The16 th International Scientific Conference
"DEFENSE RESOURCES MANAGEMENT IN THE 21st CENTURY"
Braşov, October 28th-29th 2021

NATIONAL DEFENSE UNIVERSITY „CAROL I"
REGIONAL DEPARTMENT OF DEFENSE RESOURCES MANAGEMENT STUDIES

DEFENSE RESOURCES MANAGEMENT IN THE 21ST CENTURY

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October 28th – 29th 2021, Braşov

Coordinators:
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ELEMENTS OF SOCIAL SUSTAINABILITY IN NATO MEMBER COUNTRIES

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Abstract:
The Human Development Reports (HDR) are publications of the United Nations Development Programme. Each year the HDR is ranking more than 180 countries according to the Human Development Index (HDI). This is a composite index comprising 3 dimensions – Life expectancy index, Education index, and GNI index.
Among the data from the HDR 2020 we can find, as part of the Social sustainability, the Military expenditure (as percentage of the GDP), and the Ratio of education and health expenditure to military expenditure. We took into consideration for this paper also one of the indices from the Economic sustainability – the Research and Development expenditure (as percentage of the GDP). We have analyzed this 3 indices for the NATO Member Countries.

Key words: HDI; military expenditures; ratio of education and health expenditure to military expenditure; research and development expenditure

1. Introduction

The NATO Member Countries for which we have analyzed the elements of social sustainability are, in alphabetical order: Albania (AL), Belgium (BE), Bulgaria (BG), Canada (CA), Croatia (HR), Czechia (CZ), Denmark (DK), Estonia (EE), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Montenegro (ME), Netherlands (NL), North Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Slovakia (SK), Slovenia (SI), Spain (ES), Turkey (TR), United Kingdom (UK), United States (US). For the rest of this paper we will use the 2 letters country code.

2. HDI Rank

In Table 1, 2, and 3 below we have presented the HDI ranks for the NATO Member Countries, as extracted from the Human Development Report 2020. Romania is on 49th place. On the 1st place is Norway.

HDI rank									
AL	BE	BG	CA	HR	CZ	DK	EE	FR	DE
69	14	56	16	43	27	10	29	26	6

Table 1 HDI ranks AL-DE

HDI rank									
EL	HU	IS	IT	LV	LT	LU	ME	NL	MK
32	40	4	29	37	34	23	48	8	82

Table 2 HDI ranks EL-MK

HDI rank									
NO	PL	PT	RO	SK	SI	ES	TR	UK	US
1	35	38	49	39	22	25	54	13	17

Table 3 HDI ranks NO-US

In Table 4 below we have synthetized the Countries in 5 intervals in accordance to the HDI ranks – intervals of 10 units. Romania is on the same interval as Hungary, Croatia, Montenegro, Turkey, and Bulgaria.

HDI Ranks	Countries	No of Countries
under 20	NO, IS, DE, NL, DK, UK, BE, CA, US	9
[20-30)	SI, LU, ES, FR, CZ, EE, IT	7
[30-40)	EL, LT, PL, LV, PT, SK	6
[40-50)	HU, HR, ME, RO, TR, BG	6
over 50	AL, MK	2

Table 4 Synthetized HDI ranks

a. Military expenditure 2015-2018

The next indicator that we have synthetized in Table 5 below is Military expenditure 2015-2018, as percentage of GDP.

Military expenditures are *all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities.*

Romania is on the same interval with Croatia (1.5%), United Kingdom (1.8%), Portugal (1.8%), Bulgaria (1.7%), Norway (1.6%), and Montenegro (1.5%) with 1.9% of GDP allocated for this type of expenditure.

The majority of NATO Member Countries – 12 – have between 1% and 1.5% of GDP allocated for this indicator: North Macedonia (1%), Slovenia (1%), Italy (1.3%), Spain (1.3%), Canada (1.3%), Netherlands (1.2%), Germany (1.2%), Slovakia (1.2%), Denmark (1.2%), Albania (1.2%), Czechia (1.1%), and Hungary (1.1%).

Military expenditure 2015-2018 % of GDP	Countries	No of Countries

under 1	BE, LU	2
[1-1.5)	MK, SI, IT, ES, CA, NL, DE, SK, DK, AL, CZ, HU	12
[1.5-2)	HR, RO, UK, PT, BG, NO, ME	7
[2-2.5)	EL, FR, EE, LV, PL, LT	6
over 2.5	US, TR	2

Table 5 Military expenditure

b. Research and Development expenditure

Research and development expenditure are *current and capital expenditures (both public and private) on creative work undertaken systematically to increase knowledge, including knowledge of humanity, culture and society, and the use of knowledge for new applications. Research and development covers basic research, applied research and experimental development.*

The situation for the Research and Development expenditure is presented in Table 6. Romania has 0.5% of GDP allocated for this chapter, in the same interval as Latvia (0.6%), Bulgaria (0.8%), Slovakia (0.8%), and Lithuania (0.9%). The highest values are in Belgium (2.8%), United States (2.8%), Denmark (3.1%), and Germany (3.1%).

Research and Development expenditure 2014-2018 % of GDP	Countries	No of Countries
under 0.5	AL, MK, ME	3
[0.5-1)	RO, LV, BG, SK, LT	5
[1-1.5)	TR,HR,EL, PL, LU, ES,PT, IT, EE	9
[1.5-2)	HU, CA, UK, CZ, SI	5
[2-2.5)	IS, NO, NL, FR	4
over 2.5	BE, US, DK, DE	4

Table 6 Research and Development expenditure

c. Ratio of education and health expenditure to military expenditure

Ratio of education and health expenditure to military expenditure is *the sum of government expenditure on education and health divided by military expenditure.*

The Ratio of education and health expenditure to military expenditure is only 5.7 in Romania, and 18.3 in Belgium, and 19.5 in Luxembourg. For this indicator we didn't have the data for all the 30 countries.

Ratio of education and health to military expenditure	Countries	No of Countries
under 10	EE, RO, PL, US,HR,LT,BG,LV,PT,UK,IT,SK	12

[10-15)	NO, HU, ES,CZ,CA,SI,DE,NL,DK	9
over 15	BE, LU	2

Table 7 Ratio of education and health to military expenditure

3. Bi-dimensional analysis

For a more complex analysis of the 3 indicators presented above, we created 3 bi-dimensional tables and we applied the χ^2 *test* in order to see if there is a direct connection between the HDI ranks, Military expenditure, Research and Development expenditure.

$$\chi^2_{calc} = \sum_{i=1}^{p}\sum_{j=1}^{q}\frac{(n_{ij} - nt_{ij})^2}{nt_{ij}}$$

HDI Ranks / Mil expend	under 1	[1-1.5)	[1.5-2)	[2-2.5)	over 2.5
under 20	BE	DE, NL, DK, CA	NO, UK		US
[20-30)	LU	SI, ES, CZ, IT		FR, EE	
[30-40)		SK	PT	EL	
[40-50)		HU	HR, ME, RO, BG	LT, PL, LV	TR
over 50		AL, MK			

Table 8 HDI ranks and Military expenditure

HDI Ranks / R&D	under 0.5	[0.5-1)	[1-1.5)	[1.5-2)	[2-2.5)	over 2.5
under 20				UK, CA	NO, IS, NL	DE, DK, BE, US
[20-30)			LU, ES, EE, IT	SI, CZ	FR	
[30-40)		LT, LV, SK	EL, PL, PT			
[40-50)	ME	RO, BG	HR, TR	HU		
over 50	AL, MK					

Table 9 HDI ranks and Research and Development expenditure

Mil expend/ R&D	under 0.5	[0.5-1)	[1-1.5)	[1.5-2)	[2-2.5)	over 2.5
under 1			LU			BE
[1-1.5)	MK, AL	SK	IT, ES	SI, CA, CZ, HU	NL	DE, DK
[1.5-2)	ME	RO, BG	HR, PT	UK	NO	
[2-2.5)		LV,LT	EL, EE, PL		FR	
over 2.5			TR			US

Table 10 Military expenditure and Research and Development expenditure

The statistical hypothesis:

H_0 – we don't have any statistical connection between the indicators

H_1 – we have a statistical connection between the indicators

After making all the calculations for the data in Table 8, 9, and 10 we find out that we don't have any statistical connection between the indicators presented.

4. Conclusion

Military expenditure, and Research and Development expenditure, as part of social sustainability and economic sustainability are not directly influencing the Human Development Index, from a statistical point of view. But for sure are influencing the day to day live of the citizens.

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SMART CITY RESILIENCE: A SYSTEM-OF-SYSTEMS APPROACH

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Abstract:
The concept of „smart city" represents the new buzz word when discussing the contemporary urban planning practices. With the help of ICT infrastructures, settlements are nowadays more interconnected than ever, mediated at the distance and operated through control centres. At the same time, the proliferation of threats and risks to the ICT networks affect the well functioning of such intelligent tools of urban governance. Thus, the resilience of such a connected and prone to malitious actions system becomes the desiderate to decissions makers. The current research attempts to disentangle these concepts by providing an up-to-date state of art and concequently discussing gaps in the current literature on this matter. Moreover, the paper suugests some further directions of study and limits of current scholarship in this realm of research. The paper concludes that a system-of-systems approach to smart cities' resilience is missing in the literature.

Key words: smart city; resilience; system-of-systems; complexity

1. Introduction

The concept of „smart city" represents the new buzz word when discussing the contemporary urban planning and governance practices. With the help of ICTs and infrastructures, settlements are nowadays more interconnected and interdependent than ever, mediated at the distance and operated through control centres. At the same time, the proliferation of threats and risks to the ICT networks affect the well-functioning of such intelligent tools of urban governance. Thus, the resilience of such a connected and prone to malitious actions system becomes a desiderate to decisions makers.

This paper attempts to address the global trends situated at the intersection of smart city, critical infrastructures, outer space politics and resilience as a novel form of ensuring the protection of assets and citizens. It therefore reviews the implications of transitioning from analog to digital, from protection to resilience, as well as from networked to smart infrastructures, in order to shed light on the current complexities. The paper concludes that a system-of-systems approach to smart resilient cities is of benefit to decision makers.

2. From analog to digital

The collapse of the Iron Curtain in late 1980s and early 1990s produced profound changes in the global security and defense landscape. Among the most important paradigm shifts is the use of information and communication technologies (ICTs) in what is known today as digital or cyber revolution. With more than half of world's population having access to internet [1] the digital realm marked a profound paradigmatic shift of how we understand reality. While in Thucydides' time, battles were fought only on two domains, i.e. on land and at sea, the

international community agreed that current wars could be fought also in air, in outer, and in the cyber space. Indeed, in 2010 the U.S. declared cyberspace as a new military "domain" [2], while in December 2019 NATO formally declared space as the fifth operational realm [3].

However, as the allied forces struggled to keep up the pace with these global initiatives, the understanding of both space and cyber risks and threats also proliferated. The new understanding clustered around their dual use character, namely around a general fear of malign forces having "the ability to cause effects remotely not only over regional but also global distances" [4]. Similarly, critical areas as communications, navigation and intelligence which are enabled by the satellite-based technologies started to be seen as more vulnerable to new risks, as well as to potential threats of interference from non-allied nation-states [5].

While the cyberspace changed the nature of communication, from the mass media's "one-to-many" [6] into "many-to-many" [7], so it changed the understanding of space technologies' involvement into our daily routine. From weather monitoring, environment and agriculture, to transport, science, communications and banking, to name only a few, the information gathered and delivered through satellites is critical for military activities, operations and missions, including collective defence, crisis response and counter-terrorism [5].

In the international relations, this new vision of how reality unfolds maked the transformation of real politics into more fluid forms of "cyber" or "outer space" politics, constructed by various actors in different layers and at different levels. Thus, the rapid technological advancements over the past three decades determined permanent changes in national and international political and strategic agendas of countries and organizations, as well as in structures, resources allocated, research and innovation patterns, leading up to an intense technological competition on all realms of life.

3. From protection to resilience

At the same time, while risks and threats to critical assets proliferate, the concept of protection became obsolete. With ever increasing numbers of "black swan" events, the overall thinking of protection shifted towards ensuring the continuity of essential services. The interdependency of infrastructures means that a domino effect is likely to paralyse several critical sectors at once, with severe implications for society in general. While infrastructures are large, dynamically unsynchronized, and complex [8], vulnerabilities are many and the speed of proliferation is sometimes too high to keep up the pace with it. In other words, the idea of protection blurrs facing the technological expansion that permits threats to circulate through the same channels of everyday life.

Thus, while on a political level the emphasis on such approaches was growing, at the technical level, efforts were clustered around finding ways to withstand the ever growing number of potential threats. Accordingly, the capacity of bounce-back-ability of critical systems to recover their function became key in attempting to manage all the panoply of potential disasters. Resilience as a concept became the new trend, being understood more like an elastic property of critical assets to recover than to resist the myriad of potential attacks.

As governments, industry and researchers are currently pursuing next-generation capabilities, resilience emerged as an optimal solution. A recent U.S. governmental report on the politics of space operations claims that "protection is probably unlikely to be as cheap as resilience" [9]. This approach underlines the fact that constructing assets with a built-in resilient character is more efficient and arguably cheaper than to invest into the post-disaster industry.

At the European level, different research activities such as the development of methods and tools for international cyber security exercises, the assessment of the vulnerability of networked infrastructures in case of extreme space weather events, and the evaluation of the resistance of buildings and transport systems against explosions [10] also shifted from protection to resilience. Thus, emerging threats, as well as unconventional attacks to critical infrastructures have exposed the limits of traditional risk assessment and risk mitigation efforts. Some threats cannot be foreseen, while reducing all possible risks at the minimum possible level is not always cost effective. Resilience offers the perspective of reassuring service continuity in the aftermath of destructive events especially in cases when these cannot be predicted. The performance of technological systems needs to take into account their interdependencies across sectors and across borders and quantify the economic impact of disruption of critical infrastructures on society [10].

4. From the 'networked' to the 'smart' infrastructures

The 'smart city' as an evolving paradigm, situates at the convergence of technology and the city. In fact, a smart city's development is connected to the ICTs in such a way that its 'smartness' translates into high technological integration. At the same time, the outer space infrastructure opened up critical information to numerous mass market applications, fostering not only urban innovation, but access to fundamental services such as transportation, provision of energy, water and food, and healthcare, among others. Smart cities use information and communication technologies to increase operational efficiency, share information with the public and improve citizens' welfare and the quality of key services. Advances in satellite-based technologies are giving rise to more competitive services, while minimizing environmental and social impacts. Certainly, these intimate integration aspects between space technologies and cities are also valid in the cases of malevolent interventions, disruptive technologies or in any other case in which space technologies are interrupted by intent, this feature trickling down inevitably to the well-functioning of smart cities. In fact, in the moments of failure it is the most visible the profound interconnections between technologies, services and societal well-being.

Historically, urban planning has considerably changed over the last century. When, as a consequence of industrialization and massive rural-urban development in the 19th and 20th century, cities expanded beyond their middle-age walls, engineers planned the urban expansion by designing urban street networks, building electricity grids, water supply and sewage networks. In the beginning of the 21st century, a new era of infrastructure development emerged and information and communication entered the stage of urban development. Currently, the smart city adds up another dimension of urban development, one in which urbanization expansion is happening in a networked manner, giving rise to a different reality.

The contemporary urban settlements are not only networked, in the sense of being connected and interconnected through large engineering systems of pipes and wires, but they are also intelligent due to their expansion into outher spaces, namely the cyber and outer space. What would a city be without access to internet, or without telecommunications? The novel form of habitable settlement is automatically intimately connected to both technologies supporting modern lifestyle, as well as threats lurking in the shadows of such technologies, both using the same pathways to circulate and to operate. It falls from here that resilience, as a built-in capacity to absorb shocks of all kinds, is currently the only way in which the humanity could attempt to survive potential disasters.

5. A system-of-systems approach to resilient smart cities

Complexity is now an ubiquitous part of our lives. The "complex" view of reality is perceived as increasingly fundamental to understanding strategies at all levels, from the international consensus to domestic realm, and from governmental to private entities everywhere. Therefore, the inclusion of complexity into the management discourse is a natural consequence, and many researchers, strategists, or managers have attempted to find the right approach to managing complexity. However, it is not the place here to theoretise the models of complexity management, but to introduce the concept of complexity into the discussions about critical infrastructures and resilient smart cities.

The attacks on the everyday channels of mobility have accentuated changes in the everyday geographies of urban space driven by both imagined vulnerability and research and innovation pushes from the security industries. In fact, national security merged with politics of critical infrastructures, transport security and urban safety. The city perceived as a fragile and vulnerable space, one that contains both 'the good' and 'the bad', became the operational field of strategies that attempted to harden it and to increase its resilience or 'bouncing back-ability' to recover as quickly as possible from any incident, from terrorist attacks to natural disasters or accidents, by building "resilience". Furthermore, with that came other concepts such as 'societal security'- "the ability of a society to persist in its essential character under changing conditions and possible or actual threats" [11] that got to put even more emphasis on the places with high density of people. Additionally, more and more attacks from non-state actors have been consolidating this ambivalent nature of urban infrastructures as both indispensable and vulnerable.

Detecting and isolating the 'unseen threat' from the flow while maintaining circulations running requires innovative security solutions as well as high integration of previously-independent systems. As security relies heavily on real-time digital technologies of monitoring, visualization and simulation for sorting the malign components, civilian urban spaces turn into assemblages of material and non-material elements, tangled together by hopes for the absolute control of the 'enemy within'.

The systems that have been created to help and support our needs, many of which being critical, such as energy, transportation and communications, food production, water management, and heath care, among others, are being now transformed by newer technologies and are becoming increasingly connected to each other [12]. In other words, the interactions within these large-scale complex socio-technical systems as well as their interaction beyond the system boundaries raise even more challenges.

Having said that, the challenge we face nowadays is how to address the problems associated with integration of multiple complex systems [13]. Furthermore, the need to solve system of systems problems is urgent not only because of the growing complexity of today's challenges, but also because such problems require large monetary and resource investments with multi-generational consequences.

Organizational systems as well as the usual life routines are becoming increasingly complex due to involvement of more sophisticated information and communication technologies [14]. As Weck et all (2011) discusses, "systems that had once been clearly separate began to interact more than anyone could have imagined" [12]. One reason is because "scale and

complexity increased inexorably and we ended up with system on systems. These, in turn, touched more and more lives and affected how we do things".

An integration of the smart practice into the resilient city is, therefore, promising to overcome the urban complexities to support social-ecological-engineering resilience. In particular, a resilient smart city is expected to use big data, Internet of Things (IoT) and other smart information technology to manage cities to enhance capability of resisting, absorbing and adapting to external changes, thereby achieving urban resilience. Beyond this, building and understanding a resilient smart city by the use of system-of-systems enhanced approach, could reduce vulnerabilities.

6. Conclusion

This paper attempted to review some of the current trends related to security and resilience of smart cities at the same time introducing the idea of system-of-systems into current academic thinking.

It is the time to expand our thinking both in interdisciplinary as well as in trans-disciplinary ways. While, historically, outer space has been considered the realm of astrophysicists, current threats and the interconnected nature of modern society with its fusion between ground-based critical infrastructures with space-based ones to supply key services make space a realm for security experts. As these sectors are interrelated and interdependent, it is important to familiarize ourselves with a more holistic manner of thinking that is not reduced to single academic disciplines or sectors of life. It should not be solely under the jurisdiction of outer-space specialists concerning the identification, designation and management of such important systems.

Furthermore, with respect to the scholarship in governance studies, where are the limits of global politics end and the limits of urban governance start? The conclusions highlight that there is a lack of studies on the integration of smart city into resilient city and the opportunities and challenges of building smart resilient city have not been revealed.

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LIFE CYCLE COST ANALYSIS FOR MILITARY EQUIPMENT. LIFE CYCLE SUSTAINMENT PLAN AS MAIN INSTRUMENT

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Abstract:
One of the main characteristic of present days for Romanian Armed Forces is the switching accent from a numerous military corps with old equipment to a "slim" but stronger force using modern weapon systems. Suddenly, becomes a problem to fill the places with specialized people instead of using cold war weapon systems.

Of course, this situation is the consequences of aligning to 2% of GDP for defense sector and opens the way for modern weapon systems acquisitions. But when you need to fill the gap in so many capabilities in the same time in the same 2% envelope, you have to choose what to buy first and haw to mix the tempo of acquisitions. This paper is about a perspective of estimating the total cost of weapon systems, „from cradle to grave" and how to control, calculate and diminish the whole burden. One strong model is Life Cycle Sustainment Plan used by US Secretaries of Military Departments and the Directors of Defense Agencies.

Keywords*: lyfe cycle, analysis, defence, weapon , system*

1. Introduction

This paper discus the major systems acquisition process, and its underlying concepts, life-cycle costing, and cost estimation techniques and the strategies that enable the program managers to optimize the life-cycle cost of the system. There is no specific program (real data) it comprises specific evaluation on a estimating model in order to develop strategies which will eventually reduce the life-cycle cost of the system.

On the other hand, recent and constant 2 percent allocation for defense sector has already encouraged initiatives to enhance and develop capabilities in order to fulfill strategic objectives stated in planning documents. In real life, capabilities needs years to develop thus the political and top military leaders orders them as soon as it possible and imposes estimation on medium and long term for the financial implication. A very good approach is to determine all type of costs for the ownership of a system and also for creating a specific capability. Here is where Life Cycle Cost Analysis (LCCA) become mandatory, with all procedures and technics for estimating the costs. The lessons learned from the history of the modern warfare imposes that technological superiority itself is not sufficient to be the decisive factors in providing the competitive advantage but also the sustainment and operating performance. States must invest in designs and systems with improved long-term performance, especially in defense sector, where the life cycle of an equipment is long and usually extended over the planned terms.

In conclusion, the Guidelines for Life Cycle Cost Analysis instruct Project Teams to consider not only the "first costs" of a project but also long-term costs, including manpower, utilities, operations, and maintenance.

Just to be more complicated, we can add the fast proliferation and high obsolescence rates of technology as factors that must be involved in the requirements for the programs and also the need to connect the program achievements to immediate and concrete benefits for the eye of the public contributors.

2. Life Cycle Cost Analysis Concept

Life cycle cost analysis (LCCA) is an approach used to assess the total cost of owning a facility or running a project. LCCA considers all the costs associated with obtaining, owning, and disposing of an investment.[Ref2]

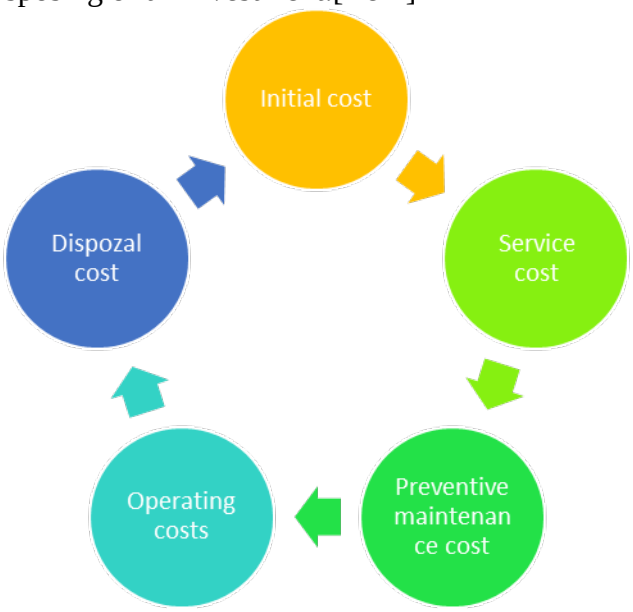


Figure 2-1: Life cycle cost concept," from cradle to grave"

Life cycle cost analysis is especially useful where a project comes with multiple alternatives and all of them meet performance necessities, but they differ with regards to the initial, as well as the operating, cost. In this case, the alternatives are compared to find one that can maximize savings. This analysis is mandatory especially when we have different initial cost, many types of operating costs, different procurement sources and all can vary in time.

2.1 Life Cycle Costs Elements

Various costs arise when procuring, operating, or disposing of a project. Project-related costs can be classified into initial costs, fuel costs, replacement costs, operation and maintenance costs, finance charges, and residual values.

For typical military acquisition programs the major components of the system LCC can be grouped as:

- Research, Development, Test, and Evaluation (RDT&E) costs;
- Investment Costs which include Military Construction (MELCON) costs;
- Production and Deployment (P&D) costs;
- Operation and Support (O&S) costs;

- Demilitarization and Disposal (D&D) costs.

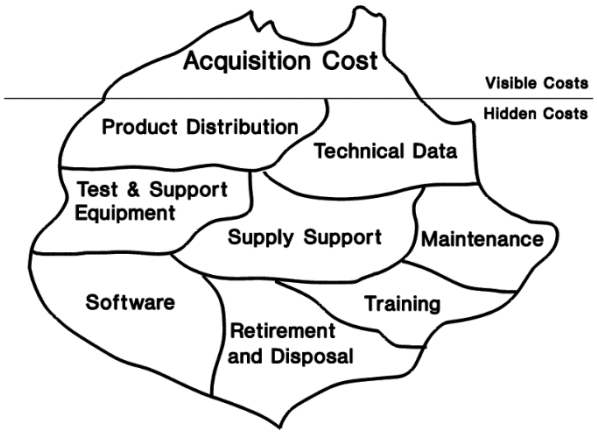


Table 2-2: Cost breakdown

Usually, the distribution of those LCC elements throughout typical system life is such that:

10% of LCC is RDT&E

30 % of LCC is Investment Costs

60% of LCC are O&S and D&D costs respectively.

As a consequence, the accent will be on diminishing the highest cost driver in LCC, O&S costs through improving system reliability to the extent feasible, and decreasing manning and logistics support requirements for the system.

To underline the complexity of the total costs I will perform a cost breakdown as it is made in the [Ref6].

a) RDT&E Costs

The costs associated with system development efforts constitute RDT&E costs and are as follows:

- Project management costs
- System test and evaluation costs
- Data collection and generation costs
- System engineering and integration costs
- Demonstration and validation costs
- Hardware research and development costs
- Software development costs
- Prototype manufacturing costs etc.

b) Investment Costs

Investment costs cover all the costs incurred to field the system to the operational units. We can classify investment costs into two major categories; military construction costs (MILCON), and Production and Deployment costs (P&D). MILCON costs are associated with construction requirements in order to manufacture, operate, and support the system throughout the system life. P&D costs refer to costs incurred for manufacturing and deployment of the system into the operational units. Generic component elements for Investment costs are:

- MILCON Costs
- Production tooling and test equipment cost
- Production set-up cost for lots

- Pre-production engineering non-recurring costs
- Recurring production costs
- Support equipment cost
- Initial spares cost
- Transportation costs
- Training devices costs
- New or modified facilities costs
- Warranty costs

c) O&S Costs

O&S costs are the total of the costs associated with operating and supporting the system through its operational life. As will be described further, the most important effort is performed to control O&S costs and resulted in creating LCSP tool for that phase of the system life-cycle.

Generic components O&S costs is such that:

- Personnel (Operations, Maintenance, Training etc.)
- Unit level consumption (Consumable Materials, Energy Consumption, Spares Replenishment, Training Munitions etc.)
- Maintenance Material Costs (O-level, I-level, D-level)
- Sustaining Support Costs (Support equipment maintenance and replacement, Sustaining engineering support, Software maintenance costs etc.)
- Indirect Support Costs (Personnel Support, Installation Support)

d) D&D Costs

D&D costs are incurred at the end of system life, and associated with disposal of the system with minimal environmental effect. The increasing level of environmental awareness by public, restrictive environmental regulations, and security considerations make the appropriate disposal process an imperative.

Calculating Life Cycle Costs. Concepts

The main challenge for LCC is obviously to calculate all types of costs. Some of them represents fix costs and many are variable. From the first estimation will be identified costs that can vary and influence the decision in choosing one alternative. Only relevant and significant costs in each of the categories above can be used to make investment-related decisions. Costs are considered significant when they are substantial enough to cause a dependable impact on a project's LCC.

All the costs involved are treated as base year values equivalent to present-day dollar amounts. LCCA transforms all dollar values into future year occurrence equivalents and then discounts all the values to their base dates. In such a way, it's easy to find their present value.

This section explains fundamental concepts behind LCCA and presents the standard Stanford LCCA approach.

A number of basic concepts underlie LCCA.

a) Time Value of Money

The value of money today and money that will be spent in the future are not equal. This concept is referred to as the "time value of money."

The time value of money results from two factors:

(1) inflation, which is erosion in the value of money over time

(2) opportunity cost.

For cash or existing capital, opportunity cost is equivalent to the benefit the cash could have achieved had it been spent differently or invested. For borrowed money, opportunity cost is the cost of borrowing that money (e.g., the loan rate).

b) Inflation

Inflation reduces the value or purchasing power of money over time. It is a result of the gradual increase in the cost of goods and services due to economic activity. By eliminating inflation from all escalation and discount rates, estimates of future costs can be made in current dollars and then returned to present value with the proper formulas. An estimate of the future behavior of inflation rates can be avoided.

The following formula factors inflation out of any nominal rate:

$$\text{REAL} = \frac{1+NOMINAL}{1+INFLATION} - 1$$

Where: REAL is the real rate NOMINAL is the nominal rate INFLATION is the inflation rate

c) Discount

Project costs that occur at different points in the life of a building cannot be compared directly due to the varying time value of money. They must be discounted back to their present value through the appropriate equations. The discount rate is defined in terms of opportunity cost.

The basic discount equation is as follows:

$$PV = \frac{FY}{(1-DISC)^{Y}}$$

Where:

PV is the present value (in Year 0 dollars)

FY is the value in the future (in Year Y dollars)

DISC is the discount rate

Y is the number of years in the future

d) Escalation

Most goods and services do not have prices that change at exactly the same rate as inflation. On average over time, however, the rate of change for established commodities is close to the rate of inflation.

Like discount rates, escalation rates are adjusted to remove the effects of inflation. The Escalation Rates table under Life Cycle Cost Parameters below lists the "real" escalation rates of various types of goods and services. Where the real escalation rate is close to zero or zero, the escalation rate for that category is essentially the same as the inflation rate.

The formula for calculating the future cost of an item with a known cost today and a known escalation rate is:

$$COST_{YEAR-Y} = COST_{YEAR-0}(1+ESC)^{Y}$$

Where:

COSTYEAR-Y is the cost at Y years into the future

COSTYEAR-0 is today's cost (at Year 0)

ESC is the escalation rate

Y is the number of years into the future

e) Study Life

The study life in LCCA is the period over which the costs of a project will be examined and will influence LCCA decisions. The study life may not be the same as the building life but

may be the same as that of the longest-lived subsystem option under review. To make LCCA comparisons valid, the study life must be the same for all alternatives. [Ref4]

Calculation method

LCCA properly weights money spent today versus money spent in the future. All costs should be converted to common, current dollars and then summed to develop a total cost in present dollars for each alternative. This quantity is sometimes referred to as the net present value or the total cost in today's dollars. With the net present value calculated for each alternative, comparisons are simple because units are consistent. The best option is simply the alternative with the lowest life cycle cost or net present value.

The basic formula is as follows:

$LCC = C + PV_{RECURRING} - PV_{RESIDUAL\text{-}VALUE}$

Where:

LCC is the life cycle cost

C is the Year 0 construction cost (hard and soft costs)

PVRECURRING is the present value of all recurring costs (utilities, maintenance, replacements, service, etc.)

PVRESIDUAL-VALUE is the present value of the residual value at the end of the study life (note: these guidelines recommend his to be $0) [Ref4]

Uncertainty in LCCA Calculations

Uncertainty can be explicitly addressed in LCCA calculations, but it makes them much more complex. Each parameter used can be assigned a degree of uncertainty; these uncertainties can then be aggregated in statistically justifiable ways to measure the overall uncertainty of the result.

To make LCCA calculations as simple and straightforward as possible, the Stanford LCCA approach makes uncertainty an external qualitative consideration rather than a quantitative analytical one. Users should consider uncertainty throughout their LCCA studies and weigh the results qualitatively. For example, if an LCCA comparison of a variety of options shows a small difference in overall life cycle costs (e.g., 1%), then these costs should be considered equal. In other words, a small cost differential should not determine the best approach. In this case, the alternative with short-term benefits such as lower first cost, favorable environmental impact, or increased comfort for building occupants should be selected in accordance with project goals and budgets. [Ref4]

Many assumptions need to be made over the course of an LCCA study in order to generate enough data to produce results. These assumptions will strongly affect the results. All assumptions used in LCCA must be clearly stated and documented so that appropriate members of the Project

Team can validate them through the design process as costs, goals, and budgets change.[Ref4]

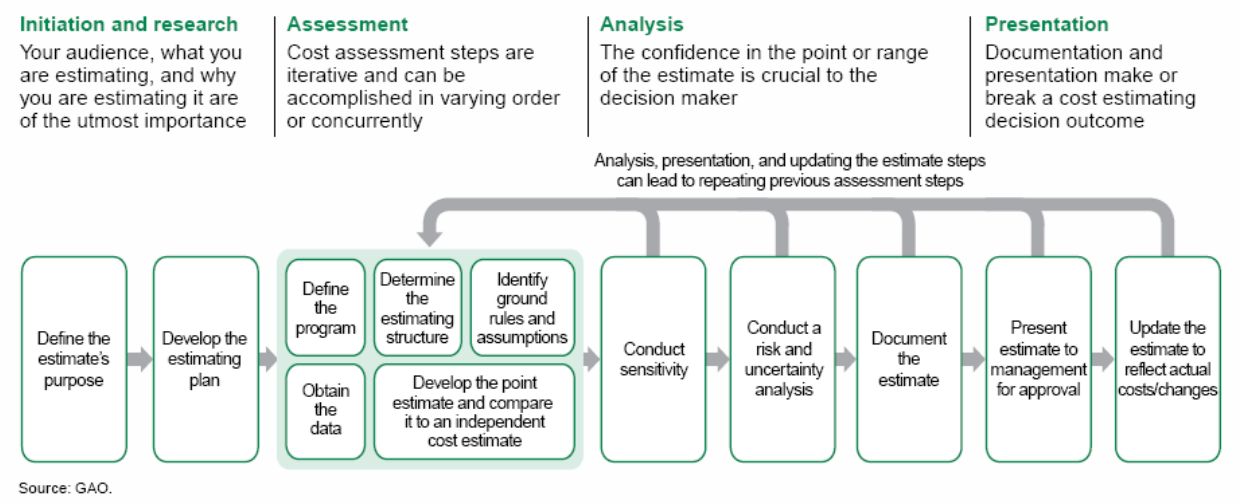
Cost estimations

Cost estimation can be defined as a process in which the financial resource requirements, which are required for developing, manufacturing, fielding, operating, and sustaining a system, are explored either for budgeting, programming, and funding purposes, or analysis of system effectiveness and analysis of alternative system designs.

Cost estimating is a recurring activity throughout system life rather than a one-time activity during the system acquisition period, and generally the quality of the estimates increases as the program moves through the phases of system life-cycle since the level of uncertainty decreases.

Table 2-3: Recurrent estimation in LCCA

The available methodologies for cost estimation are classified as the analogy approach, parametric techniques, the engineering approach, extrapolation from actuals, and the expert opinion approach. I will not insist in discussing those techniques in this paper, presenting a more practical tool, the Life Cycle Sustainment Plan, which includes also a lot of estimates.



Regardless of the methodology employed, there are some prerequisites in order to develop qualified cost estimates. First, all the relevant costs should be included into the cost elements of the system, which refers to completeness of the estimate. Second, the methodology employed in order to develop a cost estimate must be suitable to circumstances such as availability of data, and the purpose of the estimate etc., and must consider the differences with analogous systems' cost data in technology, and socio-economic conditions (which refers to reasonableness of the estimate). Finally, the assumptions upon which the cost estimates are based and cost estimation documentation must be supportable by the facts, be consistent within the known context, and be valid (which refers to consistency of the estimate).

3. Life-Cycle Sustainment Plan

When we discuss about LCCA for military equipment in most of cases the significance of analysis is no longer a tool for choosing between some alternatives. Especially in the cases of aur armed forces, the decisions will keep an important part of political argumentation and in the most important programs will be Gov-to-Gov agreement. In that cases LCCA will be very useful like a practical tool for reducing the financial pressure and overall cost in the entire LC of equipment. This plan integrates models, estimates and analysis applicable to a very large variety

of military equipment. This paper will present LCSP using models with fictive but realistic data just to exemplify the tool.

The Life-Cycle Sustainment Plan (LCSP) serves a valuable purpose as a tool in coordinating the efforts, resources, and investment of the DoD Materiel Commands such that down time for fielded weapons systems is managed through deliberate productivity improvement steps that continually lower the cost of readiness. The LCSP support the conditions for the Services to analyze the decision space for how to control Operating and Support (O&S) cost. This annotated outline was structured as a framework to assist weapons programs in thinking through the set of planning factors that must be integrated to achieve the sustainment results quantified in user specified requirements. An LCSP that logically integrates requirement, product support elements, funding, and risk management, establishes the groundwork for successful communication with Congressional, Office of the Secretary of Defense (OSD), and Component oversight staffs.

The whole "product support package" consists of all or a subset of the following product support elements:

- Product Support Management
- Supply Support
- Packaging, Handling, Storage, and Transportation
- Maintenance Planning and Management
- Design Interface
- Sustaining Engineering
- Technical Data
- Computer Resources
- Facilities and Infrastructure
- Manpower and Personnel
- Support Equipment
- Training and Training Support

Additionally, the product support package includes the agreements between program offices and government and contracted support providers.

Looking at the document can be noticed that the term "plan" can be easily replaced with "the strategy", having a set of tasks and activities required to be implemented. This outline aims to capture the strategy and the set of planning tasks and activities to stimulate critical thinking for managers and teams responsible for sustainment planning. The plan let the managers to have initiative in choosing what to measure and how to estimate costs or even to propose upgrades or changes in the program (major upgrades or modifications, adjustments to program scope or structure, or a revision to the sustainment strategy).

In addition to ensuring program's product support strategy influences a system's design, the LCSP is the primary program management reference governing operations and support—from Milestone A to final disposal. The LCSP is not a static document. It evolves throughout the acquisition process with the maturity of the system and adjustments to the program's life-cycle product support strategy. To remain relevant and current, the LCSP is updated every five years or upon a major program change to the program.

Program managers must project the timeline to obtain necessary stakeholder buy-in and approval of the sustainment strategy and completion of the LCSP to support program decision

points. In order to minimize document development timeline and rework, it is recommended that parallel staffing processes be considered.

Further, there are presented major chapters of the LCSP.

Product Support Performance

In this chapter the program managers have the requirements for sustainment performance and also the observed/ measured. The obtained data are used to evaluate how well the adopted strategy meets the outcomes. These desired outcomes are established by Military Departments and are expressed as program requirements in the form of Key Performance Parameters (KPPs), Key System Attributes (KSAs) or Additional Program Attributes (APAs) through initial planning documents.

Product Requirements

Here, the LCSP is to identify all explicit, implicit or derived sustainment requirements from program documents for every domain or even discrete components and determine how to measure and evaluate them. The values can vary from Initial Operational Capability to Final Operational Capability and to the time of disposal, especially in reliability parameters or training parameters.

For each sustainment requirement, identify which are KPP/KSA/APAs set of parameters, threshold and objective values, section of the Test and Evaluation Master Plan (TEMP) covering that metric, along with projected values at IOC, Full Operational Capability (FOC), and full fielding. The document may contain the reference in contract which impose the requirement. Further there is an example of key parameters as defined in this section.

Requirement (KPP, KSA, Derived requirement)	Threshold / Objective	IOC FY XX	FOC FY YY	Full Fielding FY ZZ
Availability	66% / 82%	100%	100%	72%
Mission Reliability	46 hrs/ 61.6 hrs	46 hrs	46 hrs	46 hrs
Logistics Reliability	MTBF 3.5 hrs /4 hrs	3.5 hrs	3.5 hrs	3.5 hrs
Maintainability				
Corrective Maintenance	1 hr/ 0.5 hrs	1 hr	1 hr	1 hr
BIT Fault Detection	>98%	98%	98%	98%
BIT Fault Isolation	>95%	95%	95%	98%
O&S Cost Avg Annual	$4.2M per unit per year			$4.2M per unit per year
Mobility	4 pallets per 3 ship formation 2 pallets per 2 ship formation	5 pallets	4 pallets	4 pallets
Transportability	Movement by CH-47	1	1	1

Training	60 hr crew differences / 40 hr	60 hr	N/A	N/A
Supply Chain Responsiveness /Customer Wait Time	15 Days (T)/ 5 Days (O)	15 Days	10 Days	5 Days

Table 3-1: Sustainment Performance Requirements

Sustainment Performance

For some of the defined Key Performance Parameters (KPPs), Key System Attributes (KSAs), Additional Program Attributes (APAs) there is a need to indicate the method or test to measure. This will provide data for demonstrations and tests that include evaluation of sustainment elements and assures the measurability of major feature that affects sustainment or sustainment cost (e.g., cost driver), its schedule or performance goal.

Test	Metric/ Feature	Schedule	Performance Goal	Estimated Value	PSM Assessment
Early User Test	Low observable coating on external surfaces	1st Qtr CY2012 /3rd Qtr CY2015	Repair 1 sq ft area in 4 hours	OT&E tested value: 7 hr	achieved only 50% of performance
Reliability GrowthTest (RGT)	Intelligence, Surveillance, and Reconnaissance (ISR) system reliability of 46 hrs MTBSA	Development Test Eval 1st Qtr CY15	46 hrs	46 hrs	TBD
Initial Operational Test and Evalution (IOT&E)	All metrics in Table xx	1st Qtr CY20xx	See Tables xx	See Tables xx	TBD
Supply Chain Responsiveness /Customer Wait Time	15 Days (T)/ 5 Days (O)	15 Days	10 Days	5 Days	

Table 3-2: Sustainment Performance Assessment/Test Results

During the life cycle, the values will be changed at every update of the contract or at midlife update of the equipment. Also, can be the base for revision of the program or can be the reason for sustainment plan if there are not met the planned requirements.

The Military Services should begin product support planning as soon as the Milestone Decision Authority has determined that a Materiel Solution is needed to satisfy the capability requirement. This timing often precedes formal establishment of a program of record and staffing of a program office. Antecedent systems often provide valuable lessons and performance benchmarks that new programs may use to establish performance improvement objectives and Should Cost initiatives. Building the plan, managers should identify the mission critical subsystems and strategy to keep these subsystems operational. Mission critical systems are those

systems whose failure would prevent the platform from continuing its mission and force the platform to wait for repair.

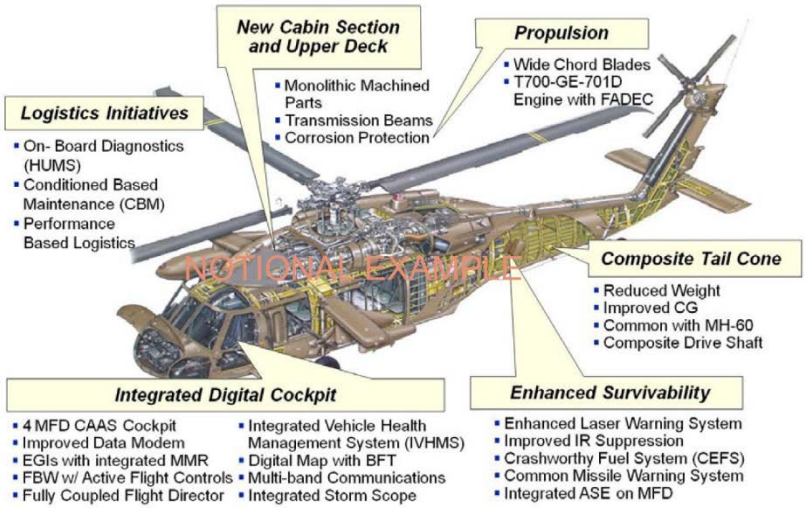


Figure 3-3: Weapon system breakdown by subsystems

The decomposition of the sustainment requirement and the system architecture and allocation against the product support elements necessary to satisfy the requirement should be included in all plans. More than one drawing may be needed to illustrate the major features affecting product support. For exemplification, In Figure 3-3 is presented a hello by its subsystems.

The complexity of system of systems maintenance may lend itself to a different depiction than the one provided in next Table 3-4.

Sub-sys***	Proprietary Intellectual Property	Data Rights	Function	Integrated Product Support Elements *																	
				Maintenance										Software Support		Transportation (PHS&T)		Config. Control**		Technical Data		Training	
				Level 1				Level 2				Level 3											
				O-1	O-2	O-3	CR	I-1	I-2	I-3	CR	Depot	CR	O	C	O	C	O	C	O	C	O	C
Airframe†	None	Unlimited												F		F		F		F		F	
			Servicing/Inspections	F	F	F																	
		OMIT data	Corrosion Control/Treatment	F	F							NI											
		OMIT data	Repair	F	L			F	L	F		NI											
Power Plants																							
Engine†	Partial	Negotiated License Rights												F		F		F		F		F	
		OMIT data	Servicing/Inspections	F	F	F		F	F	F		NI											
			Assemble/Disassemble	F	L			F	L	F													
			Repair					F				NI											
APU†	Partial	Negotiated License Rights													A	TR	P-A		A		A		A
		OMIT data	Remove & Replace	F	F	F	F																
			Repair & Overhaul				A				P-A		A										
Avionics																							
ISR	Yes	Negotiated License Rights													ISR		ISR		ISR		ISR		ISR
		OMIT data	Inspections	F	F	F							ISR										
			Functional test & adjustments				ISR	ISR	ISR	ISR	ISR		ISR										
			Repair				ISR	ISR		ISR	ISR		ISR										
Fire Control†	None	Government Purpose Rights												F		F		F		F		F	
		No expiration date	Inspections	F	F	F						TK											
		OMIT data	Functional test & adjustments					F	L	F		TK											
		OMIT data	Repair					F		F		TK											
		OMIT data	Diagnostics Software																				
Other	In Work	Government Purpose Rights													A	TR	P-A	F		F		F	
		No expiration date	Inspections	F	F	F						TK		F									
			Functional test & adjustments	F	L			F	L	F		TK											
			Repair					F		F		TK	P-TBD		P-TBD				P-TBD				
Life Support	TBD	Unlimited												F		F		F		F		F	
			Inspections	F	F	F																	
			Functional test & adjustments	F	F			F		F		NI											
			Repair																				
Test Equipment																							
Avionics	Yes	Unlimited	Diagnostics Software									NI											
			Hardware					F	L					F		F		F		F		F	
Propulsion	Yes	Negotiated License Rights	Diagnostics Software																				
		OMIT data	Hardware					L					B		B		B		B		B		B
Simulator																							

* Can include other areas of consideration in addition to IPSEs
** Includes design and logistics management responsibilities

*** Expand as required to highlight major sustainment cost or availability drivers. Expand as program moves toward MS C.

† Core

Maint. Level Codes

O-1:	Ashore Squadrons & Aviation ships	I-3:	OCONUS AIMDs
O-2:	OCONUS Detachments	CR	Commercial Repair
O-3:	Detachments aboard non-aviation ships		
I-1:	Major CONUS Ashore & Aviation Ships AIMDs	F	Full organic capabilities
I-2:	Minor CONUS Ashore Sites	L	Limited capabilities

Organizational Codes

NI	NADEP North Island	TBD	Contractor TBD
TK	Tinker – AMC Tinker	P	Organic/Commercial Partnership
ISR	ISR Contractor TBD	TR	TRANSCOM
A	Contractor A	C	Contractor
B	Contractor B		

Table 3-4: Maintenance system of a hello

In such cases the plan will contain information on many concurrent domains and will consider alternative formats for providing this information. Required information for a full picture of maintenance support includes: maintenance concept, type of work to be accomplished at each maintenance level, expected or known provider of the maintenance, and also sustainment provider/level for the Classification/Distribution Statement.

The figure must list the program's planned supply chain performance metrics. Additionally, the figure must include joint support, if planned, and the roles and responsibilities of the major agencies, organization and contractors planned as part of the system's product support. Consideration are given to DoD enterprise solutions for weapon systems, subsystems, or components that are alike, similar or already supported by a government supply chain.

The plan contains also a graphic that illustrates the major elements of the system's Product Support Strategy, both government furnished and contractor delivered, that will be used across the entire spectrum of system operations, to include peacetime, contingency, wartime, and emergency surge scenarios as applicable. The manager will coordinate to Service decision maker to fulfill the availability and affordability requirement. He also must also use data on capabilities and limitations of the logistics enterprise to influence system reliability design trade decisions. Additionally, this figure provides the product support functional breakdown necessary to develop effective contracted product support arrangements.

Product Support Functional Area	Location/ proposed location	Planned sustainment performance metrics	Planned Contracted Support
Program Head Quarters (Product Support Management)	Quantico/Stafford, VA; Warren, MI	n/a	Mix contract and gov't
Test Facilities	Aberdeen, MD; Yuma, AZ; Huntsville, AL	Test s execution within 5 days of schedule	All gov't
Logistics Support	Albany, GA; Barstow, CA; Red River, TX, Multiple throughout CONUS and AOR	Configuration support turnaround time, backlog, fill rate	Mix contract and gov't
Maintenance Depots	Albany, GA; Barstow, CA; Red River, TX	Avg Repair cycle time, Reset Time	All gov't
DLA Support	Columbus, OH, Philadelphia, PA, DDRT, DDKS, DDKA	Avg Fill Rate: Days supply	All gov't
Contingency Support Activity	Multiple throughout AOR	% ASL/PLL stocked, Zero bal w/ due out critical readiness drivers, days supply on hand,	All contract
Contingency Maintenance Depot	Kuwait	Throughput (vehicles/wk), Avg Repair cycle time (mission capability, battle damage), cost (per repair type, operation level)	All contract

Table 3-5: Product support breakdown

There are few domains reflected in the strategy, like following:

Obsolescence Management - Provide data for the management plan, known or predicted obsolete parts for all program system specifications, obsolete parts with suitable replacements, and actions to address obsolete parts without suitable replacements.

Competition in Sustainment - Provide information for planned competition in product support. Include all competition opportunities under consideration and note any small business opportunities. Not all competition is open to small business opportunities but there are many chances to reduce costs encouraging competition.

Cyber security – There is mentioned a Program Protection Plan which is the program's primary document for managing a program's protection of their technology, components, and information throughout the system life cycle. The Program Protection Plan includes areas that

directly impact sustainment including Cyber-security Strategy, Anti-Tamper Plan, and Supply Chain Risk Management. This section of the LCSP is reserved for appropriate cyber security and related program protection planning details and to identify the PM responsible for the Program Protection Plan during system sustainment and disposal.

Sustainment Relationships – Ideea is to identify relationships (industry, Service staff elements, other DoD Components, international partnerships, etc.) for the product support strategy. List planned provisions to ensure product support providers remain viable throughout the life-cycle. The data can be a figure, table, or diagram but must include all product support stakeholders.

Product Support Arrangements - In this section, list all product support arrangements (contract, task order, agreement or non-contractual arrangement within the government) for systems, subsystems or components. For every provider there is a database where there is

Performance Agreements with Organic Product Support Providers				
Organization	System	Activity	Documentation	Metrics
Corpus Christi Army Depot	1. T70-GE-701D 2. Chord Blade	1. 3000 hour Depot Overhaul 2. Chord Blade Repair	Memorandum of Agreement (MOA) with Headquarters Army Materiel Command (Estimated Completion Date (ECD): 3d Qtr. 2017)	1. Repair Cycle Time = 30 days 2. Repair Cycle Time = 14 days
Fleet Readiness Center (FRC) Southeast	Common Missile Warning System	1. Sensor Repair 2. Sensor Spares	MOA with AMC and FRC South East (ECD: 2018)	1. Repair Cycle Time = 14 days 2. 88% Army supply system spares
Defense Logistics Agency (DLA) Aviation	Common Missile Warning System	Field spares	TBD	85% spare parts stockage at field level
Letterkenny Army Depot	Enhanced Laser Warning System	1. Depot Level Reparable (DLR) Repair 2. Spares support	See PEO Memo, Next Gen Vertical Lift Support Agreement, June 23, 2014	1. Repair Cycle Time = 14 days; System NMCS >=91% 2. 92% spare stockage at field level

mentioned:

- Name and Contract line Item Numbers (CLINs)
- Organization and points of contact
- Products and period of performance covered, including remaining actions to put the contract into place
- Responsibilities/authorities and functions
- Performance metrics and incentives
- Status of Cost and Software Data Reporting (CSDR) planning/reporting

Performance Agreements - List the planned or current agreements that are part of the product support package. Information provided must be consistent with the Acquisition Strategy. An example of performance agreements list for our proposed case is presented below.

Table 3-6: Performance agreements for a maintenance system of a hello

During filling this section of the LCSP the managers has the option to consider or not the use of commercial technologies (especially IT) when it comes about reducing cost or make decision in the case of software packages that can raise availability or maintainability issues during all type of conflict.

Program Review Issues and Corrective Actions

The purpose of this section is to provide a single location to track and monitor information on the development of a system's product support as part of a program's standard review processes. Provide data for reviews in which the product support team participates, the sustainment findings from the reviews, as well as corrective action and completion dates. The data can include entries for planned reviews. Data should include information from reviews accomplished for all subsystems, supporting systems (e.g., trainers, simulators) or system of systems that impact the system's product support.

As a conclusion the program managers has to conclude if the reviews conducted to date resulted in changes to product support strategy or if any product support strategy assumptions confirmed during the reviews.

Integrated schedule

Provide the product support schedule consistent with the program's integrated master schedule. Schedule items include but are not limited to:

- Significant program activities (i.e., activities which must be performed to produce, field, and sustain the system). Examples include: program and technical reviews (including ILAs), RFP release dates for sustainment related contracts, software releases (post-FRP), sustainment contracts, CLA/DSOR process, IOC, fielding plan, and Product Support Business Case Analysis (BCA).
- Major logistics and sustainment events for product support elements with specific emphasis on materiel and data development and deliveries.
- Major activation activities for sites in the supply chain required to support the system, to include

maintenance (field, depot, overseas, ashore), supply, and training. Include events for contractor support (interim, long term, partnerships).

- Interdependencies and interactions with other weapon systems or subsystems that are part of the platform.

Cost and Funding

Operation and support cost represents the big leaf of funds during the LC. As mentioned before, majority of them are estimations performed by various estimation method. The purpose of this section is to track the evolution of the O&S framing assumptions, cost estimates, and cost actuals as the program progresses through the life-cycle.

Through brief text and graphics, provide O&S cost data on the antecedent/ legacy system(s) (if applicable). If there are similar antecedent systems that will be used as reference for estimates, with a good probability. After that is the time to identify major differences between the legacy system and the program (e.g., differences in manning, maintenance, unit quantity, expected service life). For the program, provide each major O&S cost estimate that has been performed. Sets of data will include information to highlight any major changes from one estimate to the next, will include both assumption and technical/programmatic changes.

The O&S cost data for the system represents its **O&S Will Cost**. As the system matures and evolves through its development, fielding, and operation, update data to provide a comparison of how the O&S estimate has evolved over time, the date of the estimate, and planned updates.

The following figure (Table 3-7) is a notional example for O&S data using a graph but it can be a description, table, or other format that is most appropriate for the program to display the required information.

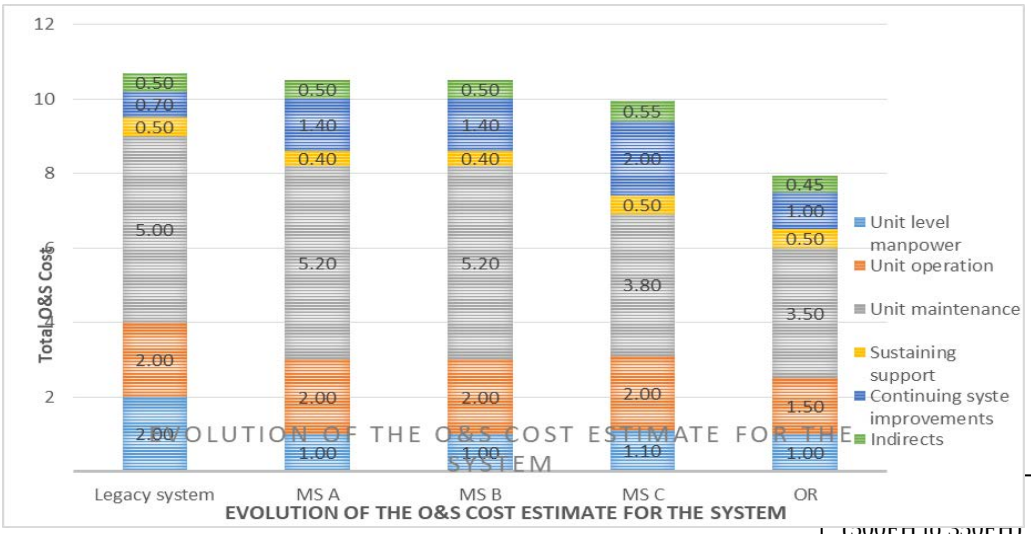


Table 3-7: Evolution of the O&S Cost Estimate for the hello

After Milestone C, this section should include a comparison of actual O&S cost to estimates. Provide data on major changes affecting O&S cost (e.g., assumptions that have changed – Operational Tempo was planned for 500 flying hours per aircraft per year, actual usage has been 350), subsystems or components reliability, etc., and actions planned or implemented to address O&S cost growth.

In the same section is comprised as reference the **Disposal costs** of the antecedent/ legacy system and compare the evolution of the **Disposal cost estimate** of the new system against that reference. To provide data on the system's current disposal cost estimate is necessary to include the estimate source, the date of the estimate, the next planned update, major assumptions, and where complete estimate documentation is available. All disposal/demilitarization costs should be included, regardless of funding source or management.

In this model case there is no possibility to sell product at residual value, but this could be a possibility for many systems. Here, it will only provide a comparison of how the system's disposal estimate has evolved over time.

O&S and Disposal Cost Drivers

The purpose of this section is to identify the elements of the system that are the greatest contributors to the estimated O&S and disposal costs. Include specific variables driving O&S

cost and the actionable Should Cost initiatives the program plans to use in controlling such costs. Should Cost initiatives specific to disposal cost should be included if disposal cost is expected to be a sizeable portion of the life-cycle cost.

Identify expected or known (post-Milestone C) O&S cost driving categories using the Cost Assessment and Program Evolution (CAPE) O&S cost elements. Figure 7-3 shows one way to portray this information. Once the most expensive CAPE O&S cost elements are determined, further analysis should be performed to decompose those cost elements into the specific labor and material costs that contribute to that element. Actionable O&S cost drivers early in the acquisition process often can be addressed through the system's design. After fielding, the reliability of a subsystem's components may be a cost driver and require re-design.

At Milestone A, cost driver analysis will likely take the form of comparison to legacy system costs. From Milestone B to Milestone C, cost driver analysis should be based on the system design and developmental testing. After Milestone C, cost driver analysis should be based on system actual costs, including initial operational testing and evaluation, as illustrated by the following figure.

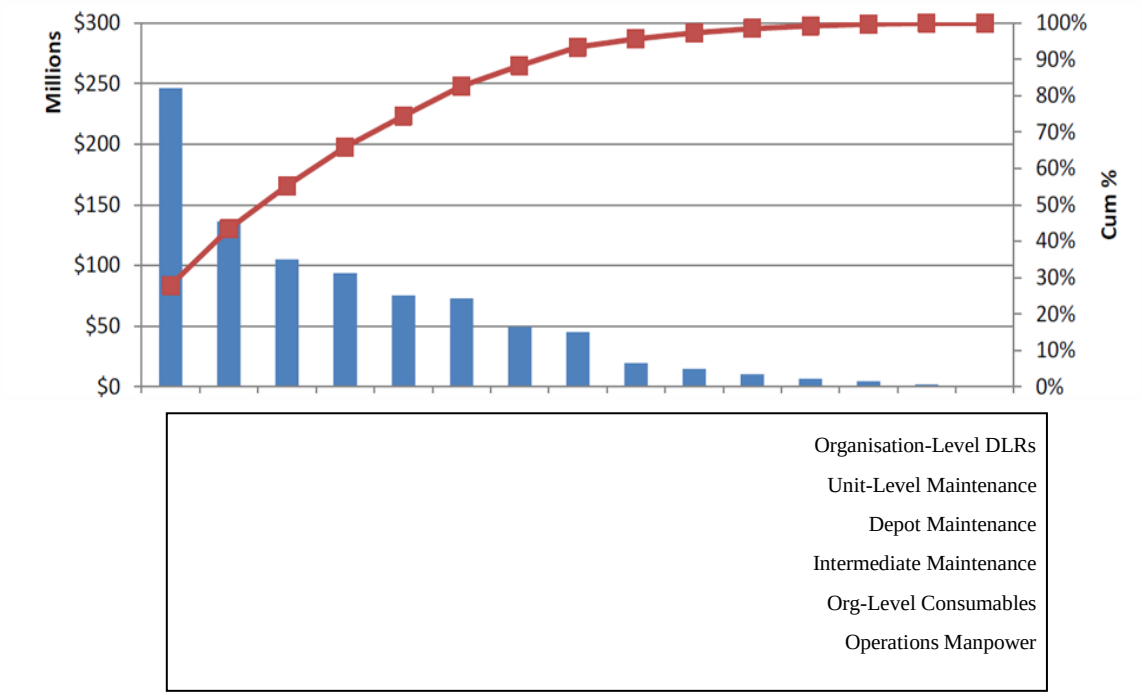


Figure 3-8: System Actual Costs, Including Initial Fielding

4. Conclusions

Modern war, even we keep the classical view or adopt the newest asymmetrical type, moves the accent from the number of fighter to the impact of the weapon. Maybe in few decades the war will be endured by programmable robots and computer controlled weapon systems. Starting from here, it is natural the interests of nations to invest in more and more sophisticated weapons, where even the thinnest technological advantage can bring the victory. I can say that

even the victory is no longer the combat clash win and is brought by the capacity to sustain the battle.

As all the main program shows, no matter the domain, the present value of maintenance, operations, and utility costs are bigger than the initial investments so anyone could not think at an acquisition program without a LCCA. Maybe in some domains (buildings) the operation and maintenance costs are more predictable and share almost a half of the total investments, but in the case of military equipment acquisition these are big actors when it comes about allocating a budget. In addition, there are more factors that will influence the O&S costs on the entire the systems acquisition process, like operation environment, operation tempo or supply chain characteristics.

The conclusion cannot be other that every investment in weapon systems should be approached from a view that will comprise the entire life time of the equipment, "from cradle to grave".

The weapon systems acquisition process should be robust to incorporate the latest technologies into system solutions, it should provide the best value to the acquiring organizations, and it also should realize best utilization of limited defense resources. Instruments and mechanisms like LCSP are originated from the need to be more and more efficient in spending resources for defense and, probably, will be assimilated at the level of NATO alliance in a form or another.

Finally, it is no so important how many weapon systems you own or how sophisticated them like the number of weapon systems are you can use and sustain in battle. From this perspective it becomes essential to perform LCCA in defense sector.

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A CRITICAL RESEARCH ON LEADER DEVELOPMENT AND MILITARY LEADERSHIP

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Abstract:
Military leadership, which can be defined as the process of affecting people to accomplish the missions by providing motivation, purpose, and direction, is a highly essential subject in modern military organizations. Although it has previously been studied in terms of leadership development, policy and guiding principles, leader attributes and traits as well as adverse situations and environments, recent developments especially in the fields of AI (artificial intelligence) technologies have necessitated more comprehensive research. Therefore, the training adapted to the classical definitions cannot provide the necessary background for developing leadership in future wars for future soldiers. Concordantly, the aim of this paper is to critically examine the definitions of military leadership in line with recent developments and try to outline a broad perspective on the subject matter.

Keywords: Future Wars; Future Soldiers; Leadership; Military Leadership; Strategic Leadership.

1.Introduction

Military leadership can be defined as the process of leading others to accomplish a mission by providing direction, motivation and purpose. The basic responsibilities of military leaders include the welfare of the soldiers while accomplishing a specific mission. A military leader is supposed to perform specified, directed and implied duties and his/her fundamental leadership power relies on the chain of command. However, upon the rapid technological developments, the operational environment, the types of threats as well as management techniques have undergone a major transformation.

While the contemporary operational environment presents multiple challenges and opportunities, recent developments especially in the fields of AI technologies have necessitated embracing multiple orientations of different leadership styles. Therefore, the training adapted to the classical definitions cannot provide the necessary background for developing leadership in future wars for future soldiers. Concordantly, the aim of this paper is to critically examine the definitions of military leadership in line with recent developments and try to outline a broad perspective on the subject matter.

2.Military Leadership Definitions, Challenges, and Opportunities

Leadership is a constantly evolving phenomenon embedded within an organization. It is affected by the delegation of authorities and works as well as the organizational culture and structure. While new approaches for improving leadership competencies have been investigated throughout the years, the main concern of human resources directors is reported as identifying leaders and improving leadership in a recent study [1]. Since the significance of developing

leadership competencies is globally recognized [2], programs for building competencies have still been developed to increase efficacy [3].

On the other hand, as a theoretical and practical discipline, military leadership requires a consistent and continuous long-term approach to develop leadership competencies that are discernible from civilian leadership [4]. Besides, military leadership incorporates unique context-based elements in addition to generic ones [5]. The main context which shapes and makes the military leadership discernible from civilian leadership is maintaining security as the core task. That main context also involves danger and potential physical, material, or psychological harm to members of the organization. Therefore, organization members are allowed to use force if necessary [5].

The security and combat task also present multiple unique characteristics that shape military leadership and reveal distinctive challenges. First of all, "totality" is the fundamental characteristic of the military organizations in which almost every aspect is controlled within the lives of its members. Accordingly, the dependency on the leader is greater compared to other institutions. Secondly, the formal institutional structure necessitates a formal chain of command through organized professionals. Not surprisingly, the power of the commander largely relies on his/her rank based upon a defined hierarchy which also shapes his/her leadership practices. Thirdly, each and every decision and command directly affect a large number of subordinates due to the size of the organization. Therefore, military leaders confront unique challenges and tribulations while making crucial and difficult decisions. Concordantly, improving military leadership necessitates a comprehensive study in which the contemporary operational environment affected by the significant technological, social and cultural changes is taken into consideration [6]. Especially the end of the Cold War initiated a major transformation within the strategic military reality; with armies being forced to overcome amorphic, frequently evolving different threats. Thus, military organizations have been challenged by technological developments, dynamic geopolitical realities, changes in military leadership practices, and the transformation of the military career [7];[8].

3.Improving and Implementing Strategic Leadership

As a result of being a large, total, and hierarchical institution with a specific structure and orders operating within a fast-changing, complex social and cultural environment, modern military organizations employ different leadership styles. Besides, these different leadership styles may contradict each other. In light of the aforementioned challenges and dynamic environments, a wide array of leadership abilities are discussed to ensure that commanders can deal with conflicting demands caused by the complex environment. That's why several commander training programs have focused on developing, improving, and implementing a distinctive leadership that can cope with paradoxes revealed by the complexities. In a recent study, these paradoxes are introduced as the following:

"(a) Shared leadership versus hierarchical leadership,
(b) flexibility and creativity versus conformity and discipline,
(c) complexity and chaos versus simplicity and linearity,
(d) hegemonic and prototypical leadership versus leadership of multiple identities (with regards to gender and other peripheral situated identities),
(e) distant leadership and exchange relationship versus intimate leadership and

communal relationship." [5].

Transformations in the battlefield, force design, mission execution as well as joint and combined operations have also transformed military leaders and enabled them to understand strategic implications earlier. Accordingly, developing tactical leaders and directing them into strategic leaders as well as empowering them in the right manner cannot be achieved by using a set of classical leader competencies. Although hierarchical organizational culture presents many challenges that hinder the development of strategic leadership, the paradox literature offers new points of view to overcoming these obstacles [9]. Recent studies suggest paradoxical-hybrid frames which simultaneously exist at different temporal and spatial contexts for effective military leadership especially operating at strategic levels [10]; [11].

4. Conclusion

It is an obvious fact that classical leadership methods such as autocratic leadership are no longer sufficient while coping with the contemporary operational environment and commanders are required to foster competing demands in order to adapt to the rapidly changing military environment. Developing future leaders capable of strategic leadership may become possible as long as accepting a major shift to skill development supported by adaptive educational patterns in addition to the experience gained by specific career patterns. In this process, rather than teaching perishable skills, it is essential to develop enduring competencies and the ability to foster competing demands. Enduring competencies involve ensuring flexibility and efficiency, supporting individuality and teamwork, balancing creativity and discipline, promoting utility and novelty, enabling members to exercise their limits while performing social responsibility and retaining their well-being.

Future wars will be dominated by advanced AI technology and practices. Therefore, in order to adapt to these developments, future soldiers are supposed to develop a strategic leadership approach much earlier in their career paths. Contingency Theory becomes useful for providing an adaptive framework to support military leaders in this chaotic and complex environment typified by asymmetrical threats and technological developments. It is concluded that competence management based on Contingency approach has become essential to develop future military leaders.

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COMMUNICATION CHALLENGES IN THE NEW MILITARY ENVIRONMENT

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Abstract:
Communication is a very wide spectrum of behavioural deeds, skills, means and tools of self-expression, own values, thoughts, decisions and attempts. Some people possess incorporated communicative abilities: they are more social, have better communication with others, more precisely transmit their stances. Others are to learn communication life long, attending less or more useful trainings. Achieving our objectives or goals depends on how we manage to make ourselves clear in describing them, communicate them, socialising among our network and asking for support. Communication is vital to enable the creation of a functioning network and to explain and overcome the differences between perspectives, courses of actions, concepts or ideas.

Key words: communication, challenges, military, environment

1. Introduction

Communication is a very wide spectrum of behavioural deeds, skills, means and tools of self-expression, own values, thoughts, decisions and attempts. Some people possess incorporated communicative abilities: they are more social, have better communication with others, more precisely transmit their stances. Others are to learn communication life long, attending less or more useful trainings.

It is worth to mention that efficient communication never occurs as single sided only. That means effective communication takes place when, as mentioned before, feedback happens, when a receiving person comprehends the message and an addresser is convinced that those processes took place indeed. In other words, appropriate communication is, in nearly all types of cases, a dialogue or a conversation.

What is more, it is not only verbal, conscious and intentional but also non-verbal, subconscious and unintentional. The behaviourists claim that "the rational verbal communication is only 7 percent of an entire message – a receiver reads and interprets also a way of addresser's speaking (approximately 38 percent) as well as the body language (as much as 55 percent)" (Mehrabian and Ferris, 1967, p. 252).

The way of speaking (that is a sound of speaker's voice, its volume, intra-sentence intonation, intonation of certain words in a phrase, pause, paralanguage) as well as non-verbal communication (mimic, communication by touch, maintaining of a personal distance, gestures, pose, overlook) are dominating here. It means, that if the content of pronounced words is not coherent with the speaking manner and the body language then a receiving person trusts more in non-verbal message than the content of words (Filipiak, 2004, pp. 51 – 53).

With regard to the military organizations – it is of paramount importance how the commander communicates as it enhances or weakens the strength of relations between him/her and soldiers. If he/she is a proficient communicator, conscious of the power of the body

language and manner of transmitting the contents, his/her chances of becoming a real leader significantly increase.

2. Individual-Level Communication Challenges

The new military environment is more dynamic, active and challenging. The actions against an enemy are a mixture of hard and soft power, which are spread through the entire depth of his territory. Therefore, while the prioritization and discarding when needed must be in place throughout the entire decision making process, *the military commanders* should remain focused on a single goal: how to raise the operational effectiveness of the forces under their command.

But the burden of being a commander is that of taking decisions whilst trying to contain as much as possible the risks and effects of his orders. When the operational environment is spread through all 5 domains, integrating joint functions and having different layers of OOD (Opponent Options Denial), the comprehensive operational picture is extremely complex and it contains a lot of elements, information and resources, which must be coordinated and effectively engaged to achieve the mission objectives.

The commander is supposed to have access to all relevant, transparent and authentic information in a timely manner, to influence his decision or to help him delivering his direction and guidance (D&G). And in the same time he must practice the principles of mission command throughout the entire cycle of planning and decision making process.

Therefore, one of the biggest challenge for a commander in charge is having the ***complete information*** before taking a decision.

The junior officers came with a different background. Being raised in an environment where everything is technological and information - sharing based, their behaviour is different than the one of senior generation. The channels of communication are different and even the language is specific. Their capacity of analysing and transmitting principles, concepts or ideas is maximized by their ability to use different platforms and means. For them, it is easier to communicate via social platform, without the need of face-to-face interaction.

The information is rapidly spread to the decision factors, and the ***feedback*** is received in no-time. The network is sometimes established without any physical interaction and the workload is shared between all the people in charge. However, in order to make this happen, there's a need of creating a shared understanding of information throughout the entire network. And to build the mutual trust that everyone is doing his job in a timely matter, in a professional way and to a certain established standard, it takes time and it is hard to educate furthermore.

However, in military domain, the communication has a ***structure*** and sometimes it is difficult to find the sources of information which could help your work flow. Many times, the old generation leaders don't take in consideration the junior officers' needs of information and, by ignorance, they don't establish ***clear procedures*** for the flow of information/channels of communication. The formal way of communicating is still predominant, with boomerang effects for commanders when it comes to take decisions in a timely sensitive matter, motivated and sustained. The awareness is spread through different levels and the comprehensive approach is hard to realize. On the other way, ***being transparent*** and ***sharing information***, communicating effective and throughout all levels of hierarchy, could raise the common awareness and comprehensive approach but in the detriment of ***information overload***.

Specific qualities for a staff officer nowadays:

- Extensive experience utilising different Office tools
- Experience implementing collaborative workspace solutions.
- Ability to provide presentations to a range of stakeholders
- Good interpersonal skills and communication skills
- Poise and tact.
- Must be able to work as a member of a team.
- Able to work independently.
- A pro-active approach to assess, identify and address system weaknesses before they critically impact on operational users.
- Capacity to analyse and resolve complex problems, particularly those related to organisational processes
- Flexible and be able to work under pressure and still produce high quality results.
- Able to work in a multicultural environment.
- Find the owners of information in your HQ. Find out how the information flow works and collect it before starting your point paper.
- Write the first point paper; you'll have 80% of solution. The rest of 20% is details.
- Present your briefing in a timely effect based way. By time – find the opportunity, don't be in a hurry but not late also

2. Headquarters Level Challenges

The communication challenges therefore are exponentially tied with the complexity of operation. We cannot have commanders or leaders as experts in all domains, but they must exercise their trust in subordinates and in their advice. In the past few years, there has been a rapid proliferation of tools and resources for conducting operations at joint level. While there's no question these tools have helped us to bring our communications approach to a whole new level of sophistication – from gathering and sharing meaningful data and metrics, to engaging our audiences in new and exciting ways – they've also created quite a lot of clutter. The focus at individual level should be, however, not on More tools and instruments, but on Better. This is because we had more tactical activity, more pushing out content on more channels; ever more new technologies and collaboration platforms.

And all those tools and systems, which are feeding the military decision elements, are delivering a huge volume of data which, in a lack of proper procedures and experience, can be easily disregarded or uncorrelated. As example, a battle rhythm at a corps-level headquarters is extended throughout a period of four days, while at joint headquarters level the battle rhythm is extended throughout seven days period.

The commanders communicate via VTC or by phone on a daily matter and the D&G are issued accordingly. But if a working group or a board is planned in a different day, then the information flow might be already broken. For this reason, teams responsible for managing the flow of information and experience between departments are decreasingly centralized departments of specialized skills, and increasingly mission-based teams of experts.

The NATO HQs however have a designated information manager (IM) planner post, who, together with the information and knowledge management office, establish the procedures, the information flow, and contribute to the development of HQ's battle rhythm. Information management is an emerging field responsible with the infrastructure to collect, manage,

preserve, store and deliver information. The IM planner provides IM planning and delivery support for a nominated NATO headquarter as part of a Project Team. The IM Planner also supports the analysis of future capabilities to support the communication flow into the HQ and Electronic Working Practices (training the functional area systems, specific systems).

The information and knowledge management office is responsible within the HQ with the creation, sharing, using and managing the knowledge and information of the designated HQ. It refers to a multidisciplinary approach to achieve HQ main goals by making the best use of his knowledge. The main characteristics are:

- Focus on improved performance, competitive advantage, innovation
- Sharing of lessons identified/learned
- Integration
- Continuous improvement of the organisation.

All those characteristics are overlapping with organisational learning and might be distinguished as a strategic asset encouraging the sharing of knowledge.

5.Strategic Communication Integration

External communication between organization and audience has evolved rapidly in recent times. Communication methods to reach key external groups has blossomed with digital platforms allowing one-to-one or one-to-many channels. In addition to well-established approaches, such as telephone or postal communication, we now have a vast array of messaging tools that have pros and cons depending upon the role required.

Strategic communication is a way to achieve cognitive information effects using any means available. Strategic communication simply employs capabilities (limited only to the imagination) to support the achievement of a military objective. Just as a commander integrates air, land and sea capabilities into military planning and execution, he can and should integrate strategic communication capabilities.

The planning process is not new. The focus on and understanding of this new concept and its capabilities, however, may be. First, planners must define the information environment and its physical, informational and cognitive dimensions. How does the target audience receive their information (TV, radio, internet, rumour, religious services, etc.)? How does culture play into the message? Who are the credible messengers? Next, planners need to consider the desired effect on the cognitive dimension, i.e. the ends or outcome. Does the end-state include changing perceptions, influencing people, gaining acceptance, gaining credibility and trust, gaining support? This will drive how the operation will be conducted where themes and messages are necessary, but not sufficient. Any military planner will quickly see how this logical thought process fits neatly into the established military decision-making process (or campaign planning process). The information environment is considered in the analysis of the overarching operational environment. The commander's intent establishes an end-state. This must include a statement of the desired information environment end-state. A properly stated information end-state in the commander's intent will guide staffs in the selection of appropriate courses of action and drive subordinate units in the way they conduct operations to achieve that end-state. A selected course of action will then be wargamed using the traditional friendly action, expected enemy reaction, and friendly counteraction methodology. The war gaming process must also occur with an eye toward information effects. This becomes especially important in counterinsurgency operations where the enemy uses information as an asymmetric strategic

means and where changing indigenous populations' perceptions can turn them from a neutral position to one in favour of coalition forces. But it also applies across all levels of the spectrum of conflict in an environment where military operations will likely be covered in real time by both mainstream and "new" media sources.

Currently staff sections exist at both the service (e.g. the G7 in the Army) and joint (the J39 for IO) levels to focus on the information environment for the commander. Most combatant commands have also established strategic communication directorates or incorporated strategic communication planning into effects cells. Human Terrain Teams (HTTs) have recently been employed in Afghanistan at the brigade level to support a focus on the information environment in planning with very positive initial success. These teams include a social scientist with expertise in cultural issues. The education pipeline, however, is not overflowing with trained information experts…and most brigades will likely never see a social scientist assigned to their staff. On the other hand, it is less important to have a school-trained information staff section than to have the command understand the value and importance of information effects and incorporate strategic communication means to achieve those effects.

5. Conclusion

The communication issue is not new. Achieving our objectives or goals depends on how we manage to make ourselves clear in describing them, communicate them, socialising among our network and asking for support. Communication is vital to enable the creation of a functioning network and to explain and overcome the differences between perspectives, courses of actions, concepts or ideas.

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NATO AND EU APPROACHES TO DEFENSE PLANNING

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Abstract:
European Union countries embraced not just one, but three types of defense planning: the domestic planning of each of theMember States, planning within the basis of NATO (NDPP - NATO Defense Planning Process) and, finally, the European Union's planning. How do all these different planning systems coexist? What are their strengths and weaknesses? Answering these questions is essential making the most out of limited national resources while maximizing its outcomes.
Key words: defense, planning, NATO, EU

1. Introduction

The NATO Defense Planning Process was born in 1971. It is a process to which the nations have long been accustomed, and which serves primarily to guarantee that the Alliance has the forces it needs to complete its missions, the main one remaining the collective defense of its members. It is a four years cyclical process, top-down organized and ruled by concerns of the security environment. It finishes with the allocation of capability targets to each of the members of the Alliance

The EU defense planning has gradually developed since the Helsinki summit of 1999 and includes many elements. It's best-known - but by no means not the only one - is the capability development plan established by the European Defense Agency. Its main goal has been to supply autonomous capability of action – both military and civil – in order to manage crises on its own doorstep, when the Americans did not wish to intervene. However, this process has evolved considerably. It actual aim is to fulfil the EU's level of ambition, which has extended to 'the protection of Europe and its citizens' and is less focused on needs in terms of military capability than on potential industrial cooperation projects.

This paper sets a view on where we are on the way of cooperation between the two planning processes and identifies how could be improved, since neither of them produces the capabilities needed to satisfy the stated levels of ambition. According to a 2015 study [1], NATO level of ambition was 66% achieved, 50% of which through USA contribution and only 12% by EU nations. The gap between the ambitions and capabilities is no doubt wider for the EU than it is for the Alliance. However, NDPP gives its members a security guarantees thanks to the American forces, while the Union finds it extremely difficult to execute the most challenging missions on its own.

The most common sense improvement seems to be to make the European process cyclical and to synchronize it with that of the NDPP. To be able to do that would imply the EU to clarify its relationship with NATO. Should EU conclude that European defense can be redesigned as a collective defense system in complementary to the Atlantic Alliance and within it, in other words, an authentic pillar of the Alliance, once and for all?

Secondly, the industrial cooperation goal of the EU might not be realistic as a strategic military as per se. Perhaps interoperability and integration is a more practical and to the point

strategic objective. This will definitely be in line with NATO and national efforts, make significant savings and increase operational efficiency.

2. NATO defense planning

NDPP was developed during the Cold War era and its purpose was to ensure that the Alliance had enough forces that latter became capabilities to carry out its missions, mainly to support the article 3 of the North Atlantic Treaty.

NDPP it is a results-oriented process. It starts from the objective to be achieved and follows a 'top-down' approach, each nation being assigned with quantitative and quantitative objectives to be achieve within a given period of time. This makes NDPP also a cyclical process. It is based on a ten-year planning time horizon and each cycle of the lasts for four years. Through this process, Alliance members undertake to develop the capabilities required in the short and medium terms.

2.1 NDPP details

NDPP starts with defining the strategic objectives which are developed in the light of the main responsibilities of the Alliance as defined in the North Atlantic Treaty of 1948 and well-defined in the 'strategic concept', the most recent of which was adopted at the summit of Lisbon in 2010.

The 2010 concept assigns the Alliance three 'essential core tasks', which are: collective defence (article 5), crisis management and cooperative security, which includes such things as partnerships with certain countries, arms control and non-proliferation.

Every NATO summit define the changes in the strategic environment that have occurred over the previous period, as was the situation with the summits of Chicago in 2012, Wales in 2014, Warsaw in 2016 and Brussels in 2018.

Also, NATO staff responsible for planning within the Defence Policy and Planning Division (DPPD) and ACT staff carry out consultations with the Allies to discuss their long-term planning and the main factors which impact this planning. The objectives of the NDPP are defined on the basis of a threat evaluation and capability-based approach. After these preliminary activities have been carried out the NDPP cycle starts. This process is made up of 5 steps.

Step 1 – Political guidance

The political guidance comprises the orientations from the higher-level strategic documents and transform these into specific enough military terms to direct the defense planning activities. It defines, in a classified directive, the scope, nature and the number of the operations which the Alliance intends to carry out in order to fulfil its objectives which constitute the '**level of (military) ambition**'. Also, from a qualitative point of view, it defines the capabilities required to carry out the operations forecasted and set the priorities and deadlines to be applied.

It is the responsibility of DPPD Division of the NATO International Secretariat (IS/DPP) under the responsibility of the national representatives meeting within the '**Defence Policy and Planning Committee**' (DPPC) of NATO to elaborate this directive.

The political guidance is then **adopted by the defence ministers within the North Atlantic Council** (NAC) and, if necessary, by the Nuclear Planning Group (NPG). It is also complemented by a document entitled **supplementary guidance**, which goes into details on the

military requirements deem necessary which is the responsibility of the Military Committee close collaboration with ACT.

Step 2.-Determine requirements

This stage is conducted by the two strategic commands on the base of the supplementary guidance. It identifies the capabilities needed to satisfy the level of ambition laid down in the political guidance, both quantitatively and qualitatively, which includes the level of capability preparation. The **Capability Requirement Review** process, as it is known, is not subject of approval by the nations but is see-through by them.

The output of this step is drafting of The **Minimum Capability Requirement (MCR)** and **the comparison report.** The second includes capability to be maintained, gaps in capability and surplus capabilities in the pool of forces.

The MCR establishes an order between the capabilities within a global framework of operational functions divided into six capability groups: preparation, projection, support, C3 (communication, control, command), protection and information.

Step 3. Apportionment of requirements and setting of targets

At this point, the NDPP purpose is to directly guidance the national planning efforts. The strategic commands develop capability targets packages for each Alliance member that include capabilities to be maintained or developed, the related priorities and deadlines. The targets are expressed in qualitative capacities and quantitative tables of forces.

The political principles applied are a 'fair burden sharing' and of a 'reasonable challenge'. Fair burden sharing implies that each ally is required to provide combat capability, with the exception of Iceland, which has no armed forces. The 'relative wealth' of each country is also taken into account, through its average GDP over the last five years as a percentage of the total GDP of the Alliance countries. The principle of 'reasonable challenge' means that the level of ambition set for each ally, should take into consideration its economic and financial capacities. The political guidance includes additional apportionment principles, for instance, with the **so-**called 50 % rule: no ally should provide a contribution that represents more than half of a capability, other than in exceptional cases.

After a sequence of bilateral consultations between the International Secretariat, ACT and Alliance members on their individual capability target packages, these packages are re-examined through multilateral consultations and approved. The capability targets packages are then submitted to the NAC before being put to the defense ministers for approval.

The capability objectives can be achieved through three main channels:

• national – each nation is given its own objectives. This is the preferred route, which quantitatively consists of around 80 % of the packages of objectives;

• multinational, in the event that ad hoc groups are set up; such examples are the logistical support group of the four Visegrad countries (Poland, Czech Republic, Slovakia and Hungary) or the multi-role tanker transport (MRTT) fleet that comprising five countries (Luxembourg, Netherlands, Norway, Germany and Belgium). In these cases, it is up to each group to decide how it will split up the shared capability target, but each nation is responsible for its own contribution;

• by NATO itself through common funding; Such examples are the Air Command and Control System (ACCS), the air reconnaissance aircraft fleet AWACS (Airborne Warning and

Control System), Alliance Ground Surveillance program (AGS). These programs are not necessarily under the NDPP, although the NDPP takes their existence into account and identifies the requirements for interoperability purposes.

Step 4. Facilitate implementation

This step assists national measures, facilitates multinational initiatives and directs NATO efforts to fulfil agreed targets and priorities in a coherent and timely manner. Implementation facilitation is not sequential but continues for the entire length of the process. It is carried out by the Defence Investment Division of the International Secretariat (IS/DID).

The focus is on addressing the most significant capability shortfalls, known as the '**defence planning priorities**'. Twenty-one priorities were identified at the Warsaw summit of 2016. Today, there are just eighteen. In this context, the Deputy Secretary General, Director of IS/DI, chairs the conference of the Representatives of the National Armaments Directors, which meets twice a year and whose job is to promote multinational corporation in the field of defence, identifying and exploiting collaboration options.

Step 5. Review results

The capability review or **Defence Planning Capability Survey** (DPCS) is conducted every two years with the goals of verifying the degree of implementation of the targets and to create an inventory of the existing national capabilities.

Questionnaire are sent to nations on the degree to which targets have been achieved and national planning and defense policies implemented. Using that information, the IS/DPP prepares an evaluation for each NATO member. The Staff Analyses constitute a comprehensive analysis of national plans and capabilities, including force structures, specific circumstances and priorities. It includes a statement by the Strategic Commands regarding the impact each country's plans have on the ability of Supreme Allied Commander Europe (SACEUR) to conduct NATO's current and expected missions and tasks.

Also, the strategic commands prepare **Suitability and Risk Assessments**, which provides the basis for the Military Committee to develop a Suitability and Risk Assessment. This includes an assessment of the risks posed by any shortfalls in NATO's forces and capabilities, as well as an assessment of the suitability of Allies' plans to enable NATO to meet its Level of Ambition, and a list of any Main Shortfall Areas.

On the basis of those assessments, the DPPC(R) drafts every two years a **report summarising the NATO capabilities** (Capability report), which includes the approved outlines of the national assessments. It is submitted to the NAC for approval, and then to the NATO defense ministers for endorsement.

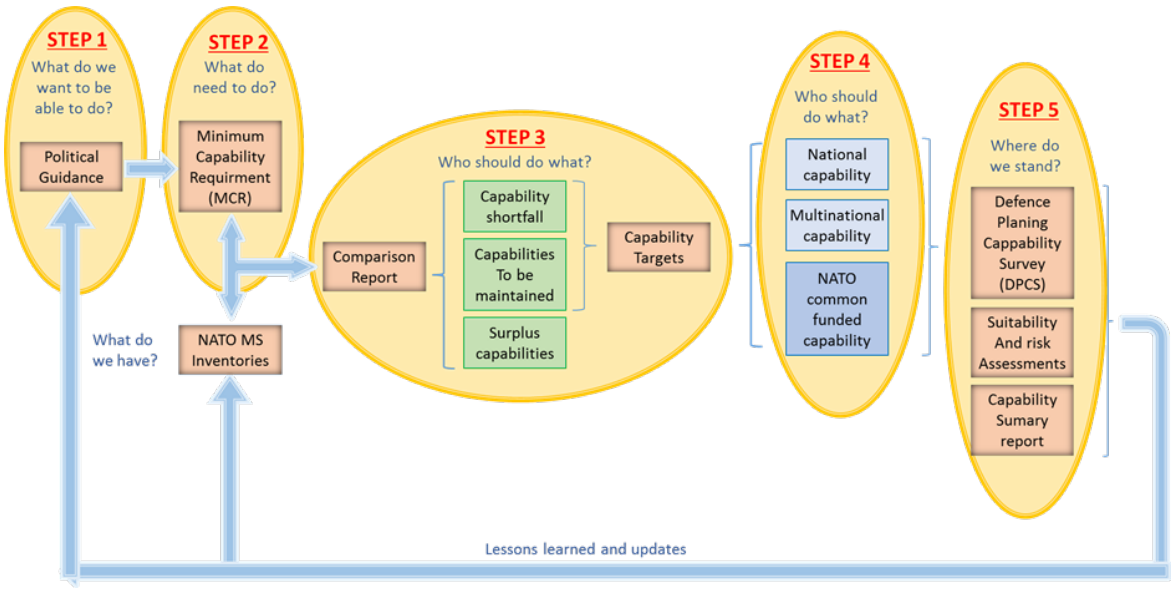

Figure 1 - NATO Defence Planning Process

3. EU defense planning

The European capability process, unlike the NDPP, is not linear nor cyclical. It is only brought to consideration only when the European Council considers that it should. This process is hard to understand, as no official document describes it in its entirety and it has no name. The acronym EUDPP (European Union Defence Planning Process) is unofficially given to imitate the name of the NATO process.

The process is not implemented by a single organization, as with NATO, but is shared between various institutions: the European Union Military Committee (EUMC) with the support of the The European Union Military Staff (EUMS), the Political and Security Committee (PSC); the Council; the European Defnce Agency (EDA) and the Member States.

Another notable characteristic of the EUDPP is that unlike the NDPP, capability targets are not assigned to each Member State. Priority action areas are defined to be satisfied collectively and for which each Member State remains free to decide whether or not to invest.

And last but not least The European capability process has also a civilian dimension as is set out in article 42.1. of the Treaty on European Union: "*The common security and defence policy shall be an integral part of the common foreign and security policy. It shall provide the Union with operational capacity drawing on civilian and military assets. The Union may use them on missions outside the Union for peace-keeping, conflict prevention and strengthening international security in accordance with the principles of the United Nations Charter. The performance of these tasks shall be undertaken using capabilities provided by the Member States.*"[2]

The challenges faced by the EU in relation to its defense planning derive from various sources. "*EU member states need to acknowledge that the current challenges faced by the defense sector are not only the result of austerity measures and financial constraints, but they are also deriving from a lack of coordination and common policies, generated by weak political will and overriding national interests. The EU can no longer afford to avoid the fact that ensuring its defense has become a political-military-economic issue, with political decisions*

being sometimes taken in a disconnected way from both the strategic / military and economic considerations"[3].

3.1 Defence objectives

Again, as the EUDPP process itself the documents that are defining the defence objectives overlap and do not supersede one another.

The conclusion of the Helsinki summit in December 1999 define for the first time a capability headline goal: *"… the European Council has agreed in particular the following: - cooperating voluntarily in EU-led operations, Member States must be able, by 2003, to deploy within 60 days and sustain for at least one year military forces of up to 50 000-60 000 persons capable of the full range of Petersberg tasks*"[4]. The number of military forces is equivalent to a Army Corps.

The Council on the EU on 4th of May 2004 redefines the headline goal 2010 as "*the ability for the EU to deploy force packages at high readiness as a response to a crisis either as a stand-alone force or as part of a larger operation enabling follow-on phases, is a key element of the 2010 Headline Goal*"[5].

The follow on reference for the definition of EU capability goal is the conclusion of the European Council on 11-12 December 2008: "*Europe should actually be capable, in the years ahead, in the framework of the level of ambition established, inter alia of deploying 60 000 men in 60 days for a major operation, within the range of operations envisaged within the headline goal for 2010 and within the civilian headline goal for 2010, of planning and conducting simultaneously:*

- two major stabilization and reconstruction operations, with a suitable civilian component, supported by a maximum of 10,000 men for at least two years;

- two rapid response operations of limited duration using inter alia the EU's battlegroups;

- an emergency operation for the evacuation of European nationals (in less than 10 days), bearing in mind the primary role of each Member State as regards its nationals and making use of the consulate lead State concept;

- a maritime or air surveillance/interdiction mission;

- a civilian-military humanitarian assistance operation lasting up to 90 days;

- around a dozen ESDP civilian missions…"[6]

In June 2016 the first EU Global Strategy (EUGS) was presented and later on, in November, the European Council adopted the EUGS implementation plan that identifies the level of ambition for the defence objectives: responding to external conflicts and crises, the capacity building of partners and protecting the Union and its citizens.

3.2 The transition of EU defence goals into military requirements – the Capability Development Mechanism (CDM)

The CDM, under the EU Military Committee authority was conducted between 2016 and 2018 in for phases and had as outputs the requirement, force and progress catalogues.

Phase 1 - Military Level of Ambition

On the basis of the defence goals and objectives five illustrative scenarios (peace enforcement, stabilization and support for the capacity building of partners, conflict prevention, rescue and evacuation and support to humanitarian assistance) and associated strategic planning

assumptions (maximum distance for operations outside the EU, implementation time and duration) the military level of ambition was set up.

Phase 2 – The Requirement Catalogue

From the level of ambitions derives the Requirement Catalogue which identifies the military capabilities needed to achieve the desired goals and objectives.

Phase 3 – The Forces Catalogue

To put up the Force Catalogue a questionnaire similar to the one used in NDPP is sent to the nations. This catalogue list, on opposite to NDPP, only the forces for EU missions. Also, it expressly specifies that these contributions are established on a voluntary basis, and only for the purposes of defence capability planning. This means that the information may not be used automatically to create forces, unlike the practice within NATO.

Phase 4 – The Progress Catalogue

The aim of the Progress Catalogue is to give policymakers a realistic assessment of the possibility of satisfying the level of ambition. From the available catalogues developed in step 3 it identifies the capability gaps and prioritize them on the basis of operational risks.

3.3 Priority cooperation areas – the Capability Development Plan (CDP)

The CDP is under EDA responsibility and identifies the priority domains for cooperation between the member states in order to fill the gaps resulting from the CDM process.

The CDP is a comprehensive and strategic planning tool that provides an overview of future strategic military capability needs of Member States' armed forces. Its aim is to address security and defence challenges in the short, medium and long term, while providing recommendations to Member States' militaries on the capabilities they may need to react to potential security developments. This in turn provides important inputs and support to the national defence planning processes of EDA pMS. The CDP is rather a living document that is periodically updated by EDA in cooperation with its pMS and other key stakeholders such as the EU Military Committee (EUMC).

Development of the latest iteration of the CDP has involved four components of activity to examine the impact of relevant strategic, operational and technological developments:

- establish the basic elements of the capability gaps resulting from the CDM and prioritize them (short term);
- assessment of future capability requirements, technology trends; R&T and industry and market assessments; provide an overview of research activities and current state of the European Defence Technological and Industrial Base (EDTIB) (long term);
- create a database on the defence plans and programs of the Member States (medium term);
- lessons learned from operations, making the process coherent with concrete needs emerging from in-theatre experience (short term).

The CDP establishes a list of eleven capability priorities, split into 38 sub-areas and in which there is a potential for cooperation. These priorities concern requirements for expeditionary corps-type missions for crisis management (land, sea, air, but also logistical and medical support) but also for adapting the military capabilities required to carry out land defence permissions, such as air superiority or military mobility within the EU, internal security and cyber defence.

3.4 The Coordinated Annual Review on Defence (CARD)

Similar to the 5th step of the NDPP, the CARD is carried out every 2 years with the main aim of providing a picture of the existing defence capability landscape in Europe and to identify potential cooperation areas. The idea is that over time, this will lead to a gradual synchronization and mutual adaptation of national defence planning cycles and capability development practices. Which, in turn, will ensure a more optimal use and coherence of national defence spending plans. CARD is a 'pathfinder' for collaborative capability development projects while, of course, avoiding duplication of work with NATO.

After a first trial run in 2017/2018, the first full CARD cycle was launched in autumn 2019 and completed in November 2020 with a final report submitted to Defence Ministers meeting in EDA's Steering Board.

At the same time as the launch of the new planning cycle at the end of 2016 (CDM/CDP/CARD), two major initiatives concerning the capability process have taken place: Permanent Structured Cooperation (PESCO) and European Defence Fund (EDF).

PESCO was established in December 2017 by 25 EU Member States whose declared ambition is to make it the "*most important instrument to foster common security and defence*" and a tool intended to provide Europe with *"a coherent full spectrum force package, in complementarity with NATO"*. In March 2018, a first list of 17 PESCO projects were approved. On 19 November 2018, a second list of 17 additional projects was approved by the Council.

On 7 June 2017, the European Commission adopted a Communication proposing a European Defence Fund (EDF) to co-finance collaborative European projects in the domains of defence research and capability development. The final decision on the setting up of the EDF was taken by the Council and the European Parliament in 2019/2020. The Fund started functioning on 1 January 2021 with a total agreed budget of €7.953 billion (in current prices) for the 2021-2027 period.

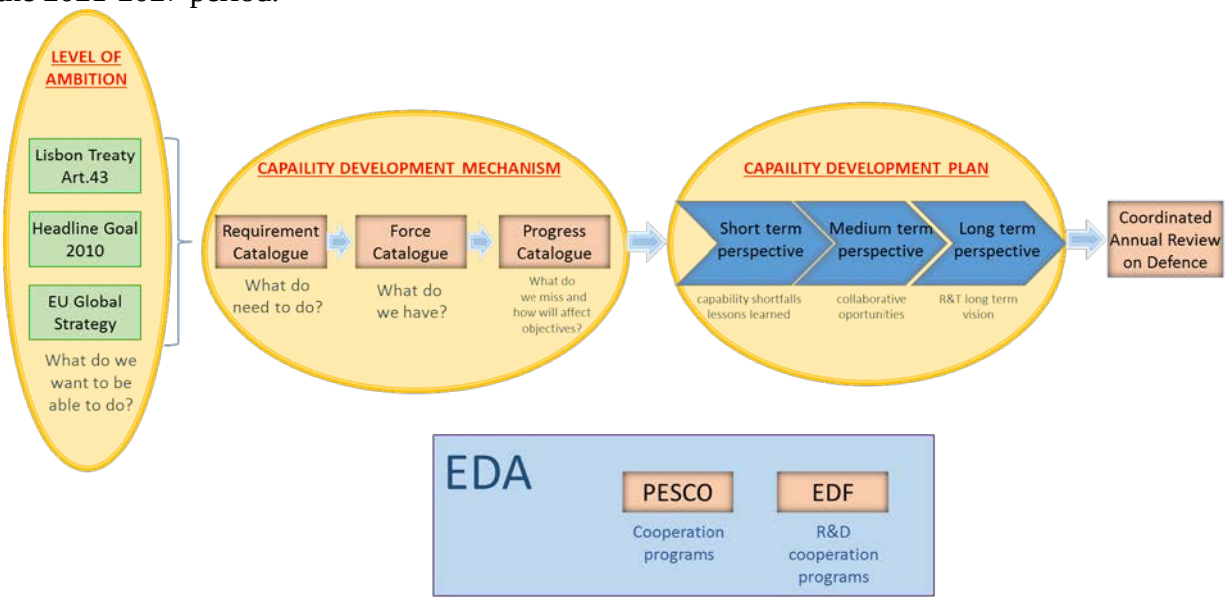

Figure 2 European Union Defence Planning Process

4. NDPP and EUDPP strengths and weaknesses

From the beginning it must be noted that neither of the two processes produces the capabilities needed to satisfy the stated levels of ambition. According to a 2015 study, NATO level of ambition was 66% achieved, 50% of which through USA contribution and only 12% by EU nations. The gap between the ambitions and capabilities is no doubt wider for the EU than it is for the Alliance. However, the latter gives its members a security guarantee thanks to the American forces.

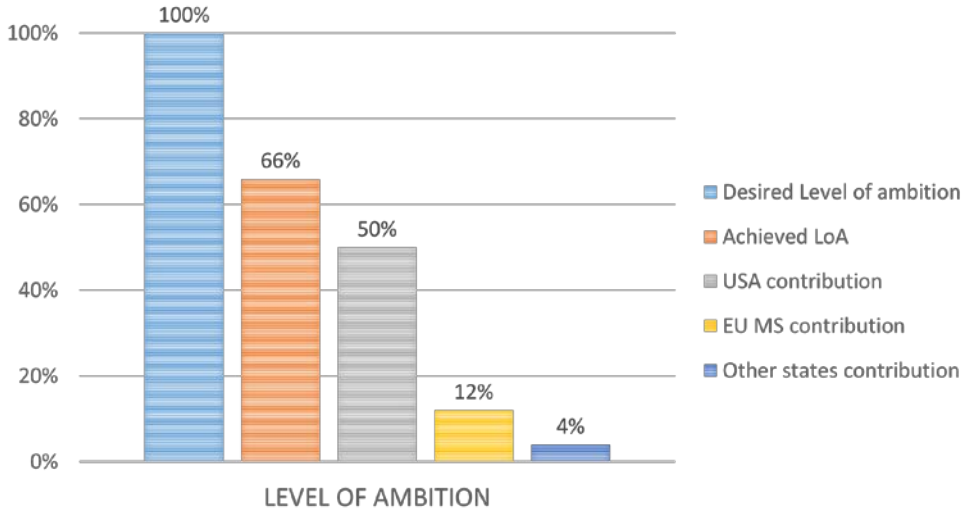

Figure 3 NDPP level of ambition fulfillment

The NATO process has three major advantages.

Firstly, it structures the Alliance. NDPP can be considered the backbone of the Alliance, around which the muscles and other organs are coherently arranged. It forces the nations to work together on the same assumptions, to share the same operational concepts, to use the same standards and, finally, to increase the interoperability of their forces.

Secondly, the NDPP reassures the Allies and deters potential enemies. For most of its members the Alliance is the backbone of their political-military strategy and gives quality and coherence to their defence planning systems. It responds to the question 'who does what?' and by that divides the burden of the military mission between everybody's shoulders that is the heart of the Alliance's identity. Additionally, one of the benefits of the NDPP is to show potential enemies that the Alliance is prepared for any eventuality and never drops its guard.

Finally, it merges the sovereignty of the nations with an effective mode of governance. Legally, each nation is free to decide whether or not to fulfil the capability targets assigned to it. On the other hand, it is clear that the American have a heavy weight on these decisions. This hegemony, has at least the virtue of giving the Alliance the capacity to make decisions.

On the other hand, NATO process has some major weaknesses.

Firstly, it makes it difficult to exercise critical strategic thinking. The Europeans have invented no critical technology since the radar and missiles, in other words since 1945. All the technology being developed by the Europeans and all new armaments concepts are mostly directly inspired by Americans. The art of war is written in American English. This inability of the Europeans to carry out a critical analysis of the strategic thinking of their ally can lead them down the same blind alleys as the Americans, or lead them to develop expensive arms systems

that they do not really need. This is the case with ballistic anti-missile defence, which is ineffective against nearby Russia, and useless against Iran, which is not a threat to Europe

Secondly, for a long time the NATO process had a very short programming cycle: six years. This limitation prevented it from going beyond the time horizon of acquisitions, which is around a decade or even two. This changed with the creation in 2013 of long-term strategic analyses, which have extended the field of vision of the NDPP.

Finally, the NDPP is accused of favoring the American defence industry. Most of the military standards are written in Washington and consequently these standards favor the industry on the other side of the Atlantic. United States export more arms to Europe than the other way around. Also, many American firms buy up their European competitors and become leaders on the European market.

The principal virtue of the European process is that it exists, despite the NATO process. The Europeans have an appropriate level of strategic autonomy to allow them not so much to conduct high-intensity warfare on their own, but at least to limit the effects of crises that take place in their neighborhood.

Secondly, the European process has the advantage of answering the question: 'how?'. It gives states that are members of both the European Union and of NATO a range of options to enter into industrial cooperation projects, allowing them to build or acquire the capabilities they are supposed to have to fulfil the objectives assigned by NATO.

Finally, the European process is both military and civilian, and therefore theoretically gives the EU the means to build a global capacity to respond to external crises.

To set against these advantages, the European process has several major weaknesses.

First, it is not cyclical and is not laid down in any document. Its complexity harms its ability to be understood by the very people who are supposed to be implementing it, not only in Brussels, but also, and in particular, in the national capitals.

Secondly, it is incomplete. It lacks any clear merging between the defence objectives set out political level and their translation into military terms, in other words, a political guidance.

Thirdly, it opposes operational logic to industrial logic. The fact that 2 main institutions, EUMC and EDA conduct in sequence the EUDPP leads to different cooperation priorities, one focusing on operational reasoning and the other rather on industrial projects.

5. What can be done to improve the NATO and EU defence planning processes?

5.1 Ending one of the two processes?

The NDPP is working very well and it forms one of NATO pillars. To question a possible end for the sake of EUDDP seems a utopia. Nevertheless, it is not long ago, at the Brussels summit of July 2018, that the US president made an allusion that the United States could withdraw from the Alliance. However, despite the political declarations of the American President, there are strong reasons to believe that Atlantic Alliance, which could be seen as a marriage of interests, would survive this, mainly because it is in the reciprocity of these interests that it finds its permanence.

If, therefore, there are no reasons to anticipate the fading of the Atlantic planning process, should we, on the other hand, consider losing the European process? This is also an entirely theoretical hypothesis, as the CSDP is part of the TEU and it would require treaty change to restraint it. Also, EU freedom of action or strategic autonomy remains one of the very

basic goals of EU creation and referred in the EU Global Strategy of 2016. And autonomy cannot be achieved without credible military and civilian resources, to manage crises in the immediate neighborhood of the EU.

5.2 Harmonizing the two processes?

So, since none of the two processes can be shut down what's left is to continue to close the gaps between them. There is no doubt that since the initiative to have a EU defence planning process, back in 2003, the member states leaders acknowledge the need for coherence with the already mature NATO process.

Nevertheless, is was not until 2016, at the Warsaw summit that concrete actions to line the two planning processes were taken. Main reason for doing that so late was the difference in aim. For the NDPP the aim is to ensure the collective defence of European territory, with the support of the American armed forces, up to and including nuclear deterrence, while the EUDPP's is to manage crises, in the European neighborhood, without the assistance of the American forces.

The definitive shift to close the two defence planning processes was once more caused by the crisis in Georgia and especially the one in Ukraine, which reassured, after the post-cold era, the existence of a real threat on the eastern flank of NATO. Also the Brexit took its share influencing the reconsideration of EU strategies.

As a consequence, the EU redefined its defence objectives from being able to carry out its external crisis response operations alone to ensure the protection of Europe and its citizens, which is more close to collective defence.

Also the EU states started to seriously reconsider the defence spending, if not increasing them, at least stop cutting and commitments to common defence investments taken during 2014 summit.

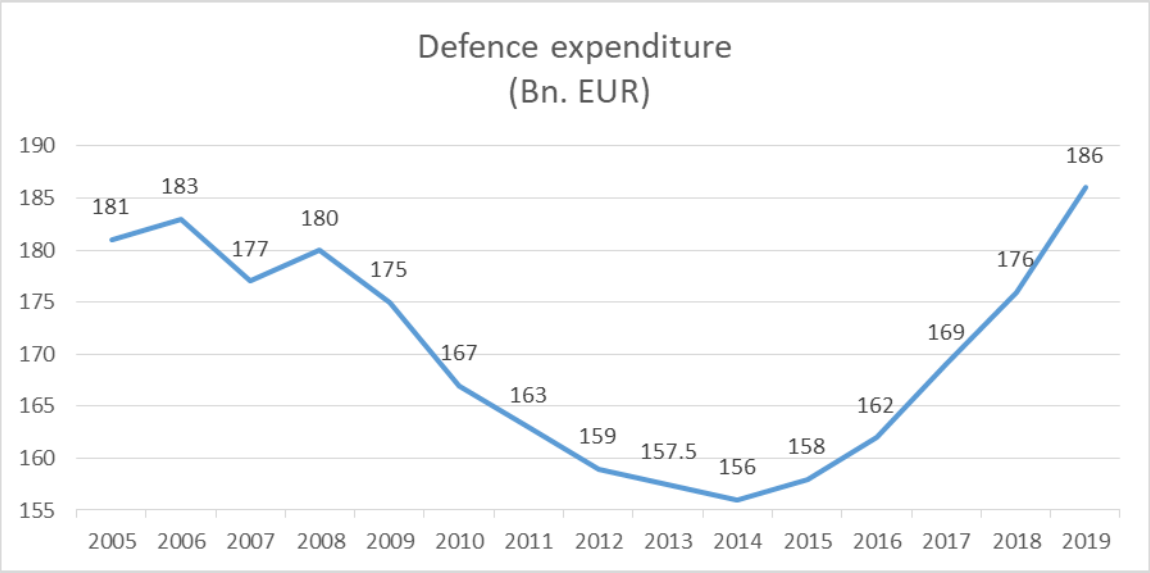

Figura 4 - Total EU Member States defence expenditure [7]

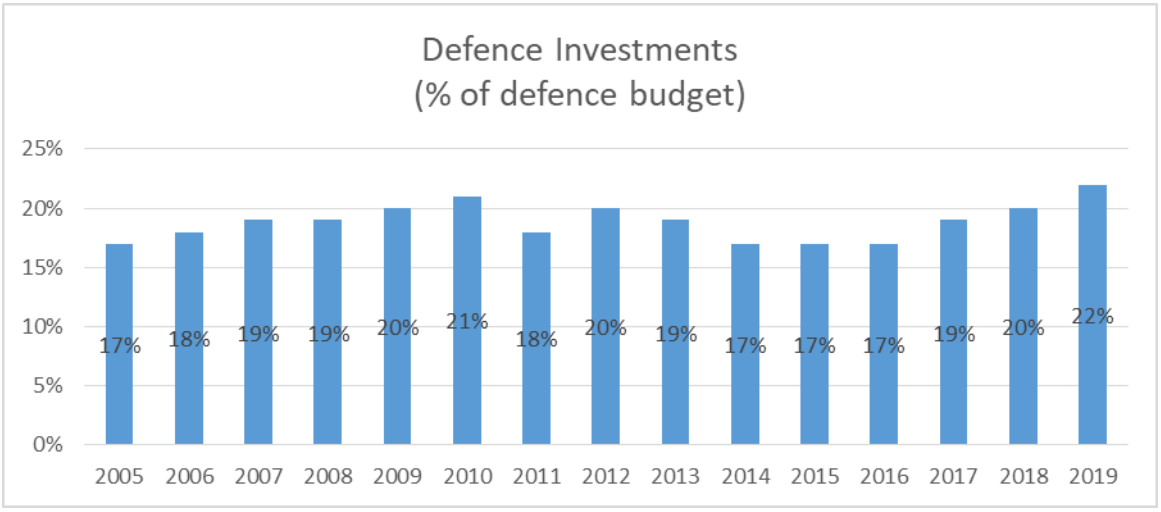

Figura 5 - Defence investments as % total defence expenditure [8]

Follow on, at the Warsaw summit in 2016, a strong assurance to a transatlantic partnership between NATO and EU took shape in the form of plan with 42 actions aimed at increasing the cooperation between the two organizations, out of which 6 refer directly to defence capabilities. In 2017 other 32 new measures were added, 3 concerning capability development.

If the NDPP and the EUDPP are to move closer together, the first item on the to-do list would be to make the European process cyclical, conveying its length in line with and matching its cycle with four-year cycle of the NDPP.

To synchronize the two processes, it would seem logical to start them at the same time. However, the new NATO political guidance was adopted in February 2019. The drafting of a new political directive on the European side does not appear to be in the pipeline, which means that the next opportunity to synchronize the military objectives would be the first half of 2023. Meanwhile, The EU could continue to use the NATO questionnaire for the 22 Member States that belong to both organizations and send out the questionnaire to the others. Further, the drafting of the 'minimum capability requirements' could be carried out in the same timeframe and using the same tools.

On the EDA side, PESCO projects should be more in line with the capability priorities set out either by the Progress Catalogue, or by the CDP and not with national priorities of the Member States promoting them.

Also under EDA control, it is crucial that resources available through the EDF be used to contribute to the funding of a European capability roadmap rather than the industrial interests of Member States.

EDA should continue to focus on research and development as a basis for growing capabilities with European industry and not shift to procurement of on the shelf products. NATO moved towards that empowering NATO Supply and Procurement Agency (NSPA) to do just that since 2015, without any significant results. No major common acquisition have been succeeded by NSPA yet remaining a great life cycle logistic support provider.

Another step to be taken, if it is to really have EU capabilities, would be to start to work hardly on interoperability and integration. Only integrating defence resources can produce substantial budgetary savings and significant operational benefits. These attributes were solely

NATO's through common exercises and bilateral partnership. It is well know the fact that for the interoperability of the same weapon system, Germany and the Netherlands created more than 15 years ago the Extended Air Defence Task Force (EADTF) later transformed to The Competence Centre Surface Based Air and Missile Defence (CC SBAMD), just for the purpose of making two "plug and play" system understand each other.

To have EU leadership institutions on defence matters seems to be another path. NATO has the NAC as political leadership and then the two operational commands to make decision on military actions, while EU Member States have the capabilities, money and experience, but, not an military strategic command, like a European Security Council or something else. One of the characteristics the European military experts frequently put forward among the weaknesses of the European capability processes is the absence of a clear chain of command. Who is the military leader in charge of the reaching the EU defence objectives? Where the decisions on capabilities are taken? All of these questions have an answer if asked within a NATO framework, but not in an EU framework.

6. Conclusions

In an increasingly volatile and unstable geopolitical context, cooperation between the EU and NATO is essential. The security of EU and NATO are inter-connected. Together, they can mobilise a broad range of tools and make the most efficient use of resources to address challenges and enhance the security of their citizens.

The great move in my opinion, made by the EU was the creation of the EDA and later on the PESCO and mostly EDF. By doing that EU intention was to change the focus from the not so interesting defence planning to EU funded industrial cooperation programs that would finally lead to capabilities. If implemented, the PESCO and EDF projects are to technologically increase Europe capabilities during the next 10 years, which since 1945 did not invented almost anything in terms of military technology. It is to be reminded that the radar and missiles, including cruise and ballistic ones, were the creation of UK and German scientists during the Second World War. The side effect of that would be to be see these industrial cooperation programs as an attempt to reduce US armaments sales in Europe, one of the direct interests of USA in sustaining NATO. United States export more arms to Europe than the other way around. Also, many American firms buy up their European competitors and become leaders on the European market. This is clearly and advantage that USA would not like to lose.

Nevertheless, it important not to confuse industrial cooperation with operational military capabilities. Cooperation intends to focus on building new capabilities rather than use the existing ones. It is much more convenient for the industry to build something new and expensive than to just integrate/up-grade existing systems. Also, cooperation is limited to a not much of participating countries, even though it should include the largest numbers. This is mainly true of PESCO, which has an average of only seven participants per project, even though it is made up of 25 Member States, which should, in an ideal world, all get involved in all projects. To these limitations must be added the fact that cooperation is not likely for industrial competitors, which fight over export markets. The natural tendency in the defence industry is to avoid cooperating, to remain in a monopoly situation and, if possible, to get rid of competitors from the market.

To end with an optimistic sense I would say that the EU is a unique and essential partner for NATO. The two organizations share a majority of members, have common values and face similar threats and challenges. The defence planning processes of the two organizations can and

will only become an enabler in joint efforts to make the Euro-Atlantic area safer and contributes to transatlantic burden-sharing.

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DEVELOPING AN EFFECTIVE MILITARY LEADERSHIP – THE LONG ROAD FROM FIGHTER TO LEADER

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Abstract:
The development of military leaders is a crucial component of defense resources management in general and of the military education/training system in particular, but also a most challenging process. Leadership is a discipline found in most curricula of military academies, it features in the job requirements of many officer positions, and at the same time it is a very elusive concept. The Romanian White Book of Defense mentions "developing leaders, specialists and fighters" as an objective for the military training/education system, but are the above mentioned terms really synonymous? Developing a military leader is a complex and lengthy process that begins with the identification of basic personality traits in the future leader, and continues with the intricate process of training, education, providing the opportunity for exposure to various situations in order to gain experience etc. The theory of leadership can be taught in academies, but developing leaders requires a lot more than that. Besides the theoretical background, a leader needs controlled exposure to practical situations in order to build experience and self confidence, and a structured system of mentoring and support throughout the officer's career. The aim of this paper is to analyze the main challenges on the long road of developing fighters into leaders, and to propose some recommendations for a more effective leadership development process.

Key words: *leader, fighter, process, military, challenges*

1. Introduction

The aim of developing an effective leadership is stated in many strategic defense documents, in most of the countries. In Romania, the White Paper of Defense from 2021 states that the aim of military education and training system is "training, educating and ensuring the professional development of leaders, fighters and specialists, able to achieve success in a constantly changing operational environment, with the professional skills necessary to fulfill missions now and in the future" [1].

The above mentioned goal, as worthy as it may seem, raises several interesting challenges in the process of identifying the specific objectives, course of action, measures, tasks and techniques to put it into practice. A major challenge comes from the fact that the definition of the terms is not clarified anywhere in the main programatic documents, leading to confusion and hindering the clear identification of the way ahead. The civilian and military literature abounds in definitions of leader and leadership, while the term of warfighter and specialist are less well clarified. The oversimplification of the complex interaction between warfighter, leader and specialist, the confusion of definitions and roles can generate undesirable results in terms of the end results of the military education and training process, but also in terms of the functioning of the military system in general.

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process of training, education, providing the opportunity for exposure to various situations in order to gain experience etc. The theory of leadership can be taught in academies, but developing leaders requires a lot more than that. Besides the theoretical background, a leader needs controlled exposure to practical situations in order to build experience and self confidence, and a structured system of mentoring and support throughout the officer's career. The aim of this paper is to analyze the main challenges on the long road of developing fighters into leaders, and to propose some recommendations for a more effective leadership development process.

2. Clarifying the terms of leader, fighter and specialist

The literature offers a variety of approaches and definitions on what means leader and leadership in the military. The US Army Doctrine Publication 6-22 defines *leadership* as "the process of influencing people by providing purpose, direction, and motivation to accomplish the mission and improve the organization", and the *leader* as "anyone who by virtue of assumed role or assigned responsibility inspires and influences people to accomplish organizational goals… motivates people both inside and outside the chain of command to pursue actions, exercise diverse thinking, and shape decisions for the greater good of the organization".[2]

In a national approach, leadership is defined as "power, a authority exerting its influence in order to inspire the conduct of others (individuals and groups) or to determine them to actively participate, on their own volition and with enthusiasm, to the achievement of the set objectives or ...tasks related to a common goal" [3]

Drawing on the various approaches in the literature, a leader is supposed to be endowed with a number of characteristics that make that person able to fulfil its leadership role. Thus, the Australian Army identifies the qualities of an effective leader as: "leadership, professional knowledge, intellect and vision, courage and resolve, integrity and example, judgement and decisiveness, credibility, and adaptability" [4]. A Romanian author considers that a military leader should possess a general understanding of the organization, cognitive abilities, professional competences, the ability to be a team member, a vision regarding the organizations future, the ability to assume risk, the ability to recognize value, moral characteristics such as integrity, equity and courage, progressive thinking [5].

We are going to come back to the features a leader should possess in the second section of this paper, but for now let's focus on clarifying the concepts. The reason why it is important to understand the concepts of leader/commander/warfighter goes beyond the academic or semantic considerations, as it has direct implications on how an organization is led towards the achievement of its goals.

Command is often associated with leadership, as it is exerted by the commanders and staff officers, consisting of leading the personnel at tactical and operational level and leading the organization at strategic level [6]. Nonetheless, the terms should not be considered as synonymous, as there are differences between leader and commander, deriving especially from the source of the authority (the commander has the formal authority while the leader's authority derives from the acceptance from the group members). A commander may have the formal authority, but lack leadership skills, while an informal leader may emerge in the organization without necessarily having the command position.

The term *fighter* (luptător), mentioned in programmatic documents at strategic level, such as the Romanian White Book of Defence, in the context of modernizing the military educational

system, but also in doctrines and planning documents at the level of educational institutions is well defined, overlapping with the meaning of the term "military". In the case of officers, a graduate of a service level Academy is trained to be a fighter, in the sense that he/she has to master the basic fighter skills and necessary knowledge such as handling of the service weapons, using a gas mask, achieving a specific fitness level, general military knowledge. The training is aimed at develop a basic set of military skills, abilities and values, such as teamwork and cohesion, good working habits, physical and mental tenacity, confidence, military skills, and discipline.[7] This is the first step on the long road from fighter to effective leader, as the education and training of the young officer is usually also geared towards the development of leadership skills required by the military profession, through theoretical and practical approaches. Of course, having the theoretical background and a basic level of leadership experience will not magically turn the young fighter into an effective leader, as a lot more exposure to various practical situations is required for the achievement of that objective. We may say that after fulfilling this stage, the officer is a fighter with competences in his specialty, with command competences and the potential of becoming an effective leader.

The term fighter, with the meaning outlined above, is part of the classical approach to developing the future officers of a country's military and is valid for Romania, but also many other countries. More recently, a new buzzword emerged in the United States, as a replacement for the term service-person (a member of the US armed forces, regardless of the branch), namely the term *warfighter*. [8] The term captured the attention of the defense officials and of the general public with its martial connotations, and is defined as "a person, especially a member of one of the US armed services, deployed to an area of conflict, who is responsible for making decisions involving the use of military force" [9]. One of the initial uses of the term was to make a difference between the members of the combat forces and the support forces, but the term has gradually come to designate all members of the armed forces, regardless of whether they were deployed in an area of conflict or not. Now it is mentioned in the context of cyber-defense - "the Defense Department's information technology efforts are focused on maintaining the warfighters' edge and supporting national defense priorities" [10], health "DOD warfighter brain health draft plan has six priorities" [11] or even resources management "warfighter support: Dod needs a complete picture of the military services' prepositioning programs" [12].

The term is seldom used outside the United States, but it is worth analyzing the implications of using it to designate all or part of the members of the armed forces. The term may be beneficial, as it may provide a common sense of collective identity, especially among services, by blurring the divisions and sectarian differences between branches. But it can also be misleading, especially if it is equated with a specific image promoted by the media, as it offers a false heroic narrative and paints a distorted picture of the personality and abilities of a member of the armed services. Not every military fits the personality traits, abilities and training of a movie-like heroic warfighter, and neither should they. An effective modern military does not mean an armed force composed solely from alpha type personalities, it is the one who derives maximum combat power from the resources available – human resources, material resources, financial resources, technical sophistication, sociological characteristics, an effective planning and management system, political capital, effective leaders, morale, to mention but a few factors. Fields such cyber-defense, space defense, strategic communication, to name but a few, require fighters (in the sense discussed above, of military officers and NCO's), but not necessarily

warfighters (in the sense of the above definition), yet are crucial in ensuring the national defense in the current operational environment.

The term is a buzzword, probably soon to be replaced by other similar fancy term, but is has prompted the author of this paper to consider its interesting implications on the way an officer is educated and trained for various positions requiring various leadership skills, expertise and personal attributes. A logistics officer specialized in cost estimation is a fighter, in the sense that it has the appropriate training as an officer, but does that officer have what it takes to command troops in an urban fight, inspire them to risk their lives, or not cave under the stress of seeing a best friend get killed? The initial training as fighter cannot cover all these aspects, but that officer, without qualifying to be called a warfighter, may yet have a crucial role in providing the resources required for military operations.

Warfighters may not thrive in peacetime, as they require combat to test their abilities, but much of an armed forces' strength is obtained during peacetime, through activities like building planning, training, developing capabilities etc. These activities may require additional skills and abilities than those traditionally assigned to warfighters, such as managerial skills, understanding of the complex interactions within the military system and with other government structures, interpersonal skills, communication skills, critical thinking, creativity, empathy. What does it mean then to be a fighter, a commander, a warfighter, a leader?

3. From fighter to an effective leader

Fighters come in many shapes and sizes and each country has to define its own demands on what are the personality attributes, skills, abilities and expertize a fighter should have, depending on their branch and rank, with common and specific features. The development of a fighter into an effective leader requires more than assigning a fighter with to a position of command, as the leadership skills and knowledge may be appropriate for that position, but effective leadership depends on a more complex mixture of understanding the specific demands of a particular environment, on practical experience and abilities.

The difference highlighted above between fighter and warfighter generates also differences in how the subsequent training, education and experience required by an officer should be managed, throughout his/her career, in order to make sure they have the expertise, skills and abilities best suited to become effective leaders in their field.

This means a clear identification not only of the job requirements, but also of the fundamental qualities various types of military personnel have. There are, for example, a lot of studies focused on the fundamental qualities of military personnel from branches with specifics that bring them closer to the warfighter described above, namely the high risk operational personnel, such as SOF operators, fighter pilots, intelligence operatives, combat divers.

For example, Special Operations Forces operators are described with the term "elite warrior", possessing three fundamental qualities that set them aside from other soldiers: they are warriors, are creative, and are flexible [13], while other materials in the literature highlight such SOF personnel requirements as versatility, agility, effectiveness, speed and surprise, working both independently and in direct support to others [14]. One study focused on such type of personnel found six attribute common among them, which make them effective at performing their missions: emotional stability, adaptability, teamwork abilities, physical stamina and fitness, sound judgment and decision-making, and intrinsic motivation. [15]

A successful fighter pilot needs advanced cognitive ability, unwavering emotional stability, the will and motivation to achieve a goal. The US Air Force pilots that were subject of the study scored relative strengths in extraversion and lower scores on neuroticism and agreeableness, as compared to the average sample of members of the armed forces [16]. A successful finance officer has to follow the principles of responsiveness, improvisation, and economy [17]. The main characteristics of a leader in the US Marine Corps are identified in the official documents as bearing, courage, decisiveness, dependability, endurance, enthusiasm, integrity, judgement, knowledge, tact, unselfishness [18]

One conclusion that can be drawn from these findings is that, due to the specific characteristics of fighters in various branches, they tend to have specific abilities that may or not be suited for other leadership positions. Effective leaders, regardless of the area of activity or level, do share many attributes (such as effective communication skills, accountability and responsibility, long-term thinking, self-motivation, confidence, people skills, emotional stability and many others), but depending on the specific position and level of leadership, specific skills may be required. These specifics have to be understood and cultivated through education, training and building experience, in order to turn proficient fighters into effective leaders. For example, one such difference is given by the attribute of agreeableness. A study on the Norwegian Special Operations Forces highlighted the fact that "compared to applicants for basic officer training in the conventional forces, SOF-operators were less extroverted, less agreeable and to a certain extent more emotionally stable".[19] A SOF leader does not need to be very agreeable, considering the specifics of his line of work, but that officer may be less suited for a higher position in the Ministry of Defense, for example in the Department for Defense Policy and Planning, where the feature of agreeableness is a requirement.

Other branches also have specific qualities and abilities that are desirable for their leaders, which should be clearly identified and cultivated. For example, the required characteristics of finance officers in leadership position, such as Financial Managers, should be as follows: "these leaders must be all of the following: proficient in their core competencies; broad enough to operate throughout unified land operations; able to operate in JIIM (joint, interagency, intergovernmental, and multinational) action environments and leverage Financial Management capabilities in achieving the commander's desired end-state; culturally astute and able to use this awareness and understanding to exploit opportunities in the conduct of operations; and grounded in Army Values and the Warrior Ethos" by following three main principles of responsiveness."[20]

The time resource that can be dedicated for education and training during an officer's career is limited, and for this reason, an effective human resource management system has to identify the precise education and training requirements for each position. For instance, the probability for an IT officer to command troops in the field, in a high intensity operation, is quite low, so the basic training that meets the requirements for a fighter (in the above sense) is sufficient. An infantry officer should have, in addition, a more in-depth training on first aid or psychology, in order to be able to be able to perform his duties effectively.

The path from fighter to effective leader passes unavoidably through command, but being assigned to a command position does not automatically make an officer an effective leader. A military leader is able to inspire and influence people to act in a cohesive way in order to achieve the mission / the organization's objectives and goals, but his/her job is not limited to the subordinated personnel, as a leader has to interact insider and outside the chain of command

(with other military personnel of various ranks, civilian personnel, personnel from other structures). The command position alone will not suffice to shape decisions, convince and motivate people outside the officer/s authority to contribute to the achievement of the mission/goals. What is required are true leadership skills, which have to be educated, trained and perfected.

The professional development of the officer consists of the formal education and training he/she attended, the informal education resulting from the lifelong learning process influenced by the environment and daily experience, but also from the self-education, in military and non-military subjects. While the formal education is by definition structured and its curricula is controlled by the military system, with the purpose of tailoring it after its requirements, the informal education is often less closely managed from a systemic point of view. An effective human resources management system should take into consideration the need to draft very clear job requirements (required officer characteristics, skills, abilities and expertize), for every leadership and follower position in the military, and to outline a clear career path for the officer to follow, for all ranks. This career path should outline the basic formal educational requirements, but also the life-long educational and training programs the officer should attend, the key developmental positions the officer should have in mind in order to advance his/her career, but also the developmental and broadening assignments that are not compulsory, but contribute significantly to the acquisition of expertize and essentially, of the leadership skills, abilities and experience required to become an effective leader. Leadership positions in joint and/or multinational environments, for example, can contribute significantly to the development of skills and abilities to be an effective leader, through the development of greater awareness and understanding of varied work cultures and nationalities.

Confucius' immortal words outline three ways to gain wisdom "First, by reflection, which is noblest; Second, by imitation, which is easiest; and third by experience, which is the bitterest." This approach is valid also for leadership skills and abilities, which means the officer should start his/her career as a fighter with the necessary knowledge theoretical knowledge, but also with skills such as critical thinking and capacity to analyze, that would allow him/her to learn by reflection, meaning by identifying and eventually learning the lessons gathered from the everyday activity, the experience of other colleagues or superiors. Finally, the "bitter" experience of finding out on their own the best way to lead people (through exposure to as many situations as possible, by making mistakes and correcting them) is perhaps the most valuable way to learn.

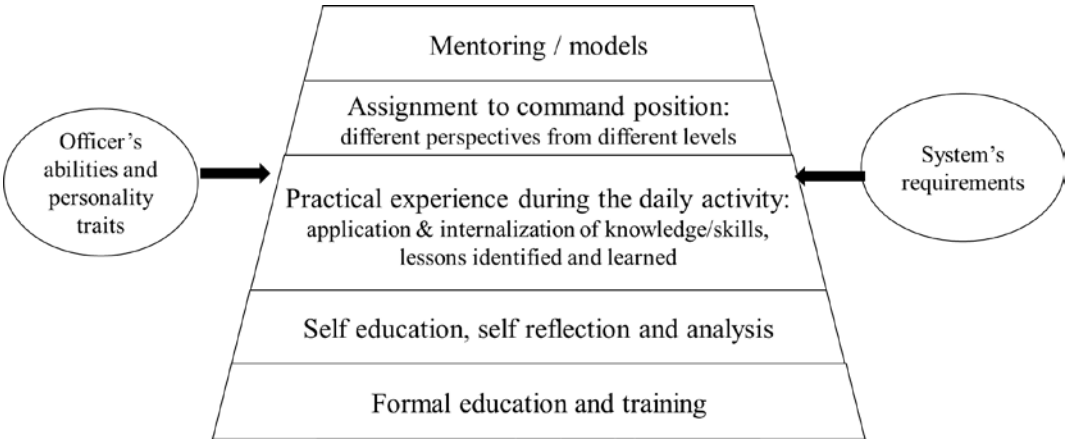
But all the above mentioned methods would be a lot more effective, from the systemic point of view, if they were controlled (at least partially), through mentorship, specific, pre-determined assignments fitted for the specifics personality traits, branch, interests, abilities and education for each individual officer. This generates the need for the establishment of a professional development system for the officers, that should cover the entire career path, and not only through compulsory post-graduate educational/training programs and compulsory assignments. The reality is that no all young lieutenants will become generals or colonels in positions of high authority, there are specific leadership challenges in every positions and some officers are naturally more suited to become leaders than others. But all officers can be educated, trained and formed to become effective leaders at their maximum level of personal expertize, abilities and skills, and this is what the goal of such a system should be.

The concept of mentoring can play a very important role in the development of an effective leader. Mentoring is "a developmental relationship in which a more experienced person

serves as a guide, role model, teacher, and sponsor for a less experienced person—usually in the same organization. A mentor typically becomes invested in the career progression and development of the protégé or mentee and often provides such essential functions as counsel, challenge, and support" [21]. Mentors can play a very important role in transferring knowledge and experience, improving communication, ensuring leadership continuity, identifying and encouraging the promotion of performant personnel. Studies have highlighted that in the military, successful flag officers have benefited from the mentorship of senior officers, at crucial points of their career. [22]

Despite the potential beneficial effects of mentoring, the concept is applied on an incidental basis in the Romanian military, more often by specific individuals who are themselves effective leaders and understand its value. There is no formal, structured process through which young officers can benefit from mentoring, on various stages of their career, that would align the mentoring activity with the long term objectives of the military organization in general and the officer's career path in particular.

The pre-requisites for the development of an effective leader are outlined in the following model, with the caveat that the model proposed is a simplified view that did not detail several internal and external factors (such as internal and organizational motivation) that may provide influence. This model is valid for all the ranks and stages of development of an officer, as all the steps below build upon each other and are not limited to junior officer ranks. It is not one-of-a time model, applicable only in the beginning of an officer's career. Even colonels that may be promoted generals need formal education and training, self-education etc, practical experience, mentoring, adjusted of course to the time limitations and the specific demands of their respective positions.



4. Conclusion

There are three main categories of factors that influence the professional development of an officer: the education and training received in academies, training schools, and other E&T institutions, the practical experience gained through the everyday activity, exposure to different situations and environments, and the concept of mentoring, the transfer of knowledge and lessons learned from the experience of senior officers. The development of a fighter into an effective leader relies upon all these three categories, but they are not often integrated into a

cohesive and functional system, focused ono the individual officer, in correlation with the requirements of the system. An effective leader is both born and made, but the leader development process is optimized when it is achieved in a structured manner, in a less subjective and random manner.

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DEVELOPMENT PERSPECTIVES OF THE FIELD ARTILLERY CAPABILITIES FOR MOUNTAIN UNITS

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Abstract:
Artillery represents the main fire support asset for maneuver units, characterized by high fire power, maneuver capability and precise engagement capacity in all types of operations and in any weather conditions. Field artillery is known as "The King of battle" because of its ability to produce massive damage on enemy forces. The fire support system integrates all the available assets for executing lethal and non –lethal tasks and capable to execute the maneuver of fire.

Keywords: capability, effectiveness, military, system

1. Introduction

Implementing a new capability in a military system is always a huge challenge for specialists, but also for decision makers. Operational requirements are always at a high level, but the budget ceiling is limited. So, specialists and project managers need to use a scientific approach to develop some alternatives in order to facilitate the political-military leaders to make the best possible decision. Military decision makers need to understand and assess the benefits and consequences of their decisions in order to make cost efficient, timely and successful choices.

The majority of defense planning activities tend to be demand-based, meaning that strategies, capabilities, and capacities are based on ideas about the requirements of potential future engagements. These demands can be derived from either threats or desired capabilities, or some combination of the two. It is a top-down planning method that begins with high-level strategic demand signals from which it derives requirements. On the other hand, supply-based planning begins with a specific real-world constraint, such as current force size, capabilities mix, or budget limits, and builds forces from that baseline. It is more of a bottom-up planning method that starts with a base of existing capabilities and a presumed resource constraint and builds upward, making incremental planned changes to the current force. In both demand- and supply-based planning approaches, policymakers develop requirements, assess capabilities and capacity, account for constraints, and incorporate risk. [1]

2 General aspects

2.1 Capability based planning

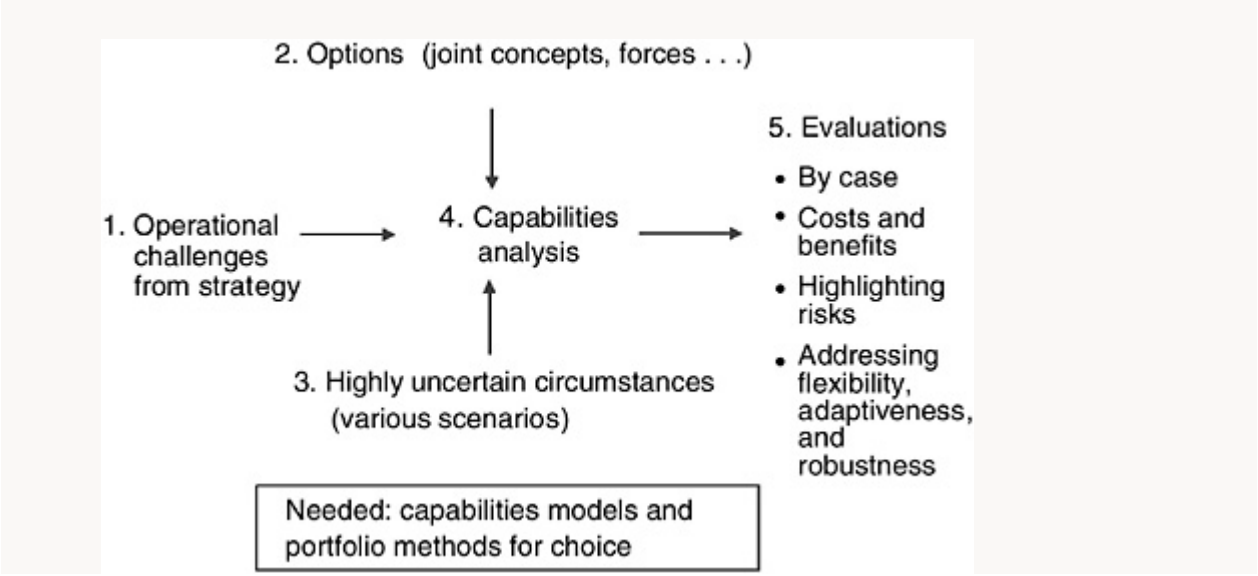
There is no official government definition of capabilities-based planning, but one of the most used is: "Capabilities-based planning (CBP) is planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice. [2] Paul K. Davis considers this "a method to inform decisions regarding DOD planning, resourcing, and operations that

addresses uncertainty and risk through agile analysis of a broad spectrum of potential challenges and circumstances leading to competitive development of robust DoD capabilities achieved within an economic framework necessitating choice".

While individual interpretations vary, capabilities-based planning (CBP) is substantially different from the "threat-based or requirements-based" analysis that was focused on point (or individual) scenarios. Indeed, the shortcoming in the earlier analysis was more the point scenarios than use of threats (obviously, planning should consider a range of specific threats).

An important aspect related to the capabilities based planning process costs "refers to the necessity to identify the life cycle of a capability. Any type of capability is generated, implemented (maintained) and then, at a certain moment, we may need to replace /renew it or even cancel it, as the priorities, challenges and risk levels change. The resources behind these capabilities may be used or reallocated for other purposes and this process may generate various costs which need to be estimated and taken into consideration for the alternatives analysis."[3]

The primary distinctions between these types of analysis are in the manner of dealing with uncertainty, in the reckoning of risk, and in the way of making choices. The core idea of the CBP approach is to confront—rather than discount—uncertainty, to express risk in meaningful terms, and to weigh costs and benefits simultaneously. The objective is to put premium value on portfolios of assets (including organizations and skill sets) that best satisfy joint needs and offer flexibility, adaptability, and robustness to hedge risk across a wide range of possible futures.



The figure above illustrates the key elements of capabilities-based planning. [2]

Military capability is defined by the National Strategy as "the mix of measures and actions including elements of Doctrine, Organization, Training, Materiel, Leadership development, Personnel, Facilities and Interoperability (DOTMLPFI) required to achieve the desired effect and fulfill an objective".

There is a six-step generic algorithm for developing a military capability:

a. Analysis of strategic environment;

b. Identify capability needs;
c. Derive capability requirements;
d. Conduct gap analysis and fulfilment;
e. Identify and select possible solutions;
f. Conduct implementation of the best solution.

The optimization of the military capability production process "is considered analogue with the production of goods and services, the basis of the market economy. Each military capability can be considered as a mix of resources which will be used to perform a certain mission. This mix of resources must consider first of all the purpose of its existence and generate the maximum benefit. At the same time, because of the resource scarcity, the use of this mix must be considered in the economic context".[4]

2.2 Initial assessment-case study

The republic of Montania is a country from the Central Eutropia having a population of 11 million. The country is bordered by mountains at north, east and south and by river Blue in the western part. Almost 65% of the country has mountain areas. The middle of Montania is dominated by a large plateau, with dense populated areas and the place of the most economical activities. In the north Montania has a common border with Urania, a country with rigid autocracy. There is an old diplomatic conflict between Montania and Urania due to some historical territorial dispute. On short term there are few chances to begin a conflict, but on long term situation could go worse. Urania's Army has better fire support capabilities than Montania. Their field artillery mountain systems are The Chinese PL-96 122 mm towed hovitzer (a modern copy of the Soviet D-30 howitzer), with an enhanced firing range of 18 km and a weight of 3,2 tones. This aspect was revealed as a weakness in The Military Strategy.

Army of Montania is composed of 8 brigades, 3 of them being mountain brigades. 1st Mountain Brigade has the area of responsibility The Northern Mountains, 2nd is in charge with The Eastern Mountains and the last one with the Southern Mountains. Each mountain brigade has an artillery battalion. The artillery battalions are operating the old M 30 122 mm howitzer having the readiness level of 65%.

This artillery system is at the end of its lifecycle and operation and maintenance cost increased a lot. There is a challenge to find spare parts and the ammunition stocks will be at the minimum level in the next 3 years. Also the operational capabilities of this system are at a low level. Every battalion has 18 howitzers, so total need is 54 howitzers.

The Defence planning guidance states that the mountain brigades will replace the actual artillery systems in the next planning cycle, in order to fulfil the new operational requirements. Ministry of defence budget is 1,5% of GDP(apox. 6000 million $). Land Forces program has allocated a budget of 900 million $ and Field artillery subprogram budget limit is 40 million $.

A team of specialists has the task to analyse the operational requirement for this systems and the available assets. They will present some alternatives for the program manager of Land Forces programme in the next planning meeting.

Based on general capabilities standards, the artillery systems for mountain units have *the mission* to provide decisive lethal and non-lethal fire support, rapid target acquisition and engagement in order to destroy or annihilate the enemy's objectives and to integrate the all fire support elements. Artillery represents the main fire support asset for maneuver units, characterized by high fire power, maneuver capability and precise engagement capacity in all

types of operations and in any weather conditions. The fire support system integrates all the available assets for executing lethal and non –lethal tasks and capable to execute the maneuver of fire.

3. Capabilities needs and operational requirements for field artillery systems for mountain units

Mountain operations are influenced by rough terrain, by rapid weather changes, lower temperature and forest areas that limit the maneuver. Weather conditions are various from low temperatures during winter to high temperature during summer. Due to the rough terrain command and control are disrupted, favouring isolated small operations.

The fire support operations in mountain areas are influenced by the following aspects:

- mobility is limited;
- disposal and force protection possibilities are limited;
- difficult support for isolated units;
- specific ballistic aspects(vertical paths, no fire areas, meteorological corrections);
- difficulties to identify targets because of limited observation;
- difficulties to deliver the logistic support;
- command and control are disrupted;
- USS communication means are limited.

Taking in consideration this factors, the artillery systems that operated in mountain areas require increased maneuver capacity, a higher firing range, a short readiness term, interoperability and high precision.

3.1 Short term objectives:

- Developing advanced artillery systems that operate in an integrated network, using high precision projectiles with synchronized effects, capable to use different types of ammunition (lethal and non-lethal;

- Ensure the possibility to an extend deployment and enhanced capabilities to observe and discover targets;

- Integration of indirect fire support systems in the ISTAR systems;

-Capability to operated advanced types of ammunition to achieve higher precision and low rate of consumption.

3.2 Medium term objectives:

- Developing artillery systems with high deployment capability, efficient and capable to locate and engage targets in any conditions;

-Capability to maximize the equipment and ammunition availability and to integrate the logistic support.

3.3 Capabilities needs for mountain field artillery

In order to fulfil the mountain operational environment requirements, the artillery units need to have these capabilities:

- independent tactical deployment capability;
- full spectrum fire support missions;
- all weather and all terrain mission capability;
- rapid reaction capability in order to reduce risk of enemy response;
- deep fire support capability, in order to destroy planned and unplanned targets, enemy armoured vehicles included;

- the capability to communicate with other forces using interoperability procedures;
- artillery force protection means;
- C2 capabilities;
- artillery radars for target acquisition;
- enhanced equipment for target detection, selection, tracking and communications;
- high level of firepower using modern ammunition;
- high firing range.

3.4 Operational requirements for mountain field artillery

- High mobility in the mountain area (passing of slopes of 30-40%);
- Minimum indirect fire range using standard projectile shall be no more than 4 km (T=0).
-Maximum indirect fire range when firing standard projectile shall be no less than 18 km. Maximum range when firing assisted projectile shall be no less than 23 km.
- C2 systems that operate in cold environments for extended periods of time, including satellite tracking systems;
- Capability to transport crew and ammunition;
- Speed of 65-80 km/h on paved roads and 25-40 km/h on all terrain;
- Maintain the equipment and engine efficiency up to 2000 m;
- Ballistic protection against medium intensity explosive ammunitions;
- Armoured crew protection.

4. Possible solutions for field artillery capabilities for mountain units

Taking in consideration all the operational requirements, the specialists' team has identified three possible solutions for mountain troop's artillery system:

- Hawkeye 105 mm self-propelled howitzer on HMMWV chassis;
- M198 medium-sized 155 mm towed howitzer;
- M119A2 lightweight 105 mm towed howitzer.

4.1 Hawkeye 105 mm self-propelled howitzer on HMMWV chassis
The main characteristics:

Dimensions and weight	
Weight	~ 4.4 t
Length	~ 5 m
Width	~ 2.4 m
Height (in travelling order)	~ 2.3 m
Armament	
Main gun	105 mm
Barrel length	27 calibers
Machine guns	Optional
Maximum firing range	12.5 / 15.1 km
Maximum rate of fire	10 - 12 rpm
Sustained rate of fire	3 rpm
Elevation range	- 5 to + 72 degrees
Traverse range	360 degrees
Mobility	
Engine	General Engine Products 6.5-liter diesel
Engine power	190 hp
Maximum road speed	over 100 km/h
Range	~ 400 km
Maneuverability	
Side slope	30%
Vertical step	0.3 m
Emplacement	3 minutes

The Hawkeye is one of the lightest self-propelled howitzers in the world today. It requires less crew (only 3) and can be briefly redeployed. This artillery system is well suited for shoot-and-scoot missions. It can fire a couple of projectiles and leave its firing position before the enemy opens counter battery fire or takes other offensive engagements.

The Hawkeye fires standard NATO 105 mm ammunition. Maximum range of fire is 11.5 km with conventional projectile and 15.1 km with rocket assisted projectile. The Hawkeye can fire indirect and direct fire modes. Another unusual feature of this lightweight system is that it offers 360 degrees field of fire.

The Hawkeye has rapid rate of fire. It can launch up to 10-12 rounds per minute. Sustained rate of fire is 3 rounds per minute. Due to its short range this artillery system is intended for operation near the frontline. It should best exploit itself for shoot and scoot type attacks. The Hawkeye mobile howitzer can be prepared for firing and leave the firing position much faster than the towed 105 mm howitzer.

This artillery system incorporates a soft recoil technology, which reduces carriage loads and allows to mount the Hawkeye on light 4x4 vehicles such as the HMMWV.

The Hawkeye has an automated digital fire control system. It takes minimal time to fire the first round. Also this artillery system can is rapidly emplaced and can briefly leave its firing position. The M1152A1 HMMWV has an armored cab, which provides some degree of protection for the crew. [3]

3.2 M198 medium-sized 155 mm towed howitzer

The main characteristics:

Armament	
Gun bore	155 mm
Barrel length	39 calibers
Projectile weight	44 kg
Maximum range of fire	22 km
Maximum range of fire (with rocket-assisted projectile)	30 km
Maximum rate of fire	4 rpm
Sustained rate of fire	2 rpm
Elevation range	- 5 to + 72 degrees
Traverse range	45 degrees
Dimensions and weight	
Weight (in combat order)	7.17 t
Length (in combat order)	11 m
Width (in combat order)	8.53 m
Mobility	
Side slope	25%
Road towing speed	72 km/h
Cross-country towing speed	8 km/h
Emplacement	7 minutes
Displacement	~ 6 minutes

The Rock Island Arsenal M198 was for almost 3 decades the primary towed artillery piece of the US military, and is still in use with several other countries.

The M198 has two broad towing arms, which are bent slightly to the left at the ends, and have a prominent hitch near the end of the left arm. The barrel is long, and tapers sharply halfway between the carriage and its double-baffle muzzle brake. The gun sits atop a sliding mount, in a square-cornered, U-shaped fixture, the latter of which is hinged at the front of two towers (which the breech recoils between when fired). A crew of 11 is required to operate the M198 normally. Approximately 6 minutes are required to set-up an M198 for fire missions.

The M198 and can safely be towed cross-country at 8 km/h, over improved secondary roads at 40 km/h, or over paved roads at 72 km/h. The M198 may be delivered by parachute, or sling-loaded underneath a CH-47 Chinook. The M198 155 mm cannon has a tube 39 calibers long, giving it an effective range of 22 km with a standard projectile, and 30 km with a rocket-assisted

projectile. The rate-of-fire for the M198 is 4 rounds/min maximum, or 2 rounds/min sustained. Service life of this howitzer is 1 750 rounds at full charge. [6]

3.3 M119A2 lightweight 105 mm towed howitzer
The main characteristics:

Country of origin	United States/UK
Entered service	1989
Crew	5 men
Armament	
Gun bore	105 mm
Maximum range of fire	17.5-19.5 km
Maximum rate of fire	8 rpm
Sustained rate of fire	3 rpm
Elevation range	- 5 to + 70 degrees
Traverse range	45 degrees
Dimensions and weight	
Weight (in combat order)	2.3 t
Length (in combat order)	5.5 m
Width (in combat order)	1.78 m
Mobility	
Side slope	35%
Road towing speed	70 km/h
Cross-country towing speed	8 km/h
Emplacement	6 minutes
Displacement	~ 5 minutes

The M119A1/A2 howitzer is a lightweight towed howitzer in service with the US Army. The howitzer provides direct and indirect fire support to the forces deployed in combined arms operations. It is manufactured by the Rock Island Arsenal-Joint Manufacturing and Technology Centre (RIA-JMTC) under joint US/RO (Royal Ordnance) partnerships.

The M119 was first deployed in the 7th Infantry Division, Fort Ord in December 1989. US Army began the Light Artillery System Improvement Programme (LASIP) Block I improvements in 1998. The programme added a new low-temperature recuperator, an improved trail access cover, simplified tail light assembly and brackets to include a chronograph and battery computer system. The existing M119 gun system received a new low blast overpressure muzzle brake (LBOP) in February 2017. It transmits propellant gases to the rear of the gun and also reduces auditory and non-auditory health hazards.

The M119 can fire all standard NATO 105mm ammunition including the M1 high explosive rounds, M913 high explosive rocket-assisted shells, M314 illuminating star shell and M60/M60A2 white phosphorous smoke cartridge.

The M119 can be easily moved and rapidly deployed in the field to deliver optimum firepower with less combat weight. The M119A1/A2 howitzer has a lower silhouette and can

fire without a recoil pit. It is primarily towed by the high-mobility multipurpose wheeled vehicle (HMMWV). It can be routinely airdropped by parachute and also carried underslung by the CH-47 Chinook.[7]

5. The most appropriate solution proposal

5.1 The comparison of the main characteristics

	Weight t	Slope	Response time min.	Firing range km	Maximum rate of fire	Hit probability	Crew
Hawkeye 105 mm self-propelled howitzer	4.4	30%	3	15	10	80%	3
M198 155 mm towed howitzer	7.3	25%	7	22	4	90%	9
M119 105 mm towed howitzer	2.3	35%	6	18	8	85%	5

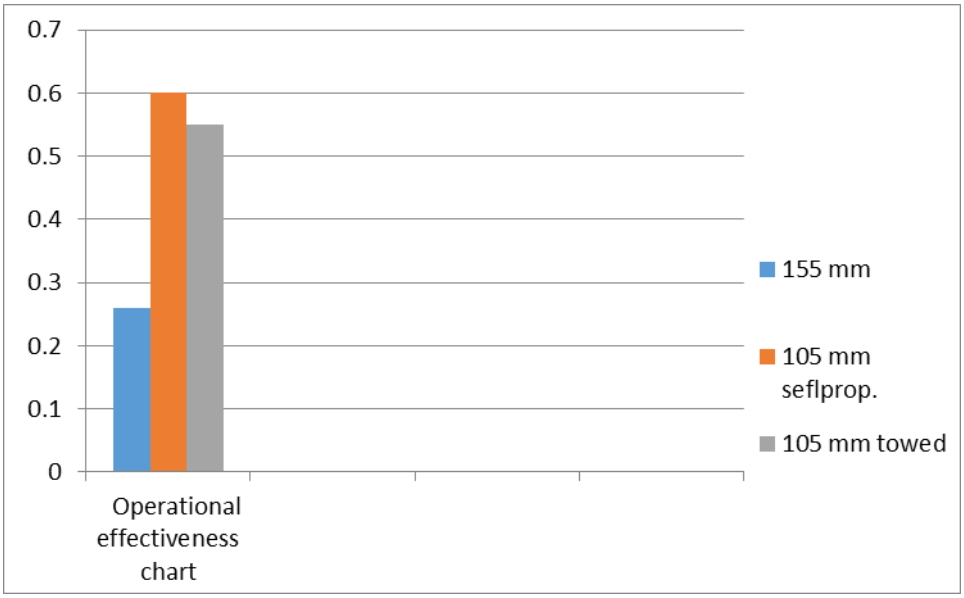
Analysing the operational capabilities of these systems, we can see that M198 has a higher range, but a low level of mobility because of weight. Hawkeye 105 mm has a very good firing rate but has a small range of 13 km. Also, M119 has a good firing rate and a proper weight but has a limited response time.

5.2 Effectiveness analysis

	Weight 0.13	Slope 0.17	Response time 0.16	Firing range 0.14	Maximum rate of fire 0.13	Hit probability 0.12	Crew 0.15	**TOTAL**
Hawkeye 105 mm self-propelled howitzer	0.58	0.5	1	0	1	0	1	**0.60**
M198 155 mm towed howitzer	0	0	0	1	0	1	0	**0.26**
M119 105 mm towed howitzer	1	1	0.25	0.45	0.66	0.5	0.66	**0.55**

Hawkeye 105 mm self-propelled howitzer has the highest level of effectiveness having good mobility features, a good firing rate and a small crew. The second level of effectiveness is

for M119 105 mm towed howitzer also with good mobility features, with an enhanced firing range and good rate of fire. The lowest level of effectiveness is for M198 155 mm towed howitzer that has low mobility features and also low rate of fire.

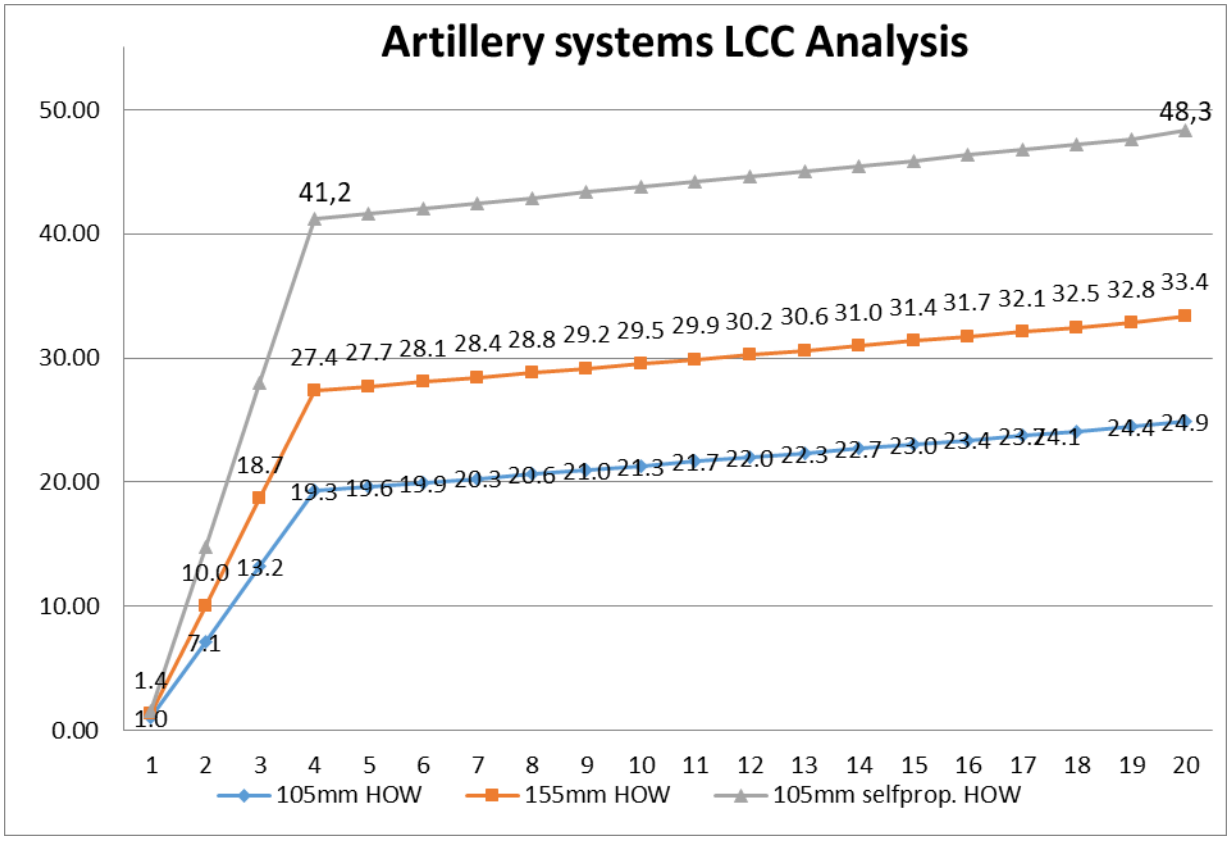


5.3 Life cycle cost analysis

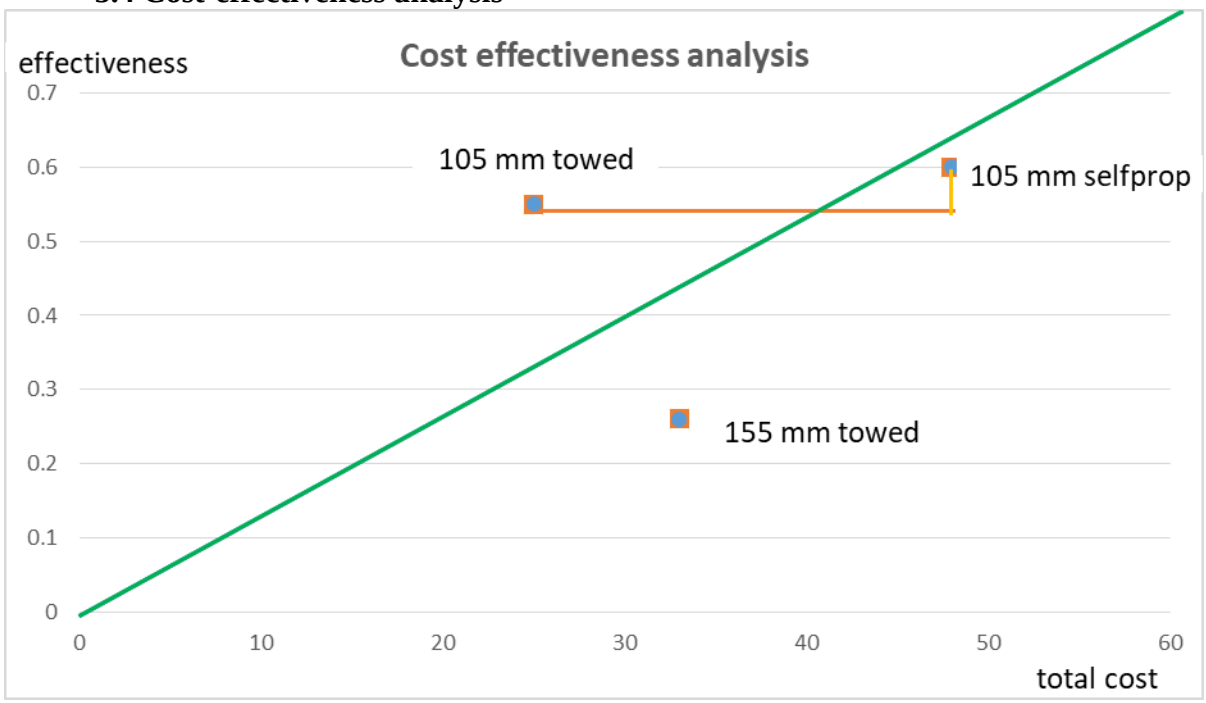
The life cycle cost chart with detailed cost for each expense is presented in Annex 1. [8]

The total cost of an alternative includes all the costs of the system over the life-cycle of the system, estimated based on expected operating conditions.

For life cycle cost analysis specialist took in consideration a period of 20 years, an inflation rate of 0,02, training inflation of 0,03 and maintenance inflation of 0,04. They consider buying 18 systems per year in the next 3 years.



5.4 Cost-effectiveness analysis



The optimal solution taking in consideration the effectiveness but also the total cost is **M119 105mm towed howitzer.** This is the only system that in on the graph above the cost-effectiveness line.

Also *the marginal cost and marginal effectiveness* analysis revealed us that for a small amount of effectiveness (only 0.05) we will have to double the cost if we want to have Hawkeye 105mm self-propelled howitzer that is the most effective system. The effectiveness will increase with **9%,** but the cost will raise with **96%**

Land Forces program has allocated a budget of 900 million $ and Field artillery subprogram budget limit is 40 million $. So, the budget limit is another argument for our proposal.

Cost-effectiveness matrix

	Effectiveness	**Total LCC**
Hawkeye 105mm self-propelled howitzer	HIGH	HIGH
M198 155mm towed howitzer	LOW	MEDIUM
M119 105mm towed howitzer	HIGH	LOW

Also in the cost –effectiveness matrix we can see that **M119 105mm towed howitzer** is the system with high effectiveness and low price, so it should be the most appropriate solution for mountain troops.

5.5 Defining the capability based on DOTMLPFI model

Doctrine: a new manual has to be developed for operating the new capability
Organization: no change because this system has the same crew number.
Training: is needed for crew and for technical support team
Material: systems and ammunition acquisition. A new contract for spare parts and maintenance.
Leadership: no change
Personnel: no change because this system has the same crew number.
Facilities: -new hangars.
Interoperability -need to implement some standard agreements for ammunition.

6. Conclusion

Cost effectiveness analysis is an important tool for decision making because it reduces uncertainty and risk in taking decisions, but does not eliminate it. There no exists the best decision for all situations. The best alterative needs to be linked by a specific environment and is affected by the competition for resources between different priorities. The military leaders tend to use of methods based on its experience in operational matters, using experience as a guide in predicting operations. The Resources management theory help the decision maker's to develop a priority list for the factors that make up a decision, as well as how each alternative option weighs against those factors.

Starting with valuable analysis of the strategic environment and deriving capabilities need and requirements, specialists could identify some realistic solution to fill the gap in capabilities. After a solid analysis of effectiveness and also of the cost implications, decision makers can select the optimal solution and they must implement it in a proper way, adapted to that military system.

Capabilities-based analysis is conducted to provide well-articulated alternatives to leadership. The alternatives need to be distinct, viable, and realistic, linked by the budget constraints. These choices should be developed taking in consideration the demands of the national military strategy and associated joint needs.

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MODELING DECISION SUPPORT SYSTEMS

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Abstract:
The military system has developed constantly and has remained connected to everything that means the decision-making process, At the same time, to reduce operating costs, simulators have made their way into all categories of forces. An important place is occupied by intelligence; it has developed both by volume and by means of collection, which has led to the design of computer systems for collection, transmission and analysis. Different integrated operations and information systems, now offers a wide range of functionalities especially in operations, command and control forces.The benefits of implementing the decision-making process using models and decision support systems provide an extensive understanding of situations, a developed process in solving problems and reach a decision. The problem of real-time decision-making process is a current challenge to the decision makers and to the artificial intelligence.

***Key words**: decision, making, framework, challenges*

1. Introduction

Decision makers need a framework that constantly adapts to an organization conditions or to the new challenges of the ever-changing organizational environment. Information management and decision making within an organization requires a systematization of the problem, a model and a decision support system. For this situation, the decision support system (DSS) combines human skills with the skills of PCs. to provide productive information management, reporting, investigation, display and troubleshooting. This approach seeks to make a synthetic connection between the steps of the decision-making process, the creation of a model and the decision support system.

2 Decision-making process

2.1 Decision-making process steps

Decision-making can be defined as the process of selecting a right and effective course of action from two or more alternatives for the purpose of achieving a desired result. Decision-making is the essence of management. The entire managerial process is based on decisions. Decisions are needed both for tackling the problems as well as for taking maximum advantages of the opportunities available. Effective decisions reduce complexities, uncertainties and diversities of the organizational environments.

The decision-making process is a tool available to any manager, at any level, to choose the optimal, deliberate and thoughtful decision. This process is done by collecting and organizing relevant information and prioritizing alternatives. This approach considerably increases one's chances of choosing the most satisfactory alternative. "Decision making has always been a difficult process, based on various combinations of objectivity (when scientific tools were used)

and subjectivity (considering that decisions are finally made by people, with their strengths andweaknesses)."[1]

Step 1: Identify the decision

Identifying the decision is the first step in this process, which is very important in clearly defining the nature of the decision that should be made.

Step 2: Gather relevant information

The collection of information must take into account the following aspects: knowing what information is need and having a plan for gathering information from credible sources. The information come from internal source or external sources. External information can be found online, from open sources or from other people. Additionally, it's important to note, that in some case the collection process involves spending large sums of money and resources to obtain a good information.

Step 3: Identify courses of action

The information obtained creates alternatives, courses of action. Their identification and listing will be done at this stage of the decision-making process.

Step 4: Weigh the evidence

Analyze each course of action, weigh the pros and cons. Assess at this stage whether the need identified in step one is met or addressed through each course of action. Some alternatives have a higher potential to achieve the goal. Sort the alternatives according to the established criteria.

Step 5: Choose amongst alternatives

Once all available data has been considered, the best course of action will be chosen. Alternatives can be combined into a new one. The alternative chosen in this step may be the same or similar to the alternative at the top of the list in step four.

Step 6: Take action

In this stage, we move on to the implementation of the course of action chosen in step five.

Step 7: Review your decision and its consequences

At this point, consider whether the resulting decision meets the need set up in step one. If the decision did not meet the identified needs, certain steps in the process may be repeated to make a new decision. For example, if the initial information changes, then additional information will be needed.

Fig.1 Step-by-step Decision Making Process

MDMP (Military Decision Making Process) uses the same steps, with small changes in problem solving and decision-making. It applies at all echelons and includes the steps needed to develop well-reasoned, supportable solutions.

Ref: ATTP 5-0.1, Commander and Staff Officer's Guide (Sept '11), pp. 11-1 to 11-6.

1. Identify the Problem
2. Gather Information
3. Develop Criteria
4. Generate Possible Solutions
5. Analyze Possible Solutions
6. Compare Possible Solutions
7. Make and Implement the Decision

3. Model construction

3.1 Model construction

A model is a simplified and small-scale representation of the real world and includes only some of the relevant variables to the problem at hand. The oldest models were physical

representations, such as ships, planes and wind tunnels. Physical models are usually quite easy to build, but only for relatively simple objects or systems and are usually difficult to change.

The next model, the graphic, is used for only three variables, is easier to build and manipulate, but more abstract.

To represent several variables is necessary to use symbolic models. These are completely abstract without any limit on the number of variables that can be included.

The model is given content or meaning by defining the symbols. This makes the symbolic models of the system with very different content often reveal a similar structure. Therefore, most systems and the problems that arise can be successfully classified in terms of relatively few structures. Because the methods for extracting solutions from models depend only on their structure, some methods can be used to solve a wide variety of contextual problems. Finally, one system that has the same structure as another, no matter how different the two in content, can be used as a model for the other. Such a model is called analog. By using such models, much of what is known about the first system can be applied to the second.

Physical and graphic models are frequently used in the preliminary phases of constructing symbolic models of systems.

Models represent the causal relationship between the controlled and uncontrolled variables and system performance; they must therefore be explanatory, not merely descriptive. Only explanatory models can provide the requisite means to manipulate the system to produce desired changes in performance.

Models are also are useful in formulating the problem not only assist in finding the answer. Models can be used as guides to explore the structure of a problem and to reveal possible courses of action that might otherwise be missed. In many cases the best course of action revealed by such application of a model is so obviously superior to previously considered possibilities that justification of its choice is hardly required.

In some cases the model of a problem may be either too complicated or too large to solve. It is frequently possible to divide the model into individually solvable parts and to take the output of one model as an input to another. Since the models are likely to be interdependent, several repetitions of this process may be necessary.

Even if a model cannot be solved, and many are too complex for solution, it can be used to compare alternative solutions. It is sometimes possible to conduct a sequence of comparisons, each suggested by the previous one and each likely to contain a better alternative than was contained in any previous comparison. Such a solution-seeking procedure is called heuristic.

3.2. Testing the model and the solution

A model may be deficient because it includes irrelevant variables, excludes relevant variables, contains inaccurately evaluated variables, is incorrectly structured, or contains incorrectly formulated constraints. Tests for deficiencies of a model are statistical in nature; their use requires knowledge of sampling and estimation theory, experimental designs, and the theory of hypothesis testing.

The structure of a model consists of a function relating the measure of performance to the controlled and uncontrolled variables; for example, a business may attempt to show the functional relationship between profit levels (the measure of performance) and controlled

variables (prices, amount spent on advertising) and uncontrolled variables (economic conditions, competition).

The solution derived from a model is tested to find whether it yields better performance than some alternative, usually the one in current use. The test may be prospective, against future performance, or retrospective, comparing solutions that would have been obtained had the model been used in the past with what actually occurred. If neither prospective nor retrospective testing is feasible, it may be possible to evaluate the solution by "sensitivity analysis," a measurement of the extent to which estimates used in the solution would have to be in error before the proposed solution performs less satisfactorily than the alternative decision procedure.

3.3. Military models

The evolution of models from the classic sandbox to the 'Holographic Tactical Sandbox' is a big loop that facilitate operational planning and decision-making. In addition to its operational benefits, this lightweight, ergonomic and compact technology offers several other advantages:

- Remote tactical planning: Thanks to an avatar, military leaders can meet around a holographic map even if they are not in the same base.
- Improvement of the battlefield perception: Augmented reality allows players to experiment the battlefield in advance. They can feel and anticipate the main sensitive military data (planimetrics, intervisibility, covered infiltration tracks, etc.)
- Time-saving: No tedious sandbox to build. Digital maps easy to load in the system.

4. Decision support systems (DSS)

Computers have had a intense impact on the management systems and in different fields. The capabilities of computers, speed and data-handling allow scientists and military to construct complex and realistic models of different organized systems and to get solutions from simulation techniques.

The primary use of computers have been in the areas of record keeping, bookkeeping, and transaction processing. These programs, were oriented to maintain orderly and accurate records.

After a while, computers entered in the basic decision-making process offering a tool to decision makers. Evolution from data-processing systems to prepare management summaries is call management information systems (MIS). These systems use to keep inform the managers, to monitor on trends, cycles and performance.

Recently, decision support systems (DSS) receive the new functions to project and to predict the decisions before they are made. These functions allow managers and analysts to evaluate the possible effects of decisions and to find alternatives.

The development of decision support systems can be found in different fields, from military to business planning. To create a computer-based systems is necessary to combine knowledge of an organization and its activities, to technical skills in computer programming and data handling.

4.1 New software tools for decision making

The availability of Microsoft Office or similar programs on personal computers, with their capabilities, makes a big step forward in construction, solution, and testing of models. Easy-to-use programs permit for collaborative work, easy communication with analysts and managers and finally a low-cost model building. Now, all the managers use computers in their daily work with programs as a part of their managerial duties.

4.2. Examples of Decision Support Systems

The first step to solving a problem is finding out its common structure. The most common structures have been identified as prototype problems, and extensive work has been done on modeling and solving them.

All the problems with similar structures can use the same model. Large or complicated problems can be divided in smaller solvable problems. The overall model is a aggregation of different prototypes from smaller problems.

Resource allocation

Allocation of resources among different alternatives will be done in a manner to maximize the profit and reduce the cost. The problem is how much the resource will be allocated to a set of jobs.

Linear programming

Linear programming (LP) refers to solving resource allocation problems, use mathematical optimization techniques, in industrial production systems.

Linear programming is probably the most widely used mathematical optimization technique, numerous computer programs are available for solving LP problems.

Inventory control

Inventory control is used in order to optimized the stocks and reduce the cost. Another role of the general inventory problem is to trigger the time and the levels at which orders for replenishment of inventories are to be initiated.

Japanese approaches

In the 1970s several Japanese firms, led by the Toyota Motor Corporation, developed approaches to the management of inventories named "just-in-time" approach. The element of the new systems was reduction of inventories throughout the total production system. This approach needed a very good coordination of resources. They develop the method using cards or tickets attached to the goods making the system running very simply, the total number of parts in the system is held constant, the coordination, scheduling, and control of the inventory is greatly simplified. This technique is called Kanban.

Replacement and maintenance

Replacement and maintenance problems involve items or some parts that degenerate with use or with the passage of time. To find out the right time and the right quantity of items that must be replace in order to reduce the total cost.

Queuing

A waiting line process that deals with items or people in sequence. The cost of providing service and the waiting time of users are minimized.

Job shop sequencing

Is a more elaborated queuing, that means to find the right job and the right moment to maximize the profit and reduce the cost. Selection of order to minimize some function of the time to perform all the tasks is a sequencing problem.

Manufacturing progress function

Increasing the production of different goods, while decreasing their manufacturing costs in predictable fashion. Declining steeply at first, and then continuing to decline at a lower rate. In this case, the estimating future costs will be valuable.

.**Network routing**

A network routing problem consists of finding an optimum route between two or more nodes in relation to total time, cost, or distance. Taking in account the problems that exist, such as a prohibition on returning to a node already visited or a stipulation of passing through every node only once.

Competitive problems

Competitive problems are applicable also to the military decision making process because the outcome of one decision maker's choice depends on the adopted solution. Competitive problems can be certain, risky, or uncertain. Under certain condition it is easy to make a decision, but under the risk or uncertain conditions it is recommendable to use analysis or estimations in order to choose the best alternative. This can be used in business for contract competition.

The theory of games was developed to deal with a large class of competitive situations of the uncertainty type in which each participant knows what choices he and each other participant has. The military have long constructed operational games; their use by business is more recent.

Search problems

Search problems involve finding the best way to obtain information needed for a decision. Military problems involving composition, location and intentions of the enemy forces.

Observation can affect the decision if it is made with error, omit or commission,

The cost of search can be controlled if it is orientated in the right spot and at the right time.

A "reversed-search" problem arises when the search procedure is not under control but the object of the search is.

Militaries are increasingly bringing simulators into their training programs to cut down various operating costs associated with the training involved with real equipment. Moreover, many governments are planning on shifting parts of their trainings and using simulators.

The modernization of armed forces has lead to an increased demand for military-simulator systems around the world.

Different platforms offer an integrated operations and information system, which offers a wide range of functionalities specially designed to meet the requirements of multi-national forces and joint service commands. That have been designed and developed to be operated in mobile as well as in static headquarters. It perfectly suits modern types of operation and task management at all command and control levels. The features are:

- Built-in Multilateral Interoperability Programmer (MIP) standard data model and extensions;
- Interfaces to tactical communication links;
- Comprehensive set of operational applications (Transfer of Function Orders (TFO), battle space monitoring, planning management, Rules of Engagement management, intelligence, services, logistics…)
- Full collaborative environment (web, messaging, chat, access management…)

- Personnel data maintenance and retrieval
- Order of Battle management
- Data access and filtering, request tools
- Situation display integrating a large range of cartographic formats with compiled Situation
- Layers including real-time tracks
- Logistics data maintenance and retrieval, management tools
- Live, simulation and exercise mode of operations
- MIP compatible data exchange

5 Conclusion

Decision makers supported by their staffs, use the operations process to drive the conceptual and detailed planning necessary to understand, visualize, and describe their operational environment. Take the beast decisions and direct, lead, and assess military operations.

The military system has developed constantly and has remained connected to everything that means the decision-making process,

At the same time, to reduce operating costs, simulators have made their way into all categories of forces. An important place is occupied by intelligence; it has developed both by volume and by means of collection, which has led to the design of computer systems for collection, transmission and analysis.

Different integrated operations and information systems, now offers a wide range of functionalities especially in operations, command and control forces.

The benefits of implementing the decision-making process using models and decision support systems provide an extensive understanding of situations, a developed process in solving problems and reach a decision.

In my opinion, the problem of real-time decision-making process is a current challenge to the decision makers and to the artificial intelligence.

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THE ECONOMIC IMPACT OF THE U.S. MILITARY WITHDRAWAL AND TALIBAN TAKEOVER IN AFGHANISTAN

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Abstract:
This article aims to highlight the main gaps in the work of the institution responsible for maintaining peace and security on the international arena, especially in the context of the COVID-19 crisis. This paper tries to identify and analyze the impact of the U.S. military withdrawal and Taliban takeover in Afghanistan. The United States concluded a 20-year war in Afghanistan with the U.S. force withdrawing its last remaining soldiers in August, 2021. Furthermore, U.S. officials have reported that the Taliban are now in possession of the equipment paid with U.S. funds for the Afghan National Defense and Security Forces (ANDSF) such as ground vehicles, aircrafts, arms and ammunition. Much of the materials and equipment now belong to the Taliban forces but the exact quantity remains unknown. In addition, fleeing personnel of ANDSF took some arms, aircrafts and military equipment to neighboring countries such as Uzbekistan, Tajikistan and Iran. Although the U.S. military equipment was rendered inoperable, being in the hands of the Taliban will reveal plenty of information on how the U.S. builds its weapons and how it uses them.

Keywords: *Afghanistan, US, Taliban, military equipment, takeover*

1. Introduction

The Taliban movement was formed in 1993-1994 of Afghan Muslim clerics and students. Many of them used to be anti-Soviet fighters - mujahideen - who had become discouraged with the civil war between different parties that erupted after the withdrawal of Soviet troops and the subsequent fall of the Soviet-backed government in 1992. Most of the members of the movement had studied seminaries in Pakistan and decided on the name Taliban (student of Islam) to separate themselves from mujahideen (Rashid, 2000). The Taliban movement was supported by Pakistan because of the potential of the group to bring order in Afghanistan and secure a cooperative ally, hence providing Pakistan with great security on one of the several borders for what they called strategic depth (National Commission on Terrorist Attacks Upon the United States, 2004). The beliefs of Taliban and practices were derived from the conservative tribal tradition of Pashtuns, who represent Afghanistan's complex ethnic makeup and who used to rule Afghanistan.

After the Soviet troops' withdrawal, the Taliban viewed government of President Burhanuddin Rabbani as anti-Pashtuns, corrupt and weak. From 1992 to 1996, civil war erupted between the mujahideen group leading to population's support for the Taliban as they were perceived as more able to deliver stability and less corrupt. According to Zalmay Khalilzad who later became an U.S. Specialist Representative for Afghanistan Reconciliation stated that the he liked many of the Taliban members and seemed optimistic regarding them at the beginning. In November 1994, the southern city of Kandahar was overrun by the Taliban and started a series of military campaigns throughout Afghanistan that culminated in the capture of Kabul in September 1996. As the Taliban imposed strict adherence to its interpretation of Islam, the group rapidly

lost domestic and international support because they employed harsh punishments such as public executions and bans on Western music, dancing, and television to enforce its decree in areas it controlled. Taliban forbidden women working outside home unless for health care or attending school and publicly executed women for alleged adultery. Taliban drew international criticism in March 2001 for destroying massive sixth-century Buddha statues carved into hills because they considered them contrary to Islam and idolatrous.

The United Stated had played a crucial role in supporting anti-Soviet mujahideen. However, due to the withdrawal of Soviet troops after the 1988 Geneva Accords, the attention of the U.S. to Afghanistan declined. Thus, due to security reason, since 1989 until 2001, the U.S. embassy in Kabul was evacuated. Although, the United States still assisted the mujahideen groups who continued to fight against the Soviet supported Afghan government which fell in 1992, there was little appetite to maintain U.S. engagement. By that time, in 1996, the Taliban took control of Kabul as the U.S. policy towards Afghanistan was unclear (Coll, 2005).

Growing international and U.S. popular attention to the difficult situation of the Afghani women combined with a renewed focus on human right under Secretary of State Madeleine Albright led to U.S. policy shifting against the Taliban by 1997. This move occurred even though an U.S. partner Saudi Arabia – one of the three countries along with United Arab Emirates and Pakistan that recognized the Taliban as the government of Afghanistan - showed support for this group. The U.S. views of and the relations with the Taliban was mainly influenced by Taliban's decision to shelter Al Qaeda leader Osama bin Laden. In 1996, bin Laden moved from Sudan to Afghanistan, where he had previously spent most of 1980s as a high profile organized of efforts to aid the mujahideen and financier. Pakistani Intelligence officers reportedly arrange the meeting between the Taliban leaders and bin Laden in Kandahar. As a result, bin Laden formed an alliance with the Taliban where he financed the group and provided military support for their efforts to complete their conquest of the country in exchange for safe haven for the Al Qaeda recruits and training camps. It has been estimated that over 10.000 Al Qaeda combatants, may have trained at the Al Qaeda camps in Afghanistan. In April 1998, the U.S. Ambassador to the United Nations Bill Richardson visited Kabul and required Taliban to expel bin Laden. The Taliban group answered that they did not know his whereabout and that bin Laden does not pose a threat to the United States. In August 1998, the threat posed by bin Laden became clearer when operatives from Al Qaeda simultaneously bombed U.S embassies in Tanzania and Kenya with casualties of over 200 people. In response, the U.S launched cruise missile attacks on Al Qaeda targets in Afghanistan that proved to be unsuccessful in either persuading the Taliban to expel him or killing bin Laden. U.S. pressure on Pakistanis and Saudis to use their influence to convince the Taliban to expel bin Laden proved to be unsuccessful. Nonetheless, in July 1999, President Bill Clinton imposes sanctions on the Taliban. Those sanctions were equivalent to sanctions on governments deemed state sponsor of terror. Furthermore, in October 1999, United Nations Security Council (UNSC) added economic and travel sanctions against the Taliban with United Nations Security Council Resolution (UNSCR) that expanded the sanctions and included an arms embargo against the Taliban. However, Taliban leadership were not moved by any of the sanctions as the foundation was deep and personal (National Commission on Terrorist Attacks Upon the United States, 2004).

On 11th September 2001, Al Qaeda operatives directed a series of terrorist attack on the United States soil that killed approximately 3000 people. Shortly after, on 20th September 2001, President George W. Bush in a nationwide address before a joint session of Congress demanded

that the Taliban hand over the Al Qaeda leaders, permanently close terrorist training camps and provide the United States with access to those camps. However, the Taliban leaders did not comply with any of the demands and stated bin Laden's status as their guest (Washington Post, 2001).

Waiting for an authorization to use military force (AUMF) enacted on 18th September 2001, the U.S. military action started on 7th October 2001, with airstrikes aimed at Taliban targets in every part of Afghanistan while having air support to anti-Taliban troops in the northern of the country. In less than two weeks, a limited number of Central Intelligence Agency (CIA) paramilitary forces, U.S. Army Special Forces and some conventional ground troops began deploying in Afghanistan (Perry and Kassing, 2015). Shortly after, on 13rd November 2001, Kabul was evacuated by the Taliban which was soon retaken by the Afghan army. As the U.S. backed Afghan troops approached the birthplace of the Taliban movement, the group's leaders offered terms of surrender including an amnesty for the Taliban combatants who would lay down their arms. U.S. officials rejected such amnesty. Although many Taliban troopers were killed by U.S. or Afghan army, other managed to escape in rural areas of the country and then flee to Pakistan. Afghan delegates assembled in December 2001 in Germany, by the United Nations selected Hamid Karzai to perform duties as the head of an interim national Afghan government marking the start of the post-Taliban governance. No attempt has been made to include the Taliban in the talks and no members of the Taliban participated in the 2002 emergency consultative assembly that elected Karzai as president. The development and success of the new Afghan government represented the start of a crucial mission set for the U.S. forces and their international partners to help defend and assist the new government and its emerging military. In January 2002, Karzai attended the State of the Union address where President Bush stated that Afghanistan and United States were allies against terror and partners in rebuilding the country (White House, 2002). Congress assisted the Bush Administration in his approach, authorizing funds for more expansive for U.S. civilian assistance missions and military. In May 2003, U.S. officials announced an end to massive combat operations in Afghanistan, even though then-Secretary of Defense Donald Rumsfield added that there were still dangers in certain parts of the country (CNN, 2003).

By 2005, the Taliban combatants had already begun to regroup in the heartland of southern and eastern Afghanistan, Pashtun, as well as across the border in Pakistan where the Pakistan's security and intelligence services were tolerating or even supporting the Taliban according to many observers (Waldman, 2010). On the other hand, the Taliban described the military coalition operations between the Afghan government and U.S. as a military occupation since the group described the Afghan government and as being puppets for foreign powers (Calvin, 2012). The United States cautiously enlarged their forced to around 30.000 soldiers by the end of Bush Administration in response to growing Taliban activity. The United Stated and its partners, under the Obama Administration, increased even more the troops present in Afghanistan at approximately 130.000 soldiers in 2010-2011 with a set goal to end combat operations by the end of 2014. However, the increase of the U.S. and its allies' forces proved to be unsuccessful in weaking the Taliban advancement. The assessment of the Obama Administration was that the military means alone will not end the conflict (New York Times, 2012). Furthermore, negotiations between U.S. and Taliban could not be carried out since U.S. would have been forced to include the Afghan government with which the Taliban refused to meet in any settlement (The Guardian, 2010). NATO began to gradually transfer security duties

to Afghan army starting in 2011 as international force levels were reduced in advance of the scheduled 2014 transition. As such, at the end of 2014, the Afghan army assumed full responsibility for security nationwide. Also, by the end of 2014, the International Security Assistance Force (ISAF) would end and on 1st January 2015, the start of a noncombat Resolute Support Mission (RSM) would begin. Additionally to advising, training, and assisting the Afghan army as part of RSM, U.S. forces in Afghanistan also conducted counterterrorism operation (CRS, 2021).

2. U.S. Military Withdrawal and Taliban Takeover

In January 2017, President Donald J. Trump came into office and pulled out approximately 11.000 U.S. soldiers from Afghanistan reducing the U.S. force within the region. Therefore, compared to the peak in 2009-2011, the number of U.S. troops in Afghanistan have declined of approximately 100.000 soldiers (Lubold and Youssef, 2017). However, in June 2017, Secretary of Defense James Mattis delegated the authority to set force levels limited to 3.500 soldiers. In September 2017, Secretary Mattis signed orders to deploy 3.500 additional troops in Afghanistan (Copp, 2017). Upon arrival in the region, the additional troops were dedicated to RSM putting the number of U.S. forces between 14.000 to 15.000 by the end of 2017 (Washington Post, 2017). The lack of military progress against the Taliban frustrated President Trump and ordered negotiations between U.S. and Taliban without the Afghan government for the first time. Although the negotiations developed under Zalmay Khalilzad, President Trump carried on expressing disappointment with the mission of the U.S. military in Afghanistan and manifested the desire to withdraw the U.S. troops as quickly as they could (TOLOnews, 2009). According to the top U.S. commander in Afghanistan, General Austin S. Miller, U.S. force level started to decrease by 2.000 soldiers to arrive at approximately 12.000 - 13.000 soldiers between 2018-2019 (New York Times, 2019).

In February 2020, the Taliban, and the United States signed a formal agreement. The United States committed to withdrawing all its non-diplomatic civilian personnel, contractor, and troops from Afghanistan. The military force would be pulled out of the region in two stages. More specifically, 8.600 soldiers would be removed from Afghanistan by mid-July 2020 and the complete withdrawal of the soldiers by April 2021. In return, the Taliban committed to prevent any groups similar and including Al Qaeda from threatening the United States and its partners by not allowing those groups to fundraise, reside or train in Afghanistan. The U.S. withdrawal commitment did not impose any conditions regarding the reduction of violence of the Taliban against Afghan government or taking any other action. The agreement between U.S. and Taliban without the Afghan government stated that up to 5.000 Taliban prisoners of the Taliban held by the Afghan government and by March 2020, up to 1.000 Afghan personnel to be released by the Taliban. According to the agreement, negotiations between the Afghan government and Taliban were also to start that month but they remained unscheduled for months due to disagreements over the prisoner release and political holdup in Kabul. However, on 12nd September 2021 in Doha, the Taliban and the Afghan government completed the prisoner release eliminating the key obstacle intra-Afghan negotiations (CRS, 2021).

Throughout 2020, U.S. officials stated that the Taliban were not in full compliance with the agreement (Reuters, 2020a) while the U.S. troops continued to decrease to 8.600 one month ahead to the mid-July 2020 deadline (CNN. 2020). In addition, according to President Trump in

October 2020, the remaining numbers of the U.S. troops in Afghanistan, will be home by Christmas 2020 (Reuters, 2020b).

Then-Secretary of Defense Christopher Miller announced on 17th November 2020 that he will continue to reposition the U.S. forces from Afghanistan; however, 2.500 U.S. soldiers would still remain in the region by January 2021 (DoD,2020). According to Secretary Miller on 15th January 2021, only 2500 U.S. soldiers remained in Afghanistan (DoD, 2021a).

On 20th January 2021, President Biden took office and stated on 16th March 2021 interview that the U.S. - Taliban agreement was not a very solid negotiated deal and meeting 1st May 2021 U.S. troops withdrawal deadline could happen but would be very tough. Furthermore, he also mentioned that an Administration review of the U.S. policy in Afghanistan was in process and reaching a decision would not take much longer (ABC News, 2021).

On 14th April 2021, President Biden stated that the complete withdrawal of the U.S. troops from Afghanistan would begin on 1st May 2021 and be completed by 11th September 2021 (White House, 2021a). In a written response to this announcement, the Taliban accused the United States of breaching the February 2020 agreement and emphasized that the U.S. decision to remain after the 1st May 2021 would open the way for Taliban forces to take the necessary countermeasures and hold the American side responsible for all future action (Augengeradeaus, 2021). On 26th August 2021, the Afghan nationals together with the U.S. were killed in Kabul. The attacked was claimed by an affiliate of the Islamic States in Afghanistan that has been in conflict with the Taliban. Unfortunately, the Taliban failed to predict and prevent such attacks on any group in Afghanistan according to the U.S. - Taliban agreement (CRS, 2021).

According to the United States Institute of Peace, few observers mentioned that the Biden Administration could retained a small force in the region in order to facilitate an agreement between the Afghan groups breaching the U.S. - Taliban agreement. Contrary to this view, President Biden stated that the small number of the U.S. force would not have been sufficient to deter the Talian force and destroy the relationship even further (White House, 2021b). Still, others consider that it would not have been worth risking further lives and U.S. military resources for a minimal footprint in Afghanistan (Brookings, 2021). By June 2021, 44% of the U.S. troops have already been removed from Afghanistan according to the United States Central Command (CENTCOM). The majority of the U.S partners and NATO allies withdrew their soldiers by July 2021 (Military, 2021). On 8th July, President Biden declared that U.S. military mission in Afghanistan will end on 31st August. A fast Taliban advance, leading up to the taking of Kabul, and the emergency evacuation of the U.S. embassy personnel and some Afghan of Afghanistan, led to the United States deploying thousand additional soldiers to assist with the evacuation process (CRS, 2021).

3. Budget Implications

The most recent Department of Defense Cost of War quarterly report showed that from September 2001 to March 2021, DoD provided a total of $837.3 billion in current dollars for the military operations such Operation Freedom's Sentinel and Operation Enduring Freedom together with the reconstruction activities in Afghanistan. The report shows that the annual obligation – in current dollars – decreased to $40 billion in FY2020 compared to its peak of $98 billion in FY2012. The report from 2020 represents the last fiscal year for which data are available (SIGAR, 2021).

According to the quarterly report of Special Inspector General for Afghanistan Reconstruction (SIGAR) to Congress, from October 2001 to June 2021, the Congress has appropriated approximately $145 billion in current dollars to federal agencies from which the Department of Defense received $83 billions for reconstructions and related activities in Afghanistan. More specifically, those $83 billion were directed to Afghanistan Security Forces Fund (SIGAR, 2021). However, some nongovernment observers such as Brown University estimated on 15th April 2021 that the cost of war in Afghanistan exceeded the value provided by the Department of Defense to $2.31 trillion. Additionally to the funding for overseas emergency military operations for the State Department and Department of Defense, the estimates include amounts for what it is pictured as other war related costs such as increases to the DoD budget, interest from the national debt of borrowing and medical care for the U.S. veterans who served in Afghanistan (Watson Institute for International and Public Affairs, 2021).

The Afghan government together with the U.S. allies have received dispositioned U.S. military equipment and materials to assist with the advance of U.S. National security and foreign policy interest according to SIGAR in December 2020. As of 17th September 2021, Department of Defense did not publish a full public estimate of the amount of their personal property in Afghanistan. Much of the materials and equipment now belong to the Taliban forces but the exact quantity remains unknown (Reuters, 2021).

U.S. officials have reported that the Taliban are now in possession of the equipment paid with U.S. funds for the Afghan National Defense and Security Forces (ANDSF) such as ground vehicles, aircrafts, arms and ammunition. On 17th August 2021, the U.S. National Security Adviser Jake Sullivan declared that the U.S. does not have an obvious and complete picture of where every article of defense material has gone but he could confirm that a fair amount of U.S. materials and equipment has fallen in the hands of the Taliban (White House, 2021c). According to General Mark Milley on 18th August 2021, the U.S. government had unspecified abilities relevant to the U.S. equipment seized by the Taliban (Department of Defense, 2021b). In addition, fleeing personnel of ANDSF took some arms, aircrafts and military equipment to neighboring countries such as Uzbekistan, Tajikistan and Iran. Although the U.S. military equipment was rendered inoperable, being in the hands of the Taliban will reveal plenty of information on how the U.S. builds its weapons and how it uses them. The ultimate winner of two decades of war is Afghanistan is most likely the most important and eager partner of the Taliban, China. Expect the Chinese military to use this opportunity to create a new generation of tactics and weapons tailored to the U.S. vulnerabilities against the U.S. military while exporting to its client states (DefenseOne, 2020).

4. Conclusion

The United States concluded a 20-year war in Afghanistan with the U.S. force withdrawing its last remaining soldiers and ending airlift of more than 120.000 civilians; however, leaving thousands of others stranded (Financial Times, 2021). Furthermore, U.S. officials have reported that the Taliban are now in possession of the equipment paid with U.S. funds for the Afghan National Defense and Security Forces (ANDSF) such as ground vehicles, aircrafts, arms and ammunition. According to Watson Institute for International and Public Affairs, the costs of war in Afghanistan is greater than DoD's estimations at approximately $2.26 trillion compared to $837.3 billion. Furthermore, Department of Defense by did not publish a full public estimate of the amount of their personal property in Afghanistan. Much of the materials

and equipment now belong to the Taliban forces but the exact quantity remains unknown. More specifically, the DoD report has yet to come out in order to see the damaged done by the Taliban to the U.S. military budget.

In addition, fleeing personnel of ANDSF took some arms, aircrafts and military equipment to neighboring countries such as Uzbekistan, Tajikistan and Iran. Although the U.S. military equipment was rendered inoperable, being in the hands of the Taliban will reveal plenty of information on how the U.S. builds its weapons and how it uses them. The ultimate winner of two decades of war is Afghanistan is most likely the most important and eager partner of the Taliban, China. Expect the Chinese military to use this opportunity to create a new generation of tactics and weapons tailored to the U.S. vulnerabilities against the U.S. military while exporting to its client states. Whatever weaknesses the Chinese military will discover, will likely endanger the U.S. force in years to come.

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THE CHALLENGES OF GENERATIONAL CHANGE

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Abstract:
Generations are identified by looking for cohort groups of this length that share three criteria. In the Romanian army this field of research is an interdisciplinary one and includes aspects from sociology, psychology, anthropology and economics. Uncertainty and volatility have since become the key words in the security field. The recruitment approach, career opportunities and people management, among other things, need to be adjusted.
Key words: *generations, cohorts, change, challenges, Strauss–Howe, Generation X, Millennials.*

1. Introduction

The purpose of this paper is to initiate a field of research in human resource management. The reason for doing this is given by the changes in society, as well as in the Romanian army.

I will start in this approach beggining with the theoretical aspects, continuing with approaches from the western world and then with aspects specific to the Romanian society and the Romanian army.

2. The Strauss–Howe generational theory

The Strauss–Howe generational theory, also known as the Fourth Turning theory, describes a theorized recurring generation cycle in American history and global history. It was devised by William Strauss and Neil Howe. According to the theory, historical events are associated with recurring generational personas (archetypes). Each generational persona unleashes a new era (called a turning) lasting around 20–25 years, in which a new social, political, and economic climate exists. They are part of a larger cyclical saeculum (a long human life, which usually spans between 80 and 100 years, although some saecula have lasted longer). The theory states that a crisis recurs in history after every saeculum, which is followed by a recovery (high). During this recovery, institutions and communitarian values are strong. Ultimately, succeeding generational archetypes attack and weaken institutions in the name of autonomy and individualism, which eventually creates a tumultuous political environment that ripens conditions for another crisis.

Strauss and Howe define a social generation as the aggregate of all people born over a span of roughly twenty years or about the length of one phase of life: childhood, young adulthood, midlife, and old age. Generations are identified (from first birthyear to last) by looking for cohort groups of this length that share three criteria. First, members of a generation share what the authors call an age location in history: they encounter key historical events and social trends while occupying the same phase of life. In this view, members of a generation are shaped in lasting ways by the eras they encounter as children and young adults and they share certain common beliefs and behaviors. Aware of the experiences and traits that they share with their peers, members of a generation would also share a sense of common perceived membership in that generation.

Strauss and Howe describe a four-stage cycle of social eras which they call turnings. The turnings include: The High, The Awakening, The Unraveling and The Crisis.

High. According to Strauss and Howe, the First Turning is a High, which occurs after a Crisis. During The High, institutions are strong and individualism is weak. Society is confident about where it wants to go collectively, though those outside the majoritarian center often feel stifled by the conformity.

Awakening**.** According to the theory, the Second Turning is an Awakening. This is an era when institutions are attacked in the name of personal and spiritual autonomy. Just when society is reaching its high tide of public progress, people suddenly tire of social discipline and want to recapture a sense of self-awareness, spirituality and personal authenticity. Young activists look back at the previous High as an era of cultural and spiritual poverty.

Unraveling**.** According to Strauss and Howe, the Third Turning is an Unraveling. The mood of this era they say is in many ways the opposite of a High: institutions are weak and distrusted, while individualism is strong and flourishing. The authors say Highs come after Crises, when society wants to coalesce and build and avoid the death and destruction of the previous crisis. Unravelings come after Awakenings, when society wants to atomize and enjoy.

Crisis**.** According to the authors, the Fourth Turning is a Crisis. This is an era of destruction, often involving war or revolution, in which institutional life is destroyed and rebuilt in response to a perceived threat to the nation's survival. After the crisis, civic authority revives, cultural expression redirects towards community purpose, and people begin to locate themselves as members of a larger group. [3]

The authors describe each turning as lasting about 20–22 years. Four turnings make up a full cycle of about 80 to 90 years, which the authors term a saeculum, after the Latin word meaning both „a long human life" and „a natural century".

Each of the four turnings has a distinct mood that recurs every saeculum. Strauss and Howe describe these turnings as the seasons of history. At one extreme is the Awakening, which is analogous to summer, and at the other extreme is the Crisis, which is analogous to winter. The turnings in between are transitional seasons, the High and the Unraveling are similar to spring and autumn, respectively. Strauss and Howe have discussed 26 theorized turnings over 7 saecula in Anglo-American history, from the year 1435 through today, as you see in figure 1.

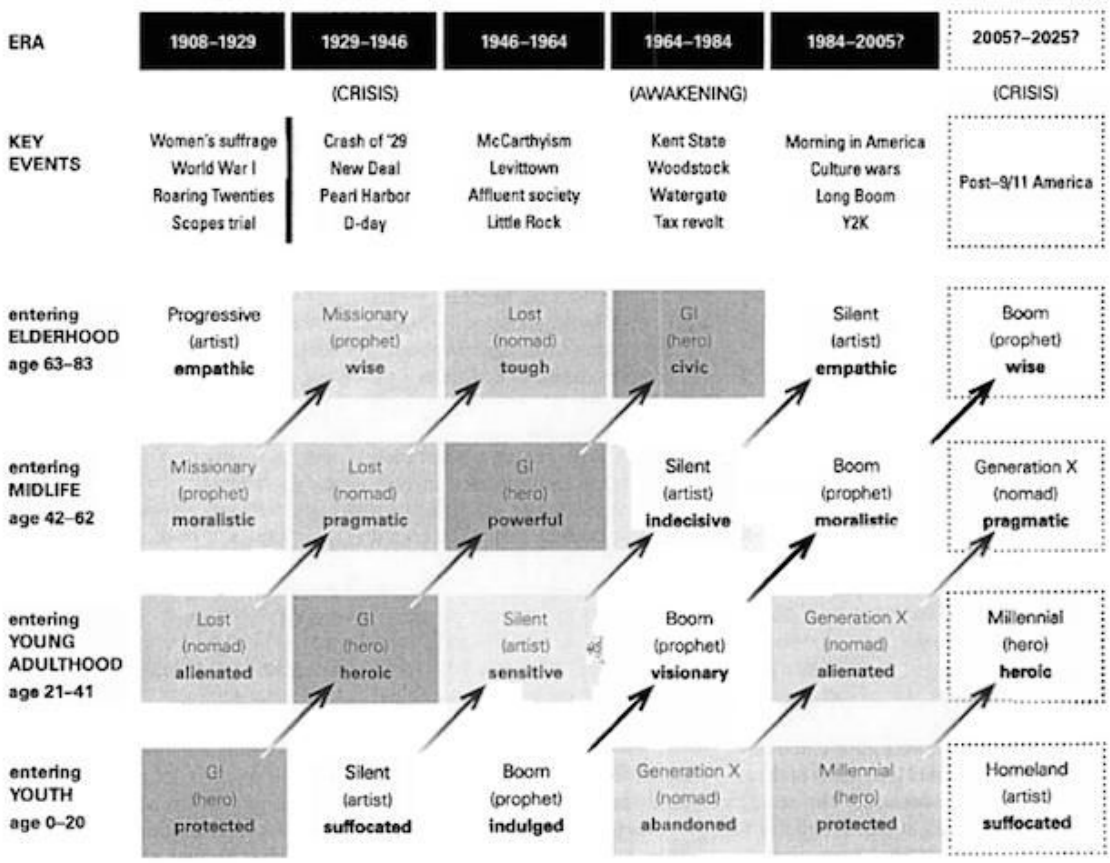

Fig.1

During Crises, great peril provokes a societal consensus, an ethic of personal sacrifice, and strong institutional order. During Awakenings, an ethic of individualism emerges, and the institutional order is attacked by new social ideals and spiritual agendas. According to the authors, about every eighty to ninety years-the length of a long human life-a national Crisis occurs in American society. Roughly halfway to the next Crisis, a cultural Awakening occurs.

The authors say two different types of eras and two formative age locations associated with them (childhood and young adulthood) produce four generational archetypes that repeat sequentially, in rhythm with the cycle of Crises and Awakenings. They refer to these four archetypes as Idealist, Reactive, Civic, and Adaptive. In The Fourth Turning (1997) they change this terminology to Prophet, Nomad, Hero, and Artist. They say the generations in each archetype not only share a similar age-location in history, they also share some basic attitudes towards family, risk, culture and values, and civic engagement. In essence, generations shaped by similar early-life experiences develop similar collective personas and follow similar life-trajectories. [4]

To date, Strauss and Howe have described 25 generations in Anglo-American history, each with a corresponding archetype. In figure 2, you can see the illustration of this idea.

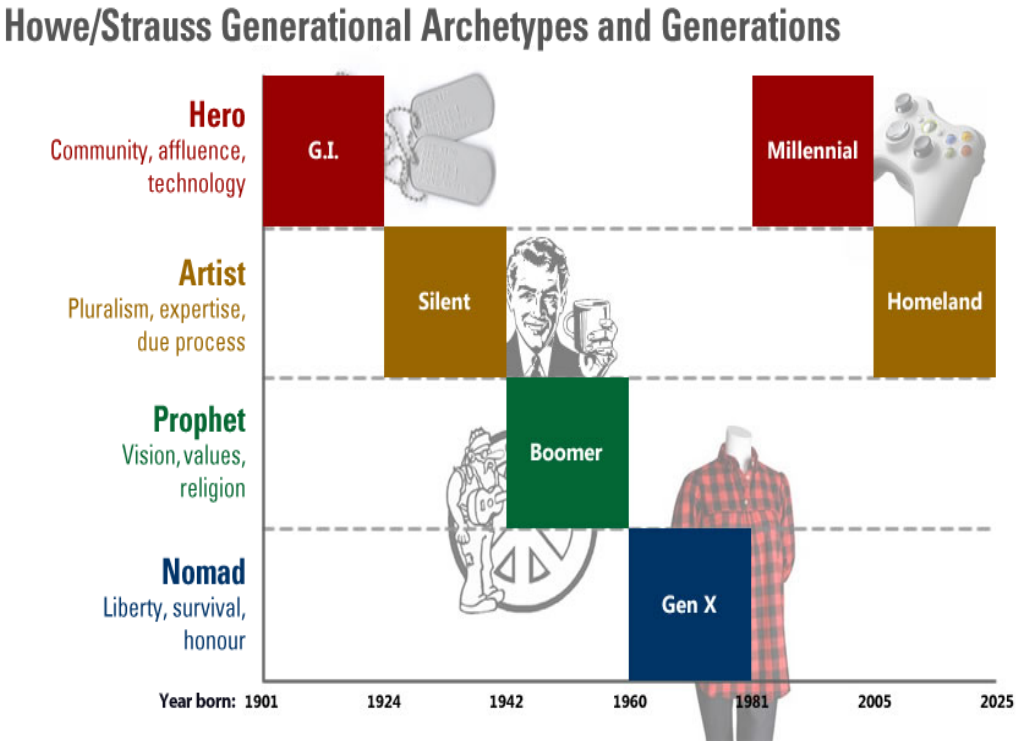

Fig.2

Prophet (Idealist) generations enter childhood during a High, a time of rejuvenated community life and consensus around a new societal order. Prophets grow up as the increasingly indulged children of this post-Crisis era, come of age as self-absorbed young crusaders of an Awakening, focus on morals and principles in midlife, and emerge as elders guiding another Crisis. Examples: Baby Boomers.

Nomad (Reactive) generations enter childhood during an Awakening, a time of social ideals and spiritual agendas, when young adults are passionately attacking the established institutional order. Nomads grow up as under-protected children during this Awakening, come of age as alienated, post-Awakening young adults, become pragmatic midlife leaders during a Crisis, and age into resilient post-Crisis elders. Examples: Generation X

Hero (Civic) generations enter childhood during an Unraveling, a time of individual pragmatism, self-reliance, and laissez-faire. Heroes grow up as increasingly protected post-Awakening children, come of age as team-oriented young optimists during a Crisis, emerge as energetic, overly-confident midlifers, and age into politically powerful elders attacked by another Awakening. Examples: G.I. Generation, Millennials

Artist (Adaptive) generations enter childhood during a Crisis, a time when great dangers cut down social and political complexity in favor of public consensus, aggressive institutions, and an ethic of personal sacrifice. Artists grow up overprotected by adults preoccupied with the Crisis, come of age as the socialized and conformist young adults of a post-Crisis world, break out as process-oriented midlife leaders during an Awakening, and age into thoughtful post-Awakening elders. Examples: Silent Generation, Zoomer Generation.

Summarizing these notions, the following can be stated:

- An average life is 80 years, and consists of four periods of ~20–22 years
  - Childhood → Young adult → Midlife → Elderhood
- A generation is an aggregate of people born every ~20–22 years
  - Baby Boomers → Gen X → Millennials → Homelanders
- Each generation experiences four turnings every ~80–90 years
  - High → Awakening → Unraveling → Crisis
- A generation is considered dominant or recessive according to the turning experienced as young adults. But as a youth generation comes of age and defines its collective persona an opposing generational archetype is in its midlife peak of power.
  - Dominant: independent behavior and attitudes in defining an era;
  - Recessive: dependent role in defining an era.
- Dominant Generations
  - Prophet: Awakening as young adults. Institutions are attacked in the name of personal and spiritual autonomy;
  - Hero: Crisis as young adults. Institutional life is destroyed and rebuilt in response to a perceived threat to the nation's survival.
- Recessive Generations
  - Nomad: Unraveling as young adults. Institutions are weak and distrusted, individualism is strong and flourishing;
  - Artist: High, when they become young adults. Institutions are strong and individualism is weak.

3. Generational aspects in the U.S. military

There are currently four different generations of officers within the Army and these generations arrange themselves across the Army's hierarchical rank structure because of „time-in-grade" requirements for promotions.

Baby Boomers: current 3 and 4 Star Generals (tail end of the generation). The Baby Boomer officers were born from 1943 to 1960. These officers were company grade officers during the Vietnam Conflict, field grade officers during the Cold War and Desert Storm, and generals during Operation Enduring Freedom and Operation Iraqi Freedom. As children, Boomers received the windfall of economic growth in America. While the radio and television brought the horrors of the Korean Conflict to their living room, their parents shielded them from the reality of this war. As Boomers became teenagers, the nation emerged into an age of optimism. They watched as their parents placed men on the moon and witnessed women and African Americans fight for equality. Early-stage Boomer lieutenants left to fight a war in Vietnam and came back disgruntled and unappreciated. They returned to a nation that cursed their service and devalued their participation in an unpopular war. As field grades in the post-Vietnam era, they witnessed their Army bottom out on readiness and give way to the arrival of zero defects, careerism, and new heights of micromanagement into the military. However, with the election of President Reagan, this same army rapidly grew and modernized. Vowing to learn from the failures of Vietnam, early Boomer colonels and brigadier generals helped write Air Land Battle Doctrine. At the start of Operation Enduring Freedom, senior Boomer officers had the ability to see the fight unfold and talk to the tactical officer on the ground. Often their

tendency to micromanage proved too great, and junior Generation X officers rebuked their tinkering at the tactical level.

Generation X: LTC-2 Star General. Generation X officers were born between 1961 and 1980. While some of these officers served in Operation Desert Storm, most were company grade officers during Bosnia. As children, Generation X felt the impact of a divided Boomer household. Due to an increase in divorce rates and dual working parents, they were generally independent and self-supporting early in life, also known as latchkey kids. As teenagers, they experienced social failure on multiple fronts between Presidential resignation, economic crisis, and the Challenger Explosion. When Generation X officers entered the Army, a majority of them did not share the same work ethic as their Boomer field grade officers. These junior officers often failed to adapt to the 24/7 work attitude of their leaders, as many felt the Army was simply a way to make a living and not a lifestyle. In the mid-1990's, their perspective was reinforced when a downsizing Army laid off many Boomer and Generation X officers. As the Army entered direct combat engagements in Bosnia, Afghanistan, and Iraq, their experience and commitment to the organization grew. Their independent personality thrived as they controlled large sections of the battlefield and even served as interim mayors of towns. However, as Generation X officers occupy the senior ranks, they struggle with how to connect to the Millennial junior field grade and senior company grade officers that work for them.

Millennial: CPT- LTC. Millennial officers were born between 1981 and 1993. These officers were lieutenants and captains in Iraq and Afghanistan and sustained a bulk of their leadership development during these conflicts. As children, Millennials experienced a resurgent focus on family values and a rebuking of the divorce culture their parents endured. A key moment of their cultural development was the 2001 attacks on the World Trade Center Towers, as many were teenagers during this attack. They watched the terror live on television and then witnessed America and the World band together to take action. While in high school and college, Millennials experienced the rapid growth of the internet, instant reporting, and the birth of social media. When they entered the military, these officers found an Army that was fighting two protracted wars in Iraq and Afghanistan. As currently serving company commanders and junior field grades, Millennials have a direct impact on the newest generation of officers.

iGeneration: Cadets-1LT. A typical iGeneration officer was born after 1993 and started to arrive at U.S. Army units in 2015. When these officers were born, home-based internet became mainstream and connected people through email, chat rooms, and websites. This invention influenced the way they learned, processed information, and even interacted. As an adolescent, they watched the 9/11 attacks unfold live on television and struggled to understand the fear and uncertainty that gripped the nation in the aftermath. As teenagers, Facebook, Twitter, and other social media sites were mainstay hangouts among their friends. Due to witnessing a terror attack, financial ruin, and world power plays, they are naturally guarded and more pessimistic about America and the future. With the invention of smartphones, information was instantly available and they had the ability to answer any question, interact online with any number of their social circles, and enjoy constant streaming access to world news and current events. With this capability also emerged an environment where companies were marketing to them around the clock. Technology is second hand to these officers and through social networking or data mining, they possess an innate ability to find or crowdsource information.

Leaders should understand that these generational differences impact those around them. Over the last seven generations of officers, these differences often perpetuated a cycle of

misunderstanding. Recognizing how these misunderstandings can occur, officers should be aware of personality traits and how leaders and subordinates will interpret these traits. Leaders should also recognize that a new generation of lieutenants is arriving in the Army. These officers are technology-based and have a vast social network that can span various nations and cultures, granting them a unique perspective into the strategic environment. They possess an unparalleled ability to virtually mine the internet but lack the critical analysis to understand it. With proper self-awareness within the officer corps, leaders can effectively develop programs for this emerging generation of lieutenants. Senior officers should develop more programs that develop the critical thinking and analytical abilities of these officers while leveraging their strength and understanding of technology and social networking. By better understanding the Army's generational divides, officers can ensure that the Army remains on the leading edge of technology, leadership and war-fighting capability. [2]

4. The generations in Romanian society

In Romania there is a gap between the western generations and the moment of their appearance in our country. This is caused by the time and economic-political differences specific to our area.

The baby boomers. Is the generation of those born between 1945 and 1960's. They are now the oldest generation in the workforce. This generation did not have access to social networks until they managed to become parents or even grandparents and build their own careers. There is still a reluctance of the Boomers generation to fully embrace online platforms just like the younger generations. This is especially true when it comes to mixing their personal and professional lives. 82% of Boomers who use the internet have at least one account on a social network. Their main platform is Facebook, where they perfectly share their work and personal life.

They use social media for communication and research and have stopped at this point. In the case of Baby Boomers, they are the least likely to access social media from a smartphone or make a purchase through an application.

Generation X. Years of birth: 1966-1976. Maturity: 1988-1994. Generation X in Romania appeared later than in the West, starting in the late 1960's, and lasted until the early eighties. The upper limit of the interval indicates the last promotions of students who integrated into socialist mass organizations (at least the Homeland Falcons, in the case of preschoolers, followed by the National Council of Pioneers of Romania and the Communist Youth Union - finally entered the born earlier than 1976). It is said that they are the lost generation, exposed to divorces and extended kindergartens, children who did not have very healthy relationships with their parents. The generation with the lowest turnout became the most passive in relation to current events. It is characterized by skepticism, increased selfishness and questionable tastes (caused by mass passivity). Relationships between their parents and their relationships have greatly influenced their own families.

Generation X has most of the previous intellectuals and this has led to the formation of families with more responsibility, with attention to the relationship with the spouse, so that children do not repeat their own painful experiences, but also to better financial planning.

In Romania, the generation is better known as the „decree" of children born since the summer of 1967, when the fertility rate in Romania exploded from 1.9 to 3.7 children/ woman,

following the policy of banning abortions. This generation filled kindergartens, general schools a few years later and then fought for high school and college places. There are young people from the Revolution and those who grew up in communism, transition and worry about capitalism. This generation has faced the biggest changes in mentality and habits. The American version also applies: being many, it is difficult to take care of everyone, always in competition, always in resource planning.

Generation Y, Echo Boomers or Millennials. Years of birth: 1977-1995. Maturity: 1998-2006. They are sophisticated, technology-oriented, immune to most marketing and sales techniques because they were exposed to them from an early age and evolved with them, of the most educated generations, with increased self-confidence, goal-oriented, creative. They grew up under the care of their parents, in social groups accessible in number and had hobbies.

They are more segmented in terms of audience by TV, radio or the Internet. They are not very loyal to brands and the Internet has made them very flexible in terms of fashion, the way they communicate and the choices they make. Few things surprise them and they quickly adapt to the changes around them, whether they are mental or contextual. They are a challenge for marketers and the most desired segment of the population. They are more united as a generation and more willing to make their voices heard (see elections, protests, etc.). The main things to highlight about these three generations in Romania are expressed in table 1.

	Baby boomers	Generation X	Generation Y
Values	personal development, teamwork, personal gratification	self-confidence, autonomy, independence, entrepreneurship, diversity	honesty, diversity, integrity, responsibility
Caracteristics	individualistic, competitive, materialistic, focused on relationships, respect for superior positions	comfortable with change, cynical, pragmatic, flexible, multifunctional, creative, resourceful, autonomous	sociable, confident, optimistic, cooperative, educated, technological, multifunctional, practical
Workplace preferences	focused at work, living at work, safety, strength, career progress	focused on career, work-life balance, informal approach	flexible job, career focused, mentoring

Table 1

Generation Z. Years of birth: 1995-2012. Maturity: 2013-2020. Not much is known about this generation yet, but for sure they are very diverse. The high level of technology to which they are exposed will generate more and more personalized education and more interesting opportunities. Generation Z teenagers grow up in a diverse, highly technological environment and will be much more flexible even than Generation Y, being the first to be born in a digital environment and grew up online. They do not believe in ideals and reject the promises of a perfect life, but prefer realistic communication that comes to their aid. Look for

personalization and independence, unlike Generation Y which sought impeccable mentoring and services. The brands that want to address them must go from digital adaptation to digital native and are the ones who will prefer an indie brand to a traditional/experienced brand.

5. Romanian army generations

From the beginning it must be specified that in the Romanian army this field of research is an interdisciplinary one and includes aspects from sociology, psychology, anthropology and economics.

At this moment the personnel structure by categories, sex and generational cohorts is the one included in figure 3.

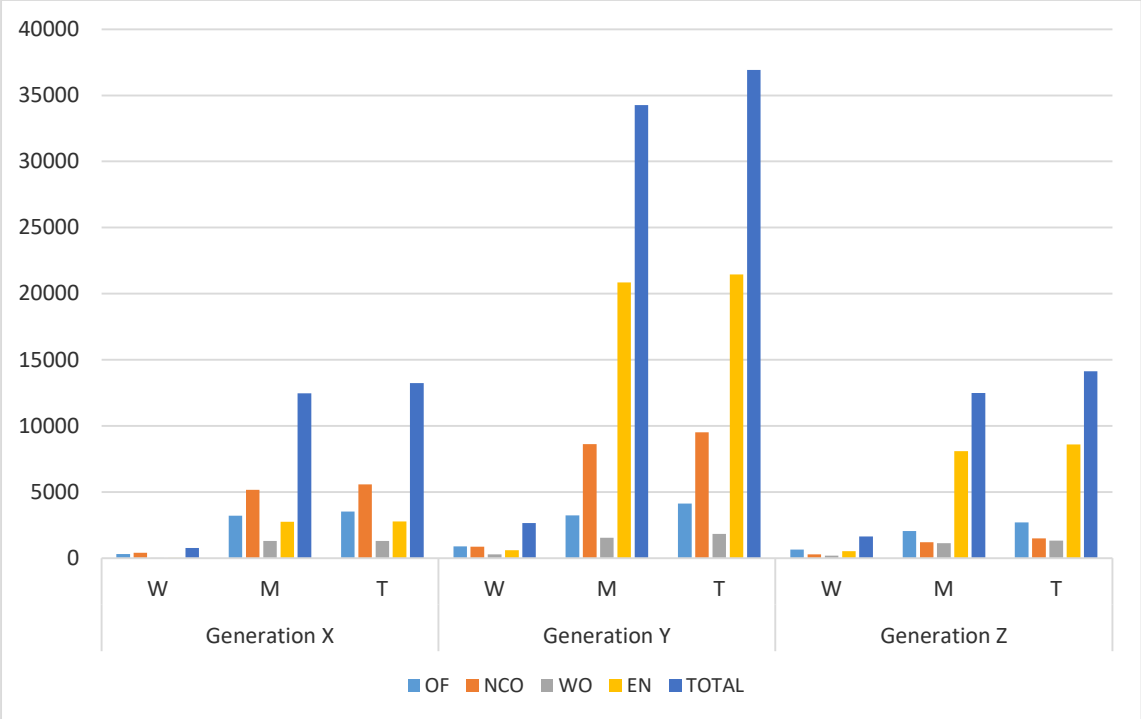

Fig.3

It is observed that generation Y represents the most numerous component (57,5%), and generation Z (21,9%) begins to equal generation X (20.6%). Also the enlisted from generations X are the fewest, which is caused by the late introduction of this category.

At the same time, although those from generation X were outnumbered by the others, they represent the category with the most important functions, the one that can create a certain inertia in adapting the system to the new challenges.

The recruitment approach, career opportunities and people management, among other things, need to be adjusted. Here are some ideas:

- We will need to modernize our talent management systems – creating an Office of People Analytics, resuming exit surveys, and launching LinkedIn-style pilot programs to help match service members with their next assignments;
- We will need to focus more on family retention for military personnel – promoting that critical objective by helping them balance their commitments to the force and their families by expanding maternity and paternity leave, extending childcare hours on bases, and giving families the possibility of some geographic flexibility in return for additional service commitments;
- We will need to adapt communication approaches to the opportunities offered by technology and the resources used by the millennials and generation Z;
- We will need a more demand-driven talent management system rather than supply-driven personnel management; this requires more flexibility and a permanent scanning of the possible needs;
- We will need to give more geographical stability in exchange for additional service commitments;
- We will need to create the possibility for granting study credits in order to allow our service people to steer additional education and training more independently;
- We will need to strengthen the organizational culture of our units;
- We will need to strengthen the physical and mental resilience of our service people. [5]
- The application of modern educational methods, such as reversed teaching [6], is curcial for motivating the young generation to learn.

6. Conclusion

In order to be effective and to provide meaningful change, any proposed mechanism for revealing and recording junior officer talents would have to have a series of specific outputs leading to desired outcomes. First, in an effort to better understand generational and cultural perceptions of subordinate leaders, the Army ought to provide educational opportunities to officers at the battalion and brigade levels on leadership theory and transformational leadership practices. Second, the Army should implement flexible developmental programs at the battalion and brigade levels, with specific identified outputs, that require senior officers to counsel, coach, and professionally develop junior officers. Third and simultaneous to the implementation of flexible development programs, the Army should require each responsible senior officer to compile and report specific talent data gleaned throughout the development process to the Army's HRC. [7]

The young men and women who recently joined the armed forces or who are coming into the military today all share two common characteristics: (1) they know that they are going to be sent to a foreign conflict and (2) they are part of the so-called generation Z, the boys and girls born between 1990 and 2000.

Unlike their predecessors, the members of this generational cohort have not consciously been confronted in their lives with the Cold War: a period of latent threat, but mainly a stable and predictable security situation. Uncertainty and volatility have since become the key words in the security field. Hence the quasi-certainty that almost every one of the youngest generation of soldiers will participate in foreign missions.

Our armed forces were and continue to stay instruments of conflict prevention in peacetime and controlled violence in war. Their culture must reflect the unique demands these places on their members. Few businesses call on their employees to give up their lives if required to get the job done. Partly as a result, military service is often viewed as a calling, not simply as a job or even a career. Only a select few can be expected to answer that call for a career or a lifetime. But they need to be the right few. And we need to do everything to attract those people, to retain them and to provide them the right level of well-being. [8]

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HOW ENERGY POLICIES IMPACT DEFENSE RESOURCES MANAGEMENT

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Abstract
The energy field is one of the factors most subject to technological evolution and rapid transformations in the current global spectrum. Energy policies will therefore also impact the field of defense resources. The aim of this paper is to pursue two types of energy policies and their impact on security and defense at European level. A first challenge is represented by green energy and its development. Green energy is a paradigm shift for production factors and will therefore influence at macroeconomic level, defense industries and the way these industries manage new technologies that require new types of energy in order to function. A second challenge that this paper wants to study is related to how the recent energy crisis at European level, which is due to a series of policies and decisions like implementing Nord Stream, may have an impact on defense resources and their allocation, especially for the states of the East Flank to NATO. With such challenges in mind, we aim to study the impact that all of these factors have on defense and security policies at a transatlantic level, including USA and European States.

Key words: nergy policies; defense expenditures; defense industries; security

1. Introduction

The global context of the past decade has brought a massive change in security and defense risk and threats. If cyber threats have increased in a technologically dependent environment, starting with 2020, the Covid-19 pandemic has demonstrated the shortfalls in security that healthcare challenges can bring to the table. The energy field with its ongoing evolution is starting to represent a new challenge for organizations like NATO and the European Union, as well as for other emerging countries.

Two have been the factors that have generated attention on the energy field and how its evolution can impact many economic sectors, as well as defense outputs.

The first factor is that of green energy, which has meant a change in paradigm on how countries like the US, Germany, France, etc., understand and manage their energy resources. Policies that would include moving from coal and nuclear energy, implementing new and innovative energetic solutions have meant an evolution of energetic management that has influenced the political, economic and defense fields **[1].**

The second factor represents the energy price increase of 2021 that followed the completion of Nord-Stream 2. The fall of 2021 has brought a price crisis all over the European Union. Energy policies mentioned above as well as the development of Nord Stream by Russia represents a change in terms of energetic solutions for EU member states. On short term, this

shift in energy distributers has generated a crises with effects that cannot be fully understood at that moment.

The aim of this paper is to analyze how these energetic factors influence defense policies and planning as newer risks and threats emerge under the changing environment. We can therefore speak about a new field that of energetic security and how it evolves under current global challenges.

2. Green Energy and its impact on Defense

Following the Trump administration, the Biden administration has once again positioned USA as a global fighter against climate change. With many actions taking to mitigate this threat one has to wonder how it will affect the US Department of Defense, which is considered the largest institutional consumer of energy in the world. If we were to consider the four life cycles of major equipment from R&D, Acquisition, Operations and Support and Disposal, we would see that when it comes to operating equipment, there many activities that make energy essential, from fueling ships and aircraft, to powering military bases. With a global changing environment, with resilience as a key objective, the US DoD has to also take climate change into consideration when planning its future long term objectives.

The US military's dependency on fuel has been visible ever since the wars in Afghanistan and Iraq started **[6]**. Using clean energy technologies could enable US troops to reduce that need for fuel, extend readiness in terms of range and duration while helping mitigate risks. Solar backpacks and blankets are already used by the army and marine core in order to charge ther communication equipment. The army also wants to take things one step further and electrify its vehicles and weapons systems. In its own attempt to mitigate its dependency on fuel, the US Navy has started to deploy hybrid drive ships that gain with this technology extended autonomy and time at sea.

A proposal for developing a DoD Office for Energy Innovation has been made with the intent of coordinating R&D policies for green energy and implementing it all across the US armed forces. The goal is to ultimately develop electrically powered tactical vehicles, remotely piloted aircraft as well as unmanned underwater and surface watercraft. Subsequently these steps will be then transferred and implemented at NATO level for member states that are trying to replace their fossil fuel dependent equipment as well.

The same initiatives exist at the level of the European Union, where the concept of Military Green has been implemented under EU directives. Basically the concept implies that all EU military operations be conducted under Environmental Protection. The European Defense Agency has overseen this process in an attempt to developed more effective capabilities for the future when it comes to energy consumption. EDA's desires include better water and waste management, energy efficiency and more econ-friendly materials and munition. In order for this process to be developed, EDA has tried to increase awareness among stakeholders on climate, ecology and environmental issues, as well as present steps forward for strategies regarding green policies. As each mission is driven by a course of action, by a protocol, using material and energy will also be monitored in every step of developing different missions. Like in the US example, the lifecycle cost of introducing new equipment will also be managed with green energy in mind, by trying to analyze what environmental footprint each phase of the LCC draws.

One element that should be mentioned is that of nuclear energy. While both US and the EU seek to develop green energy, the United States still follows its path on introducing new technologies when it comes to developing nuclear energy. The use of nuclear energy in Europe however is fragmented, with many countries either having, not having or planning to stop the use of nuclear energy on their territories.

In **Figure 1** we can observe the proportion of EU member states that operate nuclear energy, those that don't, as well as neighbor countries to the EU that either use or not this resources. It should be mentioned that while Germany is in the group of states that those have nuclear energy available, its intentions are to give up on this type of power as well as persuade other EU member states to do the same.

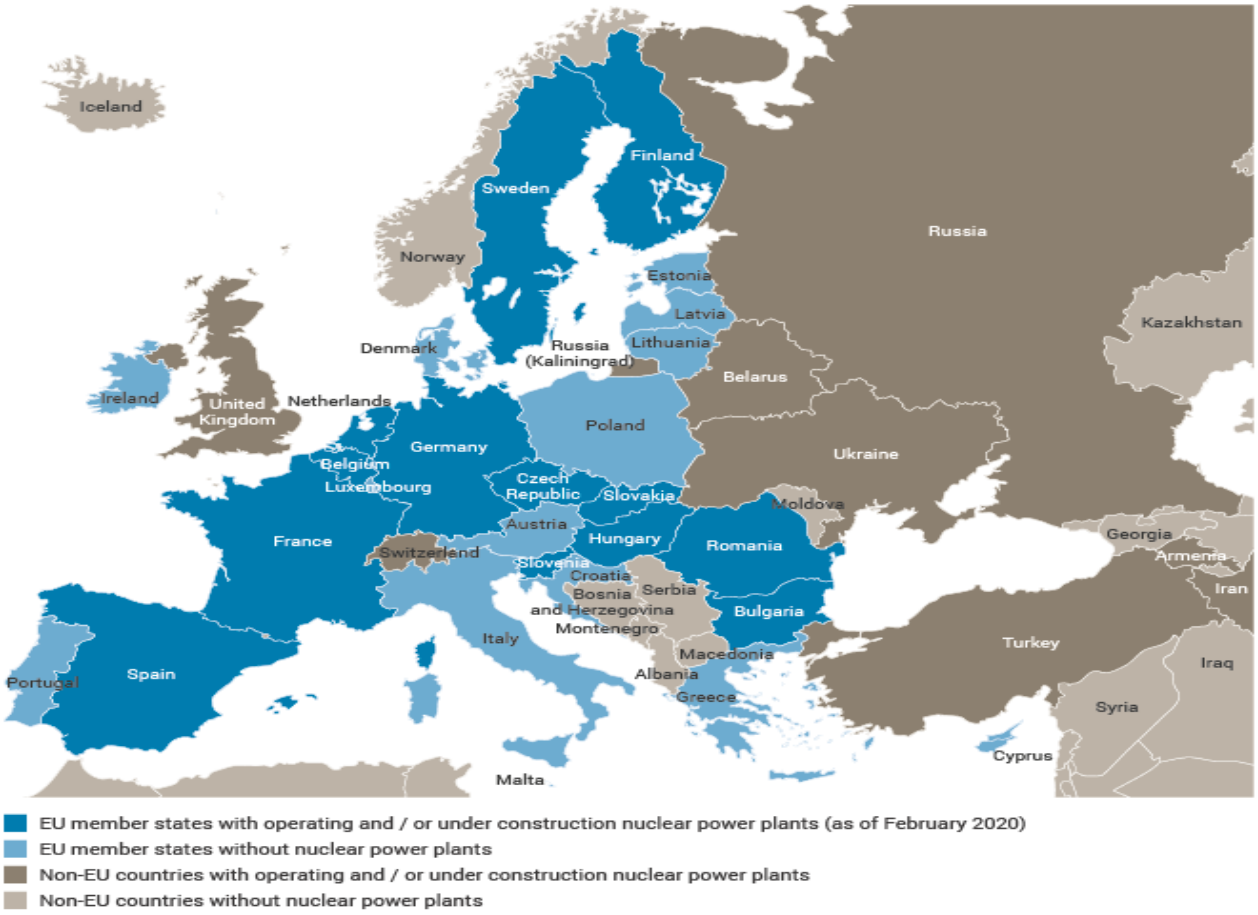

Fig. 1 Nuclear Power Plants in the European Union[1]

The interesting aspect here is the US policy of creating partnerships with Eastern Flank member states like Romania, Poland, Bulgaria and Ukraine (not a member of EU or NATO) in developing innovative nuclear reactors. As a response to the EU's increased dependency on Russian gas through North-Stream 2, this becomes a security strategy as member states of the Eastern Flank are most vulnerable to Russian threats and therefore need backup energetic

[1] https://world-nuclear.org/information-library/country-profiles/others/european-union.aspx

solutions. How the EU has become dependent on Russian gas, the issues and challenges it encounters and what are some alternatives to mitigate these scenarios will be addressed in the following chapter.

3. Energy challenges inside the EU and their effects on defense and security policies

Energy in Europe must be discussed in the context of the importance of dependency on Russian energy **[3]**. For the last two decades Russia's intent has been the development of Nord Stream 1 and 2. Following the Covid-19 pandemic, Europe finds itself in a situation where gas prices have reached unprecedented highs with up to 600% increases in some cases compared to the previous 12 months.

There are many reasons for why these scenario has taken place **[2]**. The reduction of traditional coal energy supplies as well nuclear energy because of the green energy policies presented in the previous chapter as well as Russia's actions in terms of gas distribution leave Europe in a situation similar to that of the USA gas crisis in the 70's. To better understand Russia's vision for gas distribution in the future we can have an outlook on Nord Stream as it is presented in **Figure 2**:

Fig. 2 Nord Stream[2]

One of the major reasons for which gas prices have increased at European level is due to the fact that Gazprom has stopped supplying its European clients, energy through its export pipelines but has chosen instead to sell gas from its stock reserves from Germany and Austria.

[2] Samuel Bailey (sam.bailus@gmail.com) - Own work

This event needs to be put in connection with the Covid-19 pandemic that stopped European economies last year, economies that are now restarting and in direct proportion consumption increases as well. Because of this reason there is a high demand for energy, a demand that suppliers were not able to keep track with, which has also triggered many European countries to use reserve stocks of energy instead.

All of these events show the risk of dependency on Russian gas. There is also a fear that Gazprom doesn't operate on itself, but rather as a political partner to the Russian government it takes its decision in the interest of higher Russian politics. These was the case with the Republic of Moldova, that after electing a European oriented president found itself with high increased gas prices from Gazprom. Moldova which is a country of approximately 2.6 million citizens, situated between Romania and Ukraine is 100% dependent on Russian gas transported through pipelines from Ukraine and from the pro-Russian province of Transnistria.

As the contract with Gazprom was coming to a close, monthly renewals of the contract happened at an overwhelming increased prices that put the Rep of Moldova, one of Europe's poorest countries in a very difficult situation. To answer this risk and threat, for the first time from declaring independence from 1991, Moldova declared a state of emergency and bought gas from Poland in order to reduce the pressure that Gazprom was putting on the country.

Through the energy and gas crisis happening in Europe **[4**], Russia wants to demonstrate to its European partners how important Nord Stream 2 could be, as gas could be pumped twice as much through the north of the continent by using the pipeline built below the Baltic Sea. Following the change in USA, from the Trump to the Biden administration, Germany has received a green light to go forward with Russia with this project. Given the Republic of Moldova example, as well as the shortage of gas from 2021, experts question the increased dependency on Russian gas that Nord Stream 2 will not solve but rather prolong. In terms of security and defense there is also a issue of weaponing the pipeline from the Russian side, especially in terms of different technology used for intelligence and data collection. All of the challenges mentioned above remain crucial on long term if Europe choses to obtain autonomous security and become a major player on a global scale in terms of politics, economy and defense.

4. Conclusions

As it has been addressed during this paper, the EU has increased its policies and measures of moving on from fossil fuel, to green energy, which has become the main source in the European Union starting with 2020. However transition is slow and uneven, as different member states have different views on what the impact of this shift would mean for their economies. The recent gas crises have also triggered member states to try and maintain a status quo in their energetic systems in order to not be caught off guard by different scenarios, like those that Gazprom could undertake.

In 2021m 35% of total electrical energy in the EU is still provided through gas and coal means, gas being 5% of that percentage. The energetic mix remains very different from state tot state, because of economic, political and even cultural reasons. If countries from Scandinavia use fossil fuel marginally, France uses nuclear energy, while countries like Holland, Germany, Romania and Poland still use more than 60% of their energy from gas and coal resources **[5]**. The tendency to reduce coal due to pollution is clear, but the path to green energy is not straight forward, as some countries are willing to take an extra step and first replace their coal industry

with a gas one. Such many member states use gas as a transition energetic solution before moving to windmills, solar panels and other newer solutions.

During the Glasgow Climate Change Conference, the EU has assumed a leading role in developing modern, innovative and green energy objectives. The Glasgow Confernce established that developed countries should contribute to a 100 billion USD fund that would finance climate change. UE has also taken a step following the summit to increase it pollution norms, thus all energetic suppliers are to reduce their emissions in order to be accepted on the European Market.

All of these measures must be taken into consideration in a larger pictures, as they tend to influence the political field, the economic field and the defense field as well. While Germany is pushing forward for greener energy, France is relocating part of its GDP in order to build more nuclear factories. USA is bringing innovative nuclear technology in the Eastern Flank.

It is for this reason that we can conclude that energetic security is far from reached at European level. As long as different states have different agendas, cohesion in decision making is still a long term plan when it comes to the energy field, and recent events, like developing Nord Stream, pushing for green energy in countries that have gaps in securing their internal consumption will only create a difference in opinions on the matter, instead of delivering a unitary positive response.

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INFORMATION OVERLOAD AND ITS IMPACT ON ORGANIZATIONS

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Abstract:
Information overload is considered as phenomena to which we are exposed to too much information that is of no use. Such exposure to too much information significantly undermines the process of undertaking effective decision making in an organization. Additionally, it subsequently undermines the quality of decision making in any organization, including military organization. This paper critically evaluates the concept of information overload in an organization. Moreover, the analysis will involve the various causes of information overload, the symptoms of information overload, the impacts of information overload and the various strategies that can be deployed in addressing the issues associated with information overload. Additionally, from the analysis recommendations to reduce information overload include having a high level of management control over decision making and employing technology based decision making such as through the use of data mining.

Key words: information, overload, implications, decision making

1. Introduction

Information overload is a subject of immense debate especially nowadays. Can too much information overload a system and cause adverse judgmental decision making? What defence mechanisms do organization have to implement against this abundant flow of information? How much information is too much and how much is just enough? Can an organization function "off the grid" in this interconnected, interrelated and fast running world and still be competitive? The scholars and practitioners are working on finding the right balance or right practical approaches to maintain organization supremacies in this new context. What is commonly agreed is that an organization requires to capture, organize, and disseminate the critical information in a timely and succinct manner to those consumers who needs it, in order to efficiently solve the encounter problems, or to solve the tasks ahead.

Therefore the information is vital for all organizations functionality. However, the nowadays proliferation in the quantity of electronically available information is overwhelming people and network systems, and is making it very difficult for users to find necessary information in the time they have available. This can reduce the overall performance, can hinder learning and innovation, and affect decision making and cost organisations large amounts of resources.

Consequently, in the attempt to be competitive and profitable all organizations needs to be conscious about the possibility of incapacitating the internal decision making processes, or even worse, the potential of endangering its overall roles and functions by information overload, and to methodically cultivate the required organizational "know how" to properly mitigate the associated risks.

2. Understanding information overload

Information overload (also known as "infobesity", "infoxication", information anxiety, and information explosion) is the difficulty in understanding an issue and effectively making decisions when one has too much information about that issue, and is generally associated with the excessive quantity of daily information.

Individuals typically describe information overload as the situation of receiving too much information. Organizational scholars define overload as a state induced when the amount of input to a system exceeds its processing capacity or when information processing capabilities and the information loads encountered are mismatched.

What is not often highlighted is that most of the time perception plays a key role in overload as in this definition: overload is the "perceived inability to maintain a one to one relationship between input and output within a realizable future with an existing repertoire of practices and desires". In order to maintain the overall functionality of an organization, managers needs to be proactive, by institutionalizing proper counteract mechanism in order to neutralize or minimize the information overload impact.

Managers needs to monitor the organization overall functionality, and to be able to apply corrective measures before a system (individual or organization) is no longer able to efficiently process information and becomes overloaded. Most likely before any system will be overload with information some "*symptoms*" will be manifested. Identifying what might be the "*symptoms"* and implementation of a properly calibrated warning system is of paramount importance and it's a managerial responsibility at all levels.

The human brain is designed to process and retain information in very particular ways, and that doesn't necessarily change or speed-up in the face of changing technology. Many of us are finding that despite how much knowledge and information we have access to in our modern times, it's actually harder than ever before to retain it. That makes us slower when it comes to decision making, and it can be a big detriment in the long run.

It costs nothing in most cases to access a range of information, and also for people to forward that information on to others. Therefore, in this new technology focus era, where access to information has exponentially increased for the entire human race, it is harder and harder to make a difference between what information is really needed for achieving a desired end state, or for daily task accomplishment, and what is the "noise" that is overcharging the brain, consuming time and derailing you.

3. Information overload causes

There are, of course, nearly as many causes of information overload as there are bits of information available to us. However, the main cause of information overload is the fact that huge volumes of new information being constantly created, on a daily bases, by literary everyone. As long everyone has access to technology and social media, everyone can produce information. That is further creating the nowadays information chaos, generated the existence of various sources of information, validated or not, as well as by the exponential increase in channels to receive information. Information overload may also be caused as a result of the pressure to create and compete in information provision – leading to a quantity over quality

effect in news industry which will lead to high volumes of conflicting, contradictory and plain old inaccurate information. All that will generate a high volume of conflicting and contradicting information, which is generating information overload.

Also, the maximizing volume of data can lead to difficulty in handling this data. The increase in the variety of information from different sources can acquire information to be insignificant and irrelevant. Overload can also develop from a lack of time to digest and comprehend the available information. In a business setup, people with access to computers internet and email and other sources can attribute some other causes of information overload such as ease of creation in computers, duplication, and transmission of data across the Internet which increases the available channels of incoming information.

All this together with the lack of a method for comparing and processing different kinds of information contribute to the problem of information overload. Information overload seems definitely connected with the amount, nature of skills and knowledge which are possessed by processing quality and speed and therefore they impact information overload. Apart from the work factors, some studies show that the individual and his or her qualification, attitude, and experience are another significant factor. While earlier studies simply state that a person's capability to process data is limited, more recent studies include particular limiting factors such as lack of clear structure in groups of information and poor clues as to the relationships between those groups.

The cause of information overload is endless due to the need for information in the decision making business, but generally speaking the causes can be grouped in the following categories, as per figure below.

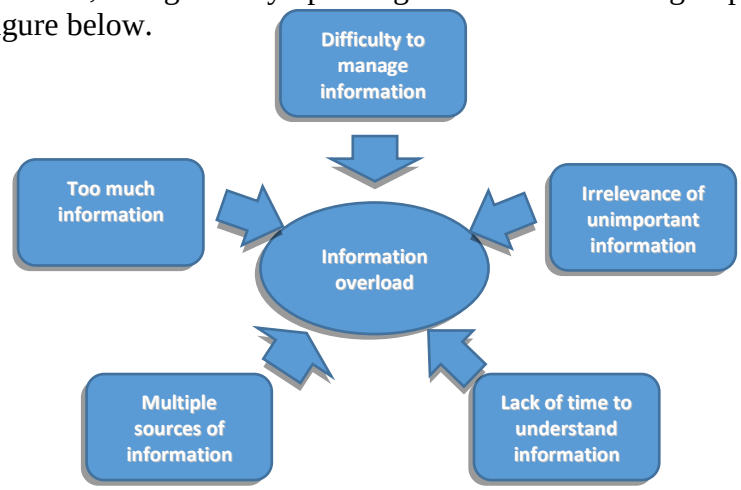

Figure 1. Factors causing information overload

4. Disadvantages of information overload

Information overload can lead to several disadvantages which are causing the human brain to become less productive, easily get tired and distracted. Furthermore, information overload can lead to a feeling of powerlessness and a sense of being overwhelmed by the assigned tasks (either number of complexity) or by the need of absorbing more information, in the attempt to understand the problem and identify the most efficient solution.

The need for more information will introduce individuals or organization in a vicious data mining process feed by a lot of insecurities: Does the information we are seeking relay exists?

Where to look for information? Do we already have the information that we are looking for? Do I have access to the repository where the information is store or to the source of information?

However, this depends on whether the problem lies with the volume, or in the way information is handled. If this isn't tackled, then you will start to get frustrated, or so blasé that you will not perform well. This effects the way you react to your colleagues and starts a vicious circle of unproductivity.

The problem might be not be the information, but the information flow within organization. Is the information directed to the proper person? Is there a structure that is dealing with information flow? Do we have the technology required to assist in finding the right information at the right time?

If it's an organizational-wide problem, the easiest solution would appear to be to employ more staff to cope with it, to create the structure that will deal with information management, and to employ the required technology to support the process.

5. Information overload symptoms

Although being informed is never bad, the overstimulation of the brain can have the reverse effects. In other words, instead of becoming smarter, our brain's ability to learn and engage in problem-solving thinking will decrease. Information overload is a real threat nowadays. Therefore, all managers need to monitor its staff and processes in the attempt to timely identify the symptoms of information overload. Information overload symptoms can be as follows:

- *Reduce of decision making capacity.* Decision makers, as all human beings, have fairly limited cognitive processing capacity. Consequently, when information overload occurs, it is likely that a reduction in decision quality will occur;
- *Diminish productivity by impacting the ability to process information.* Too much information will impede the understanding of the problem as well as the capacity to tackle it. Along with weakened decision making, information overload can also lead employees to feel unnecessarily overwhelmed and stressed out. Employees may not even have too much on their plate, but information overload can create the perception they do. This can lead to a lack of engagement, a loss of productivity and a high employee turnover rate when in reality it's entirely avoidable. Too much information, particularly when it's unnecessary or irrelevant, can also confuse employees on their job role and make them unsure of where to focus their attention. Employees who report information overload tend to become frustrated and give up more easily than their non-overloaded counterparts, they need more time to make decisions, and they frequently make mistakes, often because of confusion. They can also have a hard time identifying pertinent goals and how to achieve those, and they tend to waste a lot of time in the workplace.
- *Development of strong compulsion to periodically check information sources (feeling overwhelmed by the need of absorbing more information).* When an organization is dealing with a large income of information on a daily bases, especially in this rapid changing environment, the managers will face the tendency to base their decision on the last update available, and that will lead them into a vicious circle of periodically searching for new information, of disregarding the already made decisions, and

jumping into new conclusions. This working practice might be effective for a short term, but in the long run will prove to be contra productive due to the lack of foundation in the decision making process, due to the fact that will generate frustrations within the team.

6. How to mitigate information overload

There have been many solutions proposed for how to mitigate information overload, but it is difficult to measure the effect. Based on the definition of information overload, simplistically have been identified two general approaches to deal with it:

- either to r*educe the amount of incoming information (*be cautious of how you are exposed to information, and limit information overload by unsubscribing from newsletters and advertisements); and
- *or enhance the ability to process information* – related to information processing where how a person records, moulds, and stores information is crucial.

Nevertheless, by developing the two general direction, have been identified some concise sets of measures that managers have at there disposal in the attempt to minimize the impact of information overload on the organizations, such as:

- *Manage your time* – One of the major problem that we face is the lack of time to cover all the required tasks. Unfortunately we cannot extend the time, but what is within our power is to choose what to do with the time available. You can decide which things are worth investing and which are not. You can choose to either be focused on things that matter or allow yourself to be swept away in a sea of distraction. Therefore "time prioritization" will help to avoid the information overload. Managers needs to be able to established what is "Important and Urgent", what is "Important but Not Urgent", what is "Not Important but Urgent", and what is "Not Important and Not Urgent". Splitting task based on the aforementioned categories will avoid the overload, by identifying what needs to be done now, and what can be postponed for later.
- *Organize the information in accordance to the organization's needs and purpose* – Information is commonly organized within an Enterprise's repositories with classification systems designed within a conceptual framework. These frameworks allow information to be consistently classified to make it easier for users to know where to look for various types of documents and records. This framework is translated into a hierarchy of descriptive categories that form the taxonomic schema used to control the classification process.
- *Use only evaluated and validated sources in order to avoid errors in decisions* – Once you have a clear idea of your information objectives, you can make a deliberate decision about what sources you will use. Which reports, newspapers, magazines, journals, news services and television programmes do you need to look at regularly? Once you know your priorities you can often rationalise the sources you need, rather than being swamped by a mountain of paper you can never get through. Can you use media summaries or industry updates? Getting the information you need more efficiently is well worth the cost of a subscription. Aim to read things your competitors aren't likely to see – get a broad perspective. Source evaluation is the

process of critically evaluating information in relation to a given purpose in order to determine if it is appropriate for the intended use. Common source evaluation criteria include: purpose and intended audience, authority and credibility, accuracy and reliability, currency and timeliness, and or bias.

- *Filter the information that you seek* – You have to be ruthless in getting rid of surplus information. Get yourself off mailing lists, use assistants to filter your messages, and use e-mail filtering software. From there, filtering is in its essence a process of scanning everything to judge according to your information objectives whether it's worth reading or dealing with in more detail. Those things that pass are read or put aside for your reading time, the rest go in the bin. If you're still getting too much to read, you need to go back to your objectives and refine them until you only get all the most important information that you have time for. Using metrics like trustworthiness, conciseness, accuracy, etc. to gauge the reliability of an information source. If you're offered data from multiple sources, you can use metrics and various standards to filter out the sources you don't want. This is frightening at first because there's an unspoken fear lurking behind the scenes. "What if I miss something important?" Implementing this strategy takes a little bit of faith. If you miss something and you're alerted to that fact, refine your filtering criteria so you catch the information that matters, then continue. Read and listen only to the information you consider useful for today or if it enriches your knowledge. Otherwise, ignore irrelevant information like news, gossips, talk-shows, etc.
- *Automatization of data mining* – in order to be effective an organization needs to employ the proper technology to support the achievement of their goals. Data mining programs, such as dTSearch, are not expensive, but are enhancing users capacity to search thousands of terabytes of structured or unstructured data in matters of minutes, and are offering highlighted hints as results, which will help user to save time.
- *Train employees in using the existing technology – p*roper usage of technology needs to be trained, even if the employee have been use that piece of equipment or similar one. Each organization has its own particularities, and therefore hands on training will expedite the integration program of the newly employed personnel. Therefore, session for induction training for the new comer, periodical training for all personnel with the aim to understand how to properly use the available technologies in their advantage is for everyone benefits. (i.e. train the email usage: what and when to use urgencies, where the "all users" type of information to be store, use notification for information related to the task ahead, etc)
- *Learning how to search for information* – learning how to build and save queries, how to use Boolean logic in searching are time saving, and increase the filtering out of unwanted information.
- *Create an information management department* – Information management is a broad term that incorporates policies and procedures for centrally managing and sharing information among different individuals, organizations and/or information systems throughout the information life cycle. Information management is generally an enterprise information system concept, where an organization produces, owns and manages a suite of information. The information can be in the form of physical data (such as papers, documents and books), or digital data assets. Information

management department deals with the level and control of an organization's governance over its information assets. Information management is typically achieved through purpose-built information management systems and by supporting business processes and guidelines. Moreover, information management department should also focuses on how that information is shared and delivered to various recipients, including individuals and different computing devices such as an organization's website, computers, servers, applications and/or mobile devices. The information management department is the heart and blood vessel of any organization. The information management departments is the organizational security in the fight against information overload.

- *Push and pull systems* – Simply put, a push strategy is to push information at a customer, while a pull strategy pulls a customer towards the information. To apply the aforementioned strategies within organizations means to have a central repository where only the information required for daily task completion to be displayed, as well as to have the possibility to send targeted information to different groups or persons that are involved in a task.
- *Delegate* – delegating tasks to the right/relevant teammate or co-worker, rather than taking it on ourselves it is important. Delegation will allow the manager to save time on performing minor tasks, as well as will bust the confidence of the personnel that the task is delegated to.
- *Prioritize* – Information isn't created equal. At any given point a manager may find that one task is more important than another. Sometimes that requires dropping what the manager is currently working on. Other times it might required to say "No" to someone asking for help with something less important. Prioritization never ends.
- *Reject* – Some requests, tasks and people should be ignored. If they're not relevant to the manager work, or not helping someone on your team (or in your network), it's a good idea to quickly delegate "to-dos" to someone else. If it's not a fit and a manager know he/she shouldn't be doing that or that it's someone else's job, finding a way to reject the request outright is a wise idea.
- *Develop proper working practices* – Use company wise page for general announcements, don't pass everything through email. Develop organizational norms for electronic communication either explicit or implicit. The IT department could come up with guidelines specifying the preferred communication channels for different types of information. For example, e-mail could be reduced significantly if group newsletters and announcements were posted on a company intranet or wiki, which pulls in people seeking the information instead of pushing it at them. A rule of thumb: If the information in an e-mail you're about to send, even if potentially important in the future, is not urgent, post rather than push. The IT folks could also replace those irksome confirmation-of-receipt requests from senders with auto-responses from recipients. Such responses would alert senders to your personal schedule for answering e-mail and urge them to phone if something needs attention sooner than you are likely to respond. That could reduce confusion stemming from differences in people's unspoken expectations. If I think of an e-mail as something to be answered within the business day and you think of it as something to be answered upon receipt, ill will and bungled decisions may ensue. If you escalate the contacts—

instant message, voice mail, a huffy visit to my cubicle—you'll end up increasing the total volume of information related to a single request.

7. Conclusions

This paper cannot endeavour to be a complete assessment of information overload, related types, contributing factors, or potential solutions. It is certainly not the first to examine issues of information (or even information overload) within an organizational context, nor to re–examine rationality in this area. However, this work exists in the recognition that new perspectives on existing things can be illuminating, and in the hope that perhaps it may serve in such a way.

Additionally, from the analysis recommendations to reduce information overload include having a high level of management control over decision making and employing technology based decision making such as through the use of data mining. Moreover, the establishment of an information management department and implementation of a sound information management policy in all organization, will definitely increase the organizational resilience to information overload.

The best ways of avoiding overload, individually and organ organizationally, appear to lie in a variety of coping strategies, such as filtering, withdrawing, queuing, prioritizing, delegating, training and embracing support technology and know how. Better design of information systems, effective personal information management, and the promotion of digital and media literacies also have a part to play. Overload may perhaps best be overcome by seeking a mindful balance in consuming information and in finding understanding.

It is important to manage with care and effectiveness information of the organization by taking into account the aspects of perception of the value of information. It is only this way organizations will have competing advantages in a knowledge economy.

Discovering the effects of information search, selection, processing, and evaluation in the decision-making process and the occurring biases and limitations is key for our understanding of the decision-making process itself.

In conclusion, this review has some limitations to address. First, I include business-related research only and exclude other research fields (i.e., pedagogy, social networking etc). Second, I searched for the keywords "information overload", "information management", "information overload effects", and "cognitive overload". There might be other relevant studies on information overload or related topics which do not use these keywords in their titles or abstracts.

In this paper, I have provided some perspective on information overload cause, effects, symptoms that needs to be monitored, and potential mitigation measures at organizational level. The study does not exclude or intend to contradict other views or opinions in this matter, but merely is trying to have a practical approach by rising awareness and providing a toolkit for all managers in fighting "infoxication".

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PERSPECTIVES ON INDIVIDUAL FORCES OPPOSING THE CHANGE PROCESS IN PERIOD OF DEEP CRISIS

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Abstract:
The work of managers is a complex and continuous one to find the best solutions to increase the overall functionality of the organization that leads it. The changes in the environment are permanent sources of generating modifications at the level of any company. The management team should respond adequately through clear, concrete, realistic actions that benefit the development of organizational processes. But the last two years, characterized by the effects of the COVID 19 pandemic, have been years of deep crisis throughout humanity, and for the management of an organization, they have been an unprecedented challenge to sustain their survival.

Key words: management; crisis; pandemic; market; obstacles; change.

1. Introduction

It is demonstrated that, theoretically and practically, management is contextual, and adapting to the requirements of the organizational environment (internal and external) is the primary mission of the management team. With multiple variables and unknown elements, the current context can be categorized as at least challenging if it cannot be included in the changing chapter. We believe that the period elapsed since the onset of the COVID pandemic 19 and, until now, has required a redefinition of how managers have designed, conducted, or evaluated the management process in their organizations. Time, in form or volume, has not been the "best friend" of these managers, hard hit by the obstacles generated by the consequences of applying limitations or restrictions by authorities around the world. Despite all the difficulties, ups and downs, the economy and society do not stop but reorient or reinvent themselves, with and without the adaptation of managers.

2. Analysis of the context of contemporary organizational change

"The world will never be the same again" is the phrase most often heard in discussions between people, in public statements, or at scientific conferences. But the same expression can be found quite widely used in the early twentieth or fifteenth century, but it is essential to understand its essence from the perspective, especially, of the future - both individually and organizationally.

The transformations that organizations are subjected to result from environmental pressure made up of a sum of factors and forces. For the contemporary period, we can name the following as the most common factors:

• *"scientific and technological evolution (large-scale use of robots and increasing the implementation of artificial intelligence in various organizational processes, etc.);*

• *rapid aging of products and services (shortening the life of products, reducing the production cycle and design period, etc.);*

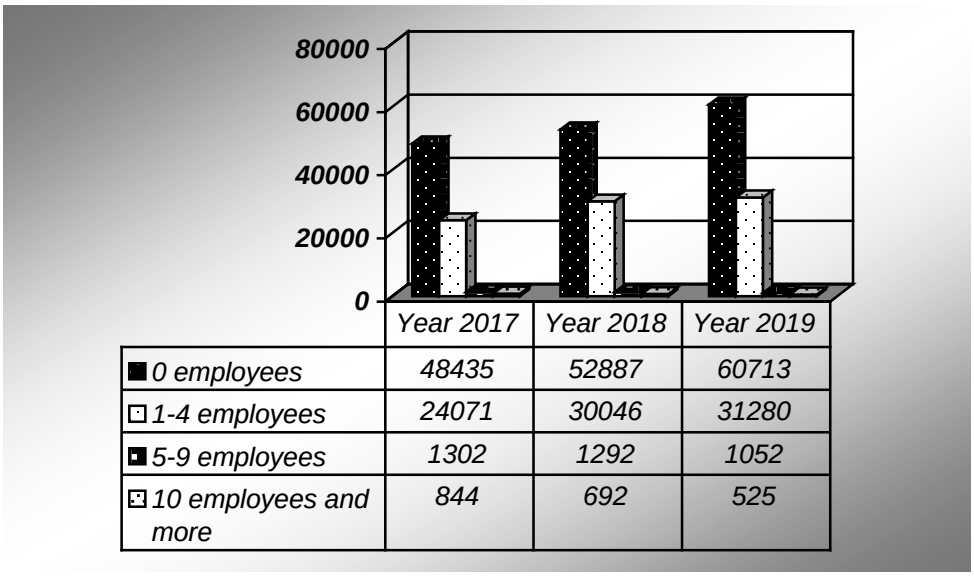
• *the need for continuous improvement of working conditions (staff are offered greater comfort at work, as part of the motivation processes, etc.);*

• *changes in the labor market (increasing the share of jobs held by women, intellectualization of human resources, etc.)"* [1]

Even if the list of environmental factors is much broader, it is easy to see that managers are obliged to consider all the trends of these elements of influence to identify the best alternative to follow by their organization in the future. It is also obvious that their analysis must be thorough as the consequences will be reflected up to the level of each position in the organization, up to the level of each person working within it.

The general impact on the organization will generate the need to trigger the process of change within it and its management. As a rule, organizational change does not happen by itself, and improvements must be generated to the actions to be carried out (the algorithm for carrying out the production process based on robots leads to resizing the volume of human resources needed and/or requalification of it - aspects that do not are generally very easy to accept or implement) etc.

And one of the arguments that support the idea that change is a complex process, lasting, and quite challenging to accept may be the large number of companies that close each year on the Romanian market, especially at the level of small ones (fig. 1). Thus, the managers/owners of companies with up to 5 employees considered, most likely, that adopting the change is too expensive or too complicated to find a form of transposition in their organization.



	Year 2017	Year 2018	Year 2019
0 employees	48435	52887	60713
1-4 employees	24071	30046	31280
5-9 employees	1302	1292	1052
10 employees and more	844	692	525

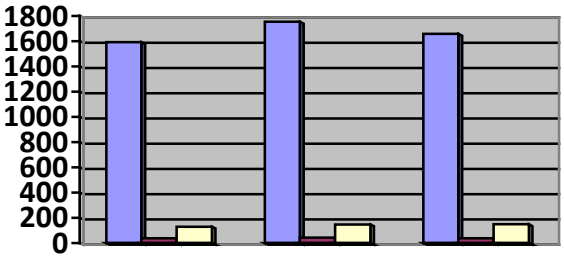
Fig.1 Number of Romanian companies disbanded [2]

The pandemic generated by the SARS-CoV-2 virus has triggered a new reinterpretation of the evolution of society and organizations. There have been fundamental changes at both the structural and procedural levels. Managers were challenged to rethink the entire management process: the objectives were restructured, the related activities were redefined, the

communication directions were reoriented, the elements of the information subsystem were reconsidered, the performance standards were adjusted or deadlines, etc.

Eloquent is the overall economic result in Romania, "in 2019, the turnover of non-financial companies in Romania reached 1.565 billion lei, being almost 30% higher than in 2015 and 70%, compared to 2010. Compared to 2018, however, the increase was minor, of only 1%." [3]

Also, there are differences in the entire market in our country, highlighting a decrease in turnover in 2020 compared to 2019 by about 5.5%, and the increase in 2019 compared to 2018 was over 10% (Fig. 2).



	2018	2019	2020
Fiscal value	1591	1752	1657
Net losses	38.1	43.3	38.5
Net income	129.7	147.3	149.1

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Fig. 2 Financial results of all Romanian companies (billion lei) [4]

We can say that these results are pretty contradictory if we corroborate them with the way the activities were carried out within the organizations in these two years affected by the pandemic, as a crisis as follows:

- reconsideration of the modalities of carrying out daily activities, depending on the decisions of the competent institutions regarding the free access of the citizens outside their own living space;
- redefining the access circuits within the organizations to limit to the maximum the direct contact between the employees or between the employees and the business partners;
- the increase of the general expenses within the companies, with those expenses generated by the purchase of sanitary or other materials also for limiting the effects of the spread of the SARS-CoV-2 virus;
- implementation at many companies of the hybrid work system, with one part of the employees at the physical headquarters of the company, and with the other part of the employees in the telework / online system;
- reconsideration of logistics routes within the company, both in terms of the supply of equipment, raw materials, and materials, and in terms of distribution of products made within the company, etc.

3. Current particularities of the forces that oppose change, at the individual level

Countless forces of change constantly assault organizations; we must not rule out that there are forces that oppose it, so efforts are needed to keep the organization in balance. Resistance to change is an issue that must be taken into account when implementing any organizational change. Precisely in this regard, "the sphere of resistance must be limited by multiple ways, procedures and methods that prevent the possibilities of manifestation of dysfunctional, conflicting phenomena, etc." [5]

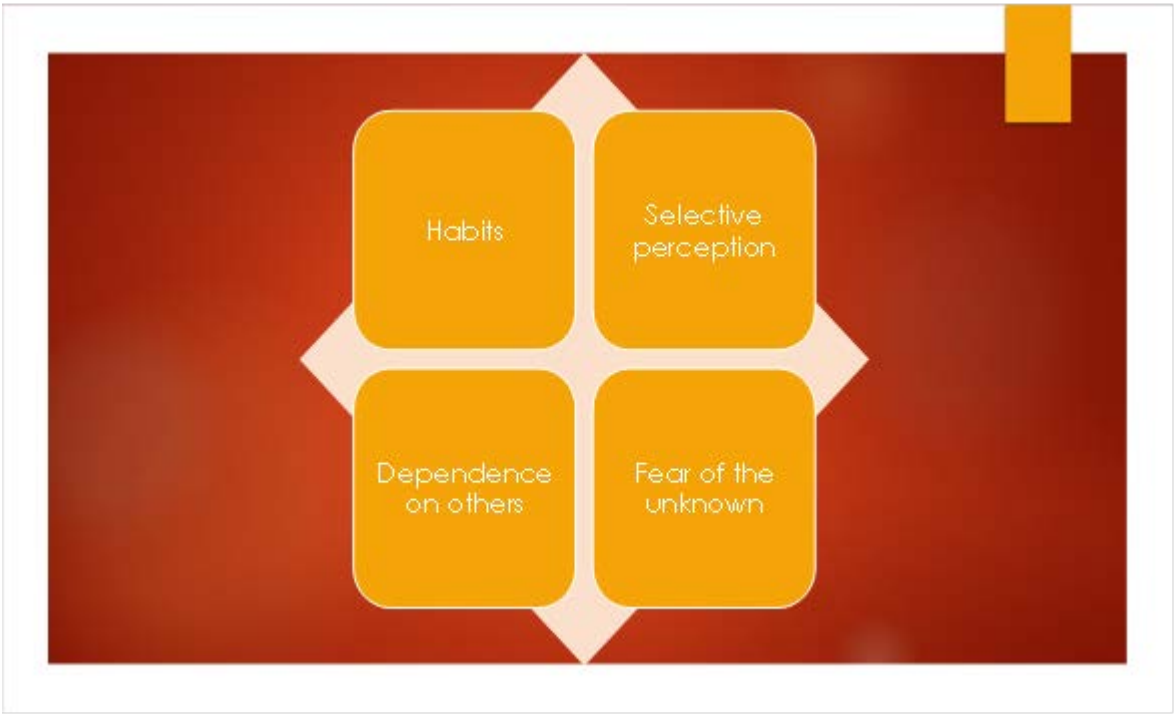

Fig.3 Forces that oppose change at the individual level

The state of affairs in these pandemic years has not led to substantial changes in specific concepts of organizational change, but we are convinced that their explanatory structure has undergone adjustments that managers have had to make. Takes into account in making the best decisions for organizations.

Changing the work schedule or the times of accomplishing certain activities are elements that have added to the force that opposes change: habits. We can agree with the idea that most of the habits that can be formed in power that opposes change have remained the same, but new ones have emerged to which managers have had to find an answer in counteracting them, for example: the habit of working at home, without wanting to physically return to work or the habit of taking children to school before the work schedule begins.

Under the same conditions of changing the rules of operation of organizations, the selective perception has also undergone adaptations to the current context, for example: changing the individual perception of the results obtained in a certain period of time, given that employees

have not worked permanently together or the fact that the health of other colleagues is not as good/serious as it is claimed.

The trend of the 21st century in the organizational field has been to promote work and team spirit, thus implicitly increasing the degree of dependence of some on others. In the new pandemic conditions, individual reorientation is a widespread effect, each aiming to obtain results on their own in the shortest possible time, corroborated to protect themselves as much as possible from sources of risk of infection outside their own home.

The fear of the unknown has taken on other nuances in the context of the spread of SARS-CoV-2 virus infection, as information support related to both the organizational and environmental environment has changed substantially, mainly due to the spread of numerous rumors or unjustified assessments of specific actions. And due to the multitude of decisions with immediate applicability of the institutions empowered to intervene for the return of the company to normality.

4. Conclusion

The solutions are not simple and cannot be generated by a predetermined pattern. Some managers have reinvented themselves and managed the activities of the organizations under their responsibility, while others have clicked under the pressure of the new conditions and have failed to ensure a minimum level of functionality. However, an adequate reanalysis of the employees' characteristics is necessary to delimit precisely the stage of the forces that can oppose the change to design a realistic plan to implement this process throughout the organization.

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PLANNING, PROGRAMMING, BUDGETING AND EVALUATION SYSTEM: TUNISIAN EXPERIENCE

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Abstract:
Reaching good governance and building the integrity in the public sector is one of the most important target of Tunisia especially after the revolution which happened in 2011. For that reason, restructuring the budgeting system should be the first priority. The Planning Programming Budgeting Evaluation System, as an integrated financial management cycle, can be one of the solution to build a comprehensive cycle of resources' management for the Tunisian defense department. through this paper, we aim to make a reflexion about the requirements and conditions that help implementing the Planning Programming Budgeting Evaluation System in Tunisia and how to make it works successfully. To meet this purpose, this paper is organized as follows: the first part will be dedicated to an overview about the country (Geography, Economics, Geopolitics, defense environment). In a second part, we will proceed to the presentation of the budget structure and process. Finally, we will try to identify the challenges faced to adopt Planning Programming Budgeting Evaluation System in the Tunisian context and to present the possible limits.

Key words: PPBES, good, governance, challenges

1. Introduction

After Jasmin's revolution which happened in 2011, Tunisian citizens showed a big request for democracy, good governance and transparency.

A democratic transition has been happening for ten years. In 2014, a consensual constitution is adopted and couple of elections had been held successfully and the legitimacy of the new regime is established.

Our country achieves in a few years the national consensus on building a democratic and inclusive political order based on dialogue and compromise.

In other side, the security context was characterized by abundance of terrorist activities and smuggling. It becomes a critical situation. The defense policy comes as a priority of first order.

To face all these challenges, forward-looking analysis and the culture of anticipation are imperative for good governance. Indeed, decoding the growing complexity in order to guide public policies and making decisions around strategic issues is a major difficulty for public policy and change management.

This fact calls for a new strategic paradigm: removing uncertainties, setting the course, adopting a vision. Tunisia needs a federative, mobilizing, inclusive and modern strategic project in order to aspire to the rank of emerging state, resilient and reconciled with itself. National, regional and international conjuncture calls for a start, dictates a change of attitude and state of mind.

Therefore, Tunisia has to try to adapt his policy and strategy in the military field to face the security challenges, which are the most important mission of the Ministry of National Defense.

Leading this challenge in the classic budgeting system may not be possible: the use of a single fiscal year budget and the economic crisis and budget limitations are reasons that explain and affirm this theory.

So, the adoption of budget established for many fiscal years and taking into consideration the political, geopolitical, social and economic factors during the presumed timeframe may be the best solution to lead a long and steady reform.

Presently, the reform is already started.it has been deeply studied and experimented between 2011 and 2018 before the implementation of a new financial management system in 2019 by the adoption of the law 15-2019 dated on 13 February 2019 related to the organic budget law based on management axed on result.

To expose our purpose, it is crucial to survey the Tunisian situation from different perspectives and analyze the financial and budgeting system of the Republic of Tunisia, before studying the implementation the Planning, Programming, Budgeting and Evaluation System (PPBES) in the Tunisian version.

2. Overview about Tunisia

Geographical and historical review:

Tunisia is Located in the continent of Africa, it covers 155,360 square kilometers of land and 8,250 square kilometers of water, making it the 93rd largest nation in the world, but the smallest country in the region of North Africa with a total area of 163,610 square kilometers.

It is bordered by Algeria to the west, Libya to the southeast and the Mediterranean Sea to the north and east. Its capital city, Tunis, is located on the country's northeast coast. An abrupt southward turn of the Mediterranean coast in northern Tunisia gives the country two distinctive Mediterranean coasts, west-east in the north, and north-south in the east.

Tunisia became an independent state in 1956, after gaining its sovereignty from France and since that date the system is proclaimed republican.

Though it is relatively small in size, Tunisia has great environmental diversity due to its north-south extent. Its east-west extent is limited. The Dorsal, the eastern extension of the Atlas Mountains, runs across Tunisia in a northeasterly direction from the Algerian border in the west to the Cape Bon peninsula in the east (highest pick Mountain Chaambi 1544 m). North of the Dorsal is the Tell, a region characterized by low, rolling hills and plains, again an extension of a mountain range located in the west of the Algerian border. The Northwestern corner of the Tunisian Tell, elevations reach 1,050 meters (3,440 ft) and snow occurs in winter. The south of the country is desert (about 40% of its surface). Tunisia has a coastline 1,148 kilometers long. In maritime terms and its position in the middle of the Mediterranean and the south of Sicily makes strategic its maritime location , the country claims a contiguous zone of 24 nautical miles (44.4 km), and a territorial sea of 12 nautical miles (22.2 km; 13.8 mi). About thirty-eight islands and archipelagos are located in these waters, mainly unmanned except two of relevant size and important population. Climate is Mediterranean in the north and the coasts, with mild rainy winters and hot dry summers. Valleys are located between the two main mountain ranges and coastal plains are subject to an intensive agricultural activity, in opposition to the desert region where agriculture is limited to the oasis around the rare water points.

Population:

The population of Tunisia is 10.732,900 (2013). Population is highly concentrated in the capital (about 3.000.000 inhabitant), around the coastal cities and became more and more dispersed to west and the south when lands are mostly unmanned. Tunisia's Human Development Index (HDI) value for 2012 is 0.712—in the high human development category—positioning the country at 94 out of 187 countries and territories. Between 1980 and 2012, Tunisia's HDI value increased from 0.459 to 0.712, an increase of 55 percent or average annual increase of about 1.4 percent.

Economic activity:

Tunisia's economy has been in the process of economic reforms and liberalization since 1986 after three decades of state control and state participation in the economy. With the entry into force of the free trade agreement with the European Union in 1995, since 1st January 2008, the Tunisian economy is facing at full level of its economy while benefiting from sustained annual economic growth of about 5% per year for the last ten years.

Tunisia's economy is historically linked to agriculture (wheat, olives, dates, citrus fruits and seafood), mining and energy (a major producer of phosphates and to a lesser extent hydrocarbons), tourism and manufacturing industries (textiles, food and electro-mechanics) from an extrovert perspective (large number of totally or partially exporting industrial enterprises). Thus, its diversified economy distinguishes it from that of most states in the African, North African and Middle Eastern regions. In addition, Tunisia is, like Morocco, one of the only countries in the region to have entered the category of "middle-income countries".

Economic activity has been slow in the post-revolutionary period, as real GDP grew at 1 percent only in 2019. The recovery in external demand has been largely absent, reflecting developments in the European Union, while the domestic demand is increasingly affected by tighter macroeconomic policies. The social tensions that marked the post-revolutionary period, as well as the combined effect of the two dramatic terrorist attacks of the Bardo Museum and the Sousse holiday resort further negatively affected activity in Tunisia. This has led the economy into couple of consecutive negative quarter growth. This deterioration is also attributable to the pandemic Covid 19.

Tunisia is nowadays an export-oriented country in the process of liberalizing and privatizing an economy. In 2019 it had a GDP of $75 billion (purchasing power parity). The agricultural sector stands for 12% of the GDP, industry 25%, and services 63%. The industrial sector is mainly made up of clothing and footwear manufacturing, production of car parts, and electric machinery, Tourism accounted for 7% of GD.

The European Union remains Tunisia's first trading partner, currently accounting for 72.5% of Tunisian imports and 75% of Tunisian exports. Tunisia is one of the European Union's most established trading partners in the Mediterranean region and ranks as the EU's 30th largest trading partner.

Political regime:

Tunisia is a constitutional Republic, with a president serving as head of state and chief of the Armed Forces, a president of the government as head of government, a unicameral parliament and a civil law court system. In January 2011, a revolution resulted in the overthrow of the president and its regime; it was followed by the country's first free elections. Since then, Tunisia has been consolidating democracy in the end of a transitional phase.

3. Tunisian Armed Forces and budget System

Tunisian Armed Forces:

Tunisia is a defensive military power. Until recently, its major threat has been terrorism and smuggling. At this point, it faces serious external threat. Its armed forces are designed largely for border defense, internal security, and protection of key economic facilities.

The armed forces have a conventional organization and command structure, with a Minister of Defense and a Chief of Staff, and an army, navy and air force. Logistic support, supply, maintenance services, administrative and financial affairs, military medical services and social welfare are organized in general directorates referring directly to the minister of defense.

Tunisia had total force with only some 86,000 men in 2020. Its land forces had a total of 84 tanks, 149 AIFV's, 268 APC's, and 117 pieces of towed artillery. Its air force possessed 29 combat aircraft and 15 attack helicopters. Its naval forces had 6 missile craft and 20 patrol boats. These small equipment holdings make Tunisia an exception to the "militarism" of most North African states.

The aftermath of the Arab spring had been challenging for the Tunisian armed forces and this for several factors. Starting from the dawn of the social uprising of January 2014, the Armed forces had to carry on simultaneously many missions besides its conventional one. It was at first involved in the close support of interior forces to keep public order and to secure the majority of government facilities. This mission required deployment for a long timeframe in the urban areas. Meanwhile, the Libyan revolution against the former Libyan regime, had added more burden. The beginning was with the enormous flow of refugees from this south bordering country. According to official estimates; about 2 million submerged the border in several weeks, predicating the establishment of refugee's camps and the cooperation with international organizations to deal with the situation. Due to its expertise, acquired by participating in many UN peacekeeping Missions, the armed forces were entrusted to handle the situation.

The most challenging risk is terrorism. Indeed, since 2011, and due to the complexity of regional environment, Tunisia was hit by some Terrorist groups belonging to AQIM (Al QAEDA in Islamic Maghreb –Ouest and ISIS). These groups originally based in Algeria, have spread at once profiting from the propitious environment in Libya.

After being a transit country of narcotics and weapons between Libya and Algeria (southern part), Tunisia has seen, since 2012, the establishment in the western part of the country (Algerian border) of some terrorist groups leading an asymmetric warfare and making alliances with the smuggling gangs and the narcotic's Traficant to empower their resources.

The Armed Forces had to bear the burden of their operations suffering of a lot of casualties many and a relatively heavy death toll. In addition to its classical mission predicated by the constitution, The Tunisian Armed Forces found itself engaged in a relatively new type of missions including border security and countering Guerilla.

This situation has created many challenges not only for the military and security decision makers, but also for the political level. It is the fact of developing capabilities and bearing the economic burden of resources allocation to defense on a long timeframe.

The Tunisian Budget System:

The Tunisian Constitution gives only a few details about the budget process, mainly focusing on the approval stage.The different phases of the elaboration of the budget are described in the Organic Budget Law (OBL) of 2019, which modernized the budget management and structure. The 2019 organic budget law provides a detailed description of the rules and

procedures governing the budget cycle, sets the rules organizing the legislative review and approval of the proposed budget, the execution of the budget, and budget reporting and government discharge.

The modernized Tunisian budget is structured in **missions**, **programs**, **subprograms** and **activities**. The new law of 2019 which aborted the old organic budget law of 2004 insisted on the management based on results for each missions and each programs. Every programs inside a mission constitute a public policy which have its own expenditures:

- recurrent expenditures.
- functioning expenditures.
- Investment expenditures

The Organic Budget Law of 2019 outlines the procedures and process for preparing the annual budget law. The fiscal year starts on the first of January and ends on 31 December every year. Each budget cycle starts with a framing letter sent from the Prime Minister's office to heads of units within the sector ministries and all other public entities instructing them to establish annual estimates for the expenditures of their respective units. This letter summarizes the government's development plan and provides guidance and directives within the context of which the sector budget is to be developed. The estimates developed by ministry spending units are aggregated at sub-ministry level, at general directorates, and then submitted to the Ministry of Finance before the end of May of the year prior to the budget year in question. These general directorates are then in close contact with corresponding structures at the Ministry of Finance (the CGABE), and negotiate specific programs and spending proposals directly with them.

Defense budget:

The defense budget adopts the same structure of the general budget. It is annually elaborated and executed under the same rules and regulations. Principal legal texts dealing with public finances in Tunisia are the 2019 organic budget law, law n°81 dated on 31st December 1973 (Code of public accounting). Public procurements, as a tool of public spending, are done in accordance with the decree N°1039/2014 dated on 13 March 2014 and the control of public spending for each missions is mandatory at every stage.

The little specificity related to the confidentiality of defense is perceived at the legislative stage, and during budget execution. In the execution stage, every commitment for expense has to be mandatorily submitted for the visa of the budget control services, according to Decree n° 2012-2878 du 19 November 2012 dealing with control procedure of public spending some special kind of expenses article 2 "expenses of the Presidency of the Republic, Ministry of National Defense and the Ministry of the Interior, having a secret aspect, are exempted from the prior visa of the services of public expenses control. Modalities of issuing Visas and approval of contracts are fixed by the decree n° 88-36 of the 12th of January 1988 related to the special procedure of control.

Tunisian Defense Budget has increased from 1,653 M (TND) in 2011 to 4,251 M (TND) in 2020. It is clear that during the post-revolutionary period, budget allocationsfor defense sector increased remarkably.

As formerly mentioned, the Tunisian government was holding from 2011 to 2020, a moderate yearly rate of growth of TDB. This rate was mainly under the economic and the national budget rates of growth. The year 2011 announced the starting of a severe recession phase taking the growth of the national economy from 6% in 2007 to -2% in 2011. This recession was amplified to the level that obliged the government to reduce the general size of its

budget in 2014. It seems that this situation had a reverse effect on the TDB. Instead of operating cuts on defense spending, as it is usual during recessions, the government took it to the highest limits.

During 2020, the main part of the TBD is allocated to wages and salaries (around 74%), the share allocated to investments, equipment and infrastructure, is about 13 %. The importance of part allocated to wages and salaries may be explained by the increase of the total number of the military personnel which was one of the direct result of the war declared to fight terrorism.

4. PPBES in the Tunisian context:

Concept of multiannual planning:

During the period 2011 until 2018, the budgeting approach was axed on means. The allocation of defense budget seems to be incremental, based on the precedent years and the small share dedicated to equipment. This method of budgeting does not reflect any willingness for major acquisitions and there is no efficiency for the sector of defense.

In 2019 a turnover is seen in the budgeting approach in Tunisia by the adoption of the organic budget law of 2019 which aborted the law of 2004 to announce a new phase based on efficiency, efficacy and transparency.

Moving to a new approach can be explained by the limits of the old system: the budget should traduce a response to threats and risks faced really**.** The old approach constitutes a competition for funds between departments. It is viewed subjective process without prioritization and clear vision.

In response to this challenge, the current government has prepared a National Development Plan for 2016-2020 covering all sectors and all key fields (infrastructure, information and communication technologies, green economy, education).

Being the first since the Tunisian revolution (December 17, 2010-January 14, 2011), this plan is part of a new vision of Tunisia and gives birth to a new model of economic and social development based on a multidimensional approach promoting efficiency, equity and sustainability.

The **Five Year Plan**, which was adopted by the Assembly of People's Representatives (APR), is intended to strengthen the economy and also aims to increase the attractiveness of the investment in order to strengthen the private sector's driving role in growth.

Fruit of consultations of the Tunisian government with the couple off stakeholders at the regional and international levels, the Development Plan requires investments in the order of 60 billion dollars (about 120 billion dinars). It is structured around 5 priority principles: good governance, reform of administration and fighting corruption, transition from a low-cost economy to an economic hub, human development and social inclusion and fulfilling of ambitions of the regions and promoting green economy.

National security and defense strategy:

The National Security Council, headed by the President of the Republic, decided on 12 February 2015 to prepare a national strategy to fight terrorism. A group of multidisciplinary experts was commissioned with the participation of representatives of civil society, benefiting at the methodology level from the collaboration of the Counter-Terrorism Committee of the United Nations Security Council. A draft has been prepared and handed over for finalization by the National Commission for Combating Extremism and Terrorism after its creation with the entry

into force of the Anti-Terror Law. After one year (in 2016), The National Security Council adopted a "strategy to fight against extremism and terrorism".

It is a response to the absence of a global vision to prevent and eliminate the terrorist threat facing Tunisia. This strategy proved the need for a political decision at high level, to develop and implement a national anti-terrorist strategy to improve the performance of the country and its institutions in the fight against terrorism, to defend the rule of law and ensure the protection of its population, institutions and achievements.

The strategy is considered by the council as a bridge that connects the means available to the objectives to be achieved. It represents the step or the answer to the question "What to do?" A strategy is "alive" because the context is changing, means and objectives are changing, hence the need to submit this strategy to the National Security Council for approval and to constantly review it through the National Counter- extremism and terrorism Commission.

The strategy will be put into action via an action plan that translates the "How to do?" Step.

PPBES, the Tunisian experience:

Many similarities, between the Tunisian system of budgeting and PPBES, exist: it is question to manage the medium and long term employment of resources to stand up effectively against terrorism. PPBES will enable the Ministry of National Defense to overcome the constraint of resources scarcity and deal with the environmental vulnerabilities. In addition to that, the government is strongly attached to the reform of the budgeting system in order to mutate from the classical budget to the Result Based Budget (RBB). It started in 2019 by implementing the process in all ministries mandatory after an experimentation period starting from 2013 to 2018.

Presently, midterm programming system is being implemented by the Tunisian defense department in order to overcome the current and upcoming challenges. This is not a choice; it is an obligation introduced by the new organic budget law adopted on 13 February 2019. In addition to that a five years' defense plan is being established.

The new organic budget law has introduced new concepts and insisted on performance method to build, execute and evaluate the budget. Since 2019, we talk about medium-term budget framework which is a slippery programming technique that allows the budget to be prepared over a multi-year horizon. The medium-term budget framework is developed for a three-year period and updated each year. This framework includes forecasts of revenue and expenditure from the state budget by nature and destination. It divides the total amount of expenditure by nature between missions.

Also, we have a new principle to take into consideration when doing planning budget: the medium-term sector spending framework. It is a framework used to allocate of each mission's appropriations according to programs and sub-programs that derive primarily from the objectives of sector strategies as well as development plans.

The budget of the defense department is called the mission of defense instead of chapter (according to the old organic budget law). It contains a set of programs that contribute to the implementation of specific public policies. It includes all the funds made available to each head of mission. The program reflects a specific public policy under the same mission and brings together a homogeneous set of sub-programs and activities that contribute directly to the achievement of the public policy objectives of that program. Now, we have the program manager how is the person in charge of the program, he is designated "Program Manager" by the head of

the mission. He has objectives to achieve; each program has a number of objectives set in accordance with public policy objectives. The performance indicator is a key concept in the new system. It is a quantitative or qualitative measure depending on the case, which allows to assess the degree of achievement of a given objective.

The intention of the legislator through this reform of public finance is to guide management based on performance, it is the ability of each organization or administration to effectively exploit the resources available to it in order to achieve set goals. So, each mission prepares an annual performance project; it includes the programmatic redistricting adopted for each mission, the strategic directions and all the objectives and indicators set for each program. - The annual performance report: it highlights the performance achieved compared to the objectives and indicators outlined in the annual performance project for the same budget year. The sustainability of the State budget is a new principle of the reform; is a continuity of the State's ability to honour its commitments and obligations and to preserve financial balances. To show more transparency in budget, the overall staff of state and public institutions (the number of staff authorized for the budget year for the benefit of ministries including their central and regional services and the staff of public institutions) are attached to the state budget.

We should stress here that voted budgetary allocations within each program between compensation expenditures, capital expenditures, financial transaction expenses and other expenses per order of the Minister responsible for finance. This order cannot introduce any changes to the voted budgetary allocations. They are allocated by part within each program by order of the head of mission after notice from the program manager.

According to the new organic budget law, redeployments of funds within the same program can be carried out by order of the head of the mission. However, there can be no increase in compensation expenditures or a decrease in capital and financial transaction expenses. The budget of a public institution whose budget is attached to the State budget may be changed during the year in revenue and expenditure by decision of the head of the institution after the advice of the head of the program concerned. The redeployment of budgetary allocations within each special account is carried out by order of the head of the mission concerned.

For the evaluation and control, the Assembly of People's Representatives monitors the enforcement of financial laws and evaluates annual performance reports and other matters relating to public finances. All financial and administrative information and documents, including reports prepared by the control structures, must be provided to the Assembly of People's Representatives, which will respect the secrecy of matters relating to national defense and the internal and external security of the State and the confidentiality of investigations and medical secrecy. The Government presents a report to the Assembly of People's Representatives at the end of the first semester of each budget year on the implementation of the budget and on the implementation of the provisions of the Finance.The State budget is subject to administrative control at the various stages of its implementation. The control procedures are set by the regulatory texts specific to each supervisory body. All governments are subject to audit missions and their annual performance reports are reviewed and evaluated.

5. Conclusion:

The aim of this paper was to provide an understanding of the management system of the Tunisian defense budget. The implementing of a new budgeting system in the sector of defense

was a very important step achieved in 2019 on the path of conducting a strategic reform to improve the efficiency of public finance. The reform help creating a new culture to develop management based on objectives and performance. It is also a challenge for all the public administration. In addition to that, the adoption of PPBESs principles will prepare the Ministry of National Defense to move to the management based on result since there are a lot of similarities. However, it is important to consider that PPBES depends on resources. For Tunisia, its adoption has to be self-built and adapted with a smart look and feedback from similar army. The implementation of PPBES (Management Based on Result- the present Tunisian model) is considered benefit in our case.

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COST ANALYSIS AND MEASURE OF EFFECTIVENESS USES IN IMPROVING THE MILITARY CAPABILITIES

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Abstract:
Cost–benefit analysis (CBA) in the military offers a vital tool to help guide governments through both stable and turbulent times. As countries struggle with the dual challenges of an uncertain defense environment and cloudy budgetary prospects, CBA offers a unique opportunity to transform defense forces into more efficient and effective organizations.
Taking difficult decisions is always a struggle in the military. Choosing between cutting cost and raising effectiveness is a hard job for every leader. CBA offers a scientific approach to decision making in the military, especial in the field of resource allocation.

Key words: cost-benefit analysis, effectiveness, cost estimation, decision-making.

1. Introduction

Cost analysis is very important from the perspective of a decision maker or a decision maker's adviser. Cost–benefit analysis (CBA) requires careful consideration of future costs. Cost estimating is the process of collecting and analysing historical data and applying quantitative models, techniques, tools, and databases to predict the future cost of an item, product, program or task.

The term "cost analysis" is broadly used to include not only the process of estimating (measuring) the cost of a project but also the process of discovering, understanding, modelling and evaluating the relevant information necessary to estimate the cost as well as the cost uncertainty and risk. This "cost analysis" is used to help the decision makers to select the best alternatives to achieve the objectives/goals of the organization. [1]

Some examples of military organizations objectives can be: Maximize security, firepower, skills, system capabilities or Minimize deaths, costs. All objectives that cannot be expressed in monetary forms can be grouped under the term Effectiveness. The one remaining – namely Costs, it is to be linked with the notion of Efficiency, ability to avoid wasting materials, energy, efforts, money, and time in doing something or in producing a desired result. In a more general sense, it is the ability to do things well, successfully, and without waste.

It is important to note that cost analysis and estimating, as applied to financial management throughout government and industry, provides for the structured collection, analysis, and presentation of life-cycle cost (LCC) data to assist in decision-making for systems capabilities throughout their useful life. Examples of the components of LCC analysis conducted during each phase are:

- research and development (R&D) - complexity and innovation studies;
- production - performance, scale, and process studies;

- operations and support (O&S) - crew levels, training, fuel consumption support, reliability and maintainability, and logistics studies;
- disposal - feasibility and tradeoff studies.

There are three main applications of cost estimating in the Planning, Programming, Budgeting, and Execution System (PPBES) process:

- preparation and justification of budgets (the cost estimates are performed within all phases of the acquisition process to determine the budget amounts required to fund the program throughout its life-cycle)
- making choices among alternatives (acquisition cost forecasting or analysis of alternatives - AoA),
- source selection (contracting).

The scope of this paper is presenting cost estimating as a most for AoA.

2. Cost estimating and analysis of alternatives

Cost estimates for the AoA requires forecasts of time-phased cash flows that occur over the life of a system. This forms the basis for estimates of the total LCC of a system. The LCC estimates are usually developed using constant currency, and cost comparisons of alternatives are based on the present value of the total LCC.

AoA and selecting the best alternative implies answering to 3 questions:

1. How can we estimate the cost of different alternatives?
2. How can we combine all the objectives into one measure of effectiveness?
3. How do we choose if one alternative is cheapest and another alternative is the most effective?

2.1 Ways to estimate costs

Costs can be defined in several ways. It can be defined or measured as the actual physical resources consumed (iron, oil, timber, number of planes, ships). Costs can be described as what is given up, which is sometimes maned opportunity cost (what you give up to choose / buy your preferred alternative). [2]

The most common way to state cost is in term of money, the currency value of the resources consumed.

According to the International Cost Estimating and Analysis Association (ICEAA), formerly called the Society of Cost Estimating and Analysis (SCEA), estimating is "the art of approximating the probable worth or cost of an activity based on information available at the time." [3] An estimate is a judgment, opinion, forecast or prediction. A cost estimate therefore is a prediction of the likely future cost of a process, product, project, service, program or system.

When you think about the total cost of one alternative you should consider all relevant costs of the system over the lifecycle of the system, based on expected operating conditions.

In the defense acquisition process, a cost estimate is a prediction or forecast of the complete costs of a complex program or weapon system, and it is often a time-phased estimate. The first step in any cost estimate of complex systems is to understand the attributes of the program or weapon system whose cost is to be estimated.

Traditionally, this requires understanding and describing the weapon system in terms of physical and technical parameters, operational and support concepts, mission requirements, and interfaces with other systems. Understanding the program's schedule and acquisition profile is also important in developing a cost estimate. The goal is to understand the relationship between

key weapon systems' attributes and cost. The next step is to develop an explicit framework for the cost estimate. [4]

Having accurate and revealing cost information is critical for decision making. Understanding cost behaviour is the key to useful cost analysis.

We have to keep in mind that lifecycle costs (LCC) has 4 components: Research & Development, Procurement (Investment or Acquisition), Operation & Maintenance, Disposal (Decommissioning or Salvage). All costs should be in the budget the needed period of time.

Cost estimates are designed to inform users about the cost realism, the cost validity, and the cost reasonableness of proposed alternatives, contracts, and budgets.

2.2 Cost estimating techniques

Estimating future costs is always challenging, and is one of the most difficult tasks facing analysts. The three basic methods recognized for use within the professional cost estimating community are:

- analogy - using costs of similar systems to determine the cost of the subject system;
- expert elicitation – ask the experts about what they believe;
- engineering (also called bottom-up or industrial engineering analysis);
- parametric - generalized relationships between system characteristics and costs.

Analogy-based cost estimating, which can also be called "It's like one of these," subjectively compares the new system with one or more existing similar systems for which there is accurate cost and technical data. With this approach, an analyst selects a system that is similar to or related to the system for which costs are being estimated, and adjusts for differences between the two systems (using an index). This approach works well for derivative or evolutionary improvements. Therefore, a relevant starting baseline must exist to apply the method successfully. The analogy estimating approach is faster than the other three approaches, yielding more immediate cost estimates.

Expert elicitation is about what specialists think about future costs. Here can be a problem of overconfidence (costs could be less or experts could not think what can go wrong). We should always ask the experts: What if contract award is disputed? Is the technology unproven? What if we change numbers purchased? Can be some supply shortage?

Industrial engineering is the most detailed method to estimate costs ("Is made up of these"). The bottom-up approach relies on detailed engineering analysis to determine an estimate. To apply this approach to estimate future aircraft engine production costs, an analyst would need the detailed design and configuration information for various engine components and accounting information for all material, equipment, and labor. A conceptual engine design is built from scratch (hence the name "bottom-up"). This approach generates a fairly detailed forecast, but it is very time consuming.

Parametric relationships sometimes known as the statistical method ("This pattern holds"); this technique generates an estimate based on system performance or design characteristics. The parametric relationships used for estimating costs are called cost estimating relationships (CERs). "A parametric cost estimate is one that uses CERs and associated mathematical algorithms (or logic) to establish cost estimates." [5] Parametric methods are usually based on a statistical technique that attempts to explain the correlation between the dependent variable (typically cost) as a function of several explanatory variables such as

technical and performance characteristics, independent variables derived from project parameters, such as:

- intended performance and in-service date (hedonic);
- overall system design characteristics (parametric);
- sub-system design characteristics (synthetic);
- inputs to program work packages (resource-based).

Advantages and disadvantages of the cost estimating methods are presented in the following Table 1:

Model	Description	Advantages	Disadvantages
Analogy	Compare project with past similar projects	Estimates are based on actual experience	Truly similar projects must exist
Expert elicitation	Consult with one or more experts	Little or no historical data is needed; good for new or unique projects	Experts tend to be biased; knowledge level is sometimes questionable
Industrial engineering	Individuals assess each component and then component estimates are summed to calculate the total estimate	Accurate estimates are possible because of detailed basis of estimate; Promotes individual responsibility	Methods are time-consuming; detailed data may not be available, especially early in a program; integration costs are sometimes disregarded
Parametric	Perform overall estimate using design parameters and mathematical algorithms	Models are usually fast and easy to use, and useful early in a program; they are also objective and repeatable	Models can be inaccurate if not properly calibrated and validated; it is possible that historical data used for calibration may not be relevant to new programs

Table 1 [6]

Another thing to keep in mind is that you should have a risk / sensitivity analysis. What can go wrong? What are the associated likelihoods? What are the consequences? Cost estimating process take into consideration all this aspects.

2.3 Time value of money

Using historical data to predict future costs requires that the data not only be relevant to the system under consideration, but that it match the assumptions of the cost estimating model. For example, cost data is recorded in accounting records based on transactions that occur over time. The cost of each transaction reflects the buying power of the currency at the time the transaction was completed. Over time, if a country is experiencing inflation or deflation, the buying power of the same amount of currency changes. As a result, cost information contained in accounting records incorporates inflation or deflation. These effects must be removed before they are used in a cost estimating model; otherwise the cost estimate will be biased.[7]

Another way to say it is that we all prefer money now versus money in the future, we all prefer costs in the future versus costs now. So we must introduce present value analysis as an analytical tool (not a budgetary one!).

This method of present value analysis is used just to compare the costs of alternatives over time.

$$P = F_n / (1+r)^n,$$

where P = present value, F_n = future cost year n, r = discount rate (not inflation, interest, cost of risk, opportunity cost, cost of borrowing money), n = year.

Denominator in above formula is called "discount factor" and it is equal to $(1+r)^n$. For example a discount rate of 0.05 means that $1.050 next year equal $1.000 now. $1.050 two years in the future equal $952.38 now (at 0.05 discount rate).

Usually future currency worth less, but the question is "how much less?". Choosing (calculating!) the right discount factor is very important. In the last period this became even more complicated because of negative interest, possibility that a sum of money from the future worth less than in the present.

There is also the possibility of considering a discount rate equal with zero. Then, undiscounted costs assumes future currency are as valuable as present currency.

2.4 Effectiveness of alternatives

Effectiveness can best be measured in the public sector by developing a framework for solving decision problems with multiple objectives. The framework will provide you with a practical tool for quantitative investigation of all factors that may influence a decision, and you will be able to determine why one alternative is more effective than others. This analytical ability is very important because many real-life decision problems involve more than a single issue of concern. This holds true for personal-life decisions, private sector business decisions, and public sector government resource allocation decisions. [8]

Effectiveness measures the extent to which an alternative helps to pursue objectives, taking into consideration the relative importance of each objective. It does not consider cost.

Government decisions in general, and defense resource allocation decisions in particular, have an added evaluation challenge. Outcomes are difficult, if not impossible, to represent in monetary terms. First, benefit cannot be expressed in terms of profit. Unlike the private sector, the public sector is not profit motivated and this single monetary measure of benefit is not relevant. Second, market mechanisms often do not exist for "pricing out" the many benefits derived from public sector decisions. Thus, it is not possible to convert all the benefits into monetary terms and conduct a cost–benefit analysis (CBA). In national defense, benefits are often characterized in terms such as deterrence, enhanced security, and increased combat capability. No markets exist that generate a price per unit of deterrence or a unit increase in national military security.

So choosing the right objectives, right hierarchy of those, relies on decision maker preferences (you have to be that or have access to him/her for understanding preferences).

There are 3 basic questions to address the decision maker:

1. What is important?

Identifying objectives is the most important step when defining effectiveness.

The decision maker should make an objectives hierarchy from general to specific ones. He / she should made very clear where do you start from and what do you want to achieve. Every objective should be divided until you can measure them clearly. One technique to do that

is to ask "What do you mean by that?" until bottom level of the hierarchy is composed of measurable attributes.

There is a possibility to establish the objectives from some policy documents. This situation should be avoided but could happen when is not possible to speak with the decision maker (because of distance, lack of time…).

2. How much is enough? (value functions)

Each attribute is translated to a value scale between 0 and 1. For example you should put the value 0 when is not enough performance and 1 when performance is at maximum.

3. How important it is? (tradeoff weights)

How important is each objective, relative to each other? This is the step when tradeoffs between attributes are made by the decision maker according to his/her preferences. Each attribute weight is between 0 and 1 and sum of all equal 1.

A decision maker usually can say an order of objectives but cannot say how much more important is. This is the reason that attributes / objectives have to be somehow ranked.

From this "ranked objectives" a measure of effectiveness (MoE) can be derived.

For easier analysis of alternatives the decision maker can put Effectiveness (MoE) and Cost on a graph.

Still remain some questions: Is the required budget reachable? Do you have a required minimum level of effectiveness? How much do you want to spend more to gain something in effectiveness? All this questions are depending on how important the objective is viewed by the decision makers, what are his / her preferences.

Practical application. Choosing a truck for the Army.

Imagine the following decision problem for the fictitious country of Amria, a nation with some security problems and limited funds for addressing these problems:

Amria Army uses a number (around 1.000) of old trucks type DAC 665 produced 20 years ago in a company based in the city of Sengen. There is high need for new trucks to replace the old ones. Main reason to do that is that old DACs have very big maintenance costs, a lot of them not working for different reasons (engine or transmission problems, lack of spare parts). Another reason is that DACs engines are old ones, polluting a lot the environment.

Amria Government decided to make a contract with a firm to improve the Transport Capability of the Army by providing new trucks or modernizing the old ones. A team from the Army Vehicle Command receive the task to analyze this issue and advise the Chief of Land Forces about the best way to resolve this problem. There can be two possibilities: up-grade the existing trucks or sell them and buy new ones.

Special attention is to be paid to the fact that there is a truck factory in Amria, in Sengen city.

After the Army Vehicle Command conducted a research they came with the following offers:

	Upgrade DAC 665	***IVECO HM 6X6***	***Rheinmetall HX***
Price	*30 (engine / transmission*	*100*	*115*

	modernized)		
Warranty	*2 yrs.*	*4 yrs.*	*4 yrs.*
Annual maintenance cost	*8*	*6*	*0 in the first 4 yrs., 8 after*
Protection	*N/A*	*Yes, 25 mm*	*Yes, 40 mm*
Speed	*85 km/h*	*110 km/h*	*125 km/h*
Range	*800 km*	*750 km*	*900 km*
Power	*250 CP*	*400 CP*	*430 CP*
Maximum load	*10 t*	*14 t*	*15 t*
Produced in	*Amria*	*Altland, possibility 50% Amria*	*Altland*
Ground clearence	*390 mm*	*400 mm*	*380 mm*

Expert elicitation told us that there are R&D expenses for modernization of DAC 665 of 2.000 to be made in the first year. Old DAC trucks have a disposal value of 20 / each. Fuel consumption is similar to all alternatives.

Cost analysis (considering LCC of 10 years, all prices above in constant currency, discount rate in the next 10 years - 0.03) for the offers are as follows:

1. Modernizing existing 1.000 DAC 665

We will consider that we will upgrade 1.000 trucks – 100 in year 1, 300 / year in the next 3 years. 2.000 R&D needed in the first year, no disposal cost in the next 10 years.

	YEAR									
DAC	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
R&D	2,000	0	0	0	0	0	0	0	0	0
Procurement	3,000	9,000	9,000	9,000	0	0	0	0	0	0
Maintenance	0	800	3,200	5,600	8,000	8,000	8,000	8,000	8,000	8,000
Disposal	0	0	0	0	0	0	0	0	0	0
TOTAL constant	5,000	9,800	12,200	14,600	8,000	8,000	8,000	8,000	8,000	8,000
TOTAL discounted	5,000	9,515	11,500	13,361	7,108	6,901	6,700	6,505	6,315	6,131
										79,035

2. Buying 1.000 new Iveco HM 6X6

We will consider that we will buy 200 trucks/year in 5 years. We will sell next year used DAC trucks (that were replaced by Iveco) resulting a salvage revenue of 20 / piece.

	YEAR									
Iveco	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
R&D	0	0	0	0	0	0	0	0	0	0
Procurement	20,000	20,000	20,000	20,000	20,000	0	0	0	0	0
Maintenance	0	1,200	2,400	3,600	4,800	6,000	6,000	6,000	6,000	6,000
Disposal DAC	0	-4,000	-4,000	-4,000	-4,000	-4,000	0	0	0	0
TOTAL constant	20,000	17,200	18,400	19,600	20,800	2,000	6,000	6,000	6,000	6,000

TOTAL discounted	20,000	16,699	17,344	17,937	18,481	1,725	5,025	4,879	4,736	4,599
										111,424

3. Buying 1.000 new Rheinmetall HX

We will consider that we will buy 200 trucks/year in 5 years. We will sell next year used DAC trucks (that were replaced by Rheinmetall) resulting a salvage revenue of 20 / piece.

	YEAR									
Rheinmetall	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
R&D	0	0	0	0	0	0	0	0	0	0
Procurement	23,000	23,000	23,000	23,000	23,000	0	0	0	0	0
Maintenance	0	0	0	0	0	1,200	3,200	4,800	6,400	8,000
Disposal DAC	0	-4,000	-4,000	-4,000	-4,000	-4,000	0	0	0	0
TOTAL constant	23,000	19,000	19,000	19,000	19,000	-2,800	3,200	4,800	6,400	8,000
TOTAL discounted	23,000	18,447	17,909	17,388	16,881	-2,415	2,680	3,903	5,052	6,131
										108,976

For **Measure of effectiveness** we will grade the characteristics of the trucks:

	Up-grade DAC 665	***IVECO HM 6X6***	***Rheinmetall HX***
Warranty - MAX	**0**	**1**	**1**
Produced in - MAX	**1**	**0.5**	**0**
Protection - MAX	**0**	**0.625** = (25-0) / (40-0)	**1**
Speed - MAX	**0**	**0.625** = (110-85) / (125-85)	**1**
Range - MAX	**0.33** = (800-750) / (900-750)	**0**	**1**
Power - MAX	**0**	**0.833** = (400-250) / (430-250)	**1**
Maximum load - MAX	**0**	**0.8** = (14-10) / (15-10)	**1**
Ground clearance - MAX	**0.5** = (390-380) / (400-380)	**1**	**0**

and we will consider the relative importance of the trucks' characteristics:

Objectives level 1	**Objectives level 2**	**Relative importance of objective**
Production attributes		0.4
	Warranty in place for the	0.6

	new/modernized truck	
	Country of origin	0.4
Technical characteristics		0.6
	The range with full load	0.15
	Protection for the crew	0.25
	Speed of the truck on the road	0.1
	Power of the engine	0.2
	Ground clearance (for off-road trips)	0.1
	Cargo capacity	0.2

We can calculate now the overall effectiveness for each alternative.

1. Modernization DAC 665

Production: 0.6*0 + 0.4*1 = 0.4
Technical characteristics: 0.15*0+0.25*0+0.1*0.33+0.2*0+0.1*0+0.2*0.5 = 0.133
TOTAL DAC 0.4*0.4 + 0.6*0.133 = **0.2398**

2. Buying Iveco HM

Production: 0.6*1 + 0.4*0.5 = 0.8
Technical characteristics: 0.15*0.625+0.25*0.625+0.1*0+0.2*0.833+0.1*0.8+0.2*1 = 0.6966
TOTAL IVECO 0.4*0.8 + 0.6*0.6966 = **0.73796**

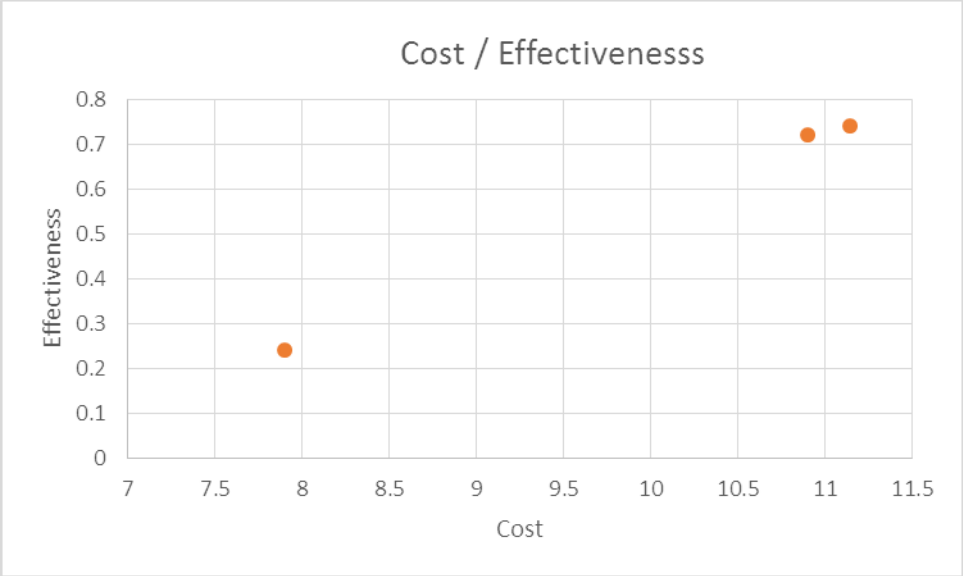
3. Buying Rheinmetall HX

Production: 0.6*1 + 0.4*0 = 0.6
Technical characteristics: 0.15*1+0.25*1+0.1*1+0.2*1+0.1*1+0.2*0 = 0.8
TOTAL RHEINMETALL 0.4*0.6 + 0.6*0.8 = **0.72**

We will have final results:

	Cost	Efectiveness
DAC	79.04	0.24
Iveco	111.42	0.738
Rheinmetall	108.98	0.72

and put the values obtained on a graph.



We can observe that there is a big difference between the modernization of DAC and buying of new trucks Iveco or Rheinmetall.

The final decision have to take into consideration the budget. Is big enough to exclude the cheapest alternative? Also comparing Iveco with Rheinmetall; we can observe that Rheimetall was best at almost every characteristic. One thing raise the effectiveness of Iveco alternative. The fact that can be produced 50% in Amria. Is this really important?

Choosing the best alternative is never a simple thing. The decision maker will have a tough time to explain to Sengen workers why he / she didn't choose DAC modernization over importing trucks from Altland.

3. Conclusion

Cost benefit analysis CBA, seen as a synthesis of economics, management science, statistics, and decision theory, is currently used in a wide range of defense applications in countries around the world to shape national security strategy, to set acquisition policy and to inform critical investments in people, equipment, infrastructure, services, supplies. Faced with severe budget cuts and an uncertain threat environment, defense officials confront urgent decisions on whether to approve specific projects (military housing; training, HQ and maintenance facilities) or programs (fighter planes, UAVs, armored personnel carriers, corvettes, cyber-defense). Military CBA offers a valuable set of analytical tools to increase the transparency, efficiency, and effectiveness of critical defense decisions.

The important thing is that the decision maker to follow a top-down approach. The logical sequence "What do I want to do" (objectives) – "How" (alternatives) – "With what" (prioritization) – "What is the best way" (analysis) is important. Objectives should be specific, measurable, achievable, realistic and time-bound. Measuring effectiveness (of objectives that cannot be translated into monetary form) should have a scientific form, based on statistics and decision theory. Cost have to be estimated in the right way, using the best method that can be applied (analogy, expert judgment, industrial engineering, parametric).

Combining cost with effectiveness the defense officials can choose the right alternative, take the best decision that can be logically explained to the all the stakeholders – state government, leaders in the military, army personnel and the simple resident of the country.

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ELEMENTS OF FOOD SECURITY IN ROMANIA IN THE CURRENT GEOPOLITICAL CONTEXT

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Abstract:
Sustainable development - as a concept - had as its starting point the global economic crisis at the beginning of the twentieth century, reaching today the inclusion of all economic, social, and human spheres. This is the new path of humanity. For it is a concept that promotes the conciliation between economic and social progress and the balance of the planet in terms of environmental quality. The explosive growth of the planet's population comes with difficult problems for billions of people: hunger, lack of water, depreciation of the environment. These elements can lead to conflicts, which are accentuated in the current geostrategic context through: migrations due to armed conflicts and hunger, overpopulation, fewer and fewer natural resources. Food security and the ability to meet minimum needs must keep pace with climate change. In a world and an increasingly globalized economy, as a member country of the European Union (EU), Romania must capitalize on its agricultural potential. The land market, with many very fertile lands, is the resource of maximum interest in protecting the national population and ensuring food security.

Key words: food security; sustainable development; global economy; overpopulation; own resources; economic progress;

1.Introduction

Agriculture plays a strategic role in the Romanian economy. In 2020, with the onset of the health pandemic, it was found that the Common Agricultural Policy (CAP) is a necessity: the EU's economic and agricultural cohesion is mandatory in the current global context [1]. The aim is to improve the lives of EU citizens, respecting the principles of sustainable development and the priorities related to this goal. The CAP militates to eliminate competitive disadvantages, guarantee food security, ensure fair prices for buyers, and increase productivity in agriculture [9].

2.Food security, as security of states

Food security is a component of the security of every state. Own natural resources must be managed efficiently so as not to jeopardize the state and its population. The biggest problems are underdeveloped or developing countries.

Agricultural production and food are viewed both in terms of quantity, but also in terms of quality and diversity [2]. The prosperity of a nation and a society is interdependent with its food security.

The increase in the world's population and the pressure to provide food on limited areas of agricultural land has triggered the development and use of new technologies in agriculture.

Today on earth are living approx. 7,89 billion people, and by 2064 it is estimated that about 9,7 billion people will live.

The number of malnourished people is increasing every year, today they are around 855 million people; 788 million people do not have access to safe drinking water, according to www.worldmeters.info [12]. More than 1 billion people suffer from hunger because they are too poor to buy food. The agrarian system, considered at one time as "old-fashioned" work, has returned to the top of the most important activities, an important component in the GDP of developed countries.

F.A.O. gave a definition of food security: "the direct access of all people to the food they need." This concept was first defined in 1963, in Rome, when the manifesto "Proclamation of the right of every man to eat to satisfy his hunger" was launched [10].

The report "Population: one planet, too many people", prepared by the Institute of Mechanical Engineering of Great Britain, was analyzed in NATO-Review 2011 [6], as: "the population explosion in the XXI century will be hungry, lack of water, overcrowded urban areas with possible conflicts. "

Sustainable practices and the anticipation of phenomena based on engineering technologies together with global measures are elements that can help states and societies [11].

According to estimates, the world's population will grow, reaching a peak of the curve between 2085-2070. There will be a decline in the curve, generally in developed countries, with stable populations, or countries with a high degree of industrialization. Populations in developing countries show an accelerated growth of citizens. It is about Africa and Asia, where internal or cross-border conflicts can occur.

Demographic trends in the EU were analyzed by the European Parliament in the report published on 19.05.2021, "How to stop the decline of the population in the regions of Europe?"

The EU is affected by the decrease in the number of births and the negative demographic increase in recent years, starting with 2015.

The COVID-19 crisis has affected birth rates and mortality in EU countries, but the consequences are ongoing, given the current evolution of the pandemic. The impact is economic, social, cultural and environmental protection.

Some regions of Eastern and Southern Europe will be depopulated due to migration to developed countries and low birth rates, he continues, in other words "brain drain".

Rural areas have 44% of the EU area, but 78% of the population lives in urban areas. The phenomenon of population aging is also witnessed due to the increase of life expectancy; in 2019 it was a percentage of 20% with people over 65 years and is estimated to reach 30% in 2070.

According to EU policies, rural areas must be connected to transport networks. The digital system, which has proved its necessity and usefulness in pandemic online education, can be part of rural development, agricultural production and modernization in food production. Jobs will be created for young people fighting the depopulation of rural areas.

In the next 40 years, according to the same British study, populations of up to 1 billion could be displaced due to climate change, drought, armed conflict, or natural disasters. This

large-scale migration, which is already happening from Asia and Africa to Europe, is putting pressure on states in the field of security in general, but also food security.

Romania is the country with the largest number of farms - mostly family - in the EU. Out of the total agricultural area, only 2,9% is the ecological area, we being on the last places in Europe. The European average is 8.5%. Switzerland has 25%, Sweden and Estonia 20%, Italy and the Czech Republic 15%, Germany and France 7,7%, the ecological area of the total agricultural area.

The EU is preparing a number of 23 measures to lead to the development of organic farming, around 3 priority axes, namely:

- stimulating the consumption of organic products,
- increasing organic agricultural production,
- improving the sustainability of the agricultural sector.

Special attention is paid to research, with an allocation of funds worth 30%.

Another important component is the consolidation of local processing and the exchange of information and good practices.

In the material "Food security in the context of a global food crisis and the rise of food power", Ms. Madalina Virginia Antonescu from the University of Bucharest, says: fertile (both in terms of classical risks, such as interstate warfare, but also unconventional risks - sudden and massive displacement of populations due to war, starvation or economic causes. " [5]

The signs of a global food crisis are spreading. Highly developed countries in terms of food, with surplus food and processing them themselves, produce additional value that is found in the country's strategy.

Romania had in 2021 a record agricultural production of cereals, of 34 million tons, of which an estimated 11 million tons of wheat, 15,4 million tons of corn, 1,3, million tons of rapeseed, 3,35 million tons sunflower: according to the Farmers' Trading House, Ziarul "Financiar". It turned out that Romania has potential, and with an irrigation infrastructure and storage space, the conductivity will increase.

Romania is one of the countries with the most fertile land in the EU. Romania's land market is undergoing continuous transformations. The geographical position of the country is favorable to agriculture; the ratio between the Arabian area and the number of inhabitants shows that each Romanian citizen has 0.41 ha / capita; the EU average is 0.212 ha / capita, according to the 2018 Eurostat Year Book; in contradiction, we also have the most fragmented agricultural area in the EU.

Romania owns 7,6% of the agricultural area used at EU level; France owns 16%, Spain 13,6%, Germany 9,6%, Poland 8,3% of EU agricultural land.

The average size of an agricultural holding in Romania is 3,6 ha compared to the EU average, which are 14,2 ha. In the structure of the agricultural area used, 63% is arable land compared to the EU average of 60%.

Romania is the largest grower of corn grains and sunflowers in the EU; on the area cultivated with wheat we are on the 5th place after France, Germany, Poland and Spain, according to Eurostat.

According to the UN, the institutions with competences in the management of the necessities in agriculture, the provision of basic food to avoid migrations, conflicts generated by the food crisis, zonal or global, are of special importance. It is necessary to combat pollution generated by food waste.

The 2030 Agenda, with the 17 goals of sustainable development of the UN, represents the desire for a better world without poverty, inequality, hunger and without environmental degradation [7].

Objectives 1 and 2 refer to poverty and hunger. So:

* Objective 1 - No poverty - means reducing hunger, malnutrition, limited access to education, basic services, social discrimination.

* Objective 2 - Zero starvation - talks about rural development that must be people-centered and environmental protection, providing food for all. Climate change is putting pressure on primary resources, increasing the risks associated with disasters caused by drought, floods, rapid degradation of soils, freshwater, forests and biodiversity.

Participatory policies, social behaviors, food waste, sustainable food systems must be changed in line with new technologies.

Hunger and poverty, population aging, geopolitical instability, climate change are elements that must be studied and corrected to create the conditions for sustainable agriculture by protecting the environment [8].

Food waste is on the rise worldwide.

According to the World Wildlife Fund (WWF) Report conducted in 2019-2020, it revealed that globally, approx. 2,5 billion tons of food at the level of farms, retailers and consumers, compared to 1,2 billion tons estimated to be lost and / or wasted [3].

The study conducted by the UN and FAO in 2011 showed that 33% of world food production was wasted.

Compared to the results of the studies and the reality regarding the food resources, it is necessary to take urgent measures to limit the food waste.

Food waste is a widespread phenomenon, the decline of which requires education and investment. The most wasted foods are fruits, vegetables and bread, and the culprits are mostly consumers and restaurants.

In the WWF study, Romania was part of the research. The Romanians participating in the study, in percentage of 83%, stated that they usually throw food.

The crisis caused by the health pandemic has accentuated food waste by about 10%, according to the same study.

One proposed measure at EU level is the establishment of a European Office for Food Waste Management.

In order to provide food for the population, the minimum requirement should be 30% more; annually, in a period of crisis, there must be agro-food products necessary for the Romanian population.

3. Conclusion

Agriculture is one of the strategic sectors of the country. Along with health, during the pandemic, this is the basic area through which food is provided to the population, being necessary [3, 4]:

- Redirecting food to other markets has put pressure on the EU food sector.

- Supporting local producers, supporting the lot because they are pillars of Romanian food security.

- Encouraging young people to set up farms and support them by the state; they are providers of healthy, green food.

- Reconciling the economic development and the ecological balance of the planet, in the context of the exponential growth of the world's population.
- Protecting its own primary resources, Romania's agricultural land, and its exploitation respecting the principles of sustainable development and environmental protection.

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THE FALL OF KABUL WHAT DOES THIS SITUATION MEAN FOR CENTRAL ASIAN STATES AND EUROPEAN UNION?

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Abstract

Just days after the withdrawal of US troops, the Taliban took control of Afghanistan. Inevitably, this situation will affect the nations of the Central Asian region, which are already suffering from authoritarian regimes and various forms of hybrid threats, including terrorism, separatism, extremism, drug trafficking and cross-border organized crime. In the same vein, there is a state of uncertainty regarding the ramifications of this situation, which could lead to a deterioration of the security climate in Europe. As the level of hybrid activity has increased substantially in recent years and the expected challenges are cross-border in nature, they require special attention from the international community. Therefore, this paper will bring an explanatory and predictive note in relation to the situation in Afghanistan and the new threats, that foreshadow in the short and medium term in Central Asia and Europe.

Keywords: *European Union, Central Asia, Hybrid Threats, Security, Cooperation.*

1. Introduction

It is not difficult to see that, along with the withdrawal of US troops, the erosion of the security environment and stability in Afghanistan has accelerated, and the consequences of this event will sooner or later affect Central Asia and Europe.

The Caspian region is challenged by a wide variety of political, socio-economic and military threats, which include inter alia armed conflicts, inter-ethnic and confessional tensions, militant separatism, international terrorism, illegal arms and drugs trade.

The security of the region is also affected by the intensifying strategic competition among major foreign powers over establishing their political and economic influence in regional affairs.

Therefore, on the fertile ground created by the crisis in Afghanistan, the questions that arise concern the risks, threats, and vulnerabilities in the region.

How can the premises be created, for regional powers to justify an increased military presence in the Central Asian region? How will new risks, threats and vulnerabilities be exploited by different actors?

How can the new risks, threats and vulnerabilities affect societies in Central Asia and Europe? - with an emphasis on language policies, the emergence of ethnic enclaves and nationalist currents.

What tactical and strategic methods could be used, to intensify the military presence in the area?

It's no secret that such tactics were used successfully in 2014, when, under the pretext of protecting Russian-speaking minorities from the threat of extremism and government aggression, the Russian Federation deployed troops on Ukrainian territory in order to occupy the Crimean Peninsula. Further, the pro-Russian ethnic groups orchestrated a "referendum", and under the umbrella of "popular will", declared the independence of the Crimean-Peninsula, which was later annexed to the Russian Federation.

The answer to these questions will be integrated in the form of a qualitative analysis and will include methods of deductive and inductive argumentation designed to highlight and explain the risks, the threats and vulnerabilities, arising from the crisis in Afghanistan.

2. Europe's Connections with Central Asia and Security Implications

Regarding the risk, threat and vulnerability factors that the crisis in Afghanistan has caused for Central Asia and Europe, it should be noted that most of them have pre-existed in various forms since the Soviet Union.

Therefore, it is expected that, under the new challenges, the Russian Federation will take advantage and will create favorable conditions designed to influence the new regional cohesion policies.

This special situation raises concerns about the prospects for cooperation between the European Union and the Central Asian states, and these issues, have been expressed in the European Union Strategy for Central Asia.

On the one hand, through the strategy for Central Asia, the European Union aims to eliminate its dependence on oil and gas imports from Russia.

On the other hand, the Central Asian states are equally advantaged by the strategy of the European Union, through various opportunities for economic, trade and security cooperation with Western countries.

The EU Strategy for Central Asia currently covers seven main areas: human rights and the rule of law, good governance and democratization, youth and education, economic development, energy and transport, environmental protection, countering common threats and intercultural dialogue.

However, none of the initiatives mentioned above managed to break down the numerous trade barriers that existed between states.

Although the Strategy was reviewed four times in 2008, 2010, 2012 and 2015, 2019, the EU's top priorities for the region remained constant.

On 19th of June 2017, the EU and its Member States reaffirmed their commitment to developing a strong and durable relationship, based on joint ownership and aimed at fostering peaceful, prosperous, sustainable and stable socio-economic development of the Central Asian region, in line with the EU Global Strategy and the United Nations Sustainable Development Goals.

> Article 5 asserts that *"The Council recognizes the security challenges faced by Central Asian countries and stresses the need to strengthen dialogue and cooperation on security challenges such as prevention of violent extremism (including addressing radicalization, the issue of foreign fighters and counter-terrorism, with an increased focus on prevention. […]"*

The Council recognizes the importance of effective border control in ensuring the facilitation of cross-border trade, the fight against illegal trafficking of drugs, persons and goods and for managing migration flows, and is determined to continue its support to strengthening cooperation among Central Asian countries on their border management.

Hence, the EU recognizes the importance of keeping the area safe and peaceful, but not much progress has been done in recent years to implement the measures stated above.[1]

Finally, several EU Member States are funding the Central Asian Regional Information and Coordination Centre (CARRIC), which was created to coordinate joint actions for countering illicit drug-trafficking.

European countries also participate in the Central Asia Border Security Initiative (CABSI), a platform for dialogue and exchange between local actors and international donors.[2]

A renewed EU strategy towards Central Asia was adopted in 2019, which was synchronized with the adoption of the multiannual development assistance budget for 2020-2027.

In its strategies, the European Union is committed to a much more active presence in the Central Asian region and takes into account the involvement of Russia and China in the area.

The size of the allocated funds, as well as, the numerous cooperation programs with the states in the area, underline the importance of these commitments.[3]

The general objectives of the regional development programs aim to increase cooperation in the fields of energy, environment, water and socio-economic development.

There are also programs, designed to strengthen cross-border cooperation through integrated border management and joint fight against drug trafficking, giving a new impetus to *the Joint Plan Action for the Implementation of the United Nations Global Counter Terrorism Strategy in Central Asia, the Border Management Program in Central Asia (BOMCA) and the Central Asia Drug Action Program (CADAP).*

Intergovernmental cooperation and efficient border management have always been the central interests for EU policy in the Central Asia region, but despite a long period of dialog and cooperation, the breakthrough has been somewhat modest.

Even if now the EU is committed to a more involved policy in the region, it lacks the means and influence to actually implement those plans.

The former Secretary General of NATO, Lord Robertson, stated that: "Europe cannot be fully secure or realize its own potential, if the Central Asian countries are left out of the equation."[4]

Equally important in this context is the ability of policy makers to identify common ground and means for improving coordination between EU and US strategies in the Central Asia region.

2.1 The emergence of insecurity factors for Central Asian countries

Despite European Union programs aimed at strengthening the democracy and security of Central Asian states, there are concerns that, in one way or another, amid the new crisis, *the region's dependence on the Russian Federation will increase.*

Hence, the recognition of the Taliban regime by the Russian Federation requires special attention from the international community.

On the one hand, the Russian presence in the area would bring a drop of stability, through new cooperation agreements with newly installed Taliban regime.

These actions will cause unmistakably interdependencies and isolationist policies in the region.

On the other hand, the danger of insurgency and interethnic tensions, remains active and may lead to an increase in "Soviet sentiment", which calls for military intervention to protect Russian-speaking communities in Central Asia, followed by annexations of territories and / or various economic and military agreements with the Russian Federation.

The depth of the subject lies in the fact that, the politicization of ethnicity and language issues can become a direct attack on the sovereignty and territorial inviolability of a state.

The psychological component of hybrid warfare was tested in Ukraine and raises questions on the capabilities of Central Asian governments to counterbalance this phenomenon. How will protect their citizens, critical infrastructure and sensitive information from disinformation campaigns, cyber-attacks and informational aggressions?

The geopolitical unpredictability of the "Russian World" concept and the thesis about "protection of fellow countrymen", have created some fear in Central Asian region regarding the destabilization and growing militaristic sentiments in certain population groups, fueled by fake news from social media.

As part of the psychological warfare, the Russian federation seeks to establish new, or to encourage transformation of existing ethno-confessional public movements and organizations in Central Asia.

A clear example of these tactics could be seen in Ukraine, where the need and importance of establishing policies to ensure government control over interethnic relations and language policies was highlighted, but unfortunately the lack of such policies has turned into violent confrontations.

Central Asian states, which have significant Russian ethnic communities (especially Kazakhstan), must also consider the risks posed by the coexistence of several national identities in a state.

The chaos in Ukraine occurred when the government failed to shape a domestic policy, targeting the consolidation of the single-nation idea and single-state ideology.

Therefore, the events in Crimea and then, in Donetsk and Lughansk regions, showed the effectiveness of Russia's strategy regarding symmetrical and artificial joining of "divided people."

Subsequently, the fragmentation of Ukrainian territory set a precedent, that can be repeated in Central Asia given the numerous existing ethnic enclaves and various territorial claims.

In this context, the governments of Central Asia must pay more attention to Russia's plans, which continuously simplify the procedures for granting citizenship to persons born in the Soviet Union, or descendants of Russian-speaking Soviet citizens.

The existence of ethnic communities could potentially be used as justification of military intervention.

Hence, the annexation of the Crimean Peninsula, should raise awareness for Central Asian governments regarding the importance of protecting their borders against third-party military action, especially in light of existing enclaves, diverse ethnic environments and reciprocal territorial claims.

On the other side, Russian Federation, has been accelerating the expansion of its military presence in Central Asia and signed agreements with Tajikistan and Kyrgyzstan, thus extending the presence of its military bases in those countries until 2042 and 2032.

However, Russia doesn't have as much influence in Uzbekistan and Turkmenistan, as it has in the other three other Central Asian states.(these 2 countries have managed to avoid Moscow's multilateral treaties and cooperation organizations).

Nevertheless, at a bilateral level, Russian-Uzbek and Russian-Turkmen economic relations remain close knit.

The reciprocal measures taken by the West and Russia to reduce mutual trade in the principal commodities, such as oil and gas have had long-reaching effects for the Central Asian states, especially Kazakhstan and Uzbekistan as the major exporters of fuel.

Kazakhstan's economy has been further affected by the Ukrainian crisis, as trade has shrunk by more than 40 % during the post-Crimea period.

Russian factories' demand for raw materials from the Central Asian region has been declining, since for production, those factories heavily depend on cooperation with industrial companies in Ukraine.

The events in Ukraine affected also the small and medium-sized businesses in Kazakhstan and other Central Asian countries that trade with Ukraine, as well as serious disruption for the European trade and investment.

Logistics and supply chains have changed significantly and have narrowed the range of goods and services, making trade dependent on the current geopolitical situation.[5]

Moreover, Russia's economy has lost its appeal to the countries of the Central Asian region due to the prolonged recession and sanctions imposed by the international community.

On the same note, the Covid-19 health crisis, as well as the devaluation of the Russian ruble and the stagnation of the economy, have severely affected the official and clandestine labor flows, which become increasingly complicated.

In this regard, it should also be noted that remittances made by migrants working in Russia to their countries of origin have decreased considerably with the economic isolation of Russia.

All these factors have determined the migrants to prefer Turkey or Europe, as a final destination!

2.2 Soft Generators of Insecurities in Central Asia

The Eurasian Economic Union was created as a counterweight and is Russia's mirrored version of the European Union, the first regional organization since the fall of the Soviet Union, to reach a deep level of integration (single market and common foreign trade tariffs).

The Eurasian Economic Union is useful for Russia not because of any purported economic advantages, but because of the geopolitical leverage it gains.

Russia provides the other member states with various incentives, free trade and movement, and in exchange they gain a political ally.

Thus, this regional organization often works as a redistribution mechanism mainly driven by political consideration, in which the most powerful member (in this case Russia) provides side-payments or other forms of incentives or facilitations to weaker states in exchange for their participation in a geopolitical coalition.

Therefore, it can be appreciated that the EAEU has a different purpose, that of maintaining Russia's influence in post-Soviet Eurasia, and thus, Russia perceives this regional organization as a necessary accessory of a Great Power in the modern world.

The next step for Russia would be to integrate all five Central Asian countries into the Eurasian Economic Union.

Russia, has strong links to the region both politically and economically, but is no longer the main investor and trading partner, losing that position to China.

All these actions indicate that, Russia's primary interest is to regain control, not cooperation and regional development.

Nevertheless, Russian Federation still remains the most important actor in regard to security in the region and de facto leader of Collective Security Treaty Organization (Uzbekistan and Turkmenistan are not part of the treaty).[6]

In this context, the EU and NATO must adapt their policies and focus their efforts on new alternative development opportunities for Central Asian countries, so that policymakers in this region understand that Eurasian integration and partnership with Russia are not the only options available.

However, the Russian Federation should not be disregarded and the foreign policy of the Central Asian states can be shaped, only by the ability of the Western political establishment, to manage a balanced long-term relationship with Moscow.

2.3 Rise of China as Economic and Security Player in Central Asia

Central Asia boasts one of the largest oil and gas reserves in the world and thus, for China's ever-expanding economy, it represents an important untapped potential.

The energy infrastructure in Central Asian region was developed during the Soviet Union days, but is not yet completely modernized and able to keep up with China's increased demands for imports.

Today, China has become the main trading partner and investor in the Central Asian region and is the most significant external player from an economic point of view, followed by Russia the EU, the US, Japan and Turkey.

As China is dependent on crude oil and gas imports from the Central Asian region, it has a growing interest and has various means to promote regional cooperation and ensure that the area is free of conflicts.[7]

Kazakhstan is the most important oil supplier for China and between the two countries runs the longest gas pipeline in the world, measuring 2300 km.

During the Beijing Silk Road Forum, that was hosted in May 2017 by the Chinese government, all of the Central Asian states have expressed their interest in joining the initiative, as China holds a great importance for their economies.

For example, Kazakhstan and Uzbekistan signed the agreement to take part in the Belt and Road Initiative and in return have received generous sums for various infrastructure projects.

China has invested in the region and has made offers to invest massively in the following years if, in return the Central Asian countries take measures to reform their economies and cooperate between them.

Before the Belt and Road initiative, China put forward the Shanghai Cooperation Organization, a platform for cooperation in the field of security which has allowed China to consolidate its influence in the region without antagonizing Russia.

More to the point, China tried to go beyond the initial scope of the organization, that of traditional security dialog and introduce an economic dimension.[8]

Beijing is seeking to expand roads and railway lines to export Chinese goods not only to Central Asia, but also to Europe. [9]

As well, China has been building up its economic presence in Afghanistan – a part of what has been called "Greater Central Asia". It actually plays a leading role in Afghanistan's economy, and in expanding its influence in Afghanistan, it will probably use Pakistan's support.

Due to economic interests, the withdrawal of the Americans from Afghanistan is a huge advantage for China, which along with Russia recognized the Taliban regime.

Additionally, it should be noted that western Afghanistan, heavily depends on energy imports from Turkmenistan.

So, Ashgabat and Beijing may have a common interest in building a gas and oil pipeline from Turkmenistan to Afghanistan to Pakistan, potentially also to handle oil and gas resources of Uzbekistan and Kazakhstan.

In this context, European Union policymakers need to consider the potential of natural resources held by Central Asian states and strengthen cooperative relations with all countries in the region in order to shape a long-term perspective on ensuring energy security for the European Union.

Focusing only on blocking China's projects in the European Union and the lack of a global strategic vision, produces devastating long-term effects.

If China, by importing massive amounts of resources, manages to monopolize the export of oil and gas from Central Asia, then it may end up controlling stock prices and the geo-economic situation in the entire region.

Therefore, in order to ensure energy security, some countries in the European Community could end up accepting various compromises, which would benefit the Russian Federation and / or China and jeopardize the homogeneity of the European Union.

More to the point, China has been cooperating ever more actively with the Central Asian countries in recent years within the framework of the SCO Regional Anti-Terrorist Structure (RATS).

The SCO regularly holds joint anti-terror military drills called the "Peace Mission," to intimidate terrorists in the region.

Law-enforcement agencies are also strengthening bilateral practical cooperation in the fight against terrorism and drug trafficking.

For example, China and Kyrgyzstan have created a mechanism of joint border cooperation in the fight against terrorism.

Also, China invests in different training programs for officers from central Asian countries, all in an effort to ensure security in the region.

On the same note, China constantly renders military assistance to Central Asian countries. For example, it delivers tents, motor vehicles, computers, office equipment and various military supplies to Central Asian states.

China through all this different cooperation programs and investment initiatives tries to build multidimensional links with Central Asian countries, specifically, in the sphere of energy, infrastructure and minerals production, to ensure long-term stability in the region.

It is of note that, to date, China has only used soft power tools to try and influence its partner countries and there are well-established agreements for an institutional transfer between China and the Central Asian countries.

These were agreed in the form of financial incentives, the construction of infrastructure and various major development programs for commercial and loan facilities, all in an attempt to build loyalty.

With this approach, China still adheres to its foreign policy which is vastly different from that of Western countries and in total opposition with the Russian one.

2.4 Cross-border security implications

The new Taliban regime, which settled just few days after the withdrawal of US troops from Afghanistan, brings with it a series of hybrid risks and threats to the European Union and Central Asian countries.

Besides illegal migration, this crisis can bring in, some domestic terrorism and extremism, as well as various viral strains, modified and resistant to existing vaccines that can generate new health crises, perhaps more dangerous than Covid-19.

Increasing drug trafficking is also a problem that needs special attention, as it can destabilize many social sectors in Central Asian countries and in the European Union as well.

In Central Asia, these problems, will be added to existing problems such as the local phenomenon of radicalization and drug trafficking, which is largely a business state sponsored and accepted by high-level officials and secret services.

Regarding narcotics issue, Afghanistan produces over 80% of the world's heroin, which is delivered to foreign markets through Tajikistan and other Central Asian countries.

Unfortunately, the effects of Afghan drug trafficking and related organized crime have amplified in society, leading to an increase in HIV illnesses and drug-related crime in Afghanistan and Central Asian countries.

In the light of this evidence, warnings should be raised at European Commission level about new types of risks that threaten social security of the entire European Community.

Central Asia and the Caucasus have traditionally been a key link in the transportation of opium and heroin, harvested and produced in Afghanistan, to Russia and Western markets. Heroin and opium from Afghanistan currently account for 87% of world production per year. Today, it is estimated that 65% of opiates produced in Afghanistan circulate in the Central Asian transport corridor.[10]

If the drug trade continues to expand uncontrollably and fund the work of the Taliban in Afghanistan and Central Asian countries, local communities will be destroyed, along with all efforts to build trust and any chance of successful cooperation with neighboring countries and the European Union.

It is also important to note that poppy cultivation will have long-term effects on national health, education and social welfare, which in turn will negatively affect legitimate long-term economic growth.

Most opium processing takes place in northern Afghanistan, making large quantities available in the vicinity of Central Asian states.

Known heroin labs in Kunduz province and elsewhere in the north, as well as increased heroin seizures, along with a reduction in opium seizures, indicate that the main volume of drugs moving to Central Asia is in the form of heroin.

In recent years, the number of drug users in Central Asia has risen alarmingly, and even though Central Asia has not seen an addiction epidemic like in Russia, heroin addiction levels are rising exponentially, becoming a national security issue.

This has created a severe corruption problem across the region at all levels, especially among the government structures on the borders of Central Asian countries, which are closely linked to drug trafficking, as low-paid government officials in law enforcement are routinely bribed by smugglers to look the other way.

More than that, there is sufficient evidence that high-level government officials have been involved in drug trafficking in Central Asia, raising the question of whether there has been a progressive and systematic criminal infiltration into state agencies.

Moreover, the insurgent elements in the Central Asian area, are closely linked to drug trafficking, further amplifying the issue of threats to the security of the region and Europe as well.

It is also estimated that in Central Asian countries, the combination of organized crime with terrorism can give rise to - the lethal product of strategic crime - which aims to usurp political power.

In other words, terrorist groups are generally strongly ideologically motivated to use extreme violence for a cause considered sacred, in order to punish unbelievers, while organized crime aims, first of all, to occupy as large a segment of the illicit or licit markets of goods or services as possible, such as Mexican Drug Cartels, without being animated to promote in any way their own ideology but willing to promote fear and terror.

Even if some call them, political goals, and others economic ones, their common denominator is the desire to obtain funds as soon as possible to allow them to ensure the fluency of actions.

It is no secret that terrorist organizations frequently use criminal groups to obtain weapons, ammunition or material resources, or they use methods specific to criminal groups such as human trafficking, smuggled goods, weapons, radioactive substances.

While experts fail to reach a consensus on defining the concepts of terrorism, organized crime, mafia, or corruption, which can be defined from various angles and experiences, *organized*

crime structures have often demonstrated the ability to collaborate with terrorist groups. (Mincheva, Gurr, 2008)

Moreover, these structures prove more and more easy in adapting to the changes of situations and conditions, orienting very quickly towards the economic space, that ensures them the biggest gains and concrete possibilities of penetration in the social and legal institutions.

Thus, it can be appreciated that, in addition to the distinct threats posed by terrorism and organized crime, to the security of Central Asian states and European Union countries, new risk factors are added, resulting from the interference of these two phenomena and represented by:

- ***the financial means*** *obtained by terrorist groups from activities specific to organized crime, may allow the development of their own organizational and operational support capabilities similar to Mexican Drug Cartels, but with ideologic component;*
- ***the emergence of conflicts of interest****, through the involvement of terrorism in European organized crime where both parties can resort to extremely violent ways to resolve them;*
- ***the prospect of establishing and consolidating, on the territory of European Union, of new hybrid threat vectors****, resulting from the convergence of organized crime structures with the international terrorist phenomenon.*

3. Conclusions

With the Taliban coming to power just few days after the withdrawal of US troops from Afghanistan, inflation is expected to rise throughout the Central Asian region.

At the same time, it is very likely that hybrid threats associated with terrorism and organized crime activities such as arms trafficking, drug trafficking, corruption, clandestine migration and various forms of local or regional epidemics to intensify.

Anti-globalization trends will emerge in the Central Asian region in favor of nationalist and protectionist approaches. Such phenomenon can increase vulnerabilities in both Europe and Central Asia, where cooperation is imperative to counter the security risks associated with hybrid threats.

Thus, it is foreseen that against the background of the sanitary crisis and security issues from Afghanistan, the political authoritarianism in excess, will rise in Central Asian region.

This crisis will provide acceptable pretexts for Central Asian authoritarian leaders to eliminate their opposition, as well as, to close borders and to reject accusations based on national security issues.

In the same context, messages and attitudes of extremist and xenophobic type will emerge to blame ethnic, professional, or social categories.

As a result, it is likely that in Central Asian region, the polarization of society and the gaps widening between different socio-demographic, ethnic and professional categories, to be an important challenge for the coming years.

Competition and not cooperation will intensify amid this crisis and cooperation will have more bilateral than multilateral values.

National protectionism in Central Asia could lead to an era of more isolationism and stronger feelings of sovereignty.

Most likely these attitudes will continue to expand in Central Asia and Europe also, and thus, through more nationalism and more bilateral than multilateral negotiations, the public policies characteristic of each country, will determine the way in which the regional and international system will be reformulated.

Due to the involvement of the Russian Federation and China, the crisis in Afghanistan is becoming a game changer, that may lead to the emergence of a new eastern economic-military bloc, that mirrors the the NATO and EU model.

The European Community will be affected also by the crisis from Afghanistan and related hybrid threats.

It is likely that migration pressure will increase in Europe and Russia, due to the fact that populations will want to flee from Afghanistan and Central Asian countries, less able to withstand the security crisis and its consequences, including food shortages, sanitary and economic issues.

Most likely in the short and medium term, the Central Asian region will witness a situation of socio-economic instability.

In the most aggressive scenario, social instability can turn into military instability, which would attract the involvement of other states.

The exaltation of geo-technological competition between the US and China will accelerate the evolution towards a technological bipolarity globally and Central Asia or European Union are no except.[11]

This aspect will be determined by the promotion and dissemination of technological standards (5G, quantum processing, biotechnologies) of associated products and regulations on their use for the benefit of the citizens and the authorities.

This phenomenon will be manifested by imposing conditions in political relations with other states, or by assuming their own standards and technologies, respectively by excluding competing technologies from the market.

This will also generate competition for European and Central Asian markets in order to influence major decisions on technological standards.

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THE ROLE OF FROZEN CONFLICTS IN RUSSIA'S POLICY TOWARD THE 'NEAR ABROAD' REGION

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Abstract: *The dissolution of the USSR did not bring clarity over Russia and newly independent states relations. Despite an apparent peaceful process, the dissolution brought in light many conflicts that Russia used to mediate as central peacekeeper actor of the region and claim its 'near abroad' as a strategic area of vital interest. Its aspiration to regain international recognition as a great power and maintain control over the former soviet states made conflict resolution an endless and unclear process that anchor countries further development. Used by Russia to maintain its military posture on the contentious front with western countries, it denies the statehood of host countries and threatenspopulations' security.*

Keywords: Russia; frozen conflict; EU; security; Transnistria

1. Introduction

The dissolution of USSR changed the security environment and the geopolitical map entirely. In this situation, Western powers perceived Russia as a liberal state that followed a democratic way and gradually accepted independence of the former soviet states. However, the new Russia was unwilling to accept their independence considering as part of a historical pattern. In Russian understanding, Eastern Europe and the South Caucasus regions remain as its exclusive sphere of influence and significant interest [9]. The new geopolitical context maintained the Black Sea region in the Russian Federation area of interest that resulted in a policy oriented to preserve its *cordon sanitaire* well beyond its borders and reaching most of its neighbours. Simultaneously, because of many changes in the state's internal structure that affected its economy and, consequently, every state's establishment. This new reality weakened its ability to coerce former 'brother' entities.

2. After the Cold War

Despite the tendency to characterise it as a 'peaceful process' [26], the end of the Cold War was marked by considerable violence in some newly independent states on the USSR's outskirts. Russia has begun to act politically and militarily in the former Soviet republics,which constitutes the border between Russia and the West.Built as an empire,Russia needs to have buffer states to separate them from the outside world, as Shevtsova stated [3]. This fact might come from their historical background being periodically invaded, and the only vast territory gave the possibility to buy time for recovering. Russian strategy 'divide and influence' based on conflict instigation confusedthe EU and NATO. Three main arguments emphasise the role of the conflicts in Russian hybrid strategy: control over neighbours and resources, hinder EU/NATO access in its'near abroad' by mediating disputes, and reassuring its supremacy. The chapter will address the first one.

Economically weak and in reformation, Russia found the best way to maintain its control over neighbouring countries through forging military conflicts on the various basis and eventually becoming the mediator of the de jure conflicting parties. Planned during the soviet time as 'mines of

delayed action' [8], Russia used enclaves to ignite local discontent that sparkled military conflicts. Perceived as non-Western geopolitically [12], Eastern European countries, less Baltic States, gave Russia a fertile soil for its hybrid tactics. Having a protracted period of more than two centuries of uncontested influence in the region, Russia still considers the only significant player with the rights on security and economic issues. Russian intervention in conflicts and its resolution was biased. In Transnistria, the 14th army intervened on the separatists' side. Russia delivered military, political and economic assistance to the separatist regime, thus enabling conflict [14].

Nevertheless, this was far from being the only Russian support to the regime [5]; other volunteers came from Russia to fight on the separatists' side [2]. Assistance continued after the 1992 ceasefire, thus enabling regime survival and securing a certain amount of autonomy vis-à-vis Moldova [17]. The new Russian's military began recruiting Transnistria residents, thus violating other international law [26].Since that, Russia tried to make its de facto military base status in Transnistria de jure, but Moldova was able to resist [10].The Russian financial support is vital for the region's economy that would be sustainable for two to three months without Russian economic aid [4]. For Russia, Transnistria is an instrument that allows Moscow to exert influence over the domestic and, more importantly, foreign policy of Moldova. Therefore,the conflicts were double beneficial for Russia: control over neighbour territory and position as 'leader of stability and military security over the former USSR, by contrast 'having quite special interests in the region [14].'It is therefore of strategic importance for the Russian military, as former 14th army commandant Lebed emphasised the geopolitical significance of the region as 'the key to the Balkans', stating, 'If Russia withdraws from this little piece of land, it will lose that key and its influence in the region' [27].

Some scholars see the ongoing territorial disputes in the post-Soviet spaceforged by Moscow to reverse the fall of the Soviet Union [16]. However, Putin denied such intent in an interview claiming that 'no one wants to believe that we do not have a goal of recreating the Soviet Union [20].' This statement might be correct; Russia's intent is not the annexation of the territory but control through destruction from within. However, Crimea emphasises an exceptional case due to its military importance for Russian control over the Black Sea. It gives Russia military superiority in the Black Sea and the possibility to establish an Anti-Access Area Denial bubble, which effectively threatens the entire region [11].

Moreover, the home base for its Black Sea fleet stationed in Sevastopol perceived as being threatened by the NATO takeover [17].Furthermore, Russia seeks international recognition claiming that 'responsible international organisations should grant Russia special powers as a guarantor of peace and stability in the region of the former Union' [28]. The same discourse had president Medvedev after the 2008 Georgian ceasefire stating that 'there are regions where Russia has privileged interest' [23]. Russia used a hybrid strategy based on protracted conflicts to 'divide and influence' society and compel new governments to accept military troops presence on their territory [24].

Moscow's hybrid strategy in Moldova and elsewhere secured several Russian geostrategic objectives as emphasised by Hill in a report on the Ethnic Conflict Project [6].The main goal was to ensure the buffer zone between the West and Fatherland by maintaining a military presence in the region, subsequent transforming military peacekeeping forces [1]. Russia represents vital defensive protection for the regime in Tiraspol, protecting its statehood politically and diplomatically. As a critical member of the '5+2' negotiating format, Russia ensures that Tiraspol's interests are well represented within the conflict resolution meetings.It becomes very aggressive when Moldova or Ukraine decide to undermine 'Transnistrian statehood', often blocking Joint Control Commission counsel for conflict resolution meetings. An example of suchbehaviour is Russia's blockade of Moldovan wine, agriculture products and increase of gas price, an act politically motivated as

punishment for Moldova's reorientation towards the West [19]. Conflict prevents Moldova from moving closer to the West andless attractive for the EU [21]. Such entities became sources of illegal and criminal issues, negatively influencing the country's development by economic and political means. They created the ground for corruption and organised crime that destabilises region [25]'. Russian end-goal is Moldova part of the Eurasian Union that will return it under full Russian authority.Moreover, any country under Russia's tutelage provides additional vote for Russia or abstentions in international organisations.

The same patterns perceive in the Georgian case as a region with strategic importance, the vital point on the transit area to Turkey, Iran, and further beyond in the Middle East [1]. Like inMoldova, Russia used its stationary units to support anti-government separatists from the Georgian regions of Abkhazia and Tskhinvali. In the early '90s, Russia orchestrated its activities as a neutral party and chosen to act just when Georgia had compelled to the Russian imposed condition: join the CIS treaty and allow the further presence of Russian troops on its territory. Having a considerable contingent of troops in Georgia, Russia could have separated the poor equipped and trained forces of Abkhazia and Georgia and acquire the July 28 ceasefire [6].

Even in particular having differences, both cases highlight that Russia used frozen conflicts to secure its objectives in the region perceived as 'near abroad'. The support, and consequently, the separatists' control, was the main obstacle to achieving constructive coordination during the process [13]. The limited law enforcement and international intervention prevented the peaceful conflict's settlement where Russia is the central mediator.

The 2014 conflict in eastern Ukraine gave more insight into the Russian hybrid tactics and its goal in waging conflicts. Russia's most critical outcome is to anchor the targeted country with a burden that will keep it underdeveloped and allow control over it. Furthermore, under the guise of peacekeeping forces, the military footprint is a complementary outcome of the established conflicts. Even though Russia had a substantial military presence in conflict areas, they preferred to compel the targeted government through force to accept a Russian military intervention as a third mediator party while maintaining such enclaves that will allow control to the resolution process. However, such a scenario did not work in eastern Ukraine that rejected Russian peacekeepers for a leading international force.

Moreover, the international community provided substantial support in the political field. However, this does not mean that Russia sustained a defeat. The main goal of the conflict was not the conquest of the territory but interior dissolution. It is worth saying that Russia used conflicts in the targeted countries as a part of a hybrid strategy to maintain control over the region perceived as 'near abroad'. Although Russia is the only central mediator in all the peace processes, it is a party to the conflict due to its perpetual military and political involvement. Since the conflict's settlement in the early 1990s, Moscow has used them as a lever to influence domestic and external developments in 'near abroad'. Russia has managed an individual approach policy to each case's specifics [7], never allowing further Western integration and blocking the hopes that Western pressure on Russia will bring the conflicts to resolution [22].

3. Conclusions

Concluding one can say that Russia will continue to use its hard power as the primary tool in its external policy, as we might perceive from the last decades conducting strategic exercises to strengthen its military. Fuelling frozen conflicts will maintain its influence in the neighbouring countries and reject EU/NATO interference in the area. It will continue using uncontrolled sites to corrupt political leaders and create destabilisation in the region, thus disrupting the targeted countries' economic and political integration in the Euro-Atlantic area. Moreover, the Euro-Atlantic

integration of Eastern Europe and the South Caucasus will not be possible soon due to the Russian military presence in the area.

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COGNITIVE HUMINT TOOL FOR COGNITIVE ENVIRONMENT

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Abstract:
Understanding human behavior is imperative for the success of HUMINT in military deployments, no matter if this refers to the enemy, friendly or own troops behavior. Whoever has the power to influence human behavior – besides the ethic responsibility for such actions that is not the subject of this article – is able to efficaciously achieve the desired objectives. Nowadays, the human behavior in general, is part of an extended human network enabled by social media, households, Internet of Things and Internet of Everything, all together forming the "actors" within the cognitive environment. Like many other "military tools", HUMINT needs to be able – to a certain extent – to shape the hearts and minds, particularly the human source ones. The old model of winning the hearts and minds, generally applied in counter insurgency operations and not only, was instinctively applied in HUMINT domain with positive results. Nevertheless, the complexity of the cognitive environment, where the dexterous influencers are playing the "molding games", necessitates a methodological and scientific approach that requires to firstly analyze our own behavior and then to influence others. A Cognitive HUMINT Tool enables the understanding of how the heart and mind can determine the actions, or vice-versa, and would create the premises for shaping the human sources. **Disclaimer:** This paper expresses the views, interpretations, and independent position of the author. It should not be regarded as an official document, nor expressing formal opinions or policies, of NATO or the NATO HUMINT Centre of Excellence.

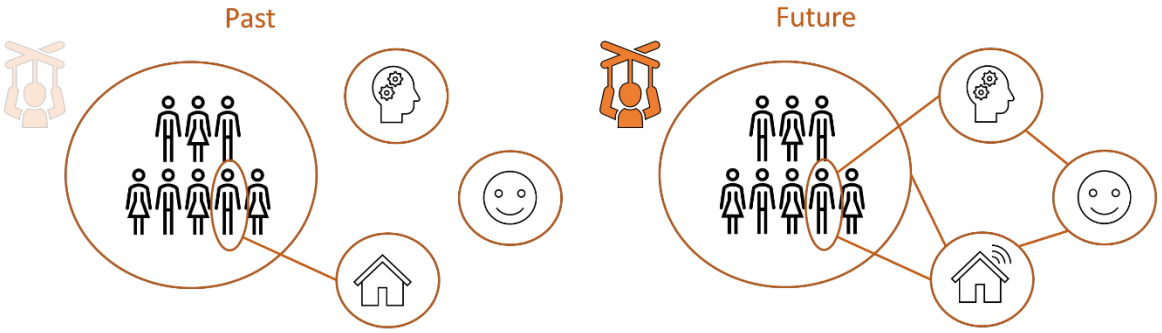
Key words: HUMINT; cognitive; psychology; human; intelligence; military; source; shaping.

1. HUMINT in Cognitive Environment

Cognitive environment is not officially approved as a NATO warfare environment or domain but in reality, we have to admit that we are totally immersed into a "cognitive pool" made of perceptions, thoughts, ideas, decisions, etc. Even more, nowadays all these cognitive elements are connected and blended into technology, and we dare to affirm that our thoughts are sometimes "created" by technology. Everything is interconnected, the people with the houses, the houses with telephones … the telephones, being almost an extension of us, are influencing our spirits, our emotions. Furthermore our emotions are influenced by whomever has the will and access into this cognitive environment, whomever understands how deeply intertwined is everything, whomever can figure out that our minds are blended into physical and virtual environments at the same time.

In the past, the cognitive environment was not as visible as it is now, the social interaction was based on face-to-face communication and the messages broadcasting range was limited to a certain geographical area. Now, social interaction is based on the virtual environment where the speed of spreading the message is far beyond our capacity to analyze its potential impact. In this new cognitive environment, the risk of being manipulated is tremendously higher than in the past, masses of population being easily influenced to take action into a certain direction. Our will is dependent on the "baits" dropped into the cognitive environment … our will is part of the cognitive environment.

HUMINT needs to adapt to this new enhanced/expanded cognitive environment.



1.1 - Cognitive Environment – Past & Future

Past … winning the hearts and minds! Even if it was not institutionalized, the psychological approach of HUMINT was to win the hearts and minds, going without saying that once these two are won, automatically you influenced the will to proceed to action. This was by default, instinctively influencing the feelings and thoughts by creating a "desire" to take action. Of course, the mini-cognitive environment formed between the HUMINT-er and the human source was mainly influenced by the face-to-face micro-environment. Nowadays this micro-environment is connected with a much bigger cognitive environment described above.

Future … knowing the hearts and minds, create a desirable action! In general, the mechanism of influencing human sources does not have to be changed, only the way of analyzing should be more relevant. If we want to create the "desire to take action" for the human source we need to emphasize and break down in a detailed manner the "will to take action" – the will of the human source. The "tool" proposed in this article, named Cognitive HUMINT Tool, is nothing else than an old religious and psychological model of the powers of the soul: heart, mind and will (fuel of the action). The same analysis should be applied both to HUMINT-er and the human source.

2. Cognitive HUMINT Tool – Components' Definition

Starting from these three components of the soul, this article proposes an idea, a way of analyzing the relationship between the HUMINT-er and the human source, by separately analyzing the personality of both and their interaction. Again, we do not claim the wheel invention, it's just a method generally used instinctively in day-to-day life by ordinary people and scientifically applied in psychology. Of course, the method's adaptation to HUMINT operational needs, represents the novelty in this affair.

Mind or … thought

At this moment, there is no generally accepted concept and without equivoque, regarding the definition of the "mind", but we will try to scratch a little bit the surface and dare to propose a definition. The simplest definition of "mind" is the "ability to think" [1] The mind (intellect, reason, thoughts, rationale, etc.) is the component of a person that enables us to "sense" the world around us, it is the faculty of consciousness and thought. It is the mind' job to reason, think things over, and reach conclusions. The mind relies on the five senses (see, hear, smell, taste, and touch) to obtain information, but uses its internal functions to analyze and come up with the perceived reality's image as Plato said, "thought is a vastly superior means to obtain the truth", and we may add … to obtain our "own truth". The perceived image of reality depends also on the emotions associated with this; process summarily described in the next subchapter. If we want to be even more precise, this

image could be also formed as an intuition image, without the need of conscious reasoning [2] and since the intuition was not conceptually put on the feeling's side, maybe we could say that intuition is just another source of information for the mind or even a power by itself. Anyway, this article does not want to cover the psychological intuition aspects since for the moment the theory is too blurred, but the article will deal with this "identified truth" from which various mental processes start. Our activities, our actions and our feelings depend on our mind, our thoughts, our "own identified truths".

Heart or … emotions

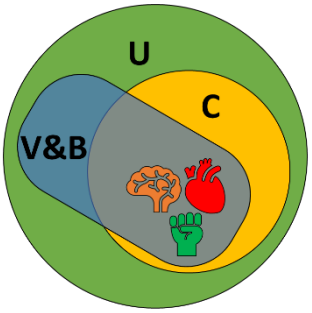
Heart or feelings and emotions should be seen as the same thing if we can call it a thing. According to the dictionary, the heart is defined as "the place in a person where the feelings and emotions are thought to be" [3] … heart is the feeling but also the place itself, not mandatory to be the body part, so called heart. Anyway, for sure in this article the heart should not be confounded with the organ in our body, anyhow as the brain is the tool for the mind, the same, the heart as conceptualized in this article, is the tool for the feelings/emotions. As the five senses are the source of information for the mind, the same senses are the source of feelings, many studies revealing the fact that any sensation is accompanied by an emotional background colored in "emotional" nuances. The specificity of the emotion is the subjective reflection of the reality, the emotion having this evaluation function, being at the same time a subjective reaction to the internal or external environment [4]. Besides the evaluation function, the emotions may play also different other roles like body activator like in the stress somatic reactions cases, communication tool like in dissatisfaction expression with an angry reaction, action activator like in the fight and run process. Of course, in exercising these functions, the heart cannot claim as having the monopoly because the delineation between the mind and heart is also blurred from time to time.

Action or … will

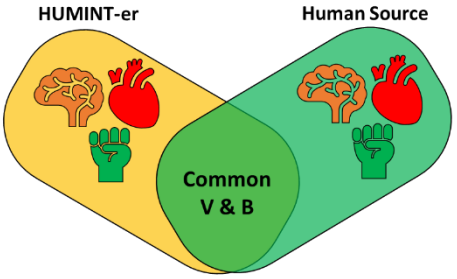
"Action" is the power of taking action and it should be seen as the "will" interface of the interaction between person and reality whether internal or external. The will is in charge with fulfillment of the necessities or better say the perceived needs. According to the dictionary [5], the will is the ability to control your thoughts and actions in order to achieve what you want to do – your perceived needs. The will is also defined as the human capacity to act in the direction of a scope consciousness established [6]. Thus, we can say that the will concept is intertwined also with the "desire" and "motivation" concepts as E. Elin says that the will is often identified or substituted with the motivation [7]. In our article, the will/action is treated as the factor/trigger that inflicts the action, determines the person to take action in certain circumstances. In fact, this is the unspoken goal of the article to pay more attention to this component of the soul in order to complete the heart-mind model with the main entity that drives us to action – the will – and to figure out the mechanism of inflicting/provoking/ determining another person – human source – to take action in the HUMINT desired direction. The biggest enemy for HUMINT in this endeavor is the "will" characteristics themselves, because the "will" is not only the capacity to fulfill a desire/need, but also to inhibit some of them based on the code of values, beliefs and social norms, a domain that will be also covered below. According to Locke [8], and Kant, the will represents the power of mind or the capacity to take decisions based on the intellectual knowledge of reality [9]. If we consider that the perceived reality is formed by thoughts (mind, reasoning) and emotions (heart), we easily admit the words of J. Kuhl stating that the will is a shaping factor for unifying emotions and mind processes [10]. Overall, the "action" as the final step in the volitive process represents a result of the evaluation made in the will-heart-mind laboratory. S. Rubinstein referring to the unitary character of psychological life, stated that the same psychological process could be at the same time (and in

general it is), emotional, rational, and volitive [11]. This laboratory is envisaged to be analyzed in this article to better understand the "action" process.

In the volitive process, a very important role played for taking action towards a certain direction is represented by our values and beliefs (V&B) consciously or unconsciously developed along the life. Its importance in volitive process resides in the difficulty to change or significantly alter the someone's V&B. Without disregarding the fact that the "action" could be performed by a person against the internal values and beliefs, if a good motivation arises (e.g. the bribe effect), this article tries to identify the common psychological niche between two persons – HUMINT-er and human source – which offers the opportunity of "shaping" without creating the discomfort of acting against internal V&B. The values and beliefs are deeply assimilated in our mind-heart-action laboratory and in general, without the exceptions mentioned above, the evaluations produced by this laboratory are in line with the values and beliefs, conscious or unconscious. The picture 2.1 depicts the place of the laboratory in our conscious (C), immersed in the V&B space that is prolonged in the unconsciousness (U). The common psychological niche desired to be identified between the HUMINT-er and the human source should be at the intersection of the HUMINT-er's V&B with the human source's V&B spaces, as visually displayed in the picture 2.2.



2.1 - The laboratory / V&B place in Consciousness / Unconsciousness



2.2 - Psychological Niche – Common Values & Beliefs

3. Cognitive HUMINT Tool – Functioning Mechanism

The question is "How does this laboratory function?" As it happens whenever someone is trying to offer a silver bullet for solving a social science problem, it is the same in our case, when the proposed Cognitive HUMINT Tool – the laboratory – is analyzed with the intention of determining a way to shape the will of the human source. We are conscious from the beginning, it's even a belief, that we cannot draw attention to this tool as a universally applied tool for any cases. We believe in the necessity of comprehensively evaluate the human source laboratory so that we can create the favorable premises of influencing the will/action. In other words, the main responsibility of HUMINT-er is to assess the human source laboratory, and to match with its own laboratory by identifying first the common psychological niche. This niche should be consciously accepted as common V&B space by both, HUMINT-er and human source. Then, the "shaping" goes towards intelligence collection by launching the message (most probably a verbal one) discreetly associated with information requirement goal. This message should trigger the human source's laboratory evaluation process … concluded with a desired action of obtaining/providing the info required. But let's see how does the laboratory function?

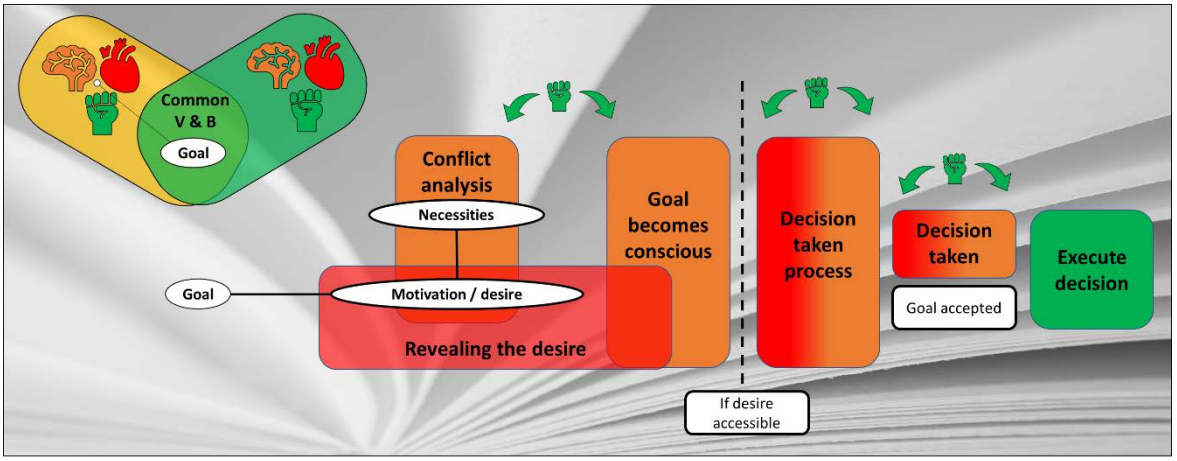
The baseline, generally accepted, but not scientifically proven, is that thoughts create feelings, feelings create actions, and eventually, actions create thoughts again, like a continuous clear flow within the laboratory, Mind – Heart – Action and Mind again. Nevertheless, as described above, the line between the heart (emotion) and the mind (thought) is a very thin one, and the great dilemma is which one was the first the emotion or the thought? Between the *logic of feelings* and *logic of rationale* there is no natural barrier, some cases could be both attributed to feelings or rationale [12]. No matter the answer, we accept that there are persons who are led by their emotions-heart and some other who are led by their rationale-mind. In this article, the person who is led by heart will be categorized as "the emotional", the one led by the mind "the thoughtful", and the one led by actions "the subordinate". The last one, the subordinate might be the easiest to understand, because its actions are determined by the order of someone, and regardless of its internal laboratory process evaluations, the bound to the "boss" is so tight than even if the order is emotionally or rationally accepted/unaccepted the will is activated to perform the action – task, order. For HUMINT shaping process, this case will be difficult to be managed, because such persons will apply the "boss filter" to all the emotions and thoughts. In other words, on top of its V&B layer, the "boss filter" will prevail and dominate the actions. The HUMINT-er should assess "the subordinate" and act accordingly, by remaining in the V&B psychological niche but considering also the over-head imposed "boss filter" … if the filter can be avoided, the shaping process enters on its common path.

The other two categories "emotional" and "thoughtful" deserve of course the biggest attention, and most of the population – we dare to say that – are within these boundaries, otherwise we will not have revolutions, revolts, strikes or person-to-person fights. The will in these cases is activated mainly by the heart-emotions or the mind-thoughts. To better understand how to shape the human source, there is a need to figure out how an emotion or a thought is turned into action. We will try to apply reverse engineering, starting from the goal of the HUMINT-er, to obtain information that should also become – maybe not verbalized with the same words – as one of the human source's goals.

The human source to accept this new goal necessitates first an assessment process made by HUMINT-er regarding the match between this goal and the V&B psychological niche of the human source. Only when this match between the goal and the niche is anticipated, the shaping operation could start a further development. There would be an invisible fight between the will of HUMINT-er and that one of the human source.

To determine the human source to accept the new goal, the HUMINT-er should first trigger or activate a motivation, a desire, an interest inside the human source laboratory. The HUMINT-er must anticipate this desire, otherwise the overall shaping process may go into another direction. This desire should also be among the necessities, needs of human source. Rubinstein states that this motivation – necessity – is revealed to the human source under an emotional cover that draws attention to the significance of the necessity [13]. This is what we can see on the face of our interlocutors when we make some proposal, and the emotional acceptance or unacceptance is immediately seen on their face. Afterwards, according to Rubinstein [14] and St. Jon of Damascus [15], the conflict of necessities, motivations and impulses is analyzed, and the goal of motivation becomes conscious**.** The motivations are hierarchized in accordance with the goal. If the human source desire is accessible, the decision of acting or not is made [16]. This is the key moment when the will of the human source is "convinced" of taking a decision which lays between heart and mind. Once the decision is taken this implies that the goal was accepted. It seems that the decision taking process – strained effort – is automatically accompanied by the negative emotions [17], and the HUMINT-er should take this into consideration by creating a positive emotional bound, according to the principle that a smiling face arouses the sympathy, hope and goodwill to interlocutors.

After decision, the last phase of volitive process is to take action, to execute the decision, that could be also a complex and a lengthen process. In the graphics 3.1 below you may find the overall process of shaping operations from the goal transfer from HUMINT-er to human source to the execution of decision.



3.1 - HUMINT shaping operation process on human source decision

From this moment, depending on the type of the human source laboratory (emotional of thoughtful) the HUMINT-er will create both emotional and rational guidance, insisting on that terrain – heart or mind – on which the human source predominantly has the tendency to "listen". Some people listen to their feelings, despite their rationale judgement, while others suppress their feelings in advantage of their rationale. Of course, on top of this there is also the intuition, reminded at the beginning of this article. The intuition has the capacity to "access", otherwise invisible manifestations of the subconsciousness of the human source and to identify some other unknown resorts, but in order for this spark to happen it needs a self-training on this kind of access to self-subconsciousness, before claiming it in relation with a human source. Taking the intuition out of this laboratory, being far more an even more complicated and unknown process, the goal could be achieved through the so-called mixt judgement [18], where the rational judgement represents a skeleton, and the emotions are used as tools for argumentation methods. This mixt judgement could be also called "calculated emotional judgement", or "artificial judgment" because it's conscious, willing and calculated, being in contradiction with spontaneous emotional judgement. The mixt judgement varies in accordance with the quantity of the emotional and rationale judgement involved. In the graphics 3.1 above the mixt judgement or calculated emotional judgement is represented by the rectangle "decision taken process" colored in red – heart, emotions – but also in orange –mind, thoughts. The main moments in this shaping process where the HUMINT-er has something to say or should pay attention are:

1. Understand the human source's laboratory.
2. Identify the psychological niche (common values and beliefs).
3. "Put" the goal in the psychological niche.
4. Launch the goal so that to trigger a motivation/desire/interest which should be one of the human source's necessities. At the same time, the HUMINT-er must be sure that the anticipated motivation/desire is accessible – desire's accessibility being a game stopper.
5. Create the emotional and rationale positive state that encourage the decision, thus the goal being accepted.

4. Conclusions

The most important phase in shaping the decisions of human sources is the understanding of their psychological profile, the so-called laboratory – by us. The importance of knowing how emotional, thoughtful, or subordinate the human source is, it is seen during all the five steps described above – critical moments when the HUMINT-er can influence the decision taking process of the human source. On the other hand, the HUMINT-er should apply the process of understanding the own laboratory, if there is an objective to have a better understanding of someone else's laboratory. This is based on the principle that you cannot understand the psychological mechanism of you interlocutor if you didn't first understand your own. The HUMINT Cognitive Tool, with its functioning mechanism of taking the decision proposed in this article, does not intend and does not claim to be a silver bullet for any kind of collection related HUMINT operations. For example, this tool cannot be applied for elicitation – a HUMINT collection operation also – because the goal in such cases does not become conscious, and the examples may continue. At the same time, the article represents just an incipient initiative of analyzing this complex process of shaping the human sources decisions, by using current psychological theories without reinventing the wheel. The HUMINT Cognitive Model is designed as a tool for ordering and systematization of the vast amount of information regarding the psychological profiles of human sources in order to simplify and use them especially in shaping operations. But, what it is the most important is that a HUMINT Cognitive Tool is a necessity for a better understanding of the nowadays so enhanced/extended cognitive environment.

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MIGRATION AND SECURITY - EXPERIENCES FROM A REFUGEE CAMP ON THE GREEK ISLAND OF LESVOS

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Abstract:
The aim of the article is to define the relationship between migration and security in the context of the Greek island of Lesvos. The main research problem was the following question: Does the refugee crisis affect local, national and international security? The following research methods were adopted: statistical analysis, synthesis, inference, comparison and research of the literature on the subject and source documents.

Key words: security, migration, social problems.

1. Introduction

Migration processes have been associated with the European continent for centuries: from ancient times (Greek colonization, migrations related to the expansion of the Roman Empire, migrations of the Visigoths and Vandals), through the Middle Ages (Crusades), to the period of great geographical discoveries that began the era of economic expansion , cultural and demographic of Europe to other continents. In turn, the end of the 20th century is a period of demographic decline of our continent - from a place of exporting migrants, we have become an immigration area[1].

Since the emergence of nation states, the development of international migrations has progressed. The inhabitants of individual countries cross borders not only for tourist and recreational purposes, but also to raise their standard of living and increase development opportunities. Migration is the engine of progress and development for all mankind. It affects the improvement of the living of many social groups, contributes to the economic development of countries (increasing national income, development of investments, etc.), to which immigrants come, has a positive impact on globalization processes, cultural exchange, etc. Nowadays, illegal immigration is an increasingly important and problematic aspect for Europe countries.

Factors that increase migration include: the disintegration of multinational states and related ethnic and religious conflicts, natural disasters that move people to safer regions, discriminatory government policies, political instability (including civil wars and conflicts, armed forces in various parts of the world), poverty, the lack of adequate welfare programs and uncontrolled population growth. The above elements combine with the so-called pull factors in countries where illegal immigrants arrive. The most important ones include: the need for additional workforce, comprehensive medical and social care, high economic growth, a democratic system of government characterized by political and social stability, family and historical ties, a common language, etc.

The aim of the article is to define the relationship between migration and security in the context of the Greek island of Lesvos. The main research problem was the following question: Does the refugee crisis affect local, national and international security? The following research methods were adopted: statistical analysis, synthesis, inference, comparison and research of the literature on the subject and source documents.

2. Migrations and internal security

It has become a popular slogan of the last dozen or so years that the borders of states and their protection are secondary problems for internal security in the face of globalization and growing economic integration. Scientists announcing globalization and supporters of the free market optimistically proved that such a concept as the territorial area of the state is almost obsolete and popularized the notion of countries without borders in the flows of services, goods and people. This was the case until September 11, 2001. In the world after September 11, the problem of territorial protection of the state acquired a new quality in political discourses, in Europe after March 11, 2004, it returned with redoubled strength, and in this context the phenomenon of international migrations began to be perceived with new power as one of the real threats to internal security.

International migrations have long been considered in political debates in the context of various threats. Over the past twenty years, the systematically growing inflow of immigrants to the European Union countries has meant that the cheap, foreign workforce has also begun to be perceived as a destabilizer of social security. The destabilizer analyzed and associated, however, mainly with the situation on the labor markets, i.e. the level of unemployment, segmentation of labor markets, access to social benefits, competitiveness on the labor markets, etc. Soon, when immigrants constituted five to ten percent of the population of most countries of the present European Union - and it happened in the late 1990s - migrants ceased to be considered a factor enriching the host country's culture, and the notion of a threat to national identity and culture was added to economic threats.

In the world after September 11, international migrations are no longer the subject of demographic and social disputes trying to balance the issues of economic growth and cultural integration with the problem of the prosperity and well-being of voters. The relationship internal security - immigrants seems to be gaining more and more importance and, as has already been mentioned, of quality. The relationship between migrations and internal security is one of those aspects of the political discourse that may in the near future influence the shape of national migration policies and the migration policy of the European Union. Recently, various measures and mechanisms for controlling borders and the movement of people have been introduced. Migration policy is an area where compliance with national and international law can work well together in combating international terrorism and transnational organized crime.

Stricter border controls, stricter entry controls, stricter visa policy, the use of modern means of identifying identity, collection and regional exchange of personal data (in the European context this is the Schengen information system - SIS, Eurodac and Europol) concerning, inter alia, infringed persons , these measures are unfortunately necessary in the modern world. However, they mainly focus on the control of personal flows and therefore may not be sufficient both in the fight against terrorism and the development of extremist forces and organized crime. The challenge for internal security is to consider the above-mentioned measures and mechanisms of border control and the movement of people in a broad socio-economic dimension, concerning the relations of the majority with minorities. In this context, the governments of some European countries, understanding that immigrant communities, which are culturally and economically integrated with the host society, do not constitute a potential source of infiltration for extremists and recruitment for criminal groups, run special programs aimed at combating xenophobia and discrimination.

Security is commonly equated with the state of certainty, peace, possession, existence and development. One thing that changes over time are the external and internal conditions of national security. As a consequence, changes are being made to the nature and manner of implementation of activities aimed at maintaining the expected state. The system of concepts and criteria relating to

safety is characterized by a timeless, essential and unquestionable influence on the fate of both individuals and local communities and entire nations[2].

International migrations are currently massive and global in scale. This fact is confirmed, inter alia, by the results of studies conducted by the International Organization for Migration. According to the above, in 1960–2010 the number of immigrants in the world almost tripled, from 75 million in 1960 to 214 million in 2010. In conclusion, during that period, about 3.1% of the world's population lived and worked outside the country of birth. The reason for such changes is most likely the dynamically developing phenomenon of globalization and, related to it, the increasing openness of international economies, making the mobility of people an indispensable element of the process of social and economic development. This fact is both an opportunity and a threat to local security.

When talking about security issues, it is impossible to ignore the threats that somehow condition this state / process. The most serious threats resulting from the presence of immigrants include (among others): economic disturbances of the host countries, which may, as a result, translate into negative responses from local communities; civilization and cultural deviations, and thus the disappearance of the national identity; all kinds of social pathologies, such as: the spread of poverty, crime, robbery and even rape; the phenomena of the formation of organized crime groups and terrorism.

In addition, quoting, for example, the words of the United Nations High Commissioner for Refugees António Guterres: "now, when anti-immigrant sentiment is escalating in some parts of Europe, it is necessary to pay attention to the positive impact of refugees and immigrants in the countries that receive them, and to honor key for a Europe of values: protecting life, defending human rights and promoting tolerance and diversity"[3]. This statement suggests that despite the existing threats from immigrants, it is also worth paying attention to and focusing on positive and important things - such as life itself.

When considering the issue of the causes of migration, one could boldly resist the previously presented division according to the causal criterion. For example, economic migration is the most common type and, at the same time, the cause of departures or arrivals of certain people, towards, as the name suggests, improving one's material well-being - typically economic migration. Another type of migration is the so-called family, otherwise also known as social. Carried out in order to unite families that may have been separated at one time or, on the contrary, to create a new, often multi-cultural one. Most national and religious migrations are based on similar reasons - persecution or ethnic or religious discrimination. Religious often referred to as pilgrimages to areas of worship. Probably the most pleasant type and the reason for causing a migration movement is tourism, trips / arrivals for sightseeing and recreational purposes. Both emigration and immigration have their own specific goals and are born with the occurrence of certain favorable situations, periods of time or the so-called external and internal factors. The external ones include, for example: intolerance, failure to respect human rights, and persecution. These are factors that do not depend on the migrant. On the other hand, internal ones are defined, among others, by: the desire to improve the standard of living, the desire to develop, change the social environment, create a family or even experience an adventure. However, the economic aspect is still one of the most common reasons for leaving. There is also a different division of factors in the literature, into the so-called "pushing" - favoring emigration and "pulling" - favoring immigration to specific places. The first group includes: poverty, unemployment, low wages, high birth rate, lack of basic medical care, deficiencies in the education system, corruption, conflicts, violence, human rights violations, religious and ethnic discrimination. On the other hand, the "pulling" factors included: prospects for higher earnings, personal or professional development, prospects for improving the general standard of living, political freedom,

sense of security, no discrimination, migration to the country of ancestors, possibility of family reunification[4].

Based on the UNHCR data[5], the main reason for migration is the willingness to take up a relatively better job. Thus, when choosing the country of emigration, people pay attention both to the living conditions in the country of arrival, the attitude of the inhabitants of this country to the newcomers, but also to historical conditions, the distance of a given country from their home country and largely formed migration networks, it is mainly about information obtained from the experiences of relatives, neighbours or friends. In second place as for the reason for emigrating from their own country and usually without many options to choose the country of arrival are immigrants called refugees, displaced persons, etc. They usually differ from other immigrants in that the situation in their country is so dangerous that their health and even life is in danger, and their country is so unstable that it is unable to provide them with adequate protection. Most likely, this proportion of immigrants coming to Europe will continue to increase and will not change until the end of the conflicts in their home countries. Europe is now a safe haven for them.

3. Migration on the Greek island of Lesvos

The current refugee crisis is the worst since World War II. In 2016 alone, over 65 million people became refugees: that is nearly 170% of the entire population of Poland. Many of these refugees are children who were born in conflict zones and have never experienced anything but violence, war or life in a refugee camp.

There are three ways of looking at the current refugee crisis: from a humanitarian perspective, one of national security and from an economic perspective. Looking at the crisis from a humanitarian perspective, we should help refugees find shelter, provide them with food, clean water and clothing so that they can survive the difficult period until they return to their homeland or resettle in another safe country. The right to life is a fundamental human right, protected by international law. From the point of view of national security, countries receiving refugees should cooperate with the international community in order to prevent uncontrolled border crossings by those who do not leave their countries for economic reasons or because of any threat, and who themselves pose a terrorist threat to citizens of European countries. It should be stressed that they are also a threat to the refugees themselves, who are often themselves a target of their attacks.

The refugee crisis in Greece has obviously had a significant economic impact on its people and economy. The Greek government has been forced to spend over €1 billion a year on housing for refugees and migrants alone. It is worth a reminder that in 2010 Greece faced an economic crisis that led to thousands of people losing their jobs. The government had to make cuts in public services and social benefits, which led to citizens losing their jobs and financial flow. Under these conditions, the additional financial burden of the refugee crisis is almost too much to handle.

Refugees are people who have left their country to seek protection in another country. Refugees are also known as asylum seekers, displaced persons or stateless persons. Refugees leave their countries for various reasons, such as poverty, natural disasters, persecution or violence. They may be fleeing civil war and other forms of violence: persecution based on race, religion or nationality. They may be victims of terrorism or may be driven from their homes by climate change and extreme weather events. In 2015, a record number of refugees and migrants, 1.1 million, crossed the Mediterranean to reach Europe. They were from countries all over the world, but most of them came from Syria (54%), Afghanistan (19%) and Iraq (11%)[6]. These refugees are fleeing extreme poverty, war, ethnic violence or religious persecution.

Fleeing their homes in search of a better future, refugees risk their lives to reach the island of Lesbos. The journey is usually made by sea from Turkey and can take up to four hours. Those who can afford it can pay for transport by speedboat and arrive here in just two hours. However, many refugees do not have any savings. They use rubber dinghies and inflatable rafts, which are often overloaded and prone to sinking. It is estimated that 2 000 to 3 000 people a year die by drowning trying to cross from Turkey to Greece. This is the equivalent of one person dying every 40 minutes over a six-month period.

The opinions of Lesbos residents on the refugee situation are not equivocal. Although many people actively collect donations or support refugees through charity fundraisers, some Greeks are critical of the impact of refugees on the islands' economy. The question of whether refugees feel safe in camp Moria 2.0 is complex. On the one hand, refugees are given shelter and **food**, but on the other hand they are also subject to harassment and violence from other migrants who have come to Europe not necessarily for the same reasons. Moreover, most of the refugees in Camp Moria are **children**, women or elderly people with special needs, including safety. They are definitely more susceptible to attack or exploitation, especially in the absence of a permanent security presence in the camp. Camp Moria 2.0 is overcrowded and poses a huge health risk to refugees due to the dire sanitary conditions, which can lead to diseases such as dysentery, cholera and tuberculosis. **There is a lack of medical and psychological support**, which aggravates the spiral of helplessness and passivity among the refugees. The Good Factory strives not only to provide medical or material aid, but also to establish **genuine** relationships with refugees**: we personally visit them in their tents and win the trust of entire families day after day.**

The future of refugees in Lesbos and on the other Greek islands after leaving Camp Moria 2.0 is uncertain. Many refugees who have been living there for years repeatedly ask for asylum, which sometimes seems to be granted by random chance. **Families are separated** and it also happens that single mothers with four children are not granted asylum. Asylum itself is no guarantee of safety, as many refugees are relocated to Athens without any plan for their integration and without any job opportunities. Some refugees hope to return soon to their home countries to find work, but are deterred from doing so by the fear of armed conflicts which threaten their lives.

4. Conclusions

The most frequently mentioned threats related to migration in the context of the Greek island of Lesvos include:

- cases of violence against the inhbitants of the island,
- cultural differences,
- refugee crisis causes tourism collapse,
- conflicts between inhabitants of island (those who support refugees, and those who do not),
- no perspectives for refugees: unfamiliarity with the language, lack of education, psychological problems,
- possible terrorism threat,
- pathologies in the camp: religious radicalization, drugs, prostitution, violence etc.,
- conflicts between nationalities in the camp.

There is a lot of false information - myths about refugees. One is that Arab/Muslim/neighborhood countries are not helping refugees. So why should Europe do this? The truth is quite different. In fact, many Muslim countries accept far more refugees than most European

countries. In 2015, over a million refugees from various parts of the world came to 27 countries of the European Union. At that time, an equal number of Syrian refugees were registered in Lebanon alone. In practice, this means that every fifth person residing in this country is a Syrian refugee. Turkey has accepted 2.5 million Syrian refugees, and Jordanian authorities estimate that almost 1.5 million Syrians live with them, of which every second is registered as a refugee.

Analyzing the statistics of the United Nations High Commissioner for Refugees (UNHCR)[7], we can see that many rich Gulf countries did not accept a single refugee in 2015. However, it should not be concluded on this basis that the Arab countries are passive in the current migration crisis. Why? The Gulf countries have not yet signed international refugee agreements, so Syrians crossing their borders do not formally receive this status. However, they often get residence and work permits in return. It is estimated that over half a million Syrians currently live in Saudi Arabia, about a quarter of a million in the United Arab Emirates, and another tens of thousands in Qatar, Kuwait, Oman and Bahrain.

It is worth knowing that, according to the UNHCR report, at the end of 2020[8], the following countries were inhabiting the most refugees: Turkey - 3.6 million, Colombia - 1.8 million, Pakistan - 1.4 million, Uganda - 1.4 million, Germany - 1, 1 million. They are followed by Sudan, Iran, Lebanon, Bangladesh, Ethiopia, Jordan and the Democratic Republic of the Congo. It must be corrected that these are official statistics, so the actual number of people fleeing to these countries may be much higher.

Another piece of information that is popular among European society is the opinion that refugees increase the threat of terrorism. However, refugees are not terrorists. They are people fleeing danger and persecution. They face terrorism only as victims - it is often because of it that they leave their homes and go to Europe. On the other hand, there are undoubtedly terrorist groups in the world planning to organize attacks in the European Union. They usually recruit collaborators on the spot in the country where they want to carry out the attack. If this is impossible, the bomber candidates must enter the EU from outside, thus crossing the borders of the Schengen area. There are at least three ways to do this. They can enter legally upon receipt of tourist, business or education visas. They can also cross the border secretly, illegally. In recent years, along with the growing migration crisis, the method of impersonating refugees has also become one of the potential channels to enter Europe.

From the point of view of terrorists, however, this method is one of the most difficult, risky and time-consuming. Persons applying for the refugee status are subject to much more thorough control of secret services than those who cross the border with a legal visa. They are checked both in terms of their life so far and the safety of the destination country. Moreover, they are checked four times: first when crossing the European Union border, then when qualifying for the relocation program at the EU level, then when confirming refugee status in Poland or another European country. Immediately before obtaining their status in Poland, they are once again checked by the local special services. Consequently, the relevant intelligence agencies know much more about them than if they had chosen any other way of getting into Europe. Even if they manage to escape one of the checks, they immediately find themselves on the lists of potentially dangerous people and on the basis of biometric and dactyloscopic data are searched in the territory of the European Union.

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NEW THREATS OLD CHALLENGES FOR NATO

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Abstract:
NATO has to adapt itself in order to meet the present and future security challenges. New threats are emerging from different sources: traditional opponents, new state actors, non-state entities to terrorists, social security failures, hybrid aggressions and cyberattacks. As a result, the Alliance has to prepare in conceptual, political and military terms to contribute to the security of its member states by developing a proper posture against The East and making southern neighborhoods more stable.

Key words: threats, challenges, NATO,

1. Introduction

The North Atlantic Treaty Organization is a political and military alliance between 28 European countries, the United States and Canada. Founded in the aftermath of World War II, the organization was established mainly for three purposes: deterring Soviet expansionism, forbidding the revival of nationalist militarism in Europe through a strong North American presence on the European Continent, and encouraging European political integration.

At the beginning of 2021, the Alliance faces a number of challenges. Some of them are as old as NATO itself, and some are new and unpredicted. In particular, for the first time since 1991, NATO faces the possibility of a conventional confrontation. The probability of such a confrontation is fairly low, but nevertheless it has risen for the first time in the 30 years since the end of the Cold War.

This threat became a reality after the Russian aggression in Ukraine and the annexation of Crimea. However, the process itself had begun earlier, with Russia's aggression in Georgia. Russia posed a test to the West, and, unable to go against NATO, flexed its muscles against a weaker opponent, an Alliance aspirant that was nevertheless unprotected by Article 5, not even part of the Membership Action Plan (MAP) process, but still strongly pro-Western. The West's response was largely rhetorical, leading to the question of whether it actually did anything concrete at all in answer to Russia's aggression.

The Alliance was facing a type of conflict that, although not new, has managed to capture it. The Ukraine aggression was a new challenge for NATO, which needs to reevaluate and revise its procedures so that it can respond in a timely and effective manner to this type of confrontation reinvented by the Russian Federation. In spite of the fact that, NATO's military strategies have always considered "*brute force*" in classical forms of combat to be the specific mode of action of the Russian armed forces, this time the approach was deferent, Russia used misleading and surprising concepts first to shape the confrontation environment, then to rapidly defeat the Ukrainian Army response and finalizing with strengthening the achieved objectives phase.

This "Old player", mainly seen as the threat from the East, has become now a common challenge everywhere: in the southern flank of NATO, into virtual space, or challenging from

NATO inside by exploiting any vulnerabilities/ private disputes among the allies (egg. Turkey vs France, Turkey vs USA).
The threat from Russia continues, and left unchecked it may generate a serious challenge to NATO, moving the threat from the theoretical to the practical.

1. NATO's New Challenges from the East

Not a threat, but o possible challenge for NATO in the future is represented by China.

At their meeting in London, in December 2019, NATO leaders "*recognized that China's growing influence and international policies present both opportunities and challenges that states need to address together as an Alliance*"[1].

NATO Secretary-General Jens Stoltenberg stated at the summit "*China has the second-largest defense budget in the world. They recently displayed a lot of new modern capabilities, including long-range missiles able to reach all of Europe, United States*"[2].

NATO's mission has expanded since its creation in 1949 as a counterweight to the power of the Soviet Union. Its security mission is limited to North America and Europe, but NATO Secretary-General said "*China's rising influence should not be ignored. Apart from making technological strides, Beijing was investing heavily in European infrastructure and cyberspace, and expanding its presence in Africa and in the Arctic*"[3]. The NATO chief stressed that the Alliance did not seek "*to create a new adversary but just to analyze, understand and then respond in a balanced way to the challenges China poses*". In other words, NATO would likely take time to develop a China policy. In the long run, Beijing could represent a bigger problem but a slower burning one than Russia.

China has an increasingly global strategic agenda, supported by its economic and military heft. It has proven its willingness to use force against its neighbors', as well as economic coercion and intimidatory diplomacy well beyond the Indo-Pacific region. Over the coming decade, China will likely also challenge NATO's ability to build collective resilience, safeguard critical infrastructure, address new and emerging technologies such as 5G, and protect sensitive sectors of the economy including supply chains.

China's industrial policy and military-civil fusion strategy are central components of this systemic challenge. Its military modernization in all domains, including nuclear, naval, and missile capabilities, introduces new risks and potential threats to the Alliance and to strategic stability. Also, its approach to human rights and international law challenges the fundamental premise of a rules-based international order.

Grave risks are posed by China in some critical sectors such as telecommunications, space, cyberspace, and new technologies, as well as disinformation campaigns. Since the start of the COVID-19 pandemic, China has conducted a disinformation campaign in numerous Allied states. At the same time, because of its scale and economic trajectory, China is a driver of global growth, trade and investment, and a significant investor in many NATO countries. It has begun to develop a strategic-commercial presence in the Euro-Atlantic area via the Belt and Road Initiative, numerous bilateral agreements, and its military-civil fusion strategy. For most Allies, China is both an economic competitor and significant trade partner. While China does not pose an immediate military

threat to the Euro-Atlantic area on the scale of Russia, it is expanding its military reach into the Atlantic, Mediterranean, and Arctic, deepening defense ties with Russia, and developing long-range missiles and aircraft, aircraft carriers, and nuclear-attack submarines with global reach, extensive space-based capabilities, and a larger nuclear arsenal. NATO Allies feel China's influence more and more in every domain.

2. NATO's Challenges from the South

In the south, the security situation in the Middle East and Africa has deteriorated, causing loss of life, fueling large-scale migration flows and inspiring terrorist attacks. It is a fact that a great number of the world's crises originate in the Mediterranean Basin - the spread of Daesh, Libya's instability, the Syrian war, new tension in Lebanon, the dangers posed by foreign terrorist fighters, the fragile situation in the Western Balkans, the migration crisis, and the list goes on and on. Instability in the southern neighborhood of the Alliance is indeed linked, on the one hand, to the terrorist threat and on the other to the migration crisis affecting Europe. The Mediterranean, a crossroads between Europe, Africa and the Middle East, is facing an unprecedented multiplication of regional crises. It is a home to multiple humanitarian, security and development challenges, which affect particularly vulnerable populations.

Terrorist activity across the southern Mediterranean is complex in nature. Tunisia has a problematic homegrown militancy issue, and this potential jihadist has found a safe haven in Libya amidst the collapse of the Libyan state. Open-source intelligence suggests that training camps established in Libya were used to dispatch Tunisian foreign fighters to Syria. The militancy issue in Libya also threatens Egypt's Western Desert area and overstretches Egyptian security forces between the Libyan frontier and Sinai. In many cases, one cannot separate smuggling, terrorism, and violent extremism from each other in the southern Mediterranean. The Algerian national Mokhtar Belmokhtar, for example, is a key figure in al-Qaeda in the Islamic Maghreb as well as an infamous champion of organized crime. He is known as "Mr Marlboro" due to his cigarette smuggling activities. Instability and conflicts in NATO's southern neighborhood, the related terrorist threat and the migration crisis, are all deep-rooted, complex and long-term challenges, which have worsened in the last seven years and are not expected to improve soon.

NATO is responding by reinforcing its deterrence and defense posture, as well as supporting international efforts to project stability and strengthen security outside NATO territory. The allies have long recognized the existence of threats and diffuse risks to Allied security from the "*South*", in addition to threats from the "East". A clear cut separation between the two flanks is losing relevance, however: the South and the East are joined at the seams (and geographically through the Western Balkans) with regard to Russia, which is acquiring an increasing role in the Mediterranean region. The intervention in Syria has fostered the Russian military's combat readiness. The Syrian expedition has led to fundamental improvements in the concept of operations. In brief, Moscow's military gains in the Syrian expedition inevitably affect the overall NATO-Russia balance. "*The Alliance faces two categories of risks in the south. First, there is the rise of violent non-state actors, state failures, and human security issues. Second, NATO has to deal with state-led challenges emanating from Russia's rising military posture in the eastern Mediterranean[4]*".

In the next ten years, therefore, the 360-degree approach to security will become an imperative and the South will likely grow in importance for NATO. As a result, the Alliance has to prepare in conceptual, political and military terms to contribute to the security of its member states by making its southern neighborhood more stable. The Alliance has agreed that its approach in the South includes[5]: *"building the capacity of and engaging southern partners and neighbors'; increasing Alliance awareness and risk monitoring; increasing Alliance resilience and responsiveness to security threats and challenges arising from the South; working with the EU, African Union and other regional and international organizations, where relevant"*. Differences have arisen among some Allies about certain security challenges in the South. If not carefully managed, they may impair the Alliance's ability to respond to security challenges in the region and risk the cohesion of the Alliance. Conversely, a stable South holds the prospect of realizing the immense latent potential of societies and economies in this region, with attendant benefits for the countries of the Euro-Atlantic area.

NATO must, therefore, maintain political focus on building up military preparedness and response for the Southern/Mediterranean flank, in particular by revising and delivering its Advance Plans and strengthening the Hub for the South at JFC Naples. The Hub for the South (HUB is not a command and control entity and will not exercise operational control over assets but it is an essential and visible element of the Framework for the South that will provide a considerable enabling and support platform within Joint Force Command Naples (JFCN). The HUB is also the first tangible deliverable of the framework to be implemented. The local stakeholders share information with the Hub based on NATO and partner requirements and guidance. The HUB's critical or unique tool is its depth and knowledge of the South.

Basically, it is about a holistic understanding of the South, derived from information gathered from those on the ground, who have a broad understanding of the local situation and share their perspective with the Hub. In this context, the Mediterranean region has to remain free to Allied navigation as a prerequisite to sustaining a military effort across Alliance territory. Maritime security is one of the dimensions of this enhanced cooperation, while NATO must remain the key actor in guaranteeing freedom of navigation. It should engage more with partners in the South, regional organizations, including African Union, League of Arab States, Organization of Islamic Cooperation, Gulf Cooperation Council and United Nations, to establish a cooperative security network across the region.

The political and strategic evolution of the southern flank is as important for the Alliance as the East (Russia & China).

3. NATO facing the terrorism challenge

Radical Islam, and its latest product the Islamic State, is another challenge facing NATO. The 9/11 events and six years' ago attacks in Paris and Brussels have proved that ISIS is capable of striking NATO countries where it hurts most. The frequency of these attacks show that ISIS will continue to grow, and the present efforts to counter it will not be sufficient.

Terrorism is responsible for the death of more Allied citizens than any other security threat in NATO's history. It also poses one of the most immediate, asymmetric threats to Allied nations and citizens. The only time that Article 5 was triggered was in response to a terrorist attack, but in general terrorists have been able to operate under this threshold because of the nature of their tactics.

The 2010 Strategic Concept cites terrorism as part of the security environment but emphasizes mainly the need for enhanced analysis, consultations, and training of local forces. Since then, NATO has made important strides, including with the adoption and subsequent updating of the 2017 Counter Terrorism (CT) Action Plan. The evolving strategies and *modus operandi* of terrorist networks and groups and the emergence and spread of early detection technologies (EDTs) call for adaptive and innovative counterterrorism strategies, means, and methods. While the primary responsibility for countering terrorism remains with national authorities, as acknowledged by Allies, NATO adds value and has an important role to play in the fight against terrorism, not least to maintain NATO's perceived relevance amongst concerned home audiences. Displaying a united Allied stance against terrorism will remain a crucially important response to this threat. Together with relevant partners NATO should develop its role to match the evolving threat. NATO must focus primarily on the threat of terrorism in the Euro-Atlantic area, including terrorist threats emanating from NATO's southern flank. It should not continue to approach terrorism as a standalone phenomenon but instead focus on specific identifiable threats to Allies.

The Alliance should enhance the fight against terrorism as part of the hybrid and cyber conversation, and ensure that the threat from terrorism figures in exercises and lessons learned. It should continue to incorporate the CT dimension in military planning documents, where relevant and in accordance with threat assessments, with the aim of tackling instances of severe and organized terrorist threats originating outside of Alliance territory.

NATO should strive to improve current practices of intelligence-sharing among Allies to achieve better, common situational awareness in key areas including emerging safe havens and terrorists' use of EDTs, as well as hybrid tactics. Allied nations should improve resilience by strengthening their national capacities for civil preparedness and homeland security. NATO nations retain the primary responsibility for their domestic security, and for their own resilience, nevertheless, more determined, coordinated and integrated joint work to establish and pool capabilities to cope with contingencies with a low probability, but very high impact would be beneficial. NATO could offer a surge capacity to individual countries whose capabilities may be overwhelmed by e.g. a terrorist attack involving non-conventional means including chemical, biological, or radiological substances.

But maybe a greater challenge to NATO is the lack of willingness of its members to fully commit to strengthening security and empowering the Alliance. This is well demonstrated by the approaches of individual countries to their military establishments and national defence. The NATO members' military expenditures demonstrates that a critical majority of NATO countries have gradually stopped taking national defence seriously since the end of the Cold War[5].

The World Trade Centre attacks and other events of 9/11 were a wake-up call, but this was gradually forgotten, and especially neglected after the 2008 financial crises. The lack of resources also demonstrates an apathy towards defence in most of the European capitals. And, while everybody is very vocal on their concerns about such things as Russian aggression and the expansion of ISIS, very little practical action is taken.

NATO faces both conventional and unconventional challenges; it lacks resources and new ideas, but nevertheless continues to be the most affective military and political alliance in history. In

fact, NATO is the only alliance to have survived its initial purpose, in this case, to contain Soviet aggression and win the Cold War.

I think there are two issues to discuss. The first is whether the old threats were greater than those we face today or may face in the foreseeable future. The second is whether NATO is equipped to address today's challenges and the most appropriate institution for the task. When most people talk of modern security threats, they think, above all, of that posed by terrorism, or rather terrorisms. I use the plural because there is no agreed definition of terrorism and clearly terrorism comes in many different forms, each of which must be treated in a different way.

The biggest early challenge to NATO in terms of terrorism was 9/11. The Alliance engaged vigorously with this new threat, and its actions were considered as a success, especially the first years of ISAF campaign. From the current perspective, however, it has become more complicated and less successful.

NATO introduced a number of new approaches to make itself more suited and able to counter new threats. Some of these were presented by NATO Secretary Generals, each of whom felt it necessary to leave NATO with some new catchy phrase that would serve as a slogan for some time. These slogans presented NATO's new strategic approaches, which would supposedly transform the Alliance into a much more effective and modern organisation.

Jaap de Hoop Scheffer's "*niche capability",* Anders Fogh Rasmussen's "*smart defence*," and of course Jens Stoltenberg's "*STRATCOM*" and "*hybrid warfare*" are fine examples of this tradition. Here are some detailed extracts on how NATO viewed these problems and solutions.

"*NATO unveiled a new Strategic Concept at the Washington Summit in April 1999. This new Strategic Concept still includes the main principle that NATO must have the capability to prevent aggression directed against any one or more of its members. However, the strategy also suggests that NATO must look beyond traditional collective defence and establish the capability to deal with threats*."[6]

"*Smart Defence is a cooperative way of thinking about generating the modern defence capabilities that the Alliance needs for the future. In this renewed culture of cooperation, Allies are encouraged to work together to develop, acquire, operate and maintain military capabilities to undertake the Alliance's essential core tasks agreed in NATO's Strategic Concept. That means harmonising requirements, pooling and sharing capabilities, setting priorities and coordinating efforts better. Projects cover a wide range of efforts addressing the most critical capability requirements, such as precision-guided munitions, cyberdefence, ballistic missile defence, and Joint Intelligence, Surveillance and Reconnaissance, to name a few.*"[7]

"*The 2006 Hezbollah-Israel war demonstrates the ability of non-state actors to exploit the vulnerabilities of conventionally stronger militaries and devise appropriate counter-measures. The deployment of hybrid tactics is inherently destabilizing for the stronger opponent. An inherent weakness to hybrid warfare, however, is that it is often a range of tactics lacking a strategy, causing its adherents problems in the long term. In the post-2014 international security environment, there is no uniform definition of hybrid warfare, as there is no uniformity in the way that it is and can be used.*

The tactics can be scaled and tailor-fit to the particular situation. Hybrid tactics as used by Russia are not inherently anything new for the Alliance. The Soviet Union often sought to manipulate domestic issues inside of NATO member states, creating grey zones of ambiguity surrounding the degree of its involvement. Today, Russia seeks to create a grey zone of ambiguity along NATO's eastern flank-attempts at domestic political and economic destabilization and manipulation of states along the eastern border regions of NATO from the Baltics to the Black Sea have driven many political leaders to claim that they fall within this grey zone already, and that it will only expand. A key difference, however, between Soviet and today's Russia's use of hybrid tactics is that, while the Soviets used them primarily to soften their opponents, president Putin seems to be using them as a means of achieving his objectives of a politically restructured Europe."[8]

4. Conclusions

Speaking of new threats and challenges for NATO, I think they are not actually that new at all. The Cold War could be considered as example of hybrid warfare. During the confrontation, both sides tried to gain the upper hand by using different methods such as political, military, informational, social, financial and many others.

In many aspects, most of the new initiatives which NATO is putting forward are actually already part of NATO's organisational and structural philosophy. Rebranding is a very complicated task, and one should ask what exactly needs to be transformed in NATO. We do agree that capabilities and structure should be subject to constant review and improvement. NATO should try to be very efficient to new threats and challenges. However, its philosophy and values should remain constant. NATO was founded on principles of common defence and security. Article 3 and Article 5 define NATO as a collective security organisation, and this should remain a major cornerstone of NATO's existence.

New ideas and initiatives are attempts to bring additional capabilities to NATO, and they are more than welcome. However, in a reality of limited resources, each new spending should be a matter of very careful consideration. Every organisation needs new ideas, and they are useful. But NATO has the choice of whether to divert resources to new initiatives, or prioritise territorial defence. The lack of resources makes the outcome of this choice inevitable. It is obvious that implementing new ideas while continuing to focus on established core priorities is increasingly difficult, almost impossible. NATO is in the business of winning wars, and it always has been. It is much harder, though, for a military organisation operating with limited military capabilities to win the peace. ISAF is an unfortunate example of this.

Sometimes, the political side of NATO, or more correctly the political leadership of individual Allies, is often trying to use the Alliance to solve all problems. NATO performs admirably in the first stages of conflicts where a conventional, kinetic approach is predominant, demonstrating its readiness and effectiveness. Afterwards, though, it struggles with the stabilisation phase. There are many reasons why militaries struggle to win the peace. Their training doctrines, equipment and capabilities are designed to win a war, and trying to use any military force to win the peace is a simple misuse of a very effective and expensive tool.

Using NATO in situations where militaries should not have a major role creates conditions for a very questionable outcome, even failure. Of course, with sufficient resources, there would be nothing wrong in engaging it in such initiatives. Indeed, it would be very beneficial. But the existing limitations on resources demand that they are used efficiently. Therefore, NATO should focus on its traditional, conventional capabilities. In other words, it should further enhance its ability to win wars.

NATO needs to rebuild its image as a very strong conventional alliance. By projecting this image and sending the proper signals, NATO would prevent any further threats of new conventional confrontation, or at least make it less tempting to challenge the Alliance. Some statements and declarations of NATO officials and Allies' leaders are in line with this approach. The security conference in Munich (February 2016) was an example of how NATO should demonstrate willingness and resolve to engage if necessary.

Both strengthening the eastern borders and increasing the presence in the Black Sea are welcome initiatives. However, words should be back up by actions. NATO should continue to strengthen its core capabilities and enhance conventional structures. Russia, and any other potential challenger, will be watching closely. There is necessary NATO collectively unquestionable declaration and plan, and supported by the resources of each individual Ally, aimed at dramatically updating and increasing NATO's conventional Article 5 capabilities. Anything less would be considered, by the Kremlin in particular, as the Alliance backing down.

Undoubtedly the future of a credible and effective Alliance will be key to make this complex world more stable and it will be the only liable legacy to leave to our future generations. However, a step forward would be to use the whole NATO toolbox as a politico-military alliance to address two key factors of instability, which are intimately interlinked. On the one hand, there is the clash of regional powers which use force, covertly or openly, to protect their interests and extend their influence, in an increasingly aggressive way. On the other hand, there is the lack of state control over certain countries, because of civil war and/or the collapse of statehood, such as in Syria, Libya, Yemen.

In an environment where emerging challenges and threats can occur from anywhere, addressing those challenges require a strong network of allies and partners that look to develop peaceful and friendly relations in order to promote peace and stability.

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TERRORISM AND COUNTER-TERRORISM – AN ANALYSIS

PASCU Claudiu Sebastian

Abstract*:* The purpose of this paper is to present the causes of terrorism, the offensive against terrorism and the methods of counteracting this worldwide spread phenomenon which has become an unconventional battle strategy used to achieve political goals. It is essential for different structures and organizations to combat terrorism, in order to reduce the psychological effect of panic and intimidation it generates. The war against the current order of the world is based on acts of violence and threatening which represent the terrorists' way to implement their ideas in the world. In the terrorism counteracting process, military and non-military structures use different strategies to combat this threat and its consequences.

Keywords: *terrorism counter-terrorism, anti-terrorist/anti-terrorism structures, offensive actions*

1. Introduction

Terrorism is, in the broad sense, a violent, intentional act committed by destructive conspiratorial organizations or by individuals against dignitaries, political, economic, scientific, military, cultural, diplomatic objectives (institutions) as a mean to create terror, fear, for the purpose of revenge and raising public awareness of a particular cause and to achieve political stability and satisfaction of claims.

Today Terrorism has become a particularly dangerous aggressive system that threatens man as an individual, human communities in all their diversity, and even state entities with their political values. Terrorism use violence or threatening to violence to introduce feelings of intense fear and intimidation, the attraction of public opinion to constrain or intimidate governments or societies (state entities) with their political, economic and military values, the endanger of their freedom, well-being, or even existence to achieve political, religious or ideological goals.

Terrorist actions are carried out by external or internal forces, supported by organizations and states that are dominated by ideologies or exclusive beliefs, denying the fundamental freedoms of man and propagating violence and crime as methods of imposing in the world their own ideas and convictions. The purpose of the terrorist action is usually to generate large-scale comments in the media, to damage or to destroy a valuable edifice for the adversary, to assassinate a key political or military character, to contribute to the reputation and credibility of the group. [1]

The correct understanding of the causes of terrorism is essential for adopting strategies to combat this phenomenon and to reduce the number of victims and the negative social, political or economic effects. There are lots of diverse specific reasons of terrorism, but the most common are: *getting money and advantages* (getting unconventional weapons - chemical, biological, nuclear - by a non-state or unstable group interested in selling them), *desire to spread a message* (the act of violence is committed only to draw attention on a state of fact, to convey a message or to bring some ideas into the public debate, *judicial terrorism* (it is called like this because its targets and pretexts are the revenge and punishment of actions considered unjust by terrorists - judicial terrorism is quite rare, and is usually responsible for political assassinations), *religious fanaticism* (it can be a supporting base for groups or terrorist organizations, though they often manipulate this fanaticism for their own interests*), the struggle for liberation, emancipation and political power* (it is said that while insurgency is the strategy of the poor, terrorism is the desperate poor's strategy - many

terrorist groups are motivated by legitimate ideals that cannot be achieved by political, military or economic means).[2]

2. Terrorist War

Because of its strong political determination, terrorism is considered to be a *war*, an *asymmetric war*. The Clausewitzian definition which refers to the war as being the continuation of politics by other means remains valid. Therefore, the terrorism can be defined very well, as war is sometimes defined, the end of politics.

This type of terrorist war has been unknown until now. It is characterized by: the lack of a particular location where terrorist actions should take place (so that terrorists expand their activity on the whole planet and even in the cosmos), the great diversity of actions, the use of man as a weapon and as a mean of struggle, the lack of unitary strategic coordination, the surprise, the maintaining of strategic initiative through stunning, fast-moving actions, anywhere, anytime.

From the states mentioned above, we can define *two important characteristics* of terrorist war. On the one hand, the terrorist war *has no territory* (the territory was fundamental in the conflicts of the past, because each protagonist identified himself by the territory where the military forces were located – it was predominant the conquest of territories or the defense of territories) and, on the other hand, it is *asymmetric.* The asymmetry is observed in the means terrorists use: civil aircrafts directed against civil towers, against aircraft carriers or missiles which, despite their number and technological level, are little adapted to asymmetric conflict, and it is also observed in special forces, intelligence, territorial police and financial embargoes.

The terrorist war requires a reasonable response, but no one is prepared for fighting against terrorism, because no one has ever thought that it could become a war, and yet a planetary war, because it represented for a long period of time only an extreme form of protest or obedience. A true strategic and military reflection must be committed to determine what means and strategies are needed for our democracies to efficiently counteract this threat. The fight against international terrorism is not only an issue of internal security affecting certain countries but it is a real strategic challenge launched against our democracies and our values.

It is clear that the issue of combating terrorism requires different solutions than before. Counteracting the terrorism implies a different concept, a different reaction, a different strategy. Terrorism has become a very serious threat and its consequences can degenerate into monstrosities. [3]

3. Anti-Terrorism Structures

a. Non-military structures

Terrorism has been considered until now a police and special forces job. Special forces have not been created to combat terrorism, but for special military actions, especially for research, intelligence, diversion and action against enemies. Practically, besides intelligence structures and internal order and public order structures, there are not currently viable structures to combat international terrorism. However, terrorism is considered to be an asymmetric threat to the whole world, so the world will have to set up its structures to protect it and combat this threat. These structures are required to be set up at both international and national levels and to consist of: *clear and rapid legislation in the field* which is supposed to finally bring terrorism out to the law and to establish a world reaction against it*; integrated structures* in the purpose of discovering terrorist

organizations and fighting against them; *structures of civil society*, for the eradication of terrorism from the societies through cultural means and civic education.

b. Military structures – Special Forces

Special forces were not created for anti-terrorist actions. They are neither equipped nor prepared for such missions. However, missions of this type do not require training at the exceptional level at which these forces are trained. Special forces are structures of war intended to perform extremely difficult missions in the depth of the enemy device, to gather information, to direct the means of striking, to realize the strategic manipulation of forces and means, to accomplish their missions.

Antiterrorist warfare requires in the first place a rigorous system of detection, surveillance and rapid annihilation of networks, organizations, training and logistics bases, schools and terrorist infrastructures and terrorist actions. For this, an integrated planet-wide surveillance system is needed, with networks and structures in every country in every corner of the world. In the terrorism counteract process, special military forces (or some of them) may be hitting, annihilation, surveillance, and diversion elements.

c. Regular military structures

Common military structures are not intended to fight against terrorism. But under the circumstances, they can also be trained for such missions. In this case, a counter-terrorism warfare training program should include: topics of detailed knowledge of the terrorist phenomenon and modalities of action; training of forces to carry out surveillance and destruction of terrorist elements and networks; engagement of troops in localities, forests, crowded or deserted areas both on national and multinational territories; topics including evacuation and first aid methods in the case of terrorist attacks; other topics related to the preparation of military for fighting against terrorist attacks, for protection of the population and their values and respectively for offensive actions against terrorist organizations, training bases and other structures.[3]

4. Combating / Countering Terrorism

a. Policies to combat terrorism

Combating terrorism is not a military issue, but rather a political one. Policies to combat this phenomenon must be based on knowledge, their aim being to eradicate the causes that generate this violent phenomenon. The policies to counteract terrorism should include: investigative policies; evaluation policies; policies to counteract its effects; policies to eradicate the causes; prevention policies; policies for funding the structures and the actions against terrorism; policies to train forces, means, and population in order to be prepared for anti-terrorist war. The political decision to fight terrorism belongs to civilization and has the aim to protect by law communities, properties, institutions, systems against terrorist acts through a coherent system of constraints and actions of the citizen.

b. Offensive actions against terrorism

A. Terrorism surveillance and monitoring systems

Terrorism surveillance and monitoring systems involve structures and infrastructures distributed to cover the whole planet or, at a first stage in anti-terrorist warfare, areas that reach the greater importance. These systems need to be integrated, but also flexible enough to cope with the tactical and aleatory flexibility of terrorism, and to provide the databases and intelligence needed to properly organize the action and response. They must also have national and international components to act through cooperation in all environments and in all spaces.

Each of these structures must include: high sensitivity electronic surveillance components; direct research components; fast and secure communications components; data and information analysis components; fast decision-making components; validation components and timely correction of these decisions. The most important factor in the surveillance of terrorist structures, infrastructures and actions is the man, the intelligence agent, equipped with all the necessary means and helped by a permanent and effective technical-information system.

B. Structures and offensive actions against terrorism

a. Non-military

The most effective ways to combat terrorism are not military, but political and cultural. Being a political phenomenon, an expression of social dysfunctionality, terrorism acts in this space, striking everything that means order, organization, authority and democratic values.
It has already been proven that terrorism can be considered an asymmetric war. All international structures, starting with the UN and continuing with the regional ones and all states, must be involved in the fight against terrorism primarily through the means of civil society - legislation, economic and financial means, policies, preventative systems, education, culture - and, if necessary, by using force.

b. Military

Terrorism is a war against the current order of the world. The most dangerous effect of terrorism is fear, that is, the insecurity of the person, of the management and communication systems, of the social organisms, destruction and murder being only the ways terrorist act through. In this case, the war required to be carried out against terrorism must include: identification strategies, protection strategies, counteracting strategies, offensive strategies and dissuasive strategies.

A possible configuration of the military may be: Specific management structures (within the usual ones); Information, surveillance and warning forces (structures); Special Forces; Preventive action forces; Main forces of action and reaction. Integrated military capabilities will have to be available during peacetime too, especially in the field of special forces, tactical air force, military transport and means of information. [3]

5. The role of the Romanian armed forces in the actions against terrorism and anti-terrorist action / the role of the Romanian armed forces in preventing and coutering terrorism

Romania has not faced major terrorist risks until now. Although our country presents geopolitical and geostrategic interests, it is not yet a terrorist confrontation space or a proper environment to the development of terrorist actions.

The terrorist threats and risks that may affect our country result from: the continuous degradation of human condition; the expansion of drug trafficking, prostitution and human trafficking on our territory; the evolution of underground economy's structures, the money laundering and illegal activities; the existence of some Kurdish, Muslim, Islamic minorities which could represent terrorism support structures; the existence of people who, in the absence of other means and activities that can bring them prosperity, can be recruited in terrorist organizations and structures.

In order to accomplish its role in the fight against terrorism, Romanian military forces should be provided with the necessary structures (conception, leadership and execution), an adequate training system and a good strategy. The role of the army in anti-terrorist war is: to gather and analyze the information about terrorist structures, training bases, depots, action systems, communication networks, etc; to protect strategic objectives and other important objectives against terrorist actions; to seek, to discover, to attack and to rapidly destroy terrorist structures and infrastructures; to participate in the liquidation of the consequences of terrorist attacks (when they occur by surprise); to take action on the strengths points of terrorist networks (structures); to act, together with the anti-terrorist coalition, against international training bases and other terrorist structures and infrastructures.

National Response System for Critical/Emergency Situations

Nowadays, the world is face with asymmetrical conflicts, atypical threats, chaos, organized crime at a planetary level, and situations which require emergency conditions. Therefore, the most efficient way to organize the reaction (action) against terrorism is to establish a National Response System for Critical/Emergecy Situations that would also include the national anti-terrorist subsystem (or system). This national system of reaction (action) in a borderline situation must be led by the Supreme Council of Defense of the Country or by the Government, which have not only the ability, but also the means necessary for any kind of intervention or reaction, including in the anti-terror warfare system.

The forces involved in this type of war are numerous and they must really be joined in this response system. These are: the intelligence services; the air, land, sea, space, information and cultural space surveillance institutions; the central and local government institutions; the calamities and disasters response institutions; the public order institutions; the intelligence protection institutions; the armed forces. [3]

6. Conclusions

Terrorism is a special type of war aimed at destroying lives and value systems. Terrorism strikes by surprise in vulnerable spots, so that it kills, destroys, frightens, and creates spectacular effects, an atmosphere of hell and human misery. Terrorism is becoming more and more a tool of politics, very hard to stop and also to control. The main weapon of terrorism is man - the intelligent and fanatical man, who is capable of any sacrifice and, above all, is capable of inventing the most intelligent and effective means of action. He is hard-driven by his religion, so he is not easy to be stopped.

The society remains very vulnerable to the nuclear, radiological, chemical and biological terrorist attacks which, in the next stage, will multiply and diversify, their effects being particularly serious. The criminal terrorism will become more and more organized, highly globalized, with leadership and action organizations all over the world, which will radically change the configuration of the international strategic space, these threats becoming very dangerous and creating the need for a strategic response. Therefore, the anti-terrorism measures system must include the creation and maintenance of a strategic situation dominated by a coherent and permanent system of civil and military surveillance of areas, states, organizations and even of those who suspect to be part from terrorist networks.

At the same time, it is necessary to develop a system of anti-terrorist training of the population, economy and institutions. It is necessary to set up, according to the EU standards, a

National Response System for Critical/Emergency Situations, which must also include a significant specialized component of research, investigation and combating terrorism of any kind, including cyber-information and NBC (nuclear, chemical and biological) weapons/systems *(or something of the kind, you can choose something suitable; as far as I know, NBC most commonly refers to protective equipment such as suits, but you may know better; in any case, you need a noun there)*, in order to prevent a phenomenon which is likely to become the most serious threat ~~to~~ at the beginning of the millennium.

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MANAGERIAL COMMUNICATION AND AUTHORITARIAN LEADERSHIP STYLE

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Abstract:
Communication is the process behind the process, it is one of the forces that shape and boost organizations. No activity can take place within an organization without the support of communication, be it verbal or written, formal or informal. Communication props up organizational activity and influences organizational performance. However, communication is always influenced by the source the characteristics of the emitter therefore, managerial communication of a specific organization will be shaped by the management style applied there.

Key words: communication; management; management styles; authoritarian management;

1. Introduction

Managerial communication, explained in a simplistic manner, represents communication at the workplace, communication flowing down from managers to subordinates, flowing up from subordinates to superiors and among peers, it is one of the most frequent, common and unavoidable activity taking place within an organization. In this paper we intend to demonstrate that the managerial style will deeply impact the way the communication process takes place in an organization, with the focus upon the authoritarian management style.

Chronologically, it is very difficult to pinpoint the moment communication became relevant for managers since it has always been part of every organized group interaction nevertheless, even if there was little research of the domain before the 40s, we can infer that it has been used as a management tool even before the concept was scientifically officialized. According to T.M. Lillico [1] the interest in this domain appeared together with the development of companies, the increase in the number of jobs, the clear distinction that started to be made between specializations, the world expansion of companies, the mobility of employed people, combined with the development of communication technologies (telephone, telegraph, radio etc.) which required better managed communication at the work place.

Leadership has been the preoccupation of people for thousands of years. We have Sun Tzu quotes regarding the qualities and skills of a leader [2], we have ancient Roman emperors [3] who bequeathed us their views on leading people and, closer to our century, in the 1840s historians such as Thomas Carlyle who developed a theory called the Great Man theory which says that leaders are born, not made, followed by the Trait theory, (1930s-1940s) which claims that leaders can be both born or made. This was the moment when scholars began a more thorough and systematic analysis of the characteristics that an effective leader needs to have and this scholastic development continued with the behavioural era, situational era, new leadership era, transactional and transformational era.

2. Managerial communication and leadership styles

Kurt Lewin together with a team of researchers identified three leadership styles, authoritarian (autocratic), participative (democratic), delegative (laissez-faire), which were presented in a study, *Principles of topological psychology* published in 1939 [4]. These three styles remain the traditional styles alongside which, due to the development of organizations and of management as a science, other managerial styles were identified by scholars and added to the initial list: bureaucratic, pacesetter, visionary, coach, transactional or transformational style etc.. The focus of our paper will be on how autocratic leaders communicate and how this impacts the entire organization.

Autocratic leadership, also known as authoritarian leadership, is a leadership style in which there is only one individual, the manager, who controls the decision making process with little, if any, input from the group members. Autocratic leaders decide based on their convictions, considerations and interests and rarely accept suggestions. Autocratic leadership implies absolute control over the organization and, according to Cheng et al., it is "a leader's behavior that asserts absolute authority and control over subordinates and demands unquestionable obedience" [5].

The autocratic leadership is the most basic style of leadership, but the most effective one from the manager's control perspective because the authoritarian manager aims at attaining efficiency through a process of centralized decision-making. Imposing rank based authority, ignoring consultation and other people's inputs creates a safe space for the manager. This usually happens due to the insecurity, lack of expertise, lack of trust in the other members as well as the desire to have absolute and uncontested power over the organization and the disregard for other individuals' opinions and expertise. At a superficial level of analysis, we could say that it is a good approach because the process of decision making is short and simple when there is only one person involved in it. Also, since the control over the implementation of the decision is the attribute of the same person who took it, this person, namely the manager, has a very clear idea of how to do things and what the outcome should be.

On the other hand, such a strict and limited approach has its downfalls for example: too much information for one person to store and process and a very narrow perspective of how activities should be performed. As far as the employees are concerned, they will show a high level of disinterest because people who are not involved in the analyzing and decision making process will show little interest towards the implementation process thus, the activity they will perform will be rather superficial. In addition, highly skilled, experienced personnel might not be satisfied with the position of a simple executant and consequently, their engagement in the achievement of tasks might diminish. Unilateral decision making no matter how efficient might appear, has its flows and limitations like the narrow perspective on how different matters should be approached or the limited experience only one person can have. However, when managers consult their subordinates they not only widen their perspective on the matters in question, but also increase the chances of reaching a better decision.

Communication is an inherent part of any managerial activity and supports all managerial functions, it helps the transmitting and gathering of information for decision making, the passing on of decisions and it can trigger attitude changes, engagement, better understanding, and accountability on the part of employees. Flauto, in his article *Walking the talk: The relationship between leadership and communication competence* presented a study performed on 151 employees from nine organizations and the results highlighted the connection between the communication abilities a manager has and their leadership style and the fact the communication is mandatory for effective leadership [6]. Also it stressed the fact that leadership, is a social process involving a relationship between individuals which is executed through comprehensive, two-way communication.

Open, two-way communication between managers and employees is essential for performance management, especially for larger organizations since the more complex the activity of organization is, the more important the communication process becomes. Therefore, autocratic leadership, which revolves around the manager and their decisions and which is a rigid and egocentric management style, will undoubtedly affect the organizational communication process, shaping it into a simple means of transmitting orders and receiving information on the achievement of tasks. The culture such leaders develop is called the Eiffel Tower Culture where the hierarchal structure is more important than the function, the leader is the boss and not a father figure. Also, the organization is highly bureaucratic, depersonalized, rules dominate, roles come before people, orders flow from top to bottom [7] and no feed-back is required nor accepted.

There is no real communication process within such an organization, employees are given orders and information related to their tasks only, no other information is shared and no consultations are held. Subordinates cannot question the orders received, the manager is the initiator of every communication activity and the employees are expected to provide only answers of acknowledgement. This type of communication which flows mostly from top to bottom and very rarely from bottom to top is called vertical communication. This type of communication even if it seems simple and efficient has some negative consequences upon the organizational activity. First of all, it provides a limited amount of information which reduces the possibility of action, it is a lengthy process and any message that goes through the numerous managerial levels will only echo down the information towards the intended audience. Furthermore, such a lengthy process of transmitting and retransmitting the message is prone to multiple distortions and the impossibility of providing feed-back or asking for supplementary clarifications becomes an obstacle for the accomplishment of tasks.

3. Authoritarian communication and the organizational climate

When the leader behaves as the absolute authority in the organization, belittling and dismissing any contribution to the decision making process from the part of the employees, there are consequences upon the morale and the behavior of the employees. Both the morale and the behavior of the staff will change for the worse and the change will trigger in its turn negative effects upon the task accomplishment and therefore, the achievement of organizational objectives. The organizational climate, the perception employees have upon the organization, their work environment or the management, is one of the elements that help or undermine work performance and it is strongly affected by the leadership style. An authoritarian leader will impact the organizational climate through the distant, dictator-like style of management used, which happens because "subordinates of authoritarian leaders are likely to have low levels of trust-in-supervisor, organization-based self-esteem, perceived insider status, relational identification, and thus, little motivation to improve performance" [8].

Based on the analysis of specialized literature and personal observations we can state that the manner in which communication unfolds between a manager and their subordinates impacts dramatically the satisfaction of the employees and can lead to an increase or decrease in the work effort. Pavitt [9] argues that a collaborative approach from the part of the managers would create the possibility of a two-way communication channel and consequently, the employees would feel appreciated for their expertise and activity thus helping them internalize the organizational vision and become more engaged. In an authoritarian organizational climate the employees feel worthless, they have no motivation to do more than the basic effort.

This leadership style rejects group communication the most and thrives in a rigid, disconnected organizational climate. Autocratic leaders encourage only one way communication based on giving orders and never explaining the reasons behind their decisions. They discourage cooperation among employees and perceive them as small elements of the big mechanism called the organization, who should never have a voice. They are aggressive communicators who use intimidation based on rank authority, they ignore other people's rights or needs, creating an environment of dark submission and resignation. Disconnected employees, people who do not talk are easily manipulated and cannot become a force, and this is one of the goals such a manager has. An authoritarian manager does not want a team, they need only submissive employees who do not dare to question their orders and who are afraid to stand or themselves. This is the easiest way to control people and destroy organizational spirit. Such leaders do not perceive communication as a powerful motivating factor and a great source of ideas and do not care because they are the power.

4. Conclusion

Communication depends more on the source's characteristics than on its purpose. So, when talking about managerial communication we can say that it depends on the managerial style of every specific manager. Authoritarian managers will never be open to debates and discussion, they will not accept nor request any feedback and they will consider that their hierarchical position entitles them to demand absolute obedience from the employees. Consequently, their communication will be strict, aggressive, demanding.

We cannot say that such an approach is completely useless, depending on factors such as the situation, the type of task the group is working on, and characteristics of the team members it can be used. However, it should never be used on a permanent basis because it annihilates any possibility of creating the sense of belonging, engagement and the drive to do one's best in the members of the organization

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LIFE CYCLE COST (LCC) FOR MILITARY SYSTEMS

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Abstract:
In an era of rapidly changing technology, every military establishment and culture faces major problem. That problem is not what new weapon system should be bought, but how best to reduce the Total Operating Cost (TOC) of existing weapon systems. The difficult question that keeps decision makers and Life Cycle Management (LCM) on edge is in how to manage and maintain that current system during its operation life until disposal or retirement in such a way as to reduce its cost, i.e. to save money and time. Each country is faced with rising costs in maintenance.

Key words: life cycle cost, military, decision making, management

1. Introduction

Costs have long since become a major issue in military systems analysis. Attention is not limited to the acquisition costs alone, but encompasses all costs involved in the use and disposal of systems.

Concepts such as Life Cycle Cost (LCC), Whole Life Cost (WLC), Cost of Ownership (COO) or Total Ownership Cost (TOC) are more and more frequent in dealing with system analysis. Early in the project life cycle, studies need to address the capability gap, the numbers of equipment or platforms required and the technologies that can help to fill the gap at lowest cost.

Once a project team has been formed and given a user requirement, the focus turns to the performance, cost and time envelope of various options that will meet the requirement.

Life-cycle cost is defined as the sum of four major cost categories: (1) research and development costs; (2) investment costs, consisting of procurement, military construction, and acquisition-related operations and maintenance (O&M) associated with the production and deployment activities; (3) O&S costs; and (4) disposal costs.

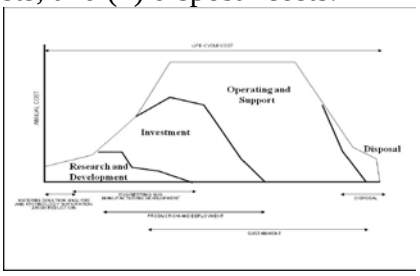

Fig.1 Life-cycle cost

2. Life Cycle Cost Analysis

Life cycle cost analysis (LCCA) is an approach used to assess the total cost of owning a facility or running a project. LCCA considers all the costs associated with obtaining, owning, and disposing of an investment.

Fig.2 Life Cycle Cost Analysis

Life Cycle Costing (LCC) has been used for many years to describe the process by which costs associated with each phase of an equipment's life, development, procurement, operation, support and disposal are brought together to address questions of 'best buy'.

Whole Life Costing (WLC) is a methodology for the systematic economic consideration of all whole life costs and benefits over a period of analysis, as defined in the agreed scope.

Cost of ownership (COO) is defined as the "total lifetime cost associated with acquisition, installation and operation of fabrication equipment".

The Total Ownership Cost (TOC) is the summation of the cost of acquiring and owning or converting an item of material, piece of equipment, or service and post-ownership cost, including the disposal of hazardous and other manufacturing waste. It also includes the cost of lost sales as a result of a reputation for poor product quality causes by defective materials or purchased services that are incorporated in the end product or service.

Life Cycle Costs have been considered key to procurement decisions for many years in a number of NATO countries. Whilst resources in terms of people and cash were considered, often only the marginal (difference) costs between options have been considered. Firstly, because of the practical need to set aside sufficient funds to pay industry for Tanks, Aircraft and Ships and the spares and maintenance required to support them. Secondly because Defense Ministries are large organizations it has been difficult to gather data on resource consumption or communicate costs effectively between budget holders.

Financial Appraisals however include all cash flows and transfer payments and hence assess affordability. In the UK, Cost of Ownership will provide this viewpoint. In financial appraisal, costs need to be split by budget holder, so they know their contribution, by phase to understand the significance over the life cycle and by major 'input' cost category (manpower, stocks purchased, in year expenses etc.).

Provided that in any assessment of options there is an affordable option (comparing COO for the new and existing capability will provide this check) then the IA should be able to identify any alternatives that offer better value for money. In the UK the primary means of distinguishing between options is cost effectiveness. The chart below shows four options with point estimates and ellipses that represent uncertainty in the costs and effectiveness forecasts.

3. Requirements for tools and project phases

The move to Cost of Ownership will help to provide data on existing platforms and hence inform modelling. To support the initiative new tools and approaches have or are being developed. They need to be directed and designed at the whole life cycle of equipment and capability.

Early in the project life cycle, studies need to address the capability gap, the numbers of equipment or platforms required and the technologies that can help to fill the gap to offer best value for money. This requires strategic cost models that can provide a capability to look at the 'big picture'.

Once a project team has been formed and given a user requirement, the focus turns to the performance, cost and time envelope of various options that will meet the requirement. Forecasts of costs for new equipment and platforms are needed. This requires models that have a holistic view and can provide a 'what if' capability.

When the preferred option is identified, industry is generally asked to compete for its supply. Assessments of these bids are based on life cycle cost analysis and need to address economic and financial treatments.

Cost figures need to compliant with rules on Investment Appraisal set out by the Treasury and at the same time provide the data by which budgets can be agreed for the long term operation and support of the assets.

The following are necessary considerations to establish the nature of each cost element when making the forecast:

- Substantially constant regardless of operation and support volumetric changes
- Simply related to operation and support volumetric changes (may use scaling factors)
- Complex relationship due to changing patterns and cost drivers over time (e.g. maintenance concept changes, ageing effects, etc.)
- Periodic, event driven, recurring or non-recurring (e.g. mid-life updates, refits, deployment changes, peace keeping etc.)
- Changing over time (e.g. ageing)
- Step changes (macro-economic impacts)

4. Output (activity) costing and input cost categories

The number of potential activities performed in development, production, operation and support etc. may be considered almost infinite e.g. Prototype manufacture, Maintenance at 1st line, Basic Training, Post Design Support, Storage, Recruitment etc. In the UK a generic Cost and Resource Breakdown Structure (CRBS) has been promulgated to provide a consistent set of activities for equipment cost forecasts.

In support based organizations, overheads are often a major part of the total cost (as they now are in a manufacturing). Any traditional costing system which recovers overheads only in proportion to direct labor costs or time may be of limited use as a management tool because activities other than direct labor may be more closely linked to the generation of costs. In Activity Based Costing (ABC) costs are linked to products via the most appropriate 'cost drivers' not solely by direct labor. Once Activity Based Costing is fully operational it may prove possible to generate cost drivers from this data.

Contributing elements of input cost (i.e. resources consumed in producing the activities) can be reduced to just 9 categories.

- Manpower expenditure (internal staff)
- Payments on contract
- Development expenditure and intangible assets
- Assets in the Course Of Construction (ACOC)
- Other fixed assets
- Capital spares purchase (e.g. spare aero plane engines)

• RMC (Raw Materials and Consumables) GWMB (Guided Weapons, Missiles and Bombs) purchase

• Stock and RMC purchase

• Other expenditure

Regarding force and armament planning the relatively long life cycle of military systems has to be considered and a total life cycle cost (LCC) in the evaluation of optimal decision reflected. When analyzing LCC a cost breakdown structure (CBS) has to be determined as the first step and a cost estimating follows. A variety of methods are available to develop a cost estimate (e.g. parametric, analogous, accounting method, expert opinion) and the methodology chosen depends on the level of detail required, the availability of data, and time constraints. An example of simplified preliminary cost estimate from the Czech Armed Forces is based on the relationship of LCC elements to the cost of acquisition alone. As a decision support tool for defense planning a simulation model ForceSim has been developed. This model is based on the optional scenario portfolio of security risks. Each scenario requires the corresponding kind and number of military systems and when we sum up the demands of all risks regarding possible concurrency and substitution, the outcome is the required structure of defense force pool. But each system represents a corresponding cost demand in the case of activation (initial cost), cost for the operation and support of deployed system, as well cost for the deactivation of
a superfluous system (disposal cost).

DOD-USA: operating and support cost-estimating guide office of the secretary of defense cost assessment and program evaluation march 2014.

For many programs, the system O&S costs will be the largest of the four cost categories, which is why there is renewed emphasis on O&S affordability and cost management. Based on cost estimates from recent Selected Acquisition Reports (SARs), the percentage of program life-cycle cost associated with O&S costs (for seven system types) calculated in constant base-year dollars is presented in the next two Figures: O&S Costs as Percentage of Total Life-Cycle Cost for Selected System Types.

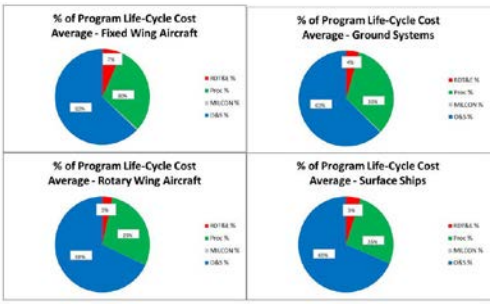

Fig.3.1 the percentage of program life-cycle cost associated with O&S costs (for seven system types) calculated in constant base-year dollars.

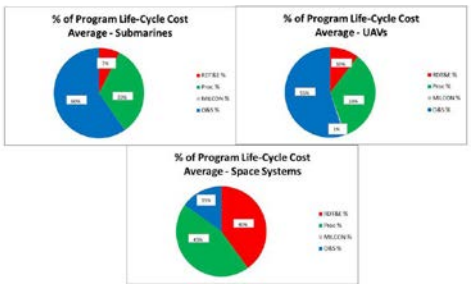

Fig.3.2 the percentage of program life-cycle cost associated with O&S costs (for seven system types) calculated in constant base-year dollars.

5. Life-cycle cost categories

The life-cycle cost categories correspond not only to phases of the acquisition process, but also to budget appropriation categories. Research and development costs are funded from Research, Development, Test and Evaluation (RDT&E) appropriations; and investment costs are funded from Procurement, Military Construction (MILCON), and, occasionally, acquisition-related O&M appropriations. O&S costs are primarily funded from Military Personnel (MILPERS) and O&M appropriations.

Note that for both MILPERS and O&M, there are distinct appropriations for the Active, Reserve, and Guard Components. In addition, the O&S cost elements for continuing system improvements (system hardware modifications and software maintenance) may be funded by RDT&E and/or Procurement appropriations.

A cost benefit analysis is an exercise in which all of the costs and benefits of an activity are quantified and valued in monetary terms. It is therefore possible to evaluate and compare options and see if the benefits exceed the costs i.e. 'send to save'.

Life Cycle Costing is the method used to quantify the relative costs to acquire and operate each option. This analysis will develop the costs for each option. This could be the first estimate of Life Cycle Cost (LCC). The first estimate of LCC is based upon a comprehensive statement of requirement in mission terms and an outline of a solution.

Such an estimate is strictly an indication of the total project cost and completion date.

After this preliminary evaluation, a Program Planning Proposal (PPP) is prepared.

The PPP identifies resources required in broad terms and is equivalent to a defeasibility study. Following approval of PPP, a Project Development Study is performed.

The Visibility and Management of Operating and Support Costs (VAMOSC) program is the most complete source of operating and support (O&S) cost data available to the three U.S. Military Services (Army, Navy and Air Force). Under the general VAMOSC umbrella, each of the services has developed its own system based on the OSD Cost Analysis Improvement Group (CAIG) cost element structure documented in DOD 5000.4M, entitled "DoD Cost Analysis Guidance and Procedures". The program includes the Navy's VAMOSC system, managed by the Naval Center for Cost Analysis (NCCA), the Air Force's system, known as Air Force Total Ownership Cost (AFTOC) and managed by the Air Force Cost Analysis Agency (AFCAA), and the Army's Operating and Support management Information System (OSMIS), and managed by the Cost and Economic Analysis Center (CEAC). These Service programs track the O&S costs for major weapon systems and some sub-systems using data drawn from their respective reporting organizations. Typical users of VAMOSC include estimators, financial programmers and logisticians.

All three Service systems face challenges to standardize cost elements and be able to validate these costs against financial data by appropriation. Each of the Service VAMOSC systems currently reports O&S costs in a format somewhat different from the CAIG O&S cost element structure. There is a continuing need to improve data sources to ensure that weapon system life cycle costs (LCC) are fully reported in a more timely fashion. Ideally, "real time" reporting of data is desired, but that is a very difficult goal to achieve. At present, Navy VAMOSC data is reported once a year. As enhancements and improvements are made, cost comparisons across Services will be easier as the systems, sources and coverage of the CAIG cost element structure are made more uniform.

6. LCC in Defence planning

Within the last few years, the needs of defense planners have changed radically, with the collapse of the Warsaw Pact, reductions in defense expenditures in most countries, and growing instability in some parts of the world. There is much uncertainty as to what type of force may be appropriate, what equipment is needed, and what concept of operations might be required in scenarios, which are still unfolding. The time horizon of defense planning must be commensurable with the average life of force structures, and it appears that force structure life time's become ever longer. For instance, combat aircraft that used to live for 10 to 20 years in peacetime, now live for 20 or 30 years (or more, e.g. the case of bomber B-52) with capability enhancing mid-life upgrades. There is other related factor that demands a rather long time horizon. The time constants required to change organization, operational procedures, training and doctrines are significant too. But a defense budget is a key factor that drives the size of defense force, the level of technology implemented, the level of readiness that can be maintained and the amount of research that can be supported to develop new technology. The
Constraints of the defense budget produce competing demands among various elements of defense force. As requirements almost exceed resources, defense planners must balance these competing demands to achieve effectiveness and affordability.

The next Annex is from "Development of cost breakdown structure for defence acquisition projects"- details at References, and is presenting a generic CBS (Cost Breakdown Structure) for military equipment in a typical Canadian context

Life cycle costing is a complex process that involves estimating the overall costs of an item over its entire life. A CBS is a hierarchical structure whereby the project cost elements are organized to avoid missing or double counting errors.

In order to better facilitate life cycle costing, each project is divided into four main phases: development, acquisition, in-service, and disposal phases. Each phase is also divided into smaller and manageable activities. The suggested approach is rationally guided by the principle of three constituents (activity, product and resource). This principle states that a cost appears when a resource is used by an activity applied to develop, produce, operate, sustain, or dispose a specific product. The first step in this approach is to identify the activities to be performed and their respective resources. The second is to assign resource costs to each activity. The third is to assign activity costs to cost objects.

We will focus on the first step.

Canadian generic CBS (Cost Breakdown Structure) for defense acquisition projects

1.0 Development
1.1 Project management
- Salaries (Civilian and military)
- Contracted Support
- Operating Expenses (Travel, Office Space/Supplies, Training, Legal, Security etc.)
- Professional Service
- PWGSC Revenue Dependency

1.2 Studies and analyses
1.3 Solicitation and Contracts
1.4 Research and Design (Optional)
- Design & Development
- System Engineering/Program Management
- Engineering Development Model

- Operational Test and Evaluations
- Other Studies
1.5 Other
2.0 Acquisition
2.1 Management
- Salaries
- Contracted Support
- Operating Expenses
- Professional Service
2.2 Studies, Analysis and Simulation
2.3 Engineering
- System Engineering
- Design and Development Engineering
- Design and Engineering Changes
2.4 Purchase
- Main Mission System
- Major Sub-systems
- Support System:
Peculiar Equipment
Common Equipment
- Initial Spares and Repair Parts
2.5 System Integration
2.6 System Test, Trials and Evaluation
- Developmental Test and Evaluation
- Operational Test and Evaluation
- Mock-ups/System Integration Labs
- Test and Evaluation Support
- Test Facilities
2.7 Deployment
- Delivery (PHST – Packaging, Handling, Storage and Transportation)
- Initial Training
- Installations and Set-To-Work
- Final Acceptance Test
2.8 Infrastructure, Facilities and Investment on Specific Means
- Industrial Investment
- Government Investment
2.9 Other
3.0 Operations & Sustainment
3.1 Operations
- System Manpower
- Energy (Fuel, Petroleum, Oil and Lubricates, Electricity, etc.)
- Training Munitions and Expendable Stores
- Other Operating Materials
- Operation Support and Services
3.2 Maintenance
- Level 1 Maintenance
- Level 2 Maintenance

- Level 3 Maintenance
- Level 4 Maintenance

3.3 Sustaining Support
- System Specific Training
- Support Equipment Maintenance and Repair
- Sustaining/System Engineering
- Program Management
- Software Maintenance Support
- Maintaining and Updating of Data and Technical Publications
- Replenishment and PHST

3.4 Continuing System Improvements
- Software Upgrade
- Modification and Engineering Change
- Major System/Capability Upgrade

3.5 Indirect Support
- Installation/Operation Support
- Personnel Support
- General Training and Education
- Other Indirect Support (Legal, Security, Housing, etc.)

4.0 Disposal

4.1 Disposal Planning
- Disposal Project Management plan
- Disposal Environmental Management Plan
- Tenders and Tender evaluation

4.2 Demilitarization

4.3 Disposal of hazardous materials

4.4 Dismantle or Destruction of System

4.5 Storage

4.6 Transportation

4.7 Resale of Demilitarized System (revenue)

The suggested hierarchical structure is comprehensive ensuring all activities are well-defined. It is also flexible and easy to use and to update as the project evolves. The suggested CBS is establishing a common ground for preparing and presenting a cost structure for national defense acquisition projects. They can also provide guidance to LCC studies in multinational projects involving allied members.

As far as I personally know, Romania military doesn't have anything like this. It can use this because of all the arguments mentioned above.

7. Conclusions

In an era of rapidly changing technology, every military establishment and culture faces major problem. That problem is not what new weapon system should be bought, but how best to reduce the Total Operating Cost (TOC) of existing weapon systems. The difficult question that keeps decision makers and Life Cycle Management (LCM) on edge is in how to manage and maintain that current system during its operation life until disposal or retirement in such a way as to reduce its cost, i.e. to save money and time. Each country is faced with rising costs in maintenance.

The decision to field a new system requires a commitment to support that system throughout its life cycle.

Decisions to develop, procure, and support new systems are based on many factors, one of which is the projected cost of the systems over their operational lifetime.

Aircraft operating costs are expected to decline initially, plateau, and then increase during a final phase of their life cycle.

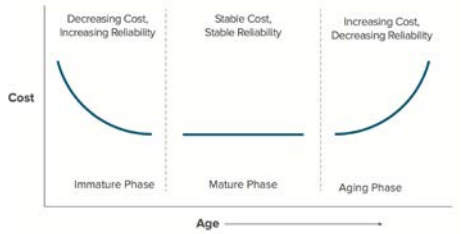

Fig.4 Aircraft operating costs are expected to decline initially, plateau, and then increase during a final phase of their life cycle.

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CORRELATION OF ORGANIZATIONAL CULTURE WITH THE ORGANIZATIONAL CLIMATE FOR INCREASING PERFORMANCE IN THE MILITARY ORGANIZATION

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Abstract:
The first objective of the article is to make a theoretical comparative analysis between the concepts of organizational culture and organizational climate. Having as a common starting point the analysis of the internal social environment of an organization, the organizational climate refers to the perceptions of an organization's members regarding formal and informal practices, policies and procedures, while culture is based on beliefs and values built over time by members of the organization. The correlation of concepts with performance and military organization is a starting point in explaining some phenomena within organizations, such as: creating a hierarchy of values, strategic orientation, determining fundamental attitudes towards the environment, interpreting the framework of human relations. The article sets the understanding of organizational culture and climate, how they intertwine and the impact they have in the context of national security, moreover, it demonstrates the essential role of concepts in increasing the performance of the military organization.

Key words: organizational culture; organizational climate; performance; military organization; management.

1. Introduction

The article starts from the premise of the existence of a link between performance at the level of organization and culture, respectively organizational climate. Arguments in this regard are the statements that the result of the intersection between skills, motivation and responsibilities that the individual has within the organization creates performance. [6] Mental strategies, training and psychological potential are factors that condition performance, respectively thought and evaluation processes. [10]

The methods used in the construction of the article are: scientific documentation for the analysis of the literature, comparative analysis and questionnaire-based survey.

The aim of the article is to make a correlation between organizational culture and organizational climate in the context of improving performance in the military organization. The common object of study (organizational social environment) and similar contents (dimensions targeted by organizational analysis) made it difficult to make a clear distinction between organizational climate and culture. Organizational culture focuses more on stable aspects, which give the impression of continuity to the "personality" of an organization, while the organizational climate contributes to the current mood of employees, their attitudes, opinions and beliefs. [7] Organizational climate refers to the perceptions of members of an organization regarding formal and informal practices, policies, and procedures, while culture is based on the beliefs and values built over time by members of the organization. [4]

The culture of an organization is analyzed starting from the individual, from his/her historical existence, from the psychology of the people he/she belongs to and, last but not least, from his/her

national culture. [5] Research on the organizational climate has resulted from the corroboration of research on the social field proposed by K. Lewin with those aimed at assessing attitudes in organizations. [1]

2. Correlation of the elements of the organizational culture with the variables of the organizational climate

„While the organizational culture focuses mainly on the value and normative aspect (implicitly and explicitly), elements that transmit and support the idea of continuity, the organizational climate refers especially to the contextual aspect, to the evaluations, opinions and feelings of employees formulated at a certain moment of a company's or institution's life." [8] Table no. 1 correlates the components of organizational culture with climate variables [7], [3], [9] highlighting the connection between concepts, how they intertwine and make their mark on the organization.

Crt. no.	Components of organizational culture	Climate variables with a contribution to increasing performance
1.	**Heroes**	Taking the risk; Responsibility; Dedication; Authority; Facilitation and support from the leader.
2.	**Rules**	Role structure; Standards; Clarity and level of objectives; Orientation of the rules; Administrative efficiency.
3.	**Values**	Support; Responsibility; Kindness; Autonomy; Dedication; Egalitarianism; Cordiality and friendship.
4.	**Statuses and roles**	Group membership; Sociability; Cooperation in the work team; Friendliness; Organizational structure; Internal communication.
5.	**Beliefs**	Responsibility; Group membership; Clarity and level of objectives; Orientation of the rules; Administrative efficiency; Organizational structure; Internal communication.

Table 1 Correlation of elements of organizational culture with climate variables

As it can be seen in Table 1, there are climate variables, such as responsibility, organizational efficiency, clarity and level of objectives, which find their value in components of organizational culture and, at the same time, are conditions for performance growth at the organizational level.

In the military organization, organizational culture plays several roles, such as shaping a vision for the future, reducing uncertainties and establishing the identity of the institution. [2]

3. Analysis on the influence of the organizational climate's elements on the military organization

This chapter contains a research whose objective is to validate the theoretical analysis performed previously. In this sense, the purpose of the investigation is to establish the level of influence that the elements of organizational culture have in order to achieve performance in the military organization. With the establishment of their hierarchy according to their importance, the issue of increasing performance in the military organization becomes much more predictable in solving any problems that may arise in this area.

In the study, a selective research was used, and in order to establish the subjects, two requirements were taken into account: to be third year students from the "Nicolae Bălcescu" Land Forces Academy in Sibiu and beneficiaries of the Ministry of National Defense.

After applying the first criterion, a number of 359 students remained. Of the remaining 359, after the application of the second criterion, the number of validated students was 315. To complete the study, 140 responses were required, out of a maximum of 315 to meet both criteria.

The objective of the investigation is to rank the elements of the organizational climate according to their importance in creating performance in the military environment and to identify the extent to which the elements of the organizational climate are present in the military organization.

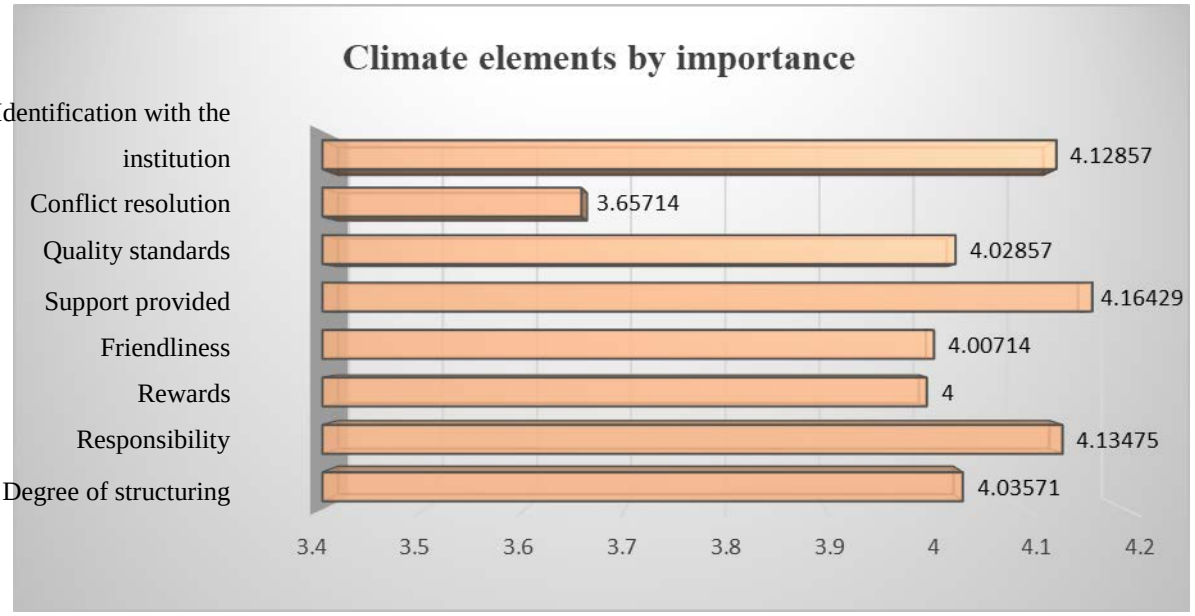

Fig.1 Hierarchy of the organizational climate's elements according to their importance

According to the results illustrated in figure no. 1, it appears that the support given to human resources obtained a score of 4.16, which confirms the existence of other related values, too such as

group membership and the possibility to form skills conducive to increasing performance, such as ease of teamwork, flexibility and good communication.

Respondents considered that in achieving performance, responsibility is more important than financial rewards, permissions or distinctions, obtaining a score of 4.13. On the 3rd place, with an average very close to the second place, 4.12, is the identification with the institution.

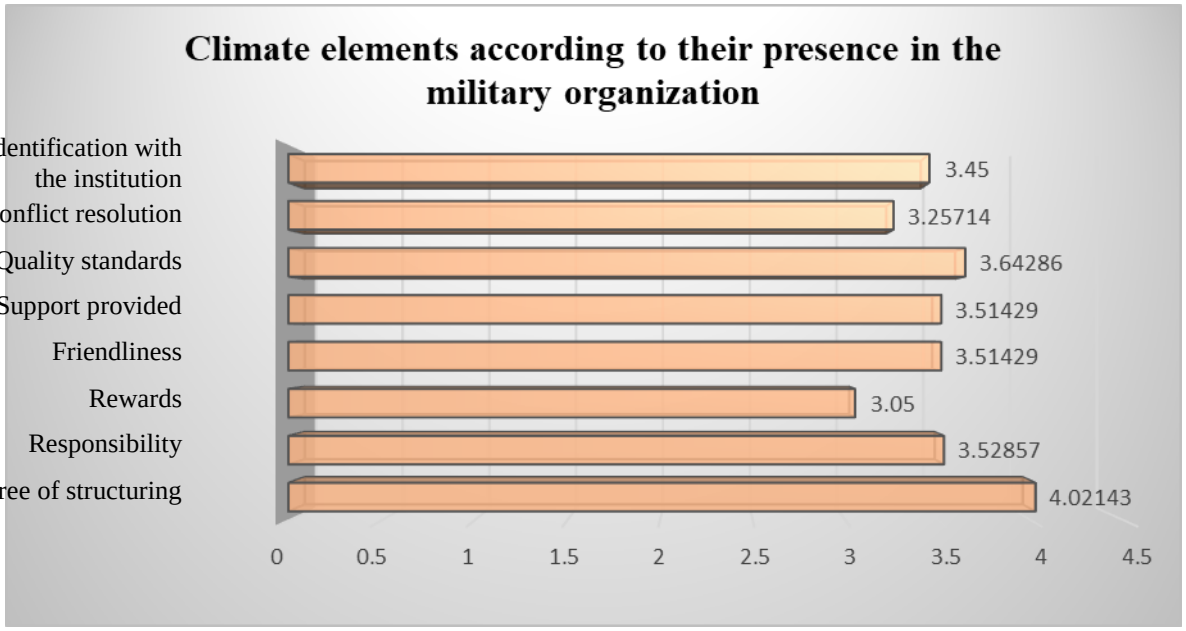

Fig.2 Hierarchy of climate elements according to their presence in the military organization

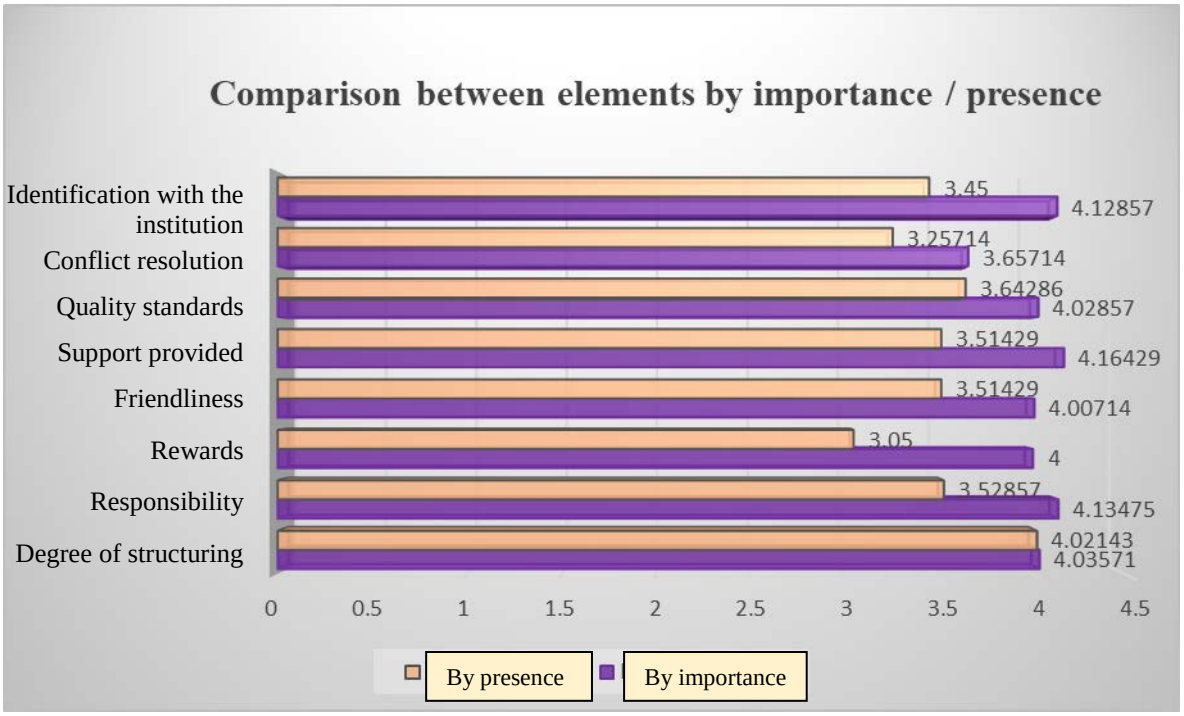

Fig.3 Comparison between the scores of the organizational climate's elements declared present and those declared existing

Regarding the comparison of climate elements according to their presence in the culture of the institution, the high score obtained by the degree of structuring was predictable because the military organization is known to be governed by rules, procedures and regulations regarding interpersonal interaction and performance of functional attributions. The presence of quality standards and responsibility suggests a professional, serious and reliable climate.

The low score obtained by rewards (3.05) and the fast and correct resolution of conflicts (3.25) raises an alarm signal, and without taking measures to increase these two elements in the long run, the performance will not be achieved at the highest levels. The identification with the organization, with an average of 3.45, suggests the lack of affiliation that members show towards the military environment. Without that feeling of "home" within the organization, the yield will be low, which affects the efficiency of the group in achieving the objectives.

Figure 3 compares the averages of the elements after processing the data from the questionnaire. The average difference of each element is easily visible. The discrepancy between the importance and existence of the elements is not beneficial from any point of view, much less from the point of view of performance.

According to the chart, the biggest difference is in the case of rewards and identification with organizational objectives, membership in the institution. These differences highlight both the awareness of the importance of climate elements in organizational outcomes and the negative effects that their lack can produce.

Figure no. 4 illustrates the difference between media frequencies depending on the importance and presence of climate elements in the organization. The importance of the elements is noticed at the level of subunits, as evidenced by the overall average of 4.01. A low average of 3.49 for presence is a cause for concern and a problem that needs to be resolved.

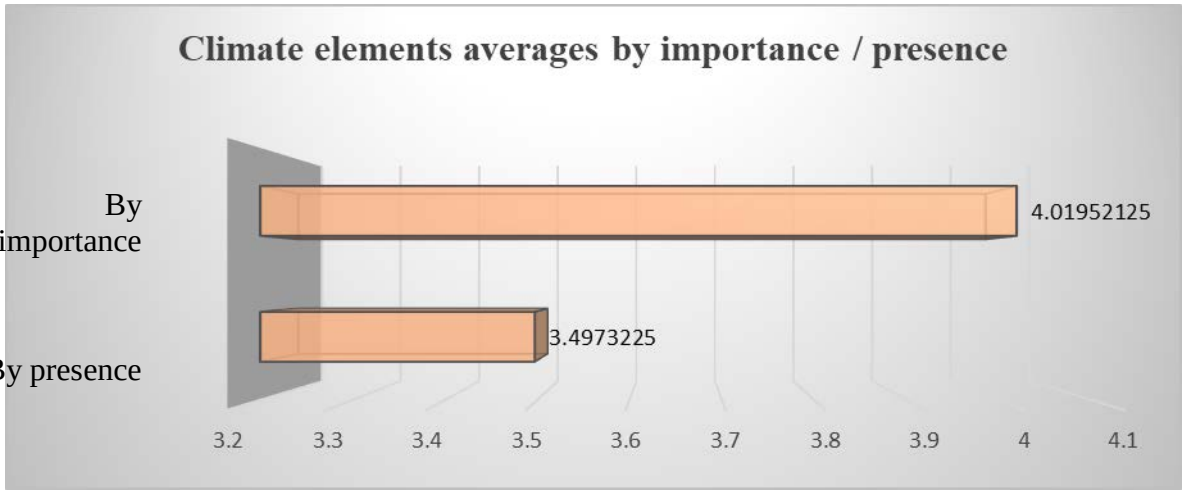

Fig.4 Hierarchy of climate elements according to their presence in the military organization

4. Conclusion

The article highlights in the first part the theoretical relationship between the variables of organizational climate and organizational culture, with emphasis on their influence on performance at the level of a military organization.

The analysis made in section 3, whose main objective is to establish the level of importance that the elements of the organizational climate have in order to achieve performance in the military organization. The results obtained were then compared with the scores obtained by the presence of climate elements in the organization.

Although all elements of organizational culture contribute to performance in the military, according to the study, some are of particular importance. As it is well known in the literature, the present study reveals the same general idea: organizational culture is more than the sum of its components. The results obtained establish a delimitation between two concepts often considered similar: culture and organizational climate.

The main problem identified is the absence from the military organizational climate of some elements, respectively values, considered important: rewards, identification with the organization, responsibility, discipline. The aforementioned elements, through the values obtained from the research, occupied the first places in their rankings by importance and among the last places by presence. This discrepancy between the obtained values shows the deficiency that the military organization has in terms of these aspects.

The organizational climate dictates the atmosphere within the organization. Complementary, and part derived from organizational culture, climate is "a combination of attitudes, feelings and behaviors that characterize life in an organization" with a strong impact on performance. Members tend to accept climate integration first, before accepting the organization's goals. In the context of national security, an understanding of organizational culture and climate, how they intertwine, and their impact are essential, arguing the importance of addressing this issue in this article.

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A CONSIDERATIONS ON THE FACTORS GENERATING INCREASES IN THE LIFE CYCLE COST FOR MILITARY EQUIPMENTS

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Abstract:
When analyzing the purchase of military equipment, the commissions should be composed of a wide range of specialists, which should be taking into account all aspects of the equipment, including its cost throughout its lifespan.
Lack of information in these committees, lack of understanding of the concept of life cycle cost, the focus on short term considerations, lack of an integrated view regarding the life cycle cost of an equipment from its acquisition to the end users, lack of correlation between military considerations and economic considerations are just a few of the risk factors that lead to increases in equipment costs over their life cycle.

Key words: life cycle; integration; short term; military organization; management.

1. Introduction

There are several standard definitions of the life cycle for equipment, but over time a number of definitions have been given which cover all aspects of the equipment starting from the initial concept to its withdrawal.

According to the SR EN ISO 14040:20022 standard, life cycle is defined as „the *consecutive and interrelated stages of product-system, from the acquisition of raw materials or the generation of natural resources until post-use*".

In my opinion, the life cycle of military equipment should include, in addition to the requirement of equipment stage, the stages of the supply with raw materials, their processing, the analysis and design phase, manufacturing, distribution (including maintenance during service, supply of spare parts) stages of using the equipment, its removal and disassembly its recovery, as well as processing the resulting waste.

In the current political context, the military and economical relevance of the subject has increased and the increased efficiency in using the life cycle cost analysis leads to the provision of equipment with a longer lifespan and an adequate cost.

By including the cost of the life cycle in the process of acquisition, the managers can take the best affordable decisions by choosing from the presented options on different stages of the life cycle and based on their estimated costs. The phases of the life cycle of equipment are presented below in figure 1:

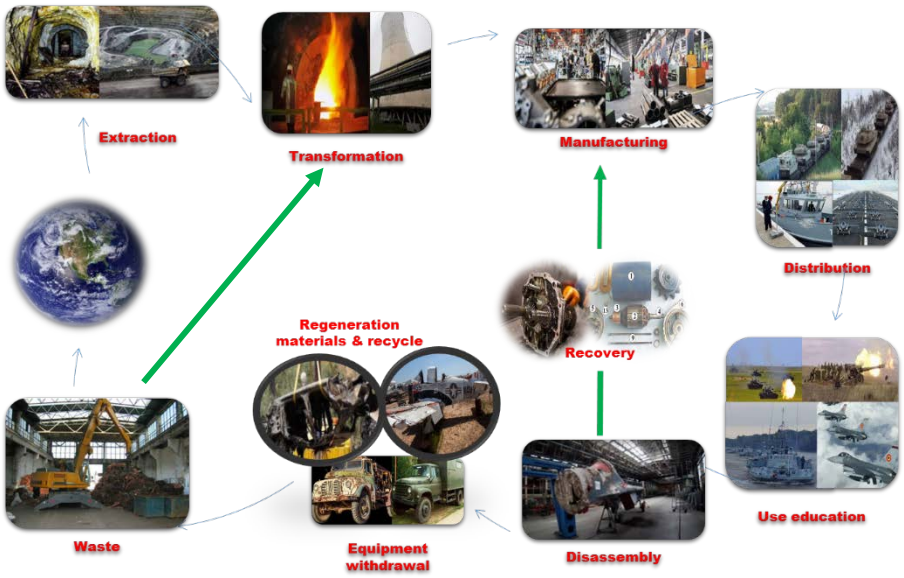

Fig. 1: Equipment life cycle phases

2. Considerations on the cost implications of the process of equipment acquisition, operation and modernization

The acquisition of military equipment is determined by the country's defense policy, which should take into account not only the defensive purpose of the equipment, but also the possibilities of equipment being used for offensive purposes when the situation requires it.

Following the decision by the Supreme Council of National Defense on the type of required equipment to be purchased or manufactured, it is recommended that all other relevant aspects related to the equipment should be analyzed down to the smallest detail, by a team of subject matter experts from the Armaments department, which should also include research specialists. This team should analyze and compare all the technical characteristics and the requirements the future equipment should meet, and the conclusions will subsequently be presented to the Supreme Council of National Defense, in order to provide clarifications and make changes to the equipment requirements (if applicable). After that, following the review process, a decision shall be made regarding the type of equipment to be purchased / manufactured.

In this respect, the possibilities of modernizing the equipment must not be omitted, nor should the associated costs. If the contract agreed between the parties (producer/end user) does not specify from the start the costs, and the various aspects related to the modernization of the equipment, in accordance with technological evolution, the risk that the update cost will increase up to half the cost of the initial equipment should be taken into account.

At the same time it must be specified in the contract that the training of a minimum number of staff (training instructors) which are going to utilize the equipment is to be done on the expense of the manufacturer or using common costs.

The training rooms and laboratories used by the staff tending to the equipment should be equipped with complete and separated subassemblies of gear, simulators for training the operators, presentations of the equipment in different stages of application. This assets should be provided by

the manufacturer, as they are the only ones who have the necessary information, after testing the equipment and monitoring its use in different work environments.

1.1: Equipment manufacturing location

A very important aspect related to the production of the military equipment which I want to emphasize is the location where the equipment as well as its component subassemblies are produced and what important raw materials are needed for manufacturing the equipment components It is a common practice that equipment of any kind, and especially the military equipment's, should be purchased from a business-friendly country which has the same defense policy approach and which is engaged in military, political and economic cooperation with the beneficiary country.

Even if the analysis of the work teams concludes that a specific equipment fully meets all the required features and the acquisition costs are below the market price, it should also be taken into account who produces it, where it is assembled, where the consumable and material goods necessary for the operation of the product come from. It would not be advisable to purchase an equipment I it is produced or assembled in an unfriendly country or if that country is in a very distant location, and the delivery of the equipment or consumables would require crossing hostile countries borders or areas such as unavoidable crossing points (oceans, canals, straits, etc.) or highly politically controlled areas.

At the time the microchip crisis occurred, the countries that did not anticipate it or weren't presented with the opportunity of purchase for stock creation, were forced to reduce their production capacity or even close entire factories.

It is entirely probable that the manufacturer chosen for the military equipment could also be unable, in some specific circumstances caused by a natural disaster or man-made crisis, to purchase certain raw materials (for various reasons: its lack of presence on the market, or the supplying country entering conflict with the producing country).

1.2: The real cost of military equipment

A standard definition of the real life-cycle cost of equipment cannot be rendered as a literary expression, as it is more of a mathematical equation, which includes many known factors, but also many other unforeseen or obscure factors that can vary from one stage of the product's life cycle to another and can substantially increase the cost.,.

Therefore, when talking about the real cost of the equipment, the whole set of planned and hidden costs, calculated and deducted from the entire life cycle of the product (even in the phase of disposal and recovery of the equipment or its subassemblies) must be taken into consideration.

A mathematical equation of the life cycle costs of equipment can be represented as follows:

$$\mathbf{LCC = a + bx + cxy +/- d}$$

Where:
a = one-time system costs (R&D)
b = one-time unit costs (Acquisition)
x= number of units
c = recurring (annual) operating costs
y= number of years operated
d = disposal costs (+) or residual value (-)

3. Developing the defense industry and the national economy through producing military equipment inside the country

Another aspect that should not be neglected in relation to the production of military equipment and which I would like to emphasize is that the manufacturing should preferably take place in the respective country. This will lead to the development of the defense industry and the national economy by creating jobs and industrial infrastructure progress, but also to the possibility of providing equipment to other countries, all this leading to an increasing of the gross domestic product and implicitly of the living standard of the population.

Trucks are currently being produced in Romania since the last generation, but we used to buy trucks from our Italian partners. Italy's higher economic power meant that the producer could also provide the maintenance for the purchased truck, something the Romanian producers could not provide. The decision also had the advantage of facilitating the interoperability in the joint exercises carried out between our country and other partners Although the purchase of the necessary equipment from foreign producers has undeniable advantages, it would be perhaps better to consider a mixture of foreign and domestic producers when choosing the supplier for the equipment needed to modernize the land forces. .

Taking into account the modernization requirements of the Romanian Armed Forces, which for a period of about 50 years was equipped with assets of Soviet origin, the analysis of costs during the life cycle of equipment failed to take into consideration the following aspects:

- **The type of fuel used for the military equipment**. It is important to mention that apart from the air force, which uses a unique fuel for the aircrafts and the helicopters, all the other services also use diesel fuel (both in the summer and winter), gasoline and many other types of combustibles and lubricants. Using different types of fuel can generate problems during an armed conflict, as it would not be possible to use the resources from a damaged technique (cannibalization), as the fuel type and spare parts would not fit. On the other hand, even during peacetime, the lack of standardization increases the difficulty of the purchasing process and the problems to be overcome in relation to the storage the fuels and the lubricants. (Figure no. 2)

Figure no. 2: Types of power supply and chassis

- **The chassis type of armored and unarmored military equipment.** Similarly to the aspects mentioned above, trucks do not have the same type of chassis, the same type of wheels, engines and other components, with significant differences from one military structure to another. The armored vehicles have different chassis and different driving components, which also leads to the same inconveniences related to the acquisition, storage and reuse of the subassemblies taken from damaged equipment as mentioned above. An increased standardization of the same class of equipment, at the level of all the military units within a service, would significantly improve the operational effectiveness and also reduce costs, through savings related to economies of scale regarding acquisition of fuel and spare parts and reduced storage costs.

From the perspective of the life cycle cost, there are numerous arguments in favor of acquiring and maintaining the military equipment using domestic suppliers. This approach would have the added benefit of encouraging the economic growth, by stimulating domestic producers, but this approach should be a comprehensive one, including the development of the roads and railway infrastructure required for increasing the effectiveness of supply and maintenance.

In conclusion, the use of a wide variety of military equipment produced in different countries generates difficulties and additional costs, deriving from maintenance challenges, increased cost and high complexity of the acquisition process for a very diverse range of consumables, from the storage costs, from the additional costs generated by training operators for a high diversity of equipment, but also from the opportunity cost of not stimulating the economic and industrial development of the country.

4. Risks related to the acquisition of military equipment and their associated costs

In the contents of the paper I would like to emphasize three types of risks related to the purchase of military equipment and their associated costs, over the lifespan of the equipment.

According to the International Organization for Standardization (OISS) *ISO 31000 (2009) / Guide ISO 73:2002* ***risk*** *is defined as „the effect of uncertainty on objectives". Uncertainty implies events which may or may not occur and the uncertainties caused by ambiguity or lack of information.*

The first type of identified risk would be the **assumed risk.** The costs generated in this case would close to what is predicted and are easily affordable throughout the life cycle of military equipment.

Hidden risks. These type of risks lead to increased costs, sometimes even over half the value of the initial price of the equipment, and the impossibility of using the equipment at maximum capacity.

The following examples refers to the purchase of military equipment, which led to unforeseen costs deriving from hidden risks:

- Portable radio stations were purchased within a brigade, yet they were not bought from the same manufacturer (HARRIS and PANTHER). The attempt to use them to communicate in secret (frequency hopping, a very important feature for a radio station) failed, as they were not compatible, so the units could not communicate secretly with each other. Also, the initial acquisition of the radio stations did not include the required cables for data transmissions. These were purchased later, in a separate transaction, for a substantially increased price.

- Another example refers to the acquisition of SPIKE-type weapon systems, whose ammunition must be kept in warehouses that maintain a certain minimum temperature. These additional costs were not taken into consideration initially leading to an increase in the overall life

cycle cost compared to the estimated one. **Unforeseen risks.** These type of risks seems to me to be the biggest generator of unforeseen costs, for instance through blockages that may occur, leading to the impossibility of providing raw materials for the production of equipment and causing increased costs related to the purchasing of the raw material or other components or even at the closure of production lines.

An example of unforeseen current risks would be the microchip crisis used in the automotive industry, avionics, IT, home appliances, etc., generated by the unforeseen risk of the COVID 19 pandemic, which diminished the production capacity in various industries.

Another current example in our country it is the issue of the crisis of the special type of plastic used for identity cards, with broad societal impact: people with expired documents cannot travel abroad anymore, they cannot make real estate, financial, or any other transactions.

5. Conclusions

A final conclusion is that when analyzing the purchase of military equipment, the commissions should be composed of a wide range of specialists, which should be taking into account all aspects of the equipment, including its cost throughout its lifespan.

Lack of information in these committees, lack of understanding of the concept of life cycle cost, the focus on short term considerations, lack of an integrated view regarding the life cycle cost of an equipment from its acquisition to the end users, lack of correlation between military considerations and economic considerations are just a few of the risk factors that lead to increases in equipment costs over their life cycle.

The well-known Romanian principle *that we are too poor to buy cheap things*, in other words *marginal costs equal to marginal benefits* could be a good guideline in relation to the acquisition of equipment required for the modernization of the armed forces.

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STRATEGIC COMMUNICATION IN THE MILITARY

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Abstract:
Nowadays extremists and extremist organisations use communications to influence and manipulate people; hence, the military organizations must try to come up with strategies to minimize their effectiveness and come up with their own strategies to win hearts and minds of vulnerable people who might otherwise be tempted to join them. It is regarded as an instrument of statecraft to facilitate the governments in order to influence the perceptions, attitudes, beliefs and behaviours of stakeholders, non-state groups, neutrals, in support of national security policies. In this premise, this paper discusses the concept of strategic communication in the military, in NATO and in the Romanian Army.

Key words: Strategic communication, NATO strategic communications

1. Introduction to strategic communication

The world today is going through a revolution; in fact, it has just got out of the last revolution and is entering a new one. It is not just about computers, or technology - every device which uses electricity will be alive. Communication between the governments – what we generally can call strategic - is going to be affected by disruptions in the future the same way that other industries, but there is always a need to keep communications lines open and reach-back channels in order to ensure avoiding misunderstandings. The states will have to do much more and much better in order to stay up with the times. They will need to have effective, timely counter-messaging. They have to be very effective in monitoring all channels so they know what is happening and that they respond timely and in the proper manner. There are many thing the governments can do:

- They can address the real grievances and the perceived ones that fuel terrorism and extremist groups or organizations behaviours;
- They can help social media networks take down any kind of distribution of any kind of extremist violent messages.

The whole challenge of the future is about educating the citizens, how to tell the difference between false or true, propaganda and well-justified beliefs, and especially for the governments and the military organisations to use the StratCom as a tool for fulfilling their missions.

Kirk Hallahan defines StratCom as "the purposeful use of communication by an organization to fulfill its mission". To begin with communication, when discussed in the context of StratCom, refers to all the words and actions that are perceived and interpreted by audiences. Creating clear goals and understanding "how a certain set of audience attitudes, behaviors, or perceptions will support those objectives" is what makes communication strategic. In StratCom, message development, or the process of creating key points or ideas, requires high levels of planning and research. These messages are targeted, or created with a specific audience in mind, and help to position an organization's communication goals with its structural goals. As the world becomes increasingly interconnected through new forms of communication, the role of StratCom is to help organizations understand how to effectively deliver their message to key audiences. StratCom is an inter-ministerial, intergovernmental, and inter-agency concept.

According to the Defense Science Board (DSB) of US, StratCom is an interactive process and a clear set of activities which include:

- **Understanding** identities, attitudes, behaviours and cultures; media trends and information flows; social and influence networks; political, social, economic and religious motivations.
- **Advising** policymakers, diplomats, and military leaders on public opinion implications of policy choices.
- **Engaging** in a dialogue of ideas between people and institutions through programs that support the national interest,
- **Influencing** attitudes and behaviour through communication strategies supported by a broad range of government and civil society activities.
- **Measuring** the impact of activities.

Communication is strategic when the scope of communication activities are geared for multiple and diverse audiences (rather than a generic or specific audience); when it occurs continuously through time (rather than being discrete at one point in time); when communication is receiver-centric, or tailored for suitability to audiences (rather than sender-centric); and when words and actions are matched to advance policy goals.

2. Strategic communication – increasing role for the modern warfare

In an article "The Value of Science Is in the Foresight," published in the weekly Russian trade paper Military-Industrial Kurier, Valery Gerasimov, Russia's chief of the General Staff, wrote: "The very 'rules of war' have changed. The role of non-military means of achieving political and strategic goals has grown, and, in many cases, they have exceeded the power of force of weapons in their effectiveness. All this is supplemented by military means of a concealed character." According to the Russian analysis, the application of digital technology to democratic practices constitutes a strikingly effective new way of waging war. Gerasimov claims that information warfare can transform, in a matter of days, a thriving society into "a web of chaos, humanitarian catastrophe, and civil war... The scale of casualties and destruction...are comparable with the consequences of any real war. In his doctrine the information dominance is an indispensable pre-requisite of combat actions - unless ones is already winning the information, it is going to lose, because information is a pre-requisite of combat actions, including media and social networks. Information confrontation runs through all phases of a war/military conflict.

Strategic communication became popular as a term, about three decades ago, from the times of the First Iraq War (1990-1991). Strategic communication is a vital activity that supports the military, in peace and in war.[1] StratCom is a vital activity for supporting the military operations and national interest. *If planned well and intelligently executed, it can affect attitudes and behaviors [2]*. It is one of the most important tools which can be used in order to shape the battlefield in advance. It is indispensable now for fighting adversaries who employ non-traditional and asymmetric means. *Communication can be a strategic weapon of mass influence to assure allies and to dissuade and deter adversaries. It can give non-state actors state-like power to affect world events [3]*. Our adversaries are using communication and information very adeptly to do just that.

While there is a continuous debate over what StratCom is, the term continues to be used differently by different people inside different governments. Part of the reason is that StratCom is in fact many things. It is a tool and instrument of power to support the national goals. It is a means to influence attitudes and behaviors. It is a process of listening, understanding, and engaging audiences. It is a process of coordinating messages across our governments and with the allies, and of synchronizing and integrating information with other instruments of national power. StratCom is both words and deeds.

At its core, StratCom is a perception strategy. It is the massing of information, ideas and actions to align the perceptions of key audiences with the policy objectives. It is achieved through the synchronized promulgation of information, ideas and actions over time with means and content that are tailored for multiple and diverse audiences.

a. The Principles of War Applied to Strategic Communication

To effectively support the policy goals, we must be aware that communication takes place in four domains. The physical domain is where action takes place. The information domain is where information is created, manipulated, and shared. In the social domain, information is interpreted through historical, cultural, political and social experiences. In the cognitive domain, understanding is created in the minds of individuals.

Data from the physical domain is transmitted through an information domain; it is mediated by a social domain; and it is interpreted in a cognitive domain. The interpretation of our words and deeds can result in changes in attitudes or behavior, ideally in support of the policy goals. In the physical domain, the "say-do" gap has to be proper managed. The credibility is undermined when actions appear to undercut words. Not only do the words and deeds have a StratCom impact, but so does their absence. What is not done and said is just as important as what it is. There may be cases when the intention is to produce ambiguity by creating a "say-do" gap. In the information domain, trusted channels must be used in order for the audiences to listen. We live in a world where information is abundant, even in remote places. When information was hard to obtain and disseminate, StratCom depended on controlling its transmission. Now that information is available in difficult to penetrate areas that are under adversary control, StratCom will depend on the credibility of the messenger. What makes a messenger credible can vary across societies and cultures. It is likely to depend on cognitive and social beliefs as much as the truth of a message's content.

In the cognitive domain, we must understand the frames of reference others use to interpret the messages they receive, and ultimately try to alter them. As an example of communicating with Middle Eastern cultures, the most effective communications are processed in an emotional framework. The western world communicates using logic and reason.

Effective StratCom requires both language skills and cultural understanding and StratCom is a cost-effective tool for supporting our military objectives. The execution of a successful StratCom requires a planning methodology, based on an understanding of the four domains:

- The first step in the methodology is to define the ***policy goals***. Effective StratCom requires clear, consistent core messages that flow from policy goals;
- Next, the identification of the ***target audiences*** and conduct an audience analysis that assesses current perceptions and the desired effect on perceptions planned to be achieved;
- Next, the identification of the ***main themes*** and tailor messages and actions for audiences. Where possible, messages to appeal to a broad and diverse audience should be framed;
- StratCom requires that all ***available mediums/channels*** must be exploited to reach different audiences. In the information domain, this includes: radio; terrestrial TV and Cable; satellite TV; print; internet; streaming video and cellular phones. It also includes more traditional ways that information travels, like tribal councils and oral tradition. Actions speak as loudly as words: exercises; force posture; visits and person-to-person interactions at conferences and workshops; educational programs and exchanges;

- StratCom requires purposeful operation across ***time*** to shape the environment and react to it. StratCom is also about long-term engagement over decades and generations to win the hearts and minds of diverse audiences, and to influence future generations;
- Finally, StratCom can be effective across a range of issues; ***to act***, not just react, it needs to be proactive.

We are living in an entirely new information environment and are engaged in the first war of the information age. The enemy is a networked one and it has a highly professional and sophisticated propaganda machine that exploits electronic media, most notably the Internet, to disseminate messages globally, to recruit adherents, and to provide pre-recorded videotapes and audiotapes to sympathizers. The enemy's center of gravity lies in the information domain and it is there that we must engage it. StratCom has become a core capability.

3 NATO's Strategic Communication Concept

NATO has defined the concept of StratCom as follows: *The coordinated and appropriate use of NATO communications activities and capabilities:*

- *Public Diplomacy,*
- *Public Affairs (PA),*
- *Military Public Affairs,*
- *Information Operations (lnfo Ops), and*
- *Psychological Operations (PSYOPS), as appropriate – in support of Alliance policies, operations and activities, and in order to advance NATO's aims. (PO0141, 2009)[4]*

Most researchers merge this term with Public diplomacy and see it in the prism of information operations (IO). The military uses StratCom as an integrating term for abovementioned capabilities. These capabilities are distinguished from IO capabilities that is a term to include Computer Network Operations (Computer Network Attack and Defense), Electronic Warfare, Operational Security and Military Deception. In IO, those capabilities are often non-kinetic, sometimes non-lethal, and often aimed at processes within systems that is, behavioural effects aimed at cognitive processes. *Often networked globally, StratCom both informs and influences, synchronizing and de-conflicting PA and IO themes and messages[5]* . In other words, *StratCom focuses on the cognitive dimension of the information environment[6]* . Military PA is a part of the wider NATO StratCom effort which aims to enhance coherence of all its information and communication mechanisms, both civilian and military. The Chief of Public Affairs Officer (CPAO) supports the commander's StratCom process by ensuring that PA actions, plans and objectives are coordinated as part of the broader StratCom effort. The coander's StratCom structure (if in place) will not affect the direct link of the Spokesperson or the CPAO of the commander.

StratCom is aligned with NATO's comprehensive approach, developed in April 2009 at the Strasbourg-Kehl Summit (NATO, 2009). StratCom applies to all existing information and communication capabilities. StratCom is a process designed to coordinate communications (words and deeds) between inter-ministerial actors and to reinforce their strategic effect. To achieve this, StratCom exploits all existing expertise found in the various information and communication departments. The aim of StratCom is to promote behaviour in target audiences that is favourable to the actors' objectives and, thereby, to shape the operational environment.

NATO had for decades focused mainly on hard power while information aspects played a complementary but less visible role in its activity. However, the failure of the NATO forces to generate public support in Afghanistan highlighted the limitations of traditional military operations and set the Alliance on the road to developing a StratCom concept. Russia's hybrid warfare against

Ukraine and its illegal annexation of Crimea forced NATO to respond to a new reality and sparked a number of questions about its current approach, not least regarding StratCom's allegedly weak position within the Alliance. Meanwhile, the NATO-accredited StratCom Centre of Excellence, established in 2014, contributes to the Alliance's communication efforts and works as a 'hub for debate' across various StratCom disciplines. *In the face of increasingly aggressive propaganda campaigns from adversaries in the east (Russia) and the south (primarily ISIL(Da'esh)[7])*, cooperation between NATO and the EU is set to increase.

To address this increasing competition in the StratCom area, NATO is continuing updating their StratCom structure as well as the training of its personnel, incorporating both international and national experiences and contributions.

3.1. NATO's Strategic Communications' structure

The StratCom command structure is essentially comprising three levels of responsibilities. The first two levels are strategic while the third is operational and tactical:

1. The messages communicating NATO's objectives are determined at NATO headquarters (HQ), including the North Atlantic Council, the Secretary General and the Military Committee.
2. StratCom is then developed at the Supreme Headquarters Allied Powers Europe (SHAPE) under NATO HQ guidance. SHAPE has thus defined the StratCom concept, described its objectives and the expertise it requires. SHAPE is also in charge of developing StratCom training.
3. Finally, the successive Force Commanders are responsible for ensuring that their written, oral and behavioural communications transmit the messages determined by NATO HQ.

3.2 Training in Strategic Communication in NATO

Most General officers feel that they are both senior leaders and senior communicators[8]. Eventually, the audience is the best judge, of good communicators, those who build thrust, and give a feeling that they are reliable. Nevertheless, StratCom for senior officers, especially for the charismatic ones, can be a force multiplier. The military must focus on the need to broaden the baseline communications skills of all the officers and make them all communicators. The military also must be aware that its communications professionals (implying strategic communicators) need to be culturally aware and able to operate in volatile, uncertain and stressful information environments.

NATO is currently developing various trainings regarding StratCom. It is important to recall that StratCom does not involve new competences but exploits those that already exist. As a result, training in StratCom comes down to ensuring its institutionalisation.

The NATO StratCom Centre of Excellence in Riga, Latvia is an excellent source for individual training and will provide resource support to collective level training. The Centre of Excellence has developed the on-line course "Introduction to Strategic Communications" as a first step towards familiarisation, and to develop a unified understanding of StratCom. This course is offered for the NATO School and defence academies as a part of preparatory teaching, focusing on the training audience which does not have a communication specialists' background[9].

Also the NATO School – Oberammergau offers the,, *NATO Senior Joint Staff StratCom Course"[10]* and,, *NATO Strategic Communications Practitioner's Course*"[11] which are tailored to provide students with introductory knowledge of StratCom in the NATO environment, particularly on ensuring consistency and credibility of communications by all means through

comprehensive coordination and to prepare StratCom Practitioners for the challenges and opportunities of conducting StratCom in the NATO environment.

4. Strategic Communication In The Romanian Army

In the document framing the information and public relations activities in the ROU MoD, issued in 2020, the StratCom is defined as – *the designing, consolidation and upholding of the favourable conditions for advancing the MoD politics, strategic or long term objectives and of the activities/operations conducted by the ROU Army, through the usage of coordinated programs, advanced planning, themes, messages and synchronized products, with the coordinated involvement of the public relations (PR), public diplomacy (PD), civil-military cooperation (CIMIC) and the information operations (InfoOps)[12]*. The StratCom techniques used by the Information and Public Relation Directorate of the ROU MoD are:

- Communications campaigns
- Public events, seminars, conferences
- Interviews, press articles and reports
- Partnerships and collaboration protocols with MoD structures, other Governmental structures or NGOs and international organizations
- Newsletters and publications, guides, messages sets
- Books, multimedia products, posters, banners, videos
- Analyses, evaluations, reports to analyse the fulfilment of the communication objectives
- Internet sites, accounts/pages in the social media, publications, magazines, online apps
- Photo, arts and books exhibitions.

In the Romanian Army the StratCom term is relatively new, but some steps were done in acknowledging its importance:

- The National Security Strategy for 2020-2024 comprises, among other Priorities for the ROU Army capabilities, the ,,*issuing of a strategy for rapid reaction and for countering the hybrid threats, which should contain strategic communication elements, informational space security and the increasing of the communication infrastructure resilience against cyber-attacks, simultaneously with the adjustment of the national security legal framework regarding the new hybrid threats and the conventional high technology ones*"[13].
- The StratCom is assigned as one of the responsibilities of the Information and Public Relation Directorate of the ROU MoD, in the ,,*Instructions for information and public relations in the ROU MoD*"[14], 2020 - the document that drafts the principles, organization and functioning of the information and public relations within the MoD: ,,*the participation in planning, organizing and conducting of the StratCom programs/actions, in collaboration with MoD structures, other governmental structures, diplomatic missions or international organisations*". This document also includes a section focused on ways to support the StratCom in the ROU Army.

5. Conclusions

StratCom is not the silver bullet, but it does present the possibility for a more tightly focused informational contribution to the strength of the other instruments of national power to achieve

national strategies. Communication must be taken as a strategic weapon to support organizations, to discourage and deter adversaries. StratCom is not an additional activity; it is part of the planning process and conduct of operations. Actually, it must prepared and shaped even prior to an operation, with the buildup of the narrative, the selection of media, and dissemination is essential.

Continuation of digitization of information – societies consuming digital information, fake data, disinformation; the deep divide in the societies and the tremendous effort to counter the anti-vaccination disinformation - will be the most notable elements of the first half of the 2021 year. Many people are struggling with the ability to distinguish between real and fake, facts and fiction, opinions and facts. The countries that will have successful governance models and capabilities will have the most successful StratCom and will be more successful in managing the emerging crisis. Fake news, misinformation and disinformation were in the front of the news lately, influencing the societies that are still not up to the new information environment.

The benchmarks for success will be defined by the capabilities of the governments, the military and their allies to operate in the new information environment and how they will be able to make an impact. Science is knowledge – it provides us the understanding of who we are, where we are and where we are heading. Just owning the knowledge does not necessarily qualify as a success – the knowledge that is making an impact is. Hence, is essential to be aware of where we are in the information space, to understand the trends and the new risks and therefore make people better prepared. The new element in this narrative is, provided the right tools, prepared for those who will operate in a specific environment such as the military or the government.

Understanding the StratCom is a very strong element of the ability to survive in a modern world – as a country, as a government, as an organization, as a group or as an individual.

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THE MANAGEMENT OF RESEARCH AND DEVELOPMENT PROGRAMS IN THE MINISTRY OF NATIONAL DEFENSE

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Abstract:
Research and development are targeted to development new products, new solutions and creates knowledge. Security environment, policies and strategies were analysed in the paper, in order to identify factors that affect military R&D. The last four years of R&D Sectoral Plan were analysed in a comprehensive study, analysing also key players and mechanisms for financing the Romanian military R&D.

Key words: Research and development, military planning, major programmes, budget, end-user

1. Introduction

There are a multitude of definitions for Research & Development (R&D), one of them being presented in the Cambridge Dictionary [11]:

Research & Development is *"a **part** of an organisation that **works** to **improve** its existing products and **develop** new ones"*.

A much more elaborate definition is presented in Encyclopaedia of Quality of Life and Well-Being Research [12]:

"Research and development (R&D) is a broad category describing the entity of basic research, applied research, and development activities. In general research and development means systematic activities in order to increase knowledge and use of this knowledge when developing new products, processes, or services. Nowadays innovation activities are strongly tight into the concept of research and development. In the broadest meaning, ***research and development consists of every activity from the basic research to the (successful) marketing of a product or (effective) launching of a new process (R&D&I)***".

New product design and development is often a crucial factor in the survival of a company. In a global industrial landscape that is changing fast, firms must continually revise their design and range of products. This is necessary as well due to the fierce competition and the evolving preferences of consumers. Without an R&D program, a firm must rely on strategic alliances, acquisitions, and networks to tap into the innovations of others.

In general, research and development activities are conducted by specialized units or centers belonging to a company or can be out-sourced to a contract research organization, universities, or state agencies. [13]

2. Environment analyses

At global level, the security environment is continuously transforming, which is reflected in high interdependencies of international relations and the difficulty of delineating between classic risks and threats and the asymmetric and hybrid ones [2].

Presently, by its commitment to Euro-Atlantic values, Romania has the most powerful security guaranties in the entire history. The main guarantor of Romania's security is the North-

Atlantic alliance, whose policies and capabilities are based on solidarity principles and US commitments in Europe.

Beyond these international "security assurance policies", one of the main objectives of national security policies is the maintenance and the development of high potential for research, expertise and technical and technological consultancy in the military area, as well as the development of testing and evaluation capabilities of the Ministry of the National Defence [2].

2.1 Doctrine papers related to R&D

2.1.1 Wales summit declaration, issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales, 4-5.09.2014 [4].

This document stated, in para 14, that allies who currently spend less than 20% of their annual defence spending on major new equipment, including related Research & Development, will aim, within a decade, to increase their annual investments to 20% or more of total defence expenditures.

2.1.2 The governing programme for 2020-2024 [3] stated a lot of important measures related to R&D, in a dedicated Chapter. Some of these are:

- maximizing resources for domestic defense production, from the mandatory annual budget allocation of 2% of GDP, as well as the appropriate use of funds for research and development in the field of technologies that can be used for dual purposes (and in the civil sector, eg. cybersecurity);
- the increase the value and efficiency of research and innovation funding and reach the target of 2% of GDP by 2024 (1% public funding + 1% private funding) by ensuring a balanced budget distribution to support both applied and fundamental research;
- the harmonization, updating and simplification of legislation on public research organizations according to the principles of "better regulation" and avoidance of excessive bureaucratization;
- stimulating decision-making processes regarding research management, on a scientific basis;
- attracting annually 100-150 Romanian researchers from the diaspora and / or researchers from abroad, through RDI projects with duration of 5 years.

2.1.3 White book of the Defence – 2021 [2]

The Defence White Paper underpins the military strategy and the Defence Planning Directive and is designed in a new strategic paradigm, with the goal of strengthening the defence and deterrence posture based on five key elements: high technology; highly educated and well-trained human resources; a strong domestic defence industry; developing an institutional culture focused on knowledge and innovation; resilience.

This White book states that the basis of the research-development and innovation activity will be represented both by ensuring at least 2% of the defense budget for this domain, and by allocating at least 20% of the defense budget for endowment and modernization.

By developing and capitalizing the national scientific and technological potential, R&D&I, for military purposes, it will be provided the necessary scientific and technological support to fulfil the missions of the Romanian Army, with an efficient management of allocated resources.

The main objectives of research and development and innovation for military purposes are:

- increased performance and efficiency, by:
  - achieving operational capabilities' objectives and priorities;
  - development of military scientific and technological competency;

- strengthening the links between R&D entities from the MoND and industry;

- allocation of own resources for:
  - increasing the budgetary allocations for scientific research until reaching the threshold of 2% of the MoND budget;
  - R&D infrastructure development, including by accessing EU funds
  - development of human resources involved in R&D and improvement of young specialist entries in the R&D system.
- increased use of R&D results, by collaborating with companies from national security industry;
- involvement of private sector in military projects, financed by own budget.

2.1.4 National Defence Strategy for 2020-2024 - „Together for a safe and prosperous Romania in a world marked by new challenges", that states some threats, risk and vulnerabilities [1].

The lack of real multi-annual budgetary planning was identified as a vulnerability related to the capacity of state institution to evaluate and mitigate the impact of risks and threats, regarding to critical infrastructure, armed forces' capacity for modernisation and development etc.

One of the correlation between lines of action and the national security objectives stated in the National Defence Strategy is continuing the Romanian Armed Forces' process of transformation, modernisation and endowment/ procurement, by allocating at least 2% of the GDP to the defence budget annually, for at least 10 years, a process started in 2017.

2.1.5 National Strategy for Research, Development, and Innovation 2021 - 2027

This new strategy has not been published yet, so it is not available.

2.1.6. Strategy of the Ministry of National Defense in the Research-Development and Innovation field 2021 -2027 (project) [7]

The general objective of the strategy is the optimal use of the scientific and technological potential of the structures in the Ministry of National Defense that carry out R&D activities, as well as developing the relationship with national and international R&D institutions, both public and private.

The main objectives, for 2021-2027, defined on the project of the strategy consist in:

- Development of defense capabilities used by the Ministry of National Defense to achieve its strategic objectives;
- The armament systems that are part of the Romanian Army must be a priority for the entire scientific community in the Ministry of National Defense;
- Integration with the civil environment.

Accordingly with the strategy, the priority research areas are:

1. Information technology
2. Modern communications and electronic warfare
3. Autonomy and artificial intelligence
4. Weapons, ammunition and missile systems
5. Protection, health and human performance
6. Energy, environment and climate change
7. Eco-nano-technologies and advanced materials
8. Military sciences
9. Information for Defense

2.2 Research, Development and Innovation in Romania

2.2.1 The national R&D establishment

The national R&D network consist of all public and private establishments and institutions that perform R&D according with their registered domain of activity.

The national R&D network includes the following categories of establishments and institutions:

A. Public organizations:

a) R&D institutes, centres or stations organized as public institutions;

b) R&D institutions or research centres organized within national societies, national companies and autonomous bodies under central or local administration (including military research organizations);

c) international R&D centres, established under international agreements;

d) other public organizations, which provide R&D in their activities.

B. Private organizations:

a) R&D entities, organized as companies;

b) companies or their departments which provide R&D in their activities;

c) private accredited higher education institutions or their departments.

2.2.2. Civilian authorities

Ministry of Research, Innovation and Digitalization (MRID) is the top-level governmental authority that organizes and leads the national scientific research, technological development and innovation system [14]. Its responsibilities are derived from laws and regulation and it is responsible for elaborating the public policies for R&D.

As state authority for research and development, MRID provides, on one hand, design, implementation, monitoring and evaluation in scientific research, technological development and innovation, and on the other hand, coordinates the development, implementation, monitoring and evaluation of policies for expanding national and international heritage of research, technology and innovation, sustainable economic development, access to research results and technologies developed domestic and international, customer satisfaction and quality of life.

Intermediary Organism for Research is subordinated to MRID and acts as Management Authority for Operational Programme Competitiveness (POC 2014-2020, even we are in 2021).

Executive Unit for Financing Higher Education, Research, Development and Innovation (UEFISCDI) acts as administrator of National Plan for Research, Development and Innovation and as Management Authority for some programmes in this national plan. UEFISCDI was created in 2010 with the mission to centralise the funding and coordination activities of higher education, research, technology development and innovation. This centralisation reflects a change in the Romanian RDI system, i.e. separation of the RDI policy-making and performance evaluation functions, retained by the Ministry of National Education, from the implementation functions, delegated to UEFISCDI and some consultative councils. [15]

2.2.3 Military authorities

The highest military authority involved in managing R&D activities is **Armament General Directorate (DGArm)**, directly subordinated to minister of defence [16,17].

Among other responsibilities, **DGArm** provide the management of armaments systems and major equipment acquisition programmes, as well as the management of R&D activities, related to major programmes [8, 16].

The main links between Armament General Directorate, RDI organizations from Ro MoND and other military stakeholders are presented in figure 1

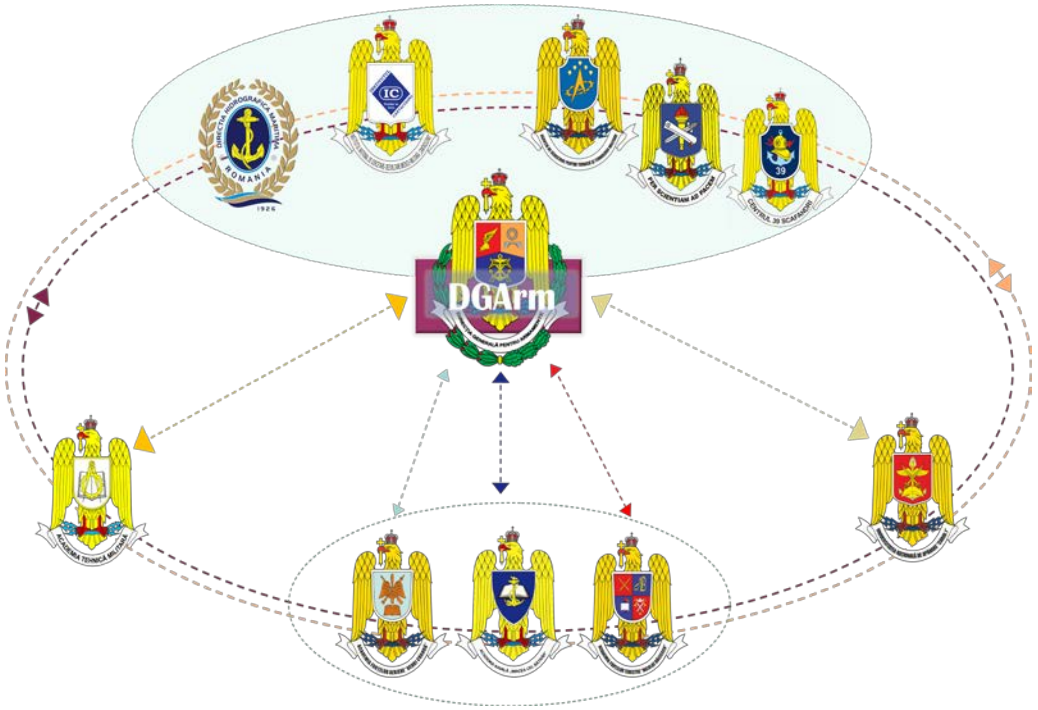

Fig. 1 R&D organizations from Ro MoND

Management Directorate for Endowment Programmes is subordinated to Armament General Directorate and its responsibilities related to R&D consists in the coordination of all R&D activities performed in the Ministry of National Defence, but also the coordination of all testing and evaluation, audits and analyses activities, related to endowment with new military systems and equipment [18].

Military Equipment and Technologies Research Agency (METRA) is subordinated also to Armament General Directorate and its primary mission is to perform basic oriented and applied research, technological development activities, for continuous input of technical progress to military, design of new military technology with higher performances and modernization of fielded technology, at low resource investments [19].

METRA consist in or subordinates 5 scientific research centres, which are organized on departments and laboratories with distinct profile, according to specific research areas:

- Information Systems and Communications Test & Evaluation Scientific Research Center
- Scientific Research Center for CBRN Defense and Ecology
- Scientific Research Center for Navy
- Flight Research and Tests Center
- Test, Evaluation and Scientific Research for Weapon Systems Center

2.2.4 R&D Plans to fulfil military R&D goals

There are three main ways for achieving R&D goals for military purposes, the endowment with new and modern military equipment or technologies:

a. **MoND R&D Sectoral Plan** for military equipment and technologies, funded entirely by MoND based on Governmental Decision no. 1266/2004.

b. **National Plan for Research, Development and Innovation**, funded by Ministry of Research and Innovation based on Governmental Decision no. 583/2015.

c. **Internal R&D Plan** of each research organization within the MoND.

3. R&D in the Romanian military field – case study

The current status analyses are based on the data available for the last 4 years.

Despite all policies and strategies, the R&D expenditures are far away that the presumed ones and are presented in table 1.

Table 1. GDPs vs MoND budgets vs R&D budgets (in the MoND) (K RON)

Year	GDP	Total MoND budget	MoND, %	R&D Budget	R&D %
2018	815,195,000	18,185,459	1.99	1,765.5	0.01
2019	907,900,000	20,309,841	2.00	2,096.5	0.01
2020	1,017,500,000	22,198,333	2.00	15,156.2	0.068
2021	1,110,200,000 (estimated)	22,746,269 (estimated)	2.00	76,103.9	0.335

It could be only one explanation that, despite all the commitments, R&D funds are far less that the desired one. The new security environment and endowment status with old military equipment forced the MoND to focus on acquisition.

It is easier to buy on the shelf military equipment and train the personnel to work with it than waiting for a R&D solution and hoping that Romanian defence industry will produce it to a rate and to the desired quality as expected from the R&D project.

In normal situation, even it has taken longer periods until completed, an endowment programme through R&D is to be desirable, because the end user will have full control of the military requirements, but also the results can be finely tuned during the development phase, in terms of capabilities delivered.

In nowadays situation, when there is great need of modern equipment in short time, the acquisition of on the shelf equipment solve the needs of the army. A big disadvantage of this approach is that the end user cannot control entirely the technical requirements of the military equipment.

Because the funds allocation in the Ministry of National Defence is based on major programmes (MjPs), the current analysis is based on R&D Sectoral Plan (RDSP) for military equipment and technologies, funded entirely by MoND.

As Armament General Directorate, as the highest military authority which coordinates the R&D in the minister, is funded from Central Administration MjP, all the financial resources necessary to perform R&D in the military are traditionally allocated from this MjP.

The process of providing military equipment through R&D starts with a requirement (either in terms of mission needs, or in terms of research needs) of an end-user, analysed by R&D

organizations within MoND, which translate the needs in terms of resources (workpower, budget, time) necessary to complete the projects.

Usually the end-user for the R&D projects are the services (Army, Air Force, Navy, Logistic Command), but also General Staff and Military Intelligence Directorate. These end-users are also the structures that run a MjP in Romanian military planning, based on force structure.

The allocation of funds on RDSP for the last four years is presented in table 2 and figure 2.

Table 2. R&D budgets for RDSP, 2018-2021 (K RON, without medical assistance)

Year	R&D Budget	CA	Army	Air Force	Navy	Strategic command	Logistic	Intel
2018	1,765.5	125.7	721	339.6	155.2	271.3	68.1	84.6
2019	2,096.5	165.6	419	873.7	147.2	228.5	102.5	160
2020	3,066.2	187.7	1,048.5	1,097	373.5	185.5	79.5	94.5
2021	23,819.9	3,852	5195	5,586	4,066.9	4,246.5	594.2	279.3
Total	**30,748.1**	**4,331**	**7,383.5**	**7,896.3**	**4,742.8**	**4,931.8**	**844.3**	**618.4**

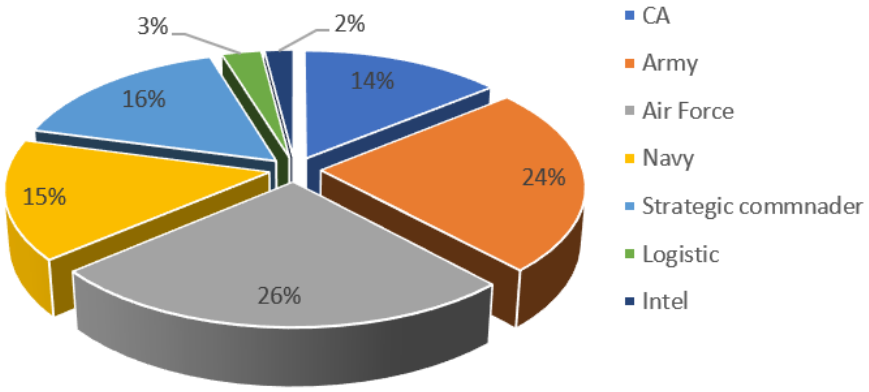

Fig. 2 Budget allocation for RDSP, 2018-2021 (without medical assistance)

In addition, starting with 2020, the "medical assistance" program was budgeted separately. The funds were allocated especially for "Cantacuzino" National Medical Military Institute for Research and Development.

These found represent an important part of the RDSP budget, 12,090 K RON (2020), respectively 52,284 K RON (2021).

The allocation of funds on RDSP for the last two years (including "medical assistance") is presented in table 3 and figure 3.

Table 3. R&D budgets for RDSP, 2020-2021 (K RON, including medical assistance)

Year	R&D Budget	CA	Medical	Army	Air Force	Navy	Strategic command	Logistic	Intel
2020	15,156.20	187.7	12,090	1,048.50	1,097	373.5	185.5	79.5	94.5
2021	76,103.90	3,852	52,284	5195	5,586	4,066.90	4,246.50	594.2	279.3
Total	91,260.10	4,039.70	64,374.00	6,243.50	6,683.00	4,440.40	4,432.00	673.70	373.80

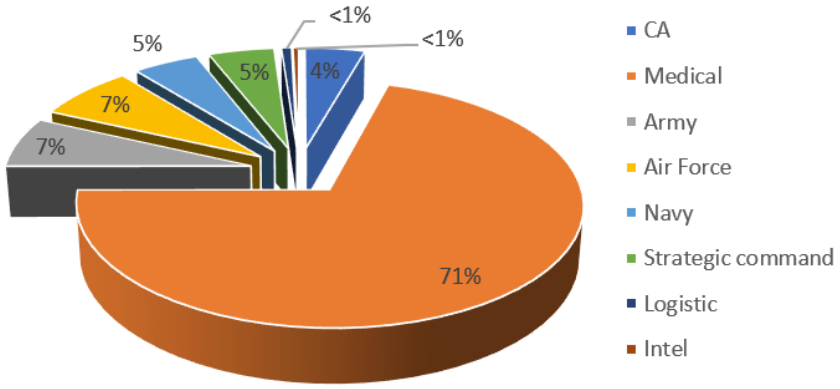

Fig. 3 Budget allocation for RDSP, 2020-2021 (with medical assistance)

For the first time in 2021, investment funds were allocated. These founds (11,636 K RON) represent 22.3 % of the budget allocated for this year.

For a thorough understanding of the allocating funds process for R&D, I will consider each end-user situation.

The R&D budgets (for RDSP) in the analysed period are presented in figure 4.

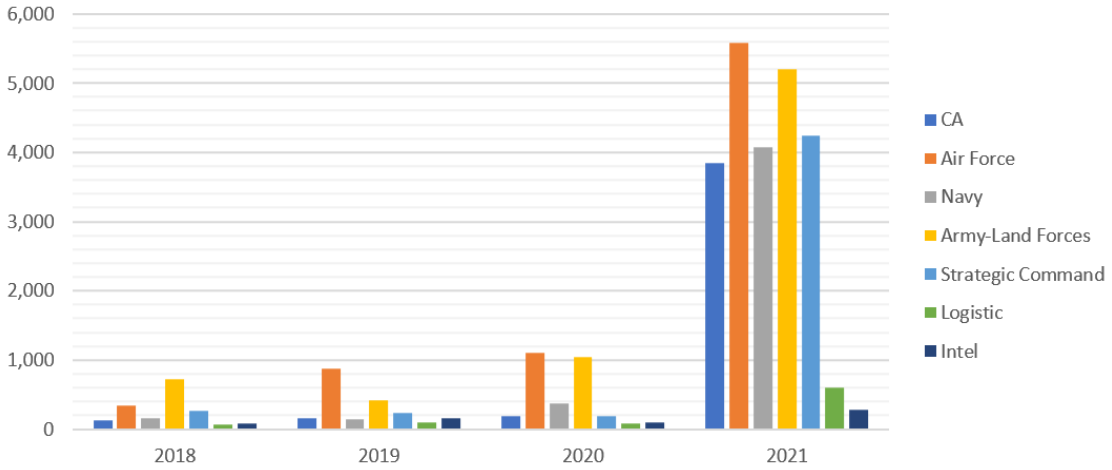

Fig. 4 Annual budget allocation for RDSP, 2018-2021 (without medical assistance), K RON

Each end-user can allocate additional financial resources to the R&D budget. As a result of increasing needs for R&D projects coming from various end-users, they started recently to add some funds from their MjPs to the common pool of RDSP. A statement of allocated financial resources vs. expenditure for 2021 is presented in fig. 5. Also, the number of R&D Project, from RDSP 2018-221, for each end-user are showed in the figure 6.

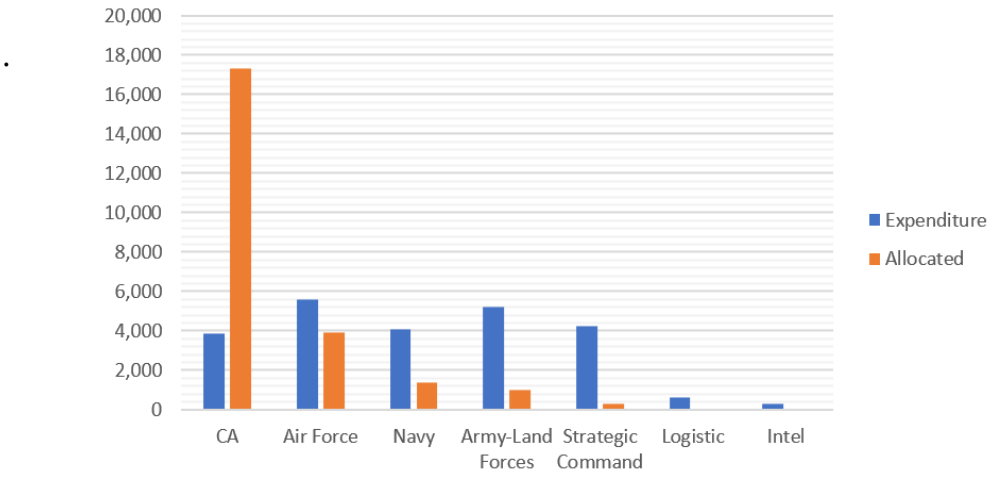

Fig. 5. End-user's own allocations and expenditures for RDSP, 2021

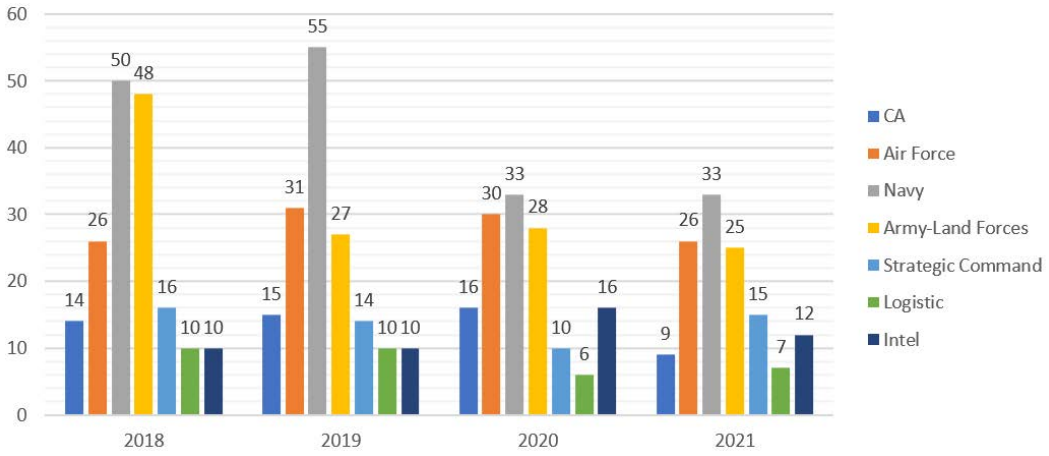

Fig. 6. Number of R&D Project (from RDSP), 2018-2021

These figures proved that when there is interest for specific R&D projects, MjP managers can identify the necessary funds. Even if the number of projects is relatively the same (for each end-user per year), when the number of projects increase, based on end-user needs, MjP can supplement the R&D budget with funds dedicated for specific projects.

Figure 4 shows a significant increase in the budget in 2021 compared to previous years. Even the number of projects has remained relatively the same, a significantly larger budget allocated in 2021 demonstrate that the allocation is not driven by the number of projects, but rather by their importance.

4. Conclusions

Policies and doctrines, both international and national, have only limited and general provisions about R&D. There are strategic document where the progress involves R&D, but their implementation consider mostly the actual economic situation and not the approved strategies.

Current domestic security environment does not support the R&D as a major programme for Romanian MoND, the actual budgetary structures being based on existing structures (services or commands) and not on needs and/or capabilities.

The lack of real multi-annual budgetary planning was identified as a vulnerability related to armed forces' capacity for modernisation and development.

The actual financing mechanism for R&D is not a sustainable one. There are too many actors involved in the process, with different responsibilities and different roles, thus the accountability of the R&D process being diluted:

a. The services are issuing the needs and sometimes contribute to the overall budget for R&D, but only with small amounts, if a specific interest occurs. Exceptions from this situation are Air Force and Navy MjPs, which contribute almost yearly to RDSP.

b. Armament General Directorate is managing the distribution of the end-users needs toward the proper military R&D organization, and also the rest of the processes (projects proposals, project management, project ending, audits, homologations and so on).

c. Central Administration MjP is the main financing authority, but is placing in the R&D common pool only what is left from other subprogrammes, because it is not an end-user for the R&D results. The R&D results are not interesting for CA MjP, further implementation of the R&D projects being responsibility of end-users.

d. R&D organizations propose the way projects should be fulfilled, but the approval is mandatory for Armaments General Directorate, and not for the end-users or CA MjP.

Funds allocation should come from the end-users entirely as a result of negotiation between the end-user and the R&D organization, thus making the end-users more accountable for project outputs and their later implementation in the military. The actual organization, where end-user issue a need and someone else is responsible for project audit lead to a lack of responsibility, both for project results and results implementation.

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ASSESSING MILITARY READINESS -METHODS AND CHALLENGES

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Abstract:
The readiness as a term refers not only to operational units but also to the entire army. The readiness level as a percentage it may be transformed in a unit's capability to perform a mission in a matter of hours, days or months. For specific units of quick reaction alert it is measured in minutes. It is very important for decision makers to budget the personnel the training the equipment and to ensure a proper chain of supply in order to achieve a specific readiness that can meet the objectives and the goals of a nation. Readiness verification should be conducted at all levels periodically. The today's readiness is not the same with tomorrow's readiness.

Key words: readiness, military, challenges, assessement, effectiveness, decision

1. Introduction

The most basic element of understanding readiness is knowing what types of wars the military must be prepared to fight. This includes potential adversaries it could face, the capabilities these adversaries are likely to possess, the conditions under which conflict may occur, and how the military plans to fight or deter such wars.

Readiness also depends on the time interval in which the military must be prepared to respond. Near-term readiness depends in part on the peacetime force posture, such as the mix of forces in the active and reserve components and the stationing of forces at home or overseas. Some conflicts could begin with little or no warning, greatly compressing required response times. Long-term readiness depends more on the capabilities the military is investing in for the future and how these capabilities will address the future threat environment.

2. Readiness broadly

Readiness is a term that is not statutorily defined and not exclusively used by the defense community. During the past two decades, it has become increasingly common to see the word readiness used as an alternative expression for preparedness throughout both the public and private sectors. [1]

Readiness is a term regularly applied to the United States' ability to produce, deploy, and sustain military forces that will perform successfully in combat. The DOD—including its predecessors the Departments of War and Navy—and Congress have used the word "readiness" since at least the 1830s to discuss the state of military personnel, training, equipment, and other related activities. Definitions for readiness have changed over time, and have varied in specificity.

The word has also been periodically adapted in DOD policies and congressional reports to apply to specific military forces (e.g., "reserve readiness"), or to contributing factors to total readiness (e.g., "individual medical readiness").[2]

2.1 Definition of Readiness

DOD officially defines the term "readiness" in Joint Publication (JP 1) as "the ability of military forces to fight and meet the demands of assigned missions." This intentionally broad

definition of readiness highlights DOD's focus on military forces, and the general context is those forces' ability to fight and win, anywhere, and at any given time. [3]

3. The readiness production process

3.1 Building initial readiness

The process begins by receiving untrained personnel (i.e. recruits) and providing them with some degree of entry-level training. These recruits must be properly resourced to complete their accession. Likewise, the administrative units providing this training must also be properly resourced in order to provide adequate training. In due course, recruits are tested to ensure proficiency in the basic requirements of their profession. If they pass, they continue along the production line. If they do not pass, depending on the circumstance, some may be recycled, meaning they will have another opportunity to train, test, and pass. [4]

3.2 Increasing readiness

Personnel who have completed their entry-level training must then receive advanced training from additional training units. At some point, recruits who complete their advanced training will be awarded an occupational specialty, and become fully qualified to join operational units. Operational units integrate new personnel and provide them—along with existing unit personnel—unit-specific training that increases both individual and total unit readiness. Operational units will test their war fighters' proficiency regularly (both as individuals and collectively) to ensure units are maintaining or increasing their readiness. It is important to remember that in order to produce ready forces, each unit in the production line—be it an administrative unit or an operational unit—must be properly resourced in order to be able to perform their functions. [5]

3.3 Sustaining readiness

This includes the continual training and resourcing of units, prior to and following deployments, in order to ensure units remain ready for future assigned missions.

4. Military readiness tenets

Military readiness tenets	**Leading indicators**	**Strategic levers**
Manning	Personnel Structure	Recruitment policy
	Acquire	
	Employ	Changes in force structure
	Retain	
Equipping	Personal equipment	Aquisitions
	Technical equipment	

Training	Individual training	Doctrine
	Unit training	
	Exercises	Annual planning exercises
Leading	Qualification	
	Education	
	Experience	
Assesing	RV exercises	National programs
	Tactical evaluation	
Sustaining	Maintain army readiness	Repeating the cycle

Table 1 [6]

4. Readiness dependence

4.1 Logistics

Different units use different equipment which needs to be repaired or replaced. If the supply chain of equipment or of spare parts is altered then delays occurs and the readiness level can be heavily affected. An immediate solution to this problem would be - "cannibalization". On the long term "cannibalization" will even deepen the problem due to over use of some parts of equipment.

4.2 Support

Deployed units have met a certain readiness level at a specific moment. In the new location that readiness level can be affected by the new displacement of buildings, hangars, ammunition shelters or the lack of those. This issue can be solved by prior sites surveys and by prior adjustments with provisionary buildings or shelters. For missions conducted over waters, airborne MEDEVAC is mandatory. If the weather conditions do not permit airborne helicopter then the mission will be postponed or canceled. Without specific support the readiness level will be diminished drastically.

4.3 Training

"You train as you fight" is an active saying in the military. To be able to develop scenarios in accordance with a real operation you must know how your potential enemy fights. Unless the unit has already met its opponent all training will be conducted based on assumptions. Therefore you

must train the personnel using a various number of scenarios which takes time and affects readiness as well.

4.4 Doctrine

The tactics the techniques and procedures must be updated in accordance with the potential threat development and with the evolving materials and equipment. A previous tactical approach towards a newly developed radar is for sure obsolete and the outcome can be disastrous for the entire operation. Today's level of readiness is not the same with tomorrow's level. All involved factors should be able to keep the same pace in order to acquire or to maintain a specific readiness level.

4.5 Weather

The weather even though is predictable it represent a huge factor for readiness. Phenomena like thunderstorms, sand storms, heavy rains, unfavorable wind direction can keep a squadron grounded for weeks. Also low temperatures can influence the potential of a unit not only at personnel level but also at equipment level.

4.6 Incalculable factors

There are some factors that cant be predicted. Volcanic ash can ground airplanes for weeks for instance. COVID 19 had a tremendous impact not only on our daily lives but also on the military. In 2020 all international military exercises were canceled. That means less training for troops at joint level. And one year later the situation continues, is nothing cleared out and the planning of new military exercises is still pending.

5. Assessing military readiness

5.1 Personnel readiness (P-level)

The three principal metrics of personnel readiness for units are as follows:

- The ratio of unit personnel available for deployment in comparison to the total number of personnel the unit is authorized to have.
- The ratio of unit personnel who are both available for deployment and qualified in their assigned duty position in comparison to the total number of personnel the unit is authorized to have.
- The ratio of available "senior personnel" in comparison to the total number of senior personnel the unit is authorized to have. Ratios in each of these metrics generate a rating between one (highest) and four (lowest), and the lowest of these three ratings is used to determine the overall "P-rating" of the unit.

In essence, units with a full or nearly full complement of warfighters by specialty and grade are assessed as P-1, while those with substantial shortages in one or more of the measured areas are assessed as P-2, P-3, or P-4. This aspect of readiness is relatively objective and therefore requires limited application of a commander's professional judgment.

5.2 Equipment Availability readiness (S-level)

The availability or supply of key equipment is called the "S-level," and it is based on two metrics:

- The ratio of the number of designated critical equipment items (known as pacing items) currently in the unit's possession, under its control, or available within 72 hours to the number the unit is authorized to have (a pacing item for a Fighter Squadron would be an F16 MLU).1
- The ratio of the number of other mission essential equipment items currently in the unit's possession, under its control, or available within 72 hours to the number the unit is authorized to have (equipment might include radios, Transponders, and night vision devices).

Like the P-level, ratios in each of these metrics generate a rating between one and four, and the lower of these two ratings is used to determine the overall "S-rating" of the unit. S-levels are readily measured. Equipment availability is heavily influenced by whether there is sufficient funding to procure the required equipment for a given unit, and by how senior policy makers chose to allocate equipment among units.

5.3 Equipment Readiness (R-level)

The third assessed resource area for units is equipment readiness or "serviceability"—that is, whether the unit's equipment is fully functional or not. A unit could have all of its authorized equipment by type and numbers, but still suffer from poor equipment readiness if much of the equipment does not work. The "R-level" is determined by calculating the percentage of each pacing item that is fully mission capable, and the aggregate percentage of certain designated equipment ("maintenance reportable equipment") in the unit's possession that is fully mission capable. Each of these categories is rated between one and four according to a published scale and the lowest of these ratings becomes the overall R-level.

The R-level is heavily influenced by appropriations. If there is not enough funding for spare parts or to send a vehicle into depot level maintenance, equipment readiness can suffer. Unit manning can also affect equipment readiness. If there are not enough of the right skill level of trained mechanics and supply personnel, repairs can be delayed.

5.4 Training (T-level)

The final assessed resource area—training—allows for the most subjectivity. Training readiness does not lend itself to quantifiable evaluation as easily as personnel and equipment readiness; it relies more heavily on the commander's professional military judgment. In assessing training readiness as a resource area, unit commanders evaluate how well a unit performs certain tasks.

Commanders evaluate training proficiency for each task as trained (T), needs practice (P), or untrained (U). Based on these ratings, a specified calculation methodology, and a published scale, the unit receives a T-level rating of between one and four. The data on which the commander's judgments are based can vary substantially. For example, variations may exist between units in the frequency of training, the ranges and resources available for the training, and the number and type of units represented in a training exercise.

Operational deployments may also be used when evaluating a unit's training proficiency, so the commander of a recently deployed unit may be able to more accurately assess his or her unit's training status.

5.5 Overall Resource Readiness (C-level)

Overall Resource Readiness (C-level) The C-level rating—or overall readiness assessment—is derived from the ratings of the four resource areas previously discussed (P, S, R, & T), and is equivalent to the lowest of these four levels. However, commanders have some ability to upgrade or downgrade the rating based on their professional military judgment.

The C-level rating is meant to reflect the unit's ability to accomplish its core functions, provide its designed capabilities, and complete its designed missions based on the cumulative assessment of resources. 183 The meaning of each Clevel is described in Table 2.

C1	C2	C3	C4
The unit possesses the required resources and is trained to undertake the full wartime missions for which it is organized or designed.	The unit possesses the required resources and is trained to undertake most of the wartime missions for which it is organized or designed.	The unit possesses the required resources and is trained to undertake many, but not all, portions of the wartime missions for which it is organized or designed.	The unit requires additional resources or training to undertake its wartime missions.but it may be directed to undertake portions of its wartime missions with resources on hand.
The unit does not require any compensation for deficiencies.	The unit would require little, if any, compensation for deficiencies.	The unit would require significant compensation for deficiencies.	
The status of resources and training in the unit will not limit flexibility in methods for mission accomplishment	The status of resources and training in the unit may cause isolated decreases in flexibility in methods for mission accomplishment.	The status of resources and training in the unit will result in significant decreases in flexibility for mission accomplishment	
The status of resources and training in the unit will not increase vulnerability of unit personnel and equipment.	The status of resources and training in the unit will not increase the vulnerability of the unit under most envisioned operational scenarios.	The status of resources and training in the unit will increase the vulnerability of the unit under many, but not all, envisioned operational scenarios.	

Table 2 [7]

The methodology assigns a weight of 3 to each "T," 2 to each "P," and "1" to each U. These figures are summed and then divided by the product of 3 multiplied by the number of METs. The resulting quotient is multiplied by 100 to produce a percentage, which is interpreted according to a published scale. As an example, if a unit had 5 METs, which the commander evaluated as T, P, T, U, and P this would be converted to 3, 2, 3, 1, and 2. The sum of these numbers (3+2+3+1+2=11) would then be divided by 3 times the number of METs (3x5=15). The resulting percentage would be 73.3% (11/15*100). If the unit had no untrained tasks (U), this percentage would result in a T-2 rating. However, since the unit has an untrained task, the result is a T-3 rating.

6. Mission Capable (MC) and Aircraft Availability (AA) Rates

Two "stand-alone" readiness metrics frequently used by DOD for major weapons systems are Mission Capable (MC) rates and Aircraft Availability (AA) rates, which assess the availability of certain major weapons systems to perform assigned missions. This can be sometimes misinterpreted as representing the overall readiness of all units that rely upon the same weapons system (e.g., the readiness of all aviation units in a Service using the same aircraft). Such a narrow explanation of unit readiness omits other key readiness elements. For example, an aviation unit may report a high MC rate (e.g., 90% MC rate) for their fighter aircraft, but lack a certain number of qualified pilots, maintenance personnel, or equipment necessary to carry out an assigned mission. In this example a high MC rate is not a good indicator of the unit's readiness. [8]

6.1 MC rate

Definitions or formulas for the rate may vary by Service. However, one commonly accepted definition is the ratio of "uptime" to "uptime plus downtime:" "Uptime" includes the time that a weapons system is operating at a unit or location and the time it is inactive, but still available to be operated by a unit.116 "Uptime plus downtime" can be considered the total time that a unit possesses a weapons system.

6.2 AA rate

This readiness metric applies to military aviation units and has been used as an alternative for, or in addition to, the MC rate. It is the ratio of mission capable hours to total aircraft inventory (TAI) hours. TAI hours differ from a unit's total possessed hours. This difference is based largely on the inclusion of aircraft categorized as non-available (i.e., in a certain status that takes the aircraft out of a unit's possession) in the summation of TAI hours. The AA rate is a metric that can be applied to the entire fleet of like aircraft at a unit, a specific location, for an aggregated fleet type (e.g., bombers, fighters), or for an entire Service, at a given time.

Conclusions

The readiness as a term refers not only to operational units but also to the entire army. The readiness level as a percentage it may be transformed in a unit's capability to perform a mission in a matter of hours, days or months. For specific units of quick reaction alert it is measured in minutes. It is very important for decision makers to budget the personnel the training the equipment and to

ensure a proper chain of supply in order to achieve a specific readiness that can meet the objectives and the goals of a nation. Readiness verification should be conducted at all levels periodically. The today's readiness is not the same with tomorrow's readiness.

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INTEGRATED HUMAN RESOURCE MANAGEMENT PLANNING, PART OF THE DEFENSE PLANNING PROCESS

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Abstract:
The aim of this article is to show the place and role of integrated human resources management in the defense planning process of the Romanian Army. I will focus on presenting some milestones in the defense planning process in the actual security environment from human resources perspectives. Then, I will highlight the important the place and role of integrated human resources management processes in the defense planning process.

Key words: integrated human resources management, defense planning, manpower, personnel.

1. Introduction

Strategic human resources management is a very important capability for all defense organizations and represent a key element for defense planning process. Although each nation manages its defense institutions differently, every nation needs its own overarching concept, along with policies, plans, and programs, to manage its security forces and people in them. Human resources combines with other components of resource management, form the pillars that support policies of defense for each country. The absence or failure of integrated human resources management (IHRM) policies can be determining factors in the evaluation of defense policies, especially then within alliances or partnerships and for that reason we must have a significant interest in adapting and transforming human resources systems to align with best practices.

2. Integrated human resources management (IHRM) system

Integrated human resources management (IHRM) system from a defense planning process perspective represents a general framework which is in charge with providing very well trained human resources for armed forces. Considering this framework, the foundations of IHRM system, is mandatory to have some principles like efficiency, effectiveness, transparency and meritocracy as pillars. Also is important to align short and long term defense goals, with suitable operational requirements for a clear picture to establish the drive line for implementing the various policies and procedures in human resources system. These challenges can establish the quantitative terms of the forces as well as their quality to achieve the strategic objectives of defense.

The transformation of the IHRM system involve modernizing strategic institutions, improving the ability of the military decision-makers to coordinate modern defense forces engaged in cooperative international efforts, developing of leadership at all military levels, growing the professionalism of defense workforces and not least aligning the objectives of the human resources and professional military education with strategic defense goals.

In accordance with National Defense Strategy 2020-2024, any robust defense architecture also requires the provision of prepared and equipped human resources, as an essential part of interoperable capabilities, able to operate coherently together. From this perspective we identified three main defense actions line in conjunction with IHRM, as follows:

- "provide the human resources necessary to public institutions in the national security system as well as their adequate training;

- implement the force structure resulting from the "Strategic Defense Analysis 2020". This will allow the transition to a multi-annual planning, which will ensure the dynamics of personnel and endowment according to the current and prospective needs of the Ministry of National Defense;

- fulfill the national obligations assumed both within the PESCO (permanent structured cooperation), as well as in the NATO defense planning process, participation in allied missions and operations, in its command structure and forces, in order to contribute to enhancement of the Alliance's role and capabilities, giving priority to strengthening the Eastern flank in a unitary, coherent and cohesive manner";[1]

For all the organizations responsible for implementing these action line is important to develop action plans to accomplish them. Actual force requirements depend on a host of other factors, including the country 's overall geopolitical environment and the degree of cooperation and support agreed upon with allies. The correlation of the action line with the national security objectives stated in the National Defence Strategy 2020-2024 is necessary in order to provide "*human resources, material, financial and informational necessary to maintain and develop the operational capacity of the competent institutions, based on a rigorous process of planning and evaluating the efficiency and effectiveness of their use"*[2].

In accordance with 203th defense planning law from 2015, the main objectives and action lines from National Defence Strategy 2020-2024, was approved by Parliament in the White Book for Defense in the 28th may 2021. Based on analysis of the IHRM implications from the national defense strategy and strategic analysis of defense from 2020, White Book for Defense, contain main pillars in order to have to accomplish the specific requirements for each domain for short term. Developing for this strategic document implies to know the current state of the defense workforce, current institutions, policies, and practices designed to develop a professional defense workforce. From IHRM system point of view we identified some directions for transformations of military personnel. First of them is in the educations domain, which is very important for the next generations of officers and NCO. Some specific requirements which was developed for the short term implies:

- reform of educational programs from curricular concepts perspective;
- ensuring the integrated management of education, in order to maximize the use of all allocated resources;
- implementation of training programs in e-learning system and digitization of military education;
- developing partnership programs with similar educational institutions in the armies of other NATO and EU member states.

Other major directions correlated with IHRM system established in White Book for Defense[3] implies developing and implementation capabilities targets in accordance with the framework NATO defense planning process (NDPP) and EU based on integrated management of resources for defense and strategic planning.

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[1] National Defence Strategy 2020-2024, available at https://www.presidency.ro/files/userfiles/National_Defence_Strategy_2020_2024.pdf, last viewed 18 october 2021, p.32-33

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[3]White Book for Defense, https://sgg.gov.ro/1/wp-content/uploads/2021/03/CARTA-ALBA-A-APARARII-.pdf, last viewed 08 october 2021

In the context to develop the Military Strategy[4] which was approved this year, the strategic IHRM model, that means to, "aligned to the goals of the nation's national security and military strategies" can be design like in figure 1. In other words, the foundation underlying a nation's HR strategy includes the nation's security interests and military goals. From these goals come more specific requirements for capabilities, requirements for forces and organizations oriented on providing those capabilities, and competency requirements for the different positions in the units and organizations. This is the essence of the planning function in the construct below. The rest of the processes are then designed to support the achievement of the overall HR goals and to contribute to the ability of other processes to achieve them.

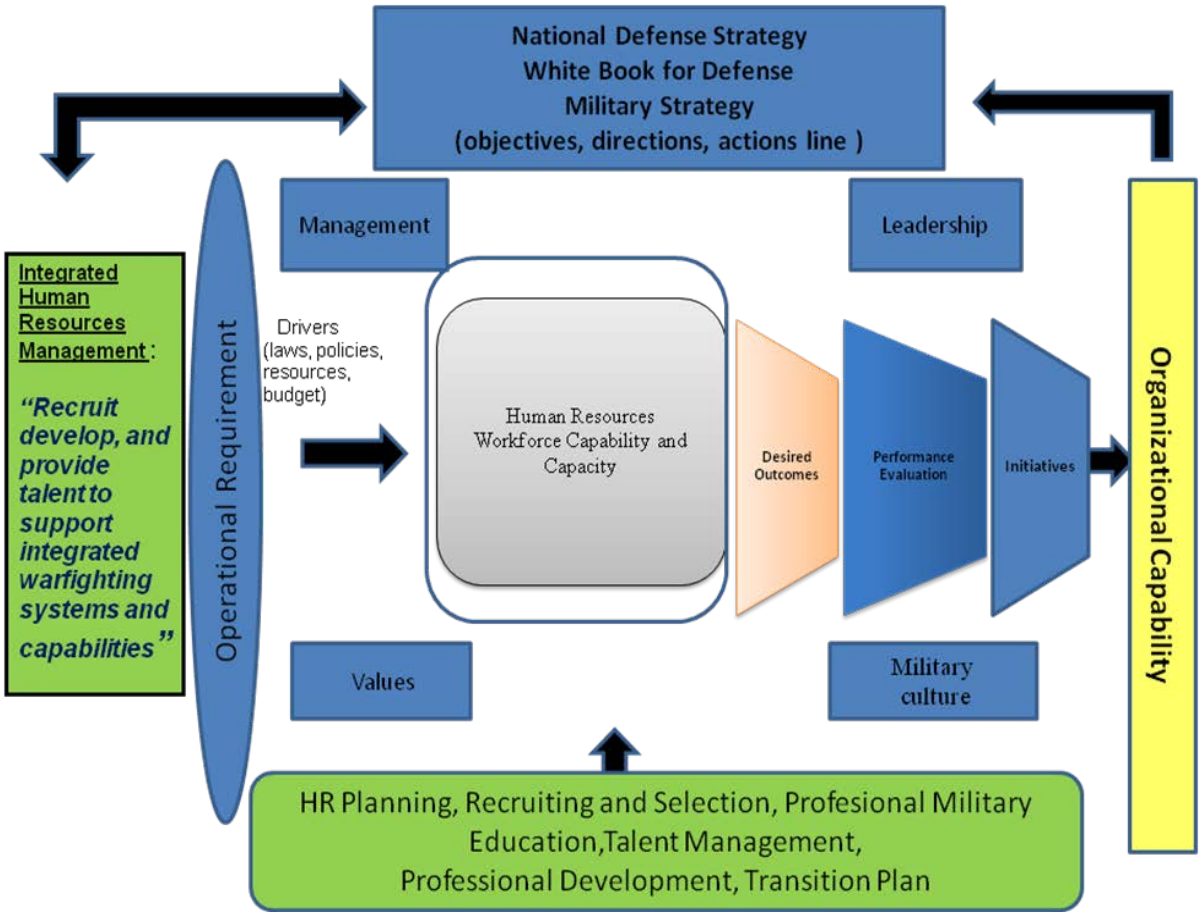

Figure 1. Integrated Human Resources Management model

The strategic IHRM construct which demonstrates the overall strategy and goals, and their influence on the personnel planning process which derives its goals and direction from the national defense strategy, white book for defense and military strategy. The essence of this model, is that all the other major functions (recruitment, professional military education, talent management[5] and development, and the sub-functions associated with each) derive their goals directly or indirectly

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from the personnel planning goals and operational requirement. All functions contribute individually, and often collectively, to the accomplishment of the overall goals. Although the planning activities drive the others, this is a dynamic model that represents the real Integrated Human Resources Management world in which all the functions are continually adapting to changing circumstances.

Strategic IHRM processes illustrated in Figure 1 are to derive from and support the overall national defense strategy, is easier for drawing from national strategic goals, capability, and force requirements to articulate the workforce requirements that form the foundation for the human resource strategy. The national defense strategy's implications for capabilities turn into more specific requirements for forces, manpower, and skills through functional links between the development of national defense requirements and the delineation of strategic IHRM requirements and goals. Those responsible for strategic IHRM must first translate strategic defense goals into required capabilities for military forces.

The next steps include deriving operational and institutional requirements from national defense and military plans, identifying roles and missions for military forces and supporting institutions, and translating roles and missions into organizational designs both for the military forces and for their supporting institutions. The organizational designs and requirements then utilize a job and position classification system to establish specific manning needs: numbers, skills, and grade levels for military and civilians in operational forces and their supporting institutions. There must also be a process in place for ensuring accessions, retention, career management, and professional development processes are and remain consistent with manning requirements.

In IHRM system, manning requirements — specified in terms of positions, ranks, grades, qualifications, skills, experience levels and professional military education — become the fundamental goal for the IHRM strategy and the means for implementing and assessing its success. This generally involves establishing and articulating strategic IHRM goals, identifying ways and means to accomplish those goals, and articulating the goals, objectives, ways, and means in an overall statement of the IHRM strategy. It is important that the IHRM system take into account both current requirements and the need to sustain the force over time. The latter starts with specifying, establishing, and maintaining a sustainable grade and experience profile for the force, consistent with manning requirements drawn from the force design.

Regardless of the current size and shape of the personnel profile, the establishment of a sustainable one is a key strategic IHRM goal. Once the strategic goals have been articulated, the next steps require translating the strategy into specific policies, procedures, and implementing guidance.

A parallel process involves identifying the financial resources required to support all the IHRM functions, and ensuring programming and budgeting processes suitably account for those requirements. The main cost of this resource requirement comes from compensation, benefit, and pension systems.

One challenge for this IHRM model represent "succession planning" which means the ability to project anticipated vacancies and turn those projections into requirements for replacements. This process is an iterative, replacements coming from within the pool of military forces must themselves be replaced.

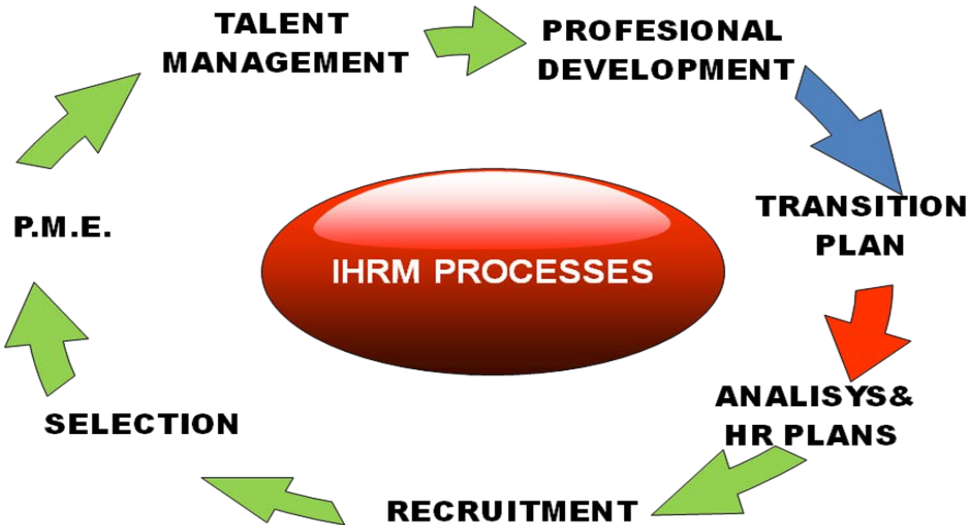

Figure 2 Integrated Human Resources Management processes

After all the strategic objectives and operational requirement were approved by IHRM need to align all requirements in terms of capable military forces planning process and starts the processes like in figure 2. For a reliable projections, the organization can determine how vacancies will be filled, including from where candidates will be drawn from. The process must also account for the requirements for each position, in order to accurately allot candidates to open positions. These derive from the force design process, and could include rank, professional military educations, technical skills, or years of experience. By aligning the projected losses and vacancies with specific requirements, IHRM system are able to evaluate whether their existing military forces contains enough qualified candidates, or if more need to be sought.

The role of human resources planning is capital and need to be fair and transparent in order to establish the number of military needs, ranks, professional military educations, technical skill and must design a succession plan for senior leadership and other key positions.

The next processes are recruitment and selection. Requirements-based, objective, and transparent recruitment and selection processes are the major element of the development function. The basis for all of these processes is identification of vacancies by grade and specialty, in accordance with needs projected and another of the many connections among the elements of the HRM system. It is important to emphasize that selections are based on medical tests, physical test and psychological exams in order to keep and develop the right military. The selection system must be founded on objective selection criteria that are disseminated to and understood by those affected. Another significant challenge is the establishment of selection procedures (as distinct from criteria), that implies the recommendations for some specialty like paratroopers, pilots, mechanics, scuba divers. These processes, depend heavily on the active and informed support of recruitment system.

Professional military education (P.M.E.) systems support the professional development system outlined above, and could thus be combined with professional development. Typically, however, the institutions that perform these functions are separate from the staff and leadership organizations that accomplish the functions listed above. Whether the institutions are combined or not, the functions must be well coordinated with one another and with the assignment and career management functions.

Usually P.M.E. provides the requirements for the training and education system, thus enabling the managers of that system to project and specify training and education needs for all

components of the force. The IHRM system must also develop and maintain the capacity to provide required training and education. Ideally, this is a flexible capacity that can adjust, within reasonable limits, to changes in requirements.

Part of this flexibility can come from judicious planning and projecting from HR plans. Integrating available foreign or civil sector training and education courses with requirements determination is another potentially significant source of flexibility in matching requirements with the capacity of national institutions; this plays a particularly significant role in the training, education, and professional development systems.

Evaluation and validation of the effectiveness of all of these systems, and the degree to which they are suitably coordinated, is also a key responsibility. For that reasons a high level of interoperability can only be achieved through a transparent and critical approach to the development of military training, education programmed and systems[6]

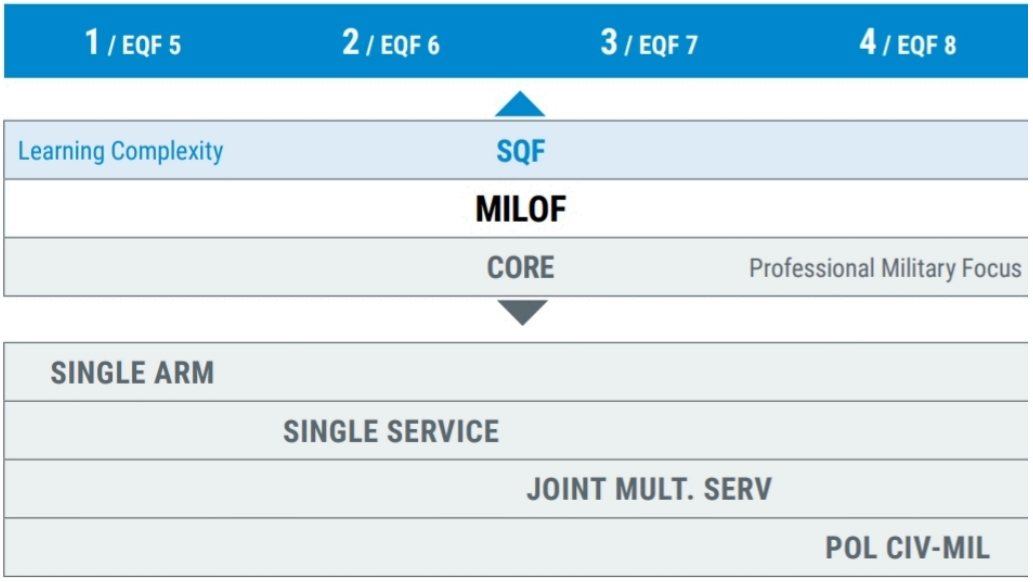

Figure 3. Levels of complexity for military profession

The four levels of complexity range from comprehensive (level 1) to most advanced knowledge and professional skills (Level 4). The four levels of operations focus the learning from individual or low tactical level (Single Arm/Branch) up to strategic level (Political Civil-Military). The new concept, SQF-MILOF implements the modern realities of lifelong learning for military officers. It is fully in line with the European Qualification Framework that covers all types and levels of qualifications.

This new concept is in developing and will be implemented in accordance with the new concept for training and educations for Rou Army in order to align the competence area as military service member, military technician, leader and decision maker, combat role model, communicator, learner and teacher/coach, critical thinker and researcher, international security/diplomacy actor for officers.

The talent management process must also be tied to the career management system to ensure positions are filled not just on the basis of immediate needs and qualifications for the position in question, but also with a view toward the experience the position will provide in developing the

[6] Sectoral Qualification Framework for the Military Officer Profession (SQF-MILOF), https://esdc.europa.eu/sqf-milof/, last viewed in 20 october 2021

incumbent for other positions in the future. This implies the need to connect the succession planning system and assignment systems with professional military education, selection and professional development systems in a comprehensive career management system.

Figure 4 Individual career planning

Correlated with the previous process the professional development process must be a comprehensive and well-maintained with professional military education process. An effective professional development system must first project and identify vacancies, along with the education, training, and experience requirements associated with the coming vacancies. Career and assignment human resources managers need to match the pre-requisites with available military persons in the market and determine any needs for additional training or education, and also enables better alignment of individual development needs with the manning requirements of the force. The result of these coordinated processes is the efficient matching of best-qualified candidates against projected vacancies.

Part of talent management and professional development can be considered performance management[7] like an important contributor to development. Performance management starts with establishing and publishing overall goals for the system. This includes developing criteria for evaluation—professional values and standards, and key common competencies, knowledge, and skills—and developing skill and knowledge requirements by specialty and grade. This connects closely with job description and position classifications and, again, with professional development.

The IHRM system must also organize evaluation means and methods into a comprehensive process for individual evaluations and establish methods to be used in the evaluations: the means by which leaders and managers communicate evaluations of key traits, knowledge, skills, competence, overall performance, and potential. Typically, this is done using evaluation forms; getting these forms structured in ways that truly accomplish the purposes of the evaluation system is a frequent challenge.

It is important to stress that while evaluations can and should have a prominent role in selection processes, performance management should also contribute in more general ways to furthering the development and improving the abilities of the workforce to accomplish its goals. In this regard, appropriate policies and practices for other means of recognizing achievement (e.g., awards, other commendatory actions, and bonuses) can be useful contributors to the overall performance management system.

[7] Joseph Soeters, Management and Military Studies, Michael Porter - Strategic management and value creation in bussines and the military, Routledge Taylor &Francis Group, 2020, p.109

One very important part of processes of talent management is retention. Effective retention processes start with the establishment of retention goals based on manning requirements and predicted losses: skills, aptitudes, qualifications, and numbers, which, taken together, comprise specific retention requirements. Retention planning should include the means to compare retention goals with anticipated behavior and adjusting policies or incentives accordingly, and to apply those incentives to encourage the required number of people to continue their careers. This is partly an ongoing and relatively short-term dynamic process centered on bonuses or other immediate incentives, but over the longer term it should include periodic examination of the retention effects of the entire compensation system, including all pays and benefits. Retention processes should also identify training and education requirements and select individuals to align with them, with sufficient lead-time to allow efficient allocation of training and education resources. Finally, the IHRM system must ensure that the assignment and distribution systems place retained individuals in accordance with requirements; this is another case where periodic assessments are needed to ensure all systems are aligned.

The elements and sub-elements presented here also connect very closely with one another and in many ways with the engagement and acquisition functions. Of all the parts of the strategic IHRM model, this major function depends the most on active participation from the leadership in operational units and supporting institutions, not just members of HR staffs.

Effective strategic IHRM includes establishing a retirement and pension system that fairly and effectively rewards dedicated service, adequately provides for retirees, and complements the rest of the compensation system in accomplishing motivational and force-shaping goals.

The last process in their raw forms, are simply inventory management- transition plan. In a well-designed IHRM system, they are an integral part of total compensation; they become an effective part of both engagement and inventory management when designed fairly and efficiently, and when aligned with force shaping goals. In some cases, it will be necessary to develop standards for separation and selective retention to accomplish these purposes. Involuntary separations are also a necessary component; fairness in their design and implementation includes provisions for independent appeal processes. Appropriate types and amounts of transition assistance enhance the fairness of the separation system, as do transition benefits. The latter should be designed with entitlement provisions tied to eligibility criteria such as length of service, disabilities, or other appropriate considerations. Veterans' outreach programs and other means of recognizing service of those being separated are also worthwhile enhancements.

3. Conclusion

All human resource management systems need a system for collecting, using, analyzing, and archiving information on the members of the workforce. Such a system is valuable not just for managing and tracking individual careers (reason enough to have the system), but also for evaluating the effects of policies and programs and for planning future adjustments to them. Most modern systems are automated, but that is not a hard-and-fast requirement to have manual records or a system that combines digital and manual records. However, it is essential that some system be in place that stores and makes available information for decision support, research, actuarial analysis, reporting, and evaluation of programs and policies. In any records system, it is also important that the information be periodically and systematically updated; contained in archived records to enable compiling of histories (like assignment records) and longitudinal analyses; and accessible, with appropriate safeguards, to personnel staffs and key decision makers. The choice of which types of

information to include in the records system will naturally reflect the priorities and requirements of operational level.

Finally, as long as organizational success depends on qualified people performing the tasks they are assigned, good strategic human resource management will be at the core of that success. Strategic IHRM is a complex iterative process that involves the entire organization, and the single most important prerequisite for success is that it be fully integrated into the workings of the military organization.

Senior leadership provides the guidance, direction, and visible support needed to get the entire defense establishment working together to accomplish the needed IHRM changes. It also means developing and continuing constructive relationships with the HRM staff to support their efforts to design policies and programs suitable to their context. Accomplishing these aims requires both empathy and strategic patience.

The models presented here, with its basis in the modern Talent Management construct, is a comprehensive approach to framing efforts first to understand, and then to adapt or refine the IHRM policies and practices. Those using these ideas must have sufficient expertise in strategic IHRM to be able to judge which elements of the framework are applicable of the model accordingly.

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CAPABILITIES-BASED "CONFUSION": WHY CAPABILITIES-BASED PLANNING SYSTEMS STRUGGLE

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Abstract

In the 2001 Quadrennial U.S. Defense Review, Secretary of Defense Donald Rumsfeld announced that the Department of Defense would henceforth use capabilitiesbased planning to guide the development of the armed forces. The popularity of the idea spread to many allied countries that also embraced the concept. However, the successful implementation of the method has been hindered by a number of factors: lack of an agreed lexicon, confusion in many defense organizations to the degree to which "threats" are used, inattention to policy priorities, heavy institutional analytical requirements, and a lack of acknowledgement of the importance money must play in any planning system. The paper concludes that whilst elements of the method are well-suited to providing objective data in support of senior leadership's decision-making; alone, it is insufficient to drive planning, which is inherently a political process.

Key words: defense planning, capability analysis, capabilities-based planning, defense economics, capability partitions, threat-based planning.

1. Introduction

„The beginning of wisdom is to call things by their proper name." Confucius

Although few Western defense and military officials at the time could have imagined it, defense planning was relatively simple during the Cold War. Defense planning methods could be characterized either as scenario-or threat-based. Either description was underscored by a clearly identified threat, which was quantifiable, and most countries enjoyed more or less stable defense budgets. These conditions, Builder and Dewer argued shortly after the fall of the Berlin Wall, had lulled defense planners into a state of complacency and they should get back to the business of "planning."[1] The end of bloc tensions presented Western defense officials with the novel challenge of developing plans and convincing governments to fund them whilst they were enjoying peace dividends. In the United States, during the 1990s the Department of Defense conducted an almost endless series of defense reviews (i.e., *Base Force*, 1989–1992; the *Bottom-up Review*, 1993; *Commission on the Roles and Missions of the Armed Forces*, 1995; the *Quadrennial Defense Review (QDR)*, 1997; and the *National Defense Panel*, 1997),[2] to determine the size of the armed forces, as well as which capabilities they should field. A major development occurred in 2001 when the newly installed Secretary of Defense announced in that year's version of the *QDR* that the Department of Defense would adopt a defense planning methodology that had been discussed in general terms in the bureaucracy, if not widely in the literature, "capabilitiesbased planning," to guide the development of the armed forces. As Donald Rumsfeld wrote in the *QDR* 2001, "This capabilities-based model focuses more on how adversaries fight, rather than specifically whom the adversary might be or where a war might occur."[3]

Whilst Rumsfeld avoided political difficulty by not specifying possible adversaries as either Russians or Chinese, he nevertheless initiated a debate over how to use this novel concept. The immediate question to be addressed was how capabilities-based planning was to be conducted. Paul Davis of RAND Corporation published a work in 2002 that became widely quoted that presented a model of how this new planning method could work.[4] The Technical Cooperation Program (TTCP)[5]

accepted it, along with a definition provided by a NATO study,[6] as planning gospel and propagated it to defense planners in the Anglo–Saxon world, and beyond.[7] In the absence of clear guidance as to how to use this new method, considerable debate and discussion emerged on how to implement capabilities-based planning in the Department of Defense, even with the Secretary's published intent on how to proceed.[8] As such, the new process did not have its envisaged effect of changing how the Department of Defense plans and executes its budgets. Early guidance as to how to implement this new way of thinking, as will be shown *infra*, was very slow in coming and not a little confusing. This could be explained by the press of events of conducting two wars (Afghanistan and Iraq), or despite the initial shock to the three military departments that the Secretary of Defense intended to change the planning system,[9] the realities of the appropriation *and authorization* processes, firmly controlled by Congress,[10] likely all combined to derail this initiative.

But the concept and its proponents the world over were not deterred, and the utility of the method continues to be preached. Many ministries of defense, general/ defense staffs, and defense analysts have studied and tried to adopt the method, as well as engage in a debate about the challenges of implementing it. Two points in this respect are worth noting. First, notwithstanding claims such as those proposed by one highly-respected defense-oriented think-tank that it constitutes the "gold-standard" of defense planning, a veritable "Copernican revolution,"[11] there is no agreement amongst defense planners and analysts as to its precise definition, let alone is there a commonly accepted methodology.[12] In effect, a gold-standard without a denominator of value, or a scientific discovery that cannot be replicated. Second, there is little agreement even apropos its name. It is both represented in its singular, as well as its plural, noun–form. This might appear as a distinction without a difference, but in actuality it is not: after all, what cannot be explained with precision cannot be understood with absolute clarity. As such, an appreciation of this nuance can help in understanding what capabilitybased planning is and identify its utility.

It is the intention of this essay to bring clarity to discussions surrounding capabilities-based planning, because many countries continue to experiment with it and some analysts tout its potential utility: of which the current writer is likely guilty, albeit in a different context.[13] What the essay does not address, due to space limitations, is what type of defense planning method cleanly ties policy priorities to financial execution: this is the subject of a future work. As confusion abounds with capabilitiesbased planning, it will be argued that it is more appropriately a planning *tool*, and/or encourages *capability-based thinking*,[14] as opposed to constituting a viable planning *system*. Moreover, proponents of this still to be defined planning methodology will be confounded to point to a defense organization where it has been implemented as a *planning system* and that has produced a viable defense plan that has been executed.

This essay is organized firstly to present a brief explanation of the planning method. Second, it will analyze its numerous methodological weaknesses, to include the allimportant point that the method depreciates the centrality that money needs to play in any defense planning system. The penultimate section will assess the method's utility, as judged by its record of success, and the ambivalent views expressed by its *proponents*. The final section is a conclusion that includes some observations as to where elements of the method are very much relevant in the area of capability optimization, as opposed to acting as a *driver* of a defense *planning system*. In light of this analysis, defense officials and analysts can make an informed decision on how they can effectively utilize elements of the concept.

2. The Theory of Capabilities-Based Planning

At the outset of this section, one must acknowledge the challenge of providing a précis of a concept for which there is no agreed lexicon. In fact, it is difficult to say with any certitude how defense institutions in the world employ it as a *planning system* given there is no agreed definition or methodology.[15] A positive development is that since 2011 NATO has agreed what could be considered to constitute a (needed) taxonomy of capabilities, but whether it is appropriate for *national* requirements, as opposed to supporting multinational operations, is debatable.[16] To simplify an explanation, the current author has selected an influential paper drafted by a panel of defense experts sponsored by the TTCP in 2004.[17] The reason for this selection is that it provides the essence of the concept, informs defense planners, and has been widely cited as authoritative in professional and academic literature. Those readers wishing a more detailed explanation and analysis of the method are invited to read Paul Davis's seminal 2002 book.[18] Annex A presents a diagram of a basic capabilities-based planning model produced by the TTCP panel. Space does not allow for a full review of the entire process, but rather this section will cover some of the most salient aspects of the planning process which distinguishes it from other planning approaches.

The TTCP paper describing the planning process begins with interpreting nationallevel guidance, then moves to identifying capability gaps, developing capability options, and ends with developing an affordable financial proposal. The method's putative unique approach to planning is to ascertain what capability is needed, as opposed to what equipment needs to be replaced. Proponents of the method claim that it is a superior planning method as it addresses changing and variable strategic environments, connects strategic goals with acquisitions, provides an audit trail, encourages innovation in addressing capability gaps by deterring early equipment decision-making, and produces better information to enable informed decision-making. All of these activities are enabled by grouping capabilities from various services within clusters, or capability partitions, based around their ability to achieve specific tasks, e.g., sea control, air defense, etc.[19] They are organized as clusters in order to overcome parochial service stovepipes, thereby enabling a more effective joint approach to defining capability requirements.

Thus, in theory, the method purports to further many positive practices and encourages jointly determined outcomes. But what of its methodological shortcomings? A hint can be found in U.S. Department of Defense issued guidance in 2004 requiring that when following the new, undefined, planning method, it was expected that planners would need to be both competitive, as well as collaborative, but without instructing how and when.[20]

3.Methodological Challenges

3.1 Problematic Lexicon

Whereas there appears to be little agreement concerning what constitutes capabilitiesbased planning in an applied environment, there is general agreement that the centerpiece of the method relates to planning against "capabilities," vice being tied *solely* to threat scenarios. Conceptually, this should create capabilities that would be applicable to a range of missions and situations that have utility in more scenarios and cases than just the threat envisaged, which, of course, so often proves to be wrong. But even in regards to this basic methodological point, there are sufficient differences in definitions to lead to dissonance in understanding the concept. For without agreement on a lexicon, it is difficult to understand precisely how a planning method could be constructed, tested, and validated, let alone how one could develop analytical products that can be compared with, and against, others.[21] In the absence of a common official definition, or statement of its method, the three U.S. armed services had to develop their own individual frameworks,[22] and their own definitions of force–equivalency needed to meet a capability requirement.[23] One can identify three different

published definitions of the concept. Analysis of the content of each definition's methodology will be addressed *infra*, however, for the moment, it is critical to argue the point that there is little agreement apropos what the method comprises:

- Davis (2002): "Capabilities-based planning is planning, under uncertainty, to provide capabilities suitable for a wide range of modern-day challenges and circumstances while working within an economic framework that necessitates choice."[24]
- NATO Handbook on long-term defense planning (2003): "This method involves a functional analysis of operational requirements. Capabilities are identified based on the tasks required… Once the required capability inventory is defined, the most cost effective and efficient options to satisfy the requirements are sought."[25]
- The Technical Cooperation Programme—TTCP (2004), using both of the above definitions argues that: "CBP provides a more rational basis for making decisions on future acquisitions, and makes planning more responsive to uncertainty, economic constraints and risk. CBP provides a framework to support analysis and facilitate risk management. It focuses on goals and endstates and encourages innovation."[26]

Whilst it is clear these definitions are not in agreement in detail as to how capabilitiesbased planning should take place, they do share a number of commonalities. First, as the different definitions demonstrate, over time the NATO Handbook and the TTCP definitions place more detailed emphasis on how to optimize choices, albeit by proposing different approaches to achieve this goal. Second, whilst there are plenty of "whats" capabilities-based planning should do, there is precious little space given to the "how" the method can be used as a defense planning system. Third, none of them are authoritative, and therefore do not enjoy any form of official sanction.[27] In fact, few defense organizations have established formal definitions: NATO[28] and the United States[29] does not, whereas Canada does, albeit within the context of force development.[30] Fourth, according to Davis and the TTCP paper, the planning method uniquely addresses "uncertainty," but it is not made clear how this is addressed. This likely explains why there is some confusion of the degree to which threats are used in capabilities-based planning (*vide infra*). Fifth, of the five countries that make up the TTCP, it should be noted that all of them have "embraced" the concept, but at the same time have implemented it differently, thereby adding to the confusion of what precisely is contained in the method.[31] As late as 2004, an international working group of defense experts argued that without a U.S. Department of Defense agreed capability taxonomy, comparisons across capability partitions (a key strength of the method) were all but impossible to make. Yet, by the Secretary of Defense's direction, the planning process had to be used by the entire Department of Defense for budgets, force development, acquisitions, and adaptive planning.[32]

3.2. *Capabilities vs. Threats?*

The advocates of capabilities-based planning almost from its inception have struggled with a vexatious problem of semantics in arguing that it was more effective in addressing "uncertainty" in a country's strategic environment. Both the 2001 *QDR* and Davis argued that capabilities-based planning has the advantage of addressing uncertainty, which many took to imply that the method does not acknowledge the need to plan against threats. After all, if there is "uncertainty", then, by definition, threats are not officially sanctioned, because they remain "uncertain." Yet, Davis rightfully argues that it is a fallacy that the methodology does not include within its logic the essential need to address threats, in fact, he argues that they are an integral element of the method.[33]

Whilst he is certainly correct to argue that "…history shows defence planners are rarely right when it comes to positioning for and predicting future events and threats,"[34] he argues further that the method is superior in addressing a wide range of threats, without explaining how this is superior to other planning methods.

Clearly, the issue of planning for uncertainty, whilst still using scenarios, could present a complication, indeed, a contradiction, for planners. The importance of how threats are treated in defense planning extends beyond their operational utility, but is an issue of high political importance in any form of governance. Whilst planning to create "capabilities" in a defense force makes eminent sense, care must be exercised to ensure that they are not assessed in a politico–military vacuum, obviating context which could make them intangible. Worse yet, it could undermine accountability given that planning for an uncertain future provides a convenient excuse for mistakes. Pity a minister of defense arguing the case within the cabinet for an expensive "capability" that *could* have utility against possible threats in an uncertain future.[35] In fact, one could question how many countries have the resources and the need to plan continuously against threats, uncertainties, *and* generic possibilities (a key element of capabilities-based planning),[36] thereby making this planning method appropriate to their requirements. Rather, Treverton makes the perceptive argument that advocating for capabilities premised on threats should put the onus squarely on a parliament to approve or disapprove defense procurements, thereby rightfully assuming risk.[37] Or, as Colin Gray presciently argues, "It is not impossible to conduct defence planning in the absence of an obvious enemy, but to do so tests the credibility of politicians and their voters in democracies, usually beyond the bounds of prudence."[38]

The TTCP method argues that capabilities-based planning provides a more rational basis for decision-making in that it addresses more comprehensively acquisitions, uncertainty, finances, and risks.[39] But, in reality, it runs the risk of removing the strategic context for the rationale for developing needed capabilities by inadvertently depreciating their political meaning and utility, and by extension, undermining the *raison d'être* of a defense force. In its most extreme form, planners are expected to plan capabilities ("for a wide range of challenges"), which are then to be employed on operations against unvalidated threats. This runs the risk of removing the strategic context for developing capabilities by failing to demonstrate their near-term military relevance to a government: presenting an attractive argument for any rapacious minister of finance looking at the armed forces for "efficiencies." Clearly, a prudent defense institution would be wise to eschew any financial arguments in a political forum based on procuring generic capabilities if validated threats are at hand.

Finally, it has to be acknowledged that it makes little sense that threats are somehow diminished as planning factors given that the method employs scenarios to ascertain capabilities gaps.[40] Although it has been argued that one could construct scenarios that do not assign aggressive intent,[41] this assertion is weak given that such a method would surely remove any politico–military context from the analysis.[42] The TTCP methodology argues that in using scenarios, the more the better is essential.[43] One group of experts observed when assessing the degree to which threats are addressed in this planning method, even something as innocuous as a "training standard," can be tied to a reaction to a threat.[44] In short, irrespective of the argument for using uncertainties and generic threats in the method[45], it would appear to be dependent upon the employment of threats in order to produce viable capability gaps.[46] It is, therefore, confusing that some analysts make the argument that there is somehow a binary choice between capabilities-based planning and threat-based planning, thereby failing to acknowledge the nuanced nature played by threats in capabilities-based planning.[47]

3.3. *How Are Priorities Addressed?*

With acknowledgement to Jane Austen, it is a truth that *should be* universally acknowledged that all defense organizations struggle to determine priorities. It is challenging because priorities are, by definition, zero-sum. And as such, they are inherently *political* and constitute the most important instrument of policy. The TTCP method proposes a clean, if not scientific, method whereby priorities are derived from strategic guidance, which is followed by an optimization process that presents defense officials with a range of solutions.[48] A group of defense experts, implicitly agreeing with the TTCP methodology, advocates addressing priorities as the penultimate planning step in order to create a capability plan[49] (see Annex A). The issue of addressing priorities when employing capabilities-based planning would appear to be challenging. In one case study, the author found that linking priorities to requirements was a major weakness in the New Zealand defense organization. Across the Tasman Sea, the Australian Department of Defence struggles to ensure that priorities are expressed in capabilities.[50] In the case of the Canadian Department of National Defence, the study found their planning method (modeled on the TTCP's method), was incapable of connecting "long-term future strategic issues, defence priorities and consequent investments…little justification is made for the high-end capabilities contained in the investment plan." Finally, when assessing the U.K. Ministry of Defence's planning method, the author was all but scandalized commenting that the "defence budget determined the capabilities available. This runs counter to the TTCP model…"[51]

Seemingly missing in these capabilities-based planning methods is an appreciation that priorities, as expressions of policy, should constitute the *sine qua non* of a planning system, which may explain why the New Zealand, Australian, and Canadian processes have struggled to implement the method as a key driver of their defense planning systems (*N.B.*: using elements of it for force development being another issue, to be addressed *infra*). Albeit a methodological heretic, the U.K. system nevertheless produces policy-endorsed capabilities. Encouragingly, a working group in 2006 identified two successful methods of expressing capability priorities through scenarios and identification by senior leadership, using the results of scenarios. Whether either of these methods have become widely used is unknown.[52] The issue of the financial realities of priorities will be addressed *infra*. But with a small degree of foreshadowing, one may surmise that one of the key reasons why these three countries have struggled with the method is that planning logic is not being driven by *costed* priorities and leave addressing the financial consequences of their analysis at the end of the planning process (e.g., Canada).[53] One would be prudent to predict that options developed in this manner would be rarely financially acceptable.

3.4. *Institutional Requirements*

Despite the lack of a common planning methodology, let alone a definition of the concept, some advocates of capabilities-based planning have suggested that it remains a viable method, suitable for emulation. Interestingly for a planning method, advocates suggest significant institutional requirements that are essential if the process is to function. Some of these requirements are seemingly innocuous and eminently reasonable, e.g., a joint planning culture and a dedicated planning staff with analytic capability,[54] to which one could add that defense forces training concepts which are premised on capabilities. Additionally, one author claims that the U.S. experience in implementing capabilities-based planning demonstrated the need for a well-designed decision-making process.[55] But surely these organizational attributes would be needed in any functional defense organization. However, advocates of the method also argue the need for unique requirements. De Spiegeleire observes that small defense organizations have the challenge of not

possessing the necessary planning tools to support the analysis required by the method.[56] Indeed, along with his co-authors of an intriguing study of modern defense management practices, he argues that there may well be a critical mass threshold, below which the method may simply not be supportable.[57] This is intuitively correct, but how small is "small"? They cite the example of the "small" Australian defense organization as being able to use the method successfully.[58] The use of this organization may not be apposite. It is hardly modest, enjoying a defense budget of A$37.8 billion for financial year 2020, and some 57,200 personnel.[59] Conversely, as found in the *First Principles Review*, Australia struggles to express priorities as capabilities.[60] Clearly, more research and analysis is needed to determine the institutional expertise needed to employ the method effectively.

Related to the question of institutional critical mass is the factor of time. In case of Canada, the Department of National Defence constructed an elaborate strategic capability roadmap that was envisaged to be reissued in a 3-year cycle.[61] One study makes the argument that for the method to be useful, it must look at least two years into the future. As most governments operate on one–year budgets and as it would be infeasible to change a previous year's budgetary allocation, planning must be completed far enough in advance to be expressed in that year's defense budget.[62] This seemingly reasonable requirement is problematic on two levels. First, it assumes that the practice of long-term planning is valid[63], which evidence from the experience of many countries in central and eastern Europe has proven not to be the case,[64] and which is viewed with skepticism by many U.S. Air Force senior leaders.[65] Second, one has to ponder how a planning method that plans out multi-years (as opposed to controlling for long-term financial obligations)[66] could possibly be responsive to policy changes, let alone be responsive to operational commanders *in war*.

3.5. *Show Me the Money!*

The last planning methodological challenge a review of the literature reveals relates to the all-important issue of money. Gray is certainly correct in observing that, "The *lingua franca* of defence planning has to be money, not strategy."[67] In addressing the issue of finances, there are two issues which impede the method's successful adoption: the need for financial guidance and solving the vexatious issue of how to design capability partitions. As to the former point, the general approach to capabilities-based planning, which is found in the TTCP paper, begins with "overarching guidance," but no mention is made of the need for determining financial ceilings, priorities, policy proscriptions, etc.[68] As mentioned *supra*, the TTCP model addresses the budget as the penultimate (financial constraints) and final (affordable capability plan) steps in the planning process, which in itself is proper *if* the process begins with clear financial guidance. Davis acknowledges that the method has been critiqued in the U.S. Department of Defense because its advocates have been able to use it to identify shortcomings, but then have asked for additional funding without leadership making hard choices, thereby being decried as a blank-check approach.[69]

One study group noted that costs and cost-effectiveness were generally absent from discussions on the planning method and are only considered in different processes. Even three years into the United States' putative use of the concept, there was still no agreed common method to cost accurately "capabilities."[70] What is revealing is that neither the 2001 *QDR*,[71] nor the important 2004 *Joint Defense Capabilities Study* (Aldridge team)[72] commissioned by the Department of Defense, addressed how the existing U.S. defense budget system and the three autonomous military departments were to be reconciled with this new planning methodology.[73] Apparently, in the case of the United States, the issue of how the budget was to be realigned to facilitate the operation of this new planning method was never reconciled, in large part due to the lack of agreement on how

planning was to be conducted.[74] Other defense institutions soon discovered existing weaknesses in their respective planning systems when they tried to adopt the method. For instance, inadequate or not properly referenced cost models, or a failure to use life-cycle costs in the case of Australia[75] and Canada,[76] impeded the implementation of the method. Nor are these challenges limited solely to these sophisticated defense organizations. According to De Spiegeleire, "…in many countries the defence capability development community (with defence staffs in the lead) has for a long time been separated from the defence costing community (primarily in the acquisition and the finance/control community)." He suggests that the adoption of life-cycle capability management, could solve this challenge, without explaining how.[77] Yet another expert notes that apportioning costs of platforms across multiple capabilities likely will be arbitrary, and as such, acknowledges that costs perforce will be inaccurate.[78]

As to the second point, the key issue of how capabilities-based planning addresses the critical importance of *money* is the likely reason why implementation has proven to be difficult, *as a planning method*, where it has been attempted. As two analysts observed, … *CBP [capabilities-based planning] may not effectively incorporate the resource dimension of capability. Here, the complex interdependence between [sic] the key resource constraints of financial capital, human capital and time needs to be understood so as to tackle fundamental problems.*[79]

Thus, arguably one of the method's most compelling attractions may well include an inherent weakness that impedes its successful adoption. By this, the method's strength is that it was designed to empower "jointness," as well as avoid the over-specialization of defense forces and the predictable practice of "stove-piping" in their own environmental planning.[80] Without doubt, this is a laudable objective, however, good intentions have apparently met an impasse when capabilities, which are envisaged to span environments and organizations, need to be connected to budgets.[81] This may appear to be a mere budgeting issue, but in reality the source of the problem is more conceptual in nature. When developing capability partitions, which are needed to organize budgets, officials are confronted with the problem of deciding where to send the money. How can one fund a task that feeds multiple capabilities or conversely, fund a capability that can support various and different missions?[82] Moreover, according to one author, the method does not support innovative operational and functional concepts, particularly in the case of the U.S. Department of Defense, where its three military departments exist in splendid financial isolation from each other.[83] Indeed, Caudle's optimistic assertion that this planning process uniquely "links procurement decisions to strategic goals and provides an audit trail for accountability" is simply difficult to accept in the baronial U.S. Department of Defense.[84] Individual services understandably are resistant to initiatives to transfer money to "joint" missions, given that they have more confidence in their own methods to address risk in their battlespace.[85] In consequence, the method generates an abiding tension as capabilities are envisaged to be executed in a joint environment, but budgets are allocated to services.[86] The case for, and need to, continue to operate the fleet of A-10 Thunderbolt II closeair-support aircraft by the air force for the army, is a case in point.

The TTCP paper outlines the many challenges well, but falls short of providing advice on how to organize a defense budget using capabilities-based planning. As stated, the problem is that capabilities are not nicely defined and discrete amalgamations of command and control, equipment, personnel, and training that can be individually funded as they can span numerous organizations and even constitute parts of other capabilities. The paper's authors acknowledge that they have not seen an ideal solution to the problem, but that some partitions they have studied are worse than others. As the paper describes the challenge: "once information has been elicited within the partition it must facilitate aggregation to allow for whole of force considerations, or easy translation if the capability is used in a different partition." Easy to describe, but incredibly difficult to achieve, as a solution has

apparently yet to be validated. The paper suggests that it might be useful to develop a common partition method, whilst a case could be made to use different methods designed to meet the unique requirements of different types of capabilities. But if the latter solution were selected (which is likely the easiest), the method loses one of its main conceptual strengths: its ability to facilitate cross-comparisons of different capabilities.[87]

Alas, it gets worse. One group study published in 2019 (some 15 years after the TTCP working group identified the partition's issue as being a major problem), both argued the viability of capabilities-based planning, but acknowledged that they have yet to find a *partition method that might constitute a best practice*. The authors then inexplicably argue that the implementation of capabilities-based planning is *dependent* on the adoption of capability partitions.[88] Given that partitions are a *sine qua non* for the planning concept to be adopted and yet no such "best practice" exists, it is difficult to understand how this planning method could possibly be considered valid. Confusion is compounded by their argument that a program structure is an "inherent requirement to link capability plans to the budget."[89] But absent a viable capability partition, which they acknowledge they have yet to discover, this simply does not seem possible, nor even needed. De Spiegeleire argues in his two influential works on the subject that traditional means of budgeting across services is incompatible with the planning method, and therefore argues that some countries are cutting up their partition schemes into more manageable sub-areas, to include developing more functional partition schemes (e.g., mobility, strike) that either replace, or complement, existing service budgets. Such solutions are both intriguing and attractive, but alas, he offers no details, or hard examples of successes.[90] One possible success in breaking this budgetary impasse could be the case of the Australian practice of designating one capability manager, as a whole-of-enterprise agreed position, which allows for the apportionment of resources funded by one budget.[91]

It is difficult not to conclude from assessing the inability of capabilities-based planning as *a planning system* to address budgets that the concept cannot be easily adopted. Surely, the most important role of any defense planning process is to optimize however much money has been allocated to the defense budget, and thence to execute it. Rather, capabilities-based planning appears to exist in a space that is isolated from the realities of developing a financially-supportable defense plan. Evidence of this distance between these planning aspirations and budget realities can be found in the work by Davie. He argues that in the seven countries[92] he studied that employ capabilities-based planning, he discovered that they largely comply with the TTCP "template", constituting a "global defence planning standard." Yet, with almost near incredulity, he acknowledges at the same time that "defence investment outcomes often differ from those generated by this capability based model" and, "…final capability outcomes are either at odds with CBP generated recommendations and/or inconsistent with preceding stages of the CBP process."[93] Evidently, defense political leadership and policy officials across these countries are skeptical with the recommendations produced by this method, one suspects, due to its inability to link proposed capabilities with the budget that expresses priorities in a language they can understand.

4. Determining the Utility of Capabilities-Based Planning

This essay, heretofore, has laid out the many methodological challenges that have confronted countries attempting to introduce capabilities-based planning into their defense organizations. With this background in mind, it would be useful to assess which of the aspects of the method are valuable, and therefore, can support the development of viable defense plans. Upon careful review of the method and the wellintentioned efforts of its advocates, one judges that there is great value in elements of it, but these useful techniques must be carefully identified, and most importantly, their limitations need to be identified. One can acknowledge four key aspects of the method that need to be assessed individually.

First, as one could imagine coming from the massive U.S. Department of Defense, any planning method it develops would be, perforce, optimized for U.S. requirements. Therefore, one could also predict that it will be highly complex and decidedly nuanced. It is little wonder, therefore, that the method requires a critical mass of highly-trained and -experienced military and technical experts to be able to conduct the necessary analysis (e.g., operations research) to inform decision-making.[94] This is no minor requirement when one of the key elements of the method is to address generic adversaries, as well as "capabilities" that might be employed against an armed force.[95] One would think that the U.S. Department of Defense would be well-prepared to execute this level of analysis. Surprisingly, this is not the case. Some three years after the publication of *QDR* 2001, a group of U.S. and allied defense officials, officers, and analysts ostensibly involved in capabilities-based planning complained that, "The theologians of CBP have a responsibility to explain the principles of CBP in clear, concise English."[96] Davis rightfully argued that the Department of Defense would need to change in order to equip itself with the ability to conduct successfully this type of planning.[97] One study of how the U.S. Navy could adopt this planning method argued in 2005 that the "Navy has not yet developed or acquired all of the analytic tools needed to address this type of portfolio-management issue."[98] Admittedly, the Department of the Navy has been slow to adopt an effective planning, programming, budgeting, and execution system (PPBES) method used within the U.S. Department of Defense to enable it to connect policy priorities more closely to its budget.[99] However, that the world's largest navy acknowledged that it did not have the necessary staff and analytical capability to undertake this systematic level of analysis is significant. If the Department of the Navy judged itself incapable of conducting this level of analysis, how can any other defense organization do so? The fact that the Australian and the Canadian defense organizations, at least according to the literature, struggle to implement the method should obviate suggestions that it can be adopted by many other defense organizations.

Second, this planning method has a decided orientation towards the future, as opposed to being concerned with current operations. One group of experts argue that the method explicitly does not address current operational challenges, arguing that this is the responsibility of commanders[100] (assuming, of course, they have the authority to "fix" problems and the resources to do so—a big assumption in many countries).[101] Therefore, one might be forgiven to see within the method shades of the Department of Defense's PPBES, at least in terms of its future orientation. Thus, there is an almost myopic focus on developing capabilities, which suggests a planning alignment with acquisitions, as suggested by Gaffney.[102] Far from seeing this as a strong point, Filinkov and Dortmans identify the fixation on acquisition as one of its conceptual shortcomings.[103] Whilst it would be understandable for any planning system to emphasize obtaining appropriate capabilities for the armed forces, to all but ignore current operations is imprudent for two reasons. Firstly, a planning system oriented largely towards acquisition runs the risk of becoming irrelevant in periods of crisis and war. It is a legitimate question to pose how many defense organizations can realistically assume

that they could manage two planning systems (for acquisitions and operations) as does the United States (i.e., PPBES and Overseas Contingency Operations supplemental appropriations)?[104] Secondly, a *defense planning system* that is not focused on current operations, but rather some distant, undefined future, runs the serious risk of producing false positives, e.g., the introduction of PPBES during the Vietnam War. A review of the arguments of how PPBES was enabling the United States to fight successfully in Vietnam (ca. 1971)[105] by two of its creators should provide salutary caution against planners focusing too much time and energy on acquisitions and the long-term.

Third, the proposal to use "capabilities" as opposed to platforms and systems as a unit of force development and management is quite laudatory. Arguably the most lasting, and irreversible, contribution made by advocates of this method has been to create *capability-based thinking* to help planners break out of their platform and environmental conceptual shackles. Here, De Spiegeleire and his colleagues are only partially guilty of overstatement that the introduction of capabilities as a measure of output is arguably the equivalent of a "Copernican revolution" for defense planning.[106] As rightfully identified by the authors of the TTCP manual, such a logic starts the discussion of requirements by "…asking questions regarding *what do we need to do* rather than *what equipment are we replacing*."[107] But, this description, whilst more than valid, cannot alone constitute a defense planning system. Rather, the cold, analytical, and objective answers to the question of what is needed are within the realm of force development, vice defense planning. Indeed, one group of experts in defense planning openly state that their capabilities-based planning model "focuses on force development,"[108] a view all but echoed by the TTCP[109] and Canada.[110] A group of Canadian defense researchers in one technical paper discuss how "A genetic algorithmbased optimization tool produces solutions offering best value for money and these preferred options form the basis of a 20–year roadmap (the SCR [Strategic Capabilities Roadmap])."[111] Here, we can identify how a promiscuous and imprecise use of nomenclature can lead to confusion. This is a description of "capability analysis", now an essential *tool* in modern force development planning, and cannot on its own constitute a *defense planning system*. Rather, if we return to the subject of grammar, one can argue that the concept's use of the singular noun–form is where the concept's true and deeply important value can be found, i.e., as constituting an analytical *tool* employed in optimizing capability options, and not purporting to be a *defense planning system* since the method's recommendations cannot be accurately calculated, let alone connected to the budget. Once again, Gray provides a sagacious observation of the true political nature of *defense planning*: "Much about defence can and needs to be analysed with quantitative methods. But the higher reaches of policy and strategy do not lend themselves to conclusive scientific analysis metrically verifiable by testing. Human political judgement, individual and collective, friendly and hostile, can make a mockery of rational process with its frequent domination by all too subjectively unreasonable intent."[112]

By defining and keeping the process within a highly rational, analytical, and algorithmic realm, the proponents of capabilities-based planning have perhaps inadvertently contributed to its undoing. Given that planning is political, as it has to address "money" (after all, one cannot buy half a radar), expectations have been created which have been difficult to produce.

Fourth, and finally, can one point to instances where capabilities-based planning, *as a planning method*, has been successfully employed? Here, hard examples are difficult to find. However, there are some instances that can be reviewed (some by its advocates) which can support speculation about the method's degree of success. The reforms to the NATO Defense Planning Process in 2009, which were envisaged to base alliance defense planning on capabilities (in the form of discrete capability targets, in place of general force goals), all managed in a multinational forum, did not have its envisaged effect since countries can weasel out of meeting their commitments with little political consequence.[113] In effect, yet again, capability aspirations are systematically stymied

by the realities of national and international politics and money. NATO Defense ministers agreed in October 2016 to a revised method that has the objective of bringing greater discipline to the process.[114] The authors of *Closing the Loop* identified that in the subject countries that they assessed (and one NGO), that the "main tenets of CBP now seem fully internalised by the main defence referents," albeit precise methods vary across the subjects reviewed.[115] But at the same time, De Spiegeleire and his co-authors acknowledge that the process has yet to be fully realized.[116] In another publication, De Spiegeleire admits that whilst the concept is arguably revolutionary, "its actual impact on force structures has been underwhelming."[117] His explanation for the lack of success is revealing. As he writes,The potential analytical power of CBP has so far not proved a match for the much more potent constituencies (political, bureaucratic, industrial and others) that drive capability planning. Any objective observer cannot but be surprised by some of the choices that still come out of our current, supposedly more "rational," CBP processes.[118]

This is hardly a ringing endorsement of capabilities-based planning *as a defense planning system*.

5.Conclusion

The observation that most countries continue to practice "marginal planning," as opposed to capabilities-based planning, is likely more accurate than inaccurate.[119] Whereas a number of countries have attempted to adopt the latter method, there is no evidence that it has taken hold. One can identify other reasons for the failure of the method to be implemented. The method, like programming, is human resourceintensive, due to the heavy need for producing objective analysis of capability options.[120] That the U.S. Department of the Navy identified it lacked expertise to use the method successfully, should give other defense organizations serious pause when considering its adoption. From a policy perspective, one can speculate that the method has failed to be institutionally internalized as it has elevated to the national level, which is inherently political in nature, a technical method which is optimized for decisionsupport, and cannot act as a *defense planning system*. Additionally, practitioners and proponents of the method have been unable to address successfully how to employ calculated priorities in the planning process. The fact that costs are considered at the end of the generally-accepted generic planning process is telling. To be sure, the method is ideally suited to contributing to the debate and formulation of capability options. But these data, by themselves, are incapable of replacing the political nature of defense planning and policy decision-making where discussions are more often about finances, as opposed to strategy.[121]

Given its value in supporting decision-making, it is appropriate to pose the question in which countries should the method be adopted? One could argue that most countries likely have a good idea from where threats could possibly emanate. Yet, capability analysis would nevertheless be an essential tool to ensure that an adversary's full complement of capabilities is acknowledged, if not addressed. The original argument
(put forth in the 2001 *QDR*) that it was envisaged to address generic threats and to base planning assumptions on countering "capabilities", vice explicit threats, does not obviate in the least the contemporary utility of capability analysis. However, it is unrealistic for many countries with armed forces equipped with legacy equipment and/ or which are cash-strapped, to experiment with the

method either as a defense planning system, or even use extensively capability analysis. In addition to the need for highlytrained and experienced experts to generate useful data, the method's focus on the long-term and acquisition should preclude its adoption by countries that need a defense planning system that can function through escalation (peace, tension, crisis, war), and thereby obviate the need for two planning systems. It is a truism amongst professional armed forces that in peacetime one uses processes and assumptions that can function in wartime conditions. As a planning method, capabilities-based planning is not designed to meet this standard.

Finally, the utility of a defense planning method that does not enjoy a common definition, let alone even an agreed planning methodology, is problematic. As it enjoys neither, as a defense planning system it runs the risk of being defined *as being anything, to anyone, and anywhere*. It is likely because of all the reasons cited *supra* that, in the end, its most troublesome challenge as a *defense planning system* is that it has not been able to develop robust capability partitions, as well as producing accurate costs of capabilities, a *sine qua non* for any effective planning system. Failing to make full provision of the need to work within a strong policy-framework and a planning system driven by financial priorities, has produced a method akin to Frederick the Great's observation that "diplomacy without arms is like music without instruments." Thus, whichever planning method is used, it will be unsuccessful if it fails to connect policy priorities to financial execution. As Hicks so presciently noted about defense planning, the key challenge is to "…focus on improving our ability to prioritize investments in light of realized requirements and possible threat, concept, and capability evolutions."[122] "Capability analysis" can most definitely contribute and arguably improve aspects of most defense planning process, but it certainly cannot drive it, let alone be at its center.

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IMPACT OF COVID 19 PANDEMIC ON MOLDAVIAN SOCIETY

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1. Introduction

This paper contains an analysis of the impact of the Covid19 pandemic on Moldovan society depending on the evolution of the pandemic and other factors: political, informational, religious, etc. Contains information heared or read from a variety of sources, mass media, web, publications, interviews, and others.

In order to better understand the context of the evolution of the Covid19 pandemic in the Republic of Moldova and its impact on Moldovan society, I decided to briefly describe the Republic of Moldova as a country. Moldova is a parliamentary republic with a president as head of state and a prime minister as head of government.

Moldova, officially the Republic of Moldova, is a landlocked country in Eastern Europe. It is bordered by Romania to the west and Ukraine to the north, east, and south.The capital city is Chișinău. The official language of Moldova is Romanian.[1]

According to the 2014 general census, Moldova's population is approximately 2.9 million. Moldovans make up 75.1% of the total population. 7.0% self - identified as Romanians. Ukrainians account for 6.6%, Gagauz for 4.6 %, Russians for 4.1%, Bulgarians for 1.9%, Jews 0.11%, Roma 0.3% and other nationalities 0.5%, among them Belarusians, Poles, Armenians, Germans, and Tatars. Ethnic communities are not territorially divided and are interspersed across Moldova, except for the Gagauz people, who live in the South of Moldova. The data on Moldova does not include the Transnistrian region, over which fighting occurred in the early 1990s and which remains outside of the control of the central government.[2]

For the 2004 census, Orthodox Christians, who make up 93.3% of Moldova's population, More than 2.0% of the population is Protestant including a growing number of Jehovah's Witnesses, 0.9% belongs to other religions, 1.0% is non-religious, 0.4% is atheist, and 2.2% did not answer the religion question at the census.[1]

Emigration is a mass phenomenon in Moldova and has a major impact on the country's demographics and economy. The Moldovan Intelligence and Security Service has estimated that 600,000 to one million Moldovan citizens (almost 25% of the population) are working abroad.[2]

2.The evolution of the Covid 19 pandemic in RM and the challenges related to false news

The virus was confirmed to have reached in Republic of Moldova on 7 March 2020, when a Moldovan woman that returned from Italy was tested positive for the novel coronavirus. As the number of infected people started to rise during the next days, on 17 March 2020, the Parliament declared a state of emergency for the entire territory of the Republic of Moldova for a period of 60 days (17 March - 15 May 2020). On 15 May 2020, in the last day of the state of emergency declared by the Parliament on 17 March 2020, the Extraordinary National Commission of Public Health declared the state of emergency in public health for the entire territory of Moldova for the period of

16 May to 30 June 2020. On 9 June 2020, the total number of confirmed cases surpassed 10,000. On 1 September 2020, the number of deaths surpassed 1,000.[1]

This period was characterized by a series of statements and actions by politicians, religious figures, as well as many rumors that questioned the seriousness of the situation caused by the Covid 19 pandemic, such as:

In its address, the Metropolitan Church of Moldova called on the country's leadership to defend Moldovans from what they called the international criminal Bill Gates, who would pursue the microchipping of Moldovans with the anti-COVID-19 vaccine. The metropolitan is citing an alleged request by an Italian MP for the arrest of Bill Gates, who he claims is accused of being a criminal against humanity - and has caused vaccines to kill 500,000 children in India, and claims the idea of genocide to reduce the planet's population. All this being intensely propagated so far in the public space, through fake news platforms and propaganda tools;[4]

The Metropolitan Church of Moldova mentioned that Bill Gates is considered primarily responsible for creating microchipping technology through a vaccine that introduces nanoparticles into the body that react to waves transmitted by 5G technology and allow the system to control humans remotely.[4]

Some voices said that The Metropolitan Church of Moldova fed the fakes related to COVID and claimed in the midst of a false hysteria, created and maintained by the Russian anti-Western propaganda machine and fake news sites.[4]

On the other hand, the head of the Department of Control and Legal Assistance within the National Agency for Regulation in Electronic Communications and Information Technology (ANRCETI), claimed that the hysteria related to 5G antennas and harassment of the population is false, especially since there is no such antenna in Moldova.[4]

In turn, the head of the National Public Health Agency of Moldova, described the information about the connection between 5G technology, coronavirus and chip implantation as stupid.[4]

,,It's a virus invented to kill the elderly, there are already hundreds of dead in Moldovan hospitals, garlic gets rid of the virus" are just some of the news that crept into the virtual environment from discussions in the kitchen. Because of fear, many people were inclined to believe this fake news, and some media portals rated it by distributing such news, instilling fear in people.[4]

Manipulation campaigns about Covid-19 included a wide format of communication channels and messages to reach the widest possible audience, through news, blogging, comments on articles or posts on social networks, false profiles of alleged influencers, reports TV, documentaries, Facebook posts, YouTube videos and more.

,,The new type of coronavirus may pass through us and we may not even notice it". This is the statement made by the former head of state, Igor Dodon. In this context, the president urges citizens to call the doctor and possibly perform the test only if he has obvious symptoms of illness.[4]

At the same time, at the beginning of the Covid-19 pandemic, there were rumors in the Moldovan society that the authorities were interested in registering as many cases of Covid 19 as possible in order to receive more money from the World Health Organization.[4]

In the same context, there were many cases in which the relatives of some deceased stated that although the relatives died of other diseases, they were promised money to write them in the death certificate of the deceased relatives as the cause of death Coronavirus 19.[4]

On the other hand, doctors said that falsifying infections and deaths is definitely impossible. It is absurd and incomprehensible where such imagination comes to the population.[4]

In this context I could conclude I find the lack of transparency on the part of the authorities to be a major deficiency. People wanted to know as much as possible about the coronavirus, and the fact that they stay home longer should be a reason to inform them more. Authorities need to know

that rumors are always born out of a lack of information and non-transparent information. Officials only told us about the number of infections and deaths.

The period of awareness of the danger of Covid 19 disease (september 2020 - february 2021)

This period was characterized by a calming of the statements of the church faces related to the origin of the Covid virus 19. This, after the infection and the death of several priests. They gave up statements on conspiracy theories and even some of them urged citizens to get vaccinated

Also, this period coincided with a pre-election and electoral period of the presidential elections, which took place in November 2020. For instance Igor Dodon, the former president of the Republic of Moldova, completely ignored the health protection rules, rarely wore the mask in public and continued to travel frequently to Moldovan localities. Such examples of violations of protection measures against Covid 19 by politicians have been quite numerous.

Some representatives of civil society said, "It does not seem convincing as long as the rulers of the country do not follow any rule, but on the contrary by their example they would rather be interested in a large number of cases.[4]

Despite this, more and more people began to realize the gravity of Covid 19 disease due to the growing number of infections and deaths that somehow had a tangent with them.

As of 29 March 2021, a total of 226,521 confirmed cases, 201,769 recoveries, and 4,827 deaths have been reported in the country.[1]

In this period, the daily number of infections and deaths began to increase sharply.

The whole of Moldovan society seems to have no doubts about gravity of Covid 19 disease, but another dilemma has arisen, if to receive vaccines or not, due to the appearance of several news about some adverse effects of Astra Zeneca vaccine.

3. The impact of Covid 19 pandemic on Moldavian society

The impact of the COVID-19 outbreak on a small and open economy and a fragile local business community as the one in the Republic of Moldova was expected to be significant. Thus, a comprehensive response that leaves no-one behind must start by considering the most acute vulnerabilities of both the vulnerable population and economy. To this end, was identified in scope a list of 7 vulnerable groups and 7 economic sectors as follows.[3]

Vulnerable Groups	Economic Sectors
Children and youth	Wholesale, retail trade (non-food)
Poor households	Transportation and storage
Vulnerable women	HORECA
NEET Youth	Light industry
Elderly population	Health
Returning migrants	Education
Freelancers	Agriculture

Table 1 [3]

I analyzed only the vulnerable groups of the Moldovan society follows:

•Necesity of children to attend school on-line likely contributed to a further inequality of educational performance between pupils from socially advantaged pupils and socially disadvantaged ones. Despite government and donor efforts, there is still a baseline disparity in availability of equipment, such as tablet/computer/notebook (59.5% of households in 2019) or internet connection (60.8% of households were connected to the internet 2019, while the figure for rural areas was 51.3%).[3]

• Children also have overlapping vulnerabilities, particularly when being part of a poor household. According to 2018 data from the National Statistics Bureau, households with 3+ children have the highest rate of absolute poverty among any group – 42%, a starting point that, by virtue of low resources, limits their ability to adapt to the pandemic.[3]

•Poor households are impacted more by the pandemic crisis since they are left behind and lack necessities in order to properly fight COVID-19 and the related crisis.[3]

•Women have also been directly affected by the pandemic, with the Ministry of Health and Social protection reporting that the number of domestic-violence related calls has increased 30%.[3]

•Youth had have seen their prospects deteriorate as the pandemic effects linger on far beyond the lockdown phase. As the opportunity to migrate is restricted by the economic damage suffered by foreign countries, and remittances will decrease for the same reason, may be constrained to further levels of inactivity. Also, any sustained weakness of the domestic labour market may make it an unattractive option for youth. Thus COVID-19 may likely increase their skill fragmentation and decrease their resources.[3]

• The elderly population is at risk for isolation and loneliness during a time of social distancing policies – a fact especially relevant when considering that 1 in 2 pensioner households is a single-person household. Limitations in accessing the public services, as well as challenges in access to vital goods have topped-up the vulnerabilities of the elderly during the pandemic.[3]

• Returning Migrants have been forced to return home or re-evaluate their work prospects, with informal workers having low legal protection and falling outside of the social safety nets. IOM (International Organization of Migration) has found that up to 255,00 migrants have a probable intention to return, and circa 79,000 of them manifested an intention to stay in Moldova for a longer period.[3]

• Freelancers, while not being considered part of the traditional vulnerable, have found themselves in a difficult position. Craftsmen, small entrepreneurs and microenterprises have seen decline in sales, restricted access to raw materials and decline in domestic demands and have serious concerns about declines in liquidity/cashflows.[3]

To all the negative effects of the impact of the Covid 19 pandemic on the vulnerable population described above we can also mention the negative psychological impact on each person for fear of being infected. Although the vaccine has now appeared in the Republic of Moldova in small quantities, initially intended for doctors, the vaccination rate is very low. Moreover, there is a mass perception of the population about the need for vaccination in order to stop the spread of Covid disease 19. Moldovan society is still confused.

4. Case study, Impact of Covid 19 pandemic on military

In order to understand the impact of the Covid 19 pandemic on the military as part of Moldovan society, I decided to make a questionnaire. I surveyed 30 military officers, most of them friends and colleagues. The results are as follows.

Questions/Answers	Yes, nr.	No, nr.	Not sure, nr.
Were you scared of the virus at the begining of the pandemic?	3	25	2
Are you right now scared of the virus?	23	2	5
Were you infected with Covid 19?	20	7	3
Did you have some doubts about the gravity of the Covid 19?	21	6	3
Did the pandemic have an negative impact on your life?	25	5	0
Do you want to get vaccinated?	13	12	5

Table 2

Examining the table 2, I noticed that the military believes like the entire Moldovan society has also begun to be afraid of the Covid 19 with the increase in the number of infections and deaths. At the same time, most respondents said that the pandemic has an negative impact on their lives.

5.Conclusions

The Republic of Moldova did not have a coherent communication strategy on the COVID 19 pandemic, and the example set by many senior officials in Moldova remained one of ignoring minimum rules. Another mistake in managing the Covid 19 pandemic was the fact
that the politicians and representants of church first spoke and then the specialists.Thus, a series of contradictory information was often delivered in the public, which led to a series of negative effects on society, such as distrust, disorientation, ignorance of protection measures and others.

It is obvious that the Moldovian society has been affected quite a lot by the Covid 19 pandemic, both economically and psychologically. I hope the society will become more responsible and overcome the pandemic Covid 19.

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