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COMMAND AND CONTROL STRATEGIES IN A BROADER HIBRYD COMBAT ENVIRONMENT

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The main goal of this paper is to analyze the new theoretical concepts that provide a vision regarding the future armed conflicts, determined by the technological advance and the increased dynamics of the information flows between different levels of authority within modern societies. The paper starts with an analysis of today's international environment (characterized by the existence of competing cultural contexts and political opinions which generate frictions, crisis and eventually military conflict), followed by a comprehensive plea regarding the necessity of changing the current military operating concepts. Finally there are presented two solutions that address the desired conceptual change, which fit the uncertainty of future conflicts: the "Army Operating Concept" developed by the US Army Training and Doctrine Command, and "Future Operating Environment 2035", developed by the UK Concepts and Doctrine Centre's (DCDC).

Keywords: *future armed conflicts, hybrid warfare, military operating concepts.*

1. INTRODUCTION

The main goal of this paper is to analyze the new theoretical concepts that provide a vision regarding the future armed conflicts, determined by the technological advance and the increased dynamics of the information flows between different levels of authority within modern societies.

The classical war concepts may not apply at all (or apply partially) to the new PMESII (Political, Military, Economic, Social, Information, and Infrastructure) environments. The latest crises reveal the existence of a complex mix of peacekeeping, stability, and war fighting operations, which require a different approach in applying command and control strategies.

It's a widely known fact that military actions tends to produce unpredictable behavior and often chaotic consequences that disregard orderly, efficient, and precise control. The approach to command and control concepts must find a way to manage this often chaotic inherent complexity.

The command and control system has three basic elements:

- *People* - they gather information, communicate, and cooperate one another, make decisions, take action for the fulfillment of a common goal;
- *Information* - the representation of reality used to provide control or structure to decisions and actions; it serves two purposes: create situational awareness as prerequisite for a decision and direct actions in the execution of the decision and
- *Support structure* - aids the people who create, disseminate, and use information; consist of *"... facilities, equipment, communications, procedures, and personnel essential to a commander for planning, directing, and controlling operations of assigned forces pursuant to the missions assigned"* [1].

Despite of the accelerated technological developments, the human component will continue to remain a dominant one, because all conflicts are a result of competing political opinions, different cultural contexts and disagreements generated by the competition for resources or redistribution of power.

In these conditions, the military commanders at a strategic level have less control upon the complex phenomenon which is war, in comparison with common computer operators. The act of command and control should be view as a complex system characterized by reciprocal action and feedback, which implies that effective

command and control must be responsive to changes of the situation, rather than being only focused on achieving internal efficiency. Unlike peace times, in war/crisis situations the military organization is never in a state of stable equilibrium, but in a continuous process of adaptation to the surroundings (the enemy) [2].

2. THE DESCRIPTION OF THE CURRENT ENVIRONMENT

Today international environment is characterized by the existence of competing cultural contexts and political opinions which generate frictions, crisis and eventually military conflicts. Even the technology progressed in an unprecedented rate, war remains human in nature, triggered by the clash of wills upon the redistribution of power and/or competition for resources.

Aside from the "traditional" view upon war, with sides well defined fighting with known weapons and following precise rules of engagement, lately we witness emerging trends which comprise new and more robust challenges, such as [3]:

- increasing importance of cyberspace and space domains;
- proliferation of weapons of mass destruction;
- operations among populations in dense urban terrain;
- ease of technology transfer to state and non-state actors and
- transparent nature of military operations due to ubiquitous media.

All those trends brought together create a more inclusive, complex and broader environment. The term "*complex*" could be defined as an environment that is not only unknown, but unknowable and constantly changing. The hybrid nature of the environment impacts the nature of the war, which turns during the latest decades in a complex mix of peacekeeping, stability, and warfighting operations, referred as "Hybrid War" or "4 Block War" [4]. The military commanders cannot accurately predict anymore *who*, *where* and *what coalition* forces they will fight against.

Due to advances in technology we are observing an increased lethality at tactical level in close combat actions, improved long-range capabilities concerted with ongoing effort to develop anti-access and area denial capabilities, and the emergence of cyber and electromagnetic threats. Increasingly states and non-state actors are learning and mimic successful tactics, procedures and techniques, in order to apply hybrid strategies that match to some extent forces which rely on „classical" military power means.

Even though progress in technology will continue to influence the character of warfare, the effect of new technologies is often not as great as expected. The already obsolete concept of "*Revolution in military affairs (RMA)*" was based on the assumption that technological means would enable precise military operations, deliver rapid advantage and consist the key to victory in future wars. The RMA concept also triggers changes in military strategy and tactics driven by advances in information technology.

The relatively recent actions in Afghanistan, Iraq and Syria have proven that planning of military actions based on linear projections was simply non effective, because it did not anticipate enemy adaptations, the usage of noncombatants as shields in the irregular urban warfare and the evolution of those conflicts in directions that were difficult to anticipate in the beginning.

The opponents, either nation states or non-state actors (such as transnational terrorists, insurgents, and criminal organizations) tend to employ both traditional, unconventional and hybrid strategies. In order to acquire success they will *avoid* strengths, *disrupt* advantages in communications, long-range precision fires, and surveillance and *emulate* military capabilities through military technologies transfer. Consequently, the ability to achieve dominance in land, air, maritime, space, and cyberspace domains will become increasingly harder to be obtained. We are also observing a growth of the "insider threat" (propaganda and disinformation to affect public perception).

3. THE NEED FOR CHANGE FROM A CONCEPTUAL POINT OF VIEW

One of the most important responsibilities of the theoreticians ("professional thinkers") within the military science domain is to clearly foresee the way future armed conflicts will unfold. This vision of the future should ensure that military forces are properly shaped and adequately directed to achieve success in any potential challenging security environment.

The resulting military operating concepts should address challenges generated by a change in the national or international environment, by updated national security guidance, or by the need to address a known breach in existing capabilities.

The new military operating concepts should strive to provide answers for three major uncertain subjects:

- What level of conflict is the concept going to address: strategic, operational, or tactical
- What is the environment we think military forces will operate in, and
- What is the problem we are trying to solve.

Confronted with one or more of the challenges named before, the military organization must adjust or change the ways it conducts battles and acquire new innovation based capabilities. It is useful for the sake of reasoning to enumerate the four factors that facilitate the process of military change [5]:

- *Leaders within military organizations* – influences external to military frequently have an uncertain impact (e.g. political leaders' interpretations of the international environment; decisions related with military budget and conscription); consequently the role of military leaders is crucial in developing specific programs and policies that cope with possible constrains;
- *Training practices, personnel policies, organizations, equipment, and leader development programs* – the change of doctrine must be implemented through a comprehensive set of reform measures;
- *Authority over the development of the entire organization* – broad authority is required for an extensive and successful change;
- *Stability in an organization's mission and resources* – given by the fact that the process of developing and implementing peacetime military changes can take several decades.

The Command and Control concepts and strategies evolve through time, being adapted to the historical conditions. The example of the US "AirLand Battle" concept (published in 1981) is relevant for the argumentation. Its specific purpose was to ensure that in a situation which encompass a known enemy (Soviet Union), a known location (central Europe) and known coalition forces (NATO), the blue team should "fight outnumbered and win", using specific weapons - the famous "Big 5": M1 Abrams Tank, Bradley Fighting Vehicle, Apache and Black Hawk helicopters, and Patriot missile system (figure 1).

Figure 1. The 1970s Big Five.

The "AirLand Battle" concept solved the problem in a logical manner: the weapons systems were designed to deliver superior firepower, service as many targets as possible in the shortest time possible and the forces were designed to be able to shoot on the move and quickly maneuver to create local superiority.

Since than, the nature of warfare was altered by political, social, economic, and

technological developments and especially in today's international environment, military organizations must adapt to remain effective. Command and Control concepts and strategies should be designed to deal specifically with the unknown. Some authors argue that the future is not only unknown, but it is unpredictable, which result in the need to employ for winning not just the military, but also economic, cultural and political means.

The creation of a new set of „Big 5" like specific weapons could also be anticipated, but the future conflicts cannot be reduced into only weapons programs. They will require the existence of specific prerequisites such as: augmented soldiers and improved team performance; the development of adaptive / innovative leaders and institutions capable to understand and operate in complex hybrid environments; establishment of complete interoperability; assemble of scalable and tailorable joint formations; leveraging concepts and technologies to maintain capability overmatch while speeding deployment and reducing logistical demand.

Those prerequisites will materialize in a new Big 5 set (figure 2):

- Optimized Soldier and Team Performance;
- Joint/Interorganization Interoperable;
- Capabilities Overmatch;
- Scalable and Tailorable Joint Combined Arms Forces;
- Adaptive Professionals and Institutions to operate in complex environments.

Figure 2. The today's and future's Big Five.

The new Big 5 is based on a network-enabled force which presents significant improvements and on a thorough planning / conducting of military operations grounded in social and cultural realities. The military operations should take in consideration larger goals, which include and ensure coordination of diplomatic, political, economic, military and strategic communications efforts.

There are authors which claim that despite the appearance of transformational technologies, the nature of war remains the same. In this regard, the concept of „5Cs" (*congested, cluttered, contested, connected and constrained*), describing the characteristics of the future joint battlespace was first introduced by UK Ministry of Defense in 2010 [6] and amended / expanded in 2015 [7].

The amendment introduced was that the commanders should not assume that the „5Cs" will always apply together, interplay and overlap in every combat environment. The meanings of the terms applied to an operating environment are:

- *Congested* - densely populated by civilian, commercial and military activity; *uncongested* - low density due to violent conflicts or natural disasters;
- *Cluttered* - informal and disorderly environment resulting in an inability to easily distinguish individuals, items or events; *uncluttered* - planned and orderly;

- *Contested* - such an act could lead to competition, confrontation or ultimately conflict with the adversary;
- *Connected* - the resource domains (international, supranational, and global) in which common-pool resources are found (oceans, the atmosphere and outer space) will present increased connectivity;
- *Constrained* - the conduct of military operations is restrained by legal and societal norms, including the case of new technologies' usage (cyber capabilities, new weapon systems).

Finally, we must not permit assumptions about transformational technologies to cloud our thinking about the nature of war. Many promising technologies have not arrived as early as originally projected or when they arrived did not become the "silver bullet" we had planned on. Although we continue in technology development, we cannot predict when tactically relevant weapons will arrive for land forces and cannot develop our concepts that are not grounded.

4. POTENTIAL CONCEPTUAL SOLUTIONS

To answer the need for a conceptual change which fits the uncertainty of future conflicts, we will present two complementary approaches. The first one, developed by the US Army Training and Doctrine Command is the "***Army Operating Concept***", which *„provides a vision of future armed conflict based on grounded projections of the future operational environment, advances in technology, directed missions, emerging threats and adversary capabilities"*[8].

The vision of future armed conflicts takes in consideration on one hand the defense strategy, policy goals, objectives, missions, emerging operational environments, advances in technology, and in the other hand anticipated enemy, threat, and adversary capabilities.

The concept states how future Army forces will operate in order to influence the security environments prevent conflicts and "Win in a Complex World". It starts by stating the Army mission in the new operational context, given by the anticipated threats and the future operational environment, underlining the continuity and change in armed conflicts. The principles of future combat power generation (and application) at strategic, operational and tactical levels are also described, along with the core competencies and capabilities needed to achieve operational overmatch at decisive points.

The concept describes how commanders, using military art and science, will employ the capabilities described in the concept, in order to to create sustainable political outcomes while defeating enemies and adversaries who will challenge U.S. advantages in all combat domains: land, air, maritime, space, and cyberspace. The command and control measures described in the new concept are meant to enable forces to achieve operational overmatch and grasp, retain, and exploit the initiative.

Two main thesis were emphasized and redefined: the need for leaders to adapt their mindset, "*assess the situation continuously, develop innovative solutions to problems, and remain mentally and physically agile to capitalize on opportunities*" and *"think ahead in time and determine how to connect tactical and operational objectives to strategic goals"*.[9]

Also, the traditional notion of *Joint Combined Arms Operations* was expanded to include not only the integration of joint capabilities, but the broad range of efforts necessary to accomplish the mission. Also, the key mission presented here is the „expeditionary maneuver", supposed to deter, prevent or rapidly resolve a conflict, based on the presence of prepositioned forward troops. The troops will be augmented by forces capable to deploy and transition quickly into operations. The force structure combat decisions will not being taken based on warfighting functions, because this separation is artificial.

The future forces must employ a set of characteristics, such as [8]:

- *initiative* - determine the terms of operations and keeping the enemy incapable of responding;
- *situational understanding through action* - operate dispersed over wide areas and being able to integrate intelligence and operations;
- *mobility* - concentrate and disperse rapidly;
- *adaptability* - anticipate perils and opportunities; adjust operations to seize, retain, and exploit the initiative;
- *simultaneity* - engage forces to overcome the enemy both physically and psychologically; act in the physical battleground and into other spaces (such as public perception, subversion, and criminality);
- *depth* - control a territory large enough to prevent enemy forces from recovering, and
- *endurance* - sustain high tempo and lengthy operations;

The document provides the basis for identifying decisions about doctrine, organization, training, materiel, leadership and education, personnel, and facilities. It does not simply describe potential technologies with military application, but the capabilities needed to implement a solution for the critical problems of future force development.

The second theoretical endeavour is the ***"Future Operating Environment 2035"***, developed by the Concepts and Doctrine Centre's (DCDC) in 2015, which *„provide a long-term analysis of the key characteristics of the operating environment in 2035, to provide evidence-based insights that can inform future Defence capability development"* [7]. The main goals of the military capabilities will be to „protect the mainland and overseas territories [...], shape the international environment and support the UK's wider prosperity [...] and respond to events and project power to protect national interests, alone or with allies". [7]

The document introduces a new concept called „*forward defense*", justified by the increasing difficulty of preventing conflict escalation, and reducing/eliminating the threats. It is envisaged that technological development will allow more nations (and even non-state actors) to use effective anti-access and area denial capabilities, fact which will require advanced command and control strategies in order to aquire a layered innovative defense based on cyber, and precision weapons, automated systems, flexible joint logistic hubs, supported by an adaptable and industrial base.

5. CONCLUSIONS

The new command and control strategies mentioned in the previous paragraph could be a solution for the armed forces worldwide, but will require an extensive assessment, experimentation, evaluation and testing of the proposed innovative solutions and their corresponding capabilities. The learning process implied should be continuous, with a constant adaptation of the initial assumptions, due to the unknown nature of the enemy that have to be faced in the future decades.

The supportive military forces of the new theoretical concepts must present three charactersics essential to „fight and win in a complex world": adaptive leaders, resilient soldiers, and cohesive teams. The forces must integrate new technological capabilities and posess the appropriate combination of mobility, protection and lethality.

In the future, defense technologies will proliferate rapidly, and states, nonstate and hybrid actors will prefer different approaches for the conflict beside the unlikely conventional battle. In those conditions, the advantage will be given not by technology alone, but by a combination of training, teamwork, leadership and technology. The current and future fights are over the control of teritories and people's perception through information campaigns. The actions of Daesh in the Middle East and the conflict in Eastern Ukraine are two recent examples that support this assumption.

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HYBRID WARFARE AND THE EFFICIENT LINES OF EFFORT IN THIS TYPE OF CONFLICT

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In the context of the security environment and the conflicts approach methods, the early study of these techniques and procedures used by the aggressor in the hybrid conflict appears to be a necessity that cannot be ignored. It looks like, using a not that profound analysis method on those hybrid conflict lines of efforts, we came up with the conclusion that this conflict is a living organism, which continuously affects the victim and, even if at the beginning needs various and consistent types of resources, it become a symbiotic one that feeds on the victim's vital resources. It has limitations, which in general consist of the maturity of the society and the democracy on which the aggressor concentrated his efforts. In the proximity of the Romanian territory the most evident victim of the hybrid conflict is the Republic of Moldova, but the similarities of the analysis results with the actual situation of our own state cannot be ignored.

Key words: *hybrid, Moldova, Transnistria, intimidation, Russia, buffer zone.*

The major relevance of a personal point of view, with high objective characteristics, as compared to an "authorized" one, derives from the plausible presumption that the political analysts or the representatives of certain strategic studies centers may be posing as opinion makers, attached to political circles to which they are "subordinated", in exchange for consistent funding or the insurance of an "unorthodox" pole of influence.

These categories of specialists have the opportunity, by means of their notoriety and the visibility of their professional activity, to manipulate the masses, to publicly formulate forecasts designed to draw the population towards a particular political actor or organization, and to distract the general attention from "hot" topics which cast an unfavorable light on "the financers."

Depending on the magnitude of the impact that is expected to be generated in order to gain the support of the relevant population, the influence of the political analysts may expand from a metropolis, region, country, even to unions/alliances of states.

Our point of view is that Russia, following the collapse of the Soviet Union, leaves the former Soviet republics and maintains some frozen conflicts (Transnistria for the Republic of Moldova, Ossetia and Abkhazia for Georgia) to use them, when the situation requires it, in its favor, simultaneously launching a comprehensive set of destabilizing measures through which it actually controls the former areas of influence. Even though these measures become obvious only after the annexation of Crimea by the Russian Federation, we cannot ignore the fact that they have been applied immediately after the fall of the Communist bloc.

The use of a buffer zone between the physical territories of the North Atlantic Treaty Organization and those of Russia seems to be an unavoidable template for the former great power. In addition to what has been said, we must complete the idea with the issue of the control that Russia is trying to maintain over these buffer zones. As an example, the Transnistrian conflict may have been artificially created, activated and maintained in order to contribute to delaying Romania's accession to NATO and to minimize the possibility of Moldova's accession to this alliance. We cannot exclude the possibility that after Romania's accession to NATO, Moldova, without the present issues, would have been accepted in the same alliance.

The declaration of independence of the Transnistrian Moldovan Republic on September 2, 1990 is not an unfortunate accident, but a calculated implementation of a plan by which the Republic of Moldova,

whose independence is proclaimed on August 27, 1991, is to be considered a risk from the perspective of joining the European Union or NATO.

In addition to the aforementioned, we must not overlook the European ethnic problems with high explosive potential, included here are the autonomist and secessionist aspirations of Catalonia in Spain.

Besides, Hungary - having good political and economic relations with Russia - has a position in this election year which encourages the Hungarian minorities in the Carpathian Basin countries to seek autonomy at all levels (cultural, administrative, territorial), promising full support in this regard. We recall the fact that, by granting Hungarian citizenship to Hungarians who were minority citizens of the neighboring countries of Hungary, the number of electors has significantly expanded. Once again, everything is reduced to obtaining the support of a relevant population in achieving political goals. The relevant population is not necessarily formed by the "conscious electorate," but the lines of effort in the hybrid war are generally directed towards this segment.

The use of frozen conflicts reverts to the attention of the international public opinion after the "incident" in Crimea and the lower basin of the Don in Southeastern Ukraine.

The methods or lines of effort in the hybrid environment seriously extend beyond the common sense, drawing a new meaning of the notion of "normal". Thus, our today's responses to the unfolding of serious security incidents resulting in loss of lives that are not related to natural phenomena are influenced more by the number of victims or the impact on the personal domain, of our daily activity, although more "normal" would be to matter not the number but the ferocity or the motivation of morbid actions.

In support of the aforementioned, we consider it necessary to analyze the important events of the Transnistrian conflict, which appear to be preventively or reactively generated by the important events preceding Romania's accession to NATO, bearing a strong hybrid scent.

We cannot ignore the fact that the Russian Federation is trying to maintain a buffer zone between the North Atlantic Treaty Organization and Russia's national territory, and is desperately trying to maintain a major influence over these buffer zones (Belarus, Ukraine, Moldova, Georgia) which are located in the neighborhood of the alliance member countries.

This conclusion was highlighted by chronological and comparative analysis of the events in Transnistria and Romania.

The statement of General Alexandr Lebed, the commander of the Russian Operational Group, that he may reach Bucharest in 2 hours - made in 1992, almost concomitantly with the signing of the convention on the principles of the peaceful settlement of the armed conflict in the Transnistria area between the Republic of Moldova and the Russian Federation,- from our point of view, clearly orients the conflict towards Romania or against the stated intention of the North Atlantic Alliance to accept the Romanian state as potential for a future accession, which was discussed at the inauguration of the Euro-Atlantic Center in Bucharest on February 21, 1992. A year later, Romania ignores the Russian Federation's direct warnings, and on April 1, 1993, begins the Mil-to-Mil Defense Cooperation Program with the United States of America.

Yet, the regional instability in Romania's proximity and the domestic political unrest strongly "subsidized" by the Russian Federation does not remain without echo in NATO, which postpones the decision to accept Romania's joining the alliance in 1997. In spite of what has happened, Romania becomes, a year later, the "air bridge" of the alliance in the Balkan conflict, which forsakes the instability and decisively leads to our country's accession to the alliance in April 2004.

Russia reminds Romania and the alliance about the Transnistrian issue and when our country joined NATO, we witnessed the closure of the six schools offering teaching in Romanian and the Latin alphabet in the summer of 2004. The schools subsequently resumed their activity as non-governmental

institutions. Despite the difficult situation of the Republic of Moldova, one of the thorniest problems has been that of the official languages at regional and national level.

We consider it necessary to present an accepted definition of the hybrid conflict - "the diverse and dynamic combination of regular, irregular forces and/or criminal elements, unified to generate beneficial mutual effects" [1]. Other points of view offer similar definitions for the hybrid threat, which materializes an opponent capable of simultaneously carrying out several types of conflict; others advocate to accept how armed groups from less developed societies tend to incorporate advanced enemy technology and implement specific tactics in a different way than the traditional one. We believe that, using the above mentioned approach, one may become more capable, one may engage effectively in combat, kinetically and non-kinetically on broad fronts, using the full range of capabilities available including cyber resources, the media, encrypted communications, transnational organized crime networks, advanced technology acquired legally (available on the free market) or illegally (weapons and military equipment trafficking), and even robots in the future [2].

The hybrid conflict can reach a level of violence similar to low-intensity conflicts, but in particular it has a non-violent component that has an unparalleled efficiency without escalating violence at maximum levels.

And yet some minimum conditions are needed to ensure that the effectiveness of the aggressor's actions in the hybrid conflict is maximal. These are closely related to the standard of living and the solidity of democracy in the area of operations. For example, we consider that it is extremely difficult for a democracy to be easily penetrated by hybrid methods. The misleading, disguised aspects and the indirect approach are ineffective in a democracy where social responses are normal and immediately oriented to solving the problems that have arisen.

We will further try to exemplify some of the effective lines of effort of a potential aggressor in the hybrid conflict.

We start by mentioning the information campaign, the effects of which are now easy to achieve in an era of high-speed internet. Nevertheless, we do not try to minimize the importance of similar actions in the recent past when the information exchange did not rely on the Internet. In our opinion, the information campaign aims, firstly, to draw the attention of the relevant population to a particular direction, either through a high rating potential event and a well-defined subliminal message, or through a shocking, arrogant and prominent message which causes disputes and polarizes the audience for or against a topic.

An example of this may be the Kozak memorandum, named after Dmitri Kozak [3], a member of the Russian President Vladimir Putin's team, who suggested to the Republic of Moldova in November 2003, prior to Romania's accession to NATO, the constitution of an asymmetric federal Moldovan state, stating that the Russian military troops should maintain deployment for another 20 years. The document was not passed or taken into consideration, but it sparked disputes and gained partisans, or rather, followers of the idea that Russia should not be neglected, but rather considered as the follower of the USSR traditions. Our viewpoint is that Russia at that moment was very different from what it represents today, but it is a validation of Russia's aggressive information campaign, which proved its worth in a similar context in Crimea. The partisans on whom the messages have a strong effect seem to focus in the southern part of the former Soviet Union, which is predominantly communist, an area often referred to as "the red belt" [4], being indirectly encouraged in this respect by the former Soviet states in their difficult way to democracy, and somehow established as such by the large-scale military exercises conducted by the Russian militaries on the periphery [5].

Such campaigns promote the idea that Russia is strong and it is not advisable to mess with it, or that Russia is stronger than NATO

and, of course, the Russian armed forces can successfully invade Europe at anytime. No pertinent analysis results from the latter two conclusions. The former, subsequently after the successful annexation of Crimea, acquires a new light and is often used by pro-Russian analysts for intimidation. In support of what has been said, the intimidation campaign is permanent and remains strong, as evidenced by the statement given by the Russian Foreign Minister who considers the law on the reintegration of South-East Ukraine (the Lower Don Basin) to be a preparation for a new war [6].

The media has become a second equally important line of effort with the development and spread of the Internet and cable television. Although it had initially been losing ground due to the minimization of the written press, it has a hallucinating development by sharing information through social networks.

This is how, from a restricted press, during the Communist regime, the young democratic societies, emerging from the communist umbrella, are faced with an extremely free and very difficult to control press. Thus, messages are easily distributed through a press that is subordinated to local, national, or regional circles of influence.

Another line of effort used in the hybrid environment is to maintain a high level of corruption at central and local level. Corruption is, and will remain, a scourge that is hard to counteract once it enters the political area, which through the legislative instrument can "effectively" control the development of countering the phenomenon. In the beginning, corruption seems to have been encouraged and rewarded by both the eastern and the western sides, in the early days of democracy. Recently, it has reached unpredictable levels by the attempt to alter the laws of justice in the sense of enhancing the rights of the aggressor and diminishing those of the victim. The representatives of the current political class, framed by a consistent aura of corruption, brought to the attention of the public opinion the idea that if we have a corrupt political class, we most probably only have to change the law to redefine the notion of corruption, and thus they will become "clean" [7].

Through corruption, a number of secondary lines of effort emerge which are effective in the hybrid conflict and result not only in weakening the state's capabilities but in changing the individual mentality in the sense that the opportunity of a change for the better is null. Thus, for example, blocking the industry by buying off all the traditional production units and closing them out due to permissive contracts leads to the weakening of the national capabilities and the creation of a false dependence on the production of raw materials from abroad (heavy industry, metallurgy, etc.). Another line of effort is to capture the primary energy resources that provide independence to the industry, such as fossil fuel, mining industry, etc.

The Dark-web is another mean by which the aggressor facilitates cross-border organized crime and logistically supports other related actions in the hybrid war, under the cover of permissive legislation or the implementation of which lamentably fails to enforce the law.

In the same direction, maintaining or creating several political parties of the same orientation or doctrine leads to the waste of effort and the loss of focus on the essential issues. In addition, small parties become decisive in shaping the politics, they contribute to creating the majority which results in a generally short-term politics without a far-reaching horizon beneficial to the society as a whole.

Thus, it becomes extremely easy to influence the political doctrines by mixing political platforms (the liberals take social measures or socialists with liberal views) or apparently impossible alliances (liberals-socialists) which create confusion and induce the following message: no matter who one votes for, the changes will be minimal and this leads to an increase of the electoral absenteeism phenomenon.

The hybrid conflict has many non-kinetic valences, which show and lead to diminish the public confidence in the ability of the state to meet the basic needs. We understand by the decrease of the basic services' quality [8], for

example, the disruption of the electricity supply to certain areas of the Republic of Moldova during the sanctions applied to the Pridnestrovian Moldavian Republic (Transnistria was supported in this approach by Ukraine which, at that time, in the summer of 2004, was led by a pro-Russian president, Leonid Kuchma), as well as a budget decrease for the institutions that are responsible for providing them, which inevitably results in poor quality for the beneficiary.

Also, the issue of a complicated and ineffective legislative framework encourages cancelling the investments and projects with medium- and long-term effects and directs the existing funds to projects with immediate effects but no horizons on the long term.

It is not possible to discuss the hybrid conflict without considering the aggressor‘s intention to weaken the capabilities of the military and paramilitary entities by maintaining outdated and obsolete assets and even by deprive the operational elements of the basic requirements, without at least allowing them to maintain the skills needed to accomplish the missions (lack of ammunition, fuel, etc.).

Going forward, by minimizing the cooperation between the state institutions we are faced with the impossibility of the effective co-operation in crisis situations, in particular by encouraging the struggle for resources, and limiting the cooperation to make their use more efficient. Although it is hard to believe, in support of what has been said, we mention the situation of procuring identical equipment and supplies for which there are no unified framework agreements but they are purchased separately by the state institutions. It is obvious that the purchase price would be much lower and the quality much higher. In addition, the single command is an unreachable goal for structures with common missions, the existing headquarters being totally separated and heavily partitioned, without any chance of being quickly interconnected in the sense of a coherent response and a unique objective. Redundancy is the most appropriate word for special operations forces, which have become the personal toys of the leaders in office. Thus, the transfer of tasks from one institution to another, without providing in some way the use of the experience of the existing structures that had been performing those tasks until that moment, seems unbelievable (see the transfer between RIS and MIA of the lawful interception tasks, following a surprise political decision, which declares its fulfillment by the former institution as unconstitutional).

Moreover, by keeping the wages at a minimum, the leaders may be kept under an adequate control when attempting to make beneficial decisions.

Intimidation remains one of the tools excellently handled by the aggressor. To exemplify, we recall the reaction of the surprising general Alexandr Lebed, commander of the Russian Operational Group, a structure that emerged from the 14th Army, a military structure of the former Soviet Union, which states that he can reach Bucharest in two hours at anytime. In support of what has been said it is worth mentioning his subsequent running for the office of president of Russia in 1996, where he received a surprising 14.5% of the votes, following Boris Yeltsin, and having a devastating echo at the time in the two states involved, Moldova and Romania.

A new course of effective action in the hybrid conflict is developed in the cyberspace, where the aggressions directed against the state institutions have become more and more frequent, overshadowing those directed against the individuals which have also increased in number. Thus, the small-scale electromagnetic spectrum jamming for temporarily blocking the institutions that must act effectively in various crisis situations seems to become part of normality.

Moving on to the kinetic field, we discover in the hybrid conflict the use of less conventional methods, such as the use of commercial drones to transport explosive devices, improvised to disable the military component by triggering explosions or fires at munitions factories or stores. In addition, the civilian population and, moreover, minors,

have been increasingly used as a shield in order to intensify the impact of the information campaigns triggered by legitimate military actions.

Another effective line of effort in the hybrid environment remains the development and the funding of insurgency in the areas of interest, in order to maintain instability facilitating the achievement of hidden political goals.

A relatively new aspect is the use of the military personnel as a non-state force, as a militia for keeping the areas of interest under control (in Crimea the military units were blocked by personnel dressed in an incomplete military uniform, which showed neither the name nor the affiliation, the so-called "little green men"[9], who tried to disable the local and central authorities in their attempt to react to the measures implemented by Russia for annexing the province). Subsequently, the model is taken up in the lower basin of the Don, in Southeastern Ukraine, with limited success, without realizing, so far, the intention to create the "bridge" to Crimea.

The Republic of Moldova can be considered one of Russia's priority targets. Moldova constantly struggles between the East and the West, a point also highlighted by the political division of the country. Moreover, the presence of a large pro-Russian community (taking into account the Autonomous Region of Gagauzia [10] and Transnistria) is a factor that can at anytime offer Russia a motivation to intervene in order to protect its own citizens. In November 2014, a movie posted on youtube.com shows a former member of the ANTIFA group (sometimes radical militant group that takes a stand especially against the radical right) [11] describing the actions of an illegal group in the Republic of Moldova [12]:

- The group is organized on independent cells with specific tasks and goals to be able to act on the order of a higher echelon;
- The group is divided and decentralized (the cells are unaware of each other), an aspect specific for the information structures;
- The group's personnel is specifically trained by experts (Russians) in remote areas in eastern Moldova;
- The training includes survival, sabotage, firing various types of weapons (pistol, assault and precision rifles);
- The members have been instructed to act especially during the acts of public disorder, to commit acts of violence, especially when the authorities move in to limit the effects of the aforementioned actions;
- When accusations are made, after the events, ANTIFA will cast the blame on the new extremist side of the organization while continuing to carry out acts of violence in order to keep the authorities busy and to determine the population to express their dissatisfaction with the state's ability to solve the emerged situations;
- The members were encouraged to infiltrate the state institutions and to recruit new followers from workers or even government officials.

There are strong similarities between the explanations of the questioned individuals and the actions observed in Crimea and Southeast Ukraine. Such a result leads us to the conclusion that Russia more than likely has begun preparations for a possible future unconventional warfare campaign to secure and take control over the Republic of Moldova, maintaining its plausible denial concerning the implication in the operation (using ANTIFA).

We consider it necessary to mention that the unconventional war is the likely course of effective action in the hybrid conflict. Such an approach complements the list discussed in the present paper, and, moreover, it seems to be one of the most complex and effective available methods, whereby the aggressor can not only achieve its objectives but also maintain the option of denying involvement in the conflict created in the assaulted territory. In addition, we note that this line of effort is time-consuming, which cannot be rapidly

implemented but requires long-term implementation.

The hybrid also applies to the limit of war, where the laws of war cannot clearly and simply apply, in a "gray" area of the law. It is precisely for this reason that the use of the abovementioned methods and lines of effort has a maximum efficiency. Our conclusion is that the effective lines of effort in the hybrid environment cannot be applied immediately but require a long-term approach that gives the aggressor the opportunity to "feed" his actions even from the financial sources of the assailed state. This is the last and most effective line of effort of the hybrid conflict, which, through a series of convergent and long-term measures, obtains all the necessary resources, not just for the continuation of these actions but also for the achievement of the initially set goals, whether they require or not a certain level of violence, which involves armed combat. Thus, the hybrid conflict is identified as a living, symbiotic organism, which, although born out of the resources of the aggressor, is gradually nourished by the resources of the aggressed party.

The relevance of this paper is also highlighted by the fact that it draws attention on focusing on the lines of effort with long-term effects. Most papers bring to the forefront the immediate or medium-term effects lines of effort, those that are obvious and cannot be contested. If we objectively analyze the facts, we notice that the major objectives are achieved by specific actions taken a long time ago. Focusing the attention and the efforts of all those bearing responsibilities in countering the short and medium-term hybrid threats is an effective way to mislead the decision makers who control all the tools needed to limit the effects of these actions.

Finally, by taking into account the effective lines of effort in the hybrid warfare, we conclude that in particular those having long-term effects and require a consequent implementation, are a preventive, proactive attitude at a time when it has never been more obvious that, due to the lack of resources, we are more reactive than ever. At the alliance's border we are exposed to actions that are not filtered by any other coalition partners [13].

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DETERMINATION OF LANDING BEACH LOCATION FOR AMPHIBIOUS OPERATIONS ON THE WEST PAPUA SEA WITH ANALYTIC HIERARCHY PROCESS (AHP): CASE STUDY ON SORONG REGENCY

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Abstract: Determination of landing beach is the most important power of the Indonesian Marines Corps in carrying out amphibious operations. Prerequisites for determination of landing beach must conform to predefined parameters and functions. The aim of this paper is to determine the most feasible landing beach for amphibious operation in Sorong Regency by Analytic Hierarchy Process (AHP). The research stages are starting from the determination of the weight value of the selection criteria and the weight value of landing beach alternative. It results from pairwise comparison analysis in the framework of AHP. The selection of landing beach that has objective values in accordance with the data can assist a decision makers to solve a multi-criteria problem in amphibious operations. The result of this paper can be seen as the second beach with a value of weight of 0.639 was chosen to be the most appropriate beach location for amphibious landing operations. While for the second order is the first beach with a weight value of 0.259 and the third beach with a weight of 0.101.

Key words: *Amphibious Operations, Landing beach, AHP method.*

1. INTRODUCTION

The expansion process in the Papua region contributed well to establish a third of The Sea Area Command and Marine Force in Sorong West Papua due to infrastructure development [1], facilities and infrastructure of the local area are getting better. In order to carry out the function of empowering the marine defense area it requires the ability of sea defense and also the ability to maintain all the natural resource potential [2].

Understanding the coastal characteristics of Sorong especially related to determine the landing beach is a should be for landing troop element in order to carry out the task of amphibious operations, especially to determine the ideal landing beach location [3], [2]. Requirements to determine the ideal landing beach should be in accordance with predetermine parameters [2] and serve as an important component in determine the weight value of landing beach selection criteria [4].

With the AHP method, the research stage starts from the establishing of the criteria weighted value and the alternative of landing beach selection processed [5], [4] in the AHP framework which arrangement in the hierarchical model by performing pairwise comparison analysis, it is processed in the form of a complete matrix with consistency analysis [4]. Hence, it is expected that the result of alternative landing beach to be a logic and objective value in accordance with accurate data and is very helpful for decision makers to solve multi-criteria problems [6].

The systematically of this research is as follows: Chapter 2 contains a literature review on the definition of Amphibious Operations, landing beach and basic theories which are used for AHP methods. Chapter 3 – materials / methodology which contains research process stages. In chapter 4 the results and discussion are presented and the last is chapter 5 – conclusions.

2. LITERATURE REVIEW

2.1. Amphibious Operations

The amphibious operation is an attack carried out from the sea by a naval unit and a landing troop of the Indonesian Navy loaded for shipping and amphibious landing means and landed on the beach or coastal potential of the enemy [3]. The development of amphibious operations was initially carried out by US marine as a result of state policy to reduce the budget of the war. The other side, the need for security to protect trade routes in the world belonging to the United States continues to increase. It directs the American Marine Corps to prove the usefulness and efficiency of military operations. The American Marine Corps defines an amphibious assault technique to seize the opponent's shore. In the end, the policy gave rise to an amphibious assault technique [7]. Why is amphibious operation still relevant to use? Amphibious operations are still relevant because they are providing several solutions during warfare, like: (a) overcoming natural obstacles from land, (b) overcoming impasse on land, (c) providing mobility and operational flexibility to troop commanders; and (d) giving psychological benefits [8]. Amphibious operation has many types, such as: (a) Amphibious Raid, (b) Amphibious Demonstration, (c) Amphibious Assault, (d) Amphibious Withdrawals, (e) Amphibious Forces Support and other operations.

Fig. 1. Amphibious Operation of indonesia Marine Corps

2.2. Landing Beach

The landing beach is part of the coastline required for landing one Battalion of Landing Team or equivalent unit [9]. Beach landing can also be part of a coastline that has tactical values, such as a bay beach that can be used to land a smaller entity than the Battalion of the Landing Team [3]. Several landing beaches allow marine force to gain an advantage position against the enemy by distributing weapons and logistics within the enemy areas, then the marine forces concentrate and maneuver toward their ultimate target. In landing beach selection, some types of oceanographic data [2] should be given enough consideration so that the Marines can safely carry out their landing [9], [2]. These types of data include the concept of landing troop operations, coastal capacity to maneuver amphibious landing troops, coastal approache, natural obstacle, coastal backdrop trait, communications infrastructure, including railroad and weather and other hydro-oceanographic data [10].

2.3. AHP Method

AHP method is a method of decision-making analysis that applies pairwise comparison theory to decision variable [11] that become the main criteria of decision as a

derived element of the predeterminate objectiveness [12] where the determinate of the priority scale of these criteria depends on the assessment of experts in order to determine the alternative choice of solutions [13].

3. MATERIAL/METHODS

3.1. Flowchart of Research

This study is divided into four stages of research activities that are arranged sequentially starting from the stage of identification, data collection phase, analysis and data processing and conclusions. It can be seen in **Fig. 2** as follows [14]:

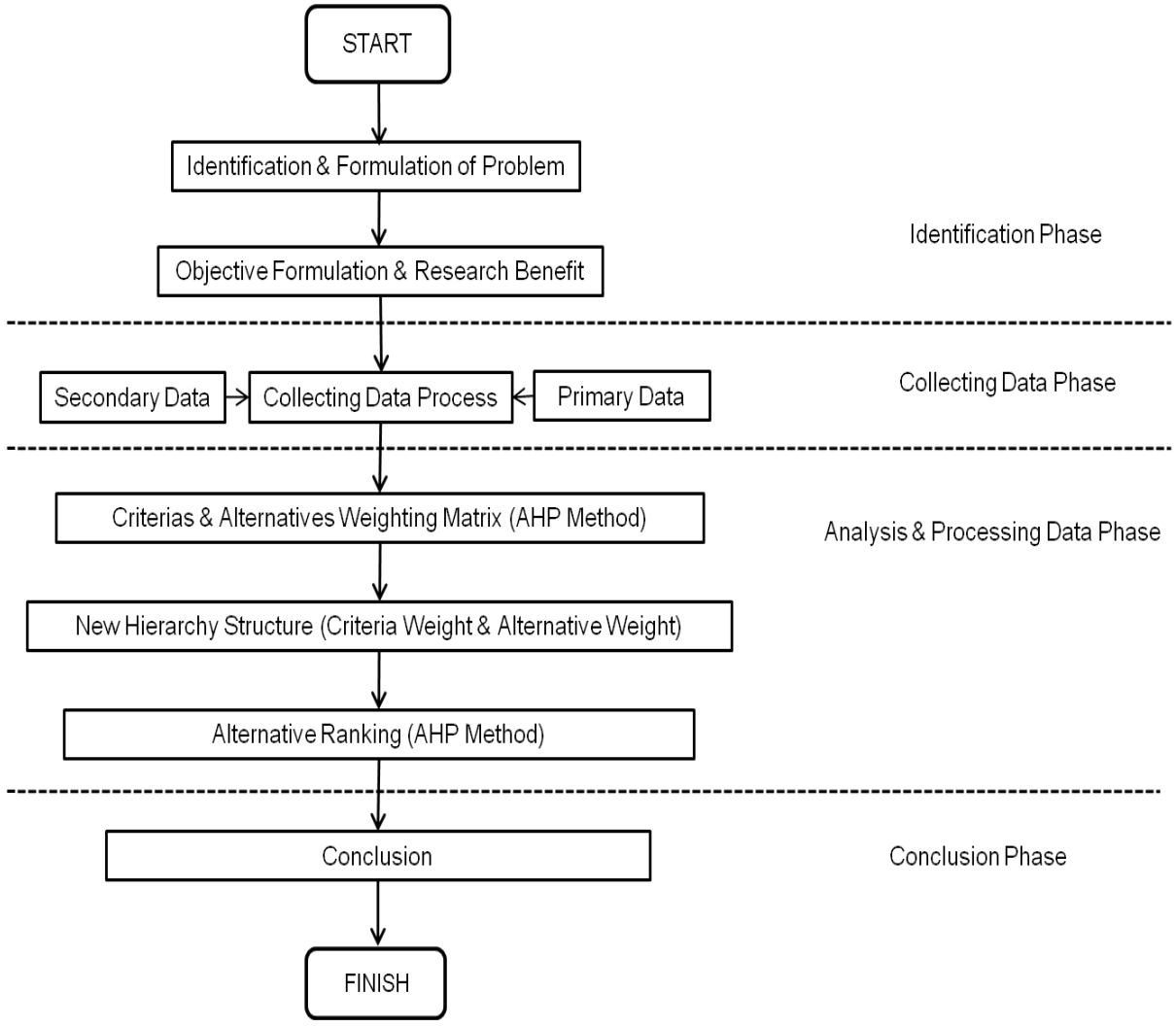

Fig. 2. Flowchart of Research

3.2. Research Object

This research is focused on the process of choosing the ideal landing beach location analysis. Because of that, the variable that become the main criterion in landing beach location should be analyzed according to the preparation method. The location of the research was conducted at TPI Jetty of Sap Papua West Papua (**Fig. 3**) located at 01 ° 07 '34.71 "S - 131 ° 13' 29.98" E [15].

A Sorong regency of West Papua has an area of 13,603.46 km² which consists of a

land area of 845,71 km² and a surface of ocean of 514.65 km² [15].

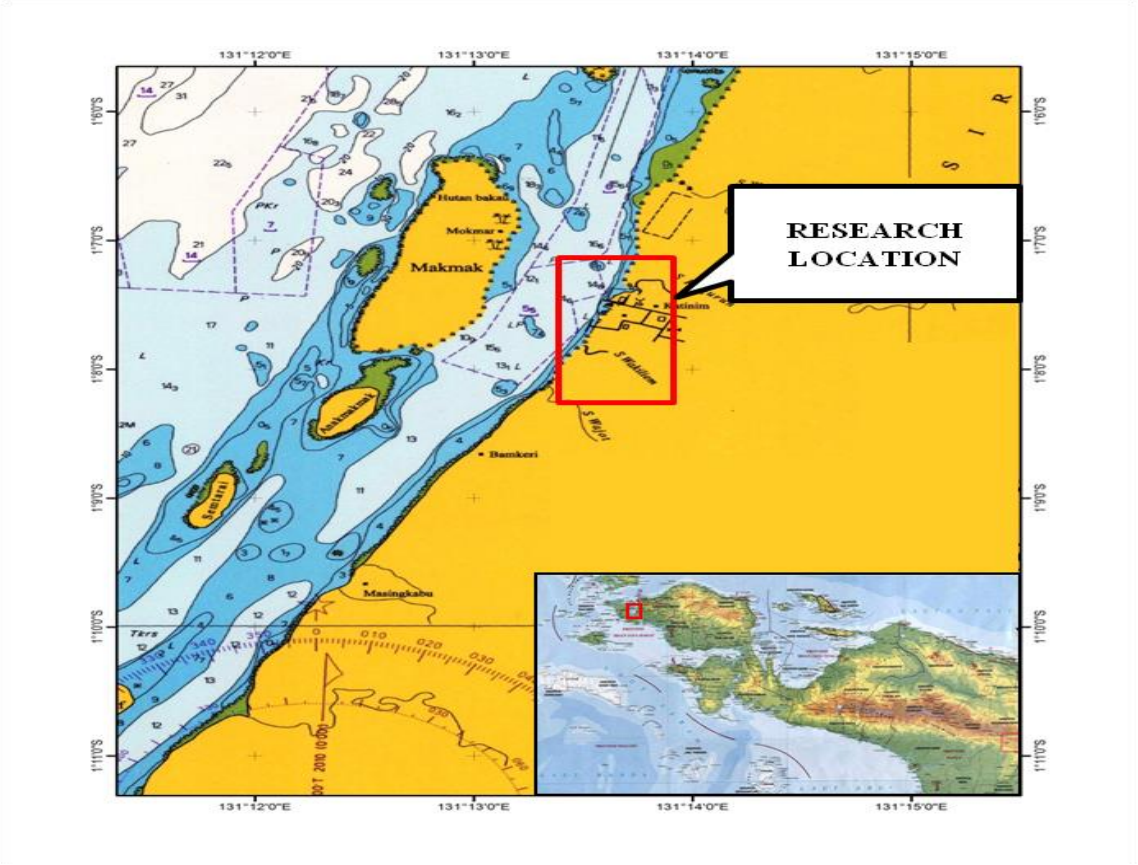

Fig. 3. Map of Research Location.

3.3. Research Steps

This method is used as the main framework of the decision maker system builder as well as to determine the value [16] of alternative weighted value through the process of pairwise comparison analysis up to the final stages of the research [17].

3.3.1. Determination of landing beach selection criteria

The criteria of landing beach selection in this research can be seen in **Table 1** below:

Table 1. Criteria for selection of landing beach

NO	CRITERIA	INFLUENCE IN AMPHIBIOUS OPERATIONS	IDEAL PARAMETER
1	**2**	**3**	**4**
1	**Type of Shorelines**		
	a. Straight shoreline	a. Influence of currents and waves.	Straight shoreline
	b.Convex shoreline	b. Effect on the direction of the shot	
	c.Concave shoreline	the opposing coastal defense.	

2	**Composition of the seafloor**		
	a. Sand.	Influence on surface manouver	Sand
	b. Sand pebbles.		
	c. Muddy sand.		
	d. Rocky gravel.		
3	**Coastal gradient**		
	a. Steep (gradient 1:15)	a. Influence on determination of ship type & landing lifeboat.	a. Moderate gradient
	b.Moderate (1:15 >gradient≥ 1:30)		1:15 > gradient ≥ 1:30
	c.Gentle (1:30 > gradient≥ 1:60)	b. Influence on type of break wave in shallow water area.	b. Gentle gradient
	d.Mild (1:60>gradient≥1:120)		1:30 > gradient ≥ 1:60
	e. Flat (gradient > 1:120)		
4	**Physical hydro-oceanography**		
	a. Wave	a. Effect on landing lifeboat and amphibious vehicle.	a. Spilling wave type.
	b. Tidal	b.To determinate type of lifeboat & amphibious vehicle to be used.	b.Semidiurnal and Mixed Semidiurnal tidal type
	c. Current		c. Current parallel shoreline velocity < 1 knots.
5	**Back area of beach**	a. Influence on manouver of troops & amphibious vehicles.	a. Flat with an elevated beach backdrop.
		b. Defense area for protection after landing.	b. There is a ramp to the rear of the beach.
6	**Point of reference for landing beach**	a. To help identification process of landing beach.	Can be a known terrain sign for its position
		b. As a navigation mark when on sea surface.	
7	**Coastal obstacles**		
	a. Natural obstacles	a. Influence on motion power of combat materials and troops	Selected beaches which minimum natural obstacle.
	b. Artificial obstacles	b. Can make amphibious vehicle and lifeboat become broken.	
8	**Beach access**	Make easy to maneuver for troops & vehicle on landing beach.	Selected beach which has enough total access.

3.3.2. Weighting matrix of criteria with AHP Method

In order to make a decision with the AHP method, it is necessary to process the problem with the following stages [14], [18]:

a. Create a hierarchy structure

The multicriteria problem in AHP is arranged in the form of a hierarchy consisting of three main components, namely the main objectives, assessment criteria and alternative choice [4]. The structure of the hierarchy can be illustrated as shown in **Fig. 4.** [19]:

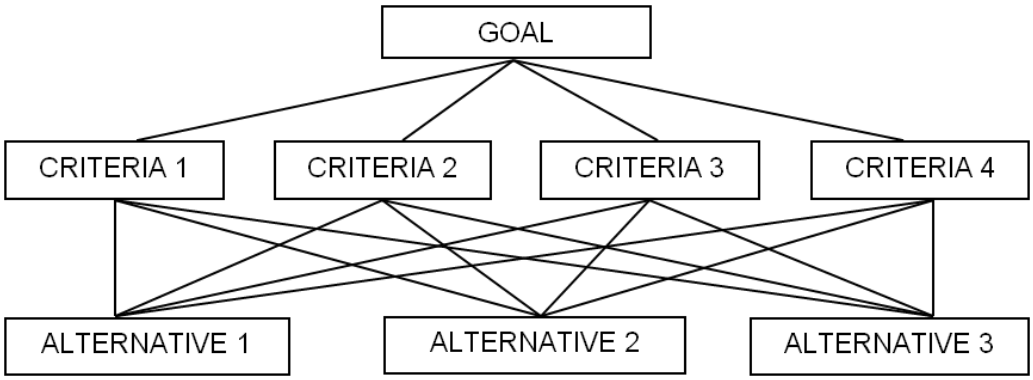

Fig. 4. Hierarchy structure [19]

b. Create a pairwise comparison matrix

1) Pairwise comparison based on Saaty Scale.

Table 2. Assessment of criteria weighting based on Saaty scale [4]

Value	Definition	Explanation
1	The same important	
3	Slightly more important	
5	More important	
7	Very important	
9	Absolute is very important	
2,4,6,8	Average	When in doubt between two adjacent values
1/3,1/5,1/7,1/9	The opposite of the value 1,3,5,7,9 (Reciprocal)	If the value of A to B is 4 then the value of B to A is 1/4

2) Calculating the criteria weight (priority vector).

Then, it is done the calculation of the average value of the sum in each line matrix according to the following formula [13], [20]:

$$A = (a_{ij}) = \begin{bmatrix} 1 & W_1/W_2 & \cdots & W_1/W_n \\ W_2/W_1 & 1 & \cdots & W_2/W_n \\ \vdots & \vdots & \cdots & \vdots \\ W_n/W_1 & W_n/W_2 & \cdots & 1 \end{bmatrix} \quad (1)$$

3) Testing Consistency Ratio (CR).

If *CR*>0,1 then the pairwise comparison process should be repeated again until *CR*≤0,1:

a) Determine λ_{maks} by formula [13]:

$$[Ax = \lambda_{maks} x] \quad (2)$$

Where x is *eigen vector* value obtained from the calculation *priority vector*. After processing (2.4) has obtained λ_{maks} Matrix and then determine the average value of λ_{maks}.

b) Determine Consistency Index (*CI*) by formula [13]:

$$CI = \frac{(\lambda_{maks} - n)}{(n-1)} \quad (3)$$

Where:
CI : Consistency Index.
λ_{maks} : Average value $\frac{Ax}{x}$.
n :Total weight.

c) Determine *CR* value by formula [13]:

$$CR = \frac{CI}{IR} \quad (4)$$

Where Index Ratio value is determined in accordance with **Table 3** as follows:

Table 3. Index Ratio (IR) [13]

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
IR	0,00	0,00	0,58	0,90	1,12	1,2	1,3	1,4	1,5	1,49	1,51	1,48	1,56	1,57	1,59

At this stage it should be ensured that CR values must be consistent (*CR*≤0,1) [20].

4) Develop a new hierarchy completed with criteria weight.

The preparation of the new hierarchy can be seen in **Fig. 5** [20]:

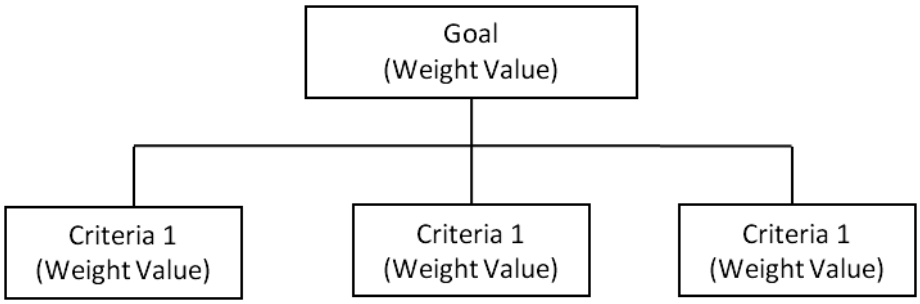

Fig. 5. Hierarchy structure of weight value

5) Calculate the value of alternative weight for each criteria.

This process carried out a number of assessment criteria as shown in **Table 4** [12]:

Table 4. Matrix Table of Assessment Criteria

Criteria	Alternative 1	Alternative 2	Alternative 3	...	Alternative n
Alternative 1	1	...	...	...	...
Alternative 2	...	1	...	...	...
Alternative 3	...	...	1	...	...
...	...	...	...	1	...
Alternative n	...	...	...	...	1

6) Develop a new complete hierarchy with the value of the weighting criteria and the value of alternative weight.

The preparation of the new hierarchy can be seen in **Fig. 6**:

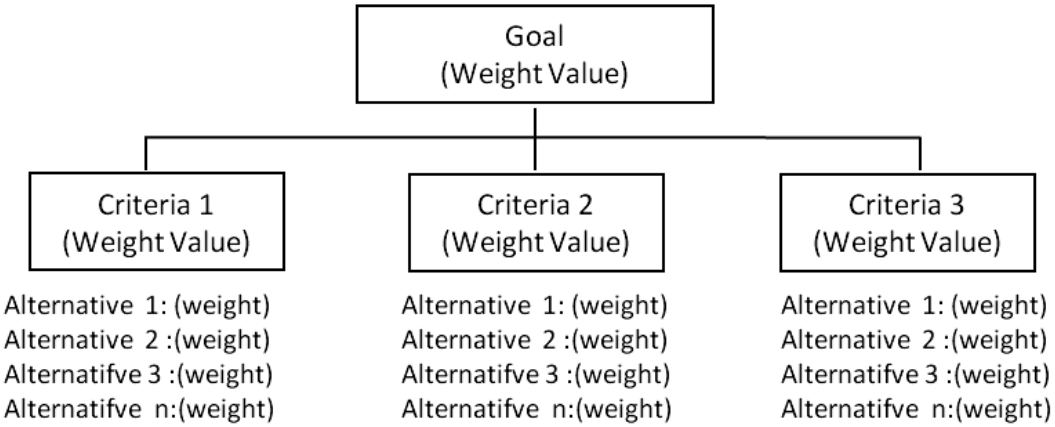

Fig. 6. Structure hierarchy of weight value

c. Determine the preferred alternative ranking

The determination of the optional alternative rank corresponds to the following matrix calculations:

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} k \\ l \\ m \end{bmatrix} = \begin{bmatrix} x \\ y \\ z \end{bmatrix} \quad (5)$$

4. RESULTS AND DISCUSSION

4.1. Matrix weighting criteria with AHP Method

a. Create a hierarchy structure

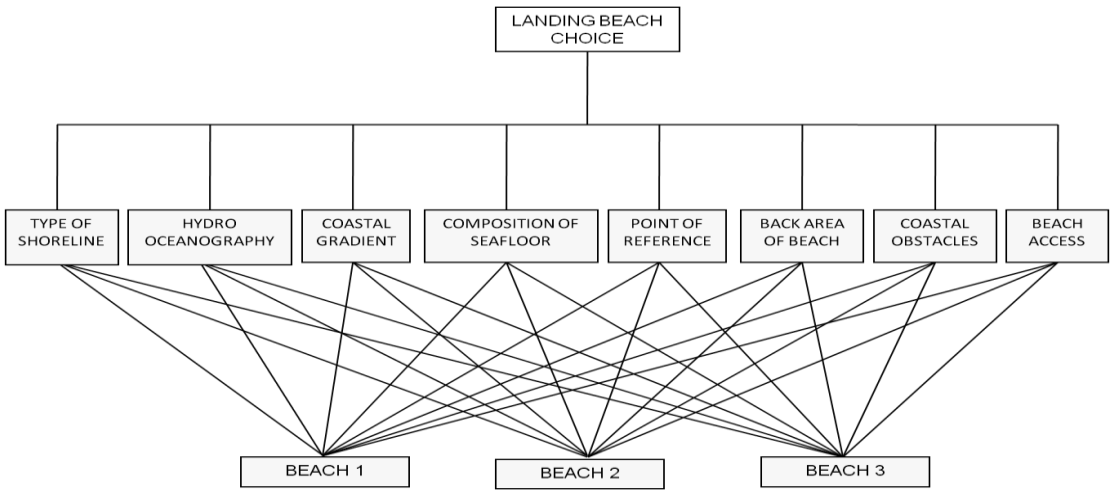

Fig. 7. Hierarchical structure

b. Determine pairwise comparison matrix.

Accuracy in determining the value of scale to matching criteria or alternatives by experts in the previous stage makes the basis of determining the preference at this stage so it is helpful for the decision maker to determine the numbers in a pairwise comparison matrix with Saaty scale like is shown in **Table 5** below:

Table 5. Criteria pairwise comparison matrix

NO	CRITERIA	TYPE OF SHORELINE	HYDRO-OCEANOGRAPHY	COASTAL GRADIENT	COMP. SEAFLOOR	POINT REFERENCE	BACK AREA OF BEACH	COASTAL OBSTACLES	BEACH ACCESS
1	TYPE OF SHORELINE	1	0,333333	2	0,5	0,333333	3	4	5
2	HYDRO-OCEANOGRAPHY	3	1	4	3	2	5	7	9
3	COASTAL GRADIENT	0,5	0,25	1	0,5	0,333333	2	3	5
4	COMPOSITION OF SEAFLOOR	2	0,333333	2	1	0,333333	3	4	5
5	POINT OF REFERENCE	3	0,5	3	3	1	4	5	7
6	BACK AREA OF BEACH	0,3333333	0,2	0,5	0,333333	0,25	1	2	3
7	COASTAL OBSTACLES	0,25	0,142857	0,3333333	0,25	0,2	0,5	1	2
8	BEACH ACCESS	0,2	0,111111	0,2	0,2	0,142857	0,333333	0,5	1
JUMLAH		10,283333	2,870634921	13,033333	8,783333	4,5928571	18,83333333	26,5	37

c. Determine the priority vector.

The normalization result matrix and priority vector can be seen in **Table 6** below:

Table 6. Priority vector

MATRIX A								X	AX	λmax (AX/X)
1	0,333	2	0,5	0,333	3	4	5	0,1177	0,972	8,254
3	1	4	3	2	5	7	9	0,3121	2,631	8,43
0,5	0,25	1	0,5	0,333	2	3	5	0,0871	0,708	8,129
2	0,333	2	1	0,333	3	4	5	0,137	1,158	8,451
3	0,5	3	3	1	4	5	7	0,2307	1,982	8,59
0,333	0,2	0,5	0,333	0,25	1	2	3	0,0553	0,448	8,1
0,25	0,143	0,333	0,25	0,2	0,5	1	2	0,0362	0,295	8,151
0,2	0,111	0,2	0,2	0,143	0,333	0,5	1	0,0239	0,196	8,219
								TOTAL =		66,325
								AVERAGE =		**8,291**

d. Test of Consistency Ratio (CR).

If $CR > 0{,}1$ then the pairwise comparison process should be repeated again until it is obtained $CR \leq 0{,}1$.

Determine λ_{maks} by formula: $[Ax = \lambda_{maks}x]$,where x is the eigenvector.

Table 7. Table of λ_{maks} matrix

NO	CRITERIA	TYPE OF SHORELINE	HYDRO-OCEANOGRAPHY	COASTAL GRADIENT	COMP. SEAFLOOR	POINT REFERENCE	BACK AREA OF BEACH	COASTAL OBSTACLES	BEACH ACCESS	PRIORITY VECTOR
1	TYPE OF SHORELINE	0,0972447	0,11611833	0,1534527	0,056926	0,0725765	0,159292035	0,1509434	0,135135	0,1177
2	HYDRO-OCEANOGRAPHY	0,2917342	0,34835499	0,3069054	0,341556	0,4354588	0,265486726	0,26415094	0,243243	0,3121
3	COASTAL GRADIENT	0,0486224	0,087088748	0,0767263	0,056926	0,0725765	0,10619469	0,11320755	0,135135	0,0871
4	COMPOSITION OF SEAFLOOR	0,1944895	0,11611833	0,1534527	0,113852	0,0725765	0,159292035	0,1509434	0,135135	0,1370
5	POINT OF REFERENCE	0,2917342	0,174177495	0,230179	0,341556	0,2177294	0,212389381	0,18867925	0,189189	0,2307
6	BACK AREA OF BEACH	0,0324149	0,069670998	0,0383632	0,037951	0,0544323	0,053097345	0,0754717	0,081081	0,0553
7	COASTAL OBSTACLES	0,0243112	0,049764999	0,0255754	0,028463	0,0435459	0,026548673	0,03773585	0,054054	0,0362
8	BEACH ACCESS	0,0194489	0,03870611	0,0153453	0,02277	0,0311042	0,017699115	0,01886792	0,027027	0,0239
TOTAL		1	1	1	1	1	1	1	1	

Consistency Index (CI) is obtained by the formula:

$$CI = (\lambda_{maks} - n)/(n-1) \quad (6)$$

CI = (8,291-1)/(8-1) = 0,291/7 = 0,0416. (7)

Consistency Ratio (CR) testing is shown in **Table 8:**

Table 8. Table of Index Ratio (IR)

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
IR	0,00	0,00	0,58	0,90	1,12	1,2	1,3	1,4	1,5	1,49	1,51	1,48	1,56	1,57	1,59

$$CR = CI/IR \quad \text{(n=8)} \quad (8)$$

CR = 0,0416/1,41 = 0,0295 ($CR \leq$ 0,1 so consistent)

e. develop a hierarchy structure based on the criteria of weight value.

Table 9. Matrix of Criteria Weight

No	Criteria	Weight
1	Type Of Shoreline	0,1177
2	Hydro-Oceanography	0,3121
3	Coastal Gradient	0,0871
4	Composition Of Seafloor	0,1370
5	Point Of Reference	0,2307
6	Back Area Of Beach	0,0553
7	Coastal Obstacles	0,0362
8	Beach Access	0,0239

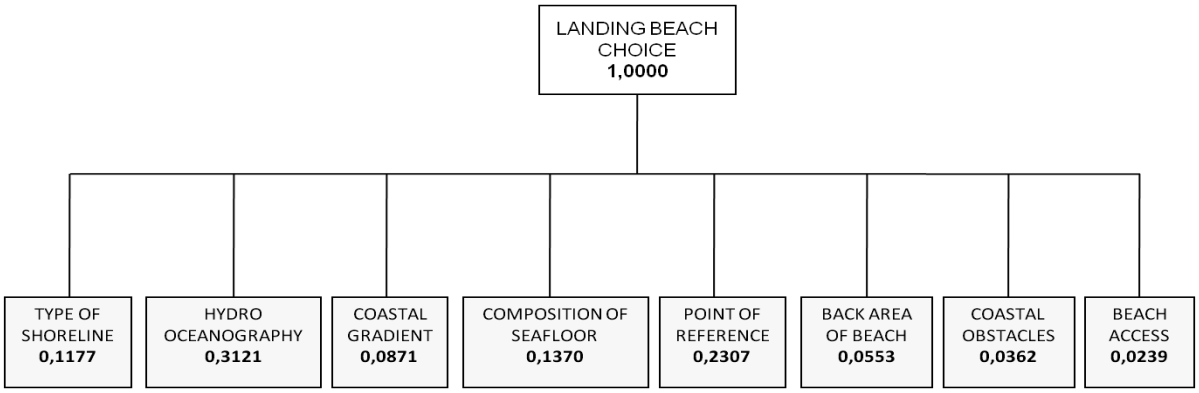

Fig. 8. Hierarcy structure with Weight of Criteria

f. The result of the calculation of the alternative weight values for each criteria.

Table 10. Result of Alternative Weight Values

1. TYPE OF SHORELINE

TYPE OF SHORELINE	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,25	4	0,190	0,167	0,444	0,267
BEACH 2	4	1	4	0,762	0,667	0,444	0,624
BEACH 3	0,25	0,25	1	0,048	0,167	0,111	0,108
TOTAL	5,25	1,5	9	1	1	1	

2. HYDRO-OCEANOGRAPHY

HYDRO-OCEANO	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,2	5	0,161	0,149	0,385	0,232
BEACH 2	5	1	7	0,806	0,745	0,538	0,697
BEACH 3	0,2	0,142857	1	0,032	0,106	0,077	0,072
TOTAL	6,2	1,342857	13	1	1	1	

3. COASTAL GRADIENT

COASTAL GRADIENT	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,33333	3	0,231	0,200	0,429	0,286
BEACH 2	3	1	3	0,692	0,600	0,429	0,574
BEACH 3	0,3333	0,33333	1	0,077	0,200	0,143	0,140
TOTAL	4,3333	1,66667	7	1	1	1	

4. COMPOSITION OF SEAFLOOR

COMP. OF SEAFLOOR	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,333333	3	0,231	0,211	0,375	0,198
BEACH 2	3	1	4	0,692	0,632	0,500	0,608
BEACH 3	0,333333	0,25	1	0,077	0,158	0,125	0,120
TOTAL	4,333333	1,583333	8	1	1	1	

5. POINT OF REFERENCE

POINT OF REFERENCE	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,25	5	0,192	0,179	0,385	0,252
BEACH 2	4	1	7	0,769	0,718	0,538	0,675
BEACH 3	0,2	0,14286	1	0,038	0,103	0,077	0,073
TOTAL	5,2	1,39286	13	1	1	1	

6.BACK AREA OF BEACH

BACK AREA OF BEACH	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,5	2	0,286	0,273	0,333	0,297
BEACH 2	2	1	3	0,571	0,545	0,500	0,539
BEACH 3	0,5	0,333333	1	0,143	0,182	0,167	0,164
TOTAL	3,5	1,833333	6	1	1	1	

7. COASTAL OBSTACLES

COASTAL OBSTACLE	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,5	3	0,300	0,250	0,500	0,350
BEACH 2	2	1	2	0,600	0,500	0,333	0,478
BEACH 3	0,3333	0,5	1	0,100	0,250	0,167	0,172
TOTAL	3,3333	2	6	1	1	1	

8. BEACH ACCESS

BEACH ACCESS	BEACH 1	BEACH 2	BEACH 3	NORMALIZIED MATRIX			PRIORITY VECTOR
BEACH 1	1	0,5	2	0,286	0,250	0,400	0,312
BEACH 2	2	1	2	0,571	0,500	0,400	0,490
BEACH 3	0,5	0,5	1	0,143	0,250	0,200	0,198
TOTAL	3,5	2	5	1	1	1	

g. The hierarchy arrangement is complemented by the criteria and alternative weights.

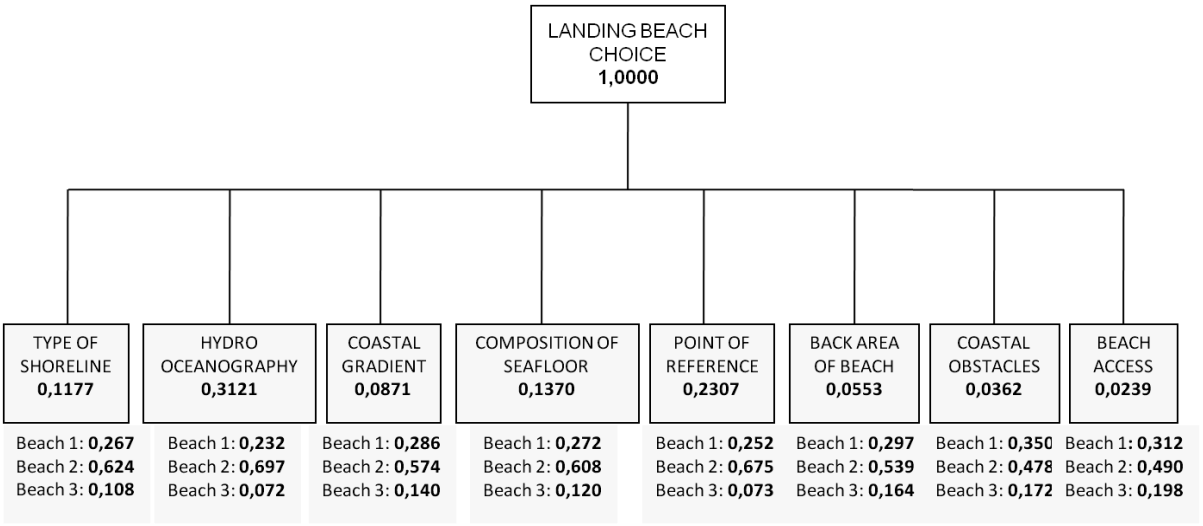

Fig. 9. New Hierarchy Structure with Weight of Criteria and Alternative

h. Determine the preferred alternative ranking (Final Priority).

$$\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} k \\ l \\ m \end{bmatrix} = \begin{bmatrix} x \\ y \\ z \end{bmatrix} \quad (9)$$

The calculation of priority matrix with the criteria weight can be seen in the following matrix multiplication:

$$\underbrace{\begin{bmatrix} 0{,}267 & 0{,}232 & 0{,}286 & 0{,}272 & 0{,}252 & 0{,}297 & 0{,}350 & 0{,}312 \\ 0{,}624 & 0{,}697 & 0{,}574 & 0{,}608 & 0{,}675 & 0{,}539 & 0{,}478 & 0{,}490 \\ 0{,}108 & 0{,}072 & 0{,}140 & 0{,}120 & 0{,}073 & 0{,}164 & 0{,}172 & 0{,}198 \end{bmatrix}}_{\text{Priority Matrix}} \underbrace{\begin{bmatrix} 0{,}1177 \\ 0{,}3121 \\ 0{,}0871 \\ 0{,}1370 \\ 0{,}2307 \\ 0{,}0553 \\ 0{,}0362 \\ 0{,}0239 \end{bmatrix}}_{\text{Criteria Weight}} = \underbrace{\begin{bmatrix} 0{,}259 \\ 0{,}639 \\ 0{,}101 \end{bmatrix}}_{\text{Final Priority}} \quad (10)$$

Then, it gets the result of alternative choice of landing beach based on the value of weight on matrix final priority can be seen with table 10 below:

Table 11. Final Result of Landing Beach Rank

Priority Matrix	Final Priority	Rangking
Beach 1	0,259	**2**
Beach 2	0,639	**1**
Beach 3	0,101	**3**

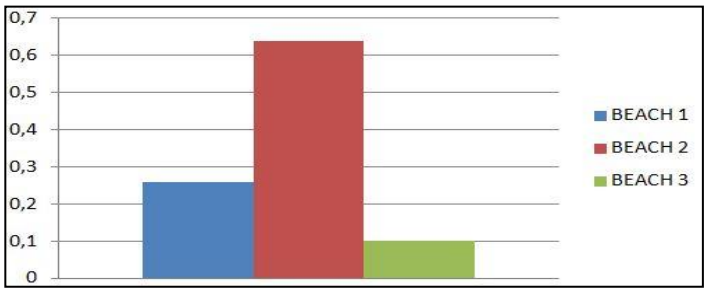

Fig. 10. Result of Landing Beach Determination

From the results of analysis with the AHP method can be seen that the second beach with a value of weight of 0.639 was chosen to be the most appropriate beach location for amphibious landing operations. While for the second order is first beach with a weight value of 0.259 and the third beach with a weight of 0.101. The ranking results show that the second beach is a highest rank, first beach is the second rank and the last is Beach 3.

5. CONCLUSION

Based on the results of research, through data analysis conductance we have obtained the following results:

a. In determining the ideal landing beach to carry out amphibian

operations, there is a need for an analysis of the components to be used as the main criterion for selecting and alternating landing beach options that are multi-criteria.

b. From the results of analysis with the AHP method can be seen that the second beach with a value of weight of 0.639 was chosen to be the most appropriate beach location for amphibious landing operations. While for the second order is first beach with a weight value of 0.259 and the third beach with a weight of 0.101.

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A NEW APPROACH TO BUILDING AND DEVELOPING DEFENSE CAPABILITY OF THE REPUBLIC OF BULGARIA

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The purpose of the article is to elaborate on the existing theory and practice about Defense Capabilities of the Republic of Bulgaria. Furthermore, by applying the systematic approach, it tries to propose a new method for building the National Defense Capability in order to achieve integrity. As a result, new conditions are established that contribute to the national defense system management; they are to be considered in a systematic context, and thus, social relations are placed at a new conceptual level.

Key words: *national security, defense system, governance, defense capabilities*

1. INTRODUCTION

In recent years, we have witnessed significant changes in the global military-political environment, particularly in the Balkans, the Black Sea and the Eastern Mediterranean. Typical examples of these changes are the arms race along NATO's eastern flank, the crisis in Ukraine, the continuing tensions in the Balkans, the conflicts in Syria, North Africa, etc. The visible expression of all this is constant instability in the Middle East, growing military activity of Turkey, the US, Russia, Iran and China, increased migration and growing radicalism on the European continent. As a result of these changes, as well as the impact of a number of additional factors from internal (increasing social and ethnic divisions in some countries) and external nature (radicalization and terrorism), there is an increased hybrid impact on different spheres of social life.

It is worth noting that there is a tendency for a certain change in the views on the character of possible risks and threats in the world, mainly in shifting the focus from the common interests of existing alliances to those of individual states. In other words, it can be claimed that globalization seems to be on its way to fail with an increasingly open debate about the process of de-globalization. We are also witnessing individual (with an unclear international legal basis) steps to neutralize the new risks and threats taken by countries (e.g. Turkey's actions in Syria) in order to protect their national interests, while collective responses in most cases are inadequate or delayed.

In response to this, the Republic of Bulgaria has launched a number of measures, mainly in the legislative sphere, which have been reflected in the updating of some normative acts in the sphere of security and defense - the Law on the Defense and Armed Forces of the Republic of Bulgaria, the National Security Strategy of the Republic of Bulgaria, the National Defense Strategy (NDS), and the adoption of new ones - the Law on the Management and Functioning of the National Security Protection System, the Counter Terrorism Act, Cyber Security National Strategy "Cyber Resilient Bulgaria 2020", Strategy for Counteraction to Radicalization and Terrorism, etc. The aim of these measures was to overcome the existing deficit in capabilities both in the Armed Forces of the Republic of Bulgaria and in terms of increasing the sustainability and civic readiness of the non-military component of the defense system. For example, the Counter-Terrorism Act regulates the involvement of the Armed Forces in the fight against terrorism, and with the change of the Law on the Defense and Armed Forces of the Republic of Bulgaria they have also been assigned tasks for the protection of the state border. On this basis, the Armed Forces formations were defined, and they were to undergo specialized training

in programs, which were coordinated in advance with the Ministry of Interior (MoI). As a result, conditions for closer interaction between the Armed Forces and the structures of the Ministry of Interior were created. This in turn has demonstrated the need to seek new conceptual approaches in defining, building and developing integrated capabilities for joint operations and actions by security forces to protect national security.

Undoubtedly, state authorities, mainly the Council of Ministers of the Republic of Bulgaria, are ambitious to become more committed to the obligations our country has undertaken in the defense sector through NATO. To this end, a National Plan was adopted by the Republic of Bulgaria for host nation support to NATO forces, in view of the NATO Defense Plan. It is also important that our country is an active participant in many exercises, together with our NATO and EU partners.

At the same time, however, there is an ongoing process of deepening the crisis in the structures of the national security system, and in particular those of the Ministry of Defense (MoD) and the Ministry of Interior, which is a permanent incompleteness of the armed forces and the structures of the Ministry of Interior, low motivation of staff, obsolete armament and equipment, insufficient financing of modernization processes, etc. There has been no desire to achieve a political consensus on taking long-term and effective measures to stop the process of erosion in the defense system capabilities, nor is there awareness of the vital necessity to carry out a comprehensive strategic review (this has not taken place for nearly 15 years) of the national security and defense systems.

Such a review is needed because there is obvious vacuum in the subsystems of the security and defense systems, and we could even claim that some of these subsystems are missing. Therefore, it is critical to carry out such a review and, on this basis, to develop and adopt a whole new set of security and defense regulations. This is the only way for functional and integrated defense system architecture to be created to ensure the effective and efficient implementation of the mission of the system on the basis of increasing inter-institutional interaction and integrity in defense capacity building in the overall set of preparatory steps for defense.

The need to meet such a requirement was also confirmed in a lecture delivered by the Deputy Prime Minister for Public Order and Security and Minister of Defense of the Republic of Bulgaria at the opening of the academic year 2017/2018 at Rakovski National Defense College. He stated that "The changed security environment places new and higher requirements on our national defense capabilities within NATO's collective defense and EU Common Security and Defense Policy ..." [1]. Emphasis was also placed on the need for unified actions of all the elements comprising the national security system. In this sense, "The capabilities of the Bulgarian Armed Forces must be combined with the other instruments of national power in the political, diplomatic, economic, and information spheres. Thus, defense investment leads to increased efficiency of the entire national security system" [1].

From what has been said so far, it is clear that the issue of the national defense capability is current, and it must be included in the list of priorities for the government. Moreover, it should not be seen simply as a formal problem falling within the competency of the Ministry of Defense, but as a basis for building the country's defense system. Given the essence of the term "defense", the challenges related to building and developing national defense capability should be addressed and, more importantly, solved through the prism of social relations, because in essence the national defense system is a complex social system.

Therefore, there is an objective justification for the need for research that, on the one hand, reveals the dynamics under the changing security environment, especially the growth of non-traditional and asymmetric risks and threats, and on the other hand, seeks ways to fill the existing vacuum in the normative basis regulating the public relations between institutions and citizens. On this basis, an alternative to meet the resulting organizational and functional challenges in the

construction and development of the national defense capability shall be offered. In this context, *the purpose* of this article is to answer the question: why is there a need to change the approach to building and developing the defense capabilities of the country? The answer to this question involves seeking arguments and justifying a mechanism using a different, mostly systemic, approach to building national defense capability to meet the above-mentioned new requirements.

2. WHERE ARE THE PROBLEMS AND WHICH ARE THE POSSIBLE SOLUTIONS?

In order to achieve the stated goal, the article addresses *two issues arising from each other*, namely: the presentation of sufficiently clear arguments proving the necessity of changing the views on building and developing the defense capabilities of the country; and a rationale for a new conceptual Model for the construction and development of the national defense capability, which presents separate aspects, revealing the conditions for its introduction, the state and the order for building the defense capability of the country.

2.1. The need to change the views and conceptual framework of the Model

The first problem we will be dealing with it to prove the **need to change the views on building and developing the defense capabilities of the country**. It is well known that the strategic goal of defense policy is to build, maintain and use the defense capabilities of the country that are adequate to the development of the country's security [2] (item 157).

According to the Law on Defense and the Armed Forces of the Republic of Bulgaria (LDAFRB), "The maintenance of the country's defense capability is an obligation of the state authorities, the armed forces, the local self-government bodies and the local administration, as well as the citizens and the legal entities to whom it is entrusted. It is also stated that "the defense of the Republic of Bulgaria is carried out with the effective use of the national defense potential, including the armed forces and non-military components" [3] (Art. 7, para. 1 and 2).

In addition, the National Defense Strategy determines that "Defense is a comprehensive, government activity with unified leadership, planning, finances and resources" [4] (item 39, p. 10). For its part, the Law on Defense and the Armed Forces further develops this formulation, stipulating that "The defense of the Republic of Bulgaria is a system of political, economic, military, social and other activities to provide a stable security environment and to prepare and implement armed protection of the territorial integrity and independence of the country. The Armed Forces of the Republic of Bulgaria, the state bodies, the bodies of local self-government and the local administration, the legal entities and the citizens are assigned their rights and obligations to prepare and implement the defense of the country" [3] (Art. 3, para. 1 and 2). Unfortunately, these statements are insufficient in terms of achieving the end goal - maintaining the defense capability of the country. This is due to the fact that there is *no regulation who, with whom, how and why should interact, and what the interrelationships and dependencies are between the elements of the national defense system* in order to build collective, integrated defense capabilities within the scope of activities and tasks of preparing the country for defense.

This thesis is also confirmed by the analysis of the main strategic documents in the field of security and defense, which shows that they, apart from lack of coherence and coordination [5], do not consider either in theoretical or in practical terms, any formulation mechanisms and approaches to build the country's capabilities needed to reliably defend its territorial integrity and independence; i.e. its defense capabilities. The documents do not specify the steps and ways to build the capabilities of the military and non-military components, how to integrate them and implement them within the country's defense system, or how to build and maintain

interoperability capabilities between individual components.

On the other hand, strategic documents refer mainly to collective (allied) capabilities, or to the defense capabilities of the armed forces, to individual structures or subsystems. It is true that in the Updated National Security Strategy of the Republic of Bulgaria (UNSSRB) in 2018, together with the multiple use of the concept "abilities" in different contexts, for the first time, emphasis was placed on the need for certain capabilities of the National Security Protection System, as one of the priorities of the country's security policy [2] (item 78). This list of capabilities, however, is too vague, mainly related to the modernization of the armed forces and complementing the incomplete structure of the Security System but does not make any demands on the capabilities of the non-military component. And this is because the methodology and the logical link between the main strategic documents have been violated. In this case, the updated Strategy was adopted two years after the next in the hierarchy – the National Defense Strategy, which is in fact its subordinate, sectoral strategy.

In other words, it can be argued that the approach used in defining and building the defense capabilities of the Armed Forces and the non-military component of the national defense system is again predominantly institutional. Proof of this is the lack of coordination between them and their relationship with other documents. For example, the Program for the Development of Defense Capabilities of Bulgarian Armed Forces 2020 [6] states the requirements for armed forces capabilities - planning method, input-output measures of assessment, engagement with mission capabilities, including within NATO. By a Decree of the Council of Ministers of the Republic of Bulgaria of 2011 [7], a "List of the basic defense capabilities of the country (civilian component)" has been defined, in view of the assigned wartime tasks in defense of the country. Thus, the parameters of these capabilities are related to the wartime needs of the country for the production and delivery of military and civilian production in view of wartime tasks. However, the analyses here show that the requirements for the capabilities of the civilian component are not in line with the contemporary needs of the Armed Forces, the new socio-economic conditions, nor with our country's commitment to NATO membership and the Common Security and Defense Policy (CSDP) of the EU. As a result, an integrated national approach is not provided and the necessary conditions for full coverage of the defense tasks of the country are not created.

It is therefore appropriate to adopt a new conceptual *Model for building and developing the defense capability of the country as a basis for planning and building capabilities of the Armed Forces and the non-military component of the national defense system.* The rationale behind this is the perception that the country's defense capability is built up as a result of the two sets of capabilities - *functional and operational* defense capabilities.

Among experts, it is generally accepted that the defense capability of the country is a complex set of military and civil (non-military) abilities that are built and developed to perform defense functions and related tasks. In this context, the design and development of the national defense capability should be considered as a process involving activities in the creation of *functional areas of defense capabilities* (FADC) covering different areas in which defense takes place. For example, management, information impact, cyber defense, intelligence, strategic deployment, protection of the population and infrastructure, etc.

In turn, each functional area of defense capabilities is formed by bringing together the relevant operational capabilities developed by the different institutions and structures with assigned tasks in the defense system (see **Fig.1**). It is a prerequisite that the operational capabilities of each functional area be interoperable. Compatibility can have different dimensions and can be achieved at different levels. For example, compatibility may be military, technical, information, resource, procedural, administrative, doctrinal, etc.

If we have to summarize everything that has been said so far with regard to the need to

change the views on building and developing the defense capabilities of the country, we should reiterate the fact that, from the point of view of functional areas of defense capabilities, achieving compatibility between assets and resources both in the Armed Forces and in the non-military component of the national defense system will require the development (presence) and implementation of common concepts, doctrines, procedures, projects, etc., in order to achieve and maintain interchangeability or uniformity. This can and must be implemented by applying standards and models of training and exercises, enabling them to carry out operations effectively together, in fulfillment of their assigned missions and tasks.

In other words, a key feature of the proposed Model appears to be the most important imperative in building the country's defense capability, namely to achieve interoperability between the capabilities of the Armed Forces and the non-military component of the national defense system. For this reason, it can be argued that the Model is significant, not only theoretically but also from a practical point of view, because it contributes to the systematic and comprehensive consideration of the process of construction and development of national defense capability and creates conditions for increasing inter-institutional interaction within the national defense system, i.e. it leads to the improvement of the national defense system management

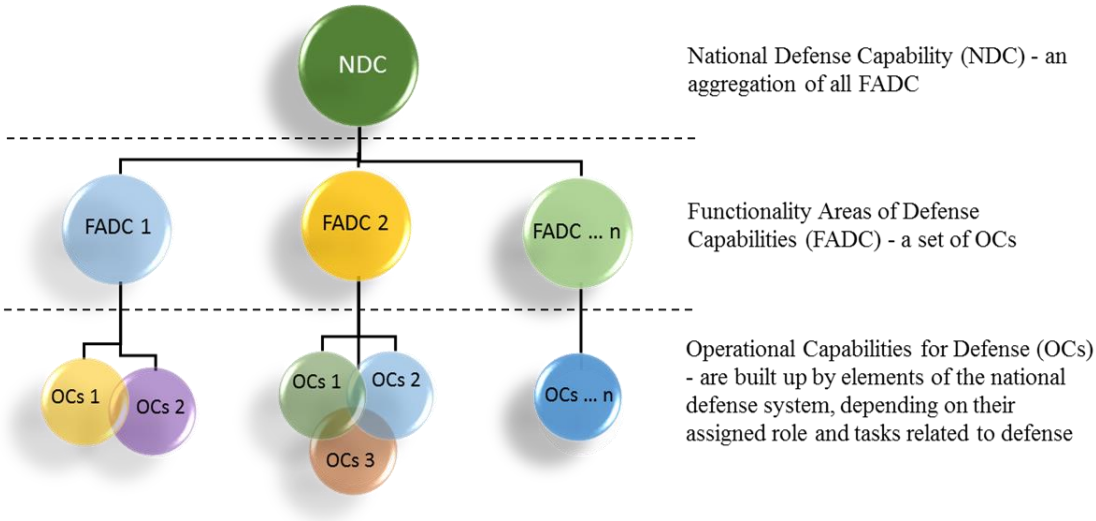

Fig. 1. Model for building and developing the defense capability of the country

2.2. Methodological imperatives in applying the Model for building and developing the defense capability of the country

2.2.1. Prerequisites for implementation of the Model

The second problem **requires creating the conditions for introducing the proposed new conceptual Model, the approaches to assess the current status, and the order for building the defense capability of the country.**

As mentioned above, currently there is no existing model, algorithm or system of theoretical steps and approaches to the order, conditions, stages and logic in the construction of the national defense capability. It is undisputed, however, that *such a model is needed and it is essential that it be set as a conceptual idea in the provisions of the National Security Strategy of the Republic of Bulgaria*. Thus, the National Security Strategy will state what capabilities are to be built up by the armed forces, what other capabilities shall exist in the other spheres of public life,

and their mutual interdependence will be determined. This will provide guidance for developing sectoral strategies - defense, information, social, economic, political, environmental, etc., which will ensure the emergence of their integral component and achieve more effective inter-institutional interaction in time of crises and conflicts.

It is also important that the Model for building and developing the defense capability of the country be accepted as a *methodological basis for the development and accomplishment of the objectives of the National Defense Strategy*, as well as in the other doctrinal defense documents. Along with the issues related to the objectives, functions, tasks and priorities of defense policy, a detailed description of the approaches to building, developing and using military and civil capabilities of the defense system shall be present. It should also be explicitly stated who, how and what operational capabilities are to be built in functional areas, as well as the steps of their provision and joint use, in case of necessity. This is particularly important to achieve a new, higher level of interaction within the country's defense system.

After the National Defense Strategy develops the Model and defines the objectives, functions, tasks, steps for building, development and use of military and civilian capabilities of the defense system, *the doctrines and plans shall elaborate on the deadlines, stages, means and responsibilities of the institutions and organizations with responsibilities assigned to the defense of the country*. Thus, at the lower governance levels, coordination will be ensured in building functional areas of capabilities, and conditions will be created for better synergy in shared use of assets.

The defense capability of the country is a function of the degree of development of military and civilian capabilities, and is therefore assessed by conducting periodic reviews of defense and/or force structures. One or another level of the defense capability is the result, on the one hand, of the political will and ambition of the state leadership, and on the other - an expression of the real actions undertaken to build and maintain military and civilian defense capabilities. All these aspects are generally reflected in the defense policy of the country, and in practice the quantitative and qualitative dimensions of these levels are achieved by implementing a number of programs and/or plans to develop the capabilities of the armed forces and other forces, structures and institutions in the defense system. The degree of realization of political ambitions, the effectiveness of defense policy and the implementation of plans and programs are evaluated annually, and the results shall be reflected in the Report on the State of Defense and Armed Forces of the Republic of Bulgaria. The Report shall be discussed and adopted by the Security Council of the Council of Ministers and then submitted for adoption by the Council of Ministers.

2.2.2. Methods of building and developing the defense capability of the country

When it comes to the methods of building the defense capability of the country, the following principles shall be taken into account: modern defense management; planning, based on capabilities and probable scenarios; technological development of the defense system and rearmament of the armed forces, applying lessons learned from participation in missions and operations; preparation and training of human resources in the defense; increasing our involvement in joint structures, programs and projects with our allies and partners; incorporating the national defense technological and industrial base into the development of research/ innovation capabilities; updating concepts and doctrines on the development and use of military and civilian components of the defense system, etc.

In order to fully clarify the mechanism for building and developing the defense capability of the country, we will present *some considerations* related to the description of its main components, in which the two groups of capabilities of different institutions and structures of the defense system are built.

Firstly, the following requirement is laid down in the National Defense Strategy: "the development and improvement of the country's

defense capabilities is a necessary condition for building a modern and effective defense system" [4] (item 38, p. 10). Unfortunately, there is no further information on the mechanism or method of fulfillment of this good wish, nor does the document mention who is to implement it. It only speaks about the defense capabilities of the armed forces - their components, requirements and the principles of their construction. Therefore, we consider it unrealistic that national capabilities, which are the resultant dimension between those of the armed forces and the capabilities that are built up by the various non-military component institutions and organizations, automatically unite in an integral entity and form *the defense capability of the country*.

An important and indispensable condition for all the capabilities of both the armed forces and individual institutions and organizations is that they are viewed as a common set of multiple dimensions united by common goals, tasks and efforts planned and used in a particular design and by a single control body. For this reason, it is imperative that the National Defense Strategy, along with the components, requirements and principles of building capabilities of the armed forces, stipulate the same requirements on the capabilities of non-military component institutions and organizations. Only when all of them are united by functional areas, common scenarios, and unified leadership, a higher level of interaction between the individual entities in the system can be expected, and a greater effect with fewer resources will be achieved.

Secondly, the National Defense Strategy states that "the implementation of a comprehensive approach to crisis and conflict management becomes vital to successfully countering hybrid forms of war. It is crucial that the actions of the Armed Forces be synchronized with all governmental and non-governmental organizations and structures within a single strategy and plan" [4] (item 39, p. 10). In this case, however, the National Defense Strategy is not specific enough about the ways and approaches to achieve this goal, and does not determine in practice who will implement it. This determines the need to elaborate and, at the same time, to centralize some of the functions of governance. Comprehensiveness in planning is impossible without trust and a desire for joint work and integration between the various actors. All this is achieved only if there is a single (common) national decision-making model with clearly defined decision-making rights, roles, responsibilities, models of interaction, etc.

Third, the National Defense Strategy states that to ensure defense the armed forces and the non-military component of the defense system build and maintain capabilities to perform tasks [4] (item 49, p. 12). A number of tasks that they should be able to perform are listed. In view of the practical realization of the Model, one possible approach is to group these tasks in the following **four areas**:

- intelligence and surveillance (related to the so-called intelligence community, which is part of the early warning system for direct threats to security and defense);
- covering the threatened section of the state border and ensuring the deployment of Allied forces and NATO assets on Bulgarian territory (ensuring strategic deployment of the defense system, demonstration of force and conditions for conducting joint defense operations under Article 5 of the Washington Treaty - host nation support by Bulgaria);
- protection of state borders with non-combatant neighbors where and when necessary; protection and defense of critical sites on the territory of the country; fight against landing, diversion-intelligence and terrorist groups of opposing forces; maintaining public order and internal security (covering defense activities on the territory of the country in wartime);
- providing civilian resources in the interest of defense; maintenance, recovery and technical cover of national infrastructure; assistance in disasters, accidents and catastrophes; restoration of destructions, etc. (covering the bulk of civil defense activities).

The operational capabilities of the Armed Forces and the structures of the non-military component should be built for the

accomplishment of the tasks in the four distinct areas. Thus, the functional areas for the "Defense" Mission and the related operational capabilities will become basic and will be used in accordance with the specific conditions of the crisis or conflict. The need to pool tasks in areas from the point of view of the capability of interaction between military and civilian entities stems from the fact that most of them will be implemented jointly. This, in turn, raises the requirement for joint preparation of authorities and assets, and ability to carry out operations and actions jointly, i.e. interoperable military and civilian capabilities will be required.

It is worth noting a fact related to the lack of tasks in the "Defense" Mission *information* field, occupying the fifth domain of modern crises and conflicts. This FADC requires the development of operational capabilities by all institutions for participation in information campaigns and operations, as well as cyber security and defense capabilities.

Of course, due to the specificity of this article on the defense capability of the country, we reckon *it is appropriate to add one of the most important FADC in defense - the defense system management.* This capability also requires building, maintaining readiness for immediate use and continued development of operational capabilities by all institutions for sustainable governance and defense management at all levels to fulfill the above groups of tasks.

Fourth, by analogy with the definition of operational capabilities in the National Defense Strategy, it can be assumed that **the defense capability of the country** is *an opportunity to carry out activities and actions to achieve a specific objective(s) or a desired end result (protection of national interests) under certain conditions in space and time in accordance with accepted standards.* Similar to the common understanding in the National Defense Strategy for building operational capabilities in the Armed Forces, the national defense capability can also be considered as a *set of indivisible components* that can be distributed in the following three areas: ***cognitive, social and technical*** (see **Fig. 2**).

The cognitive area includes a well-ordered, synchronized and adequate to the security environment regulatory framework, an organizational and functional structure of the architecture of the national defense system, and a purposeful joint preparation of the structures and forces. ***The social area*** includes qualified and trained managerial, expert and executive staff with the necessary expertise. The technical area includes the resources (tangible and intangible) and functionally built infrastructure for defense of the country. Every structural element of the defense system may develop more than one operational capability and every functional capability may be provided with more than one structural element.

The cumulative result of the degree of development of the components in the three areas of the national defense capability is present in the *physical sphere,* i.e. in the effectiveness and efficiency of realization of the planned goals and effects.

Fifth, the construction and maintenance of the country's defense capacity *shall be inextricably linked to the defense planning process*. This is because it is precisely in the course of this process that the identification of the necessary and the acquisition of new capabilities or the release from existing ones is carried out with a view to the future development of the defense capability of the country. Defense planning includes decision-making with a different horizon and cycles which, in their entirety, must ensure universality, flexibility and timely response to changes in the environment, the formation and implementation of national and allied defense policies. It is based on a capabilities-based approach.

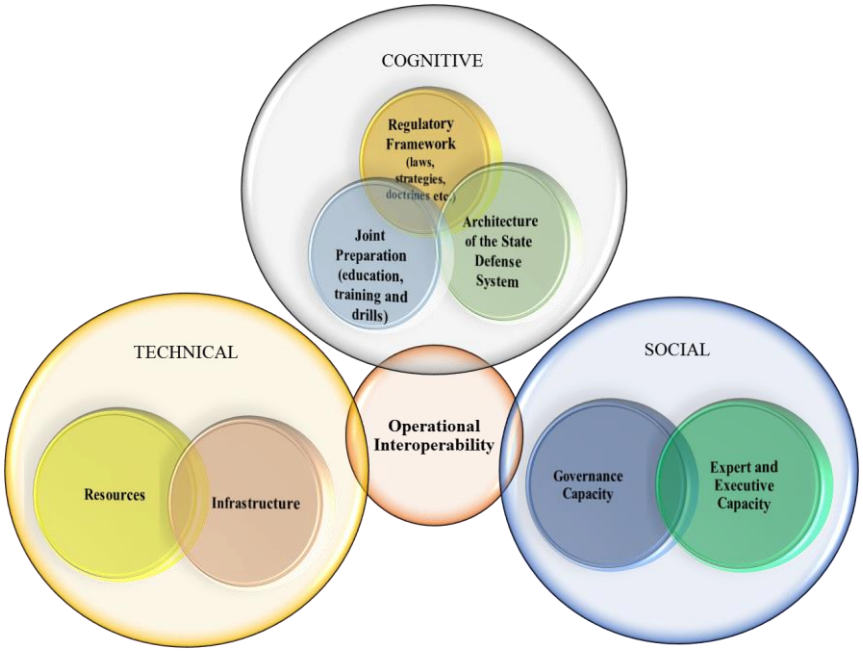

Fig. 2. Main components of the national defense capability

The defense planning process in the Republic of Bulgaria takes place in two directions, covering military (armed forces) and civilian capabilities. The process of armed forces capability planning has been well developed and is in fact integrated into the overall process of building NATO allied capabilities. This does not apply to civilian capabilities, though. Although civilian capabilities within the Alliance are planned by NATO Senior Civil Emergency Planning Committee, in practice in this area of capabilities, our country has undertaken partial commitments to their development. Civilian capabilities actually exist and are being built; however, there is no clarity regarding the extent of their availability and readiness to use. This is because they are not controlled and reported in the Annual report on the Defense and the Armed Forces of the Republic of Bulgaria, nor do they comply with the Alliance requirements and the commitments undertaken by our country.

Therefore, the defense planning process *should be integrated at national level*, and taking into account the requirements of our country's membership in NATO and the EU, it should be *harmonized with the decisions taken by the political bodies of the two alliances* in the form of political and strategic guidelines, as well as their common defense planning. In addition, the necessary structures and strength of both the armed forces and the civilian component of the country's defense system must be closely connected with the capabilities required by the defense planning process to ensure effective implementation of defense related tasks.

Sixth, the National Defense Strategy generally addresses the issues of financial provision for defense capacity building, setting the requirement that the process of maintaining and building the defense capability of the country under the conditions of reduced financial resources will be planned in stages by defining specific priorities for each stage, in order to implement the defense policy for a medium-term period (6 years), on the basis of the three-year budget forecast approved annually by the Council of Ministers [4] (item 121, p. 22). In practice, the national budget on the "Defense and Security" function regarding defense policy priorities provides only for the Ministry of Defense and the Armed Forces, whereas building non-military component capabilities in the system of defense-mobilization preparation for wartime military activities and tasks is carried out on the basis of requests for the next budget year. Thus, the non-military component institutions and

organizations are provided budget subsidies from the state budget annually through the budgets of the respective first-level budget spending units, and the activities related to defense mobilization training in the municipalities are financed with funds from the state provided for "Defense and Security" function.

A more appropriate approach appears to be the one in which **the funds for maintaining the Ministry of Defense and the Armed Forces are separate from those allocated for building and developing defense capabilities under the "Defense and Security" function.** This will form a separate budget for building national defense capability within the framework of the country's preparation for defense, and this budget will be broken down into separate parts directly related to the functional areas of capabilities. It is appropriate to divide it into sub-paragraphs - for the armed forces and non-military component institutions and organizations. It is important, however, to determine its amount as a percentage of the national gross domestic product and to indicate certain financial resources in the long-term as part of the country's preparation for defense. Such an approach ensures the complex implementation of the overall process of building and maintaining national defense capability, while planning and spending financial resources in the long run should also apply the *program approach* and *project management* in capacity building.

2.2.3. Expected effect from the implementation of the Model

To summarize the conditions for Model implementation, the mechanisms for assessment of the status, and approaches to build the national defense capability, we shall assume that for the building, maintenance and development of an adequate defense capability of the country, it is necessary that the National Security Strategy specify what capabilities will be built by the armed forces and what other defense capabilities should exist in other spheres of public life. The National Defense Strategy shall elaborate on the approaches to building, developing and utilizing military and civil defense capabilities, while the planning process shall take into account the requirement for interoperability.

In the process of national defense planning, it is important to develop in detail and provide resources for a *National Defense Capability Development Plan of the Republic of Bulgaria, following the logic of the presented Model and components for its formation*. The plan shall be developed on the basis of the implementation of a program approach and project management in building the capabilities to be implemented in the defense procurement of defense products, linked to the opportunities for development of modern technologies and innovations and to the national economy. The assessment of the level of development of the country's defense capability, the need to build new capabilities, or the elimination of existing ones shall be determined as a result of periodic strategic reviews of the defense system. With a view to efficiency and effectiveness in the development of national defense capability, as well as the unified management of the defense planning process, *it is appropriate for a single national body* to plan, coordinate and control the activities of all the institutions responsible for the construction of the defense capabilities required for the fulfillment of their tasks.

It can be assumed then that the proposed Model and Guidelines for building and development of the national defense capability will essentially form a single national mechanism that will provide the defense system with management in a systemic context. This also answers the question raised at the beginning of this article - there is a need to change the country's approach to building and developing defense capabilities, in addition, a new approach to the development of the national defense capability is possible. Moreover, this new approach not only creates the conditions for consistency and comprehensiveness, but also enables social relations in social systems to be placed at a new conceptual level. Thus, the effect on the development of the whole society is expected to lead to sustainable economic and financial growth and hence to create favorable

conditions for overcoming many social challenges facing the state governance.

3. CONCLUSIONS

Undoubtedly, the arguments presented not only show the necessity of introducing this approach, but also claim that through the implementation of such a governance mechanism, conditions will be created to achieve a high level of interaction in the security and defense systems, integration of the process of development of national defense capability as a complex set of military and non-military capabilities, and hence the reliable protection of national interests. This implies both the existence of *systematic thinking and understanding of the essence of the processes and tendencies in the construction of the security system architecture, as well as political will, high expert capacity, excellent staff training and proactive civil society*.

The present study does not claim to be comprehensive but the authors are convinced that the proposed Model for building and development of the defense capability is universal in nature and can successfully serve as a basis for defense planning in other partner countries as well.

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HOW TO INCREASE THE INFORMATION ASSURANCE IN THE INFORMATION AGE

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The competitive world we live in today is characterized by an environment where the advancement of technology has increased the number of complex vulnerabilities and sophisticated attacks. Organizations around the globe are facing now the same challenges of implementing data protection and securing information assurance. The purpose of this paper is to prove that Information Assurance has become one of the most important tools in creating and maintaining a competitive advantage in today's competitive and global marketplace. This paper also presents the relationship between information assurance and cybersecurity, and their connection with confidentiality, integrity, availability (CIA) triad. Furthermore, assuring information and providing security is a life cycle process which needs a comprehensive understanding, skills, and experience in order to protect today's risk management challenges. The author concludes the paper with the importance of information assurance policies which are the fundamental guidelines for protecting information assets and fulfilling information assurance objectives of an organization.

Key words: *Information Assurance, Cybersecurity, Confidentiality, Integrity, Availability, Risk Management, Policies.*

1. INTRODUCTION

The competitive world we live in today is characterized by an environment where the information is progressively interconnected and at the same time more independent. Globalization has become part of every domain in which the world operates such as economic, social, and technological infrastructure. Behind the globalization is the transformation of information technology which has become an important part of an organization's global business strategy. Today's interconnected world is full of uncertainty which allows transferring the information across the borders through cyberspace.

At this moment, we are in a phase of transition, a world which is moving from the Industrial Age to the Information Age. In other words, we are changing from 3D hyper-integration technology architecture such as future technology research in computer, nanotech and biotech to a 3C (connected, contested and complex) hyper world. Unfortunately, today's sophisticated environment and electronic war give us less expected and more unexpected.

In short, the transformation from industrial to information is a test for all of us, and even if we pass it, this does not mean that we have been well prepared. This is the reason why, nowadays, people are more concerned about new threats such as data security and information assurance. It is difficult sometimes to make a distinction between information security and information assurance.

2. INFORMATION ASSURANCE CONCEPTS AND PRINCIPLES

2.1. What is Information Assurance?

Information assurance has many definitions or interpretations. According to Department of Defense Information Assurance Certification and Accreditation Program (DIACAP) *Information Assurance* is defined as "measures that protect and defend information and information systems by

ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. This includes providing for restoration of information systems by incorporating protection, detection, and reaction capabilities." [1] Information Assurance Handbook has the following definition; "*Information Assurance* is the overarching approach for identifying, understanding, and managing risk through an organization's use of information and information systems." [2]. The Maconachy-Schou-Ragsdale (MSR) model of information assurance characterized three states of information (storage, transmission, and processing); three essential countermeasures (technology, policy, and people); and five basic services (availability, integrity, authentication, confidentiality, and nonrepudiation), as shown in **Fig. 1**. [3]

According to these definitions, information assurance has a much broader view than only secure the information because encompasses all the components of information security under the integration of protection information based on confidentiality, integrity, availability, non-repudiation, and authentication which are the five main components of information assurance. Furthermore, information assurance includes all information an organization can transmit, store, and process.

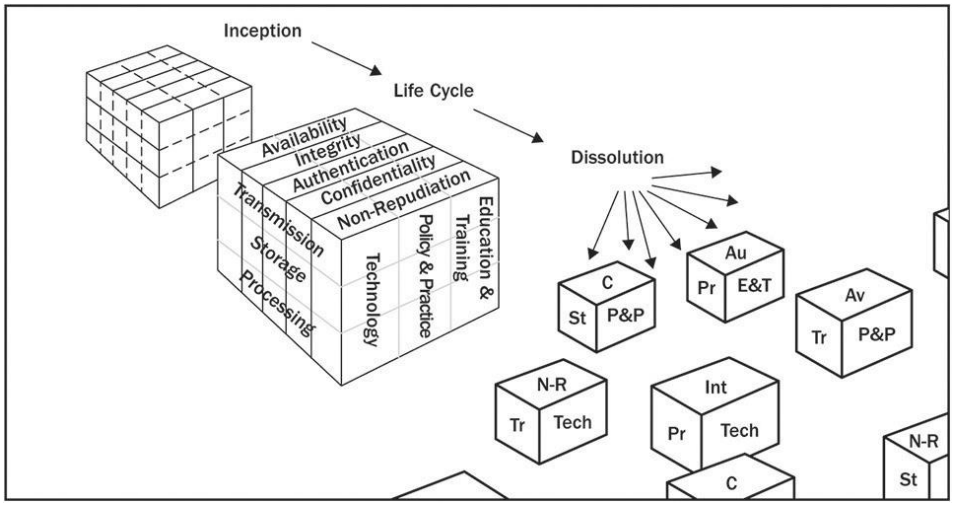

Fig.1 MSR Model

2.2. Information Assurance and Subdomains

In addition, there are three main subdomains of information assurance; information security, information protection, and cybersecurity. Information security is a subdomain of information assurance and focuses on the CIA triad: confidentiality, integrity, and availability, as shown in **Fig. 2.**

Fig.2 CIA Triad

In the same context, information security is responsible for all information an organization is storing and transmitting, electronic or paper format. As information assurance, information security is responsible for both domains: information protection and cybersecurity. Information protection has the role of protecting the integrity and confidentiality of information by using a diversity of means such as monitoring information classification, information categorization, and all the strategies. [4] Moreover, from other point of view, information protection has to be in charge of sensitive information such as personal information and information related to person's health.

For example, Central Intelligence Agency (CIA) of the United States is focusing on this "triad" when it needs to put into place a new security control policy into computer environment. [5] This triad facilitate the understanding of Information Technology (IT) Governance to ensure the efficiency and effectiveness of information technology in making possible that the organizations achieve their goals and produce measurable results toward accomplishing their strategies. The Figure 2 shows how CIA is represented by these three pylons that are the security policy core fundamentals.

Every component has its own significance, because an organization cannot achieve success if one of these is not fully integrated. Confidentiality is very important nowadays because it is very easy for hackers to obtain private data and information such as birth date, social security number, and other types of data if there is no encryption of information. This is why only authorized people who have the equivalent level of secrecy must have access to folders, and permission to access this type of information.

Furthermore, in order to protect data and information every organization has to have all the information about the administrators who are in charge of their security control and must be monitored also. Information must always be accessed by the correct users in order to be secure. However, even if the information is well secured but there is no authenticity that can create another problem.

Another fundamental component of information security is integrity. It is about making sure that data has not been modified or changed. Authentication comes with "trust" because it is very important to trust the person with whom you are interacting with. In other words, only by joining together integrity and authentication we will get to the level of authenticity. For example, if a database follows rules such data integrity, the database will increase performance, stability, accuracy, and will not allow entering data in an incorrect format in database.

The last part of the triangle is availability. This part describes the restriction and limitation of using data, and the access to the device must be available only with the given permission by the authorized administrators. The access to the information must be restricted, or available only with the permission and approval of the authorized people. These attacks can easily damage the whole system by shutting down the system. This is why security policies must be put into place in order to remediate these unwanted attacks before the event happens to help keep information safe and secure.

2.3. Information Assurance and Cybersecurity

The twenty-first century has become an interconnected corporate IT system for managing and distributed computing which provided the possibility to work from anywhere around the globe, and has created a

new era of vulnerabilities. [6] This is the reason why cyber crimes cannot be controlled and the cyber risk is the newest indicator of an out of control world. [7] Despite the fact that big companies around the globe spend every year millions of dollars in order to secure their information assurance, the next generation of cyber risk has the potential to have a negative impact on their data base and network systems. The main goal of cybersecurity is to protect electronic information systems and networks from being attacked by threats and vulnerabilities. Organizations start paying more attention to cybersecurity domain because both public and private sectors are not sufficiently protected against sophisticated attacks, and they need to develop defensive actions in order to be ready to secure the information.

The efficiency and effectiveness of cybersecurity requires that governments, private companies and non-governmental organizations must concentrate their efforts to understand the threats from a common point of view and to share the information and resources in order to mitigate them. [8] As our world is more interconnected at the same time is more insecure. Cyber domain is an environment where there are many actors involved that may affect the security network at the national and international level. Numerous companies have been victims of cybercrime, by losing their integrity and confidentiality. It is very important for the companies to assure themselves that only the right and authorized individuals have access to data and information, otherwise the information will not be secured. [9] For example, in the healthcare scenario, the doctor who sends the information to the laboratory needs to be sure that the orders can be read only by technicians in order to perform the test, and should not be accessed by the receptionist. [10]

For this reason information assurance becomes one of the most important issues and must be encrypted before transmission from end-to-end. Today anyone can start a computer and can access all the files from the hard drive. Furthermore, after gaining access many attackers will try to escalate the system in order to become the administrator of the computer. For example, in September 2014 Home Depot was one of the targets of such an attack which give the attackers the advantage to discover ~~of~~ 53 million customer e-mail addresses, and also 56 million credit cards accounts. [11] This is another example that shows the importance of information assurance, and what happens when the attackers break the network system of an organization only by compromising the username and password. There are many areas the companies have to focus on when they speak in terms of protecting confidentiality, but not all the time they succeed on doing so.

Today, many organizations do not want to pay attention to cyber threats or often they try to neglect the area of information security without investment in this domain. These situations bring to the conclusion that big companies spend a colossal amount of money to this domain. Cybersecurity is an area where nations need to continuously take actions in order to raise the level of information security, and to sustain their competitiveness on the business global market. Figure 3 illustrates the connection between information assurance and its relationship with subdomains such as information security, information protection, cybersecurity, and their relationship with confidentiality, integrity, availability, authentication, and nonrepudiation. [12]

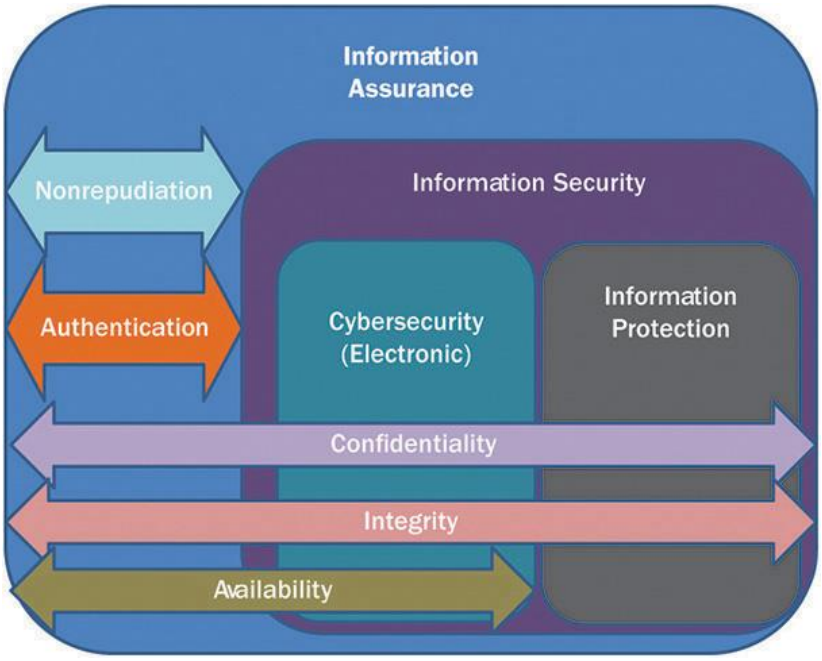

Fig. 3 Information assurance and subdomains

3. INFORMATION ASSURANCE RISK MANAGEMENT

3.1. Risk Management Concept

For an organization's management is very hard to be successful without implementing a risk management strategy for defending the risks. A well-executed management plan can reduce risk and increase economic efficiency. However, organizations must identify risk in order to manage it. The objective of risk management is to identify, analyze, evaluate, and continue to progress ~~it~~ every day. In addition, risk management is a whole process that includes policies, theories, and practices for identifying, managing, and controlling risk actions. Companies must take into consideration that ignoring the risk may cause unwanted outcomes. For this reason is important for organizations to have a good management risk practices in order to be ready and prepared for unwanted surprises.

Information assurance risk management is very important for an organization in order to face uncertainty, which can be one of two: a risk or an opportunity. This is a challenge for many organizations because they have to decide how much ~~it~~ they can accept in order not to fail to manage the risk. One of the areas which can bring success to an organization is the integration of protection of the infrastructure of communication technology by requiring identification, authentication and ensure the continuity of the companies by mitigating the risk management. [13] The risk management is a key element in the organization's information security program and contributes to the organization with the most effective framework for selecting the appropriate measures for an information system in order to secure and protect individuals and assets of the organization. [14] One of the most important functions of risk management is to select protective measures to guarantee the ability of the organization to fulfill its mission. [15] A holistic approach must be integrated for protecting an information system. Furthermore, it is important to know the most vulnerable parts that should be protected and the security measures which must be taken. Nevertheless, for security is not enough to have techniques and skills because the most critical point in any information system are the human beings. [16] To have the entire framework of security network we must take into consideration both

technical and human factors. Moreover, as the technological and societal backgrounds are progressively evolving, threats also transform and evolve.

The information system has a strong connection with threats and has to be both monitored and managed at the same time. There are many definitions related to risk. One of the most recent provided by the International Organization for Standardization is "the effect on uncertainty on objectives." [17] The older definition is "the potential that a given threat will exploit vulnerabilities of an asset or group of assets and thereby cause harm to the organization." [18] As we can see both definitions have something in common, because the effect on uncertainty means the terms *threat*, *vulnerability*, and *asset* can produce harm to an organization by challenging its way of operating, and damaging the resources that maintain the value of the organization and its mission. Research has shown that in theory information security risk is easy to calculate by using different types of formula. In contrast, reality has shown that, in order to measure the risk within an organization it is necessary not only to take into consideration a combination of theoretical measures but also an organization must be prepared for unknown situations by adopting the best practices.

Another way of measuring risk is by adopting fundamental principles, analyzing and evaluating the factors that are connected to the event, particularly the threats and the vulnerabilities. In addition, risk can be reduced by applying security measures that are translate from a methodology. A methodology that should include a security approach defined by effectiveness and efficiency applicable to directives, executive orders, policies, standards and regulations. [19] These documents must be part of Risk Management Framework, in order to make an information security program more effective, and organizations need not to apply only to the enterprise architecture but also to the new information system within the context of the system development life cycle. [20]

4. Risk Management Process

Risk management consists of many processes that are related to the information security. There is no a single process which can be used by every organization because every organization applies its unique process. Organizations should choose their management methods or approaches that are more relevant to their environment where business is taken place. Risk management process should have a continuous cycle and this cycle have to be always monitored, as shown in **Fig. 4.** [21]

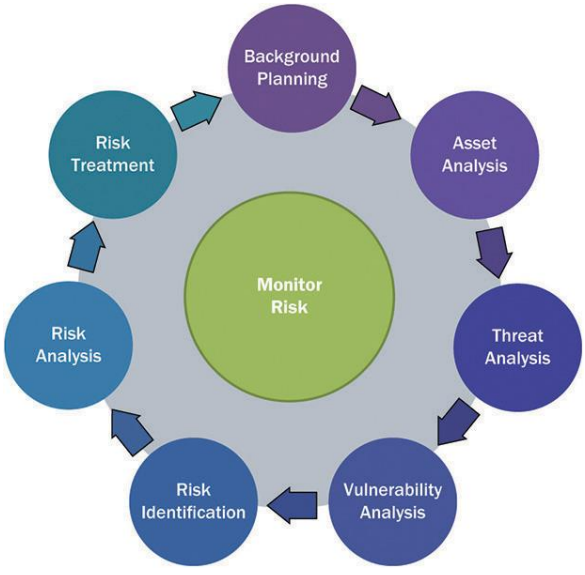

Fig. 4 Risk management process

The three main processes that risk management is focused on are: risk assessment, risk mitigation and evaluation and assessment, as shown in **Fig. 5.** [22]

Fig. 5 Risk management components

It is a very complicated course of action for an organization to be able to evaluate the impact of the risk on the business information process without having risk evaluation criteria. The criteria should indicate both: the level of damage caused by an information event and the estimate cost for eliminating it. Research has shown that there are no organizations in the world that are completely secure and do not acknowledge risk acceptance. Every organization must have a strategy that should include the goals and objectives related to developing risk acceptance criteria such as business criteria, finance aspects, and social and humanitarian aspects.

First and foremost, in order to assess the risk within an organization, it is imperative to define the scope and make sure that all the measures are taken into consideration ensuring risk assessment. Furthermore, the scope is not the only factor that should be taken into account when we want to assess the risk, because we have to be aware of limitations and constrains. By identifying the boundaries, organizations might figure the risks arise inside these boundaries. Only after identifying the scope and boundaries, the organization needs to analyze its whole approach to risk management such as strategic objectives, strategies, and information security policy. As abovementioned, every organization needs to identify its limitations and constrains. Risk analysis should be done from both perspectives: quantitatively and qualitatively. Both types of analyses must have the same common goal to analyze the risk in order to obtain a general scale of the risk level, and most importantly to consider the major risks identified. The risk evaluation process includes a complex risk assessment in order to make decisions for the next actions, and prioritize risks in accordance with risk evaluation criteria. Taking into consideration that risk management is an ongoing and never-ending process, maintenance of security measures should be planned and permanently performed on a regular scheduled basis. [23]

The implementation of security measures must be done by the organization in order to organize and develop risk assessment exercises within the organization by involving all the factors that have a connection with risk such as new types of business objectives and functions, and we must follow how effectively and efficiently are put into practice the security measures to respond to the new more sophisticated threats or vulnerabilities. Only after all the necessary adjustments and transformations had been taken into consideration, the risk might be reevaluated and security measures could be identified.

Risk assessment is the first phase of risk management process and includes all organizational resources such as information, people, processes and technologies. In addition, based on these resources an organization can make an estimation of the value they add in achieving the organization mission, estimating the vulnerabilities that have a direct impact on the resources, and assessing the likelihood or probability that each threat will have a connection with an equivalent vulnerability. [24]

From a practical point of view, a risk matrix approach is the best option for an organization to measure its risk because shows both the likelihood and the impact of a risk event happening. This graph demonstrates that even though the risk is not completely eliminated, it can be partially reduced, as shown in **Fig. 6**. [25] The highest risk is the more sophisticated one and requires more resources and time. In contrast, the medium and low risks need less effort and can be fully eliminated. However, all the organizations must keep in mind to be responsive to all types of risks, and they have to daily monitor and periodically review them to make sure that organizations are secure.

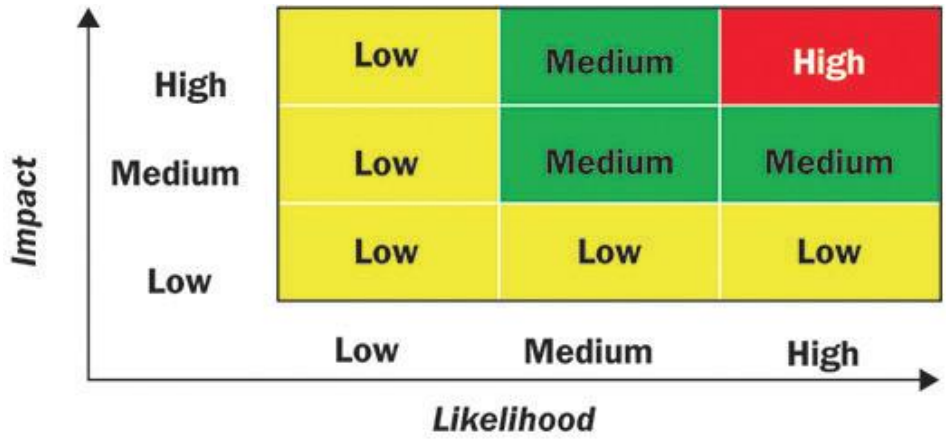

Fig. 6 Example of risk level matrix

5. INFORMATION ASSURANCE POLICIES

5.1. Security Policies and Plans Development

Information assurance policy is unquestionably the essential element for any successful organizations and without having these policies it is very hard for an organization to operate properly. Every organization must have a comprehensive information assurance documents that guarantee their security policies against potential threats. Today, there are no organizations in the world who can assure their information without a strong secure policy and security plans and methodologies that must be used in contemporary assessment and information technology infrastructure. For example, in order to build a resistant and solid house we need a strong foundation at the base, because without having this house might be destroyed at the first big flood. The same analogy we can use for an organization. For this reason it is imperative for any organization to have a security policy implementation foundation to be put in place and to have well-organized senior management support, as shown in **Fig. 7**. [26]

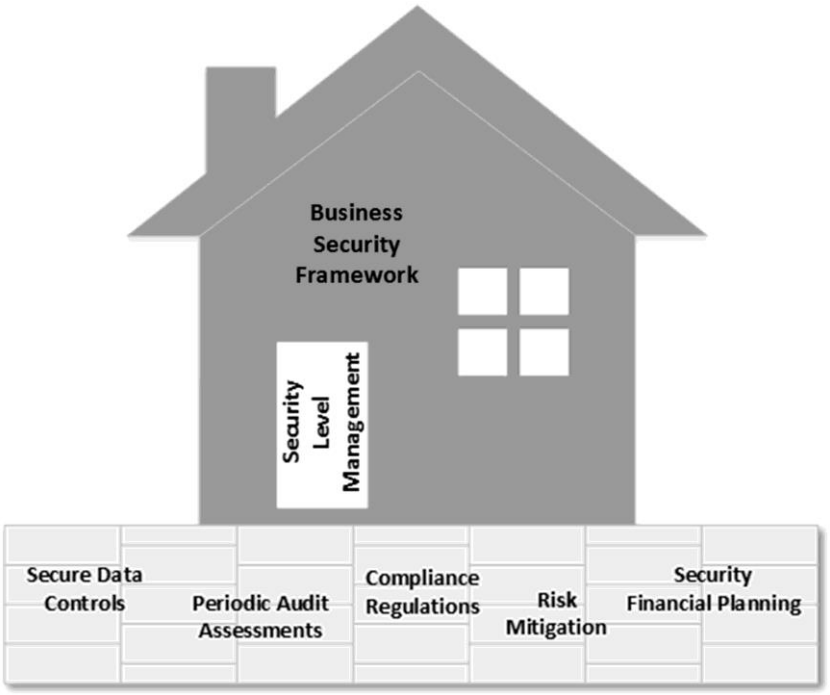

Fig. 7 Business security framework

By using this analogy, every organization can spend less time and resources for identifying solutions without reinventing something when events will happen. Another secure example that could be used by an organization is called "BRICK" that also emphasizes the biggest challenges that most of the organizations have to regularly work on, in order to keep protecting their security environment by defending confidential data and information as renewed as possible, as shown in **Fig. 8.** [27] Nowadays, in the field of computing is almost impossible to control the storage and the use of information due to innovative cybercriminals who are taking advantage of security gaps that are present in the unprepared organizations.

Cybersecurity strategist Matthew Gardiner pointed out very well saying that "the sophisticated hacker of today is not so much a hacker by trade but more entrepreneurial" and "They are leaders on the bad side of the economy, but they have the same skills that happen in the good side. They can assemble the people and processes needed to run a business." [27] This saying demonstrates that these types of criminals are more orientated toward money, and they can easily start a business because they have a technology background and this knowledge help them to assemble everything in order to run a business. Based on "BRICK" model, all five phases need to be fully integrated each other in order to ensure the life cycle for security policy and to correlate the policies with the needs that must be updated to help secure the environment and identify the measures that must be taken to accomplish the whole process.

Fig. 8 BRICK

5.2. Information Assurance Priciples and Strategy

The information assurance strategy should be a living document of every organization because its principles accomplish the necessities and objectives that organizations need in order to develop their long-term business plans. The most important principles that an organization must be based on are the following; comprehensive, independent, legal and regulatory requirements, living document long life span, customizable and pragmatic, risk-based approach, organizationally significant, strategic, tactical, and operational, concise well-structured, and extensible – see **Fig. 9**. [28] Each principle has its unique contribution to the grand information assurance strategy.

The future organization should have in place a non-classic model and more comprehensive type of strategy such as defence-in-depth strategy, which will cover all the management programs and domains.

Fig. 9 Information assurance strategy principles

The defence-in-depth strategy is not only an information assurance concept which uses the multiple countermeasures to protect the integrity of the information assets in an

organization but also offers the best practices taking into account the three main important elements for an organization such as people, technologies, and operations. The 19th century military strategist Helmuth von Moltke said that "No plan survives contact with the enemy." [29] We should not underestimate the enemy, because they know what is their strategy and how to react once engaged. The same concept hackers and attackers apply when they want to damage the software and network systems. Even though organizations have already developed plans, there is no guarantee that their information is secured. The defence-in-strategy is the most effective approach because is composed of numerous countermeasures that can be applied to various types of risks which have different level of complexity and rigidity. Furthermore, defense-in-depth offers the best tools for information assurance.

However, this type of defense must always be planned in advance because it has to be responsive to the most sophisticated attacks and unpredicted events. Former U.S. Defense Secretary Donald H. Rumsfeld stated very well by saying, "You go to war with the army you have, not the army you might want or wish to have at a later time." [30] There is no well-developed strategy in the world that can respond to unknown situations. However, having a strategy can minimize the impact of the risk. Organizations must take appropriate actions according with their laws and regulations to survive when sophisticated attacks are happening. An information assurance strategy is the essential pylon for protecting an organization.

6. CONCLUSION

Organizations and their resources are always under risk pressure, which create them a lot of problems in the areas where they are more vulnerable. Seniors and managers have to conduct a comprehensive risk assessment within organizations in order to evaluate their level of risk and to identify the most sensitive parts. The advanced technology has brought new types of risks that are more complex and sophisticated. In today's information age a country which is isolated from the rest of the world cannot survive alone. This is why it is necessary that all the countries combine their efforts and establish a common joint research to exchange experience in the field of technological training. In addition, organizations should increase the level of security and draft plans against cyber attacks. A globalized world makes the products to be developed outside the country. This development has invented a new "Open innovation" or "Open doors" which becomes more a new way of collaborate with other companies and a new imperative of competition in global markets, but lees a secure system and control access of integrity among competitors. [31]

It is very important for organizations to make *right* and *secure* decisions and to properly address enough methods for securing information assurance. However, in order to make right and secure decisions, organizations have to have a comprehensive approach, because cyber domain includes threats that are more sophisticated and dynamic. These complicated threats most of the time are created by individuals such as customers or competitors with extensive knowledge and who have the authorized permission. Organizations should maintain their level of information assurance by developing and implementing defensive policies that may keep their infrastructure technology secure. If companies do not take measures against threats today, they will never have a greater chance of success in future cyber environment. There is no magic formula which can be applied in today's turbulent environment. Companies should be flexible and to adapt easily to this environment, meanwhile, to be strong, more efficient and more integrated with partners around the globe in order to secure their information and to remain operational. Nowadays, measures should be taken at the international level in order to share information according to some criteria which are accepted by private companies and non-governmental organizations. There is no country in the world that can defend alone against cyber threats. For this reason, the internal network security cannot be effective

anymore, and it is necessary to have a common knowledge management and a defense approach at the international level. By adopting a set of defensive strategies, the management of information assurance will be increased, and organizations will be secured from being attacked. Organizations must have a comprehensive defense policy in order to ensure the protection of critical infrastructure of their security network. Not all the time the advanced measures can neutralize the unexpected risks. Organizations have to invent new solutions based on their evaluation criteria from the risk analysis perspective.

A secure organization is not only about equipment and antivirus programs. It is very important to understand that no program or combination of programs will make a secure organization by itself. Securing information assurance is an entire process which requires critical and innovation thinking, a lot of time, money, and application of new IT technology to maintain the organization operational. However, many organizations do not want to pay much attention to information assurance domain, or they do not want to spend much money on it, and as a result they end up with unwanted outcomes. This is why creating a secure infrastructure is compulsory for every organization at national or international level, because we never know when an organization might be under attacked by very sophisticated hackers.

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FAILING EUROPE?
THE PRESENT REALITY.

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The article is concerned with the performance of the European security strategy and differentiated views of individual areas of assessment. The table contains comparison of unfair assessment by Brussels and the real situation. In conclusion, the author claims that the contents clearly indicate that the European Union is failing in the area of security.

Key words: *security, strategy, migration, terrorism, globalisation.*

1. INTRODUCTION

On May 1, 2004 the Slovak Republic became a full member of the European Union. Together with the Slovakia´s entry to the NATO it was the fulfilment of the most important objectives to which our efforts were directed. By obtaining a full membership in the EU, we also had the ability to play an active role and influence European policy.

Our common vision is that by 2020 Europe should be successful and prosperous for all Europeans, it should be an integrated region of independent, equal states creating conditions for high living standards of its citizens and to ensure their rights, freedom and security. A successful fulfilment of these targets is never assured and to achieve them it will be necessary to further reinforce the basic principles and values on which the European Union is based. Our expectations have even risen on December 12, 2003 when the European Security Strategy was adopted in Brussels [1]. To prove an affirmation that security analysts may be wrong we will compare the Report on the Implementation of the European Security Strategy of 2009 with the current situation.

2. THE IMPLEMENTATION OF EUROPEAN SECURITY STRATEGY

Several years after the adoption, we can say that the European Union carries on its shoulders a greater responsibility than ever before. The EU still remains an anchor of stability. Democracy and prosperity on the continent has increased through its expansion [2]. The situation is improving also in the Balkans. The Neighbourhood Policy has established a solid framework for relations with partners in the south and east. A new dimension has been given to these relations through the Union for the Mediterranean and the Eastern Partnership. Since 2003 *the EU has brought a new dimension to the EU also into dealing with crises and conflicts in places such as Afghanistan and Iraq.* Despite this fact, twenty years after the termination of the Cold War, Europe faces increasingly complex threats and challenges. There have still remained some unsolved conflicts in the Middle East and others have occurred even in our neighbourhood. A new threat which affects us within our societies comes from the terrorism and organized crime.

Globalisation brings new opportunities.

Many people have come out of poverty thanks to the rapid growth in the developing world led by China. Moreover, globalisation is accelerating redistribution of power and it uncovers differences in values. The recent financial turmoil has shaken developed and developing economies [2].

The EU has been contributing to a safer world through a unique file of tools. So far, we have been building human security by trying to reduce the poverty and inequality, we have

promoted good governance and respect for human rights, strengthened development and addressed the root causes of conflicts out of which conflicts and low security arise.

The EU is still the greatest granter for countries in need. To achieve lasting stabilisation a long-term commitment is needed. Over the last decade under the European Security and Defence Policy, which is an integral part of our common foreign and security policy, more than 20 missions have been conducted to cope with a wide range of crises.

To be able to guarantee the security of our citizens and meet their expectations, *we must be ready to shape events. That means that we have to think more strategically and our actions have to be more efficient and visible worldwide.* Our success is bigger if we act on time and in a uniform manner, use suitable capabilities and if we have permanent support. It is necessary that all countries follow the fundamental principles of the UN Charter and the principles and obligations of the Organisation for Security and Cooperation in Europe (OSCE). The international system is headed by the UN. All activities of the EU related to the security are interconnected with the UN objectives. Cooperation with the United States and other partners around the world offers us a unique opportunity to renew multilateralism. In order to promote better cooperation in managing crises the EU and the NATO have to deepen a strategic partnership.

A process of expansion is still a strong mechanism leading to stability, peace and reforms in our continent. Negotiations with Turkey started in 2005 and since then several chapters have been open. The progress in the Western Balkans has been continuous despite its slow pace. The accession negotiations with Croatia have progressed well. The Former Yugoslav Republic of Macedonia has gained a candidate status. The other Western Balkan countries have signed agreements on stabilisation and association. Serbia is close to meeting all conditions for approaching towards the establishment of deeper relations with the EU. A necessity in the region is the cooperation and good neighbourly relations. This process is supported *by the European Neighbourhood Policy (ENP) which commenced in 2004.*

The Mediterranean area, which is an area of major importance and opportunity for Europe, still raises complex challenges, such as insufficient political reform and illegal migration. Due to its role in the Quartet, co-operation with Israel and the Palestinian Authority, the Arab League and other regional partners, the EU was also at the centre of efforts to settle the Middle East conflict. It has been fully engaged in the Annapolis process to build two states and provides continuous financial and budgetary support to the Palestinian Authority and capacity building, including the deployment of judicial, police and border management experts working on the ground. The EU Member States make a significant contribution to the NATO missions, and the EU is engaged in governance and development at all levels. The EU extends its police missions as well. These efforts will not succeed without the full Afghan engagement and support from neighbouring countries – particularly Pakistan, but also India, countries in Central Asia and Iran. The improved prospects for good relations between India and Pakistan in recent years have certainly been a positive element from the point of view of the strategic balance.

To respond to the changing security environment we need to be more effective – among ourselves, within our neighbourhood and around the world. Our ability to meet the challenges of the past five years has developed and needs will be developed further. We have to strengthen our own cohesion through institutional coordination and more strategic decision-making. The provisions of the Lisbon strategy provide a framework to achieve this objective.

Concerning military missions, we have to continue to strengthen our efforts on capabilities as well as mutual cooperation and arrangements for the allocation of costs. Based on the experience there is a need to do more, particularly in the area of key capabilities, which include air transport, helicopters, space assets, and maritime surveillance. These

efforts must be supported by a competitive and strong European defence industry, which invests more in research and development. Since 2004 this process has been successfully lead by the European Defence Agency since 2004 which is expected to continue this work.

3. A SECURE EUROPE IN A BETTER WORLD

As a union of 25 states with over 450 million people producing a quarter of the world's Gross National Product (GNP), and with a wide range of instruments at its disposal, the European Union is inevitably a global player. In the last decade European forces have been deployed abroad to places as away as Afghanistan, East Timor and Democratic Republic of Congo. The increasing convergence of European interests and the strengthening of mutual solidarity of the EU makes us a more credible and effective actor. Europe should be ready to share the responsibility for global security and to build a better world.

3.1. The secure environment, global challenges and key threats

Large-scale aggressiveness against a Member State is now improbable. Instead, Europe faces new threats which are more diverse, less visible and less predictable.
Terrorism remains a major threat to life, it is cost demanding, it is aimed at undermining the openness and tolerance of our societies and represents a growing strategic threat for the whole Europe. Terrorist movements have more and more resources, they are interconnected with electronic networks and do not hesitate to use unlimited violence to cause massive casualties.

The most recent wave of terrorism is global in its scope and it is linked to violent religious extremism. It arises out of difficult causes. These include the pressures of modernisation, cultural, social and political crises and the alienation of young people living in foreign societies. Europe is both the target and a base for such terrorism. Logistical *bases for Al-Qaeda and the Islamic State cells have been found in the United Kingdom, France, Italy, Germany, Spain and Belgium.*

The European Union has been actively involved in solving the key threats. After September 11 it responded with measures that included the adoption of the European arrest warrant, actions against terrorist financing and an agreement on mutual legal assistance with the USA. The EU continues to develop cooperation in this area and improves its defence.

3.2. Migration crisis in 2015 – 2016

The European Union has failed in dealing with migration crisis. At a time when the EU decides to take any action, it has become obsolete and the development of the crisis has already been elsewhere [3].

"Europe cannot handle the situation, it will not be such a safe place to live as it was before. All mechanisms have failed and the vast bureaucracy that goes with it. ""It appears that Europe might not manage coherent national relations which have been made tense by this wave of migrants and refugees. "It might have been integrated at great speed." "But the European Union comprises 28 states, therefore we can say that those 28 states, among which we belong, have failed."

4. ASSESSMENT OF SECURITY STATE IN 2015

2015 was undoubtedly one of the most difficult years in the history of the European Union. On the one hand, we saw the revival of the economy, the successful launch of the Juncker investment plan and Energy Union, the Digital Single Market, as well as important global agreements on sustainable development and climate changes. On the other hand, there were armed conflicts outside the Union, the consequences of which were reflected also within the Union. From the European perspective following tasks are considered to be the most important [4].

a. Global agreement Agenda 2030 for sustainable development

This agreement was approved at the Extraordinary Summit of the United Nations in September 26, 2015 in New York. It establishes a general framework for all countries that aim to eradicate poverty and achieve sustainable development by 2030. The new strategy established 17 fundamental objectives, including the *eradication of extreme poverty.*

b. European year of development

The European Union declared 2015 the European Year for Development to communicate the importance of development and get this issue into the attention of the professional and the general public. *It also aims to encourage Europeans to help people in need* and promote fair approach to life. *The European Union and its Member States are the largest donors of development aid in the world, only in 2014 they spent more than € 58 billion.*

c. Agreement on climate change

On December 12, 2015, 195 countries adopted a new legally binding agreement on climate change. It is the first major multilateral agreement in this century that brings global action plan to combat the devastating impact of climate change and is the result of many years of international community effort. Governments have agreed on a long-term objective of keeping the increase in global average temperature well below 2°C compared to pre-industrial levels and seek to limit its increase by only 1.5°C.

d. Refugee crisis

The migratory pressure on the European Union has reached unprecedented proportions. Over a million migrants have joined the European Union, most of which were people escaping from the war, violence or political persecution. The massive influx of refugees highlighted the weaknesses of the Schengen area and led to the unilateral restrictions of free movement within the EU by several Member States. *The European Commission has introduced complete steps to strengthen the management of migration crisis. The establishment of the common border and coast guard, a common list of safe countries, strengthening the rescue operations would help to stabilize the situation and prevent the uncontrolled influx of migrants.*

e. Security threats

The terrorist attacks in Paris and other European cities have revealed safety concerns and the need for closer cooperation between European countries. In response to these threats, the European Union has adopted rules for monitoring data on air passengers and prepared proposals for the strengthening of surveillance of dangerous weapons and more strict controls at the external border of the EU. *Among Member States there is an increasing belief that they should intensify also the cooperation of intelligence services.*

f. Investment plan for Europe

The economic crisis has caused a severe reduction in investments across Europe. To reverse this negative trend and to put Europe back on the path towards the economic recovery it is necessary to make joint and coordinated efforts at European level. The Commission has identified an approach based on three pillars: **structural reforms, fiscal responsibility** and start-up of **investment for sustainable growth**. The core of this strategy is the investment plan for Europe.

g. Energetic union

In February 2015 the vice – chairperson of the European Commission Maroš Šefčovič introduced an ambitious project of the Energetic union. The aim of this project is to ensure safe, sustainable, competitive and affordable energy for all Europeans. *A common European approach to the construction of the gas pipeline Nordstream 2, which has been strenuously opposed by Slovakia and other six countries of the European Union, will also test the European cohesion.*

h. The single digital market

The Internet as well as digital technologies is changing our world – in all areas of our lives, in each business area. *In 2015 the Commission introduced detailed plans to eliminate barriers and build a single digital market.* These plans include the rules for the digital contents support, modernisation of

copyright, protection for consumers when shopping online.

i. European means for Slovakia

The European Commission has approved all operational programmes for utilization of European structural and investment funds. 15.3 billion EUR has been allocated to Slovakia for the development of several important areas – to enhance transport infrastructure, environment, energetic efficiency, research, innovation and to develop human resources.

Resources from the European funds will also be used for the development of the Slovak countryside. In addition, 3 billion EUR will be designated for direct payments to Slovak farmers.

j. Threat of Brexit

Brexit is becoming a reality. *The European Commission will support an agreement which will be fair to Britain and other 27 countries of the European Union.*

Let us confront the intentions of the European Security Strategy with the report on its implementation and the reality of the present day. According to a simple table it is clear that the message from Brussels is not objective, it highlights the merits of Europe, simplifies the view of reality and does not bring new proposals to address the situation (**Table 1**).

Table 1. Report, assessment and reality on European security strategy implementation

Number	Report on European security strategy implementation	Year 2015 from the point of view of security assessment	Reality
1.	A new dimension in dealing with the crises in Afghanistan, Syria and Iraq	Positive development	Expansion of Islamic State – solved not by the EU, but by the USA and Russia.
2.	Efforts to form events the world events	Positive assessment	We do not form. On the contrary, we always just correct negative development.
3.	Building the peace in Europe	Positively evaluated European Neighbourhood Policy	Instable development – Greece, G. Britain, V4 Group countries, Balkans
4.	Designation of the Mediterranean region for possible conflicts.	Positive assessment	Instability- Libya, Egypt, Tunisia, Morocco, Turkey, Greece, refugees.
5.	Israel and Arabic states – a relation identified as problematic	It is possible to keep the peace.	Unresolved area, continuous violence and conflicts.
6.	Terrorism identified as the greatest threat	Effective but insufficient measures	Expansion of terrorism in Africa, Asia and in Europe.
7.	There has been an unprecedented increase in migration crisis	The adoption of complete steps to manage the crisis: - Common border	All is the secondary absolute failure – problem solving in the countries – who is

Number	Report on European security strategy implementation	Year 2015 from the point of view of security assessment	Reality
		guide - List of safe countries - Rescue operations	responsible for the security system failure in Iraq, Afghanistan, Syria, Libya, and Algeria.
8.	Europe has never been safer	Security threats Intensifying cooperation among intelligence services.	It should have been done a long time ago, Europe is more dangerous.
9.	Economic policy	Decline in investment	The growth of GDP of all countries.
10.	Energetic project of the EU	Discrepancy between countries – Nordstream 2	Natural interest of the EU countries in profit from transit.
11.	Use of the EU funds	Allocated funds per year	Obsolete approach-transfer to next years.
12.	Threat of leaving the EU-Great Britain	Search for a fair solution	What is a fair solution?

5. CONCLUSION

We must realistically assess that EU is failing. Europe will have to face a lot of above mentioned challenges also in 2018 and in the next years. The understanding of the Member States that these challenges can be managed only through joint efforts will be the key to their successful management. The reforms should fulfil the expectations of the EU citizens – the provision of safety area without internal borders, mutual cooperation and economic prosperity. 2018 will have a special flavour for Slovakia. Not only from the perspective of a member country which will be contributing to seeking and adopting the solutions together at the same European table.

After the second half of 2016, when Slovakia for the first time in its history learned first-hand the difficulty in seeking a consensus among often disparate interests of member countries and security, this applies doubly.

Evaluation of the fulfilment of strategic tasks, intentions or strategies cannot be made by officials in Brussels, but it should be made by each country based on real results and benefits for them and the citizens of those countries.

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EURASIA AND FUTURE GEO - STRATEGIC CALCULUS

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Abstract: Eurasia is the vast landmass composed of two of the seven traditionally known Continents – Europe and Asia. Europe and Asia, though have traditionally been considered two separate continents, geologically they both lie on the same landmass or tectonic plate, the Eurasian Supercontinent. Despite this the idea of Europe and Asia as two separate, distinct Continents has been in vogue for centuries, more likely due to Euro-centric approach for geopolitical considerations. Eurasian landmass, covers a space of about 55 million sq km that contains 93 of present day countries (almost all of Asian countries including China and Russia, all European countries, Central Asian and some African countries) with a total population of around 4.7 billion people (almost 3/4 of the world's total population – 60% in Asia and 12.5% in Europe).
Future of rich energy resources of Eurasia and which way may these go? How would it affect the world, region and EU? There is so much happening almost every other day, that it's hard to predict the future. With the typical information overload of the current age, one wonders which facts matter and which do not.

Key words: *Eurasia, energy resources, information overload.*

1. INTRODUCTION

Eurasia has been a subject of great interest by geo-strategic thinkers and practitioners since advent of the recorded history. More so, of late, for what has been happening there for the past few years. At the outset, it is essential to clearly understand the term – Eurasia. While ***geographically***, Eurasia is simply the biggest continent: the **combined landmass of Europe and Asia**. However, geopolitically, the word has several different meanings, reflecting the specific geopolitical interests of each nation. Mainly, there are ***three major geopolitical definitions***.

Firstly, in the ***widest*** possible ***sense***, the geopolitical definition of "Eurasia" is consistent with its geographical area. This is sometimes the way it is understood in political circles in the **US, Japan and India**. Remember, this is what **Brzezinski** called the *'Grand Chess Board'* [1]. ***Secondly***, when political scientists ***in Western Europe*** talk about "Eurasia", they generally mean ***Russia integrated into Europe*** – economically, politically, and even militarily. ***Thirdly***, ***Russians*** traditionally view Russia itself, being European and Asian, as "Eurasian." The ***Russian sphere of influence***, therefore, has historically been described as Eurasia. Their view today is that "Eurasia" consists of the land lying between Europe and Asia proper; namely, those made up of ***Western and Central Russia***, ***Belarus***, ***Ukraine***; ***part of Caucasus*** – Georgia, Armenia and Azerbaijan – and ***Central Asia*** Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan. This covers about 15 % of the earth's land mass and population both. ***This*** is the definition of Eurasia that will be used during the discourse of this paper.

Eurasia has been a melting pot of civilizations, where Russian, Chinese, Turkic, Mongolian and Central Asian nomadic civilizations have co-existed and inter-mingled over centuries. Culturally diverse, yet distinctly Eurasian. Greatly significant since Huns from the Eurasian Steppes ravaged Europe in the 5^{th} Century, or the Mongols conquered much of the known world; Eurasia had been a major player in the now clichéd *'Great Game'* of the 1^{9th} and early 2^{0th} Century between Czarist Russia and British Empire. After World War-II, containment of Soviet

Union during the Cold War remained a major geostrategic pre-occupation of the West. Quite bloated, Eurasia back then, sought security from NATO through Eastern European countries and Baltic States under Warsaw Pact – buffers, so to speak. More than 20 years after collapse of the former-Soviet Union, many analysts contend that a *'New Great Game'* is brewing these days in the region. With much of Europe's virtual dependence on Eurasian energy resources; China looking westward to secure its energy needs; and a raging quest for dominance in the region between Russia and the West, Eurasian geopolitics have come under sharp focus of the entire world. Paper is an attempt to take an analytical view of the subject; without being bias to any of the stake holders.

Aim

To analyze the ***evolving geo-strategic calculus of Eurasia*** with a view to recommending viable ***policy measures for EU***.

2. HISTORICAL CONTEXT AND GEO-STRATEGIC SIGNIFICANCE

2.1. Historical Context

Eurasia, through centuries has been the cradle of many civilizations. The heartland of Eurasia led the world economically, scientifically, and artistically for many centuries despite invasions by Persians, Greeks, Arabs, Chinese, and others [2]. Many migrations and conquests out of Eurasia, their mixture with local peoples, and the resulting development of the Greco-Roman, Persian, Indian, and Chinese civilizations had taken the Eurasian cultural influence much beyond its geographical boundaries.

From 18th to early 20th Century, Czarist Russia found itself in almost a perpetual state of conflict, power politics or both – with European imperial powers. Even today, the power politics of *'Balance of Power'* and *'Great Game'* of the 19th and early 20th centuries have not lost their relevance in the realm of geo-strategy. A lot of scholars still support ***Mackinder's Heartland Theory*** of early 20th Century, when he said, *"Whoever controls Heartland* [Eurasia that we're referring to], *controls the World Island* [i.e. Europe, Asia and Africa combined]; *whoever controls the World Island, controls the world."*

Europe's apprehensions of Soviet expansion towards west, both historically and towards the end of World War-II, have also had a profound effect on European and US policies ever since. On the other hand, repeated conquests by European powers on Russia, until the World War-II and their pursuit of *'Containment'* Policy during the Cold War, has placed a deep-seeded fear of vulnerability from the West in the Russian psyche. Whether the events taking place today in Russian neighbourhood, reflect the same historical *'Security Dilemma'?*

Post Cold War Race for Influence

Immediately after disintegration of former USSR, all major players launched different initiatives for their influence in the region on basis of common political, economic and security interests:

a) Russian Initiatives

- Commonwealth of Independent States (CIS) [3]
- Eurasian Economic Community
- Eurasian Union (Figure 1)
- Collective Security Treaty Organization (CSTO)
- Shanghai Cooperation Organization (SCO)

b) Western Initiatives

1. European Union (EU) [4]

The **European Union** (**EU**) is a political and economic union of 28 member states that are located primarily in Europe. The EU has developed an internal single market. Covering 7.3% of the world population, EU constitutes approximately 22.2% of global nominal GDP and 16.9% in terms of purchasing power parity. EU was awarded the Nobel Peace Prize [5] in 2012. Due to its global influence, the European Union has been described as an emerging superpower [6].

Fig. 1: Eurasian Union.

2. NATO Expansion [7]

NATO is an alliance that consists of 29 independent member countries across North America and Europe. An additional 21 countries participate in NATO's Partnership for Peace program, with 15 other countries involved in institutionalized dialogue programs. The combined military spending of all NATO members constitutes over 70% of the global total. Members' defence spending is supposed to amount to at least 2% of GDP by 2024.

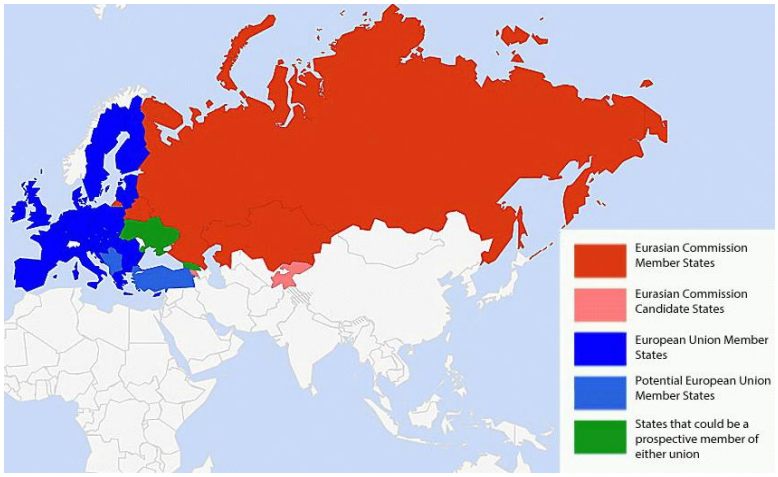

Fig. 2: Expansion of NATO.

3. Colour Revolutions.

A term widely used for various west-sponsored democratic and west-leaning revolutions within the Russian sphere of influence. It included the:

- Rose Revolution in Georgia – 2003.
- Orange Revolution in Ukraine – 2004.
- Tulip Revolution in Kyrgystan – 2005.
- Jeans Revolution in Belarus – 2006.
- Grape Revolution in Moldova – 2009.

4. Russian Invasion in Georgia.

A five-day long conflict between Russia and Georgia in 2008 ended with Russia recognizing the break-away independent states of Abkhazia and South Ossetia. Relations between the two states have been sour since then.

5. Events in Ukraine.

A series of events in Ukraine has brought Eurasia in the centre of world debates. Briefly, the events can be summarized as:

- In Nov 2013, Ukraine's pro-Russia government withdrew its request for greater cooperation with EU.
- In Feb 2014, pro-West protesters launched a coup, forcing a regime change.
- Sensing the trend of events, Russia annexed Crimean peninsula in March 2014 after a controversial referendum.
- A series of reciprocal economic sanctions followed, led by US and followed by EU and Russia.
- No major break through has so far been made in diplomatic contacts and heads of state meetings.

2.2. Geo-Strategic Significance of Eurasia

Economic Significance

Though encompassing about 15% of the world's landmass and population, Eurasia accounts for about 4% of the world's GDP in nominal terms. In terms of Purchasing Power Parity, however, it almost trebles to about 11 %.

Eurasia, mainly Russia, controls more than 35 % of the world's natural gas reserves and about 7.3 % of its crude oil. Contribution of Eurasian countries in world's gas and oil mix is given in the table below.

Ser	Country	Percent of World Gas	Percent of World Oil
(1)	Russia	23.4 %	5.0 %
(2)	Kazakhstan	1.2 %	1.8 %
(3)	Turkmenistan	8.6 %	0.04 %
(4)	Uzbekistan	0.9 %	0.04 %
(5)	Azerbaijan	0.5 %	0.5 %
(6)	Ukraine	0.5 %	0.02 %
	Total	**35.0 %**	**7.0 %**

Table 1: Eurasian contribution to world oil and gas mix.

Amongst other natural resources, Eurasia accounts for about:

- One-fourth of the world coal. [Russia – 17.3; Ukraine – 3.8; Kazakh – 3.4]
- One-fourth of world's Uranium production. [24 %: Kazakh – 10; Russia – 8; Ukraine – 3; Uzbek – 2]
- 13 % of gold production. [Russia – 8; Uzbek – 3.4; Kyrgyz – 1.]
- 10 % of the world's iron ore.
- 7% of global electricity generation. [Russia – 4.8; Ukraine – 0.9; Kazakh – 0.4; Uzbek – 0.25].

Major hydrocarbon reserves in Eurasia are shown in the picture below.

Fig. 3: Major Hydrocarbon reserves in Eurasia.

Russia is the world's largest exporter of fossil fuels – with its proceeds comprising 16% of the GDP, 52% of its federal budget revenues and over 70% of total exports [8].

Russia accounts for about 36% of the continental Europe's natural gas, 31% of oil and 30% of coal supplies. Some central and eastern European countries are almost entirely dependent on Russia for their oil and natural gas [9].

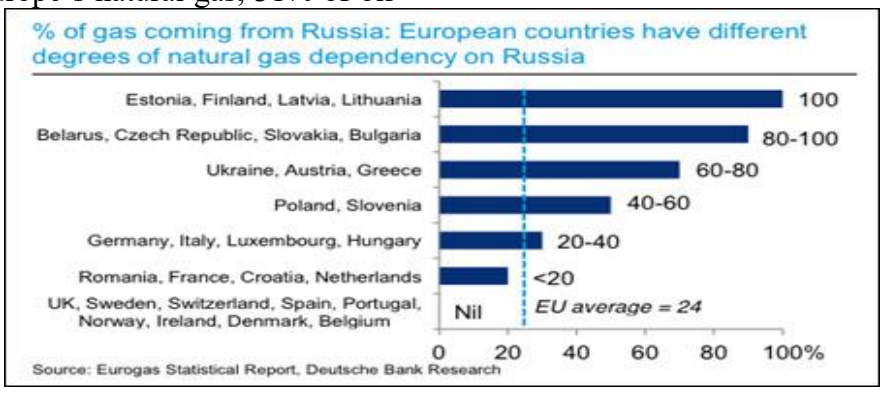

Fig. 4: Europe's dependence on Russian gas.

In September 2013, President Xi Jinping, undertook an extended visit of Central Asia promoting the idea of a *"Silk Road Economic Belt."* [10] Proposed alignment is shown below.

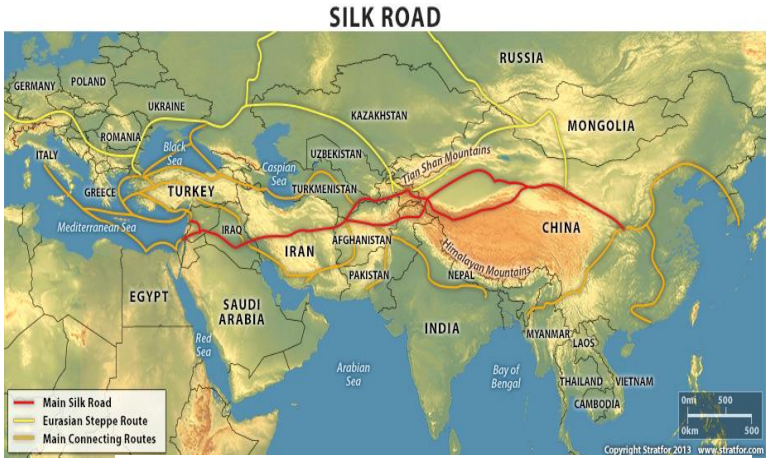

Fig. 5: China-Eurasia link – The New Silk Route.

Political Significance

The energy policy is the heart of Russian foreign policy and its geo-political lever in Europe, Caspian Basin, Central Asia and with China [11].

Formation of Eurasian Union provides Russia a forum to exert its political clout globally. Besides, it also enables it to coax or coerce its former satellite states back into its fold.

Central Asia is considered *"deeply Russified."* This status has been further underscored by the presence of Russian troops and ethnic Russian inhabitants, as well as strong economic ties and established transportation links to Russia.

The impact of Russia in Central Asia also includes ethnic and linguistic dimensions. Approximately 10 million ethnic Russians [12] call the five former Soviet Central Asian republics home.

China's interest for the Caspian region has found common ground with Russia's ambitions in the Shanghai Cooperation Organization (SCO).

Security

Russia relies on nuclear forces to maintain its status as a major power, because of the reduced capabilities of its conventional forces [13].

Russia has a number of military installations in the region, Kazakhstan, Kyrgyzstan, and Tajikistan staffed by several thousand military personnel. Russia continues to have a significant geostrategic interest in Central Asia [14].

Six former Soviet republics; Ukraine, Georgia, Moldova, Kazakhstan, Armenia, and Azerbaijan now link their militaries to NATO's, via the ***"Partnership for Peace"*** program.

All five former Soviet republics in Central Asia, Kyrgyzstan, Tajikistan, Turkmenistan, Kazakhstan, and Uzbekistan provide NATO countries with some basing, transit, refueling, or over flight rights for use in the Afghan war [15].

Russia's actions in Ukraine have heightened long-standing tensions; and have sparked a strong debate within NATO over how Europe should react to a new, more aggressive Russian foreign policy intended to re-establish a Russian sphere of influence along its border with Europe.

Fig. 6. Ethnicity-based leaning in Ukraine.

Despite regaining Crimea, in March 2014, there is no land link of Crimea with Russia. Keeping **Ukraine** within its circle of influence, therefore, is of **vital security interest to Russia**. From the Russian point of view, NATO expanding into Ukraine threatens Russian interests in the same way, as if the Warsaw Pact had moved in Mexico. Therefore, from a *geo-strategic* stand point, some of the **Russian actions** that appear rather offensive **are** actually **defensive in nature**.

3. MAJOR PLAYERS' INTERESTS IN EURASIA

Eurasia is considered as an economic and political powerhouse of the 21st century. Various issues engulfing the sensitive Eurasian region include exploitation of the Caspian seabed resources, ethno-political conflicts, the problems involved in oil and gas transit routes, links with world markets and the region's critical security and environmental issues. It is in this environment that the major players within and outside the region are in constant pursuits of their interests:

a. **Russia's** has multiple interests in Eurasia that are spread across political, economic and security domains. It mainly seeks to preserve its influence over the region and deny the same to US / NATO / EU. Supply of natural resources to Europe and China lies at the heart of Russian politics.

b. **USA** has substantial political, economic and security interests in the region. Countering Russian resurgence ranks high on the agenda.

c. **Europe's** interests in the region predominantly revolve around Energy security and preservation of trade relations.

d. **China's** interests mainly lie in economic domain; though some security concerns over separatism in Western China also figure out.

e. **CARs** seek to address their economic and security interests in the region.

f. **Iran** mainly wants to secure its economic interests: i.e. to maximize the advantage of its geo-strategic location.

4. PROJECTED SCENARIOS

With **Russia** being the ***principal actor*** within the region, much of projected scenarios for future of Eurasia revolve around it. Bulk of the environmental analysis of the region has largely been covered in the preceding part.

4.1.Major Trends, Drivers and Uncertainties

For the ***horizon year*** of ***2030***, major trends, drivers and uncertainties are:

Major Trends:

- Emerging centers of power – China, India etc.

- Growing food, water and energy demands around the globe (35, 40 and 50 % respectively) – Consumerism.
- Energy as the main geo-political concern.
- NATO's expansion within Russian sphere of influence.
- Globalization and diffusion of state power.
- Demographic Patterns: shrinking population in Russia (from 141 to 130 Mn); shrinking youth percentage globally.
- Technological advancements.

Drivers

Multiple drivers present multiple combinations of scenarios. Amongst the long list of uncertainties surrounding our future global and regional projections, the major drivers of change in Eurasia have been considered as:

- Energy demand.
- Security maneuvers.
- Regional economies.
- Situation in ME and Afghanistan.
- Rise of China.
- Globalization.
- Institutional strength / governance.
- Technology.

Uncertainties

There is a long list of uncertainties in the projected world of ***2030*** within and around Eurasia. Some of the important ones are:

- Europe's demand / dependence on Eurasian energy resources.
- Russian influence in CARs.
- Rise of political Islam / separatist tendencies.
- Integrity of EU: post BREXIT.
- Petroleum prices after exploitation of shale gas resources.
- Continued rise or disintegration of China.
- Peace in Middle East and Afghanistan.
- Crisis-prone global economy.
- Impact of new technologies – constructive and disruptive.
- Capacity of Russian institutions to absorb and manage change.
- Governance gap due to diffusion of state power.
- Climate Change, natural disasters, food crises and pandemics.

4.2.Scenarios

Plotted on a 2 x 2 matrix, four plausible scenarios for Eurasia emerge. These are:

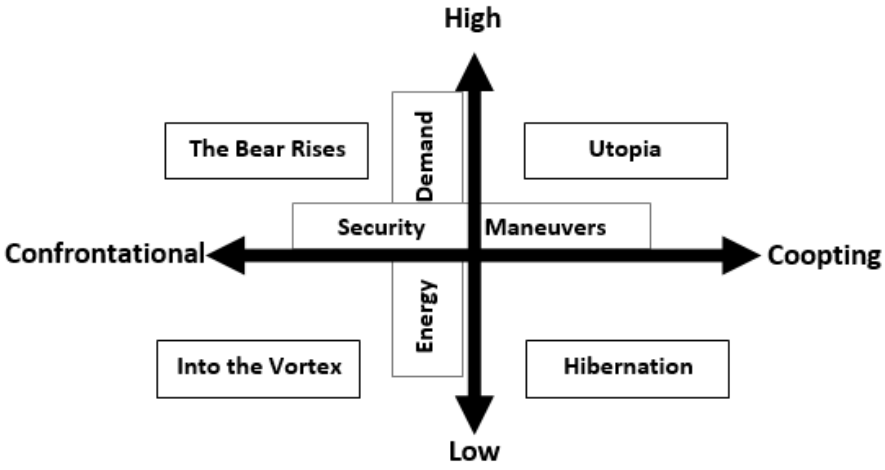

Fig. 7 Scenarios for Eurasia

4.2.1. Scenario-1: The Bear Rises (Top Left)

Assumptions:

- NATO expansion into Eastern Europe.

- Economic sanctions on Russia.
- EU into economic recession.
- Turmoil in ME and Afghanistan.
- High oil prices.
- Russian economy expands East wards.
- Climate change and development of new sea lines of communication (SLOCs) in the Arctic Ocean add to Russian influence [16].

Scenario – 1: Caving in from the lobbying of US Defence-Industrial Complex, exhortations of Ukrainian pro-West government and domestic political pressures on European states, ***ABM Shield Batteries*** were ***deployed in Poland and Ukraine*** with establishment of ***NATO bases*** in ***Baltic States*** by 2020. Tit-for-tat ***economic sanctions*** sent ***EU into an economic recession***; and ***largely marginalizing the economic block by 2030*** due to other systemic causes. Western plans of alternate pipelines, by-passing Russia, could not materialize due to political and technical reasons. Continued crisis in Middle East and North Africa took the ***oil prices beyond US$ 150 per barrel by end 2020***, providing a fillip to Russian economy. By 2020, Russian industrial sector started picking up – leading to diversification of its economy. ***Russia***, forced to look ***eastward***, cashed in on the Chinese option of ***New Silk Route*** connecting both Eurasian and Chinese economies ***by 2022***. ***Pakistan-China Economic Corridor***, linking Gawadar Port with Urumqi, was completed in ***2025***. ***Eurasia, China*** and ***South Asia*** emerge as the ***most powerful economic block*** in the world ***by 2030***.

4.2.2. Scenario-2: Utopia (Top Right)

Assumptions:

- Ukraine settles peacefully.
- NATO expansion capped.
- EU and Russia economic cooperation enhanced.
- Limited unrest in ME. Peace in Afghanistan.
- Russian economy expands East wards.

Scenario – 2: ***Prudence prevails*** in both the Western and Russian policies. After a terrible winter in Ukraine amidst suspension of Russian gas supply, negative growth in major European economies due to reciprocal economic sanctions, ***rapprochement began in 2019***. After a UN-brokered re-election in Ukraine, East Ukraine gain regional autonomy; EU and ***NATO's eastward expansion capped***. With ***change in Russian political leadership in 2024***, Andrey R. Belousov came into power with strong belief in economic upsurge. ***Institutional reforms*** were put in place and ***economic cooperation with Europe soared***; while both retained their regional identities as separate economic and political blocks. With limited unrest in ME, demand of crude oil around the world increased; but ***oil prices*** remained steady. Options with ***China*** were optimally exploited. ***Peace in Afghanistan*** brought greater prosperity to CARs with completion of ***TAPI pipeline in 2025***; almost in time with completion of ***Pakistan-China Economic Corridor***.

4.2.3. Scenario-3: Hibernation (Bottom Right)

- *Assumptions:*
- Ukraine settles peacefully.
- Break-through in cheaper shale gas technology.
- Peace in ME and Afghanistan.
- EU's dependence on Russian gas supplies reduced.
- Oil prices drop.
- Russian economy contracts.

Scenario – 3: While ***political de-escalation*** measures were taken by US, European countries and Russia, stand-off over Ukraine petered out. NATO's eastward expansion was capped. ***Peace*** prevailed ***in Middle East*** by 2020; and ***Iran's relations with US improved greatly***. A ***cheaper*** *'fracturing'* technology enabled exploitation of world's ***shale gas*** reserves, substantially reducing Europe's dependence on Russian energy. ***Falling oil prices*** hit Russia hard. In reaction to this, the government ***nationalized*** parts of the ***economy*** in ***2020***; further exacerbating the decline.

4.2.4. Scenario-4: Into The Vortex (Bottom Left)

Assumptions:

- Ukraine conflict intensifies and results into direct confrontation between Russia and NATO.
- NATO expands Eastwards till Russian border.
- EU and Russia confrontation.
- Break-through in cheaper shale gas technology.
- Peace in ME and Afghanistan.
- Oil prices drop.

Scenario – 4:. With harsher economic sanctions and decisions for deployment of ***ABM*** Batteries in ***Poland*** and ***Ukraine***, the battle-lines were almost drawn in Europe by 2019. In Aug 2018, Russian forces marched into Ukraine, exercising their ***'Right to Protect'*** ethnic Russian population of Ukraine. Intense diplomatic and military posturing. A ***series of conflicts in 2020's over Belarus, Georgia*** and again ***Ukraine*** kept ***Europe and Russia*** tied down in a ***zero-sum game*** – seriously undermining the economic growth. ***Falling oil prices*** hit Russia hard. By 2025, Europe and Russia both got into ***economic recession*** due to systemic flaws; lack of institutional reforms and over-reliance on proceeds from oil sales respectively. This spiraled into a ***global economic crisis***. By ***2030***, ***EU disintegrated*** and ***Russia lost control over CARs, Belarus*** and its resource rich ***Far East***.

4.2.5. Conclusions

a. European economy is heavily dependent on Russian gas. No other alternative can replace it, at least, till medium term. Any suspension in supply can send major European economies into recession.

b. Given the increasingly energy-hungry economy of China and abundance of the same in Eurasia, there are natural complementarities between the two regions.

c. Much of the Eurasian power-politics appear to revolve around the control of and access to Central Asian oil and gas reserves.

d. Russian revisionism in Crimea and Central Asia suggests that its influence over the region's hydrocarbon resources is likely to continue till at least short to medium term.

e. US and NATO forces have gained footholds in Eastern Europe through *'Partnership for Peace'* initiative; and in CARs for support of GWOT in Afghanistan after 9/11.

f. Historically, Russians perceive their western border as their *Achilles' Heel'*. Expansion of NATO into Ukraine presents a precarious *Security Dilemma* to Russia – a probable 'Red Line'.

5. THE WAY FORWARD

Over a period of time European Union has emerged as a powerful geopolitical entity. It has come a long way from the courtship between most developed founding members' to a Europe-wide superpower ready to climb rungs of social and economic order on the global ladder. Theoretical framework of European integration still seems vague as it is transitions towards consolidation. In this context, the EU foreign policy is also evolving under impact of reasons stemming from both structural and political context and from external geopolitical trends. Despite the fact that the common EU foreign policy is still a vague concept, dependant on constant dialectic change within the EU itself, it is clear that now we can talk about the existence of certain rules [17].

5.1.Foreign Policy

Despite the fact that concept of European Neighbourhood Policy (ENP) was focused towards EU expansion to the East, started in 2004. However, the integration of new members into EU remains a blurry concept causing evident frustration among the struggling countries vying to join band of brothers. Thus, it is imperative to find new solutions to the challenges related to the integration of the CEE countries. Though signing of Association Agreements with Georgia, Moldova and Ukraine in June 2014 and the establishment of a visa-free regime with Moldova has brought European

Neighbourhood Policy and Eastern Partnership Programme to a completely new level yet crisis' like (Ukraine, Crimea, Russia's virtual control in the former Soviet Union area) require better unity of the EU and the development of fundamentally new approaches to its Eastern policy.

EU has remained traditionally fragile in building a consensus towards bilateral engagement with Russia. Still we see divided opinion even on issues like Ukraine. Two clear blocks; one with a relatively hawkish approach, in favour to put all possible sanctions on Russia and second having comparatively lenient view like France, Italy, Hungary. A unified pro European approach settling down Russian insecurities, ensuring long term peace in the region is the only solution. EU must withstand that European agenda is far supreme and obligatory than serving US interests in the region resulting into undue pressure on underdeveloped CEE countries.

5.2.Trade Policy

Favorable trade policy regimes for creating a common EU – EAEU economic space in the wake of sanctions, anti-globalization movements and Brexit are the biggest challenges to EU. Protectionism wave initiated by USA recently in shape of steel tariffs, initiating an unannounced trade war will have serious adverse consequences. Regarding EU-EAEU potential trade deals, negotiations cannot start unless relations with AA/DCFTA countries (Georgia, Moldova and Ukraine) are settled. EU-EAEU agreement will be more than just a FTA and results are not to be expected before the next decade. Thus a pro EAEU approach incorporating Russia and other stake holders is a must to ensure long term trade relations in Eastern Europe.

5.3.Energy Policy

Dialogue between EU and EAEU is seen as vital for economic cooperation in Europe. The reasons why the EU remains on the sidelines include skepticism about whether the EAEU project will really materialize.

One reason for the EU's reticence is certainly the EAEU's strategic importance for Russia and its consequent geopolitical relevance. For Moscow the EAEU is one element of the balance of power in a multi-polar world, creating a counterweight to both China's Belt and Road initiative and to the European Union. But in restricting its vision to geopolitics and security, the EU is ignoring the EAEU's potential to generate progress on market liberalization and diversification.

The energy space joining Europe and Asia is increasingly being shaped by actors other than the EU. China's Belt and Road strategy, which is successively bringing in individual EU member states through moves like the 16+1 initiative, is the most prominent example. In general terms, it is energy infrastructures and interconnectivity that create and shape integrated energy spaces. If diverging legal and regulatory spaces now emerge, new fault lines, barriers and fractures will appear where they meet, with repercussions for commercial activity and market transactions [18].

6. CONCLUSIONS

The evolving geo-strategic calculus in Eurasia has enormous global and regional implications. Where on one hand, it threatens to destabilize the region, it has also begun to show signs of greater Sino-Russian cooperation in future. Recent developments of *'New Silk Route'* and Russia-China and CARs-China oil and gas pipelines hold massive opportunities. The critical element hence, the importance of peace in Afghanistan; for which, a regional solution should be brokered with Pakistan, Russia and China playing their due roles.

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THE TIPOLOGY OF RUSSIAN INTERNATIONAL INTERVENTION – THE GEORGIAN CASE

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Russian interventionism manifests itself in a broad number of shapes and forms, which are explained by the circumstances of international politics and generally speaking, dependent on Russia's grand foreign policy. Therefore, I have taken the case of Russian intervention in Georgia to establish whether there is a specific typology and methods followed through by Russia when it decides to intervene outside its borders.

Thus, through the motivation of international intervention, I will eventually identify, under the paradigm of the Copenhagen School, the many forms of Russian interventionism after the year 2000.

The definition of Russian interventionism is achieved both through programmatic documents and by their implementation in various ways.

Key words: *international intervention, hybrid warfare, revisionist foreign policy, responsibility to protect.*

1. INTRODUCTION: THE REVISIONIST POLICY OF THE RUSSIAN FEDERATION

Russia's foreign policy over the past two decades has had several phases, starting from a clear opposition to the status quo before the events of September 2001, following an alliance with the West in the fight against terror and continuing with a fierce struggle of imperial reassertion and reunification, considered to be a revisionist foreign policy.

Over time, after many clashes, it can be noticed that Russia is not missing from the confrontation place and always finds claims, intrusion ways, ways of intervention, in an aggressive and determined tone.

On the occasion of the 42nd Security Conference in Munich in February 2007, Russian President Vladimir Putin used harsh language to challenge the existing pattern of Russia's relations with the West, which, in his opinion, had been in force since the end of the Cold War. Putin's main statement was that the West, and especially the United States, did not take Russia's opinion and interests into account. Putin criticized general issues such as the US ambition to build a unipolar world order and lack of commitment to arms control as well as punctual issues such as NATO enlargement and missile defense. Putin's message to the transatlantic event participants was that Russia no longer accepted the existing international order. [1]

This speech symbolically marked the opening of a new phase in Russia's foreign policy, which can be mentioned as a revisionist.

In the mid-1990s, Russia has criticized the model of the relationship with the West that emerged after the end of the Cold War. But, at the same time, Moscow was reportedly trying to join the then existing global order, saying that it wanted to aspire to Western-dominated institutions and instead was pushing system adjustments that were meant to be favorable to Russia. (From this point of view, Moscow's policy towards the West must be described as a status quo policy).

Starting 2007, Russia apparently changed its mind. Moscow started to tell the world that it doesn't agree with the way the international system was shaped up.

The ministry of Russian foreign policy at that time, Lavrov, had also some intervention that clarify this trend and deliver more elements to underline the way that Russian

Federation understands the international relations:

“When Russia is being pushed into the position of a ‘revisionist power’ contesting the status quo, one should ask what status quo we are referring to, now that the Cold War has ended, a multipolar international system is objectively emerging, and the world is experiencing a financial crisis. Is it a status quo [policy] to bring military infrastructures closer to the Russian border?” [2]

Also, a year after, he said: “I would not agree that any structured international relations existed during the last 20 years. Rather, we witnessed a drift of what was before [in the Cold War period], which ultimately proved inadequate to the new reality. For this reason, speaking of a status quo seems to be irrelevant and a de facto defense of the past”. [3]

It is only at the end of 2006 and early 2007 that Russia seems to begin to shape a new model of relations with the West and a new position on the international stage. Since the Munich speech in 2007, Russia's policy towards the West and its neighbors in the CIS has become increasingly assertive and sometimes even aggressive. The culmination of this approach has so far occurred with the Georgian war in August 2008.

The global economic crisis, which started to affect the Russian economy only in the last quarter of 2008, was a factor that Russia didn’t expect and didn’t take into account when it launched the attack against Georgia. It triggered a speculation that Russia's "revival" and "revisionism" era was coming to an end - that Moscow would not have enough funds to implement such an ambitious policy and that it would be forced to mitigate position in international relations, and the revisionism from 2007-2008 will prove to have been a short episode, a moment of euphoria caused by the success of the Russian oil industry. However, the first year of the crisis and the years that followed did not give enough reason to appreciate that the Russian Federation's foreign policy will change.

2. RUSSIAN INTERNATIONAL INTERVENTION TYPOLOGY – THE GEORGIAN CASE

Russia's military intervention in Georgia in August 2008 raised significant questions about Russian thinking and practice on the legitimate use of military force abroad, especially with regard to neighboring states or the so-called "near neighborhood." [5]

The near neighborhood concept in Russia's foreign policy is a consistent pillar in explaining interventionism in the region, ultimately representing the main justification that Kremlin leaders use.

At the NATO summit in Bucharest in April 2008, the US President George W. Bush announced that Georgia and Ukraine should receive the Accession Action Plan, and even if they did not receive it in the end, but only got the NATO's intention to receive it, the two states entered in the North Atlantic Club, which irritated Russia, given its categorical opposition to NATO's eastward expansion process.

However, Russia had begun long before the conflict to carry out a series of actions leading to a possible military intervention in Georgia, some of them intensifying as a result of Georgia's steps to the west.

Thus, Georgia participates in the region's most important economic project: the construction of the Baku-Tbilisi-Ceyhan pipeline, which allows Azerbaijan to diversify the routes of its energy resources to the world market and not to depend on Russia. It was Georgia's first step to get away from Russia.

In 1999 Georgia became a member of the European Council. Moreover, the country's leadership officially announced the intention of Georgia to become a NATO member. Subsequently, the US has initiated the so-called "Train and Equip" program to modernize the Georgian army and enhance interoperability with NATO. [4]

In addition, Georgian soldiers participated in the NATO mission in Kosovo in 1999. Then President George W. Bush paid a visit to Georgia in 2005 as a warning message to Moscow. Georgia has tried to show its Western partners that it wants to be not only the consumer of security (from the Euro-Atlantic security system) but also the security provider. Thus, the Georgian soldiers joined

the coalition forces in Iraq as well as the NATO mission in Afghanistan as part of the International Security Assistance Force (ISAF).

Moscow has begun to consolidate its positions in separatist regions of Georgia, while Tbilisi has tried to significantly increase its partnership with the West. Russia provided military equipment to the armed groups in Abkhazia and South Ossetia. Moreover, it stepped up the process of issuing passports to citizens of these regions.

All this was happening in the context of continued tensions in Georgia due to the risk of territorial disintegration due to the separatist demands of the two provinces, especially in the case of Ossetia, which had held a referendum in 2006 to obtain independence.

At the same time, Russia announced that its army was ready **to protect its citizens abroad**. Thus, the first signs of a possible armed conflict between Russia and Georgia had become visible in 2005.

On this basis, Russian military expert Pavel Felgenhaur predicted that Vladimir Putin would launch a military intervention against Georgia in Abkhazia and South Ossetia in August 2008.

Finally, on 8th of August, the military confrontation began, Russia attacked Georgia and invaded South Ossetia. During this period, Russian President Dmitry Medvedev was on vacation, and world leaders were at the opening ceremony of the Olympic Games in Beijing.

Fig. 1 Georgia map with the two regions, Abkhazia and South Ossetia.
Source: The Economist

Military intervention in Georgia was also called the blitzkrieg war, lasting only six days. The first Kremlin leader's statement highlighted that "women, children and the elderly die in South Ossetia, and most of them are citizens of the Russian Federation," and "those responsible for it will be punished properly." [6]

Thus, Georgian President Mihail Saakashvili ordered the army to respond to the attacks of secessionist groups in South Ossetia on Georgia's incursion into South Ossetia on Thursday August 7 to stop the bombing of Georgian villages by the Ossetian militia. Air strikes in the region and military troops were send to South Ossetia.

The ceasefire was immediately followed by peace talks, mediated by a third state - France. The six-point Peace Plan, an agreement contested by the United States, recognized Georgia's sovereignty, but not its integrity. The two regions remain separate from Georgia, and Russia is committed to withdraw the troops.

On August 26, the President of Russia signed an official act acknowledging the independence of the two regions. The US reaction was not late, and G.W. Bush said at the time: "The United States condemns the decision of the Russian President to recognize the Georgian regions of South Ossetia and Abkhazia as independent states. Georgia's territorial integrity and borders must be respected, just like those of Russia or any other country." [7]

With regard to the instruments used in this intervention, in addition to the terrestrial and airborne armed force used, the cyber and informational dimension should also be mentioned.

A cyber-attack was reported thus unfolding a new front of the invasion coordinated by Russia. On August 8, Georgia's presidential website was taken under external control and began to expose pictures of Adolf Hitler interspersed with photographs of President Saakashvili. But another 38 major Georgian

websites have been attacked, including the Foreign Ministry, the National Bank, the Supreme Court, and the Central Electoral Commission, the American and British embassies. Obviously, the ability of the Georgian authorities to reach out to the public has been affected.

In order to facilitate communication between the authorities and the outside world, Poland and Estonia, allies of Georgia, intervened and offered the Georgian government their websites as alternative and temporary platforms.

Media campaigns began on both sides. A study by Hans-Georg Heinrich, professor of political science at the University of Vienna, together with Moscow-based journalist Kirill Tanaev on the trends of the six-day war in Georgia and his echoes in a selection of Western newspapers (New York Times, Le Monde, The Guardian, Washington Post, Der Standard) and, of course, Georgian (independent) and Russian, Rossiiskaia Gazeta (power) and Novaya Gazeta (opposition) analyzed this situation. [8]

The conclusion of the research claims that initially the Western newspapers went to Georgia and President Saakashvili and accused Russia, and later the same newspapers became much more critical and circumspect over the circumstances in which the conflict was triggered, acknowledging the falsity of the theory that Georgia would have been the victim of Russian aggression.

So we have elements of the hybrid warfare, a type of warfare considered to be of new generation, but, in my opinion, its new-ness consisted in the transformation that have arise from the technological leap and globalization. The hybrid warfare in the Russian version is beginning to become a concept since the publication of an article in 2013 by Russian General Valery Gerasimov, Chief of Staff of the Russian Armed Forces. The article mentions the different types of modern warfare by referring to operations led by Western states, exemplifying the case of Libya and Syria. He points out, among other things, that the hybrid warfare involves political, economic, informational, humanitarian and other non-military measures. [9]

However, this article is not a strategy of the Russian Federation itself, especially since the implementation of these ideas would materialize during the intervention in Ukraine. From a strategic point of view, promoting the concept of hybrid warfare under the name of the Gerasimov doctrine can be considered as a legitimation of actions for Russia's subsequent interventions and is certainly an important document from the point of view of the analysis of Russian interventionism.

Even though hybrid war is assimilated to Russia's intervention in Ukraine, according to current definitions, it also applies to Georgian case.

3. CONCLUSIONS – FROM MOTIVATION TO ARGUMENTATION AND LEGITIMIZING THE RUSSIAN INTERNATIONAL INTERVENTION

The motivations of Russia's intervention in Georgia have several dimensions: the strategic, the economic and the consistency with the principles of the Russian foreign policy are implicit.

Russia has strategic motivations considering geographic location of Georgia. Located in Transcaucasia, between the Russian region of the North Caucasus and the Middle East, Georgia is part of the "buffer zone" between Russia and the Middle East, the South Caucasus. The region is bordering on Turkey and Iran. So the strategic importance of the region has made Georgia a security concern for Russia.

Major economic reasons, such as the presence or transport of oil, have also increased interest in Transcaucasia and therefore Georgia. Control over Transcaucasia, in the opinion of Swedish academician Svante Cornell, would allow Russia to control Western influence in the geopolitically important region of Central Asia. [10]

Russia has appreciated the Black Sea coast and the border with Turkey as Georgia's strategic attributes. Russia had more interests in Abkhazia than in South Ossetia, because Russia's military presence on the Black Sea

coast was considered vital for Russia's influence in the Black Sea.

The closeness of the Western structures and declared ambitions of Georgia to join the North Atlantic Alliance, as it is observed also in Ukraine's case, where ties with the European Union were more visible, made Russia demonstrate that the area in its near neighborhood is an area of influence that Kremlin wants to control at all costs.

The arguments put forward by Russia to justify this campaign show that Russian interpretations of international law as well as rules on the use of force have served as instruments of state policy rather than being rooted in an international consensus.

Russia's speech in this context on sovereignty, self-determination and the legitimacy of recognizing South Ossetia and Abkhazia as states appears similarly strongly influenced by its own political interest and Russian views on its right in the CIS region.

Among Russian claims, Moscow's commitment to protect "citizens" in territories beyond its borders has been particularly controversial. It was considered that Russia, through its justifications to trigger the war against Georgia, disputes to a greater extent the interpretation of certain international norms, which they consider to be essentially constructed by the Western states.

On the other hand, we can note that the argumentation of interventionism in this case can fall within the scope of the concept of responsibility to protect, with the specification of the importance of the ethnic aspect transposed into a dimension with emotional implications, as observed in the Russian leaders' speeches.

Today, Georgia is closer to the West than to Russia, despite geographical proximity. Tbilisi has significantly stepped up cooperation with Washington and NATO, with new institutions, including the NATO-Georgia Commission. Also, the Georgian-European relations have advanced to a new level after the signing of the EU-Georgia Association Agreement.

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THE PARALELISM OF THE CONTEMPORARY-MEDIEVAL CHRISTIAN FANATICS AND THE SECURITY RISKS INDICATED BY THEIR OBJECTIVES

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Religious fanaticism has manifested itself in Christian religion amid the action of religious entities whose members have not accepted individuals who have not mastered their doctrines and fanatical goals. The phenomenon was identified only with a part of the Christian confession, indifferent of the rite: Catholic, Protestant or Orthodox. The roots of unaltered fanaticism over the past millennium are clear and edifying, in the sense that all fanatics believed to fulfill the will of divinity. They also thought it was their duty to modify society according to their own confession, demonstrating special violence to achieve their goals. The partial or total destabilization of the states in which they appeared and manifested was common, and the killing of thousands of people to set up communities or even theocrats became normal. In the following I intend to point out these references from the medieval - contemporary perspective and the measures of the authorities to prevent attacks on individual life and integrity and on national or international security.

Keywords: *religious fanatics, goals, Christianity, risks, medieval, contemporary*

1. INTRODUCTION

Religious fanaticism in essence points to misinterpretations of the doctrine of any religion, because many times the basis of this phenomenon is faith in a divinity without reference to the whole complex of doctrines and religious teachings, which maintains a balance and at the average level of religious zeal as well as intolerance towards those of another denomination. Religious fanatics have objectives or develop clearly defined aspects of the actions of such persons over time and the way in which religious matters are addressed by them. These include: the Crusaders, the Protestant Reformists, members of the Inquisition, the Christian-Orthodox Sects, whether they existed eight centuries ago or manifest in contemporaneity.

The problem was and is, with these religious-fanciful entities, that they have been successful in proselytize actions, forming followers according to their own religious and political objectives, because most of these religious sects and organizations have societal-modifying goals. These fanatics have posed risks to individual and state security, which in the modern era is known under the name of national security.

2. CHRISTIAN CRUSADES

These were military and religious expeditions carried out between 1096 and 1270 with the purpose of liberating Jerusalem and the Holy Land from Islamic domination. Although this is the dominant idea in the research carried out in this field, the remaining historical and archaeological testimonies point to a completely different reality. These crusades came as a reaction to the conquest of Jerusalem by soldiers of another denomination. But this religious rivalry existed for about half a millennium, amid the conquest of Jerusalem in 614 A.D. by the armies of the Persian empire of this capital symbol for Christians, and with this conquest the crucifix on which Jesus Christ was crucified was also stolen, triggering a strong antipathy to all the populations that inhabited these territories. As a reaction to the loss of the holy relic of Christianity, the Byzantine Emperor Heraclius I [1] carried out a military expedition to find the relic, "this was not simply another Roman-Persian conflict. It was a holy war, one whose object was the

retrieval of the „true cross". In effect, it was the first Crusade" (Hill, 104).

Religious Christian fanaticism was also influenced by relations with those of other denominations, including the Islamic one. The fanatical behavior of Christians participating in the crusades was shaped by centuries of religious fervor and antipathy toward Islam. This mode of reaction and conduct of Christian fanatics was induced by single cases but with a strong impact, as was the persecution of Christians triggered at the beginning of the 11th century by al-Hakim's order, generating a counter-reaction in the Christian world, with particular emphasis in the West amid the destruction of the Holy Sepulchre, sacred place for Christians (Cahen, 7).

The revenge of Catholic Christians was no less fanatical, but rather the actions that triggered it even more, that is were, very violent. This reaction was driven by the equally fanatical actions of 1009 when the Egyptian caliph al-Hakim bi-Amr Allah ordered the destruction of churches in Egypt, Palestine and Syria, and especially the Sa'id Church.

The Crusaders wanted vengeance because they had been indoctrinated since the first crusade in 1096 to persecute and kill in the name of Jesus Christ and less to conquer and protect the religious symbols, although the latter had been triggered from the latter. Religious fanaticism made the Crusaders continue the siege on the city of Antioch although they did not get the necessary logistics and a significant part of the expedition members died of inanition. The problem, however, arises after the conquest of the fortress, in order to observe the manifestation of a ferocious religious fanaticism, aspect revealed by the fact that they massacred all the Muslims, and besides them the Orthodox Christians, guilty of not supporting them in their religious war (Paine, 41).

The exacerbation of the religious zeal of the Crusaders also turned against the confessional brethren, that is to say against the Orthodox Christians in Constantinople and beyond, but from all the territories considered by the Catholics to be the heretical of the masses of people participating in the crusades. The appearance is revealed by the Fourth Crusade of 1202 who did not save the Holy Land because the participants never reached Jerusalem but returned to the West, which aroused a great deal on Pope Innocent III, the initiator but this was overshadowed by the joy of conquering and robbing Constantinople, the capital of Orthodoxy, a confession considered heretical by Catholics (Paine, 104). Over the last centuries, crusades have been seen as military expeditions without a concrete purpose, organized by religious leaders of the Catholic Church only from the desire for domination, aspects that reveal fanaticism because achievements have been accomplished by force by ignoring the wishes of the rest of the members of the society (Kostick, 290). The crusades had a link formed by an enthusiastic intrinsic dynamic reflecting well European society at that time, but it was just moving (Kostick, 290).

3. PROTESTANT REFORMISTS

Among the many religious sects that emerged as a result of the Protestant reform initiated at the beginning of the sixteenth century are the Anabaptists. These were very active in 1534, including in mass revolt (Bergsma, 93). These fanatical-religious activities of the Anabaptists have generated counter-measures against them. Thus, the leaders of the German Principalities were forced to trigger massive repression to suppress the radical wing of religious reform after the German peasant war to create order against those who wanted to change the secular society and not just the connection that man must have with the church, as had been admitted by Martin Luther, persons known under the name of the Anabaptists (Pelz, 24).

The Anabaptists were so fanatical that they refused the authority of the state,

considering the religious community as the supreme authority to govern their interests. Also the Anabaptists, refused any cooperation between their church and the Dutch state authorities at the end of the seventeenth century and the beginning of the eighteenth century, which they considered to be governed by non-religious rules and based their beliefs on the Bible (Furner, 51-52).

Religious fanaticism and the way of action of Protestant followers is revealed by the multitude of religious sects and organizations resulting from the religious reform of the early 16th century, which also triggered a religious war involving the German peasantry or countries hinterland. One of the resulting religious rites is the anabaptism. James Stayer claims that the actions of the Anabaptists were a natural and logical continuation of the message of the Protestant Reformation as well as its radical form during the German Peasant War, even after its suppression (7). At the same time, the second attempt to establish a theocracy occurred between 1534-1535 by the Anabaptist religious radicals in Munster, Germany, and failed. This led the inhabitants of Munster to adopt a tolerant religious behavior towards those who did not share their radical ideas on the background of the failed experience of setting up the Anabaptist Kingdom after which they concluded that "religious fanaticism could have disastrous and far-reaching consequences" (Laqua-O'Donnell, 8-9). We can see the way in which the anabaptist fanatics operate and the consequences of these processes from the fact that, before the attempt to establish these theocrats, they have made strong efforts to implement their religious ideas with an impact on society, interaction within the community and the change of the right to property so that the cult co-ordinates and directs the funds.

The same Simone Laqua O'Donnell says that "in the 1530s, the city of Münster was the site of the most radical experiment in the history of German Protestantism—the Anabaptist Kingdom, which eliminated all private property in the city, introduced polygamy, and established a king at its head" (5). The deviant behavior of the Anabaptist leaders has generated a firm counter-reaction, by which the leaders of this radical sect were decapitated after that theocracy. Jan Bockelson, one of the Abaptists leaders who led Munster in 1536, had inappropriate behavior that was interpreted either as religious fanaticism or as a hypocrisy without measure (Cohn, 268). The fanaticism and at the same time the danger of anabaptists is indicated by their belief in the apocalyptic ideas regarding the end of the world, which made them extremely unstable and unpredictable in terms of their decisions in relation to the rest of the members of society. This degree of fanaticism has come to the fact that they believed more than any present religious group that the time for the battle between God and Satan had arrived (Arthur, 3) as was foretold and recorded in the Revelation of St. John (Chapter 12, verses 7 to 12) and for this reason its leaders were executed and the bodies were exposed in cages hanging from the cathedral in the city.

Another case of religious fanaticism with major repercussions is that of the massacre of Catholic confessors and Protestants, known as Hugenoes, after which a large number of people died, an event known as the Bartholomew Massacre took place in France on the night of August 24, 1572. The passion and religious enthusiasm of the participants actually stood at the basis of the religious conflict that lasted more than 30 years. Alexandra Schäfer tells about these events that "the French Wars of Religion (1562-1598) were some of the most brutal, important and captivating confessional conflicts in the sixteenth century" (27). At the same time, in these religious wars the followers of the two parties manifested themselves with great zeal and intolerance, and the crime in the name of the divinity became justified and even obligatory, and they strongly

believed this. The causes of this long 36-year conflict were: "the religious divisions, economic difficulties, and political rivalries" (Baumgartner, 1572). It should be noted that the French King ordered the slaughter of hypoenoses under the influence of his mother, Caterina de Medici, who appealed to the awakening of fanaticism in the soul of his son (Moran, 8). That same night, thousands of Protestant followers were killed in the name of religious beliefs.

4. INQUISITION

It was a religious order of the Catholic Church, which was responsible for identifying and eliminating deviations from Catholic faith. Although the Inquisition appeared at 1184 AD, the form known to all is the one formed in 1542 and can be called the Roman Inquisition, and it was abolished in 1860. Although it provoked terror in the name of Christ, it was venerated against the background of religious enthusiasm as a result of the attribute given to the church of liberators and anti-Islamic fighters, as happened in Spain. This is also revealed by the fact that when the rest of Europe populations rebelled agains the Inquisition, the Spaniards were happy under her investigations, as well as the artistic genius developed under this religious phenomenon (Bouterwek, 105-106). This pattern of manifestation is indicative of a high degree of religious zeal amid a highly enthusiastic religiosity. Although the Spanish Inquisition has committed some of the greatest crimes in the name of faith and divinity, it has not led them to consider it abusive, as religion fanaticism was very well rooted in people's minds to think rationally was a sin of death (Bouterwek, 106).

The Inquisition has greatly used the capital punishment to complete its own investigations on behalf of the Catholic Church, which reveals the message they transmitted about those who dared to believe or think otherwise than the official message of the leaders of the Catholic cult, on the other hand, the message they were using was noticed, avoiding saying that they were fulfilling the commandment of Jesus Christ. At the theoretical level, the Inquisition had nothing to do with the death penalty of the investigated people, the efforts being very much focused on altering the person's religious behavior and transforming it into a obedient Catholic, but eventually burning it on the ground (Leah, 97). But, as any religious cult has always taken care of its own image, the Catholic Church has not made an exception. The Inquisition never carried out the death penalty although it issued the sentence that was read by the civil authorities to avoid sending a message that it was leading this bloody campaign (Liebman, 142).

5. ORTHODOX SECTS

These Orthodox sects of origin include those that manifest themselves on the vast territory of the Russian Federation. Some of these are harmless, but many of them have a socially inappropriate behavior dubbed by religious fanaticism and becoming dangerous to those with whom they interact because it is violent and without control mechanisms. At the end of the seventeenth century, tens of thousands of apocalyptic sectarian "Old Faithful" in Russia self-burned on the background of the occurrence of collective events in monasteries amid the poor management of the tendency to resist violently the laic state influenced of demons, also revealed by the fact that one community or village burned once (Robbins, 1).

The sectarian phenomenon of former Soviet and former communist space is not new, but the present one has been regenerated with extremely strong force and many times in functional areas of society that until 28 years ago was inconceivable as the Russian or Serbian army. For example, in Russia, Nizhny Novgorod, in the village of Bolsaia Elnia,

there is a religious sect called "Renaissance of the Slavs" who worship the icons and worships Vladimir Putin, the president of this country, considering him as the Apostle Paul and King Solomon reincarnated. The members of the sect affirm that the icon with Vladimir Putin miraculously appeared one day. [2] The problem is that in 2007 the Russian authorities considered that there are between 500 and 700 such sects and have more than 800,000 followers, [2] such a large number can affect the national security of any country, either directly the manifestations within the gardens or the neighboring states but equally effectively by influencing other adherents on their territory or by establish in these countries. The fixation of religious sects in general regarding the end of the world is generally valid, whether we are speaking of Protestant, Catholic or Orthodox sects. This causes them not to abide by the rules of social conduct, ie the Anabaptists who have just established the Kingdom of Munster have the same vision of changing society as the present sects, such as those in present-day Russia who believe that the end of the world will come soon and followers have to give up their own lives to prepare for this event. The "True Orthodox Russian Orthodox Church" sect spent all the time in 2007 in a cave in southern Russia, its leader being arrested for "establishing a religious sect associated with acts of violence."[3] Another sect of Russian Orthodox origin that poses risks to the physical and mental security of men is the well-known "Church of the Body of Christ," the actions of which are not covered precisely because of violent and inhuman acts. [4]

6. SECURITY RISKS

The risks to national security induced by religious fanaticism are extremely complex and varied. This is also revealed by the analysis of the European Interagency Security Forum, which stated in 2014 that in most complex risk environments there were elements of religious fanaticism, a major issue, and such fanatics are threats, which is why security agencies need to negotiate with them to have a certain degree of access (Hodgson, 24). Religious fanaticism is one of the most significant threats to the security of the population as a result of models of followers who want to create them, that is, strongly indoctrinated individuals. As a result, the United Nations, in addition to national legislation, adopted resolution no. 2178/2014, [5] which provides, among other measures to prevent terrorist acts and religious offenses, the importance of which is enshrined.

7. CONCLUSIONS

The aforementioned organizations and religious sects have several doctrinal characteristics or features and forms of manifestation that are common to them, whether they are contemporary or some five or eight centuries old. Thus, these points can be synthesized as follows: the belief that the religious entity possesses the correct religious doctrine and those who do not share it are wrong; the vision of the end of the world, which they acquire and adopt including a martyr's conduct in the name of the divinity; exacerbates religious zeal doubled by intolerance towards others; the desire to change society according to its own conception, doctrinal rules and references; the use of terrorist attentions to achieve the goals; extreme violence conduct; Satanic rejection of state-of-the-art technology: cards, chips, smartphones, state-of-the-art medical devices, even if some members die.

ENDNOTES

[1] Born 575 AD. in Cappadocia, current Turkey - deceased 11 February 641 AD Constantinople, the Roman Empire of the East.

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HISTORY OF MANAGEMENT. THE CONTRIBUTION OF ROBERT McNAMARA TO THE DEVELOPMENT OF MANAGEMENT SCIENCE

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The idea of developing this theme by the team of authors from two prestigious institutions in the field of military higher education institutions mainly aims at demonstrating the necessity of carrying out general military management studies, emphasizing more eloquently, and on this line of approach, the managerial peculiarities of the military organization as a subsystem of the social system. In addition to the theoretical considerations that will base the choice of pioneering case study by Robert McNamara in the field of defense resource management, it is also highlighted, by developing previous authors' ideas or recent references in the literature, the hypothesis that the army itself, institutionally speaking, has been an authentic model of managerial development.

Key words: *management, planning, science, defense resources*

1. GENERAL CONSIDERATIONS

As stated in the summary, is a real need that, when discussing management schools, the contributions of the respective authors should be mentioned, more focused with what the political, social, economic, technological, national and/or international context in which the ideas were crystallized and subsequently imposed actually meant. Manuals specific to academic disciplines such as management bases or general management contain insufficient references from this point of view for a much more relevant outline of a solid framework of integrated analysis of the subject. In the field of economics, the study of some disciplines on history and economic thinking or economic history has been imposed over time and is already a tradition in the curricula of faculties in this domain, with tangible benefits for acquisition of knowledge and training of skills. We believe that in this context, the question whether there is a history of management, as a discipline of its own to provide professionals and students input elements for understanding some fundamental concepts of work selected within the discipline but which would also be a binder in relation to other disciplines in the social sphere is justified.

There are very few remarkable references at national level to support this idea. The most important position in this respect is that of the reputed Professor Petrescu Ion, who, starting in 2017 such a research line, even called History of Management (also the title of the first volume of the series to be produced), mentioned on the slip cover of the work the following: "*I define the History of Management as a collection of writings in which the events, processes and managerial phenomena of the past are recorded. Through it, management theorists and practitioners can travel back in time to get information from which they can learn about great leaders who have lived and acted in the past, and their works that are still needed today. The history of management gives identity to today's management, reflecting in recent times the past of management together with its success and inadequacies, its victories and failures*." [3]. Synthesized, the author describes this discipline as a source of inspiration, as a science of synthesis and last but not least, as an element of great spectacularity, as a component of national history. Although in

another thematic register of managerial culture, references that converge to the same belief, we find Professor Ioan Abrudan, a true creative school manager at the Technical University of Cluj-Napoca. In this sense, the references to the managerial aspects of the activity and works of Aristotle, Plato, Marcus Aurelius and the approaches on Neagoe Basarab and the beginning of the Romanian managerial theory [1] can be considered unique in the national academic landscape.

By appealing to history as both content and temporality, aspects of the military organization, phenomena and processes related to conflict and war, characterizing and influencing with different intensities the development of humanity in all its aspects are also required. It is worth mentioning here that P. Drucker's work provides examples of military activity to discuss and analyze managerial patterns. More thoroughly, developments in strategic management, logistics management, operational management, project management, or organizational leadership are based on milestones specific to the military institution, the managerial performance of some great personalities of the military world (Dwight David Eisenhower, George Marshall and Stanley A. McChrystal) frequently quoted in specialty papers specific to the field of management.

As a result of the accumulated expertise and the possibilities to disseminate identified, learned and internalized lessons, a special case of good practice is also the co-optation, after withdrawal from operational activity, of known military personalities within professional associations or within companies that deal with managerial consultancy. The statement of Walter Isaacson, the author of *Steve Jobs* and *Innovators*, is thus eloquent in this sense, in a preface to a reference work published in 2016, in fact an international bestseller: "*The experience of General McChristal and his colleagues and their examination of the experiences of others has taught him that because of the great complexity, the reductionist management of solving these problems has become inefficient in our connected world. To be a successful organization, efficiency is necessary, but not enough. It has been in the twentieth century, but is now rapidly overtaken by the accelerated and exaggerated impact of some small players like terrorists, startups and viral trends*." [6]

2. ROBERT McNAMARA'S EXPERIENCE AND PROFESSIONAL EXPERTISE

Defining a problem specific to management history, and in particular, military management, means dealing with a question that has unclear, controversial issues that require clarification and explanation, which in turn leads to difficult conversations to a common point of view. Our thinking as specialists or researchers in a field can often mislead us, leading us to a false understanding of events and circumstances, which in turn causes deficiencies in our analysis of certain contexts. Thus, the need to use structured analysis of problems as general methodological reference points appears, to our belief structuring being the basis, the foundation, for the analysis of the facts. However, we must also take into account the pertinent and objective way of what concepts such as mindset and bias might imply. We state this because, even if management is a relatively young science, each of us, in researching a particular subject, comes with our own experience and expertise, formed and accumulated over time in different ways, which implicitly exerts an influence on the way we interpret the information at one time, by placing it in a certain context or pre-existing framework.

When attempting to bring to life the landmarks of a managerial personality, we must admit that in most of the situations there are two great possibilities which might determine even two major categories in terms of falling in a classification: people whose educational past does not announce any evidence of subsequent managerial performances and people for whom we attach from the beginning, given the educational

path, the possibility of spectacular evolutions on a professional level. Robert McNamara (figure 1) falls under this latter category, the famous universities (University of California, Berkeley, Harvard Business School) where he attended various forms of education and his positions (assistant professor, the first president of Ford who came from outside the family, secretary of defense, president of the World Bank), being sufficient arguments in the sense of the previously mentioned.

Fig. 1 Robert McNamara with members of the Defense Staff [8]

Without minimizing in any way the importance of the other functions held, in fact an objective demonstration of developed managerial capabilities, we point out in particular some aspects of the defense activity (1961-1968). From the outset, it should be noted that managerial style is based on facts and figures, systemically analyzed, harmonized and integrated through the use of statistical methods and techniques well-known in earlier periods. Thirty-five years later than the moment of taking over the defense mandate, just as pragmatic, he said: "*Put very simply, it was to define a clear objective for whatever organization I was associated with, develop a plan to achieve that objective, systematically monitor progress against the plan... The objective of the Defense Department was clear tome from the start: to defend the nation at minimal risk and minimal cost, and, whenever we get into combat, with minimal loss of life*„ [7].

It is well known and unanimously accepted that in the contemporary society the public finances are part of the money relations through which, in the process of distribution of the gross domestic product, the funds necessary for the fulfillment of the functions and tasks of the state are formed, distributed and used. The combination of economic and operational criteria is the principle that suggests the optimal dimension of engaging defense resources, taking into account both the economic possibilities and the nature of the possible dangers.

Corroborating what has been said in the two previous paragraphs, we can observe that, in the present case, we are basically dealing with a paradigm shift in defense management, in a complicated historical context for the US. It is undoubtedly a crucial moment in the development of military managerial science, when a line of thinking like „everything for the front" is transformed into „securing security costs", indicators such as the cost-effectiveness ratio being brought to the forefront of analyzes substantiating the decisional variants of strategic options. As a scientific contribution, it is among the most famous lessons inscribed in the history of management by an author, with a certain continuity in relation to the operational research approaches, developed predominantly after the end of the Second World War. Phil Rosenzweig, an expert in modern management, remarked in an objective study about management evolution that "*perhaps more than anyone else, Robert McNamara personified management in the 20th century*" [4]. Even though it has undergone transformation over time, McNamara's defense planning system (**Fig. 2**) has proven to be a viable managerial tool that would soften the ambitions of some component leaders (forces, commandos, etc.) of the military macro system, still applied today, in different forms in different states, including Romania.

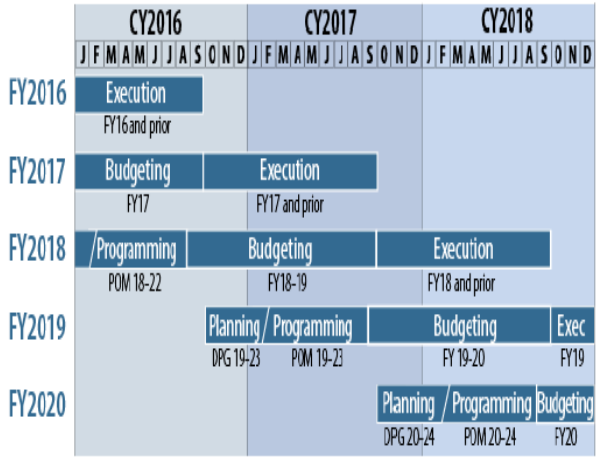

Fig. 2 Using the defense planning managerial tool currently in the US [5]

One of the aims pursued by the implementation of this managerial tool was the development of frameworks for assessing the way and the extent to which the objectives previously achieved (the evaluation of results) were closely correlated with the level of resources used (inputs) and the resources estimated as necessary. Also, with the use of medium-term mission-oriented programs, it was intended to link the strategic analyzes, resource allocation decisions under the programs, and short-term defense budgeting. It should be noted that defense planning, as a viable mechanism to cope with geopolitical changes, has, over time, seen several types of resources, including: resource constrained planning, historical expansion-based planning, planning based on skills and basic missions, capability-based planning.

An important source of problems in military management prior to the McNamara system implementation was related to defense budgeting and budgeting itself, as this was done separately by the categories of forces, being approached as a simple accounting and expenditure control system. The defense budget was not regarded as a managerial decision-making tool but only as a current way of grouping expenditures, not prioritizing them according to the most important goals [2].

This genuine system of systems somehow overlaps with the resource planning process, taking on the information from strategic planning and capability planning processes as well as from the procurement planning process and integrating them into major programs. The major goal is to provide an overview of the future, a picture that could be resized depending on changes that occurred at the level of priorities, analysis prerequisites, financial thresholds, the availability of some resource categories, etc.

The system presented was also introduced from 1999 in the Ministry of Defense in Romania, with the help of the American experts from the Institute for Defense Analysis as a suitable solution for the management of the transformations required to be operated at that time in the military structures after ten years of democratic functioning of the military organization, correlated with the strategic objectives of security and defense.

3. CONCLUSIONS

Joseph Joubert, French essayist, general inspector of the French universities during the Napoleonic government, known mainly for his later work “Thoughts” (1838), said that the worst thing about new books is that we are preventing them from reading the old books. Under the auspices of this observation, the present paper is also a “manifesto” for the proper reconsideration and valorization of past achievements in the history of management science development, even if the trend of publishing specialized papers in this field is now almost exponential.

Helped by his previous experience in managing civilian corporations and analyzing systems, Robert McNamara (1916-2009) has contributed to the restructuring of military organization management by optimizing the defense resource management system, increasing the focus on the need to plan, organize, implement and control in the short and medium term, which is also the origin of the multiannual programs. It is for the first time that the defense budget is seen as a useful tool for managerial decision both in the public sector but also in the private sector.

It is well known that management has evolved from eminently practical activities

that, over time, following verification and validation processes, have been accredited as theories. It has been noted that, in scientific terms, especially in the military field, given the organizational peculiarities, ~~both~~ organizational charts should be tested in terms of method value certification: both from theory to practice and in the opposite direction. In this context, it can be argued, as stated in the introduction, that management history can be a means of rationalizing knowledge in the field.

In the 21st century it can be said that we are seeing a slight escalation of "soft" aspects in the field of management to the detriment of the "hard" aspects. Knowing that McNamara was a supporter and practitioner of managerial systems based on figures and statistics, we consider justified the direction of study characterized by the question "when does the quantity mean too much, in management, to the detriment of quality?"

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BUSINESS PROCESS MANAGEMENT, AN IMPORTANT AID IN OPTIMIZING ORGANIZATIONAL PROCESSES IN NATIONAL SECURITY INSTITUTIONS

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Being required to conform to the large number of regulations, standards and requirements, information security should be considered a general problem of organization that requires involvement at the level of management and must involve all departments and activities of an organization, from professionals in the field to information to users. Creating a culture of security is essential to the organization through continuous education of staff, permanent collaboration with partners in a common approach to security issues, but also through customer awareness of information security risks.

Key words: Business Process Management, Business Process Execution Language, Intelligent information systems, National security

1. INTRODUCTION

Romania is becoming more attractive to hackers and Internet fraud seem not to stop anyone bypass. Last year, Romania has experienced forty two millions computer security incidents and were affected approximately two millions IP address. Most have focused on financial and banking system, public institutions and NGOs. Operational risk, the novelty brought by Basel II, is the risk of direct and indirect losses caused by internal factors and external factors.

Securing organizational processes is an objective and a permanent objective of organizations active in the field of national security, for this there are different solutions, both software and hardware. A modern solution may be the efficient use of Business Process Management (BPM) and Business Process Execution Language (BPEL) as tools to optimize and streamline the decision flows.

Operational risk is the most controversial, the least defined and most likely will have a major evolution in the coming years. The impact of operational risk can affect relationships with customers and partners, and its implications values are difficult to measure accurately. The technological revolution has led to a reassessment of human perception of the surrounding world and the explosion of information technology has increased the number of communication methods between individuals.

2. NATIONAL SECURITY AND CYBER ATTACKS

Using computer systems through their applications in operational, managerial and create a competitive advantage ensures the organization of local, national (in collaboration between departments, between hierarchical levels) to form the exchange of information using the Internet. For this purpose, the basic concepts of intelligent information system provide technical and behavioral elements that help substantiate specialized applications, the decision-making process and to build a strategic advantage against competitors of the organization.

Business processes can be described as executable business processes, which shape current behavior of a participant in a business interaction protocols and the business processes that use descriptions specifying the behavior of parties to exchange messages without discovering their internal behavior. Access to information and rapid transmission from one continent to another, and still have

both positive and negative consequences on the development of moral, psychological and social development of individuals, on the structure and functioning of society in general.

Many network security attacks come from within. Internal attacks refers to theft of passwords (which can be used or sold), industrial espionage, disgruntled employees who tend to cause damage to the employer, or simply misuse. Most of these violations can be resolved by using corporate security officer who monitors the network users. Among the internal factors that influence operational risk we can include: conducting inefficient internal processes, inadequate staff training, quality systems used.

Information security issues also come into the category of factors that have direct implications on operational risk: partial or complete systems falling out, problems caused by attacks or intrusion, fraud, operating errors, off work for a certain period, and more. Corresponding operational continuity planning, policies, standards and procedures to ensure timely maintenance and resumption of operations in the event of interruptions help reduce risks and add value to the organization.

The relationship between Internet and globalization can be seen as a relationship in which each factor influences the other. Globalization is a phenomenon tends to emphasize extensive and ever more. Today most large organizations have developed systems globally as a consequence of the difference in costs in various places around the globe, while pointing out the existence of small and medium-sized organizations the use of the Internet becomes a primary mean of communication for their activity, an important mean of promotion.

Network security is now an integral part of computer networks and it involves protocols, technologies, systems, tools and techniques to secure, and stop malicious attacks. Cyber attacks have increased significantly in recent years and according to Europol reports, crimes committed in cyberspace causes annual losses of over one trillion USD. Romanian Intelligence Service will launch early next year a program worth ninety seven million euros with which to protect at least state institutions cyber attacks. The money comes from European funds. In addition, companies that invest in cyber security could benefit from tax incentives.

3. CYBER WORLD AND NATIONAL SECURITY

Computer security is a branch of computer science (computer science) that deals with identifying risks involved in the use of computers and their removal solutions. Information security is concerned with protecting information and information systems from unauthorized access, use, disclosure, disruption, modification or destruction. The three components of information security are confidentiality, integrity and availability. Confidentiality is ensured by encrypting information. Integrity is obtained by dispersing mechanisms and algorithms. Availability is ensured by strengthening network security systems or networks and providing backup.

With the increasing number of digital payments, grow also the security issues. For this reason, you should increase the importance of information security related education both in schools and in the management of state institutions and private banking, who do not understand how cyber attacks can be dangerous, especially since many institutions have sensitive data that may reach the wrong hands.

Cyber security has become one of the major components of the Internet. Analysts have noticed a contradiction between the need for communication and connectivity, on the one hand, and the need to ensure confidentiality, integrity and authenticity of data, on the other hand. The relatively new field of information security seeks technical solutions to resolve this apparent contradiction.

The speed and efficiency of communications and documents instant messaging gives many pluses of decision-making in a modern society based on competitive economy. But using email

services, web, transfer funds, etc. is based on a feeling, often fake security communications that can transform potential earnings, such as rapid access to information in major losses caused by data theft.

Information security requirements grow in the context of credit institutions to connect the infrastructure payment, settlement, and reporting system established at national, regional or global level. The need to ensure security at the system level translates into minimum security requirements for each participant, a participant's security problems can affect the functioning of the entire system.

Business Process Management is focused on managing change and improves business processes. Business Process Management unites different disciplines: previous process modeling, simulation, workflow, Enterprise Application Integration (EAI) and Business-to-Business Integration (B2B) in one standard. The fact that Business Process Management is a new initiative can make you believe that business processes were not previously managed. This of course is not true - many organizations have shaped and manage their business processes over the years using a wide variety of techniques and tools.

These techniques have been successful partly or totally failed because it was a lack of standards and a full life cycle to control and guide the design and execution of business processes. Managing the change process can not be an ad hoc process - it is necessary to control management on innovation, architecture, design and processes. For site management to understand the architecture, design and deployment processes requires modeling standards in business and execution of business processes.

4. BUSINESS PROCESS MANAGEMENT IN NATIONAL SECURITY

Business Process Management is a structured software solution with role modeling and optimization of current activities (especially repetitive) of an organization and human interactions inside and outside them, operating with them in the form of processes. Information systems in the field of national security organizations have a high level of heterogeneity, but BPM provides solutions for integrating highly diverse systems.

The business consists of any group of activities carried out in order to produce a particular result or to specific customer oriented market. This result appears as a consequence of globalization. In a modern organization, information technology is leading to new guidelines that require the use of increasingly sophisticated means (artificial intelligence, expert systems, etc.). The business environment is constantly changing and requires new techniques and methods of preparation of the process.

Unlike traditional systems, Business Process Management offers advanced features for modeling and automating business flows in the organization. Also, access to diverse data sources is much easier, due to a large number of applications interoperability. New technologies based on BPM enable business processes that can be modeled directly by analysts (operative, financial and economic), without the support of IT departments.

Technologies and standards used in implementing BPM are XML and Web services. The latter represents a standardized way of communication between Web applications. The language, specific to BPM, is Business Process Execution Language. It is defined by a standard based on XML and Web services, which allows modeling and automating their business flows. With this dedicated language, business flows and business rules can be defined in an intuitive way. Thus, there is provided a high level of transparency in making business operations. Thanks to these innovations, BPEL technology simplifies the integration of various applications and business processes.

Business Process Management solutions are used both to automate internal processes within the organization and with partners to conduct flow. These solutions offer flexibility in integrating and automating complex business processes, involving several organizations. The implementation of BPM technology in existing computer systems

requires a complex information analysis. This identifies business processes and establishes correlations between them.

Switching to new technology can not be made without a cost analysis. This analysis will seek to identify the size of the cost of design, implementation and maintenance for various solutions on the market. After the analysis phase, the conclusions will proceed to the construction of management models. This is done using visual tools included in the Business Process Management applications. In fact, they are modeling business processes for their integration with the information systems within the organization.

The instruments used are based on technology UML (Unified Modeling Language) and Business Process Execution Language. As a result, implementation of the solution will be followed by generation of components from models. Testing and optimization of the solution is the last stage of implementing BPM. It involves testing the menus business processes, correction of programming errors or modeling, and optimization of these processes.

BPEL is an XML-based language. It allows developers to describe their business processes as Web services. Language is derived from languages WSFL (Web Services Flow Language) and WSDL (Web Services Description Language), applied to business. BPEL language focuses on modern business process modeling, adopting Web services as external communication mechanisms. It integrates features Web Services Description Language (WSDL) to describe incoming or outgoing messages.

The descriptions of processes in business protocols are called abstract processes. BPEL is used to model processes both executable and abstract ones. For large-scale programming, BPEL language describes the abstract processes as a series of observable behaviors. Thus, it shows you that you have expected / sent messages when you have found compensation for failed transactions etc.

The main role of BPEL in data exchange via Web services is to define all steps in a transaction. The use of BPEL is designed to ensure that they are executed in the correct order. BPEL can automate the sequencing of messages, but does not deal with the effective execution of transactions. Thus, BPEL provides a much cheaper method than stronger (and more difficult) EDI (Electronic Data Interchange).

5. STANDARDS, LAWS, REGULATIONS AND CYBER SECURITY

Business Process Modeling Notation (BMPN) is the new standard for the flow of business processes and web services. Created by the Business Process Management Initiative (BPMI), the main goal of BPMN is to provide a notation that is readily understandable by all users of software for business. This includes people from the business analysts that create the initial projects to technical developers responsible for implementing the technology that will perform these processes.

A second purpose is equally important to ensure that XML languages designed for implementation of business processes such as BPEL4WS (Business Process Execution Language for Web Services) or BPML (Business Process Modeling Language) can be expressed visually by a common notation. BPMN allows business process management (BPM - Business Process Management). Thus, BPMN is a central factor for a new initiative in the world of Enterprise Architecture - Business Process Management.

The lack of a systemic approach increases the capital required for the functioning of financial and banking institutions. To reduce it, according to Basel III, operational risk should be kept in check. Performance indicators should be collected and reported on a concept and a well-developed system. Leaks, even theft determine the need to actively prevent data loss.

Computer applications require active monitoring systems, availability must be real and carefully managed, and abnormal behavior is detected by the computer. User activity must be performed and recorded. IT and information security processes must be based

on clear standards for type ITIL, ISO 27000 standard reporting systems COBIT, and these standards should be reflected in national regulations, in a complete and integrated financial sector specific.

Credit institutions shall respect the laws, rules and regulations containing provisions on information security. Regulatory banking system is contained in the Banking Law and the rules NBR, and Rule 16/2004 on techniques for guaranteeing the authenticity of the signature, and Rule 17/2003 for the organization and internal control of the business of credit institutions and significant risk management. In the field of electronic payments, the most important regulations are MCTI Order 218 / 14.06.2004 and NBR Regulation 6/2006 concerning transactions by electronic payment instruments and relationships between participants.

Other regulations refers to electronic signature (electronic signature Law 455/2001, Law 451/2004 on temporal) and electronic commerce (Law no. 365/2002, as amended by Law no. 121/2006). We have legislation on preventing and combating cyber crime, Law no. 161 / 19.04.2003. A separate chapter is the law on privacy: Law 677/2001 on the protection of individuals with regard to the processing of personal data and Law 506/2004 regarding the processing of personal data and privacy in the electronic communications sector. To this, add a significant number of European Directives in the field of information security. Regulations only partially covers the spectrum of problems they raise: information security, information technology control, risk management and quality services.

Last but not least, with the accession to the European Union, credit institutions may have access to regional infrastructure such payments TARGET2, TARGET2 Securities, EBA Clearing systems (EURO1, STEP1, STEP2) or other payments infrastructure which impose specific security requirements. Also in the Euro Zone, the SEPA project of the Single Euro Payments involves standardizing payment instruments in Euro and new requirements for infrastructure and payment with cards, including a strategy to prevent fraud with cards, by migrating throughout the Euro EMV and implement 3DSecure.

6. MONEY LAUNDERING, A PERSISTENT MATTER IN BANKING

Money laundering is the process or complex actions when criminals sometimes are trying and failing to hide the origin and possession of real income from their illegal activities. This category includes money from fraud, robbery, theft, weapons smuggling, drug trafficking and smuggling. Criminals will try to use the banking system to hide the criminal origin of the money.

The bank prevents money laundering and terrorist financing, following within BPM the rules, procedures and related laws. Under EU law, the bank must have a good knowledge of the business and how they use bank services and products. This means that in some cases, to ensure total transparency and in order to comply with current regulations, the bank will require customer’s information on their activities. Money Laundering Law requires banks to have a good knowledge of their customers' businesses.

Money laundering is the de facto financial crimes which all bring profit. It is the process by which criminals attempt to conceal the origin and actual possession of the income from their criminal activities. Therefore, more and more banking institutions in Romania are recognizing the international standards are the basis of organizing activities and information security.

Also, banks are required to understand the purpose of business relationships and transactions of clients. For this reason, the bank can require certain information to be always treated with the utmost confidentiality, subject to banking secrecy and confidentiality law and protection of personal data.

7. CONCLUSIONS

Information systems are under threat from both inside and outside. They may be well intended people who make different operating errors or malicious individuals who sacrifice

time and money to penetrate computer systems. Among the factors that allow cracks security techniques may be some errors of software processing or communication or computing defective equipment or communication lines. The lack of an adequate training manager, operators and users of systems increases the likelihood of security breaches. Misuse of systems (hacking) is also one of the major risk factors of security systems.

Implementing new technologies in intelligent information systems belonging to organizations working in the national security is welcomed, organizations from the member states organizations in our country are already having these technologies widely implemented. Given the specific processes of change in all these organizations, the current geo-political context, securing business processes through intelligent applications is mandatory, as a primary defense operations and secret documents.

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FROM THE TRADITIONAL ORGANIZATION TO THE LEARNING ORGANIZATION

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At present we live in a world of organizations, and human society can be seen as a system of distinct organizational structures within which various human activities take place. Over time, organizations have evolved. From „organization" to „intelligent organization", „network organization", „democratic organization", „knowledge-based organization" and „learning organization". The success of organizations has begun to be given by the efficient use of talented employees.
Although it is not a perfect organization and in organizations resistance to change prevails, more and more organizations tend to become „learning organizations" because they focus on lifelong learning, on creating, generating and transferring knowledge, as well as changing employee behavior.

Key words: *organization, learning organization, lifelong learning, individual learning.*

1. INTRODUCTION

We currently live in a world of organizations: most of us spend time and work in organizations. Starting with school and ending with retirement, we have to integrate into various organizations and work with other people to be able to carry out our activity professionally and to get the right results. Therefore, human society can be seen as a system composed of distinct organizational structures within which various human activities take place.

2. ORGANIZATIONAL CONCEPT AND ORGANIZATIONAL PECULIARITIES

Organizations are all around us, shaping our lives in different ways. They differ in their purpose, component, methods, and technologies used to achieve their goals, but also through their dimensions, activities and markets. Being a complex social entity, the organization is hard to define. The difficulty of defining the concept of „organization" is determined both by the many perspectives from which the organization is being analyzed and by the fact that the organizational analysis, thanks to the theoretical and practical research, has devoted new ways of defining it. Psychologists tend to analyze and define organizations based on the needs of the individual, sociologists and political scientists are interested in adapting the individual to social needs and focus on social and political relationships, and economists approach organizations through the individual's effort within the organization to grow its capital.

We will further present some of the definitions given to the organization, precisely to highlight the different perspectives of approach.

Eugen Burduş: „*The organization may be made up of two or more people carrying out activities to achieve common goals*." [1]

Dumitru Iacob and Diana-Maria Cismaru: „*The organization is a social system in which and through which people interact (cooperate) to achieve common goals*." [2]

Ovidiu Nicolescu and Ion Verboncu: „[...] *the organization can be defined as a system usually composed of several people working on the basis of certain predetermined rules in order to achieve a goal*" [3]

Gheorghe Militaru: „*Organizations are formal social constructions set up to achieve common goals through group efforts*." [4]

Mihaela Vlăsceanu: „Organizations are instruments for achieving a goal, they have a set of specific and clear objectives and their

internal structure is designed to contribute to the achievement of the objectives." [5]

Viorel Cornescu, Ioan Mihăilescu and Sica Stanciu: „*Any organization is made up of a group of people between whom interpersonal or multi personal structural relations are established, in which individuals are differentiated according to authority, status, role, and which is constituted for the realization of the proposed objectives or goals, aiming to get high efficiency*". [6]

Gary Johns: "*Organizations are social inventions designed to achieve common goals through common effort".* [7]

Richard W. Scott: *"[Organizations] are communities whose participants pursue multiple interests, both different and common, but who recognize the importance of perpetuating the organization as an important resource. The informal structure of relationships that develops between participants provides a more informative guide to understanding organizational behavior than is provided by the formal structure*. " [8]

John M. Ivancevich and Michael T. Matteson: "*Organizations. Institutions that allow society to pursue goals that could not be achieved by individuals acting separately*." [9]

As it can be noted, the above definitions share a number of key elements: *individuals* or *communities*, *specific objectives*, *common interests or goals*, *achievement of goals*. In my opinion, on the basis of these elements, the organization can be defined as "*a system of at least two people who have established a set of specific and clear objectives that can be achieved through the activities of those individuals*."

Each type of organization has specific features, but there are features that we encounter in all organizations [10]:

- organizations are always specialized in the sense that they have a mission to which certain specific objectives are associated;
- organizations, as social institutions, reflect a number of culturally accepted needs and values, meet certain goals of society;
- organizations are the place where people can make a particular career;
- organizations are made up of groups of people who carry out processes to achieve common and specific objectives, which would be individually very difficult and / or impossible to achieve;
- organizations keep, protect, store and transmit the knowledge to future generations, but they also add knowledge to what has already been accumulated;
- organizations cannot exist without an appropriate management to set goals, ensure both the process and structural-organizational conditions necessary to achieve the goals, as well as the coordination of the efforts of the people in the organization and their dedication-motivation;
- organizations have a formal organizational structure, focused on well-defined principles, rules and relationships and unanimously assumed and respected by the group members.

3. LEARNING ORGANIZATION - ORGANIZATION FOCUSED ON HUMAN RESOURCES DEVELOPMENT

Over time, organizations have evolved. From "*organization"* to "*intelligent organization*", "*network organization*", "*democratic organization*", "*knowledge-based organization*" and "*learning organization*". The common element of all these types of organizations was the recognition of the value of knowledge, talent, motivation, and the innovative spirit of the employees. The success of organizations has begun to be given by the efficient use of talented employees.

The one who put forth the phrase "learning organization" was Peter M. Senge in *The Fifth Discipline*: *The Art and Practice of the Learning Organization*, first published in the year 1990. According to the author, organizations that will achieve remarkable results in the future are organizations where each employee shares his knowledge and learns from others. These organizations "will find out how to capture people's commitment and how to foster the ability to learn at all levels of the organization." [11]

Since the emergence of the "learning organization" syntax, specialists have developed different definitions of this type of organization. We will further give a review of these definitions.

Business Dictionary: "*The organization that acquires knowledge and innovates quickly enough to survive and develop into a rapidly changing environment. Learning organizations (1) create a culture that encourages and supports employees' lifelong learning, critical thinking and risk-taking from new ideas; (2) allows employee mistakes and appreciates their contributions; (3) learns from experience and experiment; (4) spreads/disseminate new knowledge throughout the organization so that they are integrated into everyday activities*." [12]

N. Mathieu: "*Learning organization is an ideal type of organization where values, mental models, organizational structures, strategy and management anticipate and adapt continuously through collective learning, to the reality well identified, creating the best environment for the organization and its members, to achieve the goals and results that they really want*." [13]

D. Garvin: "*Learning organization is able to create, acquire, understand, transfer and retain knowledge and intended to change behavior to reflect new knowledge and understanding*." [14]

Kenneth W. Johnson: "*Learning organization is an organization that aims to create its own future; this presupposes that learning is a continuous and creative process for its members, and the organization develops, adapts and transforms in response to the needs and aspirations of people both within and outside of it*". [15]

Peter M. Senge: "*Learning organizations are organizations where people continuously extend the capacity to create the results they really want, the new and prolific ways of thinking are encouraged, where collective aspiration is free and people learn continuously how to learn together*." [16]

The above definitions, although developed by different authors and in different periods, share common key terms: *organization, collective aspirations, personal and/or professional skills, lifelong learning and/or together, achievement of objectives, development of the organization*. Based on these terms, in our opinion, "*the learning organization is the organization in which employees are encouraged to develop their personal and professional skills through continuous learning and the use of new knowledge to achieve the goals and development of the organization*."

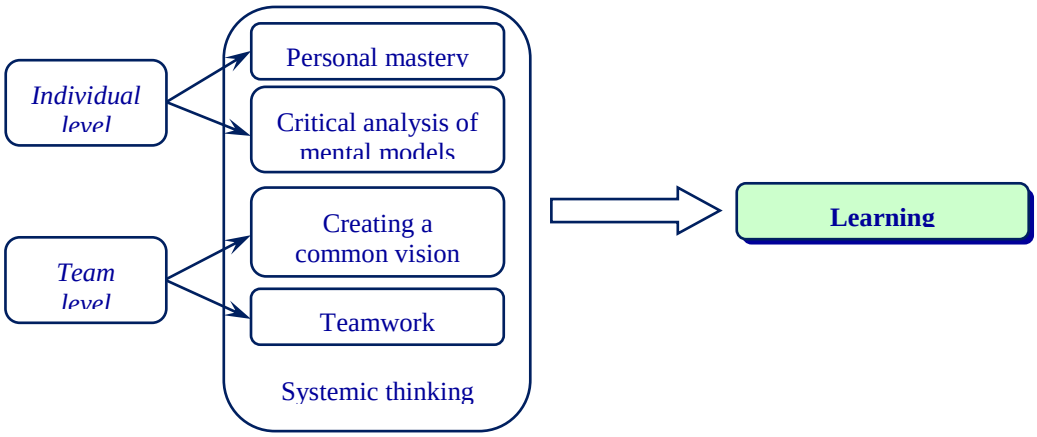

Figure 1: Learning organization (personal contribution)

According to Peter M. Senge, building a learning organization involves focusing on the following elements: personal mastery, mental models, creating a common vision, team

building, and systemic thinking. These elements are seen as “disciplines”, as a “body of theories and techniques that must be studied and assumed in order to be put into practice”. [17] The first two disciplines (personal mastery and mental models) have a pronounced individual application, and the next two (creating a common vision and team learning) have application especially at the group level.

The level and value of an organization from the perspective of the “learning” process is determined by the way in which the mix of these elements highlighted above is achieved.

Table 1 gives a summary of the characteristics of the learning organization’s elements.

Table 1. Characteristics of the learning organization’s elements (personal contribution)

Element	**Characteristics**
Personal mastery	– considered to be the cornerstone of the learning organization;
	– the in-depth knowledge of all the members of the organization of the tasks they have to accomplish helps the organization to cope with the challenges it faces.
Critical analysis of mental models	– the members of the organization periodically analyze critically both the way in which the activity in the organization is carried out and the way of thinking used to solve the problems of the organization.
Common vision	– when there is real vision in the organization, people have great results and learn because they want it;
	– all members of the organization have a common perception of the purpose of the organization and work together to achieve this goal.
Teamwork	– has outstanding results;
	– makes every member in the team, in part, develop much faster than they could by learning by themselves;
	– the members of the organization work together, find solutions together to the new problems, solutions that they apply together;
	– helps the organization achieve its goals.
Systemic thinking	– integrates the previous elements and unites them into a coherent set of theories and practices;
	– each member of the organization is aware of the tasks and the way in which these tasks interpenetrate with those of the other members of the organization.

Key features of learning organizations are [18]:

– constantly creating opportunities for each employee to learn;
– learning from one’s own experiences and from others;
– promoting investigation and dialogue;
– systematically solving problems;
– establishing a link between individual and organizational performance;

– using training to reach goals;
– an organizational climate that encourages each employee to learn and develop their full potential;
– encouraging dialogue, collaboration and team learning;
– where possible, extending the learning to other people outside the organization but coming into contact with it;
– the transfer of information and knowledge from outside the organization;
– building systems for learning and distributing learning;
– experimenting new ideas;
– supporting the development of the group vision;
– centering the development of the organization on the human resources development strategy of the organization;
– valuing the link between the organization and the environment.

The learning organization is not based on a passive or ad hoc process, hoping learning will be a byproduct of everyday activities. This type of organization promotes, facilitates and rewards individual and collective learning.

Although it is not a perfect organization and in organizations resilience to change prevails, more and more organizations tend to become "learning organizations". Encouraging and stimulating employees to learn alone or in groups, using the theoretical and practical knowledge of employees as well as learning from past mistakes helps the organization achieve its goals.

4. CONCLUSIONS

Changing organizations into "learning organizations" means more than "redesigning" existing structures. There is a need for a completely new vision of what organizations can become, because when an organization is transformed into a "learning organization", it creates a learning environment, both by supporting and stimulating learning, and by exchanging knowledge among employees. In the case of the learning organization, the way the team thinks matters very much. This is because, even if people have the ability to learn, it does not mean that the group has this capacity, too.

Nowadays, more and more organizations are evolving towards "learning organizations" because they focus on lifelong learning, creating, generating and transferring knowledge, and changing employee behavior. At the same time, addressing new directions used in the management - long-term planning; giving more importance to people and leadership; focusing on teamwork, cooperation, diversity; delegation of authority; decentralized control - leads to the creation of the learning organization.

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ANALYZING THE SPEECH EXPRESSIVENESS USING PROSODIC DYNAMIC CONTROL

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At the level of verbal communication, the prosodic support and emotional space is modelled as a nonlinear system described through some parameters extracted from the spectral model of vocal wave, respectively the outline of the fundamental frequency, the time and energy of sonorous segments, the duration of non-acoustic segments and breaks, the voice timbre etc. Through the discretised addressing of the spectral model, the aim is to optimise the prosodic characteristics extracted from local variations of the fundamental frequency, by a method of dynamic control.

Keywords: *dynamic control, prosody, message, communication*

1. INTRODUCTION

On their way for a superior positioning more and more entities with interests in the area of socio-economics applied in policy, looking to optimize the communication in various ways, updating classical techniques of persuasion or those of management media and experimenting with new ones in order to maintain and increase public support, sometimes discovering innovative methods to communicate more effectively. In the present, the pursuit of ratings and profit from the *fourth power in the state*, attract new challenges in terms of the use of the mass communication forms that have as target the citizen, media and socio-political vectors being polarized excessive on the direct and fast influence expository of the target audience. As a result, we observe an unprecedented discrepancy between the policies on the provision of necessary information as a citizen to effectively participate in the democratic life and those more oriented towards *infoshow*, characterizing a more commercial media.

Voice, music, verbal information, sound effects, silence and prosody are all fundamental elements that are operating in public communication. Despite the fact that verbal information is of utmost relevancy, prosody is what defines the message and guides the communication partner with its speed rhythm, intonation and its variation in accent and emphasis. Prosody, as part of linguistics, examines certain aspects of spoken language that reflects some features of the verbal message related to the emotional or intentional state of the speaker. Also, the prosodic component of a verbal message signals the presence of some aesthetic or philosophical categories, the speaker's concentration within the communication on certain ideas or structures with a differentiation or persuasion role. In this context, restrictions can be given by grammatical rules, semantics of the edited text or the capabilities and vocal peculiarities of the speaker.

A mathematical model that increases the efficiency of a complex verbal information transfer, in the presence of restrictions, is based on several conditions and criteria that a point in the allowable solutions space has to satisfy in order to qualify as the best solution. In essence we are dealing with a mathematical programming problem, which consists in

determining the values of the variables vector $x \in R^n$, which has achieved the minimum target of a function *f(x)*, under conditions which must satisfy an array of restrictions (equalities, inequalities or simple edges). Following the procedure in which the conditions are resolved for a point x* to qualifying as the solution of the problem, different algorithms for this method of approach are obtained. To develop an optimisation model of direct speech, there are a number of algorithms with a high degree of complexity. These algorithms are based on high performance computing techniques, which take into account the geometry admissibility domain, the presence of nonlinearities and even of non-convex functions, for the objective function as well for restrictions or lack of feasibility or boundlessness of the problem.

There are three different approaches to obtain optimal conditions. The first one is based on separation and support of convex sets theorems (theorems of the Hausdorff type), the second is based on penalty functions and the third and final approach is based on the classical theory of Lagrange multipliers. These optimal conditions, assuming differentiability, are the Karush-Kuhn-Tucker conditions. In addition to their intrinsic value to characterise the optimal solutions of a convex programming problem, they define the theoretical foundations for the development and analysis of mathematical programming algorithms [1].

At the vocal signal level, the prosodic and emotional descriptions are analyzed with the help of some nonlinear models, based on some features extracted from the vocal wave, respectively by the contour of the fundamental frequency, period and energy of sound segments, the period of non-sonorous segments and breaks, voice timbre etc. In the synthesis of expressive speech, the emotional level is a very important element. Unlike other classical analyses that were focused on meshing emotional states, this study focuses on finding ways to improve the discourse from an emotional point of view, regardless of the classification of its intensity: strong, weak or medium.

A number of studies have shown that there is a strong correlation between emotions and stress. For example, the emphasis is the most prominent element found in a speech or "semantic concentration", which is the central factor that shows the attitude of the speaker. Contextual information derived from the linguistic particularities is also very important for the emotional type of expression. To determine an optimum point for the Prosodic type expression, it will operate on local pitch spectral pattern through a method of dynamic control, using Lagrange multipliers method and variational calculus.

2. PROSODIC ANALYSIS TECHNIQUES OF THE VOICE SIGNAL

Interpersonal communication is almost exclusively based on affective and emotional components. The detection of emotions can be achieved by analyzing facial expressions, gestures, physiological characteristics, but mainly, from the speech process. For the recognition of the nature of emotions and emotional level from verbal communication act, it is not very important as to know what is communicated but, mainly, **how** communication is realized. Amplitude, intensity, intonation, rhythm are intrinsic features of the voice from which identification and extraction of emotion can be achieved. It's about the so-called prosodic component of speaking. For example, a low vocal intensity could denote low motivation, sign of the existence of sadness or disgust feelings. On the other hand, a high intensity or an alert speech pace could mean the existence of nervousness or fear. Current automated systems of speech analysis can operate with about 17 vocal features, the accuracy hovering around the level of 80%.

In general, the studies on prosody focus on the evolution of intensity and fundamental frequency curves, but also on temporal features - rhythm, marked by breaks and the duration of syllables. With sensitive differences from a model to another, syllables can be acute, grave, infra-grave or over-acute. Outside prosodic transcription, each

prosogram, namely the visual representation of sound sequences, allows sound intensity and the speech frequency to be highlighted. The processing of prosodic aspects of verbal communication follows, in essence, the identification of some patterns and of some rules that describe the in-time evolution of the elements that present these characteristics existent in a voice signal.

For example, in studying the evolution of speech characteristics and of its synthesis, scaling algorithms depending on time or on sound level are intensively used. The aim of voice modification by scaling depending on time is the recovery of speech speed without the modification of its original content. The alteration in time can be made uniform by changing the speed for some factors/features, according to the prosody or sound characteristics, for different parts of the speech. A function to scale depending on time, named time-warping function, assigns time series in the original signal for entering in correspondence with the time series of the new signal. The unequally scaling depending on time can increase intelligibility of the voice signal under analysis. The same technique is used in the synthesizing concatenation of speech, where voice properties segments subject to concatenation are changed in accordance to the language restrictions. A good technique for voice signal processing, from a prosodic point of view, is NSM (*Non Linear Springing Method*) [2]. This method, which operates in the domain of time, is based on the prosody prediction (prosodic matrix) and on signal processing and generates, as a result, a synthesized speech signal, which already contains the targeted prosody. In order to maintain the sound length, some periods must be repeated or omitted. In this way, there exists a control of sound frequency and duration. NSM algorithm contains descriptors of the fundamental period (pitch markers), a prosodic matrix and a re-sampling method with variable frequency. As initialization, the program computes the number of periods for every vocal waveform:

$$N_{nr.per} = \int_{t_i}^{t_f} f_{0\,prd}(t)dt \qquad (1)$$

where $f_{0\,prd}(t)$ represents the predicted intonation curve on which it operates the prosodic predictor, and t_i and t_f represent the initial moment, respectively, final moment of evolution for the selected sound. The output signal is determined by knowing the sound duration, the sampling frequency and the number of samples. Then, it follows the concatenation operation of needed bi-phonemes and the calculus of each signal periods. The manipulation of the main period's number is performed in concordance with the pitch markers. Obtaining the concatenated signal s_L from a number of L-samples, re-sampling is subsequent necessary in N samples for s_N.

The voice signal s_N will have the wavelength and intonation curve determined by the prosodic descriptor. For the fitting of the intonation curve to the predicted one, the re-sampling has to be done in accordance to the control curve $f_{0\,ccd}(t)$:

$$f_{0ccd}(t) = c(f_{0\,prd}(t), f_{0L}(t)) \qquad (2)$$

where $f_{0\,L}(t)$ is the intonation curve of s_L. The function *c* correlates both intonation curves of (2) and will calculate a third one, which is named re-sampling curve. An advantage of this method is the continuity between fundamental periods, without an angular point occurrence. Also, the obtaining of the intonation curve can be done with great accuracy. As disadvantages of the NSM method there can be mentioned the need of a high volume of data entry, the fundamental period markers, the prosody descriptor markers and especially, the fundamental period's deformation fact, that sometimes leads to voice signal distortion [3].

In recent years, new stochastic methods for modeling and transformation on short time intervals both, for spectral parameters and for prosodic features have been explored. In regard to the application of the spectral

conversion technique GMM (Gaussian Mixture Model), it was considered that this one alone is not sufficient to describe the emotional state. In this case it is better to use the hybrid model of conversion pitches GMM-CART, where the last one is a model based on the classification and regression tree. In the same direction of analysis, it is important the conversion unified model that uses a temporal pre-set Bi-HMM (Hidden Markov Model). This is used for converting the spectrums and decision trees in order to transform the syllable formants segments depending on the context and for each type of emotion. The system of analysis and processing of emotional expression is comprised of three main modules. The stage of spectral conversion generates, as output, a signal that contains the prosodic source and converted spectrum. The second stage is the modification of the duration of phonemes using CART relative trees. Finally, within the third module, the converted durations are used in generating the pitch contour for the whole speech, using a syllables sequence from HMM [4].

The emotional degrees are very important elements, tracked in synthesizing the speech expressiveness (*expressive speech synthesis*), indifferent to the use of classifications depending on terms like “positive” , ”negative" , ”poor" ,“neutral” or “stronger". Given that these aim at the framing of utterance prosody in typical emotional categories such as: fear, sadness, anger or joy.

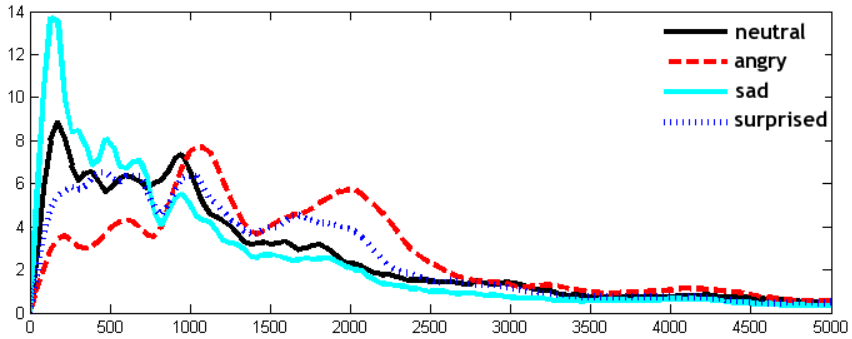

Fig. 1 - LATS analysis of phoneme /ae/ in the corpus of entrainment for different types emotional of speech

In most applications of analysis of sentiments / emotions, it is required to study diverse opinions, from several subjects engaged in the communication act, each opinion attesting a different level of subjectivity [5]. In this domain, one of the most interesting and up-to-date methods of message characteristics transformation, in the sense of bijection dependencies from the utterance characteristics and the text ones, is the LSI method (Latent Semantic Indexing), which transforms the space text in a new system of axes which is a linear combination among the original features of the words. The main disadvantage of the LSI method is the fact that it is an unsupervised technique that cannot realize the basic generated distributions. The FS methods family - of characteristics selection - also includes the techniques based on HMM and LDA models (Latent Dirichlet Allocation).

3. THE CURRENT METHODS IN PROSODIC MODELLING OF SPEECH

Currently, there are several effective methods of prosodic modeling of speech. These models are LMM (Linear Modification Model), GMM (Gaussian Mix Model) and CRT (Classification by Regression Tree). The LMM technique can perform a direct representation of frequency contours F0 and syllabic duration given by the sound

distribution of emotional speech (F0- peak level, F0-basic level, duration, intensity). A more detailed analysis shows that emotional speech is linked to the level of stress and to the information shown linguistically. Unlike LMM, the GMM and CRT methods try to map the prosody distribution of neutral speech and speaking with emotion. The studies show that out of all three methods, LMM offers the least desirable results [6].

The GMM method is more suitable for lower sets of training, while the CART method confers a better analysis of utterances in a more complex emotional context, if provided bigger training corpora and more contextual appropriated. There are also interesting implementations in the Emotional Speech Synthesis. For example, some researchers [8] added emotional control parameters to basic methods for sound analyzing, with remarkable results. Other researchers [9] did determinations on emotional speech, by operating a direct "black box" type, using an editor of acoustic and visual characteristics. Recently, good results have been obtained by using some prosodic corpora of large size. An interesting system [10] in expressive speech synthesis was conducted using a base of spoken texts recorded over a period of 5 years and that has led to impressive results. Other researchers [11] generated a motor TTS (text-to-speech) for expressive interpretation of texts. This could be programmed, by language annotation of speech synthesis, to use a variety of expressive styles arising from ten hours of interpretation of emotional "neutral" sentences. Finally, some researchers have used an array of emotionally keywords by using a TTS type system [12]. It was found that, in general, the emotional state of the utterance is mostly determined by factors related to the text made available for playback. One can say that the emotional state can be considered as generated by an emotional vector. Starting from this idea, unlike traditional methods, we can label text corpora according to four categories: strong, normal, weak and unpleasant, corresponding to the following status: happiness, sadness, fear and anger. The term “neutral speech” is used as source reference (for calibration) and it is not annotated according to the categories above.

In this manner, we can test prosodic conversion methods that aim to transform the prosody characteristics, duration or intensity of a certain utterances, to obtain an emotional type superior utterance. In this context you can use combined methods: LMM, GMM and CART. Because the LMM method does not provide very good outputs, a parallel application of the GMM and CART methods is often imposed. The GMM method achieved the mapping of the prosodic features distribution from a neutral state to various kinds of emotions, while CART model establishes some links between linguistic and prosodic characteristics. In contrast to the LMM method, the GMM and CART methods can not directly use the frequency F0 contours, therefore a special model must be introduced. It is based on the idea that the observed F0 values are not language units in itself. They constitute themselves surface achievements of functional language units like tone and accents. A recent analysis shows that LMM direct method offers the worst results of all three methods. The GMM method is suitable on corpora of short trainings, while CART proves more suitable for longer corpora [13]. Overall, the more profound analyses of emotions and stress in the speech show that they are closely linked to prosodic distribution.

4. THE METHOD OF PROSODIC CONVERSION

In the world there are some languages or dialects with emphasised tonal form, in which one syllable with a different tone can represent a different morpheme. There are four types of reference tone: high, increasing, low and decreasing. They manifest mainly in the contours of the F0 frequency. They are using two types of commands: with impulse shape, which gives an increased tone to the global intonation, and the accent command with step form, which confers great emphasis given by specific oscillations of each word. For example, the STEM-ML system, developed by Bell Labs, is a labelling system in which the

F0 contours are described by tags, including accent markers for local tone and level markers for global expression curves [14].

The problem is the difficulty of all these models to establish a relation between commands tags and different utterances. In the pitch identification model, the variations of its contour representation result not only from underlining the units pitch (syllables from the respective language), but from articulatory constraints. Local pitches are defined as the smallest units associated to functional linguistic units and these pitches can be static (high or low) or dynamic (with specification of motion, capturing their rapid increase or decrease). We consider that the local pitches are very weakly bound to the particularities of language but are closely related to the level of involvement in communication and the manner of control to the emotional component. The rules for implementing the local pitch model are based on possible articulatory constraints in F0 contour generation. We consider that the generation fundamental frequency of F0 contour is a process of continuous approximation of the local pitches along syllables. When the syllable limit is reached, the new approximation starts for the next syllable, with a new local pitch. We consider the time of a syllable as [0, D]. The LPM, local pitch model, is described by the following equations:

$$\begin{aligned} &\tau(t) = at + b \\ &y(t) = \beta \cdot e^{-\theta t} + at + b \\ &\theta \geq 0 \\ &0 \leq t \leq D \end{aligned} \qquad (3)$$

where $\tau(t)$ is the support of local pitch and $y(t)$ is the equation of F0 contour. The parameters a and b represent the slope and the intercept home for the local pitch. These two parameters describe the target intonation of the speaker, which can be totally different from the overall contour F0. The coefficient β is a parameter which measures the distance from a general outline of F0 and local pitch fixed at time $t=0$. The parameter θ describes how quickly the local pitch oscillates. As the value of θ is higher, as bigger the oscillation speed is. So, a model of local pitch for one syllable can be represented as a set of parameters (a, b, β, θ). Closely related with physiological limits of the human vocal tract, these parameters impose restrictions such as the maximum range of pitch or maximum speed of pitch change [15].

5. PROSODIC OPTIMISATION BY DYNAMIC CONTROL OF LOCAL PITCH MODEL (LPM)

At the speech level, the prosodic and emotional descriptions are shaped with the help of nonlinear systems, on the basis of some parameters extracted from the spectrum of voice-wave, respectively, the fundamental frequency outline, time and energy duration of non-acoustic segments and of breaks, voice timbre etc.

In general, optimal control problems associated to the dynamic evolutionary systems, as the process of free speech, consist of the intervention on their evolution with commands that lead to the satisfaction of performance indices. The choice of operating for spectral model of local pitch by dynamic control method is justified by the fact that the state described by this voice spectral model reflects very accurately the emotional state of the operator or, at least, the emotional charge of the issued informative content. The intention of operating on this spectral model is due to the idea that utterance prosody is reflecting, in turn, in pitch developments due to the correlation with the semantics of the communicated message. By reflecting accordingly to the local pitch pattern, we will have to do with formalization of the LPM model:

$$\dot{x} = f(t, \tau(t), u(t)), 0 \leq t \leq D \qquad (4)$$

where $\tau: [0, D] \rightarrow R^m$, $m \geq 1$, describes the state of the system at the time t € [0, D].

We define the function $u: [0, D] \rightarrow R^n$, $n \geq 1$, describing the decision of the process routing the dynamic speech/utterance system, which is taken at the time $t \in [0, D]$

and $\dot{\tau} = \frac{d\tau}{dt}$, for evolutionary process (4). The components $\tau_1, \tau_2, \ldots, \tau_m$ of the vector $\tau \in R^m$ are state variables and the components $u_1, u_2, \ldots, u_n$ of the vector $u \in R^n$ are the control variables which we consider directly associated with changes imposed by the volitional component of the speaker. The state variable also satisfies the initial condition:

$$\tau(0) = \tau^0 \tag{5}$$

of the initial entry point. The control variables are put under some restrictions described by functions (regulated) $g_i: R \to R$, $g_i(u(t)) \le 0$, t $\in$ [0, D], which set if a command $u(t)$ is or not admissible at time t $\in$ [0, D]. It can be noted that the conditions of regularity are satisfied:

(i) $\tau(t)$ is a continuous function and differentiable on parts

(ii) $u(t)$ is a continuous function on parts

(iii) function f is continuous in its arguments and differentiable in relation with t and τ

A problem of optimal control, or of speech control optimizing, associated to the previous process, consists of the admissible taken decision $u(t)$ such that a nonlinear state functional:

$$F(u) = \int_0^D f_0(t, \tau(t), u(t))dt \tag{6}$$

to be minimal (maximum) on states set $\tau(t)$, solutions of the system:

$$\begin{cases} \dot{\tau} = f(t, \tau(t), u(t)) \\ \tau(0) = \tau^0 \end{cases} \tag{7}$$

If the optimum criteria is given through a linear functional, then - through a variable shift in system status - the optimal criterion is written in a linear form:

$$\tau_0(t) = \int_0^t f_0(s, \tau(s), u(s)ds \tag{8}$$

Resulting in:

$$\tau_0(0) = 0 \text{ și } \dot{\tau}_0(t) = f_0(t, \tau(t), u(t)) \tag{9}$$

So the problem of optimal control has the form:

$$(\text{PCO}) \begin{cases} \dot{\tau} = f(t, \tau(t), u(t)) \\ \tau(0) = \tau^0 \\ u(t) = \beta \cdot e^{-\theta t} + at + b = \beta \cdot e^{-\theta t} + \tau(t) \\ J = \sum_{i=1}^{m} c_i \tau_i(D) = \langle c, \tau(D) \rangle \end{cases} \tag{10}$$

with $0 \le t \le D$; where $\tau \in R^{m+1}$ has the components $\tau_1, \tau_2, \ldots, \tau_m$, f $\in R^{m+1}$ has the components $f_0, \ldots, f_m$ and:

$$J = \tau_0(D) = (c, \tau(D)), \quad c = (1,0,...,0); \quad c \in R^{m+1} \tag{11}$$

The determination of the best solutions is done on a set of functions, namely on the set of the *problem Cauchy PCO* solutions, which are obtained by functional parameter $u(t)$ variation. We use the method of Lagrange multipliers, where multipliers $l_1, l_2, \ldots, l_m$ will be functions by $t \in [0, D]$. So for any $t \in [0, D]$ we build the Lagrange function:

$$L(\tau, u; l) = J[\tau(D)] + \sum_{i=1}^{m} l_i(t)[f_i(t, \tau(t), u(t) - \dot{\tau}_i \tag{12}$$

to which we attach the nonlinear functional:

$$L = J[\tau(D)] + \int_0^D \langle l(t), f(t, \tau(t), u(t) - \dot{\tau} \rangle dt \tag{13}$$

where $\langle \cdot, \cdot \rangle$ represents the scalar dot in R^m. By integrating by parts we deduce that:

$$\int_0^D \langle l(t), \dot{\tau} \rangle dt = \langle l(t), \tau(t) \rangle \Big|_0^D - \int_0^D \langle \dot{l}, \tau(t) \rangle dt \tag{14}$$

which - replaced in L - produces:

$$L = J[\tau(D)] - \langle l(t), \tau(t) \rangle \Big|_0^D + \int_0^D [H + \langle \dot{l}, \tau(t) \rangle] dt \tag{15}$$

We calculate the variation for $L(\tau)$ to a variation $\delta\tau$ for the state caused by some variation δu of the command, i.e. approximately:

$$\Delta L = L(\tau+\delta\tau) - L(\tau) = [J(\tau+\delta\tau) - J(\tau) - \langle l(t), \delta\tau\rangle]_{t=D} + \int_0^D [H(\tau+\delta\tau, u; l) - H(\tau, u; l) +$$

$$\langle \dot{p}, \delta\tau\rangle]dt + \|\delta\tau\| o(u, \delta\tau) = [\frac{\partial J}{\partial \tau} - l(t)\delta\tau]_{t=D} + \int_0^D [(\frac{\partial H}{\partial \tau} + \dot{p})\delta\tau + \frac{\partial H}{\partial u}\delta\tau]dt + \|\delta\tau\| o(u, \delta\tau) \quad (16)$$

Where $o(u,\delta\tau) \to 0$ *for* $\delta\tau \to 0$ and where:

$$\begin{cases} \dfrac{\partial H}{\partial \tau} = \left(\dfrac{\partial H}{\partial \tau_1}, ..., \dfrac{\partial H}{\partial \tau_m}\right) \\ \dfrac{\partial J}{\partial \tau} = \left(\dfrac{\partial J}{\partial \tau_1}, ..., \dfrac{\partial J}{\partial \tau_m}\right) \\ \dfrac{\partial H}{\partial u} = \left(\dfrac{\partial H}{\partial u_1}, ..., \dfrac{\partial H}{\partial u_n}\right) \end{cases} \quad (17)$$

Also: $\tau(0) = \tau^0$ being given, we have that $\delta\tau|_{t=0} = 0$. For getting rid of the independent term of $\delta\tau$ from ΔL's expression, we choose one conveniently, namely:

$$\begin{cases} \dot{p} = -\dfrac{\partial H}{\partial \tau} \\ l(D) = \dfrac{\partial J}{\partial \tau}\Big|_{t=D} \end{cases} \quad (18)$$

In this case:

$$\Delta L = \int_0^D \left(\frac{\partial H}{\partial u}\delta\tau\right)dt + \|\delta\tau\| o(u, \delta\tau) \quad (19)$$

and because the variation δu is variable, we deduce as in the finite dimensional case that a necessary condition u^* to be an optimal command is as:

$$\left(\frac{\partial H}{\partial u_i}\right)_{u=u^*} = 0, \quad 1 \le i \le n, \quad t \in [0, D] \quad (20)$$

It is observed that once selected the command $u(t)$, the vector of Lagrange multipliers, $l(t)$, is unique determined from the Cauchy problem:

$$(PC) \begin{cases} \dot{p} = -\dfrac{\partial H}{\partial \tau} \\ l(D) = \dfrac{\partial J}{\partial \tau}\Big|_{t=D} \end{cases} \quad (21)$$

Also, it is observed that $\tau(t)$ and $l(t)$ are reciprocal dual, in the sense that:

$$\frac{\partial \tau}{\partial t} = \frac{\partial H}{\partial l} \text{ and } \frac{\partial l}{\partial t} = -\frac{\partial H}{\partial \tau} \quad (22)$$

Namely, they appear as solutions of a system in the form of classical Hamilton-Jacobi.

In the case in which the command of speech is subject of admissibility conditions $g_i(u(t)) \le 0,\ 1 \le i \le p,\ t \in [0, D]$, we can no longer consider some variations δu absolute, but we must choose such that $u^* + \delta u$ a supplementary command admissible for $\|\delta u\|$ to be sufficiently small. Then, the same as in the finite dimensional, we are led to a variational inequality:

$$\int_0^D [\frac{\partial H}{\partial u}(\tau, u; l)\delta u]dt \ge 0 \quad (23)$$

This must happen for any admissible variation δu. It shows that, for any admissible δu and any t € [0, D], we have:

$$H(\tau^*, u^* + \delta u; l^*) \ge H(\tau^*, u^*; l^*) \quad (24)$$

where τ^* and l^* are the solutions of the problem (PCO 10.1-10.4) and (PC) for $u=u^*$. So, for an admissible command of utterance $u(t) \in R^n$, for J to be minimum (maximum) in the case of dynamic communicative process (PCO), it is necessary to be a function $l(t) \in R^m$ solution of the system (PC) so that $u(t)$ to minimize (maximize) the Hamiltonian $H(\tau(t), u(t))$ for every $t \in [0, D]$.

6. CONCLUSIONS

A message which impacts you will be the one with a balanced structure, from the prosodic point of view, the asymmetric messages, from a linguistic but also phonetics perspective, risking not to achieve their goal, even partially.

By analyzing the characteristics of prosodic speech, with the help of the dynamic prosody conversion method, the expressivity evolution of utterance was followed from an emotional point of view, indifferent to the intensity level.

Emotional speech differs of neutral speech, not only in prosodic characteristics, but - in the same measure - in spectral characteristics. For the analysis of expressivity, some characteristics that describe the processes located in the vocal tract must be taken into account, with impact on the voice specificity.

The local pitch model parameters (a, b, β and λ), respectively neutral parameters and emotional parameters, describe, very well, the speech through a nonlinear mathematical system. The local pitch parameters can be extracted in a relatively simple way from the pitch contour of each syllable/phoneme and finally, the functions of mapping the parameters a, b, β and λ can be estimated using the regression model, CART. While GMM uses only acoustic characteristics, the CART model permits the integration of mapping linguistic characteristics.

Choosing operation on the local pitch model by dynamic control method was justified by the fact that the state described by this spectral voice model reflects, very accurately, the emotional state of the operator or, at least, the emotional charge of the issued information.

Emotional support described and materialized by the use in communication of prosodic components reflected in the LPM model has been optimized by the application of the dynamic control method.

A prosodic optimization was performed through variational modeling of functional parameter u(t), which designates the decision function in the process of controlling the dynamic system of speech/utterance in verbal communication space.

Using the method of Lagrange multipliers and variational calculus, the determination of optimal solutions - in accordance to the evolution of the state parameters and utterance control parameters, introduced in the local pitch spectral model was successful.

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THE MANAGEMENT OF HEALTH ORGANIZATIONS. PARTICULARITIES OF HUMAN RESOURCES IN HEALTH ORGANIZATIONS.

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Abstract: The management of health services is highly complex and is in a process of continuous transformation, constituting not only the object of the medical and administrative staff concerns in the sanitary units and related institutions, but also a major priority on the political agenda of many countries. The concept of health management and manager is both a theoretical and a practical interest for the entire community benefiting from the services provided by health institutions.

Key words: *management, human Resources, health organizations, public health system.*

1. INTRODUCTION

The management of health services is highly complex and it is in a process of continuous transformation, constituting not only the object of the medical and administrative staff concerns in the sanitary units and related institutions, but also a major priority on the political agenda of many countries. The concept of health management and manager is both a theoretical and a practical interest for the entire community benefiting from the services provided by health institutions.

As defined in the Classification of Occupations in Romania, the head of health units plans, coordinates, and assesses the delivery of clinical and community health care services in hospitals, public health clinics and similar organizations. In this situation, the leader has the task to perform the activities of programming, coordination, organization, training and control of the resources of the organization (specialists, endowment, budgets) in an efficient and effective manner in order to provide quality services to the population.

2. THE CURRENT STATE OF THE PUBLIC HEALTH SYSTEM

At the national level, we face a multiple crisis in the health sector, manifested both financially, structurally, at the system level and in terms of employee behavior. Such a crisis materializes in the form of difficulties that seriously diminish the efficiency of health services, such as poor information management, the organization is not objective and accountable, contradictory objectives, neglecting the integration of economic objectives of medical institutions at the level of the specialty, etc.

Such problems can only be solved by improving the health care management system, the design of which should take into account the public character of these services and the environment in which the medical institutions operate.

The reform of the continuous and profound health care system, especially in the last decade, is one that should be considered a priority of any social policy and especially of one educational policy. Because a real and viable reform can not be made without an education that provides a theoretical foundation that will provide the health organization leader with sound management knowledge on service financing, optimal use of existing resources, quality management based on criteria, standards, normative, but also on controlling the related expenditures.

3. CURRENT SITUATION AND SOME MANAGEMENT ISSUES

Health organizations are complex and dynamic. The nature and type of these organizations require people capable of leadership, but also supervising and coordinating the subordinates. Just because they are so important to society, such organizations need to make sure that the managers will focus their strategic goals on achieving organizational goals by making optimal use of resources (human, financial, time, material, informational) that will provide adequate support to organizational activity. Decisions taken by health managers are not only focused on improving patient health and providing the best services to the population, but also on constantly adapting the organization to the latest professional and medical news as well as managerial ones.

Practically, managers are required to focus their attention on two areas on which they will decide and set strategic goals: the external and internal ones. The external domain refers to the influence, resources and activities that must take place outside the organization but with a profound impact on it. The external domain is felt through a series of variables such as the needs of the community, the characteristics of the population, the reimbursement of the insurances of economic agents and the management of the health insurance at the local/regional/national level. The internal one is to provide medical services by involving all the resources available and acquiring patient-oriented quality management and needs, in conjunction with the needs of the local community.

4. THE SYSTEM ANCHORS AND POSSIBLE SOLUTIONS

In the historical development of the health system, Romania has a long tradition in organizing the health care system. Between the First and the Second World War, there was a social insurance system based on the Bismarck model, a model operating in Germany, Austria, Belgium, France, and the Netherlands. The system has a broad coverage with high medical performance but with high expense. Population categories without insurance do not have access to the benefits of the system.

Contributions to finding ways to improve the healthcare system in Romania and to avoid mistakes resulting from the experience of post-accession European countries can be found in continuing reforming actions and in the use of information and communication technology in line with the EU strategy in the field, to ensure the common desideratum of the EU member states - "health for all".

A study of the World Bank showed that three out of five Romanians give public physicians money to get a better health service. The conclusion of the study was that the attitude of giving "attention" to the doctor is normal, from the point of view of the Romanians. Developing the private health system could be a way for people to change their mentality.

5. THE HUMAN RESOURCES MANAGEMENT

Addressing the peculiarities of human resources in health organizations became a problem difficult to be solved, especially considering the requirements of contemporary society, confronted with a critical situation of human resources at its disposal. Specialists agree that the potential and quality of results depend, to a large extent, on organizations that provide good quality services. At the national level, we face a multiple crisis in the health sector, manifested both financially, structurally, at the system level and in terms of employee behavior.

Such a crisis materializes in the form of difficulties that seriously diminish the efficiency of health services, such as poor information management, the organization is not objective and accountable, contradictory objectives, neglecting the integration of economic objectives of medical institutions at the level of the specialty, etc. Such problems can only be solved by improving the health care management system, the design of which should take into account the public character

of these services and the environment in which the medical institutions operate.

6. THE COMPLEXITY AND THE PARTICULARITIES OF THE HUMAN RESOURCES IN THE HEALTH SECTOR

The complexity of human resources management is generated by the set of activities in this field, such as: strategic human resources forecasting and management, selection and recruitment, performance appraisal, motivation and remuneration of human resources, professional training, career management, management of work groups. The diversity of human resource management concerns is generated by the human factor. The "human" side is based on the fact that collective intelligence, complexity of employees' competence and competition lead to a new resizing of human resources management (accreditation of National Authority of Quality Management in Health).

The issues described above represent human resource management in health organizations as a growing, emerging, high-potential research area as part of the wider management sphere. More specifically, key theoretical contributions of emerging research to management of healthcare organizations include defining the roles and responsibilities of the management team, benchmarking performance based on specific indicators, developing investment plans, and monitoring the expenditure structure. Thus, it can be seen that research potential is high because "the man is the most important resource of an organization".

7. CONCLUSIONS

The issues described above present the management of health organizations as an emerging, ever-increasing area with high research potential as part of the wider management sphere. More specifically, key theoretical contributions of emerging research of the management of healthcare organizations include defining the roles and responsibilities of the management team, benchmarking performance based on specific indicators, developing investment plans, and monitoring the expenditure structure. Thus, it can be observed that the chosen topic is a topical one with a high research potential.

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