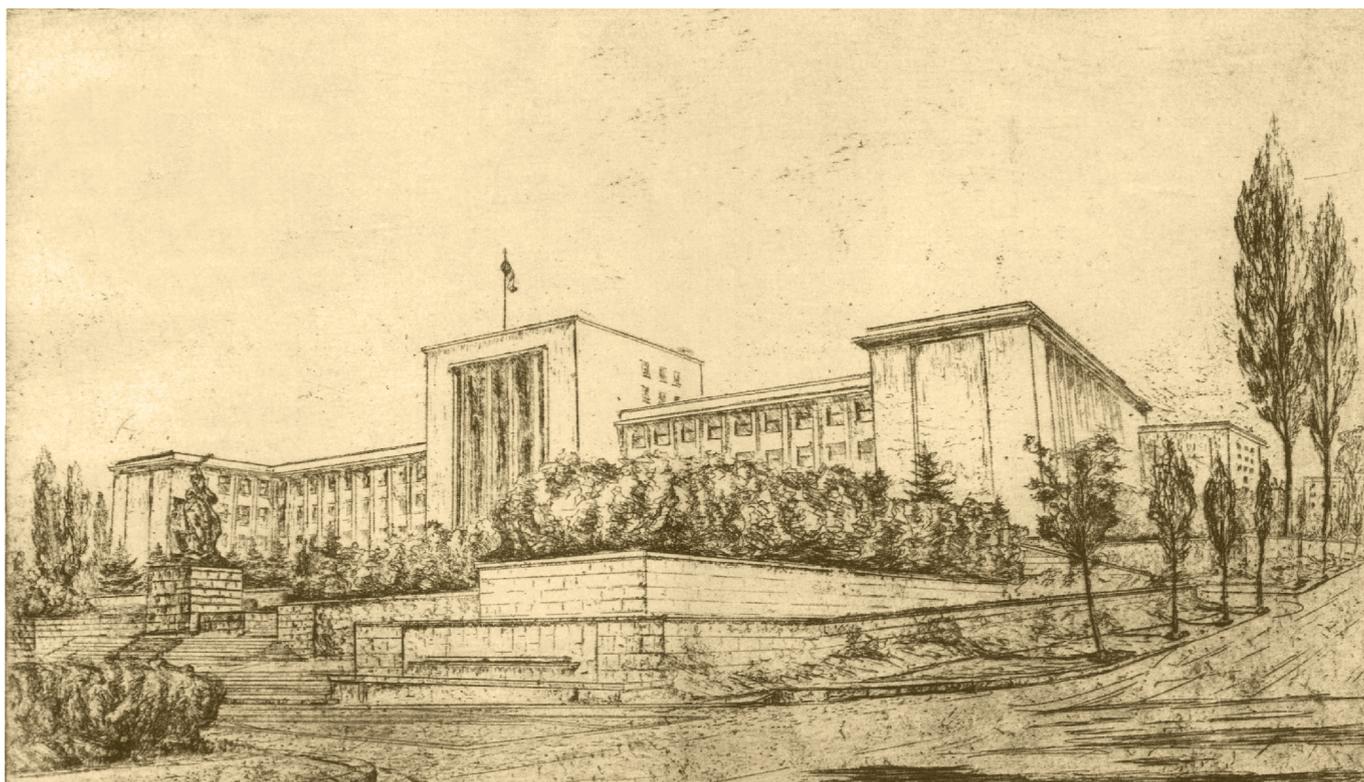


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# BULLETIN

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## COPD V3.0 AND IMPLICATIONS ON THE JOINT LEVEL

Col.adv.instr. Cătălin CHIRIAC, PhD\*

The Comprehensive Operations Planning Directive / COPD, version 2.0, has been in recent years a guide for planners at the strategic and operational levels who need to understand and implement specific operations planning processes. Consistently applied by the member states of the Alliance, the Directive has reached the stage where the lessons identified have required its revision, with a view to improving and aligning it with the new requirements of the operating environment. Thus, the publishing of the COPD version 3.0 at NATO level established the process of modifying procedures or maturing thinking at the strategic and operational levels. Following the guidelines of previous versions, COPD version 3.0 describes in detail the planning processes specific to the strategic and operational levels, remaining the same indispensable tool necessary for planners to carry out the operations planning process.

**Keywords:** COPD; operations planning; directive; operational level; planning process.

### Introduction

The Allied Command Operations Comprehensive Operations Planning Directive, Version 3.0 (v3.0), known among military planners as COPD<sup>1</sup> v3.0, was officially released on January 15, 2021 and it completely reviewed the previous 2013 edition (ACO COPD Interim Version 2.0 (v2.0)), as a result of lessons identified following the development of specific exercises, applications and operations, or as a result of changes in NATO command or force structures.

The new directive continues the approach of the previous edition, namely to provide guidance on the planning of operations, by providing processes, procedures, methods and models, but without ensuring the perfect recipe for success in military operations.

The comparative analysis of the two documents (COPD Interim v2.0, respectively COPD v3.0) which was the basis of this article, will not reflect any change or renumbering of paragraphs, page framing or word replacement. Through this article, I aimed to highlight the novelty elements of COPD v3.0 and to highlight the changes and additions that appeared in the planning process at the operational level.

<sup>1</sup> \*\*\* COPD – Comprehensive Operations Planning Directive.

\*"Carol I" National Defence University  
e-mail: catalin\_chi@yahoo.com

### Common elements

COPD v3.0 does not actually address the tactical level, where operations planning is still guided by national procedures and provisions, but to the operational and strategic command levels and to other operational level commands within NATO command structures. However, the rationale behind the directive must also be understood by the distinctive structures of the tactical level. The Directive can even be adopted by these structures in order to be able to carry out collaborative planning, because the tactical level products influence the rate at which those at the upper echelons are developed. In the same way, the Directive has maintained its level of classification so that it can be used, understood and applied by all members of the Alliance, or by other interested nations, in accordance with the specific provisions existing for these situations.

The reason of the planning process remains simple, in the sense that, it is dependent on the directions and products of the strategic level, the structures/commands at the operational level being in a permanent dialogue with the subordinate structures. The phases of the planning process at the operational level remain unchanged, being designed to develop both the proposals and products, required by the strategic level, as well as the directions, directives and orders necessary for the tactical level.



The presentation and detail of the planning process<sup>2</sup> keep the same line with the previous version, the existing changes being minor and only with the purpose of systematizing the information. These changes aim at organizing paragraphs, introducing new terms used at NATO level, highlighting activities or processes, renaming non-permanent structures or working groups<sup>3</sup> and are likely to bring that clarity and improvement that underpinned the review of COPD Interim v2.0.

COPD v3.0's approach to defining the end state, objectives and effects remains unchanged, with direct implications for maintaining the operational design structure achieved at the operational level.

From the point of view of the physical background elements<sup>4</sup> that the planning documents must comply with, there are no changes compared to the previous version. In this way, the standard format for the main planning documents ensures both the familiarity with them and their easier understanding and the consideration of important aspects related to the planning and conduct of operations, thus facilitating the decision-making process. There are also no changes to the identification and naming of operations plans, the plan identification system presented and explained in COPD Interim v2.0. being used in the current version as well.

### Elements of Novelty

The COPD v3.0 analysis highlighted changes and additions to the previous edition both in the specific chapters detailing the planning processes specific to the strategic and operational levels, and in the introductory chapter, where the framework that ensures the planning of operations

<sup>2</sup> \*\*\* N.A.: Each phase of the operational level specific process is structured as follows: the introduction which also includes the purpose of the phase, characteristic elements of the phase, prerequisites, desired outcomes, organizations, roles and responsibilities, external coordination and main phase activities.

<sup>3</sup> \*\*\* N.A.: An example would be the renaming at the strategic level of the *Response Direction Group (RDG)* in the *Cross Functional Action Team (CAT) Plans*.

<sup>4</sup> \*\*\*N.A.: Both versions set out the following elements that must be contained in the concept or plan of operation: document cover, letter of promulgation, table of contents/ list of effective pages, record of changes, main body and annexes, which include appendices and tables.

is presented. Thus, the relevant novelty elements, identified in COPD v3.0, have been grouped in *general*, which provide the necessary framework for operations planning and *specific*, which directly refer to the planning process carried out at the operational level.

The group of general novelties begins by replacing the phrase *operational environment* with *operating environment* to describe "a composite of the conditions, circumstances and influences that affect the employment of capabilities and bear on the decisions of the commander" (COPD Interim V3.0 2021, K-7). This amendment ensures the correspondence with the term presented and detailed in *NATO Term, The Official NATO Terminology Database* (NATO Term 2022) and used at the level of Alliance member states.

As provided in existing national and NATO doctrines, the conditions of each of the six PMESII<sup>5</sup> domains of the engagement space can be influenced by the application of one or a combination of the four instruments of power. The new COPD v3.0 addresses the instruments of power in the light of the construction of DIME<sup>6,7</sup>, given that NATO, as a Security Alliance, exercises control only over diplomatic/political (partially) and military (primarily) instruments.

The presentation of the phases of the *NATO Crisis Response Process* (previously referred to as the *NATO Crisis Management Process*) reinforces that, an understanding of how strategic decision-making at the NAC<sup>8</sup> level ensures, within a reasonable timeframe, assessments and strategic-level advice needed to plan and execute an operation.

The transition from *planning in a multi-dimensional environment* to *planning in a multi-domain environment* will be one of the planning challenges, for both the military and civilian partners. In this context, in order to prepare and execute complex and multi-domain operations, it is necessary to develop a properly detailed operational plan of the planning process,

<sup>5</sup> \*\*\* PMESII – Political, Military, Economic, Social, Infrastructure and Information.

<sup>6</sup> \*\*\* DIME – Diplomatic, Information, Military, and Economic.

<sup>7</sup> \*\*\* N.A.: COPD Interim Version 2.0 presented and detailed the instruments of power in terms of PMEC construction – Political, Military, Economic, and Civil.

<sup>8</sup> \*\*\* North Atlantic Council.



incorporating all relevant factors for the efficient conduct of operations. Designed to prepare the Alliance for possible security risks, pre-existing operations plans specific to *advance planning* have been complemented by two new types: *Graduated Response Plan/ GRP* and *Sequenced Response Plan/ SERP*.

In support of collaborative and parallel planning, COPD v3.0 briefly presents three planning tools developed based on functional web applications/services, used at NATO level: INTEL FS<sup>9</sup>, TOPFAS<sup>10</sup> and LOGFAS<sup>11</sup>. The purpose of these tools, which are characterized by flexibility, is the support provided to the staff involved in the planning and execution of operations, at the political, strategic, and operational levels. However, depending on the role of the tactical level and the particularities of the planning process, these tools can also be used at this level. Compared to the previous version, in which there were made only references to these tools, usually in the footer section of the pages, depending on how they could support different processes or products, COPD v3.0 presents these tools in a separate paragraph, with their specific destinations, components, and options.

Emphasizing the *role of commanders* from the very first pages of the Directive (COPD Interim V3.0 2021, 1-2) during the planning process is important for further understanding of how they direct the planning team and make the sound decision, within the timeframe appropriate to each phase of the planning process. In addition, the new approach to the role of the commander in terms of interaction with the staff demonstrates that he remains the central figure in leading the whole process. The overview of the commander's interaction with the staff/planning group presented graphically by COPD v3.0 (COPD Interim V3.0 2021, 4-6) confirms that his presence throughout the process ensures the alignment of the planning effort with its intention in order to fulfill the assumed operational objectives.

In the same way, the definition and presentation from the first chapter of the concepts and notions on *Operational art, Risk and*

*opportunity, Campaign synchronization* and, especially, *Levels of command*, has the role of introducing and explaining the essence of these notions, being used subsequently throughout the Directive where it details the planning processes specific to the strategic and operational levels.

The specific elements, improved or modified in COPD v3.0, are presented progressively in the order in which a planner should identify, analyze, and integrate them into a planning product.

It is true that the joint planning process at the operational level also involves establishing reciprocal and supporting requirements, thus providing the basis for the implementation of strategic directions and guidance. In this way, depending on the nature of the crisis and the political and military level directions, the external coordination of operational level activities has been completed by a variety of external entities, authorized and appropriate to the proposed military purpose. Other operational level commands (nominated at all stages of the process), the Cyberspace operations center or the Standing joint logistic support group are some examples of complementing the structures already nominated for external coordination.

The integration of the *Operational planning and liaison element/ OPLE* at the strategic level, ensures not only the relationship of the planning groups at the two levels, but also the support of the upper echelon in the development of their own products. Composed of staff with experience in operational level planning and who has interacted with the planning group/JOPG<sup>12</sup>, OPLE is familiar with the planning process of the command it represents, as well as with the particularities of the strategic level and ensures, in the new version, the coordination of actions between two levels.

If the term CPOE<sup>13</sup> was used in COPD Interim v2.0 to describe the appreciation of an operating environment, COPD v3.0 brings the term CUOE<sup>14</sup> to the attention of planners, thus emphasizing the need to *acquire knowledge, interpretation and understanding of their meaning* in the context of a crisis. Presented as a process

<sup>9</sup> \*\*\* Intelligence Functional Support.

<sup>10</sup> \*\*\* Tool for Operations Planning Functional Area Services.

<sup>11</sup> \*\*\* Logistic Functional Area Services.

<sup>12</sup> \*\*\* JOPG – Joint Operations Planning Group.

<sup>13</sup> \*\*\* Comprehensive Preparation of Operational Environment.

<sup>14</sup> \*\*\* Comprehensive Understanding of the Operating Environment.



between departments/structures of a command, the CUOE is supported by the various functional and special areas of the staff, some of which have their own process to contribute to the CUOE, such as JIPOE<sup>15</sup>, detailed at NATO level in AJP-2 (COPD Interim V3.0 2021, 4-13).

Equally important is the specification in Phase 1<sup>16</sup> of the operational process, in which, the intelligence / J2 staff leads the JIPOE process to develop and monitor an initial understanding of the crisis, while the planning group interacts with intelligence staff to identify information and knowledge requirements, as part of CUOE development. This delimits, if necessary, the responsibilities for the development of JIPOE and CUOE, as well as the fact that the two processes are not identical but only complementary.

In order to understand the operating environment and the impact of the environment on the planning and execution of the joint operation, the planning group performs, at the beginning of Phase 3<sup>17</sup> of the planning process, an analysis of time, space, force, and information factors and their specific relationships. The analysis, which was not presented in COPD Interim v2.0, will help operational level planners in the further analysis of key factors and centers of gravity. By detailing the time, space, force and information factors and the specific relationships between them, COPD v3.0 ensures alignment with the provisions of AJP-5, *Allied Doctrine for Operations Planning* (AJP-5 2019, A-1).

A key element of operational art is the identification of ways in which the centers of gravity of primary actors can be influenced so that the objectives set at the level of military art can be accomplished. Because the analysis and identification of centers of gravity is an ongoing process, COPD v3.0 brings a number of completions, expected by planners and useful at the same time, to the concept of center of gravity at the operational level, thus completing the limited information available in previous edition. In this regard:

- The definition of the center of gravity has been updated, identical to the NATO approach

<sup>15</sup> \*\*\* JIPOE – Joint Intelligence Preparation of the Operating Environment.

<sup>16</sup> \*\*\* N.A.: Phase 1 – Initial situational awareness of a potential/actual crisis.

<sup>17</sup> \*\*\* N.A.: Phase 3 – Operational estimate.

in *NATO Term, The Official NATO Terminology Database* (NATO Term 2022), (COPD Interim V3.0 2021, 4-53);

- It has been firmly stated that, at the operational level, the center of gravity will always be *an entity*, thus eliminating discussions about where it could be identified. It is also important to specify that, when developing the courses of action, the entity that will be the answer to the question *Who will conduct the operation?*<sup>18</sup> should become the center of gravity for that course of action (COPD Interim V3.0 2021, 4-75).

- More details on the center of gravity are provided, giving this concept due importance for the operational level;

- The analysis of the center of gravity focuses on the key characteristics/elements of each actor, starting with the assessment of goals and objectives, critical capabilities, critical requirements and critical vulnerabilities and culminating with the establishment of the center of gravity. According to the new version, the main step in the analysis of the center of gravity is to draw conclusions, where objectives and potential effects can be determined, so that they can exploit vulnerabilities, gaps or deficiencies in the previously identified elements of an opponent or their own forces;

- Even if a method/procedure for the actual identification of the center of gravity at the operational level is not yet detailed, the information provided in this version ensures a unified approach to this issue. Certainly, the details presented in *Annex B* of AJP-5, the *Allied Doctrine for Operations Planning*, together with the elements of COPD v3.0 will ensure the clarity needed to understand the concept of center of gravity.

In the section on operational risks, a number of additions were made for understanding the importance of the risk (both likelihood of occurrence, gravity of impact, mitigation measures) and the need to involve the commander in determining its level of acceptability. In

<sup>18</sup> \*\*\* N.A.: According to COPD v3.0, the planning group's own courses of action need to answer a number of edifying questions. The question *Who will conduct the operation?* must have an answer in those main forces or capabilities required to carry out the specific actions to obtain the operational effects.



the same section, the concept of *operational opportunities* is presented as a novelty at the operational level and it is usually related to risk-taking in the analysis of time, space, forces/actors, and information factors in the joint operations area (COPD Interim V3.0 2021, 4-57). Thus, the operational level planning products formats have been complemented by this new concept, and in validating the mission analysis and operational framework, the commander must also assume the risk and opportunity analysis made by the planning group. The same analysis will be repeated, improved and revised during the elaboration of the concept and the plan, specific to the operational level.

In order to achieve operational design, COPD v3.0 proposes a logical way to develop the operational framework, together with the view that the actual order or approach, used by the planning team may vary, depending on the actual situation, the guidance provided by the commander and the experience of the group.

Thus, the first concept of the operational framework to be developed is the lines of operations, because their development will shape the development of the plan and the conduct of operations<sup>19</sup>, and, therefore, the implicit approach of COPD v3.0 is that there should be a line of operation for each operational objective. This is followed by the determination of the decisive conditions, the operational effects, the actions, the sequencing and phasing to ensure continuity and tempo, the determination of branches, sequels and decision points and the development of provisional missions for subordinates. The introduction, definition and detailing of *decision points* in the operational framework was intended to optimize the execution and synchronization of available resources, following a decision of the commander<sup>20</sup>.

Following the elaboration of the operations plan at strategic level and the approval of the

<sup>19</sup> \*\*\* N.A.: In COPD Interim v2.0 there is a specification that the line of operation ensures the connection of the effects and decisive conditions with an operational objective, since, normally, there should be a line of operation for each objective.

<sup>20</sup> N.A.: More details on *decision points* can be found in the Allied Command Operations Comprehensive Operations Planning Directive, Version 3.0, SHAPE, 2021, pp. 4-65, 4-66.

plan/plans at operational level, there is a requirement to adjust, coordinate and direct the subsequent activities, at strategic and operational level, in time and space, depending on the evolution of the operating environment. Along the same line, COPD V3.0 proposes as solution the *Strategic Coordination Order/SCO*. Thus, this order is the mechanism and, at the same time, the product, which provides guidance and directions to subordinate commands for the synchronization of plans and operations at the operational level, as part of the overall military campaign. It is estimated that the SCO will be a relatively short and concise document, focused only on current or future changes, thus having a relatively short development and approval cycle. The format of an SCO is not set, but it is expected to follow the standard format of an operation order/OPORD (COPD Interim V3.0 2021, 3-128)

If the synchronization of the military campaign is carried out at the strategic level by the Comprehensive Crisis and Operations Management Centre/ CCOMC, through the Strategic Coordination Order/ SCO, at the operational level the synchronization, detailed directions and guidance of subordinates are achieved with the help of the Joint Coordination Order/ JCO. In the new version, the process of approving and issuing a JCO is much better framed in time: from a deliberate process that takes several days to a process of approval and issuance that normally covers 3 cycles of the Joint Coordination Board/JCB (initial project, coordinated project and final project) (COPD Interim V3.0 2021, 4-128).

### What is missing in COPD v3.0?

The present analysis, which expresses certain views based on personal experience, has also identified some elements, that have been overlooked in the new version, and, in addition, some inconclusive expressions, which could be misinterpreted by military planners.

It is well known that operations planning involves the development of various products, at different levels of military art, in a collaborative manner and often under relentless pressure of time. The planning processes used at each level ensure both the reflection of the proposals made at the level of the upper echelons and the elaboration



of orders or clarifications sent to the subordinate structures, in accordance with the vision and directions of the commander.

In order to make this possible, communication is the key. In support of communication and, implicitly, of planners, COPD Interim v2.0 presented in *Annex A* defining elements regarding the objectives, effects and decisive conditions and, more importantly, a practical approach regarding their drafting (COPD Interim V2.0 2013, A-1÷A-5). This ensures a standardization of the way of thinking and writing of these elements, but also, a common language between the planning groups at different levels, with real advantages in the available timeframe. COPD v3.0 has abandoned this annex due to that fact that these provisions have been previously adopted and only need to be refined or to the fact that they will be reintroduced into various operating procedures or functional guidelines.

Another example is the removal of examples and details regarding the particularities of the conclusions and deductions specific to the factors analysis, existing in the previous version. Again, the arguments in favor of maintaining them in the new version are based on standardization, common language and time management.

One aspect that is not necessarily missing but only confusing is the use of different terms for the same processes or products. Thus, the name of the *operational design* is not resolved or at least agreed, because in COPD v3.0 both the name of *operations design* and *operational design* (but also *operations framework* and *operational framework*) are used. This may be due to the joint work during the elaboration of the Directive. Certainly, this ambiguity will be eliminated in the near future, especially since the *Allied Doctrine Joint for Operations Planning* (AJP 5) used, in the 2019 edition, the name of *operations design*.

Among the inconclusive expressions, in the new version there is the possibility to interpret the way in which the Concept of operation/CONOPS and the Plan of operation/OPLAN are related. Although it is not clearly and unequivocally stated, there is a reference that after elaboration,

CONOPS should become an annex to the OPLAN. These issues can be found in the paragraphs that discuss the wargaming and the synchronization of courses of action and the development of the plan of operation (COPD Interim V3.0 2021, 4-83, 4-111). The approach is at least surprising, given that both CONOPS and OPLAN are separate documents of the planning process and have the same format, as COPD v3.0 presents and exemplifies in *Appendix 7 to Annex B*. Furthermore, the footnote of Annex C of that Directive sets out elements relating to the drafting of the main body of CONOPS and OPLAN and Annex A of these, which do not argue or mention the transformation of CONOPS into an annex to OPLAN. Transforming the concept into an annex to the plan only creates confusion in such a complex area.

### Conclusion

*To sum up*, COPD v3.0 remains the basic planning tool of the structures involved in operations planning at the strategic and operational levels, and the necessary guide for directing operations planning for the tactical level. In an increased number of pages compared to the previous version, the new version brings together notions of theory and practice on operations planning while providing the necessary processes and products.

The planning and execution of the joint operation are activities led by the commander and carried out by the planning group. While the processes and tools for carrying out these activities are provided by COPD v3.0, decision-making, based on the recommendations of the planning group and the intuition, experience and judgment of the commander ensure their continuity. Logically, the Directive will be further amended as a result of regular review of doctrines and manuals/guides at the Alliance's level, or as a result of lessons learned from the use of this variant. Yet, this must be perceived as a normality and not as a failure, given that the planning process can be permanently influenced by actions, phenomena or concepts.



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## THE METAMORPHOSIS OF THE MILITARY HIGH SCHOOL EDUCATION

Lt. Mioara CULEA (ȘERBAN), PhD student\*

The success or failure of a culture is strongly influenced by a set of cultural traits, the values and principles it creates, rather than by physical or other conditions in the external environment. In the specific literature in the field, there are several models that define the main factors that determine and lead to the construction of a culture, thus determining the differences that distinguish them in the world. One of the most widespread models is that of Geert Hofstede, who based one of the most extensive studies of cultural morphology on the cultural differences that characterize a country or a group of people. The article seeks to highlight the main components of the organizational culture of a national military college. The analysis of the educational environment in the military college from the perspective of Geert Hofstede's four dimensions is a test of awareness of the profile produced by an organization providing education with a specific vocational profile, military, in the field of under-graduate education.

**Keywords:** organizational culture; Hofstede cultural dimensions; distance from power; individualism; femininity; avoidance of uncertainty.

### Introduction – organizational culture in the military college

The values, attitudes, traditions and customs that have been formed over time in a particular organization and have been passed down from generation to generation to those who make that organization work, its culture or organizational climate, condition its functionality and performance. Each individual is the bearer of such a system, of a model of thought, feeling and manifestation acquired during life, being representative in the culture of the social group.

Organizations differ at least from a managerial point of view, through the cultivated mix of characteristics, which supports the ability to adapt and survive. The result is that for each social group, organizational culture is defined by patterns of thinking, feeling, and behaviour.

Examining the Romanian specificity from the perspective of the military configuration and the structure of the related symbols, with general circulation in the spiritual and ethical profile of the military personnel, there can be identified as dominant elements on the one hand perseverance, discipline and order, at the same time with creative intelligence, responsibility and initiative.

Competence, training and passion are required in order to be part of the major coordinates of military ethic. The military institution, through its very principles it disseminates, through its requirements, supposes and imposes a certain profile of the military.

The organizational culture of a structure providing military education has the imprint of a personalized vision in an institution that has retained the function of the symbol and the value of meanings. The specific social stratum under study has been chosen from the educational environment within a Romanian military college, this being the cornerstone for the military profession, the stage in which behavioural and value patterns of the future military are configured.

In a straight sense, organizational culture expresses education, manners, talents. In a broad sense, this is a collective phenomenon accepted by people living in the same environment, becoming a kind of collective programming of the mind. Consequently, it can be said that no part of our life is exempted from the influences of culture, starting with the way we are born, evolve and die.

In this respect, the study focuses on the procedural relationship between "admissions" (Iosifescu 2008, 36) in the military system, at the college level, and the related personality variables of the subjects together with the cultural dimensions of an acknowledged model (social axioms, the

\*General Staff of Land Forces  
e-mail: smioara021@gmail.com

factors of Hofstede's model). The interaction between them contributes to the configuration of a complex process of metamorphosis that brings changes on several levels: of knowledge, attitudes, of individual and group behaviour. All of them contribute to the realization of a personalized design of the organizational culture specific to an organization providing vocational-military education.

### Conceptual-theoretical framework

The study based on the „*cultural dimensions*” in the Romanian educational environment grounded on the model developed by Geert Hofstede, Professor Emeritus of International Management and Organizational Anthropology at the University of Maastricht, the Netherlands, is not a premiere. He studied the organizational behavior of several countries, managing to identify a set of variables that make the difference among the cultures of several organizations/countries, and established an analysis tool, perhaps the best known. In his view, the values or general preferences for a state of affairs to the detriment of others, largely unconscious that distinguish countries, are statistically grouped into several clusters, around categories of anthropological issues that are valued differently from one country to another. These are expressed by dichotomous categories: distance from power; high versus low; individualism versus collectivism; femininity versus masculinity; high versus low level of uncertainty avoidance. Thus, *”organizational cultures are a phenomenon that has aspects different from national cultures. An organization is a social system of different nature from that of a nation, even if because the members of the organization did not grow up in it. On the contrary, they have a certain influence in their decision to join it, they are involved in it only during the work schedule and will leave it one day”* (Hofstede, Hofstede and Minkov 2010).

Thus, *”culture is the collective programming of the mind that distinguishes members of a group or category of people from others. It is always a collective phenomenon, but it can be connected to different collectives. Within the collective there is a variety. If the characteristics of individuals are imagined as variables depending on the bell curve, the variation between cultures is the movement of the bell curve when moving from one society to*

*another”* (Hofstede and Milosevic 2018).

In an article, first published in 1952, the American anthropologist Clude Kluckhohn argued that there should be universal categories of culture: in principle, there is a generalized framework underlying the more obvious and striking facts of cultural relativity. *”All cultures are so many distinct answers to the same questions posed by human biology and the generalities of the human situation. Thus, the life patterns of every society must offer approved and sanctioned ways to deal with universal circumstances”* (Milosevic and Shili 2020, 137-141).

There are also other models, debates on organizational culture, with different perspectives and ideas. Considered the most widespread model of organizational culture, Edgar H. Schein's model (similar to Maslow's pyramid of needs) defines organizational culture through three levels (Schein and Schein 2017): the first level is considered external, of artifacts, the second level is of values, which the author says are manifestations of unseen beliefs and certainties, and the third is that of basic assumptions or certainties.

Another perspective is that of Barney, who proposed a theory of transactional costs, through which managers who have lost control of their institution can regain it through indirect control resulting from a series of rules, which lead to the creation of a very strong culture.

Later, Vilnai-Yavetz and Tafaeli present a model of organizational culture (Tafaeli and Vilnai-Yavetz 2004, 671), which consists of symbols, language, gestures (artifacts). This unit of analysis is based on three dimensions of instrumentalism, aesthetics and symbolism. The first component plays a role in fulfilling the goals of the culture, the second component demonstrates that artifacts are part of the organizational experience and the last one attaches great importance to values for the members of the organization.

Therefore, the culture of any organization is seen as unique, a dimension to be discovered, something that *”can be understood and interpreted by those who know and understand its context”* (Peterson and Spencer 1990, 9). The aim of the research is to identify and determine the relationship between organizational culture and G. Hofstede's variables in the general context of the organization.



**Methodological guidelines**

The investigation aimed to identify an identity symptomatology of the educational environment, by examining the cultural dimensions and personal autonomy characteristic of a military college. The research carried out from the perspective of the Hofstede cultural model had as main objectives the establishment within the cultural dimensions of some important fields in the culture of quality (perception of managerial style, perception of school mission, degree of satisfaction with the educational climate in school) and the investigation of the degree of achievement of the indicators on the chosen sample. The methodological design we built articulated the two objectives in order to make a diagnosis of the educational environment in a military college.

Are there fundamental differences between the national culture and the organizational culture within the military college? Starting from this hypothesis or, better said, question, I will briefly present the investigative approach. It was based on a research strategy in which qualitative research dominated, in this case based on the intentional sampling of a relatively small target group, students of a single military college in the country. The research was conducted on a number of 60 students, 31 male respondents and 29 female respondents, of which 37 from urban areas and 23 from rural areas, as follows:

For the collection of qualitative data, I chose the survey as the most appropriate method, this being one of the most consolidated and used methods of knowing the data. For this study I opted for the questionnaire survey. The questionnaire had 22 items, which were addressed exclusively to students and which investigate the four important dimensions of Hofstede's typology: distance from power, collectivism-individualism, masculinity-femininity, avoidance of uncertainty. The analysis of the data collected coding the answers was done using a four-step scale:

**Table no. 2**

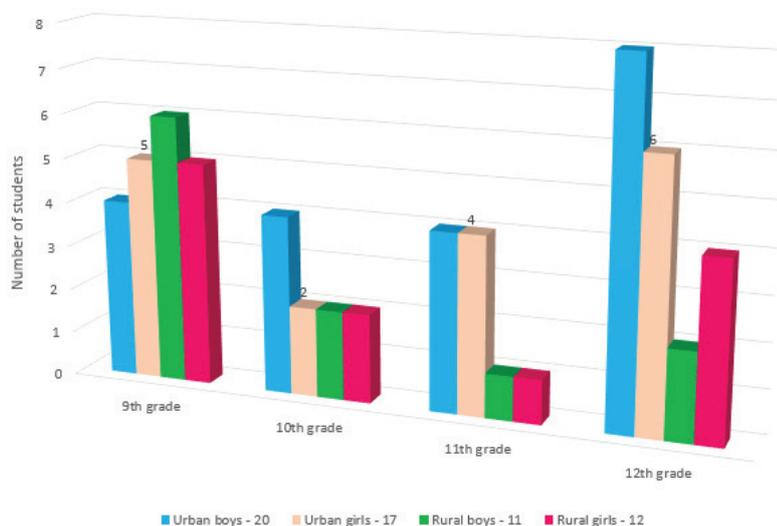
To a very large extent	To a large extent	To a small extent	To a very small extent
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A first type of analysis took into account the four cultural dimensions of the Hofstede typology, with the analysis of the answers for each of the items that are part of the four dimensions. The distribution of the items on the four dimensions of the model is as follows:

**Table no. 3**

Distance to power	Collectivism-individualism	Masculinity-femininity	Uncertainty avoidance
6 items	5 items	5 items	6 items
01, 05, 06, 09, 10, 15	04, 08, 12, 14, 18	02, 13, 16, 19, 20	03, 07, 11, 17, 21, 22

**Table no. 1**



	Defining items (reference statement)
01	I feel uncomfortable or insecure when I have to contradict my elder colleagues/ teachers/superiors.
05	Usually, superiors make their own decisions based on available information and communicate it to subordinates.
06	The decision-making style that superiors practice seems to me to be appropriate for the school organization.
09	Teachers are "sages" who transfer personal learning to students.
10	I must always treat teachers with respect, rejecting any familiarity.
15	All major educational initiatives in the classroom must come from teachers.

Representation of items on the four dimensions:

	Defining items (reference statement)
04	Under all circumstances, harmony must be maintained and direct conflicts must be avoided.
08	The main purpose of education is to "learn how to behave."
12	To me, it is more important to be able to choose the activity I carry out than the physical conditions (space, light, heat, etc.).
14	It is very important to me that the activities I carry out allow me to have enough free time to be able to stay with colleagues/friends and have fun.
18	The main purpose of education is to "learn how to learn."

### 1. Distance to power

	Defining items (reference statement)
02	Boys are not allowed to complain and are allowed to fight, while girls are allowed to cry, but are not allowed to fight.
13	About a teacher, special competence must be appreciated more than his friendly attitude towards us.
16	Achieving outstanding performance and equity are more important than solidarity and equality.
19	To me, it is more important for people to recognize my value as a person and my professional competence than to work in a team, in which the priority is to obtain optimal relations of cooperation
20	School failure is a disaster to me.

### 2. Collectivism-individualism

	Defining items (reference statement)
03	It seems to me that at school I am under a lot of stress.
07	If you want a competent person to do his/her job properly, it is best to give him/her instructions that are as complete and accurate as possible.
11	What is different is dangerous.
17	Teachers are supposed to have answers to any questions.
21	Regulations and instructions should not be violated by subordinates even if they consider this to be in the best interest of the school.
22	Our school is a safe and healthy environment.

### 3. Masculinity-femininity

### 4. Uncertainty avoidance

I used the usual statistical indicators to process the questionnaires. The specificity of the instrument used in the research is the exclusive use of evaluation items on an ordinal scale, in which the subjects were invited to specify the level of

agreement or disagreement with the statements in the questionnaire. For a better revelation of the information from this analysis, the evaluation went through a bipolar scale, by measuring the opinion or appreciation by the respondent either by a positive/favourable answer or by a negative/unfavourable answer.

Gradually going through this research approach, an important reservoir of social



subjectivity was opened, represented by the social implicit aspects analyzed in the studied educational environment. Cultural factors participate in the metabolism of identity dynamics in the system.

#### *The distance imposed by power*

The first cultural dimension, the distance imposed by power, relates to the way power is perceived within that culture. Inequality has a structural character, in cultures that value the great distance from power: the use of power is not sufficiently constrained by legitimacy or morality, qualifications, income and status are mutually supportive and are valued together. The organization centralizes power in as few hands as possible and a considerable distance is required between subordinate and superior.

The transposition of this axiom at the level of the military education system may have a different weight in determining the results, when the analysis is performed on educational levels and categories of subjects. In order to ensure an investigation that determines the basic trend, at the level of the military college, the analysis focused around a few elements that make up this axiom: the feeling created when certain opinions are supported, especially in relation to teachers or those in higher positions, the way of communicating the decisions taken based on the available information, the type of decision-making style applied to the organization, the way of relating the subordinates/students with the superiors/teachers, the way in which the initiatives are created. All these items provide information about the acceptance of differences in power, decisions, indications, opinions of hierarchical superiors, which lead to the type of management provided.

The analysis of this variable, the distance from the power, indicated that the subjects under study accept and expect that the power will be distributed unequally. This indicates the inequality defined by subordinates, not superiors, which leads to the idea that the level of inequality in the educational environment of the college is supported by both subordinates and leaders. This conclusion is predictable not only by supporting an implicit mechanism of the hierarchically constructed military system, but also as a fundamental fact for any entity, individual or institutional, which, with a minimum of experience, can argue that environments, societies are unequal, only that

some promote inequality more than others.

Assembling the information on this first axiom, which is about accepting differences of power, decisions, opinions, the results indicate a high degree of acceptance from top to bottom in the hierarchy. The tendency of all categories of subjects is to accept authority, in a form of constructive mimicry. But this way of submission and acceptance does not take the form of obedience, as a plasticization of human nature, but on the contrary, identifies an area of imposition on authority, which eliminates fear and any anxiety and discomfort in the situation of supporting opinions, statements, developing skills acquired in a competitive environment.

#### *Individualism versus collectivism*

The level of individualism/collectivism refers to the extent to which culture encourages either the individual or the collective interests. It also deals with the intensity of relationships between members of a community, organization or group or, more broadly, of a society. If people approach the activity and relationships through the prism of individualism, personal initiatives and achievements take precedence, the identity being based on the individual, the private life being strictly personal. Individualism is associated with the importance given to personal time, freedom of choice, professional choice. In the case of collectivism, the group gives, first of all, identity to the members, generates performance and, if the group interacts synergistically, it is superior to the individual performances. Belonging to a certain group also influences the privacy of the members. Collectivism is associated with parameters such as: improvement, very good physical condition and the use of development and improvement opportunities.

Every human being is a unique valuable individual; free choice is the ultimate source of authority. In the 21st is a century, three practical issues could be overcome by this belief: „*people will lose their economic and military utility, the system will continue to find value in people still collectively, but not in single individuals, and the system will still find value in some unique individuals, but they will rather represent a new elite*” (Harari 2018b, 131).

In general, the organizational culture of

schools falls into the collectivist part, both through the formal organization of educational cycles, departments, curricular areas etc., and the need for collaboration among teachers horizontally (teachers who teach the same class) or vertically, among different cycles.

In the military school, the axiom is supported and acquires specific values, given the fact that at this level adequate educational and training programs are designed and implemented in a collective commitment, of the development of teamwork skills. The functionality and achievement of results, at the institutional level, is in line with the commitment of its members to achieve common goals, through mutual support, collaboration and effective communication. Only in this way the team, respectively the institution, fulfills its mission.

The analysis was based on aspects of attitude towards conflicts, also two phrases "learning how to behave" and "learning how to learn" and the importance of how to spend free time both in terms of space and affiliation to a group. There were no differences in perceptions regarding maintaining harmony in the classroom and avoiding conflicts at all costs. Free time and the value given to it in favour of spending time with friends recorded, without exception, the highest score. This fact confirms the integration of the subjects in different categories of groups, depending on the age category, and as this increases, it is found the integration in cohesive groups, which is protected in exchange for an indisputable loyalty. This axiom also includes two relevant aspects of the importance of "learning how to behave" and the importance of "learning how to learn." The first is captured in the formulation of the mission established by the college, as a defining element of its organizational culture and, as a general desideratum, meets the majority agreement of subjects of all ages. The second aspect confirms a favourable balance in all participants in the study.

The two aspects capture two components, a practical one, related to behaviour and which is mainly fulfilled, given the specifics of the college, but also a component related to pedagogy and captures a subjective process of methodology. Each teacher is responsible for the influence exerted on the students. In the educational context, the teacher becomes "above all, the one who guides and

stimulates the natural curiosity and spontaneous interest of students in discovery, ... leaving them the freedom to examine the real fact or critical analysis of the content of a text, independence in activity, operability and speed in cognitive, affective, motor reactions), full responsibility for what I undertake" (Cerghit 2008, 109). Indirect experience is the most valuable source of learning, but also the most effective. Direct experience is another option, developed through types of activities that generate the concept of experiential learning, less common or less common in the school environment. But modeling, as a learning process, has a widespread character in the military educational environment, by taking over certain behaviours, skills, habits from leaders, from instructors, from chosen models. Therefore, in this context a perfect role belongs to the manager of the organization who must ensure the identification and recruitment of representative personnel for a clear orientation on military values (without neglecting moral and civic education), the choice of successful models, counselors who contribute to the personal development of future military. This dimension has an attitudinal pattern that is vital in the metabolism of identity, characterizing all societies.

#### *Femininity versus masculinity*

This variable is established according to the clichés about the two genders: ambition, achievements, money and material rewards characterize masculinity, and care for people, quality of life and environment are associated with femininity. Organizations in the male type society demand results and rewards after each benefit, while the female type tends to reward each one according to their needs. Being an extremely important aspect for any society, the distribution of roles between the sexes identifies two poles: one assertive, which can be called masculinity and the other considered to be sensitive and caring, as femininity. The synthesis of the collected data indicates a tendency towards affirmation, access to information and improvement from a professional point of view, so a tendency towards masculinity.

The aspects considered in the items that made up the analysis of this dimension were the perception of school failure, the importance of recognition as a person, the perception of solidarity and equality. The subjects are much more focused



on the competitive spirit and the intention to assert themselves, especially in the category of male respondents, solidarity and equality being very important for girls. No category of subjects treats failure with indifference, minimizing its effect, on the contrary, they consider it a disaster.

The presence and the visibility of women in the defense structures of the country have increased, experiencing an upward trend in recent years. In our present society, in the military system, there are no differences in the way women and men work, which shows that strength is not just about physical abilities. This illustrates a notion of a subjective nature and also does not manifest itself as exclusive to men. There are a number of values that lead to an awareness of the role they have built in an almost predominantly male environment. Respect, commitment to the present and future elections, acceptance of the most diverse challenges, the power to overcome one's own limits, the deep awareness of their role have thus become the constant prerogative of women in the military system.

#### *The level of avoidance of uncertainty*

Attitude towards uncertainty refers to the extent to which members of a culture feel threatened by uncertain or unknown situations and, according to which, organize themselves by building rules, protocols, safety and security measures, which they try to reduce or control these situations.

This dimension addresses the issue of tolerance in a society that is in a state of constant uncertainty and even ambiguity. Cultures that try to avoid uncertainty minimize the possibility of their emergence through strict laws and rules, through safety and security measures. People who belong to this culture are more motivated and emotional. At the other end of the spectrum, cultures that accept uncertainty are identified with a greater tolerance of opinions that are different from their own opinion. Most people believe that reality is either objective or subjective. However, there is a third level of reality, the intersubjective level. *"Intersubjective entities depend more on the communication between more people than on the beliefs and feelings of individuals"* (Harari 2018a, 131). It therefore creates a network of meanings that allows people to organize, build

and understand the existence of different culture, environments and organizations. People in these types of cultures have fewer rules and allow more currents to coexist in the same space of social debate. These people are more restrained in terms of emotional expressiveness.

The level of avoidance of uncertainty is given by the process of preparing troops for combat, in order to obtain a considerable increase in the ability of the military, units and headquarters to adapt to uncomfortable realities with increased insecurity, to the atmosphere generated by the actions that can produce significant changes in a short time. It follows that *"the main meanings of the concept of war potential are capacity, possibility, totality, result, and the sum of these factors (elements) results in the military power of a state"* (Prisacaru 2021, 131).

This axiom highlights the need for rules, the avoidance of ambiguous situations, insecurity and a preference for taking measures to reduce uncertainty. Included in this category were items that targeted teachers such as role models, compliance with regulations and instructions, school safety. In a society where students have multiple sources of information, as well as a series of interactions, especially in the virtual environment, generated not only by technological evolution but also by the intensity of the impact of the pandemic on this dimension, the subjects confirm the special role teachers have in their lives; although they have no answers to anything, they are guiding pillars in the process of transition to maturity. In terms of compliance with regulations and instructions, although it may seem a stereotypical cliché, the subjects confirm the need for limitations, boundaries that delimit the space cut at the level of organizational culture. In this way, the last aspect of this dimension is reached, the safe and healthy environment, to which the subjects responded affirmatively.

#### **Research results**

The educational environment in an educational organization is complex and it is described by a number of factors that contribute to its realization. It is representative for the efforts of all those involved in achieving the organizational goals. The mission of the organization must have several characteristics that support its effectiveness,



but that "inspire change and evolution" (Hohan, Cucu and Hohan 2007, 109). Starting from the environment in which the educational process takes place, traversing the whole spectrum of moral and intellectual values that it promotes, to the balance that must define a space for training, a balance between rigor and innovation, creativity and norms, the educational environment implies common objectives for the group phenomenon that has been created. The portal of the educational environment is all the more relevant as we agree with the idea that the high school period is identified with adolescence which is an extremely vulnerable and contradictory stage, characterized by psycho-behavioral upheaval which shapes the personality of the future adult. In this sense, the military college brings radical changes in the activity and life of the future military, being an environment with intense physical and mental stress, both curricular and extracurricular. The life and study regime in a military college involves innumerable peculiarities, confrontations with new, attitudinal and behavioral situations, which contribute to shaping the personality of young people. In this sense, a series of complex processes take place, of which self-knowledge is the most important. This cannot be limited to introspection, but concerns various aspects that build the psychic field on which external factors act. Thus, the management at the college level turns its attention to an education that ensures security, receptivity and perseverance, but also self-critical spirit. The college creates an organizational culture that has a special character, according to several factors. First, it is generated by the fact that each class has two managers. Apparently, they are equal in power: the head teacher, who is part of the civilian environment, and the subunit commander, who is an officer or a non-commissioned officer. At this stage, a strict hierarchy of authority is achieved, in groups and micro-groups. The power towards which the students will have a certain attitude is identified and recognized, and will make them respect the required distance. The first year students experience a certain feeling of discomfort generated by the way they communicate with the decision makers, by the way they relate to the other students but also by the way in which the initiatives are carried out. The behavioural framework is radically different from that of civilian life. The

first stage, that of imposing the discipline, and not of any discipline, but a rather severe one, can contribute to the realization of some blockages. These blockages are grouped, in particular, around emotional components that young people are trying to understand and overcome. Regarding the individualist-collectivism dimension, the students from the military college face a series of new situations regarding their free time, freedom of choice or the options they have during the school year. Being a period of adaptation, the ninth grade students face the serious restriction of freedom and the imposition of severe discipline, which generates a decrease in personal time, a reduction in the freedom to choose the options with which they were familiar in civilian life. Thus, many young people entering the military college are somewhat disappointed to find that there is a fairly obvious discrepancy between the reality of the college and the image they created before being admitted to this form of education. Over time, however, the percentage of those who are disappointed is reduced, and students integrate and adapt to military college life. If at the beginning of college, people approach the relationships and activities within this organization through the prism of individualism, in the second part of that college in the eleventh and twelfth grades they regroup and reconfigure to the area of collectivism, creating an identity of the members of the group that interact one with another, and there is a sense of belonging to this form of education that influences both their life within the college and their personal life. The middle period of the college, respectively the 10th and 11th grades, represents a period of intense socialization in which they feel at ease and in which they build their belonging to collectivism. However, at the end of the 12th grade, we can talk about a return to the first cultural dimension because most of the students retreat into an inner introspection generated by additional tension that appears with the preparation for the baccalaureate and the admission to military higher education.

If we pay attention to the issue of the third dimension, in a field that is considered specifically masculine, such as the military system, women have been choosing this career for more than thirty years and excelling in certain weapons and specialties, holding leadership positions that have had a very strong social impact over time. It seems



that they have crossed the barriers of an outdated mentality and continue to stand out and contrast somewhat with the field. The Romanian Army, like other armies in the world, has young women fighters who stand out through the professionalism with which they fulfill their missions starting from the lowest rank to that of general. Gender equality does not mean that women and men become equal, but only that their rights, responsibilities or opportunities do not depend on the way they were born, their gender. This means taking into account the interests, needs and priorities of both women and men, thus recognizing diversity. If equality between women and men is considered a human rights issue and an indicator of development, equality of opportunity refers to the lack of barriers to participation on the basis of gender. With regard to occupational segregation, this is certainly not identifiable in the military system as the merging of women or men in a particular sector, as defined by this phrase, is not covered by this area. Managing a military college is far from an easy task. There are many issues that lead to this conclusion. First of all, it is about the profile that a military college commander must have, with certain special features of a psychological and pedagogical nature, with a certain intuition, a demanding person, but, at the same time, also sensitive. It follows that the educational management carried out in such an institution implies a dynamic between the personality of the leader and the situational variables. The success of such an activity or action gets materialized to the extent that the manager of the military college together with the deputy director (responsible for the educational process), together with the Board of Directors and the Teachers' Council collaborate to capitalize on the potential of both teachers and staff, as well as of the beneficiaries of this form of education. While there are few levers that a military college commander has at his disposal to be able to actively participate in the selection of teachers and military personnel for training, he still considers an x-ray of their potential to become life and professional role models for college students, and also the extent to which they are able to make the offer of a military career an attractive option through real, tangible elements. It is well known that at this age of adolescence the values they seek and identify are personified

in human role models, in this case teachers and officers or military personnel, with whom they collaborate. In the conditions generated by the military education environment and the lack of family in the immediate environment, the model offered by the teacher from the military college gives stability and security to the students. It can also give them an illustrated picture of their professional and human existence. In the context of restoring the need for value, but also as an element of development of the Concept on the modernization of military education, a direction of action could be the creation, at the level of military high school education, of the positions of officer-teacher with appropriate studies. Also in the area of particularization of educational management carried out in the military college the way in which the managerial act is exercised is very important, either in an expressive, authoritarian way, inflexible to understand the nuances, individual and group behaviours, or in a superficial way that can lead to certain psychological blockages in the process of structuring the personality of students. It is also important for teachers to communicate with students in terms of deficiencies which can lead to dysfunctions with negative effects on the perception of educational reality. In this respect, management should function effectively in terms of the level of uncertainty avoidance. This is not only to achieve a considerable increase in the military's ability to adapt to uncomfortable realities, with a high degree of insecurity, to the ambiance generated by the conduct of actions that can produce significant changes in a short time.

As a consequence, the specificity and particularity of the educational management within the military college is one that brings a series of novelty and challenging elements to all actors involved in the learning process, with effects in the military education system, as an essential element of the educational environment.

### **Conclusions**

The study has revealed several elements regarding the positioning of the managerial and organizational culture through the cultural dimensions of Hofstede. High value highlights inequalities in power, differences in status, and unconditional submission to superiors. The tendency towards collectivism is characteristic to



the analyzed environment. This second dimension reveals the intensity both in the extent to which students depend on each other and in the number of students who build intense interrelationships based on both elements of assigned and fortuitous status, which lead to indestructible and strong bonds. Regarding the third dimension, a counterbalance of a set of femininity trends is identified, in which the emphasis is on quality of life. Avoiding uncertainty aims at the fact that the environment characteristic of the college does not easily tolerate uncertainty and ambiguity, so it is oriented towards specific rules and measures.

Education is not limited to cognitive and specific disciplines, but "involves motivation, emotions, practices and moral or social values" (Gardner 2011), based on an educational montage by transmitting these values, becoming and education full virtues in the field disciplines.

At the level of the military college, organizational culture is learned, shared and transmitted inter-generationally. It is symbolic, it respects norms and rules of behaviour, it consolidates centuries-old traditions and develops a complex, unique and special community of the military environment.

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# TRANSFORMATIONS DETERMINED BY THE EMERGENCE OF TECHNOLOGY IN THE OUTER SPACE

Lt.col. Silviu-Iulian GIMIGA, PhD\*

The discovery of unknown aspects of outer space has become one of the most important goals in our world, due to the benefits, we have in our daily lives, both through the technology launched in space and through human curiosity to conquer new territories. The great powers of the world are looking for solutions for the development of space technologies both to increase economic power and to ensure military supremacy. This can lead to the development of technology, to ensure huge amounts of data and information, fast, complex and useful connections in all areas of military and civilian activity.

**Keywords:** technology; artificial intelligence; satellites; navigation; communications; intelligence; outer space.

## Introduction

The state of space research is highly developed, but expensive and therefore accessible only to highly developed countries. The topic of the article is not a novelty, but represents a permanent subject of study due to technological development and the expansion of military activities in outer space. It is expected that in the near future most countries in the world will have access to research programs, either on their own or in cooperation, in order to be able to launch their own satellites and reap their benefits for much lower costs. Space technology makes possible the study of the atmosphere, water and land in detail, ensuring the fast transmission of impressive amounts of data and offers the possibility to develop useful navigation applications for all the areas of social life.

Originally created for military purposes, space technology has become an indispensable utility in all the areas of activity and continues to develop in order to ensure the security of the world's borders, to improve the daily life of mankind, to modernize technology and to protect the planet. Given the limited space available in this article, I will try to answer questions such as: Does the development of science and technology make space a battleground for the great powers? Is there a theater of operations in which the fight takes place with space technologies? Is space a new operational field? What are space objects and

what do we need to protect them?

According to the *Romanian Military Strategy* of 2021, the characteristics of the operating environment imply, among other things, "the creation of capabilities specific to the new fields of military operations (cyberspace and outer space)" (Romanian Government 2021, 9). Outer space is already considered a new operational field in the United States of America and represents a concern for highly developed countries such as Russia, China, Israel, Japan, Germany, France etc.

Romania is interested in "developing smart technologies aimed at economic growth and job creation" in all the areas of civilian activity (Gheorghiu, et al. 2020). *The Romanian Space Agency* "represents the Government of Romania in international space cooperation programs and coordinates the National Space Program" (ROSA 2021).

The study of outer space and the possibility of using it for civilian and military purposes leads to the analysis of theoretical implications that may influence knowledge of this field and the possible opportunity for Romanian Army specialists to be involved in programs initiated within NATO and EU. Space technology represented by launch systems, satellites and orbital stations has the role of providing data and information for the development of terrestrial applications extremely useful for improving living conditions on the globe.

Satellite navigation is a technology that allows users around the world to establish their position at any time. Satellite positioning systems were originally used for military applications, in

\**Batalionul 72 Geniu „Cetatea București”*  
e-mail: [gymyro@yahoo.com](mailto:gymyro@yahoo.com)



the construction of "smart bombs", to improve targeting in order to reduce the collateral casualties. The possibility of providing global satellite positioning services implies, for the countries that own these systems, the possibility to stop the services in certain areas; thus they have the power. I could say that in space there is a "theater of operations of satellite systems" which can be improved in order to create a new phenomenon called operational environment, similar to land, air or naval. As a result, it is imperative to carefully analyze outer space, focusing not only on the development of technology but also on its protection, by keeping track and creating programs to monitor and alert those who produce, launch and use satellites and adjacent equipment.

It is expected that our entire social, economic and political life will change in the same fast pace with technology development. The national defense system will be strongly influenced by new technologies starting with the planning and decision-making process, the stages of preparation for military conflicts and last but not least, the management of actions carried out both inside and outside the national territory.

In the not too distant future, technological supremacy due to the benefits of using satellite systems could ensure strategic supremacy, by discouraging small countries without economic power.

### **Outer space - the battle arena of the great powers**

People have always looked at the sky, using the sun and the stars for orientation, for navigation, but this becomes much more important, even vital, when it comes to a soldier moving in unknown enemy territory. Locating his position can be the most important thing for him, because it can make the difference between life and death, between victory and defeat. With the evolution of science, we began to replace "celestial bodies with artificial satellites, so that navigation has become an activity accessible to a growing audience, which does not require controlled and verified qualification on various phases and points of movement, both possible during the day as well as at night" (Luparu 2011).

In the military field, "new technologies will change the nature of war" (Romanian Government

2021, 7), taking as an example the best-known satellite navigation system, *Global Positioning System* (GPS), originally designed for military use, later providing technological support for the development of most smart technology-based applications by accessing the location of satellite-connected devices. How did we get here?

With the launch of Earth's first artificial satellite, called *Sputnik 1*, on October 4, 1957, man demonstrated to himself an extraordinary ability to operate beyond Earth's boundaries, as well as his astonishing ability to explore the world around him, understand and use its possibilities. The launch of this satellite was made possible not only by the thirst for knowledge, but also by the development of military power and the preparation for a new possible threat.

Since the early 1960s, the Union of Soviet Socialist Republics (USSR) and the United States of America (USA) have tried to place nuclear weapons in geostationary orbit in order to have permanent control over their opponent's territory. Later, this desire was abandoned because intercontinental missiles were just as effective, since World War II, Germany using V-2 self-propelled missiles, then considered long-range. This represented the basis of the revolution in space exploration.

Due to the cooperation with the USSR, in May 1981, Romania participated for the first time in a space mission, by sending the aeronautical engineer, lieutenant-major Dumitru Prunariu, on the ship *Soyuz - 40*. It flew in space for 7 days, 20 hours, 42 minutes and 52 seconds, where he obtained very valuable information in the field of astrophysics, the study of radiation, technology, biology, medicine and psychology. Thus, our country has entered the select world of those who explore the universe and fly among the stars.

For the command and control of military forces in space, the United States established the *United States Space Command* (US SPACECOM), initially in 1985 (Popescu 2022), inactivated in 2002 and re-established in 2019, with the mission to "conduct operations in, from and through space, to discourage conflict and, if necessary, to combat aggression, to provide space combat power for the joint / combined force, and to defend vital US interests with allies and partners" (United States Space Comand 2018).



The established objectives of this command are to: understand competitors, build a high-performance command and control team, maintain cooperative relationships, digital superiority, trade integration and the collaboration of intergovernmental organizations. It is understandable that the organization, missions and projects established within this institution are desired by the whole world interested in the new dimension created, the space operational environment. In 2020, the US has developed a space defense strategy for the next 10 years, which clearly sets out the lines of effort to be achieved.

China has kept pace with technology in order not to lose ground in the race for space development, making major investments in intercontinental ballistic missiles and launching its first space flight in 2003 with the *Shenzhou* spacecraft. The mission made China the third country in the world to successfully send humans into space (China Space National Administration 2021)

Israel has been able to actively participate in the development of space technology for both civilian and military use through the construction of satellites and unique technologies (Israel Space Agency 2022).

Given the progressive development of space technologies aimed at both civilian and military purposes especially by increasing the effectiveness of intercontinental ballistic missiles, the great powers have invested and continue to spend huge amounts of money on the development of such actions. The tendency of outer space to become the fourth dimension of war is no longer just a probability, in the future will certainly have a decisive influence on world peace.

The world's most economically developed countries are interested in investing in space technology to become a noteworthy military power, to raise the level of trust placed by society, to detect possible nuclear explosions and laser-powered weapons that, at this time exist being created independently of the will of the majority.

In my opinion, it is anticipated that in the next 50 years, outer space will become the battlefield of the great powers, given the rapid development of technology as a result of scientific research aimed at modernizing and simplifying life on planet Earth.

### **The "theater of operations" of satellite navigation systems**

Today, worldwide, technology offers a wide range of applications in many fields, from traditional transportation, scientific research, tourism, mapping to communication and more. „A prosperous economy depends on at least one of the following: profit motivation, ground warfare, or space warfare" (Tyson and Lang 2020, 16). Here is how interest in space can develop the economies of countries around the world, regardless of size and political power. The desire to use space technology, on which the operation of voice and data communications depend, the use of hardware devices, navigation of any kind, as well as terrain observation at any point, is common to all, but is realized only if the decision-making power of the world identifies ways to support and fund satellite launch programs and create the infrastructure needed to use them in areas of interest on Earth.

Currently, powers such as the USA, Russia, China, Israel, India, Great Britain, Japan, Australia, Spain, France, Germany are part of the select club of those who explore outer space. It is normal for the investments made to be covered by the benefits, so it is interesting to study the involvement of the countries of the world for economic development and maintaining military supremacy.

How satellites are used depends on their type, so it is interesting to know how they are classified and what they can bring to life on the planet. Depending on the destination, they can be: communications, navigation, weather determination, earth observation, scientific, military, reconnaissance, etc.

Communications satellites act as "amplification stations that provide point-to-point, point-to-multipoint, or interactive multipoint services and can be GEO (geostationary earth orbit) or LEO, MEO, or HEO (lower, medium, or highly elliptical orbit). The application area of this type of satellite mainly includes the transmission of television signal, international telephone services and data communications" (RF Wireless World, n.d.) (SlidePlayer, n.d.).

GEO satellites are launched into orbit, above the equator, at an altitude of 35,786 km, with the role of ensuring communications of any kind, given that for 24 hours they have direct visibility on a point on Earth.



LEO satellites are located between 500 and 1500 km above the Earth, make a complete rotation in 24 hours and have visibility for 15 minutes on a fixed point, ensuring the continuity of the transmission by placing them in several orbits. They have low costs but the lifespan is a maximum of 1 year.

MEO satellites orbit the Earth around the equator and the poles at distances between 5,000 and 12,000 km, with direct visibility with fixed points between 120 and 360 minutes. They are used for voice and data communications and have average costs.

HEO satellites are located at the perigee or apogee from Earth, which means that at the apogee they are at a great distance from the planet, 40,000 km and are used for communications and remote sensing coverage at high latitudes especially for polar areas.

Navigation satellites are used to determine the position of objects on Earth and are the basis for the development of applications used by mobile phones, hardware devices and other equipment and systems.

Weather-determining satellites have equipment for transmitting certain data resulting from the analysis of the earth's surface and atmosphere to ground stations, which through a process of mathematical analysis, provide vital information for predicting the weather for long periods of time.

The observation satellites can be civilian or military and are located at a distance of 700-800 km above the Earth, intended to obtain data on the state of the earth, seas and oceans and last but not least, on the military tactical situation necessary to maintain security and peace on the planet.

Scientific satellites are used for the study of other planets, comets, stars, galaxies, and especially to study the Sun and Moon.

Military satellites transmit coded data urgently needed to locate units, subunits, and military conflicts.

Reconnaissance satellites are intended primarily for military use as they provide data on friendly or enemy weapons, the extent of threats and other secret information needed to maintain international security and safety.

The analysis of the types of existing satellites show us their complexity and the need for the development of life on Earth and can determine our curiosity to find out how it got here.

The first nation to develop a global positioning system were the United States. Originally called the *Navigation Signal Timing and Ranging Global Positioning System* (NAVSTAR GPS), the Global Navigation Satellite and Radio Navigation System, originally designed for military purposes in the 1960's, has also been used for civilian purposes since 1983. GPS is now a system consisting of satellites capable of transmitting detailed information to develop applications in all the possible areas of activity.

Russia developed the *Global Navigation Satellite System* (GLONASS), a radio-based satellite navigation system in 1976, and is now operated by the Air Force. Since 1982, many missiles have placed satellites in the orbit system, until the desired constellation was completed in 1995. After the collapse of the USSR, the system crushed due to both confusion and economic collapse. The satellites deteriorated due to lack of funds, creating gaps in coverage, which led the Russian government to take the decision to restore the system by increasing their number.

The European Union (EU) has developed the GALILEO satellite navigation system since 2008, for quasi-total surveillance of the planet, the program being developed by the *European Geostationary Navigation Overlay Service* (EGNOS) in collaboration with the US GPS navigation system. This system has made it possible to improve the determination of the position up to 1 meter, as well as the transmission of integrity messages if the satellites come out of operation.

GALILEO has become a flagship project, both in terms of its strategic value and its important contribution, giving concrete shape to the EU's political, economic and technological dimensions since 2010. It has been designed and developed as a non-military application, even if it incorporates all the features necessary for protection and security. Unlike GPS, which was originally designed for military purposes, GALILEO provides a very high level of continuity for some of the services offered, based on the same technology as GPS. It offers a similar or higher degree of accuracy due to the structure of the satellite constellation, ground control and planned management systems.

The GALILEO navigation system offers high fidelity, as it includes a signal for "message integrity" (The European Space Agency, n.d.),



informing the user of any errors. Unlike GPS, it will be possible to receive GALILEO in cities and regions at extreme latitudes. Using the GALILEO system, integrated with other technologies, provide benefits to users, such as: an advanced level of air, road, rail and naval navigation, reduced travel time, increased confidence in group management and asset tracking in all areas, and more information for traffic tracking.

China has developed the *BEIDOU Satellite Navigation System*, in translation "the big chariot", at the end of the 20th century, for economic and social development, use in transportation, agriculture, forestry, fishing, hydrological and meteorological monitoring, natural disaster prevention and critical infrastructure monitoring (BeiDou Navigation Satellite System, n.d.).

India has built the *Indian Regional Navigation Satellite System* (IRNSS) which has been operating since 2012, all in its own right and is noted for being cheap on the world market. Other states are joining it, given the price, as well as the possibility that at some point it will be integrated into the Russian GLONASS system.

Japan has created the *Japanese Quasi-Zenith Satellite System* (QZSS) only from three satellites designed for mobile applications use for audio, video, data and navigation communications (Quasi-Zenith Satellite System, n.d.).

In 2012, Romania launched into orbit the first Romanian nanosatellite, called GOLIAT, "CubeSat type, being considered both a prototype and a platform for exploring the environment near Earth" (The European Space Agency, n.d.), in order to receive high-resolution images, radiation dose measurements and micrometeorite flux information as well as for the transfer of data to ground stations, which are necessary for scientific analysis and dissemination. Although it was not a success, due to the fact that the embedded devices could not be turned on, and in 2015 it burned with the re-entry into the atmosphere, it is worth noting the involvement of the Romanian Space Agency in joint projects with the *European Space Agency* (ESA) and cooperation with the *Space Research Committee* (COSPAR) for the development of new space capabilities.

Here is the hypothesis from which space technology can create a "theater of operations" is as explicit as possible, by presenting the ongoing concerns of scientists for supremacy, knowledge

of the universe and ensuring the safety of life on Earth. Where can we go and why do we need to be active to know the space? The answer to this question can be found right here.

First of all, because the information obtained by satellites is introduced into modern military control systems, it is used in the ground infrastructure development industry through software programs that establish the coordinates of works, activities in the area and provide quality services on navigation and transportation of any kind and instant communications.

Secondly, because a modern society uses the benefits of space technology to develop economies based on electronic and computer expertise, by providing high-performance communications and information services.

Satellite technology, which ensures the transmission of a large amount of data and information almost instantly, has a huge impact on human activity, social, economic, military, etc. as well as the whole of modern society. What are the advantages of those who have invested and are investing in space technology?

One of them is the development of applications based on the use of information received from satellites. They contribute to the improvement of human life by reducing intellectual and physical effort and last but not least by increasing the conditions necessary for the survival of the planet as long as possible, by monitoring climate change, geography, military activities, etc.

Another important advantage is the multinational collaboration that determines the use of the intelligence of the society's elites, the development of science, military power as well as the defense capacity of the states involved in the research and use of space resources.

Space technology saved lives during this difficult period of the COVID-19 pandemic by providing satellite monitoring, tracking services and specific devices tailored to decontamination and ventilation needs. Applications based on space technologies such as telecommunications, Earth observation, positioning and navigation, teletransmission and remote control, substantially address the economic challenges of today's society.

In this context, I appreciate that space technology is urgently needed for the development of life on Earth and regardless of concepts and

prejudices will be important to act to understand and reap the benefits of actively participating in increasing and understanding the "space theater".

### **Protecting space technology**

Unidentified objects from space travel for years at speeds of about 27,000 km/h, so the destruction of a man-made satellite system can occur at any time and can cause major malfunctions, creating functional problems with navigation, communications, Earth observation and world economy. As a result of this possible fact, the evidence and protection of space technology has become a permanent concern of powerful states, by creating institutions specifically designed to ensure the security of the world.

*EU Satellite Center* – EU SATCEN is a Spanish-based institution established in 1992 in Torrejon de Arhez "to support the European Union's decision-making process, foreign and common security policy actions, in particular the Common Security and Defence Policy (CFSP), including the European Union crisis management missions and operations, by providing products and services resulting from the exploitation of relevant space assets and collateral data, including images from satellite and aerial imagery, and related services" (European Union Satellite Centre 2022).

Under the leadership of a Romanian engineer, Sorin Ducaru, the EU SATCEN staff made a catalog of evidence of space objects, necessary for awareness of the space situation and surveillance of known objects in the universe. Eight European countries joined the catalog: France, Germany, Italy, Great Britain, Poland, Portugal, Romania, Spain. The center's staff also created three important functions: tracking, processing information, and providing services.

The tracking function is achieved by placing a network of 50 sensors including radars, telescopes and laser telemetry stations that monitor and track space objects.

The information processing function ensures the coordination of data and the analysis of thousands of daily measurements resulting from different operational centers located on all continents, in order to keep track of space objects.

The service provider supplies information to registered users on a daily basis through the online portal created, about the avoidance of collisions

regarding possible collisions between space stations or between them and other unknown solid particles and generates products to help users avoid collisions. Also, in case of accidents, data can be obtained about the resulting fragments or analyzes can be obtained regarding the time range and the location of a possible impact of uncontrolled space objects re-entering the Earth's atmosphere.

"More than 140 cosmic objects belonging to EU Member States – civilian, military or commercial – are protected from the risk of collision in conditions of exploitation of all orbits" (Pascal, n.d., 3), which demonstrates the interest shown to the institution and the important role it plays in protecting the cosmic environment.

The United States considers outer space to be an operational field, with the establishment of the *Space Forces Command*, and is directly involved in both the development and monitoring of space technology and its protection. It is no coincidence that Pentagon politicians and planners are primarily concerned with gathering information and finding defense solutions for all the satellite-dependent defense systems.

Protecting space technology by creating technologies to avoid or warn about collisions, and to eliminate waste is extremely important and has become a permanent concern of the world's states that manage satellites and more. These actions also lead to the creation of new job opportunities for the world's industry, and the support of the Romanian elite of scientists, military engineers must be directed to this field.

### **Conclusions**

The need and importance of studying the implications that space has had and has as an initiating factor, present and future, in the development of modern technology, as well as a new military operational field, is an extremely important fact throughout the world.

The field of cosmic activity has become vital, both for television, radio, telephony, data communications and for the creation of defensive capabilities absolutely necessary in the context of modern warfare. The most widespread variant of space technology is represented by communications satellites which are a pressing necessity for the whole society, resulting in remote sensing by remote analysis of the earth's



crust, of surface phenomena through various images of electromagnetic spectra. Also, the space technology applied in medicine, ensures the remote transmission, between hospitals of some data, of some information, absolutely necessary for the performance of surgeries or of another nature.

Outer space is becoming a battleground of the great powers, being permanently present in the daily life of mankind and is a wide subject of analysis, on the political agenda of governments and international organizations. The dependence of our civilization on space systems is already proven and becomes critical if we think about how much we depend on it by using intelligent technologies: computer, television, telephone. The COVID-19 pandemic affected all major human activities and had serious effects on the development of space-related technologies. However, research has continued, and the benefits of space technology have provided effective tools for crisis relief and management.

The Romanian Army benefits daily from the advantages of space technology by using encrypted communications and transmitting information in real time. With advanced technologies and adequate support, the changes of relief, strategy, infrastructure, industry, etc. are constantly updated. Information means power and why not, military supremacy, and those who create it know that!

Romania is a party and strengthens the strategic partnership with the USA, in order to be part of the developed programs and the benefits regarding the development of the knowledge of military specialists in space by participating with personnel in working groups, conferences and programs organized at NATO and EU level. The desire to reach the world of countries that explore the unknowns of space can become a reality, if we want it and if we eliminate the premise of high

costs. The benefits resulting from the creation of space technology can cover the costs and also lead to respect, security and involvement of the great powers in all the areas of activity from our country. The younger generation is and can be the beneficiary of the interest shown by scientists now, in the development of science and the implementation of modern programs in today's technology.

It is expected that space technology will provide so much information to Earth's activities that, in the future, modern technologies created on the basis of artificial intelligence, which is now in its infancy, will be able to create ways to prolong life, provide relief for people from intense intellectual effort, stress and difficult or strenuous physical activity.

Digital transformation can be the global engine of sustainable growth and could be a key lever in combating climate change by stimulating private investment and accelerating the implementation of resilient high-capacity infrastructure. The enthusiasm of the creators of new technologies is based on actions that will revolutionize systems based on the speed of transmission and the amount of data, will open the gateway to robotics and artificial intelligence. All equipment and technology will be replaced step by step, data transfers being so far the main barrier to advancing science. Areas such as medicine, economics, education and, above all, the military will benefit from radical transformations, and people will be different in their ability to adapt, understand and use new technologies for civilian purposes.

Scientific progress is unstoppable, perhaps has immeasurable limits, and our mission is to develop science in the interest of mankind, to live in prosperity, in peace, and to enjoy all that is most beautiful in our lives.

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# BLOCKCHAIN TECHNOLOGY, AN ALTERNATIVE TO THE TRADITIONAL BANKING SYSTEM

Bianca-Ioana NICOLAE, Student\*

With the advent of new technologies and the rising trend of digitalization, the financial sector is being reshaped, evolving, and adapting to improve its efficiency and keep pace with people's needs. One of the most current technologies that has the potential to develop the financial sector is Blockchain technology. The main idea of this technology is that it is based on a decentralized public registry, which allows transactions to be performed in a secure, efficient way and has several advantages that are not found in the traditional banking system we know. Blockchain and cryptocurrencies could become one of the most important innovations in the financial sector, capable of creating a digital economy, based on decentralization, since they have features that optimize and simplify transactions, without the need for an intermediary, compared to the traditional banking system.

**Keywords:** Blockchain; transactions; cryptocurrency; decentralization; evolution.

## Introduction

In the scientific field, Blockchain technology is an important technological innovation, considered a technology that has the potential to significantly change the financial sector, which is undergoing more and more transformations.

The technological era and the current context of the Covid pandemic<sup>19</sup> require the financial sector to adapt and adopt new digital technologies designed to reshape payment systems, insurance, and focus on reducing fraud. (Erik, et al. 2021, 53)

Today, the digital economy is based on the reliance on a trusted authority, both at the transaction level and at the relational level, of a third party, such as banks, to ensure the security (Dragomir, Alexandrescu and Postolache 2018, 34-38) and confidentiality of our accounts. The problem with these entities is that they are vulnerable to attack and can be compromised at any time (Laerte, et al. 2011, 186), and Blockchain is a solution.

Blockchain technology and cryptocurrencies are considered to be revolutionary inventions, as is the advent of the Internet. These could have a major impact on the financial sector, due to the advantages it offers in terms of transactions, such as lower costs, much faster transaction execution, and transparency (Michael, et al. 2016, 19), compared to the traditional banking system, which does

not have these benefits. As for cryptocurrencies, they are perceived as investments, digital assets, without a central authority, and despite their high volatility (Christian, Anessa, and Eric 2020, 218), some of them have higher economic capital than some banks. This shows that people are confident in investing. Moreover, people who invest in cryptocurrencies prove to be young, educated, passionate about technology, and prefer to invest in the long run, not speculate (Auer, and Tercero-Lucas 2021).

Socio-economic changes and the challenges of the future will make money the destiny of becoming digital (Miller, Michalski and Stevens 2002, 11). As reality shows, the popularity of cryptocurrencies has increased significantly lately, and the most powerful virtual currency is called Bitcoin. It is the first currency to be perceived as being successfully implemented, as it can make large amount transfers in a very short time and is expected to be associated as a form of digital gold in the future (Ammous 2018). It has several properties such as decentralization, security, transparency and is a tool for fraud prevention (Nakamoto, n.d.), as any transaction is visible and verifiable.

Therefore, we can say that a new door is opening for the development of a digital economy, based on decentralization, which creates extraordinary opportunities and a revolution of the economic space (Dragomir, Dumitriu, and Bărbulescu 2021, 1-4). However, concerning Blockchain technology, there are two hypotheses, that the adoption of the technology will become an

\*"Carol I" National Defence University  
e-mail: biancaioananicolae11@gmail.com

alternative to the banking system, and on the other hand that banking institutions will take advantage of it to take steps towards evolution. To date, there is no clear picture of the implications of blockchain for banks (Martino 2021, 4).

Therefore, the paper addresses how blockchain technology and cryptocurrencies could be an alternative to the traditional banking system and how they can be considered a competitor to banks rather than a step towards their evolution.

### Bitcoin

Blockchain technology was originally support for Bitcoin virtual currency. The context that favored the emergence of this currency was the global financial crisis, since 2008. At that time, many considered that the whole financial system would collapse, and the reaction of governments and central banks can be considered dramatic, by the attitude they had, in the sense that they printed money on an unprecedented scale in all of human history (Frisby 2014, xxiii).

This behavior clearly shows us that the way money is created, whether it is euro, dollar, lei, gives banks and governments immense power over the financial system. While the population is losing, they are taking advantage of their status, which leads to inequality between the two actors.

The global crisis also had a positive effect, namely an opportunity for Satoshi Nakamoto, which gave rise to an electronic payment system based on decentralization, which differs from a centralized system in that there is no authority, and any participant in the network has access to transactions, which is a great benefit.

The specialized works do not present Satoshi Nakamoto in all his economic development, and at the moment his identity has remained completely

unknown (Frisby 2014, 2).

The main feature behind the electronic payment system created by Satoshi is the Peer-to-Peer system, which allows online payments to be made from one user to another, without the need for processing by a banking institution (Frisby 2014, 2), in which the devices participating in the network are called peers and have the same rights and responsibilities (Antonopolous 2017, 93)

The key innovation of this electronic payment system is called Proof of Work. This is an algorithm used by Bitcoin miners to verify transactions, ensure security, and add new blocks to the Blockchain network (Antonopolous 2017, 231). The process consists of using processing units and electronic circuits to solve complex mathematical puzzles, and also prevents the modification of a block in the network (Nakamoto, n.d., 3), providing the quality of immutability.

### Blockchain

The entire trading system is based on Blockchain technology. The blockchain register stores all transactions performed, where a number of transactions form a unit of the database called "block", and each of them contains data about the previous block, and "hash", a unique fingerprint that has the role of identifying a block and its contents. Once a block appears in the chain, its hash is calculated, and once the first transaction takes place inside the block, the hash change takes place (Antonopolous 2017, 195).

Thus, in the Bitcoin system, transactions are linked in blocks, and then they are interconnected through what we call Blockchain. All blocks are arranged in chronological order, and as can be seen in the figure below, each block contains the hash assigned to the previous block.

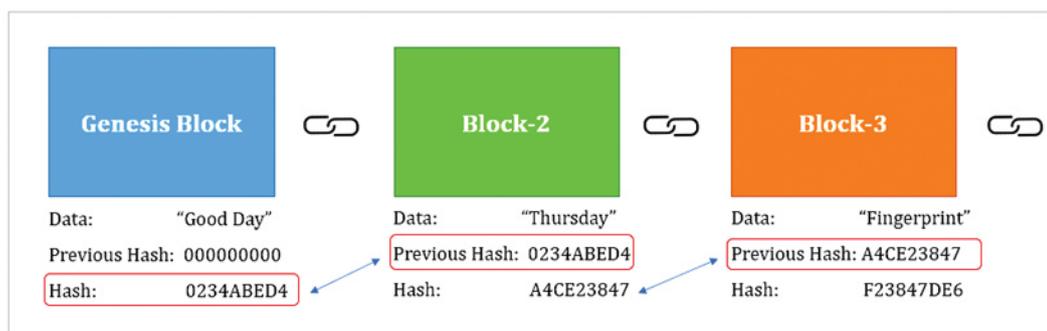


Figure 1 Blockchain system based on cryptographic hash

Source: <https://medium.com/swlh/blockchain-characteristics-and-its-suitability-as-a-technical-solution-bd65fc2c1ad1>, accessed on 25.11.2021.



The science behind blockchain is cryptography. The blocks formed in the chain are linked and secured by cryptography, and to trade securely on this system (F. L. Dragomir 2016, 235-242), users use public and a private key.

Cryptography ensures security and allows communication between two people, where a third party does not need to have access. (Stinson 2005, 1) For example, the information that Andrei wants to pass on to Alexandru can be a text, numerical data, or any other nature. In this case, the text encrypted by Andrei can be viewed by Alexandru, only with the decryption key. If a third party named Adrian wants to view the text, it will be impossible because it does not have the decryption key.

There is a private and a public key to blockchain transactions. We can associate the public key with the bank account number (IBAN) and the private key with the PIN code that gives us access to that bank account. (Antonopolous 2017, 56) Thus, the public key, in this case, allows the receipt of amounts, and the private key is used to confirm transactions and to send amounts to other users.

Each user has a digital wallet. The digital wallet was created to avoid the many problems that a physical one has, such as the fact that it can be lost or stolen. It also provides greater security because the data is encrypted and there is a backup option (Balan and Ramasubbu 2009, 100-102).

The wallet allows the management of keys and addresses, offers the possibility of tracking, signing, and creating transactions. According to Andreas M. Antonopolous from a programmer's perspective, the digital wallet "refers to the data structure used to store and manage a user's keys". (Antonopolous 2017, 93)

Users have a digital wallet, an address of letters and numbers and a QR code as shown in the figure 2.

**Blockchain, an alternative to the traditional banking system**

First of all, Blockchain technology was created precisely to eliminate the need for "trusted parties". Until its inception, payment systems relied on people's trust in intermediaries, but Satoshi Nakamoto created this electronic payment system based on cryptography to facilitate transactions between two parties without the intervention of an intermediary.

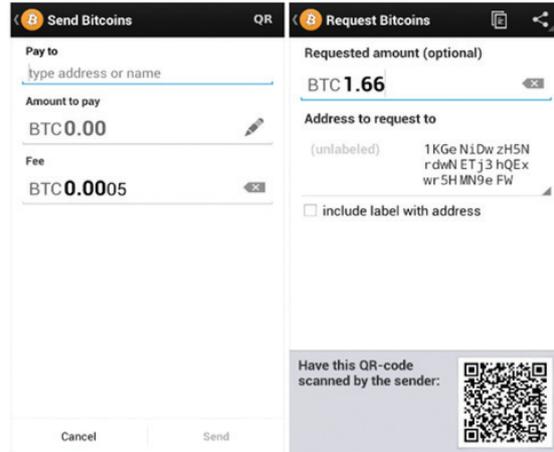


Figure 2 Digital Wallet

Source: <https://bitcoin.org/ro/intrebari-frecvente#cat-deficil-este-sa-facem-plati-cu-bitcoin>, accessed on 25.11.2021.

Secondly, transactions on this system are much faster than traditional ones and require much less effort compared to the traditional system where SWIFT codes, IBANs, BIC codes are required to transfer money today. Customers pay significant fees, and geographical location or time zone differences may increase the transfer time.

The popularity of Blockchain technology is due to the many benefits it offers as compared to the traditional system. Among the most important are the following:

*Decentralization*

In the traditional financial sector, intermediaries play an important role in validating transactions. Blockchain eliminates the need for intermediaries and makes a transaction between two parties possible securely and efficiently.

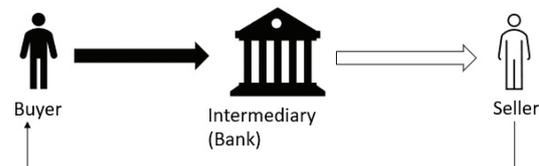


Figure 3 Transaction based on traditional banking system  
Source: Author conception

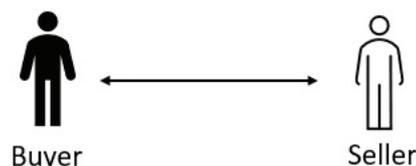


Figure 4 Transaction based on Blockchain  
Source: Author conception

*Security*

In a centralized system, such as the traditional banking system, security depends on access control and continuous checks to keep bad actors out of the system. In the case of a decentralized system, such as bitcoin, the responsibility and control depend on its users (Antonopolous 2017, 269). Thus, users must comply with certain security policies, including choosing a secure digital wallet, encrypting the wallet with solid passwords, signing offline transactions, and regular backups (Bitcoin.org, n.d.).

Regular payment systems also contain the user's credentials, such as their credit card number (Antonopolous 2017, 270). A malicious actor may access the system and compromise a transaction, steal the card data, and make payments on behalf of the user whenever he wants.

From this point of view, bitcoin is completely different. A transaction with bitcoin authorizes a single value to a certain recipient, and the transaction once registered cannot be modified. Also, the system does not disclose private information such as the identities of the sender and the recipient, and cannot be used to authorize other payments. This system leaves security in the hands of the user, and the biggest responsibility is to protect the keys of his wallet (Antonopolous 2017, 270).

**Table no. 1**

**DURATION OF TRANSACTION PROCESSING**

Payment Methods	Duration of transaction processing
Transilvania Bank	1-2 days
PayPal	Instantly, but takes 2 days to withdraw the money
Western Union	Instantly, only cash
SEPA	Up to 3 days
Bitcoin	0-60 minutes

(The data in the table were extracted from the official websites, on 28.11.2021.)

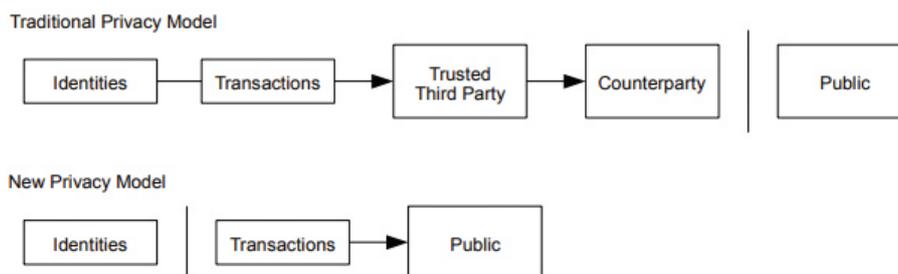
anywhere in the world, without being conditioned by the banks' schedule, geographical position, or time zone differences.

*Privacy*

One of the biggest benefits of this system is privacy. At present, online commerce depends exclusively on financial institutions, which serve as third parties to validate transactions. Blockchain technology is revolutionary in this regard, as it completely replaces the need for third parties, offering in return, the guarantee of the transaction by cryptographic methods.

*Transparency*

There has been speculation that Bitcoin could be a good means of payment for terrorists



**Figure 5** Comparison between Traditional Privacy Model and New Privacy Model

Source: Satoshi Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System, The Bitcoin Whitepaper, p.6.

*Rapidity*

In the following table, a comparison was made between PayPal, Western Union, SEPA, Banca Transilvania, and Bitcoin, in terms of transaction processing.

Therefore, the electronic payment system created by Satoshi Nakamoto is much more efficient in terms of the speed of processing transactions, compared to banking institutions or other payment systems. We can send any amount of money instantly, at any time of the day or night,

or criminals, and this has remained in people's minds (Stein 2017). But the reality is completely different because the transactions registered on the blockchain are immutable and accessible.

The transactions made can be verified at any time because they are on an open-source system, and all their data can be viewed if we enter the transaction number or the recipient id on the website <https://www.blockchain.com/explorer>.

Once an address is assigned an identity, all transactions associated with it are easily



identifiable. The bitcoin system has allowed the identification and arrest of many drug dealers who have used it as a means of payment, as they have relied on the fact that bitcoin helps them remain anonymous (Ammous 2018, 239).

So people's trust in this system comes from the fact that it is open-source and decentralized. Anyone who wants to check how the system works can access the source code and all transactions can be viewed in real-time by anyone.

Also, all payments can be made without the need for third parties, and the entire system is based on cryptographic algorithms that secure the network, and no organization or individual can control bitcoin. Control is in the hands of users.

#### *The impact of cryptocurrencies*

At this moment, cryptocurrencies have a capital of over 3 trillion dollars (Osigner 2021), surpassing some of the most important banking institutions (Cuthbertson 2021), which shows that people trust this system and feel the need for decentralization, the need for a financial system without the involvement of central institutions (Chen and Bellavitis 2019, 5).

There is a possibility that Bitcoin is the future of our payments, or as an investment because it is perceived as a form of digital gold.

El Salvador is the first country in the world to adopt Bitcoin as a legal tender. The Bitcoin law, adopted on September 7, 2021, was a great success, voted with 62 of the 84 votes available in Parliament (Renteria, Wilson and Strohecker 2021).

Citizens of El Salvador now own a digital

wallet called Chivo Wallet, where the government offers them \$ 30 worth of bitcoin when they download the app, which is available on Apple and Android phones (Robertson 2021).

To date, the position of European states regarding the recognition of Bitcoin as a means of payment is not finalized. Although it is not recognized as an official currency in any European state, countries such as Estonia and Germany consider it as an alternative means of payment or financial instrument (Banca Națională a României n.d.). It remains to be seen whether countries will begin to adopt and legally regulate the use of Bitcoin.

#### **Conclusions**

Blockchain is a decentralized registry that stores data, which is publicly accessible to all network users. Due to its cryptographic techniques, it offers many benefits such as transparency, privacy, speed, security, and the most important element that distinguishes it from the traditional banking system is decentralization.

Integrated into the financial sector, Blockchain can have a major impact on the way transactions are conducted, as by its nature, it eliminates the need for third parties needed to validate transactions.

Although it is not yet regulated, and it is not known exactly what impact it will have on the banking system, its popularity and that of cryptocurrencies has increased significantly in recent years, and this shows the interest of people and the need for decentralization. We can conclude that Blockchain technology has the potential to develop a new digital economy, based on decentralization.

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# PUBLIC COMMUNICATION IN PURSUING AND PROMOTING THE INTERESTS OF SECURITY ACTORS – A TAXONOMIC APPROACH

Iulia-Alexandra COJOCARU, PhD student\*

This paper aims to identify the best ways to support security actors in the process of promoting and pursuing their interests, through public communication. In this respect, we have considered it relevant to identify and present the forms of public communication most often used in the information environment for the purpose of influencing power games, and we have classified them into two categories: constructive and destructive, taking into account ethical aspects in terms of transmitter's intentionality, as well as the whole set of effects that they produce on the security environment (direct effects – short term, and indirect effects – long term), on its dynamics, and ultimately on the world order. Following our analysis, we will have identified strategic communication (and the techniques derived from it) as the form of public communication whose whole set of effects generated suits the interests of the actor – transmitter, the citizen – as an exponent of international society –, as well as the ideal of peace.

**Keywords:** public communication; influence; strategic communication; persuasion; manipulation.

## Introduction

Throughout history, actors in the security environment have resorted to different strategies in order to pursue and promote their own interests, which, in general terms, consist of maximizing their level of power. One of the most important forms of power (in a state) is the cultural power, which "is propagated at the social level through communication" (Stănciugelu, Tudor, et al. 2014, 243), and therefore, the potential of the communication process has been understood and exploited since ancient times, with Aristotle being one of the first thinkers who laid the foundations of communication theory as a process of influence (Roşcan and Deac 2018, 29).

Mucchielli proposes a view that "all communication is an attempt to influence" (apud Leseniuc 2017, 86), since every act of communication produces effects. The transmitter aims to make the other believe, think or act in a certain way, according to his own beliefs or interests. In this sense, *influence* can be considered a "resource", as it represents the ability to cause the one to whom the message is addressed to change his perceptions and behaviour in a certain

direction, pursued by the one who transmits the message (Roşcan and Deac 2018, 29). In these terms, one of our objectives is to bring to light the ways of exploiting influence, in order to conclude which of them can be put into practice in an ethical manner, in order to obtain benefits for societies (as states) or society as a whole, i.e., the entire security environment.

We start from the premise that the spectrum of influence through communication ranges from *information* as the most indirect form of influence to *coercion* as the most direct form of influence.

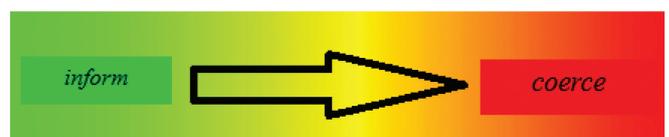


Figure 1: *Spectrum of influence*

The aim of this analysis is to place the most commonly used forms of public communication on the influence spectrum (see Figure no. 1) in order to conclude which of them are beneficial to the development of societies in terms of the full set of effects their implementation entails. We will therefore address both first-order effects – i.e., those that materialize in the short term and relate to the achievement of national objectives designed to support a state's instruments of

\* "Carol I" National Defence University  
e-mail: iulia.cojocaru92@gmail.com



power in the pursuit and promotion of its interests – and effects of the effects – i.e., those that materialize in the long term and relate to the impact they have on the entire security environment and on the state of world order/peace.

### Communication hypostases – a taxonomic approach

The analysis we are carrying out is intended to reveal which of the forms of public communication most often practiced by actors in the international environment (persuasion, manipulation and strategic communication, and all their specific techniques (such as propaganda, disinformation, fake news, etc.) have effects that contribute to the state of world order/peace, or which, on the contrary, generate effects that in the long term disrupt or prevent this state.

Thus, the present approach presents a vision that proposes two hypotheses: a *destructive* and a *constructive* one, which will be explained below. The classification is based on a common point for both, namely the intention of the actors to promote and pursue their own interests, but in order to distinguish between the two, we will look at the ethical and moral aspects of the sender's (actor's) intentions, the effects generated by the act of communication, and the repercussions of these effects (the effects of the effects) on the security environment dynamics. We stress that this approach is relevant both *internally* and *externally*, since, as we will explain below, the intentions of the sender differ when the purpose of the communication is to achieve effects at the national level as opposed to those that are sought at the level of the entire security environment, but in either case, the effects produced can have an impact on the power games.

By *destructive character* we refer to the potential of the communication to influence the masses or the adversary/adversaries, with the aim of inducing them to take decisions that would normally *disadvantage* them. We consider that within this hypostasis there are included forms of communication that have elements of *coercion*<sup>1</sup> in their composition, and thus do not conform to ethical and moral conduct.

<sup>1</sup> Coercion is the act of forcing someone to do something, and in this case, the coercion we are referring to will be through communication, which thus becomes a means of coercion.

We believe that the effects produced in these circumstances can support actors in their process of pursuing and promoting national interests and can help them achieve short-term objectives. In the long term, however, we argue that these effects disrupt the world order, as they ultimately produce a range of other effects (such as distortion of reality, of mass perceptions of relationships in the security environment or of the intentions of actors involved in power games), which implicitly affect the security status of the transmitter, with the potential to create a general state of uncertainty, chaos, mistrust, and which may consequently give rise to a range of risks and vulnerabilities for the whole social system.

*Internally*, this is reflected in the intentions of the state (or its institutions and instruments of power) to impose certain rules/laws that do not benefit the ordinary citizen, but only a privileged niche (e.g., oligarchy).

*Externally/globally*, this is expressed by distorting the perception of one or more other target actors, usually targeting their level of power in the international environment, in order to intimidate or mislead opponents by exploiting their vulnerabilities (e.g., Russia, in the context of the current conflict, threatening to be ready with nuclear weapons in order to intimidate opponents by exploiting a human vulnerability, namely fear). This implies crafting messages and narratives specifically designed to achieve objectives that converge with the interests that the actor-transmitter pursues (attracting allies, promoting its own doctrines, generating a general state of fear among the masses e.g., use of weapons and technologies of mass destruction).

*Constructive character*, in our view, refers to the potential of communication process to support actors in the security environment in pursuing their own interests, but this time with the aim of *informing and making clear* their position, attitude, intentions and actions. Thus, we consider that the forms of communication arising from this situation fall within the sphere of information, on the scale of influence, illustrated in Figure no. 1.

The communicative intentions that arise from the forms of communication that we will classify under this (constructive) hypostasis are mainly informative or educational, and influencing can refer here, for example, to the way in which the

receiver can be induced/educated to develop critical thinking – a concept defined as a way of thinking that involves relating correctly to reality, by developing a cognitive system that is well prepared for the correct analysis of the information provided (E. Mc Peck 1981, 5-13), or as "the intellectual process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from or generated by observation, experimentation, reflection, reasoning, or communication, which can be a guide to persuasion and action" (University of Louisville, n.d.). In the field of security, the short-term effect of practising forms of communication that arise from constructive hypostasis is to stabilize and standardize the perception of reality among the citizens of a state, or the citizens of the world, thus reducing the level of uncertainty. In the long term, by practising constructive forms of communication and increasing critical thinking, it will be possible to develop cognitive mechanisms to counter the malicious communication intentions of opponents. These effects have multiplier potential, as once ingrained in one's consciousness, this way of thinking will naturally be perpetuated to subsequent generations through transgenerational education.

*Internally*, constructive communication is carried out as a circular process in which feedback regulates relations between the citizen and the state, the overall aim being to match the needs of citizens with those of the state and setting a unified direction (common to instruments of power and civilian capabilities) of action which suits both national and individual (citizens') interests. At the same time, by practicing constructive forms of communication, the promotion of security culture is achieved, for example by presenting the values that a state has at the basis of its ideology and according to which it operates (Lungu, Buluc, and Deac 2018, 6) and strengthening critical thinking. Not least, constructive communication internally can also have the role of making known the norms of the respective community, as well as the changes that may occur in the legislative framework, being the main tool that the state can use in this regard.

*Externally*, constructive communication is used by security actors with the main purpose of making widely known the values underlying their political doctrine, their intentions in the international environment, their actual level of

power – by declaring the number and types of capabilities they possess, thus avoiding new arms races, which are typical of security dilemmas.

The presentation above outlines the conceptual framework for the present analysis of the communication forms that we will place in one of the two hypostases, according to the mentioned criteria. However, we draw attention to the fact that some forms of communication can fall both within the spectrum of influence at the level of information - attributed to the constructive hypostasis - and within the spectrum of influence at the level of coercion, attributed to the destructive hypostasis of communication.

### **Influencing through forms of public communication. From information to coercion**

As we will approach influencing as a spectrum encompassing all forms and techniques of communication, we want to clarify some conceptual issues. In a general definition, influencing is "an action that an entity exerts on another (either *deliberately* – to change its character, its evolution – or *involuntarily* – through the prestige, authority, power it enjoys)" (DEX online, n.d.), "social influence occurs when, as a result of interaction between two social entities (individuals or groups), one of which is the "target" and the other is the "source" of the influence, the target reacts to an "object" differently than in its usual way" (Roşcan and Deac 2018, 15). Translating these definitions into international relations terms, we understand that actors can exert influence within the security environment both intentionally, when the purpose of messages and narratives is specifically designed to create certain effects on a pre-determined target group, but that their message, once in the public space, can also create effects on groups to which it is not specifically addressed. The second situation occurs most often when the speeches, debates and diplomatic information provided in the public arena by one of the powerful states (which has prestige and authority in the power game) are widely followed by the majority of states which do not enjoy the same level of power – whether we are referring to states whose doctrine is inspired by that of the hegemonic state in question, or to those states which, on the contrary, reject and contradict the doctrine of the same state.

At the same time, it is important to note that communication processes are also influenced by external factors, such as social factors (culture, organization, group to which one belongs), physical factors (spatial, infrastructure), or temporal factors (Deac 2003, 1-2).

In the following, we propose to present the specific features of the forms of communication that have had and/or can have a significant impact on the dynamics of the security environment and that have been most often put into practice by the actors of the international security environment over time, seeking to place them in one of two categories, according to the criteria listed in the previous chapter.

### Forms of public communication

*Persuasion* is the technique of communication studied and practiced since ancient times, as the foundations of this concept are laid by Aristotle (Roscan and Deac 2018, 29), it being defined as “the intentional effort to influence the mental state of another, through communication, under conditions where the one to whom this intention is addressed has, to a certain extent, freedom of choice and both parties seek mutual benefits that do not undermine public interests” (Bayou and Panitz 1993, 44-45).

Although most scholars consider intentionality a sine-qua-non of persuasion, there are however theorists who propose an extended approach to the process. Thus, Robert H. Gass and John S. Seiter construct a model of analysis that includes different criteria used in conceptualizing persuasion and that distinguishes between “pure persuasion” and “borderline persuasion”, depending on the presence or absence of intentionality, effects, coercion, symbols and also the involvement of one or more persons, as illustrated in figure no. 2 (Roscan and Deac 2018, 32) (Gass and Seiter 2018), and for the purpose of the present material we can state that pure persuasion is a form that imposes more of an intention to influence than borderline.

According to this scheme, any form of persuasion, whether pure or borderline, falls under the umbrella of influence. Further, in terms of *effects*, two meanings of persuasion are highlighted: one aimed at achieving the desired result and the procedural one. In other words, the very process of persuading is considered to be

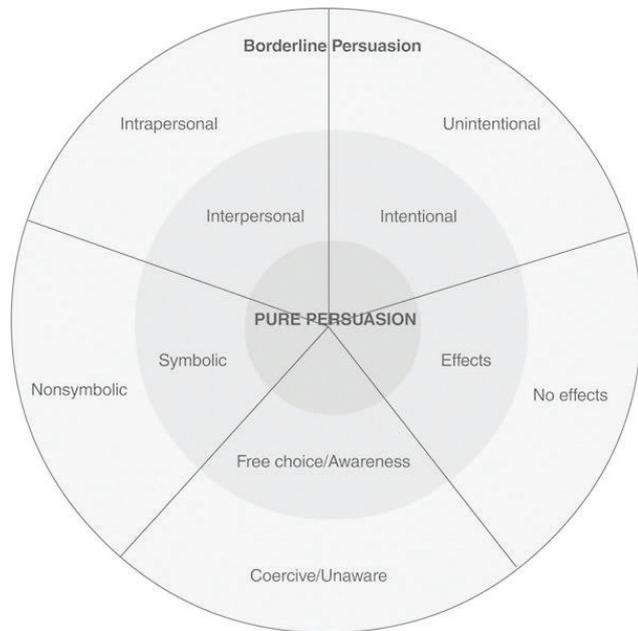


Figure 2: Extended persuasion model<sup>2</sup>

persuasion, regardless of whether it is followed by the desired outcome. As regards freedom of choice and coercion, it is difficult to make a concrete demarcation, as there is a possibility that what is initially achieved through coercion may end up being desired and vice versa, and the boundary between unsolicited acceptance and forced submission generally depends on how the situation is interpreted and passed through one’s own filter of values and perceptions (e.g., the Romanians’ fight against bribery changes the attitudes and behaviour of corrupt people). The presented model proposes to consider the means of achieving persuasion, i.e., either through language or nonverbal communication (Roşcan and Deac 2018, 32-34).

It is necessary for persuasion agents to assume an ethics of persuasion, and the agents’ accountability can result from the status or social position acquired or granted, from the duties assumed, from promises, from commitments, from agreements, from the consequences of communication. In persuasive communication, it is necessary for both the sender and the receiver to exercise conscious and deliberate judgement – responsible communication requires a careful analysis of claims, a thorough assessment of possible consequences and a lucid weighing of relevant values (Roscan and Deac 2018, 39).

Given that people are constantly subject to

<sup>2</sup> Source: Alina Roscan, Ioan Deac, *Communication and social influence*, p. 32.

persuasive influences, the answer is not refusal/denying (its existence) but educating the masses so that selective reception of persuasion occurs. Therefore, responsible persuasion implies the awareness of the recipients of the strategies and forms of persuasion used by the agents of persuasion, but also the critical reception of the persuasive contents, and, from these considerations the *positive function* of persuasion can be argued, (Larson 2003, 42). The strategy (of persuasion) represents "the whole of the persuasive approaches, the plan of action, the science and the art of using the most appropriate means to achieve the goal of the actions" (Chelcea 2006, 193-194).

Hugh Rank identifies different persuasion strategies, based on the principle of intensification or minimization, as follows: intensification of one's own strengths or weaknesses of the other party/other's weaknesses and minimization of one's own vulnerabilities or strengths/strengths of the opponent, where each type of strategy will be assigned specific tactics, namely: for intensification, repetition, association or composition will be used, and for minimization, omission, diversion or confusion will be used (Chelcea 2006, 193-197)<sup>3</sup>.

Taking into account the criterion that in order to consider a form of communication as destructive, the receiver is influenced with the aim of being induced to take decisions that are usually *disadvantageous* to him and analyzing persuasion still from the definition – "the intentional effort to influence the mental state of another, through communication, under the conditions that the one to whom this intention is addressed has, to a certain extent, freedom of choice and both parties seek mutual benefits that do not undermine public interests" (Bayou and Panitz 1993, 44-45) – we will place persuasion in the middle of the influence spectrum, but we consider it necessary to differentiate between pure persuasion (which we will place towards the coercion side) and borderline persuasion which we will place towards the information side, according to the conceptual delimitation and characteristics we established in the first chapter, in order to make the classification.

In terms of short-term effects, it is sure that certain objectives related to the pursuit and

<sup>3</sup> For details on persuasion strategies and tactics see Septimiu Chelcea, "Public opinion. Strategies of persuasion and manipulation", Economica Publishing House, Bucharest, 2006.

promotion of national interests will be more easily achieved by an actor once this form of communication is practiced, whether we are referring to its exercise internally or externally, but in the long term, we believe that its excessive use can lead to distortion of the receivers' perception (states or citizens) of reality, and for this reason the way in which we view persuasion will be one of skepticism regarding the degree of morality of the one who puts it into practice. On the other hand, as Larson points out, there is also the possibility that persuasion is a starting point in the desire to educate the thinking of the masses to produce a critical reception of this form of influence.

In conclusion, in terms of the implications for the dynamics of the security environment, the use of persuasion can on the one hand create vulnerabilities, or on the other hand create levers that lead to increased resilience by drawing attention to the ways in which the reception of persuasive messages can be done selectively and consciously.

*Manipulation* is defined as "the action of inducing a social actor (person, group, collectivity) to think and act in a way that is compatible with the interests of the initiator, and not with his interests, by using techniques that intentionally distort the truth, while leaving the impression of freedom of thought and decision. In contrast to influence of the rational persuasion type, manipulation is not aimed at a more accurate and deeper understanding of the situation, but at inducing an understanding that is convenient to the sender, using both misleading falsified arguments and non-rational emotional layers. The real intentions of the one who transmits the message remain invisible to the receiver" (Stănciugelu 2009, 122).

Analyzing the definitions of the two forms of influence mentioned above, we can see that manipulation differs from persuasion primarily in terms of the (hidden) intentions of the initiator, since manipulation does not take into account whether or not the initiator's goals coincide with those of the receiver. We will therefore distinguish between persuasion and manipulation by looking in particular at the sender's intention (while in persuasion the intention is not a negative one, in manipulation the opposite is true) and the way in which the messages and narratives have been designed (the truthfulness of the data – where in



persuasion only certain aspects that suit the sender's interests are highlighted and no falsification of data is used, as in manipulation).

In order to better understand the areas where manipulation can have an effect, we consider it important to explain the three forms of manipulation:

- *Psychological manipulation* – aimed at affecting people's knowledge of alternatives and their consequences, their reasons and ability to think rationally, to decide, to choose and to integrate their choices into the context of social life;

- *Information manipulation* – occurring when acting with the aim of affecting a person's knowledge of alternatives by altering their understanding of context. It is achieved by withholding information or conveying it in an erroneous form;

- *Contextual/situational manipulation* – when new meaning is given to the existing situation by intervening in it (Roscan and Deac 2018, 49).

Among the best known manipulative practices we mention rumor<sup>4</sup>, intoxication<sup>5</sup> disinformation<sup>6</sup>, propaganda<sup>7</sup> (Stănciugelu, Tudor, and others 2014), which, increased by the fast pace at which information is propagated in the online environment and in contemporary media, have led to the emergence of new themes in this field, such as fake-news<sup>8</sup> – a phenomenon widely debated today, around which we can say that a new concept has formed, especially because of the cognitive effects it causes on the societies concerned.

In the present material we will not insist on explaining or addressing each of the forms of

manipulation listed above, as a correct approach is necessarily a complex and far-reaching one, and that is not the purpose of this article. We will conclude, however, that any manipulative practice generates effects such as lack of trust in the actions and directives of state institutions, multiple perceptions of the same reality – which in turn generates chaos, anxiety, tension among citizens – or even favors espionage actions (Romanian Intelligence Service, n.d.). In the long term, the effects take the form of vulnerabilities in the entire power system of a state, affecting the societal sector, the economy and the state of its security. A world with states that are vulnerable in terms of their security is a world further away from what we call world order, and therefore further away from the common goal of the world's citizens: living in a peaceful world.

Thus, manipulation (and, by implication, all manipulative practices) will be placed in the sphere of influence illustrated in Figure no. 1 to the side of coercion, to the right of persuasion, classifying this form of public communication as destructive, according to the arguments listed above.

The aim of this material is not only to distinguish between communication practices that benefit societies in terms of the effects they have, but also to highlight how they can be put into practice to prevent and combat the threats posed by destructive communication practices.

Communication scholars distinguish four functions of this process, namely: norm creation, socialization of the individual, social control and innovation (Stănciugelu, Tudor, et al. 2014). The realization of these functions is necessary for the proper functioning of a state/organization, as well as its/their evolution, which can only be done in a sustainable and "healthy" way through constructive practices, as we call them in this article. We have thus identified a form of communication that suits the characteristics of the constructive side, namely strategic communication.

*Strategic communication* (StratCom) is "the concept of understanding the information environment and, based on this understanding, using all means of communication – including activities, images and words – to achieve desired results. In other words, it is the design, planning and execution of communications and outreach activities in a contested information environment

<sup>4</sup> A statement presented as true without the possibility of verifying its accuracy.

<sup>5</sup> Insidious action on people's minds, tending to confirm certain opinions, demoralize, confuse.

<sup>6</sup> Any intervention in the basic elements of a communication process which deliberately alters the messages conveyed in order to induce certain attitudes, reactions or actions desired by a particular social agent in the recipients (called targets in disinformation theory).

<sup>7</sup> A systematic activity of transmitting, promoting or disseminating doctrines, theories or ideas from the positions of a particular social group and ideology, with the aim of influencing, changing, shaping conceptions, attitudes, opinions, beliefs or behaviors.

<sup>8</sup> A completely false news item or with incomplete or partially true passages, launched with the aim of forming erroneous opinions by those who access it (Romanian Information Service, n.d.).

to maintain or change the perceptions, attitudes and behaviours of a target audience in order to achieve desired strategic outcomes" (NATO 2008).

In our understanding, strategic communication is that form of communication designed with the intention of supporting an actor (the state, supra-state organizations and its/their institutions) and, at the same time, the individual (as a citizen) in understanding reality as close as possible to the truth – in order to create lasting and trusting relationships between them – to combat threats arising from hostile communication actions, and whose implementation generates effects which in the short term support the actors in the pursuit and promotion of their own interests, without generating other sets of effects which in the long term disturb the state of order, of peace; on the contrary, which aims to develop a cognitive system among international society, capable of filtering information and integrating it in a way appropriate to reality and the ideal of the state of peace.

We see strategic communication either as a process, as a form of constructive communication, or as a way of thinking (NATO 2008), aimed at framing the whole set of actions associated with instruments of power in a single conceptual framework, necessary to support the political directive, to provide guidance to all instruments of power, from the planning stage to the execution and even evaluation stage, so that all actions taken are in line with the interests pursued, at all levels of action. Actors in the security environment will use this form of communication by promoting their own values, policies and principles, or the benefits that following such a regime brings to their society. Communication should take place in as transparent a manner as possible, with a high degree of objectivity, providing truthful and verifiable arguments for any premise put forward or information conveyed.

We believe that such practices have always been used, through techniques such as education in educational institutions or informal settings (presentation of scientific data, generally valid truths, axioms, laws of nature), religious preaching (the example of Jesus Christ, who taught his apostles, and other prophets of different religions, and continuing to the present day, with the example of priests preaching to their parishioners) and that strategic communication techniques

such as intercultural communication are still being developed today, in line with the current international context and the dynamics of the contemporary security environment. However, the theoretical foundations for how to put this process into practice in the sphere of security and defence studies have recently been laid by NATO, which has called this process Strategic Communication (StratCom).

In NATO's view, strategic communication aims to promote the values, principles and policies of a given actor, supporting the whole process of promoting and pursuing its interests. The process involves public engagement, and communication channels are complex and range from traditional mass media to modern, internet-based media. They define strategic communication to be the coordinated and effective use of the alliance's communication activities and capabilities in support of policies, operations and the whole set of activities. These are:

- *Public diplomacy* – civil communications and outreach efforts to increase awareness, understanding and gain audience support for alliance policies, operations and activities, complementing individual actor efforts

- *Public Affairs* – the alliance's civilian commitment to inform the public about its policies, operations and activities through the media in a timely, accurate, responsive and proactive manner

- *Military Public Affairs* – the promotion of NATO's military goals and objectives to the public in order to increase awareness and understanding of Alliance military issues

- *Information Operations* – military advice and coordination of military information activities to create the desired effects on the will, understanding and capabilities of others in support of Alliance operations, missions and objectives

- *Psychological Operations* – planned psychological activities using communication methods and other means directed at approved audiences to influence their perceptions, attitudes and behaviour, affecting the achievement of politico-military objectives (Stratcomcoe, n.d.).

NATO's communication strategies set the benchmarks by which member states will be guided, taking into account the characteristics of the security and communications environment of the period to which they relate, as well as trends in



global developments.

The organization operates according to three basic concepts: keeping the alliance strong militarily, strengthening it politically and ensuring that it adopts a comprehensive approach.

In order to implement the strategies, there is a need for the proactive participation of allies, as the primary actors responsible for engaging home audiences to promote NATO's messages and brand. In this regard, it is necessary for member states to initiate actions in support of alliance objectives, such as military exercises, or participation in joint operations, in the planning of which strategic communication specialists participate. Furthermore, in order to adapt and improve NATO's actions, Member States need to develop audience analysis, conduct effective communication campaigns, monitor and evaluate impact, and ensure the provision of trained and experienced staff.

NATO's engagement with audiences requires an understanding of attitudes, beliefs and information consumption. A better understanding of motivations, interests and preferences, as well as the environments in which target audiences are active, allows the Alliance to engage directly with audience segments, using the most appropriate channels and themes for each.

The communication pillar approach allows the identification of the themes that best resonate with each audience and facilitates the planning of communication activities for different groups, segmented according to specific demographic and geographic benchmarks and built on the data gathered from polls and surveys conducted for this purpose.

The current strategy stresses that, for domestic audiences, it should be considered that once the objectives of awareness, support and confidence in NATO have been achieved, communication activities should be targeted at audience groups in the low-information category about the Alliance's mission and their nation's membership, so that they perceive the benefits they can enjoy in this context. Equally, partner audiences also play an important role in the strategic communication process. Where possible, NATO will communicate with partner audiences, making use of liaison and outreach offices in partner countries and the network of embassies and contact points to raise awareness of

NATO's presence. Last but not least, efforts will be made to make the Alliance's mission known among those who oppose the doctrine and values that underpin the ideology of the organization.

Although the approach outlined above belongs to the North Atlantic Treaty Organisation, we emphasize that any actor can make strategic communication, using the same principles but adapting its mechanisms according to its own interests and context. Thus, presenting the process from the NATO perspective is relevant as it is the only documented reference approach developed to serve security and defence studies.

From an ethical point of view, we consider strategic communication to be the "cleanest" form of communication, as it suits the moral principles of the sender's intentions as well as its predominantly informational character. For these reasons, we place it at the right end of the influence scale and consider it a constructive form of communication.

The effects that can be generated in the short term, as in the case of the other forms of public communication presented, relate in particular to the achievement of one's own objectives, in accordance with the interests pursued, or, more than that, to countering threats from hostile communication actions. In the strategic communication approach, seen as a process, the short-term effects can take the form, for example, of rapid information for the masses about changes or new developments in the regulatory environment, which they must comply with or which they can benefit from. On the other hand, it should be taken into consideration that it will not be possible to achieve short-term effects from the strategic communication approach as a way of thinking, as the process of assimilating and learning behavioral skills is a long-term one.

In the long term, however, the effects are of a different nature from those hitherto identified in the case of the forms of communication that we have called destructive, and this time they take the form of strengthening the culture of security and hence the level of resilience, by minimizing vulnerabilities, developing cognitive mechanisms that support critical thinking, stabilizing mass perception of reality and standardizing it among all international players, which together contribute to the state of peace and lead towards the idea of world order.

### Final considerations

Finally, it can be said that the communication process in a general sense can significantly support the efforts of actors to promote and pursue their own interests. Starting from the premise that any act of communication implies, to some extent, the intention to influence, we have established that the extremes of the influence spectrum are, on the one hand, information, as the most indirect form of influence, and on the other hand, at the opposite pole, coercion, as the most direct form of influence.

By following the ethical aspects of the sender's intentions, the way in which the effects of the act of communication are produced, and the repercussions of these effects on the dynamics of the security environment, we have identified two hypostases of communication, i.e. two classes that serve our taxonomic approach: constructive and destructive.

We considered the analysis of the most commonly used forms of public communication by international actors, such as persuasion, manipulation and strategic communication, in order to make a comparison between the effects that each can generate in the security environment. Thus, we have placed these forms on the spectrum of influence (see Figure no. 3) and placed them in one of the two hypostases mentioned above.

We can conclude that the safest and most sustainable form of communication is constructive communication, the specific form of which is strategic communication, as it is carried out in an



Figure 3 Placing persuasion, manipulation and strategic communication in the influence spectrum

Source: Author conception

ethical manner and has the lowest risk of generating negative effects and the highest potential for achieving the desired effects, both in the short and long term.

Although seemingly utopian, the goal of replacing destructive forms of communication with constructive ones, we believe it can be achieved through sustained efforts and intra-institutional and international collaboration, and every step towards achieving this goal is a step towards a peaceful world, a state to which every citizen of international society aspires, regardless of his or her particularities.

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## ASPECTS REGARDING RSOM. THE INVOLVEMENT OF THE ROMANIAN AIR FORCE

Lt.col. Ilie ANGIU, PhD student\*

Among the missions carried out by the Air Force there are those of supporting the RSOM process with specialized forces of all forces involved in conducting combat joint operations, which leads to considerable effort on their part and related support needs, mainly concerning the transport of forces by air. The involvement of the Air Force, in particular through the use of strategic transport aircraft but also through the provision of aerodrome infrastructure and cargo and passenger processing capabilities, makes the deployment of forces a key element in the economy and the success of joint operations. The RSOM process is mainly characterized as complex and the involvement of the air force through the use of specialized forces and means in the transport of forces can be considered in some operational situations as the best option, in some cases the only choice within the deployment stage of the joint operation.

**Keywords:** deployment system; logistic support; joint; logistic structures; missions.

### Introduction. General considerations regarding RSOM

Through this article my purpose is to present a brief description of the process of Reception, Staging, Onward Movement (RSOM), providing a starting point for the deployment of national forces conducting expeditionary crisis response operations (CRO), but also to provide an image on the possible areas of involvement of the Air Force and the constraints they have on the execution of an RSOM mission.

Although this article focuses on the RSOM process, I believe that it cannot be separated from the specific steps of strategic deployment and integration of an operation. Strategic deployment, RSOM and integration processes are critical complementary aspects to the success of the operation.

The RSOM must be tailored to each specific operation, as its type and size may vary, reflecting the nature of the operation, the mission, the terrain and climatic conditions, the enemy, civil and even religious considerations, and the availability of troops.

The complexity and time required for integration depends on the size of the operation, the level of coordination and planning established at the TO level. Depending on the time of transfer, the

competent authority (TOA) will be integrated into the mission execution area, unless it is carried out before deployment. RSOM is usually limited to the depth zone where RSOM processes and activities must not be threatened by direct enemy action.

### Involvement of the Air Force in the RSOM process

NATO, EU and national concepts make it necessary to address the RSOM concept as nations strive to develop expeditionary capabilities. Also, the recently revised NATO Deployment and Movement Doctrine - AJP-3.13, Edition A, Version 1, Allied Joint Doctrine for the Deployment and Redeployment of Forces, requires nations to focus on achieving conceptual coherence in the overall context of the deployment and support projection forces, in which RSOM plays a vital role.

At the national level, the NATO doctrine for RSOM operations is implemented and adjusted with national observations or clarifications, where lessons learned from current operations (Balkans, Africa, Afghanistan, Iraq, Mali) are also integrated into RSOM doctrine and national operational procedures.

At the same time at national level according to the Romanian Military Strategy – 2021 (Ministerul Apărării Naționale 2021), Chapter V presents operational concepts related to HNS and RSOMI, with the aim of providing full volume of HNS support elements for RSOMI, agreed with allies during specific planning processes. Following the

\*Air Force Staff

e-mail: [ilieangiu@yahoo.com](mailto:ilieangiu@yahoo.com)



development of NATO's Response Plans (GRP), which requires a rapid NATO response to possible threats on the Alliance's eastern flank, the High Reaction Force (VJTF) will be deployed in short time, in any of the GRP variants. In this sense, the host countries (HNs), including Romania, must be able to provide logistical support for RSOMI of the component forces of the VJTF package, up to the final destinations. Starting in 2022, the support elements will target the entire NRF package.

Interoperability for deployment will probably also be based on civilian standards (eg ICAO, IATA regulations), as civilian contractors are heavily involved in the movement of force. The development of new trade standards will also

when the operation moves to another phase. This requires the ability and flexibility to accelerate flows by adding additional RSOM forces or reducing existing RSOM forces if necessary. It should therefore be borne in mind that the force requirements for performing the RSOM may vary throughout the stages of an operation.

COM JTF will provide oversight and liaison between theater commanders, military-level command and HNs at the strategic level and international/non-governmental organizations (NGOs/NGOs) in the theater. The RSOM process itself will usually be planned, coordinated and executed by the JLSG command using the allocated national, HN and / or commercial support

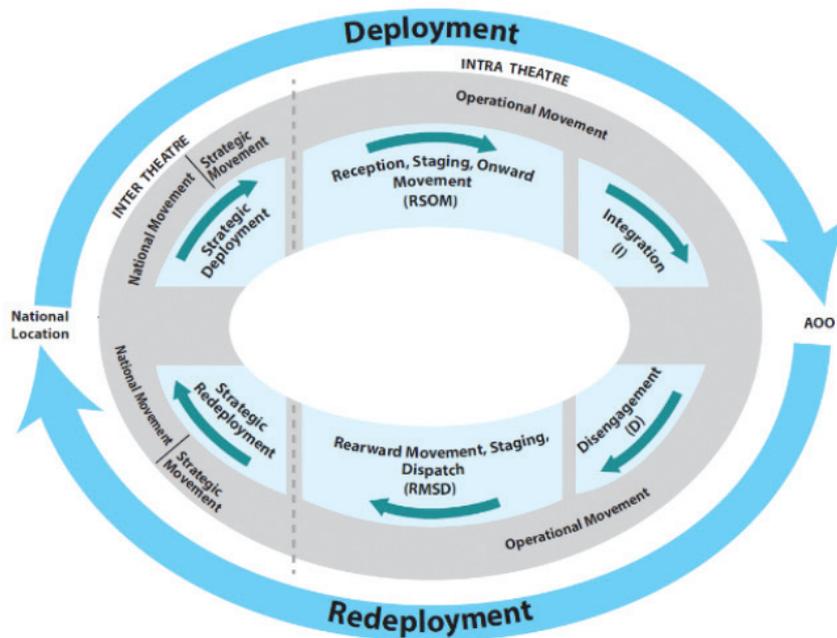


Figure 1 Generic presentation of deployment / redeployment processes

have an impact on the design criteria for military equipment and military means of transport, the ultimate goal being to provide RSOM capability in the most effective and efficient manner.

RSOM consists of essential interdependent processes carried out at the level of the theater of operations, which allow the transformation of the personnel, equipment and materials coming in most cases separately into forces capable of fulfilling the requirements of the operation. A generic structure of the RSOM process is shown in figure<sup>1</sup>.

The intensity of RSOM activities may change

<sup>1</sup> Reproduced from Allied Joint Publication AJP-3.13, Edition A, Version 1, Allied Joint Doctrine for the Deployment and Redeployment of Forces.

resources (STANAG 2580 2014).

In order to carry out specific activities, RSOM COM requires command, control, communications, computers and information (C4I) capabilities to be aware of the situation, the common operational image – COP and visibility in transit – ITV. These capabilities should be available in all RSOM nodes.

The main concepts of RSOM are the following:

**Reception**, or rather the reception process, is the conduct of operations having as a distinct starting point the arrival of deployed forces, equipment and support materials in a POD and as a final end point, the movement of forces in the waiting area under the control of the operational

commander or RSOM commander. The main effort of the reception process is given by those components of the land forces, air and sea forces that do not self-deploy, as well as by the elements of specific forces that self-deploy and are taken over by reception as single entities.

POD transfer capabilities influence the speed, timing, order of arrival, and types of units that can be deployed. Military and non-military activities can take place in a port at the same time and they can compete for limited port capacity. Units managing reception nodes should therefore take a proactive approach to organizing and coordinating military activities with other actors in the port of landing; arrangements for this may include:

- the management of RSOM COM, which is responsible for the execution of RSOM and will use national, HN and commercial support resources allocated to it;
- landing airports (APOD), which are the main reception nodes for theater staff and materials (depending on processing capabilities);
- seaports (SPOD) which are the main receiving nodes for materials;
- railway landing facilities (RPOD), which can receive personnel and materials (SMG-38 2009).

**Stationing** according to the agreed NATO definition is "the process of temporarily stopping and organizing personnel and materials for their training in order to carry out the movement." The deployment process begins with the arrival of staff, equipment and logistical support capabilities in the waiting area (SA), where the main objective is to achieve the initial operational capacity and ends with the start of the movement.

The parking area (SA) provides support, facilities and other services to support the units as they prepare to continue their movement. The number of PODs, their transfer capacity and the relative location to the other RSOM facilities will dictate the required capacity of the SA.

Stationing involves activities related to: arrival of POD personnel and materials, provision of support and VET, distribution of materials in accordance with national and force logistical regulations, assembly, maintenance and functional checks of equipment to prepare for further movement, unit preparation and strength training.

The deployment ends after the commander of the forces declares that the unit is ready and the

unit receives the order to execute the continuation of the movement.

**The continuation of the movement**, according to the agreed NATO definition, is the process of "moving personnel and/or materials from a stationary area to the area of operations assigned to them". The process of continuing the movement includes logistical support and involves HNS. Continuous force flows and near real-time visibility (ITV) transit information are key elements in the process of continuing the movement.

The move to the designated area of operations begins when the unit has finished stationing.

The following functions and elements are necessary to ensure the success of the movement:

- performing the movement control – MOVCON which is given by the planning, directing, scheduling and control of personnel and material movements on the communication lines-LOC. To continue the movement, MOVCON is executed along the network of intra-theater routes (main supply routes, ITAS, ITSS) under the control of RSOM COM;
- existence and operationalization of MOVCON information systems supported by the LOGFAS IT platform with the necessary results of providing real-time information while traveling;
- the realization of the support, along the route, and when the long distances require it, the creation of convoy support centers (CSC), which will provide on-site support, including medical assistance and FP.
- ensuring the protection of the force, a crucial requirement of the operational commander, where the responsibilities of FP throughout the LOC are essential.

As the deployed forces go through the RSOM process, their command and control relationships (C2) may change; this poses a challenge for both deployment units and RSOM activation units. Therefore, in order to be able to direct RSOM activities, including MOVCON and FP, the RSOM commander must have clear C2 relationships.

FP is an integral part of the RSOM process. Concentrations of personnel and equipment are vulnerable targets for attack, especially when the units are not fully operational. Active and passive security measures must be implemented in accordance with NATO VET guidelines. FP measures should cover HN providers (CSAT 2015)



and CSOs that support the RSOM process.

Force tracking is the process of knowing the identity of the unit, its location, the amount of personnel and materials. This will allow planning and coordinating the support and integration efforts needed by the units. The healthcare element is responsible for developing a concept, with HNS, if possible, covering the requirement during RSOM.

Environmental protection can be described as the integration and application of environmental considerations to prevent or mitigate the environmental impact of military activities. The environmental impact of RSOM activities must be anticipated and assessed before operations and included in RSOM plans.

The involvement of the Air Force in the RSOM process can be considered very important as they are those structures that provide support for operations or as support structures with strength (personnel, transport aircraft, loading/unloading capabilities, cargo and personnel processing, provision of personal accommodation and material storage), process execution.

As a support structure, the Air Force is involved throughout the country in the process of securing HNS for RSOM by providing the necessary operations for the reception and stationing of forces at landing airports – APOD and their related areas. To this end, measures shall be provided for the designation, training and preparation of forces as well as for the organization and arrangement of all areas of responsibility of the RSOM.

The Air Force may also provide support by air transport on the one hand given that on the one hand some equipment with a high priority and with a required delivery date will usually need to be shipped by air and, on the other hand, there are situations when it is necessary to use modes of transport other than land transport even for low priority cargo. They may be carried by air in the following situations when:

- transport by air is the only mode of transport available;
- the total cost of shipping by surface transport is higher than shipping by air;
- the material to be shipped is of high value with a high security risk and needs to be shipped by air;
- the nature of the cargo requires air transport for other reasons (the cargo may be sensitive to

time factors such as certain specialized batteries).

Outside the national territory, the Air Force Component (ACC) is directly responsible for the engagement of all fixed-wing aircraft in the theater. The RSOM Command will coordinate air transport and set the priority of the transport requirement in close connection with the ACC (such as the intra-theater air transport system – ITAS). Air transport (F.A/L-2 2009) it may also include rotary wing (RW) aircraft of the air component and even of the land and sea component (LCC and MCC). Operational control (OPCON) over the Air Terminal Operating Unit (ATOU) will remain with the air component, however, the designated RSOM commander will have the coordinating authority to set priorities for the execution of the RSOM<sup>2</sup>.

It can be seen that in addition to command, control, communications, computer, and information (C4I) capabilities, logistics capabilities are an operational component of RSOM. Logistics functions are applied within the RSOM, so specific activities need to be coordinated, including applying the principles specific to the logistics field, which they need to adapt, depending on their evolution. "Being an evolving field, logistics has undergone transformations determined by economic, technological and IT evolution, which have generated the expansion of logistics outside the established fields, specific to basic logistics flows, supply, warehousing, distribution, being the cause of other logistics concepts (Pinzariu and Scipanov 2016, 64). Under these conditions, the specific concepts of RSOM become adaptive to these changes.

As a supported entity, there is a situation where the air component may be assigned to command RSOM, which will involve more complex involvement in the process, including the RSOM planning process, and contribute to the establishment of C2 for logistics structures. The air component will contribute to the planning and execution of the RSOM of the Joint Force and will coordinate the national intra-theater deployment activities on behalf of the COM JTF. In doing so, it will also deploy NATO-owned forces and equipment and be responsible for deploying its designated units.

<sup>2</sup> Order M 78/2004 on the organization, training and operation of liaison teams at landing/embarkation airports and landing/embarkation seaports.



### Conclusions

Expeditionary operations are different from operations carried out with national territorial forces, as in the case of expeditionary operations the process of deploying forces from their location in peacetime and reconstituting them into combat-ready units at the final destination required by the commander is a key factor of combat missions.

All entities involved in the operation have a collective responsibility for the planning, control and execution of the RSOM process.

RSOM is not just a logistical issue, but a multidisciplinary one, involving a multitude of capabilities, being a process that requires the involvement of the CIS, force protection, genius, combat support, medical and logistical support, host nation arrangements, transfer of authority, military-civilian cooperation, intelligence gathering, MOU, SOFA and TA, movement and deployment planning, financial and legal issues,

etc. This is more than a reconstitution of forces in the theater.

Technological developments will improve ITV, better deployment capacity design and C4I systems. This should lead to a concept of deployment and RSOM in the future, with all the necessary features to provide ready forces for the missions to be carried out in the TO.

The Air Force will need to be actively involved, in particular in supporting the RSOM process at home and beyond, by building the necessary capabilities to support RSOM, to establish the necessary links and procedural elements for uninterrupted and optimized action flows with collaborating/responsible structures within ministries to the central and local public administration in Romania, to participate in the planning processes of the operations that involve the deployment of forces in order to be able to provide specialized inputs.

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## ELEMENTS OF PLANNING THE DEPLOYMENT OF FORCES WITH THE SUPPORT OF THE AIR FORCE

Lt.col. Ilie ANGIU, PhD student\*

In the overall conduct of the joint operations, the Air Force through its transport component and the capabilities held in the RSOM process ensures for participants in operations, mainly the transport of forces by air, but also the provision of certain capabilities and facilities, both at tactical level as well as at operational and strategic level. The process of deploying forces with the support of the Air Force is essential in the economy and the success of joint operations, due to the fact that the transport of forces by air in certain situations may be the only mode of transport that is available, efficient and necessary to be chosen due to time constraints, price, security risks and nature of cargo.

**Keywords:** deployment; planning; logistical support; assembly; reception; staging onward movement; integration.

### Introduction. General operations planning considerations

In this article, I intend to first provide a brief description of the process of planning the deployment of forces with the support of the Air Force, but also some specific elements of planning the deployment of forces in a theater of operations.

From a doctrinal point of view, the military actions of the armed conflict are carried out on three levels: strategic, operational and tactical, and the positioning of the armed conflict and its development at one of the three levels is closely related to the desired effect and achievement of objectives.

According to the Doctrine for Joint Operations of the Romanian Army (DOIAR), at the strategic level, two types of operations planning are carried out:

a) early planning resulting in: Standing Defense Plan/SDP, Contingency Plan/COP, Generic Contingency Plan/GCOP

b) planning a response to a crisis, current or developing, resulting in the military-strategic plan.

Thus, in the two types of planning there are significant differences given by the operational context of the moment, so that in the case of early planning, where the results of early planning result in permanent defense plans/Standing Defence Plan/SDP, contingency plans/Generic Contingency Plan

/COP, generic contingency plans / GCOP (SMG-18/2014 – SMG/PF-3 2014).

The situation given by the crisis response planning, current or in development, particularizes the planning elements specific to the deployment of forces. In this respect, depending on the situation in which the operations are planned and their type (combat operations – operations to neutralize major threats; security operations – operations that facilitate stabilization, including counterinsurgency; peace support operations; military engagement on time), the elements of planning the deployment of forces with the support of the air force are differentiated and customized for each type of operation and the actors involved in the operations.

From my point of view, perhaps the most effective method of planning is collaborative/parallel planning, especially for the given crisis response situation (current or developing), because it requires continuous collaboration and coordination, both between the political, politico-military levels, military-strategic, operational and tactical, as well as with the other actors in the TO.

### Air Force involvement in the deployment process

The Air Force through its transport component can perform strategic deployment missions, where it involves the deployment of forces in the TO as well as tactical deployment missions (intra TO) to ensure the mobility of troops and materials.

Starting from these coordinates, I will first

\*Air Force Staff

e-mail: [ilieangiu@yahoo.com](mailto:ilieangiu@yahoo.com)



mention the involvement of the Air Force in the strategic deployment process, where all planning elements must be taken into account given the type and size of operations, nature of operation, mission, terrain and weather conditions, enemy, civil considerations and even religious ones, such as the availability of the air transport component available to the planner.

From this point of view we can consider the fact that the deployment process (SMG/L-2 2014) is a stage of an operation or even an operation in itself, taking into account the magnitude of the event, the deployment process is in most cases a stage of an operation, but taking into account the complexity of the deployment process can be considered an operation in itself, of course that distinct stage of a "dislocation" operation can be merged with the "execution" stage, and the "force redeployment" stage can be considered another operation and thus only respecting the doctrinal provisions we can speak of "dislocation" as an operation in itself.

Regardless the point of view we consider the deployment from, in the sense of being considered as a separate stage of an operation or as a separate operation, to carry out the deployment of forces in TO, the deciding factor must convey to the executive factor the mission, the composition of the force, the date (s) of arrival of the force (s) in TO (STANAG 2532 2021).

These elements are extremely important for planners (especially logistics planners), because at the executive level of the deploying force (s), the process of collecting the data needed to plan the deployment of the force takes place.

Regarding the participation in the UN mission in the Republic of Mali (MINUSMA) - 2019/2020, with the detachment of 4 helicopters IAR 330 LR-M / SMFA, holding the position of logistics specialist officer, I can speak from my own experience as I actively participated according to the responsibilities (FA/L-2 2009), in the deployment process of the detachment in TO Mali.

Thus, in the process of planning the deployment of the detachment, it was necessary to operate with specific data and information, starting from:

- establishing the necessary materials (of all types), ensuring them and probably the most important element of the deployment planning

being the process of putting them into containers and embarking them: selection by types of materials; arranging them in boxes – pallets and pallets or special boxes for aviation elements – helicopter blades, engines, PSA, SDV, special liquids in containers);

- weighing each pallet, box pallet, box, container as well as the personal luggage of all soldiers;

- preparing briefcases with materials from pallets, pallet boxes, boxes, containers as well as specific documents for boarding transport aircraft;

- boarding of all materials as well as the 4 helicopters.

A particular element of planning the deployment of the 4 helicopters in TO Mali was also that of conducting on-site reconnaissance (it was possible) to identify the assembly facilities, performing technical flights as well as their supply at the airport in Mali. Gao/Mali, as well as their supply at the airport of call and bringing them to the location of the Gao/Mali detachment.

Equally important was the process of planning the deployment of military personnel (deployment of the precursor detachment as well as the main corps), where customs formalities were required at airports of call.

A very important element of deployment planning is, regardless of the type of operation carried out and taking into account the international context, the interoperability for deployment which in my view will most likely focus on civil standards (eg ICAO, IATA regulations), because in certain situations when the transport capacity for deployment is exceeded, civilian contractors are a viable alternative, being strongly involved in the movement of forces by air, which also happened in the case of the deployment of the IAR 330 LRM 4 Helicopter Detachment in TO Mali.

Other important elements of the TO deployment force planning process that need to be considered are:

- the choice of the types of transport aircraft (military or civilian) that meet the given conditions of their capacity to carry the entire package of forces (personnel, materials, equipment and machinery);

- the knowledge of the elements of the specific aerodrome infrastructure of the airports of call or embarkation/disembarkation, allowing the



operation of the chosen aircraft (runway length and strength; steering elements; cargo and passenger processing capacities);

- the level of security of the embarkation/disembarkation and stopover aerodromes regarding force protection;

Another element of air force deployment planning with the support of the air force is to ensure oversight and liaison between theater commands, strategic military and HN command and international/non-governmental organizations (NGOs) in the theater. The strategic deployment process itself will usually be planned, coordinated and executed by the FI command. The development of new trade standards will also have an impact on the criteria for designing military equipment and personnel in various TOs.

Knowing the answers, as well as confirming these planning elements, represent for the decision makers, in the process of planning the deployment of forces in the TO, with the support of the Air Force, maybe the decisive factors in making the decision.

### Conclusions

Operations carried out on the territory of other states are different from operations carried out with national forces on its own territory, so that in the case of operations carried out on the territory of another state, the process of deploying forces from their base location required by the IF commander is an essential factor for those forces to achieve the optimal ability to carry out combat missions.

The deployment process is a complex one that requires CIS involvement, force protection, genius, combat support, medical and logistical support, host nation arrangements, transfer of authority, civilian military cooperation, intelligence gathering, MOU, SOFA and technical agreements, planning movement and dislocation, financial and

legal issues, etc.

The transport component of the air force needs to be actively involved in the deployment process (deployment in TO – on the territory of another state; deployment on the national territory), so that we can distinguish the following aspects:

- deployment in TO – on the territory of another State, where national forces participate in a multinational operation and the transport support component of the national forces designated or notified to participate in the operation belongs to the national transport component by making available the national capabilities held (in particular of the military) or combined by using national capabilities and those of the coalition/alliance or international forces for the deployment of national forces;

- the deployment of national forces within the national territory, when the operation is carried out on the national territory and it is necessary to rapidly deploy national forces from one area to another (intra-theater deployment) or combined using both national and allied capabilities, in particular in case of triggering a NATO art 5 operation.

Regardless of the type of deployment used, planners must establish links and procedural elements necessary for the realization of uninterrupted action flows and their optimization, with the collaborating/responsible structures within the central and local ministries and public administrations in Romania and internationally.

The operations planning process, which certainly involves the deployment stage, needs to provide specialized inputs, which are absolutely necessary to be known and taken into account both in the planning process and in the operations, but also for each stage in part of the operation.

The airborne deployment component is one of the most widely used deployment methods in the latest global operations by all armies, as it is by far the fastest way to bring forces into TO.

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# THE RESILIENCE OF CRITICAL INFRASTRUCTURES WITHIN THE NATIONAL ENERGY SYSTEM IN ORDER TO ENSURE ENERGY AND NATIONAL SECURITY

Lect. Eng. Nicolae Daniel FÎȚĂ, PhD\*  
Prof. Eng. Sorin Mihai RADU, PhD\*\*  
Assoc. Prof. Eng. Dragoș PĂSCULESCU, PhD\*\*\*

Energy security and implicitly the regional energy architecture composed of critical energy infrastructures (power substations and overhead lines at 400 kV), can undergo various mutations and transformations caused by a possible syncope in the extraction, transport and exploitation of energy resources and energy, due to energy dynamism. The vulnerability of these critical energy infrastructures generates a number of risks and threats to them, thus endangering societal life, creating malfunctions and generating extreme damage to the state. Critical energy infrastructures thus become indispensable to society, without which the state and its mechanisms cannot function and ensure societal well-being, and their protection becomes a major national and European objective, prompting representatives of the member states of the European Union to take action to identify and manage any risk or threat. In the face of the vulnerabilities, threats and risks Romania faces in the new dynamic, turbulent and unpredictable geopolitical context of global, regional and Euro-Atlantic security, amid the military and health crisis and amplified by the global energy crisis manifested by the unfounded and unexpected increase in energy price, the Romanian state should have a strategy for strengthening the resilience of critical energy infrastructures, based on predictability, flexibility, continuity, adaptability and resilience.

**Keywords:** resilience; critical energy infrastructure; national security; black-out.

## Introduction

The definition of "black-out electricity": a generalized power failure that manifests itself in the lack of electricity to household, industrial and critical consumers and can cause major national crises with catastrophic and devastating effects, endangering national security and well-being (N. D. Fîță, S. M. Radu, et al. 2021, 37-58).

Since electricity infrastructure (power stations, power substations and overhead lines) ensures access to electricity for the population and national industry, it is critical that all sectors of the national economy are dependent on electricity and that the member states of the European Union are obliged to take action toward identification, designation, analysis, evaluation, their protection and resilience.

**\*\*University of Petrosani**

e-mail: [daniel.fita@yahoo.com](mailto:daniel.fita@yahoo.com)

**\*\*\*University of Petrosani**

e-mail: [sorin\\_mihai\\_radu@yahoo.com](mailto:sorin_mihai_radu@yahoo.com)

**\*\*\*\*University of Petrosani**

e-mail: [pdragos\\_74@yahoo.com](mailto:pdragos_74@yahoo.com)

But these critical power infrastructures vital to everyday life and to ensuring national security can be vulnerable, endangering societal welfare and causing disruption to state mechanisms and citizens.

A possible "black-out" at national level is extremely unlikely, because the National Energy System which is composed of critical energy infrastructures (power stations, power substations and overhead lines) is a fairly safe technical system, and the specialists of the national electricity transmission company Transelectrica SA, the company that manages the proper functioning of the National Energy System in optimal conditions, safety and security, is very well specialized and trained in this field.

However, in the context of the current global energy crisis, amid the unpredictability of the political and legislative system, corruption and incompetence in the National Energy System and lack of investment, a possible black-out must be considered and some calculations can be made, and for this reason, preventing such an undesirable event is imperative and mandatory.

Following the concluding findings on the



National Energy System, it is recognized that an approach to the most appropriate pathways to prevent, reduce, combat and eliminate potential *energy security breaches*<sup>1</sup> involves a deeper and more accurate knowledge and understanding of the underlying reasons behind energy security breaches, which can be perverse, varied and often combined (Fiță, Păsculescu, et al. 2022, 180-201).

### The concept of resilience

The concept of resilience has been adopted relatively recently from the study of social sciences, especially from the research of population behavior in crisis situations generated by certain unforeseen events, such as: *natural disasters* (storms, tornadoes, floods, droughts, fires, frost, avalanches, landslides, earthquakes, volcanic eruptions, etc.), *wars* (civil, military, hybrid, etc.), *terrorist risks and threats* (cyber, chemical, biological, ecological, energy, etc.), *internal disturbances* (riots, strikes, revolutions, etc.), *accidents at work* (individual, collective, etc.), *technological events* (incidents, breakdowns, etc.), *psychological trauma* (death, divorce, loss, constraints, etc.), and *epidemics/pandemics* (natural, artificial, etc.).

The conceptual meanings of resilience are very diverse, being found in areas such as: *sociology, psychology, psychiatry, management, economics, and the economy. Ecology, engineering, cybernetics, etc., and all these definitions are integrated into the science of sustainability* (Bănică and Muntele 2015), and this discipline is characterized by a general approach, with a broad scope of conceptual and applied meanings of sustainability, which integrates ideas and actions from natural, social, engineering, medical, etc., to improve knowledge and action, as well as to create a dynamic link between the components, in order to ensure sustainability (sustainable development), especially social systems. The inclusion of resilience in this complex multidisciplinary science highlights the theoretical and practical role of the concept for the maintenance and development of sustainable systems, and its fundamental characteristic is *to empower the resources and*

<sup>1</sup> Energy Security Breaches – non-compliance with security prescriptions, generated by critical infrastructures and/or the human factor, followed by technical incidents (isolated/associated), technical failures (light/serious-black-out) and work accidents within the National Energy System.

*structural components of a societal (social) or physical entity to cope with disruptive changes or actions.*

The U.S. Department of Homeland Security (DHS) believes resilience is the ability of an entity to prepare and adapt to changing conditions, resist and recover quickly from disturbances, deliberate attacks, accidents, incidents, or threats.

### Dimensions of resilience: (MCEER 2008):

- *societal (social) resilience*: the ability of society to reduce the impact of a crisis, to adapt by helping the first interveners or those who act as volunteers;
- *economic resilience*: the ability of an entity to cope with the additional costs that arise in a crisis;
- *organizational resilience*: the ability of crisis managers to make decisions and measures that will avoid a crisis or reduce its impact;
- *technical resilience*: the ability of the physical system of the organization to behave appropriately in the event of a crisis.

### Properties of resilience:

- *robustness*: the strength or ability of the elements, systems and other units analyzed to withstand a certain level of stress or stress without suffering degradation or loss of functionality;
- *redundancy*: the extent to which elements, systems or other units analyzed capable of meeting functional requirements in the event of disruption, degradation or loss of functionality events;
- *ability to react*: the ability to identify problems, prioritize and mobilize resources when conditions threaten to disrupt some elements, systems or other units analyzed;
- *fast recovery capability*: ability to meet priorities and achieve objectives in a timely manner to limit losses and avoid future disruption.

### Resilience and Security:

Resilience has become an indicator of the European Union's security policy, and in this regard, the European Commission has developed the *Action Plan for Resilience in Crisis Countries 2013 – 2020*<sup>2</sup>, a new approach has been reached to the societal dimension of national and European

<sup>2</sup> Action Plan for Resilience in Crisis Prone Countries 2013 – 2020 – European Commission.

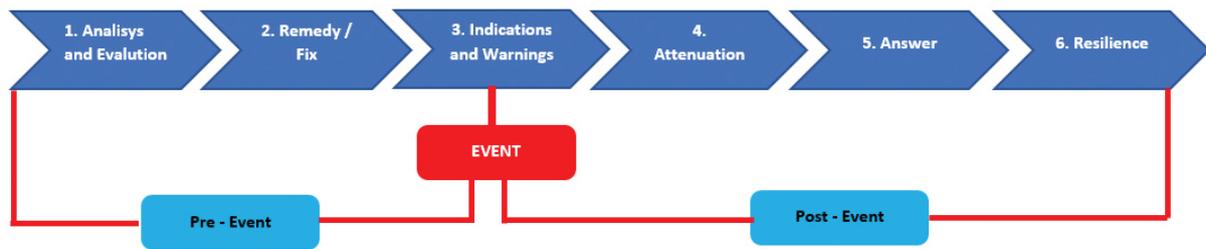


Figure 1 Sequential cycle critical infrastructures

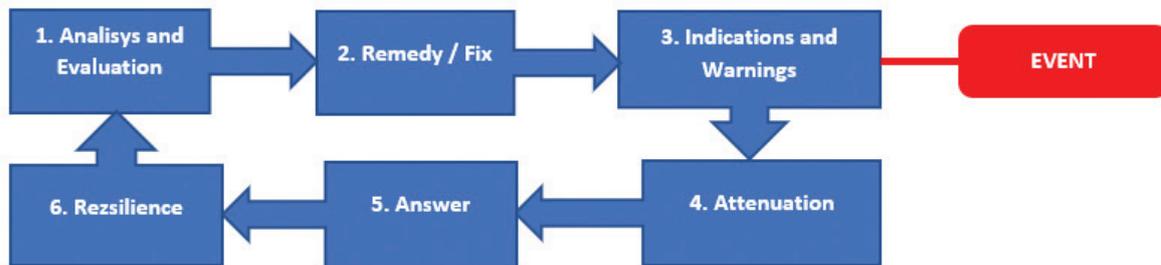


Figure 2 Closed circuit of critical infrastructures

security, focusing on the citizen, community and population of a state or region. In the 2012 European Commission (European Commission 2017) Communication on the EU approach to resilience, it is defined as the *ability of an individual, household, community, region or country to resist, to adapt and recover quickly from stress and shock situations*. The EU Global Strategy broadens the definition of this concept and resilience is seen as a broader concept, encompassing all individuals and society as a whole, based on democracy, trust in institutions and sustainable development, and the capacity to reform. The EU's strategic approach to resilience aims to achieve the set of ambitious targets for EU external action in a sustainable manner, reinforcing:

- the adaptability of states, societies, communities and individuals to political, economic, environmental, demographic or societal pressures, in order to further progress toward achieving national development objectives;
- the capacity of a state, faced with significant pressures to build, maintain or restore its essential functions, as well as basic social and political cohesion, in a way that ensures respect for democracy, the rule of law, human rights and fundamental rights that promote security and progress for all in the long term;
- the capacity of societies, communities and individuals to manage opportunities and risks in a

peaceful and stable way and to establish, maintain or restore livelihoods in the face of major pressures.

### Life cycle of critical energy infrastructures

The Romanian Government mandated the Ministry of Internal Affairs, through the National Center for the Coordination and Protection of Critical Infrastructures – NCCPIC, to coordinate and protect critical infrastructures on Romania's territory. The protection of national critical infrastructures is a complex, multi/inter/trans disciplinary task, involving all sectors of the national economy, defense, intelligence and intervention in case of emergency and necessity, without which the national security and the welfare of the Romanian people would be in great danger. It is assumed and considered to be almost impossible to protect a critical infrastructure 100% regardless of the sector in which it originates, therefore greater importance must be given by state institutions and private companies that are owners, managers or operators of critical infrastructure, through prevention and prevention activity (analysis, evaluation and remediation of the risks and vulnerabilities found) in order to secure them. Particular importance should also be given to mitigation work and the return (technical/societal/human resilience) of critical infrastructure to normality following a negative event.



The sequential cycle and closed circuit of critical infrastructures (N. D. Fiță 2020) are schematized in figures 1 and 2 (Fiță, Radu and Păsculescu 2021).

The six phases of the critical infrastructure lifecycle create a global solution to protect and secure it. Life cycle phases occur before, during and after the event and can compromise, degrade or destroy critical infrastructures

The summary of the six phases is commented on in Table 1:

**Description, analysis and quantification of a national power black-out from May 10, 1977**

*Description of the event*

On May 10, 1977, Romania was in the worst power black-out of all time. This lasted between 4 and 5 hours and consisted of a succession of technical incidents amplified by the errors of the dispatching and operating personnel and during this time no domestic or industrial consumers were supplied with electricity, generating huge damages.

*Event analysis (sequential scrolling)*

Sequential Scrolling
<b>OLD ENERGY EQUIPMENT AND APPLIANCES (lack of investment and refurbishment) + SEQUENCE OF TECHNICAL INCIDENTS + PERSONNEL ERRORS DISPATCH AND OPERATION (lack of specialized personnel) → BLACK-OUT</b>
POWER SUBSTATION (110 kV) → INSULATION DAMAGE → SHORT-CIRCUIT → AUTOMATIC DISCONNECTION OF HYDRO POWER STATION PROTECTION → THERMAL POWER STATION DISCONNECT → POWER DEFICIT OF NATIONAL POWER SYSTEM (MW) → VOLTAGE REDUCTION IN NATIONAL POWER SYSTEM (220 kV and 400 kV electrical network) → OVERLOAD (220 kV electrical network) → NATIONAL POWER SYSTEM SEPARATION → ASYNCHRONOUS OPERATION → OVERHEAD LINES TRIGGER (220 kV and 400 kV) → NORTH ZONE OF NATIONAL POWER SYSTEM DISCONNECT (non-synchronism) / SOUTH ZONE OF NATIONAL POWER SYSTEM DISCONNECT (protections) → TOTAL OUT OF SERVICE OF NATIONAL POWER SYSTEM (black - out) → ENERGY INSECURITY → ECONOMIC INSECURITY → NATIONAL INSECURITY → DAMAGE → INSTABILITY

**Event 1:**

At around 08:40 a short-circuit in the 110 kV network (Tismana power substation) led to the automatic disconnection of 3 groups from the Porțile de Fier Hydro Power Station (525 MW) and OHL 400 kV Djerdap (325 MW import). In stabilized regime, after the above triggers, at Rovinari Thermal Power Station, personnel disconnected blocks 3 and 4 (290 MW) within a few minutes. As a result, a significant power deficit (1100 MW) occurred in the National Power System, causing sub-state voltage reductions in the 220 kV and 400 kV power networks.

**Event 2:**

Around 08.45:00 by triggering the 400 kV transversal coupling Sibiu, the power circulation through the 400 kV network to the south-east of the deficient of National Power System is interrupted, redistributing in the 220 kV network and overloading the OHL Luduș – Ungheni – Fântânele, respectively Mintia – Peștiș – Hășdat – Paroseni.

**Event 3:**

Around 08:47 o'clock the high frequency block coil on the 220 kV OHL Ungheni – Fântânele, that trigger, as a result, the connecting arteries between the north and south, currently in operation (Pestis – Hășdat, Mintia – Timișoara, Arad – Szeged) trigger the overload.

This event leads to the separation of the National Power System

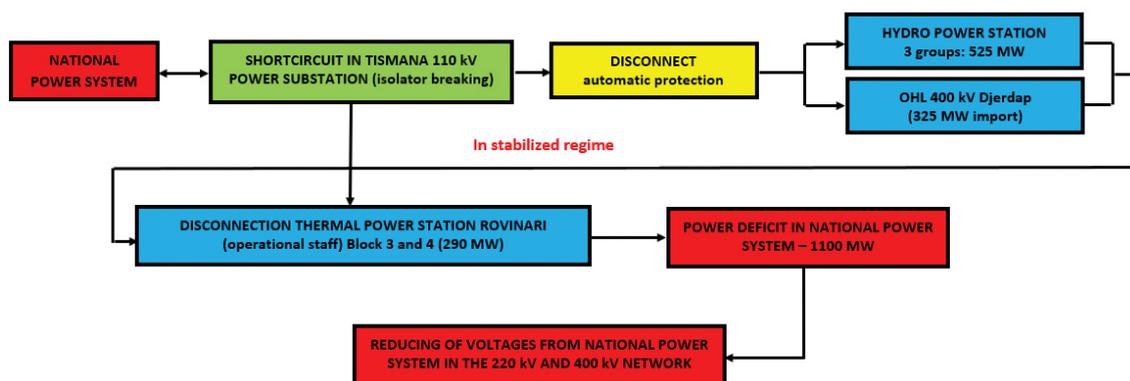


Figure 3 Technical description – Event 1

**Table no. 1**  
**DESCRIPTION OF LIFE CYCLE PHASES OF CRITICAL INFRASTRUCTURES**

Phase number	Phase Name	When it happens	DESCRIPTION
1	ANALYSIS and EVALUATION	Before an event	<ul style="list-style-type: none"> <li>- this phase is fundamental and represents the most important stage in the life cycle of a critical infrastructure;</li> <li>- this phase determines their vulnerabilities, dependencies and interdependencies, so that decision makers have all the information they need to make effective choices in managing risks;</li> <li>- following this phase, an assessment of the operational impact of the compromise, degradation or destruction of critical infrastructure is made;</li> <li>- in addition, a cyber attack on these critical infrastructures can be anticipated, as they can be remotely controlled by hackers for destructive or military purposes;</li> <li>- this phase is prevention or self-defense;</li> <li>- critical infrastructures are located in all sectors of the national economy, and each sector is composed of systems, people, programs, equipment or facilities;</li> <li>- critical infrastructures can be simple, such as a facility in a geographical location, or complex, involving geographically dispersed nodes;</li> <li>- the analysis and evaluation consists of 5 stages, which include activities covering all sectors of activity of the national economy and their critical infrastructures:               <ol style="list-style-type: none"> <li>1) identification of critical infrastructures and elements of criticality;</li> <li>2) critical infrastructure characterization (association between functions and relationships);</li> <li>3) analysis of operational impact;</li> <li>4) vulnerability assessment (probability of natural disasters, criminal or national security events, technological failures);</li> <li>5) analysis of interdependence.</li> </ol> </li> </ul>
2	PREVENTION	Before an event	<ul style="list-style-type: none"> <li>- during this phase, known weaknesses and vulnerabilities are discussed, where precautions and actions taken before an event are involved, by addressing identified physical or cyber vulnerabilities, hazards and threats that could cause the compromise, degradation or destruction of critical infrastructures;</li> <li>- remediation actions are measures designed to address known virtual and physical vulnerabilities before an event occurs and they can be:               <ul style="list-style-type: none"> <li>• education and awareness about security;</li> <li>• improvement of operational processes;</li> <li>• improvement of system configuration;</li> <li>• system modifications by replacing old, morally and physically worn components with state-of-the-art components with high safety and reliability.</li> </ul> </li> <li>- the purpose of the remedy is to improve the reliability and availability of critical infrastructures and applies to any type of vulnerability;</li> <li>- the cost of each remedy depends on the nature of the vulnerability.</li> </ul>
3	INDICATORS of WARNING	Before an event and/or During an event	<ul style="list-style-type: none"> <li>- this phase involves daily monitoring of the critical infrastructure sector to assess insurance and security capabilities and to determine whether there are any event indices to be reported;</li> <li>- the indications are based on information at tactical, operational, theatrical and strategic levels;</li> <li>- at the tactical level, the information comes from the owners of critical infrastructure;</li> <li>- at operational level, the information comes from critical infrastructure sectors;</li> <li>- at the theatrical level, the information comes from regional partners (EU, NATO, allied governments, coalition forces, etc.);</li> <li>- at the strategic level, the information comes from internal and/or external intelligence services, law enforcement and the private sector;</li> <li>- a warning is the process of notifying critical infrastructure owners of a possible threat or danger to them;</li> <li>- indications and warnings are actions that signal an event: probable, planned or ongoing;</li> <li>- where an indication is detected, a warning may be issued to notify all owners or operators of critical infrastructure of a hazard or threat;</li> </ul>
4	ATTENUATION	Before an event and/or During an event	<ul style="list-style-type: none"> <li>- this phase includes prevention (immunization) consolidation actions to prevent the impact resulting from the occurrence of the negative event;</li> <li>- owners or operators of critical infrastructure, regardless of the industrial sector where they are located, take measures to minimize the operational impact of their compromise, degradation or destruction;</li> <li>- the main purpose of the mitigation phase is to minimize the operational impact on other critical infrastructure when critical infrastructure is compromised, degraded or destroyed;</li> <li>- mitigation actions help with phase 5 emergency activities, investigations and management, as well as phase 6 resilience activities.</li> </ul>
5	THE ANSWER	After event	<ul style="list-style-type: none"> <li>- incident or accident response includes plans and activities undertaken to eliminate the effects or consequences of an event.</li> </ul>
6	RESILIENCE	After event	<ul style="list-style-type: none"> <li>- this phase involves actions taken to rebuild or rehabilitate critical infrastructure after it has been compromised, degraded or destroyed;</li> <li>- this process is the most challenging and least developed and goes to the owners of critical infrastructure.</li> </ul>

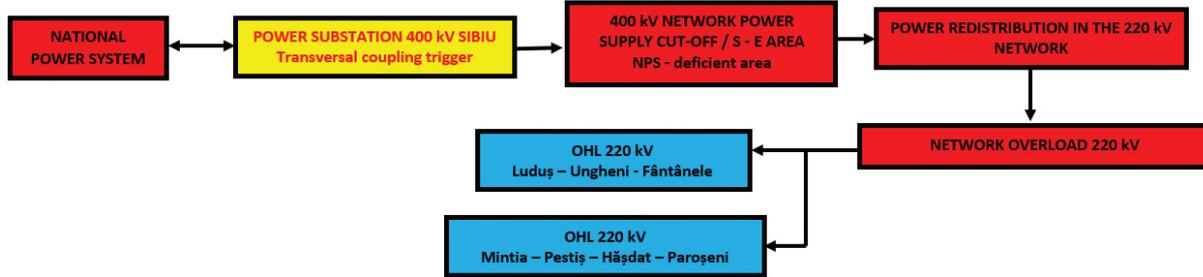


Figure 4 Technical description – Event 2

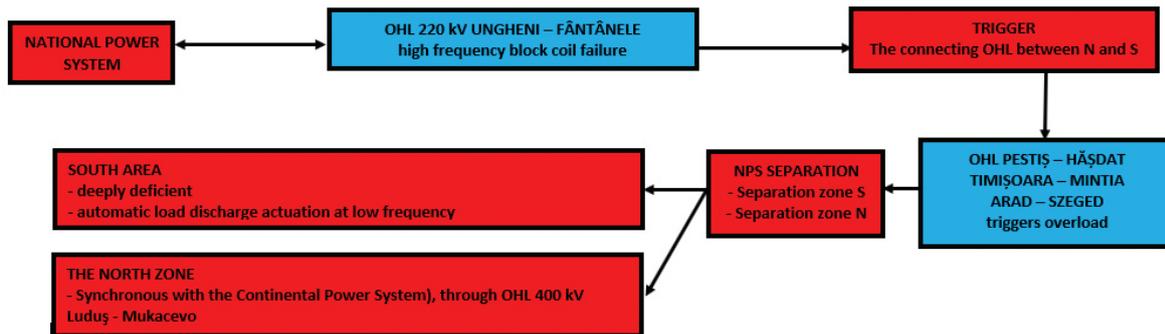


Figure 5 Technical description – Event 3

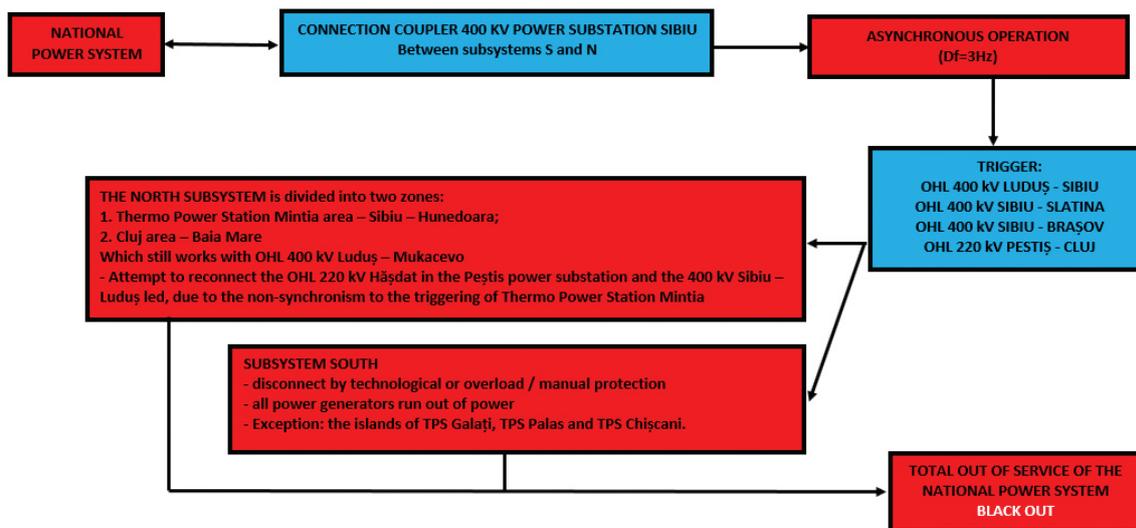


Figure 6 Technical description – Event 4

into two areas:

- the south area, deeply deficient, in which automatic discharge of the load acts to decrease the frequency;
- the north area, synchronous with the Continental Power System through the OHL interconnection (400 kV) Ludus – Mukacevo.

**Event 4:**

Around 08.49 hours, the 400 kV coupler of the 400 kV Sibiu power substation is connected between the mentioned subsystems of the National Power System, operating asynchronously

(DF=3Hz). The shock caused by this connection causes the triggering of the 400 kV OHL Luduș – Sibiu, Sibiu – Slatina, Sibiu – Brasov and the OHL 220 kV Pestiș – Cluj. The northern subsystem is divided into two areas: The Thermo power station Mintia area – Sibiu – Hunedoara and the Cluj area – Baia Mare, which still operates with the OHL of interconnection Luduș – Mukacevo. The Southern subsystem, where, within a few minutes, all generating sets have been triggered (by technological or overload protection) or manually disconnected (operating at inappropriate parameters), all power groups are free of tension

(except for the islands of Galati, Palas and Chiscani). In the northern system, the attempt to connect OHL 220 kV Hășdat to the Pestiș power substation and OHL 400 kV Sibiu – Luduș led, due to the non-synchronism, to the triggering of the groups Thermo power station Mintia.

In Romania in 2016 the indicator was 3 euro/kWh for the household consumer and 21 euro/kWh for the commercial consumer (data based on prices and Gross Domestic Product – GDP in 2016) and knowing this data, it was possible to estimate the damage of this unfortunate 6-hour generalized black-out. The average hourly power consumed in Romania was on 23.01.2016

Event 1 + 2 + 3 + 4

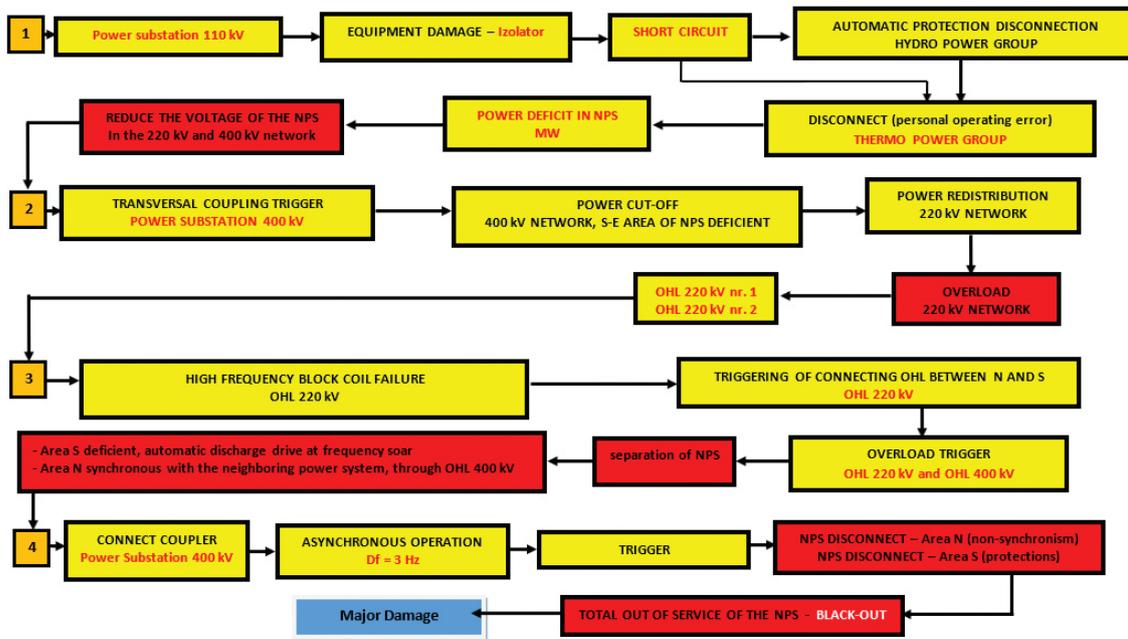


Figure 7 Technical description – Events 1 + 2 + 3 + 4

Quantification of the event

The World Bank estimated a damage of about \$2 billion, and the analysis was only estimated where a research (study) from Copenhagen Economics was used, based on Eurostat data and electricity prices from 2016, published by the European Commission. This research is about "value of lost – VoLL," which is a cost of energy deprivation, and it is an approximate indicator that takes into account a lot of variables (the time of year or day when the disruption occurs, the extent, how advanced the society is, how energy is consumed, etc.) and in addition there are various ways of calculating this indicator, from country to country. The study calculates the loss in euro/kWh of unconsumed energy for household and commercial consumers, and at European Union level, the results have an extremely high margin, for household consumers ranging from 2 euro/kWh in Bulgaria to 32 euro/kWh in Luxembourg, and for commercial consumers from 11 euro/kWh in Bulgaria to 67 euro/kWh in Ireland.

of 8269 MW (average consumption of 8087 MWh), so calculated at an average of six hours, the national consumption was 49614 MWh, i.e. about 50 million kWh. If it is used that the estimate of 28% of consumption is represented by household consumers, their total consumption was 14 million kWh, and the remaining 36 million kWh is counted commercially (this includes the technological own consumption – TOC of the National Power System). If the study values are average, it results in a VoLL of EUR 42 million for the population and EUR 756 million for the industry, so a generalized blackout of electricity nationwide for six hours would bring economic damage (others cannot be counted) of at least EUR 800 million, from the non-use of electricity necessary for economic and domestic activity, and VoLL represents only the economic value of the energy not consumed, not the damage caused by the power supply to the national industry, which are predictable and probably much higher, which cannot be calculated (N. D. Fiță 2019).



## Conclusions

A possible and unwanted national black-out brings extreme damage to citizens, society, industry and the national economy, institutions empowered with emergency situations, health care, public order and national security, etc., causing devastating and catastrophic crises that can be detrimental to national security and welfare.

The May 10, 1977 black-out had a domino effect and affected the following critical systems and infrastructures: *the medical system (loss of life), emergency services, police, fire department, ambulance, industrial system (loss of life, large production losses from enterprises, factories, steel plants, mining plants, etc.), livestock farms, drinking water supply system, IT and communications service, oil and gas extraction system, financial-banking system, transport system (airports, train stations, ports, metro, etc.), restaurants, shops, etc.*

The quantification of these damages was estimated only because of the lack of electricity supply to final consumers, not taking into account the interdependencies of all critical systems of the national economy with electricity, which are non-quantifiable.

Such an analysis and assessment of the financial losses caused by an electricity blackout is absolutely necessary to understand the importance of protecting critical energy infrastructures, and in this strategic context, the European Parliament and the European Council issued *Regulation 941/05.06.2019, on risk preparedness in the electricity sector*.

This Regulation lays down rules for cooperation between Member States in order to prevent, prepare for and manage electricity crises,

in a spirit of solidarity and transparency, taking full account of the requirements of a competitive internal market in electricity, within ENTSO-E, through the following major actions:

### Risk assessment:

- assessment of the risks to the security of supply of electricity;
- the methodology for identifying regional electricity crisis scenarios;
- identification of regional electricity crisis scenarios;
- identification of national electricity crisis scenarios;
- the methodology for short-term and seasonal adequacy assessments;
- short-term and seasonal adequacy assessments.

### Risk preparedness plans:

- the establishment of risk preparation plans;
- the content of risk preparedness plans with regard to national measures;
- the content of risk preparedness plans with regard to regional and bilateral measures;
- assessment of risk preparedness plans.

### Power crisis management:

- early warning and declaration of an electricity crisis;
- cooperation and assistance;
- compliance with market rules.

### Evaluation and monitoring:

- ex post evaluation;
- monitoring;
- handling of confidential information.

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”CAROL I” NATIONAL DEFENCE UNIVERSITY PUBLISHING HOUSE  
Panduri Street, no. 68-72, Bucharest, 5<sup>th</sup> District  
e-mail: *buletinul@unap.ro*  
Phone: +4021 319.48.80/0365; 0453