

## COMMAND PROCESS ON TACTICAL LEVEL IN CONSIDERATIONS OF COMMAND AUTOMATION

## PROCES DOWODZENIA POZIOMU TAKTYCZNEGO W UWARUNKOWANIACH AUTOMATYZACJI DOWODZENIA

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**Abstract:** *The rapid development in the segment called IT and high technology related to access to information changes resulted in the creation of a new environment, which largely determines the basic principles and ways of carrying out activities through the most modernized armies in the world. For a long time series of constraints and difficulties did not allow achieving a kind of „information comfort” in proving a result of access to information in near real-time.*

*In this paper the background of changes resulting from the automation of command were presented conditions and changes in the process of command, which is implemented at the tactical level as a series of activities organized in a logical system of consecutive and inter-dependent phases, stages and activities. From the viewpoint of the command in command automation conditions, particular attention was paid to those elements which in the opinion of the author will play a significant role in proving network-centric environment.*

**keywords:** *command, process, automation, C4ISR*

**Streszczenie:** *Rozwój technologii informatycznych i dostępem do informacji zaowocowały stworzeniem nowego środowiska, które determinuje podstawy i sposoby prowadzenia działań przez nowoczesne armie na świecie. Nowoczesne technologie informatyczne i dynamiczny ich rozwój nieodwracalnie zmieniły charakter procesów informacyjno-decyzyjnych i przebieg operacji militarnych. Dowodzenie stało się czynnikiem decydującym o wynikach zmagania przeciwstawnych stron. W referacie na tle przemian wynikających z automatyzacji dowodzenia zaprezentowane są uwarunkowania i przemiany w części procesu dowodzenia, który jest realizowany na poziomie taktycznym jako cykl działania zorganizowanego. Z punktu widzenia procesu dowodzenia w uwarunkowaniach automatyzacji dowodzenia szczególną uwagę zwrócono na te elementy, które w ocenie autora, odgrywać będą znaczącą rolę w dowodzeniu w środowisku sieciocentrycznym.*

**Słowa kluczowe:** *proces, dowodzenie, automatyzacja, C4ISR*

## **1. Introduction**

Dynamics of changes in the Polish theory assumed command after a period of significant acceleration of deep socio-political changes in the early nineties of the twentieth century. Changing the conditions in a meaningful way determined the art of war, including those caused introduce appropriate changes in the command. Numerous re-evaluation, new challenges, other hazards, varied scale and scope effects in conjunction with a strong technical and technological development initiated the process of adapting existing solutions to new times. Especially large, this process gained momentum after the Polish accession to Euro-Atlantic security system structure.

Widespread efforts to achieve interoperability and compatibility of our armed forces with the armies of other member states of NATO and the alliance command system has set new challenges and demands on the theory of command. It should in fact be the canvas for a rational and effective practice, and change the following in theory should take account of treaty obligations, international trends and the specificity and internal conditions of the national Polish Republic. That was the message pillar process of adaptation and integration of the Polish system of command, especially at the beginning of his term. The intensive work carried out in order to meet the obligations of NATO membership has led to the development of existing solutions in proving the theoretical and practical implementation of the command<sup>1</sup>. In the past, because a differentiated approach to the problems of command troops contributed to the perception of the command in a way that does not always remaining in compliance with the particular foundations of scientific theory, organization and management and other disciplines dealing with the issues of team performance measures. Presented by the author's suggestions are an attempt to look at the prospects and the transformation of command.

## **2. Basic outline of command**

Command process (DMP)<sup>2</sup> is carried out based on a prepared base, which is identified with a system that provides commanders with the appropriate command to the command base in all possible situations and in all conditions. They appear, therefore, the requirements of having the character of the organizational and structural and functional, which should satisfy the command of the conditions resulting from the application and use of Automated Command Systems (ACS).

It is not disputed the view that headquarters should be prepared to carry out a wide range of tasks in the new information - technological considerations and different hazards and challenges that have emerged in the early twenty-first century.

An important feature of modern headquarters is the realization of functions in the system of national, allied, and international, in relation to the tasks arising from the

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<sup>1</sup> J. Posobiec, *Zarys ewolucji teorii dowodzenia* [w:] *Podstawy dowodzenia*, op. zb. pod red. J. Kręcikij, J. Wolejszo, AON, Warszawa 2007, page 27.

<sup>2</sup> Proper name is Decision Making Process - DMP or Military Decision Making Process – MDMP.

obligations of the coalition and the various external threats. Membership in NATO and joining the European Union strengthens the ties between nations, but also imposes significant obligations on command and command system of each member whether signatory relevant obligations, agreements and contracts. Honoring of obligations suggests that the individual headquarters can participate in various activities.

The large span of types and forms of activities makes it necessary to significantly broaden the scope of knowledge and skills of each individual functions of headquarters at all levels. This need no longer refers only to the preparation and conduct of various operations, but primarily to the ability to capitalize on, coordinates and apply modern tools of information processing and transmission and the use of combat in complex and often unpredictable conditions.

Under the circumstances of command will perform the task, both in peacetime, crisis (the threat of conflict, stabilization of the situation) as well as conflict or war. Difficulties and unpredictability in forecasting potential threats and situations in which they can or will be forced to act the armed forces or separated from their composition components, requires an effective **preparation of headquarters for command ability**, develop plans for future operations - because they can be differentiated in terms of objectives, types, forms, and momentum, can be implemented in a variety of conditions and environments. Dynamism and uniqueness of the situation increases the need to ensure effective command of subordinate units during operations. Command ensures proper performance under certain conditions, such as the intended target will be achieved when you have a certain potential forces and means.

The functioning of the command is targeted for maximum support commanders at all levels of command in the field of power and ensure the timely information necessary to perform command functions: planning, setting tasks and the executive - leadership, coordinate the activities carried out (control).

Treaty obligations and requirements contributed to the normalization of DMP in the land forces. It has been generally defined and characterized in the development of ATP-3.2. (Land Operations), as a doctrinal document was the starting point for the development of solutions recognized as the most appropriate in the land forces and included in the national publication: *Planning Operations at tactical level in the land forces (DD/3.2.5)*.

Command process is understood as a *series of organized activities*, expressed in the algorithm for the identification and preparation of operations - a logical system of consecutive and inter-dependent stages and activities developed by the French creator of the scientific basis of organization and management issues H. L. Le Chatelier<sup>3</sup>.

In publications, the command process (DMP) is usually depicted as a whole projects related to the command executed by organizational, functional, and

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<sup>3</sup> H. Bieniok (kier. zesp.), *Metody sprawnego zarządzania, Planowanie, Organizowanie, Motywowanie, Kontrola*, Placet, Warszawa 1999, page 57-58.

personnel on command posts within a unified command system<sup>4</sup>. On this basis, developed the concept in land forces, interprets it as: *a series of information and decision-making carried out by the headquarters, the same at all levels of command, based on the cyclic execution of activities within the functions of command*<sup>5</sup>.

Special importance in proving, in new circumstances becomes **information**, and more precisely – the use of attributes in **the process of creating situational awareness** of headquarters involved in the DMP and the forces acting in the areas of responsibility.

### **3. Components of decision making process**

Cyclicity in the process of command comes down to a multiple repetition of a sequence of actions within the decision-making cycle in order to prepare and decide to organize the conditions of its implementation, and monitoring its implementation. In this perspective, the DMP is structurally divided into several phases, stages and activities implemented at all levels of command in the land forces. It is also consistent with the basic assumptions of the theory of organization and management, in particular - the decision-making. It should be noted that in publications there is a differentiated approach to problem solving and decision-making on the allocation of decision-making cycle phases and stages, which results from the ambiguous treatment and distribution functions of the manager (commander)<sup>6</sup>. The national DMP were awarded the four phases, which include:

- Assessment of the situation;
- Planning;
- Issuance of orders (set task);
- Control.

DMP cycle can be represented as a pie chart (Fig. 1).

Command is particularly kind of managerial performance by the commander. It means that since taking over the duties of command is preserved continuity, expressed in the ongoing decision-making cycles. Command in this form is a continuous process of repeating a certain sequence of time intervals: phases, stages, activities aiming to take further decisions as a response to changes occurring in the area of interest in the fighting command level.

In this perspective, decision-making cycle can be viewed as a series of targeted actions carried out by individuals, cells, groups in order to create optimal conditions for the decision by the commander, to organize the conditions of its implementation and monitoring the effects of the accomplishment of tasks (Fig. 2).

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<sup>4</sup> J. Michniak J., *Dowodzenie i łączność*, AON, Warszawa 2005; J. Michniak, *Dowodzenie w teorii i praktyce wojsk*, AON, Warszawa 2003; J. Kręcikij, *Współczesny proces dowodzenia wojsk lądowych*, AON, Warszawa 2003; *Metody i treść pracy zespołów funkcjonalnych na stanowisku dowodzenia wojsk lądowych*, AON, Warszawa 1999.

<sup>5</sup> *Planowanie działań ...*, page 13; M. Strzoda (red. nauk.), *Wybrane terminy z zakresu dowodzenia i zarządzania*, AON, Warszawa 2002, page 69.

<sup>6</sup> Z. Ścibiorek, *Kierownik w przedsiębiorstwie*, Wyd. Adam Marszałek, Toruń 2000, page 123; W. Zawadzki, *Metody pracy kierowniczej*, AON, Warszawa 1995, page 7-11.



Fig. 1. Decision Making Process Cycle  
 Based on *Metody i treść pracy zespołów funkcjonalnych na stanowisku dowodzenia wojsk lądowych*, AON, Warszawa, 1999.

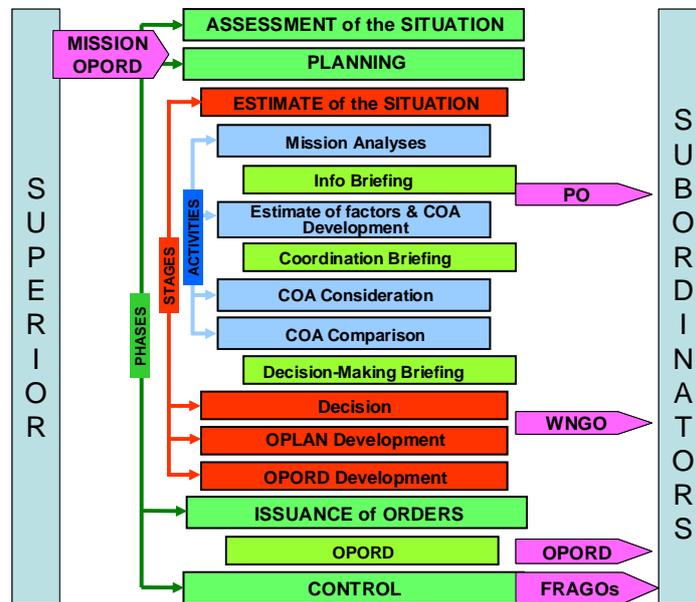


Fig. 2. Decision Making Process in Polish Land Forces  
 Based on *Planowanie działań na szczeblu taktycznym w wojskach lądowych (DD/3.2.5)*, DWLąd, Warszawa 2007.

In the aspect of the present problems of command as a process can be divided into two conventional parts: the first – **planning** and the second - the **command executing** in operation (control).

### 3.1. Assessment of the situation

Assessment of the situation is the first phase of the DMP. At the same time it is a continuous project implemented by the headquarters at all organizational cells – as a functional chain of command, with varying degrees and scope of responsibility resulting from the information needs and tasks of the staff cells. Modern military operations are very diverse in character, intensity, dynamism and volatility, which significantly affect the need for accurate and timely disposition of command knowledge of the situation in the areas of responsibility and interest in each level of command.

DMP is implemented at all levels of command and is usually initiated in receiving a new task. It can also be launched at the initiative of the commander, by the generation of significant changes in the current situation.

New tasks in a particular way intensify the activities implemented within the framework of assessment of the situation. Purpose and nature of these projects can qualify them for the first phase of the DMP, which is characterized by: acquiring, organizing, valuation, collection, storage, comparison and presentation of all kinds of data and information on: its own troops, the enemy, the other participants activities and conditions of their driving . Due to the frequently occurring high dynamics of contemporary activities and inertia kind of information, resulting from the possibility and the rules of the command, this phase is considered particularly important. It is in fact necessary for the analysis, evaluation and formulation of appropriate proposals for future action and makes your own forces of the enemy's forecast.

In the DMP, during the first phase, evaluation and presentation are subject to a number of data and information to be grouped as follows<sup>7</sup>:

- owned (situational);
- influence (situational and prescriptive);
- acquired, harvested (situational).

Continuity assessment of the situation, when receiving a new task, contributes to a situation where in the first place are taken into account the information available (existing), prepared and stored in the functional cells of the headquarters. They are then systematically supplemented by information affecting: orders (OPORDs), fragmentary orders (FRAGOs), and reports (on time, ad hoc).

The essence of these projects is that they should provide the commander's knowledge, transformed into a maximum of a clear picture of the situation, from which it can assess the situation, decide, set tasks and lead subordinate forces.

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<sup>7</sup> J. Kręcikij, J. Wolejszo (red.), *Podstawy dowodzenia ...*, page 87.

At the same time, on the basis of the obtained results, it should be noted that the contract will lose relevance **assessment of the situation secretion**. Justification of this claim will be presented later, during deliberations on the control of current operations.

In an automated system environment to receive jobs from a supervisor will take place much faster than in the classical situation. This is due to three main reasons:

- if the supervisor will provide subordinate their databases, the latter will be able to watch the progress of planning at the higher level and begin planning their own work on the basis of this road successfully obtained the information,
- superior’s command documents will be prepared more quickly than before thanks to the advanced central IT supporting,
- the transmission of command documents from superior’s command post will be, for the same reason, much faster, while maintaining the requirements for the protection of secrecy.

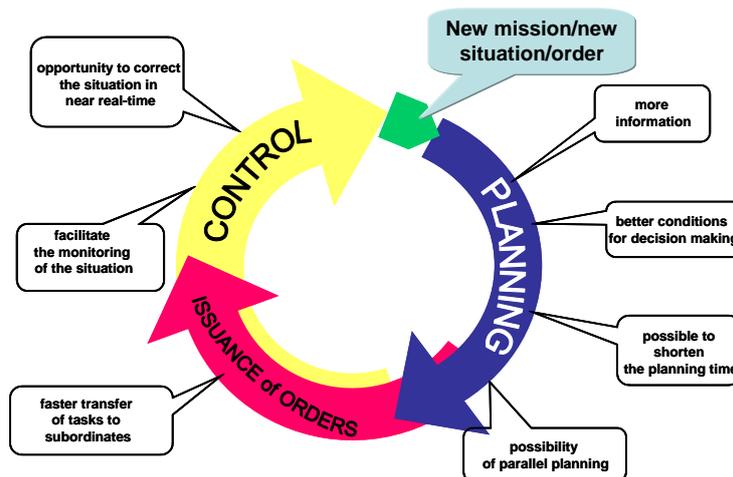


Fig. 3. Phases and automation effects of DMP

So the system adopted decision-making phases of the cycle is dictated by the assumption that the commander and the functional units involved in the process of command operate in a network-centric environment, which generates an automated command and common situational awareness picture. On Figure 4 is presented a draft decision-making cycle algorithm, based on ongoing DMP modified for network-centric environment conditions.

In light of the assumptions and requirements of network, let's assume that the target process of command in these activities may include three successive but mutually interpenetrating phase (Fig. 4):

- Planning;
- Issuance of orders (set task);
- Control.

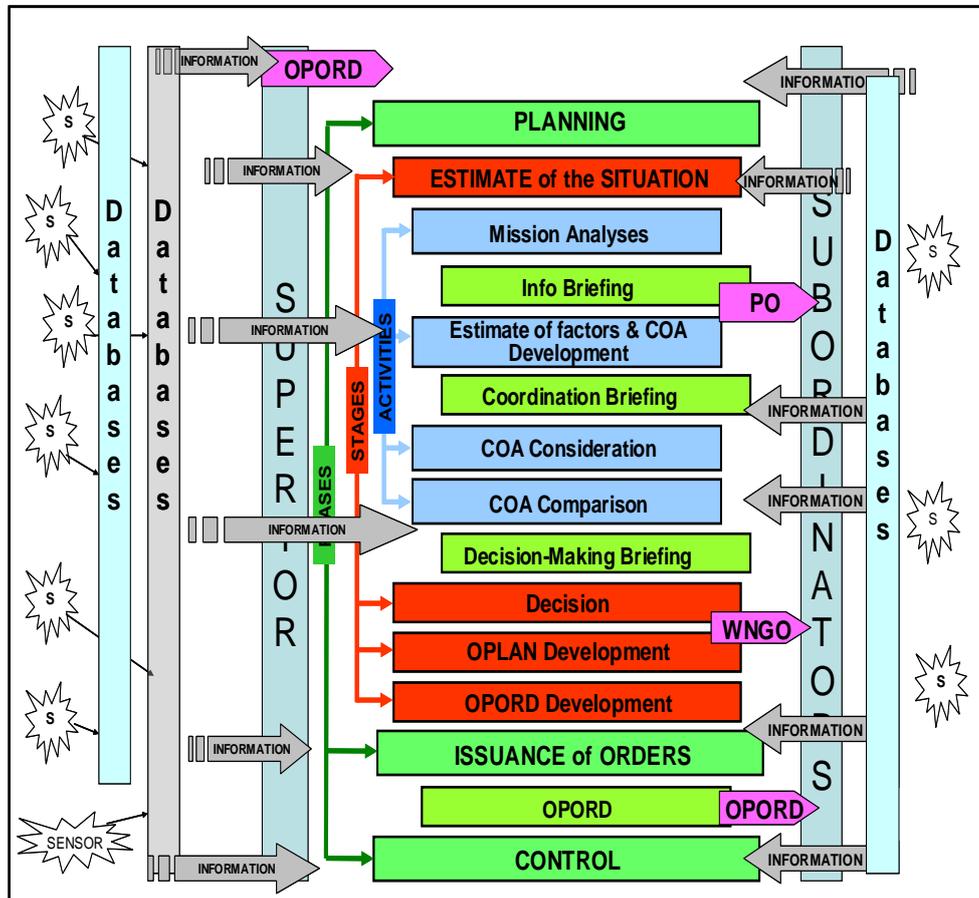


Fig. 4. Algorithm of the new DMP (project)

### 3.2. Planning

The second phase of the cycle of DMP, is planning, which plays a special role in the command. During this phase, detailed analysis and assessments shall be received from a superior job, conditions and factors affecting or likely to affect its performance. In this phase followed by a creative interpretation of the collected data and information, which arise as a COA and prognostic enemy COA (or threats that may hinder the performance of set tasks). Then they are carefully considered, reviewed and compared by the planning teams in order to create the best possible conditions for the commander to take appropriate decision. During the planning is taken by the commander of the decision and is formulated and announced the concept of operation. The elaboration of the OPLAN and a document proving the essential nature - OPORD.

The planning phase is the most diverse in terms of structure and construction. Were found in the four successive stages, and stage of estimate of the situation are also four additional activities. Order adequately to the planning phase of projects is as follows:

Stage 1. Estimate of the situation

- Mission analyses;
- Estimate of the factors and COA development;
- COA Consideration;
- COA Comparison.

Stage 2. Decision;

Stage 3. OPLAN Development;

Stage 4. OPORD Development.

Planning, which is the basis for further action, is essentially aimed at finding answers to the question, **how?** execute the task, which aims to identify the best in any given situation the way it is implemented. The vast range of challenges, threats and difficulties to be met or beat them, evident in each of the above phases, the effects of planning turned into concrete actions depend on the quality and quantity of information. The basic assumption is that even soldier in the network-centric environment is a sensor providing knowledge about the conditions of the planned activities will affect the planning results, which are presented in the relevant command documents (including the virtual or electronic form). To achieve this goal, the plan should:

- analyze new task and make a comprehensive assessment of all factors affecting its performance, taking into account the tasks previously carried out;
- determine potential options for the task (COAs);
- assess and make the evaluation of COAs produced;
- take decision and announced the concept of operation;
- develop an OPLAN and the command documents (WNGO, OPORD), which will form the basis for planning activities and work subordinates its current level of command.

The planning phase in network-centric environment, automated command systems can be characterized by the need to analyze the increased amount of information about the characteristics more desirable than in traditional activities, it should result in better decision-making conditions, shortening the time required for planning activities, the ability to quickly make the planning process at lower levels (almost parallel).

### *3.2.1. Estimate of the situation – I stage of Planning Phase*

#### ***Activity I. Mission Analyses***

Each level of command after receiving the task initiates a new cycle of DMP, which begins with a mission analyses - the first of the estimate of the situation. The purpose of analysis is to be clear about **what and for what purpose?** must take to

accomplish the task received. This is achieved by understanding the resulting tasks. Then it shall be necessary for the information necessary for planning and implementation tasks. Estimated abundance of information and its availability on information networks compels stakeholders to set priorities and refine their areas of interest relevant to the tasks of data and information.

The mission analyses can be useful, not yet known, the standard sets of problems, requiring the award of the commander answers to a number of doubts and questions. The results of the analysis should lead to proposals that will address the following final results:

- restated mission,
- define the commander's intent,
- identify the criteria for comparison (evaluation) of COA,
- clarification of guidelines,
- determine the necessary information needs of commanders,
- identify work tasks to staff,
- identify tasks for the subordinate forces (tasks for immediate execution).

In the context of proving *the restated mission* and the *commander's intent*, which are the basis of preferred **style of command by objectives**.

Faster receipt of the task clearly accelerate the start of the mission analyses by the commander and the individual elements of the functional position of command post. In the course of the analysis they do not become, as it seems, fundamental changes. Although you can not underestimate the impact on facilitating task analysis will make use of computer maps of the necessary information to application layer. However, the main results of the mission analyses, that is clearly defined task and keynote own commanders, still remain the domain of conceptual work of man - the commander.

At the same time IT support and ACS will significantly accelerate and streamline the preparation and sending WNGO to subordinates, which should lead to a faster start of the preparation of the next, lower levels of command.

Will also improve the organization of the functional teams as a result of not having to duplicate the individual pieces of written orders and distribution within the command post (CP). You can also adopt the assumption that in certain situations can be dispensed with clearance information, replacing the exchange of needed information through a system of command support.

#### ***Activity II. Estimate of factors and COA development***

This is another estimate of the situation stage act, which aims to establish some possible ways to accomplish a task (COAs). In addition must be determined subject to detailed estimate of factors that can determine the task. Estimate of factors should relate to four main groups of problem, which include:

- enemy forces;
- own forces;

- environment, within the meaning of the terrain, weather, climate, population, culture, religion in the whole area of expected operation;
- other factors (e.g. time).

The current practice shows that each made as a result of a thorough assessment of the COA should clearly specify:

- way to complete the task, including a place to focus the main effort,
- task organization,
- initial distribution of forces,
- command posts deployment.

The results of this study indicate that regardless of the number of COA produced, their common feature is the requirement to meet the five strict conditions, namely<sup>8</sup>:

1. lead to complete the task commander according to the guidelines
2. be realistic (feasible by using the potentials possessed, forces);
3. represent an acceptable level of losses of their own, especially in humans;
4. clearly differ from other COA;
5. be complete (to answer the questions: who, what, where, when, how and for what purpose?).

As part of the DMP influence ACS attributes for its implementation will be much more visible. This will result from automating (and so, consequently, a significant acceleration), a series of staff actions, who are often very time-consuming nature (in the case of the use of traditional methods of work). Information supporting these projects will provide for:

- rapid assessment of the terrain (area, environment), using previously prepared data on the area of operations, applications, and computer simulations;
- rapid assessment of the enemy, thanks to high-speed and automatic visualization of data acquired and gained the opposite side;
- shorter time needed to generate COAs - at present there are sophisticated software projects providing automatic, or at least semi-automatic building of COAs.

### ***Activity III. COA Consideration***

In light of the results of objective consideration of alternatives is complex and includes:

- COA developed to verify compliance with the commander's intent of the superior and the commander of your own level of command,
- confrontation variants with potential enemy COA,
- the verification of their capabilities support and secure the developed COAs,
- identify strengths and weaknesses of their own COAs.

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<sup>8</sup> J. Kalinowski, J. Kręcikij, *Taktyczno – operacyjne aspekty doboru kryteriów oceny wariantów realizacji zadań bojowych na szczeblach taktycznych*, AON, Warszawa 2001, page 167.

**Activity IV. COA Comparison**

The purpose of COA comparison is to identify the best of action prepared by the planning options. The basic methods of comparison options are:

- the advantages and disadvantages method,
- the voting method,
- the criteria method.

Depending on the chosen method of planning CP cells make a comparison of options, which should lead to uniquely identify variant, considered on the basis of objective assessments of officers involved in the comparison, which will then be presented to the commander as a recommended COA.

In network-centric environment ACS support in considering and comparing COAs will be largely improved and accelerated. Increase the objectivity of evaluation of COAs and will undergo a gradual effacement division between their generation, consideration and comparison, becoming one of a continuous sequence of steps.

These changes result from the following premises:

- The most objective way to consider COA is a simulation, or confront them with a potential enemy COA. Results of analysis of literature and observation of exercises allow the conclusion that at the tactical level, therefore, with a close-knit and trained staff, the one type of simulation takes about one hour<sup>9</sup>. Taking into account that will be considered at least two COAs, this time adding, we get two hours. Provide adequate information to support a significant shortening of the time, while a strong increase in the objectivity of the simulation.
- The same reasons will affect the speed comparison of COAs of which becomes a logical consequence of their simulations - to consider options for automated results will indicate which of them should be recommended as a commander in the data optimal conditions.
- Supporting information will also help (but do not exclude the possibility) to waive some briefings, such as dedicated check-in coordination determining the most likely enemy COA and to present own COAs. Rapid development, consideration and comparison of COA will in fact, that representatives of the types of forces will receive under the information they need without having to organize special meetings of staff.
- Specialists types of forces will not be forced to wait for the development of COAs, because the respective applications allow for "special" case at the stage of their generation, discussion and comparison.
- The use of information resources, sharing of situational awareness and accessibility to their planning processes allows participants to create a common picture of the battlefield (Common Operational Picture - COP). Developed COAs can be easily verified and corrected in a collision with progressive changes in operational and tactical situation as a consequence of activities carried out by the enemy and own troops, or change other terms of carrying out activities (such as floods, fires, etc.).

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<sup>9</sup> Observation of the Exercises: Dragon 07, Pierścień 08, Pierścień 10.

During the estimate of the situation in terms of network and ACS access to information, the use of a common picture of the situation and the situation awareness should allow to staff officers efficiently and faster to create the conditions necessary to make a decision by the commander.

This stage in the context of network-centric becomes a major recipient of information resources of ACS, which provide a basis for future operation. Data acquired by sensors are utilized by the officers of CP for action planning.

Relationship and network-centric feedback in the stage estimate of the situation should enable the generation of real conditions for the implementation of tasks and possible ways of their implementation. Decrease should therefore also the degree of risk arising from the knowledge of all aspects of the environment, the enemy, own troops, etc.

### 3.2.2. *Decision – II stage of Planning Phase*

In the second stage of the planning phase is taken by the commander of the decision which is an integral element of concept of operation. The decision lies in choosing the commander of one of the staff proposed to him by the COAs. This choice should lead to a determination of concept, which is a personal expression by the commander of the concept of carrying out future operation.

The conclusions of the analysis examined the publication and the lessons learned from observation exercises indicate that the concept of operation should include:

- commander's intent,
- the way the job (if necessary, taking into account the division into phases/stages), in this place (way) the main focus of effort (point of gravity, critical areas),
- task organization,
- priorities for use of forces and means of support and security measures.

The commander's decision, because of its nature - non-random selection of one of the potential options for action - is made during decision-making briefing. Under favorable circumstances, it will be possible to dispense with the decision to carry out checks, as the commander will have the opportunity to become familiar with the proposals of the staff, using a computer network, ACS. The same path of his decision and concept of operation will be forwarded to all eligible customers.

### 3.2.3. *OPLAN Development – III stage of Planning Phase*

The primary objective of OPLAN development is to create an information base for preparation of OPORD, together with the necessary attachments, which develop in detail the specific issues that needed to carry out tasks and achieve goals.

Formulated based on the concept of staff officers work activities gives rise to the achievement of success by the impact points determining the strength of the enemy. Analysis and evaluation carried out in stages prior to the development of the command indicates that the anticipated future system of material and time-space activities in the conditions of **information superiority provides a basis to minimize the risk of failure**. Pursuant to the decision taken by the commander developed and refined way, is an OPLAN.

In network-centric environment ACS with wide access to databases and the ability to automate activities related to developing of OPLAN (graphic and written part) aid the officers and reduce the time needed for its development.

#### *3.2.4. OPORD Development – IV stage of Planning Phase*

The OPORD, is a formal prescriptive document with the necessary annexes and additions, which forms the legal basis to bring tasks to subordinates. In appropriate cases, particularly if it is necessary to run a particular action before it is prepared for a complete OPORD, it is advisable to **WNGO**, targeting to specific contractors. Totality of the stages and operations planning phase allows smooth transition to the next phase of DMP, which is issuance of orders (setting tasks). It may be argued that despite the many changes resulting from the battlefield network connections, will continue to operate in practice, however, may change its form and manner of communication to subordinates. It should be sent in electronic form, with the screen image of the graphical content.

Just as work on the COAs, preparation of command documents (will be significantly accelerated. Avoid having to physically submit the order of parts (fragments) from a variety CP cells and its copy in a few dozen copies, it can reduce the project from 2 – 3 hours (at the division level) to 30 – 40 minutes.

#### 3.3. Issuance of orders

The next, third phase of the DMP cycle is the issuance of orders. The results of the planning phase of a particular decision the commander must be transferred to contractors, which is also the phase of putting the task goal. Formally, it should begin after the development of OPORD along with all necessary annexes and additions. Sometimes, it is advisable to start early mechanisms that trigger the process of subordinates supply the information in the form of WNGO. This will cause this phase can begin almost immediately after preparing an OPLAN. Then on its basis, and issued a WNGO before it is possible to place the tasks to subordinates. However, in the OPORD, at a later time, will formally sanction the content of the tasks that need to get recipients in writing as soon as possible. Method of making a task may take different forms and depends on the following factors:

- level of command,
- span of command structures,
- the level of training and experience of making its task and subordinate commands,
- at the disposal of time,
- the organization of the system of command posts and their deployment in an operational environment,
- equipment and technical level of command, especially ACS.
- the results of experiments show that the best way of issuance of orders (putting the task) remains in direct contact with subordinate commanders, during which the commander personally, verbally communicate the task to each of them. It is also acceptable in some cases, putting the task "on behalf of the commander," the deputy commander or designated staff officers. If the place of tasks by direct contact is not possible or is impracticable, the orders

can be delivered in writing version (written-graphic or video) by liaison officers or couriers. In addition, more and more common is the transmission using the means of signal communication, including in particular the automatic transmission of data. In the latter case, as submitted each time an order must be immediately confirmed by the physical, formal-legal document proving.

Analysis of literature and the results of observation exercises allow the conclusion that depending on the adopted criterion for putting the of tasks can be realized by the following methods:

1. In terms of choice of methods of planning activities:
  - through WNGO - in the case of application of the method of parallel planning (OPORD is then delivered as quickly as possible),
  - through OPORD - in the case of application of the method further action planning.
2. In terms of participation of the commander in setting tasks:
  - personally by the commander,
  - on behalf of the commander (by his deputy, chief of staff, other authorized officers).
3. In terms of location putting tasks in terrain:
  - on his CP,
  - on CP of subordinators,
  - in the field (during the reconnaissance, the purpose or one of the goals is to place the task in future area of operation).
4. In terms of technical measures to put at tasks:
  - using the technical means of communication (data transmission),
  - by personal contact by voice, video, etc.

It should be emphasized that regardless of how the tasks will be transferred to contractors, the most important is to meet the conditions determined by the objectives of **the command style**. In the proposed process of proving these conditions, the phase of putting tasks to be fulfilled by:

- provide restated mission to subordinates (in 2<sup>nd</sup> point of OPORD),
- the transfer of subordinates supervisor's commander's intent (as one of the elements of its concept of operation),
- define the tasks to subordinates with a clear indication of **what and for what purpose?** subordinate must do, without forcing his way (**how?**) for the task, and thus create conditions for subordinates to demonstrate independence and initiative.

In a network environment related activities occur ACS clearly noticeable changes with respect to previously existing methods and ways of putting tasks. It can be concluded that less importance will be the method consisting in the participation of representatives delegated by him to the commander's direct involvement with the use of information networks and visualizing putting task. Used for this purpose are also a number of sensors that provide the actual image area of responsibility, or

actions, and situational awareness, knowledge and working in the automated systems of command. Putting tasks will be able to **without the need for personal contact with subordinates commanders**, who will remain at their CPs. However, even in conditions of widespread use of ACS should not underestimate the importance of **personal contact commander and his subordinate commanders**, which should take place whenever possible, and do not adversely affect the overall task.

More and wider participation in assisting the process of science proving far easier and quicker implementation of this phase (and not only this phase). Benefits network-centric will therefore in this aspect particularly visible, allowing a very quick transfer of the performers. This will significantly speed up the setting of tasks and shorten this phase to a minimum.

### 3.4. Control

The last, fourth phase of the DMP cycle is the control. In the unanimous opinion of the theorists of the problem this phase as a function of command is particularly important<sup>10</sup>. Control of the process provides for continuity of command, and its results are a reasonable basis to update their data and information about the situation, or assessment of the situation. Allows you to smoothly move to the implementation of the decision-making cycles.

It is widely recognized that the purpose of the control phase is to check the effects of planning and bringing jobs, as well as the manner and effectiveness of their implementation. The implementation phase the responsibility of every commander, who perform it with proper procedures<sup>11</sup>. The literature lists the following measures for the implementation phase of control<sup>12</sup>:

- identify the elements of command and coordination;
- organization of synchronization;
- monitoring the situation;
- taking action/decision to eliminate and reduce adverse events detected discrepancies between planned and current situation.

Facilitates the effective control above all: to identify the determinants of the tasks, a clear definition of the scope and division of responsibilities between different levels of command and elements of the task organization elements.

One of the major projects in the control phase is the synchronization. Synchronization is a coordination effort of troops in time and space. Its essence, in terms of functional, integration means to act as a dynamic system, the necessary elements (causally related) to achieve the desired result, in sufficient quantity, quality, and in due course<sup>13</sup>. Consists of the execution of tasks assigned to each

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<sup>10</sup> J. Kręcikij, *Współczesny proces dowodzenia ...*, page 28.

<sup>11</sup> J. Kręcikij, J. Wolejszo (red.), *Podstawy dowodzenia ...*, page 107.

<sup>12</sup> *Planowanie działań na ...*, page 25.

<sup>13</sup> J. Posobiec, *Koordynacja działań obronnych na szczeblach taktycznych*, AON, Warszawa 2001, page 52.

sub-contractors under one grouping to achieve the level of the superior. Expected through the synchronizing state is therefore such a finding activities of subordinate elements to the result of the effects of interacting with each other was greater than the simple sum of the effects of actions of each individual<sup>14</sup>.

The result carried out by the commander is coordinated action of all task organization elements in space and time in the fight against the plan implemented. It is important that during the synchronization of actions to consider all possible aspects of the conduct of activities under the plan developed in relation to any possible interference (including those unlikely) that may arise as a result of the situation and possible ways of the enemy.

As particularly important for the proper conduct of the control phase should be monitoring the situation. It involves the comparison of planned (*as was supposed to be?*) with the facts (*how is this?*). For monitoring the situation consists of all the projects undertaken by the headquarters (separate teams), and the principal ways of acquiring information, to ensure the smooth and continuous monitoring of the situation, include<sup>15</sup>:

- the collection of reports from subordinates;
- visit subordinate commanders in the field;
- sending control groups (teams);
- functional inspection by specialist of kind of forces.

Information obtained during the conduct of operations are applied to monitor the situation on situational maps and recorded in the supporting documents (charts, tables, diagrams, sketches, etc.) as well as combat operations in the LOGBOOKs. This is the basis portray the actual situation and the detailed analysis and assessment leading to determine whether there are differences, and if so, whether they require additional action. If not, the commander and command post functional cells continue their standard activities related to the implementation of previously agreed action plan. If, found to be a need for change, the commander takes corrective action disclosed derogation. For this purpose, the commander, assisted by his staff, determine what steps should be taken to ensure the further implementation of the plan and take appropriate decisions. After their adoption, they are forwarded to the appropriate subordinates in oral form, or if there is a necessary, by appropriate FRAGOs. Often, in extreme cases, lead by the commander to initiate a new cycle of DMP leading to the elimination of major deficiencies or preparing subordinates to carry out new tasks. This follows from the fact that the commanders and staffs on duty to carry out continuous analysis and evaluation, and the pursuit of the enemy's intentions prior notice.

It should be noted that the functioning of control measures to address the different degrees of conditions resulting from ACS. Verification of intent in the planning phase of the inspection is carried out through the following projects:

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<sup>14</sup> W. Lidwa, *Współdziałanie w walce lądowej*, Marszałek SA, Toruń 2000, page 99.

<sup>15</sup> J. Kręcikij, J. Wolejszo (red.), *Podstawy dowodzenia ...*, s. 108; *Planowanie działań na...*, page 27.

- monitoring the situation,
- taking actions to reduce the difference between planned and current situation.

Studies have shown that each of these projects has a significant impact on the implementation of tasks and how to perform command.

A special role in the determinants of network can be seen in the monitoring of the situation, understood as the totality of projects providing an opportunity to **compare the planned state** (*as was supposed to be?*) with **reality** (*as it is?*). This is the essence of the control of particular importance because it provides the basis to assess whether these differences require additional action. If additional steps are not necessary, the commander and staff continue their usual actions - that is, carry out pre-determined (and forwarded to subordinates in OPORD) plan. If changes are necessary, the commander, assisted by his staff determine what actions (decisions) should be taken. After their identification shall be subordinate with FRAGOs, directed to specific recipients, and changing (correcting) previous tasks contained in the previously submitted orders using ACS.

Multiplicity, and especially the prevalence of sensors and receptors receiving signals on the developments will create a very reliable picture of the activities carried out by subordinates. This property will make evaluations and comparisons of the plans with the facts. Also enable an immediate response of different levels of command and correcting deviations from the OPLANs. Thus, in the control phase will be particularly important exemplification of the properties, capabilities and advantages of the command (management) process.

The results allow for the assertion that the impact will be particularly important in the following areas:

- monitoring the situation on the battlefield, providing imaging of the situation in real time or near real;
- facilitate comparison of the actual state (*as is?*) with a planned state (*as it should be?*) and automated decision problems indicate;
- to generate the potential ways of solving emerging in course of action decision problems (on a similar basis as the creation and assessment of options for action planning);
- preparation and transmission of FRAGOs to subordinates, combining the previously mentioned possibilities for the preparation and submission of documents proving subordinates.

Such opportunities also cause, as mentioned, **the ability to opt out of the contractual phase of the process of command, which is assessment of the situation**. Continuous monitoring of the situation in fact provide the necessary information in real time, and thus meet the requirements that each cell of command post has the current knowledge concerning its area of responsibility.

#### **4. Generalizations and conclusions**

The principles of functioning in the network-centric environment, ACS create new requirements for command, which it must respond and to which the command

should be adjusted. Compliance with these requirements, **within the meaning of all the terms, rates, size and expectations**, should contribute to the constructive transformations in proving that they correspond to network-centric conditions, amounting in their solutions to the command level more effectively and efficiently. Automated Command Systems, under the procedural requirements contained in ensuring clear and consistent understanding of the information, data interpretation, expressed in standardized form (e.g. set design documents, vocabularies of concepts and terms, abbreviations, acronyms, a graphic picture of the situation, tactical signs, symbols, etc.) It is therefore necessary to standardize all the elements used in the process of command to ensure interoperability. This is usually implemented through consistent application of its findings within a particular organizational structure, which in the case of national or allied activities is obvious, but in terms of multinational operations (ad-hoc coalitions) makes it necessary to adopt clear-cut solutions, and above all their consistent application in command.

In the system of command and effective command is dependent on the capabilities contained in the technical area requirements. This applies to the technical capacity to exercise leadership roles (commanding), and staff, thus ensuring quality, continuity, timeliness and fidelity transmission of information, and ensure the viability of the system of command. In terms of contemporary and future warfare requirements of the particular importance to innovation and technological progress as expressed in the concepts of network and the solutions used in ACS. There are located means of command that provide the conditions for the organization and operation of command. In this area, so will the transformation take place, including the largest range of coverage, due to the high demands and needs for action, which may include:

- Introduction of new, resources and communications equipment, command vehicles and staff vehicles, automated command systems, the modernization of existing ones (to obtain compatibility and interoperability of existing ones with new ones);
- The introduction of new technologies, applications, and modernization of existing ones.

The DMP is information and decision-making cycles of projects in which information is the driving force. Information meets the high criteria is the driver of the increase of knowledge and this knowledge **in the area will be the interaction between the participants in the process of command** (both individual - commanders, as well as collective - bodies of command). As part of these interactions will take place to **exchange information, create awareness about the situation worked out space activities and to understand the possible implications resulting from its development**. The environmental of network-centric conditions - it's in the area of knowledge will take place in a joint collaboration to develop a decision affecting the whole command and subordinate activities carried out by force.

In the information domain occur processes creating, processing and storing information. It is in this domain follows the flow of information using ACS between task organization elements and forces in space combat (commands,

command signals, the transfer of superior's concept of operation, etc.). In it also exists a common picture of the situation. While an important component of creating **situational awareness** is the cognitive domain. It is in the area of the domain, due to creative interpretation, analysis, evaluation of data sets and information, there is a key element of the development, which is a decision.

In creating situational awareness in the network-centric environment should be an information system, which plays a crucial role to develop consistency through successive of functional stages in an organized way exploit the information in the command. This will capabilities of ACS in three areas.

- Obtain information (does this mass-occurring layer of sensors, which, through network connections will acquire data from different sources and transported in real time to users).
- Data processing and information (allows relativization, valuation, extracting the information necessary for the purposes of command).
- Sharing, use, storage of information (enables efficient use of information useful, reliable, timely, accurate).

Procuring, gathering, transmission and processing is performed in order to present it to the user. In practice, the quality of the implementation of this function will depend on its use, and – this is related – the possibility of achieving dominance over the enemy. Contemporary experience shows that a very desirable feature in the network-centric environment is *the ability automated command systems for presentation, access to information anywhere, anytime, and with the appropriate scope and level of detail, corresponding to the needs of various levels of command*. Presentation of information on a command post (in the ACS subsystems) is the most important element in creating a common situational awareness in the cognitive domain.

From the viewpoint of the command in the emerging of network-centric environmental conditions occur fairly significant changes which may manifest itself in varying degrees and in all phases of DMP cycle. In this project, special attention was paid to those elements which in the opinion of the author, will play a significant role in the command.

Exponentiation of results obtained by applying ACS ability allows the planning process derived from various sources, transform the information in the process of decision-making appropriate decisions that are made by the subject of weapons systems, command level, the grouping of troops, etc. The resulting comprehensive picture of the situation in near real-time gives base to gain an advantage over the enemy: an anticipation of his actions, to prevent them driving or forcing it to their omission.

In summary, confrontation ACS impact on the command process indicates that in the considered problematic area of influence will be expressed:

1) planning and putting tasks:

- facilitate the evaluation of factors affecting task, because the having more accurate information on time,
- better decision-making conditions, with less uncertainty and risk,
- a faster transfer of tasks to contractors,
- the possibility of almost parallel planning at other levels of command,

2) in the control (as the phases of the DMP):

- facilitate the implementation of the basic tools of control – monitoring the situation, allowing for disposal in near real-time information about the location and activities of their own and enemy troops, and thus the possibility of rapid and effective use of their forces and resources, grassroots organizing,
- the possibility of cooperation at all levels of command.

The automated command support systems, in conjunction with the problems outlined above, the impact on the process of proving, by:

- 1) shortening the time of circulation of information-finding and decision-making at all levels of the organization of troops in sufficient detail to enable overtaking potential opponent in the implementation of *command cycle*;
- 2) significant improvement in the efficiency of command by:
  - increasing timeliness, completeness and reliability of the information source being basic of the planning processes,
  - increasing the credibility evaluation process and reduce the risk of ongoing decision-making and planning,
  - shortening the time required for the implementation of individual projects ongoing on CP,
  - simplify the formal process of DMP,
  - an effective command in conditions of significant reduction staff personnel – also as a result of combat losses,
  - organizational - technical conditions of effective training of command post teams (in using the methods and means of automation).

It should be assumed that the dominance in the field of information becomes apparent fully in the command process (decision making, monitoring of the situation). Automated systems for command, control (control) or the means of destruction, diagnosis, coupled to the network, contribute significantly to achieving a common situational picture available to all participants and the well-known network-centric environment of operation, regardless of where they are deployed. The flow of information, opportunities for mutual communication will contribute ultimately to improve the effectiveness and efficiency of activities. It will also allow the higher level of command to: **analyze, evaluate, and correct** operation of subordinate troops.

Outstanding role in proving the conditions used ACS attributed to modeling and simulation course of action in space dependent on many variables struggle, which is often difficult to estimate. Therefore, the estimated variables and parameters subject to pre-built simulation model will help in the short term decision maker to answer the question as to whether the planned action will reach its expected goal? Is it too low probability of success requires adjustment of existing plans?

The high degree of technical advanced of command process will allow more efficient use of databases. But we can not forget that the decision-maker still remains the man

from whom depends the process of command involving the creative transformation of information into decisions. Increasing computerization and automation of the process of command makes it probably the most unreliable element of network-centric battlefield will continue to be its author and beneficiary – a man, especially since the negative effects of network-centric, automation of command are not yet fully explored. Ability to use modern and often complex applications, systems, IT tools, including their effective use in achieving the objectives and tasks in the process of command, is the area of education, both professional as well as training headquarters. However, that even the best systems for collecting, processing, storage and transmission of information **does not replace in the near term, a man** who is the prime mover and executive in the process of command.

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