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Experience in the formation of the US strategic documents in defense sector

Resume. Analyzed experience in the formation of the US national security strategic documents in the security sector and possible approaches for its use in the strategic planning in the defense and security sector of Ukraine.

Keywords: State security, military policy, strategic planning, national security, strategy, security and defense sector.

The problem statement and its connection with important scientific and practical tasks. In today's security environment where, as mentioned in the new Concept for development of defense and security sector, aggressive Russian actions are carried out for attrition of the Ukrainian economy and undermining social and political stability, destroying our country and capturing its territory, as well as the use of military force and technology of hybrid war, the support of national security and defense of Ukraine, effective crisis response are becoming increasingly important.

The purpose of the article. The article aims to use the experience of one of the leading country in order to improve strategic defense planning in Ukraine and develop new approaches in working out the strategic documents in defense of the state.

The main materials research exposition and full explanation of the results.

Analyzing US strategic documents first thing that attracts attention is a certain difference of terms and concepts commonly used in Ukraine.

Strategic planning of nation's security is a common form of strategic management, which is applied in the European Union and NATO, as well studied and introduced by the new member states and partner countries.

In particular, the theoretical and practical aspects of this problem, and creation of effective system of national security in the United States are worked out a long time.

The subjects of strategic planning in the United States are the President, the Government, the Ministry of Defense and other industry structures in accordance with certain challenges, threats and risks to national security.

The highest level in the hierarchy of strategic documents after the US Constitution belongs to the National Security Strategy, which is approved by the newly elected president. It is a leading document for the executive branch.

The system of national priorities in the changing security environment is based on the US National Security Strategy. The Strategy may vary depending on the situation. The annual

addresses of President of the United States perform the main tactical-corrective function.

In February 2015 a new US National Security Strategy has been announced, which is described on 29 pages and contains six chapters: introduction, security, prosperity, values, international order and conclusion.

The National Defense Strategy and branch strategies of other components of national security, which together form the second level of the system of governing documents for strategic planning, are developed on the grounds of this Strategy.

The National Defense Strategy adopted in 2012 is still used in the USA. It is set out on 8 pages and includes the following chapters: introduction, a challenging global security environment, primary missions of the US Armed Forces, toward the Joint Forces of 2020, conclusion.

In general, the other branch strategies provide counteraction to individual threats to national security.

The US National Military Strategy is developed on the main provisions of the National Defense Strategy and is the basic governing document of the third level of the hierarchy, and is approved by the Chairman of the Joint Chiefs of Staff of the US Armed Forces.

It defines a common procedure for the use of the Armed Forces for the implementation of targets and the ways to implement the goals and objectives.

In June 2015, the US approved a new National Military Strategy. It's a small volume document that holds only 17 pages. The general direction of this document is to maintain US influence in the world and to have powerful, combat-ready armed forces with a constant mix of political, diplomatic, military, economic, ideological and other instruments to influence the situation.

Defense and military strategies of the US are largely based on the conclusions and recommendations of the Quadrennial Defense Review, which is a strategic development plan of the armed forces for the next four years. The four-year review, at the request of Congress, is primarily evaluated by the Main Accounting Office.

The development of this document is governed by the law of the United States "On annual national defense planning" and legal document that defines procedures for US strategic planning at the national level, namely the *Government Performance and Results Act (GPRA)*[4].

The set of guiding strategic planning documents of the US national security has a very clear structure and hierarchy of their distribution on functional and branch classification. At each level of the hierarchy the general, branch and functional strategies are simultaneously formed and implemented.

The US strategic planning is an example of development of the system of guiding documents at the strategic level in the field of national security as well as an introduction of modern methods of strategic planning.

It is appropriate to use in Ukraine an experience of the United States in the development and functioning of the system of strategic planning of security during the improvement process of

strategic planning in the defense and security sector of Ukraine. First of all, it should apply a strict structuring (hierarchy) in working out the strategic documents and should has a clearly foundation at which this document will be based on.

The important and necessary steps which will serve as an improvement in strategic documents sphere are to:

fixate the legal level the guidelines and requirements to develop a strategic document and its formalization in appropriate forms;

develop and approve a unified conceptual apparatus in the system of strategic planning in the defense and security sector, such as so-called "The NATO Dictionary";

develop the common guidelines and appropriate legal act on the organization and strategic planning in the defense and security sector of Ukraine.

Conclusion. Priority for Ukraine in the current security conditions is to achieve harmonization of strategic planning in the defense and security sector of Ukraine strategic planning process with the relevant authorities of States - members of NATO, which will facilitate future entry to Ukraine's membership in the Alliance [2].

In terms of activity of state bodies of Ukraine rethink and clarify the strategic documents governing the activities of security and defense sector, as well as the relevant decisions of the management of the state is to use advanced approaches and standards of Euro-Atlantic space in this area.

The direction of future research. A prospect for further research in this direction is to study the best practices of strategic planning and implementation of other states in its defense and security sector of Ukraine.

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Опыт формирования стратегических документов США в секторе безопасности

Резюме. Проанализированы опыт формирования основных стратегических документов национальной безопасности США и возможные подходы его использования в процессе стратегического планирования в секторе безопасности и обороны Украины.

Ключевые слова: безопасность государства, военная политика, стратегическое планирование, национальная безопасность, стратегия, сектор безопасности и обороны.

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Preventive use of force in international relations

Resume. The article deals with the legal scope of military force in international relations, including proactive and pre-emptive military action.

Keywords: pre-emptive action, preventive actions, threshold of using force, international legal justification of using force.

Formulation of the problem. Consideration of actions to prevent international relations, advance neutralize threats requires defining the boundaries of legitimate actions to unrestrained desire to ensure their own safety not become a selfish realization of their own interests at the expense of others. That resolve problems precautionary largely determined by the balance of legitimacy and legality. So you need to understand what prevention and how it can be realized through the use of military force.

The purpose of the article. The article is to outline the content and timing analysis and proactive preventive self-defense. Bringing non existing international law concepts of preemptive and preventive self-defense.

Presenting main material. Today, the theory of international law widely disputed institute new forms of self-defense: prevention and prejudice. In terms of international law a broad interpretation of the right to self-defense is contrary to the very spirit and letter of the UN Charter, which aims to limit the maximum force. A number of scientists (I. Brownlie, A. Cassese, A. Randeltshofer) believe that in this case the existence of parallel recognition of customary law of self-defense would reduce to nothing the principle of non-use of force (Art. 4 of the UN Charter) and the activities of the UN Security Council to support international peace and security. An important argument against expanding the interpretation of the right to self-defense is that the self-bias impossible to apply the principles of proportionality and proportionality, since it is unknown what exactly would the alleged armed attack and its consequences, therefore, can not be selected and adequate measures.

Thus proactive action - initiating hostilities is inevitable attack by the enemy, who can use their already effectively deployed forces and means. In any case, the challenge ahead of the curve implies a rapid resolution of the situation, but does not create conditions for resolving conflicts for a long time; actions in advance, held only by the inevitable attacks of the enemy, to prevent the receipt of benefits in strikes first.

Preventive actions are conducted states against states, and because they do not involve recourse to international institutions for conflict resolution, their driving is always contrary to positive international law. Therefore, the

doctrine of international law is almost always pre-emptive war is declared aggressive, but its implementation only if authorization by the Security Council “preventive use of military force is permissible only collectively under the procedures provided for in Chapter VI of the Charter of the UN, and only after violent means have failed”.

Nowadays preventive action received new meaning in connection with changes in the organization of the international community, corresponding changes in the nature of conflict and the need to counter international terrorist threats. The object of the preventive use of force is not the state, and the elements of the terrorist infrastructure that is not formally associated with the states. Preventive war may not include preventive actions that are directed exclusively against enemy forces, and limited long-term prevention of hostile acts or the intentions of the enemy. On the last point of pre-emptive war is very close to preventive self-defense against the enemy's intentions.

As a special form of warning should identify steps to prevent the enemy's intentions - the destruction of certain elements of infrastructure of the enemy, notice of such action the world community. A typical example of such action may be the destruction of the Israeli Air Force Iraqi reactor under construction complex in Osiraku in 1981 to prevent Iraq deployment of nuclear weapons. In 1980, in the initial period of the Iran-Iraq War (1980-1988) for this project already inflicted blows armed forces of Iran.

The application of the doctrine of public warnings as part of its policy is undoubtedly appropriate to legitimize the use of military force. This is the difference between the action to destroy elements of military or terrorist actions of infrastructure deployed to destroy enemy military units. Making beats, warning always viewed by the State as a means of force, but it also always accompanied by measures to conceal information because the opponent must be prepared to repel them. Thus, unlike the actions, warning, warning forceful intent alleged enemy pursued by the state notice to the international community about its goals. Sometimes such actions are defined as “strategic warning”.

Thus, the main feature that distinguishes the preventive action of prejudice, is that first made against states, and some are specific military means for a decisive blow against the forces of the enemy forces. If characterizes prejudice as to the operational level response to imminent danger, the prevention-strategic. This is a response to the threats developing in the future.

The history of the use of force in international relations shows that the state has never denied opportunities actions bypassing the UN Charter and procedures attacking prejudice and driving preventive actions. However, each such use of force is always doomed to wear the label of “unlawful”, and the state will always lie burden of proving that its actions are carried out for the benefit of the international community. In this state in his official arguments continue to use the literal interpretation of Art. 2, thereby declaring that they do not recognize any whose right to use force outside the rules of the UN Charter.

Therefore, in our opinion, can hardly agree with the opinion of some experts that "after the adoption of the Charter of the United Nations with its principle of non-use of force in international law there are no bases for either proactive or for preventive self-defense, especially the concept of impact that proactive generally artificially transferred part of international lawyers in international law of the tactical arsenal and terminology of the war, which opens a wide field for abuse of power".

The right of states to proactive action in various forms is justified under the UN Charter, but these limits can not be rigidly formalized due to lack of a common objective basis for qualifying the actions of states. To detect such an objective basis necessary to carry out a legal analysis of cases appeal states to proactive action in respect of objects of force.

Conclusions and recommendations for further research. Contemporary international law recognizes only legitimate basis of self-defense armed attack that took place. All other situation, including the threat of attack, only give reason to individual states to appeal to non-military means and increase their own defense, and can be the basis for the use of collective action under UN Security Council decision.

Legal nature preventive and proactive strikes different. Thus, the concept of preventive defense goes beyond the concept of proactive strikes and involves only the use of force against threats that are formed. The adoption of such a concept as a new basic principle would for the existing order Addictions consequences, and the right to self-defense, as it is understood in the UN Charter, generally ceased to exist. Therefore, there is need for a definition of armed attacks and setting clear criteria for self-defense.

Based on the analysis made the following conclusion can be made about the legality of proactive and preventive military measures: the use of armed force by state or group of states is possible only in response to an armed attack; proactive and preventive military measures as may be the case but, according to the UN Charter, only after proper authorization from the Security Council.

It seems that one of the ways to solve disagreements about the interpretation of the grounds for self-defense is to fill existing gaps and correct inaccuracies wording, namely: the need to clarify what constitutes an armed attack within the meaning of Article 51 of the UN Charter as dowry begins: only after or direct military strikes at the stage of preparation for an armed attack; equating attacks to armed attack requires making clear criteria for the attack, in response to which may use self-defense.

For a deeper analysis of an integrated consideration of this issue, taking into account different aspects: linguistic, historical, legal, doctrinal, legal, military and political.

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Превентивное применение силы в системе международных отношений

Резюме. Статья посвящена рассмотрению правовой сферы применения военной силы в системе международных отношений, в частности упреждающих и превентивных вооружённых действий.

Ключевые слова: упреждающие действия, превентивные действия, порог применения силы, международно-правовое обоснование применения силы.

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Supersonic and hypersonic aircraft aerodynamic control surfaces transonic flutter

Resume. The article considers the possibility of supersonic and hypersonic aircraft aerodynamic control surfaces oscillation on transonic. On the basis of approximate mathematical model of this phenomenon shows that transonic flutter is possible at any flight level.

Keywords: mathematical model, control surfaces, oscillation, transonic speed, *M* number.

The problem. Supersonic and hypersonic aircraft flight security at transonic is real problem. There was a lot of crash caused by peculiarities of airfoils transonic flow. Aerodynamic control surfaces transonic flutter is one of them.

Analysis. There are a lot of transonic flutter experimental and theoretical studies. Theoretical and experimental of this phenomenon the subject of many publications that offered a variety of approaches to study the causes of intense vibrations of supersonic aircraft aerodynamic control surfaces on the flight speeds. Some tests showed initial aerodynamic control surfaces vibrations exciting which erase due to the construction elasticity another construction vibrations forms, for example "the fin - the aerodynamic control surface". The destruction time of the aircraft in transonic flutter is 0.5 - 1.0 s.

The purpose. To assess the principle possibility of supersonic aircraft transonic flutter exciting at transonic speeds and to assess the M numbers of flight, this may cause the transonic flutter.

Statement. Back ground of transonic flutter exciting is mathematical model described equation of the aerodynamic control surfaces exciting hinge moment occurs through the interaction of the shock waves and its angular velocity. Distributed hinge moment at the zero angle of attack airfoil is determined by the equation

$$\overline{M}_c(\dot{\delta}) \approx \Delta P_0 \left[1 - \frac{1}{2}\frac{b_k}{b_1}\overline{\omega}|\dot{z}(t)|\right]\frac{b_k^2\overline{\omega}\dot{z}(t)}{\left[1+\overline{\omega}|\dot{z}(t)|\right]^2}.$$

ΔP_0 - the maximum pressure of the supersonic flow on the control surface airfoil at subsonic M numbers when the shock waves are located on the rear edge of the airfoil;

b_k - aerodynamic control surfaces chord;

b_1 - distance from the airfoil maximum thickness line to the rear edge of the airfoil;

$\overline{\omega}$ - Strophe number;

$\dot{z}(t)$ - dimensionless group parameter which determined by aerodynamic control surface vibration level and the airfoil and aerodynamic control surfaces data.

The Strophe number in this equation is determined by the dimensionless ratio

$$\overline{\omega} = \frac{\omega b_k}{V},$$

ω - the elastic aerodynamic control surfaces vibrations circular frequency;

V - air flow velocity,

and dimensionless group parameter is

$$\dot{z}(t) = \frac{b_1}{b_k\varphi_0\omega}\dot{\delta}(t),$$

$\dot{\delta}(t)$ - the aerodynamic control surface vibrations coefficient;

φ_0 - the maximum supersonic flow angle at the airfoil the surface without aerodynamic control surface vibrations.

Aerodynamic control surfaces exciting hinge moments equation provide non-linear dependence - at low vibration amplitudes of aerodynamic hinge moment control surface will increase and after then it will decreases.

The conditions of the transonic flutter exciting could be provided by comparison of the exciting moments and damping aerodynamic control surfaces hinge moments at $\dot{\delta}(t) \to 0$.

Moreover, this comparison could be performed without structural damping forces

considering, as in the calculation of the classical (two-stage) flutter parameters.

In this case, the dependence of the distributed exciting hinge moment from the aerodynamic control surfaces amplitude could be determine by a linear equation

$$\overline{M}_c\left(\dot{\delta}\right) \approx \Delta P_0 b_k^2 \overline{\omega} \dot{z}(t) \approx \Delta P_0 \frac{b_k^2 b_1}{\varphi_0 V} \dot{\delta}(t).$$

A value of distributed aerodynamic control surfaces hinge moment due to the aerodynamic damping forces could be determine from the known dependence [1]

$$\overline{M}_a\left(\dot{\delta}\right) = -\frac{3}{16} C_y^{\delta} \rho_H V b_k^3 \dot{\delta}(t),$$

C_y^{δ} - air lift coefficient to the angle of aerodynamic control surfaces:

ρ_H - air density at altitude.

The condition of supersonic aircraft aerodynamic control surfaces transonic flutter is

$$\frac{\overline{M}_c\left(\dot{\delta}\right)}{\overline{M}_a\left(\dot{\delta}\right)} \geq 1{,}0 .$$

After the transformation of the hinge moment's relationship on the known dependence was obtained

$$\frac{\overline{M}_c\left(\dot{\delta}\right)}{\overline{M}_a\left(\dot{\delta}\right)} = \frac{16}{3} \frac{(M_1 - M_\infty) b_1}{C_y^{\delta} \varphi_0 k M_\phi^2 b_k} \geq 1{,}0,$$

M_1 and M_∞ - the maximum *M* number of local supersonic flow at the airfoil surface and the *M* number of laminar subsonic flow when shock waves achieved to rear edge of the airfoil;

k - adiabatic index (taken for air k =1,4);

M_ϕ - subsonic M number of the laminar air flow when the transonic flutter occurred.

As a result of calculations in accordance to provided dependencies for typical thin airfoils with a relatively thick ($\bar{\tau} = 0{,}04 - 0{,}06$) at $C_y^{\delta} = 2\pi$ it is

$$\frac{\overline{M}_c\left(\dot{\delta}\right)}{\overline{M}_a\left(\dot{\delta}\right)} = (2{,}8 - 3{,}7) \frac{b_1}{b_k}.$$

Given that it is always $b_k \leq b_1$, obtained results show that the supersonic and hypersonic aircraft transonic flutter could be excited at the any altitudes.

That possibility is observed at $M_\phi \approx$ 0,91 – 0,96.

The crash of Virgin Galactic Space Ship Two hypersonic suborbital aircraft on October 31, 2014 has been occurred at the same M number. So, the possible cause of the disaster is transonic flutter.

Conclusion. At low amplitudes of the aerodynamic control surfaces vibrations, that is $\dot{\delta}(t) \to 0$, the aerodynamic damping hinge moment is always less then exciting hinge moment caused by shock waves.

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Трансзвуковой флаттер аэродинамических поверхностей управления сверхзвуковых и гиперзвуковых самолетов

Резюме. В статье рассмотрена возможность возникновения колебаний аэродинамических поверхностей управления сверхзвуковых и гиперзвуковых самолетов на трансзвуковых скоростях полёта. На базе приближённой математической модели этого явления показано, что возникновение колебаний возможно на всех высотах полета.

Ключевые слова: математическая модель, аэродинамическая поверхность управления, колебания, трансзвуковая скорость, число *M*.

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Problems of informative safety of subjects of ménage in Ukraine and possible ways of their decision are in modern terms

Resume. In the article a problems of economic and informative security of subjects of ménage is considered in Ukraine, and also possible ways of their decision in modern terms.

Keywords: economic security, informative security, subjects of ménage.

Raising of problem. In the modern terms of ménage enterprise of Ukraine function in a difficult, fleeting environment, which stipulates strengthening of informative safety, requirement in providing which especially sharply stands in the conditions of geopolitical instability in Ukraine. Exponential increase of amount of crimes in economic and informative spheres, swift distribution of the systems of electronic circulation of documents, appearance of global databases (including. - the personal and commercial information), require the constructions of the reliable system of informative defence of subjects of ménage, as an element of informative policy of the state.

On a way forming of the effective system informative, economic and financial security of enterprises there is a low level of their state, that conditioned by absence of known domestic programmatic foods (so-called SOFT), by inefficiency of the system of state administration in these spheres, insufficient by an orientation on defence of national interests in informative, economic and social spheres, and also inconsistence and unsystematic of realization of economic and other reforms, imperfection of national legislation in relation to providing of informative safety and effective management an economy; an insufficient level of qualification of civil servants is from the questions of national safety and her constituents; a corruption is in administrative structures.

To the primary functional purposes of economic security enterprises belong providing of defence of informative resources and informative field, commercial secret and achievement of necessary level of the informative providing of work of all subdivisions and departments of enterprise.

The purpose of the article is research-and-development of processes of providing of informative safety of subjects of ménage suggestions in relation to defence of informative resources and informative field, commercial secret and achievement of

necessary level of the informative providing of work of all subdivisions of enterprise due to the use of domestic programmatic foods.

Exposition of basic material. Informative safety of enterprise is characterized by the level of security of subject of ménage, is basis of construction of foundation for providing of necessary terms of steady development of enterprise and state on the whole. A main condition of informative safety of enterprise is ability to resist to the existent and nascent dangers and threats, what capable to inflict financial harm to the enterprise or assist to the undesirable change of capital, forced liquidation of enterprise structure and others like that.

As computer systems are straight computer-integrated in the informative structures of modern enterprise, facilities of defence must take into account the corresponding forms of presentation of information. It means that the systems of defence must provide safety at the level of informative resources, but not separate documents, files or reports. Informative safety of enterprise it follows to examine in the context of forming of safe terms of existence of information technologies, which include the question of priv, construction of effective informative infrastructure, informative market and creation of safe terms of existence and development of informative processes. In fact, informative defence is the meaningful constituent of the informative system of finances and record-keeping and presents one of main functions of modern control system of subjects of ménage.

Programmatic foods can become the source of threats and calls “1C”, which inculcates, will realize and the Russian company “1C” accompanies. The system of the programs “1 C: Enterprise” is intended for automation of management and account on the enterprises of different industries, types of activity and types of financing, includes for itself a decision for complex automation of productive, trade and service enterprises, foods for the financial management of holdings and separate enterprises, conduct of record-keeping (“1 C: Book-keeping” the known registration program in a number of countries), calculation of pay-envelope and administration of personnel’s, for an account in budgetary establishments, various branch and specialized decisions, worked out by a firm “1C”, her partners and independent organizations.

*Possible risks are for the enterprises of Ukraine***.** By the feature of functioning “1 C Enterprise 8” is circumstance that a code of platform is closed and without participation of developer (STALEMATE “1C”) of decision of all technical questions (automation of productive and trade enterprises, financial organizations, enterprises of sphere of service and others like that; support of operative management an enterprise; automation of organizational and economic activity; conduct of record-keeping; support of multicurrency account; decision of tasks of planning, budgeting and financial analysis; calculation of pay-envelope, management a personnel) it appears not simple. Such construction of the program enables to carry out intent control from the side of foreign developer of programmatic foods after

all aspects of registration activity of the Ukrainian business entities.

Besides, on the order of the Ukrainian government, that is specialized on a privy, research, sacred to safety in relation to the use of developments of "Laboratory Kaspersky" in the Ukrainian public organs, were conducted one of companies. The conclusions of experts are categorical - enough an antivirus can remotely block work of computers and uncontrollably to pass to data of users the special services of Russian FEDERATION. In addition, the use of anti-virus foods of production of "Laboratory Kaspersky" carries high risks in relation to an uncontrolled information transfer from the personal COMPUTER users on the servers of company with possibility of the further use of this information, including the transmission of her to law enforcement authorities and power structures. All foods to the antivirus of "Laboratory Kaspersky" work in the system with the greatest priority and can not be limited or controlled by any external software or operating system. During work foods conduct the exchange of data with servers, located in the USA and Russia. All data which are passed leave from a computer in cipher and can not be analysed.

Analogical informative risks are constrained with the use of the book-keeping program "Sail", which is used in Ukraine by most budgetary establishments, id est can have a direct informative access to the state budgetary indexes. The developer of the indicated program is also a foreign (Russian) producer - Corporation "Sail", which was created in 1990 year. By then her founders passed service in the computer centre of the Main staff of military-marine fleet of Russian Federation. In Russian Federation programmatic foods of corporation are used in the federal and regional organs of power, organs of local self-government, budgetary and commercial establishments.

Thus, it is possible to draw conclusion about scale foreign expansion at the market of Ukrainian book-keeping SOFT, which disturbs from the point of view of general national safety.

*Possible ways of decision of problem***.** Government of Ukraine within the framework of implementation of decision of national security Council defensive of Ukraine in September, 2015 charged to Government service of the special connection and privy of Ukraine immediately to eliminate the use of Russian software, disconnect updating of all Russian programs. As reported in Press-service of Government, such commission is wired for sound during a governmental conference: there "Is direct prohibition on the use of Russian software". The question is about company "Laboratory of Kaspersky" software. To state service of the special communication and telecommunications it was incumbent immediately to disconnect updating of the programs, their purchase and use in the organs of power.

In Ukraine there are own domestic specialists which are able to work out the original book-keeping program. Only, that is needed, it is creation of the proper terms, namely: establishment of government order for development of the corresponding book-keeping program; total prohibition on the use of

foreign software of ménage subjects and by supervisory fiscal organs.

Introduction of the offered measures will allow to do concrete steps to creation of the system of economic and informative security of subjects of economic activity, enterprises of different pattern of ownership, national economy and society in general.

Further research should be devoted to analysis and substance specific measures for the development of national software for manufacturing enterprises, budgetary institutions, institutions, infrastructure, financial institutions, defence agencies and other institutions ensuring national security of the state.

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Проблемы информационной безопасности субъектов ведения хозяйства в Украине и возможные пути их решения в современных условиях

Резюме. В статье рассмотрено проблемы экономической и информационной безопасности субъектов ведения хозяйства в Украине, а также возможные пути их решения в современных условиях.

Ключевые слова: экономическая безопасность, информационная безопасность, субъекты ведения хозяйства.

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Ground of recommendations in relation to balancing of forces and facilities of subsystems of fire defeat of opponent

Resume. The article is devoted the ground of recommendations in relation to balancing of forces and facilities of subsystems of fire defeat of opponent for maximally possible realization of their potential, which are based on a construction functionally of organizational chart of the system of fire defeat of opponent taking into account factors which influence on possibility of separate functional element in the process of fire defeat of opponent.

Keywords: rocket troops and artilleries, fire defeat, balancing of forces and facilities, separate functional element.

Rising of problem. Military conflicts of for some time past, including Anti-terror operation on the east of Ukraine found out the row of tendencies which substantially influence on the result of battle application of the soldiery forming, including rocket troops and artillery. To such tendencies belong: substantial diminishing of time of cycle of exposure-defeat, increase of particle of provided for by the plan not tasks in relation to the fire defeat of opponent, transience of battle collisions, increase of fate of the so-called no classical methods of application of the soldiery forming, as partisan, raid, diversionary reconnaissance actions. The noted tendencies stipulate the necessity of revision of the methodical going near organization of battle application of the soldiery forming on the whole and fire defeat of opponent in particular.

By a basic problem in relation to organization of battle application of the soldiery forming especially during the fire defeat of opponent, in opinion of author, there is absence of such methodical approaches, which would allow balancing possibilities of all of constituents of the soldiery forgings which take part in the fire defeat of opponent.

Thus, **the purpose of the article** is a ground of recommendations in relation to збалансування of forces and facilities of subsystems of fire defeat of opponent for maximally possible realization of their possibilities.

Exposition of basic material. For adequate збалансування of possibilities of subsystems of fire defeat of opponent it is necessary to define such indexes of the noted possibilities which will be identical after by an index for all of subsystems of fire defeat of opponent. For this purpose it is suggested to utilize the new aggregate of indexes, which characterizes certain dynamic work with an object for a defeat.

On the whole for збалансування of forces and facilities of subsystems of fire defeat of opponent it is necessary to define possibilities each of subsystems in relation to «treatment» of objects for a defeat. In future defining a subsystem with the least possibilities to define how many possibilities is in «surplus» in other subsystems. Whereupon or to show out part of forces and facilities, those subsystems of possibility of which appeared in surplus, in reserve or to fill

up forces and facilities (at presence of) that subsystem where appeared not enough possibilities.

By an important moment which must be taken into account there is a functionally organizational association. To the most widespread types of functionally organizational association belong centralized (платформоцентричне) and мережевоцентричне. The results of research of the noted associations testify that at the centralized association of possibility in relation to implementation of tasks from the defeat of objects of opponent $\lambda_{в(ц)}^{(м)}$ will consist of possibilities of separate chains which in same queue will be determined a that subsystem in a chain which will have the least possibilities. At the same time, at the мережевоцентричному association of possibility in relation to implementation of tasks from the defeat of objects of opponent $\lambda_{в(м)}^{(м)}$ will be determined a that subsystem which will have minimum possibilities.

During збалансування of possibilities of subsystems it is necessary to turn on two important moments. At first in practice, as a rule, a homogeneous association is not, it is mixed, that part of forces and facilities is incorporated it is centralized, and part of мережевоцентрично. For the second, it is necessary to take into account intercommunication of the productivity of subsystem, which is expressed through intensity of «treatment» of object for a defeat and firmness of subsystem which is suggested to express through intensity of waivers of «treatment» of object for a defeat μ. It is thus suggested to determine intensity of refuses after possibilities of opponent to execute a task in relation to the defeat of objects of our troops.

For determination of order of associations of forces and facilities of subsystems of fire defeat of opponent it is suggested to build a functionally organizational chart. Thus under the separate functional element of subsystem of fire defeat of opponent it is suggested to understand such object (group of objects) which is able independently to execute typical for the subsystem of fire defeat of opponent of task.

An analysis of functionally organizational chart of the system of fire defeat of opponent is taking into account factors, which influence on possibility of separate functional element in the process of fire defeat of opponent testifies that such construction can allow to define on the whole possibilities of the system of fire defeat of opponent and after a necessity to redistribute separate functional elements for to their functional copulas. Besides, the analysis of the noted chart will allow to define possible (necessary) reserve of forces and facilities of subsystems, through a leading out in reserve of certain amount of forces and facilities which appeared in surplus.

On the whole general order of збалансування of forces and facilities of subsystems of fire defeat of opponent for maximally possible realization of their possibilities it is possible to present as блок-схеми in which it is suggested to represent the sequence of operations from determination of possibilities of separate functional elements, subsystems and system of fire

defeat of opponent on the whole and the proper expedient distributing depending on their level of possibilities.

Conclusions. Thus, in the article ground of recommendation in relation to збалансування of forces and facilities of subsystems of fire defeat of opponent for maximally possible realization of their possibilities. Noted збалансування is based on the construction of functionally organizational chart of the system of fire defeat of opponent taking into account factors which influence on possibility of separate functional element in the process of fire defeat of opponent.

Application of the noted recommendation will allow promoting the degree of realization of possibilities of both separate subsystems and system of fire defeat of opponent on the whole due to the redistribution of functional connections between separate functional elements. Also introduction of the noted recommendation can allow determining the necessary (necessary) level of reserve of forces and facilities of subsystems of fire defeat of opponent.

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Обоснование рекомендаций относительно сбалансирования сил и средств подсистем огневого поражения противника

Резюме. Статья посвящена обоснованию рекомендаций относительно сбалансирования сил и средств подсистем огневого поражения противника для максимально возможной реализации их потенциала, которые основываются на построении функционально-организационной схемы системы огневого поражения противника с учетом факторов, которые влияют на возможности отдельного функционального элемента в процессе огневого поражения противника.

Ключевые слова: ракетные войска и артиллерии, огневое поражение, сбалансирование сил и средств, отдельный функциональный элемент.

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Assessing technology solutions to create hardware and software platforms information infrastructure Ministry of defence of Ukraine

Resume. The article assessed the latest technological solutions, software and hardware to create a software and hardware platform Information Infrastructure of Ministry of Defence of Ukraine, the main component of which have to become the data center. The tasks and principles of construction of the data center in the Armed Forces of Ukraine were considered, defined its basic components and technological solutions that are offered on the market by leading manufacturers.

Keywords: information infrastructure, software and hardware platform, data center.

Formulation of the problem. The transition to new strategies of implementation the state information policy in Ukraine and use information in civil and military sectors shows that at present our country can't claim to be competitive without effective information infrastructure [1].

Today, the development of information technology determines the successful functioning of the political system because it allows control over political processes, prevent social and political conflicts. Increasing of accuracy, reliability of information, the most effective use of information resources, external and internal information channels increase the firmness of the political system and stability of socio-political development of the country.

Therefore, it is urgent problem of informatization of the Armed Forces of Ukraine, one of the directions which is to create the information infrastructure of the Ministry of Defense of Ukraine.

Analysis of recent research and publications. The issues of implementation of information policy and the use of modern information technology in the Armed Forces of Ukraine are rather unexplored in the works of local and foreign scientists, but some researchers have devoted their work to this theme, such as Turchenko U.V. [3], Tsymbaliuk V.S. [4], Yarochkyn V.I.[5], Pastukhov O.V. [2].

The purpose of the article is an assessment of modern technology solutions, software and hardware to create a software and hardware platform information infrastructure of the Ministry of Defense of Ukraine.

Presenting of main material. Informatization of the Armed Forces of Ukraine is a part of informatization of the state and includes the process of creation, implementation and application of modern methods and means of receiving, processing, storage, transmission and use of information in different spheres of their activity in

peacetime and wartime. This involves the creation of information infrastructure of the Ministry of Defense of Ukraine, further development of information and telecommunication networks of the Armed Forces of Ukraine, the implementation of Unified automated system of the Armed Forces of Ukraine [3].

Software and hardware basis and the main part of the information infrastructure of the Ministry of Defense of Ukraine should be a data center (DC) of the Armed Forces of Ukraine.

The main functions of the Armed Forces of Ukraine data center must be providing of guaranteed data integrity, continuous operation of application systems, tasks and services, continuous readiness and accessibility of information for users.

The tasks of the future data center of the Armed Forces of Ukraine are:

- providing technological resources in accordance to the growing volume of information processed;
- ensuring the rapid introduction of new systems;
- ensuring of guaranteed data storage, backup and recovery;
- increasing of performance storage systems and their optimization;
- maintaining continuity of processes and scalability of information infrastructure.

Approach to creating data center of Armed Forces of Ukraine should be based on such principles as:

- complexity, that include a full range of activities considering the integration of all components into a single information infrastructure;
- multivendor, namely each component of data center can be implemented at the base of hardware or software from different manufacturers that will create optimal solutions in terms of functionality.

The components of the modern data center, shown in fig. 1.

When you create a data center at first the engineering infrastructure is built and then is designed network infrastructure. The main stages of designing DC the Armed Forces are shown in Table. 1.

Table 1

№	Name of stage	Key actions at this stage
1	Development of technical requirements for the DC	The formalization of the source data, the definition of basic requirements. Development of technical solutions
2	Development of conceptual project of DC	Evaluation of the budget for the project implementation and operating costs. Definition of DC premises previously developed taking requirements into account
3	The choice of DC premises	Clarification of the source data, detailing of technical requirements for all systems
4	Development technical assignment for the design	The design of all subsystems in the data center
5	Development of Detailed Design DC	Preparation of DC premises through construction task
6	Project implementation	Supply of equipment and materials. Construction works. Adjustment works. Training of personnel DC
7	Commissioning and acceptance into operation	Conduct acceptance tests. Providing operational documentation

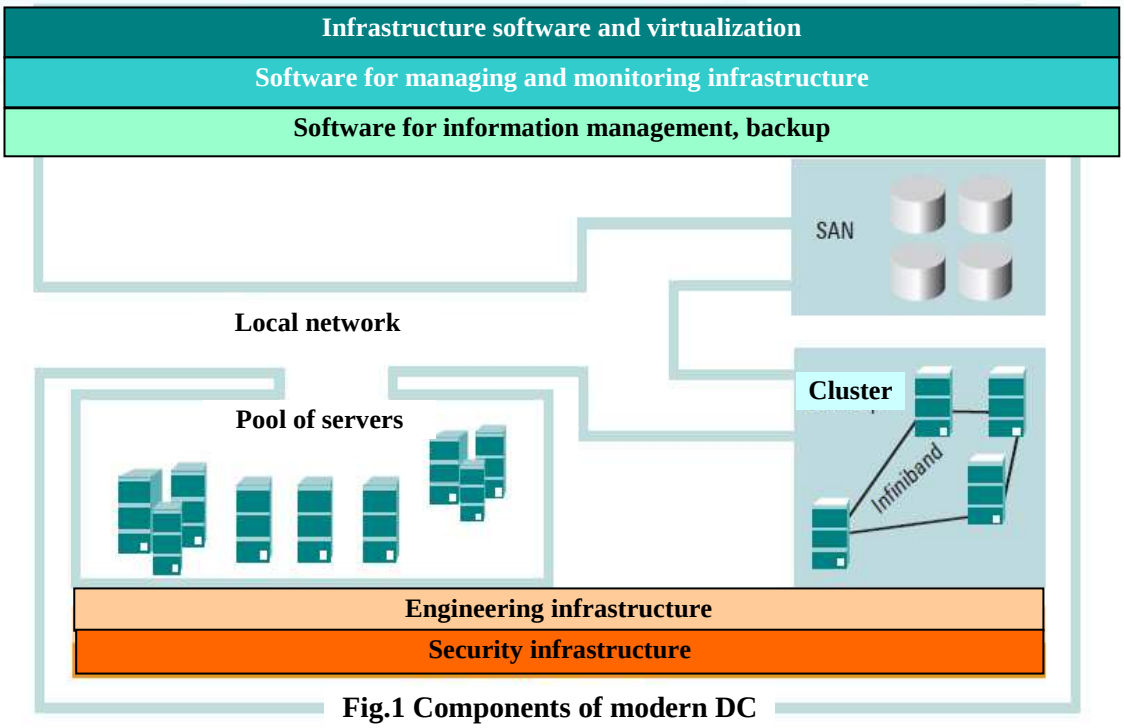

Fig.1 Components of modern DC

Engineering Infrastructure of DC is responsible for communications, power and cooling and provides a smooth and reliable operation of information systems. The choice of equipment and design of engineering systems is conducted from the perspectives of further development of DC, and based on the requirements of reliability and availability of information services.

Decisions on engineering maintenance of data center must be designed to reduce the probability of the idle of information systems that can be conditioned by equipment failure, planned preventive works or failures that caused by errors of personnel.

Engineering DC infrastructure must include the following components:

- systems of general and uninterrupted power supply with execution of performance requirements of power quality and continuity;
- climatic equipment to providing required values for temperature and humidity in a given range throughout the volume of DC premises;
- cable system to create reliable physical communication lines of guaranteed quality between DC facilities;
- assembly constructs for placement of the server and switching equipment of DC;
- raised floor of DC to placement communications, power cables, pipelines of systems to support climatic parameters, distribution of cold air, laying cable lines in the premises of DC;
- grounding system of DC for providing the connecting of DC equipments to the grounding tire;
- fire extinguishing system.

There are possible solutions from different vendors regarding to build engineering infrastructure that shown In Table. 2.

Table 2

Complex solution	Rittal, APC, BTICINO
Uninterrupted power supply	Eaton. APC, Neuhaus
Climate-control	Stulz, Uniflair, Emicon, Liebert
Structured cable system	Legrand, Corning, AMP, R&M
Assembling constructs 19''	Rittal, Електросила, Conteg
Raised floor	Uniflair, Jansen

System of monitoring and management of engineering infrastructure - is an intelligent automated system designed to monitor key parameters of the DC functionality. The system operatively inform the dispatcher if they approach the critical values . Also, the system must have a function of control the operation of engineering equipment and provided for opportunity of automatic prevention of accidents by preset algorithms [4].

System of monitoring and management of engineering infrastructure consists of the following components.

Lower level:

- sensors of DC engineering subsystems;
- interface converters to collect information from sensors of engineering subsystems;
- sensors for monitoring climate parameters in server racks in the DC premises;
- current transformers for control of electricity supply parameters in the DC as a whole and each consumer individually.

Middle level (level automation):

- a network of programmable logic controllers that use open technologies and standard protocols (ModBus-RTU, Ethernet, Bacnet et al.);

The upper level (visualization level):

- automated workplace of dispatcher that provides a convenient interface to access the DC controlled parameters.

Server equipment is the core of the data center. The server park should be very productive and the reserved, easily manageable and scalable, and economical in terms of energy consumption.

Servers that are marked for specific information systems are most often used inefficiently; in most cases their useful load does not exceed 10-15%. Thereby, over 70% of DC computing power actually idle.

To resolve this issue it is advisable to use of virtualization technology [2].

Server virtualization allows you to create multiple virtual machines on a single physical server, each of which solves a separate problem. Thus, on the same physical server at the same time can run multiple virtual servers that increase its cumulative and useful load. As a result, the degree of using application servers can grow to 70-80%, which will allow reducing the total number of servers in the DC and reducing the cost of purchase and maintenance.

To ensure safe storage, high availability and efficiency providing of large amounts of information, are used storage systems (SS) in the DC. To connect the SS to servers appropriate to use storage area network, because direct connection of storages limits the opportunity of scalability and manageability.

It is possible to use a multilevel data storage model for efficient storage

of large amounts of information. This concept provides a hierarchical division of information depending on the level of demand of users [5].

System backup and recovery is a software and hardware complex that allows you to prevent the loss of information in case of failures in the equipment, and as a result of software bugs or errors of users. The system should allow storing data in the DC in full. This ensures complete recovery of information in the shortest possible time, reducing DC downtime and associated material damage.

Within the project of creating a DC can use modern backup systems that support all kinds of remote copying, mirroring and replication data (including in real time) from various sources using tools for easy management of copying in conditions of heterogeneous information infrastructure.

Design and deployment of network infrastructure is one of the most critical steps in creating DC, since only properly planned network can ensure optimal availability and performance, security of its resources, uninterrupted users access and continuity of business processes. Network infrastructure of DC must be realized using switched fabric that connects the various components of the BC: applications, servers, specialized devices, storage systems and users.

Possibly to highlight four key components in the network architecture of DC:

- a network of high-performance computing to ensure the interoperability of servers in high performance clusters;
- storage area network for consolidation of storage resources so they can be distributed and used more effectively;
- network of interconnection with backup DC, that connects a primary and backup DC by optical or traditional networks and provides replication and mirroring of data;
- access network that provides secure access for users.

The smooth operation of all components of the DC is not possible without special solutions regarding physical and information security. Systems of physical security of DC protects equipment from fire and thermal damage, the effects of water and flooding, and electromagnetic radiation. In addition, the physical security systems of DC prevent entry of unauthorized persons and unauthorized access to equipment [2].

To provide information security stored and processed in DC should use the experience and technology of leading manufacturers. The decisions must guarantee protection against network attacks, embedded executable code and unauthorized access to data. So, this ensures maximum level of DC failover and eliminates the risk of information leakage. [4]

Conclusion. Thus was evaluated modern technological solutions and software and hardware to create the information infrastructure of the Ministry of Defense of Ukraine, an integral part of which is the DC. Offered the possible technical and software and hardware for building reliable and secure DC of the Armed Forces of Ukraine.

Further research. Today is a very promising area of research in the area of

information Armed Forces of Ukraine and creation of information infrastructure of the Ministry of Defence of Ukraine is a mobile data center. This will allow to deploy the information infrastructure in different environments, including open space, which is very important for the specific actions in eastern Ukraine.

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Оценка технологических решений по созданию программно-аппаратной платформы информационной инфраструктуры Министерства обороны Украины

Резюме. В статье проведена оценка современных технологических решений и программно-аппаратных средств по созданию программно-аппаратной платформы информационной инфраструктуры Министерства обороны Украины, главной составляющей которой должен стать центр обработки данных. Рассмотрены задачи и принципы построения центра обработки данных в Вооружённых Силах Украины, определены его основные компоненты и технологические решения, которые предлагаются на современном рынке ведущими фирмами-производителями.

Ключевые слова: информационная инфраструктура, программно-аппаратная платформа, центр обработки данных.

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Monitoring of the environment as an integral element to ensure national defense and military security of the state

Resume. Methodical approach and results of estimation of contribution into monitoring of threatening situations are offered in order to provide defensive and national safety of Ukraine in the military sphere.

Keywords: military safety of the state, monitoring, expert method, estimation of contribution into providing the military safety.

Formulation of the problem. In the situation created by the aggression of Russia against Ukraine, the problem of providing defense and military security of Ukraine as interrelated processes of national level aimed at protecting the national interests of Ukraine, its sovereignty, territorial integrity and inviolability of attacks using military force is especially urgent. The legislative basis in the system of national security of Ukraine allows to define the basic functions of the state, such as the functional components aimed at ensuring military security:

monitor threatening situations of national security in the military sphere;

forecasting of dangerous situations for national security in the military sphere;

development and management decisions to protect the sovereignty of the state on the basis of the current legislation and international law, including the use of military force;

support of the combat power of the military organization of the state (security and defense sector) to deter and repel aggression;

resource capacity of military security.

In order to determine the priority of these functions in the implementation of military construction in Ukraine, the important issue is the assessment of the contribution of execution of each function in ensuring military security, including monitoring situation threatening the national security of Ukraine in the military sphere.

Analysis of recent research and publications. Analysis of the published work shows that at present the theory of military security is imperfect, it lacks clear formal methods and techniques for quantitative assessment of certain aspects of this field, including the level of military security for a certain state. For this reason, quantative assessment of the contribution, including monitoring the situation in the military security, is a complex task that is not resolved yet.

The purpose of the article is to examine the methodological approach and evaluate the contribution of monitoring the situation, including situations threatening the national security of Ukraine in the military sphere, to ensure the defense and military security.

Presenting the main material. Research experience shows that today the most appropriate method of the research in the field of military security is the method that was used to achieve the purpose of the article.

The given above list of basic state functions to ensure the military security can be represented by the general functionality for determining the level of supporting such security.

One of the essential functions is a part concerning monitoring of dangerous situations for the state military sphere, as this activity provides information and all other action (function) of the defense sector, which can be divided into three main types:

slow monitoring as statistical analysis and storage for a long time the facts of a military nature which are threatening the state security and assessment of the basis of the military and political situation (during the peace-time);

accelerated monitoring, which is similar to slow monitoring, but with the introduction at a certain time the regime of enhanced surveillance in threatening areas of the geographical area (during peace-time, the state of deterioration of the situation, the beginning of the crisis);

operational monitoring is similar to the mentioned above kinds, but with the introduction in the time of crisis continuous monitoring of the actions of a real enemy for the assessment of the situation the (during the specific period of crisis, hostilities).

For information support to deter aggressive actions of the enemy via the use of military force operational monitoring is the most important; its level is determined by the characteristics of military systems that are designed for continuous monitoring of stationary and moving objects of the enemy.

To ensure clarity and understanding of the importance of scientific justification in the process of military development and military security of the state, further arguments should be specified on the example of operational monitoring of mobile objects (MO).

Note that the characteristics of military systems are defined by the requirements for a specific system and the extent of their implementation in terms of application. The degree of appropriateness to the system requirements with its real possibilities (capacity) under the conditions of application depends on the quality of scientific grounding. Thus, the functional demonstrates that the achievement by the system operational monitoring of enemy MO characteristics that are set by the requirements for it, directly depends on the level of military security, and scientific grounding of requirements is part of the general process of ensuring military security.

In its turn, the operational monitoring of MO enemy may be based on the use of different types and methods of intelligence and remote monitoring (i.e. removed from MO) with mostly means of radio-electronic intelligence, which allows to separate a certain class of information systems: military remote monitoring systems of space as for moving objects (RMSS MO), which implement these methods.

On the basis of expert method the contribution of military systems RMSS MO as well as requirements for such systems to ensure a certain level of military security is evaluated. For this

purpose, an independent expert survey, which attracted professionals with significant scientific or practical experience in issues of military security of the state, was conducted.

Conclusions.

1. Results of expert evaluation demonstrate that the contribution of monitoring dangerous situations to ensure a certain level of military security is more than 35% relative to the sum of all other components.

2. Assessment results also demonstrated that the tasks of operational monitoring are more than 18% of the total contribution of all components in ensuring the achievable level of military security and the military contribution of RMSS is about 9%, which is an important argument for intensive development of this class of information systems in the country. The experience of the counter-terrorist operation in eastern Ukraine only confirms the above-mentioned.

3. A scientifically based requirements for military systems allows RMSS MO to increase the contribution to the overall level of military security by 2-3 times in comparison with the case of forming the requirements in the absence of scientific analytical tools. It confirms the high relevance of research aimed at the development and improvement of scientific analytical tools of grounding the requirements and relevant methodological foundations not only for this class of systems, but also for the systems of other purposes in the national defense.

In general, the conclusions of scientific studies confirm the dominant role and the importance of monitoring the situation to ensure the defense capability of the state and its military security, requiring priority development of monitoring systems in Ukraine, and related future research.

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Мониторинг обстановки как неотъемлемый элемент обеспечения обороноспособности и военной безопасности государства

Резюме. Предложен методический подход и результаты оценки вклада мониторинга угрожающих ситуаций в обеспечение обороноспособности и национальной безопасности Украины в военной сфере.

Ключевые слова: военная безопасность государства, мониторинг, экспертный метод, оценка вклада в обеспечение военной безопасности.

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Development perspectives of combat possibilities system evaluation of military units (subdivisions) of the Army of the Armed Forces of Ukraine

Resume. The article analyzes the guidelines and methodology documents on the existing training system of the Army of Armed Forces of Ukraine, structure and content of audits and evaluation and combat capabilities of military units (subdivisions) for 2013-2015, examined the major issues of organization and conduct training activities that occur during the subsequent reorganization of the Armed Forces of Ukraine, reasonable proposals to improve the evaluation system of operational (combat) capacity of military units (subdivisions) of the Army.

Keywords: army, military unit, test, evaluation, operational (combat) possibility.

Formulation of the problem. Current conditions of reorganization of the Armed Forces of Ukraine are radically different from those when the process was launched. And the case is not only that change their quantitative and qualitative composition. Modern threats and challenges to national security have become more dynamic and unpredictable than those that existed when laying the legal foundations of military building. This discrepancy led to certain areas of military reform forces training security environment.

The accumulation of problem questions in the preparation of the Armed Forces of Ukraine, their financing a residual for more than 20 years, mistreatment to forces state leaders, the underestimation of the potential enemy, serious omissions in the course of solving issues of national defense and military security confirmed that in case of involvement of military units (subdivisions) of the Armed forces of Ukraine, which constituted the basis of formation of the Army to the active phase of the anti-terrorist operation (ATO) in eastern Ukraine with the performance of real combat missions and combat operations, a realistic assessment of the fighting capacity of our troops in full is not possible.

Analysis of the functioning of the current system of training of troops (forces) of the Armed Forces of Ukraine indicates the presence of a number of problems, which are characterized above all a fundamental change in social, political, economic and military-technical factors. In a further reorganization of the Armed Forces of Ukraine are new organizational structures, changing principles of the military forces personnel, which greatly affects the training and education of military units (subdivisions). Against this background, there are problems due to the fact that the existing system of troops (forces) training came to the disparity in today's conditions and requirements. It has such shortcomings as the lack of funding and logistical support for training activities; generally poor state of educational material base (EMB); ineffective work of military

command (MC), commanders, commanders and staffs, especially the planning and management of inter-specific training in the operational and tactical levels of management.

All these issues fully relate to the Army as the main components of the Armed Forces of Ukraine, which is composed of command of the Army, four operational commands, separate brigades, regiments, battalions, universities, research institutions and training centers, military units of direct subordination.

In 2014-2015 the Armed Forces of Ukraine continued to perform activities of the Reform and Development Concept of the Armed Forces of Ukraine till 2017, whose main goal was to create a combat-ready, mobile, efficiently trained, adequately supplied professional Armed Forces, able to respond quickly to real and potential threats to national security in military sphere, deter and guaranteed to eliminate (localize) armed conflict and solve problems with maintenance and gradual acquisition determined combat possibilities of military units (subdivisions) forces of permanent readiness of the priorities of training, resource support and readiness to perform designated tasks like in peacetime and in times of crisis.

Relevance of the article is as follows. After the introduction of the Armed Forces of Ukraine military standards [1] and the system operational standards [2] (system of documents on the management, application, training and support), the main task of preparing the Army was determined in 2014-15, a gradual entry of military command, troops (forces) operational (military) capabilities for a particular range of combat training tasks of specified standards; software acquisition possibility for planning the use of combined arms groupings of troops (forces) and their management according to the list of specific tasks defined operational plan, the creation of combined tactical groups (on a rotating basis) from the units (subdivisions) forces constant readiness and implementation of full-scale preparation for performing the tasks in the combined arms groupings of troops (forces) taking into account positions of "Conception of operative (combat) possibilities of troops (forces) of Armed Forces of Ukraine" [3]. In order to implement the order of inspection and assessment of readiness of military units (subdivisions) to perform assigned tasks were introduced and tested new forms of testing and evaluation of the defined standards: self-assessment, evaluation of 1st and 2nd level.

In connection with the introduction of the new system of troops (forces) the question on the introduction of more effective combat possibility evaluation units (subdivisions) of land component of the Armed Forces of Ukraine. Therefore, the article analyzed existing system of checks and assessment of military possibilities, guidelines on the structure, order validation and evaluation of troops (forces). The analysis of the factors affecting the effectiveness of military formations, allowed identifying perspective areas (roads) and the improvement of inspection and evaluation of the acquired operational (military) possibilities of military command, military units (subdivisions).

Analysis of recent research and publications. In recent years in military command of Armed Forces of Ukraine is conducted thorough work on drafting legal documents and teaching materials for the organization of training of troops (forces), inspection and evaluation of combat possibility of military units (subdivisions) that allowed to begin training on new principles. They reflect the composition of troops (forces) and the procedure for the acquisition of military capabilities by the standards of training.

The new wording of the Military Doctrine of Ukraine in 2015 [4] defines the maintenance tasks for military possibility that would meet the level of military threats and provides military and strategic parity in the region. The document determines that the primary role in ensuring military security owned by the Armed Forces of Ukraine. They will adhere to in the states - members of the EU and NATO standards for operations and distribution functions and main tasks in conjunction with other components of the security and defense sector.

The main guiding document under which is conducted further improvement the training of the Armed Forces of Ukraine and preparedness of troops (forces) to perform assigned tasks both in peacetime and in times of crisis, is "The Concept of the Armed Forces of Ukraine" [5], which is designed including the changing nature of modern armed conflicts, improvement of existing and the emergence of new forms and way of troops (forces) using. The concept defines the objectives, principles, elements of training in times of crisis and in times of peace, taking into account experience of troops (forces) in the ATO and participation in international military cooperation and the basic position is the basis for implementing the requirements of the Military Doctrine of Ukraine to deepen cooperation with NATO and achieve till 2020 full compatibility with the relevant Armed forces of Ukraine by the states - members of NATO.

The components (types) of training of the Armed Forces of Ukraine are: operational training; combat training; preparation of reserves; training in higher military educational establishments (MES HMEI), academic institutions and training centers.

Taking into account positions of Conception [3] and with the purpose of introduction of order of verifications and assessment of readiness of military units (subdivisions) of the Armed Forces of Ukraine to perform designated tasks from June 2013 put in place a 'Temporary Instruction on the organization and conducting inspections and evaluation of operational (combat) possibility in the Armed Forces of Ukraine "[6]. Work on the development of permanent instructions are not terminated, therefore, particularly important to define the basic principles that should be laid on the development of ways to improve and justify a new assessment system of training of troops (forces) to meet the requirements of today.

The article aim is to study ways to improve the evaluation system of combat possibilities of military units (subdivisions) of the Army with the requirements of new legal documents and the real needs of troops (forces).

Presenting main material. Army is a military formation, which is the most numerous (as the number of personnel and the number of weapons and equipment) in the Armed Forces of Ukraine and is the main carrier of combat power. According to the purpose and scope of assigned tasks and functions Army plays a crucial role in the tasks of armed defense of the state both in peacetime and in wartime. [7]

In accordance with the new system of training in the 2013-2015 academic years were introduced and approved a new procedure for testing and evaluation of operational (combat) possibility units (units) of Army to perform tasks.

The followings types of verifications were thus applied:

inspection measures - for comprehensive (integrated) or on specific issues and a status check of the facility;

estimation of alertness – for verification the combat readiness of military organizational structures from composition of Immediate Reaction Force and Forces of increase, military parts (subsections) which are certain for (maintenance) combat possibilities;

mobilization readiness assessment - to test mobilization readiness of military organizations from the reserve forces and military units and institutions of the viability of the Armed Forces of Ukraine, who have the task of mobilization and military commissioners;

assessment of readiness to perform functional tasks - to check the readiness of military units of life support (software units, military educational institutions, research institutions) of the Armed Forces of Ukraine;

training evaluation - to determine the level of training of military command and military units (subdivisions, institutions). It includes assessment of operational training (training of military command (assessment of operational capabilities) and individual training); assessment of military training (individual training, management training (staff), training units (units)); assessment of mobilization training (individual training, training of military units (subdivisions), military commissioners);

possibility assessment (self-evaluation, evaluation of Level 1 and Level 2) - to determine the level of combat possibility (level of training actions as part of the military formation of a higher level) object check from the Immediate Reaction Force and Forces of increase, units (subdivisions) defined for (maintaining) combat possibilities. It is part of the evaluation of training and can be done either separately - to establish the level of combat possibility defined composition of troops (forces) and during the inspection activities, assessment and evaluation of readiness for combat training;

evaluation of individual soldiers training can be made a separate issue during scheduled and unscheduled inspections (apart from evaluation) and trim its holding is determined by the General Staff of Ukraine [8];

checking on specific issues - for assistance, monitoring readiness for intensive training period, determine the status of deficiencies, monitoring implementation of standards collective training etc.

From all spectrum of verifications of vital functions of troops (forces) we are interested in the order of evaluation of combat possibilities of military parts (subdivisions).

Inspections results and evaluation of combat capability of military units (subdivisions) of the Army during 2013-2014 academic years showed that established the Temporary Instruction [6] the requirements have not been met in full, due to a number of objective and subjective factors, and some of their provisions, proven in practice, require clarification and detail.

Test and evaluation military units (subdivisions) was carried differentiated by category:

those who have completed an intensive period of training and have the required level of staffing military personnel contract review by committees of the General Staff of the Armed Forces of Ukraine during the battalion (company) tactical (tactical special) exercises during the active phase of command post exercises Brigadier level, were included as an assessment level 2;

those who were not involved in the active phase of the exercises Brigadier levels checked during the comprehensive tactical drill sessions (training) working groups command of the Army on brigade (regiment) landfills (with a minimum expenditure of fuel and lubricants), which was included as an assessment level 1 ;

those, who after an index “personnel” were not ready to implementation of tasks on purpose and didn’t pass self-appraisals, checked up the working groups of operative commands during the lead through of control employments after an index “preparation” by the evaluation of level of individual preparation of servicemen;

military units, that have not been identified to the acquisition of operational (combat) capabilities, inspected the working groups on the decision commanders (commanders, chiefs) according to subordination in terms of "training" through evaluation of individual training servicemen.

In addition, military units, which inspected the Main inspection Ukraine Ministry of Defense and the General Staff of the Armed Forces of Ukraine and assessed as not ready to perform assigned tasks were conducted unscheduled inspections of working groups appointed Commander of the Army of the Armed Forces of Ukraine to determine the status of deficiencies.

In connection with the situation prevailing in eastern Ukraine, in 2014-2015 evaluation of combat capabilities of military units (subdivisions) had to carry out on the battlefield during combat missions during driving ATO. This is due to the fact that almost all military units of the Army were involved in zone ATO consisting of battalion tactical groups. Because senior management on the level of the Army command and operational command decided to train troops in three periods: combat missions; restoration of combat effectiveness; training to perform tasks.

Analysis of the participation of troops in the fighting in eastern Ukraine confirms that in accordance with established requirements [4, 5] in the Army more attention should be paid to the training of personnel as part of diverse groups of troops actions and ways in terms of so-called "hybrid" war, during special operations,

implementation of information-psychological counter enemy. However, priority in training troops considered:

trained to perform assigned tasks in full force of military units (subdivisions) Immediate Reaction Forces and the Forces of increase that are designed to prevent and eliminate as soon as possible armed conflict at the state border, captured enemy territory, protection of airspace, covering important government and military against of objects;

training reserve forces units that are designed to build groups of troops (forces), the deployment of military units of territorial defense in case of threats of military aggression; leading of mobilization (formation) and combat coordination measures and guaranteed performance of their tasks.

Accordingly, the evaluation system of combat possibilities of military organizational structures must meet the requirements of today, have a clear outline, promote and provide guaranteed performance of assigned tasks under any conditions, environment, efficient use of personnel weapon systems, achieving victory with minimal loss in strength, mass and resources.

Thus, the main directions (ways) improving the evaluation system operational (combat) capacity units (subdivisions) of the Army will be:

1. Improving the management system assessment capabilities of troops and setting up highly analytical and informational support this process.

2. Ensuring real and effective functioning of the system of combat training orientation for all kinds of personal training - training and retraining of officers of different educational levels and levels of management, reserve officers; training officers from among sergeants and soldiers of higher education; dual stage training soldiers, sergeants and junior specialists in the military training centers, colleges; individual training staff in headquarters, military units; course and meeting training.

3. Introduction of innovative technologies in the training and, based on them, EMTB improvement: equipment trainer means crews, workers, operators, shooters, computer-simulation of armed clashes and confrontations units, military units.

4. Efficiency increase and insistence on control and diagnostic and monitoring activities - achieving control of combat capabilities of military units, subdivisions; summarizing best practices and proposals development for taking corrective action and so on.

Conclusion. Thus, the purpose of the article is the substantiation of ways to improve the evaluation system of combat capabilities of military units (subdivisions) of the Army with the requirements of new legal documents and the real needs of troops (forces) achieved.

In further work on mastering the military organizations of the Army by modern methods of training and warfare has only grow. However, it must meet the requirements not only of today, but also the near future, the enforcement of their assigned tasks both in peacetime and in times of crisis and ensure the implementation of the main task of the state - to enhance its defense capability [9].

Prospects for further research in this direction will be monitoring the

implementation of the results of scientific articles in the regulations training of troops (forces).

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Перспективы развития системы оценки боевых возможностей воинских частей (подразделений) Сухопутных войск Вооружённых Сил Украины

Резюме. В статье проанализированы руководящие и методические документы относительно существующей системы подготовки Сухопутных войск (СВ) Вооружённых Сил (ВС) Украины - организация и проведение проверок, оценка боевых возможностей воинских частей (подразделений) в 2013-2015 гг. Исследованы основные проблемные вопросы организации и проведения мероприятий по подготовке, которые возникают в ходе дальнейшей реорганизации ВС Украины. Обоснованы предложения по совершенствованию системы оценки оперативных (боевых) сил и средств воинских частей (подразделений) СВ.

Ключевые слова: Сухопутные войска, военная часть, проверка, оценивание, оперативные (боевые) способности.

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Assessment of the economic and functional efficiency of the use of information technology

Resume. The analysis of the proposed approaches and models of evaluation the economic and functional efficiency of implementation the information technologies in the military, in particular the automated control system of the administrative processes of the armed forces of Ukraine, to justify the ROI.

Keywords: information technology (IT), economic and functional efficiency, direct and indirect effectiveness and efficiency of the process.

Statement of the problem. The information technology industry (it) experience in the creation, development and operation of information systems (is). Information technology based on the use of modern achievements in the field of computer technology, advanced communications, software and practical experience, designed to solve the problem of effective organization of information process to reduce the cost of time, labor, energy and material resources in all spheres of human life and modern society. Information technology created through the implementation of it projects that span very diverse fields of activity: software development, information systems, deployment of it infrastructure, development of automated control systems.

Information technology is a tool of increase of efficiency of activity of the enterprise (the Department), which must be used thoughtfully and carefully. The positive effect is achieved only if the enterprise management there is a clear understanding about the purpose of the implementation. Otherwise this is an extremely powerful tool, also expensive and complicated to use, the benefits to the enterprise, unfortunately, will not bring, and funds for the implementation of it will be wasted.

In addition, a mandatory condition for the use it is obtaining economic and functional efficiency of their implementation. Calculation of the effectiveness and feasibility of implementing it projects is carried out using a specific methodology.

Analysis of recent researches and publications. The problem of developing a methodology regarding calculations of economic and functional efficiency of implementation of projects of Informatization subject of many scientific publications, in particular [1-5]. In the above sources, it describes the General approaches to the assessment of the economic and functional efficiency, but they usually relate to profitable enterprises. In addition, a clear

procedure for calculation of efficiency is not given.

The purpose of this article is to develop models for calculating economic and functional efficiency of implementation of projects of Informatization in the military.

Presentation of the basic material. The concept of "economic efficiency" has several interpretations and definitions. In this article, under the economic efficiency of the introduction it refers to the ratio of costs for an it project and results (economic benefits) from its implementation. In General, the economic effectiveness of the implementation of it projects is ensured by the following main factors:

- high speed gathering, transmission, processing and delivery of information, achieved through the high performance of modern technology, minimize the time to perform certain operations;

- improve the implementation of economic calculations by creating a common database, establishing a clear schedule for its obtaining, removing it from the persisted data and derived indicators, as well as through its Central processing;

- improve the information service to different levels of information systems by reducing development time and producing documents.

Thus, the overall efficiency of it application is directly dependent on reducing the cost of information processing – video efficiency from higher level of information services – indirect efficiency.

Direct effectiveness is reflected in the reduction of labor cost and the cost of information processing and directly, quantitatively, affects the economic indicators of the computational units involved in processing it. If before conducting the assessment the company was not automated P_0, it is sufficient to compare the results of the activities without automation at appropriate zero cost ($Z_0 = 0$) with the results after automation on the related costs Z_1.

Simplistically the efficiency is calculated by the formula:

$$E = P_1 - P_0 - Z_1. \quad (1)$$

Indirect effectiveness refers to the qualitative changes occurring in the application of computer technology. They are expressed in improving the quality and efficiency of the calculations, the increase in the received information, increasing its reliability and efficiency.

Currently there are no methods to evaluate the share of efficiency of machine processing of information in the overall efficiency, obtained as a result of various measures to improve information services for enterprises of various spheres of activities. In this case, to calculate the expected indirect efficiency it is recommended to apply the method of expert estimates. It lies in the fact that, on the basis of the analysis of the change in information processing over several periods, an expert is defined by its possible improvement as a result of using more timely and detailed information.

In the case where it technology is purchased (this is the situation that exists in the armed forces of Ukraine) to compare two of the option – designed and basic. For the base option is taken the existing technology of information processing, and for designed – the result

of automated information processing with the use of specific it technologies.

Absolute economic efficiency of a development project is the reduction of the annual value and labor costs for information processing compared to the basic variant of the process of information processing or a way of solving the problem. Otherwise, it can be described as the difference between the results (or the assessment of these results in the future) and the cost of automation.

Let the annual cost of information processing is the cost of personnel, cost of materials, depreciation, overhead and cost of machine time working on a computer and with the base variant is equal to C_0, and in design – C_1, then:

$$\Delta C = C_0 - C_1, \quad (2)$$

where ΔC is the value of reducing the cost of information processing.

So determine the cost-effectiveness of the project. If we know the number of implementations of the technological process of processing (or the number of solutions to problems of statistical) for the year and expenses for a single realization of the process (solving the problem), the annual cost is the value that is defined for the base and projected variants separately.

When developing a project for a complex of interrelated tasks costs are defined as follows:

$$C = \sum_{k=1}^{m} a_k Cp_k, \quad (3)$$

where a_k – is the number of solutions of the *k*-th task in the course of the year;

Cp_k – the cost of one solution of the *k*-th job;

m – number of tasks in the complex.

The relative economic efficiency of the project is the cost-effectiveness ratio and the index of cost changes.

The cost-effectiveness ratio shows what portion of the cost savings when a design option (or the percentage decreasing costs), and is calculated by the following formulas:

$$K_c = \frac{\Delta C}{C_0} \quad \text{или} \quad K_c = \frac{\Delta C}{C_0} 100\%. \quad (4)$$

The index of cost changes shows how many times the reduced costs in design, and can be calculated by the following formula:

$$I_c = \frac{C}{C_0} \quad (5)$$

However, implementation of the project would involve additional capital costs that need to be considered.

The value of the additional capital expenditure K_D is as follows:

$$K_D = K_1 - K_0, \quad (6)$$

where K_1 and K_0 – are the projected capital costs and existing (or base) of the system of information processing.

Efficiency capital cost is determined by the payback period of additional capital expenditure t:

$$t = \frac{K_D}{\Delta C} = \frac{K_1 - K_0}{C_0 - C_1}. \quad (7)$$

Additional capital cost is considered economically feasible if they are compensated by savings in current expenditure within the specified payback period.

Is also determined by the estimated coefficient of economic efficiency of capital costs E_P:

$$E_P = \frac{\Delta C}{K_D} = \frac{1}{t}. \quad (1.8)$$

This coefficient defines the amount of repayment of additional capital expenditure for the year.

Together with the definition of value indicators of economic effectiveness it is possible to calculate indicators of labor costs for processing statistical information.

An absolute indicator of labors costs is the difference ΔT between annual labors costs (consisting of labor input operations of the keyboard input and automatic operations on a computer) basic design and variants of design decisions:

$$\Delta T = T_0 - T_1, \quad (1.9)$$

where T_0, T_1 – annual labors input respectively, the base and the designed variants of processing of the information.

Relative indices of labors costs are:

the coefficient of labors costs K_R:

$$K_R = \frac{\Delta T}{T_0} \quad або \quad K_R = \frac{\Delta T}{T_0} 100\%; \quad (10)$$

index of change of labor costs:

$$I_R = \frac{T_0}{T_1}. \quad (11)$$

These indicators characterize the growth of productivity through the introduction of a more economical version of the design solutions.

Absolute value the reduction of labor costs can be used to determine the possible release of personnel from the sphere of information processing:

$$p = \frac{\Delta T}{T_Ф} b, \quad (12)$$

where T_F – annual Fund-time per employee engaged in the processing of economic information;

b – coefficient taking into account the possibility of full layoffs, due to the time which the calculated value ΔT.

Of particular importance is the definition of this indicator in the modernization of existing technology of information processing in the case that the value T_0 represents the time spent by engineering and technical personnel.

Of the above proposed indicators of effectiveness of implementation of IT in management processes administrative economic activity (AEA) the armed forces of Ukraine it is expedient to use: the coefficient of economic efficiency of capital costs E_P and the value of the absolute figure of labors costs. You can then calculate the payback period of the selected technology and to determine the possibility of the release of personnel from the sphere of information processing. The latter is particularly important when making decisions about downsizing the armed forces at the highest level.

Models assess performance of the implementation of information technologies can be represented in a diagram in figure 1.

Evaluation of the functional efficiency of the implementation of IT. In the General case, the functional properties of the system are evaluated in two aspects:

- result of operation;
- “algorithm” - generating results.

The quality of the result and the algorithm for generating results measured in terms of quality. Quality

indicators are specific characteristics of the system and the conditions of its functioning. In the development of quality assessments of the functioning of systems significant results obtained in the theory of operations research, in terms of which the artificial system is created to perform the operation. These results are useful in the theory of systems and system analysis.

Here's a quick overview of the quality indicators developed in the theory of operations research. The main consolidated indicators of the quality of the operation include: the performance, resource consumption, efficiency.

The performance ***E*** – is characterized by the resulting target effect – a result for which the system operates.

The resource intensity ***R*** – displays the resources of all types (human, material, energy, information, financial, etc.) used for obtaining the target effect.

The efficiency ***O*** – flow meter the time required to achieve the goal. Evaluation of the result of the operation considers that the operation is performed to achieve a certain goal, the outcome of the operation.

Under the result of the operation is a situation (system state and external environment) that occur at the time of its completion. To quantify the outcome of the operation introduces the concept of a figure of its result as a vector $Y_{ucx} =< Y_{Э}, Y_R, Y_O >$ whose components are in essence the performance of its individual properties, reflecting the efficiency, the cost and efficiency of the operation.

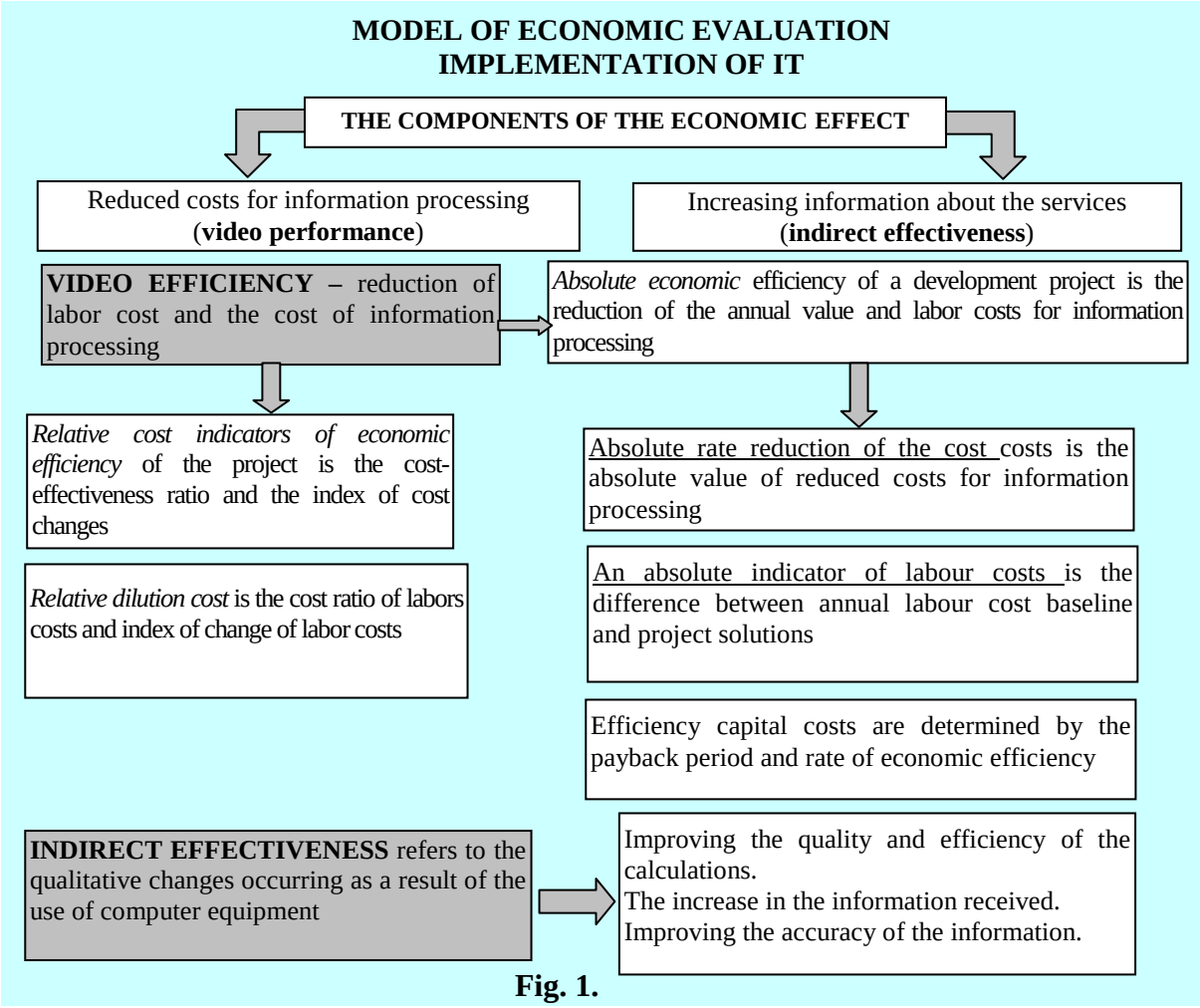

Fig. 1.

Evaluation of algorithm of functioning is leading the evaluation of the effectiveness. This statement is based on a theoretical postulate, confirmed by practice: the existence of a good "the algorithm of functioning of a system increases confidence in getting the intended results. In principle, the desired results can be obtained without a good "algorithm", but you need large resources and worse in regards to efficiency. This provision is very important for organizational and technical systems, and others, in which the results of the operation are used in real-time.

Together the performance, resource consumption and efficiency generate a composite property is the efficiency of the process *Y*, – the degree of its suitability to achieving the goal.

This property is inherent only to the operations manifested in the functioning of the system and depends on the properties of the system itself and from the external environment. In the literature the term "efficiency" is associated with the system and with the operation and decision. The resulting concepts can be considered equivalent. In the end, each of them reflects the compliance of the result of the operation performed by the system to achieve the goal. Of course you need to keep in mind that the system implements one or more operations. For most transactions, the procedure for assessing the effectiveness of decisions is in the nature of forecasting.

The introduction of this system AEA the Ukrainian armed forces requires the construction of a model of activity of the institution (Department), the essence of which are the algorithms of business processes (BP) that are planned for automation. BP consists of concrete operations which can be dedicated to certain material, financial and human resources – the cost of BP. In addition, each operation (component PD) is performed at a certain time – efficiency BP.

Thus, evaluation of the functional efficiency of implementation it consists of the following steps:

- modeling of processes of activity of establishment according to the scenario "as is";
- development of algorithms of actions of officials to implement processes that occur in the institution according to the scenario "as is";
- identification of processes to be automated;
- modeling of processes of activity of establishment according to the scenario "as it should be";
- development of algorithms of actions of officials to implement processes that occur in the institution according to the scenario "as it should be";
- the study of the structures of a typical automated workplaces of officials to perform the processes that occur in the institution according to the scenario "as it should be';
- study of structures of standard workstations officials to define the structure of the necessary resources to execute processes according to the scenario "as it should be" – calculation of the required additional capital investments;
- calculation of quality indicators – resource consumption and efficiency in executing processes according to the scripts "as is" and "as should be";

- analysis of the results of the calculations, evaluation of investment profitability.

More clearly the aforesaid order of evaluation of the functional efficiency of the implementation of it can be represented in a block diagram in Fig. 2.

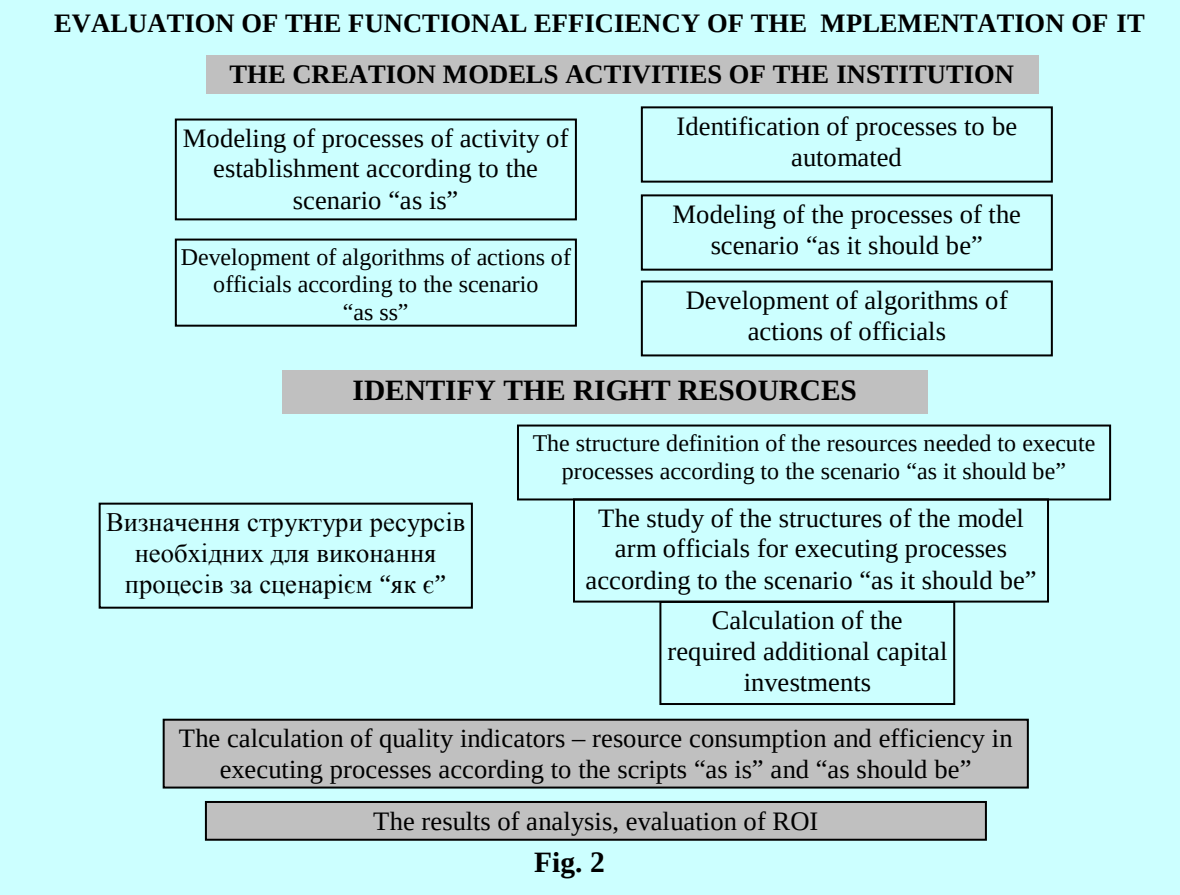

Fig. 2

Conclusions. The rationale for economic and functional effectiveness of the application it allows: to determine the necessity and appropriateness of costs for the implementation of an IT project; to choose cost-effective variants of technological processes of processing information.

Calculations using the proposed models involve the implementation of a certain amount of preparatory work, so the evaluation of the economic and functional efficiency of the implementation it is advisable to carry out at the stage of feasibility studies.

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Оценка экономической и функциональной эффективности применения информационных технологий

Резюме. Проведен анализ подходов и предложены модели оценки экономической и функциональной эффективности внедрения информационных технологий в военном ведомстве, в частности автоматизированной системы управления административно-хозяйственными процессами ВС Украины для обоснования рентабельности инвестиций.

Ключевые слова: информационная технология (ИТ), экономическая и функциональная эффективность, прямая и косвенная эффективность, эффективность процесса.

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Issues of military-scientific support of creation of information systems for military purposes

Resume. The questions of military scientific support of development activities, services for the creation, modernization of information systems and their components throughout the life cycle.

Keywords: military and scientific support, development work, the parent customer, prime contractor, information system.

Rising of problem. Creation of the modern information system of military-rented is conditioned by application of all more difficult and perfect project decisions, use of structural charts, increase of technical decisions. Aloof it is impossible to do without military-scientific component Military and scientific support implementations of experimental design work, which is executed by there, search Enterprises of Department of defence of Ukraine.

Scientific support of creation of information objects is an activity that aims to solve problems using typically new scientific knowledge and best practices in the use of inform traditional technologies.

In fact military and scientific support – a set of scientific, theoretical and practical measures of organizational, methodological, research, testing, information - analytical, expert and controlling nature, are performed on the stages of the life cycle.

The main purpose of the military and scientific support is to support the creation of modern information system with excellent properties and the existing parameters and examine applications for review of scientific research and development of new innovative technical solutions.

Scientific support to create performance experimental design work information system, as an activity is not something new or exotic. Experience in understanding scientific support close to the present, has several decades.

In foreign countries, scientific support information system development carried out at all stages of the life cycle-plan, design, manufacture, operation, modernization and utilization.

Military and scientific support research institutions of the Ministry of Defense of Ukraine and is a necessary prerequisite of all experimental design work and through the main scientific organization of military and scientific support continuously at all stages of the

experimental design work, beginning with the work tasks for implementation of their results.

Military and scientific support experimental design work information system to create is a close cooperation between customer, contractor and experimental design work performing maintenance.

Interaction research organizations of the Ministry of Defense of Ukraine with organizations information system developer's military during the military and scientific support is subject to applicable regulatory and legal documents.

However, the unresolved question of the content of the military and scientific support for the development and modernization of information system, military, namely the lack of coordination of participating organizations military and scientific support (customer– performer– research institutions customer), lack of clear division of areas of responsibility research institutions and their powers over the military and scientific support to create information system.

Analysis of recent research and publications. Background military and scientific support works on creation of information systems for military use in the Armed Forces of Ukraine is long overdue, requiring the development of relevant regulations.

Since 2007, orders came into force the Minister of Defence of Ukraine 12.01.07 number 9 "On approval of the organization of scientific and technological activities in the Armed Forces of Ukraine."

Military and scientific support of the work in the order given very little space. In order scientific support as defined and applied research, in principle, correctly reflects the essence of scientific support.

At this time during military and scientific support governed by the following regulations: "Temporary Instruction on military and scientific support single CAS of management Armed Forces of Ukraine, "Regulations on the military and scientific support single CAS of management Armed Forces of Ukraine, Regulations on the organization works to create single CAS of management Armed Forces of Ukraine and so on."

The article is a study of military and scientific support implementation of development work and in particular to create information system for military use, operation and further support as the final product.

Presenting main material. Military and scientific support for the establishment and improvement of information system military research institutions is in the Ministry of Defense of Ukraine. This should be laid down common rules for planning and monitoring of the implementation of the experimental design work and financed by the state budget of the Ministry of Defense of Ukraine.

The purpose of the military and scientific support is to improve the quality of information system that are upgraded and are based on the achievements of domestic and foreign science, engineering and computer science, advanced methods of command and conditions of use of these systems in the daily activities of the Armed Forces of Ukraine.

This is achieved through the scientific study and development of tactical and technical requirements ,

tactical and technical tasks for the development of information system, as well as evaluating the results of which received both during the creation and during their operation.

Currently, according to the Order of the Minister of Defense of Ukraine military and scientific support customers to create information system military is Defense Minister of Ukraine, Deputy Minister of Defense of Ukraine .

The working body of the customer in the field of information and management of the military and scientific support is information technology.

Artist's military and scientific support according to the functions is divided into:

home scientific research institution;

research institutions, higher military educational institutions of the Armed Forces of Ukraine, which in a separate decision of the customer carry military and scientific support parts information, information- analytical systems for military use.

Fulfillment experimental design work usually precedes the implementation of research, which is the main contractor research institutions customer.

At the final stage of the research, a draft terms of reference for holding the experimental design work.

Requirement specification experimental design work approved by the customer, combined with the performer and is the main source document for the development of information system, which proved the feasibility of establishing complete the information system.

By agreement between the contractor and the customer experimental design work (with research institutions customer) approved in the vehicle can make changes at any stage performance. Possible differences that may arise during the technical issues in the relationship between customer, contractor and manufacturer of experimental design work considered and resolved at conciliation meetings involving members' research institutions, which provides scientific support.

Military and scientific support performance and acceptance of experimental design work steps on behalf of the customer arranges and performs usually research institutions customer.

In general, the military and scientific support experimental design work provides the measures envisaged by state standards and conditions of the agreement (contract).

In the course of military and scientific support customer can at any time
scientifically an experience establishme nt attract the customer to work on commission to check the progress and quality of research and development performed by state contract research and development costs as well as the accuracy performer and his accomplices received the means to perform the experimental design work.

However, with the activities of military and scientific support performance experimental design work chief scientific institution customer

conducts a number of activities and expertise aimed at improving and modernizing the information system.

Home customer coordinates the work of the military and scientific support information system components, which are held for joint research institutions according to their functional competence.

A challenging problem is the division of tasks (functions) between Ukraine and the Ministry of Defence industry, including financing of works on creation of information system.

Separately, you can highlight the issue of work "volunteer movement". During warfare in Ukraine chide representative's volunteerism done a lot. In particular, it should be noted a significant contribution of Ukrainian citizens who have begun to develop electronic tablets for artillerymen, military communications systems automation, automated information systems, and so on.

Many volunteer groups expressed a desire to participate in the performance of research and implementation of scientific research work to create the experimental design work information system for military purposes. However, this activity requires attention from customers, chief executive, leading research institution, which holds the military and scientific support. This is due to the need to provide volunteers assistance in acquiring the necessary experience in the implementation of the experimental design work (scientific research work).

It the question remains no clear formulation of goals and tasks to be solved during military and scientific support research institutions. This issue can be solved by providing approved customer requirement specification (operational objectives) , research institutions in support of indicating the specific tasks, deadlines , authority and responsibility . Information on the research institutions, who will conduct the military and scientific support must be provided in paragraph 4 (Artists) Model requirement specification to perform research.

As you know, the Ministry of Defence Ukraine research institutions its scientific and technical activities carried out in accordance with the annual plan and promising scientific and technical activities.

Getting the customer approved terms of reference (operational objectives) to conduct the military and scientific support will work in accordance with the status, the performer to include them in the plan of scientific and technical institutions to make tentative calculation of remuneration in research, planning, research cost more.

Proposals for improving the military and scientific support and solve these issues can be:

establishment of a permanent expert - analytical center on legislative, regulatory, legal and military and scientific support of information system for military use;

providing a synergistic effect works by he military scientific support

through coordination of their activities;

clear roles information system works on creation and development of perspective between research

institutions management of the Ministry of Defense of Ukraine, military and scientific support research institutions.

Ministry of Defence Ukraine is a necessary and indispensable condition of all experimental design work research and industry and through major scientific organization with experimental design work continuously at all stages of the military and scientific support, beginning with the work tasks for implementation of their results.

Improvements military and scientific support works to create information system military is to implement the resolution of outstanding issues on the basis of achievements of domestic and foreign science, engineering and computer science, advanced management.

Effective problem solving military and scientific support information system in terms of Ukraine can be achieved if the system military and scientific support will have adaptive structure in accordance with the specific problems to be solved, with the separation of functions between the parties and the definition of the functioning (through the development and implementation of legal, regulatory, technical and guidance documents).

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Вопросы военно-научного сопровождения создания информационных систем военного назначения

Резюме. В статье рассмотрены вопросы военно-научного сопровождения проектов по созданию информационных систем и их элементов в течение всего жизненного цикла.

Ключевые слова: военно-научное сопровождение, опытно-конструкторская работа, главный заказчик, главный исполнитель, информационная система.

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Methodical going is near evaluation of level of motivation of servicemen of the Armed Forces of Ukraine

Resume. In the article is expounded methodical going near the evaluation of level of motivation of servicemen during realization of measures of the combat training

Keywords: training, motivation and evaluation.

Formulation of the problem. Experience combat use of military units in counter-terrorist operation in eastern Ukraine proves that successful performance of combat missions largely depends on their level of training. Direct impact on training facilities provides organization and leadership training combat training subjects.

During combat training to prepare actors task as subordinate encourage soldiers to capture knowledge, abilities and skills they need to achieve a military unit specified capacity. In other words, how to motivate them.

There is a necessity for scientific substantiation methodical approach to the evaluation of motivation soldiers.

Analysis of recent research and publications in this area indicates that a single methodological approach to the evaluation of military motivation does not exist. Approaches that are related primarily to certain components of motivation and they do not take into account changes that have occurred in the system of training. Thus, in Kazana does not take into account the financial motivation of servicemen, military included professional with significant limitations. In the works of Shpanchuka does not include welfare and moral and psychological motivation.

Thus, we can conclude that the available scientific and methodical evaluation of the device motivation soldiers did not fully meet the requirements of training that introduced and needs improvement.

The purpose of the article is to improve existing scientific and methodical evaluation of staff motivation troops in the course of combat training to enhance their level of training.

Abstracts of articles material. In the course of combat training to commanders at any level is always a problem, how to encourage his subordinates to better master the knowledge, abilities and skills they need to achieve the required level of training. Perform this task quite difficult, as to find true motives which have forced subordinates maximum focus on performing tasks in the course of combat training hard enough. In basis of any motivating factors behind the needs of military personnel and motives. In a general sense the need - that which occurs in each soldier individually and expression. The

majority needs periodically renewed military differently try to eliminate necessary, to suppress them or respond to them. Necessity military may occur consciously or unconsciously. It is not all needs are understood and deliberately removed.

Another important component of motivation can be called - motive. In a general sense refers to the motive that causes some human action. The motive is in the middle of everyone, and has a personal character depends on many external and internal factors, as well as the actions of other emerging along with his motives. The motif not only leads to a military action, but also identifies the need to perform and how this action will be executed. The grounds are subjected awareness soldier can influence their motives inhibiting their activity or even removed them from their motivational component.

Modern literature consider motivation as a process of motivation to work to achieve personal goals or purpose unit, in other words motivation - a combination of internal and external decisive forces that motivate a soldier to activities set boundaries and forms of activity, set the direction of this activity is focused on achieving a specific goal . The desire and willingness of military personnel to fulfill their functions is the main requirement to achieve the goal. Thus, the motivation of professional military is a special type of processes governing official military activity; commander skill is the ability to identify internal forces that motivate soldiers and a set of external conditions conducive to positive motivation.

Motivation troops to effective performance management during combat training are the most important task motivation. To determine how and in what proportions should use internal and external rewards to motivate, commander (chief) should determine what needs exist in his subordinates, which is how to effectively motivate. Perform this task fairly difficult, because to find the true motives that would have forced his subordinates to give the military their best, too hard, but if the commander possess modern models of motivation, he significantly expand its capacity to attract serviceman to perform tasks to ensure the required level of combat readiness military unit.

Based on the fact that today is the basis of combat training troops daily activities, it is logical that the study of the efficiency of training, as one of the group of indicators evaluating the effectiveness of combat training is considered leadership training. Process management in combat training is focused activities commanders, commanders (chiefs) of military administration to organize the preparation, evaluation of the quality and efficiency of its implementation and the achieved level of training, synthesis and implementation best practices training and use of troops. Partial indicator "motivation" as part of combat training of leadership characterizes the urgent needs of military personnel and accordingly to influence the effectiveness of combat training.

Before the evaluation of motivation advisable to determine the components of the index "motivation." To assess the level of motivation is proposed to use the following

components: military professional motivation, social-motivation, moral and psychological motivation, financial motivation.

Military professional motivation into account the level of meeting the needs of military personnel in professional growth.

Social and household motivation into account the level of satisfaction of social and welfare needs of military personnel, provision of housing to meet the needs and appropriate conditions of service, recreation and leisure servicemen and their families, ensuring compliance provided by the law of state social guarantees of servicemen who are exempt from military service creating conditions for them to adapt to civilian life, decent pensions to military pensioners.

The moral and psychological motivation into account the level of satisfaction of service, the situation in the team, relationships with colleagues, related to a military command, various promotion servicemen.

Financial motivation considers meet the military level financial support, especially financial support, increasing the share proportion of the main types of financial support in the total salaries while the introduction of incentive systems of military skills, introduction of an effective mechanism of awarding soldiers for excellence in service and high performance in combat training.

The way these components indicator of motivation soldiers are not dependent on each other, then it is proposed to use the evaluation additive aggregation:

$$M_{м}(t) = K_{вп}(t) \cdot q_{вп} + K_{сп} \cdot (t) q_{сп} + K_{мп}(t) \cdot q_{мп} + K_{ф}(t) \cdot q_{ф}, \quad (1)$$

where $K_{вп}(t)$ - an indicator that reflects the level of motivation of professional military servicemen at the time;

$K_{сп}(t)$ - indicator that reflects the level of social motivation troops at the time;

$K_{мп}(t)$ - indicator that reflects the level of moral and psychological motivation troops at the time;

$K_{ф}(t)$ - indicator that reflects the level of financial motivation troops at the time;

$q_{вп}, q_{сп}, q_{мп}, q_{ф}$ - weighting of indicators military professional, social, moral psychological and financial motivations soldiers.

Thus, determination of weighting coefficients is carried out by an expert evaluation. For this is a survey of experts. Every expert defines a set of numbers that reflect his view of the importance of indicators. To form you can use the ranking method. During installation procedure rankings understood the importance of indicators based on their ordering. Best performance is given first rank, and worst - fourth. Thus, the expert should place the figures in order of importance and attributed to each natural number series. Rank is determined by its index number, if in its place in the series, there are no others. When the one place we have some indicators that do not differ, then rank each equal to the arithmetic average of their new rooms.

In determining factors assumed that between the rank and importance of the indicator there is a linear

relationship. While determining factor is the formula that is given in:

$$C_{ji} = 1 - \frac{r_{ji} - 1}{4}. \quad (2)$$

Then normalized values:

$$q_{ji} = \frac{C_{ji}}{\sum_{j=1}^{4} C_{ji}} \quad (3)$$

Finally coefficients calculated by averaging the values that are received from all the experts:

$$q_j = \frac{1}{N} \sum_{j=1}^{N} q_{ji} \quad (4)$$

Because components of the indicator level of motivation can be characterized by various military dimension, normalized by bringing them to dimensionless form. Given that we desired trend growth rate th, its value will be determined:

$$K_k(t) = \frac{X_k(t)}{X_{k\max}} \quad (5)$$

where $X_k(t)$ the numerical value of qualitative assessment index the at the time

$X_{k\max}$ - the maximum possible numerical value the evaluation index.

Qualitative evaluations of these parameters are determined on a ten point scale. Assessment criteria developed separately depending on the completeness of the performance specified conditions.

Conclusion. Offered in Article methodical approach to assess the level of motivation in the course of military combat training to enhance their level of training, and can be used to determine the level of combat training management training subjects.

Directions for further research can study issues arising during the evaluation of motivating troops during combat training.

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Методический подход к оценке уровня мотивации военнослужащих Вооруженных Сил Украины

Резюме. В статье изложен методический подход к оценке уровня мотивации военнослужащих в ходе проведения мероприятий боевой подготовки.

Ключевые слова: боевая подготовка, мотивация, оценка.

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An improved method for calculating the probability of occurrence of the military conflict

Resume. Improved method for calculating the probability of occurrence of the military conflict taking into account the information potential of the parties to the conflict.

Key words: information capacity, information environment, information influence.

Nowadays predicting the probability of the military conflict beginning has become significantly relevant. In spite of the strong institution of providing the global security, declared in the strategy papers of the vast majority of states and military-political blocs attempts to solve contradictions mostly peacefully, military conflicts still occur in the XXI century.

Analysis of events from the beginning of tension between Ukraine and Russia shows that practical measures to preventing military conflict were ineffective.

The existing military-political challenges developed into purposeful information (information-psychological) effect and threatened to destabilize the social and political situation in Ukraine and are steadily deteriorating.

Poor information policy effectiveness (at the beginning of the confrontation), in coordination of the various entities of information security of the state, the weak presence of Ukraine in the global media space and etc. were the main reasons for this. The absence of the scientific-methodological body for calculating (predicting) the probability of the military conflict beginning, taking into account information potential of the conflicting parties is one of the main factors and we can evaluate the dependence of the military conflict probability on the information potential.

In turn, the prediction of the probability of the military conflict beginning requires a complex consideration of the huge number of different factors that are able to contribute and lead to the military conflict escalation in any part of the world and at any time.

Solving tasks on prevention of military conflicts requires joint efforts of political, economic, diplomatic, military and other state institutions. In turn, it requires justification of procedure which would be able to determine the probability of the military conflict beginning quickly and with a significant degree of certainty.

Scientific works in this field [1-5], nowadays, can effectively determine the level of the state military security and potential threats, but their use requires a significant amount of time and a large number of different experts.

There is an urgent need to justify the simple, without the involvement of a large number of experts, but rather rapid and accurate procedure for determining the probability of the military conflict beginning.

The predicting procedure of the probability of beginning the international conflict by C. Wright [6] and its improved version – the model of calculating the probability of beginning the military conflict by Yu Punda [7] are quite effective procedures.

In these procedures, the following indicators are offered as the basic data: the level of the national interests importance, the combat capabilities of troops (forces), the costs of the military conflict, the level of the international community impact on the conflicting parties, military and economic potentials of these parties, the possible loss of the conflict, weight coefficients for each of these components, the moral and intellectual factors and uncertainties inherent to warfare.

The disadvantages of these procedures are: failure to take into account the information potential of the conflicting parties because of the level of influence on the international community and the willingness of the population and security forces to conduct combat operations, the availability of information and psychological impact on the population and the armed forces of the parties that don't allow to predict the probability of the military conflict beginning on the basis of information potential quickly and true to fact.

Since defence is the system of political, economic, social, military, scientific, technical, informational, legal, institutional and other actions of the state concerning preparation for the armed protection and its protection in case of the armed aggression or the armed conflict, the coefficient of the defence capability is functionality. The potential functions are its arguments: political, economic, military, scientific, technical, informational, legal and organizational:

$$K_{оз} = F\left(PP, EP, CP, VP, NP, N_t P, IP, P_R P, OP\right)$$

where PP - political potential;

EP - economic potential;

CP - social potential;

VP - military potential;

NP - scientific potential;

N_tP - technical potential

IP - informational potential;

P_RP - legal potential;

OP - organizational potential.

The following improved procedure of calculating the probability of the military conflict beginning, which, unlike the suggested procedures, takes into account the information potential of the conflicting parties and evaluate the dependence of the military conflict probability on the information capacity, etc, is proposed:

$$D = a\left(1 - K_{prev}\right) + b, \quad 0{,}2 \le D \le 1,$$

where D - the possibility of the military conflict beginning between the parties X and Y

K_{prev} - preventing coefficient;

a, b - reduction coefficient.

In its turn, the military conflict preventing coefficient can be represented by the sum of the appropriate potentials differences (our and our opponent), taking into account the structural coefficient in the prevention potential of the military conflict.

$$K_{prev} = \sum_{i=1}^{N} k_i \Delta P_i$$

where k_i - structural coefficient of the *i-l* potential in preventing the military conflict;

ΔP_i - *i-l* potential difference (our and the opponent's).

$$K_{prev} = k_{PP}(PP_X - PP_Y) + k_{EP}(EP_X - EP_Y) + k_{CP}(CP_X - CP_Y) +$$
$$+ k_{VP}(VP_X - VP_Y) + k_{NP}(NP_X - NP_Y) + k_{N_tP}(N_tP_X - N_tP_Y) +$$
$$+ k_{IP}(IP_X - IP_Y) + k_{P_RP}(P_RP_X - P_RP_Y) + k_{PP}(OP_X - OP_Y),$$

where $k_{PP}, k_{EP}, k_{CP}, k_{VP}, k_{NP}, k_{IP}, k_{N_tP}, k_{P_RP}, k_{OP}$ - coefficients of relative importance of the conflicting parties potentials;

$PP_X, PP_Y; EP_X, EP_Y; CP_X, CP_Y; VP_X, VP_Y; NP_X, NP_Y;$
$IP_X, IP_Y; N_tP_X, N_tP_Y; P_RP_X, P_RP_Y; OP_X, OP_Y$ - political, economic, social, military, scientific, informational, technical, legal, organizational potentials of the conflicting parties.

The indicator values used in the model range from *0* to *1*.

Thus, using this procedure of *D* - indicator, - possibility of the military conflict beginning between the parties is placed in the range from *0* to *1*.

Analysis of calculating the probability of the military conflict beginning between the parties X and Y are scheduled. Fig. 1

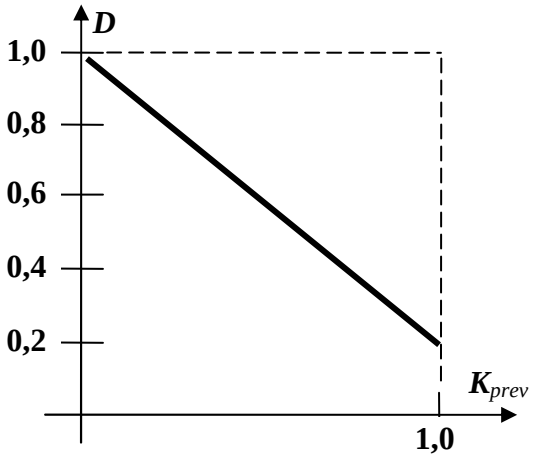

Fig 1 The evaluation schedule of the probability of the military conflict beginning between the parties *X* and *Y*

In accordance with the evaluation results of the probability of the military conflict beginning, we can conclude that:

if the military conflict probability coefficient will be in the range from 0 to 0.2 – there are interactions between the parties;

from 0,2 to 0,4 – conflict is low-probability;

from 0,4 to 0,6 – the probability of the military conflict beginning is increasing;

from 0,6 to 0,8 – one of the parties is preparing for initiating the military conflict;

from 0,8 to 1 – conflict is inevitable.

The proposed improved procedure of calculating the probability of occurrence of the military conflict, unlike with mentioned above procedures, takes into account the information potential of the conflicting parties on the basis of the level of influence on the international community and the willingness of the population and security forces to conduct combat operations, the availability of information and psychological impact on the population and the armed forces of the parties allows quickly and reliably to predict

the probability of occurrence of the military conflict.

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Усовершенствованная методика расчета вероятности возникновения военного конфликта

Резюме. Усовершенствована методика расчета вероятности возникновения военного конфликта с учетом информационного потенциала сторон конфликта.

Ключевые слова: информационный потенциал, информационное пространство, информационное влияние.

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The North Atlantic Alliance Policy of Standardization

Resume. The article deals with the formation and implementation of the Alliance of standardization policy. We consider the basic policy principles of standardization, classification NATO documents on standardization, management standardization process.

Keywords: North Atlantic Alliance, Standardization Agreement (STANAG's), Alliance Publications (AP's), management of the standardization process.

Formulation of the problem. The questions of the formation and implementation of modern standardization policy, basic principles of process standardization, classification of documents concerning standardization and management process.

Analysis of key studies and publications. Several national publications consider political science aspects of the transition to NATO standards. Also note General of the Turkish armed forces, Dr. Chihanhira Aksita (Dr. Cihangir Aksit), dedicated to the management process standardization NATO and directions of its development. The authors also used the original standards and other documents of NATO.

Objective. The article is an analysis of NATO's policy in the field of standardization.

Presenting main material. Standardization in NATO is defined as “development and implementation of concepts, doctrines, procedures and plans operational, logistics and administration in order to achieve and maintain interoperability, interchangeability and harmonization needed to ensure an adequate level of interoperability (interoperability) and optimize the use of resources”. NATO's policy of standardization aims at providing a common development, coordination and implementation approaches, principles, concepts, doctrines, criteria and plans for the development of national armed forces, defense planning procedures, operations, information sharing, administration and logistics to achieve and maintain the required levels of interoperability.

The principles of NATO standardization are: direction to achieve strategic objectives, consistency, coherence and coordination, openness, hierarchy, feedback, national commitment, responsibility for implementation and uniformity.

The documents NATO Standardization include: standards (NATO STDs); Standardisation Agreement (STANAGs); Recommendations for Standardization (STANRECs); other international standards adopted for use (non-NATO STDs); other documents related to the process of standardization (SRD): doctrine, directives, operational and tactical evaluation, the results of studying combat experience gained

during exercises and actual combat operations, strategic planning organization for standardization NATO and National Standardization Agency (NSO / NSA Strategic Plan).

NATO standards - a document that is developed and implemented in the process of standardization. By functionality standards are divided into operational, logistical (technology) and administrative.

Publications NATO Standardization (APs) - official documents for all or individual Member States establish a common terminology and determine the order and procedures for implementation and application of agreements on standardization and administrative procedures adopted by the Alliance. APs are official comments and explanations about the accepted terminology and procedure implementation of agreements on standardization.

The agreement NATO standardization (STANAGs) - an international treaty regulating the general rules and procedures, unification of administrative, technical and process support (logistics), weapons and military equipment other material of the forces of the Alliance and Partner countries. Agreements standardization criteria as defined by the ability to interoperability between members and partners.

The main body of the definition of NATO's policy in standardization is the Committee for Standardization (CS), directly accountable to the highest political body of NATO - the North Atlantic Council. Immediately organization (management) the preparation and approval of documents on standardization, support of NSDD relies on Standardization Agency (NATO Standardisation Agency, NSA). Management standardization process in NATO carried out in combination, according to the so-called counter-flow principle: retrograde way - "top to bottom" and progressive way - "bottom-up".

Standard development process includes the following steps: validation of proposals, drafting standard, standard ratification Allies, promulgation (entry into force and distribution), implementation (implementation), evaluation, clarification updates.

Conclusions. The potential and opportunities for effective defense of the Alliance member countries and for international operations outside their borders based on the effective implementation of three main components: defense planning, interoperability and standardization. All documents on standardization combined into a single coherent hierarchy of governing documents of the Alliance. National papers on Security and Defense, developed with the participation of NATO experts and received support for NATO actions may be considered as being responsible NATO's policy in the field of standardization.

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Политика стандартизации Североатлантического Альянса

Резюме. Статья посвящена вопросам формирования и имплементации Североатлантическим Альянсом политики в сфере стандартизации. Рассматриваются базовые принципы политики стандартизации, классификация документов НАТО по стандартизации, менеджмент процесса стандартизации.

Ключевые слова: Североатлантический альянс, стандарты, соглашения НАТО по стандартизации (STANAG's), публикации альянса (AP's), менеджмент в области стандартизации.

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Modeling the possible critical situations for the performance measurement of the military (military units) in the special conditions

Resume. Given a General classification and systematization of the dangers. The proposed approach to the construction of a model of the probable critical situations to support decision-making of commanders (chiefs) and appropriate staff structures in relation to personnel operating in extreme conditions.

Keywords: model critical situations, the model of the functional state of the military, the hazards, the types of critical situations.

Statement of the problem. According to sociologists [1] and the vast majority of governments of developed countries, Russia imposed on Ukraine hybrid war.

Hybrid war is not new, but the actual kind of war, waged not only with guns and tanks, as by the forces of political propaganda, terror, disinformation and economic pressure on the enemy.

According to experts on change hybrid war is likely to come a hybrid world. In the forecast of the Independent analytical centre for geopolitical studies considered several variants of development of events in Ukraine [2].

Depending on the nature of the situation, V. Putin's regime can be selected at least three choices:

1. The transition to real implementation of the Minsk agreements in the case of immediate continuation (strengthening) of the US and EU sanctions against Russia, began large-scale socio-economic crisis in the country, and also defending by Ukraine of its clear and uncompromising positions (termination Russia support separatists-terrorist forces; the withdrawal of Russian troops, armaments and military equipment from the territory of Donbas; regaining control on the Ukrainian-Russian border, as well as the return of the Crimea to the Ukraine) and increase their efforts to protect the public interest, including by force.

2. The increase (increasing) pressure on Ukraine in political-diplomatic, economic (primarily energy) and military-terrorist areas in the case that the Kremlin will be able to cope with the Western political-economic sanctions and control of financial-economic situation in the country, as well as to achieve certain “success of Russian policy in the Ukrainian direction”.

3. Intensification and scale offensive actions in Eastern Ukraine (including lock M. Mariupol and advancing in the direction of the Crimea and Transnistria) - in that case, if the Western countries are not United in

their attitude to Russia, but also dramatically worsen the socio-economic and political problems in Ukraine.

The above review of the political situation in the face of Russian aggression leads to the conclusion that in any event the armed forces of Ukraine will carry the service in extreme conditions.

There is a need for a new approach to effective human resources management in crisis situations, which is the ideology of security in peace and relief to the reliable protection of population, objects and territory of the state from accidents, natural disasters and consequences of aggression. That is, the urgent problem of development of actions of commanders (chiefs) and the state as a whole in relation to training, education and certification soldiers that operate in the conflict zone (in critical conditions). Rational use of units and other military formations in the zone of the antiterrorist operation (ATO) is possible solely on the basis of a clear understanding of the functional condition of the personnel, who is engaged to perform a specific task.

Structurally-logic scheme of the decisions of commanders (chiefs) and appropriate staff structures in relation to personnel operating in extreme conditions, is shown in Fig.1.

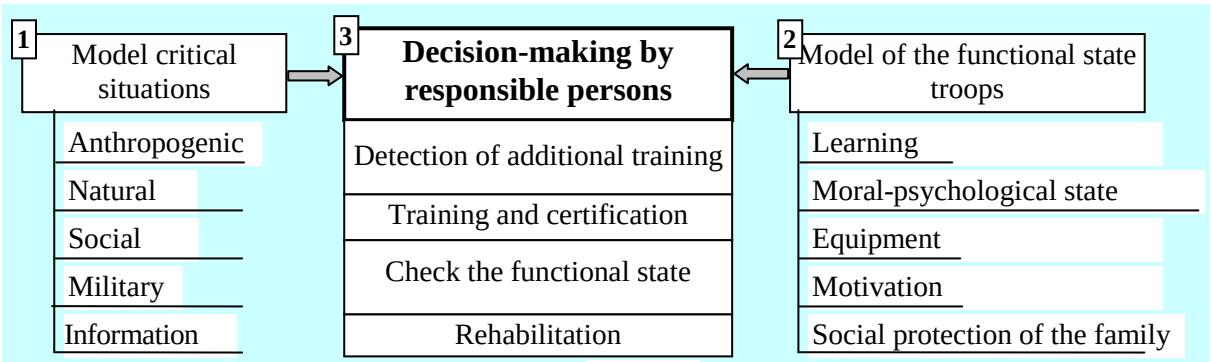


Fig.1

Based on the analysis of the most probable critical situations (critical situations model – block 1) are determined an academic discipline who need to focus on in training. Based on the model of the functional state of the military (unit 2) develop criteria for the assessment of training and functional status of military personnel.

After completing the course of training certification and verification of the functional state troops who will operate in a conflict zone (e.g. the zone of ATO) – unit 3.

The initial data for the adoption of certain decisions, the results of the analysis of possible critical situations, i.e. the construction of plausible models of critical situations. This issue devoted this article.

Analysis of recent researches and publications. In different sources in different defined the term “critical situation“, but the meaningful essence of this concept is the same. For example, in [3] noted that a critical situation –a set of dynamically changing ratings (analysis, generalization) of a set of facts and relationships between them, which consist of causes and effects that

depend on events and processes that result in complicated or fatal consequences. Under the critical situation in [4] refers to an extremely complex, difficult and dangerous situation that generates the deficit value in human life" when it is impossible to realize their aspirations, motivations, goals and values – all of which can be caused by internal necessity.

In [5,6] is partly the classification of critical situations on various grounds. However, within the analyzed sources the contents of critical situations resolution regarding the East of Ukraine, where currently perform their duties the military personnel of VS of Ukraine.

The aim of the article is justification of approach regarding the creation and use of models of crisis situations in the area of ATO in Eastern Ukraine by analyzing the content of the situations and expected frequency of their occurrence.

Presentation of the basic material. The President of Ukraine Petro Poroshenko decided on the seventh wave of mobilization – it is the only wave in 2016, if there is deterioration in the Donbas.

Another possibility, which now appears, is a military service under the contract. The President of Ukraine stressed that tens of thousands of Ukrainian patriots took the opportunity that gave us the opportunity to significantly delay the new wave of mobilization, greatly reduces its potential strength.

In turn, the Minister of defence of Ukraine Stepan Poltorak said that 20 thousand personnel have already signed contracts and this number is increasing every day. We plan that every month this number will be 5-7 thousand people.

The training system should be mobilized to military units acted professionally trained soldiers. Rank and file heading to some training centers, the sergeants in the other, and the officers will be sent on training courses at higher military educational institutions. Every military unit needs to determine the specific number of specialists that need to be replaced. According to this order, people will be directed to specific teams, which will be short combat coordination as soon as possible to join the team.

For the qualitative training of the mobilization reserve first of all you need to decide on academic subjects, who must be presented at training camps and to improve the system of certification soldiers. The solution to these problems is possible with the use of evidence-based models of critical situations that may arise in the area of military conflict.

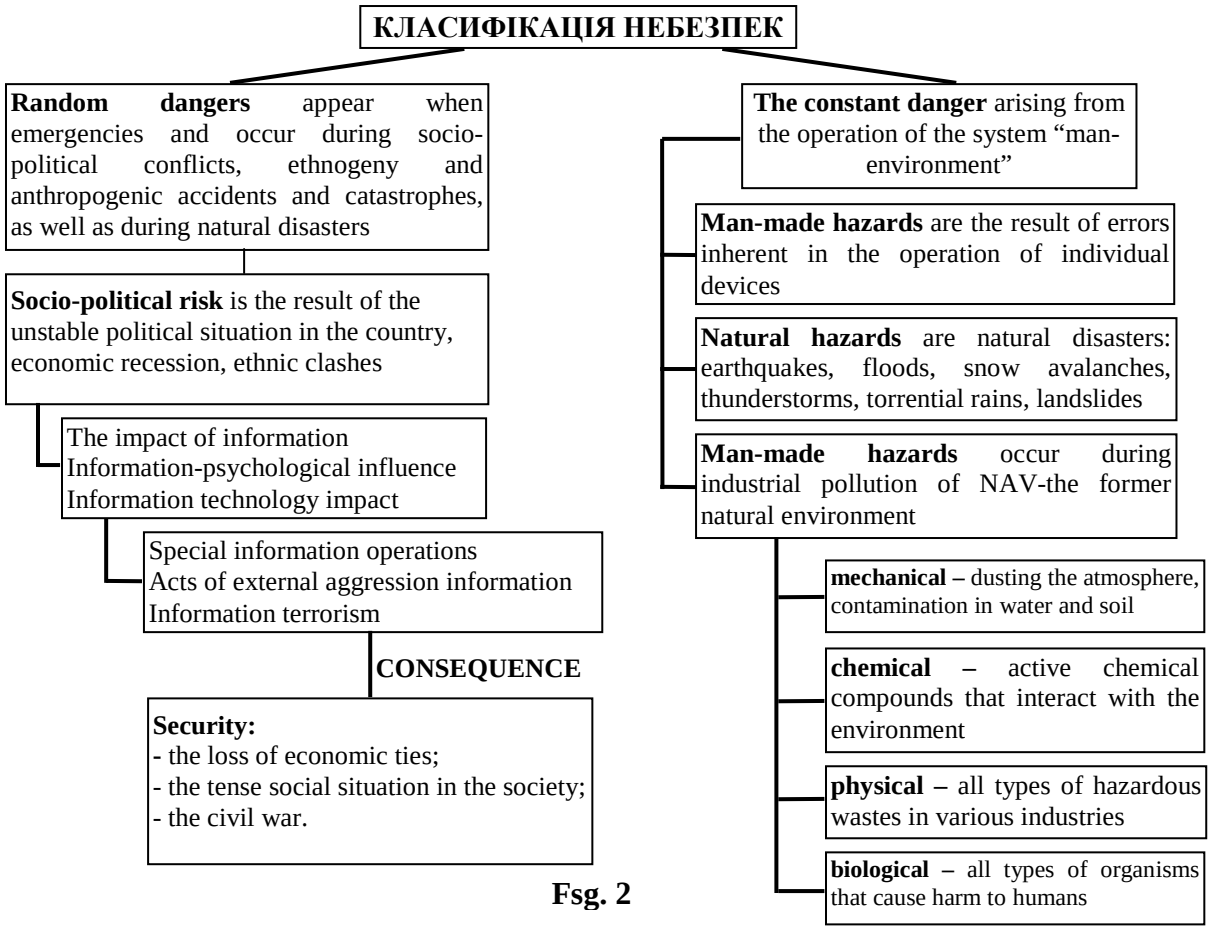
Yet a complete classification and systematization of hazards (phenomena, processes, objects) that are able to harm a man, has not yet been developed. You can talk about partial classification according to individual indicators (Fig. 2).

So, according to the classification of the dangers, all the dangers are divided into fixed and random.

Constant dangers depending on their origin are divided into natural, technological and man-made.

Random dangers appear when emergencies and occur during socio-political conflicts, ethnogeny and anthropogenic accidents and catastrophes, as well as during natural

disasters. Scale distribution they are divided into local, regional, or global.



Fsg. 2

Table 1

TERM	INTERPRETATION THE TERM
Information security	The state of security of individuals, society and the state that produces the information development (technical, intellectual, socio-political, ethical, moral), for which a third party informational influence did not cause them significant harm.
The impact of information	Organized targeted use of special media and technologies to make changes in the consciousness of the individual or population (correction) and (or) information technology infrastructure and (or) physical condition of the person.
Information-psychological influence	The impact on the consciousness of the individual or population to change (correction) of their behavior.
Information technology impact	Impact on the information technology infrastructure to ensure the implementation of necessary changes in its work (stop work, unauthorized the information revolution, programming on certain errors, reduced speed of information processing, etc.), and the impact on the physical condition of the person. ITV is a security risk to information technology infrastructure and physical condition of the person.
Special information operations	Planned actions aimed at hostile, friendly or neutral audience, which include the impact on her mind and behavior through the use of organized information and information technology to achieve a certain goal.
Acts of external aggression information	Legal and (or) illegal actions, the implementation of which could have a negative impact on the security of the information space of the state.
Information terrorism	Dangerous acts with the information impact on social group of persons, state bodies of authority and administration related to the dissemination of information, which contains threats of persecution, violence, murders, as well as the distortion of objective information that leads to the emergence of crisis situations in the state, forcing of fear and tension in society.

The impact of random risk can be divided into social, technical and environmental. Today in the East of Ukraine the socio-political dangers which are a consequence of the conflict with the Russian Federation. The enemy carries out information, information-psychological and information-technical influence, by arranging appropriate activities: special information operations, acts of external aggression information and information terrorism (see Table 1).

It should be noted that in the course of armed conflict may experience all kinds of considered the dangers of anthropogenic, natural, and anthropogenic.

Possible critical situations that require direct application of the components of the security sector and defense of Ukraine, the results of the analysis for the purposes of the Strategic defence Bulletin of Ukraine can be classified depending on the nature and consequences of such situations (Table 2).

Table 2

Type of situation	Description of the situation
Situations of ethnogeny character	Arise as a result of transport accidents, disasters, fires, unprovoked explosions or threats, accidents with the release (threat of release) of hazardous chemical, radioactive, biological substances, sudden destruction of structures and buildings, failures of engineering networks and constructions livelihoods, hydrodynamic accidents at dams, dams.
Situation of natural character	Arise as a result of dangerous geological, meteorological, hydrological, marine and freshwater phenomena, land degradation or subsoil, natural fires, changing the state of air pollution, infectious diseases of humans, farm animals, mass destruction of crops by diseases or pests, changes in water resources and biosphere.
Situation of social and socio-political nature	Associated with the illegal actions of terrorist and unconstitutional direction: exercise or a real threat of terrorist attack (armed attack capture and detention of important components of nuclear facilities and materials, communication systems and telecommunications, assault or attempted air crew or ship)
The situation of a military nature	Associated with the consequences of the use of weapons of mass destruction or conventional weapons, during which there are secondary factors of defeat of population due to the destruction of nuclear and hydroelectric stations, compositions and depositories of radioactive and toxic substances and waste, petroleum products, explosives, highly toxic substances, toxic waste, transport and utilities.
An emergency state level	Cover the territory of two or more of the regions of Ukraine, Autonomous Republic of Crimea, oblasts, cities Kiev, Sevastopol) and the elimination of which necessary material and technical resources in amounts that exceed the capabilities of these regions, or in other cases stipulated by legislative acts.
An emergency situation of regional level	Cover the territory of two or more districts (cities of regional significance) of the Autonomous Republic of Crimea, the regions, and to eliminate it necessary material and technical resources in amounts that exceed the capabilities of these areas, or the situation that led to violation of normal conditions of life from 1 thousand to 10 thousand people more than 3 days.
Emergency situation at the local level	Beyond the territories of potentially dangerous object, threatening the environment, neighbouring settlements, engineering constructions, and to eliminate it necessary material and technical resources in amounts that exceed their capabilities potentially dangerous object or situation, which led to violation of normal conditions of life from 100 to 1 thousand people more than 3 days.

To identify the most probable critical situations in the conflict zone it is necessary to analyze the peculiarities of the region, for example, the area of the ATO [7].

Technological risks. Donbass – the region most industrially loaded in Ukraine. Here there are 6.5 thousand hazardous chemical enterprises (in Ukraine there are 20 thousand). Only in the Luhansk region is located 159 high technological risk. With 20 objects that are the largest polluters in Ukraine, in Donetsk and Lugansk regions are located: the Mariupol metallurgical combine.

On the territory of Donetsk and Lugansk regions are large accumulation of waste that belong to the fourth (the highest) level of danger. The concentration of heavy metals in the soil exceeds the permissible limits several times. The same applies to hazardous substances in the air. As a result of shelling of the city Happiness, the content of hazardous substances in the air in a few cut exceeded the maximum permissible concentration. Fires caused by military actions damaged 17% of the area of vegetation zone of the ATO.

The natural risks. The war caused irreparable damage to the natural reserve Fund of the region, which developed solely as an industrial. However, in the Donbass more than 300 objects of natural reserve Fund area over 1,800 sq km, More than half of the protected objects of the Luhansk region and about one third of Donetsk region residing or temporarily were in a combat zone ATO. It and natural reserves “Lugansk” and “Ukrainian steppe” and national natural Park “Holy mountains” and “Meotida”. In the area ATO the entire Donetsk ridge which is located in Luhansk region and partially in Donetsk, where there are rare species of plants and animals that cannot be found anywhere else. Significant damage is to the construction of fortifications. These facts occur in many protected areas, particularly in the reserve “Melovaya flora” regional Park “Kramatorsk”, which are now in the liberated territories. You should also take into account the risk of graves on the territory of natural reserve Fund. In complex terrain and rocky soil poisoned water into the rivers and wells. Need water filters.

The risks of a military nature. In the Donbas is widely developed coal industry. Piles are mandatory attributes of all the coal areas.

Help. The heap is a artificial hill of a conical shape, formed from the gangue, which is obtained as a result of development of coal deposits (deposits of other minerals).

Waste heaps in Donbas is height, which are used by the military, of which shoot, and under fire. Chemical composition of filling shells, mines, pomegranates contain toxic substances. After the bombings of the chemical, the composition of which is known only to professionals, and contaminate the soil and water that can cause some environmental problems for the unauthorized use of the breed for domestic purposes in the mines, combustion, and contamination of groundwater.

The main environmental problems that we will receive as a result of military action, is the flooding of mines and the release of mine waters to the surface, destruction of sewage treatment plants, chemical and radiation pollution

of water resources, pollution of air, soil, dispersion of chemicals due to the explosions of shells, mines, bombs and the like, the destruction of places of storage of dangerous chemical substances, wastes, their combustion. Also there is a destruction of landscapes, vegetation, topsoil, large areas of vegetation.

Risks social and socio-political nature. Against Ukraine by Russian Federation is outright information war. To achieve the goal of information-psychological impact use the entire available Arsenal of manipulation, misinformation, intimidation, spreading of rumors, aggressive initiation of object States effect.

The main directions of Russian propaganda in the occupied territories of Donetsk and Lugansk regions is undermining the confidence of the population "LPR" and "DPR" to the leaders of the Ukrainian state; the formation of qualities of the new Russian patriotism"; raising the population's level of political activity; justification of the occupation of the liberation of Donbass from Ukrainian nationalists; the spread of myths about the historical past of the "new Russia"; justification of the idea that the war unleashed by "Kiev junta"; the image of the "shortcomings" of European integration and demonstration of the advantages of Union with Russia; dissemination of the judgments that the Russian troops are not fighting in the "new Russia", and only the forces of the voluntary militia fighting with the troops of Kiev.

The basic tools of information-psychological influence are the media: print, radio and television, the Internet.

Help. Almost all of may in the Donetsk and Lugansk regions in analog and digital terrestrial broadcast, there are no such powerful broadcasters as "First national", "inter", "1 1", "Ukraina", ICTV, channel 5. Their frequency is broadcast in Russian TV channels: ORT, NTV, RTR, Russia 24.

Looking at the ease with which the aggressors took control of both analog and digital terrestrial TV in Ukraine, you can argue about the insufficient level of information security, or unwillingness to oppose in the first place on the technological, not military levels.

Conclusions. The main content of the proposed approach to the modeling of critical situations are the following: structuring of critical situations on certain characteristics and the peculiarities of the conflict zone (zone of ATO).

Depending on the source of the emergency, subdivided into situations of natural, technogenic, military and socio-political nature.

Military action to overcome these situations should be worked out in the preparatory training camp of the mobilization reserve. A more detailed study of the characteristics of the conflict zone will allow you to specify the subject of the training of reservists.

Further research is advisable to devote to the development of a model of the functional state troops for the formation of specific criteria for evaluating the proficiency and morale of military personnel in critical conditions.

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Моделирование вероятных кризисных ситуаций для оценки служебной деятельности военнослужащих (воинских подразделений) в особых условиях

Резюме. Приведена общая классификация и систематизация опасностей. Предложен подход к построению модели вероятных критических ситуаций для обоснования решений командиров (начальников) и соответствующих кадровых структур в отношении личного состава, действующего в экстремальных условиях.

Ключевые слова: модель критических ситуаций, модель функционального состояния военнослужащих, виды опасностей, типы критических ситуаций.

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The problem of providing the Armed forces of Ukraine weapons and military equipment during combat operations

Resume: In the article the necessity of rethinking views on the existing system of the Armed Forces of Ukraine arms and military equipment. Substantiates the importance of timely decision-motivated and well-founded strategic decisions regarding its reform. The necessity of playing a modern, progressive, and most realistic system of mobilization training of the national economy and the importance of using existing scientific potential.

Keywords: mobilization training of the national economy, defence sector, mobilization reserves.

Statement of the problem. A comprehensive review of the security sector and defense of Ukraine has highlighted problems in the military-technical sphere – lack of modern means of armed struggle, the unavailability of repair facilities, the failure of weapons and military equipment in the armed forces and strategic reserves. The results of the participation of the Armed Forces of Ukraine in combat during anti-terrorist operation (hereinafter-ATO) in Eastern Ukraine have shown insufficient level of their preparedness for the conduct of modern armed struggle. This has been reflected in the new edition of the Military doctrine of Ukraine [1].

Of course the strategic reserves of arms and military equipment (hereinafter VVT) are created to meet the growing needs of the armed forces in the material and technical resources during the strategic deployment and conduct the first operations when the national economy is in the process of transition from peaceful to military position.

Analysis of recent researches and publications. Views on this process suggest that the national economy since the beginning of the special period starts rebuilding on the functioning in the conditions of the special period and after a certain period of time significantly increases the production of arms [2]. The dynamics of meeting the military and economic needs, which relied the basis of military-strategic calculations in the Soviet Union, included a three-month period for carrying out degreasing of defensive mobilization capacities of industry in the transition to mass production of VVT.

At the same time it is necessary to consider that changes in the strategy and tactics of armed struggle lead to changes in the preparation of the States for defense. If earlier, according to the strategic plans, focused on preparations for combat operations in the border areas, but now, given the ability of modern means of armed struggle, under the possible impact on the entire state territory, including most objects of the national economy [3].

Under present conditions of development of systems of remote sensing, geographic information systems, it is increasingly difficult to keep secret the locations of the parts and units of the Armed Forces, the location of the objects of the national economy, including the defense sector of the economy. Even in the Internet you can find satellite images are not difficult to identify the critical infrastructure. The location of these objects is well known to the security services of other countries, and therefore the leadership of the illegal armed groups.

If earlier means of conventional weapons with the beginning of the operation were amazed at the forces on the depth of the front gangs, under the existing conditions of the development of reconnaissance-strike complexes under the influence is the whole territory of the state. This applies to enterprises of the national economy and vital services.

As experts predict on issues of national security and defence, after the start of military conflict, under constant fire of the enemy, or possible asymmetric attacks on the objects of the national economy throughout the state, will significantly increase the need for recovery time of issue of defence products, and the production of high-tech products is excluded altogether [2]. Therefore, without changing the views on the mobilization preparedness of the state to function in the conditions of the special period, meet the needs of the defense becomes extremely problematic.

The purpose of the article is justification of the importance of making informed strategic decisions in support of the Armed Forces of Ukraine weapons and military equipment during combat operations.

Presentation of the basic material. Production of IWT enterprises national economy in the conditions of the special period, consider the following features:

the increase in the production cycle of modern weapons and military equipment in connection with their complexity;

the condition of the existing enterprises and the mobilization of existing capacity, which is planned to facilitate the production of VVT;

the need for completing the elements, parts and components manufactured by enterprises EFE abroad or in cooperation;

finding the EFE enterprises, objects of power generation, energy supplies in the affected area of the potential enemy weapons;

the availability and conditions of obtaining raw materials.

Today the production of AME was significantly increased compared to the period of the second world war, when the ships of “liberty” was built in a few weeks, and none of the weapons did not require its creation and the beginning of mass production more than one year. Now technological time of production of the F-15 is 3 years, tanks “Abrams” – 22 months, anti-aircraft and missile systems – up to 3 years. Significantly increased the production of IWT, in particular, instruments of automation of processes of target detection, identification, sighting and aiming conventional and precision-guided munitions, protection from enemy weapons and equipment control.

Complicated generally the production process, including:

increasing cooperative ties;

an increasing number of complex components and assemblies in samples of VVT;

the requirements for tolerances when processing materials;

much harder steel processes;

rising skill requirements of labor.

With regard to the time and conditions the decision of tasks of support of troops (forces) ATA in Table. 1 show generalized temporal characteristics of the preparation phase to the beginning of hostilities and the active phase of the military conflicts of our time.

able 1

Country	**Name operation**	**Preparation phase**	**Active phase**
Iraq	“ Desert shield ”	163 days	
Iraq	“ Desert storm ”	about a year	38 days
Iraq	“ Sword desert ”	about a year	5 days
Yugoslavia	“ Allied force ”	about a year	78 days
Livya	“ Odyssey. Dawn ”	about half a year	***13 days***

Are given in Table. 1 data indicate that on average, the time indicators the preparation of the enemy to attack range from 6 to 12 months, and the duration of the active phase of military action from a few weeks to three months. That is, during the special period the manufacture of modern weapons is almost impossible.

Based on the above, we can conclude that the task of ensuring defence requirements in the ATA it is advisable to decide by its accumulation and content in the troops (forces), the strategic reserves in peacetime and in a period of threat potential (including mobilization) sectors of the national economy, using the opportunity of joint production of arms in co-operation with other countries or purchase (obtain lease) abroad.

With VVT that is accumulated in peacetime, too, have its own problems. After the collapse of the Soviet Union, Ukraine inherited one of the most powerful military forces in Europe. On its territory stationed: rocket army, three combined arms and two tank armies, one army corps, four air armies, a separate Air defence army, the black sea fleet. They numbered more than 750 thousand people of the personnel, 6.5 thousand tanks, 7 thousand armored fighting vehicles, 7,200 artillery systems of various calibers, up to 1.5 thousand aircraft.

During the downsizing of the armed forces of Ukraine of the AME remained in the armed forces, some were sold abroad. At the same time, a significant portion of the armaments were transferred to the storage base. However, the funds for maintenance of such equipment in the required volumes have not been allocated; the work schedule was not carried out. Moreover, the extremely low amounts funded work to ensure the technical readiness of the AME that was in the troops (forces).

In the initial phase of hostilities during ATO in Eastern Ukraine, the consequences of this were disappointing. De facto it turned out that the level of serviceable equipment is only about 40%. Up to 50% WME in need of repair, maintenance in-depth and complex maintenance work. To fix everything at once was impossible. Due to the lack of sufficient operational equipment in March and April 2014, eight mechanized brigades were able to generate only 6 battalion tactical groups [4].

Especially significant loss of equipment took place during the fighting at Isvarin (July 2014), Ilovaysk (August 2014) and Debaltseve (Feb 2015) [5].

Analyzing [5-7], we can conclude that choosing the option of replenishment of combat losses of IWT at the expense of created reserves in peacetime, the volume of stock should be more predictable losses.

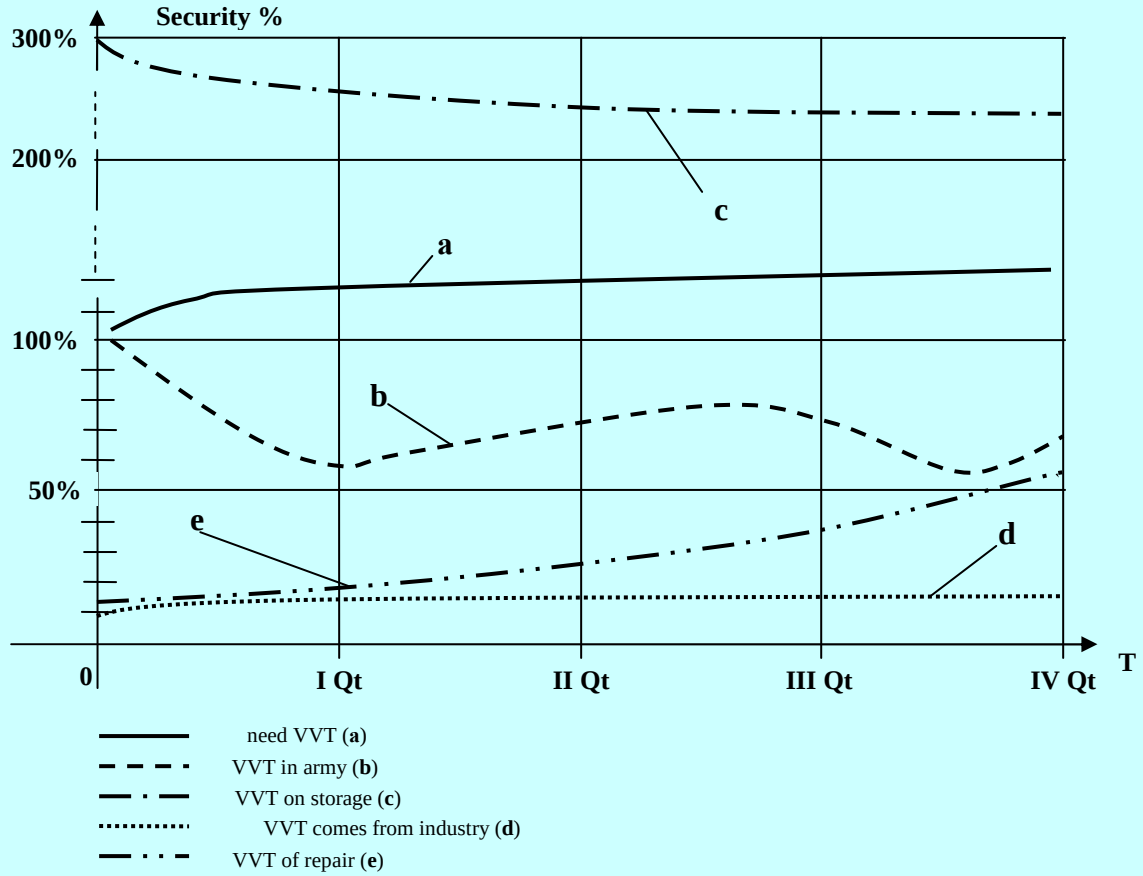

Fig.3. Graph of MIC satisfaction of the state during ATO in East of Ukraine.

The vast majority of equipment received for 2014 – 2015 years in the armed forces from defence companies, it is refurbished equipment depots and recovered after battle damage.

This was made possible thanks to collaboration with the State concern "Ukroboronprom" concerning improvement of the mechanisms of repair of weapons and military equipment and representation of the group of experts at the ATO headquarters and the sector headquarters of the ATO for the timely solution of questions of restoration of arms and military equipment.

During the year, restored and repaired by the forces and means of the

repair units of the Armed Forces of Ukraine and mobile repair teams from the enterprises of the military-industrial complex more than 22 thousand units of weapons and military equipment, in particular 21,2 thousand units of weapons and military equipment of Land forces; 806 units of the Air Force, including 19 aircraft and helicopters.

Since the beginning of ATO restored and repaired more than 36 thousand units of weapons and military equipment, Table 2, [8].

Table 2

Recovery state VVT in 2014–2015

Types VVT	Number units	
	2014	2015
Armored	4088	3196
Missile and artillery	670	1743
Helicopters	67	17

On the pace of recovery of AME affected as the production and repair capacities of the national economy. Most businesses EFE have critical physical and moral depreciation of basic production assets, technological lagging behind the leading countries in the world, a low profitability. Many items of VVT technology, repair facilities and specialists not available at all.

Given the foregoing, it can be argued that:

first, based on time factors and the possible impact of the enemy on the OSE in the system of support for the troops (forces) of the VVT, the role of upgrading the weapons maintenance units of the armed forces and the enterprises of the national economy, regardless of ownership;

secondly, the willingness OSE to restore combat capabilities of VVT in the special period, should be provided with a permanent download of repair facilities and repair units of the armed forces in time of peace, the establishment and maintenance of appropriate inventory of components, availability of trained technical staff.

The authors of the article pay so much attention to the repair capacity of the state because Ukraine has very difficult situation with the production of new samples. During 2003 and 2013, MIC has been loaded by military orders for only three to four percent of its capabilities. With the beginning of the ATO, when we increased orders to companies, it turned out that they are not able to timely fulfill them. Impact of outdated material-technical base, the critical condition of providing businesses highly qualified workers, technical and engineering personnel. For building work, these companies were forced to significantly increase staff, but to find skilled workers was not a simple task, despite the problems in vocational education in training workers. Through this latest technology comes in single copies, announced the plans for its release are not met. So Ukroboronprom in February 2015, announced plans before the end of the year to release 150 armored vehicles “Dozor-B” and 40 tanks “Oplot”. At the end of the year we can say that released only 5 armored vehicles “Dozor-B” and a single tank “Oplot”.

And it's not the most difficult item meet the needs of the troops (forces) in the ATA. That is, the economy showed the impossibility of the timely production of weapons. In the opinion of the authors this result is not timely acceptance of the political and military leadership of the state strategic

decisions in the sphere of defense; the lack of personal responsibility for decisions and performing tasks.

In the context of the issues, see the analysis of the problems of adoption in the state strategic decisions. In General, the sphere of national security and defense there are several basic types of strategic decisions:

the priority and nature of threats to national security from a military point of view;

on the definition of the dominant forms and ways of warfare;

a system state (military) control and its functioning in the conditions of war (emergency) provisions;

the number and combat strength of the armed forces in peacetime and ways of acquisition in case of war of a scale;

about the main tasks of mobilization for industry, transport, fuel and energy, agriculture, health, economy in General needed for waging war;

regarding the development of specific defense industries: armored vehicles, combat aircraft, warships, reconnaissance, communications, radar, missiles and ammunition, electronic components, etc;

to create the most important elements of the new organization of the defence forces (organization structures) under the strategic and operational objectives and ideas that underlie their use.

Weekend until further management of mobilization preparation of national economy and the state as a whole is a strategic decision on the order of satisfying the needs of defense and national security. Satisfaction will come at the expense of resources accumulated in time of peace; partly accumulated and partly be produced in the period – that is, for a mixed option.

The key to determine the future tasks of the economy, should be assessment of capabilities of the country both in peacetime and during the special period by:

meet the needs of the Armed forces of Ukraine, other components of the security sector and defense;

the effective and continuous functioning of state and non-state governments in peacetime and in special period;

creation of conditions for life of population, the provision of the necessary number of qualified personnel for production;

providing the economy of resources and means of production;

formation of the environment of functioning of the economy that is not associated with the implementation of the defence tasks of the state.

The initial potential or the possibility of domestic EFE regarding the creation and production of the necessary range of VVT, material and technical means (hereinafter MTS) with combat and technical properties of the required level, characterized by:

the availability of technology, technological equipment, production facilities and trained personnel for the manufacture of a specific item VVT closed-loop;

a list of activities that companies perform using its own capacities in the case of the existence of dependence on imported components.

It is also necessary to consider that to provide for national security and

defense, the pace of investment in EFE, the volume of research and development work and production of the necessary nomenclature of IWT in the state of any country in the world, including the US and Russia.

This situation necessitates the expansion of Ukraine's participation in cooperative projects for the development of VVT, the constituent parts (nodes, units). It is economically more worthwhile compared to licensing the production of arms, the quantitative need for which the Ukrainian armed forces, insufficient for the development of the serial production. This path is actually the only real opportunity for developing country to participate actively in the development and mass production samples and components (components) of elements that use the latest technology possessed by the States parties of the societies. A joint production of IWT in co-operation with other countries, provides (along with an unambiguous decrease in the cost of the establishment of AME) maintenance of scientific and technical and production potential of EFE, provides the opportunity to develop its priority areas, promotes international integration in the sphere of military-technical cooperation and accelerates the adaptation to international standards.

In the process of joint production of IWT it is necessary to assess the present state standards in the sphere of production and consumption, its compatibility with allies and potential partners. Find out the ability of security industries, primarily EFE, skilled labor force, is estimated to maneuver it, appropriate volumes of the reservation. In the future, ozonloch the status and capabilities of the country, the national economy, the Armed forces of Ukraine, other components of the security sector and defence must reflect the availability of energy resources. Are you referring to the volumes, terms of delivery of energy to take into account the threat of failure to fulfill the signed agreements and the like. In addition, we study the security and conditions of supply of energy as sources of heat and light for the life of the population and the means of ensuring operation of enterprises, institutions, traffic, operation support services and rescue and so on.

It ought to be reflected in political and military directives for implementation of the state defence planning.

Given work will allow to qualitatively prepare to make strategic decisions in the sphere of mobilization preparation:

the Institute of General designers have design offices in business profile, create pilot production;

what weapons, military equipment, missiles, ammunition, complex components and assemblies, circuitry, electronics and automatics, medicine and hygiene products, and so the state will produce in a closed cycle, which, in cooperation and with whom that will buy, from whom, and in what quantity;

required in the state power for the production of electricity, fuel, oil, gas, industrial and drinking water, volumes of storage and consumption possibilities of their purchases abroad, in peacetime and special period;

what are the strategic reserves of food and hygiene products for people to create, and how to keep them;

what stocks of raw materials, components, assemblies, and components to hold in reserves and mobilization reserves.

Erroneous strategic decisions regarding the allocation of resources between military and civil spheres of society, taken in peacetime, is extremely difficult and sometimes impossible to correct directly in the prewar period, and especially after the war began. And it is clear – such decisions have a huge degree of inertia through the nature of industrial production, the existing restrictions on the qualification and quantity of the available workforce, not to mention the limitations of the financial order.

Definition of the goals of EFE development, the development of its development strategy and measures to implement this strategy is important for the future 20-25 years. Taking into account the experience of other countries (USA, China, EU countries), such goals can be identified:

providing a force equipped the security sector and defense new high-tech designs, types and types of VVT and Logistics of the required quality and quantity within a certain period;

the preservation and development of high-tech enterprises export potential for the EFE within a certain military-technical international cooperation;

capacity development and manufacture of competitive high-tech products for civil and dual-purpose.

Based on the above, it is possible to draw **conclusions** for the future:

1. Preparing for support of the Armed Forces of Ukraine weapons and military equipment for the special period, should begin well in advance in peace-time provided by the program-target planning at the state level.

2. The previous event of the specified training should be to make timely and strategic decisions of the state leadership on national security and defence.

3. Planning the development of enterprises AS, maintain their building, cooperation with technical vocational education are important components of the system of state strategic planning with respect to ensuring security sector and defense of Ukraine VVT.

4. Without comprehensive international cooperation in the field of production of weapons Ukraine may find themselves on the sidelines of global technological development.

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Проблемы обеспечения Вооружённых Сил Украины вооружением и военной техникой в ходе ведения боевых действий

Резюме. В статье обосновывается необходимость переосмысления взглядов на существующую систему обеспечения Вооружённых Сил Украины вооружением и военной техникой, важность своевременного принятия мотивированно обоснованных стратегических решений по ее реформированию. Подчеркивается необходимость создания современной, прогрессивной, а главное реалистической системы подготовки национальной экономики и важность использования существующего научного потенциала государства.

Ключевые слова: мобилизационная подготовка национальной экономики, оборонный сектор экономики, мобилизационные резервы и запасы.

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Comparative analysis of information systems of automation of processes of management of financial-economic activity

Resume. In the article the comparative analysis of functionality of information-analytical systems (IAS) automation of processes of management of financial-economic activity in the Armed Forces of Ukraine and abroad. The degree of implementation of management processes in the IAS and the benefits of implementing automation systems.

Keywords: automation of control processes, defense resources, ERP system, financial-economic activities.

Formulation of the problem. In organizational and administrative work of the Ministry of Defense of Ukraine financial activities has a special place. From it depends largely on the timeliness and completeness of financial security and development of the Armed Forces of Ukraine, financial obligations to the state and other entities. The effectiveness of financial and economic activity largely depends on the full and timely mobilization of financial resources and their proper use for everyday normal process of the Armed Forces of Ukraine. This is especially important in terms of ATO. In this regard, the important role of effective management of financial activities, which can be reached via IAS management of financial and economic activity.

The purpose of the article determine the version of IAS management to solve the problem of automation of management processes of financial and economic activities of the Armed Forces of Ukraine.

Presenting main material. Modern ERP-system (Enterprise Resource Planning - Enterprise Resource Planning) combine all business transactions in a single solution, from assessment to planning, purchasing, shipping, and even accounting. Implementation of ERP-systems increases productivity and reduces costs. The main advantages of ERP-application technology include the following:

financial performance management to control costs;

financial planning and analysis solutions based on ERP-systems help reduce planning cycle time, improve efficiency and make more effective financial functions;

priorities are aligned resources and strategic / tactical goals and plans;

planning process with one or more applications can optimize financial and operational reporting;

opportunity in real time to analyze the data, which significantly improves performance.

According to the company SAP AG, the conditions of ERP-systems is to

reduce costs by 61% when choosing a product, channel, or provider. In the process of forecasting and a reduction in cycle time by 37% for example from standardized models planning to ensure coherence and comparison of data [1].

When choosing a selection of ERP-system processes automation control financial flows in the Armed Forces of Ukraine is considered low factors such as ease of use, functionality, product quality, technical support, price.

Implementation of the ERP-system enterprise resource planning requires technical, financial, human resources and time. Creating a roadmap (implementation plan) simplifies the process of implementation. Thus, the main points of the roadmap selection and implementation of ERP-system are as follows.

1. *Creating a list of requirements* - focus on specific business processes, their peculiarities. There is a widespread practice of selecting integrated solutions on price. This is not very efficient. When choosing a system must take into account the specifics of the Armed Forces and the possibility of adapting the architecture to the needs of the Armed Forces. The participation of senior Armed Forces during the selection system is necessary.

2. *Definition of evaluation capacity system solutions.* Is there enough available system solutions, panels, reports, etc.? Do I need to develop separate applications to account for very specific functions or resources account? These responses must be received by the supplier of choice, not after signing the contract.

3. *Experience from other users.* Armed forces of other countries are also system solutions for planning and automation of management of financial flows. Studying the experience and get recommendations from them on the correct choice system implementation difficulties, mistakes, etc. should be considered when choosing a system.

4. *Analysis functions provided.* Multifunctional systems with the performance and cost. This is usually to maximize the effect of automation achieved with a certain time lag when updating from version to version. Turnkey solutions on the one hand reduces flexibility, on the other hand, provides more stability and less initial and operating costs.

5. *Determining the need for mobile applications*. Today not only desktop computers can access the ERP-system. Guarantee the security of mobile applications will greatly expand the user experience and increase their productivity.

6. *Factor change management.* Currently, the process of reform and development of the Armed Forces, thus managing organizational change is an essential feature that promotes awareness, adoption and implementation of effective solutions.

7. A key feature is responsible and project manager, who is working with the employees of the vendor initiates discuss aspects of implementation within the team, collecting all the requirements of end users, organizes training with the system in the troops (forces).

8. *Ensuring the necessary time and resources for learning*. In parts of the

military unit (institutions) should be given the opportunity for in-depth study of the system. Specificity of the Armed Forces is that the most effective learning can realize people (team) is very well aware of the peculiarities of the Armed Forces.

Based on the analysis roadmap of ERP-systems can identify common errors in the methodology of choice:

Partial list of requirements. Introduction of a new ERP-system will lead to changes in the current work of the people, and in future processes. Therefore, it is important to understand the needs of users and processes after installation. Without detailed specified requirements fail to achieve the efficient functioning of the system. Requirements must be detailed in processes, operations and other features of the functioning of troops (forces).

The structural approach - is the first step when choosing a system. Prior to the selection process should introduce systems of each participant in the process of initial system requirements and principles of its choice. Everyone should understand the method of data collection requirements, the principle of selecting potential vendors, demonstrations, etc. format. Thus, each interested party is aware that the decision will be made on an objective and collective basis, and it will always result in a higher level of cooperation in the process.

Presentation of the product. Company-software vendors tend to focus on simplifying processes. The standard presentation shows a generalized process, a typical order of operations. At this stage it is important to understand that the initial presentation may be general in nature, but in the process to the final presentation to be shown all the details and specifics of the Armed Forces.

The purpose of decision. Selection of ERP-system is an integrated solution that has economic costs early in the process, which requires a multidimensional approach. Criteria and evaluation system of different types of systems should be coordinated to the presentation of the product. They must be sufficiently broad and objective observations consider all stakeholders.

Excessive emphasis on the cost of the system. The purchase price and implementation of ERP depends not only on the initial value that is declared by the supplier. It also includes functionality, technical support after implementation.

Failure transitional (adaptation) process. Following the introduction of its testing begins. It is at this stage revealed the largest number of errors and complications with procedures of data entry, access, verification, and more. Eliminating these errors, improve the system - a necessary process of the company's supplier.

Based on the analysis of IAS management processes of financial and economic activity is defined as follows:

1. The Armed Forces of Ukraine uses automation system “Parus” and “Ruslo-1C” (based on the platform “1C: Enterprise 7.7”) and trial operation are separate modules of SAP/R3. The Department of weapons and military equipment of the Ministry of Defense of Ukraine Ministry of Defence of Ukraine used information-analytical system support planning of arms “Cleopatra”.

2. Abroad, the most famous of automation systems of management and accounting processes in enterprises is SunSystem and Scala - each of which is a single centralized ERP-system that combines all general household items subject automation, including at the international level .

Given the task 1.4.8. Creating a unified information system of defense management (Defense resources management information system - DRMIS) Strategic Defense Bulletin of Ukraine, enacted by Presidential Decree Ukraine from June 6, 2016 № 240/2016, of the above systems appropriately considered as the best one for the implementation of the class ERP-systems, “Parus”, SAP, SunSystem, Scala. Details of the analysis of atomization below.

SAP/R3. According to the order of Defense 17.01.06 №12074/z with the development of a single system of control over administrative processes of the Armed Forces of Ukraine, including for the systems of management of financial and economic activities of the Armed Forces of Ukraine.

Functionality subsystem in “Finance” (developed as of 2008) has been implemented in accordance with the “Regulation on Accounting in the Armed Forces”, approved by the Minister of Defense of Ukraine on June 21, 2007 № 363 the following typical processes: banking on getting allocations and the transfer of funds subordinated to personal accounts; payments to creditors for centralized and decentralized purchased goods and services; settlements with tax authorities and funds; Payroll; Program payments; cash transactions; records of fixed assets; closure of the financial period.

The system Parus-Budget establishment, version 8 uses the database Oracle, has architecture "client-server" without restrictions on the number of jobs, the possibility of establishing a functional user, auto-updating client of the system from the server, the distribution of user access to corporate entities, organizations, units, hierarchy nodes [2].

The Department of Finance Ministry of Defence of Ukraine by Parus-Budget establishment, automated version 8 the following processes: drawing up and approval of the consolidated estimate of Defense of Ukraine; distribution of budgetary allocations of spending units lower level; drafting and approving the budget on a centralized expenditures; distribution of budget allocations for providing centralized expenditures of departments and offices MOD Ukraine and General Staff; the formation and control of budgets; forming electronic photocopies of certificates to estimate and plan allocations. Placing them on a ftp-server and sending by e-mail; accounting for funding; Accounting and finance the plan centralized procurement; accounting and legal financial obligations, payments to debtors and creditors; accounting and reporting; formation of analytical reports and other formal documents; monitoring competitive procurement.

Software system “Ruslo-1C” implemented on the platform “1C: Enterprise 7.7” and consists of five functional sub-systems [3]: financial accounting, financial accounting, accounting of personnel and salary workers, analysis of accounting

resources and forming reporting, formation of data to download a database PC “Formula MU” .

Software system (PS) “Ruslo-1C” - a complete solution for automation of accounting capabilities (financial, material and human) in military units of the Armed Forces of Ukraine, which provides computer maintenance and accounting data in information system (IAS) defense planning “Resource”.

Use PS “Ruslo-1C”: all units of the Armed Forces of Ukraine, the structure of which is financial services, centralized warehouses and arsenals. The only computer database PS “Ruslo-1C”, mainly formed during primary operations accounting.

Information-analytical system support planning of arms “Cleopatra” (platform MS Windows, MS SQL, Delphi) designed to automate the activities in the formation of policy documents on the development of weapons, the state defense order and maintain databases to create, upgrade, repair and procurement of arms and military equipment.

The “Cleopatra” is designed to perform the functions: input, storage, processing, analysis and display of information on medium and short-term planning of IWT; input, storage, processing, analysis and display of information on financial and economic, technical and economic data on R & D performed and data on weapons and equipment; preparation of solutions for the formation of policy documents on the development of weapons; formation of draft state programs of types of weapons and equipment; formation, control, correction and support implementation measures of the State Defence Order (SDO); generating reports regulated and free-form on the state of contractual work with necessary economic and financial feasibility calculations; exchange relevant information with AIS support defense planning.

In IAS “Cleopatra” is performed accounting information of all objects related to the subject area of weapons and equipment, the initial analysis and the formation of operational and regulatory reports.

SunSystem - ERP-integrated enterprise management system (developer - the company Systems Union Group), which is designed to [4]: accounting automation; development of financial statements in accordance with national and international standards; sales management, procurement, warehouse; business analysis companies (from small businesses to international holdings).

5-1000 SunSystems can support users and consists of two fully integrated with each other modular systems: SunAccount (financial accounting, many currencies, fixed assets, common shares) and SunBusiness (sales processing, handling procurement, inventory management).

SunSystems enables driving implement accounting operations in a single system with the means of operational analysis of reporting, business analysis tools, including budget planning, budgeting and forecasting.

Financial and analytical applications SunSystems let you perform operations consolidation, planning, budgeting, forecasting, and

performance management. Analytical applications use SunSystems functionality to transfer and synchronize financial and business information.

Scala - a full-featured product ERP/MRPII class, configured for different companies and covers the following areas of management [5]: finance, logistics, production management, maintenance, project management, human resources management.

Scala system has a modular structure, organizational implemented as ARM. The main modules of the system are:

Financial modules Scala - combine the functionality of automation of general ledger accounting, Modules book sales and book purchases management payments and creditors.

Modules Logistics - automate accounting functions goods orders for sales, accounting, procurement.

Production Management - is a system of planning production resources, principles-based standard MRP II, which provides management of various types of production. The plan-schedule production is based on sales forecasts or estimates for specific products and product groups within. Module costing exercises control costs and set prices for different scenarios.

Project management - integrated tool for budgeting, budget, resource planning and routine accounting.

Order management module for maintenance - helps to automatically schedule calls for periodic maintenance and repairs, supervises the materials and resources.

Module Scala PayrollPro - tool automation features departments and financial departments. Functions accounting personnel, payroll, automated payments and preparation of statistical reports.

Scala - open system architecture client/server, developed based on modern technology and is designed to work in a variety of operating systems, including Windows NT, Novell Netware and UNIX database and use MS-SQL and Perva-sive SQL.

Based on the analysis of IAS management processes of financial and economic activities determined the extent to which business processes in various IAS (Tab. 1).

In our opinion, it is considered appropriate to introduce in the Armed Forces of Ukraine information system “Parus” (full title – “Integrated automation system of managing the budget institution Sail-Budget establishment, version 8”) given following its benefits: local developers; transparent, simple and clear licensing policy developers; full functionality of ERP-system provides the customer needs; system is fully adapted to the national standards and legal requirements in the financial sector; system is well known for financiers and widely used in the financial and economic bodies of the Armed Forces of Ukraine; The developer is ready and able to regarding maintenance, support, modifying and upgrading the system to meet the needs of the Customer; The developer is ready and able to conduct customer training; The developer has the opportunity, if necessary for the customer to completion without payment systems under contract for support.

Table 1.

The degree of implementation processes in IAS

Name process	The degree of implementation					
	SAP	"Parus"	"Channel-1C"	"Cleopatra"	SunSystem	Scala
Accounting	needs some work	Implemented	Implemented	Implemented	Implemented	Implemented
Conducting contracts	needs some work	Implemented	is not implemented	Implemented (concerning SDO)	Implemented	Implemented
Conducting procurement	needs some work	Implemented	is not implemented	Implemented (concerning SDO)	Implemented	Implemented

Conclusions. Thus, the need to use the IAS management processes of financial and economic activity due to the following factors:

a significant amount of information to be processed and analyzed on the basis of the results to make recommendations for the further implementation of financial activities, prevent future errors, abuses, irregularities existing legislation;

requirements for the speed of the operations of financial activity, providing them with high quality;

the complexity of accounting and control procedures that require the use of many arithmetic calculations of various kinds of analysis - automation increase the efficiency of decision-making and enable the calculation of various complexity, analytical procedures using mathematical and statistical methods;

specificity and diversity of facilities financing activities (cash, non-current assets, capital, etc.);

the need to prompt and full error detection - use of automated data processing facilitates the detection of errors and reduces the risk of detection.

According to international practice the economic effect of the introduction of the system is about 20-30% of the annual size of monetary facility management.

Support decision-making leadership of the Armed Forces of Ukraine will ensure the formation of real-time information and analytical reporting (within the authority) by:

budget request and plan assignments (for programs KEKV, articles MOD estimates, organizational structure of the Armed Forces of Ukraine, periods, etc.);

state and dynamic performance of the budget (plan-fact);

settlements with suppliers and contractors;

accounting, and so on.

Using IAS improves the quality of planning and defense management efficiency by integrating processes and close relationship in all areas of personnel management, management organizational structure, management of defense planning, logistics, medical and other types of support, procurement management, property management, finance and budget, their reflection in budget funds and active monitoring of budget execution in real time.

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Сравнительный анализ информационных систем автоматизации процессов управления финансово-экономической деятельностью

Резюме. В статье проведен сравнительный анализ функциональности информационно-аналитических систем (ИАС) автоматизации процессов управления финансово-экономической деятельностью в Вооружённых Силах Украины и заграницей. Определена степень реализации процессов управления в ИАС и преимущества внедрения системы автоматизации.

Ключевые слова: автоматизация процессов управления, оборонные ресурсы, ERP-системы, финансово-экономическая деятельность.

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Evolution and Prospects of program-oriented planning development of weapons Ukraine

Resume. The article is devoted to the formative stages of the methodology of program-oriented planning and the main lines of development of the Armed Forces of our country.

Keywords: Armed Forces of Ukraine, program-oriented planning, the state arms program, the state defense order, the military-industrial complex.

Formulation of the problem. During the last cycle defense planning in the years 2014-2015, which was conducted in conditions of de facto armed conflict, was found a link organizational problems associated with the imperfection of the legislation on defense planning, lack of good interagency cooperation, coordination activities so low. In addition, increased requirements for planning determined the need for comprehensive planning of all components of the security and defense of Ukraine, not only the Armed Forces of Ukraine. Therefore, the analysis and ways to improve the system of defense planning is timely and relevant.

The article is an analysis and ways to improve the program and target planning of weapons systems Ukraine.

Presenting main material. The first research, covering issues jauntiness were made in the early 70s in the USSR Ministry of Defense. Foundations were formed interspecies methodology. Formulated in this period, principles and approaches to development planning weapon systems formed the basis formally adopted general provisions teaching in this area. The essence of these principles is as follows:

justification weapons systems and weapons development programs implemented in accordance with the tasks facing the Armed Forces (target planning);

integrated, cross-cutting nature of planning (program planning);

compliance tasks resources (reality planning);

Optimization (rationalization) of weapons on the criterion of "efficiency - cost" (optimal planning);

coverage of long-term planning (long term planning);

poshahove "slip" plan period of time (rolling planning).

When weapons program began to realize economically rational resourced 10-year plan for development of weapons, ensuring fulfillment of tasks facing the armed forces.

As basic documents that determine long-term established:

the main directions of development (ONR) weapon systems for a period of 15 years, which included data on target species, technical level samples (complexes of) weapon systems and a

list of relevant scientific and technical problems;

target figures for appropriations allocated to the development of weapons and equipment to the 10-year period;

weapons program (software) for the same period, which included a range of basic performance characteristics of weapons and equipment that were created, the timing of development and production, the volume of work in kind (for serial and capital) and value terms of construction, funding and composition performers - companies and organizations of ministries of defense industries.

Methodology planning of this period aimed the final result of the IWT - to achieve the goal set for the long term based on military, political, operational and strategic, scientific-technical and military-economic forecasts, taking into account the real possibilities of research, experimental design and industrial base .

In 2004 was approved the first state program of development of weapons and military equipment until 2015. But it failed not one of the main indicators: volume appropriations terms of R & D, Volume and equipment. The reasons are many. Highlights include:

not confirmed macroeconomic forecast Economy Ministry of Ukraine, which was taken as the basis for the development of DPO;

has changed the "rules" in the performance of DPO. When its design was planned contributions to the article "National Defence" under3% of GDP, and in fact allocated from 1.7% (in 2005) to 0.8% (in 2009);

unacceptably small fraction (3% and 1.5%) defense budget that went under for the purchase of weapons and equipment and R & D, with the possibility of upgrading the most optimistic forecasts by more than 10% of available weapons and equipment to the end of their service;

DOSES funding actually carried out in volumes 2-3 times smaller targets.

Efforts in these circumstances to preserve the system of priorities led to sawing available resources, the failure of R & D on time, virtually no supply of arms and military equipment and upgrading troops departing from the principles of balance arms organizational and staff units. Practically almost complete lack of R & D funding and delivery of orders for weapons and equipment negatively affected the defense industry enterprises.

In this regard, after the necessary adjustments, in 2005 adopted a state program of armaments and military equipment for the period until 2009.

At the same time appeared and weaknesses of existing methodologies: focus on macroeconomic forecast and the resulting delay in drafting DPO, no methods of forecasting prices for military products and adequate optimization methods weapons systems with existing resources (especially financial) constraints.

Based on the analysis of international experience based defense planning methodology improvement program target planning of IWT should be based on a set of principles whose meaning is specified depending on existing conditions:

systemic formation of programs and plans of the military organization;

realistic programs that the adequacy of their financial capabilities of the state and also the needs of defense;

completeness of information support process development programs;

continuity management implementation programs.

Consistency involves consideration of many factors that influence the development of weapons systems. This is the current state of the system of arms, military threats that may arise during the implementation of the program, the state and the possibility of the military-industrial complex (MIC), the state military-technical cooperation (MTC), which was and is, in fact, the only source of financial feeding DIC (if unlike Soviet times, MTC has become one of the prominent factors of development of domestic weapons systems).

Realistic or adequacy of the programs financial capacity of the state and also the needs of defense. It is necessary to develop methods of formation scenarios of economic development under the existing state of uncertainty. It is impossible to ensure the development of weapons systems around the facial features of weapon systems with parameters corresponding to the required level of problems to be solved. Therefore, an essential principle of program-oriented planning principle should be the choice of priorities in the development of IWT. Putting this principle, in turn, requires the development of methods for assessing the importance of weapon types, their contribution to solving the problems of the Armed Forces of Ukraine.

Completeness of information support process development programs. Unfortunately in the 90's of last century in the country there was an information system that would allow making a reliable opinion on the weapons systems, defense, MTC. A dynamic change of the system demanded weapons and requires prompt analysis of weapons and equipment that is in the army; absence and the destruction of the existing OPC industrial research institutes and simultaneous privatization of destroyed the then existing information system of defense; monopolization PTS led to the impossibility of forecasting the volume of supply of arms and military equipment abroad. If there are problems such decisions in the development of weapons systems is only through the use of expert experience MoD, industry and MTC. But the processes proceeded in the Armed Forces and defense system MTC were mixed and expert assessments increasingly at odds with reality. Therefore, it was necessary to develop a new information system development and implementation DPO.

Continuity management of the program. DPO implementation mechanism is the state defense order. However, in the implementation of any plan inevitably arise conditions in which its unconditional fulfillment becomes impossible. Therefore, the following management practices through the implementation of DPO annual doses that would not destroy the consistency that is embedded DPO.

This is another problem of methodology of program-oriented planning.

Force majeure arising from the economic crisis, default, etc., put the introduction of the development DPO another principle: the principle of risk mitigation planning, ensuring the stability settings to term planning, realized through the formation of multi-variant DPO projects.

In developing the DPO was necessary to implement the principle of adaptability to external conditions DPO by a priori (before the macroeconomic forecast) multivariate programming documents. It was necessary to evaluate three important options for financing the development of weapons systems Ukraine:

full funding, which provides the solution to all problems facing the Armed Forces and other troops of Ukraine, and development of weapons and equipment at the leading world powers;

a minimum level at which the integrity of stored and provided positive dynamics of development of existing weapons systems;

critical level at which the stagnation of existing weapons systems.

Conclusions and recommendations for further research. Military and political conflict between Ukraine and Russia has put our country in extremely difficult conditions. Complete cessation of military-technical cooperation and industrial relations gap calls into question even the possibility of upgrading the existing outdated weapons and equipment, the production of the USSR. There is a need to raise a new level of military technical cooperation with the leading countries of the world, take part in creation of weapon systems in cooperation with other states. Creating a professional army, even small in number, without upgrading to modern weapon systems impossible. Lack of resources in terms of socio-economic crisis requires military and political leadership of the state, new innovative solutions to ensure the defense of Ukraine.

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Эволюция и перспективы программно-целевого планирования развития систем вооружения Украины

Резюме. Статья посвящена рассмотрению этапов становления методологии программно-целевого планирования и основных направлений развития системы вооружения Вооружённых Сил нашей страны.

Ключевые слова: Вооружённые Силы Украины, программно-целевое планирование, государственная программа вооружения, государственный оборонный заказ, оборонно-промышленный комплекс, вооружение и военная техника.

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Methodology to evaluate the impact of recovery and reliability of elements of communication on the performance of digital telecommunication network special purpose

Resume: The procedure for the assessment of the influence of parameters of system recovery and reliability of elements of communication on the performance of digital telecommunication networks of special purpose.

Keywords: Maintenance, system diagnostics, system performance.

Formulation of the problem. Analysis of trends in telecommunication networks shows that is rapidly developing systems with dynamically changing structures. The configuration of these networks depending on the incoming applications and the internal state of the elements that make up the facility management.

To ensure the management of such systems should be informed about their technical condition. Technical condition determined by the internal structure of the control object, the size impacts on its input area permissible treatment strategies in the space of possible states.

High requirements for accuracy and reliability of telecommunications network implementation functions of random changes in the structure makes difficult the traditional use of the mean values of the random system parameters. This can lead to undesirable decisions on changing the structure of the telecommunication network in terms of reliability. This is possible due to changes in system parameters relative to their average value, displacement distributions which differ significantly from Gaussian white noise.

The purpose of the article: to analyze the operation and restoration of telecommunication network. Identify impacts on productivity and quality of operation of telecommunication network. A method that would take into account and adequately reflect the impact of recovery and reliability elements of communication.

Analysis of operating processes and restore the telecommunication network shows that for a wide class of problems in the management of the networks important skill to assess the state of its elements. Solving this problem relies on control systems and system software included in the monitoring system, through which organized diagnosing network status. This means that the quality of operation of the telecommunication network is largely determined by the level of its diagnostic software. During diagnostic software to understand set of interrelated rules, methods, algorithms and tools that are required to perform network diagnostics at all stages of the life cycle.

Since the use of a method or way of diagnosing essentially determined by

the type of the object, then the choices necessary techniques that provide solutions to complex problems of rational diagnostic software. Importantly, the methodology should consider the possibility of solving the problem of assessing the state of the network with the help of external means of diagnosing and using built-in tools, which in turn can be automatic or automated.

To identify the most significant parameters affecting the performance of the telecommunication network, consider the process of operation. Fig. 1 shows the process of functioning of the telecommunication network in the form of classes and events and meet general form of a plurality of states, which is shown in Fig. 2.

On the Fig. 1 marked by the following events: 1 - injury; 2 - denial; 3 - recovery correctness functioning; 4 - rehabilitation; 5 - restore proper operation.

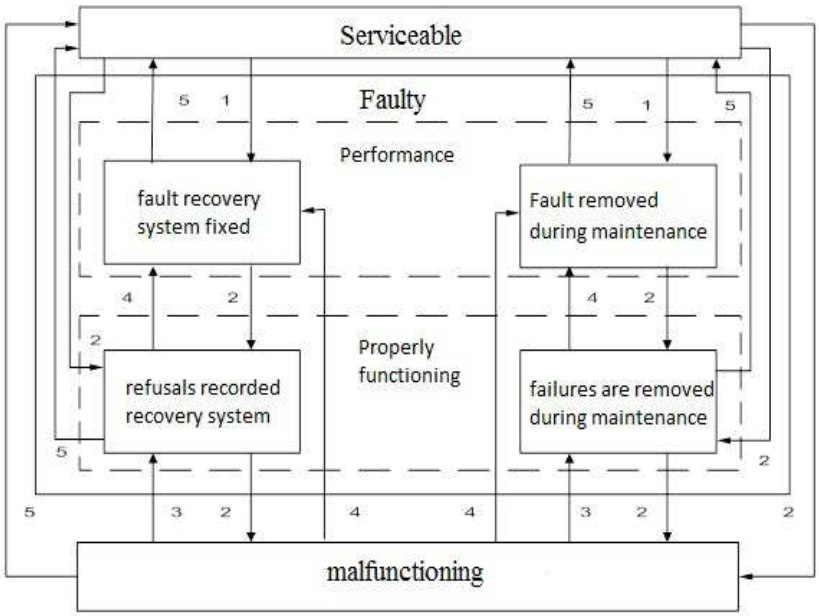

Fig. 1. Scheme of main conditions telecommunication network and events that characterize the potential to change

The transition of telecommunication network from state to state is due to defects. All these defects can be divided into defects fixed built-in diagnostics and cause transition telecommunications network in defective but usable state; defects that fixed system of diagnosis and lead to transition telecommunications network in one part of the working condition (a reduced performance); defects that are not fixed and they do not directly affect the performance of the facility; defects that cause complete denial of telecommunication networks or convert it into a state of "not functioning".

The first group of defects characteristic of telecommunications networks that have provision in its structure. When the switch is bounce reserve components based on the identification of the damage and its removal at the time $T_B^{\Pi} = T_{\Pi}$. Loss of network performance for this group

determined the time of transition ($T_П$) from primary to set the reserve.

The second group takes defects telecommunications network in defective condition and not directly affect its performance, but reduces the quality of operation and increases network performance loss. Since system failure diagnosis complicate solving problems and finding damage in the operation of telecommunications networks are not always detected, and therefore, the defects lead to a substantial increase in recovery time $T_В$ telecommunications network.

The third group of defects causing transition telecommunications network in emergency mode and then the loss of network performance as determined ($T_П$) and recovery time ($T_В$). In some cases, refusal complex communications (eg, data link equipment) give rise to partially working condition.

The fourth group of defects puts the telecommunications network in the off state, that is his complete rejection - an event that is to suspend use of the network for the purpose. Then the performance loss depending on the recovery time telecommunications network, resulting in the emergence of one of the states, or properly functioning or efficient.

Thus, the average loss of performance telecommunications networks depend on a number of factors that affect the changes $T_П$ and $T_В$.

The most important of these factors are:

level units are replaced failures;

kinds of spare parts;

types of damages and failures of complex communications;

a system of diagnosis and degree of completeness checks the correctness of its operation;

availability of external diagnostics of telecommunication network that allows for manual search of defects;

availability of diagnostic programs that make it possible to restore the complex communication operators with sufficient highly qualified and others.

The character of the average time of recovery complex due to many factors and is determined by the first type of basic supporting structure, used for the construction of concrete examples of the network. Moreover, it is important to note that for the solution of recovery at each level operating telecommunications network may apply different elements.

From Fig. 1 follows that lower average productivity loss is necessary to increase the completeness of automatic validation function, which in turn reduces the number of failures in uncontrolled part of the complex communication and allows for reduction and. However, improved performance and by automating the processes of finding defects leads to complications of diagnosing reliability which affects the quality of the application of complex communication telecommunication network. Furthermore, if the complex communications eliminate the possibility of human intervention in the recovery process through a system of diagnosis, the failure diagnosing system function loss will increase dramatically due to the increase. In general, the separation of complex recovery process

due to restoration correctness functioning (ability to transmit complex information flows), performance and serviceability, reduces equipment downtime while increasing overall time transfer system in good condition.

The complex nature of the relationship between the individual parameters of complex communications and telecommunication network characteristics require more detailed research on issues such as the division of tasks between the internal and external system diagnostics, a choice of automatic completeness checks efficiency, identify ways of reducing productivity losses due to failure.

There are two main types of control of telecommunications networks: validation and search operation defects [5], which have a specific purpose. Means and methods of their implementation is partially or completely identical. And the first of them is in operating mode communications systems and telecommunications networks have the quantitative characteristics: fullness factor verify the functioning and reliability of control. The second - designed to search for defects by means of diagnosis, for determine the location and nature of the problem. The quality of its estimated depth automatically search for defects and an average time of diagnosis.

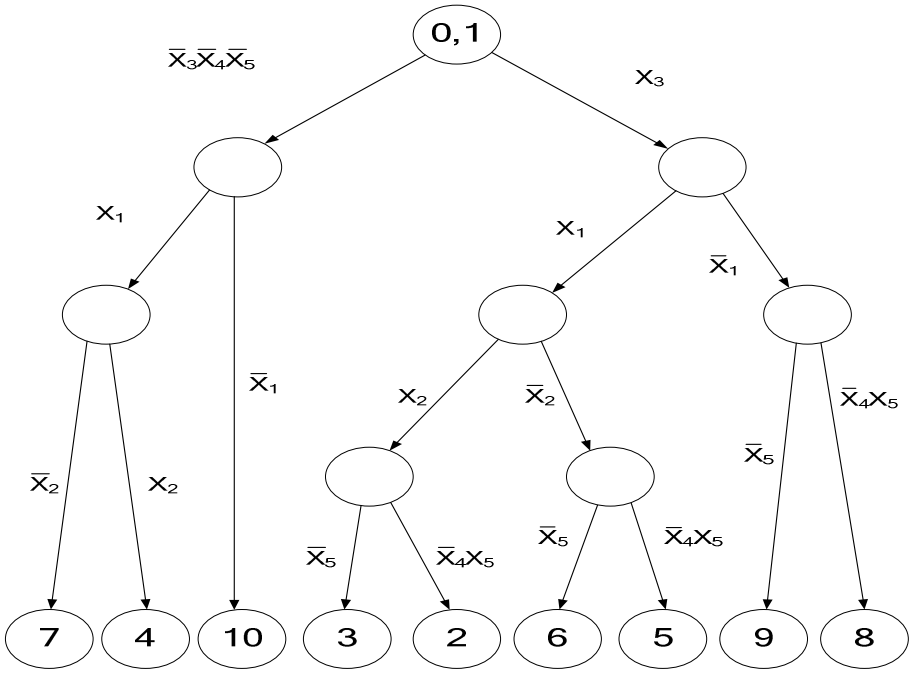

Fig. 2. Count system states

To assess the influence of various parameters embedded system diagnostics for high performance, consider the investigated object model complex communication.

We believe that the object covered by the system diagnostics α_2 (type II) (provides automatic search element that refused) and monitored by the system diagnostics (type I) (implements validation function in operating mode).

The total number states, which can be will be $D=2^5=32$, and forms a sample space. This may come one of the 11 challenging events. Each of A_i results in

some loss of performance telecommunications network during peak hours, and their system $\{A_i\}$ is the ultimate breakdown that generates the final set $A=\{\varnothing,\Omega,A_1,A_2,...,A_{10},A_0,A_1+A_2,A_1+A_3...\}$ [6]. We use topological methods of reliability of complex systems [3, 4] and, in particular, logical-probabilistic method.

In [3] to study the vehicle containing fewer than 10 items, consider using tabular method of describing their states. Using Boolean algebra [1, 3], we transform the formula to conjunctive normal forms.

$$\begin{aligned}
&f(A_0)=x_1x_2x_3x_4x_5;\quad f(A_1)=\overline{x_1x_2x_3}x_4x_5;\quad f(A_2)=x_1x_2x_3\overline{x_4}x_5;\\
&f(A_3)=x_1x_2x_3\overline{x_5};\quad f(A_4)=x_1x_2\overline{x_3x_4x_5};\quad f(A_5)=x_1\overline{x_2}x_3\overline{x_4}x_5;\\
&f(A_6)=x_1\overline{x_2}x_3\overline{x_5};\quad f(A_7)=x_1\overline{x_2x_3x_4x_5};\quad f(A_8)=\overline{x_1}x_3\overline{x_4}x_5;\\
&f(A_9)=\overline{x_1}x_3\overline{x_5};\quad f(A_{10})=\overline{x_1x_3x_4x_5};
\end{aligned} \tag{1}$$

On the Fig. 2 all the possible states of the system presented as a graph corresponding to the function of the algebra of logic (1), in which the ribs are events that the network is transferred from state to state.

$$\begin{aligned}
P_0 &= P(A_0) = P_{OM}^{(c+a_1+\alpha_2a_2+1)};\\
P_1 &= P(A_1) = P_{OM} - P_{OM}^{(c+a_1+\alpha_2a_2+1)};\\
P_2 &= P(A_2) = P_{OM}^{(c+a_1+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(c+a_1+\alpha_2a_2+1)};\\
P_3 &= P(A_3) = P_{OM}^{(c+a_1+\alpha_2a_2)} - P_{OM}^{(c+a_1+\alpha_2a_2-\alpha_2+1)};\\
P_4 &= P(A_4) = P_{OM}^{(c+a_1)} - P_{OM}^{(c+a_1+1)} - P_{OM}^{(c+a_1+\alpha_2a_2)} - P_{OM}^{(c+a_1+\alpha_2a_2+1)};\\
P_5 &= P(A_5) = P_{OM}^{(c+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(c+a_1+\alpha_2a_2+1)} - P_{OM}^{(c+a_1+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(c+\alpha_2a_2+1)};\\
P_6 &= P(A_6) = P_{OM}^{(c+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(c+a_1+\alpha_2a_2-\alpha_2+1)};\\
P_7 &= P(A_7) = P_{OM}^{c} + P_{OM}^{(c+a_1+1)} + P_{OM}^{(c+a_1+\alpha_2a_2)} + P_{OM}^{(c+\alpha_2a_2+1)} - P_{OM}^{(c+a_1)} - P_{OM}^{(c+1)} -\\
&\quad - P_{OM}^{(c+\alpha_2a_2)} - P_{OM}^{(c+a_1+\alpha_2a_2+1)};\\
P_8 &= P(A_8) = P_{OM}^{(\alpha_2a_2-\alpha_2+1)} + P_{OM}^{(c+\alpha_2a_2+1)} - P_{OM}^{(c+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(\alpha_2a_2-\alpha_2+1)};\\
P_9 &= P(A_9) = P_{OM}^{\alpha_2a_2} + P_{OM}^{(c+\alpha_2a_2-\alpha_2+1)} - P_{OM}^{(c+\alpha_2a_2)} - P_{OM}^{(\alpha_2a_2-\alpha_2+1)};\\
P_{10} &= P(A_{10}) = 1 + P_{OM}^{(c+\alpha_2a_2)} + P_{OM}^{(c+1)} + P_{OM}^{(\alpha_2a_2+1)} - P_{OM}^{\alpha_2a_2} - P_{OM}^{(c+\alpha_2a_2+1)} - P_{OM}^{c} - P_{OM}.
\end{aligned} \tag{2}$$

For the calculated probabilities construct a probability space (Ω,A,P) and obtain the analytical expression of average productivity loss network:

$$\overline{\Delta K}=\sum_{i=1}^{10}\Delta K_iP_i \tag{3}$$

where ΔK_i - loss of performance vehicle in $i-$ state of the system.

To assess the impact of system parameters restore the quality of the network, specify the function of the average recovery time. Since the information is derived system diagnostics (type I) should be used to automate the diagnosis or reduce $T_{BП}$ and T_{BC} , the latter should be associated with α_2:

$$\alpha_2=L(\alpha_2)/L \tag{4}$$

where $L(\alpha_2)$- the number of diagnostic parameters that provide methodological authenticity verification;

L- the total number of parameters to implement given depth diagnostics (Control efficiency) with the necessary certainty.

It is obvious that L varies according to the properties of the structure of the object diagnosing and depends on the tasks that rely on the system diagnosis (type II). If $\alpha_2 = 1$ depth is provided to search a component of (L + 1), the $T_{ВП}$ M is calculated as follows:

$$T_{ВП} = \alpha_2 t_П K_m + t_0(1-\alpha_2)\cdot K_m + t_y \quad (5)$$

where $t_П$ - mean time check of one object diagnostics, by means of diagnosis (type I);

t_0 - mean time check of one object diagnostics, by the person who measures the parameters;

K_m - the maximum number of search operations (depending on the localization procedure failures);

t_y - the average time eliminating a malfunction.

Given that the (50 ... 80)% recovery time of searching [1, 2, 5] with timely replenishment single ZIP, define

$$t_y = 0,5\cdot t_0 \cdot \log_2 L = 0,5\cdot t_0 K_m \quad (6)$$

Then the components of (2) will come into view

$$\begin{aligned}
&\varphi(A_0) = \varphi(A_1) = 0 \ \ (\Delta K_0 = \Delta K_1 = 0);\\
&\varphi(A_2) = (T_{B\Phi 1}\cdot B + \alpha_2 t_B K_m \cdot \Delta B + 0,5 t_0 K_m \cdot \Delta B)\cdot P_2;\\
&\varphi(A_3) = (T_{B\Phi 1}\cdot B + \alpha_2 t_B K_m \cdot \Delta B + (1,5-\alpha_2) t_0 \cdot K_m \cdot \Delta B) P_3;\\
&\varphi(A_4) = (T_{B\Phi 1}\cdot B + 1,5 t_0 \cdot K_m \cdot \Delta B)\cdot P4;\\
&\varphi(A_5) = (T_{B\Phi 2}\cdot B + \alpha_2 t_B K_m \cdot \Delta B + 0,5 t_0 \cdot K_m \cdot \Delta B)\cdot P_5;\\
&\varphi(A_6) = (T_{B\Phi 2}\cdot B + \alpha_2 t_B K_m \cdot \Delta B + (1,5-\alpha_2) t_0 \cdot K_m \cdot \Delta B) P_6;\\
&\varphi(A_7) = (T_{B\Phi 2}\cdot B + 1,5 t_0 \cdot K_m \cdot \Delta B)\cdot P_7;\\
&\varphi(A_8) = (T_{B\Phi 2}\cdot B + \alpha_2 t_0 K_m \cdot B + 0,5 t_0 \cdot K_m \cdot B)\cdot P_8;\\
&\varphi(A_9) = (T_{B\Phi 2}\cdot B + \alpha_2 t_0 K_m \cdot B + (1,5-\alpha_2) t_0 \cdot K_m \cdot B)\cdot P_9;\\
&\varphi(A_{10}) = (T_{B\Phi 2}\cdot B + 1,5 t_0 \cdot K_m \cdot B) P_{10},
\end{aligned} \quad (7)$$

Substituting (8) to (3), we get

$$\overline{\Delta K} = \sum_{i=2}^{10} \varphi(A_i) \quad (8)$$

Conclusion. The technique allows to estimate the change in performance of the telecommunication network impact subsystem disaster recovery systems provider. The methodology takes into account indicators of depth system diagnostics, and the ability to switch to backup (emergency) technical means for the operator. These expressions to assess network performance due to the influence of technical parameters telecommunication network.

In further studies using the proposed technique is invited to consider the expediency of increase (decrease) in depth monitoring equipment by means of diagnosis and its effectiveness depending on the reliability of electronic components.

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Методика оценки влияния параметров системы восстановления и безотказности элементов комплексов связи на производительность цифровой телекоммуникационной сети специального назначения

Резюме. Определен порядок оценки влияния параметров системы восстановления и безотказности элементов комплексов связи на производительность цифровой телекоммуникационной сети специального назначения.

Ключевые слова: эксплуатация, система диагностирования, производительность системы.

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Democratic defense-civil control, problematic questions about organization of defense-civil relations

Resume. The order of characteristic system democratic defense-civil control. Defined problematic questions about resource provide defense and proposed decision ways on basis democratic defense-civil control.

Keywords: defense-civil relations, democratic defense-civil control, society, state.

Statement of the problem. Modern democratic society is aimed at the transformation of relations between society and the state, and individual institution – the army. Today, when Ukraine suffers from aggression of the Russian Federation, when we got rid of vested interests, corruption have an economic miscalculations and ineffective institutions of governance priorities include the place and role of the Armed forces of Ukraine and interaction between them and the civilian population. Civil-military relations represent a complex system of interaction between society and the army, which includes all the processes that affect daily functioning: political, financial-economic, legal, and human resources professional, moral, psychological, cultural, national and so forth.

Analysis of recent publications. Analysis of existing approaches and views allows us to formulate the essence of the system of democratic civilian control (ICC) defence forces. It is assumed as a complex transformation in the defence agencies and organizations that can be divided into three independent but interlinked components (democratic control as such, the relationship between civil and military bodies, military reform). Democratic control includes the management of military activities by government and parliamentary control over the actions of the government and military structures. The relationship between civil and military structures consist of relations between the army and the government and between the army and society democratic control imposes on the military the responsibility to educate civilians in the government, Parliament and the media in the field of military activities, and also obliges civil servants to master relevant knowledge to the civil and military structures to effectively cooperate with each other. Competent civilians can perform the function of the military structures in the event of a dispute. A number of scholars explore governance issues through the prism of public participation, in particular the issues of civilian control, among them A. Krupnik, T., Balaban, A. Poltorak and others [1]. Despite significant achievements and considering the issues, the system of democratic

civilian control over the defence sector requires comprehensive review and improvement.

The purpose of the article is development of methodical provisions on the definition of the ways of improving the system of democratic civilian control over the defence sphere of Ukraine.

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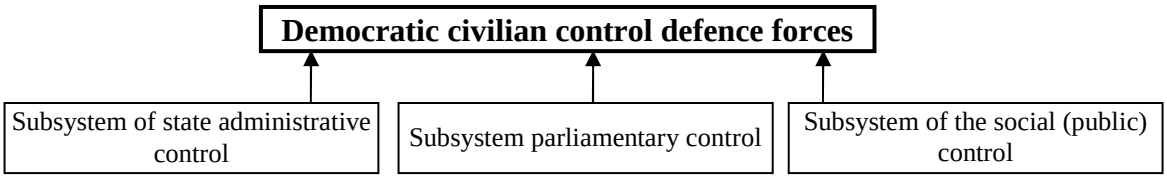

Figure 1. The system of relations between the democratic civilian control

The system of relations between democratic civilian control aims at adapting the management of the defence sphere in the driven component, will not pose a danger to the society. In December 1994, the Budapest summit the OSCE participating States including Ukraine, adopted the basic principles of civilian control over the armed forces contained in the “Code of conduct ...: p. 20 member States consider the democratic civilian control of the military and paramilitary forces of the interior and the intelligence services and the police as an immutable element of stability security. They will facilitate the integration of their armed forces with civil society, which is an important manifestation of democracy.

For the past ten years, the countries-NATO members reduced defence spending. After the aggression of Russia in 2014, during the Wales summit, it was decided to stop cutting and start increasing defence spending (in 2015, 16 of the 28 countries of the Alliance increased defence budgets). The taxpayer has a direct interest in the definition and observance of reasonable measures of volume, orientation, structure and manner of financing of the APU, and the need for this civilian control where and how to use the people's money. Communication is important for MOU power structures. A recent poll by Vox Ukraine has shown that the public and the expert community have different perceptions and evaluate the work of the Ministry of defence of Ukraine. The lack of clear communication with the public leads to mistrust and confusion.

The construction in Ukraine of a civil society closely connected with the establishment of the state of harmonic civil-military relations, which should contribute to greater transparency and clarity of the country's population of military reforms and other measures in the military sphere, democratic civilian control in the military sphere represents the total recognized in the world model of civil-military relations, determines the subordination of the activities of the military organization of the state civil authority and the rule of the political leadership in the sphere of national security and defence. Currently, models of democratic control of Armed Forces vary depending on circumstances and over time to change. Although the specific model does not exist today, but there are common denominators and indicators, which according to many experts should be in all democratic countries. Based on this, in such common denominators in Ukraine belong:

- constitutional and legal framework with clearly defined powers and appropriate checks and balance between state institutions,
- clearly defined by the ICC over the Ministry of defence, and the Ministry of defence of key positions

should be taken by civil government officials,

- specific and detailed, not superficial parliamentary oversight of defence policy and spending,
- sufficient transparency of the decision-making process that involves careful checking of public issues related to security,
- defence programs should not go beyond what is really necessary, and should not undermine democratic accountability, despite the existence of undeniable requirement for secrecy,
- information and ensured a national debate on security issues, in which special role is played by civilian experts from government circles, the media, political parties, and independent sources, in particular research institutions that advise and provide critical evaluation.

On civil-military relations based on the separation of military and political institutions, their main indicators (parameters) can include the following:

- the existence of a developed and active civil society, independent of the state,
- the existence of a clearly defined mechanism of making political decisions on military matters, which do not participate themselves soldiers,
- the presence of a network of civil institutions for the implementation of political, parliamentary and public control over the activities of the armed forces
- autonomy of the political and military professionalism as a social principle of manning the armed forces - exclusively on military-professional basis
- legal consolidation of non-interference of the military in domestic society, particularly in domestic relationships (de-politicization of the armed forces).

Analysis the above conceptual framework shows that the subject of the ICC in the field of resource support of the armed forces of Ukraine may be:

- prevention of uncontrolled or not a rational expenditure of resources and tools for military purposes,
- personnel policy in the army, the order of training of troops and training of reserve forces, training of the population and territory to defend,
- organization of production, the nature, type and amount specprodukt, the order of distribution (trade) of weapons and ammunition and their use in emergency situations,
- the state financial, economic, logistical and medical support of the army, the allocation and use of financial and material means, the creation of reserves and provisions material resources.

Consideration of these items, the ICC shows that the main object of this control is the defence resources of the state. On this basis, the defence resource (material, financial, human, etc.) plays a special role and place in addressing the ICC for the defence sector.

The results of the research and the military practice of maintaining armies of the leading countries of the world and ensuring their needs suggested that up to 70% of the costs necessary for the resource support. This means that defensive resources are the economic

basis of military and national security state, and the effective use of defence resources is a strategic task of the Armed Forces and the state as a whole.

It is obvious that in conditions of limited resources to ensure the necessary level of defence capability of the state needs high organization of work and close collaboration of all parts of the state authority, the coordination of economic efforts and the timeliness of implementation of large and small measures to improve the present situation. Therefore, the priority for today is the integration of management systems in the use of state resources to allocate them for further effective use.

The relevance of the integration of all military forces in the field of defence resources management is an objective need, the objective reality of the development of the state, in particular: the strategic direction of the state (political-military background).

The military transformation process provides for the revision of operational concepts and basics of use of Force, search and adoption of new approaches to the armed struggle, the revision of the basic tasks and the reorganization of the structure of troops (forces), readiness to possible changes in the security environment, the achievement of required operational capabilities, from the point of view of application of forces, the most important issue of the integration of the armed forces of Ukraine and other military formations is to achieve compatibility in the composition of the species groups. The existing system of defence resources management of Ukraine does not correspond to the changes that are already underway in the armed forces of Ukraine and other military formations of the state. She provides operational and technical compatibility of systems of defence resources management with control systems of troops (forces). In these circumstances, the relevance and necessity of the integration and automation of processes for defence resources management are raised from the level of the Ministry of defence to the state level.

On the other hand today, as never before, Ukraine is becoming an important problem of creating a Unified system of defence resources management (SSU PRS) Armed Forces and other military formations of the state, which will meet the conditions of the modernization and transformation of the Armed Forces, to provide technical and operational compatibility of troops, in particular their combined use.

The creation of a Unified system of defence resources management will enable the following benefits: centralize management of all types of defensive resources:

- to reduce the number of parts of the existing system of defense resources management,
- reduce spending on the Armed Forces and military units of other power ministries and departments,
- accumulate stocks at a time of war on a single plan in full compliance with the operational (operational-strategic) purpose of the Armed Forces,
- to develop a common plan for the use of civilian sources of material stockpiles and delivery systems of possible hostilities, which provide and

use of industrial enterprises for the repair of weapons and military equipment,

- to develop the infrastructure of the Armed Forces as part of the national infrastructure,
- increase mobility operational (operational-strategic) alliances of forces ministries and departments of the state.

Based on the foregoing, the main problematic issues of the functioning of the system of resource support of the armed forces of Ukraine, in particular the ICC for this provision may include the following:

1. There is no hierarchy of management and comprehensive security. Not determined the governing body, which would be at the strategic level to be fully responsible for the planning and organization of comprehensive support of troops (forces) in peacetime and during the special period, the state of the VVT at all stages of their life cycle, as well as for the creation, maintenance and update (refresh) AME, logistical resources and property.

2. The organizational structure of the Supreme bodies of management does not meet the logistics structures of the Armed forces of Ukraine and structures technical and logistical support. Consequently, the broken chain of command for implementation of technical and logistical support is not able to clearly define and formalize the functions, tasks, powers and responsibility between management bodies and structural subdivisions of the various links in the management system of comprehensive security.

3. There is no effective mechanism for the recovery and upgrade of armament and military equipment. Multiple financial constraints needs of the Armed Forces in recent years, has led to the emergence of problems affecting the General state of combat readiness of troops (forces). Therefore, despite the fact that the overall staffing of VVT is quite high, its quality, technical condition can be described as critical, which in turn negatively affects the operational capabilities of troops (forces).

4. Experience in the use of the capacity of the national economy, in particular the delivery of appliances directly to formations and units through commercial enterprises has no legal basis.

Analysis of the existing problematic issues in the system of defence resources management and the ICC for these resources shows that the Armed forces of Ukraine as a leading organization in the management of defence resources of the state today have a number of tasks, the main of which are the following:

1. The establishment of permanent committees (commissions) on the operational solution of the current problems, strengthening of personal responsibility of managers, delegation of authority to the lowest possible level of management.

2. With the purpose of optimization of system logistics, it is advisable to maximize the interest of the structure of small and medium businesses, which will significantly improve the quality of material, food and other types of support, will enable the commander

(chief) to focus on issues of combat and mobilization training.

3. Today, when Ukraine is becoming more democratic country aspiring to join the European Union, the principle of the ICC of war, when civilians take the responsibility for national defence and security brings us to the standards of modern democratic governance. In this process a key feature of civilian control over the military is vested in the Supreme Rada, the Cabinet of Ministers of Ukraine, Ministry of defence of Ukraine.

4. Democratic civil control means that the civil authority takes responsibility for the condition of national defence, combat readiness, resource support and morale of the armed forces of Ukraine. To civilian control was effective, civilians should keep in close touch with the military, but to remain outside of their corporate community, ensuring that the necessary resources in the interests of defence, effective personnel policies and other management tasks.

5. The Ministry of defence as an organ of civil procedure of the management rests with a number of important tasks: the development of a common policy, administration, legal and resource provision, the implementation of the budget functions and the like. While the military remain inherent problems: training of troops, planning and conduct of operations.

6. The defining principles of relations between society and the armed forces of Ukraine is the highest possible transparency and openness in military activities, public participation in policy of the defence Department, the formation of citizens ' trust in the Armed Forces and public support for their activities.

7. The main directions of development of civil-military relations are: the provision of the Ukrainian armed forces assistance to civil ministries and departments, local authorities and bodies of local self-government, improving the system of democratic civilian control over the Armed Forces.

8. Development of scientific-methodological foundations of a Unified system of defence resources management of the state. The actual provides for the establishment of the State Committee on questions of defence resources, which is an interdepartmental body of the government. Priority on this Committee must belong to the Ministry of defence.

The creation in Ukraine of a system of democratic civilian control over the defence sector, in particular for the resource providing the Ukrainian armed forces is currently an important task. It is expected that the above reform is aimed at improving the efficient use of defence resources of the armed forces of Ukraine. The final assessment of this reform will give the military experience, the military practice of using the Armed Forces. However, achieving full progress in the development of democratic control, civil-military relations requires a long time, and there is no final solution to this issue.

Even if there was one optimal solution, it truly would never be achieved, because it would mean the end of democracy, which provides for adjustable continuous comparison of

various competing claims on resources and political choices of the state.

Unfortunately, the above actions solve only part of the problem creating a problem of resource support of the armed forces of Ukraine and the ICC. Therefore, today such work is necessary to give new impetus, a new breath. Need a strong-willed decisions, the ability to think and act out of the box, outside the box. Need the ability to consolidate, to gather the crumbs, to mobilize the existing capacity of the Military organization of the state, to guide him in practical work to overcome the crisis, to the progressive realization of complex tasks of reform of the armed forces of Ukraine on efficient use of defence resources to ensure the economic security of the state.

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Демократический гражданский контроль сил обороны, проблемные вопросы в организации военно-гражданских отношений

Резюме. В статье рассмотрена характеристика системы демократического гражданского контроля сил обороны. Определены проблемные вопросы ресурсного обеспечения Вооружённых Сил Украины и пути их решения на основе принципов демократического гражданского контроля.

Ключевые слова: гражданско-военные отношения, демократический гражданский контроль, общество, государство.

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The relevance of the mobilization strategy of development of economy in the aspect of maintenance of defensibility

Resume. The article discusses the features of mobilization of the economy development strategy of the state to provide defense in modern conditions. Highlight the key principles of the strategy.

Keywords: mobilization strategy, the state's economy, defenses.

Problem definition. The strategy of the national economy growth significantly affects not only military art development but also capabilities, size, structure, organization and Force potential, frameworks and ways of providing proper level of defence capability, state and development of military prowess (proficiency). It affects mechanism of national defence capability insurance not only from inside but also from outside (through the environment, created by the present economic system).

Review of recent papers. Recent publications, related to the mobilization national economy development strategy issues, were covered in works of the following researchers E. Veduta [1], D. Zadyhailo [2], I. Mark, Yu. Medvediev, I. Semenikhin, V. Anokhin [5], B. Serazetdynov [6], H. Kumanev [4], D. Klynovyi, P. Rogov, V. Puhach, M. Reva [3], but models of the mobilization national economy development strategy in the context of defense ensuring have not been formulated.

The objective of the paper is to define relevance of the mobilization national economy development strategy in the context of national defence capability insurance under special circumstances.

Research presentation. The results of the annexation of the Autonomous Republic of Crimea as well as sustained anti-terrorist operation (ATO) on the East of Ukraine are dictated by the objective reasons. One of them is the dependence of the war results (victory or defeat) on the state of economy. State readiness for combat operations (ATO) in the event of critical pressure (both material and moral) is determined by the defence capability level (military power) of the state.

This issue becomes more critical if to take into consideration the results of the full-scale antiterrorist operation and the analysis of consequences of recent events in the Crimea and in the East of Ukraine which shows that Ukraine is at war de facto [3, p. 29-32], see. Fig. 1.

All this (directly or indirectly) requires the creation of a new “model” of the national economy.

The national economic strategy defines the most important goals and methods of implementation of the strategic objectives of internal and external relations of the state, especially with regard to development of the most competitive industries (sectors) of the national economy.

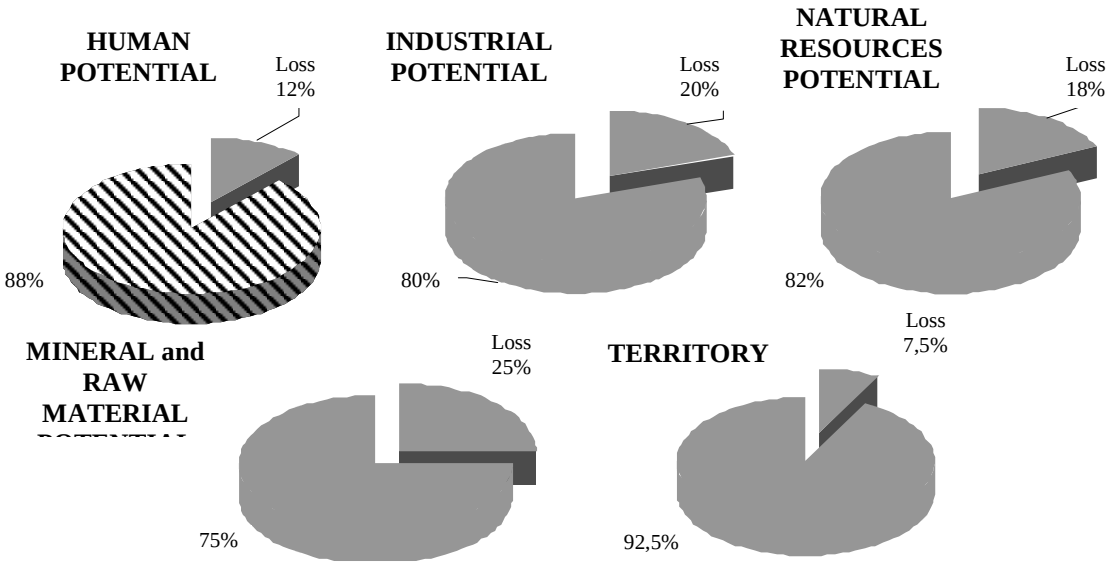

Fig. 1. Approximate loss shares in Ukraine resulting from the events in the Crimea and Eastern Ukraine

Summarizing the analysis carried out in research [6], it is possible to define that, *historically*, *mobilization economy* is a system of state regulation that achieves the most efficient use of resources for the accelerated economic growth, modernization of production, or other tasks in order to successfully win the war (armed confrontation). In the modern sense mobilization economy obtains broader meaning, it is the economy that is oriented to the development of some (most) strategic areas. It is introduced only in certain periods when the government needs gain a technological jump.

Confirmation of the effectiveness of this strategy is the experience of mobilization of the economy of the USSR during the Second World War (Fig. 2).

Selected by the Soviet Union model of the mobilization economy led to the successful military confrontation and has proven its effectiveness with regard to functioning under conditions of such a social phenomenon as war.

At the same time it should be noted the inadmissibility of blind copying of economic models, especially the mobilization models. First of all, we should take into account the general civilization and national peculiarities of the development of society, selected general political strategy and a real stage of economic development of the country. Moreover, we should not forget about the shortcomings and risks. Besides that, the initial stages of the mobilization development of the national economy are typically characterized by a general decline in the standard of living, but with further possibility of (moderate, fast) improvement.

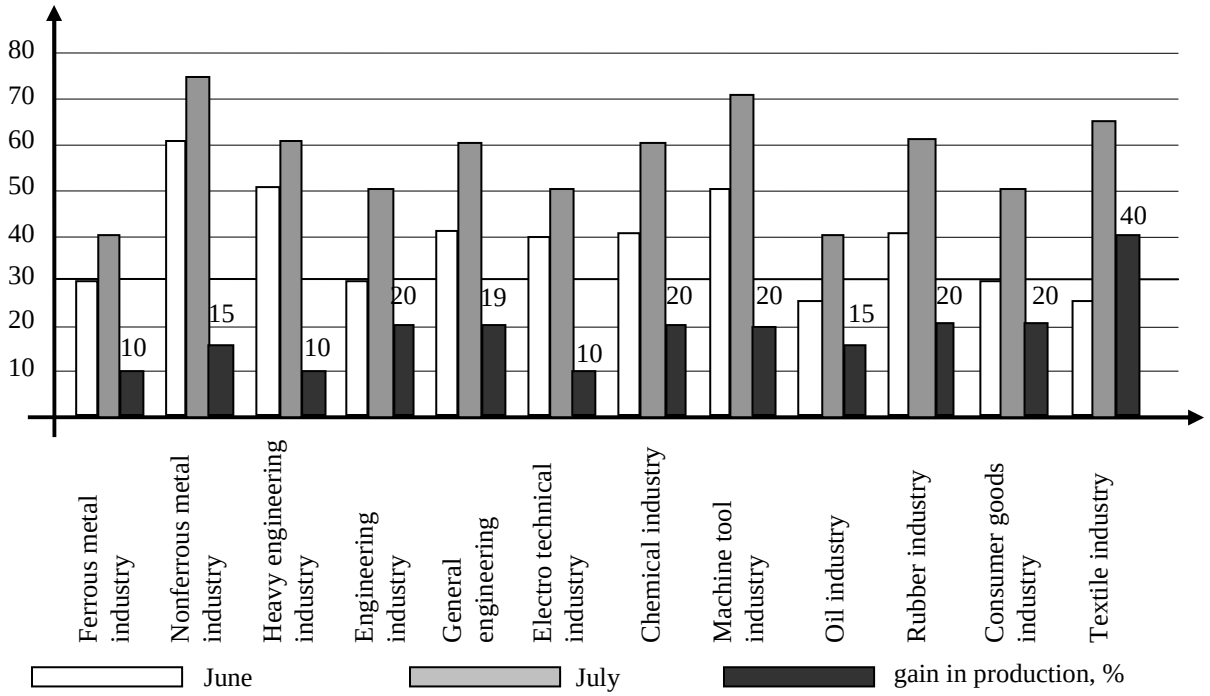

Fig. 2. Share of military products in the total gross production compared to June-

The mobilization model implies a continuous balancing between social responsibility and rights (freedoms, liberties), urgency and necessity, the need to respond to the current challenges of time and to defend fundamental human rights.

By this time the leadership of the state declares the liberal strategy of development of the market economy, which most closely meets the requirements of democratic values of society.

Key differences between the mobilization economy and liberal one are following:

the main driving force of the mobilization economy is the awareness of the threat of social existence;

activity of subjects are aimed at the implementation of national goals (victory in the war, economic recovery, etc.);

leading role in the mobilization economy management plays public authorities;

management of the economy is based on the mobilization plan;

the goals does not exclude the possibility of the excess of expenditure over income;

mobilization economy has predominately insular nature.

When developing the mobilization model of the economic development, the definition of the main the basic competitive advantages becomes methodologically important (Fig.3), these advantages are inherent in the national economic environment as well as determination of their state against the background of external environment that will allow to find out the direction, nature and extent of government intervention into economy for the synergy achievement.

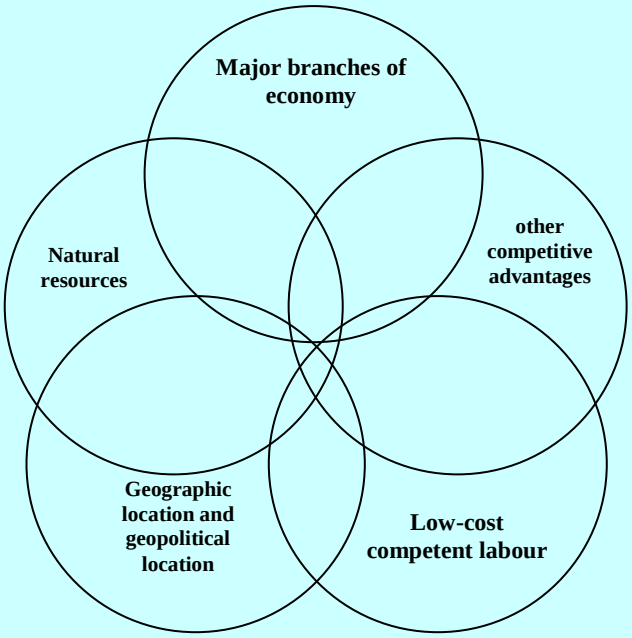

Fig. 3. Synergy model of competitive advantages in economic environment

When developing mobilization programs of economic development priority should be given to programs aimed at the mutual development of scientific-technical and industrial potential of the country, especially in the defense industry, which is characterized by the most advanced technological achievements, strong scientific and industrial potential, and external marketing communications.

Conclusions and prospects for further development in this area. At the present stage, the introduction of the mobilization model of national economy development will be very important and will allow the most efficient implementation of the country's capacity to implement economic breakthrough. In addition, the mobilization model allows more efficiently concentrate efforts on meeting the needs of defense capabilities, especially in the context of ATO.

Thus, we should note that the chosen model of development/recovery will determine whether Ukraine will be able to retain its independent economic and political sovereignty, to restore and ensure territorial integrity, to defend other national interests or it would be a passive participant of "wars of economies" of more powerful states of the world.

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Актуальность мобилизационной стратегии развития экономики государства в аспекте обеспечения обороноспособности

Резюме. В статье рассматриваются выделенные особенности мобилизационной стратегии развития экономики государства по обеспечению обороноспособности в современных условиях. Освещены ключевые принципы указанной стратегии.

Ключевые слова: мобилизационная стратегия, экономика государства, обороноспособность.

REQUIREMENTS FOR ARTICLES

In accordance with the Decree of the higher attestation Commission of Ukraine № 7-05/1 from January 15, 2003 scientific articles should contain the following elements:

- **problem statement** in general view and its connection with important scientific or practical tasks;
- **analysis of recent researches and publications** which initiated solving this problem and relied upon by, the allocation unsolved aspects of general problem which the article is devoted;
- **the purpose of the article** (setting tasks);
- a statement of **basic research material** with full justification of scientific results;
- **conclusions** and prospects for further research development in this direction;
- the **annotation and key words** are placed after the title of the article.

The article should follow the conventional terminology. All abbreviations and new terms must be disclosed by the author.

The title, list of authors, title, abstract (no more than 40 words), keywords (7 words) should be prepared in three languages: Ukrainian, Russian and English.

The size of the article including tables, figures and references should not exceed 10 pages A4.

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Do not use to format the text, spaces, tabs, and so on. Do not install manual word wrap, do not use headers and footers.

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Tables are numbered, centered, without indentation. The word "table 1" – **size 11**, alignment to the right. The format of the table title: centered, bold, position – above the table. After the table there must be one blank line.

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Матрична модель OLAP-систем (*font size 14 PT bold*)
Матричная модель OLAP-систем
Matrix model of OLAP-systems

Резюме. Розглянуті особливості матричних моделей … ***(кегль 12 пт)***
Ключові слова: модель, OLAP система, інформаційні технології.
Резюме.
Ключевые слова:
Resume.
Keywords

Statement of the problem. Numerous research works aimed at solving the problems of decrease in power consumption of pneumatic conveying systems. ...

Analysis of recent researches and publications. In works [1, 2] considered the applied methods ...

The purpose of the article. Improving the efficiency of manufacturing operations for ...

Presentation of the basic material. The author proposes the use of analytical methods of search for optimal regime ...

1 spacing

$$\sum_{p=1}^{N^2} X_{n_k}^{pk}$$

1 spacing

where $\sum$ *- Times New Roman 18 font;*
X *- Times New Roman 14 font;*
N ; pk; $p=1$; n *- Times New Roman 10 font;*
k ; 2 *- Times New Roman 8 font.*

Conclusions. ... The most effective by criterion of minimum cost of resources was...

Directions for further research. Refinement of indicators for ...

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