

RELATIONAL APPROACHES REGARDING FOCUSED LOGISTICS IN MODERN WARFARE JOINT OPERATIONS

Gheorghe MINCULETE*
Polixenia OLAR**

* Colonel, PhD in Military Sciences, professor at the Logistics, Finance and Accounting, Department, "Carol I" National Defence University, Bucharest, Romania

** Teaching Assistant, PhD, English teacher at the Joint Operations, Strategic and Security Studies Department, "Carol I" National Defence University, Bucharest, Romania

The military joint operations of the future are characterized by large concentrations of forces and conventional means on the directions that permit the exploitation of the technological superiority and the manifestation of the offensive spirit of the commanders of the joint operation force groups. Having in mind the fact that the relation between the combatant forces and the logistic ones will shift more and more in favour of the latter, the aforementioned operations will be usually supported by modern flexible logistic structures.

The constituted force groups will have a significant joint force character, ensuring superior quality of the troops' combat training, both at individual level and collective level of units and large units. The current article presents innovative aspects of focused logistics, adapted for the modern warfare, which should be designed and achieved in order to increase the operational potential of the joint force groups.

Key words: *security environment; modern battlefield; forces transformation, anticipatory distribution based logistic system; focused logistics; planning of focused logistics; Sense and - Respond Logistics.*

The current evolutions in the international security environment bring to the attention of the NATO member countries' armed forces new challenges and dilemmas. Nowadays it is necessary to ensure an optimum balance between the need to have well prepared and modern forces, the growing number of complex missions and the increasingly limited resources available.

The transformation of the armed forces will also modify the manner in which the wars of the future will be waged. Military specialists see this transformation as a process of re-thinking of the priority objectives and structure of the armed forces, from the model adopted during the Cold War to a new type of forces capable of carrying out a growing spectrum of missions and of

assuring the success of joint operations. This requires not only new technologies, but also changes at the doctrinal level, a new philosophy of training, command and organizational structure, the increase of the degree of availability of equipment and facilities and, last but not least, well trained military personnel in new fields [1].

Logistics, together with strategy and tactics, will still continue to define in the future the decision making process of the joint military actions. Commanders will continue to hold responsibility for the build-up, support and engagement of combat forces, while logistics will play a major role in the act of command through the creation and support of armament and force systems that will be engaged at tactical level for the achievement of strategic objectives.

The fundamental logistic processes that contribute to flexibility in the military strategy are those involved in the generation process of military power, the implementation of military force, as well as the support of it.

The War in Iraq from 2003 emphasized the characteristics of the military operations of the future, demonstrating at the same time many of the limitations of military logistics. The logistics of modern armies were adequate and constitute an answer the necessities of a conflict according to the scenarios of the Cold War, but it no longer matches the military operations specific to the era of information superiority. It thus results that the logistic system of modern forces is and will be in this century more and more flexible, agile and adaptable, just like the forces that it supports.

The need to be able to manage the changes and their results on the modern battlefield has led the US Defense Department Joint Vision 2020. The document states that the main objective is to attain information superiority that will provide knowledge superiority to the joint force and lead to decision superiority for the entire duration of the conflict. Among other concepts, at the origins of the Joint Vision 2020 we can also find the concept of Focused Logistics.

The new reality of the security environment made the US government initiate three new initiatives of force transformation: 1. Network-centric warfare; 2. Sense and Respond Logistics; 3. Transforming Military Culture [2].

The traditional concepts of *manoeuvre*, *strike*, *protection* and *logistics* are augmented by the information superiority provided through technological innovations, to produce improvements that are potentially so drastic that they can become, in fact, new operational concepts. As shown in Figure 1, these continuously evolving operational concepts appear as follows:

- *Dominant Manoeuvre* – the multidimensional application of information, engagement and mobility capabilities in order to position and engage the common air, sea, land and space forces that are dispersed to carry out the assigned operational tasks;

- *Precise engagement* – a system of systems that permits our forces to locate the objective or target, assures the adequate command and control, generates the desired effect, evaluates our level of success and retains the flexibility to precisely re-engage when necessary;

- *Multi-dimensional protection* – the multi-layer offensive and defensive capacity to protect own forces and facilities against all levels of enemy attacks, maintaining at the same time the liberty of action during deployment, manoeuvre and engagement;

- *Focused logistics* – the fusion of information, logistics and transport technologies in order to provide rapid crisis response, to track and change goods, even during shipping, and also to provide personalized logistical packages and support directly at the strategic, operational and tactical levels of the operations [3].

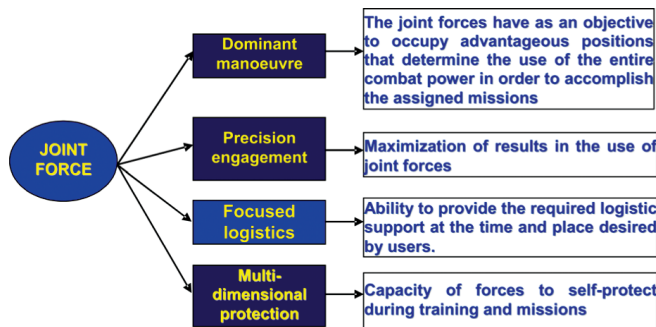


Fig. no. 1. Operational concepts applied by the US Military

The process of the armed forces modernization requires the use of high-tech armament systems and munitions that equal or surpass those of the competitors in the following key areas: tanks require a high level of fire power, mobility and reliability; combat aircraft require long flying range, large payload, superior avionics and high manoeuvrability; war ships will have to be able to survive in a hostile environment, to independently face a large array of threats and to effectively use their fire power at large distances.

From an operational point of view, the necessity to effectively accomplish the assigned missions by the joint forces led to the creation of modular military organizations, represented by a sufficient number of more flexible large units (combat and logistic support units) that will permit the planning and creation of force packages of an adequate size for a timely and efficient deployment and engagement. This fundamental objective entailed the transformation of the joint military forces manner of action and structure, through the integration and close connection between *information, operations* and *logistic* structures, whose actions are focused on *supporting the materialization of the commandant's conception*. The result is the need for the theoretical-applicative use of focused logistics, which requires sustained anticipative and proactive logistic support actions.

In modern warfare, *focused logistics* represent an operational concept of the US armed forces. It represents the fusions of information, logistics and transport technologies to ensure a rapid crisis response, to rapidly track and change the destination of the necessary quantities of materials and means (even during their shipping), to deliver to the beneficiaries quantities and categories of materials that are adapted to their concrete situations and to ensure direct support directly at strategic level, as well as at the operative and tactical levels of the military actions.

Based on the experience of recent conflicts, the requirements of network centric warfare evidently emphasizes

the necessity to develop in optimum conditions the focused logistics that will permit the adequate support of the forces engaged in joint military operations, as well as the optimum process of rapid response force projection in operation theatres/ areas with a duration of notification significantly smaller than at present.

Thus, *focused logistics represent the capacity to ensure the logistic support necessary to large units and units from the structure of a group of joint forces, which consists of adequate personnel, resources and equipment at the required location, time and in the required quantities*, during the participation in various military actions in the theatres/ areas of operations.

Focused logistics is the one that answers the complex logistic support requirements, adequate to the conditions of the modern battlefield. It represents a complex and difficult process, due to the rapid change of the operational situation and the effects determined by the technological potential of the new destruction capabilities. From this point of view we should underline the positive effect brought by: the new information technologies; the growing strike accuracy; the large scale usage of air manoeuvre and transport platforms; standardization; low consumption of fuels and lubricants; the use of evolved systems of monitoring of supply stocks, as well as the technical state of major equipments; the significant reduction of the size and weight of vehicles, sensors and armaments; the smaller crews; reduced in size operational and logistic support structures; the use of drones; the shift to electric vehicles etc.

All these technological achievements permit and facilitate: the simplification of re-supplying with materials and services specific missions; the reduction of the size of stocks as a consequence of the reduction in material consumption; the significant growth of the movement, transport, storage and maintenance capacity; the replacement of slow and hard to manage logistic support structures and systems.

In the same time, digitalization and automation of the operational logistics

domains can determine an increase of the vulnerabilities' level, which requires supplementary risk management measures in order to provide an opportune, effective and efficient logistic support of forces for the achievement of missions, according to the requirements of the stages of joint actions [5].

In order to establish adequate response options to the current and future challenges and threats to global security, both US and NATO forces act at strategic, operative and tactical levels in the following directions: full knowledge of the situation; obtaining of superiority in all domains, in order to support the intentions of the commanders; adaptation to new situations; the supply of the necessary logistic packages, focusing on speed versus quality and on

effectiveness versus efficiency; analysis and valorisation of simultaneous solutions, locally optimized, globally anticipated and expected, in rigorous accordance with: the intentions of the commanders, the strategic, operational and tactical situation, the battlefield and the abilities of the forces; logistic support decision making adapted to and in full awareness of the situation; gathering, analysis and adequate reaction to new experiences and lessons learned; the management of force capabilities and the achievement of a proactive logistic support, adapted to the intentions of the operational commanders; autonomous and one-to-one demand and supply, automated supply, agile procurement [4] (Figure 2).

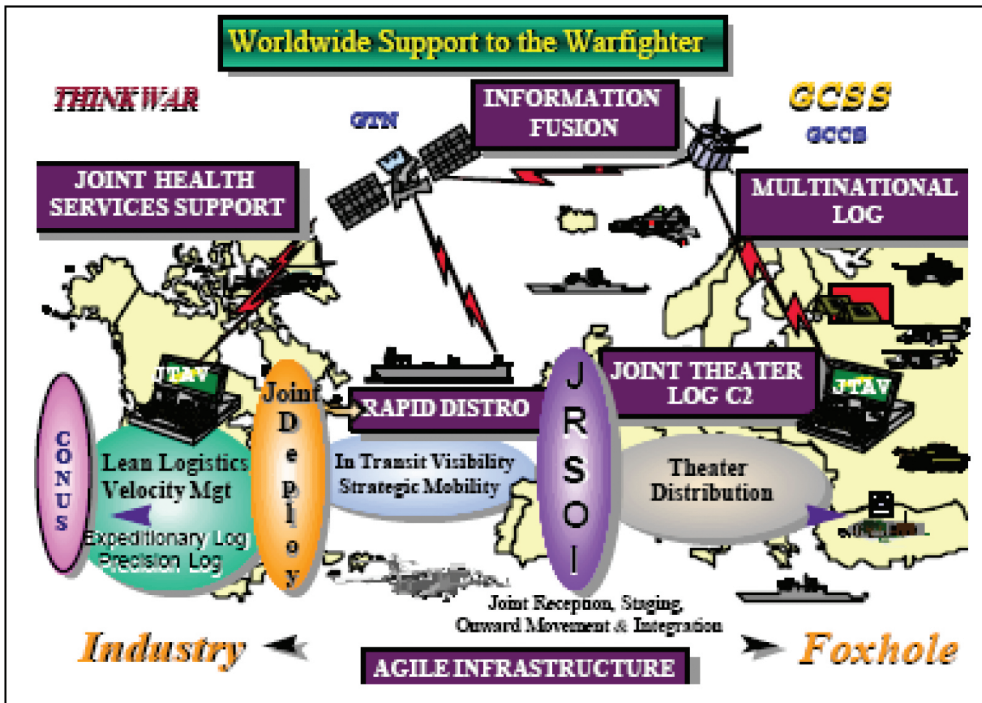


Fig. no.2. Focused Logistics Approach [3]

The aforementioned requirements can be supported by operational examples from the wars waged in the Persian Gulf. Thus, if during the 1991 Iraq War it took two days from the moment a target was detected to the moment when troops were

sent to destroy it, in 2003 this procedure took approximately 20 minutes and it is anticipated that will take less than one minute in the future.

From the same perspective of the rapid evolution of information

technology, we can mention that in 1991, 500,000 soldiers had at their disposal an information transfer capacity of 100 megabits per second. In 2003, 350,000 soldiers reached objectives a lot more rapidly, thanks to the growth of the transmission rate to 3 Gigabits per second, which is a 30 fold growth.

The superior military technological developments of the recent years determined important provisions for the future, thus being estimated that in the first minutes from the beginning of hostilities a number of over 500 strategic targets could be destroyed.

All these examples imply adequate logistics, being in continuous development, as a consequence of the rapid evolutions in the operational, technical and economical domains. Thus, modern technology and procedures will continue to act in the future as major transformation elements in the domain of focused logistics.

In these circumstances, the following trends will gather way: the *military and economic transformations* will determine a change in the logistic managerial business practice itself (as a result of the growth in forces' missions complexity, and of the availability of resources and business practices); the *technological changes and the improvement of the information management* will allow IT logisticians to shorten the decision making process and to solve the problems specific to focused logistics in shorter time [7]; the application of modern management concepts, procedures, methods and techniques will bring about focused, flexible and real time logistic flows [4].

Focused logistics emphasizes those essential elements that effectively envisage: flexible and agile acting organizational structures, with logistic support development capabilities - which permits the deployment into the theatre of military operations of smaller logistic organizations with well defined missions; ongoing logistic operations, flexible and adapted for optimum support, from supply / re-supply sources to end consumers; the use of very mobile movement and transport means, which could be rapidly relocated, recovered

and redeployed, regardless of the state of the infrastructure in the theatre / area of joint operations; the capacity to make accurate logistic analysis or estimates and to clearly identify all forces and means through the available sensor system (location, state, configuration, tracking etc.); to compile records from the national and international trading organizations to evaluate and determine the available capabilities which ensure to resources involved in the supply / re-supply processes, as well as the services they offer [4].

According to these, in order to reach superior level of support performance, focused logistics requires superior (improved) transportation capabilities and a wide array of other technological innovations, doubled by computerized command, control and communication system and structures, which will substantially modify the traditional logistics. The ability to know precisely where each person, logistic item or unit is in real time, through the creation and use of a system of sensors specific to network centric warfare, will permit precise knowledge with regard to the exact situation of the logistic support and of the state of specific flows. This level of knowledge will ensure the degree of flexibility and the speed of reaction necessary to the forces that will be supported.

The magnitude, complexity and rapidity of military actions specific to modern warfare require that forces be ready to deploy or re-deploy at any moment, in order to be able to face threats and challenges through the creation of modular operational structures. In these conditions a shift in the functions of logistics takes place from those specific to rigidly vertically structured organizations to those modularly integrated, adequate to flexible support systems. Thus, the structures within the integrated logistic systems should be proactive, and provide opportune logistic support necessary to joint forces for the full accomplishment of their operational missions. To this end, an effective management is ensured by the information subsystems of the logistic modules (S4, A4, N4, G4, J4),

which represent the components of the group of joint forces' command and control system.

At the same time, the management and execution logistic structures will have closer links and will cooperate more with the commercial companies, in order to apply and benefit from their advanced business practice, supply and distribution processes, and material management programs as well as from the specific economic networks and flows.

According to the requirements of modern warfare, focused logistics primarily requires adequate *planning*. Having this aspect in mind, operational planning will be continuously improved, so that the information systems specific to logistics will be able to effectively ensure and support the planning process of the joint forces' missions. The new information systems will be designed in such a way as to be able to generate

logistic estimates, precise and rigorous alternatives, and also the transposition of the operation concept (at strategic, operative and tactical levels) directly in logistic terms [8] (**Figure 3**).

High technology and accurate armament systems increase the lethality and efficiency of operational forces and decrease the demand for a very developed logistic infrastructure. Automated sensors embedded in the logistics networks diagnose the state of their own system, when the concrete situation calls for that. To this end, according to the speed of the actions, the stockpiles of the combat structures will also have to undergo rapid re-deployment. This should be much better achieved through the usage of a system of sensors that will permit both the permanent visualization of the needs for logistic support, the continuous movement of resources, and the predicted later deployments toward the areas of interest.

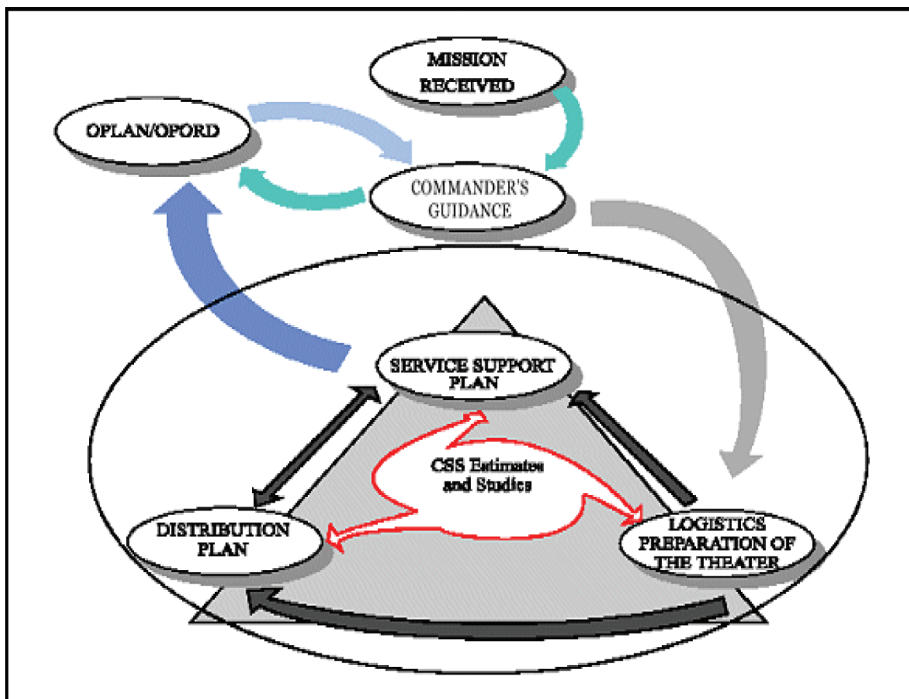


Fig. no. 3. Logistics Focused Planning [8]

At present, modern armies experiment the so-called "anticipatory logistics" concept (for oil products, munitions and maintenance), which is in fact, logistics focused on real consumption needs. This concept uses technologies, information systems and procedures designed to foresee and establish fundamental priorities in order to be able to ensure an adequate logistic support according to actual consumption [9].

The continuous modernization of logistics will also determine the reduction in the size of the forces and means deployed for the preparation and waging of joint operations and in the same time a growth in their efficiency, the reduction of the dependency of combat forces on slow and unreliable logistic systems in order to ensure continuous operativeness regardless of the weather [10]. To this end, focused logistics will have the following objectives: to *standardize logistic techniques and procedures*, both in the military and in the civilian / commercial field; to obtain *real time information on stockpiles*; to *minimize the waiting time of the consumer*; to *correlate military and commercial efforts in the field of supply – distribution chain management* [11].

The sensors mounted on the combat and on the support equipment ensure the monitoring of the stockpile levels, their exact location within every unit, the state of the equipment, etc. and they transmit these data to decision makers of the field of logistics. Knowing the situation of operational logistics at a certain moment, in greater detail will allow decision makers to be able to better configure the re-supply demands. They will use the new evaluation instruments of focused logistics, such as: *extended diagram*, *automated testing* and *data analysis and processing means*, in order to provide combat and support forces with more efficient logistic support by using fewer means [12].

On the basis of the facts presented above, it results that focused logistics require that logistic structures - that are part of combat (or about to be operational) large units and units, as well as of logistic support ones, to be

organized in a modular manner and be capable to support the components of the joint force according to the operational requirements. The size of these structures will be related to the specific of the theatre of operations and the assigned mission, so that their configuration could be modified in order to satisfy the logistic support requirements.

Focused logistics is part of an efficient logistic system established to provide anticipative and distribution based logistic support that will have to ensure: *effective information management*; *adequate operative/„readiness“ level of management*; *efficient and effective management of the supply – distribution chain*; *management of logistic capabilities in accordance with the existing logistic support requirements*.

As a fundament of focused logistics, the concept of Sense and Respond Logistics requires the existence of adequate abilities in the fields of information gathering and usage. This allows the military command and control system, as well as the operational activities associated with it, to dynamically adapt to the continuous evolution of the conception of the commander, to the strategic, operational and tactical situation, to the environment and to the continuous change of the force ability, capabilities and logistic resources.

The technological progresses related to the information era, especially those that ensure superiority in joint actions, will also give consistency to the concept of focused logistics and the capabilities needed to force projection and force support anywhere in the world, in any type of military operation.

It is obvious that, in order to cope with the existing realities and tendencies in the development of modern weapons, specialists claim that focused logistics must be in a continuous process of transformation and adaptation. But it is only through perseverance (in the direction of obtaining maximum advantages from the economic realities of the civilian environment) that we will achieve success in harmoniously mix them with the requirements specific to the military sector. In this way we will

shape the future logistic and support missions for the forces participating in operations, both on national soil and also in foreign external operations.

In conclusion, the necessity to continuously transform the military structures within the joint forces, according to the requirements of the war of the future, demands important modernizations. For attaining the requirements of focused logistics, an extremely complicated and gradual endeavour is needed, which call for adequate actions and changes from a conceptual and action point of view.

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