

Modelling of Task Force Structures

Vlastimil Maly, Petr Hruza

University of Defence, Kounicova str. 65,
66912 Brno, Czech Republic
vlastimil.maly@unob.cz, petr.hruza@unob.cz

Abstract. This article describes a new approach to the planning process and new possible way of selection forces for international operations based on modular structures and units' capabilities required for particular operation. Modularity of military units' structure contributes to the thoughtful and purposeful utilization of operational capabilities, with regard to the nature of the environment where units are deployed. Interests and ambitions of the Czech Republic do not exclude participation of the Armed Forces across the full spectrum of military operations, yet their involvement in ensuring the joint commitments is expected especially in stabilization and peace support operations. The article describes the options of original software application developed during the “*STRUCTURE*” project solution aiming as a support for staff officers in the preparatory phase of operational planning.

Keywords: Module, Modularity, Modular Structures, Task Forces, Operational Planning Process, Decision-making Process, Software, Database, Access, Microsoft Visual Studio, C# language.

1 Introduction

The changing security environment with new emerging threats determines new requirements for the Armed Forces and their operational use. Modularity within NATO, EU or UN is not fully implemented. Application of modularity at the national level may be beneficial in the development of national contributions to the operations led by NATO, the EU or the UN.

The process of creating organizational structures of task forces to NATO-led operations (EU, UN) or ad hoc coalitions is affected by many factors having at national level a significant impact on the content and timing of the actual process of creating a multinational task force.

The primary step for the development and implementation of modular organizational structures is modules definition and description of the sort of modularity, methods and associated metrics as a basis for the introduction and use of a modular approach to developing organizational structures and the creation of task forces based on modularity.

The basic philosophy of the possible use of modularity within the Army of the Czech Republic in military operations is the ability to work in different types of operations and their scope, content and urgency are and will be very diverse.

The organizational structure of deployed Army units, number of people, weapon systems and other equipment or materials must be adapted to this wide range of applications.

The task forces composed of modules that will determine the capabilities and abilities will be created for tasks completion.

Modules and their capabilities are therefore essential for the creation of organizational structures of assigned task forces.

1.1 Initial documents for the creation of task forces

Organizational structure creating and capability assessment of task forces for the operation is an essential part of military planning process in the Czech Army during the preparation and deployment of forces and other army means into the operation.

The process of development and evaluation can be specified in different ways. Organizational structure creating and capability assessment are based on current requirements for assessment of key operational capabilities defined on the basis of the document "*Declaration of Defense Capabilities - Towards NATO Forces in 2020*".

As the baseline document that describes the desired operational capabilities of the typical units within NATO and the EU can be considered existing NATO Capability Codes/Statements, referred to as Annex 1 to document *Defence Planning Capability Survey 2010, AC/281-N(2010)0014-FINAL* (EWG(R)) issued on Feb 26, 2010. This document sets out the requirements for operational capabilities by the EU, as specified in Annex 2 of the EU Capability Codes.

An updated version of the capability requirements on units for multinational operations led by NATO are defined in the document *Bi-SC Agreed Capability Codes and Capability Statements, SHAPE/CPPCAMFCR/JM/281143*, issued on Oct 14, 2011. This document has been made in cooperation of specialized military authorities, both from NATO and the EU. Specified requirements on the ability of units are applicable for planning processes both in NATO, and the EU. These requirements express minimum set of capabilities, which must be included in a military component to fulfil the tasks assigned to the required extent, quality and highest efficiency.

1.2 Process of creating task forces within NATO

Creation of forces within NATO is initiated in Phase 4 of the Operational planning process – the concept of operations processing (Concept of Operations – CONOPS). It is processed at this stage so-called "*Provisional Combined Joint Statement of Requirements*" (P CJSOR) as a document that expresses the minimum requirements for military forces created to perform the operation with potential risks accepted. P CJSOR is processed by the planning team at the headquarters for operations (Allied Command for Operations - ACO) in coordination with the designated operational headquarters (JFC HQ). The created document is sent to the individual nations through national military representatives in SHAPE as information about the

possibility to start of the planning process at the national level on the possible involvement of national military capacity in operations led by NATO (EU).

Particular selection and creation of forces for operations is the responsibility of the SACEUR in cooperation with the NATO Member States, or other non-member states, which may be also involved into the planning and execution of operations, including subordinate headquarters within NATO.

The aim of this selection process and creation of forces is to identify and confirm the national contributions to the operation with the requirements to create sufficient capacity in accordance with the requirements for the mission execution. Part of this process is the potential risks assessment on the basis of national restrictions defined by individual states.

The entire process is completed after the approval of the OPLAN and by release of order to perform the operation (NAC Executive Directive – NED), empowered by the Supreme Commander of Allied Forces in Europe (SACEUR) to perform the operation, forces activation and their acceptance into their subordination (Transfer of Authority - TOA).

2 Software for Task Force Creation

The modular system is a system composed of individual modules. The system consists of the gradual integration of functional modules into the system according to specific operational requirements. The functionality of the system is based on variable number of modules. Term *module* and term *modular system* are very versatile and both are used almost in all disciplines and various branches, not only in military sphere.

The combination of modules (military units) at the national level and the creation of appropriate structures of the national task force for the operation must establish for operational commanders of multinational task groups sufficient basis for efficient use of task force manpower and other necessary resources.

Sophisticated interaction and combination of individual task force modules creates preconditions for efficient and effective response to various situations emerging within the operation goals performance process.

Task Force Commanders are able to flexibly change the battle group units' disposition to respond to the new challenges and requirements according to the current operations conditions and situation development, if necessary. The modular structure allows the task force commanders capability of extraordinary agility and ability to react to situations.

The aim of task forces creation is to create organizational structures of units, consisting of individual modules, capable to meet all operational requirements, which will be easy to combine.

The Czech Army provides units having the required capabilities, appropriate size, professional structure and personnel.

The created task forces should be able to conduct the required activities within the entire spectrum of tactical operations from crisis situation eliminating up to the combat operations performing.

2.1 Module definition

For the purpose of practical operational procedure we have defined the basic modules that are assembled into sets in order to create a modular system designed to meet the specific tasks of the operation.

We have defined new definition of term “module” (one of the result of “Structure” project). The definition is as follows:

“Module is the basic building element (entity, organizational structure), from which is formed the structure of the common national or multinational task force in terms and conditions of specific operation. The module is designed to meet the professional task (tasks) or to meet the required capabilities (skills) alone or in mutual interaction with other modules.” [1, page 9]

Modules are the basic building block of the new introduced software application. Every module is described by the module name, abbreviation (e.g. MPR.), the number of people, by choosing of superior module type (e.g. mechanized), and size (e.g. battalion). It is necessary for each module to set its availability (in defined time slots) and capabilities. The time availability is specified in our software for each month for each module, and we distinguish among 4 possible values:

- period of preparation to operation/mission,
- period of deployment in operation/mission,
- period of stabilization after returning from the last operation/mission,
- non-deployable module.

The user of the application (software) has to assign capabilities for each module from prearranged database containing all possible capabilities. The user can set percentage of level for each selected capability for each military unit (module).



Fig. 1. Part of application form enabling editing of selected module.

2.2 Capabilities definition

Detailed identification of required operational capabilities for successful task completion is the primary basis for all process due to the complexity and expected changes during contemporary operations execution. It must be taken in the account in the formation phase of particular task force organizational structure at the national level for operation. Main goal is to meet the challenges in the entire spectrum of tactical operations during future operations (deployment, mission).

Then, assessment and detailed evaluation of (required) operational capabilities can be performed in the following areas:

- Doctrine,
- Training,
- Leadership,
- Facilities and
- Organisation,
- Materiel,
- Personnel,
- Interoperability,

well known as abbreviation: DOTMLPFI.

Particular capabilities requirements for a specific operation determine the size, structure and forces composition that will vary for each operation. Task force creation is very important and challenging process based on combination of modules depending on the required capabilities, operational goals, operational task, geographic space, time manner, etc.

Developed application described in this article provides users (operation planners) complete list of possible capabilities taken from the NATO document *BI-SCD 80-90 NATO Tasks List*.

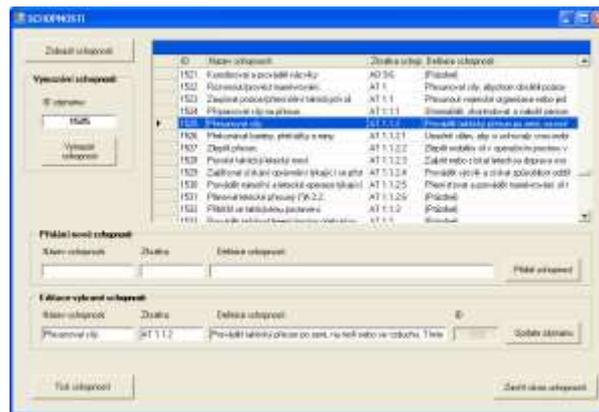


Fig. 2. Basic application form for capabilities management.

2.1 Software for task force creation

Software application called "*Creation of Modular Task Force Structure*" is intended for creation of task force using modular approach for the whole spectrum of operations. The aim of task forces creation is to create organizational structure of units, consisting of individual modules capable to meet declared operational requirements.

The main software output (benefit) is easy task force creation for the selected (predefined) operation. Task forces are created for each individual unit rotation during all time of one operation.

Basic database used in this software application consists of the following data-tables:

- Scenarios,
- Operations,
- Capabilities and
- Modules.

All database parts (data-tables) should be kept up to date to obtain objective and correct results.

The application is based on data stored in relational database. This database consists of individual database tables connected with relations within a particular relational data model. Database is stored in Microsoft Access database format and the application was written in Microsoft Visual Studio development environment using .Net Framework and C# language. Used data model and all the most important links between database tables used in our solution are shown in the Fig. 3.

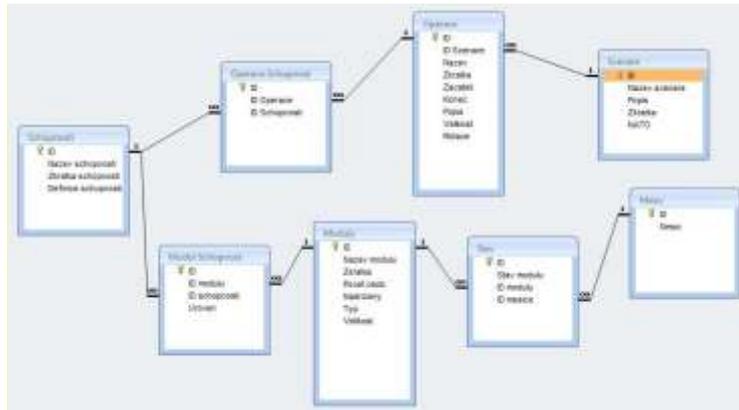


Fig. 3. Relational data model of used database (scheme taken from MS Access environment).

Application user can perform all standard database operations as insert, edit and delete of all entries in each of used data tables in our data model. The basic input data for our application are scenarios, operations, capabilities and modules. We can see also several other tables making links between data-tables in the scheme (Fig. 3.) that are necessary for relational data model philosophy and operation.



Fig. 4. Basic form (Main Screen) of the described software application

The creation of a task force can be made after filling of at least one operation, filling a number of modules, assigning them a few capabilities and adding the availability of

modules in the desired period of operation. These are the necessary presumptions before making a successful selection of modules for desired operation (and particular rotation).

Application allows us to print all partial results, list of modules for final selection for the task force, and all data from the database (data tables). User of application can print also lists of scenarios, operations, capabilities, modules and - as a main result - created task force. All prints are available also in Adobe Acrobat format (*pdf* file).

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