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## DECISION SUPPORT WITH KNOWLEDGE DATABASE IN ASYMMETRIC OPERATION AREA

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**Abstract:** *The article deals with a possibility of creating a Knowledge Database in asymmetric operation area for Decision Support System. This system can be very useful for mission planning, mission execution and mission training. The core of the system is a Knowledge Database, serving as a comprehensive source of historical information, and components supporting the assessment of risk for future missions. The knowledge database must store the following content mission, staff recommendations, asymmetric threats and assets in general and other dates. To achieve decision superiority is the development and implementation of concepts of operations, based on information network. These concepts allow leading operations through a comprehensive, common and purposeful use of the systems of command, control (C2) by means of digitization and thematic networking of deployed forces to maximize the effect of operations in real time up to the level of weapon platforms and soldiers.*

**Keywords:** *knowledge database, decision support system, mission, operation*

### INTRODUCTION

Peacekeeping operations represent a wide range of political, diplomatic, economic and military activities. Each peacekeeping mission is unique with its political framework, mandate, conditions under which it is lead and with the type of tasks to be fulfilled. Political framework of peacekeeping missions is determined mainly by the participants of the process of political decision making about executing the missions, while the participants are the national states, international and regional organizations, military alliances, nongovernmental organizations, or other subjects in the system of international affairs and politics.

Besides the standard security threats there are threats that are difficult to be identified and predicted in advance and even more when we talk about the extent of their impact. Characteristic feature of these new security threats is the dynamics of their rise and effect. The current world is exposed to the confrontation with the enemy that is scattered around the world and substitutes the lack of conventional military means with ruthless terrorism. Readiness of terrorist groups to go ahead, die of the impact of their own operations, kill the most people possible using most spectacular means, cause panic and break down the infrastructure, all these are good reasons to find solutions for this phenomenon of the present day.

## 1 ASYMMETRIC THREATS

Definition of word asymmetric embraces various forms of disproportion, the differentiation and the disharmony between two or more parties in the conflict. Asymmetry is an inherent feature of crises and wars first of all terrorist activities. The growing importance of asymmetry in present conflicts (military, terrorist and others) led to considering asymmetric threats as separate, specific area of armed operations. Typically, this area is characterized by: complications, ambiguous and uncertain situation, lack of complete and reliable information on their own and enemy forces.

Asymmetric warfare can be described, in general, as a conflict between two belligerents involving significantly different strengths and weaknesses.

Asymmetric threats in NATO perspective usually arise in relations: strong-weak or large-small. Asymmetric threats are most often posed by the party which seeking the confrontation is unable to resist the enemy in a symmetrical manner. The weaker, poorer armed party of the conflict tries to choose the means of confrontation in a way which minimizes the possibility to exploit the overwhelming combat potential by the opposing party. The case of asymmetric actions is having a place also when one party made a breakthrough in some technology or achieved technological revolution which increases its possibilities and the combat ability of the armed forces.

NATO must be prepared to act effectively against the use of asymmetric means by its enemies. At the same time, it is assumed that potential opponents of NATO will be increasingly using the asymmetric methods of fighting, including an unconventional strategy and tactics, and perhaps especially technique.

By USA view the following phenomena are considered as asymmetric threats: terrorism, the use of Weapons of Mass Destruction and fighting with information. The primary weapon of asymmetric war is terrorism i.e. the threat of using force or

violence against persons or property, in order to intimidate a government or society to achieve political, ideological or religious goals.

By British view it is important not to ignore the fact that potential adversaries have access to modern commercial technological means which, if used effectively, can allow them to become a difficult opponent to defeat, in particular concerning the areas of: technology, communications, biotechnology and information.

## 2 ASYMMETRIC THREATS IN PEACEKEEPING MISSIONS

From the mission in which members of AF of SR participated, we can draw conclusions. Participants of the missions considered the biggest threats the mortar and missile attacks, handgun shooting and explosions around the camp, terrorist suicide attacks, traps with the improvised explosive devices, terrorist activities against the public or private property, against the traffic and communication infrastructure, kidnapping and captivity of soldiers and civilians by terrorist groups and various radical groups, deadly attacks against civilians, attacks against the forming up and national police or national army forces, murdering, kidnapping, crippling of civilians and various provocation and incidents in order to violate the public order.

The fundamentals of identifying the threats that the members of the Armed Forces of Slovak Republic had to face have become the final reports of commanders of individual rotations and the exchange of experience of the members of missions etc. Part of the threats has occurred in Iraq as well as in Afghanistan, but both countries have certain specifics in this area.

The biggest threats can be considered:

- mortar and missile attacks on the camp and on places where soldiers performed demining activities,
- shooting from handguns and explosions in the vicinity of the camp in the evening and night hours,



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- mortar and missile attacks during transfers and pauses with the machinery,
- small guns attacks and sniper attacks when repairing vehicles during transfers and in case of car accidents,
- using explosive devices during transfers

Coalition units were mostly threatened when fulfilling tasks in the field, outside of bases, in convoys, patrols and at the checkpoints. For the attacks mostly explosive devices were used, placed on the main and side roads used by coalition units, on the urban roads and facilities of the infrastructure of Iraqi, in parked vehicles, in vehicles driven by suicide killers, in some cases even several suicide killers, even with their families.

The main threats that the allied forces had to face include:

- snipers attack during the activities in the built-up area, especially when building bridges, checkpoints, passages, control posts and other,
- terrorists suicide attacks using vehicles loaded with explosives,
- possible usage of guns and explosives of various types in case of contact with our soldiers and local civilians and in case of civilians moving, traveling and in the vicinity of machinery and during breaks,
- improvised explosive devices, explosively formed penetrates, attacks using handguns, creating traps and other,
- traumatic experience resulting from witnessing torn human bodies (fore mostly children) as a result of terrorists attacks,
- threat of using chemical weapons by terrorist groups,

- possible capturing of our soldiers by terrorist groups and various radical groups operating in the area of operation of our soldiers (kidnapping, captivity),
- kidnapping of foreigners, motivated by ransom that the kidnappers demanded from the families of their victims. Another reason of kidnapping was the requirements of kidnappers that they demanded from the governments of countries their victims came from – they required that the armed forces leave Iraq.
- terrorists' and radical groups revenge (former members of special forces, police, army, Islamic extremists) against the civilians because of their cooperation with allied forces, including recruits showing interest in this profession,
- higher number of people moving around all Iraq with guns caused the growth of terrorism and criminality,
- sunnit extremism along with fanatic foreign warriors of the so called holy war against the western world from Islamic countries, from Syria, Saudi Arabia, Iran, Jordan and Lebanon.
- a negative influence on the security environment was caused also by the activities of foreign secret services (fore mostly Iran secret service and Syrian secret service).

Experiences gained from peacekeeping missions can become an important source of knowledge to improve the planning of operations, leading operations and training the armies for peacekeeping missions.

**3 DECISION SUPPORT SYSTEM WITH  
KNOWLEDGE DATABASE IN  
ASYMMETRIC OPERATIONS**

Slovak Armed Forces Academy participates in the Multinational Project “Smart Information for Mission Success (SIMS)”, which can be used for mission planning, execution and training. The goal of the SIMS project is to demonstrate a tool which supports management of information and can be used in order to improve process of planning and executing daily missions in asymmetric warfare. The core of the system is a Knowledge Database, serving as a comprehensive source of historical information, and components supporting the assessment of risk for future missions.

Managing information in military applications is currently not performed in an optimal way. Military planning still focuses on scheduling of operations and deployment of forces, mostly due to the decreased appreciation of supplying adequate information required for mission execution. The Decision Support System (DSS) with Knowledge Database can offer a solution to that problem by providing methods and tools which extend the results of planning by using information schemes for mission execution. The goal of the DSS project is to create the DSS prototype, a tool to support information processing (acquisition, processing and distribution). The DSS project aims to develop a set of new mission supporting tools that aid force protection in an asymmetric warfare context, both in urban and non-urban environment.

Knowledge Database creates basis of Decision Support in Asymmetric Operations System. The knowledge database must store the following content:

- Mission (mission environment and terrain, mission purpose, tasks and specific purpose of the tasks, mission plan, mission unit, mission time, mission location mission Procedures, etc.).
- Staff recommendations (units, systems, weapons, munitions capabilities, limitations, employment, resource allocation and employment synchronisation of organic and

supporting assets, arrangements for combat, allocation, etc.).

- Asymmetric threats (preferred area of asymmetric activities, preferred action mode, preferred targets, objective, force protection measures and assets to counter the threat, etc.).
- Assets in general (equipment, transport, individual and unit force protection, other, etc.).

The knowledge database must allow updating data from the structured process of gathering lessons learned and must allow the data update based on mission status reports during and after mission, as well as mission result assessment. The knowledge database must allow automatic data update from sensors detections reporting on mission environment.

On the basis of previous experiences, the following information related to asymmetric threats will be collected from existing experience and past mission’s data. The information are related to the documents on enemy goals, capabilities, methods and opportunities, information on incidents and assets to be protected.

In the final part of the project the own forces perspective is represented by incidents and the enemy forces perspective is represented by the whole processes of mission planning and mission execution with the specific focus on force protection aspect. Data derived from real, historical missions are used to update the knowledge base and then in the future mission planning and execution by own forces and also to generate specific situation for training and analytical purposes. This concept is presented in the Fig. 1.

Decision Support in Asymmetric Operations is to be used to support:

- Operational planning (at e.g. the Brigade level) – especially in monitoring the risk in the Area of Responsibility, managing allocation of Force Protection (air, land, navy) and pre-deployment of Force Protection,
- Mission planning (at e.g. Battalion, Battle group level) in intelligence management and threat analysis – by risk assessment of the mission plan,



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- Mission rehearsal (Battalion and sub units level) – by mission review and simulation of potential events during the mission (short briefing based on map and potential risk),
- Mission Execution (at e.g. Companies, Platoon level) – by terrain data collection and status reporting.

Planning is given by exact and logical principles and it is important part of employed troops in the operation. It needs especial interest, with is stressed by necessity to understand each other in working process, often in short time. Planning is conducted in

accordance with doctrinal principles, in order to create the effects that will support and build to operational objectives and end-states within a campaign. Planning is conducted to ensure that there is a direct supporting link between tactical activities and operational objectives. This is articulated in a concept of operations.

Military Planning can be implemented at the strategic level (campaign), the operational level (operation), the tactical level (battle). A strategic level plan is more general than an operational level plan, and an operational level plan is more general than a tactical level plan. Depending on military unit, a plan is prepared with different resolution.

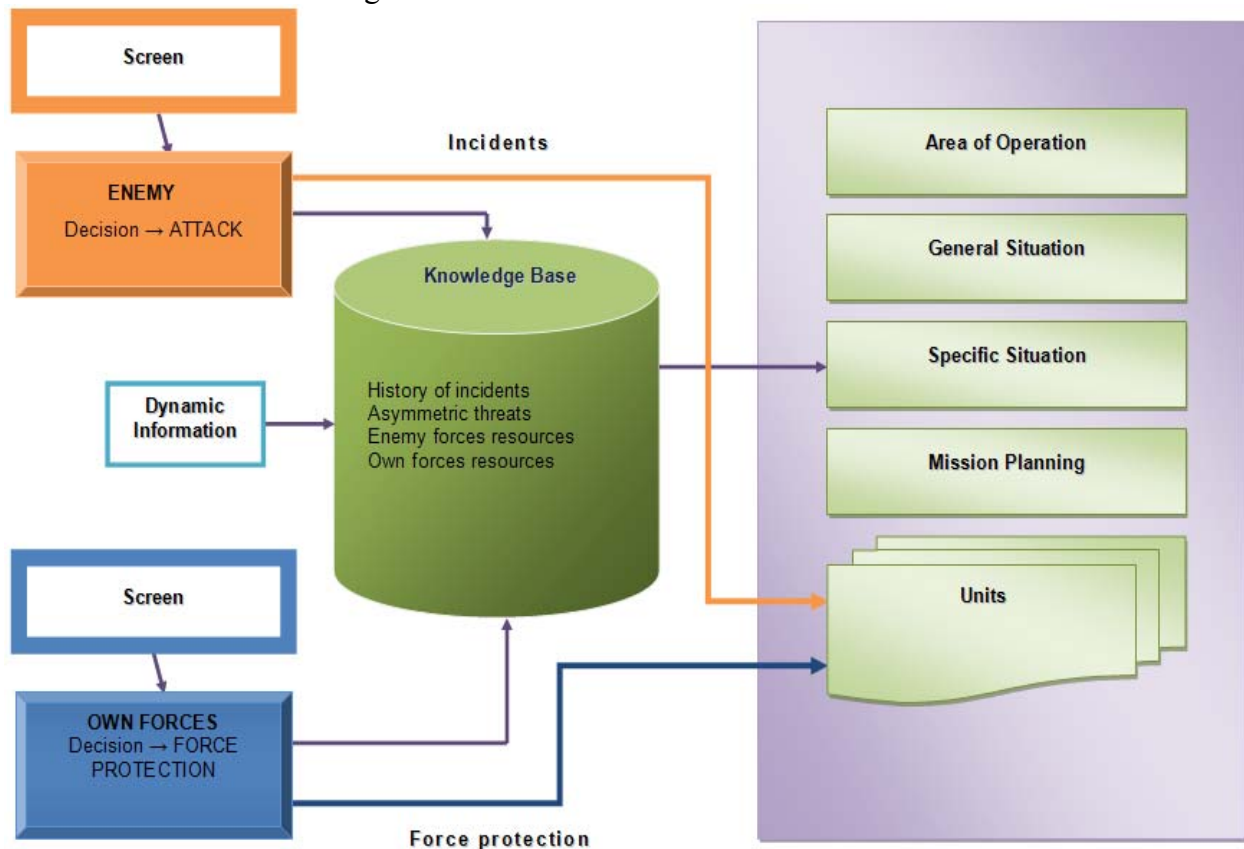


Fig. 1: Knowledge Database position in the system SIMS

Most of the advanced armies in the world have formal mission support concepts, command computerization and well developed databases with algorithms for these kinds of systems. The features of these systems were defined on the basis of factual and deductive databases with generalized knowledge, expressed in the procedural layer at the operational – tactical layers (forces ratios, saturation, feasibility and needs assessment, limits, etc.).

Using the traditional theory of knowledge terminology, the inference processes used by the analyzed tools are deductive.

### CONCLUSION

Knowledge Database and system development for decision making support are important elements of international crises management. It can be very useful for mission planning, mission execution and mission training. The core of the system is a Knowledge Database, serving as a comprehensive source of historical information, and components supporting the assessment of risk for future missions. Knowledge base will be fully full of real data and models of asymmetric threats. The knowledge base will allow automatic data update from sensors detections reporting on mission environment. The Decision Support System with Knowledge Database in Asymmetric Threat is to be used to support Mission planning in intelligence management and threat analysis – by risk assessment of the mission plan, Mission rehearsal – by

mission review and simulation of potential events during the mission and Mission Execution – by terrain data collection and status reporting. The system will also support the analysis of asymmetric threat history and models, the exploration of information related to the specific type of mission and threat. The system will provide effective access to all data stored in the knowledge base, which will update data from the structured process of gathering lessons learnt

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