SPECIFICS OF THEMATIC MAP PRODUCTION WITHIN GEOSPATIAL SUPPORT AT A POLITICO-STRATEGIC LEVEL

Vladimir KOVARIK[1], Jan MARSA[2]

ABSTRACT:
The paper deals with geospatial support of a politico-strategic level, especially with a production of thematic maps representing the most required product type at this level. Using their own experience with working in both the NATO and the EU command structures, the authors describe requirements for geospatial products that are produced at this level and they emphasize the importance of respecting the general cartographic principles. The authors compare the general technology of thematic map production employing the GIS technology with the technology specific to the politico-strategic level. They also describe the specifics of production at that level and they present both the common and different aspects of geospatial support in NATO and EU.

Key words: *geospatial support, politico-strategic level, geospatial products, NATO, EU, cartographic principles, thematic maps, production technology.*

1. INTRODUCTION

Geospatial support at a politico-strategic level differs from geospatial support at other command levels. The experience shows that there are certain specifics at a politico-strategic level that are given by that environment, personnel composition, and other factors which significantly affects the activities within geospatial support, especially the thematic map production. On the basis of the experience of the authors of the paper with working as geographers and mapmakers at command structures of NATO and EU, the specifics of the thematic map production at a politico-strategic level, in particular at the Supreme Headquarters Allied Powers Europe (SHAPE) and the European Union Military Staff (EUMS). The paper describes the common issues of the geospatial support at SHAPE and EUMS, as well as the differences. In spite of the fact that both institutions have identical goals of geospatial support, there is a difference in the way of supporting their users. At SHAPE there is a versatile and systematic support of an access to the credible, i.e. authorized, digital geospatial information via advanced methods of its supplying or publishing. Production of the thematic maps based on a specific request of the user is however a minor derivative of these activities. At the EUMS the central geospatial database exists and the users can use it through the Web Map Services, but majority of the thematic map production is still printed. One of the reasons for these differences between SHAPE and EUMS consists in a difference in a spectrum and number of activities being monitored by the EU and NATO. This is also very closely related to the diversity of user requirements for geospatial products.

[1] *Department of Military Geography and Meteorology, Faculty of Military Technology, University of Defence, Brno, Czech Republic, vladimir.kovarik@unob.cz.*
[2] *Reconnaissance and Electronic Warfare Department, Ministry of Defence, Prague, Czech Republic, marsaj@army.cz.*

2. GEOSPATIAL PRODUCTS AT A POLITICO-STRATEGIC LEVEL

2.1 Knowing the user needs

The basis for ensuring a successful meeting the needs of users, not only at the strategic level but generally at all command levels, is a thorough understanding of these needs. No geographic cell or department would be able to satisfy the users' requirements without this understanding. Possible methods of meeting the the user needs were described by Miklosik (2005). He presented the following four methods:

1. Realization of specific orders. It is a direct and relatively simple method of handling the orders in situations when the real customer exists and the basic conditions of production and use of products are known.. Therefore this method is applied especially during production of cartographic products having both the specific content and form; or having a high temporal urgency in terms of use. However, this method is the most expensive.

2. Production for the 'market'. This method is based on a survey of current needs and requirements of customers and estimating their development within different customer groups. Considering this method, it is important for a mapmaker to have the ability not only to create a product in time, but also to present it to the users in an appropriate form.

3. Production of basic and thematic maps in the public interest. This method refers to the production of state maps and it requires investing substantial resources with assumption of a long-term economic return.

4. A combination of these methods. The utilization of previously created basic maps of general use and their completion according to the current requirements represents a convenient and frequently used method. It is used mainly for creating thematic maps of various purpose.

At a strategic level, the first method of meeting the user needs is employed in the majority of cases. It applies to the command structures both in the NATO and the European Union. The second method is applied only rarely for the reason of the number of requirements and time demands. Applying the third method is then utterly impossible at a strategic level. Production of this type of maps cannot be carried out at this level for many reasons. Moreover, maps of these scales and formats are almost unusable. Finally, the last method is more or less identical to the first method.

2.2 Classification of geospatial products

Geospatial products that are used within geospatial support can be classified according to various criteria. Basic classification divides products into printed (or analogue), digital, military-geographic documents and others (GeoSl, 2009). Products can be standardized or specialized. Within NATO, in relation to specific operations, the geospatial products are divided into designated, supplemented, and others (Marsa, 2009; Marsa, 2010).

Considering specifics of geospatial product creation at a strategic level, we can focus on map products and within that especially on thematic maps. On a basic level, thematic maps can be classified with respect to the depicted territory, map content, map objective, map scale, etc. (Lauermann, 1974). Thematic maps can be differentiated according to their type or sort. According to the map type, the thematic maps can be analytical, complex, or synthetic. According to the map sort, the thematic maps can be sorted with respect to the time aspect, functional aspect, purpose and domain, map scale, territorial extent, method of recording the reality, and other criteria (Vozenilek, Kaňok & Kol, 2011).

2.3 Functions of geospatial products

The range of geospatial products produced within geospatial support at a stategic level is wide and not all of these products can be considered as proper maps, however each of them must fulfill at least some of the functions, that are called the primary functions of a map (Miklosik, 2005):

1. Information function
2. Function of a model to study the relationships
3. Function of a base to project and plan
4. Function of a management tool
5. Illustrational function
6. Function of a cartographic base

Primary functions are functions of geospatial products expected and required by the user and they are characteristic to any geospatial product. Primary functions are always present, only some may be of a less importance or they can be neglected. Primary functions allow to derive the secondary functions, such as business function, documentation function, etc. Geospatial products, however, are not primarily created to fulfill these functions. Some map types may fulfill also the ancillary functions, such as promotional function, decorative function, etc. The importance of these functions always depends on a product type and particular user needs.

Vozenilek, Kaňok and Kol (2011) use a different classification of functions and present the following basic functions:

1. Orientation function
2. Topological function
3. Classification function
4. Information function

Maps fulfill the orientation and topological functions by enabling to determine both the location and relationships of features that are portrayed on a map. Information and classification functions are usually fulfilled by the manner of a thematic content representation. If a certain geospatial product does not fulfill these functions, it cannot be considered to be a map. Apart from the abovementioned functions, it is possible to identify other functions, such as inventory function, organizational function, planning function, navigation function, educational function and so on.

2.4 Requirements for geospatial products at a politico-strategic level

Based on the experience of the authors of the paper with working in posts at SHAPE, the EUMS, and the European Union Satellite Centre (EUSC) and also on the experience with close relations and cooperating with geographic departments in the European Commission Joint Research Centre (JRC), the NATO Communications and Information Agency (NCIA), the NATO International Military Staff (IMS), the United Nations (UN), and other institutions, it can be shown that there are predominantly small scale geospatial products demanded and used at a strategic level (Marsa, 2009; Marsa, 2010; Kovarik, 2007; Kovarik & Petera, 2010). Majority of these products belongs to the category of thematic maps. They are based on a priority expression of one or more major themes at the expense of secondary themes (Vozenilek, Kaňok & Kol, 2011) and their characteristic is their content and purpose variety; and graphical and scale diversity (Lauermann, 1974).

The analysis of geospatial products being produced at the EUMS between 2005 and 2013 shows that only 9 % of products were at scales greater than 1:1,000,000. 67 % of products were at scales between 1:1,000,000 and 1:10,000,000; and the remaining 24 % of

products were at scales less than 1:10,000,000 (see **Fig. 1**). As the printed products created at SHAPE during the same period of time are concerned, the distribution of map scales of required products is very similar to the EUMS. It clearly shows the regional and mainly global interest of that command level.

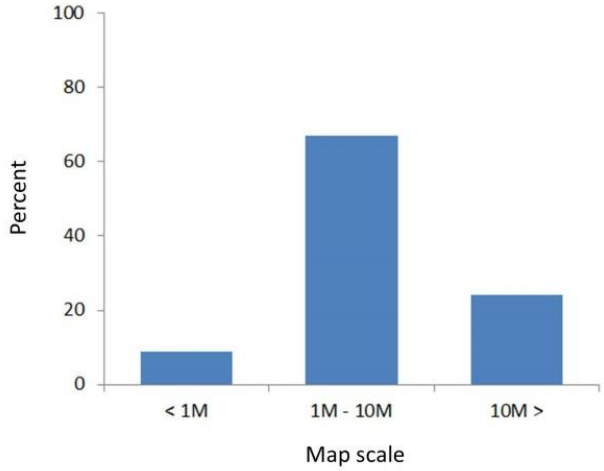

Fig. 1. Distribution of map scales of thematic maps produced at EUMS between 2005 and 2013.

However, the required scales of products cannot be generalized because they depend to a large extent on the nature and the scope of activities being monitored by the users of a given institution in a given period of time. At the EUMS, prevailing activities include treaty verification; support to peacekeeping tasks; support to humanitarian and rescue tasks; monitoring of regional conflicts, organized crime, terrorism, or weapons of mass destruction proliferation. At SHAPE, prevailing activities include particularly planning and conducting military operations.

Unlike production of standard geospatial products at national and international level, the primary requirement of the strategic level users is not respecting the cartographic principles; quality of generalization; or a balance of the map layout elements. The users require particularly the following:

- timely delivery of a product
- accuracy, reliability, currency and comprehensibility of the thematic content
- clarity.

It places demands on the mapmaker to respect general cartographic rules and principles during the production process even if the requirements for a cartographic quality are absent.

The ability to read maps as a part of a "cartographic literacy" comprises the perception of a map; the ability to use a legend; and the understanding the map content (Vozenilek, 2002). Degree of that ability - either natural or learned - differs from user to user. In the ideal situation, the mapmaker should anticipate that map reading ability of the users of his or her products and should adapt accordingly the means of expression of a given product. However, this adaptation and emphasis on clarity and comprehensibility of the thematic content inevitably affects the lifetime of the products.

2.5 The importance of respecting cartographic rules

Although the users at a strategic level do not require primarily geospatial products respecting the cartographic principles, it is necessary that all the products, whether they are intended for a few users or for a big group of users, respect these principles. Only this way can guarantee the accurate, correct, and rapid transfer of required spatial information. General cartographic principles, rules, guidelines, recommendations, and conventions concern not only the fundamental map components, i.e. the basic and supplementary map layout elements, but also selection of map content elements, use of colour, use of text, creation of the map layout etc.

As the examples of general cartographic principles we can name the principles of simplicity, comprehensibility, selection, or generalization. When compiling the map content, the legibility, visual contrast, or figure-ground organization are the principles that should be taken into consideration (Robinson et al, 1995). When compiling the map legend, the principles of completeness, independence, orderliness, comprehensibility etc. should be applied. The principles of creation of the map layout require that the layout should be well balanced and should contain all the basic layout elements. The rules of using colours describe the relationships of particular colours, their composition, ways of depicting of both qualitative and quantitative phenomena, etc. There are the rules specifying the ways of placing text to point, line, and areal symbols; the rules of constructing the interval or functional scales and many others (Vozenilek, Kaňok & Kol, 2011).

Although the principles and rules were already formulated in the era of traditional techniques of mapmaking, it is extremely important to respect these rules even today when maps are produced exclusively using digital technologies. These technologies usualy offer powerful tools for automated generating of lettering, legends, map layout and other operations but their use without the knowledge or respect for cartographic principles leads to the production of poor maps communicating the map's information inaccurately, incorrectly, or even not at all.

3. FORCED CHANGES IN THE TECHNOLOGY OF THEMATIC MAP PRODUCTION

Even though some geospatial products being created at a strategic level are very simple, the mapmaker should always respect the general requirements of map design and production, i.e. to consider the purpose of the product, to take into account the geographic particularities of a given area, and to endeavour to create the product fulfilling particularly its information function. In the course of work it is needed to address the issues both technological and aesthetic because a map is both the technical piece of work and the work of art (Lauermann, 1978).

As already mentioned, the most demanded geospatial product at a politico-strategic level is a thematic map. The following two chapters compare the traditional (or general) scheme of thematic map production using the geographic information system (GIS) technology and the scheme adapted to the conditions of a politico-strategic level.

3.1 General scheme

Over the years the standard procedure of map production has evolved and it was common for all the map types. This procedure was published already in the 1970's by

Lauermann (1974) and it was copied by many authors since then. The procedure starts with customer requirements for a map title, map purpose, geographic extent, map content, formal map arrangements, etc. Then these requirements have to be clarified by the mapmaker (or the mapmaking organization) in order to refine specifications of a thematic focus, map scale, cartographic projection, map frame and a structure of map series, draft of a map content, draft of a symbol set, etc. After that the cartographic project is elaborated into the detailed technical project laying out the detailed specification of individual steps within the whole technology.

Nowadays, and not only in connection with the use of information technology, the whole process is taking place much faster. In the ideal situation, the cartographic project is created. However, a significant percentage of thematic maps is produced for the operative purposes such as meetings, data previews, proof prints, single-purpose outputs, etc. (Vozenilek, Kaňok & Kol, 2011). The whole process of the thematic map production using the GIS technology may have various forms differing in both the individual steps and the total extent. For example, Voženílek (2005) suggests the following steps: data collection and analysis; design; layout output; evaluation and validation; layout confirmation; manufacture; test and duplication. Kraak and Ormeling (2010) present the scheme comprising the five steps: setting map objectives and specifications; data collection and combination; creating the map image; adapting the map to the medium; dissemination. Robinson et al. (1995) focus solely on the design process and it contains only three steps: graphic ideation; specific graphic plan; and detailed specifications. The individual steps of a procedure presented by Slocum et al. (2005) are relatively broad: consideration of the phenomenon real-world distribution; determination of the map purpose and its intended audience; data collection; design and construction of the map; and receiving the user feedback.

Considering the abovementioned schemes we can define the general scheme of the thematic map production using the GIS technology (**Fig. 2**).

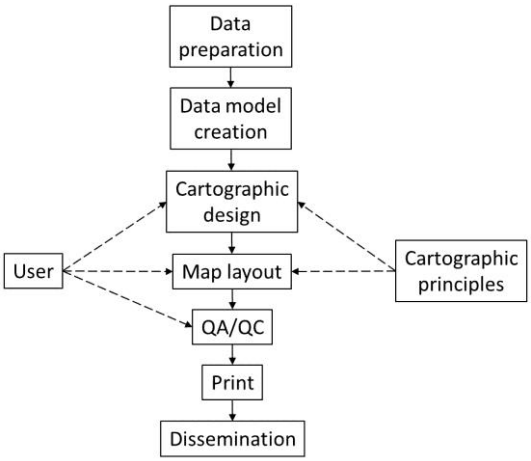

Fig. 2. The general scheme of the thematic map production using the GIS technology.

The individual steps are the following:
- Data preparation
- Data model creation
- Cartographic design
- Map layout
- Quality control
- Print
- Dissemination

Data preparation. This step represents the data collection and its analysis, sometimes also creation of new data. The particular type of data depends on the customer requirements and the type of the map that would be created. Basically, it is any geospatial information, i.e. data or products, including imagery. Thematic information are usually provided by the user. If this is not the case, then the information have to be collected from other sources, such as the existing geospatial products, either digital or printed; from geospatial databases; or from the internet. When collecting any data, it is important to assess the accuracy, completness, currency, a level of detail, utilization efficiency, etc. (Talhofer et al, 2011). An emphasis on respecting the copyright issues is absolutely essential.

Data model creation. Through creation of a data model the geometric base of a map is set. The map projection, coordinate system, map scale and data layers are determined. If the data model is set properly, it makes easy to generate not only other editions of the same thematic map but also various variations and similar products without necessity to start that "from scratch".

Cartographic design. The main goal of cartographic design is to communicate the information in the map in the most efficient manner, with simplicity and clarity. Using the data model the concrete content of the thematic map is created within this step. Both the topographic background and the thematic content are built by particular map layers. They can be formed by vector data, raster data, or imagery. Layers of the topographic background contain all the necessary features for localization of the thematic content which forms a key part of the thematic map. The thematic content is set up accordingly to the map purpose and function defined by the user.

Map layout. Creating a map layout is the most complicated step of the process. Although a technical part of the process (i.e. placing, arranging and modifying map elements) is made easy by sophisticated tools provided by GIS applications, there is a number of cartographic principles that should be respected. All the basic and additional map elements, such as a map frame, title, scale, legend, marginalia, insets, etc., are created in this step. And they must be in a balance to provide aesthetically comfortable conditions for reading the map.

Quality control. Quality assurance and quality control is (or should be, at least) an essential part of any production process. Before printing and delivering the product a thorough quality control should be performed. All the elements of a map should be revised and a map proof should be printed.

Print. The content of this step is driven completely by the user's requirements. The map can be printed applying various printing techniques which would also depend on a number of copies requested. The map can be also produced in other forms rather than in a printed one, i.e. in a digital form. This would require other operations such as transformations, export and adapting to the final format.

Dissemination. The final step of the map production technology. Its concrete form is driven by the output type of the product, i.e. whether the product should be delivered in a printed or electronic form.

As already mentioned, cartographic principles affect cartographic design and map layout. Legibility, visual contrast, figure-ground organization, or legend generalization are the examples of the themes that are important for consideration during the thematic map production, regardless of the purpose of these maps (Hubacek, 2011; Kovarik & Talhofer, 2013; Talhofer et al, 2007). A close cooperation with a user is essential. The most important point is in the beginning of the process. Unless the user's requirement is thoroughly clarified, there is always a risk that the user will not be satisfied with a product. In order to minimize the risk, it is also important to consult and review intermediate results of a design and map layout with the user and to receive his or her approval. Prior to a final export and print of the product the user should give his or her definitive approval.

3.2 Scheme specific for the politico-strategic level

Considering the thematic map production at a politico-strategic level, the production scheme becomes to some extent simplified. Changes of the general scheme are enforced especially by demanding time requirements for delivery of the products and also because majority of requested products are relatively single-purpose. These changes consist in the fact, that neither a cartographic project nor a data model are created: with respect to the single-purpose character of the products, it si not necessary; with respect to the time requirements, it is not usually feasible. However, the absence of the data model can make updating or creating other versions of the same product difficult.

A simplification of the thematic map production scheme applies both to the SHAPE and the EU. But at EUMS the high priority of the delivery time requirements has various impacts on the production process. The first of them is a transition from the GIS technology to the applications that can be marked as the DTP (*Desktop Publishing*). These are the Adobe Illustrator or the Photoshop software suites or even the PowerPoint. Kraak and Ormeling (2010) observe that the DTP tools enable designing and creating better maps than using the GIS technology. Also Vozenilek (2005) states that the production scheme is considerably simplified when the GIS technology is excluded. Nevertheless the disadvantage of these solutions is the absence of the link to the original geospatial data because the final result is the picture rather than a map. This fact brings problems for adapting the symbolization of particular features or using the result as a topographic background of other products (the well-known, yet with dificulty adaptable maps from the web pages of the UN Cartographic Section can serve as an example). At SHAPE, the DTP technology is employed occasionaly as well, however the GIS technology remains the primary tool for creation of the rapid map products which means also the thematic maps.

Another impact of the high priority of the delivery time requirements at EUMS is a necessity of using maps and geospatial products taken especially from the map servers and other internet sources. Taking over the products of someone else is forced by the impossibility to create in the available time a quality topographic background for presentation of a required thematic information. This practice is not typical for SHAPE, but at EUMS it is applied in a significant percentage of cases. It must be emphasized that it carries certain risks.

The most serious risk is potential violation of the author rights, i.e the copyright. The mapmaker must be aware of a boundary between the free use of the work and the use requiring the existence of a license agreement or at least the author's or publisher's

agreement with such use of his or her product. Every work is protected automatically, whether it is labeled by the copyright symbol or not. The mapmaker should thoroughly assess potential impacts of his or her activities that might be considered as a violation of the copyright. This concerns in particular using the map subsets, extracting features from aerial and satellite imagery or from other maps, adapting or remaking other map products, etc. (Vondrakova, 2012).

Another risk consists in not recognizing and taking over of inaccurate or incorrect information and its integrating into the new product. Incorrect feature locations or erroneous feature names can be the examples. In some cases, producers introduce inaccuracies, errors or even fictitious features into the maps or geospatial data to be able to prove potential misuse of their products.

The thematic map production technology adapted to the politico-strategic level is shown in **Fig. 3**. The individual steps are the following:

- Data preparation
- Cartographic design and map layout
- Quality control
- Print
- Dissemination

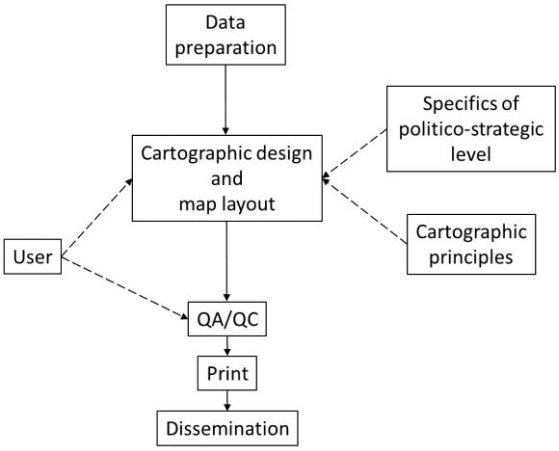

Fig. 3. The scheme of the thematic map production specific for the politico-strategic level.

Data preparation. As in the case of a general scheme, this step represents the data collection or creating the new data. It is typical for EUMS, that the priority of a delivery time leads to making use of other geospatial products, especially for using as a topographic background. A careful and an independent analysis of these data and information should be a part of this step.

Cartographic design and map layout. With respect to the limited time that is available, the compilation of a map content takes place concurrently with arranging the elements of a map layout. This step of the technology is most affected by the specifics of a politico-strategic level (these are described in the next chapter in detail). Therefore it is extremely important that the mapmaker is able to resist the influence of these specifics and still respects the cartographic principles during the production process.

Quality control. In spite of simplification of the production process, it is necessary to check the quality of the product before its distribution to the user.

Print and dissemination. The content of these two steps is identical to the content of the steps of the general scheme.

4. SPECIFICS OF THE THEMATIC MAP PRODUCTION AT A POLITICO-STRATEGIC LEVEL

Experience from working at a politico-strategic level shows that there are certain specifics brought by the environment, technical conditions, organizational conditions, staff structure, and other factors that significantly influence the geospatial support activities at that command level. Some specifics relate exclusively to a politico-strategic level, other specific occur at other command level as well. Some specifics are common to the SHAPE and the EUMS whereas some specifics are different.

- **Great responsibility of a mapmaker**

There is a strong requirement for a great responsibility of a mapmaker at a politico-strategic level. It results from the types of positions and special importance of the users (i.e. customers) working with the mapmaker's products, from a significance of decisions being taken using these products, etc.

- **Absence of a production team**

In most cases, the production does not take place at big workshops occupying large production teams. Burden of responsibility for thematic map production lies on one or two geospatial specialists who must be able to utilize their knowledge not only from a domain of cartography or thematic cartography, but also from other domains such as geoinformatics, spatial data analysis, digital image processing, and so on. In the ideal situation, the thematic maps are created by the thematic specialists and cartographers. In the reality of a politico-strategic level the thematic content is guaranteed usually by users and the cartographic aspect of the production is a responsibility of the mapmaker.

- **Unknown destinations of the products**

Although the thematic maps should be distributed in accordance with the rules for their use (*Release Conditions*) and in most cases the concrete customer or user is known, the mapmaker may not know the real final destinations of his or her products. Especially at the EUMS may happen that a particular thematic map is requested by the Situation Centre analyst for the purposes of a civilian mission planning meeting. However, that particular thematic map can be later disseminated to other working groups, commissions or EU member state national delegations. Thus the requirement for a high quality and especially correctness of the products at this command level is very important.

- **Incomplete or incorrect orders**

It may also happen that the mapmaker receives the order which is, in comparison with a standard procedure, incomplete or incorrect (Kovarik, 2008). If the order of the user does not specify exact geographic extent of the required thematic map, it affects directly selection of the map frame dimensions, cartographic projection, map scale, or the detail of map content elements. That increases demands on the mapmaker's ability of anticipation, on a correct assessment of user's map reading ability and a selection of appropriate means

of expression of a cartographic information. Therefore with respect to the fact, that the orders are not always entirely complete and correct, there is a great importance of a frequent communication with the user, so as the mapmaker produces the map fulfilling entirely the user's needs.

- **Political correctness of the products**

There are no places where the errors and omissions on maps related to the political situation at a given territory have bigger impact than at a politico-strategic level. An emphasis on the political correctness of thematic maps (as well as all other geospatial products) is one of the most sensitive issues especially at this level and it is also the most characteristic. The users are usually not specialized in a cartography domain and they may pay no attention to the fact that the particular product does not adhere to all cartographic principles. However, they know very well political reality in the countries and regions of their responsibility. Therefore a great attention must be paid by a mapmaker to creation of multilingual product versions (e.g. the map of Kosovo with the settlement names in Albanian or Serbian), names of particular countries (e.g. the Republic of Macedonia vs. the former Yugoslav Republic of Macedonia), or the manner of depicting the boundaries of disputed territories (e.g. Jammu and Kashmir).

- **Delivery time requirements**

Delivery time set by the user is a requirement of the highest priority and must be respected at all costs. The deadline is an absolute imperative at all command levels, but at a politico-strategic level, it becomes a significant specific especially in connection with a great responsibility of a mapmaker given by the importance of his or her users. This leads, among others, to adopting the DTP technology or utilizing someone else's products.

- **Employing the DTP technology**

With regard to a frequent lack of time using the GIS technology for thematic map production can be difficult because it is usually time-consuming. There is a considerable difference between the SHAPE and the EUMS in terms of using the production technology. Geospatial branch at SHAPE is capable to create the geospatial products relatively quickly employing the GIS technology. Preparation and planning of the NATO operations is a long-term and planned process where there are usually no sudden and urgent requirements for geospatial products. In addition to that, thanks to the territorial predictability various models or product templates can be prepared in advance allowing to create the product of a given territory and of relatively any type in a very short time.

In contrast to that, the geo cell at the EUMS faces a much larger spectrum of different requirements related to the large number of activities being monitored by the EU when it is not feasible to have the product templates covering all the world regions with different formats and unified symbology. Therefore the DTP technology is employed very often. Considering pure cartography or geoinformatics, using the DTP is not entirely correct; it helps however the mapmaker achieve the goal quickly. Yet it brings some risks. The mapmaker must be aware of them and must be able to cope with them as well.

- **Utilizing someone else's products**

The mapmaker must put emphasis on appropriate expression of thematic information that is required which must be in many cases underlaid by a high-quality topographic background. To create such a background represents very often production of another

separate geospatial product. It is time-consuming and the delivery time requirements usually do not allow to do that. The only solution of the problem is to find, adapt, and use the map or another product that was already created by someone else. This practice however brings certain risks. One of the risks might be a violation of the author rights, another risk is hidden in a potential adopting of inaccurate or incorrect information that might be introduced into the geospatial data and products deliberately. Taking over someone else's product can cause also other problems such as unintentional introduction of errors related to not respecting the cartographic rules and principles by the author of the original product. Utilizing someone else's product is relatively frequent at the EUMS, at SHAPE however this occurs very rarely.

- **Classification**

When creating any geospatial product, and also when using these products, it is absolutely essential to adhere to the principles of handling the classified information and documents. Of course, these principles do not apply only to the maps and geospatial products, but they are obligatory to all types of documents.

- **Releasability**

Releasability of geospatial products cannot be mixed up with classification of geospatial products. Even in cases when the product is not classified, it cannot be distributed automatically to all users. This specific relates to the fact that the mapmaker usually works in the international environment where not all potential users of his or her products belong to the nations being the members of the same operation, alliance, or treaty. In addition, the mapmaker is sometimes asked to provide the data or the products to the users from other cooperating institutions, such as the international, non-governmental, or humanitarian organizations. But it is always necessary to respect strictly the rules, i.e. license agreements, set by the author or the producer of particular geospatial product.

- **Variety of formats**

Considering variety of users and their needs, the range of product types and product formats that are requested can be considerably large. The A4 format is requested for presentations or as the attachements of text analysis and reports; the larger formats are requested for products designated for working meetings; the A1 and A0 formats are requested for wall maps. There are also requests for formats smaller than A4, such as reference maps for the web pages. As the product type is concerned, among the most required products we can find reference geographic maps, regional maps, image maps, migration maps, demographic maps, and pure thematic maps. This variety of types and formats is more typical for the EUMS than for SHAPE.

- **Production originality**

Taking into consideration satisfying requirements of numerous users having diverse areas of interest, this specific consists in a big variety of the geospatial products that must be produced at a politico-strategic level. Majority of the products requires creating the originals which does not allow using the prefabricated components, prepared templates, etc. Again, this specific is more typical for the EUMS than for SHAPE.

5. CONCLUSIONS

The paper aimed at showing the common issues in particular activities within geospatial support at a politico-strategic level in NATO and EU and to highlight the issues which differ. It follows that the thematic map production at SHAPE is based on employing the GIS technology and primary geospatial data within the system of its sharing and dissemination. The GIS technology is employed at the EUMS as well, however the current practice requires frequent employing the DTP technology. Although the technology of thematic map production may be different, the result must be always the same, regardless of the producing institution: the products delivered on time, the products satisfying the user's needs, the products respecting general cartographic principles. However, the differences in the ways of thematic map production shows the need of a common concept for a politico-strategic level both in NATO and EU in order to maintain the primary functions of thematic maps and other geospatial products.

ACKNOWLEDGEMENT

The work presented in this paper was supported within the project for development of Military geography and meteorology (PRO K-210) supported by the Ministry of Defence of the Czech Republic.

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