

ACTUAL SITUATION OF THE CARTOGRAPHY IN HUNGARY

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Abstract. Beginning from 1989 the Hungarian cartography is under an intensive process of diversification and significant changes. This paper tries to delineate in a very general way the present structure of the Hungarian cartographic society from the tasks filled by the state cartography to the multifaceted activities of the private map companies. In interest of describing all the sectors related to this field are presented also national organizations, our representation in international organizations, periodicals, higher education institutions and the most important public map collections in the country.

Key words: Hungarian cartography, national and international organizations, map production, cartographic education, map collections

1. NATIONAL ORGANIZATIONS

At present the Hungarian cartographers are represented in two national organizations related to this field:

HUNGARIAN SOCIETY OF SURVEYING, MAPPING AND REMOTE SENSING (MFTTT)

This society was founded on April 20th, 1956 under the name of Society of Geodesy and Cartography. In 1990 the General Assembly decided to change the name of the Society, adopting the actual one. From 1998 this organization became a public benefit company and a member of the Federation of Technical Scientific Societies (MTESZ). According to its name all those professionals can become members, who are working in cartography, photogrammetry, remote sensing, land surveying and land administration.

The main aims and missions of the Society are: „*to help the development of science and disciplines mentioned above, support technological progress, raise the technological level, distribute the professional knowledge, organize and coordinate the professional and social activities of the members, promote their cooperation in professional, scientific and public life, formulate, represent and enforce professional interests, elabo-*

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rate and propagate the principles of the professional Code of Ethics, keep the traditions of professional history alive, maintain and strengthen the international relations and publicize/promote our profession” [Markus and Zalaba 2006].

The main bodies of the society are the General Assembly, Presidency, Executive Committee, Supervisory Board and Professional Sections (Surveying and Spatial Planning, Photogrammetry and Remote Sensing, Land Administration, Surveying Legal Experts, Geodesy, Cartography, Engineering Geodesy, Topography, Regional Development and Environmental Protection, Education and Youth, History of Profession, Geoinformation and Seniors' Club).

The society has a total of 545 members (mostly individuals, but also some companies).

HUNGARIAN ASSOCIATION FOR GEO-INFORMATION (HUNAGI)

This non-profit, interdisciplinary umbrella association was founded on November 9, 1994. The mission goals of this association are the promotion, stimulation, encourage and support of the development and use of GI and its associated technologies, together with the strengthening of institutional links between the multidisciplinary GI communities in Hungary and in abroad. Its main objective is to provide representation and visibility of the Hungarian GI community's interests in the European Umbrella Organisation for Geographic Information (EUROGI) [7].

According to data from January, 2006 this organization has 109 institutional (public and private) members and 37 student members from 15 Hungarian universities and secondary schools. The membership is formed by representatives of the academic (20 institutions), governmental (42 institutions), private sector (36 companies) and NGOs (10 organizations).

Other national organizations related to cartography.

ASSOCIATION OF HUNGARIAN FRIENDS OF MAPS

This non-profit association was founded in 1981 (for the 25 years anniversary they published a small book with the most interesting presentation of the period). Its main goal is the promotion of activities related to maps, organizing every month a meeting to present the newest maps edited in the country, results of research on the field of cartography etc. All these activities are open for all the people interested in cartographic topics. The association also organizes activities (e.g. excursions, sales of map books) related to cartography for all the members, and collaborate with the MFTTT to attend the members of the Seniors' Club. At present this organization has about 100 members [5].

HUNGARIAN CARTOGRAPHIC ASSOCIATION (MATE)

This association was created in 1999, mainly to group the Hungarian map editors, representing officially them before the governmental institutions and other professional organizations. Between the main goals we can mention their participation in the legal and professional regulation of activities related to cartography, including the making and revision of proposals related to cartographic activities. Other activities: conciliation in professional discussions between members, making of an ethic codex, future foundation of a Cartographic Chamber and representation in international organizations.

LÁZÁR DEÁK FOUNDATION

This organization was founded in July 14, 1993 by the Cartographia Company, the Department of Cartography of Eötvös Loránd University, the Geographic Museum of Érd, the Hungarian Geographic Society and the Hungarian Office of Military Cartography. The main goals of this foundation are to elevate the level of cartographic culture, to propagate the map use, to introduce Hungarian people to the history of national cartography and to help the formation of cartographers. The foundation helps and supports different and numerous activities related to cartography as: organization of exhibitions and competitions, calling for professional tenders, support of the printing of professionally important maps, organization of camps for children in interest of enhancing their cartographic knowledge, support of participation in international events and others. Every year the Foundation organizes (together with the National Széchényi Library) the Beautiful Hungarian Map competition, which gives prizes in different categories of traditional and digital maps [5].

This foundation is open; every interested person can become a member if agrees to its goals.

HUNGARIAN GEOGRAPHIC SOCIETY

This Society was founded in 1872, one of the first ten Geographic Societies founded all over the world. The Society is divided in eight professional sections, one of them is Cartography. Between the 14 collaborator institutions we can find the Research Institute of Geodesy and Geophysics (adjunct to the Academy of Sciences) and the Department of Cartography and Geoinformatics of the Eötvös Loránd University. At present about 1300 professionals related to Geography are members of this organization.

HUNGIS FOUNDATION

Founded in 1991, the main goal of this organization is to promote the use of GIS in different sectors. Its main activities are the support of GIS teaching with the organization of national conferences in educational institutions (elementary, secondary schools, universities, etc), the publication of GIS bulletin and others in collaboration with HUNAGI [8].

2. PERIODICALS FOR PROFESSIONALS

GEODESY AND CARTOGRAPHY (GEODÉZIA ÉS KARTOGRÁFIA)

This is the professional bulletin published by the Hungarian Society of Surveying, Mapping and Remote Sensing together with the Department of Land Administration and Geoinformation of the Ministry of Agriculture and Rural Development. It is a monthly publication, which is commemorating its 50th anniversary this year (2006). At present, it is published in 1300 copies, containing articles –which are strictly selected, checked by specialists asked by the editorial staff– written not only by cartographers or surveyors, but also by professionals working in other related fields (GIS, Remote Sensing, GPS, Land Administration, etc).

TÉRINFORMATIKA (GIS)

A publication founded in 1988 for the Hungarian GIS Community, that mainly includes articles containing information related to the national development of this professional field. By now eight issues are published in a year, supported financially by the HUNGIS foundation.

3. CARTOGRAPHY IN THE HIGHER EDUCATION

At present, three educational institutions have MSc degrees in Cartography or fields related to Cartography (Geodesy, Surveying, GIS, etc):

- College of Geoinformatics of the University of West Hungary (Székesfehérvár): Surveying and Land Management (BSc), Land and Property Management (BSc) and different specializations [2].
- Eötvös Loránd University (Budapest): Cartography (MSc) and Geoinformatics (MSc) [5].
- University of Technology and Economics (Budapest): Engineering in Surveying and GIS (MSc) [13]

We should also mention those educational institutions offering degrees that are not directly related to Cartography (e.g. Civil Engineering, Architectural Engineering, Geography, etc), but include subjects about Cartography, Geodesy, Surveying, GIS, etc:

- Eötvös József College (Baja)
- Eötvös Loránd University (Budapest)
- Pollack Mihály Faculty of Engineering, University of Pécs
- Szent István University (Gödöllő)
- Széchenyi István University (Győr)
- University of Debrecen
- University of Miskolc
- University of Technology and Economics (Budapest)
- University of Szeged
- University of West Hungary (Sopron)
- Ybl Miklós College of Architecture (Budapest)
- Zrínyi Miklós National Defence University (Budapest)

Beginning from the 2006/2007 school year the Hungarian universities adopted the new two cycle (BSc-MSc) degree, following the Bologna Declaration of 1999 signed by 29 European Education ministries. This document includes the adoption of the European Credit Transfer System (process begun in 2002), in order to promote mobility between European universities and to enhance the flexibility of national higher education system.

In interest of giving a professional answer to the national GIS demands three of the above mentioned higher education institutions (the Eötvös Loránd University, the College of Geoinformatics of the University of West Hungary and the University of Szeged) are going to create a common MSc degree in Geoinformatics that will be implemented at next future.

4. REPRESENTATION IN THE HUNGARIAN ACADEMY OF SCIENCES

Hungarian researchers in Cartography have representation in the 10th Section of Earth Sciences. This section „follows with attention, promotes and evaluates all scientific activities conducted within its field(s) of science; takes a stand on scientific issues as well as in matters concerning science policy and research organization; submits opinion on the activities of the Academy's research institutes, and on those of university chairs and other research units that are supported by the Academy; and participates in the procedure of awarding the title of *Doctor of the Hungarian Academy of Sciences*.” [12].

This Scientific Section has 16 full, 6 corresponding, 11 external, 18 honorary and 10 consultant members, and fourteen of them has the title of „Doctor of the Academy”. Actually the Hungarian cartographers have one corresponding member (István Klinghammer) and two “Doctor of Academy” (excluded geodesy and photogrammetry).

5. REPRESENTATION IN INTERNATIONAL ORGANIZATIONS

The Hungarian cartography and related fields are represented in the following organizations:

INTERNATIONAL CARTOGRAPHIC ASSOCIATION (ICA)

Hungary is an ICA member since 1964. The National Committee is composed by a President, a Secretary and the Hungarian representatives in the organization (13 Commissions have Hungarian members from different institutions and companies related to Cartography). At present, two representatives from the Department of Cartography and Geoinformatics of Eötvös Loránd University cover the function of Chairman of the Commission on Cartography and Education and Vice-chairman of the Commission on Cartography and Children.

INTERNATIONAL FEDERATION OF SURVEYORS (FIG)

Hungary has representation in all the FIG Commissions. The structure of the representative National Committee is a President, a Secretary and 10 Commission members. During the last years the National Committee have organized some important FIG conferences (AGILE) and educational courses by the College of Geoinformatics (University of West Hungary). Hungary is represented with a member in the Board of Directors of FIG Foundation.

INTERNATIONAL SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING (ISPRS)

Hungary is an ordinary member of category 3 (51-150 active members in the country) in this organization. Since its' admission in 1930 (represented by the late Hungarian Association of Photogrammetry) participated actively in the work of different Commissions. The National Committee was renovated in 2003 and actually its' members represent the country in seven Commissions.

INTERNATIONAL GEOGRAPHIC UNION (IGU)

The National Committee of Hungary is headed by the Geographical Research Institute of the Academy of Sciences. In 2004 the country has representation in the Commission on Applied Geography [9].

INTERNATIONAL CONFERENCES ON THE HISTORY OF CARTOGRAPHY (ICHC)

This is not a “conventional” organization, but it can be considered an international forum for members of other organizations and internationally recognized institutions related to Cartography (ICA, IGU, Geographic Societies), who are interested in the history of this field. The first symposium was organized in 1964 and the next one, the 22nd ICHC will be held in Bern (Switzerland) in 2007. Hungary is represented by the Department of Cartography and Geoinformatics of the Eötvös Loránd University. Last year (2005) was organized the 21st ICHC in Budapest, Hungary [4].

INTERNATIONAL MAP TRADE ASSOCIATION (IMTA)

IMTA is an organization for individuals, companies, firms and institutions who are engaged — directly or indirectly — in the production and sale of maps, globes, travel guides, spatial information and related products and materials. At present, five Hungarian companies became members, four of them cartographic companies. In 2003 was celebrated successfully the IMTA 10th Annual Conference in Budapest.

GLOBAL SPATIAL DATA INFRASTRUCTURE ASSOCIATION (GSDI)

HUNAGI is a full member and one of the founders of this association, which organized a Congress (GSDI6) in September of 2002 in Budapest.

EUROPEAN UMBRELLA ORGANIZATION FOR GEOGRAPHIC INFORMATION (EUROGI)

Hungary is represented by HUNAGI in this organization founded in 1993.

6. STATE MAP PRODUCTION

INSTITUTE OF GEODESY, CARTOGRAPHY AND REMOTE SENSING (FÖMI)

This Institute was founded in 1967. *The Institute is the central surveying and mapping organization of all official activities in Hungary in the field of land management, surveying and mapping. It is financed by the state budget and has the competence of a national authority. Its direct professional supervisory authority is the Ministry of Agriculture and Rural Development, Department of Land Administration and Geoinformation* [6].

This institution offers the next map series:

- Topographical base maps and derived maps in scale of 1:10000, 1:25000, 1:100000, 1:200000
- Agrotopographical maps in scale of 1:100000
- Workmaps with and without the relief in scale of 1:100000 and 1:200000. (All the maps were produced 1999)

- Cadastral base maps in scale of 1:1000, 1:2000, 1:4000.
The databases offered by this institution are:
- Hungarian Geodetic Control Networks (Uniform National Height System, Uniform National Horizontal Network, National GPS Network, Hungarian Active GPS Network)
- Hungarian Administrative Boundaries (MKH): *The database contains the coordinates of the vertexes of the Hungarian administrative boundaries on country, county and settlement level. The database corresponds with the legally registered data, which are stored at the land offices. The database can be generalised in different variations – satisfying every demand of the users – with accuracy in cm, 1m, 10m, 100m. (Accuracy corresponds to the map-scale) [6].*
- Digital topographic base map in scale 1:100 000 (DTA_100): 84 sheets for the whole country offered in raster and vector (DGN, DXF) format.
- Digital Elevation Model of Hungary (DDM_100): The database contains DEM files in TIN and GRID formats for the whole country that are derived from the vector relief files of the database of digital topographical map in scale 1:100 000 (the size of a grid is 100x100m). The available formats are: MicroStation DGN and GEOPAK GeoTerrain TIN és Lattice formats
- Digital topographic maps in scale 1:10 000 (DTA_10): Database of digital topographic maps in scale 1:10 000 in EOTR (Uniform National Mapping System) tiling. The whole database is not finished yet. It will contain the raster and vector files for each sheet. Presently aspects of about 200 sheets are available in raster format.
- Gazetteer of Hungary (FNT): *This database contains the name of settlements, parts of the settlement, the landscape, large units of the land, woods, nature conservation areas, relief and hidrography, name of remarked points (ruin, look out tower and others) as well the name of the most important objects of traffic. The database contains 39 types of geographical names. The database has two versions. The first one (FNT1) corresponds to the topographic map in scale 1:40000, covering the whole territory of the country. The second version (FNT2) corresponds to the thematic content of the topographic map in scale 1:10000, at present only a 30% of the whole territory is finished [6].*
- Seamless Administrative Boundaries of Europe (SABE): This vector database contains the geometry and semantics of the administrative hierarchy of 26 European countries, being produced by MEGRIN, the group of National Mapping Agencies of Europe from the highest level (country) to the lowest one (municipalities or NUTS5). It is available in two versions: the first one (SABE 30) has a 30 m resolution (approx. 1:100000) and the second one (SABE200) has a 200 m resolution (approx. 1:1000000). Newest version is from 1997.
- (Quasi)Geoid databases over Hungary (HGEO2000 and HGGG2000): *The database contains the latest gravimetric (HGEO2000) and GPS-gravimetric (HGGG2000) quasigeoid solutions over Hungary in a grid of 1.5'x1.5' (2x2 km).*
- CORINE Land Cover project: Database containing information on land cover at scale 1:100.000 for the whole Europe. The database includes 44 categories in accordance with a standard European nomenclature, organized into five large groups: artificial surfaces, agricultural areas, forest and semi-natural areas, wetlands and water bodies. Classification was done using Landsat Thematic Mapper satellite

image maps with the help of topographic maps. The land cover information is stored in ARC/INFO format.

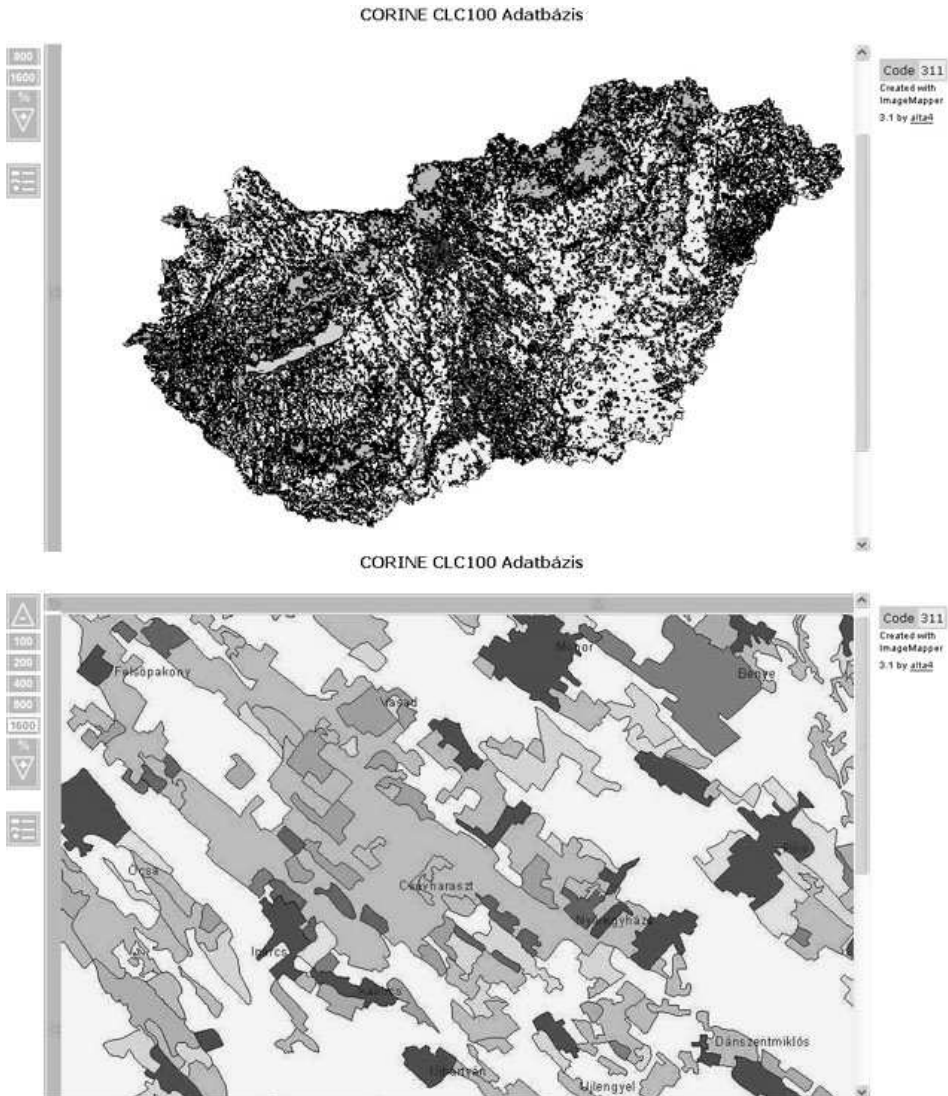


Fig. 1. Corine Land Cover database

Rys. 1. Baza danych pokrycia terenu „Corine”

The institute has played a very important role in the development of Land Office IT-system (TAKAROS – Cadastral Information System of District Land Offices). Supported by PHARE, it was completed in 2000, filling only the real property registry part.

FOMI participated also in the TAKARNET project, to develop the Hungarian Land Administration wide area network, which at present is facilitating public access to real property registry data for more than 3000 registered users. This system offers also integrated (map and land registry) data service for some districts of Budapest. The map service is in pdf format (platform independent).

Other products offered by FÖMI are: air-photos in black-white (panchromatic) and colour, SPOT, Landsat, IRS-1C and Quickbird satellite images.

MINISTRY OF DEFENCE MAPPING COMPANY

This Company was founded in 1919 under the name of Hungarian Military Mapping Group.

They have developed a very diverse and professional activity during the last 10 years and at present are offering the next products [14]:

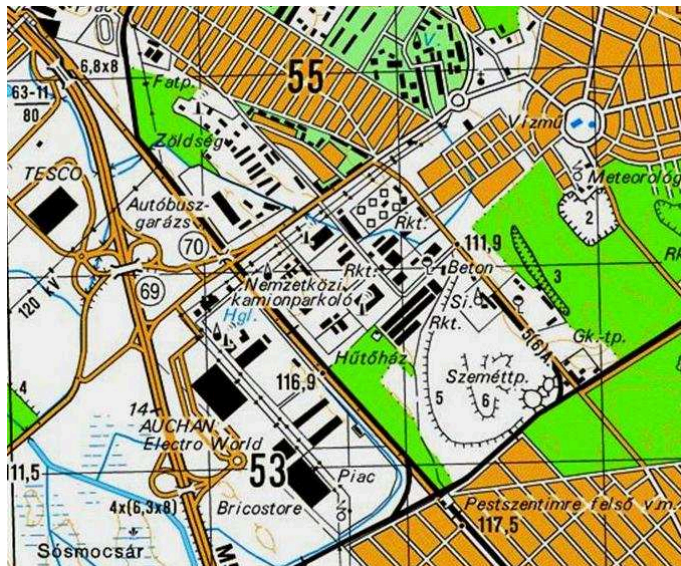


Fig. 2. Fragment of map at 1:50 000

Rys. 2. Fragment mapy w skali 1:50 000

- State topographic maps at scale 1: 25000 (Hungary is covered by 1166 sheets), 1:50000 (319 sheets, WGS-84 ellipsoid, UTM projection), 1:100000 (92 sheets), 1:200000 (28 sheets), 1:500000 (9 sheets) and 1:1000000 (6 sheets)
- Digital databases: DTA-200, DTA-50, DDM-10 and DDM-50
- JOG maps (1:250000) – for military use only
- Aeronautical charts:
 - Helicopter map at scale 1:200000: A total of 20 sheets made in WGS-84/UTM projection, including prohibited, restricted and hazardous airspaces marked; altitude data; airports marked, MGRS positioning.
 - ICAO map of Hungary at scale 1:500000

- Aerial photos
- Topo Explorer software for navigation: GPS support, available on PC and PDA.
- Raised relief maps of different territories (From Hungarian regions to the world)
- Road, city and country maps
- Facsimile maps
- Wall maps
- and different services in Geodesy, Photogrammetry, Topography and GIS

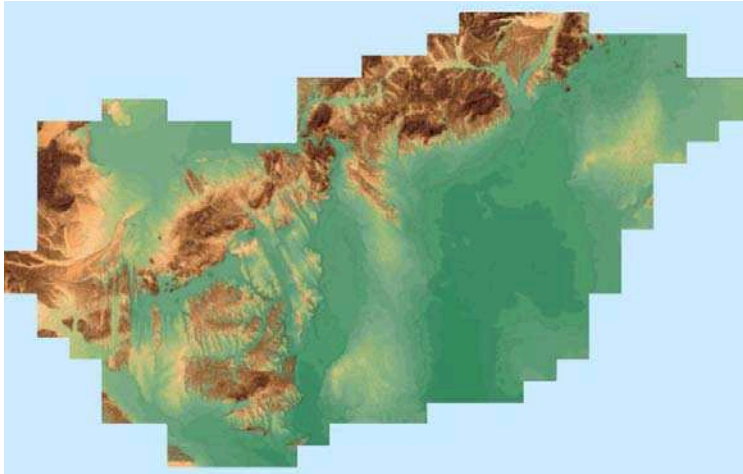


Fig. 3. DDM database (general map)
Rys. 3. Baza danych DDM (mapa ogólna)

GEOLOGICAL INSTITUTE OF HUNGARY (MÁFI)

Since its' foundation in 1869 this institution constitutes a good example of cartography applied to Earth Sciences. The most important cartographic product offered by the Institute is the 1:100000 geological map series of Hungary [10]. The decision to begin this work was taken in 1997. The map sheets were prepared on Gauss-Krüger quadrangles using the officially adopted EOTR coordinate system (Uniform National Map System). Made with uniform legend, the map series was finished in 2005. The Institute is developing GIS databases from the 90's. Their system can be subdivided in two main entities:

- Thematic key data including the digital line-work together with the relational data tables bearing geological attributes
- Cartographically processed line-work and topographic base with relational tables controlling cartographic display.

7. PRIVATE MAP PRODUCTION

While in 1990 only one state map company was in the country (Cartographia), beginning the 21th century there were between 200 and 400 companies, including map-makers, publishers and traders [11]. Because of the high number of private companies,

next we mention only those that were winners in different categories of the Beautiful Hungarian Map national competition during the last five years, as recognition to their qualified work in the map production:

- | | | |
|-----------------|--------------------|----------------|
| – Cartofil | – Karto-Pont | – Szarvas |
| – Cartographia | – Kárpátia | – Tájéoló 98 |
| – Dimap | – Micro Mapper | – TérképCenter |
| – Fírbás | – Nyírkarta | – TérképFaragó |
| – GiziMap | – Paulus | – Topográf |
| – Hibernia Nova | – Stiefel Eurocart | – Z-Press |
| – Intermap | | |

Beginning from 1989 few foreign private companies appeared in the Hungarian cartographic market. The most important are:

- Stiefel Eurocart (Germany): School maps and atlases, office maps, commercial maps etc.
- Kartographie Huber (Germany): Its' representative in Hungary is the Katicom company, which produces different types of maps for the German market.
- Städteverlag (Germany): Their Hungarian representative is the Magyar Térképház, specialized in the publishing of city and roadmaps.

There are some worldwide recognized names (National Geographic, Readers' Digest) that have published Hungarian versions of their atlases, but the map or atlas production can not be considered their main profile.

We should mention apart the GIS private companies. A part of them represents foreign companies (ESRI, Intergraph, MapInfo, AutoDesk, Bentley, etc) and at the same time works in the development of GIS systems, participating in different national or international projects. A new market that is growing intensively during the last 2-3 years is the named „mobile cartography”, using simultaneously GIS and GPS to create navigational software.

MAIN DIFFICULTIES FACED BY THE PRIVATE MAP COMPANIES

These difficulties can be divided in three more remarkable groups [Kováts 2006]:

- Economic situation: The issue of maps is low, because the Hungarian market is small and the number of companies editing maps is relatively high. This situation reduces the incomings and in this way the companies are obligated to cut down the expenses, e.g. reducing the cartographers' salaries. The reduction of expenses also motivates that illegal activities persist, (e.g. use of illegal software, use of state maps without legal permission, illegal employing etc).
- Copyright problems: Maps are used without legal permission by non cartographic (e.g. maps in textbooks, commercial material and others) and map companies. This last case –when map companies use as source or simply reproduce maps made by other companies– is more difficult to prevent and the damage (loss) is more significant than in the first case.
- Situation with the use of state base data: The 1996-LXXVI law specifies that the state base data should be used in all the cartographic works. In opinion of representatives of private companies, the law-makers did not consider professional and market factors during the formulation. The solicitude for official authorization to use base data or the data fare is theoretically compulsory even if the cartographer

did not use state base data to make a map. The fares after the use of state base data in some scales and issues are considered excessive and priceless; depending only on the map scale without considering other factors. This fact can provoke a new situation: „Hungarian” maps can be made in other countries, not only because the labor-force is cheapest, but because the Hungarian law can not be vindicated there.

8. NATIONAL MAP COLLECTIONS

THE MAP COLLECTION OF THE NATIONAL SZÉCHÉNYI LIBRARY (http://www.oszk.hu/index_en.htm)

This collection, presently numbering approximately 192,000 items, is based on the original donation of Count Ferenc Széchenyi, which contained a total of 1,500 items. The original collection consisted primarily of 18th century maps depicting Hungary, the neighboring countries and castles. Additional donations, purchases and the legal deposit submission of a copy of all newly printed books as well as maps resulted in the gradual but steady increase of the collection.

The Map Collection was made into an independent unit of the Library in 1939. It now contains 151,000 printed and 35,000 holograph maps, 5,000 atlases, 84 contour maps, 58 globes and celestial spheres and 1,800 explanatory volumes [Pokoly 2003].

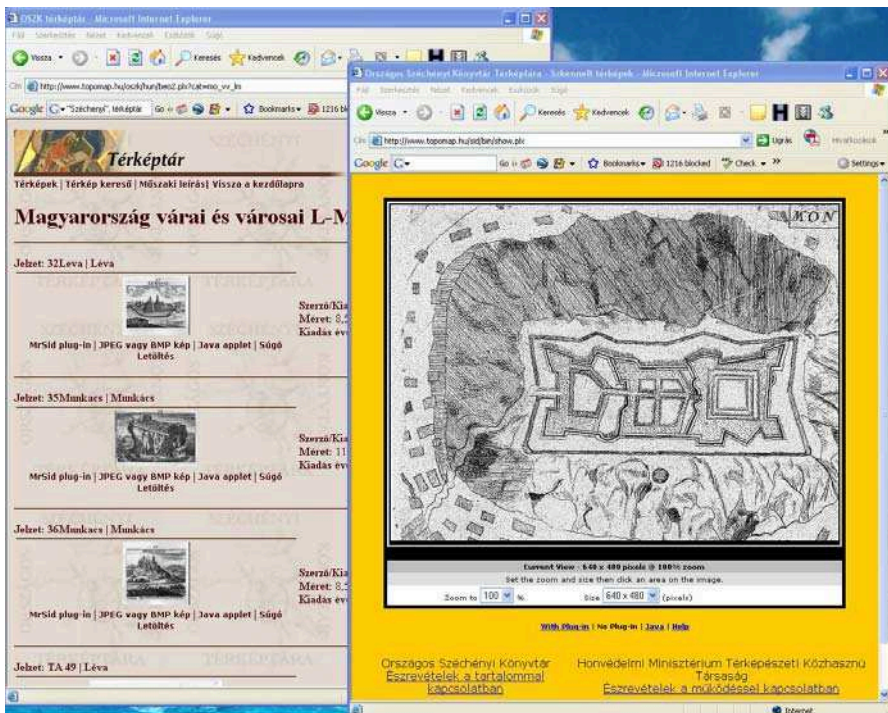


Fig. 4. Map Collection of the Széchenyi Library in the Web (site developed in collaboration with the Ministry of Defence Mapping Company)

Rys. 4. Zbiór map biblioteki Széchenyi prezentowany w Internecie (strona WWW powstała w współpracy z Działem Kartograficznym Ministerstwa Obrony)

THE CARTOGRAPHIC COLLECTION OF THE MAPROOM OF THE HUNGARIAN INSTITUTE AND MUSEUM OF WAR HISTORY (<http://www.militaria.hu/>)

In its present form the Maproom of War History was founded in 1954. The backbone of its total collection was made up of two sets of earlier materials:

- *a collection of fifty thousand items rightfully belonging to Hungary was transferred from the War Archives /Kriegsarchiv/ of Vienna to the Royal Hungarian Archives of War History /later: War Archives/ after the First World War;*
- *a set of sixty thousand objects of the Royal Hungarian Cartographic Institute /later: Defence Mapping Institute/ was founded following the First World War.*

The collection of the Maproom grew steadily partly by old maps (heritages, materials of other discontinued collections), partly by new acquisitions (military map series, aerial photographs, other civil maps). The total collection now numbers nearly 500.000 items (maps, atlases, globes, relief maps, professional journals, books, aerial photographs), and by sheer size it constitutes the largest cartographic collection in Hungary.

Those military maps which were forbidden to give to the researchers, because they had "secret" qualifications, are free for research from 1992. Nowadays we have no classified maps in our Maproom.

A representative set of several maps of the Maproom has been processed and written to CD (166 sheets). In addition the maps of the first military survey of Hungary (for the present territory, 436 sheets, scale 1:28.800) are written to CD as well.

The collection grows by some 4-5 thousand new items yearly, a smaller part of them being old maps, new books and other publications, while most of them are deposit copies of military series [Pokoly 2003].

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OBECNA SYTUACJA KARTOGRAFII NA WĘGRZECH

Streszczenie. Począwszy od 1989 roku kartografia węgierska staje się coraz bardziej urozmaicona oraz podlega znaczącym, ciągłym zmianom. Artykuł jest próbą nakreślenia ogólnych zarysów obecnej struktury węgierskiego społeczeństwa kartograficznego – od kartografii państwowej po różnorodną działalność prywatnych firm kartograficznych. Przedstawieniem wszystkich sektorów związanych z tym polem działalności mogą być zainteresowane organizacje narodowe, reprezentujące kartografię węgierską na forum międzynarodowym, czasopisma periodyczne, szkoły wyższe zajmujące się edukacją kartograficzną oraz instytucje gromadzące najbardziej wartościowe, ogólnodostępne krajowe zbiory map.

Słowa kluczowe: kartografia węgierska, organizacje krajowe i międzynarodowe, produkcja map, edukacja kartograficzna, zbiory map

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