

Interdisciplinary Partnership Based Implementation of SDI – The Case of Hungary

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ABSTRACT

The interdisciplinary national spatial data interest community HUNAGI (Hungarian Association for Geo-information) was established in Hungary in 1994 to promote the access and use of Geographical Information by improving coordination, co-operation, networking, exchange of information and knowledge transfer. The operation was integrated into the European and global level activities when HUNAGI became member of the European Umbrella Organisation of Geographic Information (EUROGI), and joined the Global Spatial Data Infrastructure initiative in 1996. Recently HUNAGI is also involved in the ISDE activities to share the Digital Earth vision, to strengthen horizontal ie.interagency, governmental-NGO, public-private partnership and interdisciplinary links and to facilitate interoperable services in the interest of users with special emphasis on the European and global initiatives such as INSPIRE, GEOSS respectively.

Its member institutions and organisations representing disciplines related to the sub-surface, natural surface (land, waters) and atmosphere are dealing with R+D and/or applications in renewable and non-renewable natural resources, monitoring, modeling and simulating processes, interactions and phenomena.

By the adoption and implementation of the initiatives of the INSPIRE draft directive, a legislation framework for the EU member states, the interoperability and higher level of accessibility and useability will facilitate the seamless management of spatial data related to natural features and man-made objects as well as virtual spaces. In Hungary both domains are highly developed the computer aided design, efficient facility management and computerized architectural planning as well as the monitoring and mapping of land surface, vegetation and land cover/land use by the use of 3D modelling of the topographic surface digital orthoimageries and Earth Observation techniques.

The interdisciplinary nature of the community partnership is promising also for paving the way for longer term developments enabling integrated management of data related to extreme scales ie. nanotechnology and X-Ray astronomy, and process investigations related to System Earth science eg. assessments in association with global changes .

By the end of its first decade of operation HUNAGI expanded to a network of more than 100 academic institutions, governmental agencies, NGOs and industry representatives countrywide. Awareness raising on NSDI, Earth Observation, Digital Earth vision, monitoring of natural resources and the environment, as well as on the European INSPIRE initiatives and programmes such as GMES and GALILEO are part of its activity. The adoption and implementation of projects and programmes such as Information Society Technologies, eTEN and e-Content Plus are also supported not only by domestic networking but also by the linked global (GSDI, GEO, ISDE) and regional activities (EUROGI, EuroGeographics, PCC, UNECE WPLA, GSDI and most recently UNSDI).

The effectiveness and synergy gained by the members in interdisciplinary environment using integrated, advanced technologies such as GIS, communication, satellite positioning/navigation and remote sensing were clearly demonstrated and verified in many applications from geosciences to land management, from local management solutions to nature conservation.

INTRODUCTION OF A STEADILY GROWING SPATIAL DATA INTEREST COMMUNITY

When the Digital Earth vision, a multi-resolution, 3D representation of the planet was introduced by former US Vice President Al Gore in 1998, he said: “Obviously, no one organisation in government, industry or academia could undertake such a project. Like the World Wide Web, it would require the grassroots efforts of hundreds of thousands of individuals, companies, university researchers and governmental organisations.” Now, in Europe especially during the past ten years a series of interdisciplinary national GI associations have been established and became member of the EUROGI framework forming a 2-level institutional network of 6500 legal entities and individual experts, users in the domain Geographic Information. Realised the role and importance of the availability, accessibility and useability of geo-referenced data, products and services, the Hungarian Association for Geo-Information (HUNAGI) was established by some professional organisations in 1994 including

- gita Hungary [website](#)
- National Information Infrastructure Development Program [website](#)
- HUNGIS Foundation [website](#)
- Hungarian Society of Surveying, Mapping and Remote Sensing www.mfttt.hu
- Hungarian Geographical Society [website](#)
- Hungarian Association for Settlement and Regional Development [website](#)
- John v. Neumann Society for Computing Sciences www.njszt.hu
- College of Geoinformatics, The University of West-Hungary [website](#)

Today, the Association has 113 institutional members and serves as a real spatial data interest community of networked stakeholders.

HUNAGI has been recognised by the government as an interdisciplinary national GI association, a co-operating partner in strategic planning in the field of GI and synergy provider in the implementation of the spatial data infrastructure.

MISSION AND OBJECTIVES/STRATEGY

Mission

- 1) To promote, stimulate, encourage and support the development, access and use of GI and its associated technologies
- 2) To strengthen the institutional links between the multidisciplinary GI communities in Hungary and in abroad.
- 3) To provide platform and expert forum by multiagency and public-private partnership facilitating the national spatial data infrastructure development.
- 4) To promote the access and use of Geographical Information by improving coordination, co-operation, networking, knowledge transfer and exchange of information in European and global level

Objectives/strategy

The objective of the Hungarian GI Association is to provide representation and visibility of the GI community's interests in the European Umbrella Organisation for Geographic Information (EUROGI), and to build up contacts with similar national GI associations in Europe and beyond. HUNAGI carries out actions related to the EUROGI membership and provides representation of its members' interest on international fora.

PRIMARY ROLES

1	GI policy maker/facilitator	Yes
2	Knowledge and information supplier	Yes
3	Public relations, awareness raising and promotion of GI	Yes
4	Program assistance and support	Yes
5	Political interface, lobbyist	Yes
6	Mediator, negotiator	
7	Promoter of standards, certification, use of right terminology	Yes
8	Facilitator for education (professional development) and training	Yes
9	Research	No

SOME OF THE ACTIONS, ACTIVE PARTICIPATIONS

Besides the own conferences, HUNAGI member institutions are deeply involved in the international activities and action plan implementation of acknowledged organisations such as IAG, FIG, ICA, ISPRS, GSDI, IPCGM, ISDE, gita, CEOS and many more.

1	Workshops and Meetings	<p>4th EC GIS Workshop (partner: DG JRC), 1998, 1st EU Cadastral Workshop, 2002 (partners: DG JRC, EUROGI) Based MoU, support of Workshops arranged by CELKCenter, the Central-European Land Knowledge Center (9 events between 2003-2005), Permanent Committee on Cadastre – EuroGeographics joint WG on the Definition of Cadastre for INSPIRE (2005) HUNAGI members FÖMI and CelkCenter involvement in the Control with Remote Sensing orchestrated by the JRC of the European Communities (2004) UNECE WPLA Workshop on Multipurpose Cadastre September 2005, Hosted by HUNAGI member FÖMI, organised by AGILE Working Group on Data Policy & SDIC MORE Joint Pre-conference Workshop on Monitoring and Reporting SDI – Application to the work of the INSPIRE Drafting Team. April, 2006 Organised by HUNAGI members Geo WHU and Hung. Society of Surveying Mapping and Remote Sensing involvement in FIG Workshop on eGovernance, Knowledge Transfer and e-Learning April 2006 CEOS Joint Meeting of WG on Information Systems and Services (WGISS) and WG on Calibration and Validation (WGCV) (Partner: UN, EOGEO Hungary), May 2006</p>
2	Seminars and Information Days	<p>European Union Satellite Center – Hungarian Space Office – HUNAGI Conference January 2004 PECS Seminar, September 2002 (partners: European Space Agency, Hungarian Space Research Office) International HUNAGI Forum on SDI and other hot issues, November 2004, GMES Information Day (Organiser: HAS Geoscience Division) May 2005 ePSInet Open Day (Partner: EU ePSInet, MoIC) 2005, Think Tank 6 organised by the Atlantic Institute, Cultural Diversities and SDI 2005 e-ContentPlus on GIS, Culture & Digital Libraries 2006,</p>

		INSPIRE Information Day (Partner: FÖMI and DG JRC), June 2006 Alpbach Summer School (with invited speaker G.Csornai of FÖMI RSC) July 2006
3	Conferences	HUNAGI members FÖMI and CelkCenter involvement in the Control with Remote Sensing orchestrated by the JRC of the European Communities (2004) 6 th GSDI Conference September 2002 (partners: GSDI Secretariat, EUROGI) GI Sessions of EFITA, the European Agroinformatics' Conference 2003 Support of annual events: Kaposvár GIS Days (University of Kaposvár), Nagykanizsa GIS Days, GIS in Education (Budapest) GISopen (West Hungary University College on Geoinformatics at Székesfehérvár), the Conferences of the Hungarian Agroinformatics Federation (Debrecen-Budapest), National GIS Conference (Szolnok) and gita Conferences (2001, 2003, 2005), Göttingen conference on GIS and RS October 2004, Organised by HUNAGI member Geo WHU Annual Conference of the Association of GI Laboratories in Europe April 2006
4	Projects	Invitation, participation (international projects): Humboldt (2006), Boss4GEMS (2006), eContentPlus (2006), Venus (2006), Agri@NetFood (2006). HUNAGI members subcontractors for LUCAS (2006) HUNAGI member Institute of Botany won the GSDI Small Grant Program (2005) Providing experts and WG members for the INSPIRE initiative (2002-2004) GINIE (Geographic Information Network in Europe) and related high level awareness raising(2001-2003). PANEL-GIS (Pan-European Link for Geographical Information), ABDS (Administrative Boundary Database Service), IST CAP3 hosting GSDI6. Contribution to: OISE (Proposal), ETeMII (by invitation in Potsdam 2001, and Antwerp 2002), ESMI (European Spatial Metadata Infrastructure (by invitation in Lisbon and Budapest), GEIX (by invitation in Budapest), OLLO, SDILA
5	Publicatio	Selected contributions to:

	ns	<p>GSDI9 Book Review Board activities 2006</p> <p>Column on the Role of the NGIA in GIM Magazine 2006</p> <p>Invitation to the Editorial Board of JRC's e-Journal on SDI Research 2006</p> <p>Discussion blogs in Hungarian and English launched in April 2006</p> <p>Environmental Atlas for Hungary using GIS (Nat StatOffice)</p> <p>ESA Space Atlas for Schools published in Hungarian assisted by 3 HUNAGI members (2006)</p> <p>Annual National Reports of the Hungarian Surveying, Mapping, Remote Sensing and Land Administration activities for EuroGeographics</p> <p>Paper on EUROGI and HUNAGI at the 8th Geoscience Conference Santiago de Chile (2004) Extended Member Meeting of EUROGI in Rome (2004), GSDI7 Conference in Bangalore (2004). Book chapter review on Urban Remote Sensing. Nature-GIS project document reviewing. GIM Magazine column: Cadastre, backbone of SDI.</p> <p>Hungarian translation of several GINIE documents (website, 2003)</p> <p>EUROGI paper at the First Cadastral Congress in the EU. Published by ACT, in English and Spanish (2002), Second Cadastral Conference in the EU (2003)</p> <p>Cadastral GIS Survey in Europe (so far covering 22 countries). A 110 pages document of EUROGI.</p> <p>Proceedings of the EU Workshop on Cadastre (published by the European Commission in August, 2002)</p> <p>Models of national GI associations in Europe (published by EUROGI)</p> <p>Panel GI Compendium A guide to GI and GIS (published by GISIG)</p> <p>Proceedings of the EC GI/GIS Workshops (Leuven, Stresa, Lyon, Budapest, Dublin, Potsdam and Warsaw)</p> <p>A strategic View of GIS research and technology development for Europe 2nd Edition (published by DG JRC), Proceedings of EFITA Conference 2003, EUGISES Conference 2000, Proceedings of EUROGI/AFIGÉO Day "Cadastre and NSDI in Europe" Paris, April 2000, Proceedings of GIS Day 2001 Budapest (CD) and others</p>
6	Lobbying	<p>Directorship, in EUROGI Working and Advisory Group on International Affairs July, 2006</p> <p>Invited membership, Organising Committee of the 5th ESDI in</p>

	<p>Palo Alto 2007</p> <p>May 2006: Position on the Active GPS Network at the Meeting of the Geodetic Science Committee of the Hungarian Academy of Science.</p> <p>March 2006: Economic and Social Committee of Europe: Lisbon Goals and the involvement of the civil societies – Conference in the Parliament with HUNAGI contribution in the subject “GI technology and employment”</p> <p>February: UNECE WPLA Bureau membership with area of interest GI/SDI</p> <p>Task Force on SDI Strategy (2004-2006)</p> <p>Accepted proposal “Spatial data availability as prime indicator for information society development strategy” (2006)</p> <p>Awareness raising for Interparliamentary Conference on INSPIRE March 2006</p> <p>Founder organisation of the ITS, Society of Intelligent Transportation Systems</p> <p>In January 2006</p> <p>By invitation, contribution to the National Development Policy Concept August 2005</p> <p>February 2005: The INSPIRE and related measures were introduced at the Geodetic Science Committee of the Hungarian Academy of Science. The Committee unanimously accepted the prepared promotive resolutions which will help in further awareness raising.</p> <p>January 2005: Cooperation between the Hungarian Contact Point for ePSInet and HUNAGI established. Consultation before the ePSInet meeting in Athens.</p> <p>November 2004 Deputy State Secretary level delegation made a study tour in the USA and the United States devoted to exchange of views on the use of GI, benefits of the SDI on local, regional and global.</p> <p>HUNAGI core members’ leadership in FIG Commission 3 (spatial data management) and 7 (cadastre) for 2006-2010.</p> <p>HUNAGI officers’ and contact persons co-chairmanship in the ISPRS Working Group Spatial Data Infrastructure for 2004-2008.</p> <p>Promoting Intelligent Transport System and 2nd Galileo Conferences held in Budapest at GSDI, EUROGI, FIG, ISPRS and EU institutions</p> <p>March 2004: contribution to the Hungarian Exhibition at DG InfSo in Brussels</p>
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		<p>February 2004: Successful initiative accepted by the Intersectoral coordination committee on Information Society and a Task Force lead by HUNAGI core members received mandate to elaborate the Strategy on the implementation of National Spatial Data Infrastructure with special emphasis on INSPIRE</p> <p>November 2003 Deputy State Secretary level delegation attended the GINIE Closing Workshop in Brussels. HUNAGI member RETC, an NGO in cross-border projects successfully organised the attendance of additional high ranking governmental advisors from Slovakia and Hungary.</p> <p>September 2002 Minister of Informatics and Communication opened the GSDI 6 Conference in Budapest, attracted 55 countries and 5 EU institutes. The meeting was attended also by Mr.Paterman, Director of Research of the DG Research</p> <p>April 2001: at the Expert Meeting of the Parliamentary Committee on Regional Development on the role and importance of GI infrastructure in natural disaster mitigation HUNAGI Forums at GIS/LIS CE (1995, 1996) and in 2004), GIS Day (2000-2002 and in 2004)</p>
7	Ongoing other actions	<p>Promotion activity for strengthening the domestic and European presence at the forthcoming events of Digital Earth, FIG/GSDI8 Conference and the ISPRS WG IV/1 “Spatial data infrastructure” Conference will be held in Hangzhou later this year.</p> <p>Promoting activities related to GMES, Galileo, PSI-ePSInet, eTEN and INSPIRE. SDI Strategy Task Force, definition and implementation of the National Spatial Data Infrastructure, Preparation as needed for the adoption of the INSPIRE Directive with emphasis on its proposed roadmap and timetable. Hosting the Workshop on “EU enlargement – impacts on the land administrations” of the UN Economic Council for Europe, Human Settlements Division’s Working Party of Land Administration</p>

STRUCTURE

General Board

General Board, meetings takes place annually. Approves reports on operation, finance, monitoring, as well as strategy updates, action plan, financial plan and agrees with new member applications

Executive Board

Presidential Executive Board operates on continuous basis. Formal meetings take place at least once per calendar year, usually two times. Decides on strategy updates, membership policy, applications and matters as regulated by the Statute, which was updated and accepted by Court decision in August 2002.

Working groups

No permanent committees. Topic-oriented ad hoc task force groups are established when needed.

New, municipality-oriented interest group is under preparation. HUNAGI members have been nominated and or recommended to join the GINIE Actions, the INSPIRE Working Groups, the EUROGI Working and Advisory Group devoted to Spatial Data/INSPIRE, GMES/Galileo, PSI/e-Content +, International Affairs and Communication.

Secretariat

The Secretary General runs the secretariat supported by the Treasurer (both on voluntary basis). Tasks include:

- Adopting and implement membership policy development and direct membership contacts,
- Administration and archive, information gathering, evaluation and dissemination,
- Co-operation development, co-ordination and awareness raising.
- Keep contact with EUROGI and partner (national, regional) GI associations
- Preparing plans, documents, keeps records on activities including photo archive
- Provide direct website development with voluntary assistance of members (FOMI, WebHU)

Three-member Control Committee, elected by the General Assembly keeps control on the overall operation.

Membership

- Categories and number in each category, target groups:

TS 52 – GSDI – FIG Spatial Information Contributing to e-Governance

9/15

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Shaping the Change

XXIII FIG Congress

Munich, Germany, October 8-13, 2006

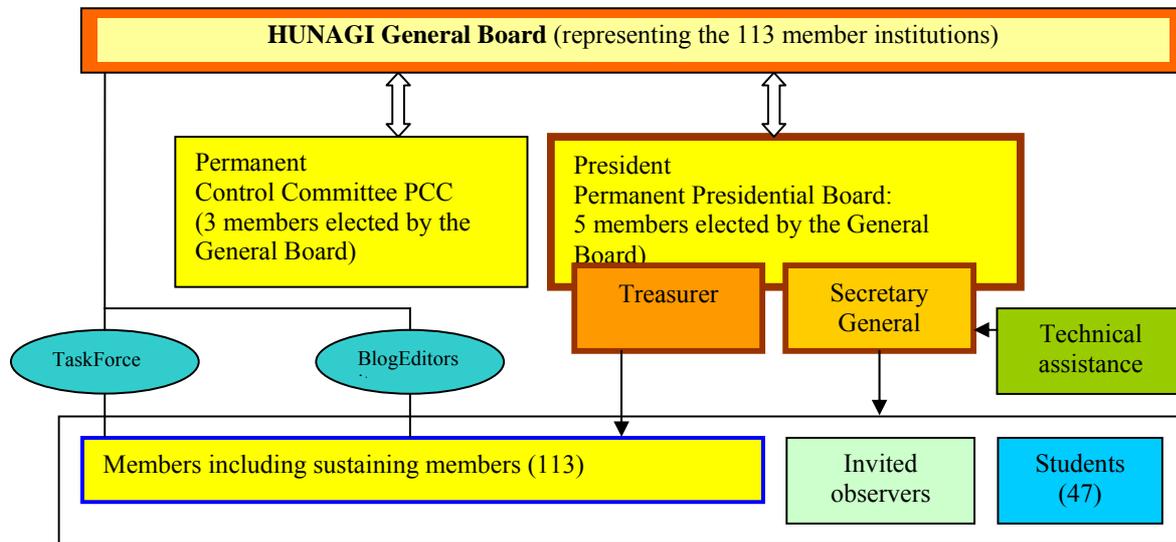
- Members (including sustaining members, all legal entities): 113 (as of 31 July 2006), Invited observers. Student Division with mentor Prof.Dr.Béla Márkus has additional 47 students as individual member sponsored by ESRI Magyarország. The managements of 8 countrywide projects are also beneficiary members, all on behalf FÖMI.
- Sectors: Governmental (34%), Academia (29%), NGOs (9%) and Private Sector (28%).
- Benefits for the members
- Forum for representing their interest, Dissemination of GI/GIS related knowledge and information,
- Directly serves the competitiveness in the European Union
- Is the membership separated in a public and private part and how are they brought together?
- The only difference is: private sector enterprises belong to the sustaining member category contributing to the activities and operations by higher membership fee. Common interest: developing potentials for public-private partnership.

Partnerships

HUNAGI has strong partnership with HUNGIS Foundation, which was established in 1989 aiming the development of the GIS culture in Hungary. HUNAGI has seat in the Board of Curators of HUNGIS, one of the prime consultant body for the government in GIS. HUNAGI had Memorandum of Understanding with CELKCenter, the Central European Land Knowledge Center between 2003-2005. Similar MoU has been signed with the Hungarian Society on Logistics (MLBKT) addressing new challenges where GI technology and logistics together can provide synergy. HUNAGI keeps excellent contact with the Hungarian Space Office in order to mobilize the private sector's interest towards the exploitation of space research especially in the field Earth Observation and Satellite Positioning and Navigation.

Another relevant development which has to be mentioned is related to the GEOSS, which held its 3rd conference in Brussels. The GEO meeting and the 4th GMES in November 2003 was already participated by HUNAGI members representing the Ministry of Environment and Water as well as EUROGI. In 2006, HUNAGI received seat in the Hungarian GEO Board supported unanimously by the representatives of ministries and the Hungarian Space Research Office.

Organisational scheme



Communication

1	Newsletters	Yes	Electronic, 1-3 per week on specific topics disseminated for members. Circulation: 160+ addresses Wider mailing list is used for awareness raising and topics generating general interest Circulation: 430+ addresses International mailing list contains several hundreds of entries to inform the international community
2	Bulletins	Yes	Periodic, theme oriented, in English
3	Reports	Yes	Annual, well documented, archived and accessible for the members
4	Web site	Yes	www.hunagi.hu Language: English gradually enhanced and reach in content number of visitors have been doubled in every two years So far there are over 42, 000 visitors. Recent monthly average increment is about 1000
5	Blogs	Yes	One blog in English http://hunagi.blogspot.com 14 thematic blogs in Hungarian http://hunagix.blogspot.com , where x=1,14
6	Publications	Yes	Regular publications in leading domestic (Geodézia és Kartográfia) and sometimes in international GIS

			journals (e.g. GIM)
7	E mail	Yes	hunagi@hunagi.hu

PROJECTS EXECUTED BY MEMBERS OF HUNAGI INCLUDES:

Geodetic reference networks EUREF and UELN
Active GPS Network
National Cadastral Programme (full country coverage in vectorised form will be available in 2006)
Digitised Land Registry and Internet based service
Nationwide Land Cover (with enhanced CORINE nomenclature and 50 m resolution)
CORINE Land Cover 2000 (new survey for change analysis and mapping)
National Topographic Project
National Orthophoto Database (based on the aerial survey flights taken in 2000, and repeated in 2005)
Area frame sampling based European Land Use Database (with enhanced resolution)
Administrative Boundary Data
Geo-referenced address register
Operational crop monitoring and yield estimation
Agricultural parcel-based identification and reference system
Area-based subsidy control with remote sensing
Local SDI: support for vineyard inventory (to be completed for 22 wine regions)
Territorial information system
Forest information and management system
Nature conservation: GIS support for the National Parks
Soil database
Geological Database
Meteorological, applications of GIS and RS
Climatical modelling, Global Change related assessments
Water Management, flood mapping, logwater damage mapping
Precision farming
Location based services
Land administration incl. valuation, land use, land protection, land consolidation
Rural development
Urban and Regional planning
Urban data management and utilities related applications
Cross-border applications in transportation,
Environmental assessments
Natural disaster mitigation
Hazard and risk assessments
Plant health and soil conservation

Human settlements and impact analysis
Air pollution
Management of non-renewable natural resources
Advanced documentation of Cultural heritages
Applications in advanced learning
Civil protection and defense

Potential resources and backstopping of programmes and projects are as follows:

Domestic level

National Development Plan,
Operational Program of Information Society

European Union level

eTEN, e-Content +, i2010, ePSInet, IST - Information Society Technologies, GMES, Galileo

Global level:

GEO Working Plans in the GEOSS framework (With contributions by GSDI, CEOS etc)
UNSDI Geoforum (with kick-off meeting in September in Rome)

INTERDISCIPLINARITY

In HUNAGI member institutions and organisations - representing disciplines related to the sub-surface, natural surface (land, waters) and atmosphere - are dealing with R+D and/or applications in renewable and non-renewable natural resources, monitoring, modeling and simulating processes, interactions and phenomena.

By the adoption and implementation of the initiatives of the INSPIRE draft directive, a legislation framework for the EU member states, the interoperability and higher level of accessibility and useability will facilitate the seamless management of spatial data related to natural features and man-made objects as well as virtual spaces. In Hungary both domains are highly developed the computer aided design, efficient facility management and computerized architectural planning with virtual building capability (eg. www.graphisoft.com) as well as the monitoring and mapping of land surface, vegetation and land cover/land use by the use of 3D modelling of the topographic surface digital orthoimages and Earth Observation techniques.

The effectiveness and synergy gained by the members in interdisciplinary environment using integrated, advanced technologies such as GIS, communication, satellite positioning/navigation and remote sensing were clearly demonstrated and verified in many applications from geosciences to land management, from local management solutions to nature conservation. It is anticipated the Hungarian research community around the VAHAVA project (www.vahava.hu) devoted to Impacts and responses

concerning Global climate change in Hungary will also join HUNAGI. HUNAGI keeps one of the most comprehensive links on its website www.hunagi.hu Links- Global.

CONCLUSION

The globally interoperable spatial data infrastructure (www.gsdi.org) and the realisation of the Digital Earth concept (<http://isde5.blogspot.com>) could provide a mechanism for users to navigate and search for geospatial information – and it is anticipated, the INSPIRE proposal for EU Directive will ensure it in Europe till 2013 in case of many of the core and thematic data listed in its Annexes (<http://inspire.jrc.it>).

In order to be prepared, the networking of the potential stakeholders (data providers, data brokers, value added product producers and resellers as well as developers, researchers, users (governmental agencies, communities, individuals and the market players of the private sector) is rather important. The role of awareness raising, the education and training should be never underestimated. Communicating, lobbying are inevitable to build bridges between agencies, to establish public-private partnership with the active and committed participation of government, industry and academia. Fora such as the CEOS, GSDI, UNSDI and GEO – in the GEOSS framework – and NGOs such as the national GI associations can help a lot to bring the Digital Earth concept into reality in the forthcoming one-two decades. The interdisciplinary nature of the community partnership is promising also for paving the way for longer term developments enabling integrated management of data related to extreme scales ie. nanotechnology and X-Ray astronomy, and process investigations related to System Earth science eg. assessments in association with global changes .

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G.Remetey-Fülöpp: Land-Related Knowledge Management -Target Areas, Results and Experiences. FIG - Workshop on eGovernance, Knowledge Management and eLearning. Budapest, 27-29 April, 2006

Allan Doyle, Harlan Onsrud, Alan Stevens, Gabor Remetey: Global Spatial Data Infrastructure - Recent Developments and Future Challenges. 21st CEOS WGISS Meeting. Budapest, May 8-12, 2006

Further recommended websites:

The most comprehensive Hungarian Geoportal maintained by the GI flagship Institute of Geodesy, Cartography and Remote Sensing (FÖMI): www.fomi.hu

Virtual building and design: www.graphisoft.com

Hungarian academic research related to the Global Climate Change www.vahava.hu

Hungarian GI news and links: www.hunagi.hu

Global Spatial Data Infrastructure Association: www.gsdiassociation.org

Digital Earth: <http://isde5.blogspot.com>

INSPIRE initiative of the European Commission: <http://inspire.jrc.it>

EUROGI: www.eurogi.org

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