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VESTA-GIS NEWSLETTER no. 2 (7/2008)

In this newsletter

The newsletter 2 focuses its attention on one of the starting activities of the project: a European survey on Continuing Professional Education Requirements and Offerings in GI.

The survey is meant to produce a reference document addressing the network development. Its aim and the subsequent analysis is to provide indications for the best exploitation of the training content already provided by partners, for its enrichment and mutual interlink between the different components

An overview about the surveys results is presented by Christoph Traun in the first article "*Current demands and offerings in GI-related vocational education in Europe*". Because an interesting aspect resulted from the survey is the strong need for qualified education on INSPIRE, the next article "*INSPIRE educational requirements*" written by Danny Vandembroucke (member of the INSPIRE drafting team monitoring and reporting), offers an important contribution.

Moreover, as already shown during the Workshop on Salzburg "*Training on Geographical Information, a challenge in a new European context*", the survey has given the chance to gather important experiences in the GIS education field. Concerning this, three witnesses from different countries are presented in this newsletter. In more detail, the first experience deals with the education offered in UNIGIS at Salzburg University, the second one discusses about the vocational training in the Czech Republic and the last one shows the training needs of the Hungarian land Administration.

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Current demands and offerings in GI-related vocational education in Europe

(Christoph Traun, Z-GIS Centre for Geoinformatics, Salzburg University)

One of the first activities of VESTA-GIS was the assessment of training needs within the VESTA-GIS target groups, the resulting requirements for professional skills and the evaluation of the training market situation at a European and thematic level. To achieve this goals a survey was carried out among the market's stakeholders of geo-information. The focus of this survey were two online questionnaires addressing the demand and the supply side of the GI-training and education market. Accompanied with qualitative interviews the results are intended to produce a feasible structure for the description and validation of courses to be included in the VESTA-GIS training catalogue. Although the survey is not completely finished yet, some preliminary results are presented here:

Survey method and target audiences

Two online questionnaires, one for each target group, form the quantitative basis of the survey which was conducted between April and July 2008. On one hand institutions offering GI vocational education were invited to describe their educational offerings, on the other hand GI-employers from private companies as well as from governmental institutions were asked to identify needs, constraints and conditions of their employees in-service-education and training in GI. The invitation to participate was distributed by email to the GISIG member-organizations. In addition the VESTA-GIS project partners used their networks to identify and invite suitable organizations or key-persons all over Europe. The responses were validated by checking on duplicate entries and plausibility. In ambiguous cases answers were clarified by email, or - if there was no contact address given - the record was removed. In total the survey resulted in 102 valid responses so far – 36 on educational supplies and 66 on the demand situation. Although higher return numbers would be favorable to improve statistical significance, the amount of data - together with several qualitative interviews of trainers' and trainees' organizations and fresh graduates looking for a job - seems sufficient to extract the "big picture".

Demanded and Offered contents

VESTA-GIS focuses on basic GIS technology plus GI-application issues in three initial application domains (Water Management, Natural Environmental Protection and Coastal Management and Landscape). Considering the actual European challenges, there is a strong need for qualified education on INSPIRE, another important issue VESTA-GIS has to deal with. Other than surveys investigating needs for traditional BSc or Master-GI-curricula (see for example C. BRONX and P. PIRES, 2004 ⁽¹⁾), the VESTA-GIS survey was limited - from a thematic perspective - to the core-topics mentioned above.

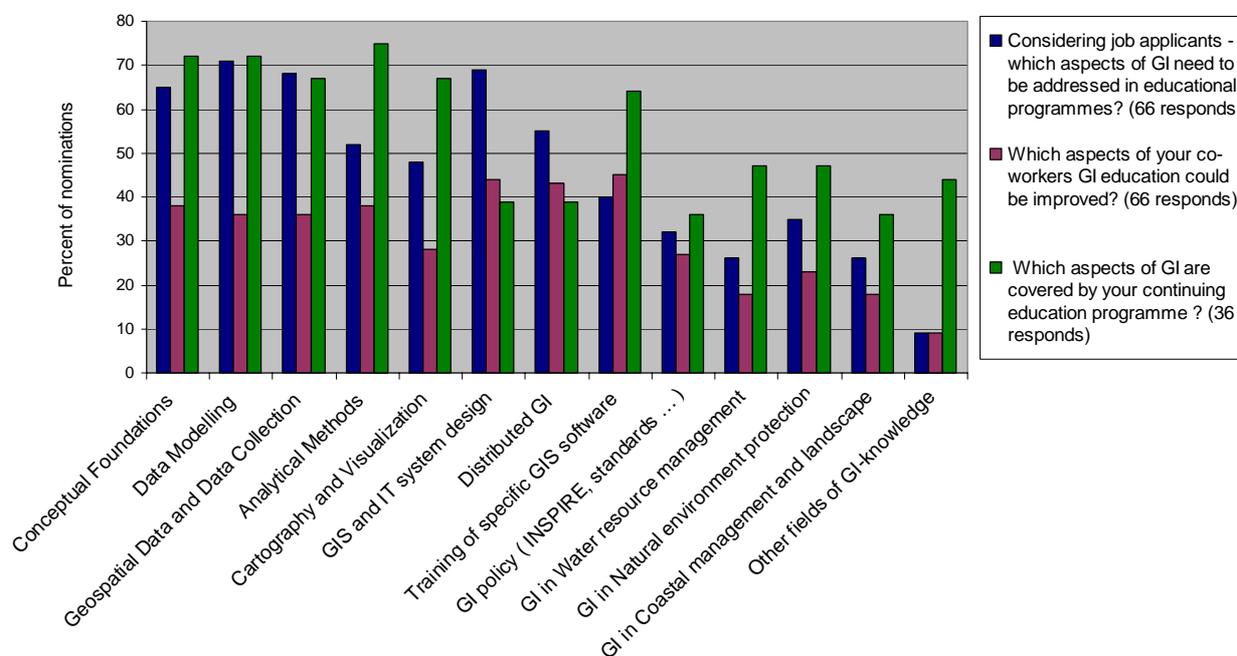


Fig.1 Educational Demand and Supply

⁽¹⁾ BRONX, C. and P. PIRES, 2004: Education in Geoinformatics - Career Profiles, Requirements, and Chances. - Fourth European GIS Education Seminar (EUGISES), Villach, Austria 2nd- 5th September 2004.

Figure 1 shows that there is demand in every single field of GI-related vocational education, both for co-workers (second column) and even more so for job applicants (first column). An exception is the slightly higher co-worker demand for training on specific GIS software. This might be related to the training needs and adaptation of workflows for the existing staff, when a new software (release) is introduced. There is an according educational supply for all topics available (ref. to third column). The fields "GIS and IT systems design" and "Distributed GI" are the only topics, where the percentage of institutions offering education is lower than the percentage of people who see demand there. Nevertheless the supply situation seems to be sufficient in this aggregated view at first glance. Considering the language barriers throughout Europe, it turned out that the whole spectrum of above mentioned topics is only offered in German and English language. It is however hard to draw final conclusions due to the limited sampling of institutions offering in-service training on GI. The three application domains which were further divided into subtopics show a similar picture on an overall lower level of demand and supply. In terms of INSPIRE almost everyone of the demand group rated knowledge on interoperability important or very important, but only less than half of the respondents believed that their organisations had the knowledge and expertise to apply INSPIRE principles. Most of the 13 (out of 36) institutions offering vocational education on GI-policy topics work together with other disciplines like ICT or law when setting up training courses on INSPIRE. This can be seen as an indicator that the interdisciplinary implications of GDIs are accommodated in education as well.

General conditions and constraints of vocational education and training in GI

In general "lifelong learning" is not just a buzzword anymore: over 90% of the responding employers rate in-service training of co-workers as important or very important. Part time comprehensive courses (to be held as evening classes or via distance learning), as well as short courses of 1-3 days are preferred in terms of course duration. A first analysis of the qualitative interviews also indicates a demand of so called "nano-learning" – small junks of context related information, that can be absorbed within a maximum of 15 minutes time length and are delivered on handheld devices.

In most organizations vocational education is financially supported. In 45% of cases working time can be set aside for education, on average 10 days per year (median). The main constraints for vocational education are seen in education costs (84%), lack of time (73%), a complex and unclear continuous professional education market in GI (33%) and missing course offers (27%). As the term "missing" could be interpreted as "difficult to find", the last two constraints mentioned strongly support the project goals of providing a catalogue and easy to use gateway for vocational training in GI.

One third of educational institutions offer vocational GI-education (learning material) for free. Typical fees for a basic introductory in-class course per trainee and day are around EUR 300 (median). For advanced topics the median price is slightly higher (EUR 350). The typical fee for a long term comprehensive GIS course/studies (distance learning) per trainee/student and month is around EUR 300-600. Because of different organizational and didactical models (blended learning, different intensities of tutoring) and country-specific price levels, the comparison of prices has to be treated carefully.

For employers the most important quality-benchmark of continuing professional education is the successful application of the acquired skills/ knowledge in the job. In addition employers prefer software training and applied skills over conceptual issues for (short-term) co-worker training. Nevertheless academic titles gained in long-term vocational education programmes are valued much higher by employers than non-academic, rather skill-oriented certificates.

When choosing an educational offer or evaluating the relevance of titles/certificates, the reputation of the delivering educational institution seems to play an important role.

INSPIRE educational requirements

(Danny Vandenbroucke, SADL Katholieke Universiteit Leuven)



The INSPIRE Directive was published in the Official Journal of the EU on 25 April 2007 and entered into force on 15 May of the same year. From that date, Member States have two years, till 14 May 2009 to transpose, i.e. 'translate', the Directive into national legislation. In the meantime, the INSPIRE Drafting Teams are elaborating Implementing Rules which define how the Member States must implement the Directive in practice. The Directive, as well as the Implementing Rules relate to various aspects of the set-up of a National SDI (NSDI): metadata, harmonisation and interoperability of spatial data, network services, data and service sharing, and coordinating and reporting & monitoring mechanisms. INSPIRE aims to enhance sharing of spatial data between public authorities for activities and policies that may have a direct or indirect impact on the environment.

With INSPIRE new educational requirements come to the forefront. Although education and vocational training are not an explicit component of INSPIRE, it is thought that there are new requirements that should be taken into account. There are at least three levels where action could be taken.

First of all, we need to understand correctly the INSPIRE Directive and the associated Implementing Rules (a lot of interpretations are floating around, mainly due to the lack of the appropriate training). Some of the issues that should get attention in a dedicated course: what is an obligation in INSPIRE and what not; can I charge for spatial data; do I need to harmonise the spatial data I have; does a Member State need to create all the data for the themes listed in the annexes of the Directive; do we need to publish our web services via a web portal; how do I know if my NSDI and its components are compliant with INSPIRE and its Implementing Rules; do I need to apply these rules also as a private company; what if we do not apply, etc. Currently, there are very few courses or training units offered in Europe on the INSPIRE Directive. The most appropriate format here would be seminars or workshops.

Secondly, there is a need for renewed training of the GI community in order to be able to implement (components of) INSPIRE. Also here, there are a lot of issues that should get attention in classes: how to set-up services; how to apply the data specifications for a specific thematic area; how does mapping of data models happen; how can we test conformity with the Implementing Rules; which standards should be implemented and how (many standards are relevant but only ISO 19115 is really known); how can I establish data sharing agreements; etc. This list is exhaustive neither. These courses could rather be in a training format with hands-on sessions included.

Thirdly, there is an obvious need to train the end-users of spatial data and related information. End-users can be policy makers, desk officers in administrations, students, even the citizen at large. The training should focus on the use of the infrastructure: how can I find the spatial data I need; how can I know about the quality of the data (trustworthiness); how can I use SDI components in my day-to-day work; how can I read and understand spatial data; etc. The last type of training could be integrated with other educational tracks, e.g. with e-government and other ICT training modules.

VESTA-GIS will look further into the requirements. One of the core partners, SADL, will elaborate a potential outline for vocational training units on the INSPIRE Directive. We also welcome all partners and stakeholders to document existing classes that are currently being offered on INSPIRE and training units that aims at building (components of) NSDI. The VESTA-GIS metadata catalogue on training offer will be a good tool to have a better view on what exists in Europe.

UNIGIS – A Successful Career Development for Professionals through Online Distance Learning
(Dr. Adrijana Car, Centre for Geoinformatics at the University of Salzburg)

UNIGIS@Salzburg offers internationally recognized academic, distance learning qualifications in GIScience and Systems through a one-year UNIGIS Professional Diploma Certificate or a two-year postgraduate MSc. The UNIGIS Masters programme provides an understanding of the conceptual, technical, and organisational aspects of GIScience whereas the UNIGIS Professional Diploma Certificate develops or improves application-oriented skills and develops an understanding of GIS. Persons (GI professionals) interested in continuing education or pursuing an academic degree while working full time will find these distance learning programmes particularly attractive. Both programmes are offered in German and English.

Professionals mostly working in GIS, interested in continuing education or pursuing an academic degree, and whose work and responsibilities require that their education be as free as possible from limitations of place and time, find online distance learning programmes particularly attractive. UNIGIS was one of the first GIS distance learning initiatives worldwide (<http://www.unigis.net/>) to meet such needs. It offers internationally recognised, academic, distance learning qualifications in GIScience and -Systems in form of professional certificates / diplomas or postgraduate Masters degrees. With sixteen years of experience, its more than a dozen partner universities make sure that this active and successful initiative continues to lead the market in graduate education worldwide (Molendijk and Scholten 2005).

This article is about UNIGIS@Salzburg. UNIGIS at Salzburg University, one of the founding members of the UNIGIS network, has been offering a one-year UNIGIS Professional Diploma Certificate (UNIGIS professional) and a postgraduate distance learning Masters in GIScience (MSc(GIS)) in German for over 12 years (<http://www.unigis.ac.at/>). In May 2006 UNIGIS@Salzburg launched an international MSc(GIS) in English directly from Salzburg (<http://salzburg.unigis.net/Salzburg/>) providing an opportunity to study for all those who are further away from any of the existing UNIGIS partner universities. Thus students can register for this program either through our partner study centres in India and Poland or directly at Salzburg University.

The remainder of this article discusses the specifics of the MSc (GIS) programme.

UNIGIS MSc(GIS) in Salzburg

The UNIGIS Masters of Science (MSc) programme provides an understanding of the conceptual, technical, and organisational aspects of GIScience (GISc) and how these can be applied to solve problems in various fields. It facilitates career advancement through a postgraduate academic degree. Targeting working professionals, this programme will graduate students qualified as a project, team or department leader.

Study Form

MSc(GIS) is an in-service online distance learning postgraduate course leading to an academic degree. Course design follows the idea of blended learning (see e.g. <http://www.learningcircuits.org/2003/jul2003/rossett.htm>); the programme is designed in flexible form including variable and open forms of study with emphasis on student-centred learning, which allows organisational diversity. Learning strategies include activities such as individual processing of a variety of materials and on-line tutorials, self-assessed exercises and quizzes, hands-on assignments, use of various software, collaborative discussions, and projects (see e.g. (Kopp and Mandl 2002).

Programme Structure

The content of the MSc(GIS) is organised in modular structure including compulsory modules, elective subjects, collaborative project and summer schools, and a master thesis (Fig.1).



Figure 1: Modular structure of MSc(GIS).

The major part of the MSc(GIS) called Common Core Curriculum (CCC) reflects core expertise, skills and competencies GIS professional needs to acquire to become and/or remain competitive in the GI industry. The CCC is implemented through a set of modules that establishes foundations of GIScience and Technology (GIS&T) and is compulsory in the UNIGIS MSc course; topics cover acquisition, modelling, and visualisation of geodata; geostatistical and spatial analysis; geo database management systems; GIS organisation and project management; and OpenGIS and distributed GI Infrastructure. At a larger scale CCC demonstrates a common denominator in the area of GIS&T that a UNIGIS graduate is expected to acquire regardless of the geographical location of their study.

Today collaborative work is one of the essential soft skills of a professional. Ability to work in collaborative manner, in digital and distributed environment has become highly appreciated by employers. Typically one collaborative project is undertaken during the UNIGIS MSc programme providing an opportunity for students to learn about such a mode of work and acquire respective skills. Students work in small virtual groups; each group member selects / is assigned a specific role / task. A group works on a topic / problem of their choice to debate and research; members work together in a joint intellectual effort to conceptualise the requirements of the topic and/or to solve the problem. Collaborative Discussion, a development made viable through electronic communication, is a key part of this process.

Elective subjects like Remote Sensing, Oracle Spatial or EuroGIS tailor the programme to the needs of students. Students can acquire expert knowledge or learn about new methods and approaches and so broaden their area of interest.

International summer schools or workshops and a collaborative project contribute to students' personal and professional development and enhance communication. Successful completion of a Masters thesis is required to graduate.

Study Format

The programme is designed to be completed in two years with a weekly workload of minimum 12 -15 hours. 120 ECTS points are awarded for all the coursework as specified in the Curriculum. Upon completion of all components of the course the academic degree Master of Science (Geographic Information Science & Systems) – MSc(GIS) will be awarded by Salzburg University.

Curriculum

The current curriculum of the postgraduate university course (Universitätslehrgang) Geographic Information Science and Systems (UNIGIS MSc) offered at Paris Lodron-University Salzburg was published in the 171st bulletin – a special issue of Paris Lodron-University Salzburg (PLUS) on June 28, 2004 (Version 04W) and can be found at http://salzburg.unigis.net/Salzburg/documents/Studienplan_MSc_PLUS_04W_e_200603.pdf.

The original document that is legally binding is in German and can be found at <http://www.sbg.ac.at/dir/mbl/2004/mb040628-ulg-UNIGIS-MSc.htm> .

Summary

UNIGIS@Salzburg has already existed since 1993 and is embedded in Salzburg University as a founding member of the UNIGIS International Association. It offers high quality postgraduate distance learning programs in GIScience and Systems.

Individuals aiming at a career in GI or professionals already active in this field who are interested in continuing education or pursuing an academic qualification while working will find these distance learning programmes particularly attractive. With the acquired know-how from these programmes, graduates are expected to master challenges in business, industry or government in any of the following fields:

- Transportation, utilities - planning and management
- Natural resources and environment- planning and management in e.g., agriculture, forestry, fisheries and hunting, mining
- Urban and regional planning
- Government – public administration, health, education
- Security – risk assessment, disaster planning and management, public safety
- Business – marketing, property development, real estate
- Insurance, tourism,
- ...and many more

Vocational training in the Czech Republic and experiences with GI training from VSB-TU Ostrava

(Horak J., Horakova B., Ruzicka J., VSB-Technical University of Ostrava, Institute of Geoinformatics, 17.listopadu 15, 70833 Ostrava-Poruba, Czech Republic)

The vocational training in the Czech Republic represents a considerable part of education system both for public and private sectors. The role of vocational training and its position in the tertiary education is currently broadly discussed, where three important factors should be mentioned:

- The role of tertiary (academic) institutions
- The structure and volume of demand
- The insufficient system of certification

The mission of tertiary institutions

System changes of tertiary education in last 18 years in the Czech republic were radical and brings establishing of private universities, changes of financial conditions and management style, establishing of „high schools“, acceptance of the Bologna process and implementation of 3-level model for higher education, launching of the credit system and more.

Nevertheless the deep impact of this movement, still the process of transformation is not closed. The national “White paper of tertiary education” opens a new round of discussion about the role and structure of tertiary education. Among others the improvement of vocational training position is envisaged. Almost all tertiary institutions declare a „university“ type of education with emphasised role of research and no tertiary institutions fully oriented to vocational education (professional oriented) exist. The White paper requires to diversify the existing system. Correspondingly the evaluation system has to be diversified, because the current evaluation of university performance is based mainly on the number of undergraduates and publication activities and any evaluation of vocational training is fully absent.

The current role of vocational training in tertiary educational system is underestimated and it has to be changed.

The structure and volume of demand

The demand of public administration sector dominates and it determines the structure and orientation of vocational education offers.

The act No. 218/2002 (about a state public service) and the act No. 312/2002 (about officers of self-administration service) introduced educational requirements for officers and declare conditions of lifelong education. The acts enable to establish both a central coordinating body (the Institute of state administration) and an accreditation process for educational institutions. No explicit role for academic institutions is currently implemented; any educational offer has to be evaluated and accredited by the Ministry of Interior.

The new act (under preparation) will integrate the different schemes and requirements for state administration and self-administration officers. It is anticipated to better integrate the academic institution into the system (e.g. to improve the education and certification process).

The demand for GIS (and related) education is influenced by administrative changes introduced by the implementation of various European directives (INSPIRE, Water Framework, Nitrate, Habitats and more) and national laws. E.g. a new construction law (Act No. 183/2006 with complementary regulations) extends substantially way requirements for urban planning. Processing of almost 200 various feature classes is possible only in a GIS environment and it raises a large demand for GI-education.

The insufficient system of certification

The act No. 312/2002 distinguishes an introductory education, continuous (lifelong) education and a certification of special qualification (required only for selected administration activities). More than 370 institutions are accredited by the Ministry of Interior to provide such education. This high number leads to high differences among conception, structure and requirements of the provided education. It complicates the assurance of such principles like continuity, succession and acceptance. The existing certification system seems to be insufficient.

The similar situation is also in other vocational education where different courses and training are provided by various organisations (firms, universities, associations etc.) according different schemes with different, incompatible evaluation/certification systems. Part of them certifies only the attendance of the course and not educational results. Such courses cannot be accepted by universities as an official part of tertiary education.

The same is true for GI education.

The Institute of geoinformatics (VSB - Technical University of Ostrava) considers the vocational training on geographical information as an important part of education of officers, specialists and other persons interested in GI and GI technologies. The institute provides 3 main forms of vocational education: face-to-face courses, face-to-face seminars and Internet-based (e-Learning) courses. Courses are usually oriented to more complex education in geoinformation technologies, they are long-term and modular. Seminars usually deal with some „hot topic“of geoinformatics reflected in short-term presentation, training and discussion. The current vocational education is provided only in Czech.

E-Learning courses are built according e-learning principles (modularity, summaries, highlights, control questions, examples). They are provided with fees by the university centre for distant education. A typical duration is 4 months. Following courses were issued in 2003 (with a periodical update):

- Geoinformation technologies (introduction to GIS, spatial analysis, remote sensing, GPS),
- Global Positioning Systems,
- Spatial Data on Internet (web mapping, web application).

Face-to-face short-time courses can be introduced using an example of last courses provided for officers of regional authorities. During 23.-25.6.2008 we organised courses „Network Analyst and Spatial Analyst“, „Map Mashups“ and „Mobile Geoinformation Technologies“. The number of attendees ranges from 11 to 14. The courses have a similar structure starting with lectures providing concepts, terminology and methods of solutions and after that training using real data and situations.

A similar scheme is applied also to face-to-face seminars, where the training is shortened and more demonstrations and discussion are included. They are organised standalone or they accompany a conference. E.g. during a symposium „GIS Ostrava 2008“ following seminars took place:

- Google Earth and KML
- Geostatistical Modelling in ArcGIS
- Web 2.0 alias how to mixed Map Mashups
- GeoNetwork OpenSource – the tool for metadata administration
- Network Analysis in GIS
- GDAL/OGR – leader in OpenSource
- XML in Cartography

A long-running collaboration with Ministry of Social Affairs and labour offices (since 2002 a support of spatial analysis and mapping) is expressed in organising a system of special GI seminars for labour offices. The titles and the number of participants are depicted in Fig.1.

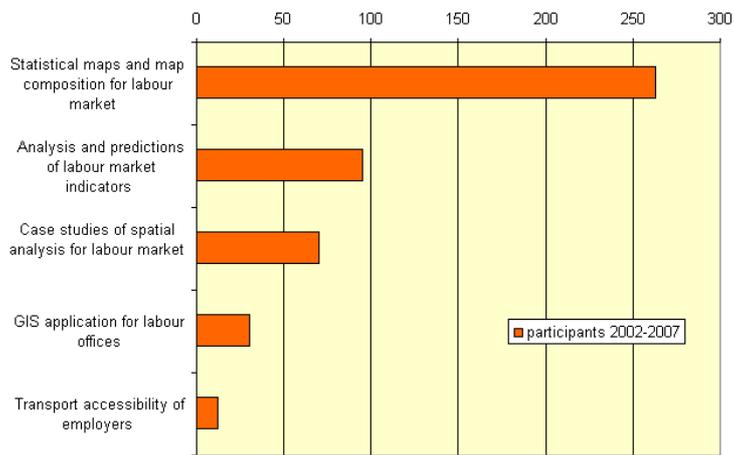


Fig.1 Number of participants of seminars for labour offices for the period 2002-2007

Conclusion

Traditionally our trainee are recruited mainly from public sector (regional authorities, former districts authorities, labour offices and less frequently other institutions), the participation from business sector is still low. The interest for e-learning long-term courses is quite low; we consider the effects of price, duration of courses and a weak visible relationship to the official tertiary education. The experiences stress the importance of distant form of education, carefully selected topics reflecting current industry/society needs, well prepared speakers understanding user requirements and expectations, precise time schedules, appropriate practical examples and also ability to select appropriate procedures for teaching and training (e.g. preference of more „robust“ techniques like statistical procedures without many constraining prerequisites).



Fig.2 A lecture from “GIS application for labour offices”
(illustrative photo: participants illuminated by new knowledge :-))

Training needs of the Hungarian Land Administration

(Bela Markos, Land and Geoinformation Knowledge Center, Faculty of Geoinformatics (GEO), University of West Hungary, mb@geo.info.hu)

Abstract

In 1998 the UN MOLA (United Nations Meetings of Officials in Land Administration) Workshop on Land Market the following problems were identified in Budapest: lack of education in the management, legal, economic, human and ethical aspects of land administration; general lack of user oriented approach to education; lack of continuity in education from universities to professions and appropriate linkage between the two. The Bathurst Declaration in 1999 documented well that increasing public awareness, developing appropriate institutions and advancing their maturity are critical to the achievement of the aims of securing sustainable development, and for the recognition of the role of land in this context. Governments should be encouraged to re-engineer their land

administration systems so that they serve the needs of all levels in society better. The Declaration recommends in view of the crucial importance of human resources in the management of land, ensure that there is sustained education and training in land administration.

The Regional and District Land Offices in Hungary maintain and update the property records, which include both large scale (cadastral) maps and the legal and administrative records of Hungary. The economic transition process has exposed weaknesses in the existing land registration system in Hungary. Many of these were addressed through the EU PHARE "Computerisation of Land Offices" Project. GEO realised these needs and started the OLLO (Open Learning for Land Offices) TEMPUS Joint European Project in 1995. The project ended in 1998, developed a set of 14 teaching modules, for study by distance learning for use by staff in the Hungarian land office network. OLLO has successfully introduced new approaches to teaching and co-operation and has significantly strengthened GEO as a center in professionally oriented land information management programmes.

While OLLO was partly retrospective in nature in that it sought to fill an educational gap that had become obvious through the requirements of the PHARE programme. To fulfil the new needs generated by the infrastructural changes and for the involvement of new techniques available, GEO initiated in 1999 a new TEMPUS project. The SDiLA (Staff Development in Land Administration) project aim was widening the target area and looking forward the needs arising from the opportunities, which appeared in Hungary in connection with the EU accession. Principal amongst these requirements was the need to disseminate a broad understanding of the ways in which land related data can be used. Such degrees of understanding and competency must also be spread through relevant areas of the civil service and must not be isolated in pockets of the land administration sector. Thus, where OLLO has developed a firm educational foundation for professional staff, SDiLA was seeking to build towards a more flexible programme of short cycle staff development activities. During the late 90's the network resources were developed quickly, as the consequence SDiLA was able to call upon the TAKARNET (land office extranet) and was thus be able to take full benefit of CBT techniques.

There were three SDiLA project objectives.

- First, the creation of a programme of education for continuing professional development (CPD) for Land Administration in Hungary based on existing programmes developed under the OLLO TEMPUS. In seeking to achieve this objective, the project developed a core base of knowledge in land administration matters, a Knowledge Pool. The project developed 3 vocational short courses, and a senior management course in land administration.
- Second, the creation of a delivery system for continuing professional development. GEO, as member of UNIGIS network and the project partners already had considerable experience of the education technology needed to deliver the programme.
- Third, the creation of a network of EU centers and education providers with the objective of participating fully in EU activities in Land Administration and the EU professional community.

The course material development was based on knowledge pool approach and the course delivery uses a distributed environment, a network of Technical High Schools in Land surveying and TAKARNET. GEO acts as a knowledge center developer, land office study centers and high schools are dealing with course delivery.

Based on the experiences of the projects GEO initiated a CPD strategy for the Ministry of Agriculture and Rural Development. By the accepted strategy success factors in staff development are as follows

- Improving the skills of management,
- Strengthening the efficiency of the work and its service-oriented character,
- Providing the land management sector with competitive national working power,
- Supporting the spread of new forms of work,
- Preparing land administration for the participation in the information society,
- Providing opportunity for lifelong learning,
- Creating motivation for continuous training.

The Hungarian NSDI (National Spatial Data Infrastructure) now offers a unified structure for the society based on the projects that are implemented in the last decade:

- National Cadastre Programme,
- Aerial Survey of Hungary,
- Multipurpose Parcel-based Information Systems primarily devoted to support agricultural, environmental and rural development related subsidies (MePAR, VINGIS),
- The intranet-like network of the land offices (TAKARNET) connecting all official players of the land management sector, providing online access to the continuously updated data.

Based on the new needs and possibilities a LIME (Land Information Management for Executives) LEONARDO project was initiated for providing access to skills through Information Society tools in the context of lifelong learning, LIME has the twofold objective of developing information and communication technologies in order to assist the process of giving access to lifelong learning, and of meeting new demands for qualifications and skills in connection with industrial change and the emergence of the Information Society, by:

- assisting the development of land information management within the Information Society; here the courses were designed to give a practical element to the theory behind each module. Each module contained both a theoretical and a practical element, allowing the participant to use information technology and computing packages;
- developing innovative training products and methods to help the less qualified in different areas needing land information in general; here, the training contains a significant practical element and this allows the less qualified to visualise the process. Allowing for practical examples and exercises gives participants hands-on training.

The project has created a flexible and widely applicable staff development resource that can be used by individuals from many civil service disciplines. The LIME project updated and improved the structure and developed a new short course in land information management, creating an EU conform new profession called "land information manager assistant".

Cadastral serves as skeleton for the NSDI, and majority of the core SDI data (according to the EU INSPIRE Directive) and related services have to be provided by the institutional network of the land administration. Land professionals are facing crucial supply and demand problems. The future for traditional skills in this area within an environment of traditional professional education cannot be sustained. That is why GEO founded in 2007 a Land and Geoinformation Knowledge Center. Its first CPD programme (SDiLAplus) is targeting land office managers using experiences of SDiLA. This SDiLAplus programme is taking into consideration the demands of INSPIRE, dealing from one side with managerial, organisational, data policy and legal aspects; and from the other side the technical aspects of new the infrastructure (information technology, databases, networks, land information systems, standards, value added services, management information systems etc.). The SDiLAplus programme is bilingual (Hungarian and English), it will be delivered in co-operation with the International Institute for Geo-information Science and Earth Observation (ITC), Enschede, the Netherlands.

The author gives a review of the results, present status and future activities of the projects of The University of West Hungary, Faculty of Geoinformatics (GEO) in building a knowledge base and an education and training network for Land Administration in Hungary.

Acknowledgement

These projects were initiated by key participants in the UNIGIS international distance education network (Josef Strobl) and GISIG (Giorgio Saio, Emanuele Roccatagliata) in co-operation with Graham Brown (University of East London) and Jim Petch (University of Manchester). The author would like to express his gratitude for their consistent advice and also for their help in project management. The projects were funded by the European Union different programmes (TEMPUS, PHARE, LEONARDO).

Faculty of Geoinformatics, University of West Hungary

Faculty of Geoinformatics, University of West Hungary (GEO) is the principal centre of excellence for staff development in Land Surveying, Geoinformatics, Land administration and Land Management. GEO is also the leading institution in Hungary in continuing professional development in the same field. In its international co-operation, GEO has accumulated a great experience of the UNIGIS distance education network (www.unigis.net) and similar international networks of universities. GEO co-ordinated or participated several EU-funded projects, aimed the issues of interactive use of GIS, development of e-learning courses, development of knowledge base in land administration matters, and development of networking between universities teaching GIScience.

Cadastral serves as skeleton for the NSDI, and majority of the core SDI data (according to the EU INSPIRE Directive) and related services have to be provided by the institutional network of the land administration. Land professionals are facing crucial supply and demand problems. The future for traditional skills in this area within an environment of traditional professional education cannot be sustained. That is why GEO founded in 2007 a Land and Geoinformation Knowledge Center. Its first CPD programme (SDiLAplus) is targeting land office managers using experiences of a previous SDiLA TEMPUS JEP. This SDiLAplus programme taking into consideration the demands of INSPIRE, dealing from one side with managerial, organisational, data policy and legal aspects; and from the other side the technical aspects of new the infrastructure (information technology, databases, networks, land information systems, standards, value added services, management information systems etc.). The SDiLAplus programme is bi-lingual (Hungarian and English), it will be delivered in co-operation with the International Institute for Geo-information Science and Earth Observation (ITC), Enschede, the Netherlands.

About Vesta-GIS

The overall aim of VESTA-GIS is to pool knowledge in the GIS domain (technology, applications), to share experience and foster innovation (new approaches) in vocational training by bringing together experts, organisations and users of GI and its application domains, as well as to identify the trends and skills requirements in this area and to improve the anticipated benefit of vocational training initiatives.

The following main activities are foreseen:

- Network Building and sharing knowledge;
- Analysis of training course offer and demand;
- Implementation of the Network training framework and of an e-learning platform hosting the partners' contributions;
- Training course catalogue building. This action will include the definition of pre-requisites of courses, such as a modular structure and selected quality criteria;
- Promotion of people mobility (students, new graduates and working people);

- Exploitation and dissemination action, including workshop organisation and support to competence validation and certification;

The network is developed with particular emphasis to the involvement of the GI users; in this perspective the network is addressed, other than on the GI technologies, including the cutting edge ones (interoperability, web-gis, standards, etc.) to the application domains, starting initially with:

- Water Resource Management
- Natural Environment Protection
- Coastal Management and Landscape

The network is developed in the favourable framework of the new European Directives for environment and territory, which are dealing with problems that have reached a new European dimension (such as the INSPIRE Directive recently approved by the European Parliament).

News and Events

- EUGISES 2008 - Sixth European GIS Education Seminar, 11th - 14th September 2008, Cirencester, UK. (<http://www.eugises.eu>)
- CONFERENZA AMFM2008, Roma, 24-25 Settembre 2008 (<http://www.amfm.it/conferenza2008/conf2008.html>)
- 11th International Conference on Interactive Computer aided Learning, September 24 - 26, 2008, Congress Center, Villach, Austria. (www.icl-conference.org)
- CAF 2008 1st Special Track on Computer-based Knowledge & Skill Assessment and Feedback in Learning Settings - Villach, Austria - September 25, 2008
- UNESCO Pilot course on Transboundary Groundwater Management, Thessaloniki, Greece from 13th-14th October 2008
- MWWD 2008 – 5th International Conference on Marine Waste Water Discharges and Coastal Environment, Cavtat (Dubrovnik, Croatia) – October 27-31, 2008. (http://www.mwwd.org/site/page.asp?dsy_id=3241)
- ECEL 2008 - 7th European Conference on e-Learning, 6-7 November 2008, Agia Napa, Cyprus.
- Workshop on Archiving in Digital Cartography and Geoinformation, Preserving and Enabling Permanent Access to Cartographic Cultural Heritage -Berlin, Germany, 4-5 December 2008
- HYDROINFORMATICS 2009 - "Science and Information Technologies for Sustainable Management of Aquatic Ecosystems", 12-16 January 2009, Concepcion, Chile (<http://www.heic2009.org/>)
- First Symposium on Cartography and Geotechnologies for Environmental Disaster and Risk management ; January, 19-22, 2009, Prague, Czech Republic (<http://c4c.geogr.muni.cz/>)
- Symposium GIS Ostrava 2009 - Seamless Geoinformation Technologies, January 25th - 28th 2009, VSB – TU of Ostrava, Czech Republic. (<http://www.gis2009.com/Indexe.html>)
- AGILE 2009 - the 12th AGILE conference, 2-5 June at Leibniz Universität Hannover. (www.agile-online.org)
- GSDI 11 World Conference Spatial Data Infrastructure Convergence, Building SDI Bridges to Address Global Challenges, , Rotterdam, The Netherlands, 15-19 June 2009
- Fifth International Conference on River Basin Management including all aspects of Hydrology, Ecology, Environmental Management, Flood Plains and Wetlands, 7 - 9 September 2009, Malta (<http://www2.wessex.ac.uk/09-conferences/river-basin-management-2009.html>)

Contacts

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