Continuing staff development in Hungarian Land Offices

Béla Márkus

University of Sopron, College of Surveying and Land Management
Department of Geoinformatics
H-8000 Szekesfehervar P.O.Box 52, Hungary
E-mail: mb@cslm.hu

Abstract. The relevant response of staff development to the challenges of the socio-economical changes in the Hungarian Land Offices is the flexible, open and very often distance education. The College of Surveying and Land Management (CSLM) has long term experiences in staff development for Land Surveying and Land Administration. In the last five years CSLM has been involved in four European Union funded distance learning material development projects targeting professionals in land administration and land / geographic information management. For the staff of Land Offices and Surveying / GIS companies distance learning offers a particularly flexible and effective way of training, eliminating most of the barriers, providing much better accessibility than traditional education. The author gives a review of the results, present status and future activities of these projects.

1. Open Learning for Land Offices - TEMPUS SJEP

The Ministry of Agriculture operates the national network of Regional and District Land Offices, employing over 4500 personnel who 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 and many of these are being addressed through the EU PHARE "Computerisation of Land Offices" Project. The project aimed to support the transition, providing a modernised land registration sector which will ensure safe and secure management of the land and property ownership records which consist of land administrative and legal records and cadastral maps. This project involved an estimated expenditure in excess of 15 million ECU and involves the complete reform and modernisation of the land registration system of Hungary. These facts need well educated staff in the Land Offices.

To satisfy the mentioned demands in Land Information Management a TEMPUS Structural Joint European Project was formed through the co-operation of the CSLM, the Department of Land and Mapping at the Ministry of Agriculture (MoA), the University of Veszprém (UV), the University of East London (UeL) and the Katholieke Universteit, Leuven (KUL). The Open Learning for Land Offices (OLLO) project was established in 1995 as a three year structural Joint European Project funded by TEMPUS/PHARE. At the centre of the OLLO philosophy is the development of professional skills to equip staff to work effectively for the government and private sector in the rapidly changing land information and cadastral survey climate in Hungary. The origins of the OLLO project lay in the evidence that emerged as Hungary sought to update its land registration operations and land market economy. The OLLO project was a key part of a fundamental process of change within the Hungarian land registration sector.

Much of the content of the OLLO study modules relates to fundamental issues of professional work, management, use of data and information technology. These are subjects of central concern to any organisation or country which has to go through a similar processes of change to that which Hungary has experienced. The demands on, and concerns of, professional staff are common factors which emerge alongside the updating of the land registration sector as it develops to support effective land markets and

economies. Looking to the future it is apparent that the valuable teaching resource and development experience created by the OLLO project should seek to be available to others going through the processes of change OLLO has addressed.

A process of dissemination should therefore be established to widen the availability and appeal of the work of OLLO to as wide a group as possible. The key target for this work clearly lies in the countries of Europe going through the process of economic transition that Hungary has and continues to experience. The dissemination of the materials in a suitable and practical form must addressed if the investment in OLLO is to benefit as wide a group as possible. At the present time, OLLO has of course addressed generic issues through Hungarian examples and has been developed in the Hungarian language. In seeking to enable effective dissemination of the OLLO project, it is clear that some research work must be done to identify those issues that need to be covered in a more widely applicable way, and to support translation of the works to a common language of study. Similarly research must be carried out to identify those organisations and countries which could make the best use of the work of OLLO in support of the changes they are experiencing. A core part of the dissemination process must lie in the adaptation of OLLO to meet the aspirations and systems of other countries in Eastern Europe.

1.1 Course structure

The structure of the course was created in co-operation with key participants in the mentioned PHARE project. In particular, the structure was designed to underpin both professional development of the staff of the Land Offices and to provide a basis for continuing education at CSLM. The modules are to be structured to be stand alone, enabling students to study at their own pace and also to choose to study individual modules for their own professional development.

Table 1. Principal study areas and modules

Infrastructure ✧ *Land and Property Registration* ✧ *Office Automation* ✧ *Information Systems*	**Data issues** ✧ *Digital Data Acquisition* ✧ *Digital Large Scale Mapping* ✧ *Land Use Management*
Management ✧ *Management and Data Policy* ✧ *Project Management* ✧ *Quality Management* ✧ *Introduction to Management* ✧ *Legal Issues*	**Applications** ✧ *Multipurpose Cadastre* ✧ *GIS/LIS Applications* ✧ *Land Reorganisation & Consolidation*

1.2 Quality control

Quality control of self-instructional materials should be a permanent process (see Fig.1). An Advisory Board was created drawing together professional practitioners from Hungary and EU countries and to act as a guidance committee at the initial workshop and then to meet on a regular six monthly base throughout the project to monitor and evaluate development of the project.

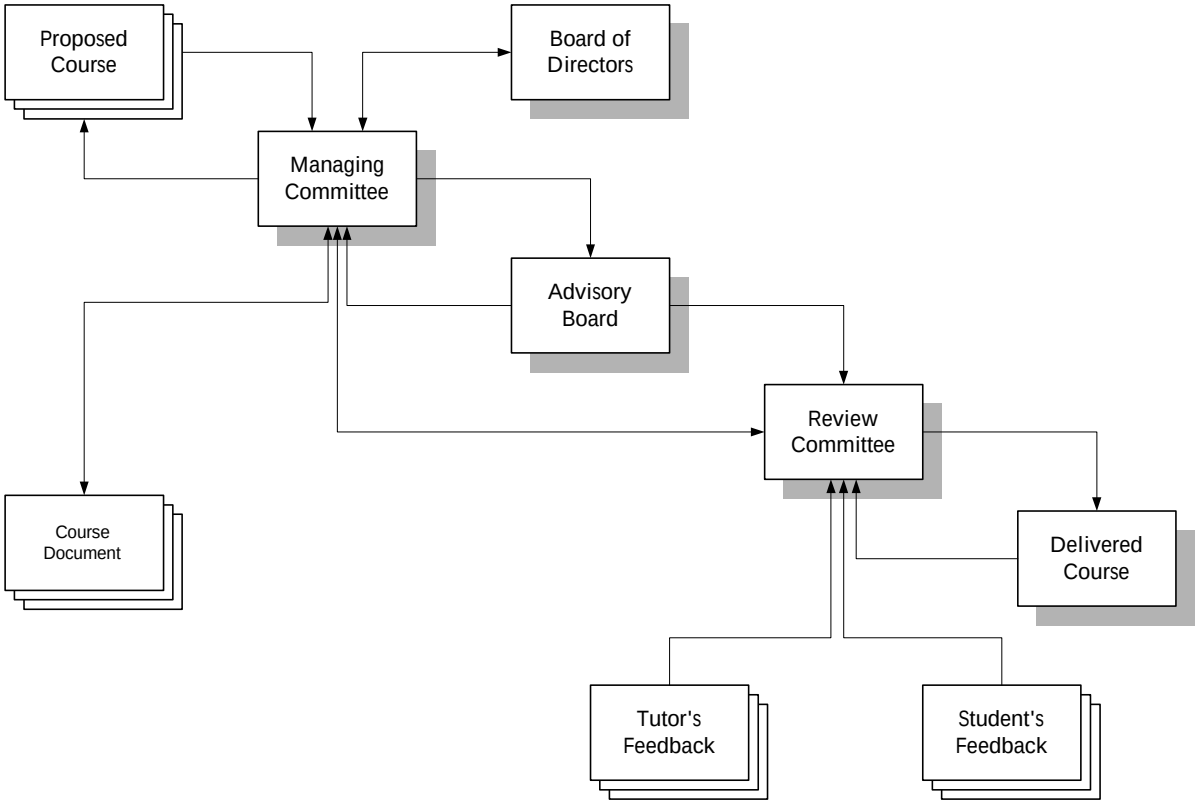

Fig. 1. Quality assurance in OLLO courses

2. Distance Learning in GIS - PHARE ODL

There is a lack of developed educational and training facilities within the Hungary also in the wider area of Land/Geographic Information Systems. CSLM delivered a postgraduate correspondence course in Geoinformatics. In the DLG project this was restructured into an open distance learning form. The aim was to reach an European standard professional degree course for the target group of database developers. The international project was undertaken involving the following participants:

- International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede
- University of Technology, Budapest
- Eötvös Loránd University, Budapest
- Geometria Systems House, Budapest

Objectives of the DLG project were as follows

- the development of a distance learning professional degree course in Geoinformatics at CSLM. The wide target group consists of professionals in the Geoinformation and related industries (national mapping organisations, application oriented organisations - cadastre, local authorities, utilities companies or private Geoinformation production companies).
- building up a long term collaboration with the International Institute for Aerospace Survey and Earth Sciences (ITC) by working on the co-authorship of the curricula and delivery of courses.

The following 7 modules were developed

- Information technology
- Digital data acquisition
- Elements of GIS
- Digital cartography
- Data integration and dissemintation
- Information system planning and implementation
- Geographical information management

3. PRONET/CCE - INCO COPERNICUS

ITC is also undertaking relevant research and development in multimedia computer based on-line training systems. PRONET (Multimedia Computer Based On-line Training and Support Service for Professionals) is an existing R&D project funded by the European Commission which is being developed under the telematics Applications Programme in Greece, Spain, Italy, and the Netherlands. The service will permit the actualization and distribution of multimedia information to three highly competitive groups (telecommunication engineers, environmental scientists and remote sensing specialists, and biomedical engineers and medical physicists) across the European Union.

PRONET/CCE - Multimedia Computer Based On-line Training and Support Service for Professionals in Countries of Central Europe is an extension of PRONET founded by EU INCO COPERNICUS. The aim of the PRONET/CCE project is to expand and further develop the system for specialists in three countries in Central Europe by testing and validating the PRONET services which will be made available throughout the CCE, and by creating training modules particularly relevant to countries in transition. PRONET/CCE is coordinated by the International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede, NL.

Project partners:

- International Institute for Aerospace Survey and Earth Sciences (ITC), Enschede, NL
- EUROCOM EXPERTISE S.A. Ag. Paraskevi, GR
- Institute of Geodesy and Cartography, Warsaw, PL
- Warsaw Agricultural University, Faculty of Forestry, Warsaw, PL
- Warsaw University of Technology, Faculty of Geodesy and Cartogr, Warsaw, PL
- University of Sopron, College of Surveying and Land Management, Szekesfehervar, H
- GEA College, Ljubljana, SLO
- University of Maribor, Faculty of Civil Engineering, Marobor, SLO

The objectives of PRONET/CCE are fitting smoothly both to our learner support developments and the new WAN developments in the Land Offices (TAKARNET). TAKARNET opens an INTRANET environment for global access of the decentralised cadastral databases with INTERNET connections to the local governments, banks, lawyers and other players of the land market. TAKARNET also will be an excellent tool for providing INTERNET support for OLLO students. Results of PRONET/CCE on the TAKARNET base will expand our services within the next two year with electronic mail services, white board tutoring, audio, video conferencing etc.

In the frame of the project CSLM will arrange and supervise the production and delivery of a 8 hour MCBT session on Geoinformatics both in Hungarian and English. The PRONET project will directly contribute to the “National Cadastre Program” of Ministry of Agriculture and the “National Topographic Program” for the benefit of the urban, rural and regional development. Target group: middle level managers at organisations (e.g. local authorities, utility companies, regional councils, ministries etc) potentially using land related, geographic data, responsible for capturing digital data, building databases for GIS, working on spatial query, analysis or modelling, monitoring of natural processes. Strategic direction: The MCBT session focus on problems how to start and manage a GIS project (quality of data, integration problems of data acquisition, financial aspects, typical errors using GIS functions and living with these errors in decision making).

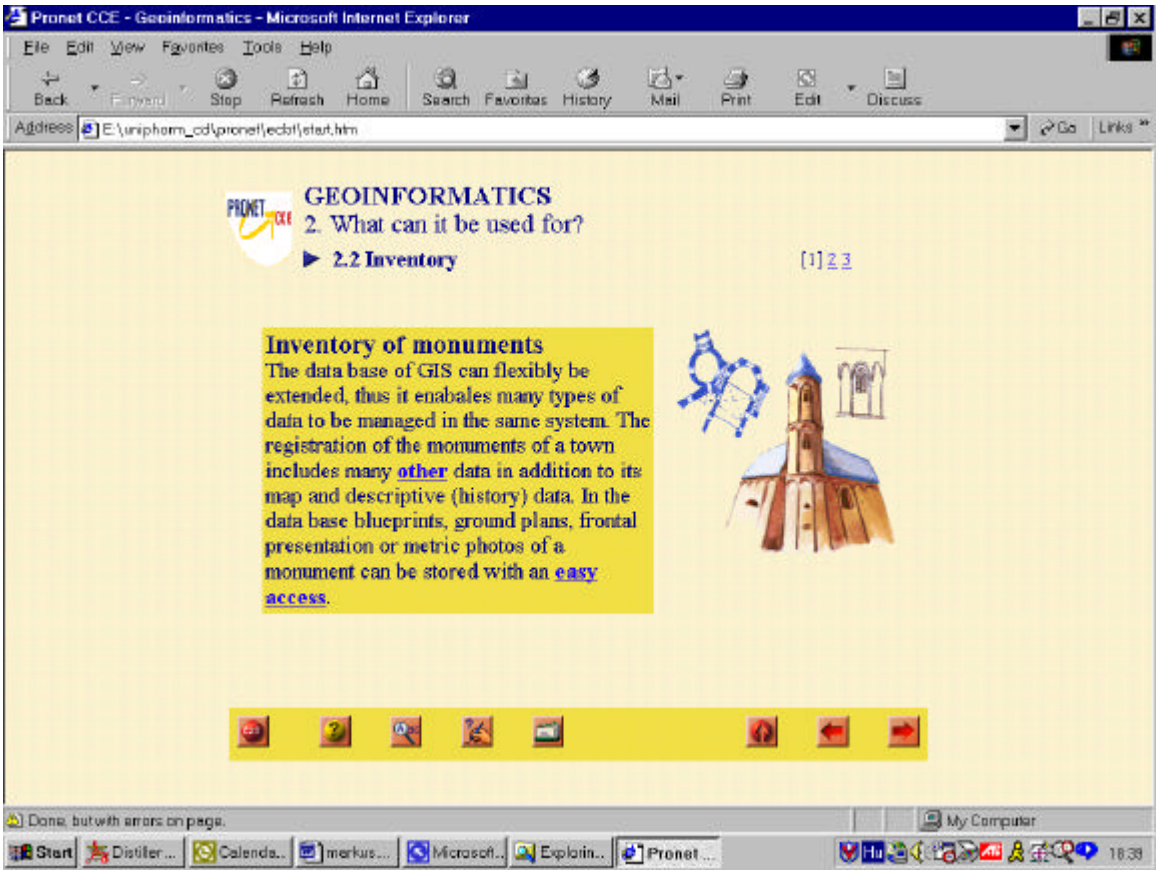

Fig. 2. Screenshot from the multimedia (MCBT) course developed by CSLM

4. UNIPHORM - PHARE MCDE

The UNIPHORM course for professional development in GIS and services for the OGIS environment aiming at technical staff with the provision of a web-based distance learning. Geographical Information Systems have become important elements of information strategies in local government, utilities, national government, non-government agencies, environmental agencies and consultancies, mapping agencies and many sectors of business. GIS are important for two main reasons. First, the disparate data sets can easily be used together and the benefits of combining data thus realised effectively. Secondly, the map is a powerful visualisation tool for complex or multiple data sets. GIS thus open up data usage to wider audiences, enable dissemination of information and stimulate ideas. At the present time, however, the GIS industry is undergoing a major shift of emphasis to what are called open systems. These developments are designed to derive benefit from the setting up of networks, from local networks to the Internet. The OpenGIS idea extends the potential for combining data, for dissemination of data and for new ventures which require disparate data sets from several types of system.

As well as benefits there are risks to these developments. The major risks come from the capacity of organisations to adopt open systems. A number of factors determine this capacity and principally they are:-

- adoption of open GIS ideas by management
- capacity for rapid change in organisations
- skills level of engineers and technicians.

This project identified the third of these risks as the most critical. The risks are common to organisations in both PHARE and EU countries. However, the history of experience in information technology and the legacy of low IT skills amongst many professions in PHARE countries means that their risk is greater.

EU-PHARE links are important in such a programme not only because of the social, economic and political benefits of linkage between the two areas but also because of the technical demands of open systems. Effective use of open systems demands common international standards for data storage and transfer. Additionally the benefits of open systems are most likely to be achieved with common interface design principles and working practices for task analysis, data maintenance and visualisation.

4.1 Target group

There is a current shift toward Open GIS systems, which has created a need and a market for Open GIS training packages. The course is targeting public administrations (local governments, utilities etc.), regional planning authorities, decision makers and GIS companies:

- Engineers needing education and training in information technology developments
- Adult professionals, needing short intensive retraining and skills updating courses
- University graduates, requiring specific skills for entering the labour market.

4.2 Training needs

- Engineers – GIS use in their application area
- Adult professionals - Upgrade
- University graduates – Best practice

4.3 Course development methods

The development was based initially on existing materials being made available from UNIGIS. The development methodology was a Rapid Application Development (RAD) using prototyping initially to:

- assess user needs
- assess trainer needs
- specify course content
- design and test delivery mechanisms

Prototyping used in this way replaced the usual project stage of specifying user requirements and scoping a project. It ensured user participation in these crucial stages of the project. The existing materials from UNIGIS allow this novel approach and help to ensure success within a very tight time frame.

The principal tool for course design and organisation of the resources is a mindmap created using Mindman software. The mindmap is also used as a presentation tool since students and staff can use it to see the course structure and logic as well as the links to and meaning of resources. This is an important pedagogic element which is difficult to achieve in other ways.
Building the mindmap is actually the first stage in course design. The course author uses Mindman to lay out the structure of the lesson on which the PowerPoint show is based. Resources are then collected to satisfy the demands of the course. Resources held as local files or on the web are connected via hyperlinks on any of the mindmap branches. The branches are highly configurable in terms of their location as well as easily edited. This means that authors can easily engineer or modify the structure and the resource links according to particular needs or in response to new or changing resources. Mindmaps can be exported as active images for use on web sites or as java applets of pages which can substitute for PowerPoint shows.

4.4 Introduction to OpenGIS – UNIPHORM course

1. Introduction
2. OpenGIS concepts
3. Object oriented systems
4. Spatial referencing
5. Metadata
6. Management
7. Software
8. Resources
9. Case studies

The module deals with Guidelines for Best Practice in User Interface for GIS, intended to help GIS users to achieve Best Practice in using GIS for their job and hence to achieve added value from their systems. The Guidelines address needs and requirements of end-user organisations. This process can be facilitated by adopting the user-centred design (UCD) paradigm, commonly applied in several engineering fields but not very well-known in the GIS domain.

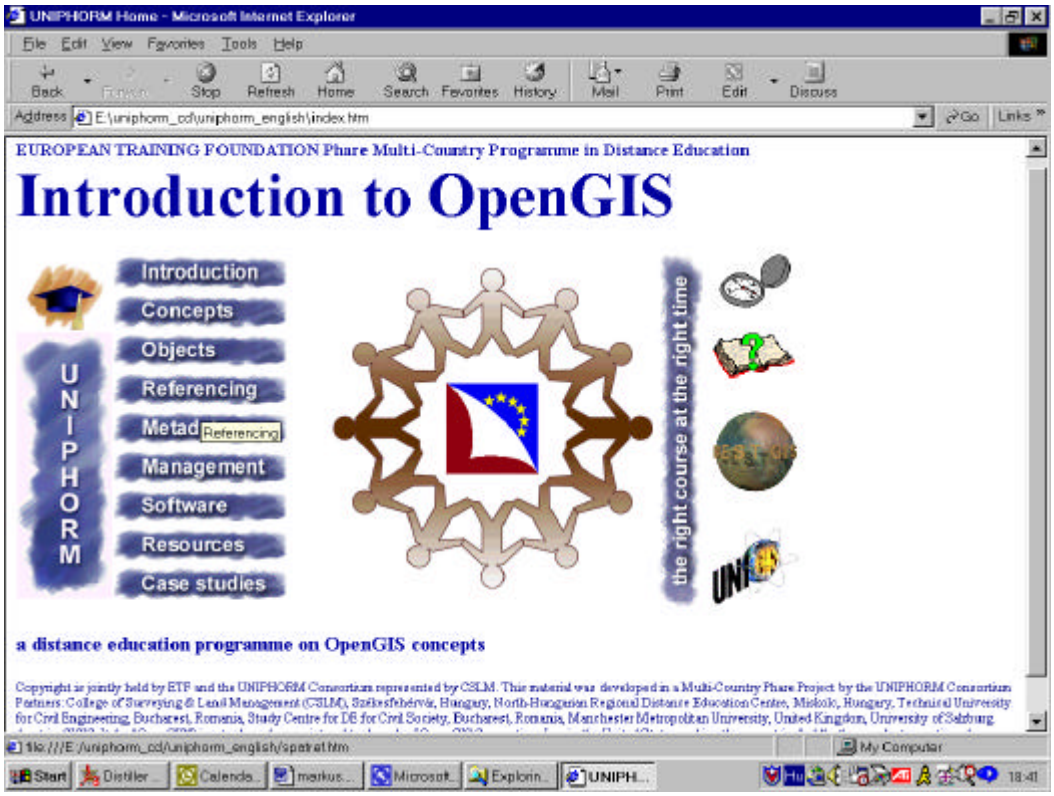

Fig. 3. The content of the UNIPHORM course

4.5 Course delivery

The course duration is 8 - 18 weeks with an equivalent of 120 hours of distance study, followed by a face-to-face training session (40 hours) which will expand the participants understanding and knowledge of the subject through case studies and group work using a market leading OpenGIS software package.

The course contains the following elements:

- ✧ 1-day introductory workshop,
- ✧ 10-week (80 hours) distance learning with self assessed exercises and continuos Web and other support, 3 tutor assessed assignments
- ✧ 2 1-day intermediate workshops for consultancy
- ✧ 3-day face-to-face final training session
- ✧ The course will be finished with an exam.

Initially the course will be disseminated in Hungarian and Romanian language versions through Phare study centres in Hungary and Romania. An English version of the course is available to all the Phare Study Centres. Through UNIGIS sites the course will be disseminated in Austria, Hungary, the Czech Republic, Italy, The Netherlands, Romania, Russia, South Africa, Spain, Sweden, United Kingdom and USA. More information is available from Phare Study Centres or at http://uniphorm.cslm.hu.

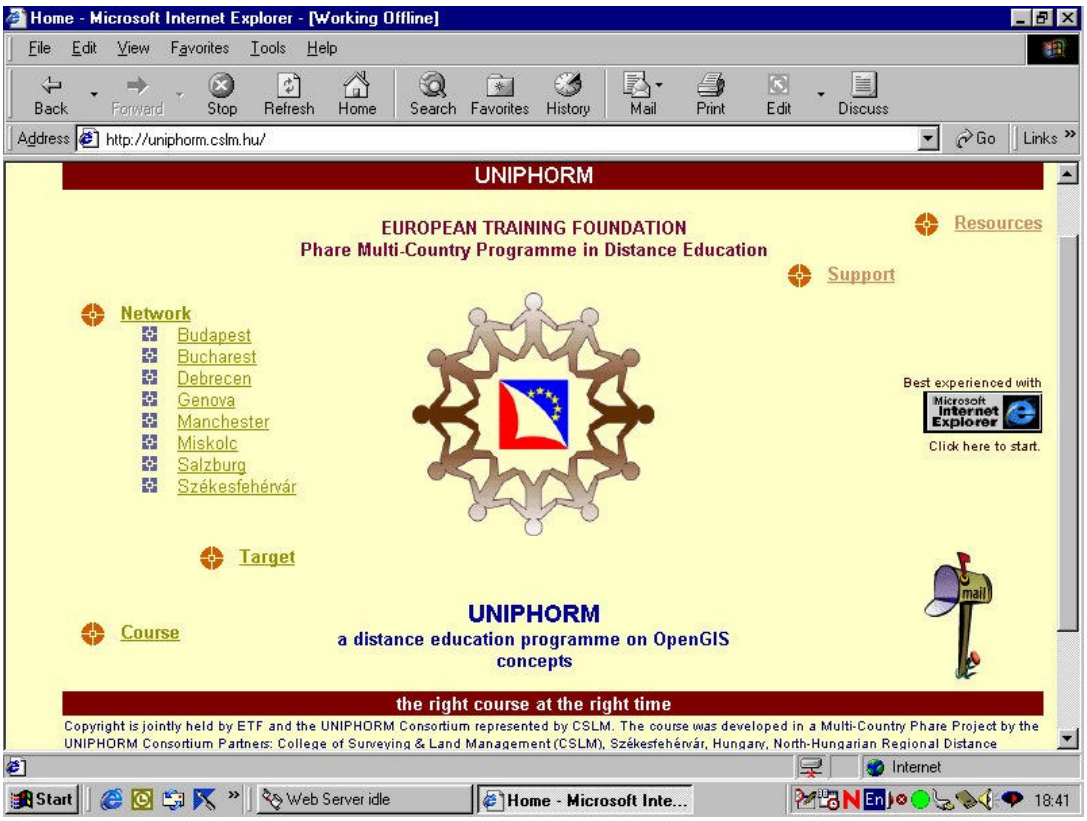

Fig. 4. The homepage of the UNIPHORM course

5. CONCLUSIONS

The criteria for entry to the EU established at the Copenhagen European Council of June 1993 include the existence of a **functioning market economy** as well as the ability to cope with competitive pressures and market forces within the Union. Fundamental to this is the existence of a sound and flexible system of Land Administration, to apply the ***acquis***, and identified elements essential in the land administration. In Hungary the education and professional development of this system has since 1973 been supported by CSLM. Under the aegis of CSLM considerable advances in technology and in corresponding education support have been made since 1989. However, there remain weaknesses in **CEE countries** that are critical for meeting the EU

criterion and for addressing the issue of Institution Building. These were identified in the United Nations Meetings of Officials in Land Administration (**UN MOLA**) Workshop on Land Market in 1998 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 long-term strategy of CSLM to ensure its role as the principal **centre of excellence** for staff development in Land Administration in Hungary. The three elements of this are to establish a viable, developing educational programme, to establish a developing system of delivery and to establish working links with EU educational providers and professions in Land Administration (to participate in a world-wide virtual academy in the field of Surveying, Geoinformatics and Land Management).

There are three objectives to support the long-term objective. First, the creation of a **knowledge resource centre** at CSLM which will form the base for programmes of education for continuing professional development for Land Administration in Hungary utilising existing programmes developed under the mentioned EU projects and the existing Land Administration infrastructure. To these will be added new programmes for higher management and a set of programmes for all levels in Land Administration focussing on matters pertinent to EU entry. Second, a **delivery system** for continuing professional development based on adapted curriculum structures, management tools and education technology, both **CD and Web**, with a comprehensive **credit** system. Third, the creation of a **network of EU centres** and education providers with the objective of participating fully in EU activities in Land Administration and the EU professional community.