Proceedings of the 6th AGILE
April 24th-26th, 2003 – Lyon, France

POTENTIAL ALTERNATIVES AND TRENDS IN HUNGARIAN GIS ENGINEERING EDUCATION

E. Dobos[1], J. Tamás[2], A. Hegedűs[1]

University of Miskolc, Dept. of Phyisical Geographyand Environmenta Sciences, 3515 Miskolc-Egyetemváros, Hungary,

2. Department of Water and Environmental Management, Faculty of Agronomy, University of Debrecen, 4026. Boszormenyi 136. Debrecen

The first applications of GIS in the US and Canada – the birth land of the GIS – were connected to the survey and management of natural resources. Due to the differences in the technical and political environment Central –Europe could start to make up its10 years arrears of GIS application from the early 90s. The engineering faculties of the higher education institutes were leading this effort. Meantime, the more commonly used CAD systems, which were so different from GIS that time, set back the GIS education. The civil engineering education committed itself to teach the CAD systems.

From the mid 90s the social and environmental aspects of engineering education have started to gain more importance. In Hungary, GIS was introduced to the engineering education through the fields of the industrial hydrology (water quality assurance), mining, geodetic, agriculture, soil protection, natural resource surveys and cadastre programs.

The multitudinous GIS education of the Hungarian universities has been started in the field of land surveying. This trend was induced by the changes in the field of applied engineering and in the real estate property structure. Significant supports were the introduction of PHARE TEMPUS projects, like the OLLO. The PHARE OLLO project aims to support the transition, providing a modernized land registration sector. This will ensure safe and secure management of land and property ownership records which consist of land administrative and legal records and cadastral maps. The project lies in the development of flexible educational courses for professional staff involved in Hungary`s cadastral survey and land information management sectors. Land Information Management largely covers the following themes [2] : land registration and cadastral systems, spatial information management, land use and land evaluation, land consolidation.

The multi - purpose cadastre system is usual to develop land information systems such that they are able to serve roles far wider than the juridical and fiscal roles for which they were originally established. It is essential to understand the nature of the integration process in legal, organizational, managerial, financial and professional terms [1].

There is a great demand for a wider and more diverse range of taught information complementing the classical technical, engineering knowledge. The information based society and the fast development of geoinformation sciences represent great challenges for the education. The up-to-date information of engineering knowledge requires life long and efficient learning. Because of the changes of the demographic and economic environment the main emphasis is going to be shifted onto the postgradual training. This is often a main conflict source between the knowledge-provider or diploma-issuer training courses. The harmonization of the applied technical and natural science GIS knowledge also represents great challenge.

These conflicts mentioned above are to be solved with the new educational model, which has been development in the frame of this geoinformation project supported by the Ministry of Education and the PHARE.

The goals of this program are the followings:

- Modularly structured educational system, where each of the modules can be taught independently within the educational network
- Application oriented practical training

- Providing an applicable knowledge for both the technological oriented (civil engineering) and the science oriented (agricultural, environmental engineering, geographer) students
- E-learning based, unambiguous, but flexible requisite system
- Credit Transfer System

About the curriculum being developed within the project.
Modules of the package:

- GIS Principles
- Vector–based GIS systems
- Raster-based GIS systems
- CAD systems
- Large scale usage of GIS, case studies
- Small-scale usage of GIS, case studies

Target group:

High school graduates with no specific training, but having general informatics background
University graduates with strong professional training but lacking the GIS as a tool for improving his or her capabilities.

Objectives and relevance of the project:

The objective of the project is to develop study materials for a training course specializing in GIS and CAD software and set up and carry out a 150 hours course. The lack of GIS and CAD software knowledge among the majority of the small and mid size companies of the region limits their performance and profitability. This course aims to reduce this problem.

Short summary of the project activities and methodology:

Within the project a 450 pages study material will be developed and integrated into five separated modules, which can be taught individually or regrouped in order to fit specific student requirements. The course is focused on GIS and CAD software and contain much practical, hands on activity in many related fields such as GPS technology, geodesy, field mapping and survey, remote sensing and the use of GIS software tools.

Expected results

The project is expected to results in a wide-range toolbook for GIS and CAD system users capable of providing the basic knowledge to start a carrier in GIS and computer aided design. This topic is suitable for many of the small and medium size companies, where these software and techniques are used only as a tool for improving the quality and efficiency of the work. It is also believed that many of the high school graduates having no specific training to start a carrier can take this course and materials as a chance to establish a good position for themselves on the employee-market.

[1] Márkus, B.: Lifelong learning - Developments for Land Offices, Proceedings of *Computer Assisted Learning and Achieving Quality in the Education of Surveyors*, Espoo, Finland, Arranged by FIG Commission 2. 1996.
[2] Márkus B. - Niklasz L.: Cadastre - Basic component of the Hungarian Spatial Data Infrastructure, *FIG 3 seminar*, Thessaloniki, 1997