Worldwide Learning Infrastructure
FIG Congress 2010: Facing the Challenges – Building the Capacity
Sydney, Australia, 11-16 April 2010

Bela Markus
Land and Geoinformation Knowledge Centre
Faculty of Geoinformatics, University of West Hungary
Chair, FIG Commission 2 - Professional education

Approach

Worldwide Learning
Lessons learned during the last Commission 2 events
• Learning Infrastructure
Workgroup 2.1: Curricula development

Chair: Bela Markus (Hungary)

- Changing profession
  - Surveying, Cadastre
  - Land Management
  - Participatory planning - GIS
  - Real Estate Management
- Teaching methods
  - PBL
- Bologna changes
  - BSc / MSc / PhD / Professional masters
- Quality Management
  - Accreditation
  - Recognition

Knowledge Is Power
"I suggest that we fly high and keep our feet on the ground at the same time."

Core Curriculum?

or Body of Knowledge
Ann B. Johnson
Higher Education Solutions Manager (ESRI):
Meeting the Challenge - Incorporating New Technologies and Methods into a Curriculum for Surveying
Core Curriculum?


The 21st Century surveyor must demonstrate

1. an ability to **apply knowledge** of mathematics, science and engineering/applied science/technology.
2. an ability to design and conduct experiments, as well as analyze and interpret data.
3. an ability to design a system, component, or process to meet desired needs.
4. an ability to function on multi-disciplinary teams.
5. an ability to identify, formulate and **solve** surveying (engineering) problems.
6. an understanding of professional and **ethical** responsibility.
7. an ability to communicate effectively.
8. a broad education necessary to understand the impact of surveying (engineering) solutions in a **global and societal context**.
The 21st Century surveyor must demonstrate

9. a recognition of the need for, and an ability to engage in, life-long learning.
10. a knowledge of contemporary issues.
11. an ability to use the techniques, skills, and modern surveying (engineering) tools necessary for practice.
12. an ability to apply knowledge in a specialized area related to surveying.
13. an understanding of the elements of supervision and project management.
14. an understanding of business and public policy and administration fundamentals.
15. an understanding of the role of the leader and leadership principles.

Core Curriculum?

Mr. Rob Mahoney and Prof. Frances Plimmer (United Kingdom), Prof. John Hannah (New Zealand) and Mr. James Kavanagh (United Kingdom):
Where Are We Heading? The Crisis in Surveying Education and a Changing Profession. FIG WW 2007, Hong Kong.

“... the number of competencies in which surveyors might claim to be proficient now number over 200”
New competencies

Based on: Mr. Rob Mahoney and Prof. Frances Pinnner (United Kingdom), Prof. John Hannah (New Zealand) and Mr. James Kavanagh (United Kingdom): Where Are We Heading? The Crisis in Surveying Education and a Changing Profession, FIG WW 2007, Hong Kong.

Core Curriculum?

Core competences
Competence pyramid

Workgroup 2.2: e-Learning

Chair: Liza Groenendijk, ITC (Enschede, Netherlands)

- Tools
- Innovations
- Portals
- Content development
  - Multimedia
  - CBT
  - Quiz
- Student support
  - Club
  - Library
- Communication
- Teamwork
- Metadata
Change your mind

ContentMS – AdminIS – MIS …
e-Learning Infrastructure

Open Course Management System
Raymond Kurzweil (99): The Age of Spiritual Machines

"Fifteen years in the future computers will enable the memory capacity and computational ability of the human brain, and interaction with computers will involve gestures and two way spoken communications. Most learning will be conducted through software-based teachers."

"Twenty five years from now computers will have the capacity of 1,000 human brains, and the majority of communication does not involve a human. Computers will have read all available human- and machine-generated literature and will be learning on their own. Machines will claim to be conscious."

Web 3.0

The Semantic Web is an evolving development of the World Wide Web in which the meaning (semantics) of information and services on the web is defined, making it possible for the web to "understand" and satisfy the requests of people and machines to use the web content.

It derives from World Wide Web Consortium director Sir Tim Berners-Lee’s vision (2006) of the Web as a universal medium for data, information, and knowledge exchange.

eLearning 2.0

The impact of technology is often overestimated in the short-term and underestimated in the long-term.

Bill Gates

Visibility

- Speech Recognition for Mobile Devices
- Corporate Semantic Web
- RSS Enterprise
- Mobile-Driven Architectures
- Context Awareness
- Event-Driven Architecture
- Telepresence
- Speech-to-Speech Translation
- Offline Ajax
- Augmented Reality
- Prediction Markets
- Quantum Computing
- Tera-architectures
- DNA Logic

Web 2.0

- Folksonomies
- Digital Paper/Paper
- Social Network Analysis
- Ajax
- Grid Computing
- RFID (Item)
- RFID (Case/Pallet)
- Enterprise Instant Messaging
- Location-Aware Technology
- Mobile Phone Payments

Internal Web Services

Communication

Years to mainstream adoption:

- 0 less than 2 years
- 2 to 5 years
- 5 to 10 years
- more than 10 years
- before plateau

Plateau of Productivity

As of July 2008


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### SWOT analysis

**S**  
- World-wide network  
- Missioners, experiences (e.g. Enschede workshop)  
- eLearning recognized by FIG  
- Workplace learning  
- CPD recognized  
- Commission 2 is a central body for all surveying knowledge and developments

**W**  
- Communication  
- IT infrastructure in several countries  
- Differences in legal/institutional background  
- Business model  
- Members from developing countries under-represented

**O**  
- Videoconferences  
- FIG Foundation  
- Partner organizations (ISPRS,...)  
- Knowledge management  
- Knowledge society  
- Awareness building  
- Land registration gaps in developing countries  
- Online cooperation

**T**  
- Missing strategic will at university level  
- Lack of lecturer’s didactic skills  
- Weak quality assurance online/distance courses  
- Online/distance course development time demanding
Workgroup 2.3: Marketing & Management

Chair: Gert Steinkellner, BEV (Vienna, Austria)

- Perception of profession
- Awareness building
- Marketing
- Recruitment
- PR
  - Brochures
  - Newsletters
  - Web
- Networking
- LLL

Reinfried Mansberger

Marketing & Management

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FIG Young Surveyors Network at the
XXIV FIG International Congress 2010

11 - 16 April, Sydney Convention and
Exhibition Centre.

The FIG Young Surveyors Network is about integrating generations and
facilitating the exchange of contacts between generations. To start with,
this is to practice the following activities are planned for the XXIV FIG
International Congress.

Sunday 11th of March

Young Surveyors Lunch, 12:00, Meet up at the registration desk.
Learning@organizations

- **Daily tasks evolving faster** than universities can produce qualified experts, many employers apply constant, on-the-job training to remain competitive. E-learning programs help staff members to obtain new skills and critical improvements quickly and efficiently.
- **Companies integrate e-Learning into mainstream.** They can easily integrate learning modules into staff communications, and can add similar tools to web-based systems.
- **e-Learning open the world.** Likewise, small businesses can access the same level of knowledge and insight that was earlier only available to large companies.
- **Mobile technology helps e-Learning initiatives.** Wireless technology allows educators to reach learners in their working environment.
- **Computer Supported Ubiquitous Learning** is defined as a ubiquitous learning environment that is supported by embedded and invisible computers in everyday life.

Open education

... is a collective term that refers to forms of education in which knowledge, ideas or important aspects of teaching methodology or infrastructure are shared freely over the internet.

It was inspired by related concepts like Creative Commons, open source, open data and open Access, and expands them to include lectures and other courseware.

Workgroup 4: Real Estate Valuation and Management Education

Joint WG with Commission 9

- In the spring of 2008 a comparative study on how the education of real estate economics is arranged in different countries will be made by the WG. The outcome gathered from different countries will be composed into a summary report.

- Chair: Prof. Arvo Vitikainen (Helsinki, Finland),
- e-mail: arvo.vitikainen@tkk.fi

Projects

- NCGIA Core Curriculum
- Open Learning for Land Offices - TEMPUS (1995)
- Staff Development in Land Administration - TEMPUS (1998)
- Land Information Management for Executives (2000)
- EEGECS - networking in Surveying and Cartography
- BEGI N - TEMPUS, Russia
- COST G9 - Modelling Land Market processes
- TETFNU, China - Environmental Modelling
- Land Valuation Training - Romania, UK, Greece
- Nature GIS
- GI-Indeed
- WAREMA - Water resources management in protected areas
- ERASMUS
- CEEPUS
- MSc in Geoinformatics in Croatia, Zagreb - TEMPUS
- MSc in Geoinformatics in Kazakhstan, Almaty - TEMPUS
- MSc in Geoinformatics in Tajikistan, Dushanbe - TEMPUS
- Nature SDIplus - INSPIRE
- SDIIaplus
- Development of New Land Governance Studies in Macedonia and Ukraine
Level 1 - Background Knowledge

**Background Knowledge on Nature Conservation**
- MODULE 1 - NATURE CONSERVATION

**GI Data Modelling and Standards**
- MODULE 2 - DATA MODELLING
- MODULE 3 - METADATA
- MODULE 4 - DATA HARMONIZATION
- MODULE 5 - STANDARDS

**Basic IT Standards**
- MODULE 6 - BASICS OF WEB SERVICES
- MODULE 7 - BASICS OF XML AND GML

**INSPIRE**
- MODULE 8 - THE INSPIRE DIRECTIVE
Level 2 - SDI and Nature conservation

- MODULE 9 - NATURE CONSERVATION IN INSPIRE
- MODULE 10 - DATASETS ANALYSIS AND DATA POLICIES
- MODULE 11 - DATASETS HARMONISATION - TRANSFORMATION
- MODULE 12 - THESAURUS
- MODULE 13 - GEOPORTAL
- MODULE 14 - TESTING THE COMPLIANCE OF OUTCOMES WITH INSPIRE AND INTERNATIONAL STANDARDS

Level 3 - Applications

- MODULE 14 - GOOD PRACTICES
  - Interreg IIIA Alcotra Italy-France - Flora and habitat conservation and management in the south-western Alps
  - VIC - NATUR (Swedish EPA)
  - Dutch Provinces - datasets INSPIRE compliant
  - ...
VESTA-GIS

26 - 28 August 2010, London, UK
Commission 2 - Website

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FIG Academic Members

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Conclusions

- **Focus on core competences - Body of Knowledge**
  - Involve more soft skills
    - Software - system integration
    - 3D data processing, analysis and visualisation
    - Project management, Working in teams (and integrate)
    - Solving complex problems
- **u-Learning?**
  - **Communicate, cooperate, coordinate**
    - Strengthen communication and networking activities
    - MSc - staff mobilities
    - PhD - student mobilities
    - Share experiences in open systems and educational management and marketing
- **Continue series of annual workshops**
- **Strengthen the link with Young Surveyors**
  - Organize Summer / Winter Schools
- **MSc – staff mobilities**
- **PhD – student mobilities**
- **Share experiences in open systems and educational management and marketing**
- **Continue series of annual workshops**
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