Continuing Professional Education via Distance Learning: Success Factors and Challenges

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32 Trends that Affect Online Distance Learning

- **Student/enrollment issues**:
  - *(2) Students are shopping for courses that meet their schedules and circumstances.*
  - *(3) Higher-education learner profiles, including online, information-age, and adult learners, are changing.*
- **Faculty issues**:
  - *(16) Instruction is becoming more learner-centered, non-linear, and self-directed.*
- **Academic issues**;
  - *(17) There is a growing emphasis on academic accountability.*
  - *(18) Academic emphasis is shifting from course-completion to competency.*
- **Technology issues**:
  - *(23) There is a huge growth in Internet usage.*
  - *(24) Technological fluency is becoming a graduation requirement.*
- **Economic issues:**
  - *(27) Lifelong learning is becoming a competitive necessity.*
- **Distance learning issues:**
  - *(28) More courses, degrees, and universities are becoming available through distance-education programs.*

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(Howell et al. 2003) http://www.westga.edu/~distance/ojdla/fall63/howell63.html

Contents

- UNIGIS
  - Professional qualification
  - Curriculum development
  - Distance Learning
  - Quality Assurance
- Assorted Challenges

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Introduction: Targeted Audience

Professionals

- mostly working in GIS industry,
- 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

UNIGIS: Global Network

- First courses in 1993
- Founding members:
  - UK
  - Amsterdam
  - Salzburg
- Global network on (nearly) all continents
- Move into professional education

Dedicated to „lifelong learning“!

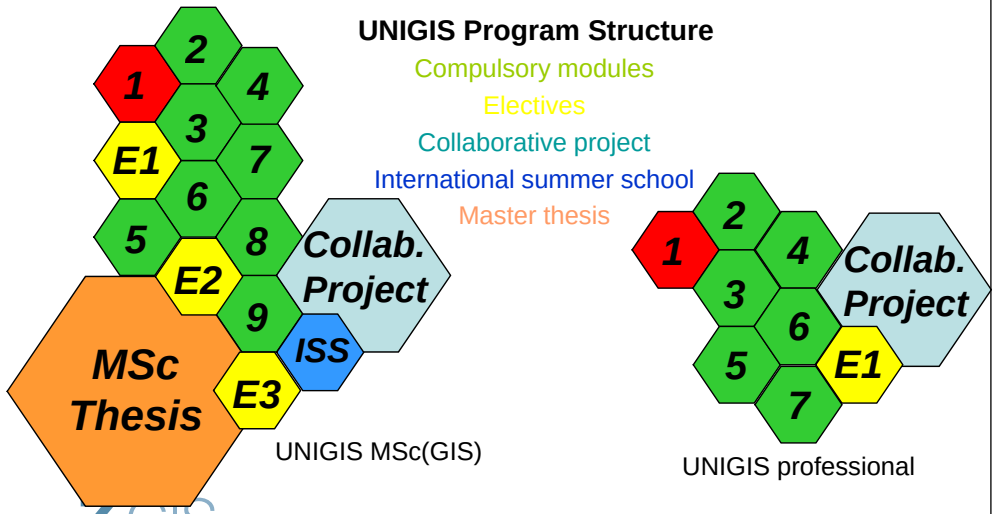
- Cooperation in development of curricula, media, and general innovation
- Exchange in GIScience and eLearning
- Mutual recognition of degrees and credits (ECTS)
- Contributions to international curricula and standards development

UNIGIS is the only sustained international (online) distance education!

UNIGIS Professional Qualification

- …and its acceptance depend on factors like:
  - Curriculum and syllabus
    - Building awareness
    - Ability of identifying and structuring problems
  - Professional relevance and employability
  - Track record with alumni and in industry
    - Program’s reputation critical for sustaining success
  - Formal accreditation and quality indicators

UNIGIS: Curriculum Development



UNIGIS: Curriculum Development (2)

Recent/Current education projects at Z_GIS

- Herodot
- eNews
- UniPHORM – PHARE
- GeoBASE
- EMGISc, EMGISc-D
- SDiLA, LIME
- InterGIS, GISELA
- Tempus CARDS – GIST-CroHE

Education and Culture DG

UNIGIS: Distance Learning

- Core factors for success of online distance learning:
  - Combination of advantages of *centralized course delivery* with *regional access to support*
  - Leveraging of novel *Internet-based communication facilities* to really ‚stay in touch'
  - Balancing an accepted core set of knowledge & skills with flexible options to enable individual choices of elective subjects

UNIGIS: Distance Learning

- Our experience:
  - there is no one-size-fits-all model for organisation and delivery of postgraduate qualifications in GIS&T
- Unique Selling Point:
  - Not distance learning per se but rather
  - Catering to the needs of a mature, well motivated and professionally active community of learners who are less mobile due to their job locations as well as social commitments

Quality Assurance

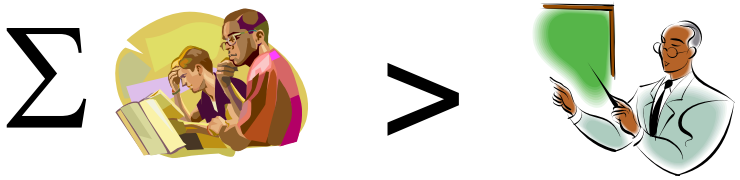
- …is permanent challenge in academia
  - in a distributed set of programmes being taught across all boundaries of cultures, languages, professions and levels of economic development
- UNIGIS Salzburg QA Policy Framework
  - a common core curriculum referenced to established benchmarks,
  - standards for teaching and performance assessment,
  - and cross-programme checks
    - joint degrees,
    - credit transfer options
    - mutual evaluations

Where UNIGIS is on it, there is UNIGIS in it!

Assorted Challenges (1)

- Students with different background pose challenge to design of continuing education programs
  - Entry requirements
  - Assumed prior knowledge

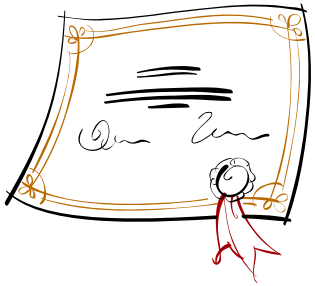
Assorted Challenges (2)



Moving from
centrifugal concept of knowledge dissemination
to
collaborative vision of knowledge creation

Assorted Challenges (3)

- Evolution of UNIGIS into truly global qualifications recognized by a wide range of industries and professions



UNIGIS Salzburg

- >>1000 students and alumni
  - In certificate and master courses
  - From German speaking areas
  - International programs
    - by our partners using our materials since 2004
    - offered since 05/2006 from Salzburg

=> Foundation for an important professional network
and
Leading GIScience education program

UNIGIS Salzburg: Principles

- **Continuing education via online distance learning**
  - *Where & When* at student convenience
- **In-service learning**
  - Alternative to full-time study
  - Some presence required
- **Application oriented**
  - professional software
  - Cooperation with industry
- **Academic qualification awarded by Salzburg University**

- ***Active Learning***
  - Continuous interaction and feedback
  - Multimedia presentation and tools
  - Problem- / Solution-oriented
  - „*Learning to learn*“

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Curriculum

- Conforming to academic course
- Modular structure
  - ~ 15 lessons
  - 4-7 assignments
  - ~6 ECTS credits
    120+ hours of student effort
- In part-time distance-learning mode:
  ~8 weeks when taken in sequence

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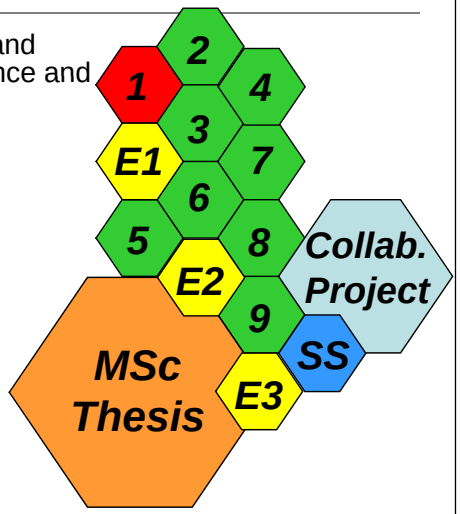
Modular structure: MSc(GIScience)

- Focus on conceptual, technical, and organisational aspects of GIScience and their application in various fields
- Qualification as a project, team or department leader
- 2 year postgraduate
- Structure
  - Compulsory modules
  - Electives
  - Collaborative project
  - International summer school
  - Master thesis
- Awarded academic degree: MSc(GIS)



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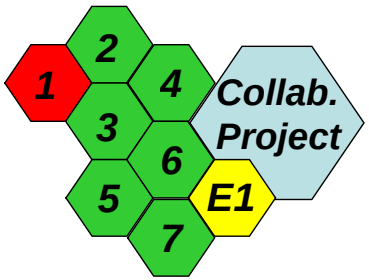
Modular structure: UNIGIS professional

- designed to develop or improve application-oriented skills & provide an understanding of GIS
- 1 year professional
- Structure
  - 7 Modules
  - 1+Elective or collaborative project
- Professional diploma certificate



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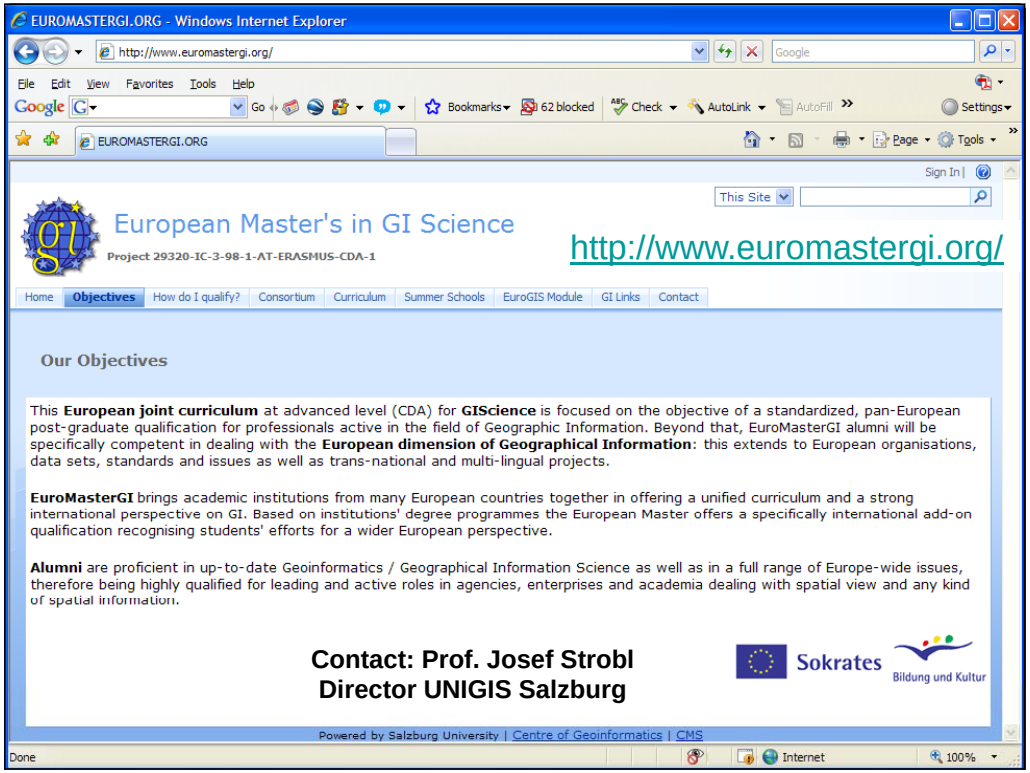

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UNIGIS Environment

- Blackboard
  - eLearning platform
  - Learning Management System
- Backpack
  - Personalized learning environment
  - offline working environment
- Communication
  - Via Email, Blackboard (discussion boards, wiki,…) Skype / GoogleTalk…
  - Tutor, Instructor, Team

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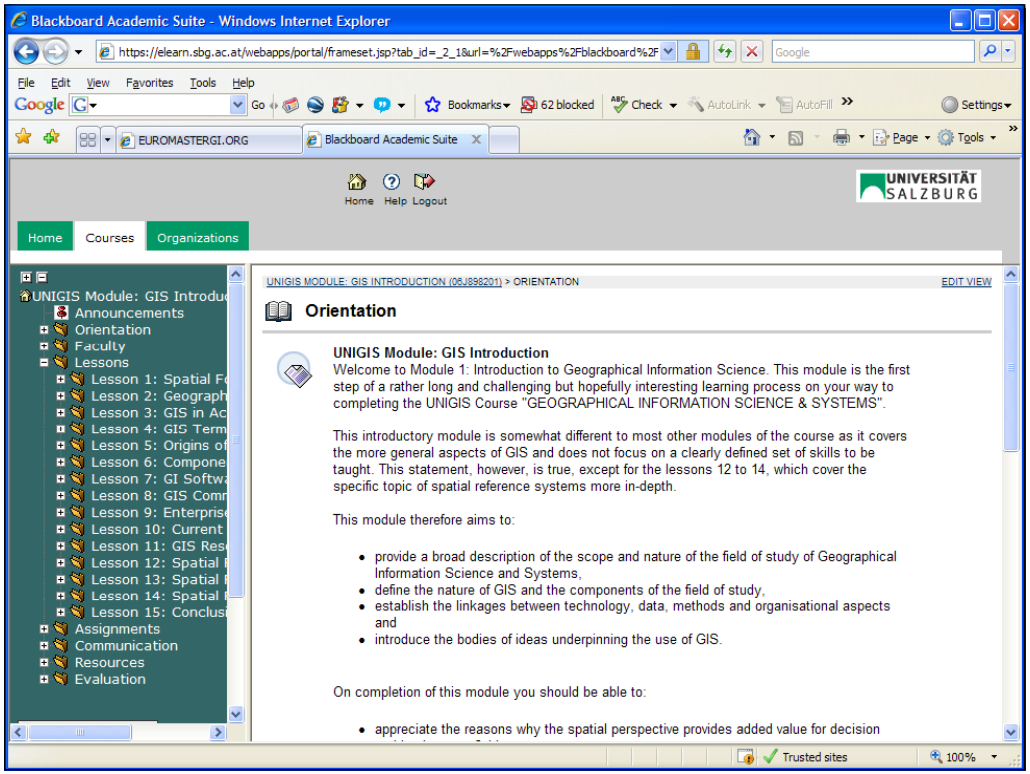

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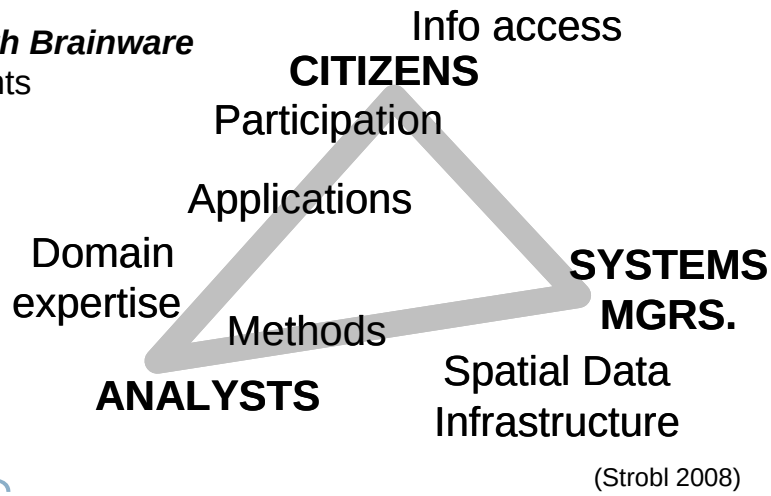
UNIGIS Professional Qualification

Digital Earth Brainware
Requirements



(Strobl 2008)

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Qualifications Digital Earth Citizens can have (1)

- **C**itizens participate in society, make it work and contribute to livable spaces, sustainable economies and clean environments.
  - **C1 – 'Consumer**' – map reading, orientation and navigation, finding one's place and identifying a destination.
  - **C2 – 'Prosumer'** – ability to participate by labelling a feature, mark up ('redlining') and rate a place or feature of interest and comment on alternative spatial scenarios, like a zoning proposal.
  - **C3 – 'Producer'** – contribute one's own data like a GPS-recorded hiking track, a geocoded photograph and perhaps even a draft proposal map for a conservation measure.

Qualifications Digital Earth Citizens can have (2)

- **A**nalysts frequently are domain experts understanding WHAT needs to be done, as well as the HOW to do it, providing critical subject matter and methodological knowledge.
  - **A1 – 'Applying tools'** by competently using existing functio-nality to answer simple questions and fulfil single-step tasks.
  - **A2 – 'Design analytical workflows'** by creatively using established methods and existing functionality to solve complex problems requiring multiple transformations and operations.
  - **A3 – 'Develop methods'** for new problems or conceptualise new solutions or complex workflows, and implement them for general use.

Qualifications Digital Earth Citizens can have (3)

- **S**ystems experts supply a working infrastructure; essentially geo-enabling the information society through a spatial data/information infrastructure.
  - **S1 – 'System setup'** and maintenance for out-of-the-box instal-lation of well-documented system components.
  - **S2 – 'Architecture design'** – competence to orchestrate multiple components, set up complex interfaces and profiles and link to external services.
  - **S3 – 'Server / service development'** – implement specifications and design and develop new services.

Qualifications Digital Earth Citizens can have (4)

- **G/R** – *Competence in establishing, using and transforming Spatial Reference Systems (SRS), 'measuring space' and advanced geocoding.* This **geodetic / surveying engineering qualification** is an essential prerequisite for setting up DE frameworks and to guarantee high quality operations.
- **T/A** – *Technician qualification mostly for data acquisition and data conversion*. As a profession this can be implemented from a vocational angle, or in other cases from a technolo-gist or sensor specialist viewpoint.
- **P/M** – *Project management and organisation is a generic skill* and frequently implemented as a standalone (e.g. consulting) career path, critically important to cover business per-spectives and for managing complex projects and imple-men-tations.

Benchmarking qualification

	UNIGIS MSc profile				
C	*C1* Consumer	*C2* Prosumer	*C3* Producer		*G/R*
A	*A1* Applying tools	*A2* Design anal. workflows	*A3* Develop methods		*T/A*
S	*S1* System setup	*S2* Architecture design	*S3* Server/service development		*P/M*

	Tech programme				
C	*C1*	*C2*	*C3*		*G/R*
A	*A1*	*A2*	*A3*		*T/A*
S	*S1*	*S2*	*S3*		*P/M*

	DE citizen				
C	*C1*	*C2*	*C3*		*G/R*
A	*A1*	*A2*	*A3*		*T/A*
S	*S1*	*S2*	*S3*		*P/M*

Why Quality Assurance (QA) for UNIGIS?

- Emphasize "**customer" (student) orientation** and **satisfaction**
- Aspire to **high-quality products**

  Where UNIGIS is on it, there is UNIGIS in it!
- Aim at **accreditation** of current and future courses at national / international level
- Introduce **QA as a part of common denominator for UNIGIS International Association**

Towards a UNIGIS QA Concept: Preliminary Results (3)

UNIGIS Common Core Curriculum vs UCGIS Body of Knowldege

UCGIS BoK – Knowledge Areas	CCC – compulsory modules
AM. Analytical Methods CF. Conceptual Foundations CV. Cartography and Visualisation DA. Design Aspects DM. Data Modelling DN. Data Manipulation GC. Geocomputation GD. Geospatial Data GS. GIS&T and Society OI. Organisational and Institutional Aspects	M1. GIS Introduction M2. Data Modelling and Data Structures M3. Data Sources and Data Acquisition M4. geoDBMS M5. Spatial Statistics M6. OpenGIS and Distributed GI Infrastructures M7. Geographical Analysis M8. Visualisation and Cartography M9. GIS Organisation and Project Management

Basic structure of the UCGIS BoK and CCC

Towards a UNIGIS QA Concept: Preliminary Results (4)

UNIGIS Common Core Curriculum vs UCGIS Body of Knowldege

Preliminary results from the comparison between CCC and BoK show the following:

- CCC or parts thereof that are not covered implicitly and/or explicitly in BoK
  - OpenGIS and Distributed GI Infrastructures (M6)
- BoK KA or parts thereof that are not covered implicitly and/or explicitly in CCC:
  - Geocomputation (GC1,2,4,5,7)
  - GIS&T and Society (GS2,6,7)
  - Organisational & institutional aspects (OI4)
  - Conceptual foundations (CF1, CF2.5-7)
  - Analytical methods (AM1, AM12.1-3)
  - Design Aspects (DA7 system implementation)

Summary

- So far we have established **foundations for a framework of thinking** and in turn for a **QA concept** and in a way sketched a respective **workflow**
- Parallel to these activities, an exploratory investigation has already been conducted to find out what already exists and can be used in our QA project

Future Work

- If successful, the emerging QA concept is expected to become a *QA policy for UNGIS@Salzburg*
- Furthermore we expect it to become *interesting to other UNIGIS partners* so they will support its development and introduction at their own site.
- The success of it certainly requires mutual respect for multicultural HE environments, and we strive for the least common denominator.