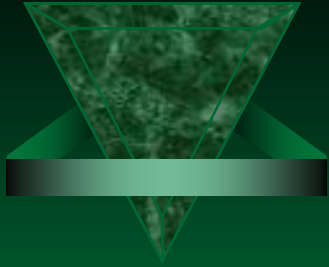


**The place of Geoinformation  
technologies in the education and  
professional development of the  
European geographers**

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# Geography and GI

- ◆ Today we cannot imagine the traditionally very conservative academic world without ICT. In the case of academic geography this role is played more or less by Geographical information Systems and related Geoinformation (GI) technologies.



# Geography and GI

- ◆ GI technologies made from geography “high-tech” discipline and the majority of professional geographers have already accepted this fact today.
- ◆ For the last two decades GIS found its natural place in geography curricula and the GIS skills today are an integral part in the professional development of the contemporary geographers.



# Two important questions

- ◆ Is there a need for a new approach in teaching GI and GIS?
- ◆ Do we need to be “rethinking” the place of GI and GIS in the professional development of geographers?



# Why GIS and GI are important for professional development of geographers?

- ◆ Because we need information about the space and the different phenomena in it and GIS is very effective tool which makes this.
- ◆ The development of GIS and related GI technologies only happened because of geography.



- ◆ The geography has provided the necessary fundamental approaches to gathering geographical data, methods for analyzing the data and generating geographical information, spatial models etc., and the IT provided the framework where the geography and geographers could operate more effectively.



## The place of GI in geography curricula across Europe.

- ◆ To study the actual statement of GIS in geography programs at the European universities, about 350 geography departments from 32 countries from Eastern and Western Europe were reviewed.
- ◆ About 230 of those departments (or 65.6 %) recognise GIS as main research and teaching area.



# Classification

- ◆ Countries with a small number of geography programs, but where all departments recongnise GIS as one of the main research and teaching areas.  
( Denamrk, Serbia and Montenegro etc.)



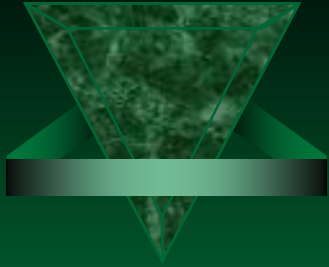
- ◆ Countries with a big number of geography programs and high percentage of programs, where GIS is recognized as one of the major areas. Among those countries are UK (from 73 reviewed programs, in 68% GIS is recognized as major field), Germany (83 programs/ 58%).



- ◆ Countries with a relatively high number geography programs (more than 10) with high percentage of programs, where GIS is recognized as one of the major areas. Most countries are in this group, including the Czech Republic, Netherlands, France, Norway, Spain etc.



- ◆ The group of countries with a small number of programs (less than 10) with high percentage of GIS – Russia, Slovenia, Croatia, Finland, Romania etc.
- ◆ The group of countries with small number of Geography programs with less than 50 % of the departments, which are recognizing GIS as major field. Here are Bulgaria, Italy, Switzerland etc.



- ◆ The last group includes the countries, where GIS is still not recognized as major subject-  
Macedonia, Albania, Moldova etc.



## From that classification we can conclude that:

- ◆ GIS is widely recognized as a major teaching and research area in European geography departments. However, if we compare the situation in Europe with this in USA, Europe is still behind the States. In the reviewed 225 geography programs in USA, in about 79 % of them declare GIS to be one of their major teaching and research areas.



# Do we need different approach in teaching GI?

- ◆ Teaching GIS is not a simple task.
- ◆ Very often it requires the ability to offer abstract concepts of digital representation to students who are sometimes unfamiliar with computer science.
- ◆ On the other hand teaching GIS also requires the development of relationships between theoretical concepts. (concepts about space with the capabilities and the features and the “language” of the different software packages )



Very often the GIS education is not more than GIS training, where “**point and click**” is the leading teaching approach.



Why the question “Do we need new approaches in teaching GIS?” is becoming more and more significant.

- ◆ This is because the GIS and GI literacy are not formed only by technical skills, but demands more than ever before basic spatial culture and understanding.
- ◆ A proper GIS education must place an emphasis on the scientific fundamentals of the technology and on the deployment of concepts and analytical skills, rather than keyboard commands.



- ◆ Despite the fact that, operations in GIS appear to be largely technical in nature, one of the most important issues for the GIS operator or user is to be aware of the geographical concepts that inevitably underpin any GIS operation.



We can propose five basic principles, to express our vision why the teaching GIS should be changed:

- ◆ Fundamental to understanding GIS is the recognition that the GIS model is not only a specialized computer model like conventional databases. It is an interpretation of geographical space, and therefore the modelled objects and phenomena need to be as close as possible to the real world.



- ◆ GIS is ‘as different as it is similar’ to traditional geographical analysis and mapping, meaning that the GIS education should be organized in close relationship with the core Geography program of the department or faculty.



Taking into account the above principle, we have to point that there are different types of GIS specialists, these might include:

- ◆ GIS users
- ◆ GIS developers and
- ◆ GIS “architects” and managers



- ◆ The didactic, two-stage educational approach (introduction, followed by an advanced course) is simply not efficient in GIS education. A case study approach with extensive hands-on experience provides better focus, but also puts a greater burden on individual instructors and facilities.



- ◆ GIS is no longer a “cameral” discipline – modern GIS and geoinformation are mobile and thus a significant part of GIS education might be organized on the field.



## Considering those principles we think that:

- ◆ GIS programs must be designed in four mutually penetrated and interacting stages, which have to be tightly connected with the fundamentals of geography as academic discipline



# The modules are

- ◆ GIS fundamental module
- ◆ GIS attributive module
- ◆ GIS application module
- ◆ GIS practicum



Thank you!