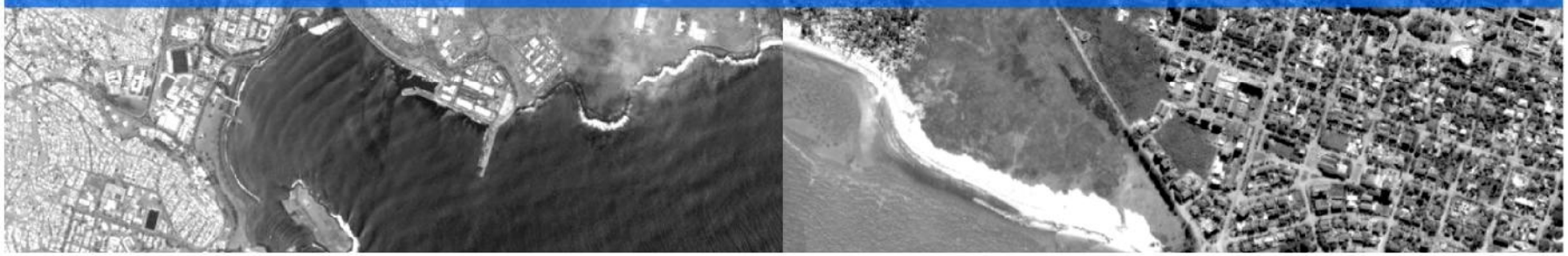
SuGIK

Sustainable Geographic
Information Knowledge Transfer
for Postgraduate Education

Geographic Information Knowledge Transfer for a Sustainable Postgraduate Education



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ISEGI NOVA
Instituto Superior de Estatística e Gestão de Informação
Universidade Nova de Lisboa

UNIVERSIDADE ... uni

ESRI Portugal
Sistemas e Informação Geográfica

SUMMARY

EDULINK

Program funded by the European Union and implemented by the African, Caribbean and Pacific Group of States Secretariat to improve and strengthen the capacity of ACP Higher Education Institutions at three constitutive levels:

- **Institutional / administrative**
- **Academic**
- **Research and technology strengthening**

SuGIK – Submitted to the EDULINK 2nd Call for Proposals (October 2007)

Lead Institution

Instituto Superior de Estatística e Gestão de Informação Universidade Nova de Lisboa - ISEGIUNL (Portugal)

Partner Institutions

Universidade Católica de Moçambique – UCM (Mozambique)

Universidade de Cabo Verde – UniCV (Cape Verde)

Associate Institution

ESRI-Portugal

Overall objective

Develop, implement and disseminate a best practice model consortium of EU-ACP Higher Education Institutions (HEIs) for the institutionalization of GIS&Science Master Programs in Cape Verde and Mozambique

Specific objectives

- Enhance the overall management, academic, and technological capacity of UniCV and UCM, in order to support the transfer and the implementation of the three editions of a GIS&Science postgraduate course.
- Support target HEIs with training, quality standards, resources and technologies.
- Provide scope for mutually beneficial structural and educational development in a perspective of long-term collaboration, allowing other network co-operation initiatives and further study and skills transfer opportunities between the partners and other European institutions.

1. Enhancing post-graduate administration capacity

- SuGIK's first set of activities will aim at strengthening administrative and technical capacities of the partner universities to effectively implement a distance Master's program in GIS&Science.
- To this end, a management and administration model will be developed in cooperation with the ISEGIUNL.

2. Adapting European curricula to African reality

- The ISEGIUNL's GIS&Science postgraduate program will be adapted to the needs and realities of the labor market in Mozambique and Cape Verde.

- During the project's first year, the partner institutions will conduct a regional and local study on the necessities of professionals in different activities in the areas of geographic information.

  This will help to identify the specific competencies that the GIS&Science postgraduate course should promote and ensure an efficient reformulation of the contents that must be proposed for the 2nd and 3th editions of the course.

3. Delivering a self-sustainable Master's programme

- The postgraduate course will be organized into two semester modules distributed through five learning areas.
- During the first year, the course will be taught by ISEGIUNL teachers to a group of selected students from both partner institutions.
- In the second year this course will be given by ISEGIUNL teachers in a partnership with selected students from the 1st edition of the course.
- Lastly, in the third year of the project, all teaching activities will be carried out by the best students of the 1st and 2nd editions of the course.

4. Meeting geoinformation professional needs

- Upon completion of the Master's program, students will be able to apply their knowledge in key scientific and technological fields considered strategically relevant to support decision making in key social and environmental development areas.

- In a broader sense, SuGIK will benefit the communities in Mozambique and Cape Verde as government departments, local authorities, private companies or NGOs will be able to recruit highly qualified researchers and GI professionals to analyze key issues in disaster prevention, health, public safety, among others.

1st SEMESTER	2nd SEMESTER	3rd SEMESTER
Geographic Information System and Science	Remote Sensing	Dissertation
Geospatial data models	GIS and Modeling	
Geographic databases	Geospatial Data Mining	
GIS Applications	Community GIS	

Target groups:

- Senior management and faculty staff of the GI partner institutions departments
- Graduate students in Geographic Information relevant areas
- Target professional in local and regional government departments

Final beneficiaries:

- Community Based Organisations
- Local authorities
- Research organisations/Researchers
- SME/SMI businesses which rely on the use of geographic information

1. GIS&Science Postgraduate Diploma/Master Degree Certification - 40 students of UniCV and 60 students of UCM
2. Development and implementation of a Management and Administration Model for GIS&Science postgraduate education in the partner institutions
3. Training of, at least, 8 teachers in each one of the partner institutions. Upgrading and enhancing the qualifications of teaching staff and administrators of the two ACP HEIs.
4. Re-design and Implementation of the 8 current modules of the ISEGIUNL's postgraduate course
5. Creation of a Quality Assurance Board and provide target HEIs with a best practice model and adequate methodologies, guidelines, and tools to develop, improve and consolidate the existing academic network between EU and ACP Portuguese-speaking countries.

Activity Area 1: Project management development

Activity Area 2: Administrative and organisational project implementation

Activity Area 3: Implementation and Delivery of the 1st edition of GIS&Science Postgraduate Course Training Activities

Activity Area 4: Reformulation and design of the GIS&Science Master Program and didactic preparation of the *curricula* content for the 2nd edition

Activity Area 5: Support a self-sustainable GIS&Science postgraduate programme delivery and innovation during the 3rd edition

Activity Area 6: Promotion of cooperation between EU and ACP Portuguese-countries HEIs in the field of GIS&Science education and research

Some facts on the ISEGI's Master program in GIS&Science (e-learning)

- **1990** – **Annual GIS Seminar**
- **1993** – **GI as part of a course** – Statistics and Information Management Undergraduate Program
  GI as an autonomous course – Statistics and Information Management Master Program
- **1995** – **GI as an autonomous course** – 2 years Undergraduate Program
- **1998** – **GI in Post-Graduation Program** – Demographical, Social and Geographical Information Systems
- **1999** – **GI as an autonomous course** – 4 years Undergraduate Program
- **2002** – **GIS&Science Master Program (UNIGIS)** – 1st Edition
- **2003** – **Program eduGI-LA 1** – EC ALFA program, No. II-0250-A-FI
  - Takes advantage of the acquired know-how in several years of GIS teaching
  - Takes advantage of the synergies created by the UNIGIS consortium
  - Fully available through the internet since 2002 (1st edition)
  - First on line masters course given by a Portuguese university
  - Directed at people who may not have access to face to face teaching
  - The 8th edition will start in September 2008
- **2004** – **GIS Master Program Revision** – Bologna Process / Novel learning Project
- **2005** – **Program eduGI-LA 2** – EC ALFA program, No. II-0426-A-FI
- **2006** – **GIScience *Curricula* Development Model**
  Program eduGI – EC Program No. EAC/25/05/E 011
- **2007** – **Master Program in Geospatial Technologies** – EC Erasmus Mundus Program

SuGIK's identity: design studies

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SuGIK's Portal: design studies

SuGIK's Master Program: Course re-design and contents adaptation

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Espaço geográfico e cognição espacial — e-book

3.3 MAGNITUDE

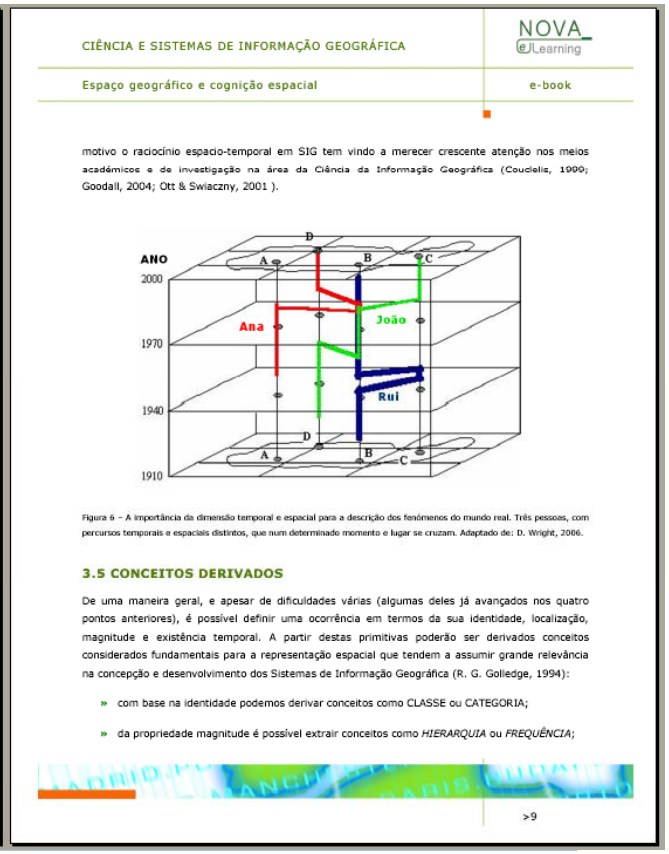
A terceira primitiva do conhecimento espacial está directamente relacionada com as duas anteriores. De facto, após determinada a identidade e a localização de uma ocorrência uma série de questões costumam ter lugar: Qual a MAGNITUDE da ocorrência nesse lugar? É essa ocorrência elevada? Volumosa? Pesada? Por outras palavras, de que modo é transmitida e comunicada a natureza de uma ocorrência num dado lugar? Para Gooledge (*Idem*) a resposta a estas questões força-nos abrir a "caixa de Pandora": Quais as escalas de medida mais adequadas para expressar essa magnitude? Por oposição ao exemplo apresentado na Figura 5, podemos constatar a importância da utilização apropriada das escalas de medida para exprimir a MAGNITUDE de uma ocorrência e para o seu correcto entendimento e significado.

Figura 5 – Um letreiro da cidade de *New Cuyama* na Califórnia. Um exemplo que põe em evidência a importância da MAGNITUDE e do uso (inadequado) das escalas de medida para o conhecimento das ocorrências espaciais. (Extraído de Chrisman, 1997, p.15).

3.4 TEMPO

A última primitiva necessária à construção de conceitos espaciais é o TEMPO. De um modo geral o tempo decorre da necessidade de traduzir o carácter efémero, mutável e inconstante de um determinado fenómeno (Figura 6). Conhecer a frequência e o modo como essas mudanças ocorrem é um dos factores determinantes à representação adequada das ocorrências do mundo real. Por esse

>8



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motivo o raciocínio espacio-temporal em SIG tem vindo a merecer crescente atenção nos meios académicos e de investigação na área da Ciência da Informação Geográfica (Couclelis, 1990; Goodall, 2004; Ott & Swiaczny, 2001).

Figura 6 – A importância da dimensão temporal e espacial para a descrição dos fenómenos do mundo real. Três pessoas, com percursos temporais e espaciais distintos, que num determinado momento e lugar se cruzam. Adaptado de: D. Wright, 2006.

3.5 CONCEITOS DERIVADOS

De uma maneira geral, e apesar de dificuldades várias (algumas deles já avançados nos quatro pontos anteriores), é possível definir uma ocorrência em termos da sua identidade, localização, magnitude e existência temporal. A partir destas primitivas poderão ser derivados conceitos considerados fundamentais para a representação espacial que tendem a assumir grande relevância na concepção e desenvolvimento dos Sistemas de Informação Geográfica (R. G. Golledge, 1994):

- com base na identidade podemos derivar conceitos como CLASSE ou CATEGORIA;
- da propriedade magnitude é possível extrair conceitos como *HIERARQUIA* ou *FREQUÊNCIA*;

>9

SuGIK's Master Program: Course divulgation and promotion

Flyer production and dissemination of the GIS&Science Master Program – UniCV and UCM

Opening workshop arrangement – allowing for project kick off and the validation of the working procedures related to the project management and the initial action plan operations review.

Doubts
Comments
Suggestions?

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