

CONFERENCE ON ADVANCED SPATIAL MODELING AND ANALYSIS

12th March 2015

MOPT | CEG-IGOT | ULisboa

(@REITORIA)

Advances in computing and more and better data, led to a new wave of spatial models during the second half of XX century, and set them crucial to decision making and urban and land use planning. In fact, one of the main issues of our forebears was the lack of spatial data. Today, “big data” translate the tide of information that overwhelms us. GIS and spatial modeling are tools that allow us to get knowledge to deal with this issue. Although conservatism still prevails in urban and land use planning we are reaching a turning point where digital data collection and analysis is pivotal to spatial planning related fields.

This conference aims at:

- Stimulating the discussion on theoretical and applied research in spatial modeling as well as quantitative and qualitative analysis of spatial and temporal data for spatial planning
- Discussing new (revisited) data and methods, their complexity and their potential for urban and land use planning
- Bridging the gap between practical problems solving and curiosity driven science.

Program

9.30h – Registration

9.45h – Opening Session

Mário Vale (Head of CEG/IGOT/ULisboa)
Eduarda Marques da Costa (Head of MOPT)
Patrícia Abrantes (AgriMET project coordinator)

10.30h – Painel 1

GEOCOMPUTATION FOR SPATIAL PLANNING
Chair: Jorge Rocha

José António Tenedório (e-Geo/FCSH/UNL)
Modeling in planning practice: Issues raised by the assimilation of local government

11.15h – 11.30h Coffee break

11.30h

Arnaud Banos (CNRS, Géographie-Cités)
Spatial simulation of complex adaptive systems: can “agents” make a difference?

12.30h - Lunch

13.45h – Painel 2

MOPT SHOWROOM
Chair: Paulo Morgado

Patrícia Abrantes
GIS-Graph toolkit for modeling agricultural actor’s network

Nuno Marques da Costa
Competing visions? Simulating alternative coastal futures using GIS-ANN web application

Jorge Rocha
Predictive models for land use / cover patterns through geosimulation

15.00h – 15.15h Coffee break

15h15 – Painel 3

BIG DATA, GEO-ANALYSIS AND PLANNING
Chair: Nuno Marques da Costa

Joana Simões (Barcelona Digital Centro Tecnológico – Bdigital)
GEO-stack for Big Data: Driving Spatial Analysis Beyond the Limits of Traditional Storage

Diogo Abreu (CEG/IGOT-ULisboa)
Emerging spatial planning challenges from a geo-modeler lens

16.45h – Closing session

Lucinda Fonseca (Directora do IGOT/ULisboa)
Eduarda Marques da Costa/Paulo Morgado (CEG/IGOT/ULisboa)



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KEY-SPEAKERS CONFERENCE ABSTRACT

JOSÉ ANTÓNIO TENEDÓRIO

Modeling in planning practice: Issues raised by the assimilation of local government

The discussion on modeling in practice planning implies that local government bodies (Portuguese municipalities) assimilate the emergent paradigm shift in terms of the transference of knowledge from universities to society, as well as regarding the usability of geographical information: i) using low-cost technology to face swiftness in terms of time and processes; ii) analysing data in order to produce territorial models and simulations as added-value in the process of drafting plans. These discussion topics shall be illustrated with data modeling results obtained both by drone (point clouds, big data) and as a result of spatial modeling resorting to cellular automata (multi-temporal application to the municipality of Portimão).

ARNAUD BANOS

Spatial simulation of complex adaptive systems: can "agents" make a difference?

Most of the scientific objects privileged by geographers can be described as complex adaptive spatial systems. Such systems are composed of a large number of localised entities, interacting one with another through various networks of interaction, across different scales. From a single village to the global village, from a single urban street to the city on the move and to networks of cities, the range of scales mobilised is very wide. Therefore, not surprisingly, complexity sciences and their modelling and simulation tools constitute a main challenge for geography. At the very front in that new scientific battle are approaches allowing reproducing, by simulation, emergence of processes and structures in geographical space. Agent based simulations occupy a central place in the picture, thanks to the variety and flexibility of investigations they allow. Virtual labs can indeed be created, amongst which experimental approaches can be led. Once defined their characteristics and behaviors, agents are used to populate dynamic environments, in order to explore the possible conditions leading to the emergence of structures and processes.

JOANA SIMÕES

GEO-stack for Big Data: Driving Spatial Analysis Beyond the Limits of Traditional Storage

In the era of Big Data, an unprecedented amount of information is produced everyday, and a great deal of this information has actually geospatial attributes attached to it. The value of such datasets is catching the attention of data scientists around the world. However to store and process such huge amounts of continuously growing information poses some challengers, and since this is a cutting-edge field no standard paradigm has yet arisen. This challenge is even more accentuated when we consider geospatial analysis, as it constitutes a niche area. In this conference we will present a software stack, that allows to store and process geospatial information, beyond the limits of what is possible to do with a "traditional" storage system (e.g.: relational database, text files, etc). In order to demonstrate this approach, we will reproduce a simple case study of analysis of geo-located Tweets, first using a "traditional" stack (PostGIS) and then using our "Big Data" stack, both of them running on the Cloud. We will discuss advantages and disadvantages of both approaches and demonstrate how they are complementary, rather than competitive.

The conference is FREE

To register please send an email to
agrimet@campus.ul.pt
with the following information:

1. Name
2. Institution

