Guest Editorial Preface

Special Issue on Recent Trends in Spatial Information

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The research articles included in the first issue of volume seven of the International Journal of Agricultural and Environmental Information Systems mainly cover four methodological issues in the field of Spatial Decision Support System, Big Data, Geovisualization and Spatial Statistics.

The paper "Functional reuse and intensification of rural-urban context: Rural Architectural Urbanism" by Cattaneo, De Lotto and Venco analyses the different themes and disciplines that are involved in planning aimed to improve, restore and re-functionalize existing minor settlements in rural-urban context. Consequently it is fundamental to develop integrated approaches. In the paper authors focus on the treatment of geographical data and on the integration of the data sets that have dissimilar origin, diverse formats (they may be not only digital) and different meaning value. They usually belong to various disciplines and together they compose the information set from which it is possible to deduce specific knowledge.

The whole process, illustrated in the paper, is a typical planning and design algorithm, after the description of the logical framework of the entire process, a specific theme has been explained with the related spatial analysis applications. In the last part a case study with a comprehensive procedure has been described.

The growth of geographical data availability at any scale and worldwide if one side increased the spatial knowledge on the other side mass-data visualizations became an important aspect in many fields. The diffusion of web mapping creates visualization problem of huge spatial datasets on mobile devices. This creates the need for usable and understandable interactive techniques that allow the visualization and exploration of large spatial data sets. The paper "The Marker Cluster — A critical analysis and a new approach to a common web-based cartographic interface pattern" by Sebastian Meier experimented a variety of technologies aiming at overcoming the obstacle of displaying large spatial datasets in interactive mapping applications. More particularly Marker Clusters, Heatmaps and Tiled Heatmaps have been analysed considering the quantitative and qualitative empirical evaluations of the performance of each of these methods.

Real time information becomeses an usual way for common citizen to access and use data coming from own information systems. This implies new issues for ICT application in main fields and domains such as 'energy efficiency', sustainability and energy management. According to the growing interest in energy saving as a relevant component of territorial sustainability the paper "Towards self energy-management and sustainable citizens' engagement in local energy efficiency agenda" by Francesco Scorza described an application based on open-source technologies providing real-time open data of energy consumptions. This hw-sw system is oriented to individual householder

needs, such as to industrial purposes and public ones. The paper discuss the results of the application of such technologies on public schools building in an integrated project linking usage model of public spaces to citizens behaviours and consciousness concerning sustainability. Outcomes could influence territorial policies and projects in the framework of EU 2020 strategy and Covenant of Majors.

In recent times the term Big Data became very popular fluctuating from scientific applications to a simple buzzword. For someone it is a database not containable a Spreadsheet for other points of view is a huge amount of data produced also by sensors and 2.0 applications. This subject was addressed in the paper "Big Data in the Field of civil security research: Approaches for the visual preprocessing of fire brigade operations" by Gonschorek, Langer, Bernhardt and Räbiger. The application domain is the risk prevention and disaster management. More particularly the spatio-temporal distribution of emergencies of German fire brigades has been investigated. In this paper analitical and visualization aspects have been analysed.

The paper "Sensitivity analysis of spatial autocorrelation using distinct geometrical settings: guidelines for the quantitative geographer" by Rodrigues and Tenedório analyses the well known problem of the loss of information moving from one scale of aggregation to another one, as well as using area units of different size. The statistics show results that are in line with the different aggregation techniques adopted. The interesting point is the adoption of a sort of tessellation of space as hexagons compared with official administrative areas using global spatial autocorrelation statistics. The results are achieved analysing five different datasets different aggregation levels.

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