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***GEOVIRTUAL URBAN ENVIRONMENTS AS MEDIA FOR THE
COMMUNICATION OF INFORMATION RELATED
TO MANAGING URBAN LAND***

Introduction

Managing urban land requires dealing with complex ecological, economical and social needs, which in general are related to spatial structures and phenomena. In order to fit these needs, state of the art management strategies make use of information technology such as Geographic Information Systems (GIS), internet-based information services, 3D visualizations, and simulations to support decision-making and improve the communication fluxes between authorities, citizens and companies.

Geovirtual environments (GeoVE) are computer-generated three-dimensional depictions of our common environment, which are based on geoinformation and can be operated in real-time. Thus, they offer an intuitive, innovative, and challenging media to interactively explore, analyze and present spatial information in its three dimensional context. Typical occurrences of GeoVE are virtual 3D city models, which are increasingly established as one part of modern spatial data infrastructures (SDI).

The project “Land Information Systems based on 3D City Models” (“Flächeninformationssysteme auf Basis virtueller 3D-Stadtmodelle”) is a joint venture of the Hasso-Plattner-Institute Potsdam, Berlin Technical University, and 3DGeo GmbH. It aims at developing an information and communication system for land management on the basis of geovirtual environments. More specifically it addresses the development of techniques, tools and methods needed to successfully deploy virtual 3D city models for decision support in the context of urban land management. It builds upon existing virtual 3D city models and technology (Figure 1) and high expertise of the partners with the set up and utilization of GeoVE in the

context of urban and environmental planning, real estate management, and consultancy of investors.

Four case studies in the Berlin and Potsdam area will be conducted in close cooperation with regional and local authorities and other stakeholders to identify potentials and restrictions. During the studies decisive parameter and geoinformation related to the specific management tasks have to be identified, integrated into the model database, processed, and visualized. The cooperation with authorities, the choice of prominent and sensitive urban development areas for the case studies, and participation during planning processes is expected to ensure a problem-oriented approach.

Background

The project is part of the German research framework REFINA (www.refina-info.de), which is funded by the federal ministry of education and science. The aim is to develop methods, tools, and guidelines to reduce the consumption of previously undeveloped land by housing, industry, and transportation networks.

Key strategies for the reduction of land consumption are land recycling, inner city redensification, and the adoption of sustainable land management concepts by administration departments. During the recent years much effort has been made to develop sustainable land-management concepts and decision support tools (e. g. the project “Regeneration of European Sites in Cities and Urban Environments” – RESCUE: www.rescue-europe.com/html/project.html; or the project “Integriertes Management und Revitalisierung der Brachflächen” – Integra Sites: www.um.katowice.pl/-strony/integrasites/de/) as well as to formulate best-practice guidelines (LfU, 2003a, Geovirtual Urban Environments as Media for the Communication of Information Related to Managing Urban Land 17 2003b). The results of the research activities show that the sheer amount of data involved and the complexity of land recycling tasks as well as the multi-stakeholder perspective often complicate urban land management. Therefore, solutions often combine a set of methods and techniques. These incorporate among others GIS, 3D visualizations,

public participation methods, and assessment methods to value economic, ecologic as well as socio-demographic aspects of land management.

Since land management is per se spatial, GIS obviously offer an appropriate technique to support land management and decision-making. At present GIS-based brownfield cadastre and empty-site cadastre are used in many municipalities to support the management, assessment and regeneration of brownfields or to allocate suitable sites for potential investors. Besides GIS, 3D visualizations are commonly used in participation processes regarding brownfield regeneration and urban planning. They support the cognition of the spatial impacts of proposed projects or policies on the visual landscape, respectively cityscape. Public participation methods such as ‘round tables’, stakeholder meetings, and the incorporation of the public during planning phases are accepted methods to access multi-stakeholder planning issues. If well prepared, these techniques can lead to better acceptance of plans. Participation processes often make use of GIS and 3D visualizations to provide information and visual input. Assessment methods finally provide basic methodologies to value land management related issues. They are the ‘every-day tools’ planners apply in planning processes.

The project partners expect that by combining and integrating these techniques under the metaphor of virtual 3D cities, innovative information systems can be realized which on the one hand provide real-time 3D visualizations, features for digital participation, and features for data exploration and analyses.

Bibliography

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