

CENTRE FOR 3D GEOINFORMATION

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ABSTRACT

This paper will present the initial ideas behind the foundation of a Centre, which can bring together research, public authorities, and business communities in a unique environment of developing 3D GeoInformation applications, all based on new Virtual Reality technology as well as on information regarding urban and rural areas.

INTRODUCTION

This will be carried out by establishing a Virtual Geographic Infrastructure (VGI), enabling a wide range of geographically related information to be spread via new, net-based means of communication. Through the involvement of the National Survey and Cadastre of Denmark, the Centre will focus on the constraints and the possibilities for the establishment of an object-oriented 3D structure for the administration of the land- and property records in the national cadastre. The initial part of this very comprehensive task would be to recognize if there could be any topological and geometrical sources that would provide a semi-automatic or automatic generation of this major object-oriented database.

Another new aspect in the project will be the user interface, based on intensive use of Virtual Reality (VR) and 3D. By creating a virtual three-dimensional (3D) model of reality and then use it as an index for many other types of information, it becomes possible to use the general human ability to familiarize with the surroundings and navigate through space.

A spatial user interface will create new possibilities for presenting reasonably large amounts of data. This means that business communities, politicians and citizens will gain access to a new media, which frequently is able to present very complicated contexts in an easily accessible way.

This media can be used within local and regional planning, marketing of the region (tourism, commercial resources, competence and knowledge) – and also to visualize more abstract forms of information (such as environmental and traffic information). The goal will thus be to establish a pioneering project, which will be the central force for the very latest within VR and GIS technologies.

These will be studied, tested and further developed at the same time as an applied diffusion of the technology will take place, aimed at business communities, learning environments, and other groups in society.

THE PURPOSE OF THE PROJECT

The purpose of the project is to establish a Centre for gathering knowledge and competence during the process of creating 3D models of cities and landscapes for organizing and presenting GeoInformation applications.

This will be done by:

- collecting competence and knowledge within the field by arranging seminars/ conferences, establishing international research networks and by employing researchers within this particular field,
- collaborating with companies, who already possess the most recent competence within VR and three-dimensional urban and rural models or are interested in acquiring this,
- establishing a VR user interface for looking for position-fixed information in the northern part of Jutland,
- creating a geographical model of North Jutland, which can form the basis of digital visualization and the marketing of the resources of the region,
- by developing a basis of knowledge and documentation for the use of a geographical communication concept covering the northern part of Jutland, adapted to the expected increased band width in digital transmission medias (Fixed and Mobile Nets) and as a framework for developing virtual environments,
- forming the basis for future research and for building up regional knowledge within field-gis (field registration with mobile units), augmented reality (a mixture of 3D models and reality), three-dimensional user interface and the use of broad band for mobile knowledge services.

A Centre for 3D GeoInformation is to be an incubator for new research activities, which will work with both the national and the international research agenda within the field of Geovisualization in several dimensions. This can only be accomplished by gathering knowledge and competence at an internationally high scientific level. The three-dimensional VR model of the North Jutland region will be available for researchers as a test model to develop new and innovative applications of the field. The Centre will also be able to form basis for the development of VR technology in general and for strategic functions, operational functions and the mass market in the region of North Jutland.

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The duration of the project is 4 years.

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