DEVELOPER TOOLS FOR SMART APPROACHES TO RESPONSIBLE-MINDED PLANNING STRATEGIES - ENERGY AND SPACE AS RESOURCES

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The city of Vienna follows a long-term initiative to become a Smart City. Within 2050 it aims to reduce 80\% of the CO2 emissions (in comparison to 1990) and looks forward to generate ways for a sustainable energy production. (Smart City Framework Strategy 2014) Reaching this targets requires a complex planning process which involves interdisciplinary stakeholders and decision makers. An interactive multi-dimensional environment, comprising spatial objects and data models, is a helpful tool during these planning processes. This paper proposes a suitable path for the development of a structural framework for such an environment. The benefits of such an environment are shown in detail, based on an application of the economic solar heat potential in Vienna.

Keywords: 3D city model, decision / planning support tool, spatial analyses, interdisciplinary approach, economic solar heat potential visualization

1. INTRODUCTION

1.1 Motivation

The city of Vienna has grown in population by 9.1\% within the last decade. Based on forecasts this development is going to continue in the future. According to regional statistics Vienna will host approximately two million people by 2029. (Peter Prenner 2014) Simultaneously the city of Vienna aims to reduce CO2 emissions by 80\% (compared to 1990) with the "Smart City Framework Strategy". Sub targets arise from the fields of energy, mobility, buildings and infrastructure for the realization of an ecological and sustainable future of Vienna. (Smart City Framework Strategy 2014) In this approach "sustainable" is synonymous with sustainable development of cities and regions in an environmentally, ecologically and economic manner and excludes sociological appreciations. The development of the population in Vienna and the future targets above lead to complex planning processes in the fields of urban planning, energy portfolios, transport systems and supply networks. Thus interdisciplinary fields, involving different base models and calculation outputs, have to be connected, located and visualized in spatial models for developing resilient planning paths. For this purpose a scenario based visualization and