Round Table Session on “3D-City-Modeling”

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With a major feedback from Bjarne Rüdiger and Bruno Tournay, Denmark

According to eCAADe’s mission, the exchange and collaboration within the area of computer aided architectural design education and research, while respecting the pedagogical and administrative approaches in the different schools and countries, can be regarded as a core activity. On the occasion of eCAADe 2001 in Helsinki a working session on the topic “3D-City-Modeling” was held, in which a varietybundle of papers was presented. The eCAADe 2002 round table session on “3D-City-Modeling” is opening up for an intensive discussion on a number of goals which were elaborated by a working group in Helsinki.

Keywords*: Urban Modeling, 3-D Modeling, Architectural Education, Collaboration*

Outline

The eCAADe 2001 working session on “3D-City-Modeling” during the Helsinki conference consisted of a varietybundle of individual presentations. However, time for discussion was too short and afterwards a working group elaborated following goals:

1. Bringing together experts focusing on different aspects concerning the creation and use of 3D-City-Models;
2. Trying to establish a comprehensive list of existing 3D-City-Models;
3. Discussing aspects like data input, data structure, data storage and data quality;
4. Creating a knowledge-base and a bibliography in this field
5. Discussing the future of 3D-City-Modeling and establishing a guiding source book on standards for the creation of 3D-City-Models;
6. Using existing publications on city modeling as a starting point for preparing a special publication on all aspects of 3D-City-Modeling (past and future).

These topics will serve a the main points of discussion for the eCAADe 2002 roundtable session on 3D-City-Modeling. The preparation for this session started with a call for interest, in which these topics were mentioned explicitly. Further aspects following the feedback are to be discussed during the session. For instance Slawek Kowal (Warsaw Model, Poland) referred to the simulation of city development processes based on parameters, which describe the virtual model. In this procedure a considerableheavy use of www-scripts in SQL-databases and internet servers is characteristic. Andreas Voigt (Linz and Vienna Model, Austria) brought in the so called “data-pipeline-concept” for automatic generation of 3D-City-Models, situat-

ed within a “Space-related Content-Management-System”. More information about this paper can be found elsewhere in these proceedings (see Voigt, et.al). An extended feedback was received from Bjarne Rüdiger and Bruno Tournay (Copenhagen Model, Denmark) and respondinged clearly to the defined goals 1 to 5. Their vision also underlines the interdisciplinary framework and the possible constitution of so called “Special Interest Groups” (SIG). Their statement has been added as an appendix to this paper.

In addition to these contributions we would like to focus on current developments concerning the automatic creation of 3D-City-Models. Over the past years there has been a number of disappointing pilots in this direction. The realized projects did not deliver the expected results and ended up in rather poor models, in which still a lot of manual corrections were needed in order to prove useful. The new generation of automatically generated 3D-City-Models seem promising regardings to contain a big promise for being a useful procedure in this direction. The concept and related experiences towards the automatically generated Graz 3D-City-Model and possible interactions with the “Digcity” project will be discussed.

Appendix: Statement from Bjarne Rüdiger and Bruno Tournay (Royal Academy of Fine Arts, Copenhagen)

Ad 1 [Bringing together experts...]
Different branches are engaged and they have different interests in creating and using 3D-City-Models. But: Which professions are involved in the creation and the use of such a model? What is the special purpose of each profession? Thus anyA related discussion has to be ofhave therefore an interdisciplinary nature. One of the nearest collaborators in setting up a city model is the surveyor, as a profession which is already involved. Their maps and corresponding references are furthermore heavily used very often. What needs to be defined are the different roles the “actors” play in this process. Our experience shows how important it is for productive output that each actor knows quite well where his or her expertise starts and ends. We can also learn a lot from the ongoing discussion within the GIS-community and maybe we should join this community.

Ad 2 [Trying to establish a comprehensive list of existing city models]
A comprehensive list of existing city models must build on general criteria, that is to say a definition of metadata. A quick surf on the web shows how occasional 3D city models can be. Most of these models are presented without any documentation, and sometimes they are even not presented at all (but just and only named). A briefrough look at some of them shows how different these models are structured. Often they are ofhave quite a mediocqre quality, and you are not able to know it is difficult to find out, if it is the model that is so bad or only the representation on the net. According to our experience the following metadata (= data about data) should be embedded:

- Authorship and the commissioner;
- Purpose of the model;
- Background data, maps and other sources of information;
- Structure of the model;
- Quality in terms of accuracy and completeness;
- Availability of model data;
- Copyright issues;
- Updating policy.

Ad 3 [Discussing aspects like data input ...]
Starting to create a 3D city model means to gather data about geometry, land-use, ownership etc. This can be both time- consuming and expensive. Occasionally it is necessary to transform data from one format into another or to digitize 2D maps and drawings. Often the model will be used

for different purposes (e.g. 2D-GIS calculations) and therefore it is important to have a precise data structure resp. different level of details, showing materials, doors, windows, etc. The following aspects should be taken into account for further discussion:

- Level of details (LOD)
- Ownership of data and copyright
- Available technology
- Available sources of data

Ad 4 [Creating a knowledge-base and a bibliography in this field]

3D City Modeling has a rather broad definition reaching on one hand from building details resp. street furniture and on the other hand to (2D) geographic information systems (GIS). To cover this area, and to support specific papers concerning city-model-theme, a Special Interest Group (SIG) could be formed in order to create a platform for a general debate.

Ad 5 [Discussing the future of 3D City Modeling]

3D-City-Modeling refers to a digital model of our physical environment. This field of (practical) research has become a part of public service and also of commercial-, social- and cultural life. It is in fact a part of the “informational” city.

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