Reality-based virtual 3D city models with Google Earth Integration

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EXTENDED ABSTRACT

Reality-based 3D city models generated using airborne data (i.e. stereo aerial imagery or laserscanner data) are predominantly used in urban planning, architecture and marketing (e.g. tourism, real estate promotion). Many other applications will use 3D-city modles in future in a much wider extent. 3D-modles will also become a firm asset to GIS. The demand to use real-time virtual reality to improve the understanding of complex project information and also to communicate this complexity to the public is growing. 3D visualization, instead of 2D maps and drawings, reflects a virtual image of the environment, which is what people are used to seeing.

Intelligent measurement and semi-automatic procedures by CyberCity AG reduce labour costs and turnaround time, while ensuring geospatial accuracy and photo-realism. CyberCity generates textured 3D city models of large areas semi-automatically from stereo aerial images or laserscanner data and developed the specialized software CyberCity-Modeler (CC-Modeler™).
The 3D building data fulfills format (e.g. SHP, MDB, DXF, FLT…), technical (e.g. Level-of-Detail, texture optimization…) and quality (e.g. accuracy, up-to-date…) requirements for the use within Geographic Information Systems (GIS), Computer Aided Design (CAD) and Visualization.
3D landmarks are photo realistic and very detailed virtual models of important buildings and sights, which are created using terrestrial laserscanning and digital photography.

Cybercity has developed an additional tool to improve and speed up texturing of the facades. Beside classical texturing from terrestrial images oblique images are used, analysed and mapped automatically to the walls

The interactive 3D visualization is performed with different tools. GoogleEarth was used for displaying the inner city of Hamburg, and the data is fully integrated. The advantage of direct integration is that every user of GoogleEarth gets access. If GoogleEarth is used separately, the user has to download KMZ files from other sources. Also it is guaranteed that there is no possibility of illegal copying. Another tool which is used for visualization with a high performance is TerainView Web™ and TerrainView Globe. It enables planners, engineers and decision makers to test, view and evaluate the spatial and visual impacts of changing project conditions and parameters in real time within a detailed, spatially accurate, georeferenced computer environment. The understanding of the complex project information can be improved and a successful community-outreach program including visualization, multi-media and web-streaming of huge 3D sceneries containing high-resolution landscape and city models can be achieved.

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About CyberCity AG

CyberCity AG is a worldwide operating System- and Software-Company specializing in the creation and visualization of reality-based virtual 3D city and facility models. CyberCity applies its proprietary software to generate high-quality virtual 3-dimensional city models. Our models are produced worldwide using aerial-/satellite imagery (photogrammetry) and airborne laserscanner data (LIDAR), GIS and 3D computer graphics.

CyberCity clients and partners include companies and institutions in Europe, USA and the Middle East. Applications in the field of planning, tourism, safety and navigation are offered. More information is available on the Internet at www.cybercity.tv.

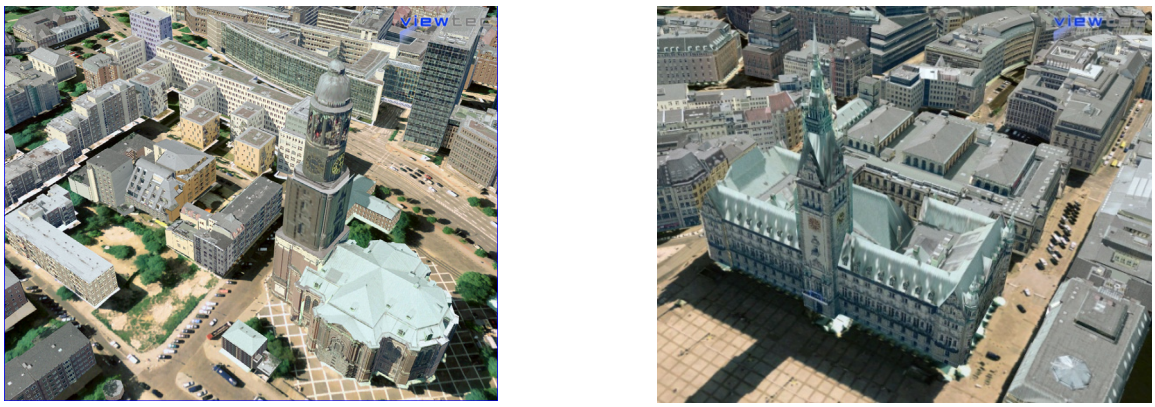

Figure 1: 3D City Model of Hamburg, Germany, with semi-automatic texturing using oblique aerial images by CyberCity AG. Left: St. Michaelis Church. Right: City Hall Hamburg. Courtesy of the State Office for Geo-Information and Survey (LGV) of the Free and Hanseatic City of Hamburg.

Figure 2: 3D City Model of Los Angeles, USA. Photo-realistic textures in the Little Tokyo district. Courtesy of CyberCity AG.