

3D-Stadtmodelle, Visualisierung und Anwendung im Internet



Globale GIS-Trendsetter, Oldenburg

Franz Steidler



Outline



Einführung CyberCity

3D-Stadtmodelle

Generierung mit Photogrammetrie und Laserscannerdaten

Texturierung

Anwendungen

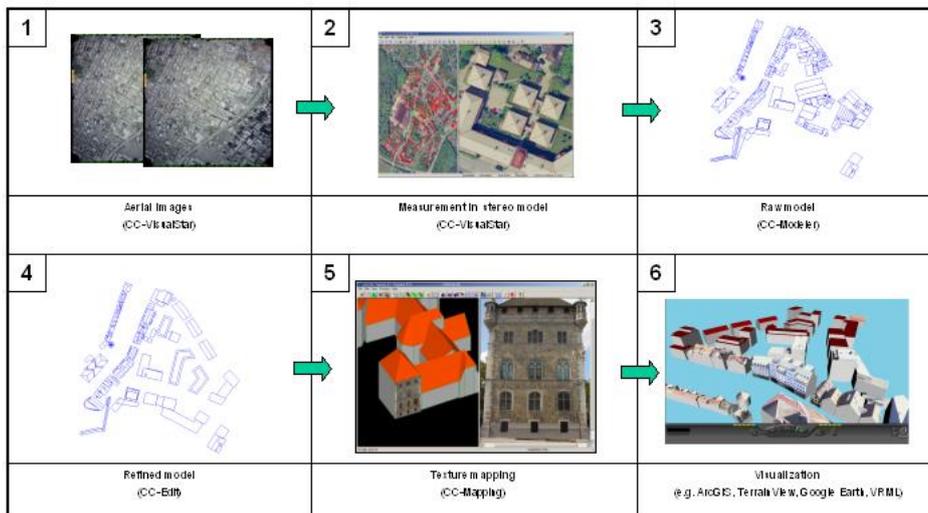
Visualisierung mit Google Earth, TerrainViewGlobe und TerrainViewWeb

Beispiele

Product range of CC-Software



CC-Software in use for a typical workflow



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www.cybercity.tv

CyberCity AG

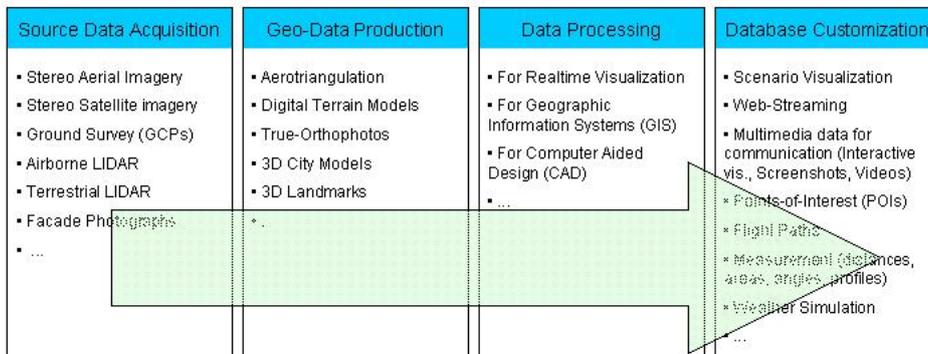
What we do...



PRODUCTION

CyberCity acts as a complete service and product provider that on the one hand PRODUCES high quality geodata like 3D city models, 3D landmarks, Digital True-Orthophotos and Digital Terrain Models and on the other hand INTEGRATES data and know-how into state-of-the-art 3D realtime visualization and GIS systems.

INTEGRATION



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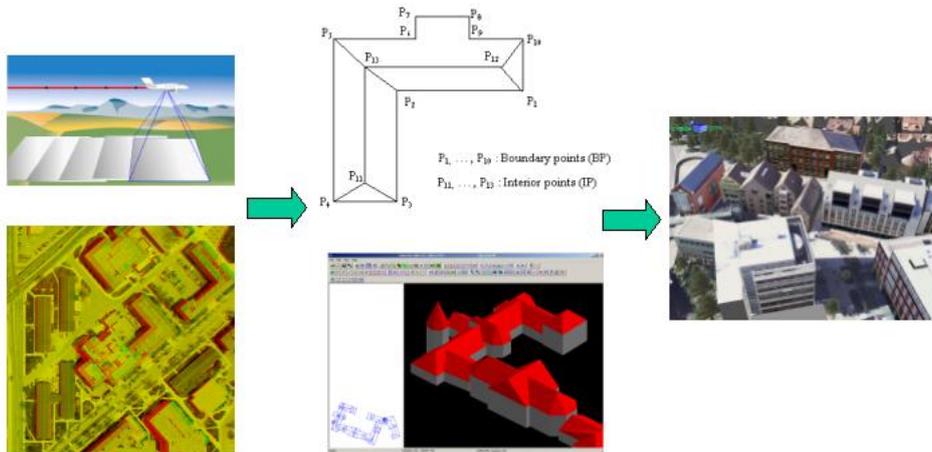
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3D City Modeling



AERIAL- / SATELLITE IMAGES



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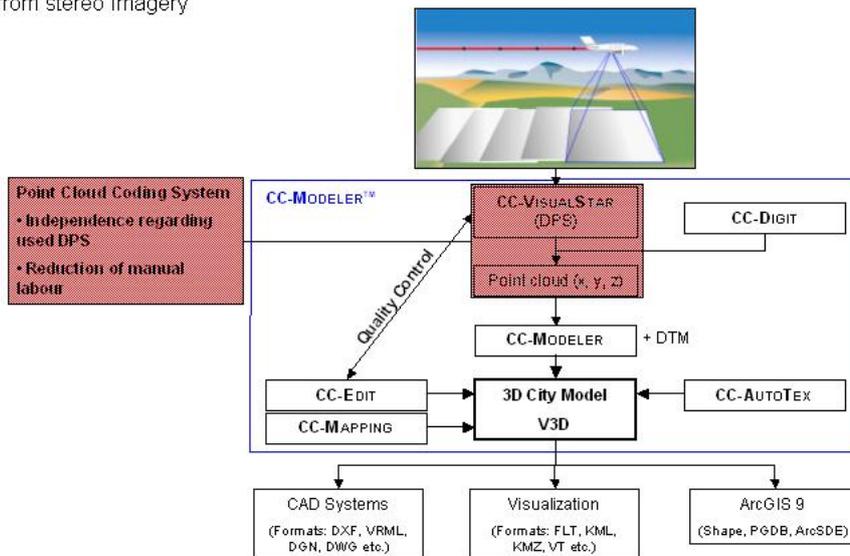
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Photogrammetry



Semi-automatic building extraction from stereo imagery



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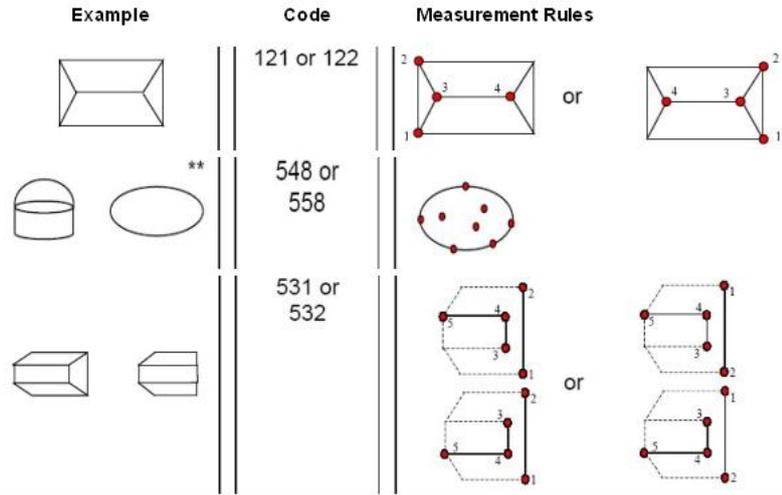
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CC-Modeler



Point Cloud Coding System



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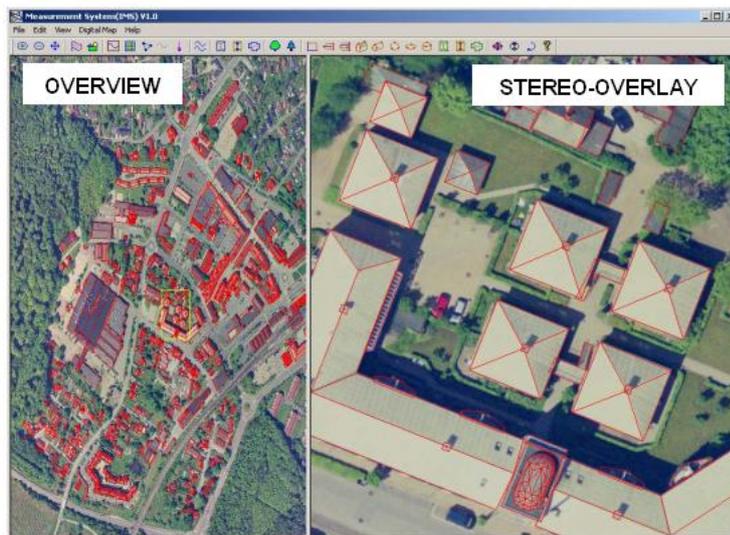
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CC-VisualStar



STEREO-MEASUREMENT, UPDATING AND QUALITY MANAGEMENT

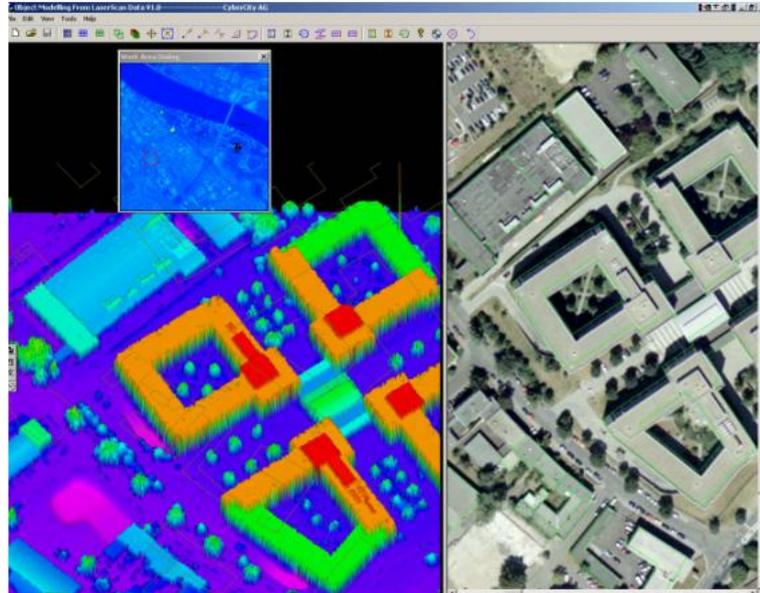


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LIDAR and Orthophoto

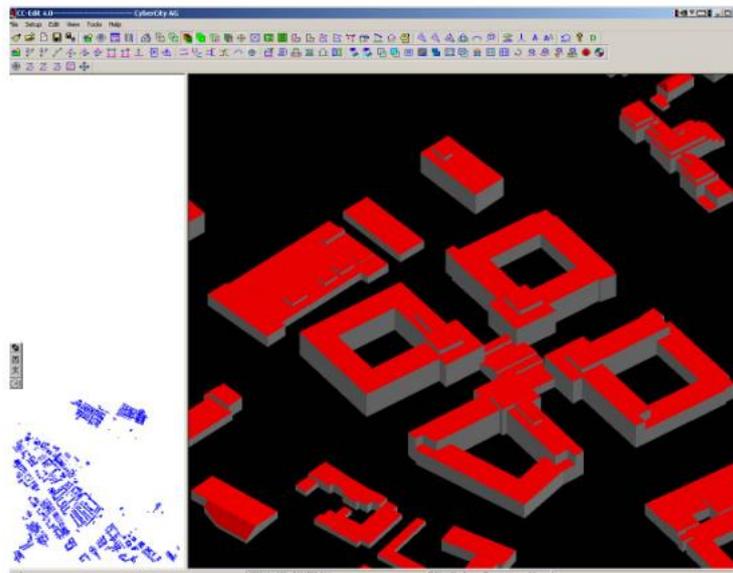


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Result LIDAR with Orthophoto



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CC-Edit CYBER CITY

Topology adjustment. Left: original, Right: automatically corrected with C.C-Edit.

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Dataexport CYBER CITY

EXPORT DES 3D STADTMODELLS

ArcGIS (ESRI)

SHP, PGDB

Google Earth

KML, KMZ

TerrainView™

DXF, VRML, FLT, IVC,...

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Texturierungsverfahren



Generische Texturierung



- Texturbibliothek
- Nicht realistisch
- Regionale Texturtypen
- Automatisch

Automatische Texturierung



- (Schräg-)Luftbilder
- Photorealistisch
- (Halb-)Automatisch

Terrestrische Texturierung



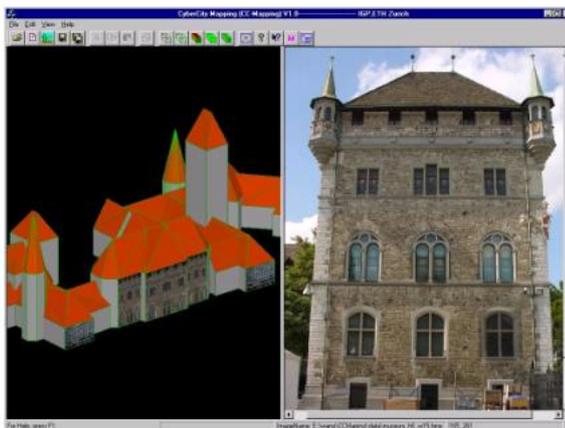
- Hochauflösende Digitalfotos
- Photorealistisch
- Manuelles Verfahren

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CC-Mapping



- GUI CC-Mapping
- Wall texturing from image
- Wall texturing from texture library
- Wall and roof texturing with colors
- Generating Corridors



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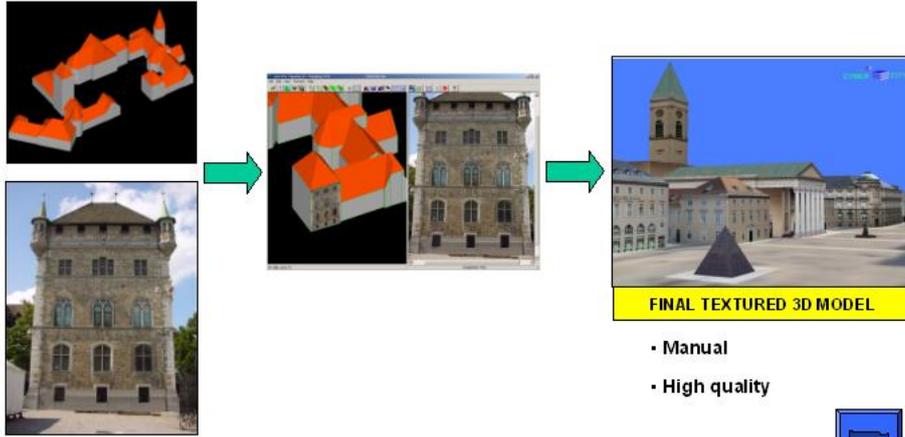
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Texturing



TERRESTRIAL IMAGES WITH CC-MAPPING

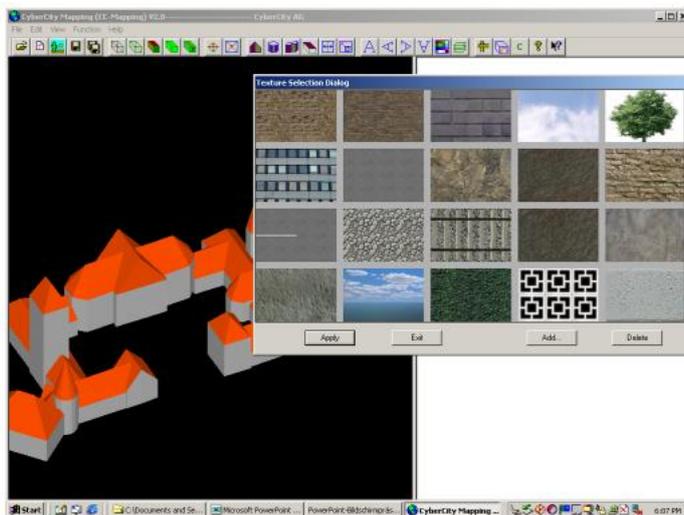


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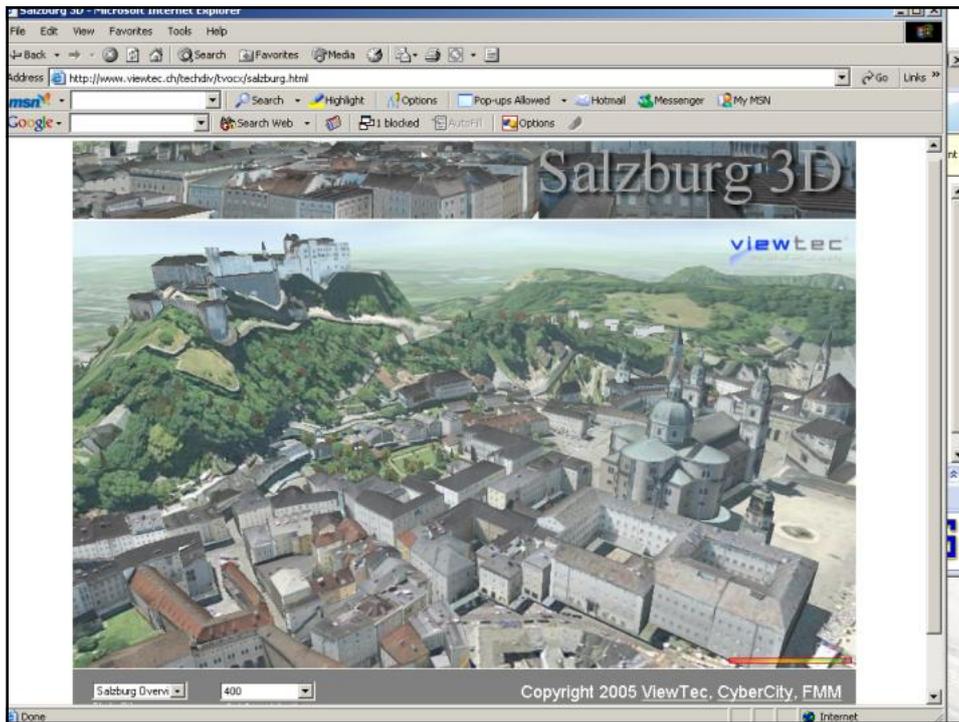
CC-Mapping



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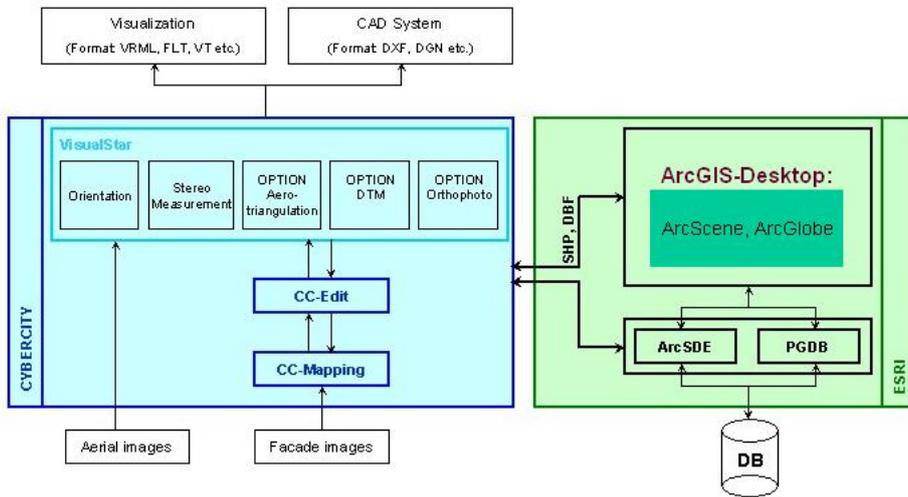
Principle of Orthophoto-True Orthophoto CYBER CITY

TRUE-ORTHOPHOTO
- Rectified using DTM and 3D City Model

ORTHOPHOTO
- Rectified using DTM

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3D-GIS USING ESRI'S ArcGIS



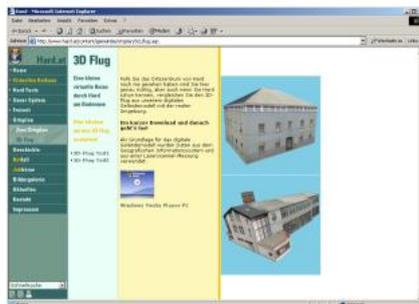
Flughafen Zürich - Einbezug von CAD und 2D-Daten



Applications

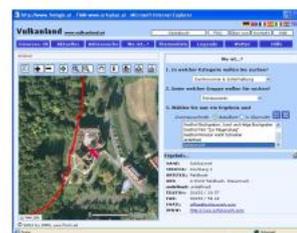


MARKETING AND TOURISM



www.hard.at

Award „Best Software Integration Map“
www.map2day.at



The image shows two overlapping browser windows. The top window, titled 'Vulkanland', displays a website with a search bar, navigation tabs (Various, Highlights, Address, Where to..., Themes, Legend, Weather, Help), and a map showing a red path through a green landscape. The bottom window, titled 'fmm', features a 3D architectural rendering of a large, multi-towered castle with a central courtyard. To the left of the 3D model is a vertical sidebar menu with categories like 'Healthcare', 'Culture - Public Services', 'Tourism - Accommodation', 'Private Services', 'Restaurants - Entertainment', 'Sports - Activities', 'Landscape - Nature', and 'Announcements'. The footer of the 'fmm' window includes copyright information for 2004 and mentions 'Forest Mapping Management GesmbH' and 'Cyber City'.

Vulkanland www.vulkanland.at [FAQ](#) [Logout](#) [Contact](#) [RSS](#)
 Various | Highlights | Address | Where to... | Themes | Legend | Weather | Help
 Vulkanland
 Various links
 20 Flight
 fmm
 Info | Flight
 Healthcare
 Culture - Public Services
 Tourism - Accommodation
 Private Services
 Restaurants - Entertainment
 Sports - Activities
 Landscape - Nature
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 MapCity | [Home](#) | [About](#) | [Contact](#) | [Privacy](#) | [Terms](#) | [Sitemap](#) | [Feedback](#) | [Copyright 2004 FMM, Österreich. Powered by VayaTV](#)

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3D Landmarks

The image displays a 3D digital reconstruction of the Brandenburg Gate in Berlin. The central archway is flanked by two symmetrical wings, each with a pedimented roof. The entire structure is rendered in a light tan color with a green roof. The Brandenburg Gate is topped with the Quadriga chariot. The scene is set against a plain white background.

CYBER CITY

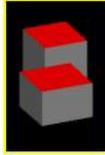
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Grade of detail geometry Geometrie



Blockmodels



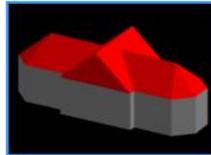
LIDAR
Data

Stereo images /
Satellite images

+

Digital Terrain
Model

Main roof structures



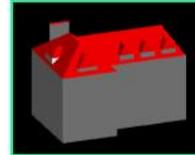
LIDAR
Data

Stereo images /
Satellite images

+

Digital Terrain
Model

Detailed roof structures



LIDAR
+
Orthophoto

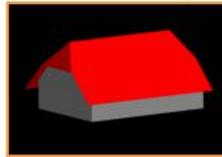
Stereo images

+

Digital Terrain
Model

(+)

Footprints (for roof
polygons)



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Applications



- Environmental Protection
- Virtual Shopping
- Planning
- Mobile Communications
- Energy (Solar)
- Tourism
- Facility Planning
- Real Estate
- Car Navigation
- Architecture, Engineering
- Monumental Protection (historical)
- Entertainment Industry (films, games)
- Insurances (dangerous transports)
- Homeland Security
- Fire Alarm
- Police
- Military
- Computer Games
- etc.....

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Conclusions



- **CC-Modeler™: Efficient Tool for high quality 3D-City Modeling**
- **CC-Visual Star: Measurement and Update of 3D-City Models**
- **Automatic Texturing of roofs and facades**
- **3D-GIS Applications by connection to ESRI's ArcGIS**
- **Visualization with TerrainViewGlobe and TerrainViewWeb**
- **Visualization with GoogleEarth**

THANK YOU!

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