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INTERACTIVE WEB3D GRAPHICS

Scalable geospatial 3D client applications in X3D - Interactive, online and in real-time

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Presentation

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X3D Geospatial Software



Technology:

Mapping geospatial 2D and 3D data at the correct location on a 3D globe automatically.

Perception:

Seamless zooming from map overview to ground level and Building interior with The same online software.



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Bitmanagement Customers



Industry adoption

375+ direct customers

Users of applications in the millions

Involved in future-oriented R&D



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Create once – run anywhere Hardware Independent



Windows



iPhone
IPad,
Ipod

Mac



Stereoscopic
devices



Linux



Cave
Systems



Android



web browsers

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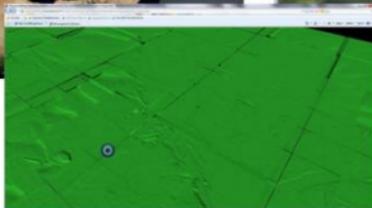
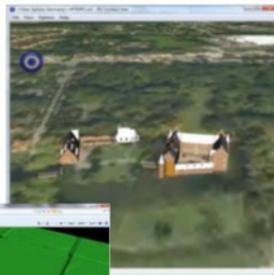


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BS Contact GEO - BIM Online Viewing

BS Contact GEO from Bitmanagement.com

Fast C++ 64-bit 3D Client plug-in
for online city content on Windows, Linux, Mac



Native X3D:
Geo node support with
Octrees and tiling scheme.

Native CityGML:
EPSG code positioning and
200 map projections
on the fly.

LOD 4 city visualization:
Highly detailed city
visualization
>= 10 cm detail.



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Speed comparison

Reference implementation vs Industry product

X3DOM
Java Script WebGL

Frames per second: 36



BS Contact
C++

Frames per second: 3365



X3DOM
25 pans

Frames per second: 1



BS Contact
25 pans

FPS: 1902



BS Contact
215 pans

FPS: 637





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BS Contact Mobile Android and Apple iOS viewing

 BS Contact Mobile from Bitmanagement.com
for iOS and Android



See the video demo

<http://www.bitmanagement.com/en/products/mobile/ios>

BS Contact iOS:
Fast X3D online visualization
on Apple iPhone, iPod, iPad
with SDK.

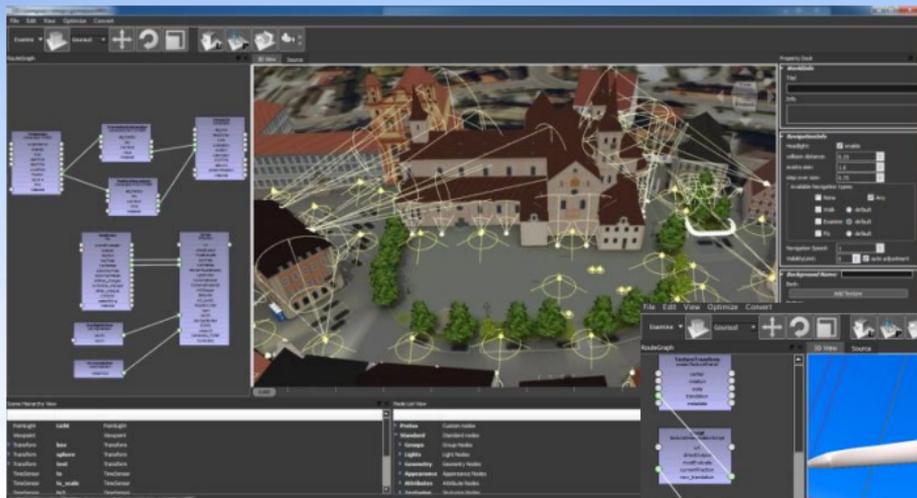
BS Contact Android:
Fast X3D online visualization
on
Google Android devices.



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BS Content Studio Tool

Production tool for easy animation of 3D from CAD and GIS



With “BS Contact Studio” working time to create 3D environments is reduced by 80 % and less skills in 3D graphics are required.”



Author once - deploy anywhere –

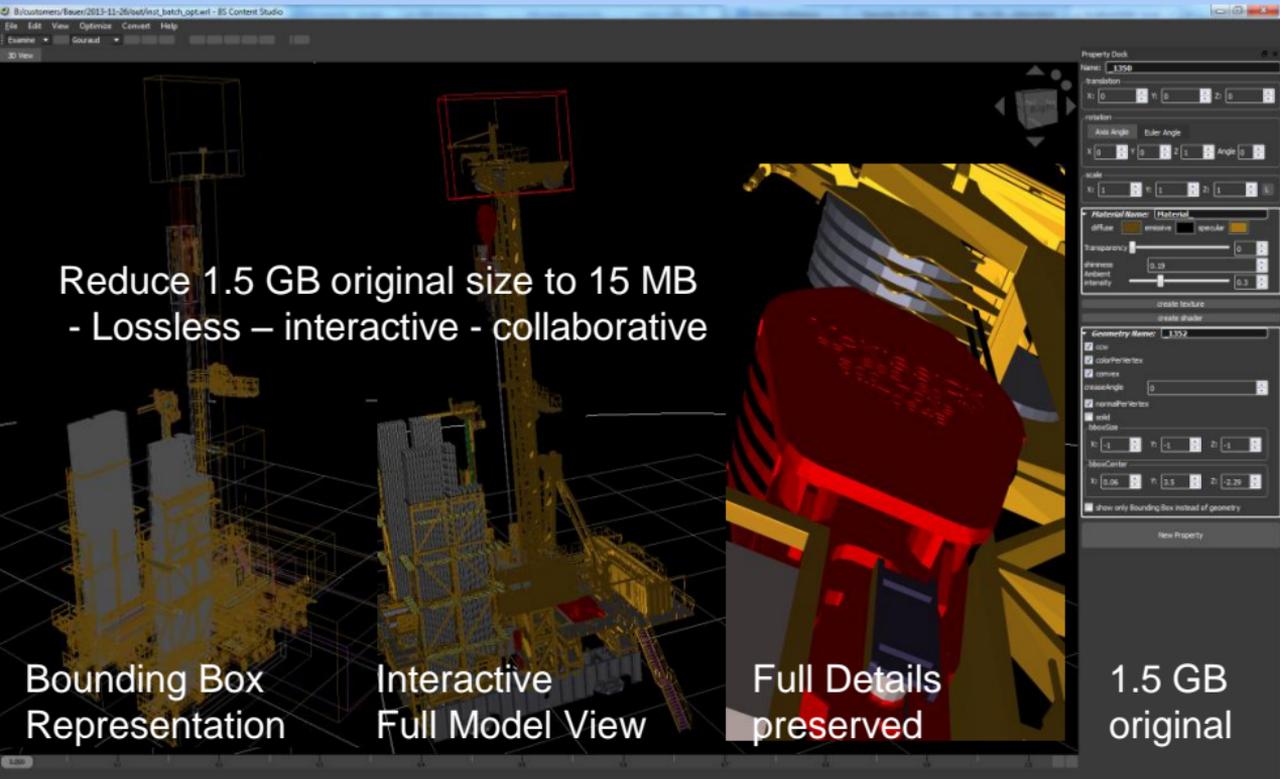
Windows, Mac, Linux,
iOS, Android,
IE, FF, Chrome, Safari,
HTML5 / WebGL.



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BS Contact 3D Engine

Best in class online X3D viewer



Reduce 1.5 GB original size to 15 MB
- Lossless – interactive - collaborative

Bounding Box
Representation

Interactive
Full Model View

Full Details
preserved

1.5 GB
original

Huge Models

Automated
Geometry
instancing

Geometry Culling

Real-time
walk-through of
full model

Full detail and
Meta-data
preserved

Output for the
Interactive
3D Web



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Daimler Automotive Internet Vehicle Navigation



- 2D/3D map-view, 3D globe view, 3D birdsview, 3D streetlevel view, 3D interior view, LOD 1- 4
- Visualization of 3D routing
- Mixing of video, audio, flash and html embedded in 3D scenes
- Interactive zooming, panning, flyover, 6 degrees of freedom navigation of users
- Points of interest, landmarks, tourist information
- Robust and adaptive Internet retrieval, content streaming, local caching
- Night vision and weather



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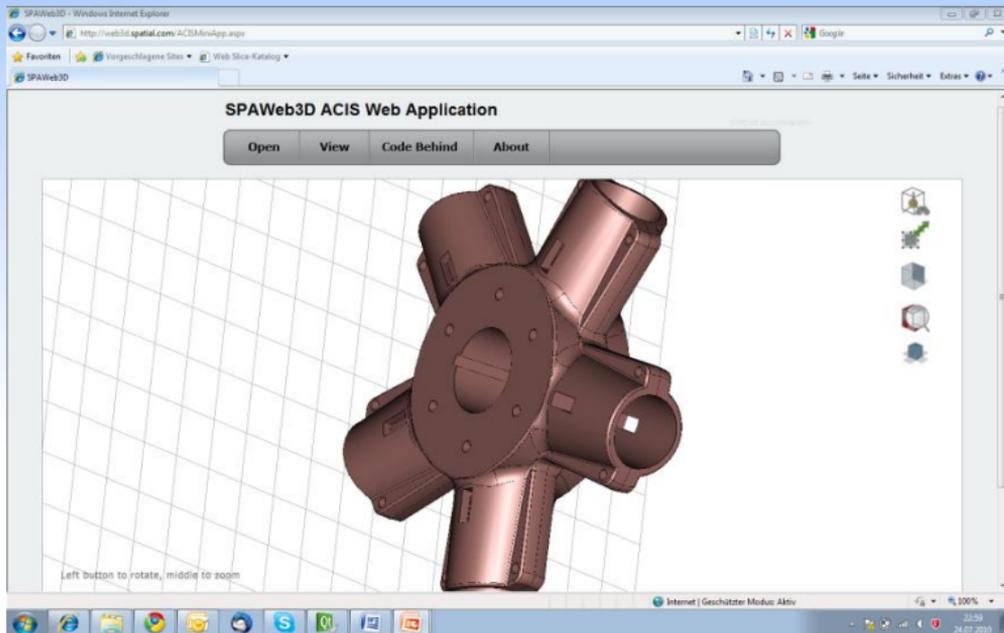
Siemens add on to WinCC

3D power facilities





Webinterface to ACIS Kernel



Technology:

The ACIS Kernel sends X3D models to the BS Contact client for visualization. The scene graph can be manipulated remotely.





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Municipality of Vienna Interactive Citymodel



Technology:
Complete cities can be visualized in realtime with BS Contact Geo on the Internet.



Perception:
Highly detailed appearance of the 3D city. High accuracy showing trees, building sites and fully textured houses.



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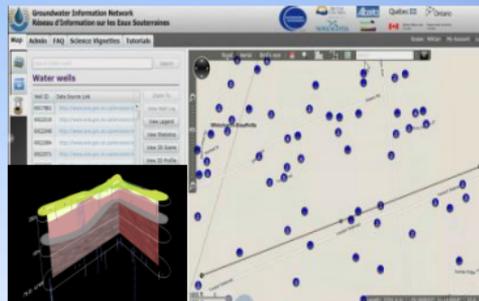
Selected Geospatial Applications



Exxon



BERTELSMANN

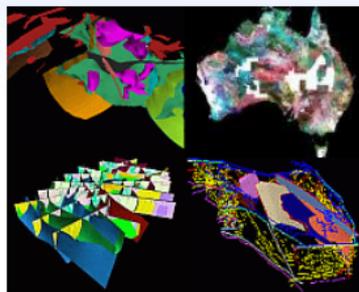


 Natural Resources Canada / Ressources naturelles Canada
Canada



Vorher Nachher

rnv
Stark im Nahverkehr Rhein-Neckar



 Australian Government
Geoscience Australia



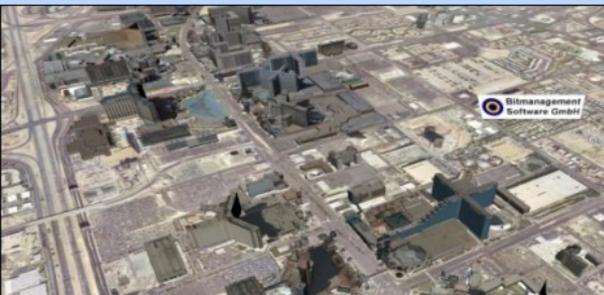
HHLA



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Interactive Cities on the web



Las Vegas
109.754 Triangles



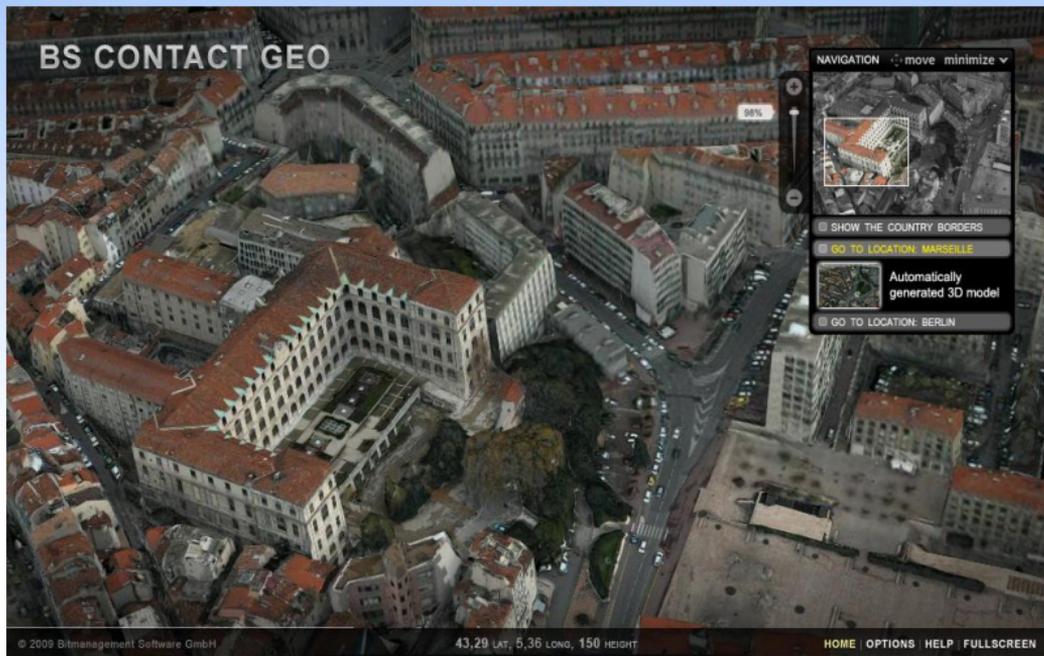
Stockholm
Ca 190.000 Triangles



Prague
19.947 Triangles



3D cities – realtime view



Technology:

Complete cities can be mapped in 3D automatically by flyover and visualized in realtime with BS Contact Geo on the Internet.

Perception:

Highly detailed appearance of the 3D city. High accuracy showing trees, building sites and fully textured houses.



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Bertelsmann – 3D Earth

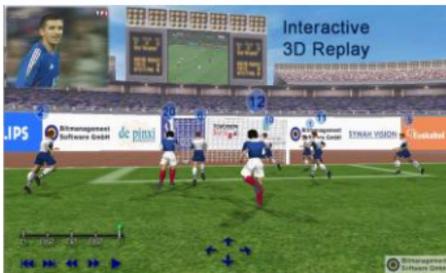
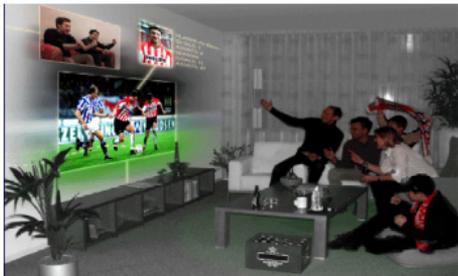


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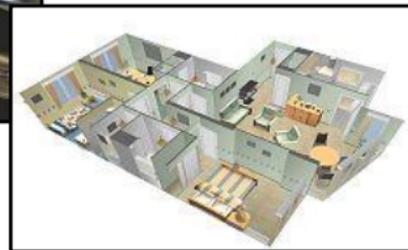
Interactive Soccer Game - HSV Soccer Arena





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Visualization Outdoors and Indoors

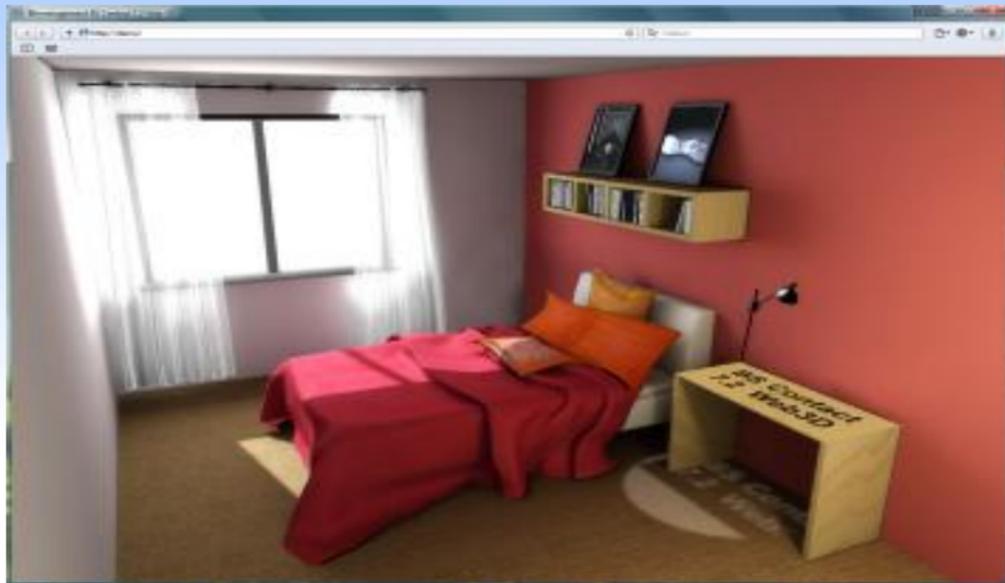


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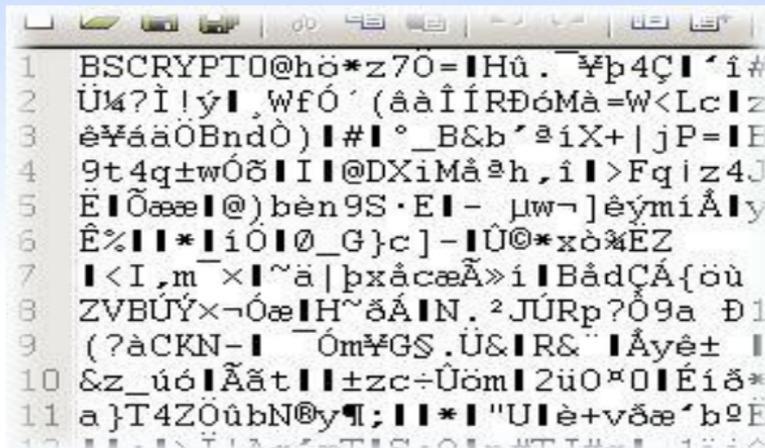
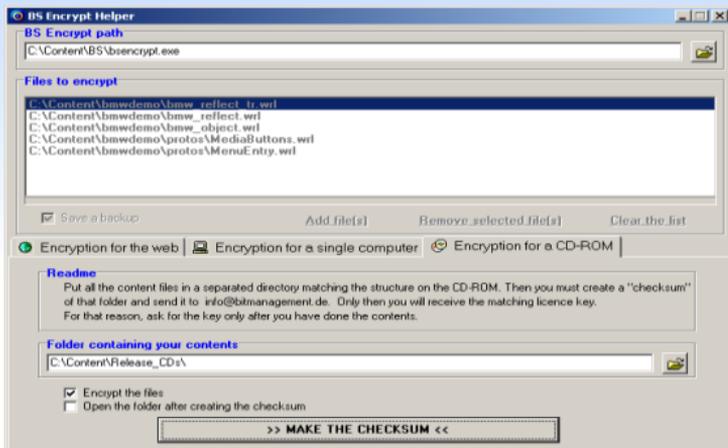
Interior visualization



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BS Encrypt – Content Encryption with strong security





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Rapid Environment Building



Technology:

3D environments can be constructed within hours semi-automatically from 2D Satellite Images.

Usage:

Missions can be rehearsed in multi-user sessions over the internet.



Comparison 3D PDF vs X3D

	3D PDF	X3D
CAD Viewer	Acrobat XI Pro	BS Contact
CAD Files	BREP and Tessellation	BREP, Spline and Tessellation
ISO Standard	Yes	Yes
Security	Encryption	Encryption
3D Measurements	Yes	Yes
3D Comments	Yes	Yes
Compression	Only zip grade.	X3D binary better
Web enabled	No. All Data needs to be local.	Yes. Data distributed on servers.
Interactivity	Only basic	Fully interactive
Platform support	Windows, iOS (?)	Windows, Linux, iOS, Android, Mac
Taylor made APPs	No	Yes
Multi-User	No	Yes with BS Collaborate Server

Bitmanagement's X3D Technology can do similar things as 3DPDF and much more.

Advantages:

Fully Interactive
Fully Web- Enabled
Cross-platform:

Windows, Mac
iOS, Android

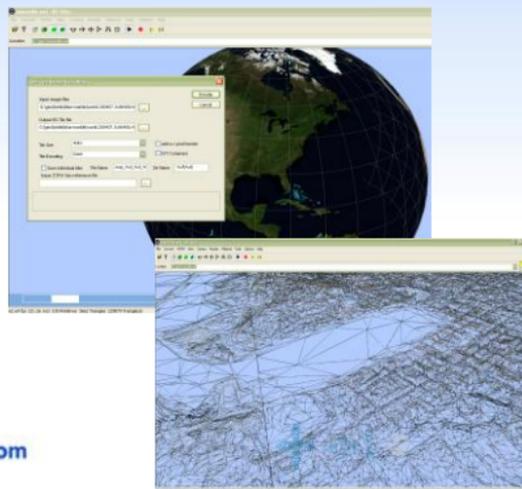
Cross-browser:
IE, Chrome, FF, SF



BS Tiler

Automated preparation of data

- Automatic tile building and optimization for fast rendering of data derived from point clouds, models and imagery
- Import of elevation grid data, grid textures and vectors
- Import of ESRI *.shp-files
- Triangulation and tile building
- Automatic level of detail (LOD) optimization
- Data reduction
- Tile edge optimization
- Output texture formats: JPEG, JPEG 2000, PNG, TGA and publish exemplar hybrid content



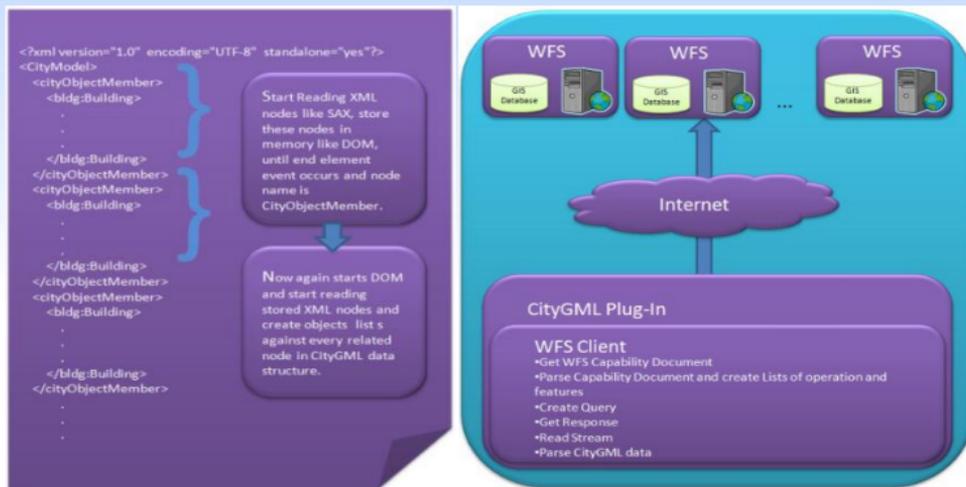


Reading native CityGML Streams - online and offline





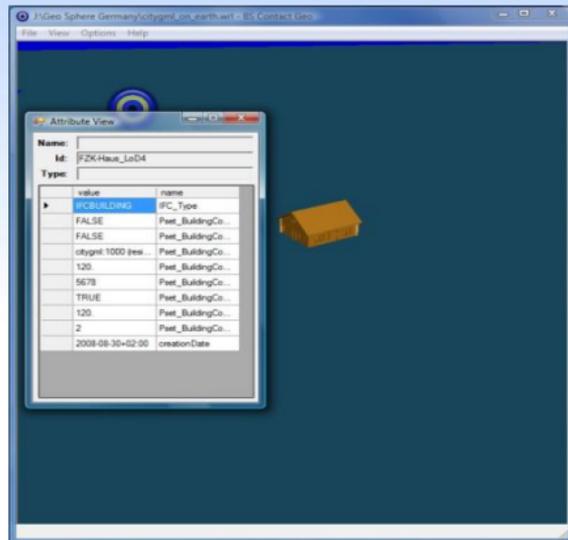
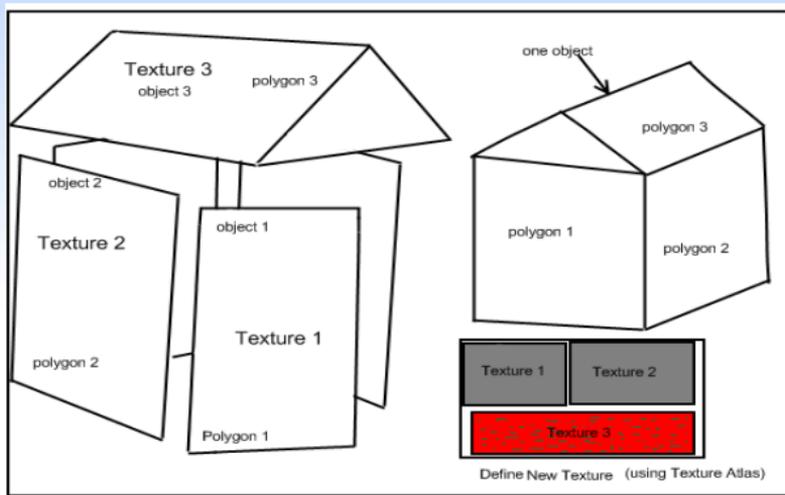
Parcing of large data, on the 3D earth.





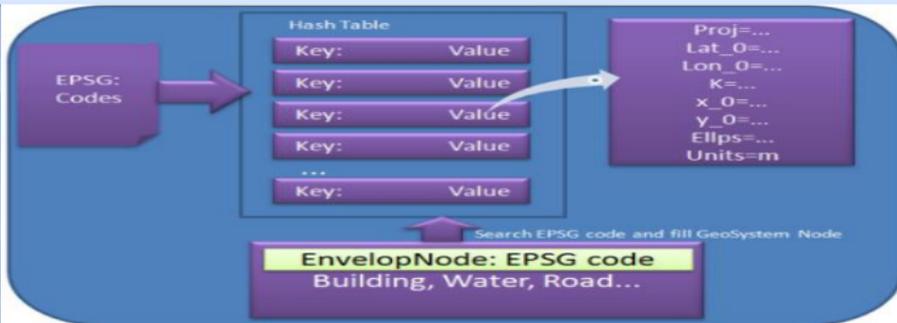
Fast Rendering Optimization

Combining Textures - keeping Metainformation





Automated coordinate Transform and positioning on 3D Globe using EPSG Codes





CityGML databases and X3D visualization go hand in hand





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BS Contact 3D Engine-
Your window to your data

Bitmanagement is uniquely **suited**
with existing **know-how** and **X3D software**
to elaborate a **central** and **holistic view** on **your 3D data**.

This makes the **life cycle** of your data,
with **actual** states, **planning** states and **alternatives**
interactive, web-enabled,
visible and **usable**.



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Bitmanagement 3D Software – Your 3D engine and tools

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