

Bentley and OGC

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OGC (Open Geospatial Consortium)

- A Consensus-based Standards Organization
- Creates and promotes standard specifications for sharing spatial information
 - Open Web Services (WMS, WFS, WCS,...)
 - Transport & store spatial data (GML, CityGML,...)
 - Spatial databases (Simple Features for SQL, WKB,...)
- Operates through Annual Open Web Services Interoperability Rapid Prototyping Testbeds

Bentley and OGC

- Bentley is “Principal level” member
- Actively participates in:
 - Architectural Board
 - 3DIM Working Group (formerly CAD/BIM/GIS)
 - GML Working Group
 - CityGML
 - Principal submitter of CityGML 1.0 RFC
 - Charter member of CityGML 1.1 SWG (Standard Working Group)
 - Simple Features for SQL
 - OWS-4 testbed and AECOO testbed
 - Expansion of the geometry types for Civil and Building

Bentley and OGC

- Actively supporting OGC standards in our products
 - Desktop
 - WMS client in MicroStation V8i and Geo Web Publisher V8i
 - GML Import/Export in Bentley Map V8i SS1
 - CityGML Import/Export in Bentley Map V8i SS2
 - WFS client planned for Bentley Map V8i SS2
 - Server
 - WMS/WFS server in Geo Web Publisher V8i

Bentley and OGC

Actively supporting OGC standards in our products

- some OGC standards are also ISO/TC 211 standards

Bentley product	OGC (ISO/TC 211)
MicroStation	WMS client (19128)
Bentley Map	GML import/export (19136)
	CityGML import/export
	KML export
	Soon WFS client (19142)
Geo Web Publisher	WMS client & server (19128)
	WFS server (19142)
	KML server
Geospatial Server	Linear Referencing (19148)

Web Map Service (WMS)

- For serving aerial photography and thematic maps on the Web as images
- The WMS server exposes his capabilities (layers, styles, coordinate systems)
- The WMS client makes a selection and requests a map

Demonstration

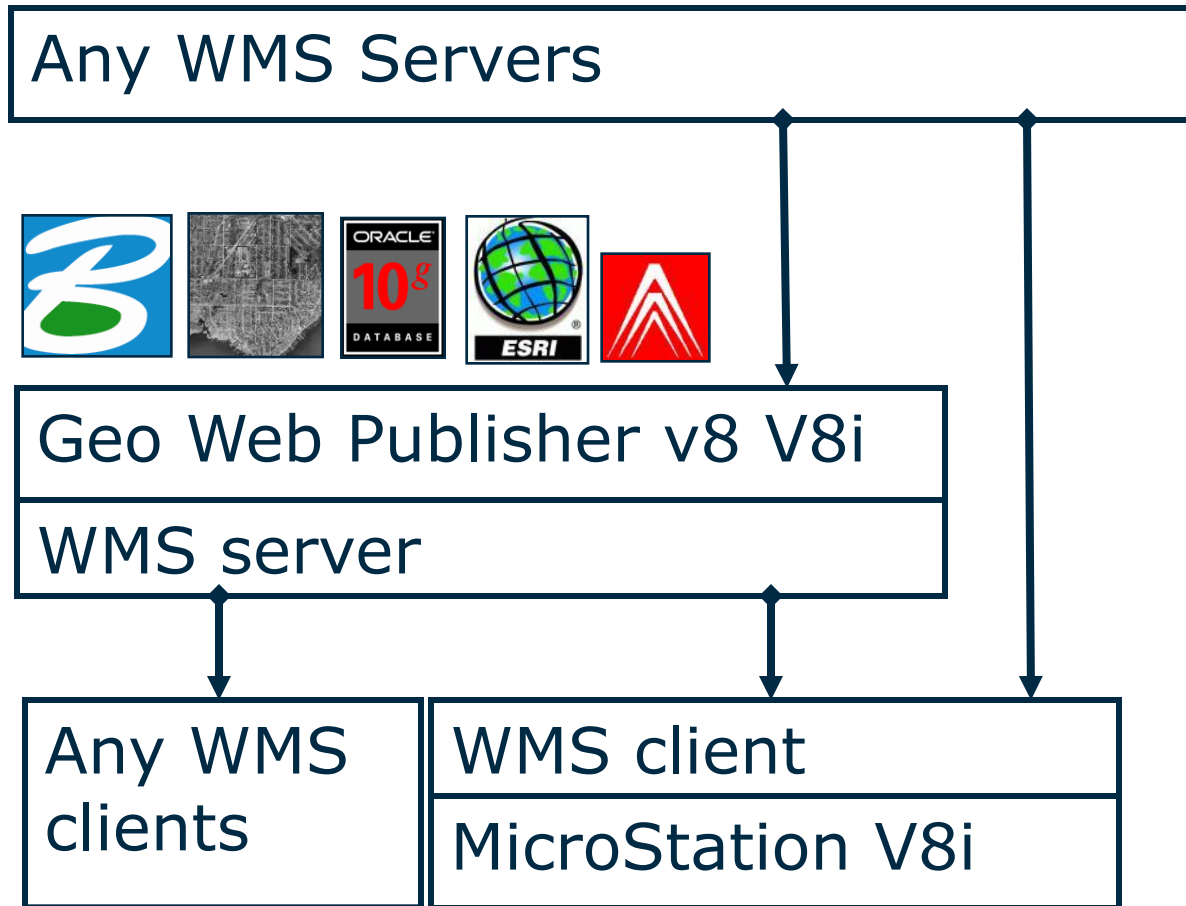
How to find WMS sites

- Many in Intranets (ask your admin for the URL)
- Few lists on public web sites
 - <http://wms-sites.com/>
 - <http://www.ogc-services.net/>
 - <http://www.mapdex.org/search/>
- Catalog specifications (CS/W)
 - <http://gos2.geodata.gov/wps/portal/gos>

WMS compliant software

- Over 170 software products implementing WMS
 - Bentley
 - Google Earth
 - ESRI
 - Autodesk
 - Intergraph
 - MapInfo
 - ...

WMS support at Bentley



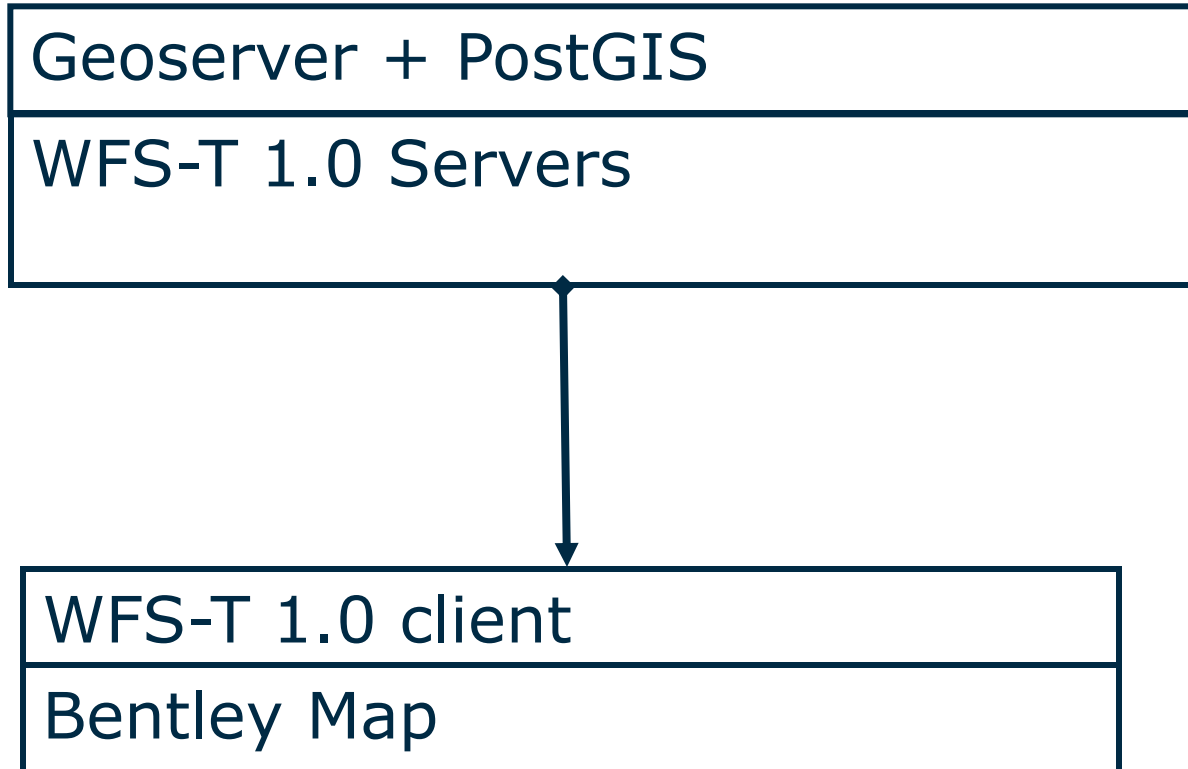
Web Feature Service (WFS)

- For serving/editing geospatial entities and their attributes on the Web as vector features
- Vector features are transmitted in GML
- Two levels of WFS support:
 - WFS-B (Basic): read-only
 - WFS-T (Transaction): for web editing

How to find WFS sites

- Mostly in Intranets
- Very few public sites, why?
 - GML 3.0 is relatively new, generic and very broad
 - The new GML Simple Features Profile should help in easing the adoption

WFS demo (prototype)



Demonstration

Geography Markup Language (GML)

- XML encoding for the transport and storage of geographic features, including the geometry and other properties ...
- Used as the standard in several countries
 - FGDC Framework Data Content Standard (USA)
 - OS Master Map (UK)
 - TOP10NL (NL)
 - KuntaGML (Finland)
 - TransXML
 - Danish FOT
 - And many more...

Bentley Map and FME Integration

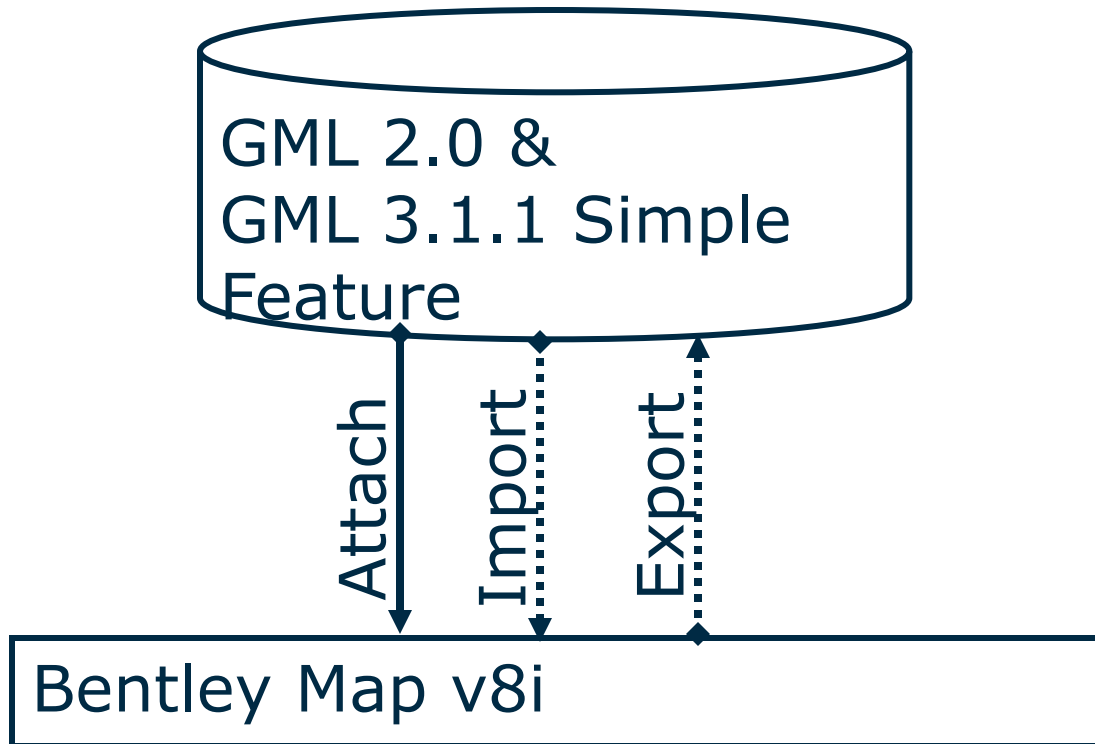
- A tool to connect directly to the Safe Software FME Desktop
- Requires FME license on the desktop
- Supports FME V9
- Available early next year as part of a maintenance release

Benefits of the Bentley/FME Integration

- Brings the power of the industry standard Geospatial ETL tool (FME) to Bentley users
- Gives Bentley users access to more than 225 formats
- Ensure excellent interoperability between Bentley GIS data and other GIS
- Allows early adoption of 3D GIS formats (e.g.: City GML)

Demonstration

GML support at Bentley

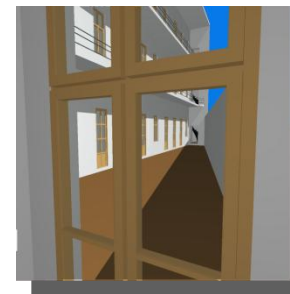
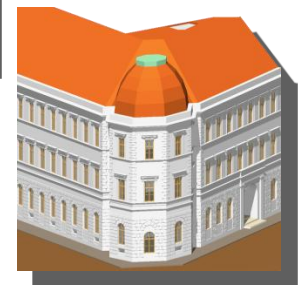
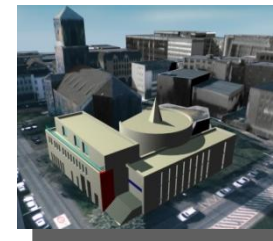
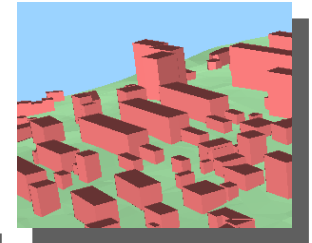


CityGML

- A specification for 3D Cities features
- Provides a rich semantic framework for representing building, terrain and other urban features and their relationships
- Not intended as a medium for Engineering
- Compatible with standard Web Feature Services

Multi-scale modelling: 5 level of details

- LOD 0 – Regional model
 - 2.5D Digital Terrain Model
- LOD 1 – City / Site model
 - “block model” w/o roof structures
- LOD 2 – City / Site model
 - textured, differentiated roof structures
- LOD 3 – City / Site model
 - detailed architecture model
- LOD 4 – Interior model



Demonstration

KML (Google Earth)

- Now an OGC standard
- MicroStation V8i can:
 - Register a design to the Google Earth coordinate system
 - Export a design to KML/KMZ



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46°45'12.01" N 71°18'28.52" W elev 53 m

© 2009 Google

Eye alt 2.29 km

Future plans

- Actively participate in 3DIM Working Group
- Experiment in future testbeds
- Add support for other specifications
 - Catalog services
 - GMLJP2
 - Web Coverage Service
 - Web Map Context
 - Sensors
 - Linear Referencing
- We welcome your requests to help prioritize

And don't forget...

- De facto GIS Standards
 - SHP
 - MapInfo MID/MIF
 - MapInfo TAB
 - ODBC, CSV
 - Oracle Spatial
- CAD Interoperability
 - DWG, DXF
 - Sketchup
 - Various other 3D data types

Questions

