What's New and What's Coming in Bentley Map

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What's New in Bentley Map SELECT Series 3

Bentley Map V8*i* (SELECTseries 3) At-a-Glance

- Spatial Database and Web Services Enhancements
  - SQL Server Support
  - Direct Database Access
  - Spatial Data Streaming
  - WFS support

- Engineering
  - Scalable Terrain Model (Map Enterprise)
  - Advanced Point Cloud tools (Map Enterprise)
  - MicroStation Terrain Model support
  - Survey and Terrain support (Tech preview)

- Coordinate systems
  - Custom Datum/Ellipsoid Definition
  - Coordinate read-out in any alternate coordinate system

- Mapping
  - Redesign of Grid Generation tool, better integration with Print Preparation
  - Export Bentley Map Manager thematic to DGN

- 3D GIS Enhancements
  - 3D Geometry clean-up (MicroStation)
  - Solar Analysis (MicroStation)
  - CityGML Application Template

- Feature Engine Performance Enhancements
  - New more efficient polygon type
  - Better memory management
  - Streamlined relationships support

- More API (including Direct Database Access)

Bentley Map

Direct Database Access API

Faster XFM Feature engine API

Spatial Data Streaming API

Bentley Map Enterprise- Standalone

Bentley Map PowerView and Bentley Map Functionality	Edit Oracle Spatial - Long Transaction/Time	View Oracle GeoRaster	Transform/ Edit Rasters	View Raster DEM
	3D Modeling	3D Analysis/ Make Decisions	3D Texturing	Advanced CAD tools
Advanced Point Cloud Processing	3D Geometry Clean-Up	Scalable Terrain Model	Solar/Shadows Analysis	

Bentley Map- Standalone or For MicroStation

Bentley Map PowerView Functionality	Edit Oracle Spatial - Short transaction	2D Analysis/ Make Decisions	Advanced Interoperability	
Export Thematic Map Symbology	Advanced Map Finishing	Cadastral Mapping Configuration	CAD tools	Edit SQL Server Spatial - Short transaction

Bentley Map PowerView- Running Standalone

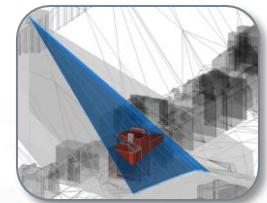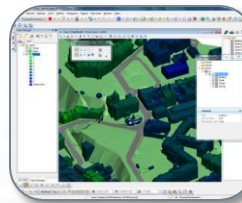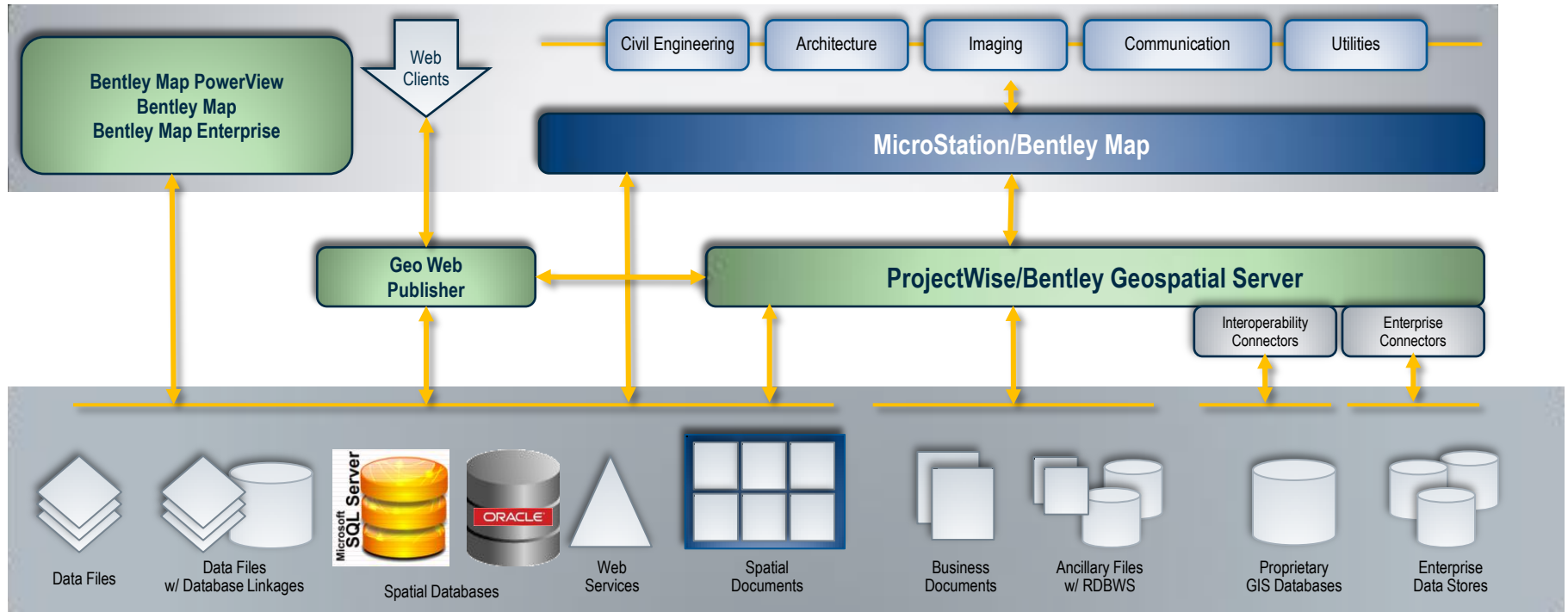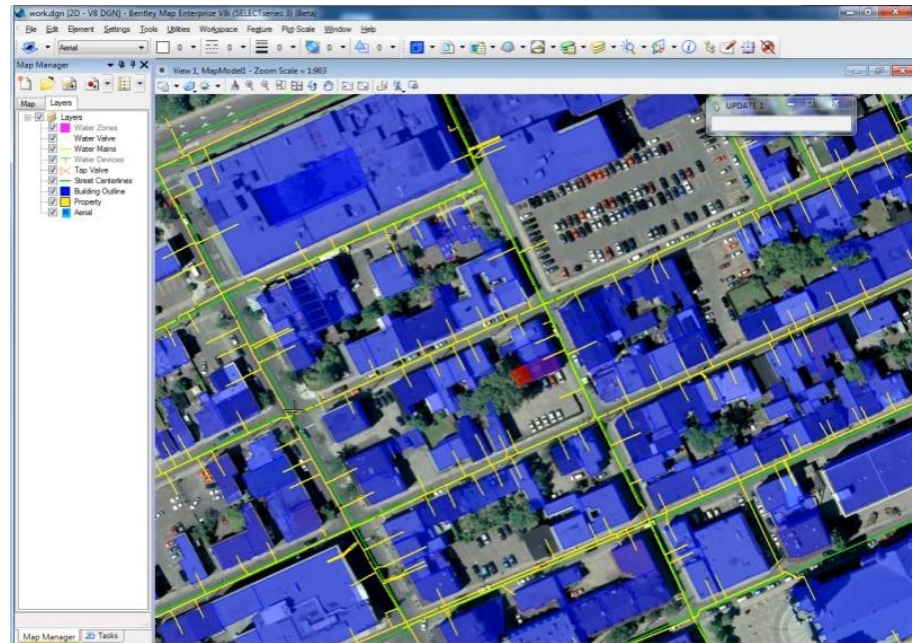|				
Mark-up/View/ Edit DGN/XFM	Create Maps/Reports	View Oracle Spatial	Feature Modeling	View SQL Server Spatial
Assemble/ Integrate	View Rasters	Basic CAD tools	GPS	View WMS/WFS
Point Cloud Viewing				

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Architecture

Bentley Map PowerView
Bentley Map
Bentley Map Enterprise

Web Clients

Civil Engineering | Architecture | Imaging | Communication | Utilities

MicroStation/Bentley Map

Geo Web Publisher

ProjectWise/Bentley Geospatial Server

Interoperability Connectors | Enterprise Connectors

Data Files

Data Files w/ Database Linkages

Spatial Databases

Web Services

Spatial Documents

Business Documents

Ancillary Files w/ RDBWS

Proprietary GIS Databases

Enterprise Data Stores

Spatial Data Streaming – SQL Server Spatial

- Connect directly to SQL Server Spatial

- Query, modify and post features

- Standard SQL Server spatial data. No required tables or columns
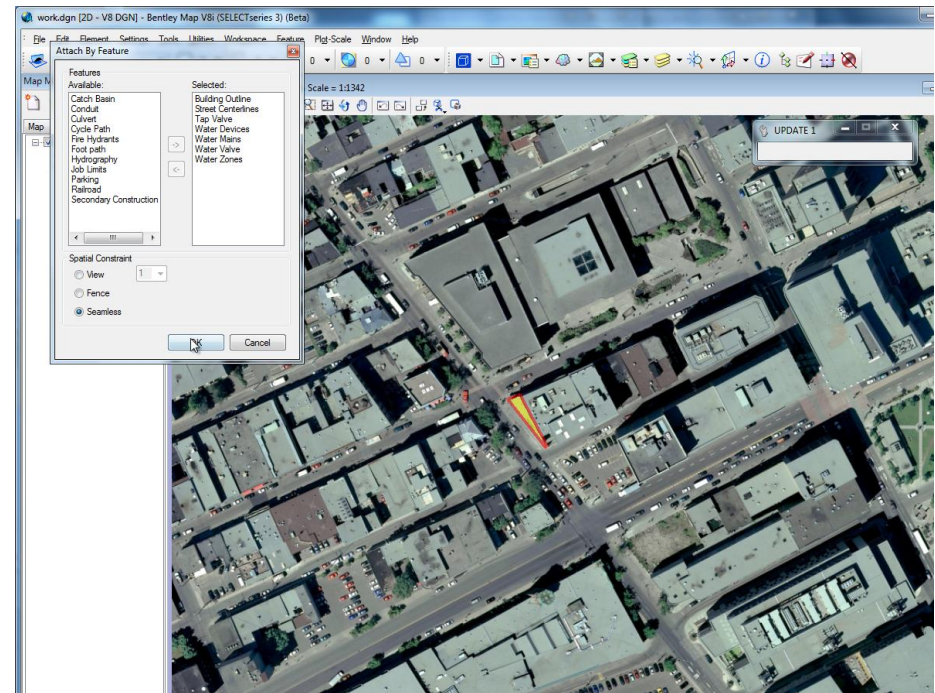
- Seamless access to spatial data at display time

Benefits – Spatial Data Streaming SQL Server Spatial

- Supports standard SQL Server Spatial features

- Spatial support for Microsoft standard environments

- Simpler and more intuitive end user experience
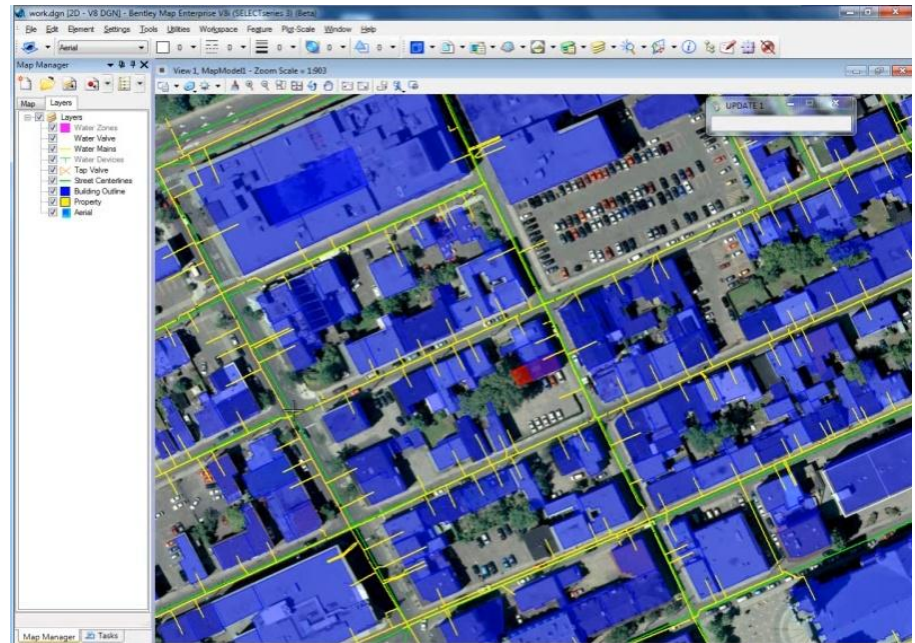
Demo – SQL Server Spatial Spatial Data Streaming

- Query SQL Server Spatial

- Locate features from Data Browser

- Attach features seamlessly
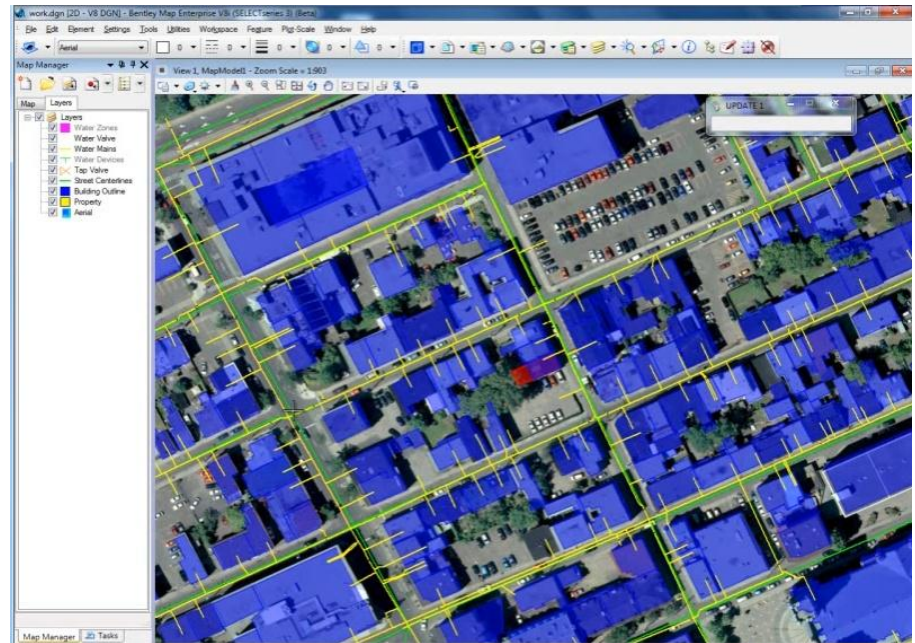
- Pan and zoom seamlessly
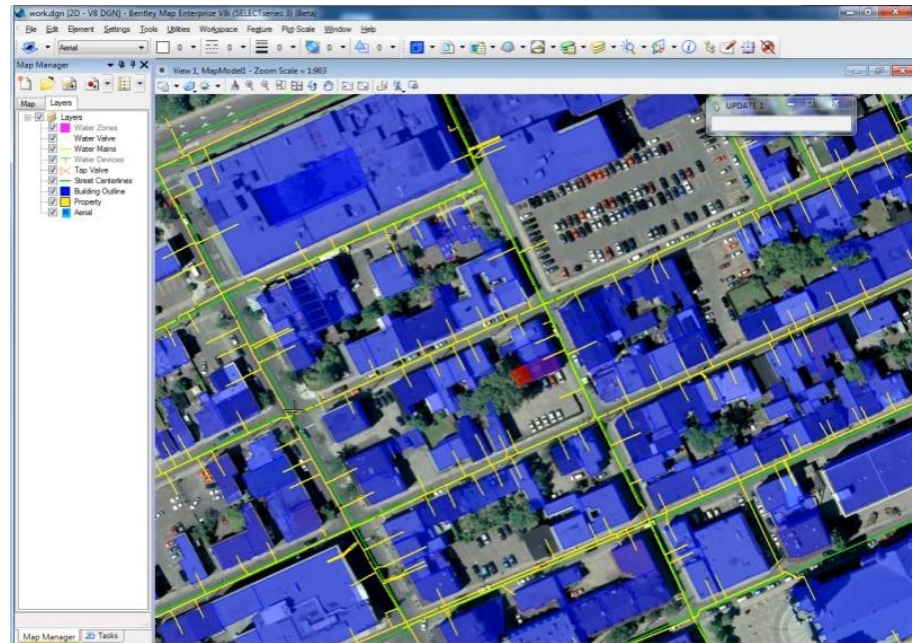

Data provided by Quebec City

Demo

Spatial Data Streaming – Oracle Spatial

- Connect directly to Oracle Spatial

- Query, modify and post features

- Standard Oracle Spatial data. No required tables or columns

- Seamless access to spatial data at display time

Spatial Data Streaming – Oracle Spatial

- Supports standard Oracle Spatial features

- Spatial support for Oracle standard environments

- Simpler and more intuitive end user experience

Direct Large Database Access

- Query millions of rows quickly to Data Browser

- Sort and filter records at database speeds

- Minimal memory required for very large databases

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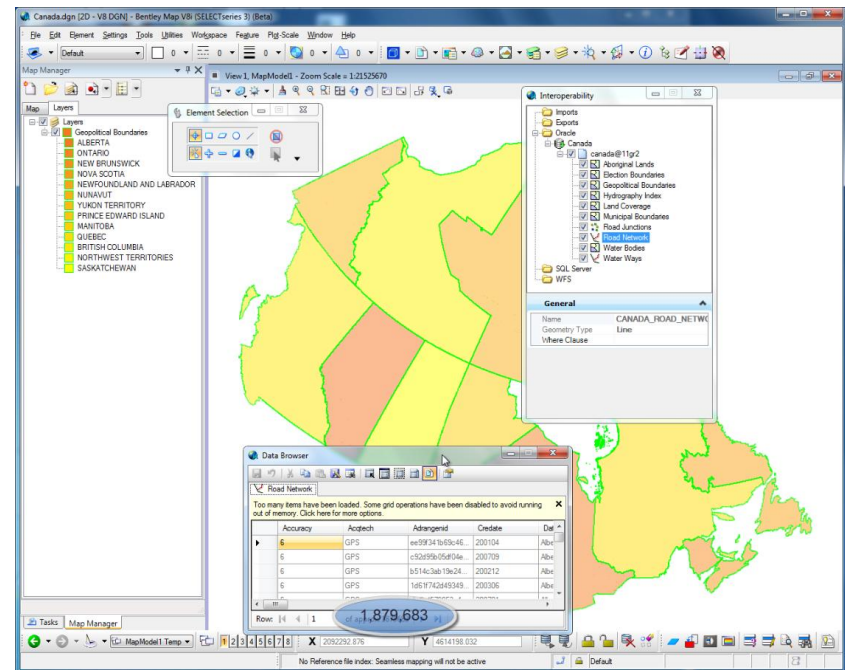
Benefits – Direct Database Access

- Fast operation with very large databases

- Save time by not creating smaller project databases

- Reduce local machine memory requirements

- Reduce network traffic by sending only the data being viewed to the workstation
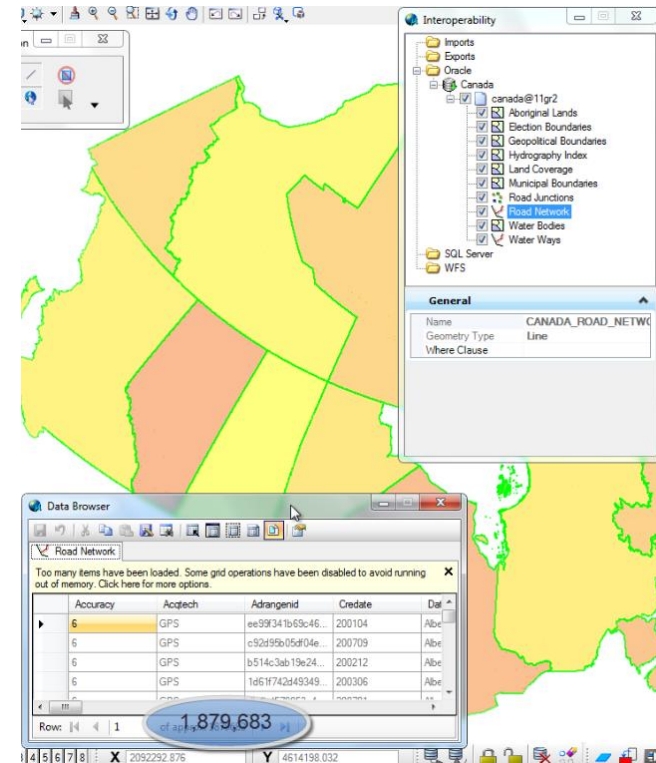
Demo – Direct Database Access

- Query Canadian road network database; almost 1.9 million rows

- Sort records

- Locate single and then multiple rows and locate in Bentley Map
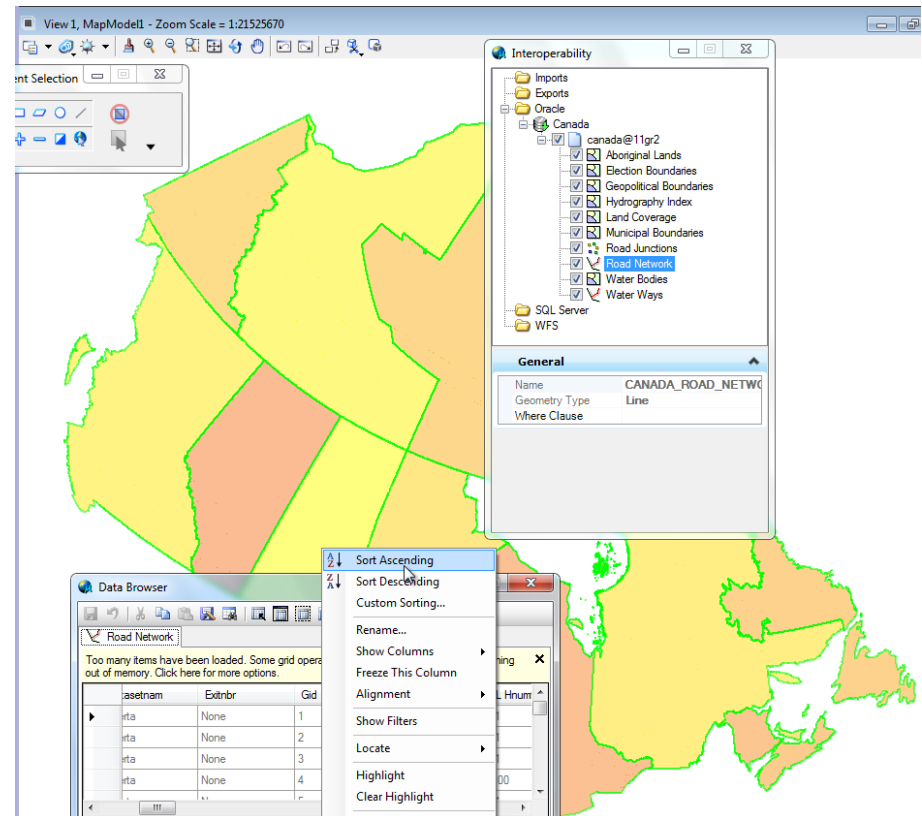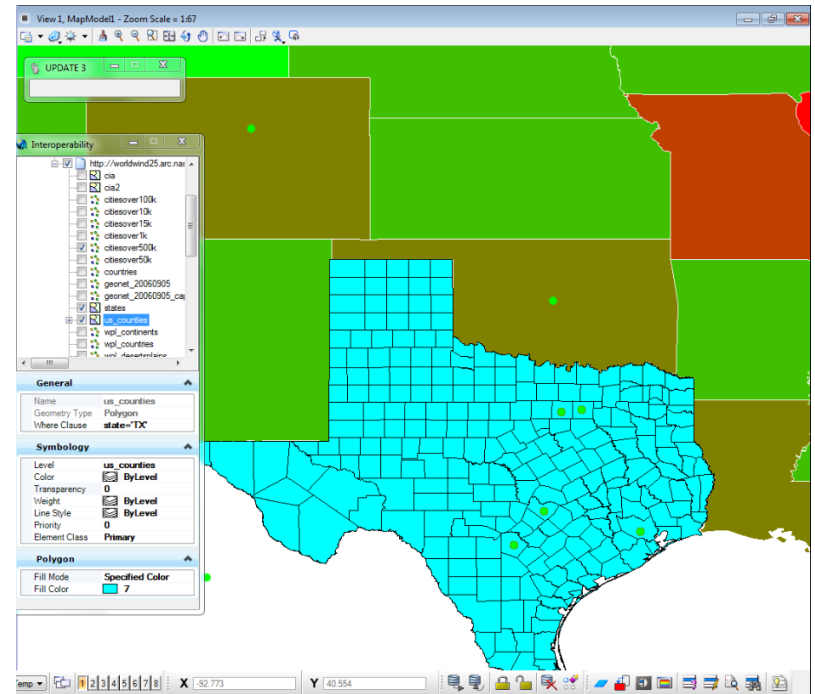

Demo

Web Feature Service

- Access WFS sources through Internet

- All Bentley Map query and symbology options supported

- WFS features behave as any Bentley Map feature
  - Annotate
  - Thematic
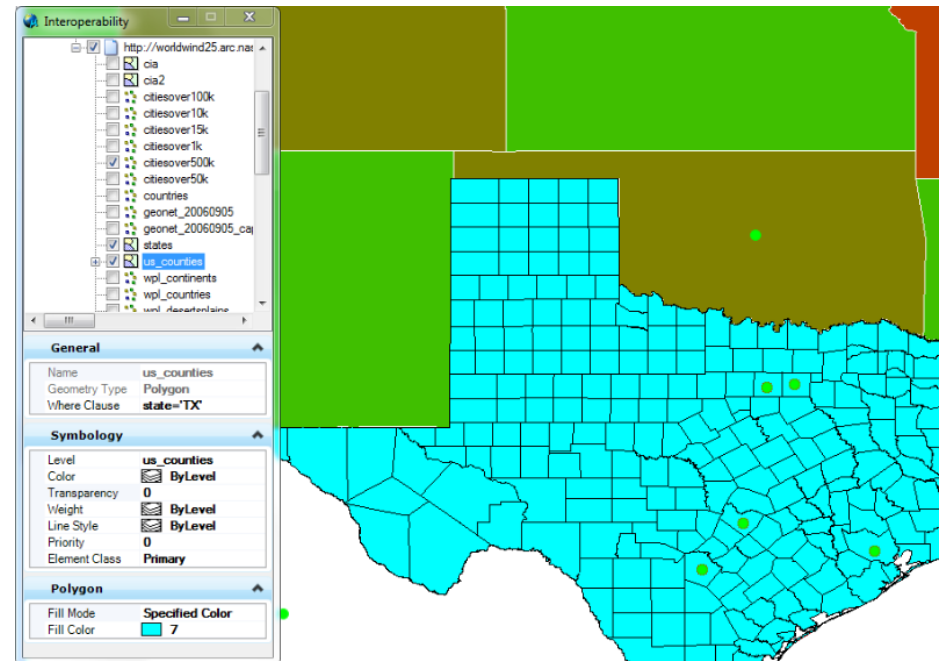 - Analyze
  - Query
  - Report
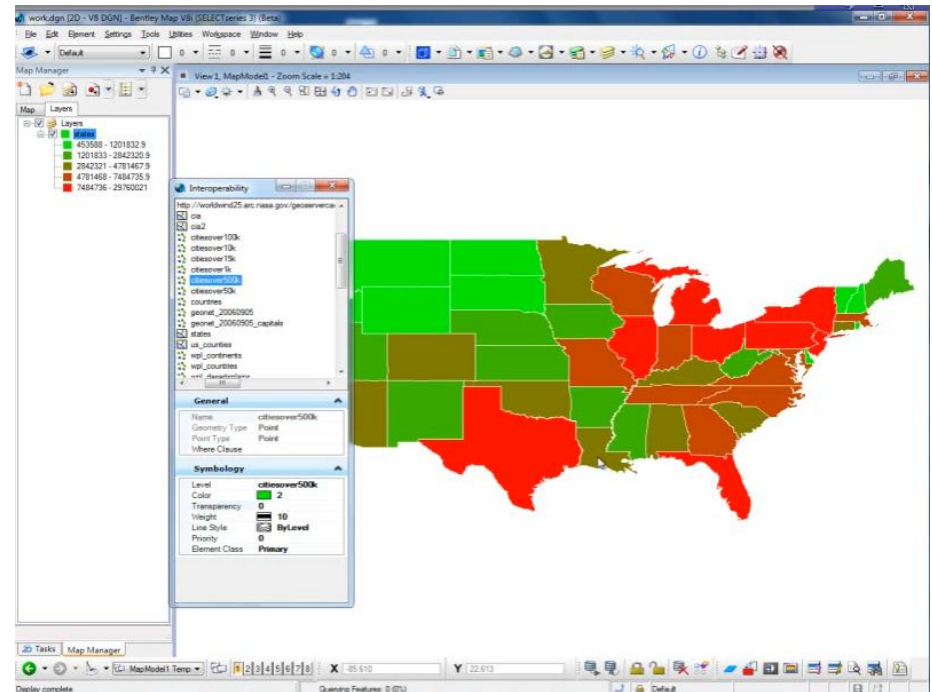
Benefits – Web Feature Services

- Take advantage of public WFS data

- Industry standard tool for spatial data access

- Enhances interoperability in multi-vendor installations

Demo – Web Feature Service

- Query WFS server from NASA World Wind

- Create thematic map on features

- Review feature properties

- Query features with attribute constraint

Data provided by NASA World Wind

Demo

Export Bentley Map Data to DGN

- Allows to export data from inside the Map Manager using the currently defined symbology

- Creates standard DGN elements (no attributes)

- Elements can be used in any CAD based workflows as the Bentley Map features are decomposed into their constituent base elements
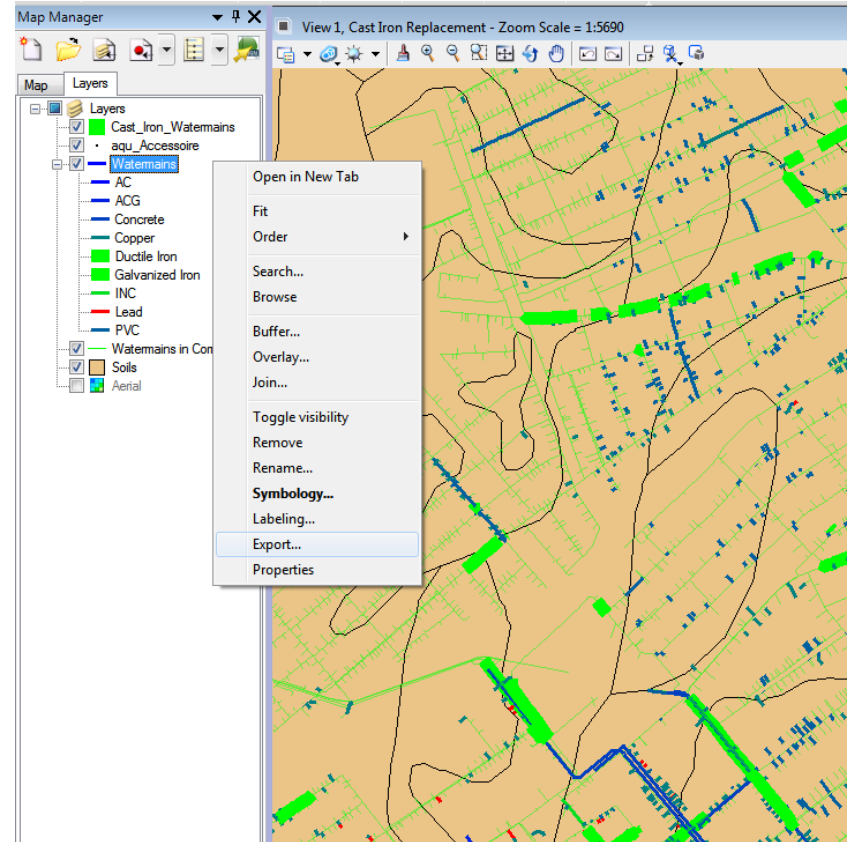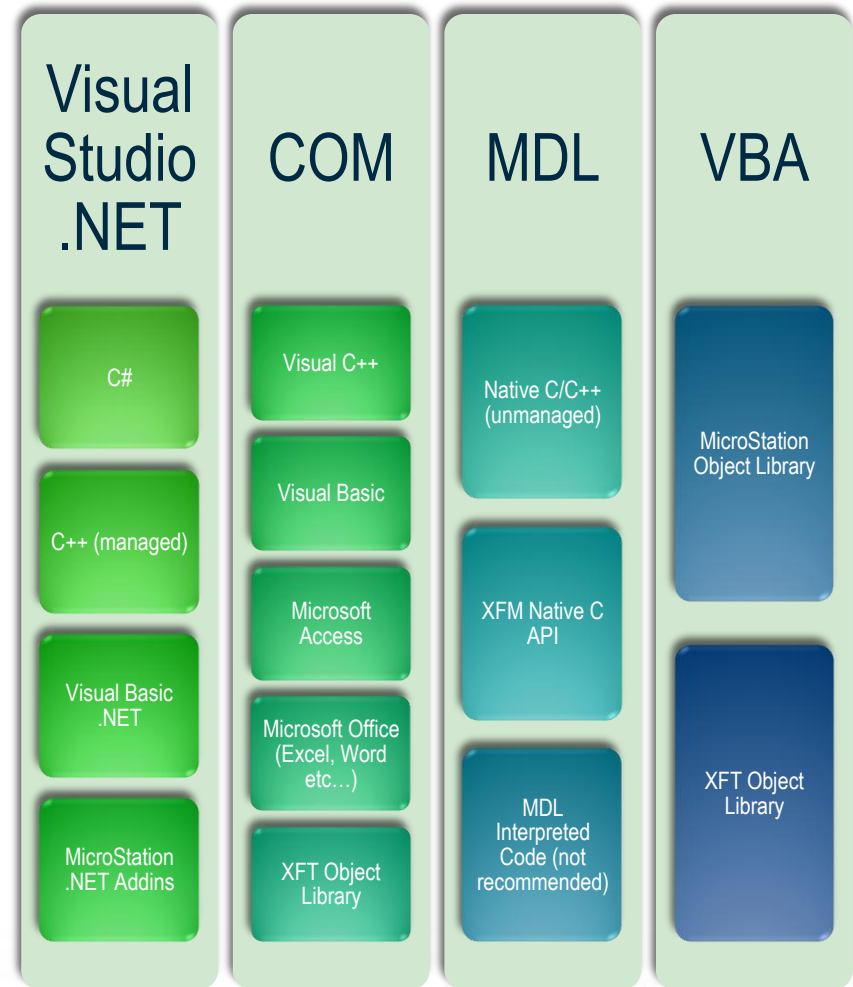
Improved Grid Generation Tool

- Automatically create grids and graticules using Wizard

- Combine multiple grids and graticules in the same instance

- Alternate coordinate system supported

- Grid automatically updated based on changes to grid definition
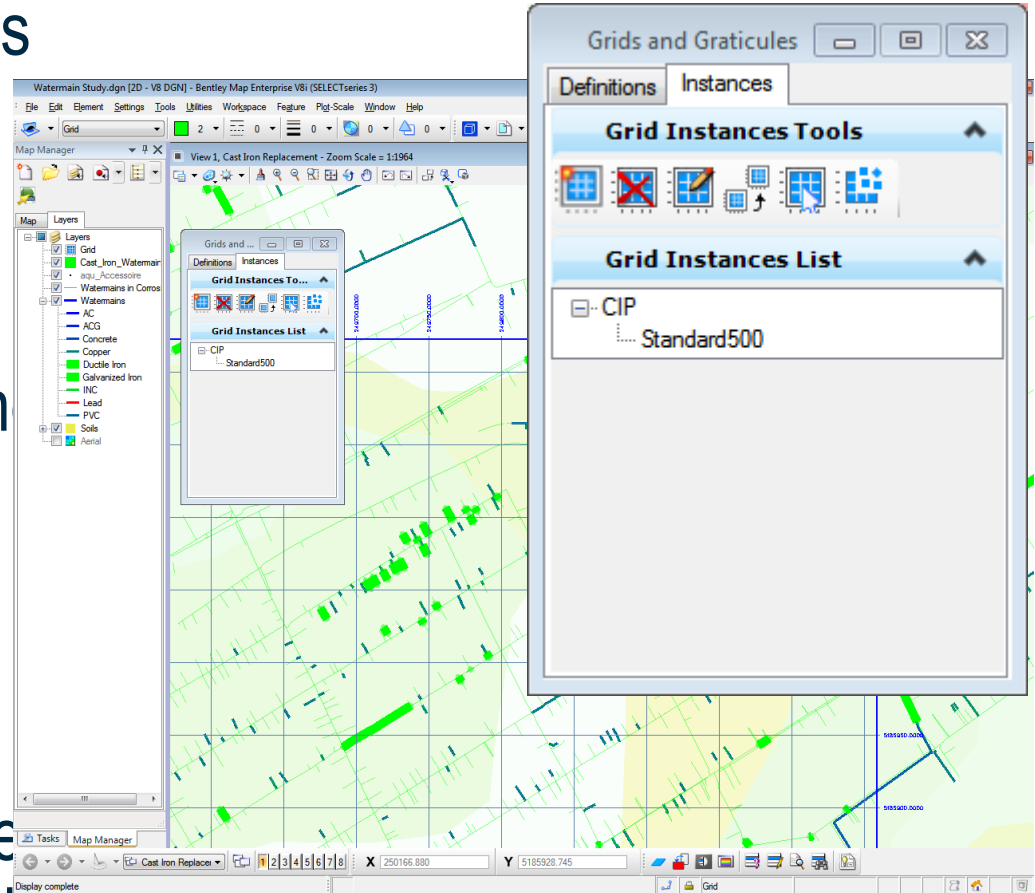
API

- New APIs to support new functionality

- Provide better integration between MicroStation and Bentley Map models

Visual Studio .NET	COM	MDL	VBA
C#	Visual C++	Native C/C++ (unmanaged)	MicroStation Object Library
C++ (managed)	Visual Basic	XFM Native C API	
Visual Basic .NET	Microsoft Access		
	Microsoft Office (Excel, Word etc…)	MDL Interpreted Code (not recommended)	XFT Object Library
MicroStation .NET Addins	XFT Object Library		

Solar Analysis

- Calculates total solar exposure over a user defined time period

- Takes weather patterns into account

- Specify different solar intensity to take atmospheric conditions into account

- Produces shadow elements that can be used for further analysis or intersection with proposed building models

Solar: Exposure

0.00 Hours
1.50 Hours
3.00 Hours
4.50 Hours
5.99 Hours
7.49 Hours
8.99 Hours
10.49 Hours
11.99 Hours
13.48 Hours
14.98 Hours
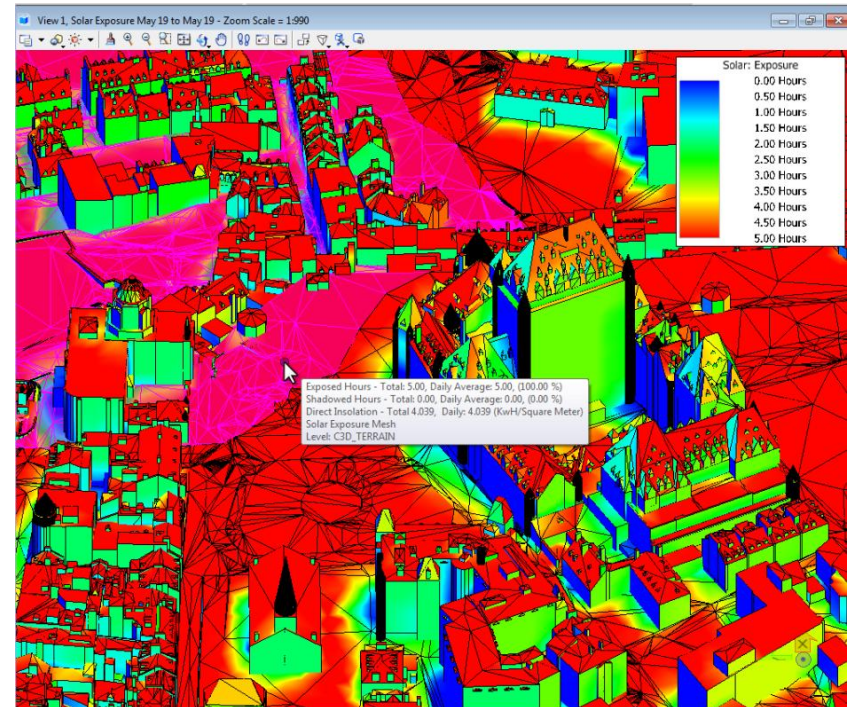
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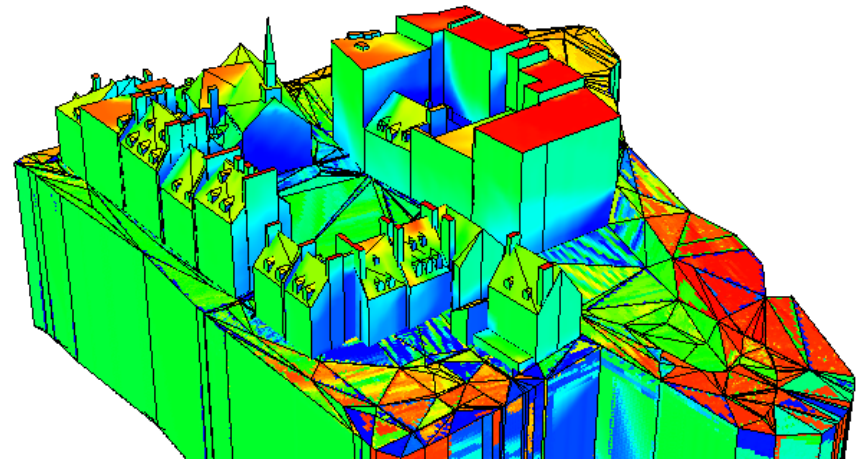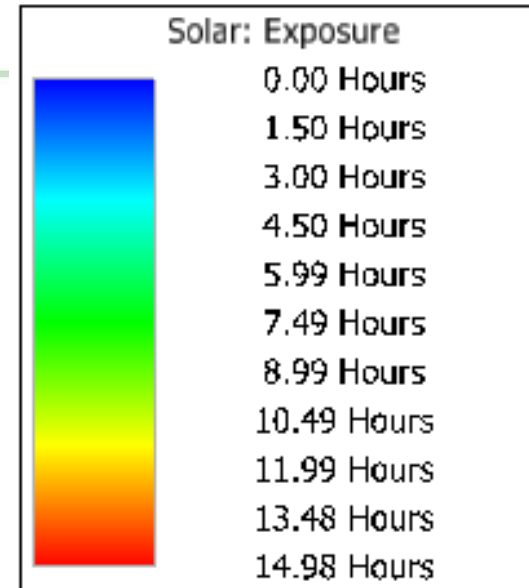
Benefits – Solar Analysis

- Calculate total solar exposure to help locate solar panels

- Solar exposure provides a better indicator of sun on public lands than simple time-of-day shadow studies

- Shadow objects show precise shadow areas and, optionally, the color of the shading object to easily assess the effect of new development on the surrounding area
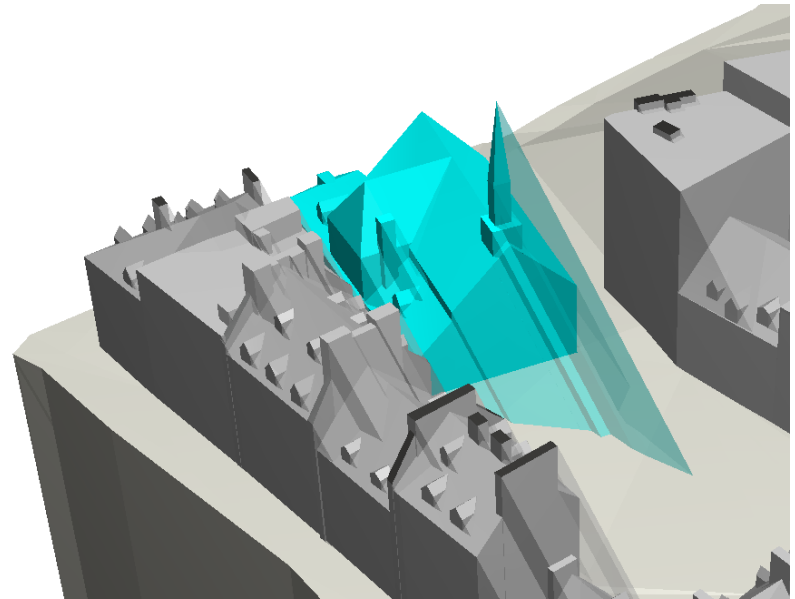
Demo – Solar Analysis

- Calculate total solar exposure

- Visualize exposure on 3D model

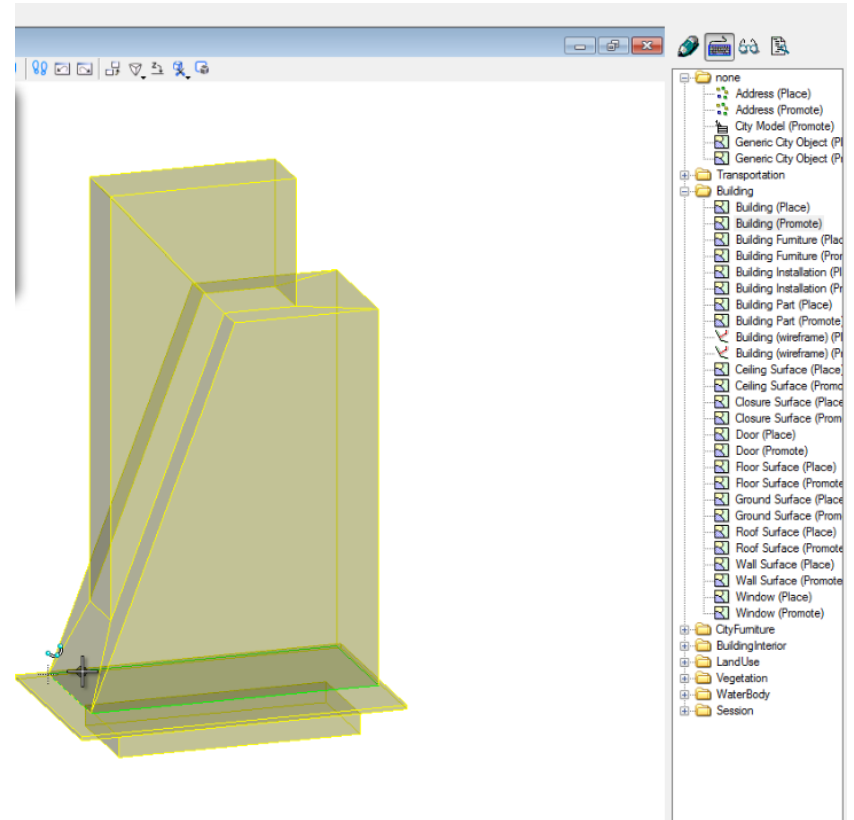- Calculate shadows as volume elements

Data provided by Quebec City

Demo

CityGML Application Template

- Bentley Map XFM model based on CityGML data model

- Supports all CityGML features

- Includes placement and promote tools

Benefits – CityGML Application Template

- Create CityGML models from existing 3D models using Promote tools

- Placement methods to create certain components directly

- Standard Bentley Map format means interoperability with supported GIS data types

- Support from FME for many other formats
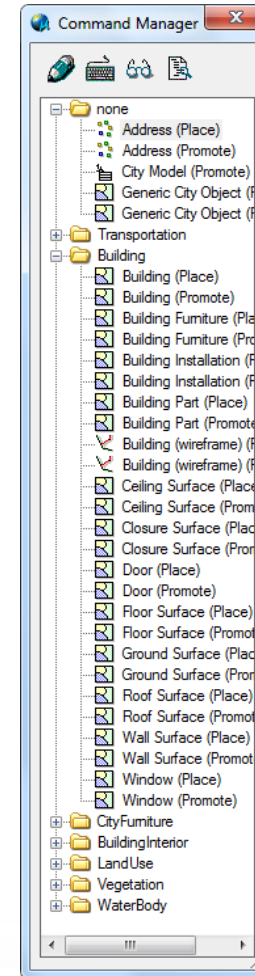
Scalable Terrain Model (STM)

- ## High-performance display of digital terrain models (DTMs)
    - very large areas
    - billions of points

- ## View huge DTMs at geospatial scale
    - City, Region, State, Country

- ## Potential users
    - Municipal, States, Federal agency and government
    - EPC working in GIS
    - Large infrastructure project
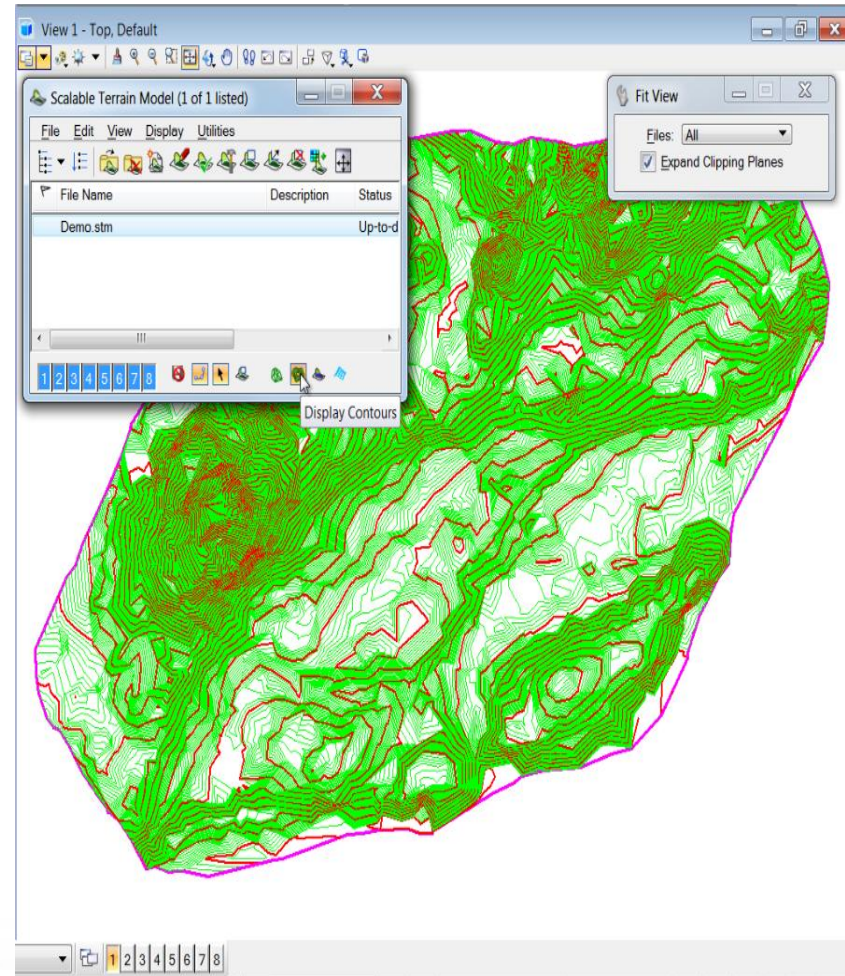
Benefits – Scalable Terrain Model

- Use city and region scale DTM, no requirement to extract project size DTM

- Full access to every point

- New workflows possible with large scale DTMs

- High resolution image draping for high quality visualization

- Easy synchronization with original terrain sources
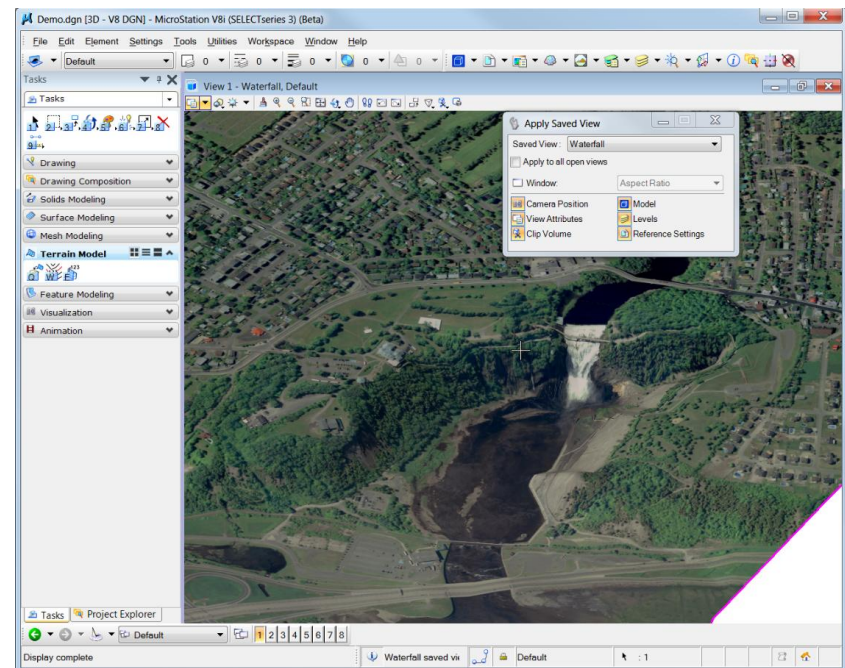
Demo – Scalable Terrain Model and High-Resolution draping

- Scalable Terrain Model display

- Triangle and contour display

- High-resolution draping
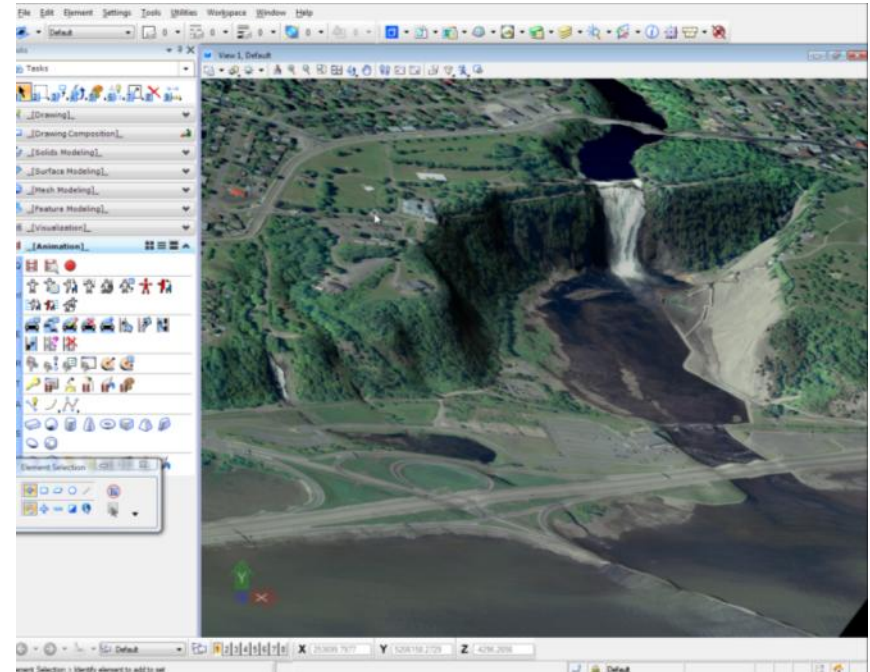
Data provided by Quebec City and Images provided by Aero-Photo (1961) Inc, Quebec, Canada

Demo

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Bentley Map – Survey and DTM tools

- Technology preview

- Survey Capabilities
  - Survey measurement import capabilities
  - Measurement processing capabilities : from observations to accurate/optimized features
  - Survey adjustment (least square)
  - Powerful real time editing and quality control capabilities

- Terrain Capabilities
  - Creation tools from multiple sources
  - Analysis tools (e.g.: volume, pond)

- Promote survey features to Bentley Map XFM features

Demo

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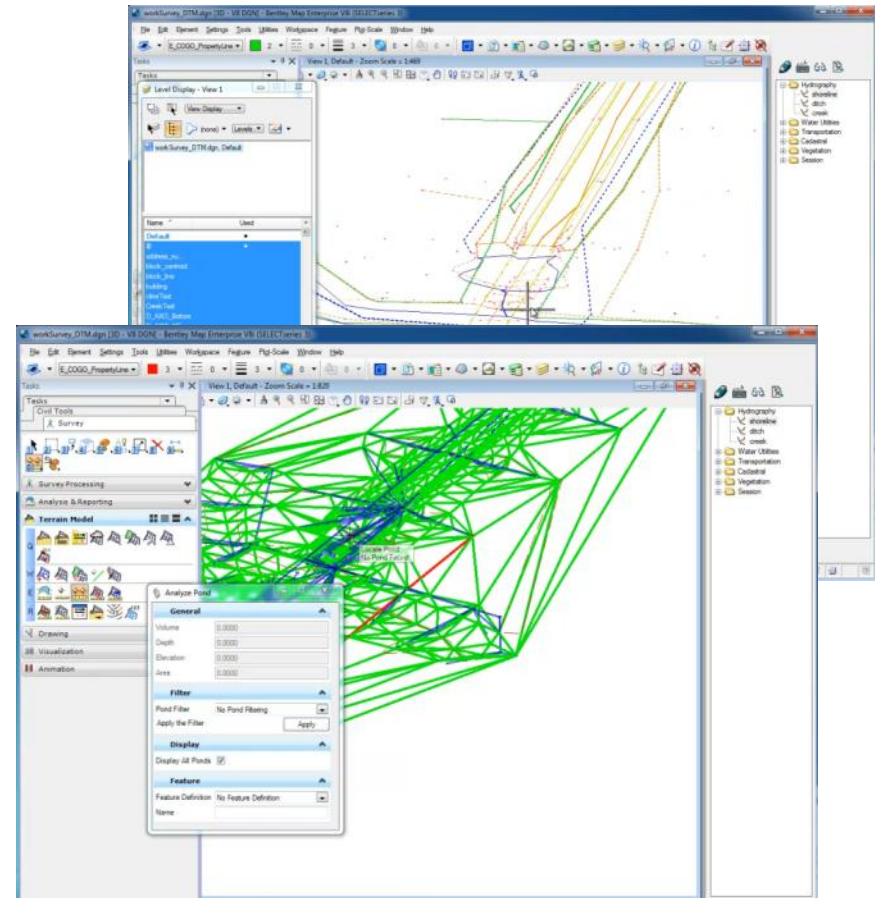
What's coming in Bentley Map SELECT Series 4

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Bentley Map V8i (SELECTseries 4)

- Mapping
  - Cartographic Representation
    - Complex line symbols with intersection management
    - Bridge symbology
  - Support Dynamic Criteria/Scale Based Map Visualization
  - Create Map model in any model
  - Set display scale per view

- Interoperability
  - Esri File based Geodatabase support
  - CityGML - Support material / textures on import/export with FME

- Engineering
  - Survey data import, adjustment, surface creation
  - Many improvements for Map Enterprise from Descartes

- Oracle Spatial Improvements
  - Support for Oracle Spatial Textures
  - Support Non-Top View Queries of 3D Data
  - Oracle 12c - Support B-Spline Curves and Non-Circular Arcs
  - Support Composite (multiple columns) Primary Key
  - Support Views As Sub-Features

- API
  - Custom symbology callbacks – new symbology event system allows application to provide symbology
  - Application owned business properties

- Availability: Q4 - 2013

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Cartographic Thematic Representation

- Enhance the Map Manager to support Cartographic Representation

- Complex line symbols
  - Easily define complex line symbology (multiple lines, etc.)

- Intersection management
  - Define the look and feel of linear feature intersections at the symbol level for a given thematic class

- Bridge symbology
  - Change the thematic representation of a bridge line to make it cartographically appealing

Benefits – Bentley Map Cartographic Thematic Representation

- Create complex thematic maps without altering the simpler geospatial representation

- Works with any spatial database types as the cartographic representation is saved in the DGN

- Line and bridge definitions can be easily shared through DGN Libraries

- Display control at the sub feature level
  - On/off or with criteria and scale
  - Comms example – show linear features but no annotations until a certain scale. At a selected scale show only selected annotations
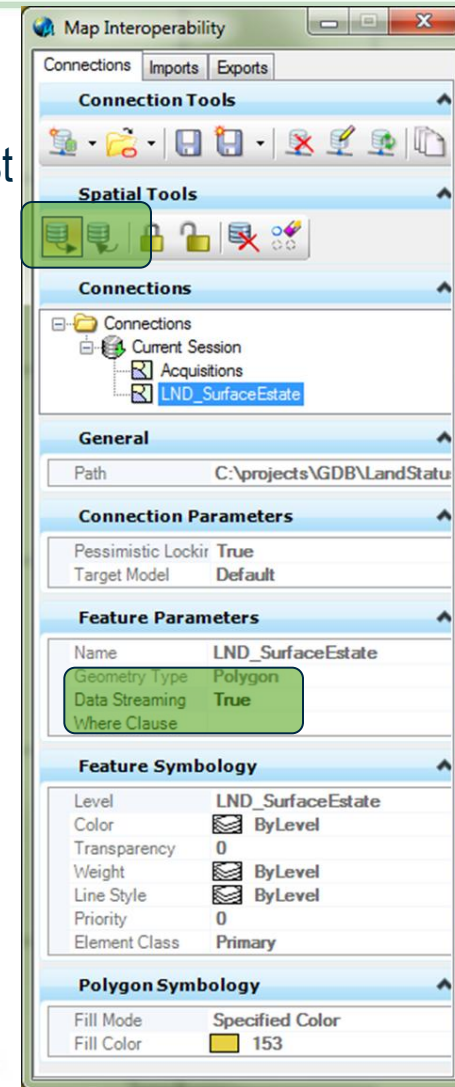
Demo

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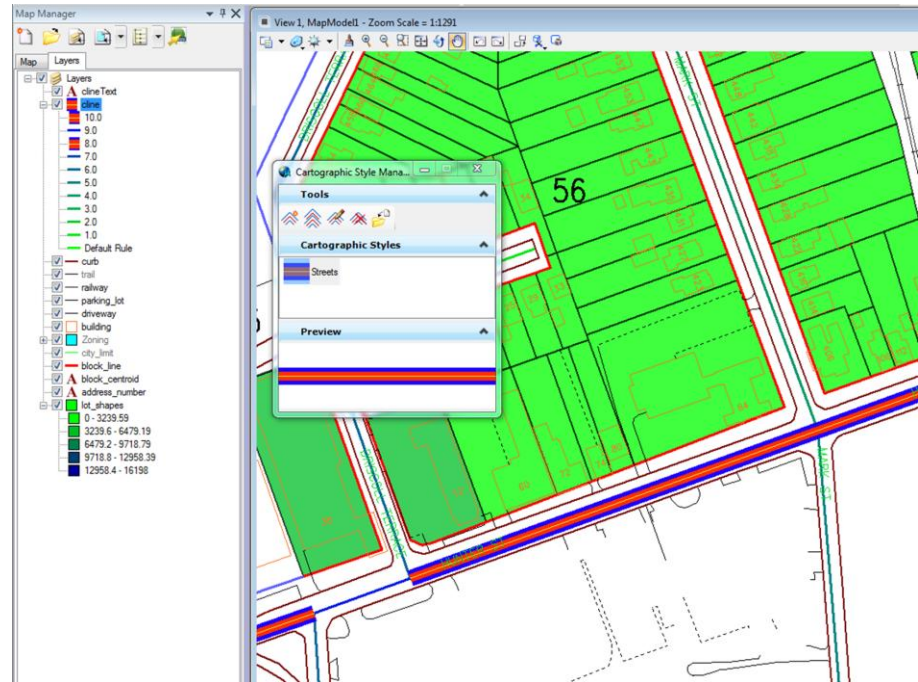
Support Dynamic Criteria/Scale Based Map Visualization

- Provide ability to define criteria/scale based view filters (autoscale) which are persisted as part of the project schema.

- Allows the user to define the view filter and scale factor for each feature class including sub-feature components using by property value(s).

  – Similar to existing Property Based Annotation and Property Based Symbology functionality, yet would function dynamically based upon view extent (in map scale units).

- Support the ability to define constant size text and symbols based upon screen or pixel units.

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Esri File based geodatabase support

- Import/Export Esri FGDB

- Reference FGDB

- Edit Esri FGDB in an ad-hoc session

- Register Esri FGDB in Geospatial Administrator

- Edit Esri FGDB using a registered connection

Query and post

Spatial Data Streaming

Demo

CityGML Texture import/export

- Import and export OGC CityGML files including textures using FME

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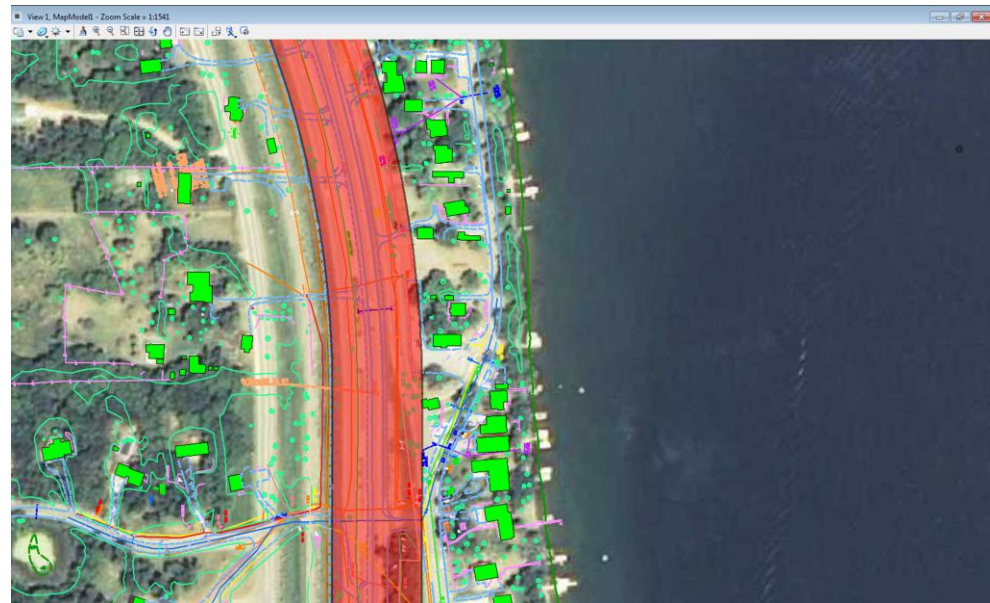
Oracle Spatial – Texture Support

- Interoperability dialog
  - optionally query the textures (all Map versions)
  - locally generate advanced texture (Map Enterprise only)

- Post will support "MicroStation textures" and "Advanced textures"

- Only Map Enterprise can post textures to Oracle

- Oracle tables must be setup to support textures (not done by Interoperability dialog)

- Works with Spatial Data Streaming

Demo

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Oracle Spatial – Support B-Spline Curves and Non-Circular Arcs

- Implement new Oracle 12c curve geometry types

- persist b-spline curve and non-circular arc elements

- Civil, rail applications

Oracle Spatial – Support Composite (multiple columns) Primary Key

- Support the use of composite (multiple column) primary keys for feature discovery.

- Application must determine values for primary key values
  – Greater than 1 column
 – Ex: PK1_ID,PK2_ID,PK3_ID defines unique key

ALTER TABLE CABLE **ADD CONSTRAINT** CABLE_PK
PRIMARY KEY (PK1_ID,PK2_ID,PK3_ID);

Oracle Spatial – Support Views As Sub-Features

- Provide ability to model both root and sub-features using views.

- Ability to use one or more views to define graphic and non-graphic sub-features.

- Perform feature discovery on an Oracle Spatial view which uses one or more views to define sub-features.

Enhancements from Descartes SELECT Series 4 & 5

- For Bentley Map Enterprise

- Improved point cloud processing and visualization tools

- Scalable Terrain Models tool
  - Drape, Extract Contours, Extract RasterDEM

- Export STM to MicroStation Terrain Element

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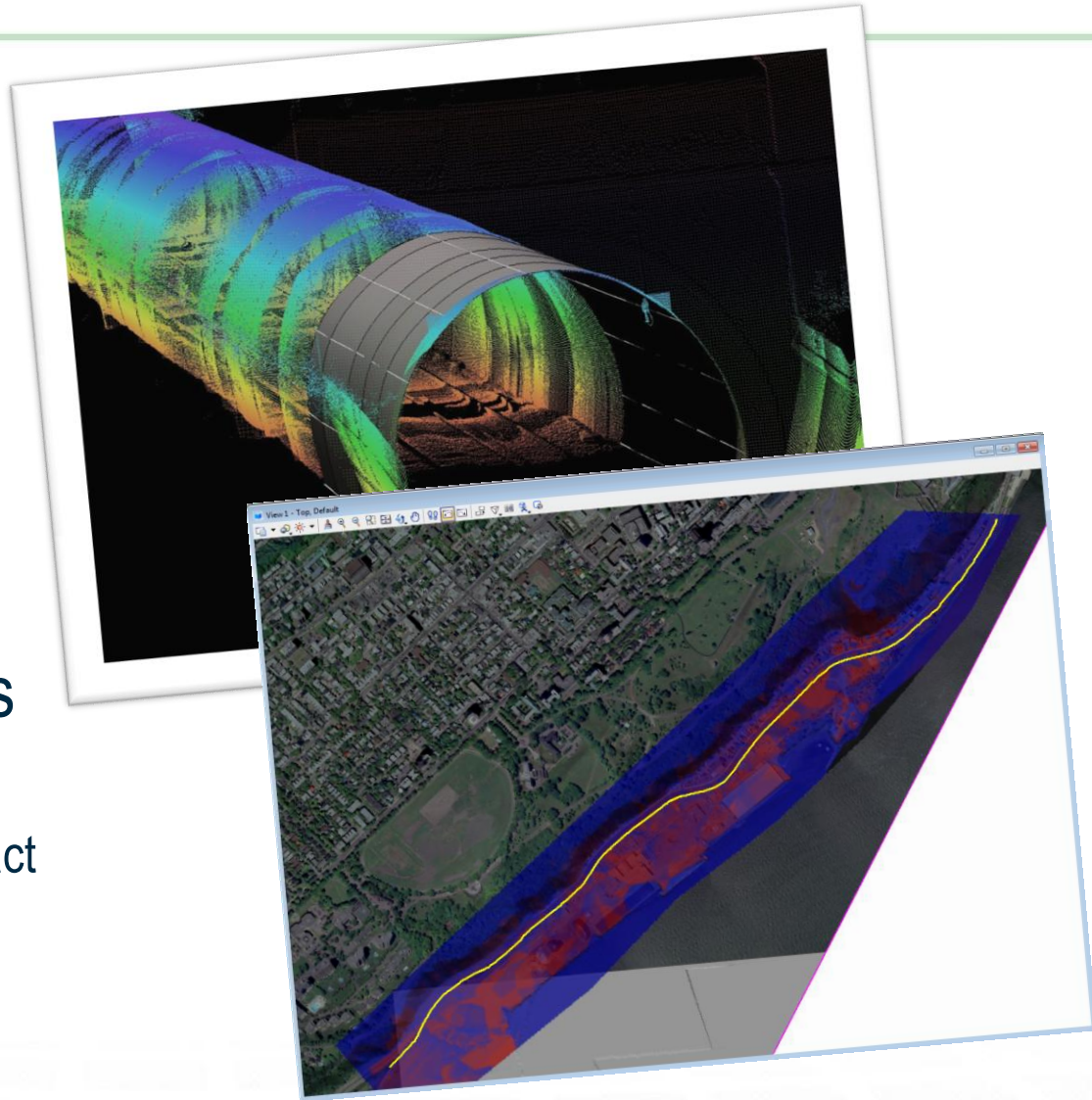
Custom symbology callback

- New API callback to overwrite existing symbology of the Bentley Map features
    - Very efficient way to process DGN elements and apply custom symbology rules based on custom code
    - App completely responsible for providing all symbology **OR**
    - Inherit existing GSA defined keys and override as required

- Application owned business properties