




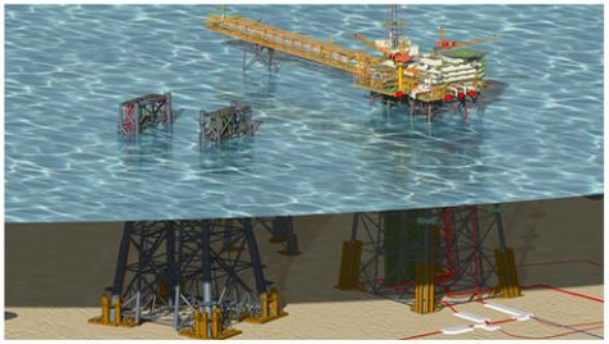

# Bentley Map V8*i* (SELECTseries 3)

## A quick overview



Bentley
Sustaining Infrastructure

# Why Bentley Map…

- Viewing and editing of geospatial data from file based GIS formats, spatial databases and raster
- Assembling geospatial/non-geospatial data to produce thematic maps and reports
- Advanced Point Cloud Processing
- Large Terrain Model Visualization
- Decision making using spatial analysis (2D/3D)
- Advanced Map Finishing
- Cadastral Fabric Editing and Maintenance
- Producing data models and editing tools for different geospatial applications
- Creating industry specific GIS applications through customization

# 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
- 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)






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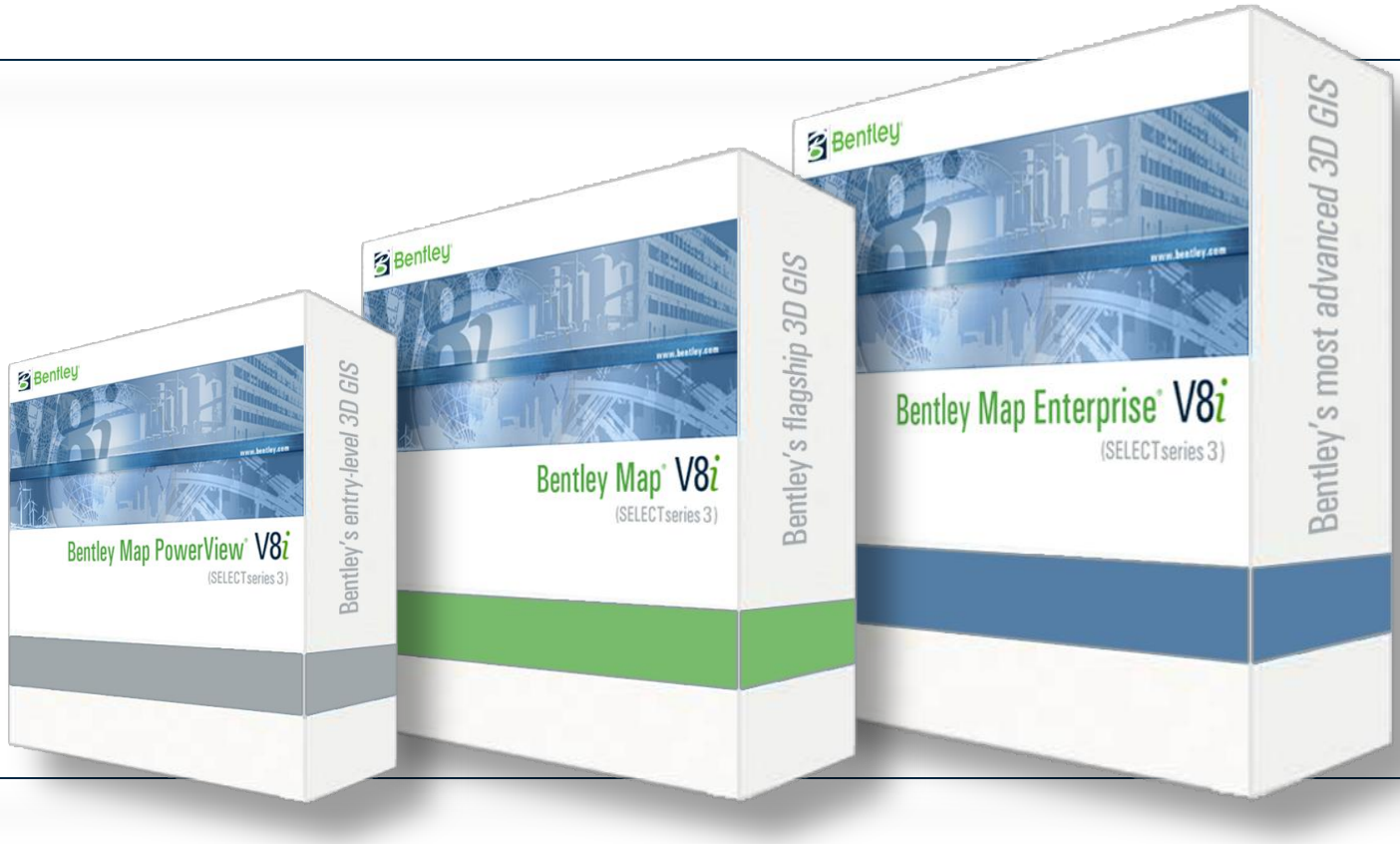
# Bentley Map V8*i*




Visualization and editing of 2D/3D geospatial information

Editing, analysis and management of 2D/3D geospatial information

**Standalone or with MicroStation*

Enterprise editing, analysis and processing of 2D/3D geospatial information





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# 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

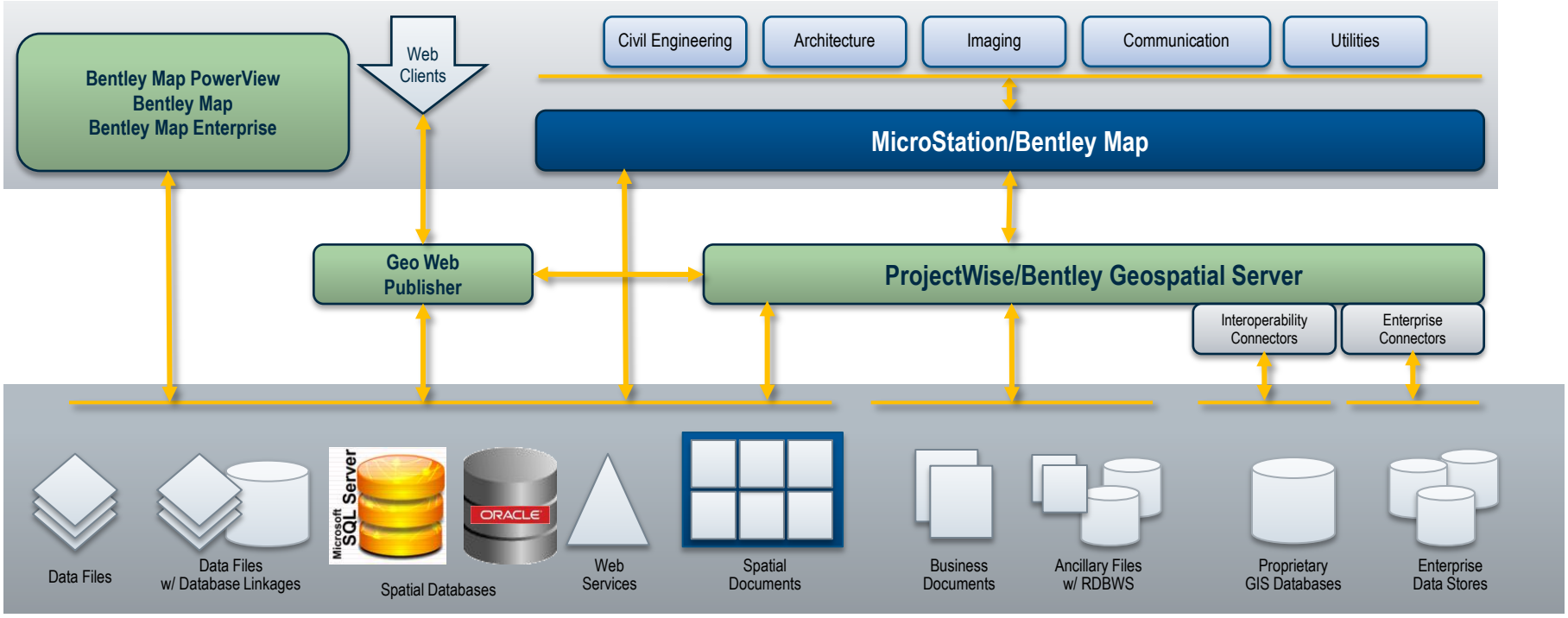
## Bentley Map- Standalone or For MicroStation

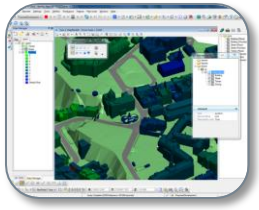
- Bentley Map PowerView Functionality
- Edit Oracle Spatial - Short transaction
- 2D Analysis/ Make Decisions
- Advanced Interoperability
- Export Thematic Map Symbology
- Advanced Map Finishing
- Cadastral Mapping Configuration
- CAD tools
- Edit SQL Server Spatial - Short transaction

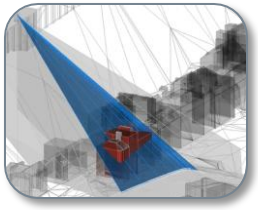
## Bentley Map PowerView- Running Standalone

- 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

# Architecture









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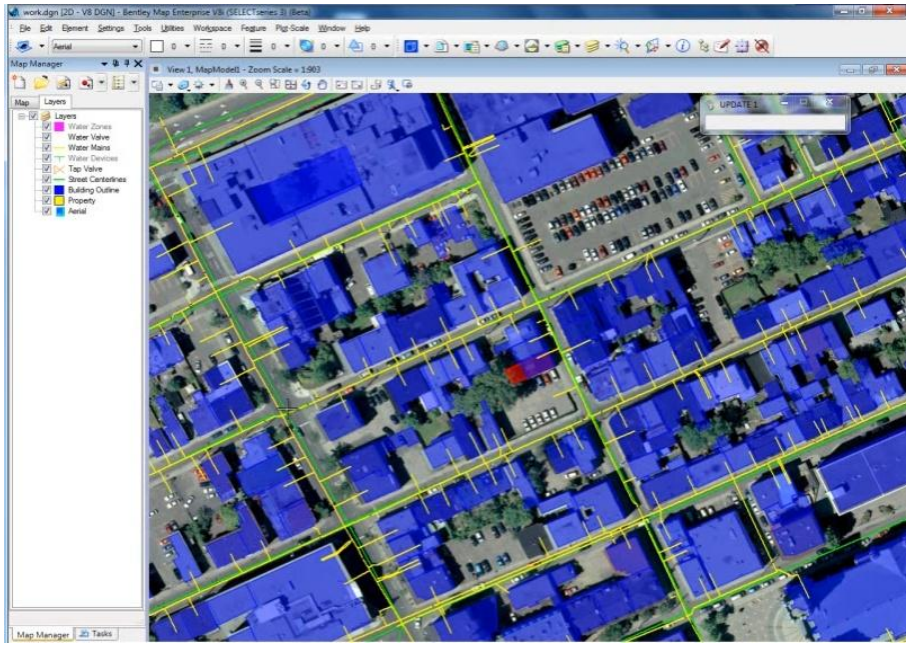
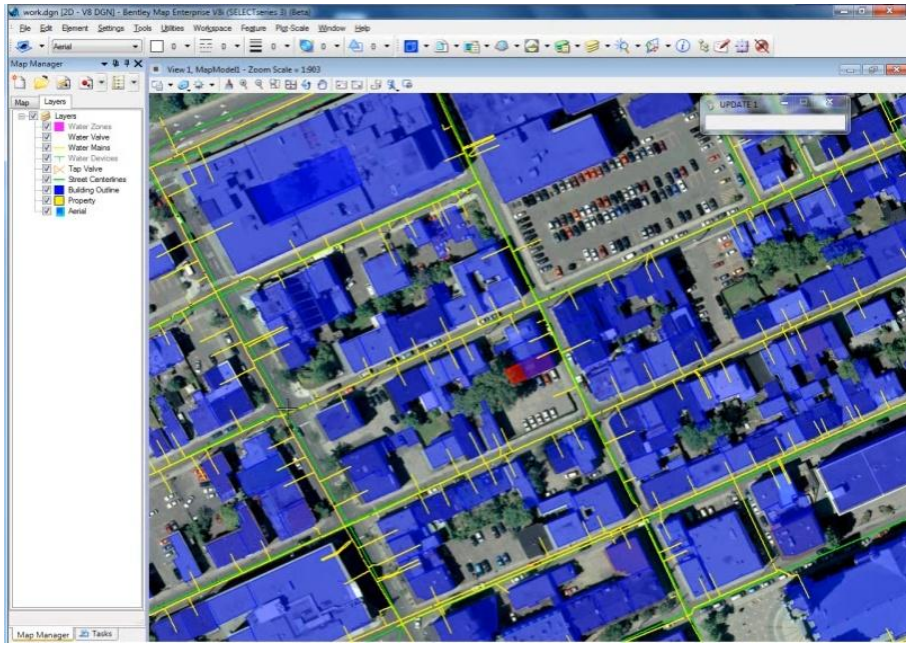
# Spatial Data Streaming – SQL Server Spatial

- 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



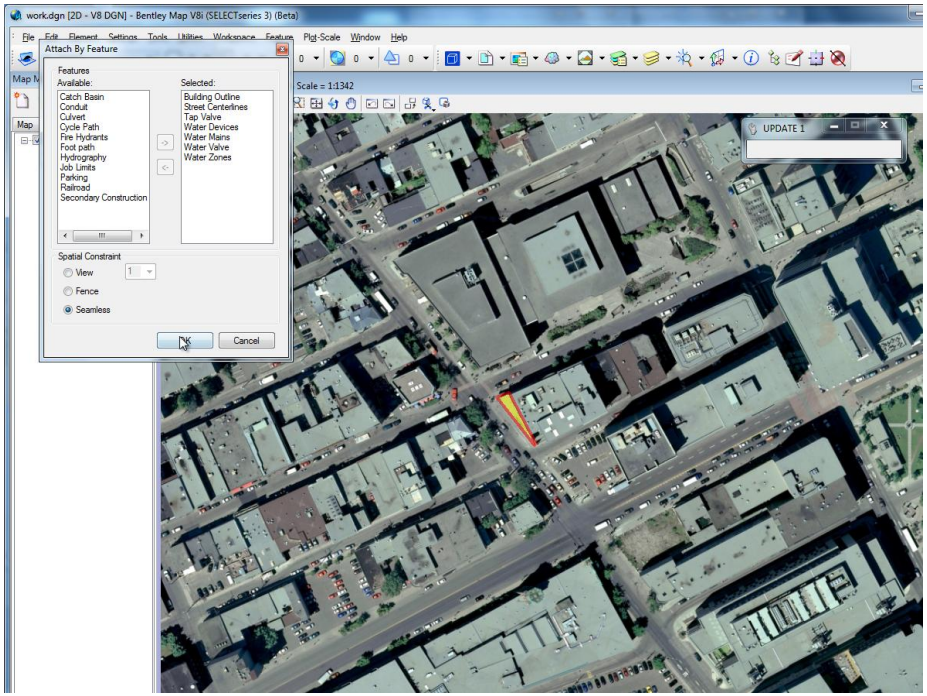
# Benefits – Spatial Data Streaming SQL Server Spatial

- 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

Demonstration





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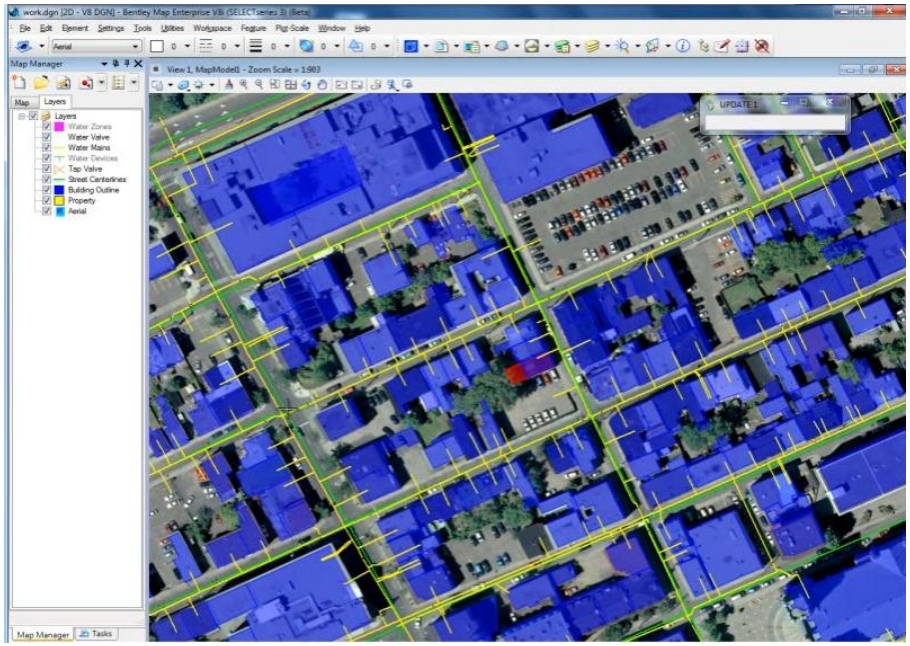
# Spatial Data Streaming – Oracle Spatial

- 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



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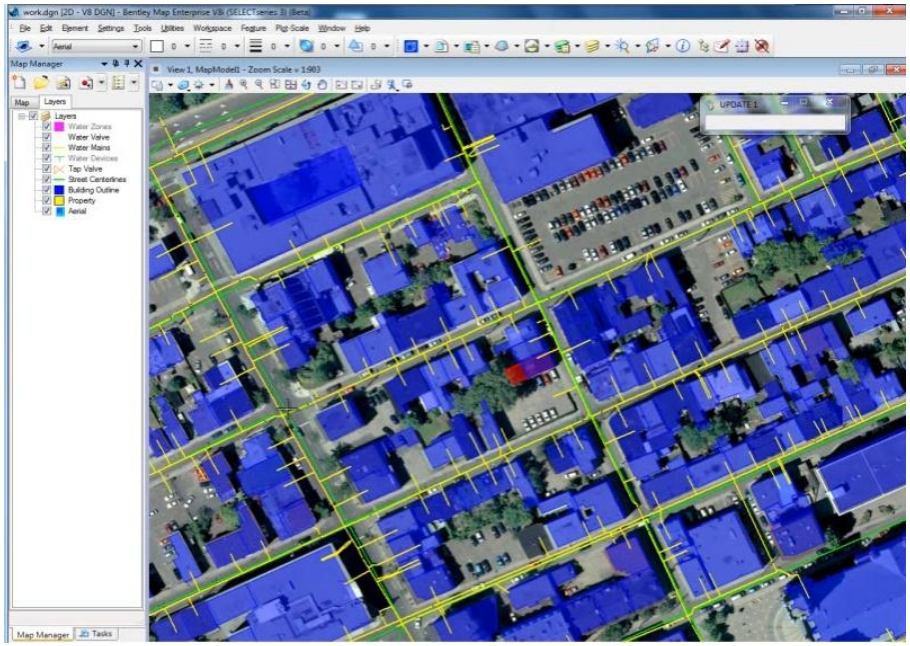

# Demo – Oracle Spatial Spatial Data Streaming

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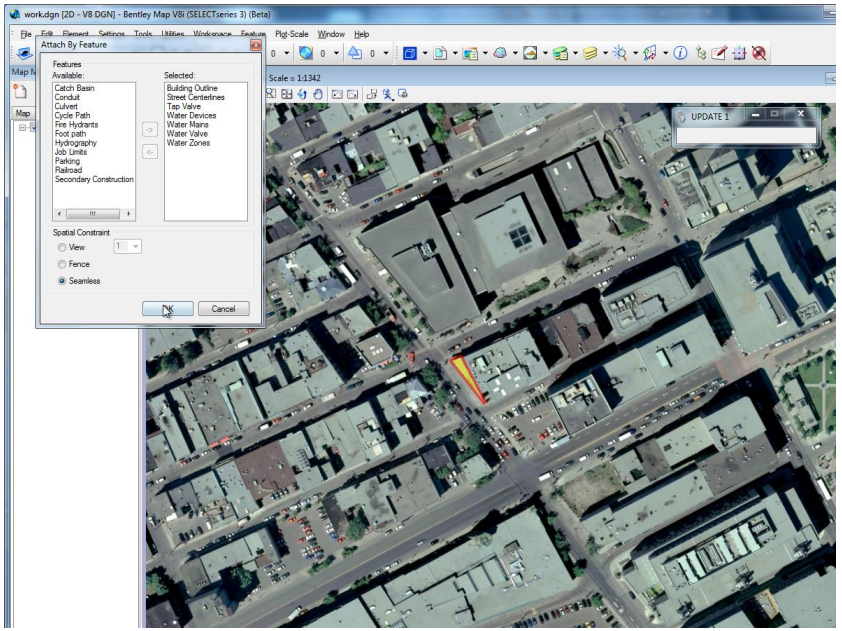


Data provided by Quebec City

Demonstration





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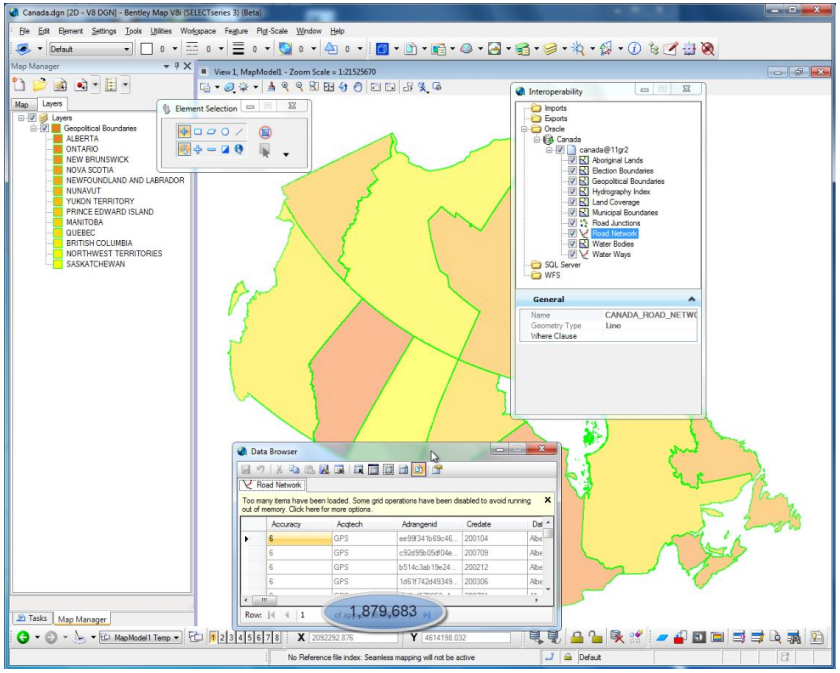
# Direct Large Database Access

- 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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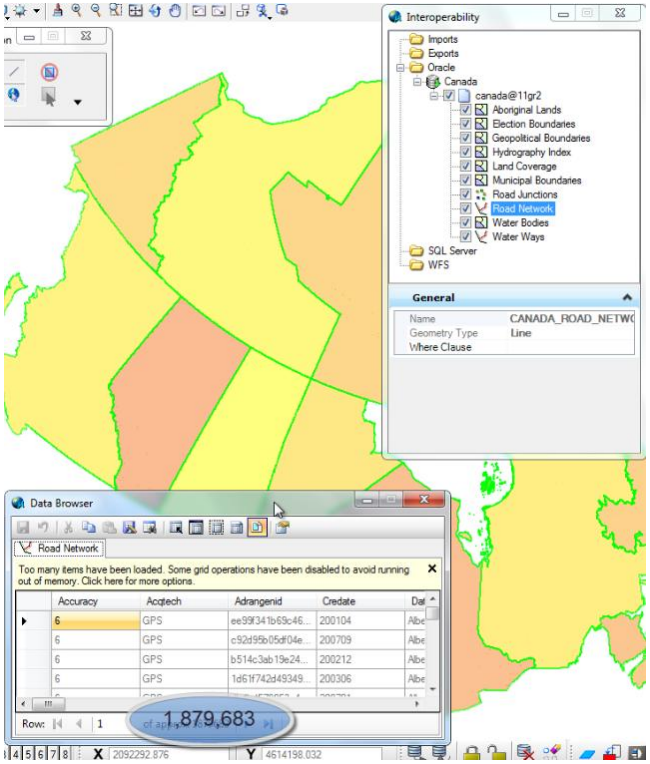
# Benefits – Direct Database Access

- 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



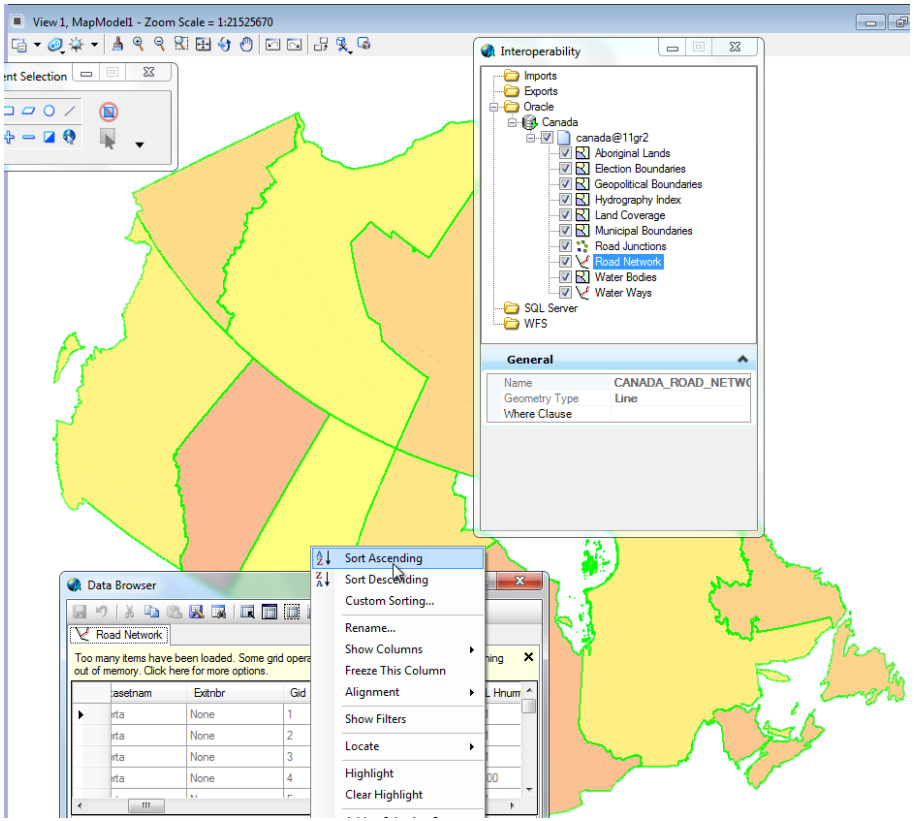





Bentley Sustaining Infrastructure

# 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




Demonstration

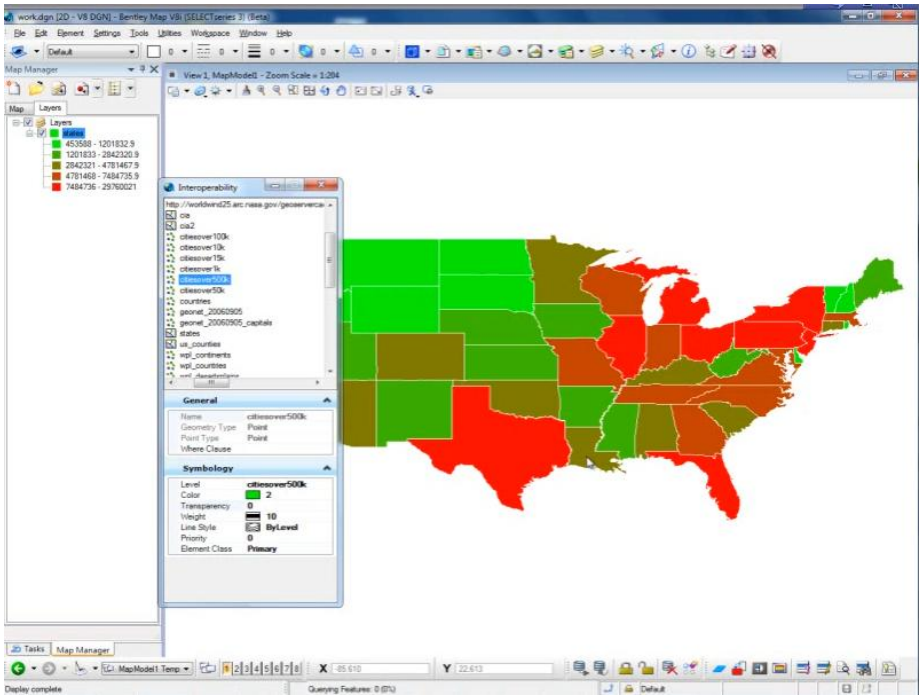




Bentley Sustaining Infrastructure

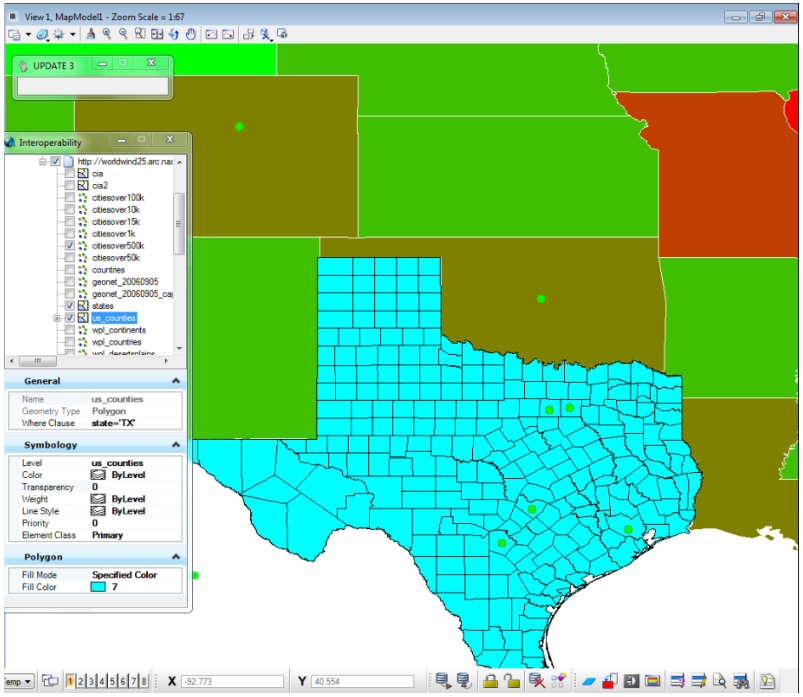
# Web Feature Service

- 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



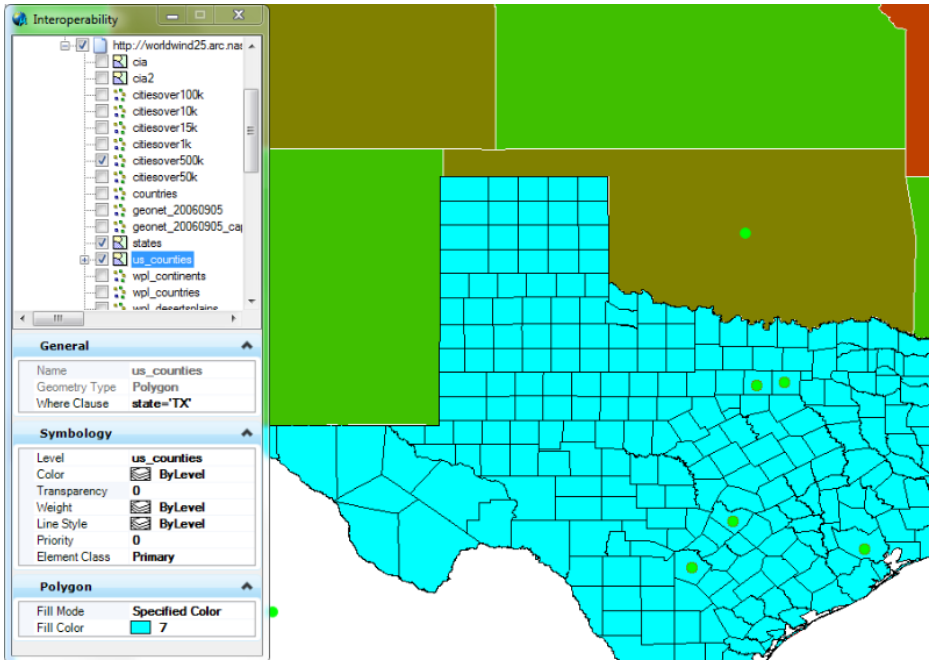





Bentley Sustaining Infrastructure

# Demo – Web Feature Service

- Query WFS server from NASA World Wind
- Create thematic map on features
- Review feature properties
- Query features with attribute constraint

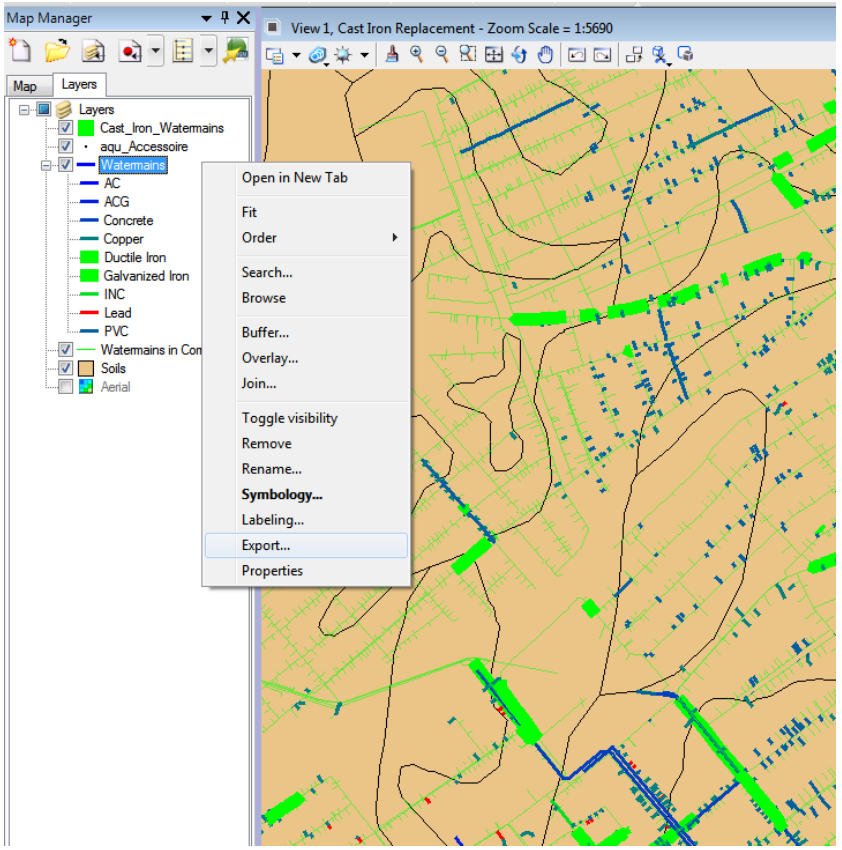



Data provided by NASA World Wind

Demonstration

# 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



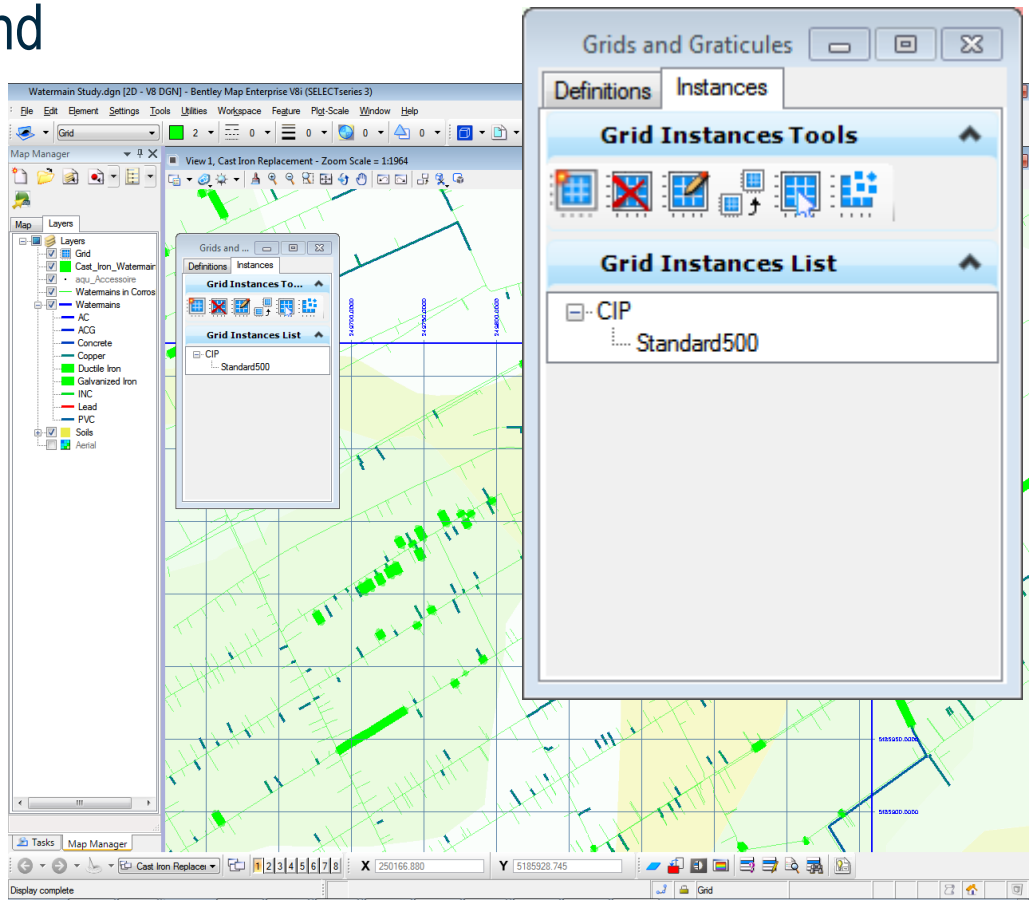





Bentley Sustaining Infrastructure

# 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
- Drop grid to simple elements



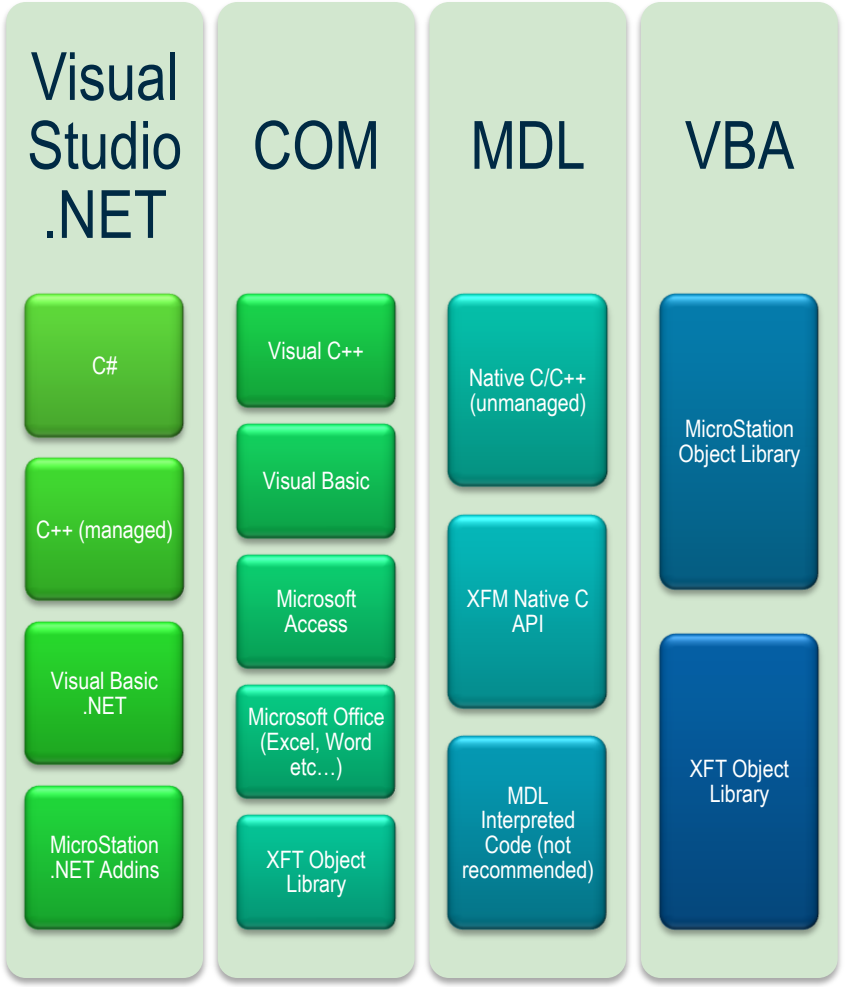





Bentley Sustaining Infrastructure

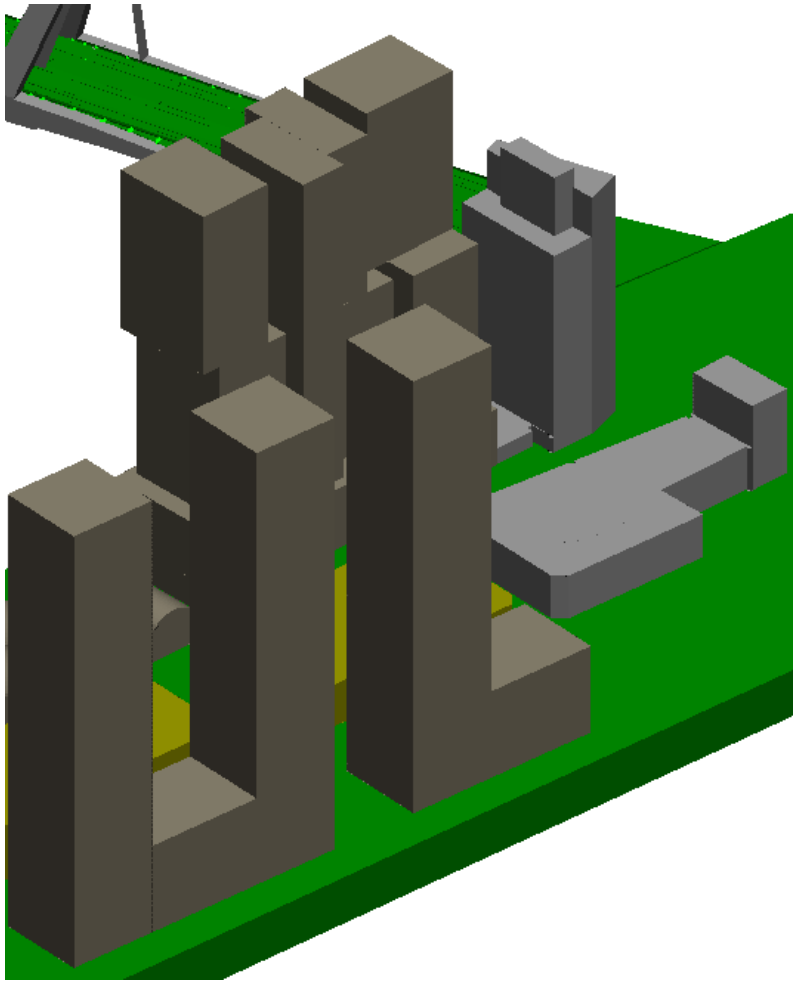
# API

- New APIs to support new functionality
- Provide better integration between MicroStation and Bentley Map models



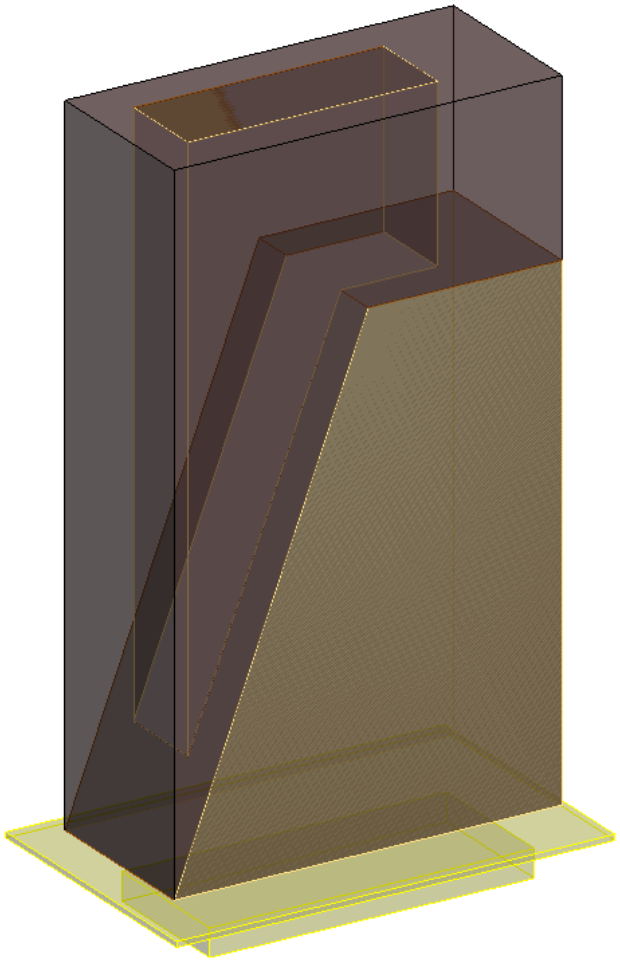
# 3D Geometry Clean-up

- New tools to create valid solid models from existing geometry
- Correct and stitch surfaces
- Automatically fix some data errors
- Identify other data errors
- Extrude down to terrain



# Benefits – 3D Geometry Clean-up

- Produce complete solid models from existing 3D surfaces
- Reduce time remodeling existing data
- Produced models will be suitable for storing in Oracle Spatial, texturing, etc.
- Move from visualization to GIS data



# Demo – 3D Geometry Clean-Up

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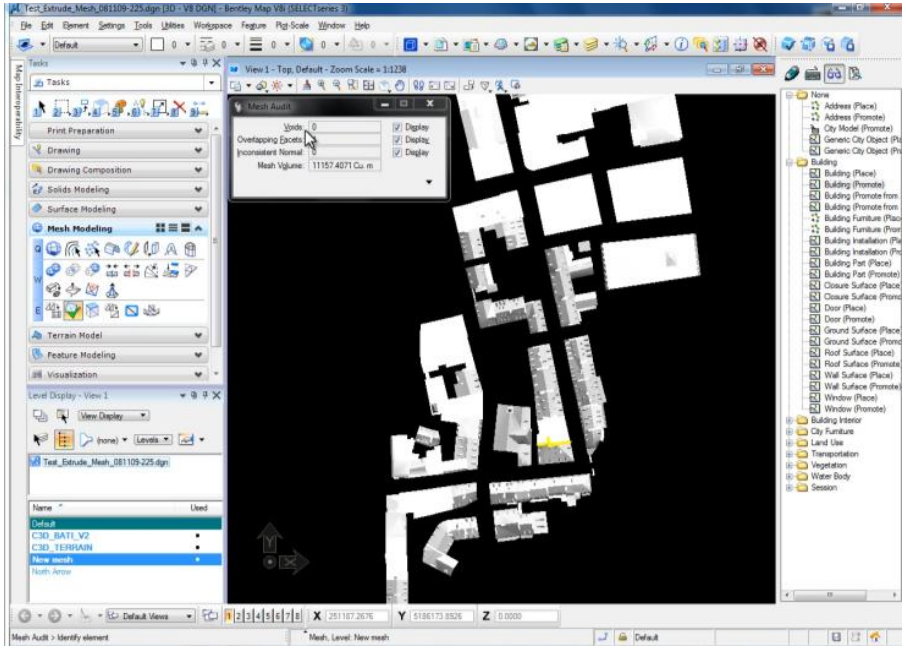
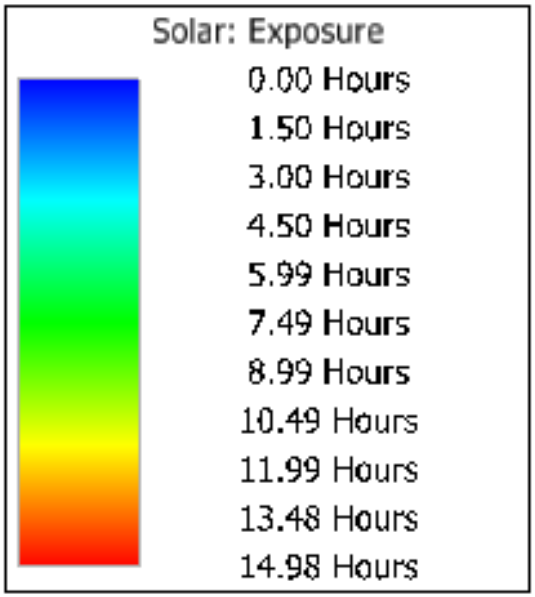


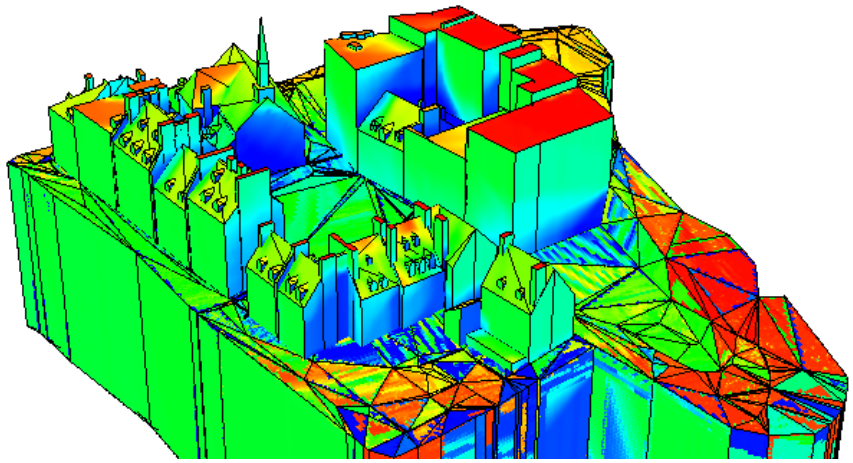
Data provided by Quebec City

Demonstration

# Solar Analysis

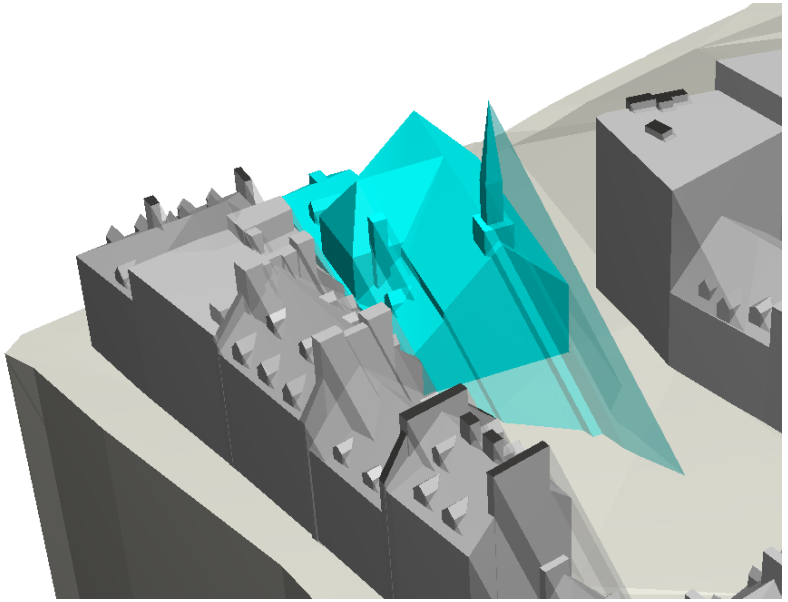
- Calculates total solar exposure over a user defined time period
- Takes weather patterns into account
- Specify different solar intensity to take atmospheric conditions into account
- Produces shadow elements that can be used for further analysis or intersection with proposed building models



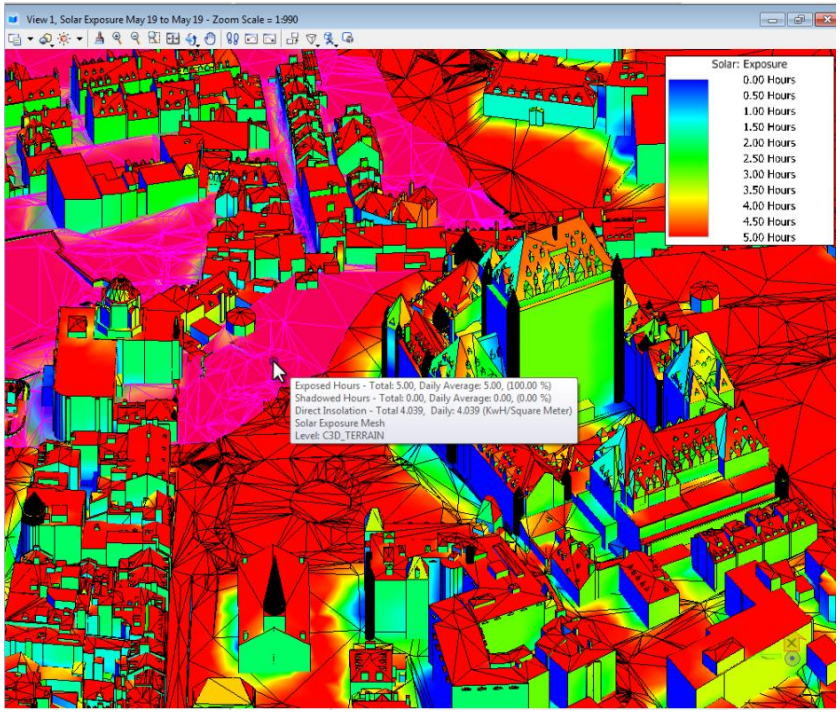
# Benefits – Solar Analysis

- 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

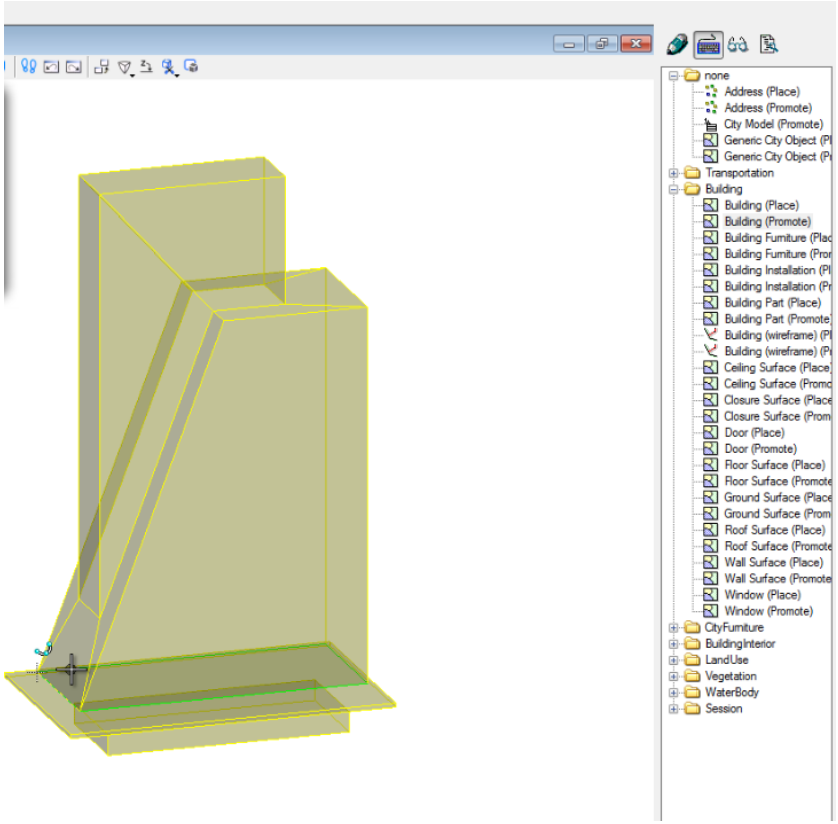



Data provided by Quebec City

Demonstration

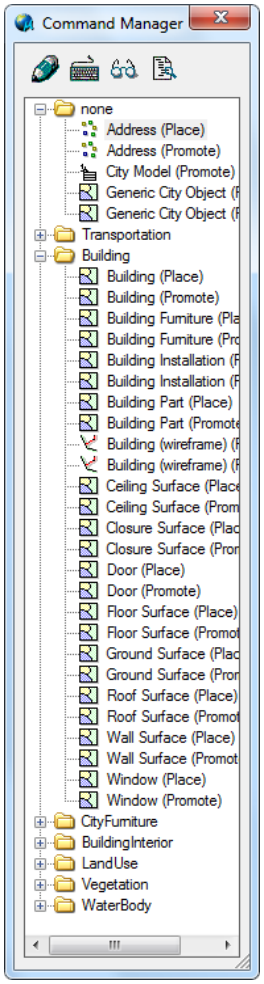
# CityGML Application Template

- Bentley Map XFM model based on CityGML data model
- Supports all CityGML features
- Includes placement and promote tools



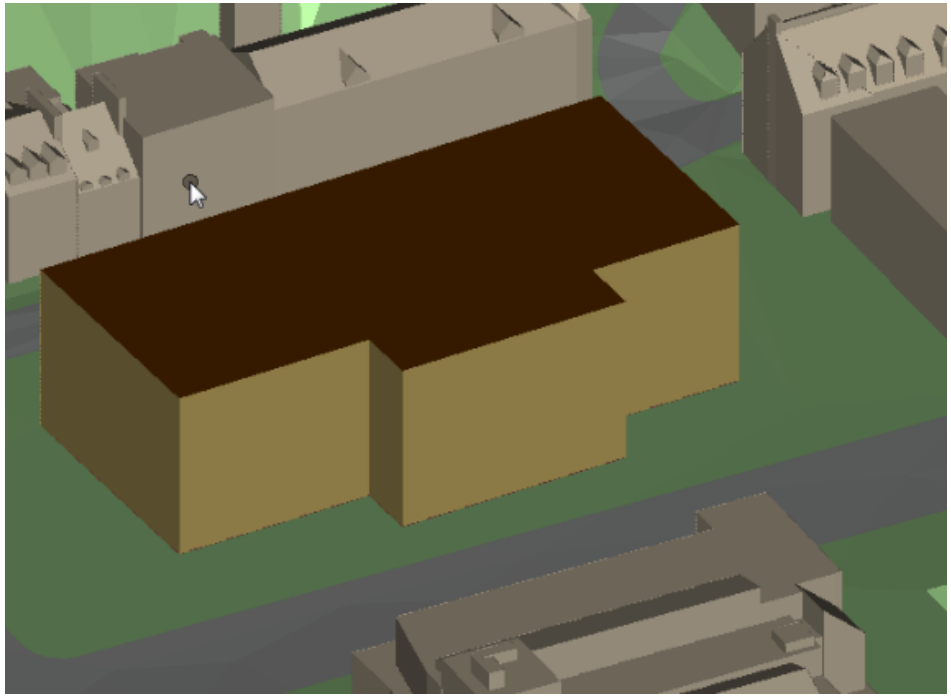
# Benefits – CityGML Application Template

- 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



# Demo – CityGML Application Template

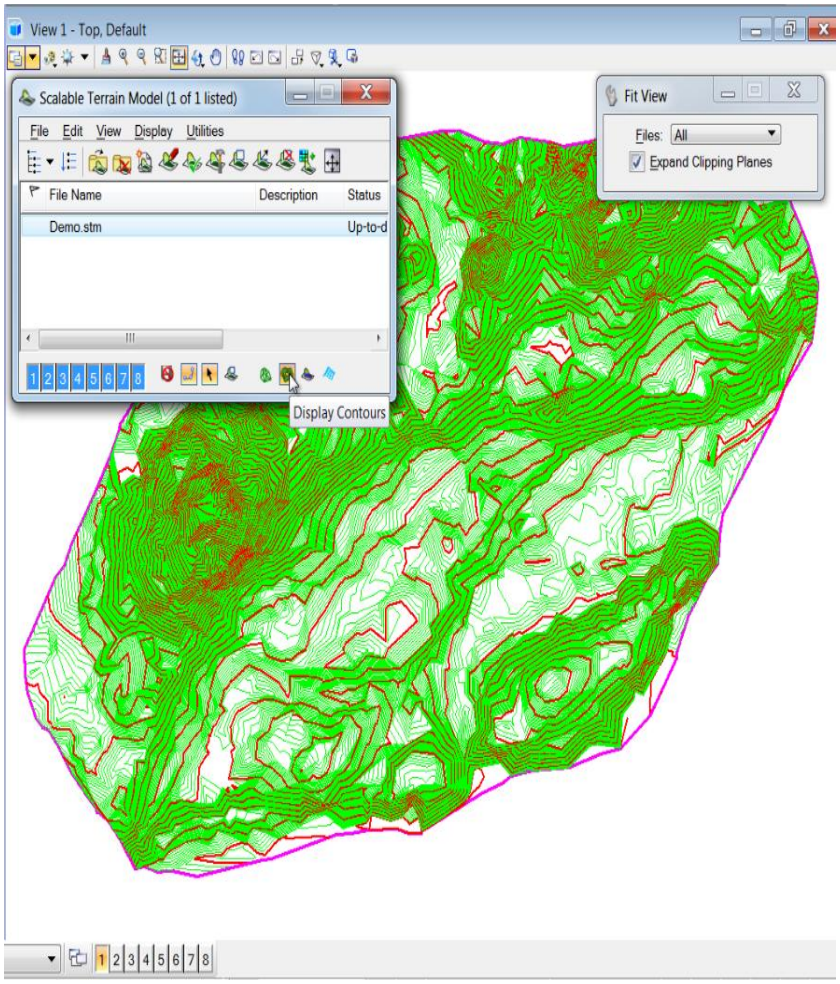
- Modeling tools to build LOD 1 model
- Use custom VBA to assign hierarchy to model
- Export using FME
- View CityGML model in FME viewer



Demonstration

# 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





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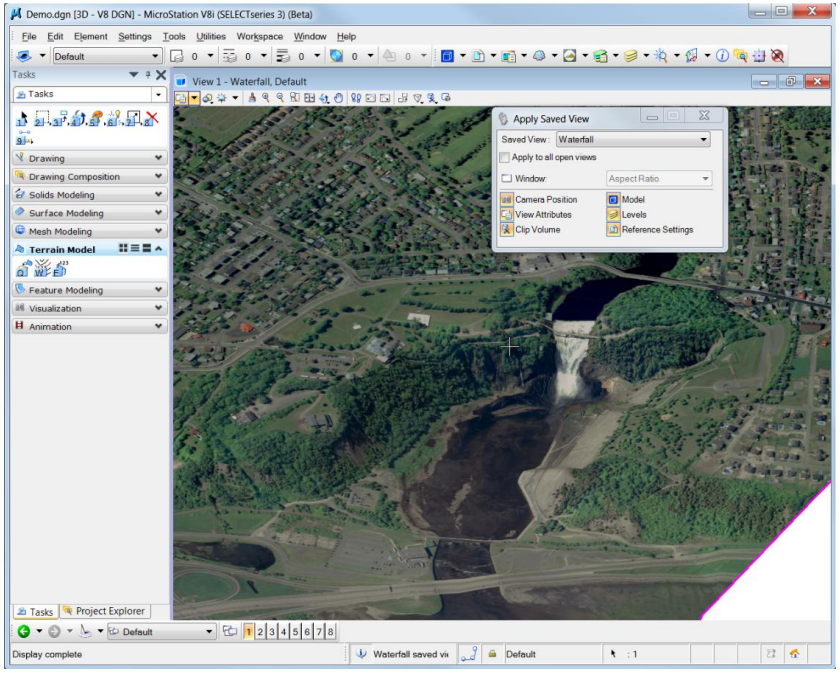
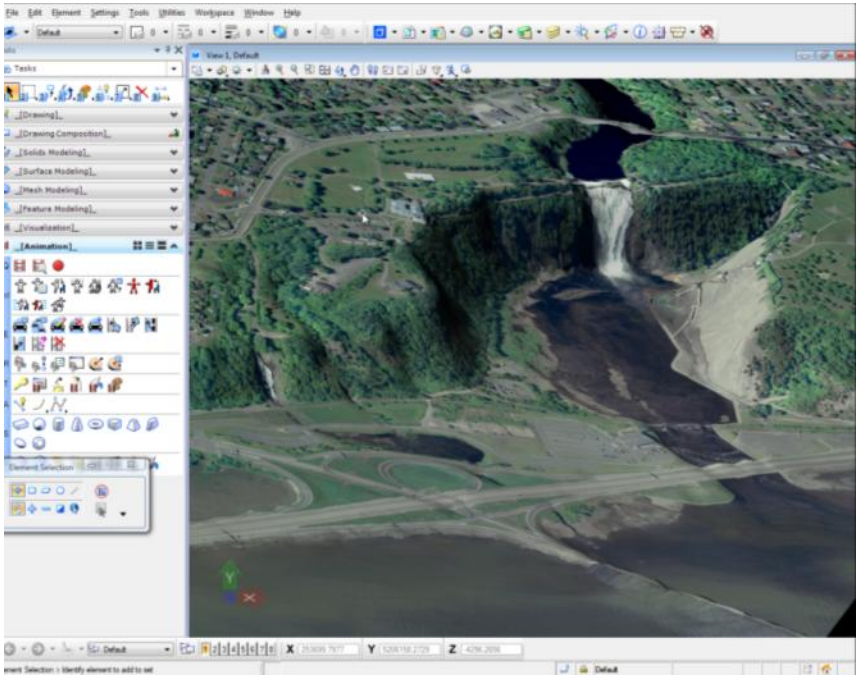
# Benefits – Scalable Terrain Model

- 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

Demonstration

# Summary: Bentley Map V8*i* (SELECTseries 3)

- Improved spatial data base support
  - SQL Server Spatial
  - WFS
  - Direct Data Access
  - Spatial Data Streaming
- Improved performance
- More tools
  - Improved grid tool
  - Export to DGN
  - More MicroStation tools
  - Datum/Ellipsoid definition
  - Alternate GCS read-out