SPATIAL

May 2011
Oracle Spatial User Conference

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Oracle Spatial User Conference

May 19, 2011

Ronald Reagan Building and International Trade Center

Washington, DC USA

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Senior Product Manager
Bentley Systems, Inc

Special thanks to:
Richard Mongeau, QLS M. Sc.
Land surveyor team leader
Cartography and special survey
Geomatic division
City of Montreal

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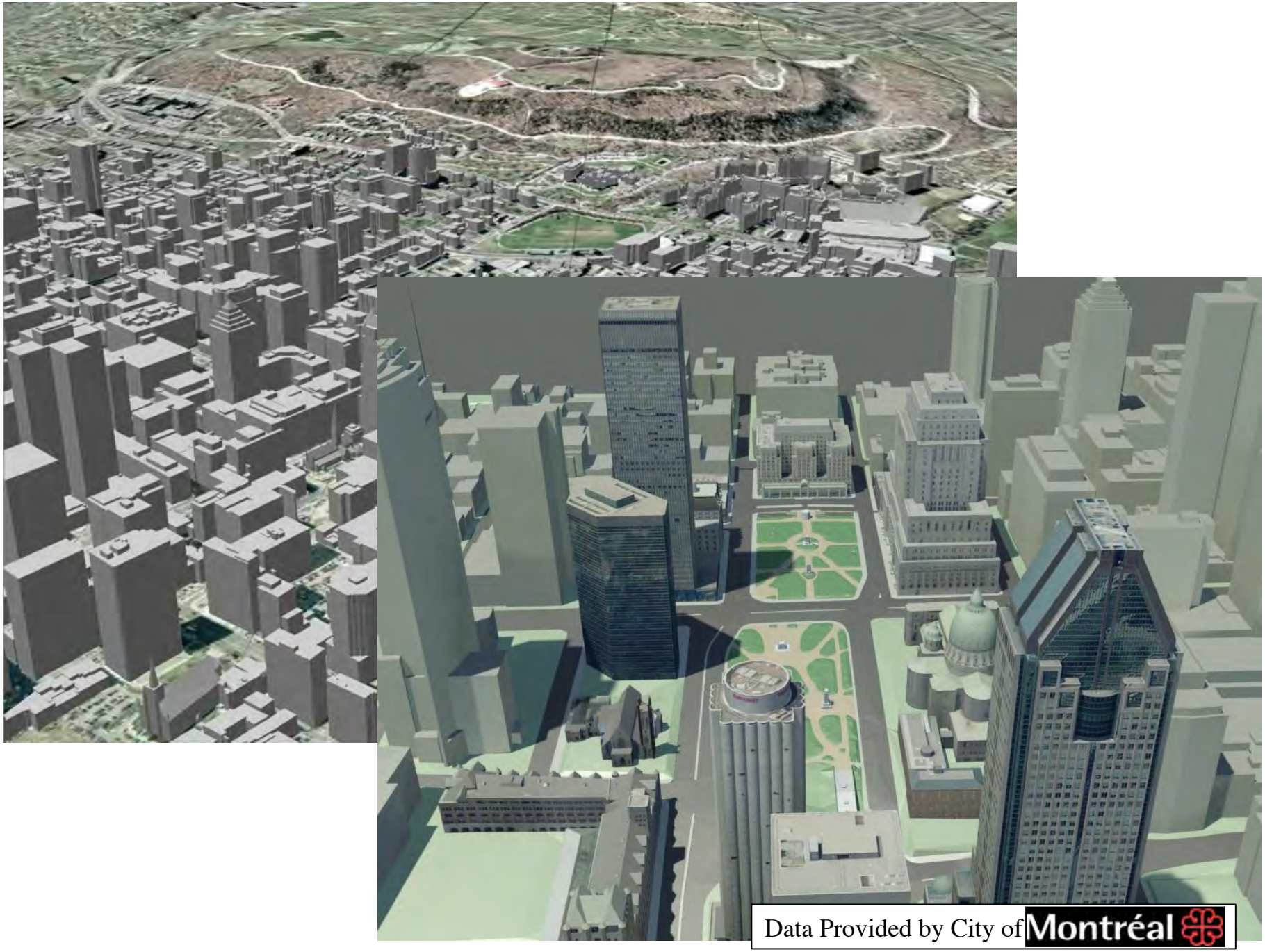
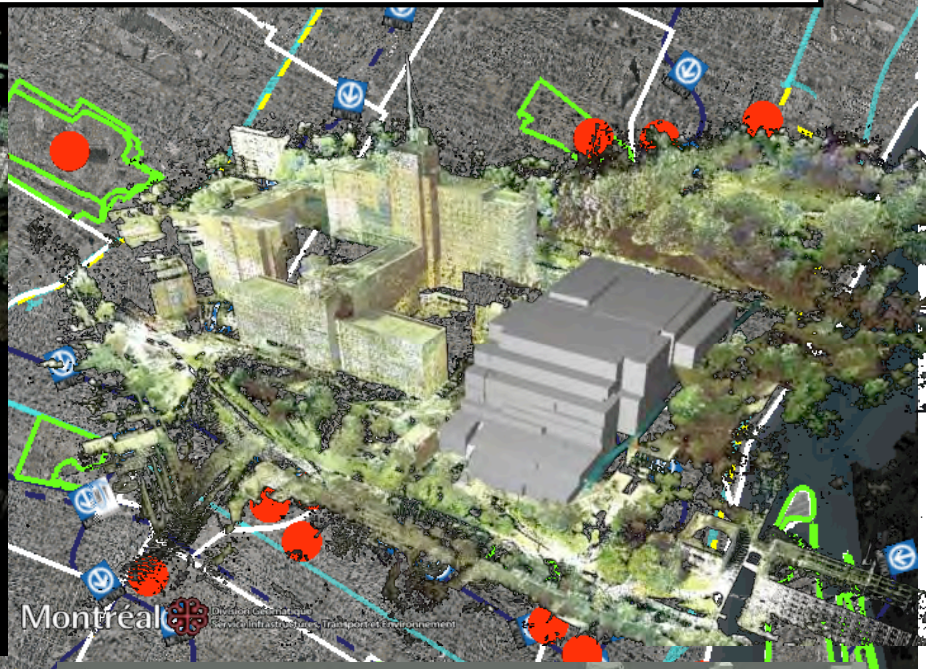
City of Montreal's 3D Urban Model - Migration project to Oracle Spatial 11g

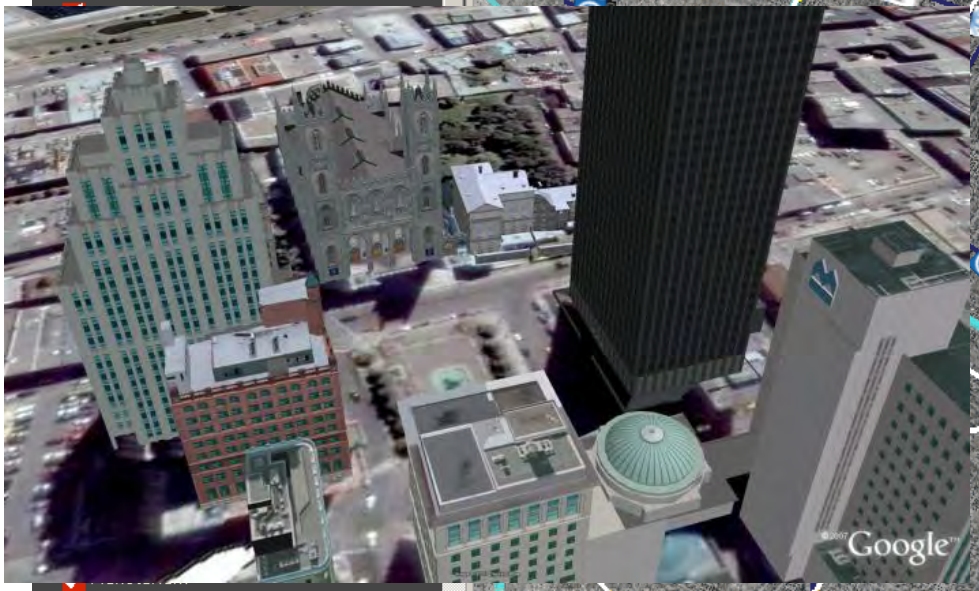
Montréal

The city of Montreal Cartography and Special Survey Team


Data Provided by City of Montréal

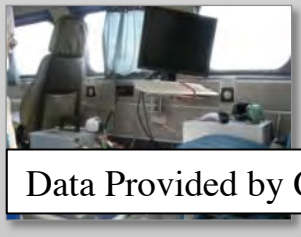
Large Projects: MONTRÉAL 2025





➢Planned 3D workflow with Oracle Spatial 3D

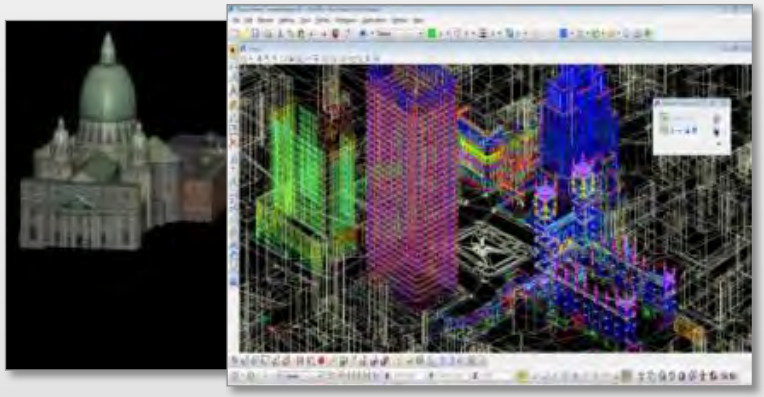
DATA ACQUISITION



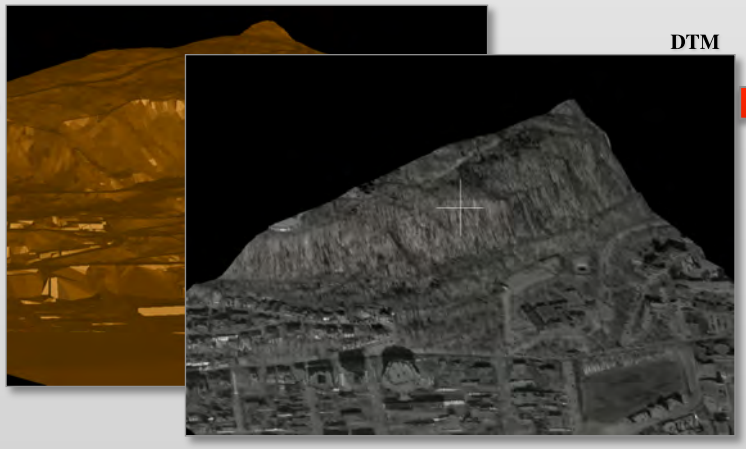
Data Provided by City of Montréal

GEOSPATIAL DATA

3D BUILDINGS



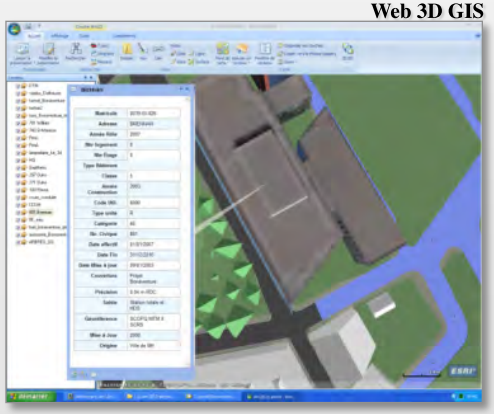
DTM



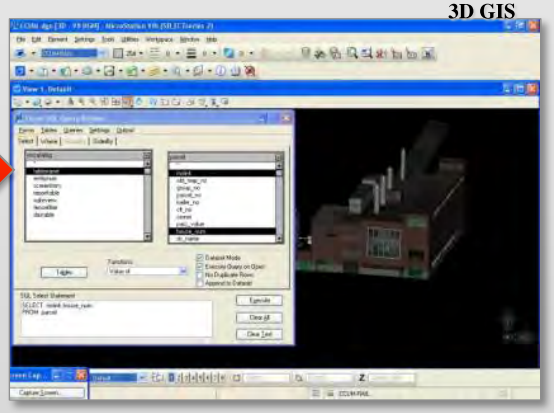
CITY FURNITURE

TAX ROLES

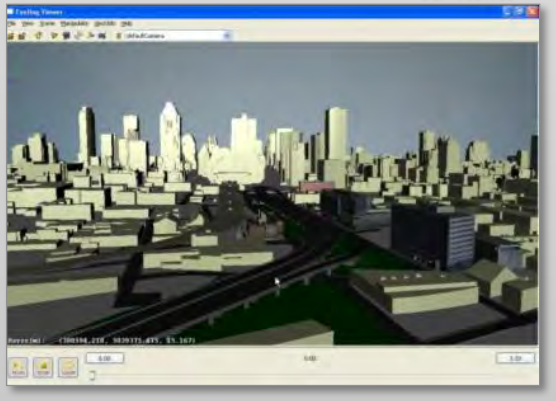
Web 3D GIS



3D GIS



3D Viewer

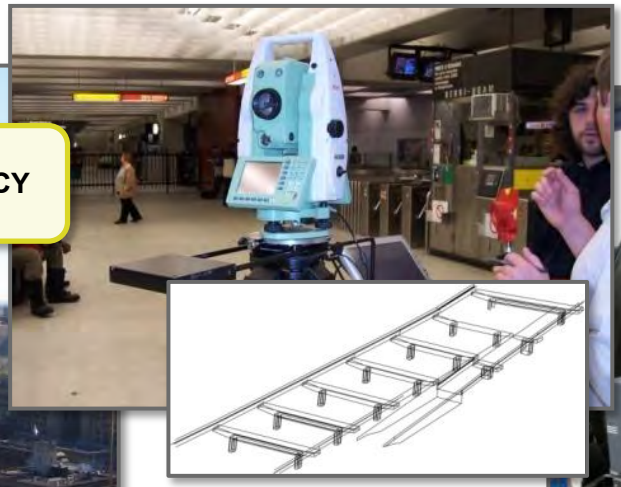


➢Using multiple data acquisition techniques

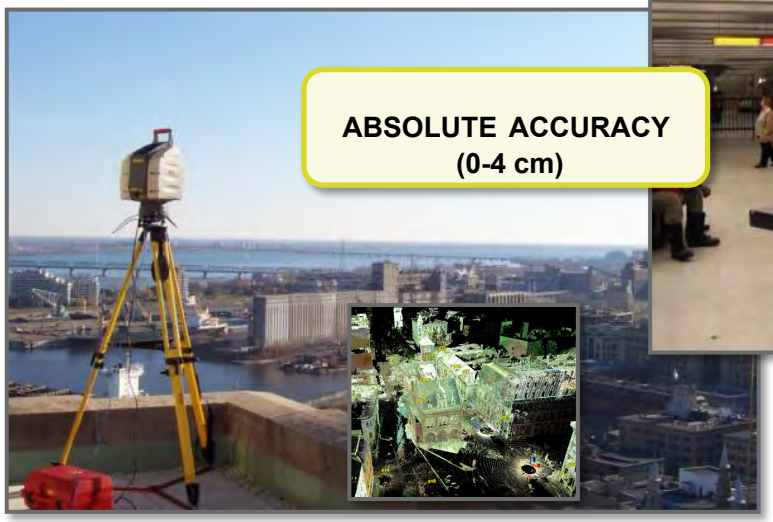
Photogrammetry

Mobile mapping

Field Survey using mobile CAD platform



High density laser scanning



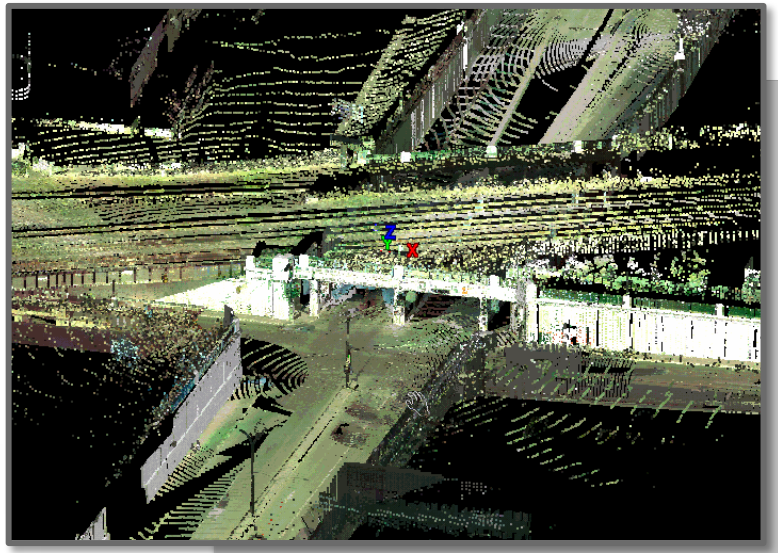
LIDAR

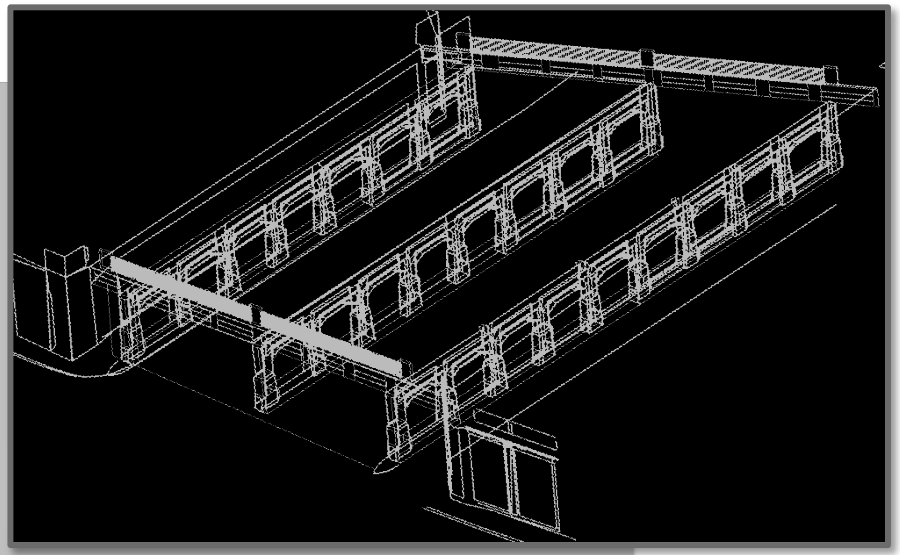
Data Provided by City of Montréal

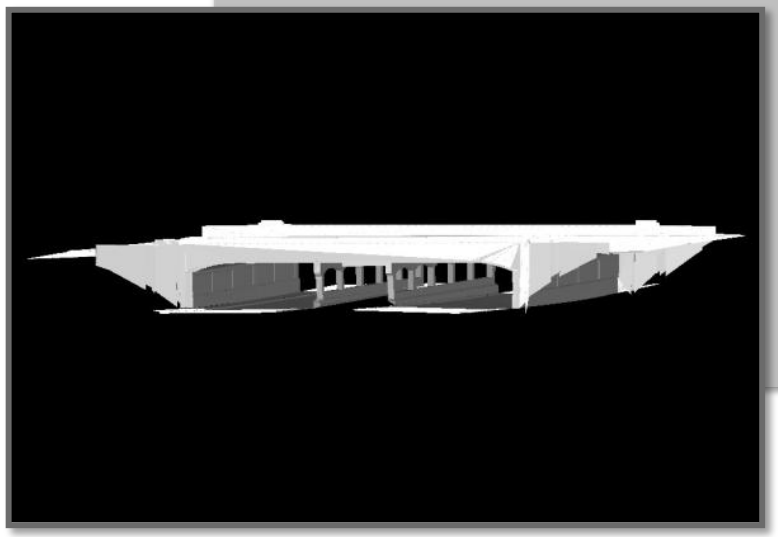
➢Urban Planning: integrate planned building

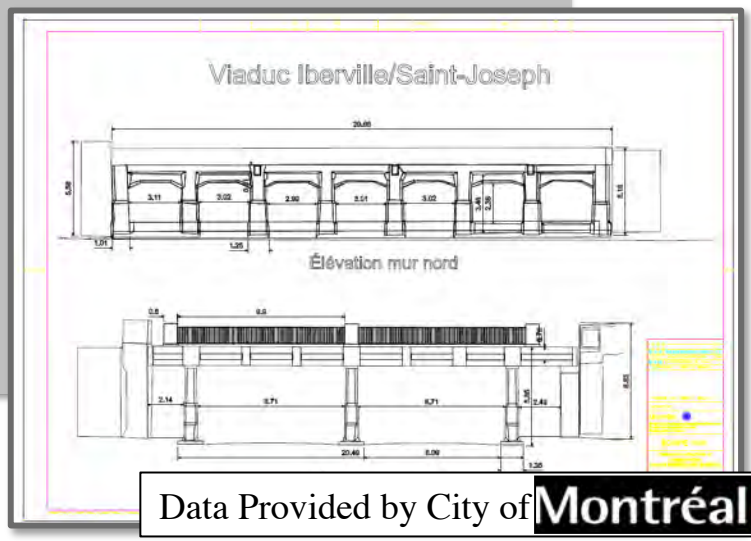
Data Provided by City of Montréal

➢Engineering projects: bridge, tunnels, etc



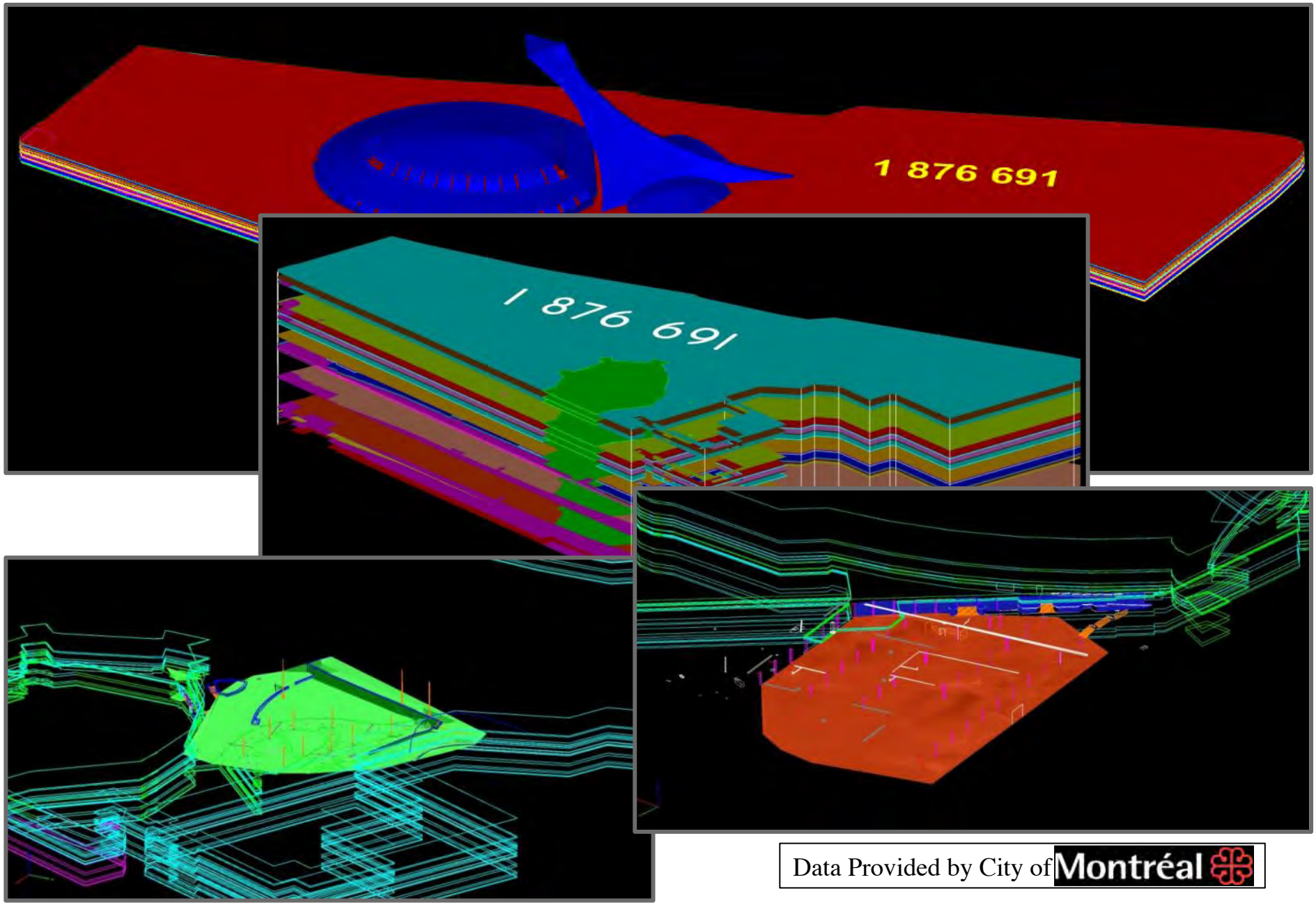






Data Provided by City of Montréal

➢Land Management: 3D Cadastre

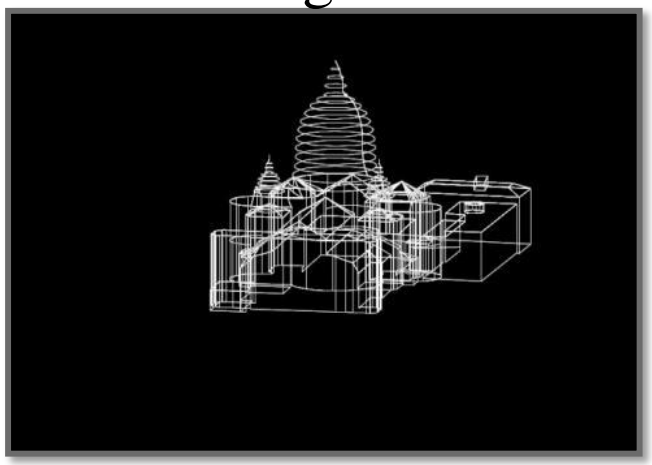


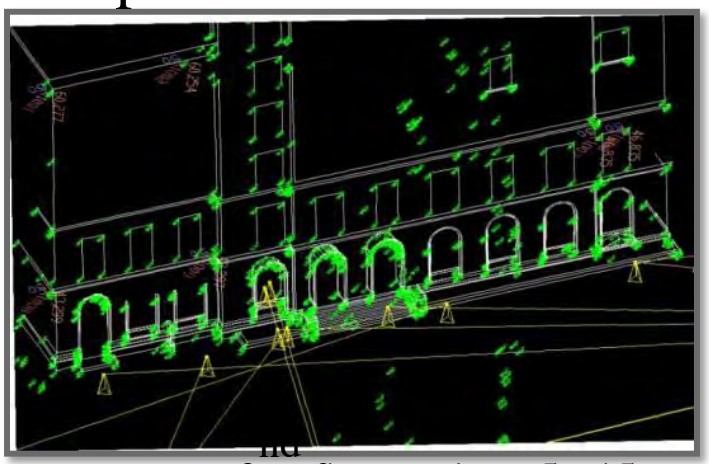
Data Provided by City of Montréal

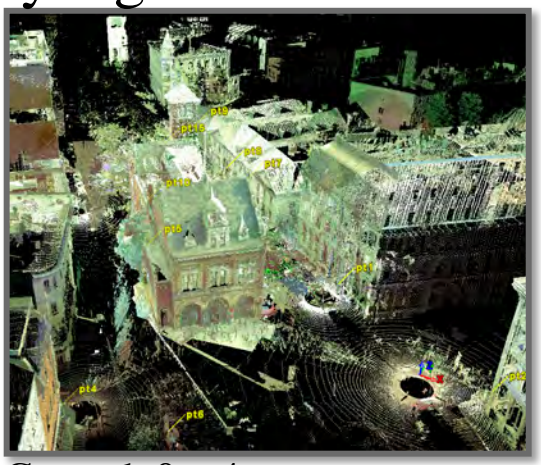
- Above ground elements and underground utilities

3D URBAN MODEL

- Data integration from multiple sources with accuracy legend

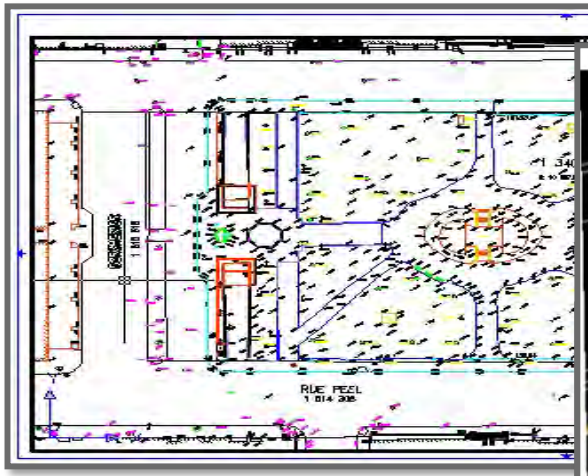


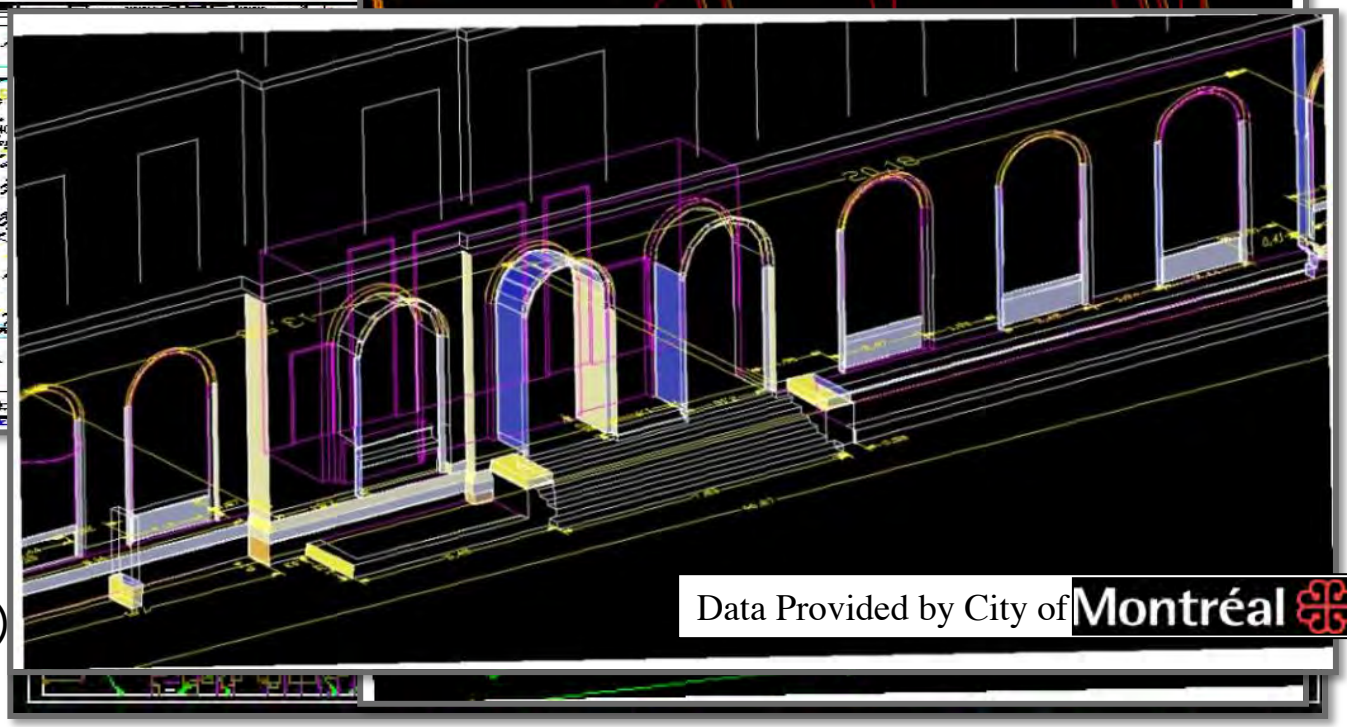




+ 16 cm

2nd floor and up: 5 - 15 cm, Ground: 0 – 4 cm





ACCURACY

-A : 0 – 4 cm (green)
-B : 5 - 15 cm (blue)
-C : + 16 cm (magenta)
-D: inferred (red)

Data Provided by City of Montréal

Bentley 3D City GIS

Bentley®
Sustaining Infrastructure

Why 3D City GIS?

- Integrate the management/maintenance of assets in the same 2D-3D platform
- Perform more accurate analysis using 3D model
- Generate realistic visual renderings for communication of projects to stakeholders
- Perform analysis not possible in a 2D GIS
- Convey complex physical infrastructure plans using photo-realistic images
- Create 3D data once and reuse for multiple projects

Rethink 3D

- Neo-geographers (Google Earth, Bing Map) have made 3D accessible to everyone
- Databases are 3D (Oracle Spatial 11g)
- 3D data is now more affordable (LIDAR, Autocorrelation image pixel, etc.)
- Evolving professional practices (http://www.3dok.org/)


Urban Planning
Architecture Support
Tourism
3D Analysis and Design
Noise simulation
Communication
Shadow analysis
3D GIS Applications
Security
Natural Disaster Management
Public Works Support
3D Cadastre
Facility Management

How does Bentley use Oracle 2D/3D?

- Excellent “Citizen” Oracle Spatial / Locator
  - Create 100% **standard** Oracle Spatial data
  - Uses 2D and 3D Oracle Spatial geometry
  - Uses standard metadata and coordinate systems of Oracle Spatial
  - Uses Oracle standard versioning (Workspace Manager)
  - **No proprietary schemas, tables or fields required**

Bentley Geospatial and Oracle Spatial

Access modes

- Attach/Open directly from Oracle
- Import from Oracle
- Disconnected Editing

Transaction modes

- Short Transaction Oracle (Pessimistic)/ Long Transaction (Optimistic/ Pessimistic)
- History/Valid time support

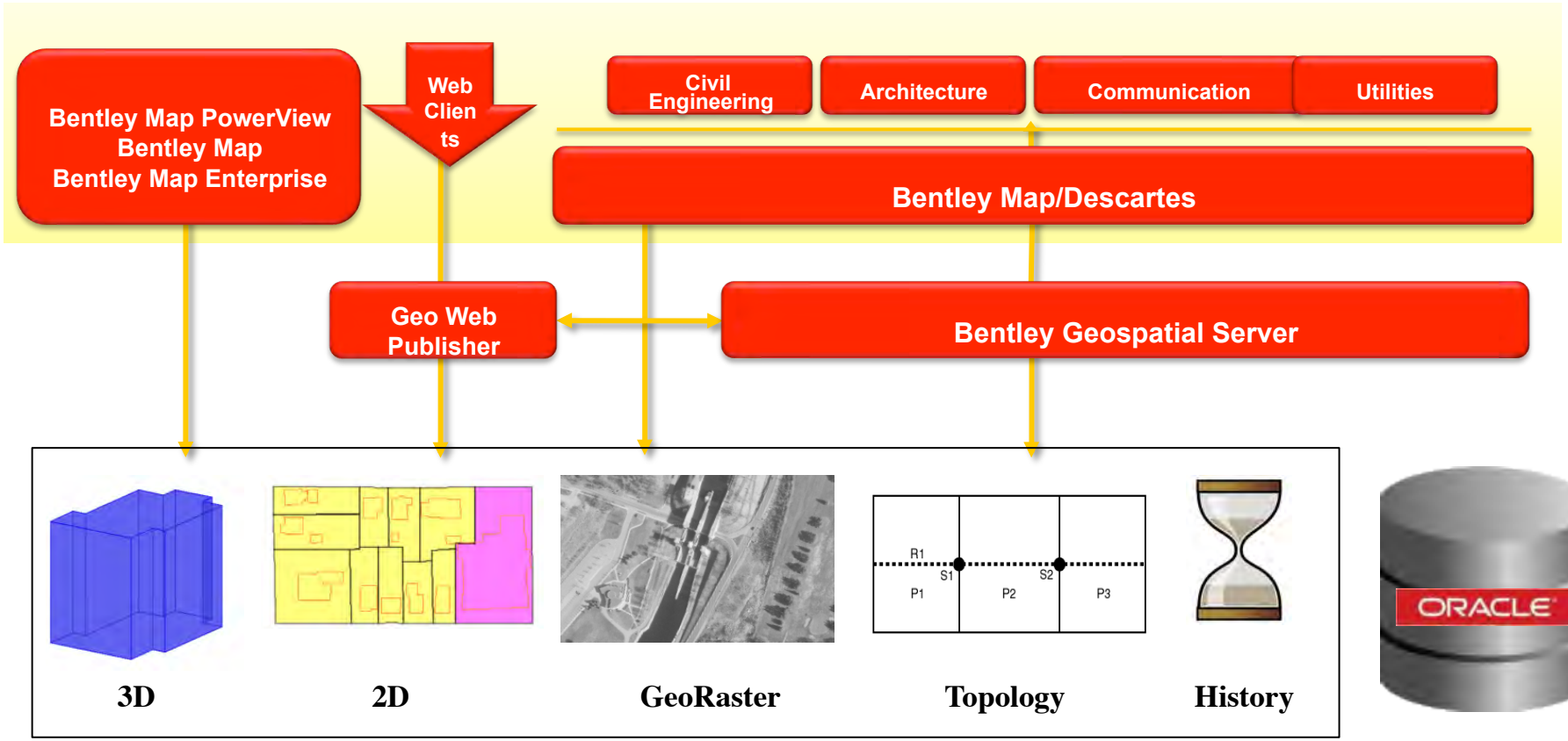
Data types

- Geometry support
- Topology Support
- Coordinate Systems
- Text, Feature-Linked text
- Coded Domains
- 11G 3D (e.g. Building, utilities, roads)
- Oracle GeoRaster

Misc

- Loading Tools (DGN2SDO)
- ProjectWise Links and Design Links support with

Bentley Geospatial Architecture with Oracle



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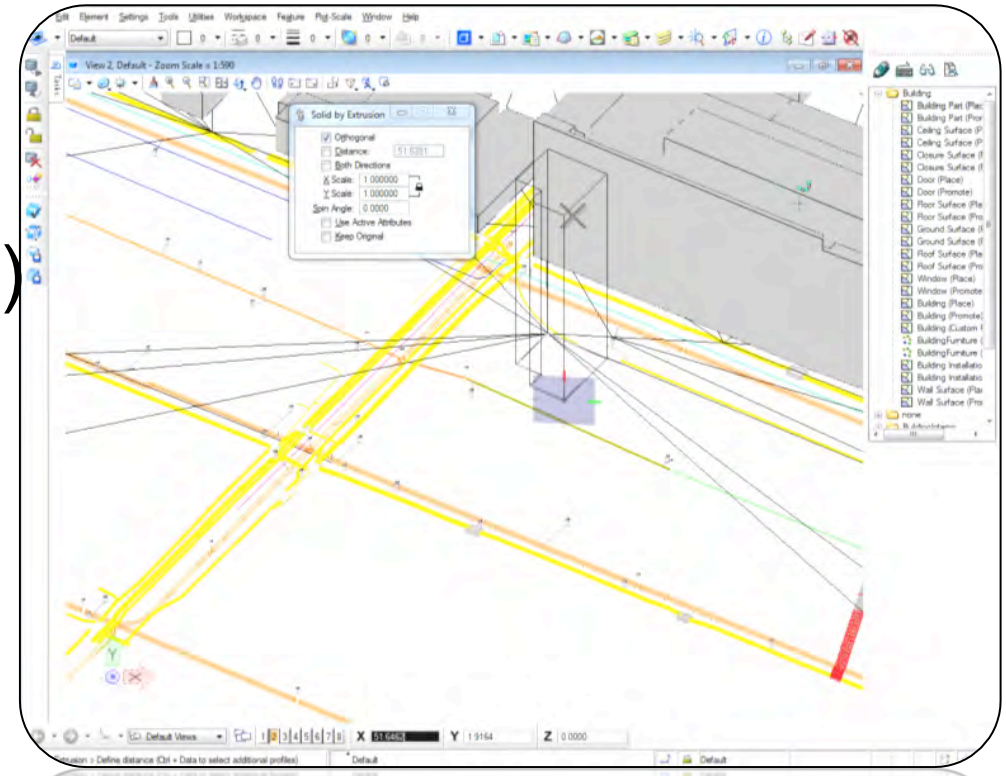
V I D E O

Oracle Spatial Editing in Bentley Map

Demo: Bentley Map 3D Oracle Spatial

- Gather data from different sources (DGN, Oracle, DTM)
- Sketch a new building
- Post to Oracle

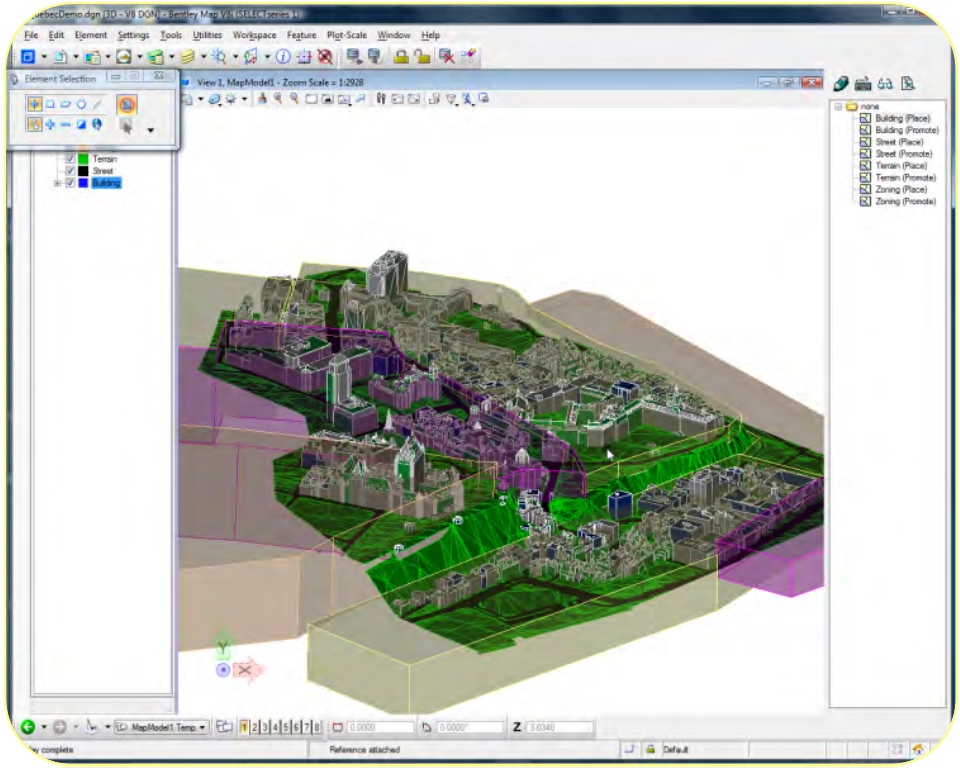


Demonstration

Data Provided by City of Montréal

Demo: Bentley Map 3D Oracle Spatial

- View Oracle Spatial 3D data
- Query streets and terrain
- Thematic mapping

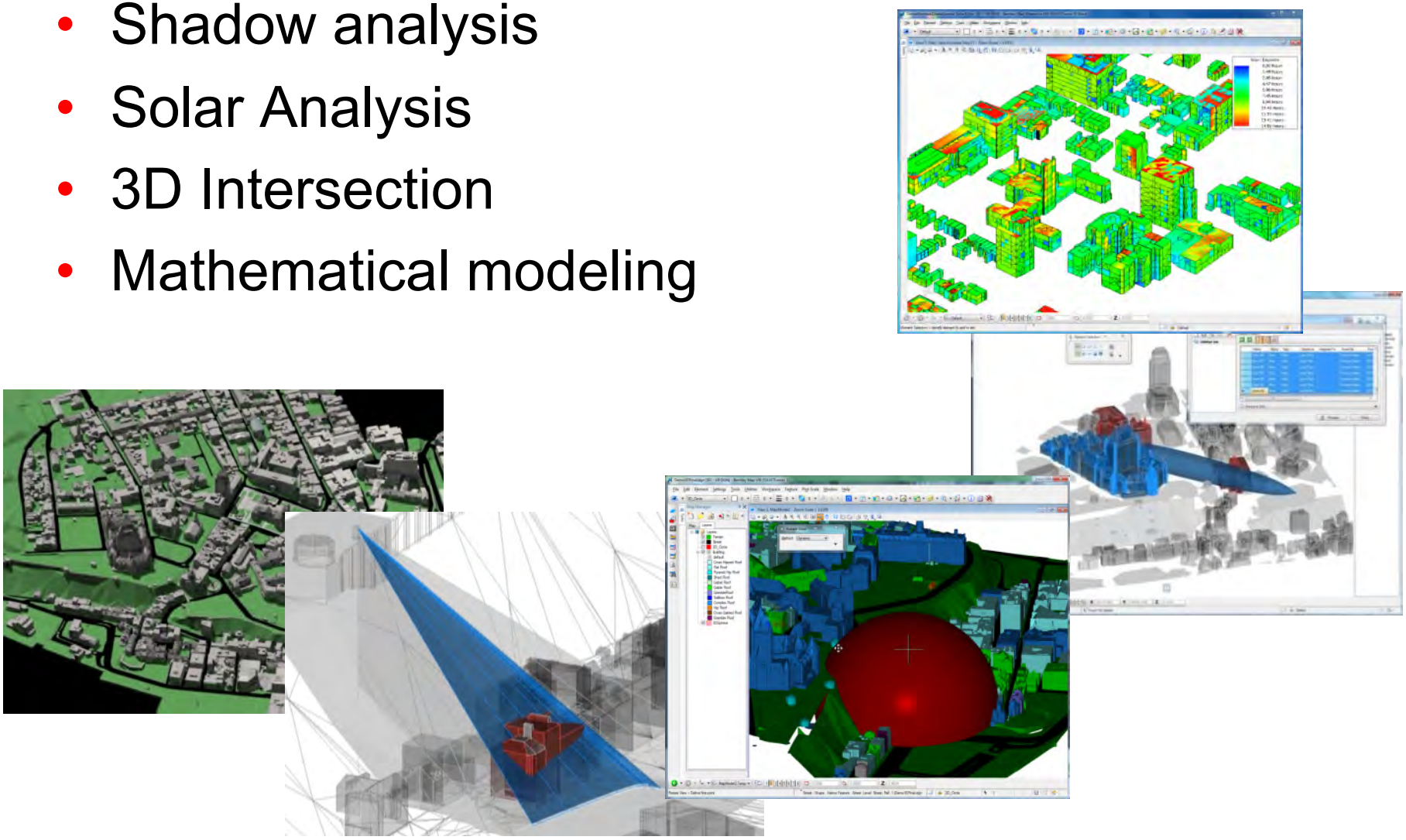


Demonstration

Data provided by Quebec City, Canada

Bentley Map- 3D Spatial Analysis

- Shadow analysis
- Solar Analysis
- 3D Intersection
- Mathematical modeling



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“Bentley is clearly in the lead with their approach to 3D GIS. Government organizations, universities and commercial organizations who seriously want to deploy a 3D GIS system should definitely look at what Bentley has to offer.”

- Sisi Zlatanova. Associate professor GIS technology – TU Delft (NL)

Customers implementing 3D Oracle Spatial

- City of Montreal, Canada
- Brussels Region (CIRB), Belgium
- Crossrail, United Kingdom
- City of Magdeburg, Germany
- Nynäshamn kommun, Sweden


Q&A


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