# Point Clouds in MicroStation V8*i*

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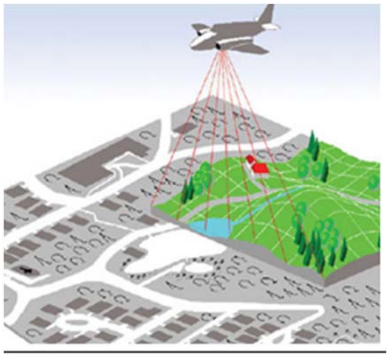
# LiDAR Challenges

- Working with many forms of LiDAR (light detection and ranging)
  - Laser Scanning
  - Airborne LiDAR
  - Mobile Mapping Systems
- All forms produce large data sets that require specialized software to view, extract and model for CADD use



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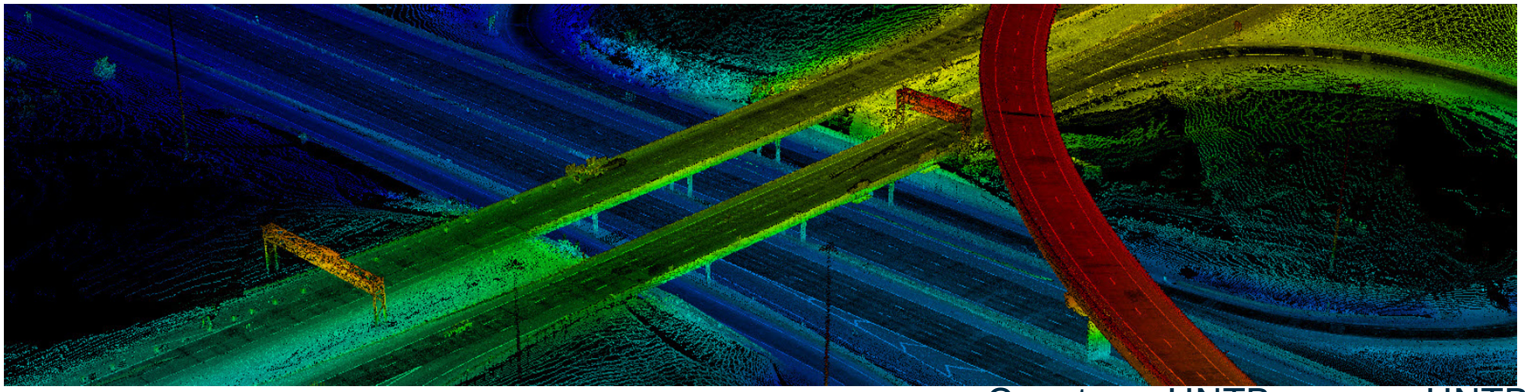
# LiDAR Challenges

- Point cloud data is increasingly used as a basis for the 3D design work
- Today, this requires sophisticated software and specialized skill sets to extract and model what is needed for as-built conditions
- Only a select group have access to these tools and the point cloud data



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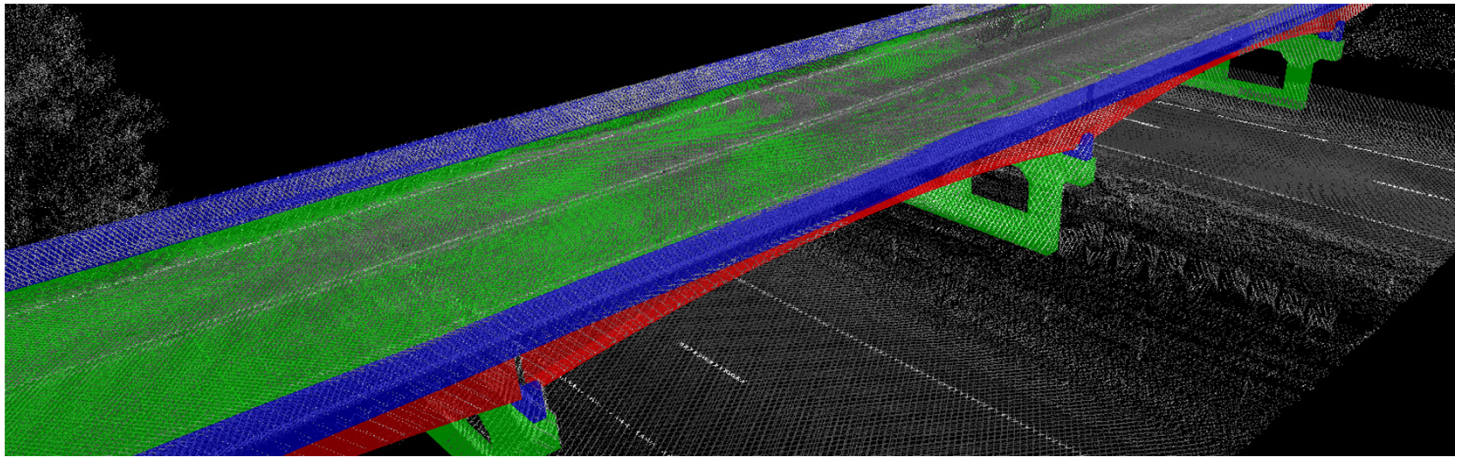
# LiDAR Solutions

- MicroStation with point cloud capabilities will enable design teams to leverage the LiDAR data throughout the design workflow
- This will empower MicroStation user base with LiDAR viewing and measuring capabilities without need for add-on software



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# Value Creation Through Partnerships

- Agreement for “continuous technology transfer”
- Embedding VORTEX engine in V8*i*

*News Release*
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**Bentley and Pointools Sign Continuous Technology Transfer Agreement to Incorporate Vortex Engine in Bentley Platform**

*Will Enable Bentley Software Users to Interoperably Reference, and Manage, Virtually Unlimited Point Cloud Data for Intelligent Infrastructure Modeling*

CHARLOTTE, N.C. – *Be Inspired: Infrastructure Best Practices Symposium and Awards* – Oct. 13, 2008 – Bentley Systems, Incorporated, the leading company dedicated to providing comprehensive software solutions for the infrastructure that sustains our world, today announced at this invitation-only gathering of top users from around the globe that it has entered into a technology agreement with Pointools Ltd., the leader in high-performance software to exploit point clouds captured by 3D laser scanning of infrastructure assets, including aerial LiDAR surveys. Through this agreement, Bentley has licensed Pointools' super-fast Vortex API engine (and its ongoing upgrades) for incorporation in MicroStation and all other software products that leverage Bentley's

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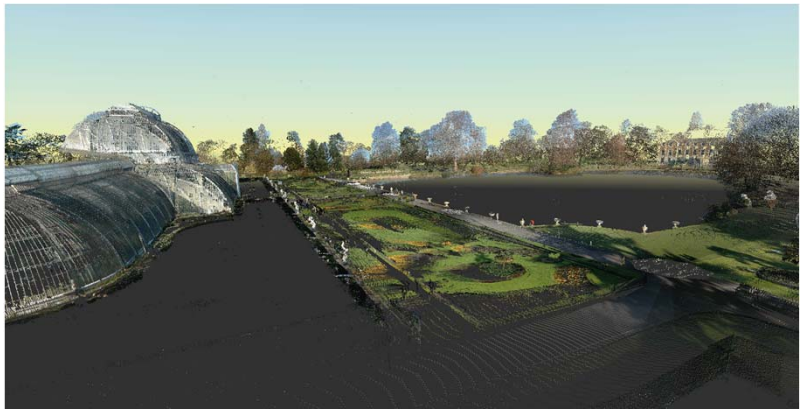
# Benefits of Partnership for MicroStation Users

1. Pointools is Dedicated to Software Development of High Performance Point Cloud Solutions
2. Embeddable Software Engine
3. Broad Interoperability Support
4. Large File Handling
5. High-speed Data Processing



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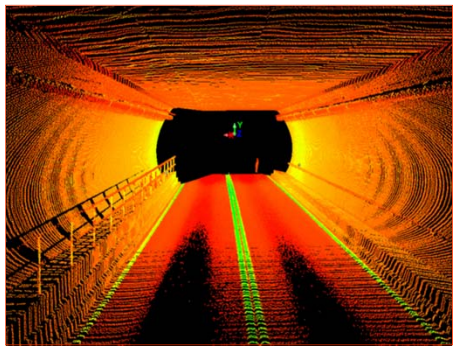
# Potential Impact of Pointools Agreement



- Mainstreaming use of laser scanned data
- Ability to manage billons of 3D data points
- Less need to create vector/CAD models
- Leverage benefits of common CAD platform across all apps
- Better integration of design and construction – VDC - Virtual Design and Construction
- Increased demand for laser scanned data and services

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# SUPPORTS ALL SCANNING TECHNOLOGIES

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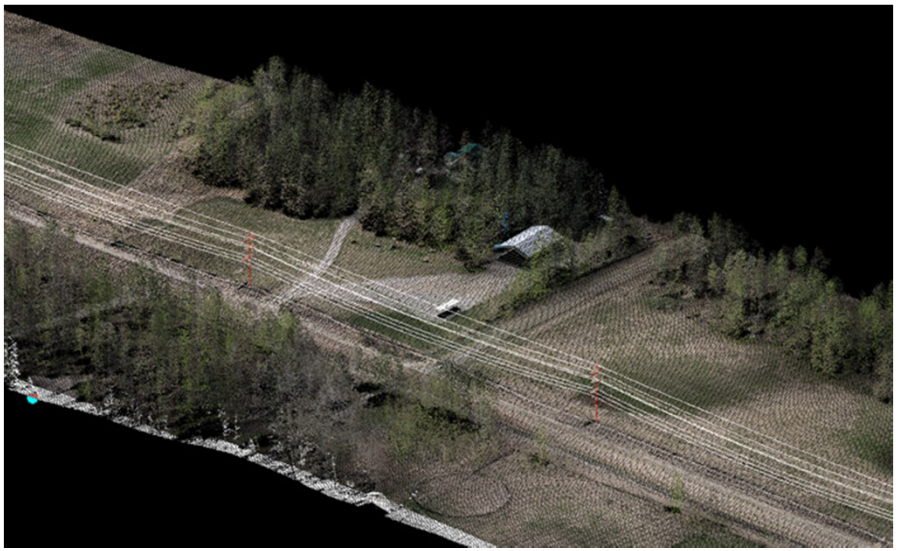
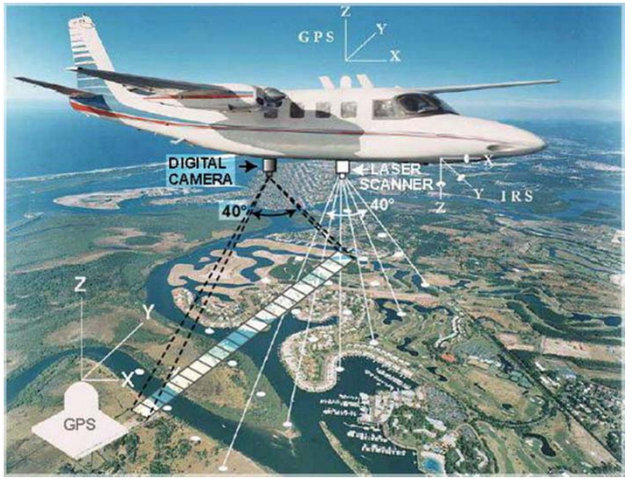
# Airborne Scanning

- Large areas, relatively low density



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# Mobile Scanning

- Relatively large areas, medium density

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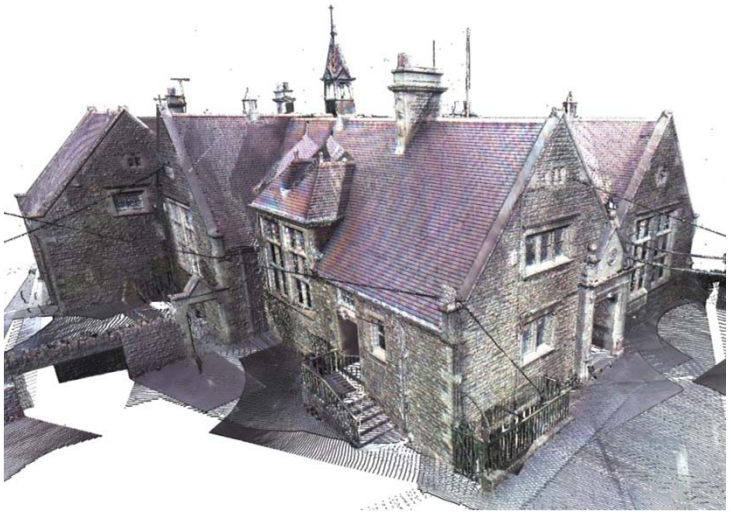
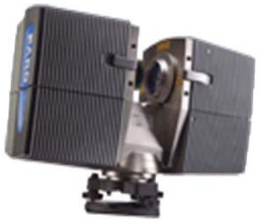
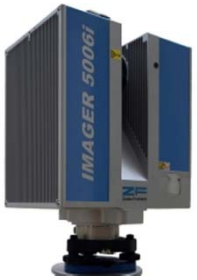
# Terrestrial Scanning

- Small areas, medium – high density





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# Laser Scanning Applications and Platforms

- GIS/mapping – fixed wing
- Utility and corridor mapping – helicopter
- Process, power and industrial plant – tripod
- BIM – tripod
- Transportation and infrastructure – mobile
- Construction – multiple
- City Modeling – multiple
- Forensic and Security Planning – multiple
- Entertainment and Gaming - multiple

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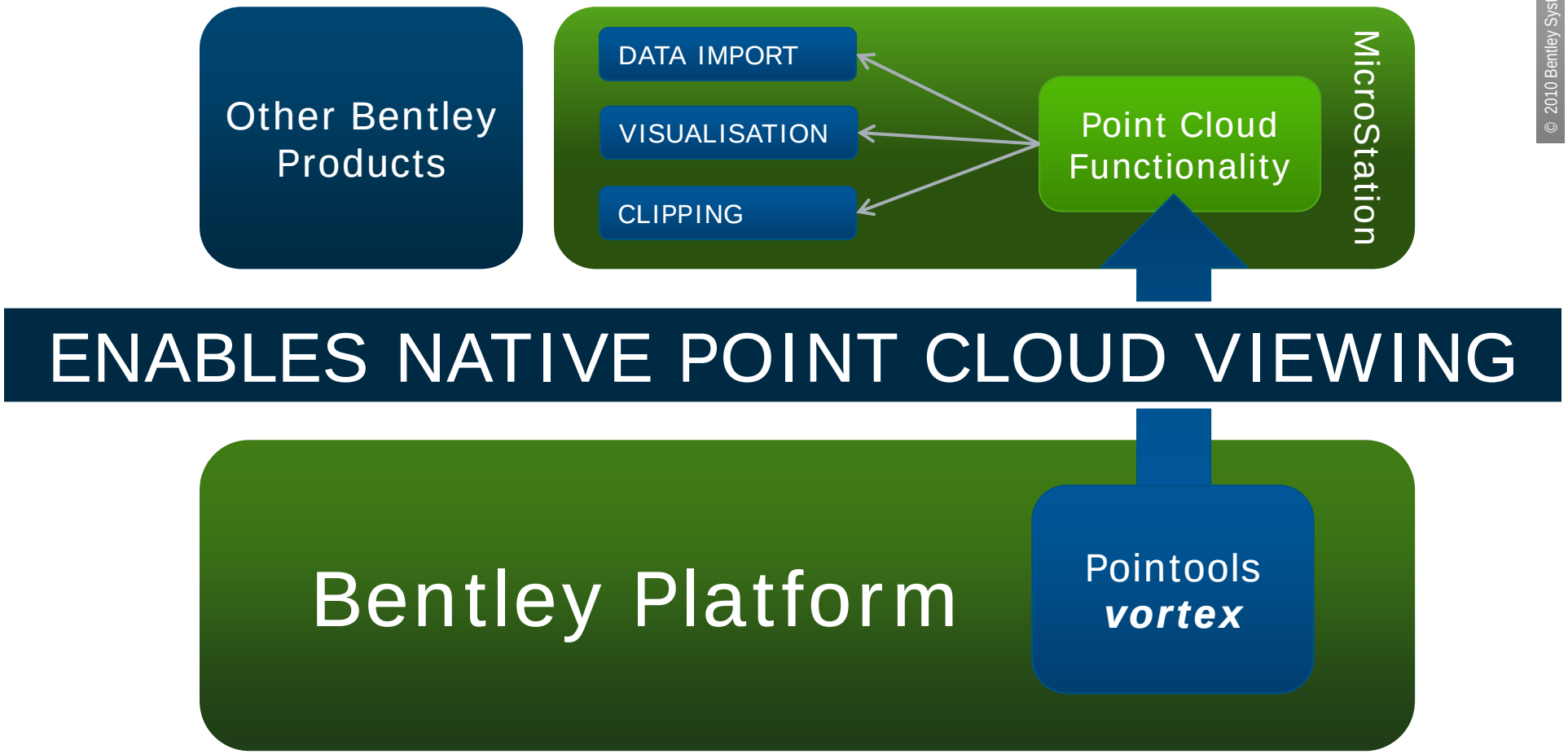
# Bentley's Implementation

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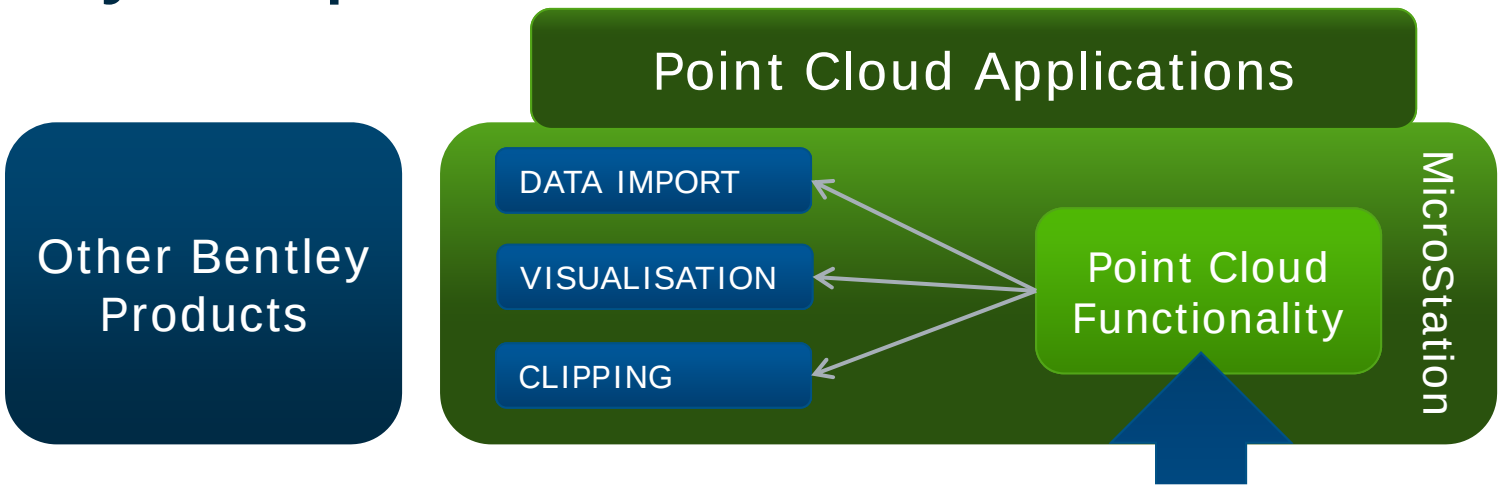
# Bentley's Implementation




SUPPORTS POINT CLOUD APPLICATIONS

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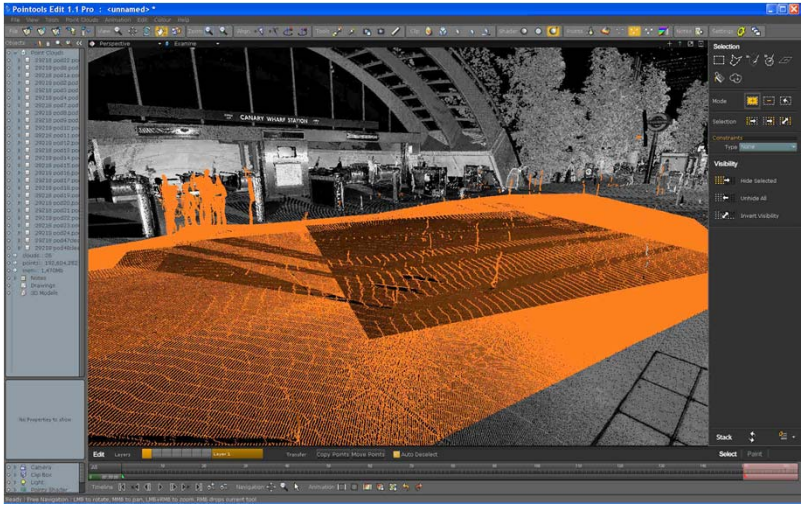
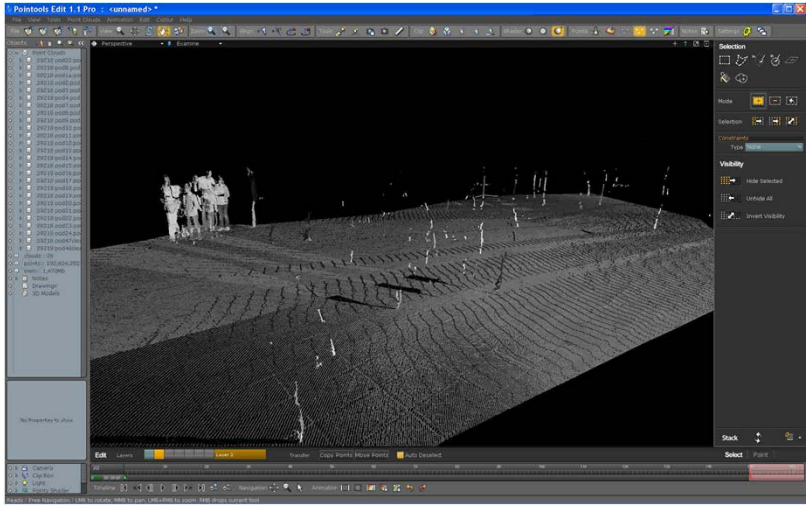
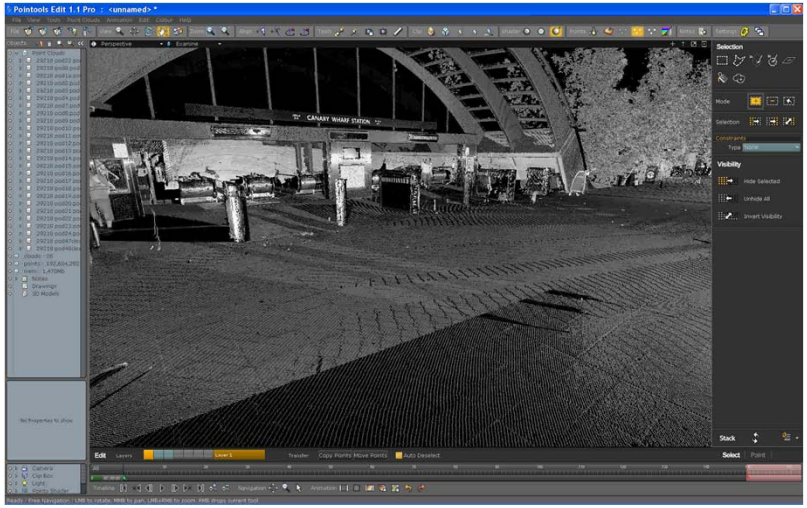
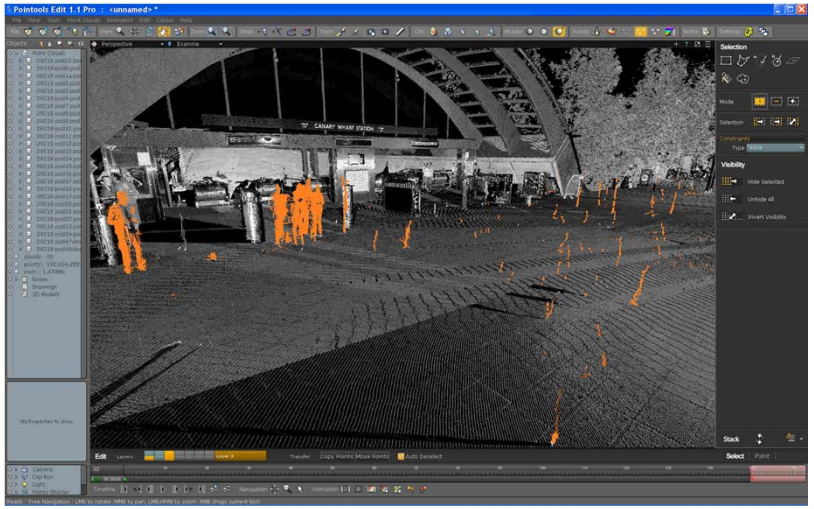
# Preparing Point Clouds in POINTOOLS









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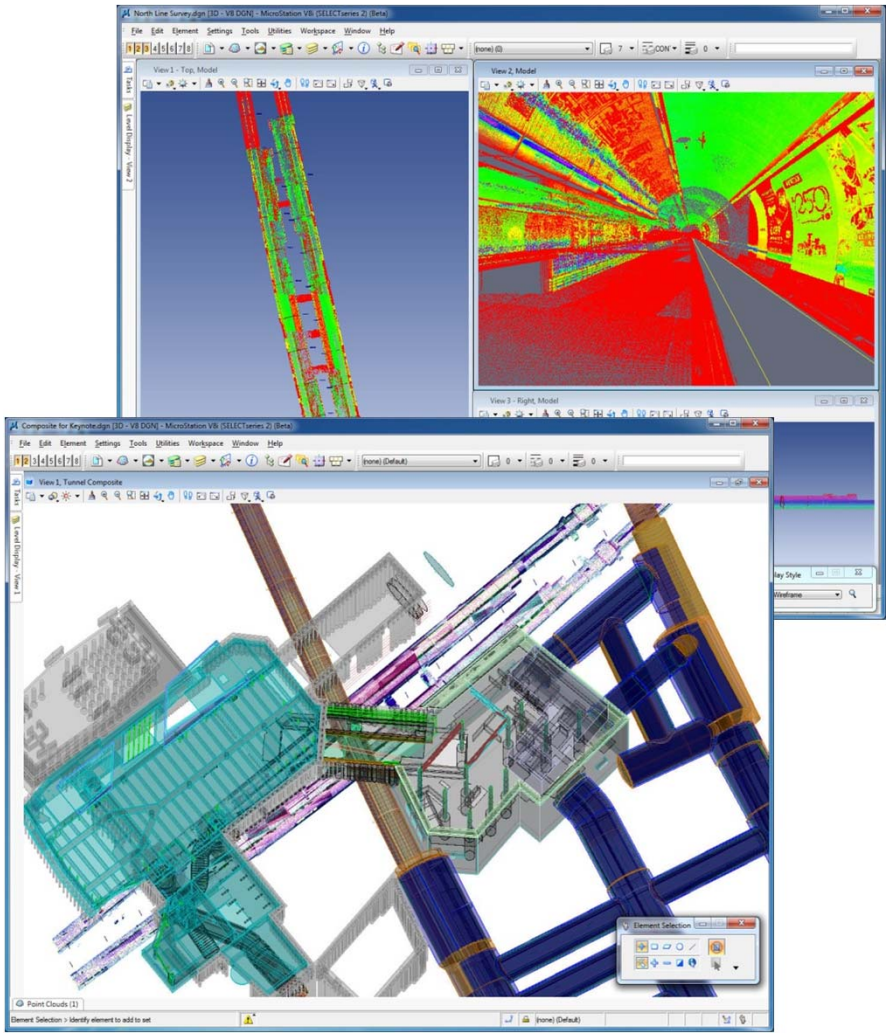
# MicroStation Implementation

## Native DGN Element

- Standard Viewing tools
- Similar to a reference file attachment
- Snap and Locate
- Measure, move, scale, etc.
- Level on/off

## Point Cloud Presentation

- RGB
- Classification
- Elevation
- Intensity



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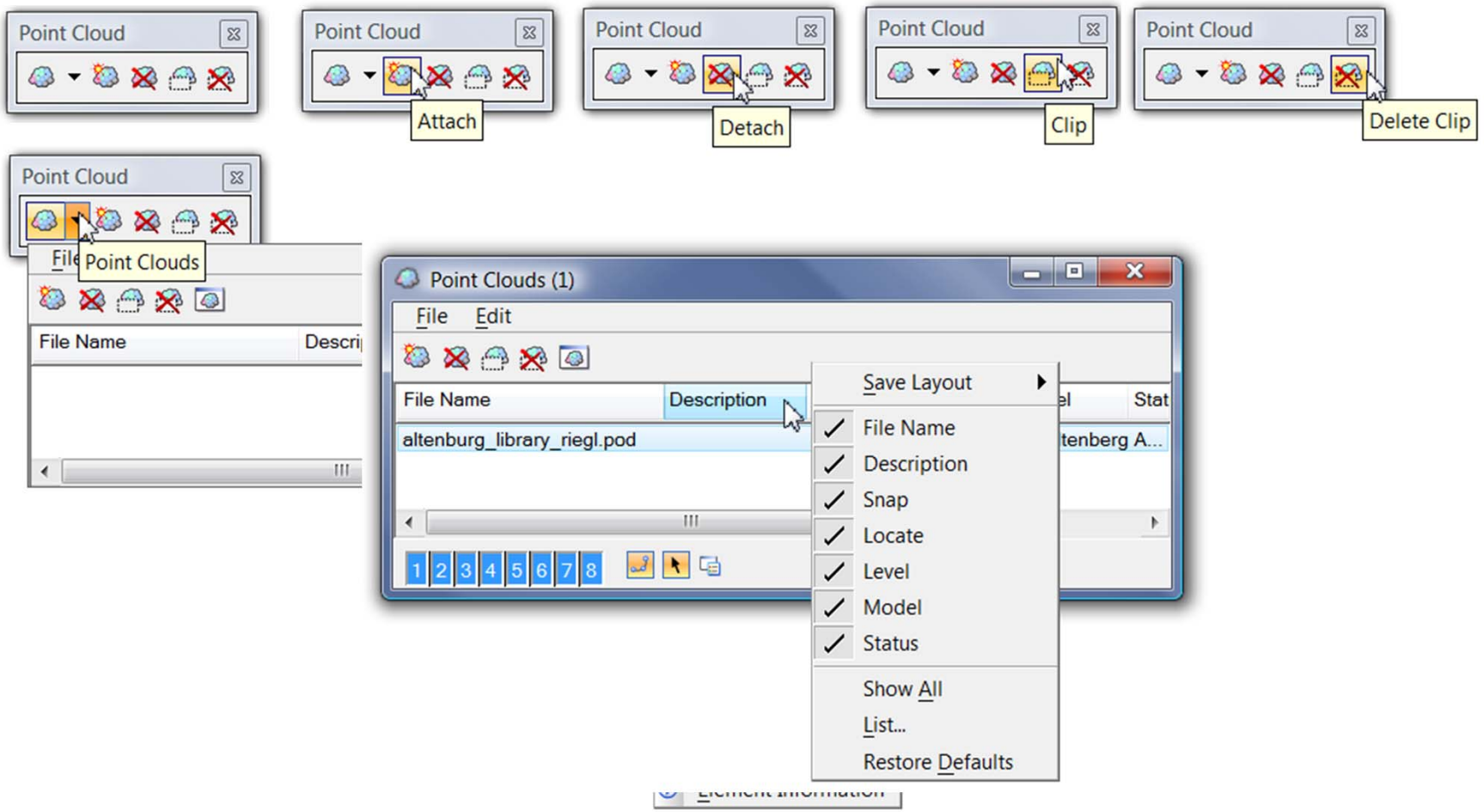
# MicroStation User Experience

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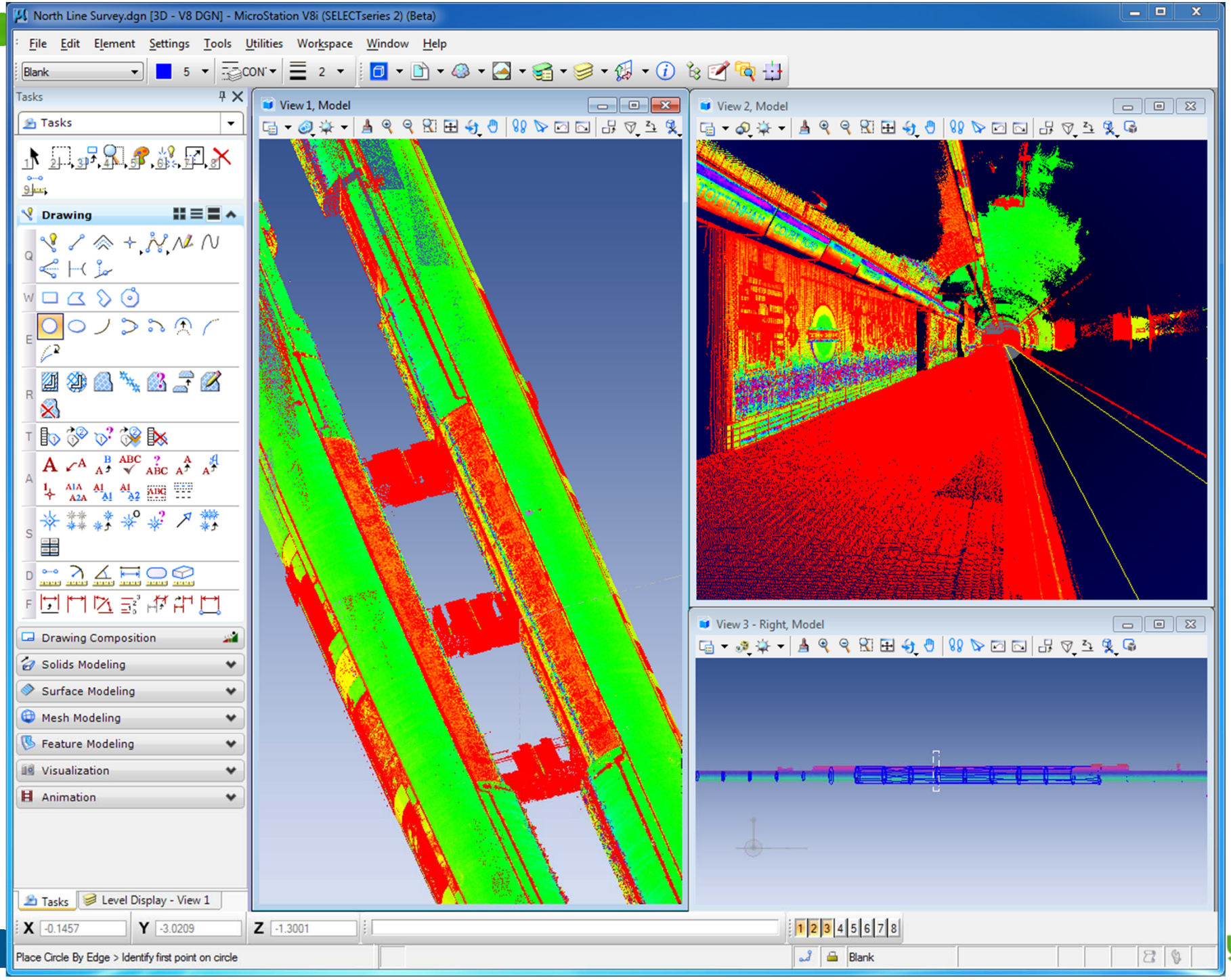


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# Demo

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# LIDAR Workflows

- LiDAR specialists prepare scans for mass consumption
- Capability will allow for:
  - Evaluation of as-built models
  - Design decision support
  - Constructability analysis
  - Clearance checking between design and survey data
  - Many others

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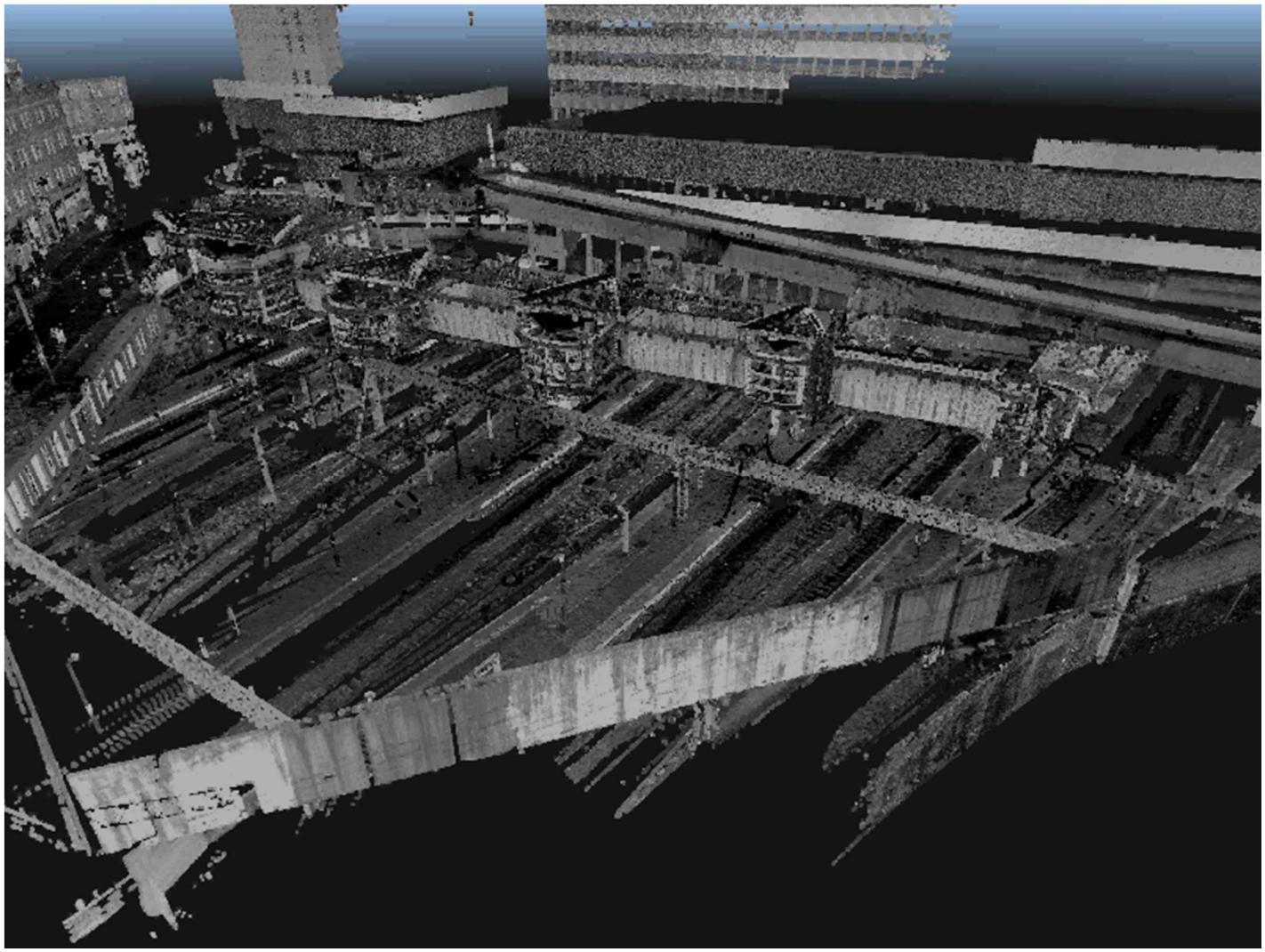
# Rail Station Project



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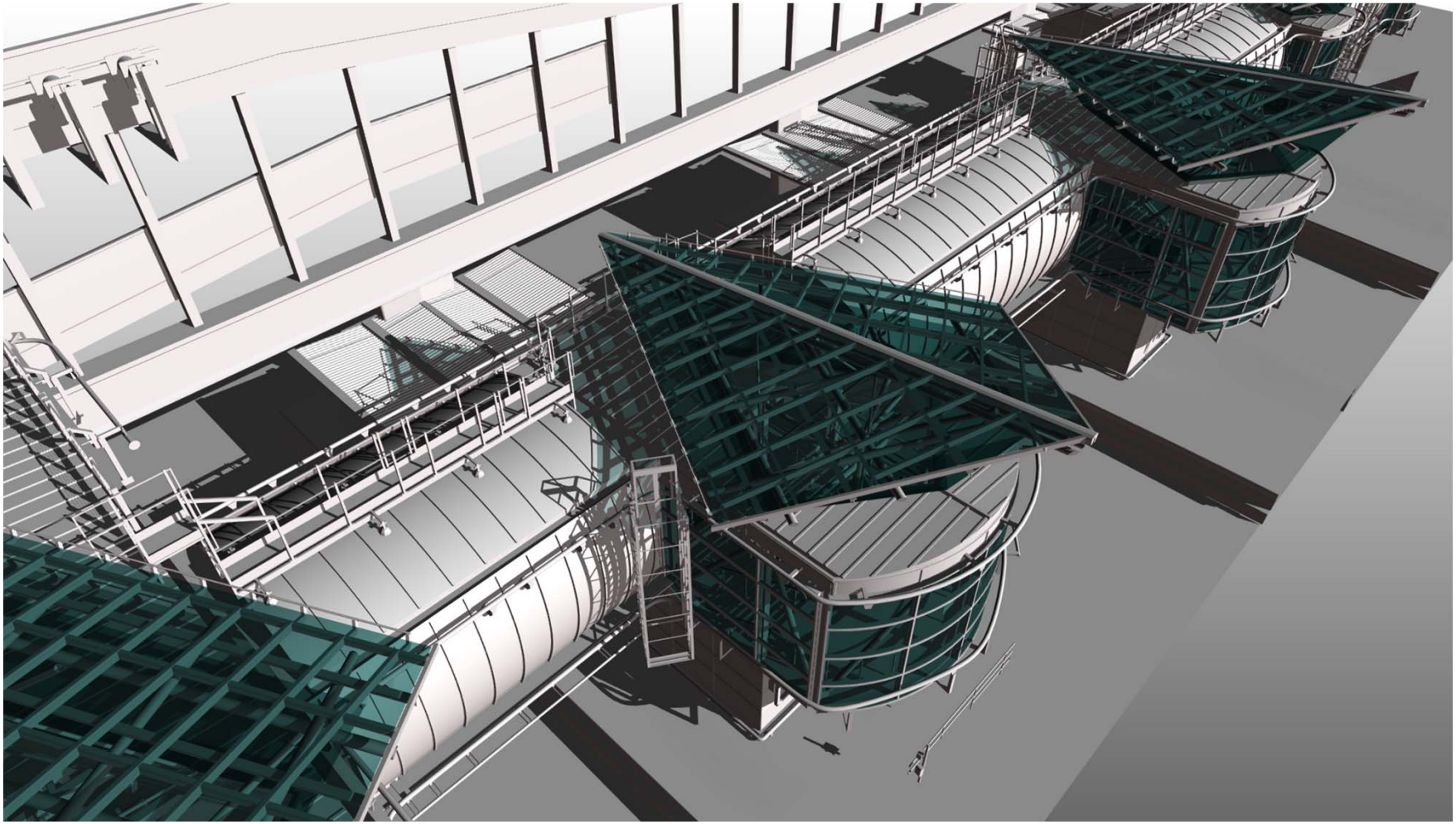
POINTOOLS



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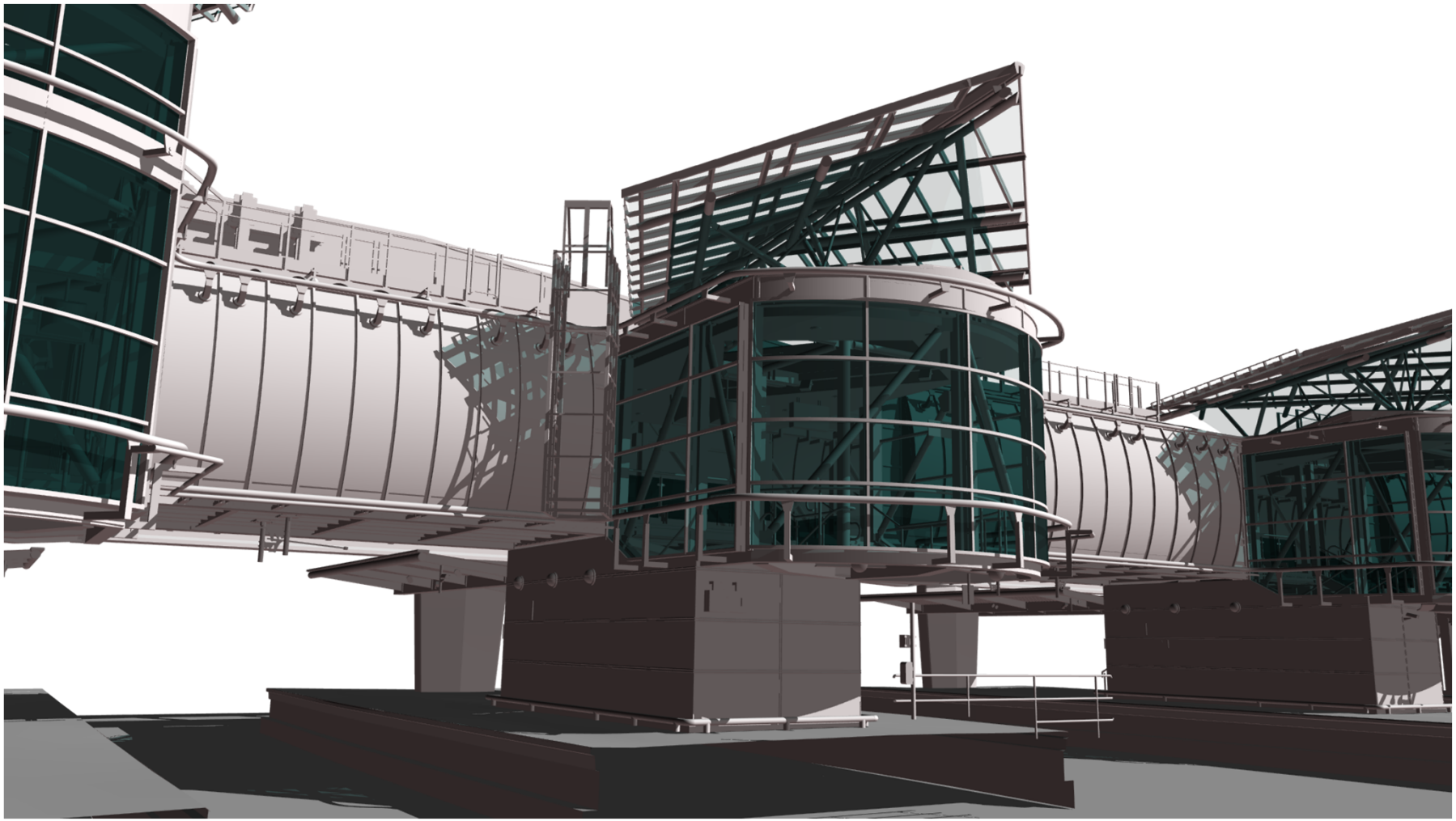

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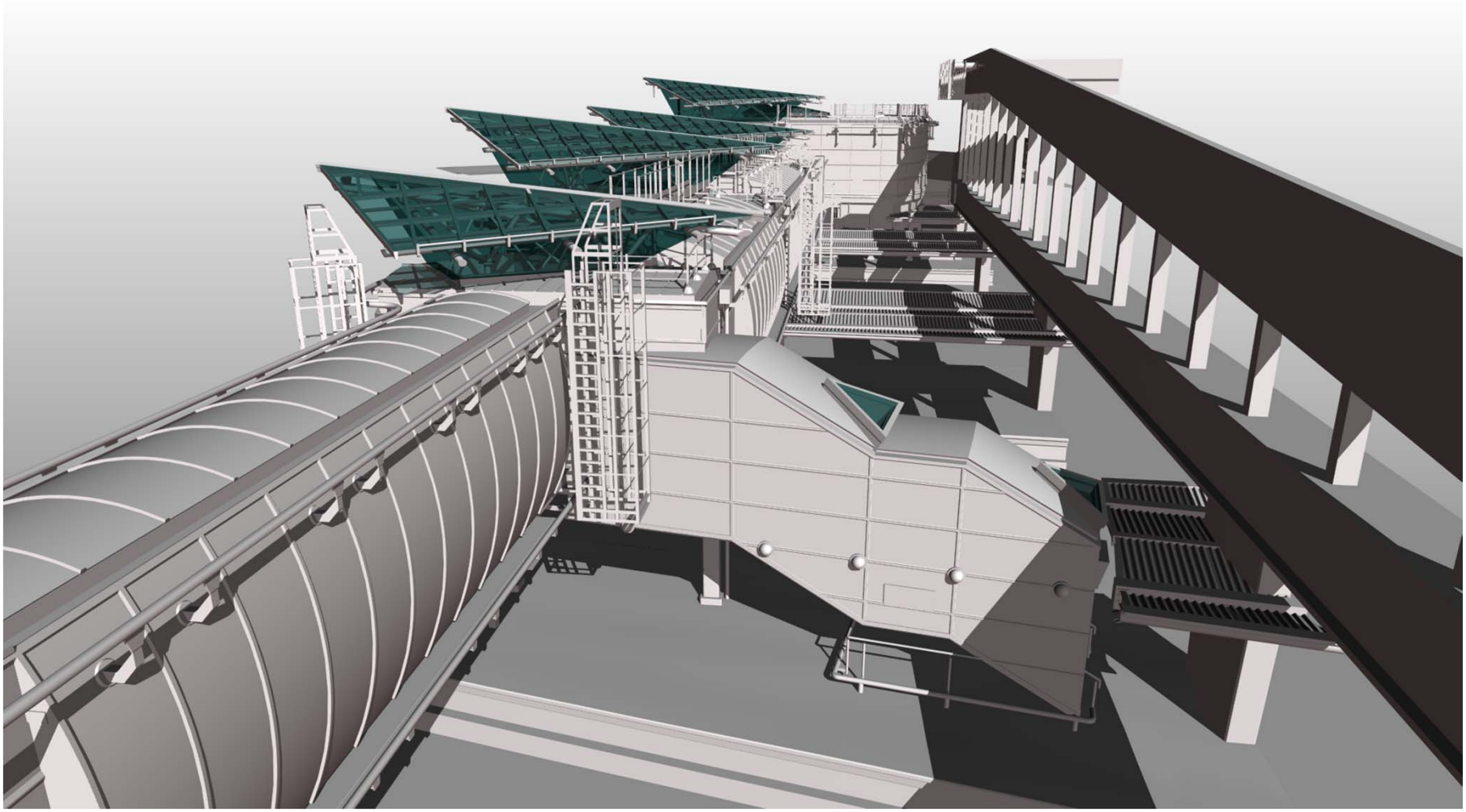

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# Availability

Available in many V8*i* (SELECTseries 2) Products including:

- MicroStation V8*i*
- PowerDraft V8*i*
- Bentley View V8*i*
- Bentley Navigator V8*i*
- PowerCivil V8*i*
- PowerSurvey V8*i*

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# Point Clouds in MicroStation V8*i*

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