Bentley
Sustaining Infrastructure

Image courtesy HNTB   Image courtesy Ville de Quebec   Image courtesy Network Rail

Bentley® Descartes V8*i* (SELECTseries 4)
The Advanced Processing Platform for 3D Imagery

Bentley Descartes provides a very powerful toolset for integrating 3D imagery into information modeling workflows and supports the processing of fundamental data types including point clouds, scalable terrain models, and raster files.
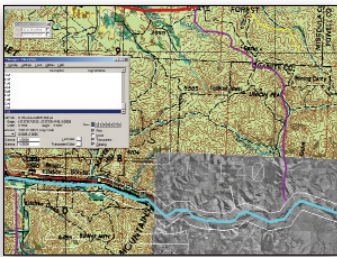
Work with multiple images as if they are a single image.

Visualize and edit point cloud data.

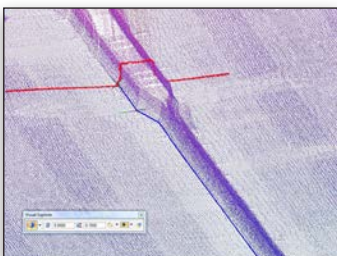*Combine various formats in a single scene.*

Advanced Point-cloud Processing Increases Productivity

Bentley Descartes integrates point-cloud data with engineering tools. Advanced modeling tools, clipping, and sectioning tools enable efficient 3D modeling of as built conditions and streamline point cloud to geometry conversion. Point clouds can be enriched, segmented and classified to be combined with engineering models to produce hybrid models. Animations and renderings for presentation can also be produced. These capabilities enable users to better evaluate point clouds and produce more accurate engineering models, for civil, building, plant, and geospatial projects.

Intuitive Manipulation of Large Scalable Terrain Models

Bentley Descartes enables the use and display of very large terrain models, typically for city or regional level planning, increasing the return on investment on large datasets. Users can display the scalable terrain model (STM) in a variety of modes and can easily keep it up to date by synchronizing it with a wide variety of sources.

High-fidelity Imaging Supports Precision Mapping and Engineering

Bentley Descartes enables users to combine imagery in virtually any format and projection with the precision mapping capabilities of MicroStation® and Bentley Map®, to support business or government requirements.

On-the-fly Projection of Georeferenced Images

When used with Bentley Map, any georeferenced image can be transformed on the fly to another coordinate system and projection. Dynamic resampling provides instantaneous raster transformation and Job Manager allows users to process resampling jobs in batch.

Fast Creation of Seamless Image Mosaics

Capitalize on Bentley Descartes' high-performance display engine to create seamless mosaics of multiple images, scanned aerial photos or adjacent raster scanned images to see the complete picture. Source images can be left in their original form or merged into one file to create an easily transportable mosaic.

Flexible Image Manipulation and Rapid Document Editing

Bentley Descartes includes tools to crop, copy, move, merge, scale, mirror, square, and rotate images or objects within images, as well as tools to make regions of images translucent or transparent. Use these capabilities to automate production of montages, corridor and plan sheet alignments, or to lay out plots or documents.
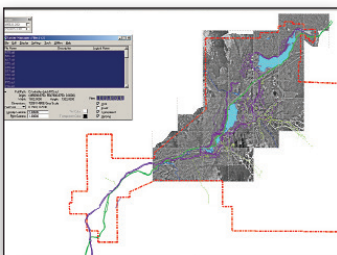
Clean up drawings by filling holes, using erasers, despeckling, and a variety of other methods. Rapidly improve the quality of poor source drawings in order to take advantage of automated conversion tools or quickly restore and enhance legacy drawings to prolong their life.

Precision Registration

Bentley Descartes' unique WYSIWYG image registration is much more intuitive than other approaches that require distinct windows for vector and image data and that rely heavily upon transformational statistics. Registration provides for dynamic warping that overlays vector data over the uncorrected image to enable users to verify the transformation model before resampling the image, and for transformation of vector data through the same model and batch resampling of images.

Native Support for a Wide Variety of Industry Formats

Bentley Descartes supports a wide variety of industry-standard image formats, including native binary, grayscale, and color image formats. All are implemented natively for optimal performance. Fast open and save operations, without conversion, are supported and files can easily be converted to any supported format.

Bentley Descartes At-A-Glance

Multiple Platform Support

- Stand-alone application that includes Microstation's information modeling capabilities
- Layered application for MicroStation, OpenPlant, InRoads, and AECOsim Building Designer, adding advanced point-cloud, raster, and scalable terrain model processing tools

Point-cloud Processing

- Point-cloud visualization
- Drape and snap elements
- Classification editing
- Smart Snap (fully integrated with MicroStation's AccuSnap)
- Visual Explorer
- Batch tile export
- Pointools, POD, LAS, and XYZ file export
- Primitive fitting (extraction of planar and cylindrical elements)
- Linear feature extraction
- Presentation style manager
- Class management for any type of presentation styles
- Definition of custom classes
- Clip and section manager
- Support of geographic coordinate systems
- Model by section

Scalable Terrain Modeling

- Creation of scalable terrain models (STMs)
- High-performance display of very large digital terrain models (DTMs)
- Flexible display modes: smooth shading, smooth shading with shadows, aspect angle, elevation, slope, contours
- High-resolution image draping on STM
- STM update and synchronization with DGN files, civil DTMs, point-cloud data, and XYZ files
- Calculation of view shed from a point or path

High-Fidelity Imaging

- AccuSnap-enabled image borders
- Dynamic transparency
- Standard MicroStation selection sets for manipulation
- Standard MicroStation tools for move, scale, and rotate
- Display priority settings
- On-the-fly projection
- Coordinate system and projection system control
- Transformation of vector and raster data
- Georeferenced file format support
- Georeferenced "sister files"
- User-defined projections

Document Cleanup, Editing, Enhancement, and Image Manipulation

- Clean-up tools
- Clean-up mask
- Pixel-grid at high-zoom levels
- Vector stamping
- Drafting
- Rubber sheeting

Image Enhancement

- Translate, scale, and rotate
- Set translucency/transparency
- Use WYSIWYG enhancement tools
- Crop non-rectangular shapes
- Perform selection set operations
- Perform contrast stretch

Registration

- Precision warping with register
- WYSIWYG display of vectors and control points over raster
- Batch resampling
- Multiple warping methods
- Align tool
- Batch processing

Image Mosaics

- Automatic seaming and feathering
- Unlimited number of images

- Automatic color balancing
- Corridor cropping to DGN elements
- Mosaics processed as a single image
- High-performance image display
- 1- to 24-bit color support
- 16-bit/channel support (64-bit)
- Look-up-table (LUT) support
- Fast file open and save
- Image conversion not needed

Standard File Formats

- ECW (unlimited), PDF, IMG, JPEG 2000, BIL, DOQ, FLI, SPOT CAP, and Digital Image Map
- TIFF (1- to 32-bit), GEOTIFF, iTIFF, COT, CIT, RLE, CALS, PCX, IMG, BUM, TG4, INT, RGB, TGA, JPEG, RLC, RS, HMR, BMP, and IKONOS 3 (Red), and 4 (NIR) bands from GeoEye
- Compression schemes: Deflate, PackBits, CCITT3, CCITT4, and JPEG 2000
- Wavelet compression schemes: ECW and MrSID

Visualization

- Image draping on DTM or 3D objects
- MicroStation-based rendering
- Real-life textures
- Lighting effects
- Elevation
- Perspective
- Creation of fly-throughs and animations
- Creation of 3D PDFs
- Interpretation and conversion
- Semi-automatic and interactive modes
- Intelligent conversion
- Topologically ready linework
- Point, stream, and arc modes
- Gap jumping
- Generalization
- RasterSnap
- Contour conversion
- Rasters erased while vectorizing
- Optical character recognition (OCR)

Bentley Descartes enables users to easily integrate raster and vector data.

An image that illustrates draped aerial photographs on terrain models.

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