Bentley®
Advancing Infrastructure

CONNECT Edition

Image courtesy: Nearmap

OpenCities™ Map Enterprise
Software to Document and Model 3D Assets for Digital Cities

OpenCities Map Enterprise helps you create and aggregate a 3D model of your assets. The application helps you to quickly add semantic information to features in your reality mesh and consume information from various design disciplines. OpenCities Map Enterprise includes high level capabilities to maintain your reality data and model your assets. The software also helps you to build a digital twin of the city and allows stakeholders of city departments to make well-informed decisions.

The CONNECT Edition
The SELECT® CONNECT Edition includes SELECT CONNECT services, new Azure-based services that provide comprehensive learning, mobility, and collaboration benefits to every Bentley application subscriber. Adaptive Learning Services helps you master the use of Bentley applications through the CONNECT Advisor, a new in-application service that provides contextual and personalized learning. Personal Mobility Services provides unlimited access to Bentley mobile applications, ensuring that you have access to the right project information when and where you need it. ProjectWise® Connection Services allows you to securely share application and project information, to manage and resolve issues, and to create, send, and receive transmittals, submittals, and requests for information (RFIs).

Reality Data Processing
OpenCities Map Enterprise enables you to integrate and process reality modeling data such as reality meshes, point clouds, scalable terrain models, and raster data for use in geospatial workflows. Reality meshes are rich 3D scalable models of the real world, which are usually phototextured and automatically created from imagery (ranging from simple mobile phone photos to high-end photogrammetric cameras) using Bentley's ContextCapture software. OpenCities Map Enterprise enables fast and easy manipulation of meshes of any scale as well as the generation of cross sections, extraction of ground and breaklines, and production of orthophotos, 3D PDFs, and iModels.

Intelligent Geospatial Object Creation
OpenCities Map Enterprise includes advanced 2D and 3D design productivity innovations to create and maintain engineering-quality spatial data of city assets. Geospatial objects can be intelligently created with ease using interactive snapping capabilities. OpenCities Map Enterprise also includes dimensioning, annotation, raster display and editing, printing, publishing, and much more.

Spatial Analysis and Presentation
A full collection of spatial analysis and presentation capabilities using 2D and 3D data are also components of the software. Some of these features include the ability to create buffers around objects, perform topology overlays, create thematic maps, detect 3D collisions, label, and more.

Improved Interoperability
You can leverage the capabilities in OpenCities Map Enterprise to improve interoperability with other GIS formats. Multiple file formats can be directly referenced from the OpenCities Map Enterprise interface, including Esri SHP files, MapInfo TAB files, Oracle Spatial, PostGIS, ODBC, WMS, Google KML/KMZ, Esri File Geodatabase, 3D PDF, iModels, SQL Server Spatial, and Bing Maps. Data can also be exported into these formats and with other engineering disciplines. Moreover, OpenCities Map Enterprise interfaces with FME from Safe Software, greatly extending interoperability.

Symbology Synchronized with Attribution
OpenCities Map Enterprise has administrative functions to define features, attributes, symbology, behavior, and placement tools. Also, the application includes functions that promote simple geometries to intelligent features with full attribution. The product ensures that feature symbology remains synchronized with attribution.

Reality Modeling Integration
Work in a real-world digital context when you integrate 3D reality meshes of any scale using the 3SM format. Easily add OpenCities Map Enterprise semantic information to the 3D reality mesh using the classification feature. Improve team collaboration when you share and stream the 3D models across project teams and applications using CONNECT and ProjectWise ContextShare. Reality modeling integration promotes digital city development and allows stakeholders of city agencies to make better informed decisions.

Field Access
OpenCities Map Enterprise offers support for the OpenCities Map Mobile application for tablets and OpenCities Map Mobile Publisher. Together they provide mobile workers access to rich OpenCities Map project information to facilitate informed decision-making in the field.

OpenCities Map Enterprise At-A-Glance

Mapping and GIS
- Compile and edit data efficiently
- Build and publish accurate maps and infrastructure models
- Enforce business rules
- Brings CAD accuracy and ease of use to GIS

All the Power of MicroStation®
- Smart, quick drawing and editing of GIS features
- Raster management
- AccuSnap, AccuDraw®
- Display priority, transparency
- Coordinate system assignment and on-the-fly reprojection
- Full 3D modeling

Map Manager
- Intuitive, easy-to-use, persisted map definitions
- Drag-and-drop layers to control display order
- Control all aspects of map display
- Automatic creation of thematic map from template
- Export layers to MicroStation elements

XML Feature Modeling
- XML metadata-driven GIS
- Property-based symbology and annotation
- Convert simple elements to smart GIS features

Geospatial Administrator
- Manage the XFM framework through one interface
- Runs outside MicroStation
- Define and maintain XFM project files
- Define features, properties, and the tools used to build those features

Choice of Data Stores
- Three-tier connection to Esri ArcGIS
- Self-contained XFM DGN files
- Any RDBMS/DGN supported by MicroStation

Data Capture and Maintenance
- Polygon parallel creation
- Digital terrain model support
- Dynamic domain lists

Geographic Coordinate Systems
- Custom datum/ellipsoid
- Create custom grid/graticule definitions

Oracle Spatial Editing
- Oracle Spatial compliant
- Two or three tier connection
- 3D object support
- Adherence to native Oracle Spatial models
- Support for GeoRaster
- Long transactions, optimistic and pessimistic locking
- Valid time and historical tables

SQL Server Spatial Editing
- Two-tier direct connection
- 3D object support

PostGIS Editing
- Two-tier direct connection
- 3D object support

Reality Mesh Processing
- Displays large, phototextured reality meshes
- Mesh editing capability (remove facets, fill holes)
- Ground and breakline extraction
- Efficient 3D modeling by using sections and templates
- Mesh classification to enrich mesh with data from many sources
- Orthoimage extraction on any axis
- Generation and manipulation of cross sections

Measurement Capabilities and Linear Adjustment
- Place points through radial or rectangular measurements from a baseline
- Create list of radial or rectangular staking measurements
- Perform linear adjustments on inaccurate data

Point-cloud Processing
- Drape and snap elements
- Classification editing
- Smart snap
- Visual explorer
- Batch tile export
- Export to POD, LAS, and XYZ files
- Extraction of lines, pipes, and elbows
- Clash detection

Scalable Terrain Modeling (STM)
- High performance creation and display of very large digital terrain models
- High resolution image draping on STM
- Display modes: smooth shading with shadows, aspect angle, elevation, slope, and contours
- STM synchronization with DGN, Civil DTMs, point clouds, and XYZ files
- Calculate view shed from point or path

Presentation and Analysis
- Spatial analysis
- Thematic display
- Buffer creation
- Dynamic labeling
- Direct data access (DDA)
- Automatic geolocation of features instances*
- Solar/shadow analysis

Map Generation and Printing
- Interactive location map index with references
- WYSIWYG plot generation with user-defined templates and legends
- Publishing to intelligent PDF, PostScript
- Solve integrity problems with imported or legacy data
- Easily adopt XFM schema for imported or legacy data through Dynamic Feature Scoring

Interoperability
- Directly reference geospatial formats
- Support for Bing Maps
- MapInfo (TAB, MID/MIF), SHP files, Oracle Spatial, CSV, GML, Esri File Geodatabase, SQL Server Spatial, PostGIS, and ODBC sources
- Import/export capabilities
- Integration with Safe Software's FME
- Publish iModels with RDBMS properties
- Spatial data streaming
- Web feature service client – read (query) access

Image Editing Capabilities
- Clean up and vectorize scanned documents
- Convert, edge match, and rectify many formats of aerial imagery
- Rectify and texture 3D models with digital photographs
- Display DEMs in various shading modes

GIS Development Platform
- Utilize Open API, C/C++, C#, NET other modern programming languages

Field Access Support
- Support for OpenCities Map, OpenCities Map Mobile, and OpenCities Map Mobile Publisher
- Android and iOS Tablets, Windows
- Fast access to large geospatial databases
- Easy to use with standard tablet-based gestures
- Simple query capabilities
- GPS integration
- Google Maps integration
- Apple Maps integration
- Disconnected, view-only operation for access without a network connection

* Only applies to direct data access (DDA) graphical source connections (e.g. Oracle Spatial, SQL Server, WFS, etc.).

Bentley®
Advancing Infrastructure