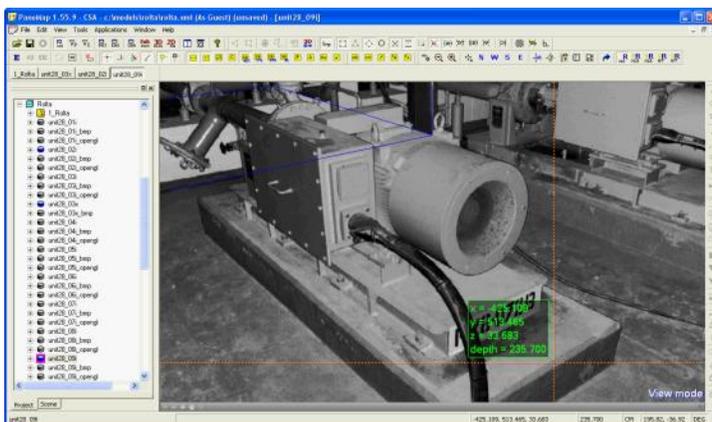


PanoMap® Powerful Laser Scanning Interface to AutoCAD®

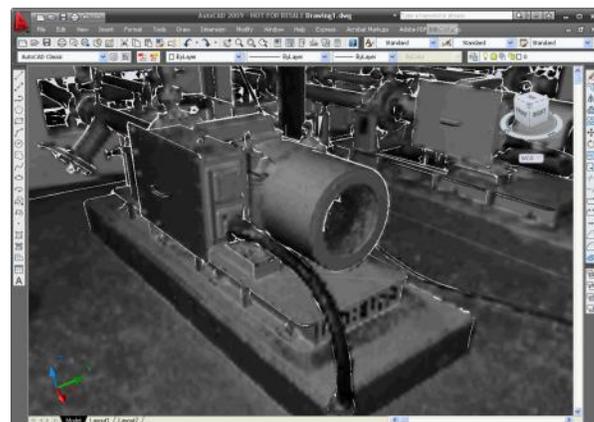
PanoMap, CSA's powerful laser scan viewer, displays scan data in a seamless, photo-realistic view. It provides effective access to the LSSM (Laser Scan Space Manager) database which can manage an unlimited number of laser scans.

Capabilities include **access to components P&IDs, 3D modeling libraries**, interference/clash detection and component removal/replacement simulations.

Using this technology, CSA has developed a **bi-directional interface** to and from its LSSM database and the **AutoCAD design environment**, including programs associated with AutoCAD.



Plant Component as rendered in PanoMap laser scan

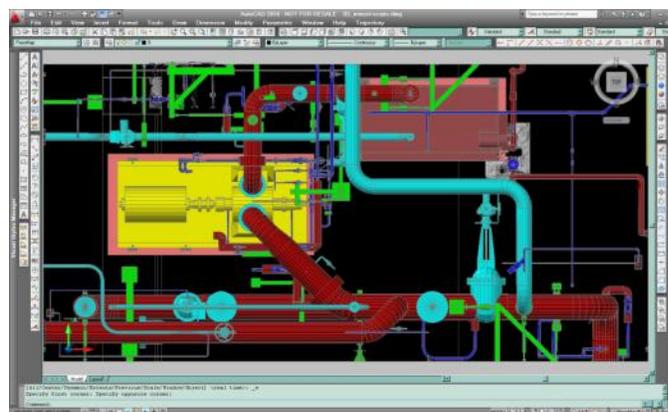


Plant component scan geometry in AutoCAD

Types of Access Formats

The interface to AutoCAD is provided in these formats:

- Photo-realistic scan representation providing user-friendly interface to support design retrofit functions
- Point Cloud data with applied intensities
- Intelligent 3D models created using PanoMap Laser Scan Intelligent Modeler
- 3D CAD surface representation



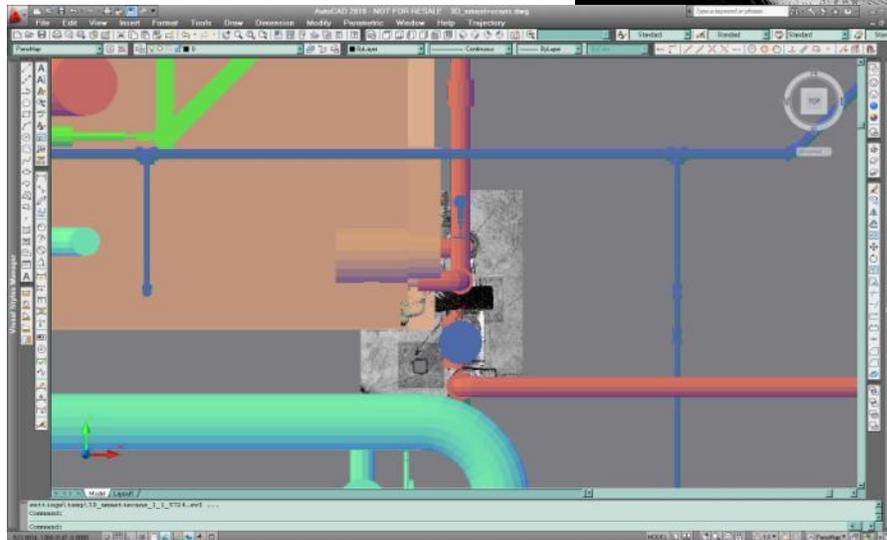
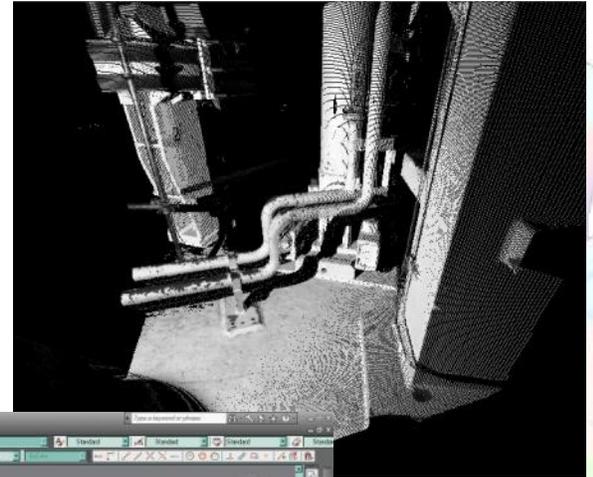
Point Cloud Interface/Extraction

To provide the best view of scanned data, the user has the original scanner view locations available.

The Point Cloud data with intensity is extracted and provided for design work. Selected Point Cloud data can be manipulated in any view.

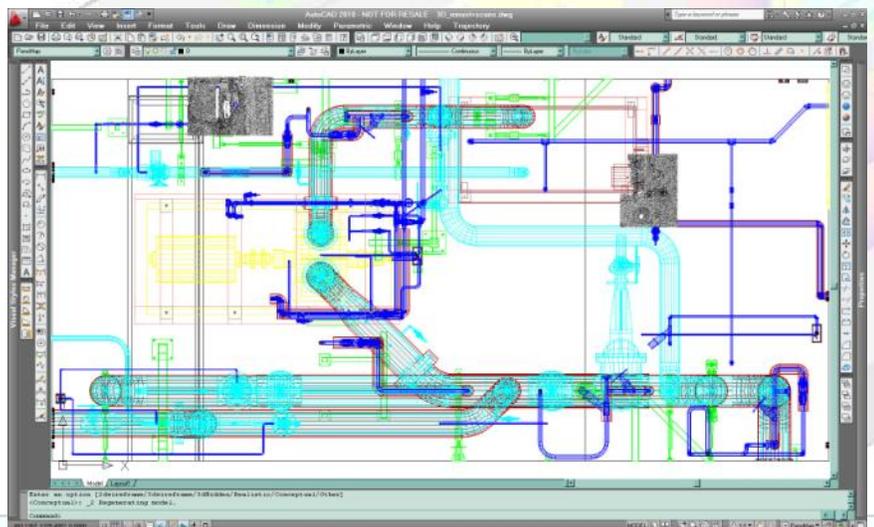
Within the AutoCAD Drawing, the user selects a desired volume of design for extraction from the LSSM database.

AutoCAD has access to a very large laser scan database containing thousands of laser scans.



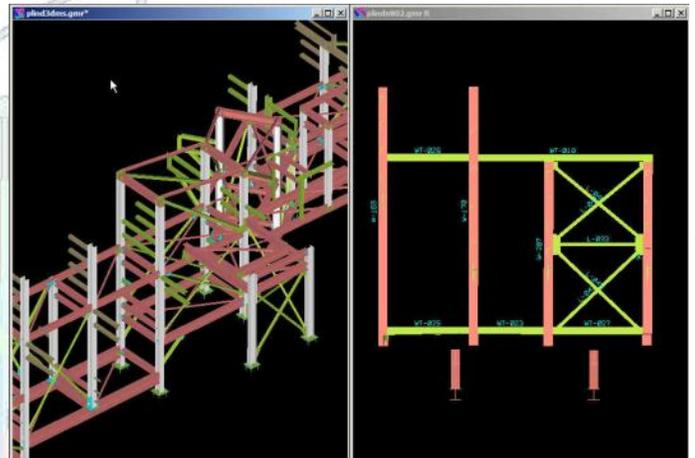
Point Cloud Submodels inserted into AutoCAD Drawing

The user may select any submodel from the LSSM master database and insert the submodel into the AutoCAD drawing.



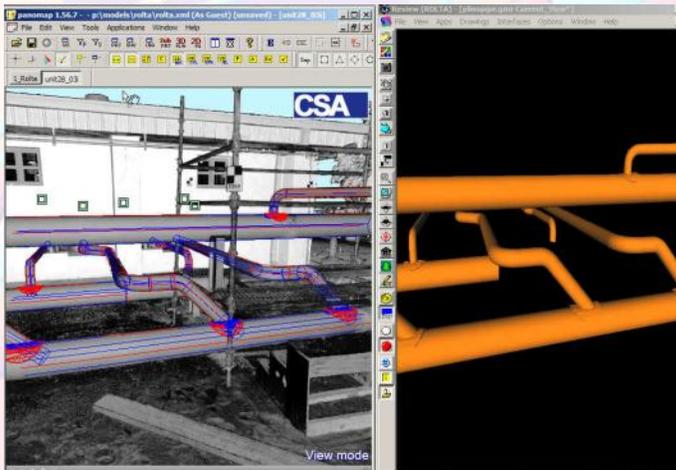
Intelligent 3D Models from Laser Scans

PanoMap provides powerful functionality to create 3D intelligent models for piping, steel, equipment, etc. which can be transferred to AutoCAD. The models are built using extensive Plant/CMS* component libraries and specifications.



PanoMap Provides the Following Functionality

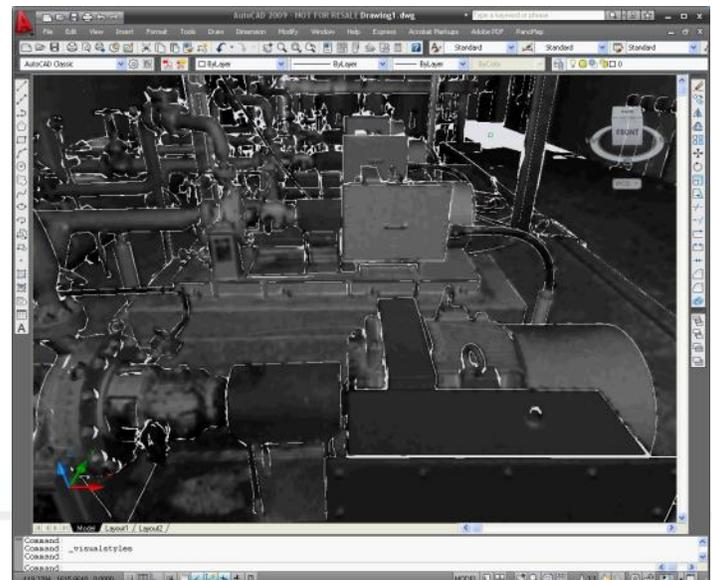
- Specification-driven modeling functionality using laser scans
- Automatic fitting of piping components
- Specialized component libraries oriented for automatic fitting of the components into laser scan space
- Automatic pipe routing capability to complete the pipe runs
- Powerful support for small bore piping, instrumentation, flexible pipes, tubing, etc.



3D Surface CAD Interface

The LSSM database also contains a surface 3D CAD representation of the laser scan space

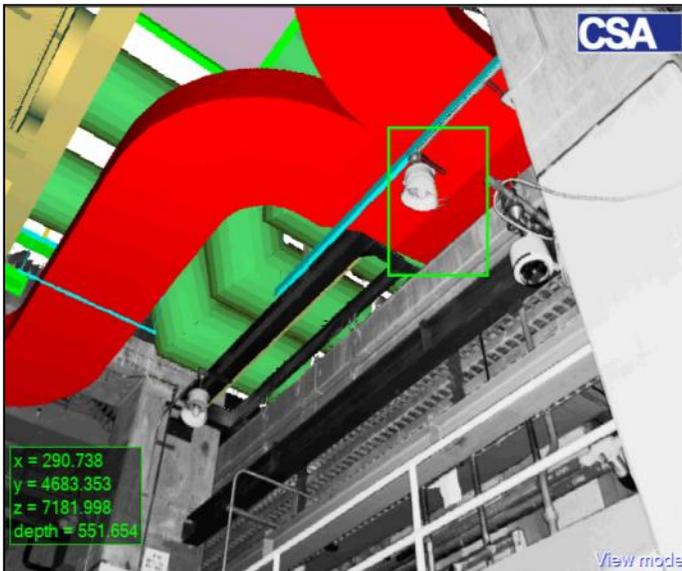
This representation provides an another, easily-visualized format of the laser scan data.



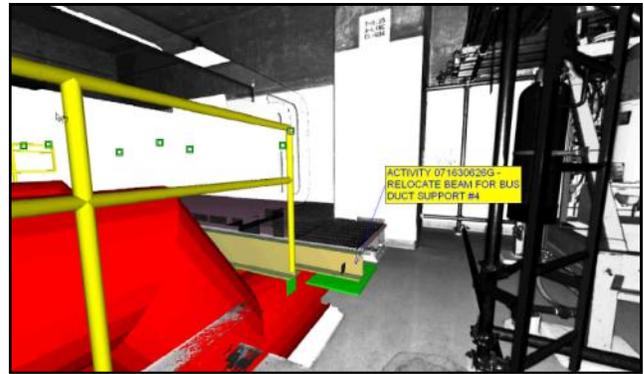
* Plant/CMS is CSA's 3D Intelligent Modeling Technology

AutoCAD to PanoMap Interface

PanoMap provides extensive laser scan database functionality, and is designed to handle projects of any size. The user can import 3D design from a variety of AutoCAD-based design applications, including CADWorx®, Plant-4D®, AutoPLANT®, etc., into PanoMap.



3D model imported into PanoMap laser scan



- User-friendly visualization of the design against scan space using a realistic, photographic-quality viewing format
- Powerful laser scan measurement and dimensioning capability
- Easily viewed interference checking with obstructing elements clearly color-coded
- Intelligent labels and tag numbers
- Access to and integration with other electronic documents and databases
- Equipment rigging and removal simulation
- Construction reviews using laser scans with new design

PanoMap on a tablet/smartphone—for plant management & more

From one-room art exhibits to entire multi-unit power plants incorporating 7,000 scans, PanoMap technology is a proven, cost-effective solution, fully functional from a standard Windows PC.

This technology is also available as an Android app, viewable on smartphones and tablets, providing remote access for walkdowns and reducing potential for human error.



View PanoMap 3D laser scan library on smartphones and tablets