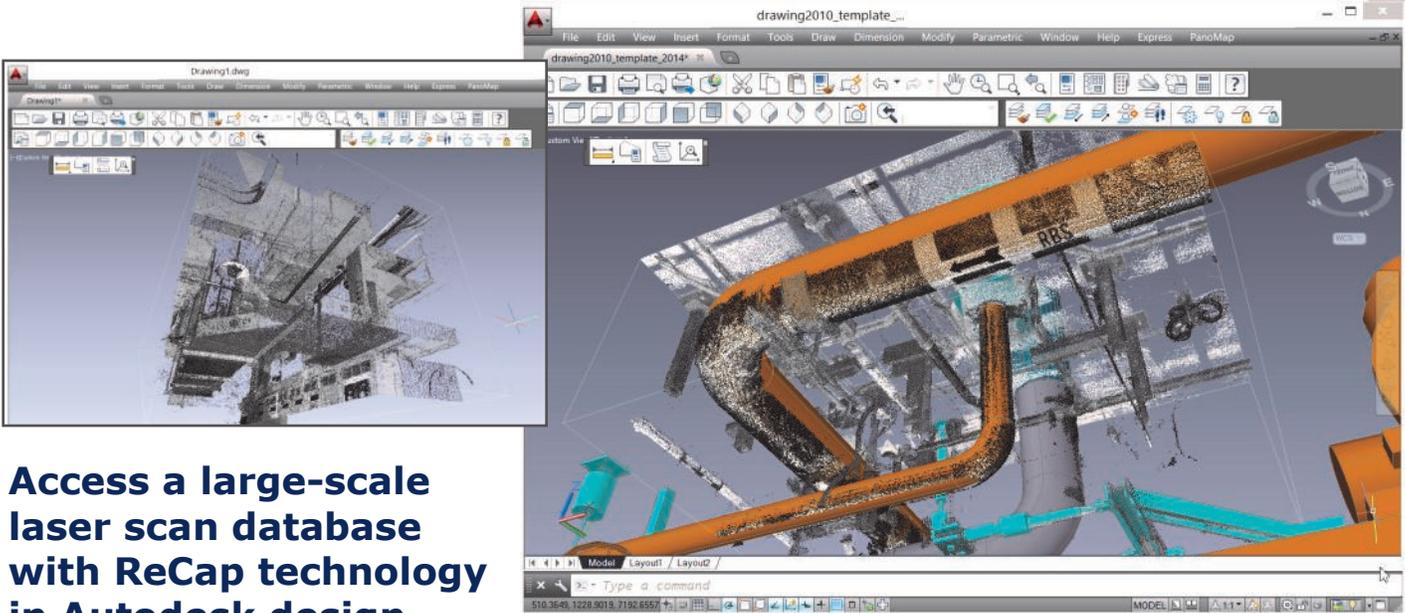


Laser Scan Database Access from Autodesk Products

Innovative Technology
Since 1976



Access a large-scale laser scan database with ReCap technology in Autodesk design products, such as AutoCAD® 2014 and Inventor.

Point cloud data from 3D laser scans with 3D model displayed in AutoCAD

Product features include:

- The PanoMap® laser scan database created from registered scans. Supported formats include .zfs, .fls, .ptx, ASCII, and .pts formats.
- Unlimited number of scans.
- Scans placed into a single plant coordinate system.
- Database indexed by geographic location providing fast access to very large models.
- Extraction of point cloud data and other processed formats (mesh, ortho drawings) from the database.
- Typical point cloud extractions may include:
 - Area volume
 - Plant sections
 - A selection in the vicinity of selected objects
 - Distance from the scanner
 - Laser scan date range
- Additional extraction capabilities include:
 - Mesh generated from scans
 - Ortho drawings in full scale generated from scans
- Sub-model registry: The extracted sub-models can be saved and maintained for future use.

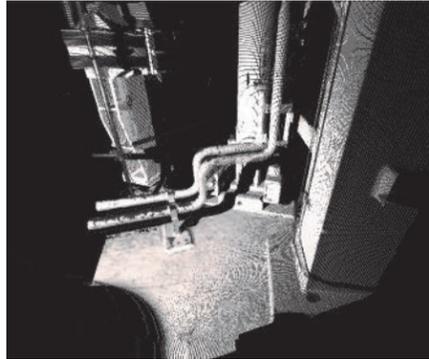
Advantages

- Compact storage of large scan databases
- Very fast retrieval
- Unlimited number of scans
- Support scans from a variety of scanners
- Support change control using handheld scanners
- No special hardware requirements
- Easily integrated with 3D models

Point Cloud Interface/Extraction

With PanoMap® Server, AutoCAD has access to the entire PanoMap® laser scan database. It stores a variety of representations of scans, including intensity and enhanced panoramic format, 3D point cloud, 3D mesh and OpenGL.

Scans are spatially indexed, and there is no limit to the number of scans in the database.

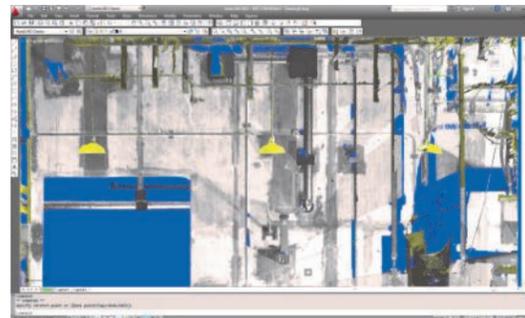


Selection criteria

Within the AutoCAD drawing, you can select just the point cloud information needed for the project. This point cloud selection criteria can be determined by one, or several, of an extensive list of possibilities, which include:

- An extraction box, created within AutoCAD
- A polyline with a profile, wherein the extrusion content is extracted
- Implementation of a decimation selection
- Points selected within a specified distance from the scanner
- A selection based on the content of custom-created boxes, cylinders, and other primitives, from which the content of this 3D geometry is selected
- Identified schema segment
- 3D laser scans selected by date range

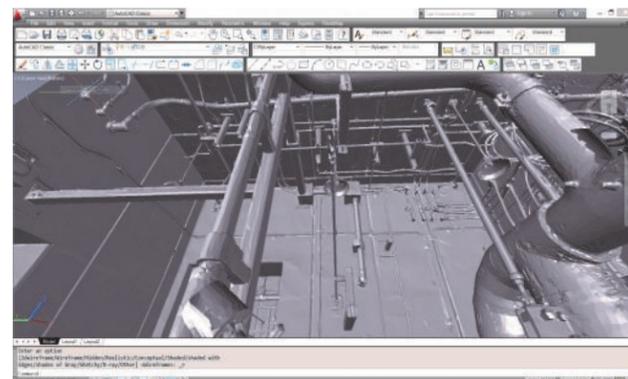
Orthographic drawing created from 3D laser scans



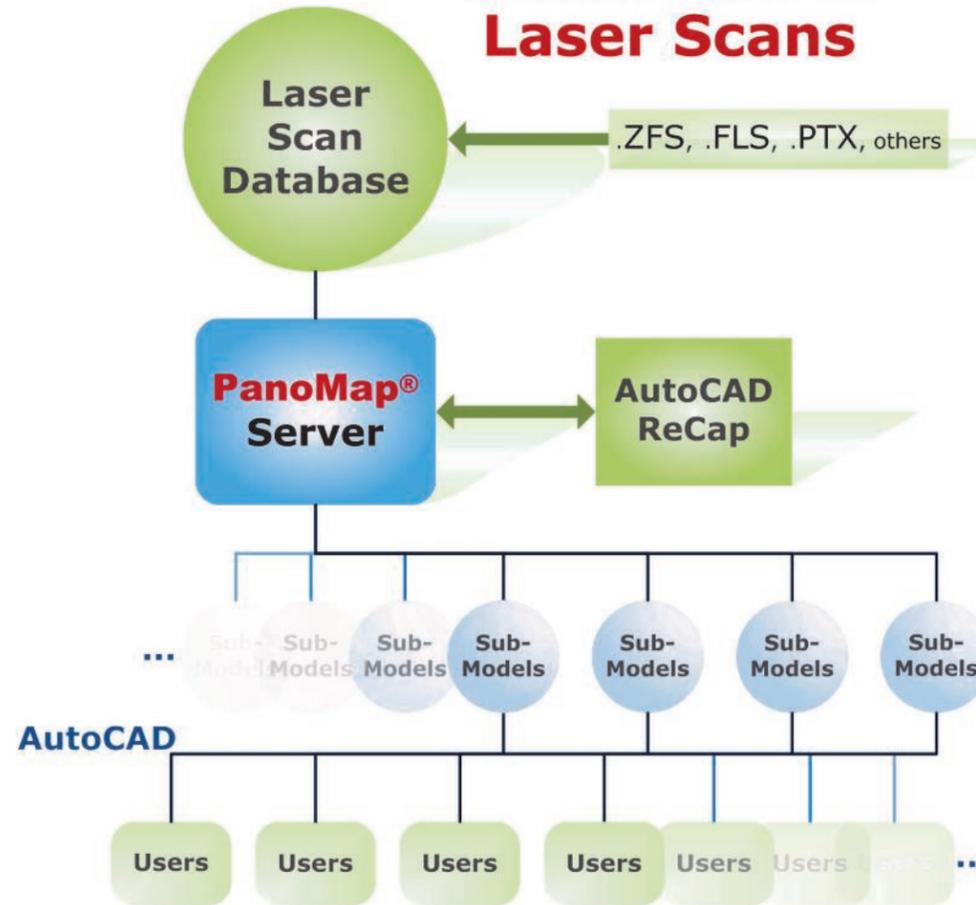
Additional Capabilities

- Full scale orthographic drawing generation from 3D laser scans for any section specified in the AutoCAD drawing
- Extraction of surface 3D CAD or mesh submodels using the same selection criteria described above
- A registry of extracted sub-models that can be queried by the user, specific to the design area

Surface mesh from 3D laser scan imported to AutoCAD



Thousands of Laser Scans



AutoCAD to PanoMap® Interface

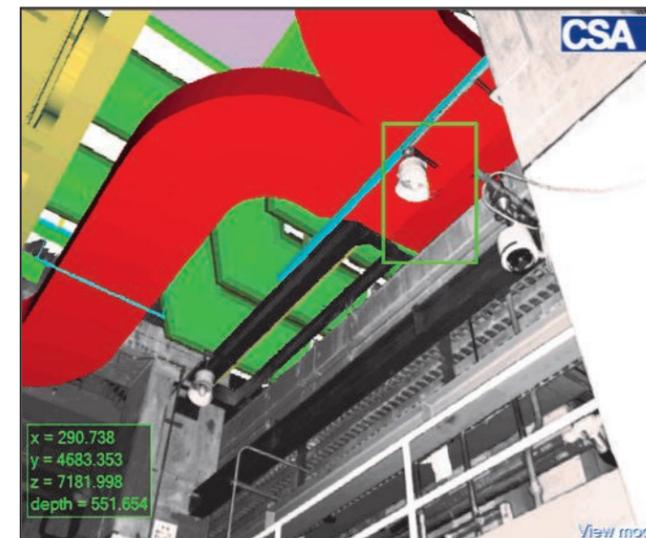
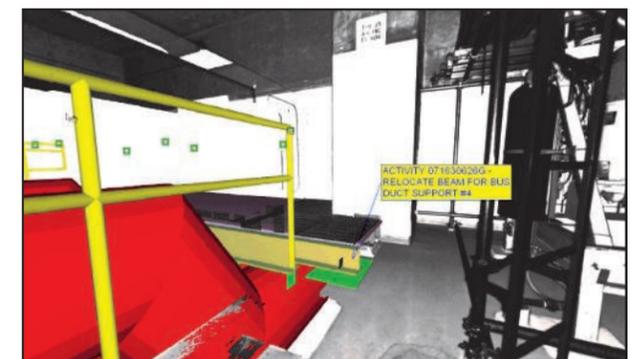
PanoMap® is the user interface to photo-realistic laser scan data, and is designed to handle projects of any size.

The user can import 3D design from a variety of AutoCAD-based design applications, including (but not limited) to **CADWorx®**, **Plant-4D®**, **Inventor**, **Revit**, and **AutoPLANT®**, into **PanoMap®**.

This provides a variety of PanoMap® functions to these programs, which include:

- User-friendly visualization of your design against scan space using a realistic, photographic-quality viewing format
- Powerful laser scan measurement and dimensioning capability
- Easily viewed interference checking (clash detection) 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 3D laser scans with new design

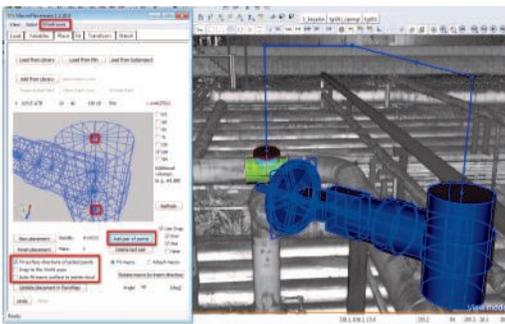
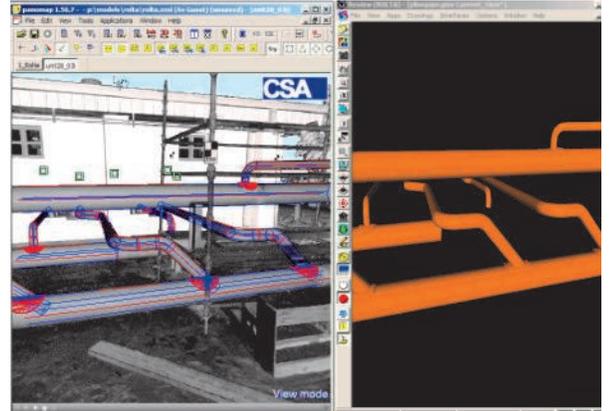
3D model imported into PanoMap® laser scan



PanoMap® Modeler

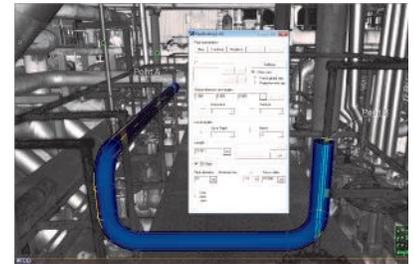
PanoMap® provides powerful functionality to create 3D intelligent models of existing piping, steel, equipment, etc. which can be transferred to AutoCAD. Functionality includes:

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



PanoMap® Designer

The photo-realistic environment provided by PanoMap® is ideal for new design, including placement of equipment and piping, valves, etc., against the existing plant configuration. This is a useful tool for conceptual design and planning, allowing for early detection of potential interference issues.



PanoMap® Manager

This tool allows for the creation of the PanoMap® database. Processing, management and registration is available for 3D laser scans generated from virtually any scanner.

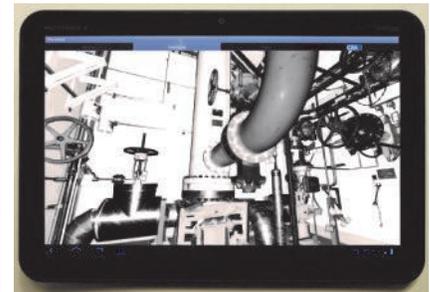
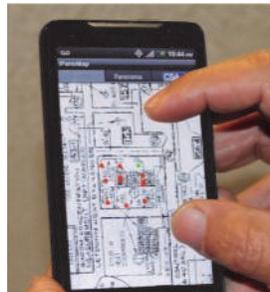
These can include Z+F (.zfs), Faro (.fls), Leica (.ptx), ASCII, and .pts formats. Scans can be registered to common features such as structural components, and the registration is performed automatically, generating projects with accuracy to within .25".

Projects can also be generated from an existing registered scan database.

iPanoMap™ on a tablet/smartphone—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 tablets and smartphones, providing remote access for walkdowns and reducing potential for human error.



View PanoMap® 3D laser scan library on smartphones and tablets