# PanoMap® Intelligent Laser Scanning
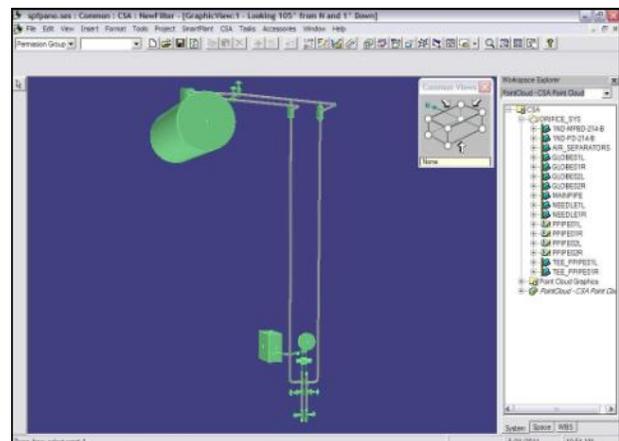# Interface to SmartPlant®

CSA's powerful laser scan viewer PanoMap® displays scan data in a seamless, photo-realistic view. It provides effective management and access to the LSSM (Laser Scan Space Manager) database with no limit to the number of scans.

Using this technology, CSA has developed a bi-directional interface to and from its LSSM database to Intergraph's SmartPlant® (SP3D) 3D design environment, and to SmartPlant Foundation.
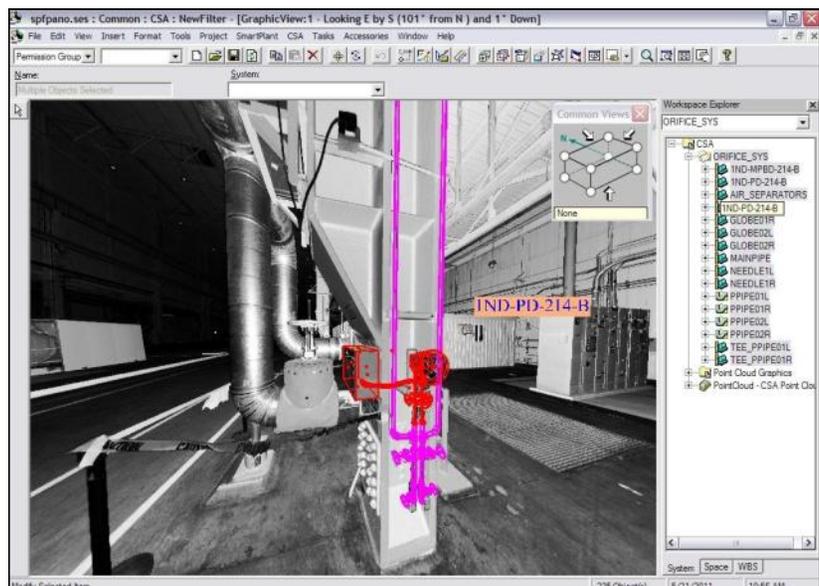
Views within SmartPlant
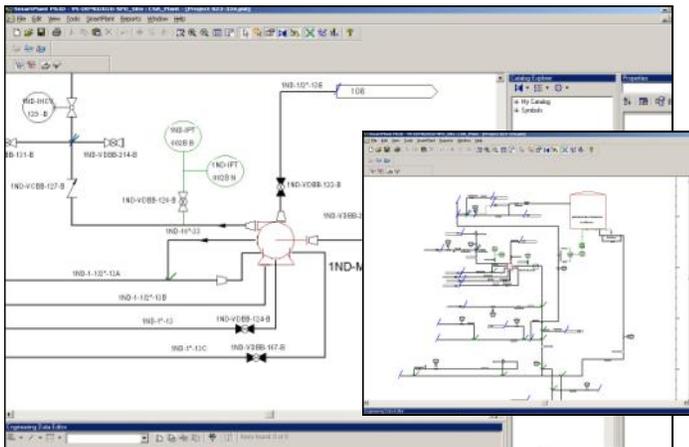
3D model in SP3D

*SmartPlant P&ID accessed from PanoMap®*

PanoMap® 3D scan displayed within SP3D, including label

Types of Access Formats

The interface to SmartPlant 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

- Component Asset Integration between PanoMap and the SmartPlant Enterprise suite, including Smartplant 3D, SmartPlant Foundation, SmartPlant P&ID and SmartPlant Instrumentation.
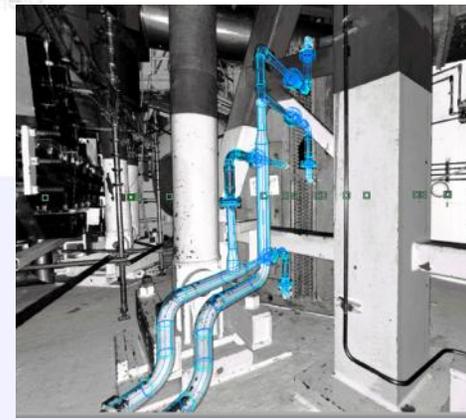
Component Asset Integration

Within PanoMap®, tag numbers are assigned to component assets in the as-built, laser scan representation or to the 3D design model integrated within the scan data. SmartPlant Foundation is a repository of data and documents published from a variety of sources such as SmartPlant P&ID, SmartPlant Instrumentation, and SmartPlant 3D. The interface allows access to data, drawings and documents in SmartPlant Foundation via common tag linkage. For example, by clicking on a Pump in PanoMap®, the user can display the P&ID in SPF and zoom in to the same pump. From within the SPF desktop client, the user right-clicks on a tag and chooses the "View Item in PanoMap" method. PanoMap® is launched, and the label is highlighted and zoomed in.

This two-way communication can be leveraged in O&M planning and Design Modification activities, including but not limited to inspection planning and engineering retrofits.

3D Surface CAD Interface

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

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

The surface CAD representation is provided in Intergraph SmartPlant Review and is useful for design verification and clash detection operations.
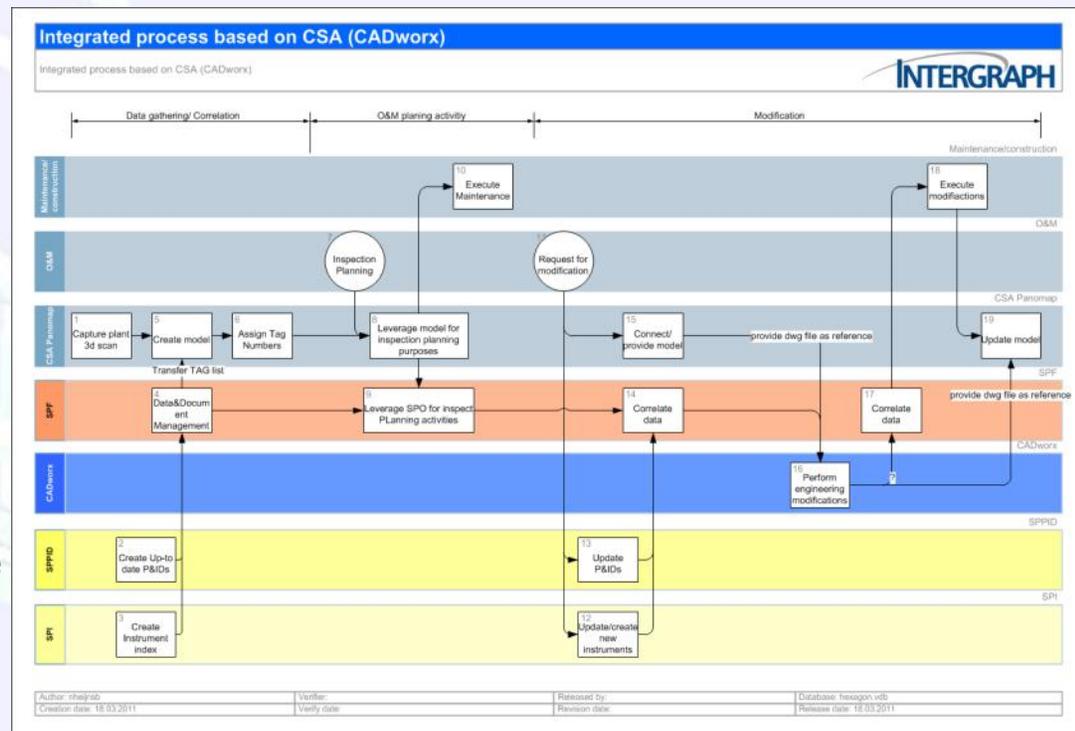
Intelligent 3D Models from Laser Scans

This support is provided using the PanoMap® Laser Scan Intelligent Modeler. Using this modeler, the data provided to SP3D uses standard SP3D libraries and specifications, and is fully available for design within SP3D.
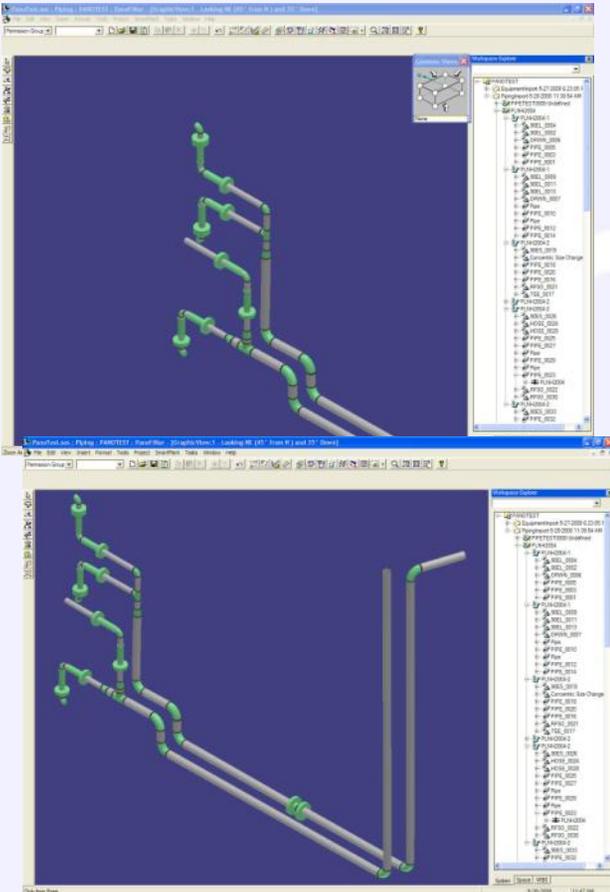


PanoMap® Provides the Following Functionality

- 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 pipe runs

- Powerful support for small bore piping, instrumentation, flexible pipes, tubing, etc.

- Piping libraries and specifications fully consistent with SP3D technology

Point Cloud Interface

Within the SP3D project, the user selects a desired volume of design for extraction from the LSSM database.

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

The Point Cloud data with intensity is extracted and provided for design work. Selected Point Cloud data can be manipulated in any view.
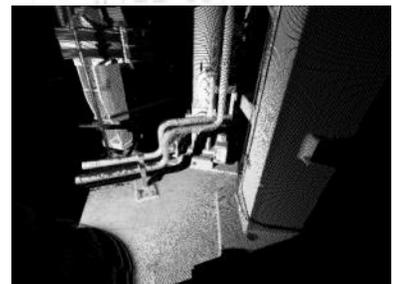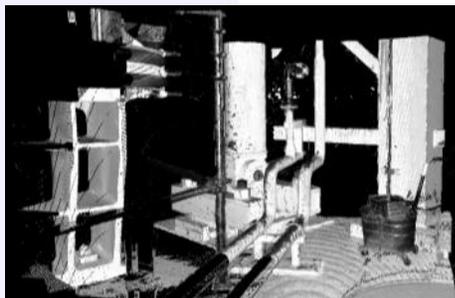
Interface from SP3D to PanoMap®

PanoMap® provides extensive functionality to access laser scan databases, and is designed to manage large-scale laser scan databases. The user can export from SP3D design project to PanoMap® and use a variety of PanoMap® functions. These functions include:

- 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 other electronic documents and databases
- Equipment rigging and removal simulation
- Construction reviews using laser scans with new design
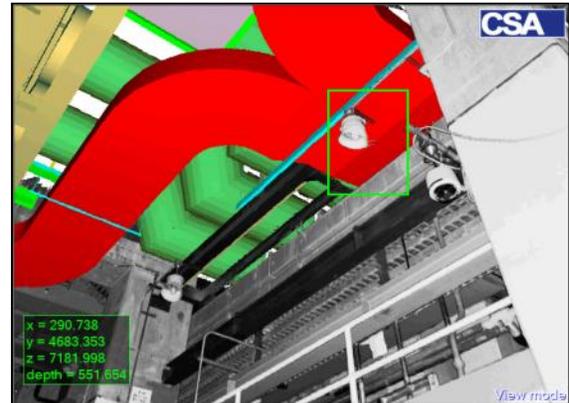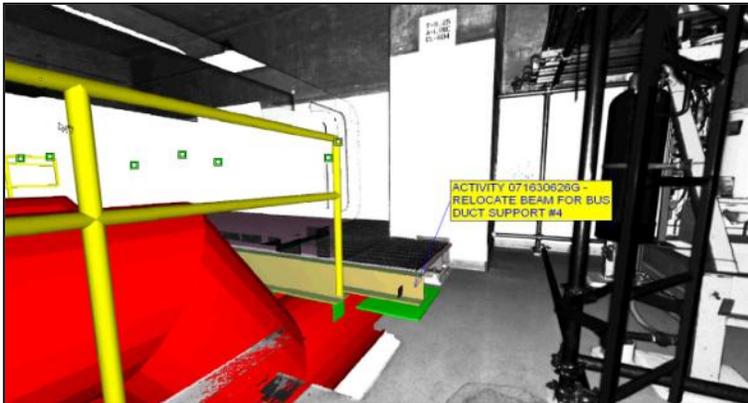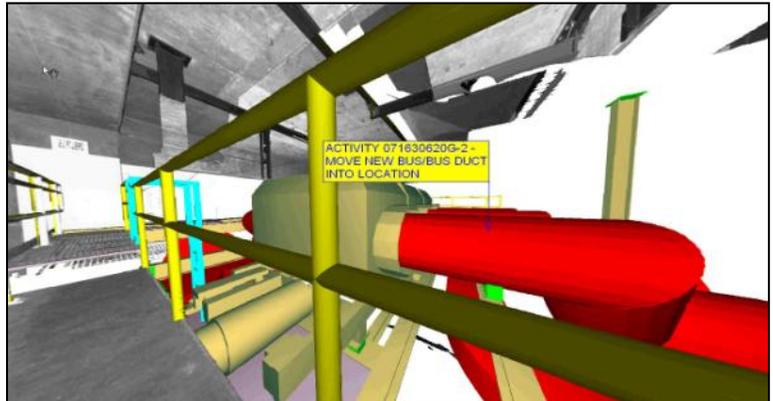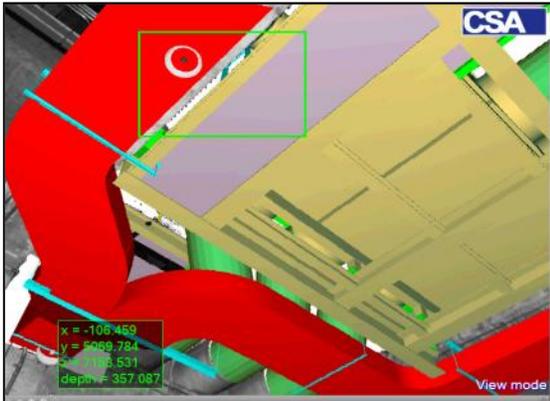
SP3D-generated 3D model components, displayed in PanoMap® scans, including activity label
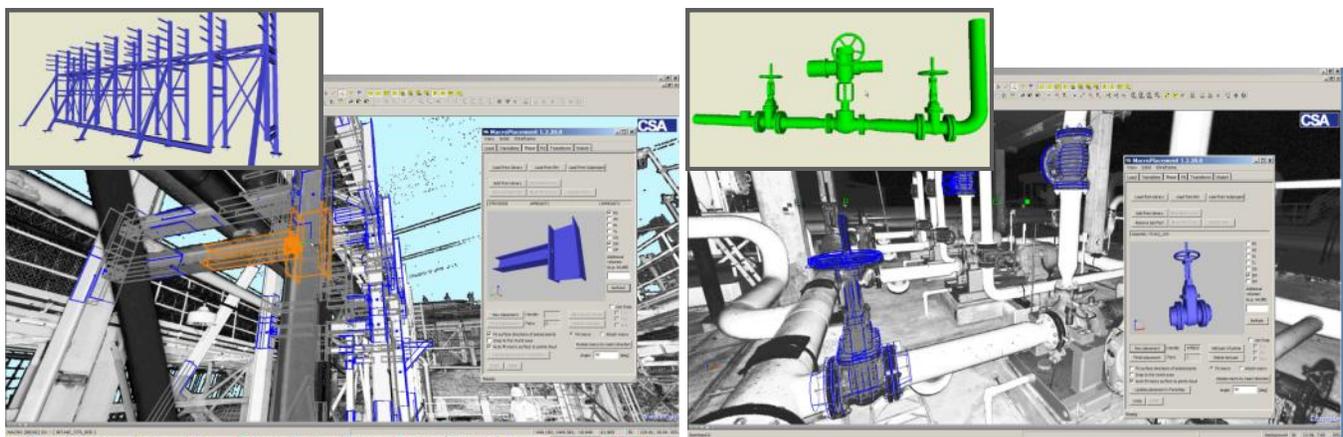
Automatic fitting of library components