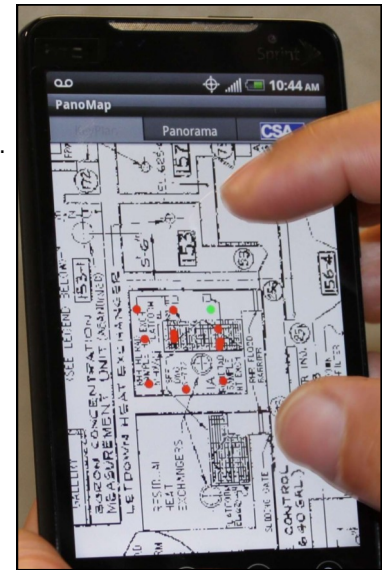


## Access Your Plant's Laser Scans on a Tablet or Smartphone

CSA Laser Scanning Technology, PanoMap®, provided in a photo-realistic format, is available on a **smartphone** or **tablet** (Android), and is **designed for a broad variety of applications including plant walkdowns, inspections and spatial field applications**. The smartphone PanoMap application can hold thousands of 360° laser scans of your facility. Its database is created by CSA on a PC using PanoMap software and transferred to the smartphone. The database can include original scans as well as 3D CAD models merged into the scans.



← 3D scan on smartphone, showing interferences (in red)



↑ Navigate to hyperlinked scans via an interactive keyplan

Pan/Zoom to specific components in a plant (Android tablet view) ↓

When performing specific tasks in the field, a smartphone or tablet provides easy access to a plant's 3D scan spatial database. **The user can navigate through scans via the plant-specific menu of locations using screen tap and menu formats that are familiar to smartphone users.** Individual areas are identified in the keyplan-based menu by building, elevation, or zone. It's simple! The user selects an area in the keyplan, taps on a scan, and the scan is displayed.

Imagine creating an inspection walkdown, operations valve lineup, or radiation survey model on your computer using plant scans. The user then accesses the task model (e.g., valve lineup for system draining), and the path is generated from individual scans that are photo quality images. The walkthrough path can be reviewed on a computer, or on a smartphone while in the plant. The application automatically identifies the highlighted piping, conduit, or component by name as it appears in the defined route's laser scan. Valve numbers, radiation fields, proximity warnings for high radiation areas or hot spots, security restrictions, and other important communications can be seamlessly integrated into the scan view. The combined effect is a **more efficient, accurate process that reduces the potential for human error and reduces personnel exposure.**



A recent application consisted of 30 pipelines in a nuclear power plant, which were marked and viewed in a continuous manner by stepping through the applicable laser scans. **Other potential applications include new-to-nuclear training, operator rounds templates, emergency planning repair and corrective action team deployment, plant worker training, and pre-job briefs.**

CSA software supports scan data collected by laser scanners from all major manufacturers using either the native laser scan format or .ptx format. Laser scan data from different sources is converted into PanoMap format by utilizing CSA LSSM (Laser Scan Space Manager) technology. LSSM is the mastering module that also includes laser scan data (point cloud) processing and automatic registration.

One of the major benefits of PanoMap is compact file size—the point cloud data is reduced in PanoMap format, without compromising the accuracy of the data.

**PanoMap® Saves Dose**

# PanoMap® CSA Laser Scanning Technology

## Frequently Asked Questions

### What is it?

PanoMap is a database-driven laser scanning technology. It represents an as-built 3D laser scan model. PanoMap includes a very powerful laser scan viewer that allows the user to display collected laser scan data—commonly referred to as point-cloud data—in a format whose appearance resembles area and component photos.

### How can I use it?

PanoMap has many powerful features. It can be used for area and component viewing and accurate dimension measuring, as well as more complex tasks such as modeling, interference checking, and equipment removal simulation processes. In addition to being a powerful engineering tool, several other applications to consider include:

**Work planning and scheduling**—location, clearances, interferences, worker location, equipment staging

**Pre-job briefings**—how to get there, where to position workers and equipment

**Operator rounds and valve lineups**—best route, reading locations, component locations

**Radiation surveys**—lowest dose, hot spot locations, high radiation area proximity warnings

**New-to-nuclear training**—plant familiarity

**Emergency planning repair and corrective action team deployment**—best route, target worksite

**Initial and continuing plant worker training**—general familiarity, specific task

**Scaffolding and shielding installations**—fit, interferences, end-user validation prior to build, archive for future installs

In addition, existing facility databases can be accessed using direct links within PanoMap including P&IDs, technical manuals, live radiation monitor data, etc.

### What are the training requirements?

For projects, PanoMap user training is typically provided at the time of project delivery. Training for other users is highly recommended to ensure the full capabilities of the system are understood and utilized. The training curriculum is customized based on end-user needs, therefore the training duration varies accordingly.

### What are the PC hardware requirements?

PanoMap can be run on any modern Windows PC. The software is installed on client PCs; laser scan project data resides on the server.

### Can PanoMap integrate with 3D technology?

Yes. Plant/CMS functionality makes integration with all major CAD systems possible, and it is a powerful tool for interference detection. The user can easily check as-designed against as-built information. Ingress/egress of equipment removal simulation can automatically be analyzed for clashes.

Any design can be verified against the as-built laser scan data including systems, structures, components, scaffolding, and radiation shielding.

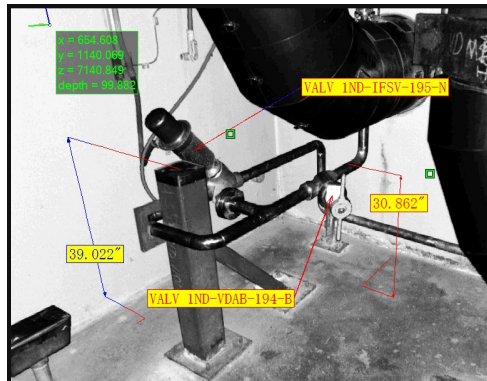
### What is Plant/CMS?

Plant/CMS (Configuration Management System) is CSA's 3D technology that easily integrates with PanoMap. It contains a powerful conversion capability to/from all major CAD systems.

CSA can easily export/import a variety of CAD systems into PanoMap (through Plant/CMS).

### Can CSA provide a complete turnkey project?

Yes, CSA provides complete solutions which include field scanning, registration of scans, and creation of a scan database. A 3D model can be built if required. CSA can also deliver specific application analysis.



Component labels and measurement tags, viewable in 3D scans, are tied to the plant database.

Viewing is done from the position of the laser scanner.

### Can you describe the process of a typical project?

CSA provides all necessary equipment and nuclear-industry experienced scan operators required for laser scanning. The area is scanned by CSA. Laser scans are processed, registered to the plant coordinate system, and fitted to keyplans by CSA. Scans are grouped by location and elevation applicable to the project. The completed project is delivered to the site, usually on the LAN for site-wide access. PanoMap user training is typically provided to the project team at the time of delivery.

### What happens if the area is retrofitted, new scans are taken?

An existing laser scan database can easily be updated with the new scans. As a rule, CSA archives older versions of laser scan databases as well. If only a small change is made in a particular area, the laser scan can be updated with a simple 3D model of the area affected. Larger changes may require re-scanning.

### How do PanoMap files differ from those of competitors?

CSA converts laser scan point-cloud data into a photo-realistic viewing format with a significantly reduced file size, which is much more effective for plant applications. Integration with intelligent, spec-driven technology provides additional benefits.

### Does PanoMap work with any laser scanner?

PanoMap works with data from virtually any laser scanner in current use.

### How do CSA's technologies add value to projects?

CSA's technologies provide a critical link between as-designed and as-built data in a user-friendly, database-driven program.

PanoMap and Plant/CMS are fully capable of integration with different databases, providing a legacy of useful information for a wide variety of plant personnel. The use of PanoMap to support accurate and efficient designs and planning has resulted in significant time and cost savings, dose reductions, and significantly reduced the potential for error and schedule delays.

The technology's use in regulatory required inspections, evaluations and modifications has ensured continued, independently validated, regulatory compliance for those customers. CSA provides a complete turnkey solution; or it can be client-customizable, depending on the customer's requirements.