

**Trimble Spatial Imaging:
Bringing Geospatial Information Down to Earth**



 **Trimble**
SPATIAL IMAGING

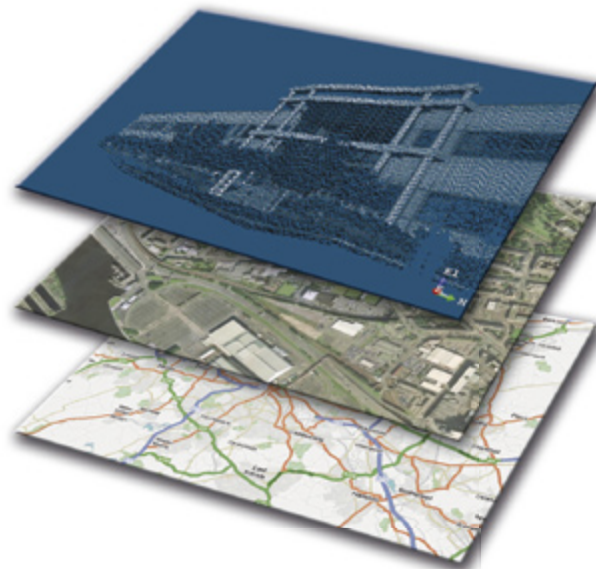


Trimble has delivered positioning and imaging solutions to engineering and surveying professionals around the world for many years. Diverse measurement technologies including GPS, optical and inertial technologies are fully integrated through common application software, wireless communications, and services.

TRIMBLE SPATIAL IMAGING

The last decade has seen tremendous growth in the geospatial industry. Geospatial imaging applications now play a key role in mainstream business and consumer applications. And those applications demand expanded functionality including imaging and measurement captured from the ground.

While geospatial imaging captures data from overhead using airborne or satellite sensors, spatial imaging provides views and positioning measurements captured at eye-level. Spatial Imaging extends the functionality of geospatial information and opens the door to powerful new applications and opportunities.



Trimble's Spatial Imaging solutions enhance geospatial information with accurate terrestrial positioning information.



Using advanced positioning and imaging technologies, Trimble Spatial Imaging solutions deliver highly accurate measurements for geospatial markets:

- Transportation and Civil Engineering
- Natural Resources Management
- Government and Military
- Location Based Services
- Business Analytics

Trimble Spatial Imaging comprises three stages: data capture, extraction, and analysis.

TRIMBLE VISION TECHNOLOGY

Trimble Spatial Imaging sensors include the powerful visualization tools of Trimble VISION™ technology. Designed to improve data collection and the effectiveness of front-office deliverables, Trimble VISION impacts on the complete flow of work—from the field all the way to the boardroom.

Using live video on the controller screen, users quickly and easily identify and capture relevant data with point-and-click efficiency. Trimble VISION provides a real-time reference, displaying work done and work still needed. The visual documentation tools of Trimble VISION also aide businesses and clients by providing a real-world, visual context for data.



CAPTURE

Trimble's Spatial Imaging sensors, the Trimble GX™ 3D Scanner and Trimble VX Spatial Station, use 3D scanning and traditional surveying techniques to capture accurate positioning data. The resulting datasets capture a target's shape, size and position with survey-grade precision.



Trimble Spatial Imaging sensors provide the rich data required for 3D modeling.



Capture the shape and position of any scene to enhance geospatial images and data.

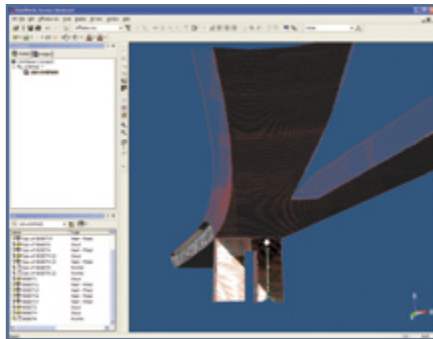


Monitor change in real-time with volume and surface computations.

EXTRACT

Taking advantage of the detailed data provided by Trimble Spatial Imaging sensors, Trimble RealWorks Survey™ software provides the tools needed to identify the features captured and understand how these features relate in the scene.

Specialized tools simplify the interpretation of data. Continuous assets such as pipe lines, power lines or walls are easily identified. Volume measurements are completely automated. Comparison between as-designed and as-built are streamlined. In addition, scenes captured before and after provide precise measurement of change—a key benefit for applications such as stockpile management and urban planning.

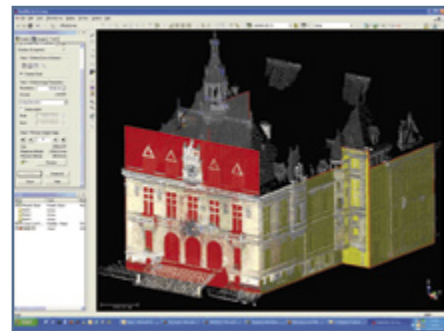
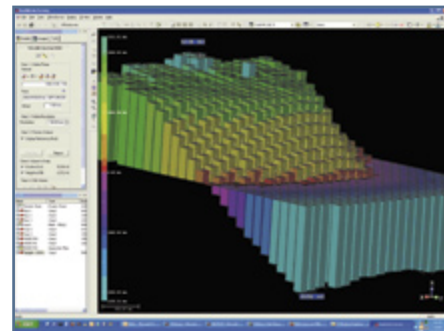


In Spatial Imaging, a set of attributes is applied to each point captured, so that point clouds become more than just 3D images. They are intelligent images for interpreting data that clearly illustrate spatial relationships.

ANALYZE

Because a picture is worth a thousand words, the recipients of visual data produced via a Trimble Spatial Imaging solution—whether colleague or client—can easily see what the data represents. Information can be shared directly or exported to CAD software for extensive analysis and integration into design specifications.

With such powerful deliverables, the review and approval of jobs is more streamlined, as is decision-making.



Trimble Spatial Imaging solutions communicate complex information in the form of compelling visuals.

The rise in demand for geospatial information is driving a world of opportunity. Trimble provides two specialized sensors for Spatial Imaging success.

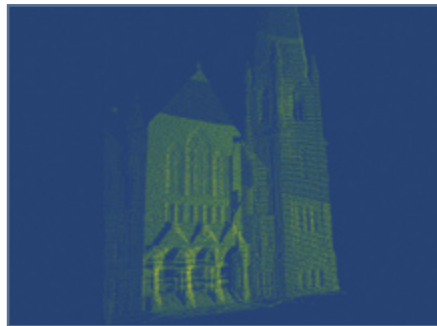
Trimble Spatial Imaging sensors are field-ready instruments designed to capture highly accurate terrestrial data. Rich collections of geospatial information allow users to identify areas of interest and extract exactly the information they need.

Capture comprehensive imaging and positioning data using one integrated sensor.

Extract the relevant details of complex scenes quickly and easily.

Enhance 3D visualizations with color, attribute detail and survey-accurate positioning.

Communicate compelling results from RealWorks Survey software via video generation or export to Google Earth (kml format).



TRIMBLE VX SPATIAL STATION

Designed to capture shapes, details, and coordinates, the Trimble VX offers an easy entry into Spatial Imaging. The instrument is optimized for the acquisition of information using integrated video, scanning and positioning technologies.

The Trimble VX Spatial Station is the ideal solution for combining standard-resolution 3D scans and digital imaging with survey-precise coordinate measurements and 2D deliverables:

- Intuitive video overlay provides visual cues on screen to speed data collection
- Spinning 115 degrees per second, MagDrive™ servo movement ensures fast, efficient measuring.
- Trimble VISION technology, enhances data deliverables with images captured at the jobsite.
- Trimble VX measurements can be complemented with GNSS positioning for more flexibility in the field.

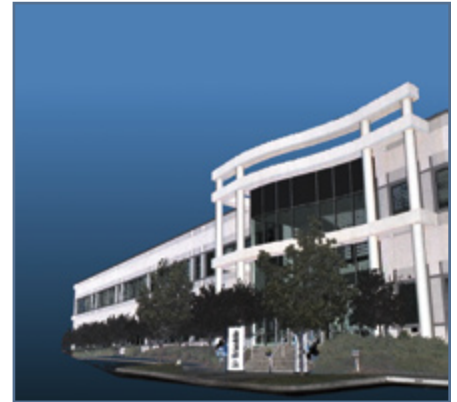


TRIMBLE GX 3D SCANNER



Capable of photo-realistic resolution, the Trimble GX 3D Scanner delivers the ultimate in Spatial Imaging detail. Data can be captured at the sub-centimeter level, giving you clear visibility into every nuance of a scene. Unsurpassed in applications such as monitoring the evolution of a work site, as-built diagnostics, historic restorations, and crime scene forensics, the Trimble GX provides the highest resolution of any scanner on the market today.

- Onboard video provides a full panorama of the scene for comparison with the scan itself.
- Real-time true color provides realism and accuracy.
- Overscan™ technology boosts data acquisition range up to 350 m when range is a priority.
- Millions of points can be measured at high resolution and unequalled speed. Or use SureScan™ patented technology to collect only the points you need.



BUILT FOR SPEED AND ACCURACY

The Trimble GX 3D Scanner provides visual precision in diverse applications such as civil infrastructure, architectural restoration, urban topography, tunneling, quarrying and forensics. The Trimble GX is the high-performance choice for any situation where large amounts of detailed data are required in a short amount of time.



Whatever your application, Trimble's Spatial Imaging solutions produce traditional and enhanced deliverables such as 2D drawings, 3D as-builts, inspection monitoring, clash detection, and volume/surface calculations.

THE TOOLS YOU NEED TO CREATE A VIRTUAL WORLD FOR YOU AND YOUR CLIENTS

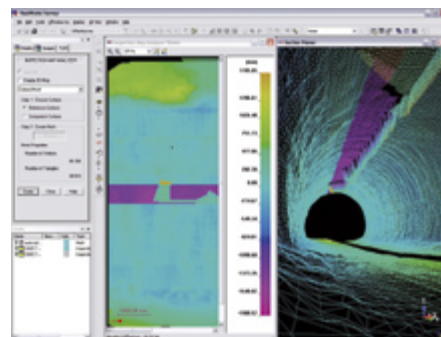
With Trimble Spatial Imaging, you can create a virtual world that represents the work in which you and your clients are involved. Trimble RealWorks Survey enables you to capture, extract and analyze as-built scenes to create compelling 2D and 3D deliverables for immediate output or export.

TRIMBLE REALWORKS SURVEY SOFTWARE

Spatial imaging creates new demands for the management and analysis of data. A single scan can capture literally millions of data points, which then need to be converted into a usable form. Trimble RealWorks Survey is the central information processing application of Trimble Spatial Imaging solutions, which automates each step—from data capture to client-ready deliverable.

Trimble RealWorks Survey provides comprehensive software tools to simplify:

- Advanced inspection tools to compare design versus build
- Pre-defined calculation tools for volume and surface calculations
- User-definable profiles for inspection and monitoring
- Fast connection and conversion to industry-standard CAD
- Share and review your results via movies, easy to understand by everybody, or via Google Earth to communicate easily.



Perform multiple inspection tasks with RealWorks Survey's powerful tools: twin surface, surface-to-model, and surface-to-curve. Generate and visualize inspection maps in 2D or 3D using the customizable color bar.



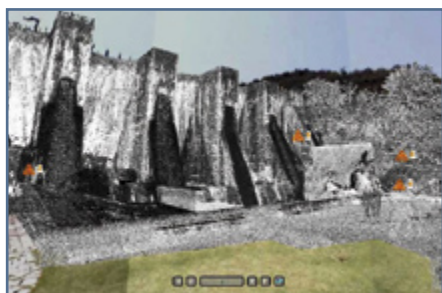
SPATIAL IMAGING: BROADEN YOUR BUSINESS OPPORTUNITIES

URBAN PLANNING

The ability to accurately capture the past and visualize the future is now critical for projects such as urban redevelopment, large construction, and historic reconstruction. With these new and powerful tools at the ready, decision makers can quickly and easily see the impact of proposed changes from any viewpoint.

DISASTER PREVENTION – ACCURATELY MODEL FLOODWATER BEHAVIOR

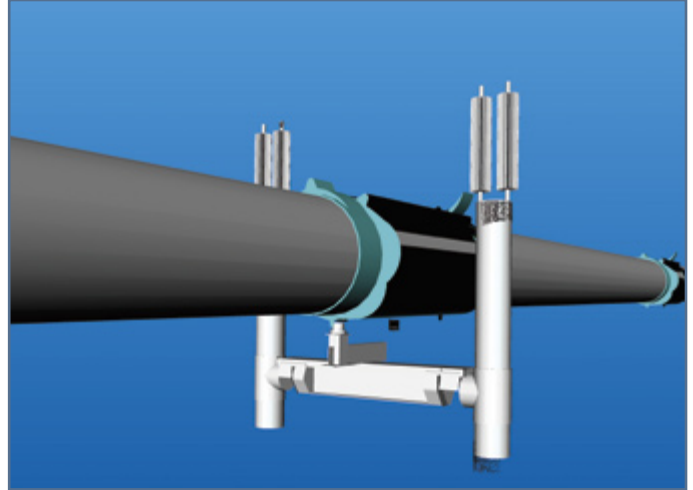
With accurate 3D measurement of a flood plane and the structures within it, the behavior of floodwater can be predicted with precision for improved data and response planning. The fusing of terrestrial positioning measurements with airborne data makes comparisons between pre- and post- flooding areas accurate and simple to assess. This information is also invaluable for the insurance and real estate industries.





UTILITIES

Geospatial information is now vital in utility and industrial applications. Combining airborne and accurate terrestrial data with Trimble's Spatial Imaging solutions enable pipeline managers to identify geohazards and High Consequence Areas (HCA) that could endanger an oil or gas pipeline. These environment assessments are not only required for construction approvals, pipe replacement and pre-construction engineering; they are also ideal for assessing shifting and movement of a pipeline over time.



Pipeline modeling based on measured points. Put Trimble RealWorks Survey to work in industrial applications for impressive results.

TRIMBLE SPATIAL IMAGING: WHERE WILL IT TAKE YOUR BUSINESS?

Today, applications like Google Earth provide integrated layers of maps and imagery that allow users to drill down to find relevant information. Taken a step further, typical services could include detailed 3D measurements of building facades, and views inside buildings or under overhead structures. Using the same technologies, industry-specific applications will also emerge: municipal governments will have instant access to precise 3D measurements of all critical city infrastructure; utilities will be able to precisely monitor the movement or deformation of critical assets; and urban planners and civil engineers will utilize powerful visualization tools to reveal completely the implications of planned changes.

Trimble Spatial Imaging creates new opportunities in the geospatial and surveying industries. For surveying businesses Trimble Spatial Imaging increases surveyor efficiency in traditional applications, while at the same time making it possible for businesses to bid for new types of jobs.

For businesses focused on geospatial solutions, Trimble

provides the capability to capture accurate positioning measurements at the terrestrial level for fusion with airborne data. The resulting combined datasets provide clients and users with a complete deliverable, making further analysis and 3D modeling possible.

Trimble provides scalable and complete solutions for numerous applications: civil survey and infrastructure, urban mapping, architecture, engineering, mining and quarrying, just to name a few. In fact, almost anywhere large amounts of highly accurate data are required in a short amount of time, Trimble has the right tool for the job.





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