Trimble Business Center

For Mobile Mapping

TRIMBLE BUSINESS CENTER OFFICE SOFTWARE
FEBRUARY 2024

Mobile mapping field-to-finish workflows with confidence

Leverage the power of mobile data along with other raw geospatial and construction data in a single, robust software environment to confidently deliver project after project with Trimble® Business Center (TBC) office software. With your professional reputation, financial well-being, and requirements on the line, use TBC's capabilities to aggregate your mobile mapping data with other survey data and stand out to your clients.

Find out more at:
www.trimble.com/tbc

⊗ Trimble.

Trimble Business Center
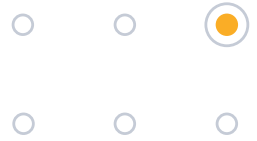
⊕ Data integration

In a single software package, combine raw measurements from your Trimble mobile mapping system—then, add in data from GNSS, total stations and levels, unmanned aerial vehicles (UAVs), and terrestrial laser scanners, all of which is scaled to your survey data. No need to import and export between multiple software packages. No need for training, renewals, or support for different applications from different providers. TBC provides the capabilities you need to deliver accurate mobile mapping and survey data.

⊕ Confidence-inspiring results

Work with the raw mobile mapping sensor data to optimize point cloud generation and produce deliverables. Process trajectories, register mobile mapping data to control points, or run to run. View panoramic images. Extract classified point cloud regions and use ground classified points to create ground surface models. Use measure and cutting plains to QA/QC your data. Run automatic road pavement inspections. Visualize your data in context with Google Earth™ or import open (WMS) background maps and imagery. Don't put up with fragmented data sets or disjointed workflows that cause costly mistakes and jeopardize your productivity. Combine your mobile mapping data with data from other survey sources and have the traceability to backup your office and field work for every project, every time.

⊕ Robust deliverables

When "good enough" is not acceptable, TBC enables you to deliver diverse results with point clouds, immersive imagery, digital surface models, corridor designs,and extracted features and linework. Export to Trimble MX software for asset and GIS data extraction or work with other industry-leading software packages from Autodesk®, Bentley®, Esri, TopDOT and more with import and export support for a variety of third-party file types. When it's time to submit, clean up, archive and share projects online to Trimble Connect™, Trimble Sync Manager™, or Bentley ProjectWise®, all initiated with TBC.

Licensing options for every need

▶ With **perpetual** and **subscription** options, there's a TBC offering for every surveying, mapping, or construction organization.

▶ Host your **multi-seat licence** in the cloud or on-premise, or use a **single-seat USB dongle** on your PC workstation.

▶ Utilize subscription value-adds like integrated POSPac™ trajectory computation, usage reporting and online **licence management** to optimize your software investment.
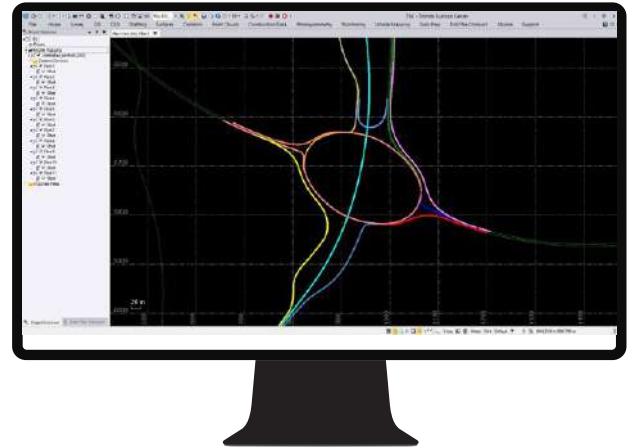
Mobile Mapping Workflows
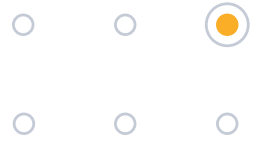
Import your raw mobile mapping data

Import your raw mobile mapping data from MX7, MX50, or MX9 and MX90.

▶ Import all raw data simply by pointing to your project database file (mxdb) created by TMI software in the field.

▶ The mxdb maintains your data integrity between trajectory, LiDAR data, and panoramic images.

▶ Full synchronization between original sensor data is maintained for data runs as collected in the field.


Integrity between captured data runs is maintained

Vehicle trajectory processing

Take advantage of the TBC Mobile Mapping subscription license to process the complete workflow in Trimble Business Center. One license to process it all. You can also still use your standalone Applanix POSPac.

▶ Load raw trajectory and base station data directly into TBC.

▶ Process trajectory data without leaving TBC.

▶ Run trajectory reports and QA/QC from within TBC.
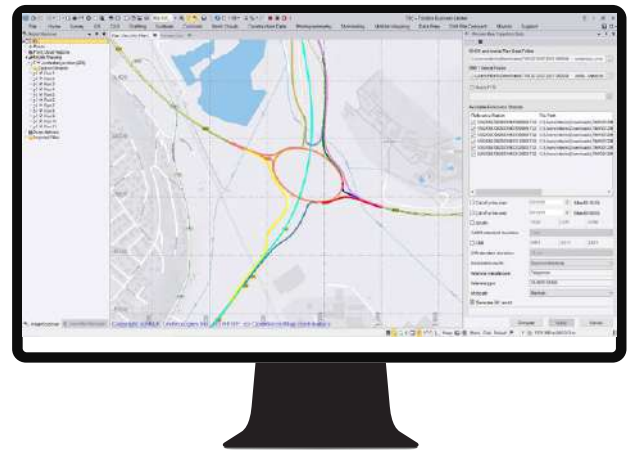
Simplify your workflow by processing vehicle trajectories in TBC

Generate scans

Use the precise vehicle trajectory to generate scans for individual runs or for all runs in your project.

▶ Generate scans and apply filters for sun and fog.

▶ Create a masking template for point cloud colorization.

▶ Colorize point clouds using RGB from 360° imagery.

▶ When needed, delegate computation tasks to batch processing.
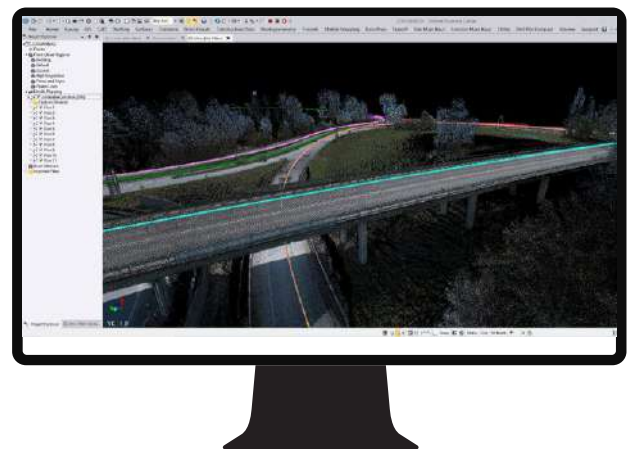
Generate accurate point clouds from raw LiDAR data

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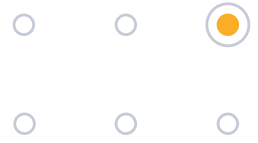
Register point clouds

Optimize your captured mobile mapping data to reduce, or eliminate, IMU drift by registering mobile mapping runs to fixed control points.

▶ Generate survey-grade deliverables from mobile mapping data.

▶ Register to precise fixed control points using the TBC smart picking tool and the integrated POSPac PFix engine.

▶ Batch register several runs together in order to minimize anomalies between common runs in the same geographical location from one mission or from multiple ones.

▶ Update scans based on registration constraints.


Register runs to meet the most demanding project requirements

View 360° panoramic images

Use complementary image data to provide additional context and help navigate through your rich mobile mapping data sets.

▶ Overlay point clouds on images for feature verification and object inspection.

▶ Use imagery to provide contextual information and clarity of smaller detailed objects.

▶ Use imagery to inspect asset condition.

▶ Navigate your mobile mapping data synchronizing your 360° panoramic with the pointcloud 3D view.
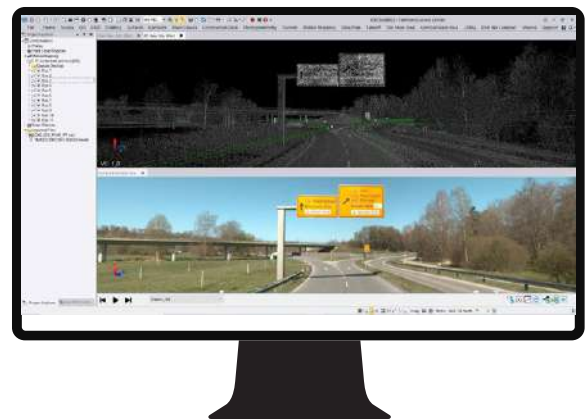
Panoramic images can provide valuable contextual information

Extract classified point cloud regions

Use TBC's simple automated classification tool to help manage your point cloud data and assist with further processing and feature extraction workflows.

▶ Create extraction regions such as: Buildings, Ground, High Vegetation, Poles, Signs, and Power Lines.

▶ Create your customized classification regions based on deep learning models. Create, train and validate your models to classify and extract your specific features.

▶ Use the extracted Ground point cloud region to optimize the process of generating surface- and corridor-related deliverables such as digital surface models.

▶ Use the extracted High Vegetation region for assisting with vegetation clearance applications and landscape management.

▶ The Power Lines and Poles region will help with power line and pole extraction.
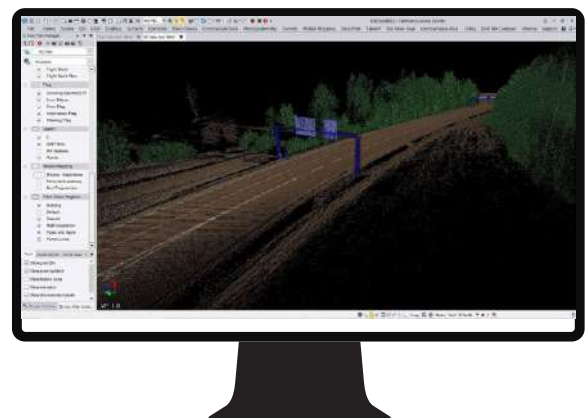
Classified point cloud regions assist with data management and feature extraction

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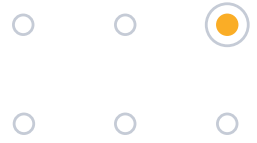
Surfaces, CAD and drafting

Create, process, and deliver complex surface models from your mobile mapping data for field devices, machine control systems, and third- party export, and produce your final CAD deliverables and roadway design plots with ease

▶ Quickly draft and edit points, 2D or 3D linework, and CAD geometry with the keystroke-based CAD Command Line.

▶ Use Dynaviews to place your model space data into sheet plots.

▶ Add dynamic labels, line and curve tables, scale bars, and other map elements.

▶ Automatically plot profiles and cross-sections for alignment-based surfaces or corridors.

▶ Create digital deliverables such as DWG CAD files or print deliverables like plan sets or 3D PDFs for communication and collaboration.
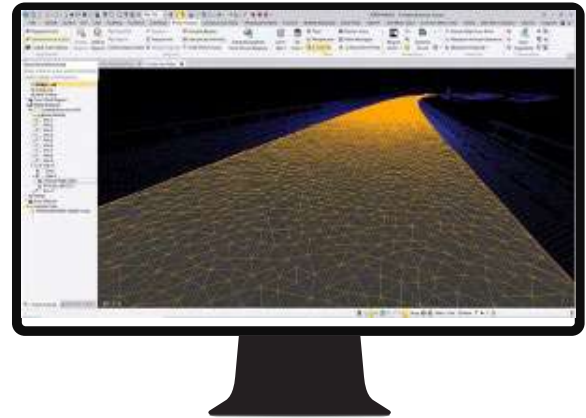

Draft plan and profile sheets with Dynaviews

Pavement condition inspection

The pavement condition inspection tool detects and classifies large and small scale pavement conditions, and calculates pavement condition index based on ASTM standard.

▶ Detects and classifies potholes, depressions, corrugations, rutting, bumps, alligator and linear cracks.

▶ Calculates pavement condition index based on ASTM standard formulas.

▶ Generates vector outlines for each condition and automatically extracts geometric attributes for each condition.

▶ Generates detailed Excel and PDF reports for analyzed pavement.
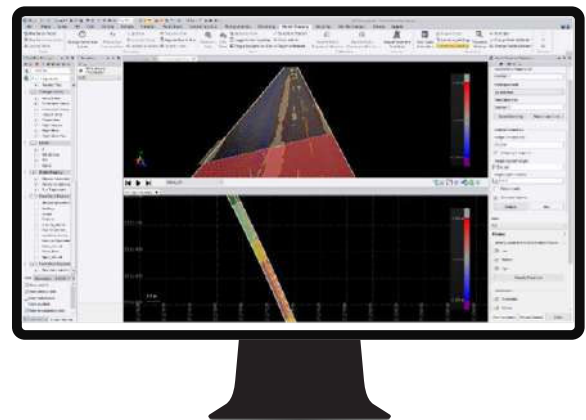
Extract, classify and analyze road distresses with the Pavement Condition Inspection tool

Alignments and corridors

Model and manipulate alignments and parametrically-designed corridors based on mobile mapping data.

▶ Define horizontal and vertical alignments from scratch or existing CAD linework with support for station equations and superelevations.

▶ Enter corridor template instructions with interactive, graphical feedback.

▶ Handle complex roadway designs with conditional instructions and slope and node tables.

▶ Design corridor features such as interchanges, ramps, and intersections with parameter prompts.

▶ Generate corridor earthwork reports, apply material properties, and create subgrade surfaces.
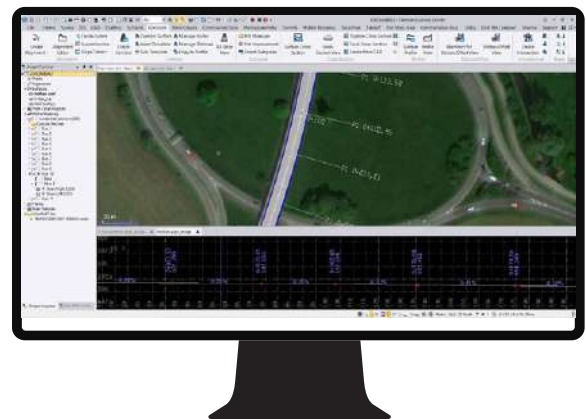
Mobile mapping data, by definition, is an ideal base for modelling and visualization of simple or complex alignments and corridors

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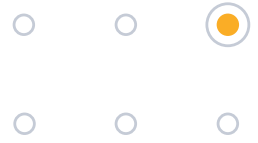
Utility modeling

Use mobile mapping data to help plan, design, inspect and rehabilitate utility and fiber networks.

▶ Create fiber and utility networks.

▶ Customize utility shapes and structures.

▶ Design parametric trench templates and surfaces.

▶ Add utility models to existing sitework, CAD geometry, and surface context.

▶ Generate customized utility takeoff reports.
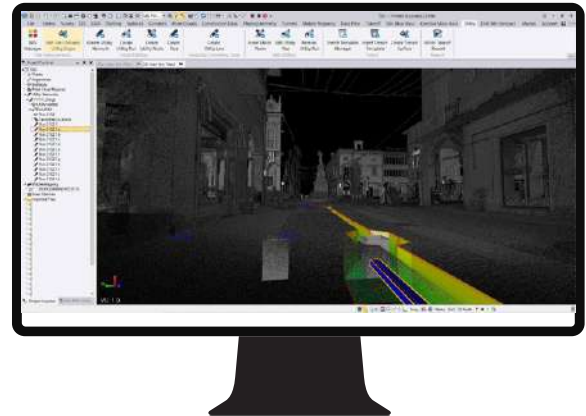
Model fiber networks, structures, and trenches in 3D based on mobile mapping data

Scanning and point clouds

Combine mobile mapping data with terrestrial or aerial scan data and view, manipulate, and extract information from the combined point cloud.

▶ Colorize, register, georeference, and adjust Trimble SX-series scan data.

▶ Import and register Trimble TX-series, Trimble X7, X9, X12 and third-party terrestrial laser scanner data.

▶ Scale scan and point cloud data to survey data in an integrated project environment.

▶ Classify regions, segment point clouds, and use limit boxes to manipulate scan data from formats like *.las, *.pts, *.e57, and more.

▶ Extract points, attributes, and linework with user-defined planes and automatic and semi-automatic feature extraction tools.
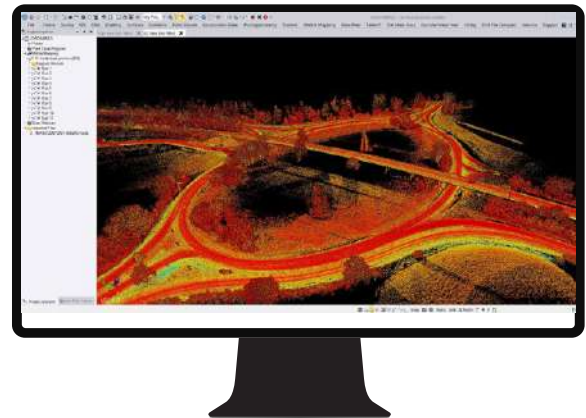
Extract features from scans and point cloud data

GIS

▶ Integrate GIS within survey data and provide deliverables to an Esri-based environment.

▶ Extract schemas and convert to feature definition code libraries.

▶ Connect to different GIS sources, File Geodatabase, Postgres database, Shapefile, and Enterprise Geodatabase.

▶ Post-process *.ssf GNSS data from Trimble TerraFlex® and other Trimble GIS field sources.

▶ Map metadata from data source connections.
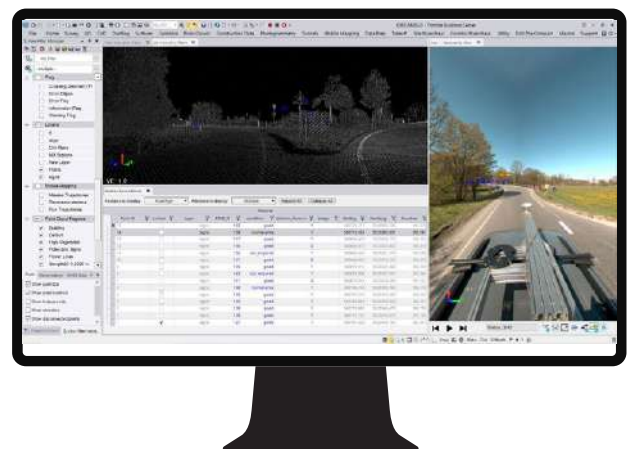
Use mobile mapping data as a source to create an asset database

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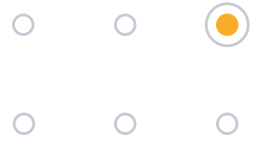
Data export

Export data to a wide range of CAD, GIS, and mobile mapping formats.

▶ Export to Trimble MX format to extract data using asset and GIS workflows and for data sharing via TMX Publisher.

▶ Export to other mobile mapping software like TopoDOT, Horus, or Mapillary.

▶ Export extracted data to host CAD and GIS system formats.

▶ Blur vehicles and people in exported images in line with GDPR requirements for data sharing.
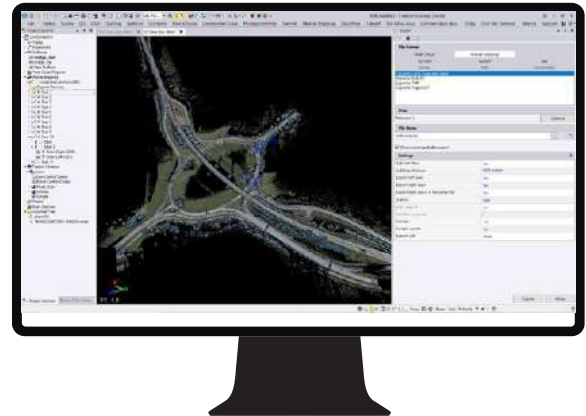
Export to CAD, GIS or mobile mapping formats

System requirements

Please reference the following for detailed requirements:
Processing MX9 & MX50 Data in Trimble Business Center - Bulletin

Operating system
- Microsoft® Windows® 11 (64-bit version)
- Microsoft Windows 10 (64-bit version)

Processor
- Dual-core Intel 1.80 GHz or better recommended
- Quad-core Intel 2.80 GHz or better recommended (additional cores with hyper-threading support highly recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning modules)
- AMD Ryzen processors are not supported

Random-access memory (RAM)
- 4 GB or more recommended
- 32 GB or more recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning modules

Hard drive
- 10 GB free or more recommended
- 100 GB free or more on solid-state drive (SSD) required with overall capacity of 500 GB or more recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning modules
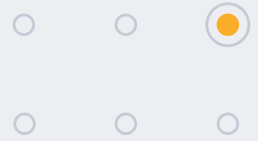
Graphics
- DirectX 11 compatible graphics card with 512 MB memory or more
- OpenGL version 3.2 or later required when working with point cloud data (latest version recommended)
- 8 GB graphics card or higher (NVIDIA Quadro P4000 or similar) required for Aerial Photogrammetry, Mobile Mapping, and Scanning modules

Monitor
- 1280 x 1024 or higher resolution with 256 or more colors (at 96 DPI)

Supported languages
- Chinese (Simplified)
- Czech
- Danish
- Dutch
- English US
- English UK
- Finnish
- French
- German
- Italian
- Japanese
- Korean
- Norwegian
- Polish
- Portuguese
- Russian
- Spanish
- Swedish

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Learning resources

Interested in TBC but wondering where to start? Want to learn more? We offer a variety of helpful resources to make you productive quickly. Learning TBC has never been easier.

Website:

Your home for everything TBC—downloads, support information and bulletins, as well as customer testimonials and videos:
www.trimble.com/tbc

Learn more about Trimble mobile mapping hardware and software solutions:
geospatial.trimble.com/products-and-solutions/mobile-mapping

Learn platform:

Complete free, self-paced workflow-based courses with hands-on guided software experiences**:**
learn.trimble.com/pages/422/trimble-business-center-tbc

Access the Mobile Mapping Knowledge Base here:
help.trimblegeospatial.com/mobilemappingkb/tbc.htm

Trimble Community page:

Join your fellow TBC users and ask questions, showcase a project, and learn from peers in this open online forum:
community.trimble.com/groups/tbc-group

Power Hours:

A live monthly session where a Trimble or industry expert showcases a workflow in TBC. All sessions available afterwards and on-demand, for free:
geospatial.trimble.com/en/resources/webinar

Tutorials:

Follow along with sample data and PDF instructions as we explain and illustrate specific workflows and introductions to TBC:
geospatial.trimble.com/trimble-business-center-tutorials

YouTube channel:

Watch and learn as our team explains how a specific function works or what's new in our latest release:
www.youtube.com/user/tbcsurvey

Watch mobile mapping videos and tutorials:
www.youtube.com/trimblemobilemapping

NEXT STEPS?

Contact your local Trimble sales representative
geospatial.trimble.com/mobile-mapping-contact-sales or visit www.trimble.com/tbc

To learn more about Trimble Mobile Mapping solutions visit geospatial.trimble.com/mobile-mapping

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