# Trimble Business Center

## OFFICE SOFTWARE

**DECEMBER 2020**

**Trimble**

# Trimble Business Center

**Office Software**

# Supported Workflows

**Start in TBC. Stay in TBC.**

## SURVEY + CONSTRUCTION FIELD TO FINISH WORKFLOWS WITH CONFIDENCE

Leverage the power of 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 unique capabilities to separate yourself from your competition and stand out to your clients.

### Data Integration

In a single software package, combine raw measurements from GNSS, total stations, and levels; then, add in data from unmanned aerial vehicles (UAVs), mobile mapping systems, 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 complete survey and construction deliverables.

### Confidence Inspiring Results

Work with the raw sensor data, not just X,Y,Z coordinates, view and edit rod heights, prism constants, vector timestamps, and more to achieve the most accurate horizontal and vertical results. Visualize your data in context with Google Earth or import background maps and imagery. Don't put up with fragmented data sets or disjointed workflows that cause costly mistakes and jeopardize your livelihood. From third-party or Trimble hardware, have the traceability to backup your office and field work for every project, every time.

### Robust Deliverables

When "good enough" is never acceptable, TBC enables you to deliver diverse results with point, adjustment, takeoff, and many other report types, digital surface and site models, CAD plans, point clouds, corridor designs, machine control models, and station-based imagery. Or work with other industry-leading software packages from Autodesk®, Bentley®, ESRI, and more with import and export support for a variety of third-party file types. When it's time to submit, store and share projects online to Trimble Connect, Trimble Sync Manager™, Trimble Clarity™, 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 and construction organization.
▶ Host your multi-seat license in the cloud or on-premise or use a single-seat USB dongle on your PC workstation.
▶ Utilize subscription value-adds like usage reporting and online **license management** to optimize your software investment.

### Use the cloud for real productivity

▶ Send project data back and forth to Trimble Access with **Trimble Sync Manager**.
▶ Store your data - including large files, images, and raw data - in **Trimble Connect**, then download to use in your TBC projects.
▶ Toggle georeferenced background maps and aerial imagery at your project location to put your data in real world context.

### Publish and view in Trimble Clarity

▶ Visualize point clouds and other survey data on any device.
▶ Measure, mark-up, and annotate your models to share now or save for later.
▶ Locate your projects easily with a graphical world view.
▶ Start your free trial today: **https://clarity.trimble.com/**

### Customize your TBC with Macros

▶ Use Python scripts and access TBC's native objects and calls to write your own commands.
▶ Encrypt and publish your own macros for distribution online.
▶ Learn more and get help on the TBC Macros Community: **https://community.trimble.com/groups/trimble-business-center-hce**

## Field Data QA/QC

Import and interact with Trimble and third-party raw data.
▶ Visualize, interact, and measure your data across multiple views and reports.
▶ Check and edit raw data with spreadsheets, selection filters, and interactive property menus.
▶ Sync data with Trimble Access, SCS900, and machine control systems.
▶ Process feature codes from the field or keyed into TBC.
▶ Provide context with background maps, georeferenced images, and overlays in Google Earth.
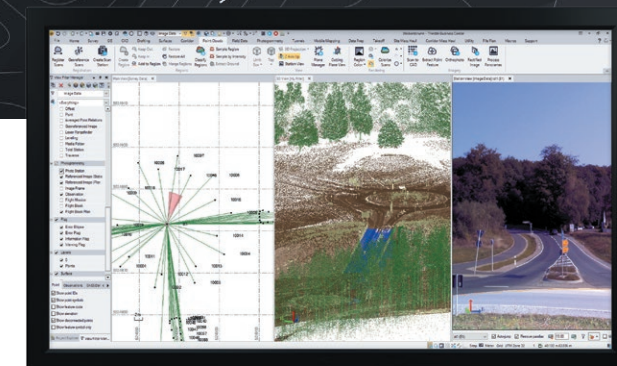


Use multiple views to review and edit raw data

## Adjustment and COGO

Efficiently reduce observations and perform cadastral survey workflows.
▶ Process static and kinematic GNSS observations and edit raw session data.
▶ Compute and adjust traverse and level runs.
▶ Translate field book data and notes into the Level Editor and Total Station Editor.
▶ Complete least square corrections with mixed data observations and constraints in the Network Adjustment.
▶ Input survey plans, compose legal descriptions, and compute parcel misclosures intuitively with the Create COGO routine.
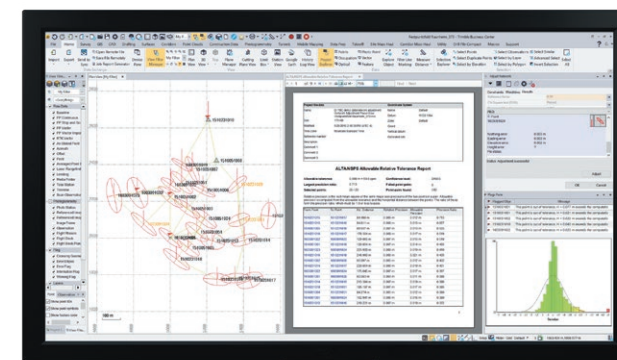


Apply a least-squares adjustment in a network adjustment

## CAD and Drafting

Produce your final survey linework, construction models, 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.
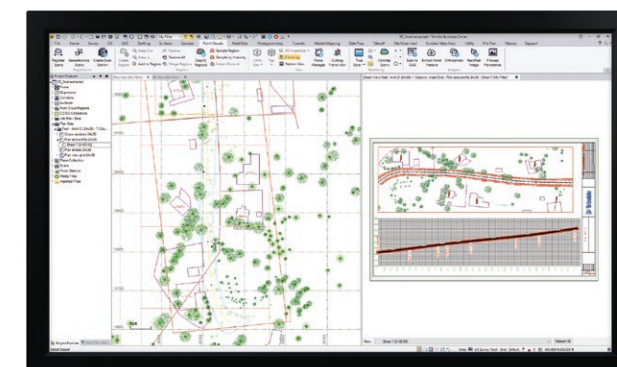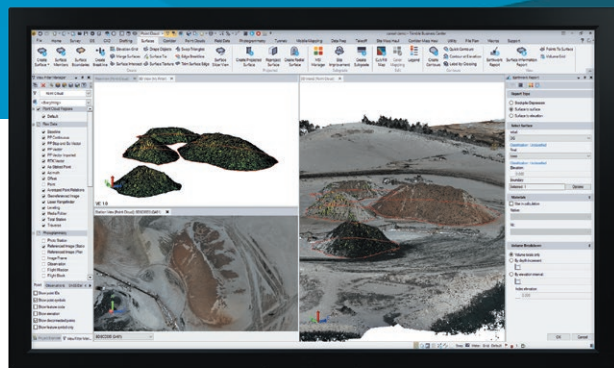


Draft plan and profile sheets with dynaviews

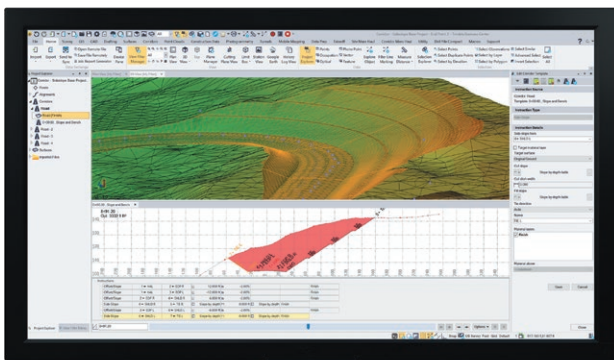**Trimble**

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Compute precise surfaces and volume stockpile quantities

## Surfaces and Volumes

Create, process, and deliver complex surface models for field devices, machine control systems, and third-party export.

▶ Create traditional, projected/vertical, and radial surfaces that dynamically update when surface members are modified.

▶ Generate quick and accurate volume reports from surface comparisons, stockpile/depression, and corridor surfaces.

▶ Compute gridded Cut/Fill surfaces and reports with customizable color mapping.

▶ Specify contour lines and labels that update as the surface changes.

▶ Drape objects onto surface and run point-to-surface comparisons.

## Takeoff and Mass Haul

Calculate earthwork and material quantities of a construction project.

▶ Define site improvements in the Material Site Manager for computations and reports.

▶ Generate takeoff reports for earthwork, materials, and costs.

▶ Balance and optimize earthwork volumes to reduce borrow and waster.

▶ Plan and design optimal material haul routes.

▶ Create mass haul diagrams and reports to plan and monitor progress for sites and corridors.


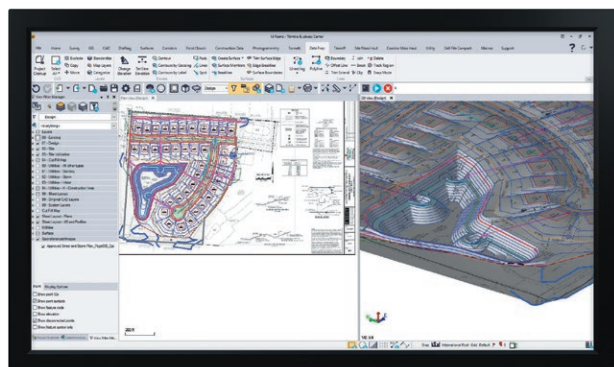
Calculate earthwork, material, and cost data



Model and visualize simple or complex alignments and corridors

## Alignments and Corridors

Model and manipulate alignments and parametrically-designed corridors.

▶ 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.

## Trimble VISION and Aerial Photogrammetry

Measure and model from Trimble VISION™ technology and UAS data with highly automated workflows.

▶ Extract points and geometry from station imagery, ortho images, and point cloud data.

▶ Choose TBC or UASMaster to adjust imagery and create deliverables.

▶ Generate photo tie-points automatically and match GCPs.

▶ Create high resolution point clouds, orthomosaics, and elevation raster DSMs from Trimble or third-party UAVs.

▶ Process and create deliverables from oblique images in UASMaster.



Adjust UAV data and create deliverables



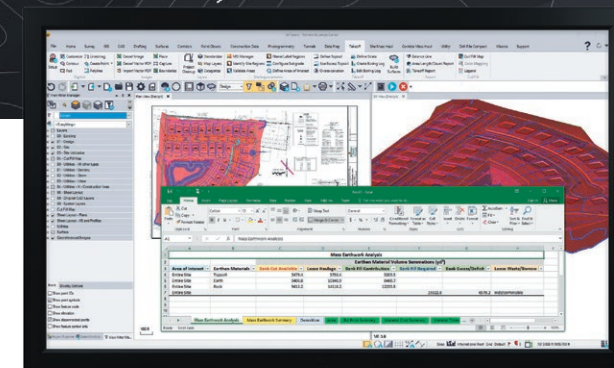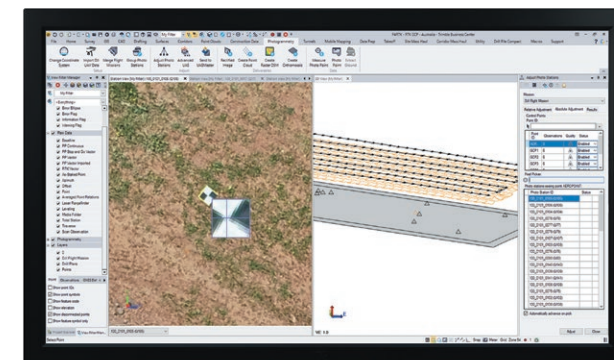Digitalize plan sets from PDF into 3D linework & models

## Data Prep

Make sure your data is clean, up-to-date, and delivered in the right format to get the job done.

▶ Import, cleanup, and organize CAD and PDF data with Project Cleanup.

▶ Extract and digitize data from vector PDFs.

▶ Elevate 2D contours, points, lines, and polygons into 3D models with parametric side slope and vertical design tools.

▶ Interact with site and corridor designs from third-party packages with support for a variety of CAD and BIM formats.

▶ Create linework, surfaces, and avoidance zones for machine control systems.

## Scanning and Point Clouds

View, manipulate, and extract information from terrestrial, mobile, and aerial point cloud data.

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

▶ Import and register Trimble TX-series, Trimble X7, 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.
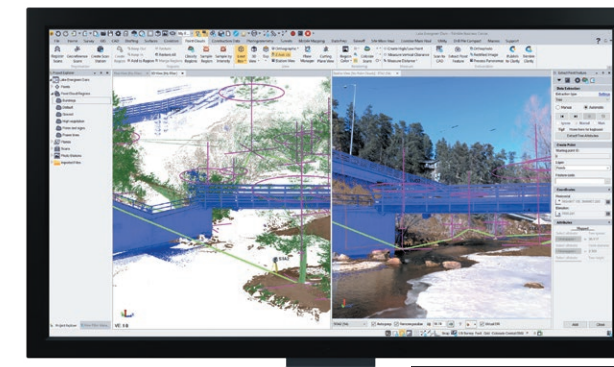


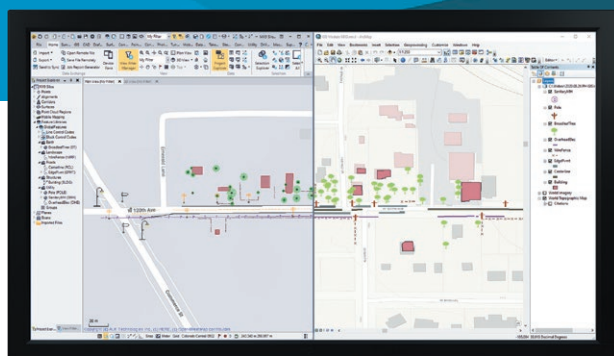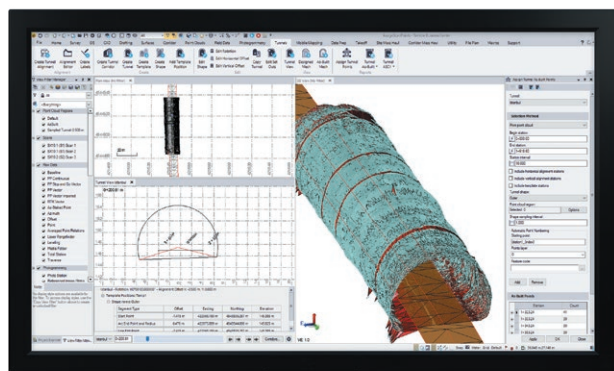Extract features from scans and point cloud data

# Supported Workflows
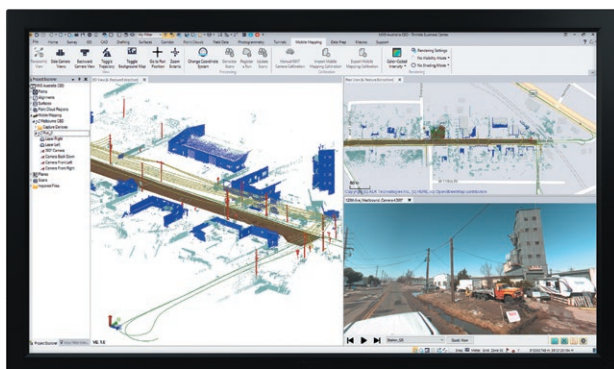
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Import SSF data and attributes via a File Geodatabase

## 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, Shapefile, and Enterprise Geodatabase.

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

▶ Map metadata from data source connections.

▶ Support for *.cor files with feature and attribute data from Trimble GPS Pathfinder® Office (PFO).

Use point cloud or total station data for tunnel survey deliverables

## Tunneling

Work with Trimble Access Tunnels and leverage TBC's point cloud and reporting tools for tunnel survey workflows and deliverables.

▶ Parametrically design tunnel shape templates with dynamic cross-section interface.

▶ Automatically generate tunnel geometry and set-out drill and blast points for stake out using Trimble Access Tunnels application.

▶ Visual and draft with designed or as-built tunnel meshes and customized heat map comparisons.

▶ Assign as-built points and point cloud data to create customized As-Built Tunnel Reports with over/under-break and volume information.

▶ Perform as-built to design and as-built to as-built inspection using total station or point cloud data to verify shotcrete thickness, excavation control, and final lining position.

Work with trajectory, registered point cloud, and imagery

## Mobile Mapping

Process, utilize, and integrate data from Trimble's mobile mapping hardware platforms like the MX7 and MX9.

▶ Adjust, colorize, and register scan data with single run or multi-run options and precise ground control picking tools.

▶ Calibrate the MX9 mobile mapping system.

▶ View mobile mapping runs, GNSS trajectories, and imagery.

▶ Integrate mobile mapping with GNSS, total station, and other survey and construction data.

▶ Export data to third-party and Trimble software such as TMX, Mapillary, and TopoDOT.

## Utility Modeling

Define gravity or pressure-based utility networks for takeoff and visualization applications.

▶ Create pipe 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.
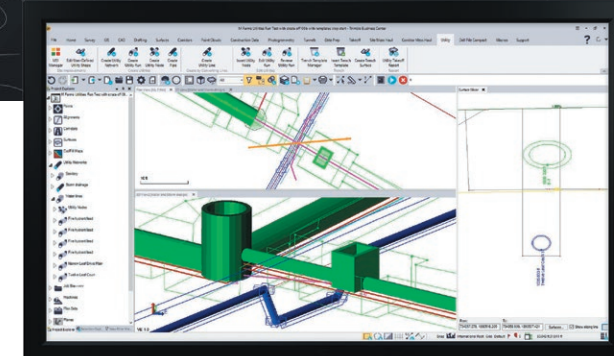
Model pipe networks, structures, and trenches in 3D

## Monitoring

Utilize survey data collected using Trimble Access Monitoring or 3rd party field software to generate manual or campaign-based monitoring deliverables.

▶ Create monitoring deliverables from all survey data - total station, GNSS, level, or point clouds.

▶ Define warning and alarm thresholds to flag points with significant movement.

▶ Visualize movement patterns and magnitude using 3D displacement vectors.

▶ View individual point movement trends using interactive charts showing thresholds in context of the movement levels.

▶ Create comprehensive monitoring reports showing displacements for client requirements.
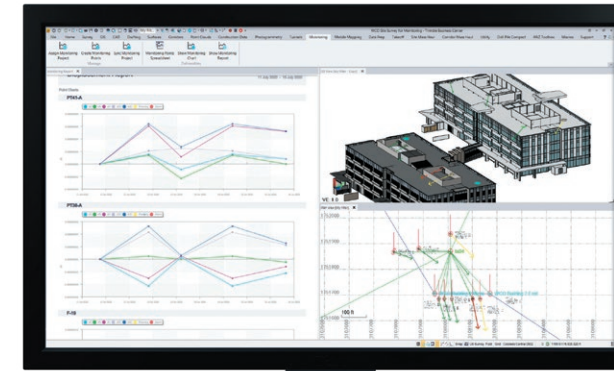
Create monitoring deliverables from any survey data

## Drilling, Piling, and Dynamic Compaction

Prepare work plans and connect to DPS900 systems.

▶ Create boring and drilling plans and work reports.

▶ Create foundation and infastructure piling plans and work reports.

▶ Create dynamic compaction plans and work reports.

▶ Customize pile types and drill quality reports.

▶ Import and export to Trimble DPS900 systems.
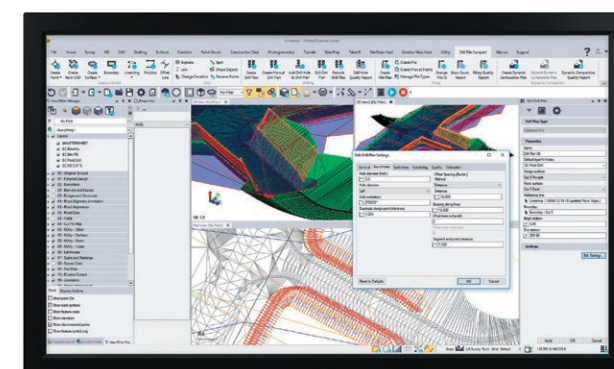
Set and edit drill, piling, and dynamic compaction plans

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# SYSTEM REQUIREMENTS

## Operating system
- Microsoft® Windows® 10 (64-bit version)
- Microsoft Windows 8 (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 workflows)
- AMD Ryzen processors are not supported

## RAM
- 4 GB or more recommended
- 32 GB or more recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning workflows

## Hard Drive
- 10 GB free or more recommended
- 100 GB free on SSD required with overall capacity of 500 GB recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning workflows

## 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 with Aerial Photogrammetry, Mobile Mapping, and Scanning workflows

## Monitor
- 1920 x 1080 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

# 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:
https://www.trimble.com/tbc

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

## 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:
https://geospatial.trimble.com/webinars/trimble-business-center

## Tutorials:
Follow along with sample data and PDF instructions as we explain and illustrate specific workflows and introductions to TBC:
https://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:
https://www.youtube.com/user/TBCSurvey

## Trimble Community Page:
Join your fellow TBC users and ask questions, showcase a project, and learn from peers in this open online forum:
https://community.trimble.com/groups/trimble-business-center-group

# NEXT STEPS?

Contact your local Trimble Authorized Distribution Partner or visit **https://www.trimble.com/tbc**

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TRANSFORMING THE WAY THE WORLD WORKS

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