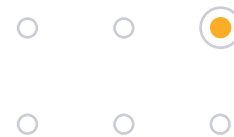


Trimble Business Center: Tutorials

TABLE OF CONTENTS

Instructions	2
Getting familiar with Trimble Business Center	2
Importing and processing GNSS data	2
Importing total station and level data	2
Performing common workflows	3
Processing features and working with GIS sources	3
Working with point clouds	3
Using CAD and drafting features	5
Working with aerial photogrammetry	5
Working with corridors and tunnels	6
Working with field data	6
Performing site takeoff and mass haul analysis	6
Working with terrestrial photogrammetry	6
Preparing data and creating surfaces	7
Processing Mobile Mapping data	7
Monitoring point movement	7



Trimble Business Center: Tutorials

Instructions

Click the Download link for any of the tutorials below to download a ZIP file containing the tutorial package. When you extract the ZIP file to the location of your choice, a new tutorial folder is created containing tutorial instructions in a PDF document and, as applicable, a VCE project file, a project folder, and a data folder. Just open the PDF tutorial document and follow the instructions.

Looking for more TBC learning resources?

- Check out the TBC section on our learn.trimble.com platform. From self-paced tutorials to Instructor-led workshops, we have you covered!
- New to TBC? We recommend you sign up for the “Getting Started - TBC” course on the learn.trimble.com platform first.

Getting familiar with Trimble Business Center

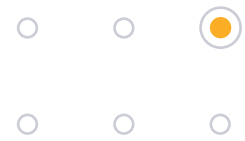
- **Setting Up a New Project** — Set up a new project, select various project settings and save the project as a template that can be used for other new projects. [Download...](#)
- **Using Spreadsheets, Selection Sets, and COGO Controls** — View spreadsheets, create a selection set, and work with COGO controls. [Download...](#)

Importing and processing GNSS data

- **Importing GNSS Data** — Import control and static GNSS data into a new project, merge points, and download reference and precise orbit data. [Download...](#)
- **Processing GNSS Baselines** — Process baselines from GNSS data that has already been imported into the project. [Download...](#)

Importing total station and level data

- **Importing Total Station Data** — Import traverse data collected with a total station into a project that already contains GNSS and level data. [Download...](#)
- **Importing Digital Level Data** — This tutorial includes three workflows: (1) import and edit Trimble DiNi level data, (2) Import level data using a custom importer, and (3) import variable row-type level data using a custom importer. [Download...](#)



Trimble Business Center: Tutorials

Performing common workflows

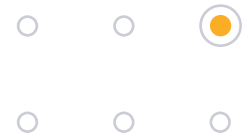
- **Adjusting the Network** — Adjust the network for a project that contains GNSS, total station, and level data. [Download...](#)
- **Calibrating a Site** — Import grid coordinates for a survey of two water towers, and import RTK data to use for the site calibration. Specify how sideshots in the project are computed, pair up the local control points and GNSS control points, and perform the site calibration. [Download...](#)
- **Creating and Adjusting Traverses** — Create and adjust three traverses that were surveyed in the field as part of the same project. [Download...](#)
- **Importing As-Staked Points** — Import points that were staked in the field (“as-staked” points). Review the deltas for the as-staked points and their corresponding design points to ensure the appropriate tolerances were achieved in the field. [Download...](#)
- **Creating Custom Reports** — Create a custom report template and then use it to run a custom report on data in the tutorial project. Also modify a predefined custom report template. [Download...](#)

Processing features and working with GIS sources

- **Working with Feature Definitions** — Import, edit, and export a Feature Library, which contains the instructions for mapping feature codes and control codes assigned to points in the field to their associated real-life features and attributes during feature processing in TBC. [Download...](#)
- **Processing Feature Codes** — Process and edit feature codes that have been imported into your project. Then view feature data in the various project views, and export the features as a CAD drawing. [Download...](#)
- **Integrating Survey and GIS Data** — Integrate survey and GIS data by first downloading a data schema from a file geodatabase and using it to create a Feature Definition Library (FXL) file. Then process feature data that was collected in the field using the FXL file, and directly upload (write) processed feature data back to the file geodatabase. [Download...](#)
- **Processing TerraSync SSF Data** — Import a Trimble Standard Storage Format file (.ssf) into TBC, along with an appropriate reference/base station RINEX file, and perform post-processing of the continuous GNSS data to create a trajectory that accurately positions the recorded feature points and line work. [Download...](#)
- **Integrating GIS Data Using an Enterprise Geodatabase** — Use an enterprise geodatabase to exchange feature data between TBC and ArcGIS Pro, where it can be viewed and edited by authorized users. [Download...](#)

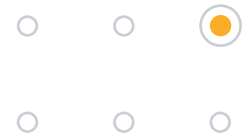
Working with point clouds

- **Working with Point Clouds** — Specify how to render a point cloud region in the graphic views, create additional point cloud regions, selectively clip (hide) and unclip scan points, and use scan points to create a surface and measure a volume. [Download...](#)
- **Creating Projected Surfaces** — Create a projected (non-horizontal) surface for each of two point clouds of an exterior building wall that were collected before and after adjacent ground excavation to determine wall movement resulting from the excavation. [Download...](#)
- **Processing Trimble SX10 Data** — Import and process data captured with the Trimble SX10 scanning total station that includes two station setups and one scan station located on an unknown position. Then use the Register Scans command to ensure that the scan captured by the scan station is correctly aligned with the overlapping scans from the station setups, resulting in a “rigid” point cloud. [Download...](#)



Trimble Business Center: Tutorials

- **Working with Planes** — Use the Plane Manager command to define the orientation and position of a 2D plane that displays in the 3D View. Then use the plane's orientation to create a cutting plane that also displays in the 3D View and whose 2D face displays on the Cutting Plane View tab, showing all of the points in your project that intersect the cutting plane. [Download...](#)
- **Extracting Point Features** — Use the Extract Point Feature command to select an object in a point cloud (for example, a light pole or a tree) and automatically create a new point at the base of the object with an assigned feature code and feature attributes. You will create both individual points (manual mode) and a batch of points (automatic mode). [Download...](#)
- **Extracting Overhead Line Features** — Use the Extract Line Feature command to create linestrings from overhead utility lines displayed in a point cloud. [Download...](#)
- **Extracting Curb and Gutter Line Features** — Use the Extract Line Feature command to create linestrings from curb and gutter lines displayed in a point cloud. [Download...](#)
- **Extracting Lane Line Features** — Use the Extract Line Feature command to create linestrings from solid and dashed lane line markings displayed in a point cloud. [Download...](#)
- **Extracting Stockpile Features** — Use the Extract Stockpile command to quickly and easily extract stockpiles from a point cloud, save them as new features in your project, and automatically calculate their volumes. [Download...](#)
- **Extracting Geometry** — Use the Extract Geometry command to create or select a 2D closed CAD object to use as a template and then locate features in a point cloud of the same shape and size (for example, painted markings on a roadway) and create a closed polyline around each. [Download...](#)
- **Performing a Plane-Based Scan Registration** — Import into your project raw positionless scan data collected with a Trimble TX8 scanner along with survey data collected at the same location with a Trimble SX10 total station. Then perform an automatic plane-based registration of the scans to properly align them with each other, and georeference the resulting point cloud to points contained in the survey data to correctly position the point cloud in the real world. [Download...](#)
- **Working with Trimble X7 Data** — Import and post-process scan data and photo images captured with a Trimble X7 Laser Scanner and Trimble Perspective field software. View text and image annotations assigned to scan points in the field and use selection sets automatically created from imported labels to filter associated objects in the Selection Explorer and View Filter Manager. [Download...](#)
- **Sharing 3D Data Using Trimble Clarity** — Publish point clouds to a Trimble Clarity presentation that can be shared with clients and other team members to intuitively explore geospatial data, make on-the-fly measurements, and add annotations. [Download...](#)
- **Performing Scan Inspections** — Use the Scan Inspection command to display positioning deviations between (1) a 3D object and a point cloud region and (2) two point cloud regions. [Download...](#)



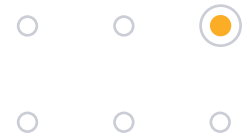
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Using CAD and drafting features

- **Working with Linestrings** — Linestrings are TBC's native linear object type. Get familiar with linestring fundamentals by creating, editing, elevating, and exploring them in a simple scenario. [Download...](#)
- **Working with Advanced Drafting** — Prepare an entire set of construction plans and maps with various drawing elements, such as a border and title block, dynaviews (of plan or cross-section drawings), north arrows, titles, labels, and sheet numbers. [Download...](#)
- **Creating Labels** — Create style templates that you will use to create single/multi-line labels and table labels. [Download...](#)
- **Working with Data from the CAD Command Line** — Create and edit CAD data by working through a dozen commands using only the CAD Command Line. On the CAD Command Line, you can work quickly by simply entering command aliases, keyboard shortcuts, and values (with occasional picking in graphic views). [Download...](#)
- **Creating COGO Collections and Parcels** — Create a COGO collection of linework in your project that you can, optionally, use to create parcels and compute parcel closure. [Download...](#)
- **Working with IFC Data** — Import an IFC file into a project that includes survey control points at the location where the IFC model should be positioned. Then reference the IFC model to one of the control points to move it to the correct position, and export the newly referenced IFC model so that it can be imported into other applications with accurate positioning information. [Download...](#)
- **Exporting Data for Visualization in Trimble SiteVision** — Use various TBC tools and exporters to export a georeferenced PDF landscaping plan, a surface, and control data to SiteVision for viewing on the real-world site. [Download...](#)
- **Creating SketchUp Models from Trimble Vision Images** — Export Trimble Vision images along with precisely measured points from Trimble Business Center to Trimble SketchUp Pro where you will use them to create a 3D model. [Download...](#)

Working with aerial photogrammetry

- **Processing Aerial Survey Data without a Trajectory** — Adjust aerial survey data collected by a Trimble X100 UAS using the Adjust Photo Stations command. Then create orthomosaic, point cloud, and raster-based digital surface model deliverables using the Create Orthomosaic command. [Download...](#)
- **Processing Aerial Survey Data with a Trajectory** — Process survey data with a trajectory collected by a DJI Phantom 4 RTK UAS and create orthomosaic, point cloud, and raster-based digital surface model deliverables. [Download...](#)
- **Processing Trimble UX5 HP Aerial Survey Data Using UASMaster** — Process aerial survey data collected by a Trimble UX5 HP UAS using TBC. Then import the data into Trimble UASMaster to adjust and create orthomosaic and point cloud deliverables. [Download...](#)



Trimble Business Center: Tutorials

Working with corridors and tunnels

- **Working with Corridors** — Create a road corridor based on an existing surface and alignment. [Download...](#)
- **Working with Superelevations** — Define a superelevation for an alignment used for a curved road. [Download...](#)
- **Creating a Tunnel Design** — Create a simple tunnel design in TBC that will familiarize you with all of the elements used to define a tunnel. [Download...](#)
- **Working with Tunnel As-Built Points** — Import tunnel as-built points to compare with a tunnel design to generate overbreak and underbreak information in reports and drafting sheet sets. [Download...](#)
- **Performing a Tunnel Inspection** — Create two as-built tunnel meshes from point cloud data recorded on site after tunnel excavation was complete and again later after shotcrete had been applied to the tunnel interior. Then analyze the differences (shape deviations), and share the inspection data with others. [Download...](#)
- **Monitoring Tunnel Convergence** — Use the Assign Tunnel Convergence Points command along with the Trimble Monitoring Cloud service to monitor tunnel convergence points by storing and comparing coordinates for tunnel points that have been measured in the field on two separate occasions (two epochs). [Download...](#)

Working with field data

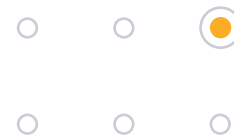
- **Working with Field Data for SCS and GCS** — Create a set of job site design files (including background map data, points to stake, and a design surface model) that can be used in the field on a hand-held controller running Trimble Site Controller (SCS) software for measurements and stakeout and on a machine running Grade Control Software (GCS) for earthmoving operations. [Download...](#)

Performing site takeoff and mass haul analysis

- **Calculating Takeoff Volumes for a Simple Site** — Perform a basic takeoff for a simple job site that includes a building pad, parking lot, driveway, sidewalk, and pond to calculate material volumes and site improvement quantities needed for predictive analysis on bid submissions for a construction job. [Download...](#)
- **Analyzing Mass Haul for a Simple Site** — Perform a basic mass haul analysis for a simple site. Create a cut/fill map, run an initial mass haul analysis, add haul roads, recalculate to see the effects on the analysis, and run the Site Mass Haul Report to confirm the costs of balancing your earthworks. [Download...](#)

Working with terrestrial photogrammetry

- **Measuring Points Using Photogrammetry** — Make photogrammetry measurements to create points, modify photogrammetry measurements, and view photogrammetry point properties and intersection observations in the Project Explorer, Properties pane, Photo Point Spreadsheet, and various graphic views. [Download...](#)



Trimble Business Center: Tutorials

Preparing data and creating surfaces

- **Performing Data Prep** — Change design data depicting a final grade into intermediate surfaces and objects required to construct the final design. [Download...](#)
- **Creating and Editing Side Slopes** - Create side slopes around piles and a building footprint to model the foundation surface. Offset pile footing elevations to get an overexcavation and then again to get a layback and slope to the finished pad elevation. [Download...](#)
- **Working with Surfaces** — Create a surface from two stockpiles and generate an Earthworks Report to calculate their volumes. [Download...](#)
- **Creating and Editing Vertical Designs** — Use vertical design tools to rapidly create two 3D surface models for a segment of road and a parking area. [Download...](#)
- **Creating an Overexcavation Surface** — Create multiple cross-sectional shape templates for overexcavation areas. Once you have defined overexcavation templates, use them to create various surfaces to represent excavation within areas that need to be cut below an intended finished or subgrade surface (overexcavated). [Download...](#)

Processing Mobile Mapping data

- **Processing Trimble MX9 Mobile Mapping Data** — Import, process, view, and export Mobile Mapping data collected with a Trimble MX9 Mobile Mapping System. (Note: This tutorial ZIP file is over 7GB and make take a while to download.) [Download...](#)

Monitoring point movement

- **Monitoring Point Movement** — Use the TBC Monitoring module to compare point coordinates measured on-site over a 3-day period (three epochs) to determine point movement (displacement) during that time. This workflow provides an excellent method for periodic or campaign-based monitoring of earth or structure movement over a period of time. [Download...](#)