TRIMBLE BUSINESS CENTER – YOUR COMPLETE OFFICE SOLUTION

Designed for today's fast-paced surveying office, Trimble® Business Center unlocks the potential of terrestrial and GNSS surveying data. Now with flexible licensing options and powerful visualization and modeling tools, Trimble Business Center is as versatile as it is powerful.

TOP FEATURES

Trimble Business Center software takes survey office software into the future by integrating common tasks into a single, unified package.

CALCULATE

- Full GNSS observation support , with extremely fast GNSS baseline processing and RTK data handling
- Terrestrial support, including total stations, levels, and spatial stations for 3D scanning data management
- Terrestrial photogrammetry with Trimble Vision™ images
- Fast and accurate surface modeling
- Extensive corridor modeling and computation
- Stakeout survey quality control tools
- Feature code processing for map creation and export
- Seamless coordinate computation based on datum transformations and projections using hundreds of published coordinate systems from around the world.
- Complete network adjustment
- GNSS site calibration
- Advanced COGO functions, including coordinate transformations
- Creation of ground coordinate systems and site definitions

CUSTOMIZE

- Flexible network licensing options
- Customization for comfort and efficiency, including toolbars, menus and layout views
- Fast and interactive data visualization
- Data selection and view filtering for faster access to information
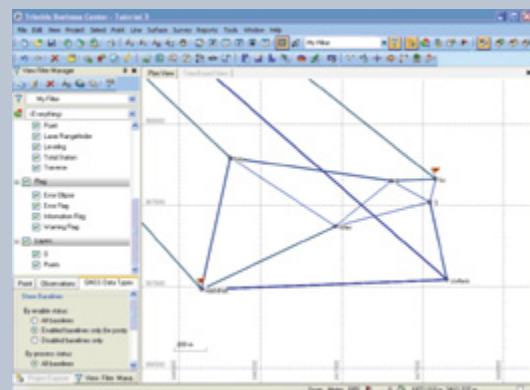- Reports for quality assurance and quality control

COLLABORATE

- Internet connectivity and direct link to the Trimble Connected Community, enabling live data exchange between the field and office (requires Trimble Access™ software services and subscription – see Trimble Access documentation for details)
- Direct field device connection for fast synchronization
- Multiple importers/exporters, based on your customers requirements
- Windows 7 compatibility
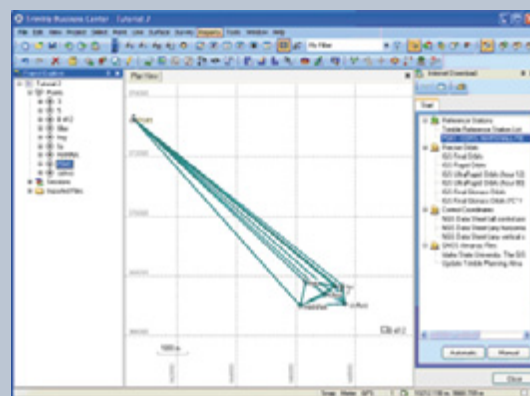- Optional Trimble SCS 900 support

WORK WITH GNSS DATA

- Import static and kinematic GNSS data in a variety of file formats, including RINEX. Integrate the GNSS data with terrestrial data collected as part of a survey project.
- Verify and correct field errors in the raw data during import.
- View and edit GNSS occupations and vectors.
- View time-based data in a chronological format to learn how session and occupation times relate to each other.
- Cross-out small regions of GNSS observations in a session, such as those containing large numbers of cycle slips, and disable problematic data when performing trial-and-error tests to improve baseline solution quality.
- Plan and schedule a project based on good and bad satellite coverage and geometry.
- Specify the quality acceptance criteria used to verify GNSS data.
- Process baselines to achieve the highest quality coordinates from both static and kinematic occupations, including "stop-and-go" sessions and continuous sessions.
- Enable and disable baselines for processing.
- Store individual vectors, instead of combining them into a single trajectory, when you need the ability to manipulate them separately.
- Use baseline processor styles to save processing settings in templates so you can quickly apply these styles to projects as needed.
- Generate a Baseline Processing report to review the solution types, precisions, and an acceptance summary for the processed baselines.
- Generate a GNSS Loop Closure Results report to identify bad vectors.
- Process event data, in which event markers indicate the precise time of each event during the survey.
- Generate a point list to see a simple summary of the coordinates for each point in your project.
- Generate a Point Derivation report to see details on the survey data used to calculate the final coordinates of points in your project.

Viewing processed baselines

Working with GNSS data in Trimble Business Center software

SET UP GEODETIC REFERENCE DATA

- Choose the appropriate coordinate system and geoid model for your project by selecting from a list of recently used systems or directly from a library of systems from around the world.
- Use the Coordinate System Manager, a stand alone utility, to create new coordinate systems or to edit existing coordinate systems in the coordinate system database (Current.csd).
- Perform a site calibration to minimize residuals between local control coordinates and WGS-84 RTK data you collect.
- After you perform a site calibration, name and save the site so it is available to use as a coordinate system.
- Generate a Site Calibration report to see details on the local site settings, horizontal and vertical calibration parameters, and residual differences between GNSS and grid points in your project.
- Import survey data using a scale-only projection.
- Create a datum grid file for projects that require a datum.
- For large geoid files, define a subsection or sub-grid before uploading to a field device.

IMPORT DATA

Importing survey data into office software has never been easier. That's because Trimble Business Center software automatically recognizes GNSS and terrestrial file formats.

- Easily drag-and-drop file imports from controllers or receivers.
- Import compressed files, such as .zip and .tar files.
- Quickly convert one or more Trimble Geomatics Office version 1.63 (or later) projects to Trimble Business Center (.vce) projects.
- Choose whether to merge data contained in a newly imported version of the file with the data already in the project, or import it as a separate file.
- Define a custom format for importing an ASCII file with a non-standard format.

- Use the Internet Download tool to obtain CORS data, Control coordinates, or ephemeris data that is relevant to your project. Also, use it to:
  - Perform a radial search based on the coordinates in your project.
  - Import file formats used by most GPS manufacturers, as well as the receiver-independent RINEX format.
  - Automatically convert time differences and find overlapping session times.
- Generate an Import Report to see a project summary, details on imported files, and any associated errors or warning messages.

For a complete list of compatible file types, see Import Data section at the end of this document.

TRANSFER AND SYNCHRONIZE DATA

- Use the Office Synchronizer, a standalone utility, to transfer data files between your computer and your CE or Windows Mobile- based field device/site controller, and verify that the data in both locations is the same, or synchronized.
- Use the Device pane to directly access Microsoft Windows® CE-based or Windows Mobile® based field devices or Trimble Tablet.
- Select a datum grid file (.dgf) based on the datum used in the project coordinate system, and upload it to a field device.
- Select a geoid grid file (.ggf) based on the geoid used in the project coordinate system, and upload it to a field device.
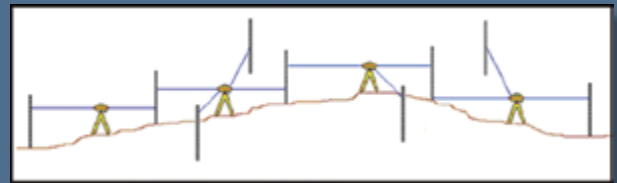
SELECT DATA

Use from the many Select commands to:
- Select all of the visible and selectable objects.
- Deselect the currently selected objects, and select the currently unselected objects visible in the view.
- Select points with specific properties.
- Select points with the same point IDs.
- Select survey observations with specific properties.
- Select all sessions for which baselines have not been processed.
- Select data within, or outside of, a specific elevation range.
- Select data by its layer.
- Select data from the entire data set using a custom set of criteria.
- Create, modify, and reuse selection sets to make selecting groups of commonly-used objects faster and more consistent.
- Review and edit the properties for selected objects to ensure they have the correct attributes.
- Use view filters to set the visibility of each data type and layer to control what is displayed in graphic views, helping you simplify what you see.

WORK WITH TERRESTRIAL DATA

- Import a data file from Trimble Survey Controller™ software or Trimble Access software that includes a traverse adjustment that was performed in the field.
- Import survey data (in a variety of file formats) that was acquired in the field using a total station or Trimble DiNi® level. You can integrate the terrestrial data with GNSS data collected as part of a survey project.
- Import total station data that employs a variety of station setup and measurement types:
- View and edit residuals for any mean angle and disable outlying observations. Generate a Mean Angle report to view details of how each mean angle was computed.
- Import scan and image data from Trimble VX and view images with overlaid point data.

Typical level run

- Import traverse-adjusted coordinates into a project where they can be used to calculate points.
- Review and edit level data during and after import:
  - Enable and disable observations.
  - Select which points to import.
  - Select to use raw or adjusted elevations in the project.
  - Manually enter benchmark heights and qualities.
  - Adjust level runs to spread any misclosure proportionately throughout all the measurements.
  - Merge two or more level runs into a single level run.
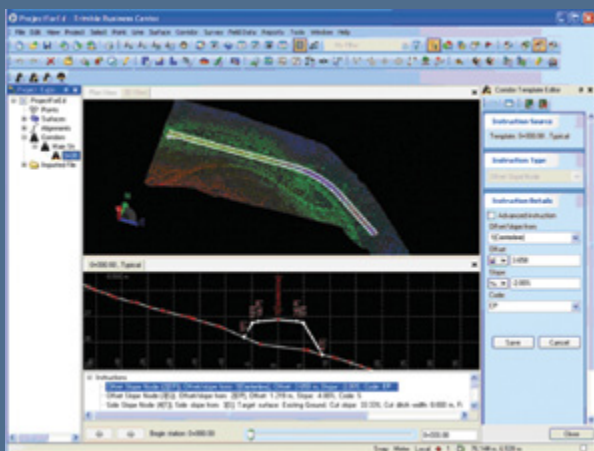 - Specify whether or not to allow a network adjustment to the level data after import .

Using a Trimble total station in the field

WORK WITH CORRIDORS

A "corridor" is a 3D model of a linear structure, such as a road or waterway. The corridor is based on a horizontal and (optionally) vertical alignment and includes templates that define cross-sections throughout the length of the corridor.

- Create a corridor based on design information contained in a variety of formats:
  - Detailed plots of the horizontal and vertical alignment, typical cross-sections, and callouts describing specific details of the road
  - An AutoCAD file with digital representations of the plan
  - A corridor model in a GENIO file or LandXML file
- Insert one or more cross-section templates as necessary into the corridor. Each template determines the cross-section shape of the corridor from the point the template is inserted until the next template, or the end of the corridor is reached.
- For each template, add one or more instructions used to specify offsets, slopes, and other properties that define the cross-section of the corridor at that location.
- View the corridor in Plan View or 3D View and export the corridor data in a variety of formats to be used in other office software applications or in field.
- Use the Alignment Editor to create superelevations (the banking of a road along a horizontal curve). Apply the superelevation to selected nodes in a corridor template using a Superelevation instruction.
- Create a list of material layers that represent different surfaces within a corridor and apply corridor templates to one or more of these layers.

Working with corridors

Viewing survey data displayed on a georeferenced image

VIEW YOUR PROJECT DATA

Visualizing your project data has never been easier. Trimble Business Center software provides an extensive array of tools to help you select the view you need and explore your data quickly and efficiently.

- Graphic views: View data graphically on any of the available graphic view tabs. Trimble Business Center's powerful graphic engine delivers fast results.
  - Plan View: View your project in two dimension from above, as in a map display. Pan and zoom to explore the view.
  - 3D View: View your project in three-dimension using predefined view points or by rotating the view with easy-to-use controls.
  - Image View: View registered photos in your project, with overlaid survey data.
  - Profile View: View the vertical alignment geometry.
  - Cross-Section View: View surface cross-section geometry.
  - Google™ Earth: View your project superimposed on photographic satellite images of the location in a Google Earth window.
- GNSS Time-Based View: View GNSS data in a chronological format for clear visualization.
- Spreadsheets: Copy data directly to MS Excel. Filter and sort the data to best suit your needs:
  - Points
  - Vectors
  - Optical
  - Occupation
  - Photogrammetry points
  - Features

USE COGO CONTROLS

Use COGO (COordinate GeOmetry) controls to calculate angles, bearings, coordinates, distances, elevations, and offsets in your project. They enable you to enter data in a variety of ways, including:

- Typing in values and point IDs
- Picking points in graphic views
- Right-clicking in graphic views and selecting additional snap and COGO options from the context menu
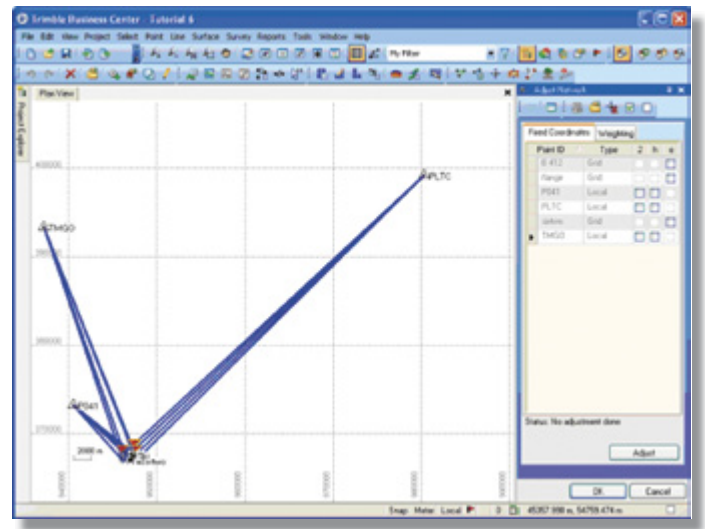
COGO controls provide this flexibility so that you have many ways in which you can enter data within a single command, rather than forcing you to work through multiple commands.

- Enter numbers in many of the COGO controls. When a COGO control supports numeric entry, you can use basic mathematical expressions by including the operators.
- Calculate geometry while using snaps to help you specify and select coordinates and points more easily and accurately. Snaps can either use existing geometry or values that you enter during the command.
- Calculate and report inverse values between any two points in your project.
- Use object transformation commands to move, rotate, scale as needed.

ADJUST A NETWORK

Perform a least squares adjustment of your network of processed vectors. Project data may include a combination of GNSS and terrestrial data. Use the adjustment to:

- Estimate and remove random errors.
- Provide a single solution when there is redundant data.
- Minimize corrections made to the observations.
- Detect blunders and large errors, and ensure any remaining errors are small, random, and properly distributed.
- Generate information for analysis, including estimates of precision.

- A least squares adjustment ensures good positional closures and estimates of repeatability. It ensures the reliability of your current and future measurements.
- The adjusted values for each point appear in the Properties pane. You can analyze the results in the Network Adjustment report.
- After network adjustment, each station's horizontal and vertical error ellipses are displayed. You can quickly and easily inspect the network's quality.
- Perform an adjustment using the individual observations that make-up mean angles, or use the mean angles themselves.
- Specify individual horizontal and vertical coordinate standard errors for control points of differing survey precisions
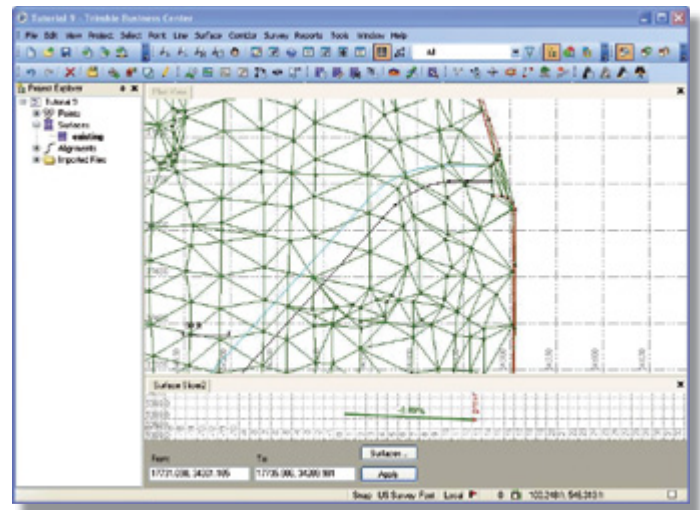

Performing a network adjustment

MODEL SURFACES

- Import surfaces to your project, or create them using existing data.
- Visualize and analyze the topography at different phases in your project.
- Compare one phase to another to generate volume reports for cut-and-fill earthwork operations.
- Represent stockpiles and depressions.
- Create contour maps from topographic surveys.
- Upload a surface to a field device to check grades, or for accurate staking of an alignment or daylight boundary.
- Import surface files in .ttm or .xml format from colleagues, clients, or field crews using field software.
- Create a surface profile to review the elevation of a surface along a vertical alignment.
- Create a surface cross-section to check geometry along an alignment anywhere it coincides with a single, specific surface.
- Use the surface slicer view to check any surface cross-section by slicing vertically through the surface. Multiple surface slicer views can be open at a time, and you can view multiple surfaces in the view concurrently.
- Create a simple breakline to add linestring segments between points where surface triangles converge (at vertices), or add simple breakline segments freely between any two locations on or near the surface.
- Create a boundary to delineate a portion of a surface. This is useful if you do not want to send an entire surface to field software, and it enables you to include a smaller surface model with your design data.
- Manage materials by creating and editing libraries of materials for volume calculations.

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- Generate a Surface Information report to see surface measurements and limits, as well as the number of triangles, vertices, and other items in a surface in your project.
- Generate an Earthwork report to calculate volumes based on a single surface, or the comparison of two surfaces.
- Define the limits of a surface by adding or removing one or more boundaries or closed lines.
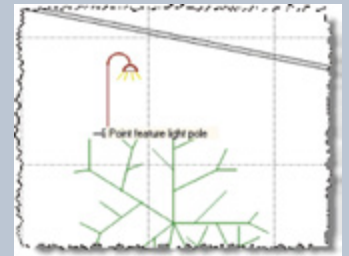

Viewing a surface in Plan View

WORK WITH FEATURE CODES

Features represent objects that surveyors might encounter as they collect survey data. Examples include trees, fences, gates, signs, utility poles, and buildings. After import and processing, the software can display symbols, lines, and areas that represent the real world objects. Features can be exported to other systems (for example, CAD packages) as necessary.

- Use the Feature Definition Manager, a standalone utility, to create and manage feature libraries (.fxl files) for feature code processing and GIS attribute data collection. A feature library is a collection of features with codes and attributes that describe them, as well as line control codes that modify how the features relate. The Feature Definition Manager comes with a default library of features with predefined attributes.
- Manage feature definitions, symbols, text, offset lines, attributes, and line control codes.
- Use feature coding to:
  - Make detailed data collection in the field more efficient and consistent by controlling how features and attributes can be captured. Set parameters for what you can and must enter ensures data integrity and completeness.
  - Add symbols and annotations to feature-coded field data so that the information can be presented in a more visual format.
  - Connect points to define line features, such as pavement or building edges, or the centerlines of ditches or fences. Line control codes give you the power to add new points automatically, and add lines, curves, and arcs between points.
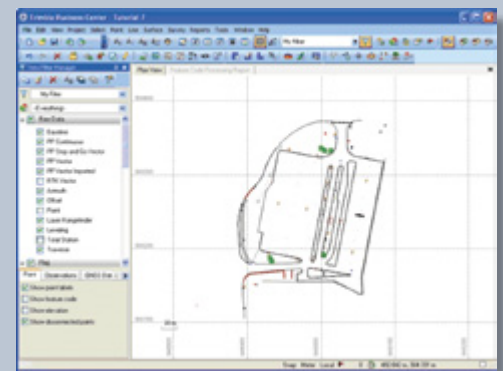

Viewing feature codes in Plan View

If you are working with surfaces:
- Define the breaklines of a surface.
- Control how surfaces are formed by specifying which points should be used, and which lines should act as breaklines. Surfaces can be modified by moving points to specific layers based on their feature codes.

After importing feature data into your project:
- Process features codes to display features correctly in graphic views.
- Review the Plan View and Feature Spreadsheet to ensure the survey was correctly performed and feature codes and attributes were correctly entered. If appropriate, create a surface to ensure that features are correctly included in it.
- Edit the imported feature code strings as necessary. Merge feature attributes and split line features.
- If the attribute includes a value that specifies a file path (for example, a photo attribute specifies a path to the photo file), view the file.
- Export feature data contained in your project to a geodatabase XML file from which the data can be imported into an ESRI geographic information system (GIS).

TRIMBLE ACCESS SERVICES

Interact with your field crews and remote office staff more efficiently than ever using Trimble Access Services directly from Trimble Business Center:

- Collaborate on a project that is stored remotely on the Trimble Connected Community website.
- Import and export data from the field by connecting to a Trimble AccessSync site.
- Manage the status of your registered devices, including Trimble Access data collectors.
- Create new Trimble Connected Community sites that correspond with your TBC projects.
- Upload raw GNSS files to be processed by external positioning services.

CHECK FOR UPDATES

Be sure you always have the latest files at your disposal. Easily download new or updated files from the Internet:

- Tutorials
- Configuration files
- Coordinate system library
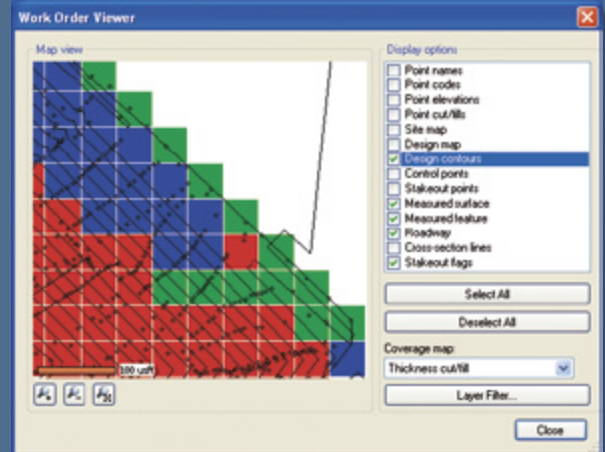- GNSS planning software
- Software patches

GENERATE REPORTS

Deliver survey results to clients in professional appearing and easy-to-read reports. Trimble Business Center software displays reports in either an HTML format that is easily displayed in word processing and Web browsing software, or (in some cases) on a tab in the software.

- Many predefined reports are available, including:
  - Alignment Geometry
  - Baseline Processing
  - Earthwork
  - Import
  - Level
  - Loop Closure
  - Mean Angle
  - Network Adjustment
  - Stakeout
  - Corridor Stakeout

WORK WITH FIELD DATA (FOR TRIMBLE SCS900 AND TRIMBLE GCS900)

- Prepare field data for use by construction crews on a job site, including site data, design data, work orders to be used on SCS site controllers, and site and design data to be used on GCS machines. Using site controllers, you can measure material volumes, monitor grades and laid material thickness, and perform other site-related tasks, such as point, line, roadway, and surface stakeout. With machines, you can perform scraping, grading, excavation, and compaction activities with accurate guidance. You can also perform blade and bucket positioning.
- Use Office Synchronizer, a standalone utility, to manage the exchange of field data between your computer and controllers.
- Use the Job Site Manager to create a job site to be used by a Trimble® Site Positioning System (SPS) or Grade Control System (GCS). Prepare job site data and assign the data to the specific controllers to be used on the site. Use the Job Site Design Manager to prepare job site designs. Use the Work Order Editor to create work orders.

Viewing a work order for required cuts and fills

IMPORT DATA

- Import data from a wide range of file types, including: Rinex, .ali, .alz, .asc, .cal, .crd, .csv, .dat, .dc, .dgn, .ds, .dwg, .dxf, .eje, .hpt, .htm, .ilj, .ini, .job, .jxl, .mos, .plt, .pts, .ras, .raw, .reb, .rxl, .sce, .sp3, .sp3c, .t00/.t01/.t02, .tra, .trv, .ttm, .txt, .xml, and .yxz.
- Import Bentley, Buhodra Ingeneria ISPOL, Aneba Geoinformatica CARTOMAP, Tool CLIP and Aplitop TCP-MDT files
- Import georeferenced .tif and .gif files

EXPORT AND UPLOAD DATA

- Export and upload multiple file types: .asc, .bmp, .cdg, .csd, .csv, .dc, .ddf, .dgf, .dxf. .dwg, .fal, .fcl, .fxl, .gif, .ggf, .ilj, .ini, .job, .jpg, .jxl, .png, .pro, .profile, .pts, .rxl, .svd, .svl, .tif, .ttm, .txt, .xml
- Specify which additional related files (for example, geoid files or datum grid files) to automatically export with a JOB file when you are exporting to a field device either directly (the device is connected) or indirectly (the files will be stored for upload at a later date).
- Use the Export Format Editor to create a custom converter to export your custom format. The converters created with this editor are used within the Export command to export ASCII files with a non-standard format.

CUSTOMIZE THE LOOK AND FEEL

Trimble Business Center software provides a customizable user interface. Its flexibility and user-friendliness let you work the way you want:

- Customize toolbar and menu layouts using configuration tools that are familiar to all Microsoft® Office users.
- Create custom commands.
- Specify startup and display options, file locations, Internet download options, and settings for external services.

FLEXIBLE LICENSING OPTIONS

Install a multiple-user license on a network server, which can then be accessed via the network on an as-needed basis by individual users.

SYSTEM REQUIREMENTS

Operating system:
Microsoft Windows® 7 (32- and 64-bit versions)
Microsoft Windows Vista (32- and 64-bit versions)
Microsoft Windows XP (32-bit version with Service Pack 2)

Processor:

Minimum:	Intel® Pentium® Dual-Core E2160 (1.80 GHz, 1 MB L2 Cache, 800 FSB)
Recommended:	Intel Core™ 2 Duo Processor E6320 (1.86 GHz, 4 MB L2 Cache, 1066 FSB)

Random Access Memory (RAM):

Minimum:	512 MB
Recommended:	1 GB or more

Hard disk:

Minimum:	80 GB
Recommended:	160 GB or more

Graphics: DirectX 9 (or higher) compatible graphics card with 256 MB memory or more

Monitor: 1024 x 768 or higher resolution with 256 or more colors (at 96 DPI)

I/O Ports: USB 2.0 port

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