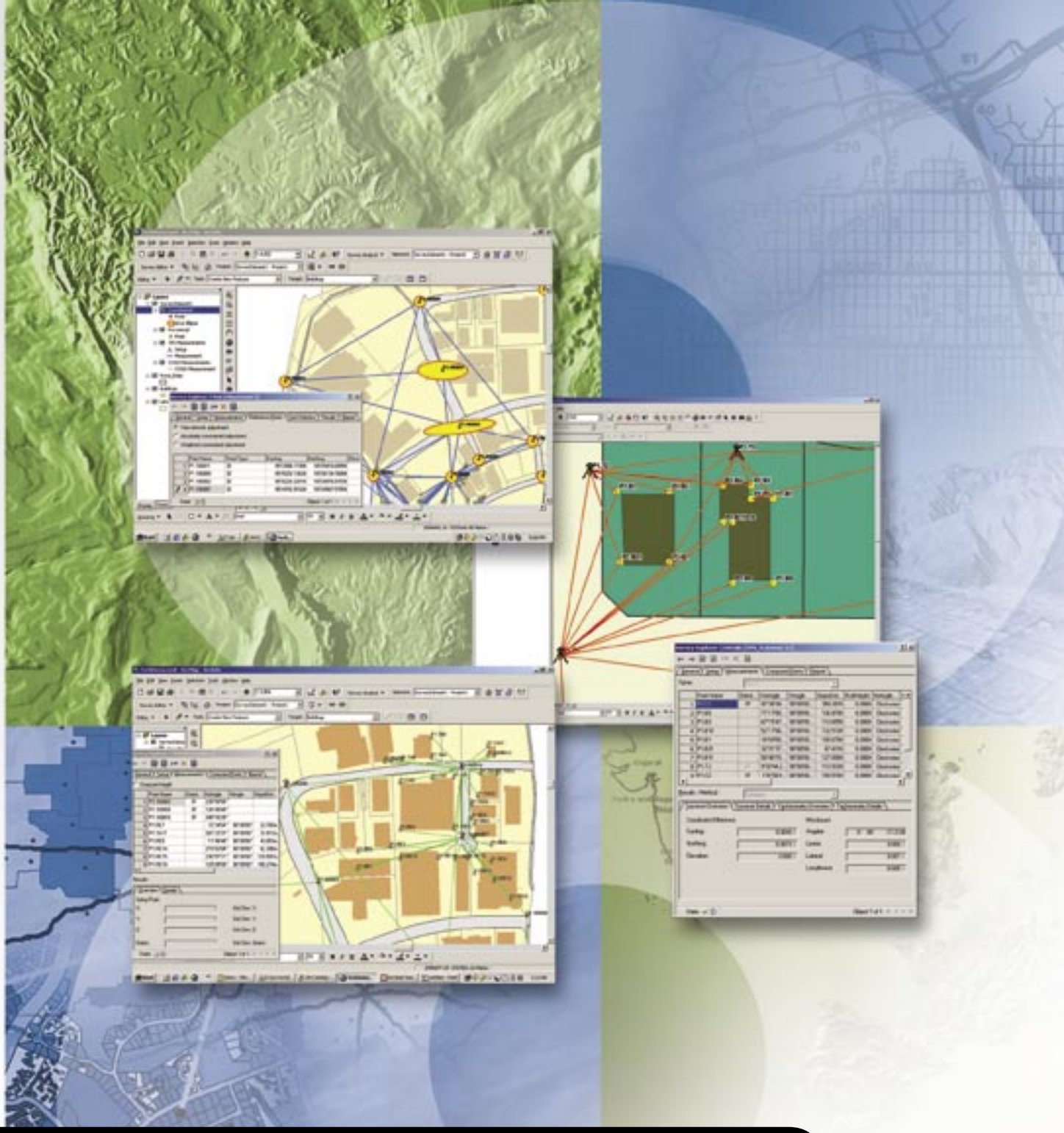


ArcGIS® Survey Analyst

Bridging the Technology Gap
Between Surveying and GIS

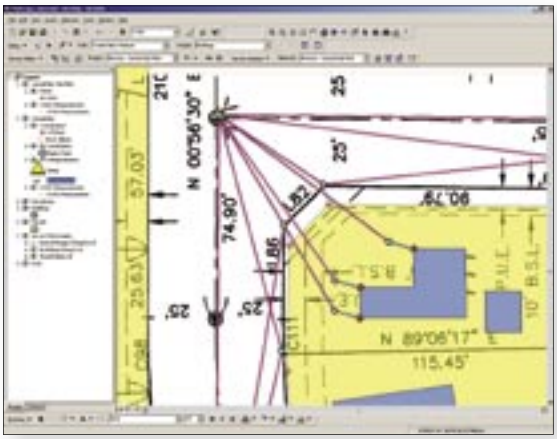
ArcGIS™ ESRI

ArcGIS® Survey Analyst

Bridging the Technology Gap Between Surveying and GIS

Traditionally, a gap has existed between surveyors and geographic information system (GIS) technicians. These two groups have typically maintained their data, measurements, and calculations in separate systems and attempts to interface those systems have often caused degradation in the spatial quality of the GIS data. As a result, the potential synergies of having surveyors and GIS technicians work together have been missed. What is needed is an integrated means of bridging this gap on two fronts by (1) enabling survey data, and its inherent information about spatial quality, to be the basis of defining mapping accuracy for the GIS and (2) allowing survey measurements and computations to be maintained in a GIS database so improvements in spatial quality for survey data can be propagated into the GIS. These needs are now met with ArcGIS® Survey Analyst.

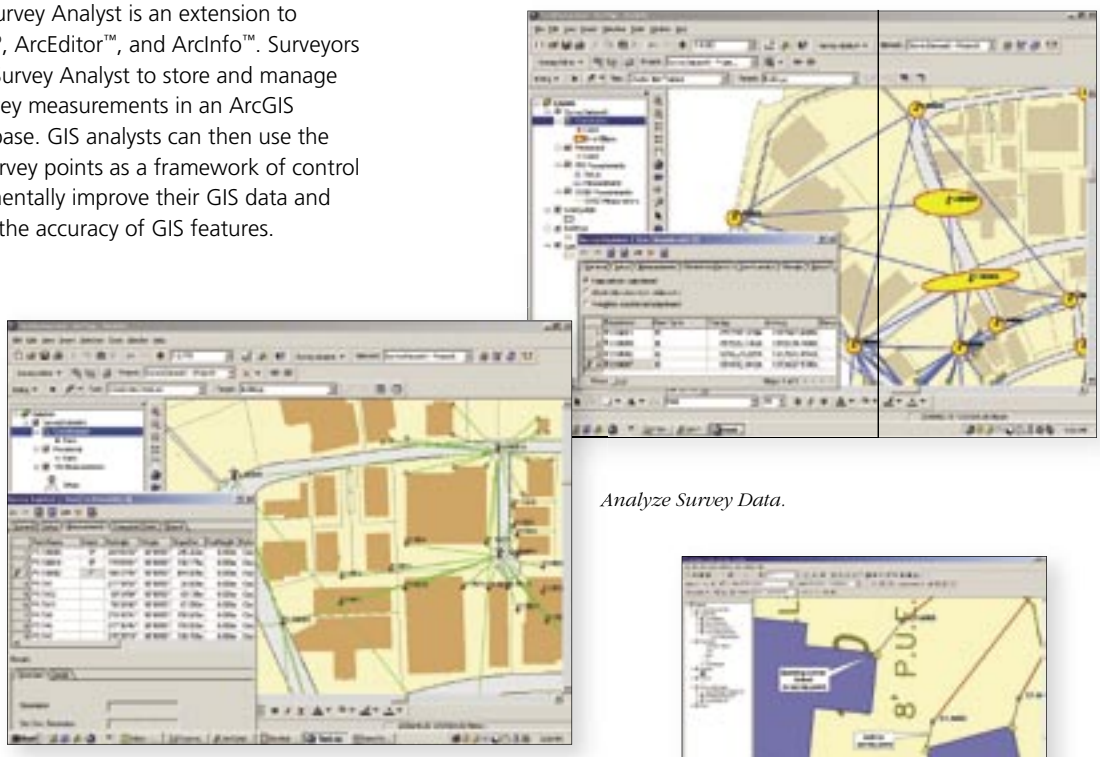
Using ESRI® ArcGIS Survey Analyst, surveyors can easily incorporate their measurements and calculations into GIS databases that serve all departments and applications in an agency. Surveyors and GIS technicians can at last work in a truly collaborative and unified environment.



Edit Survey Data.

What Is ArcGIS Survey Analyst?

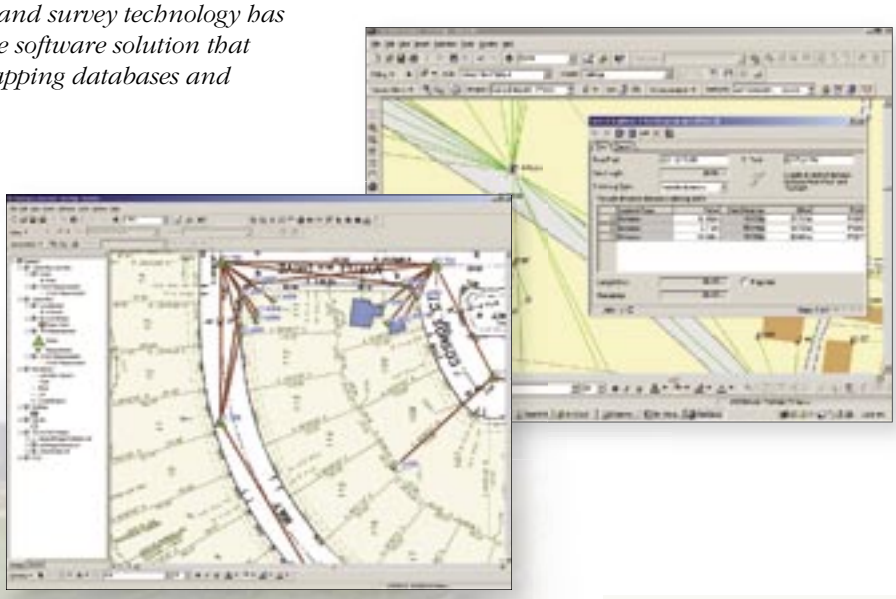
ArcGIS Survey Analyst is an extension to ArcView®, ArcEditor™, and ArcInfo™. Surveyors can use Survey Analyst to store and manage their survey measurements in an ArcGIS geodatabase. GIS analysts can then use the stored survey points as a framework of control to incrementally improve their GIS data and evaluate the accuracy of GIS features.



Analyze Survey Data.

Link Survey Points to GIS Features.

ESRI developed ArcGIS Survey Analyst in partnership with Leica Geosystems. This joint venture between the innovators of GIS software and survey technology has resulted in a comprehensive software solution that bridges the gap between mapping databases and modern surveying systems.



With ArcGIS Survey Analyst Users Can

- Create, edit, and manage GIS features based on survey measurement data.
- Integrate survey measurements into a GIS database, using observations from field notes and data collector files from survey equipment.
- Manage and process survey data with a set of comprehensive tools.
- Store survey measurements, points, and computations in a GIS database for future analysis.
- Perform basic COGO computations.
- Perform survey computations such as traverse and least squares adjustments using the original raw observations.
- Create custom importers and tools using a standard development environment.

Requirements

ArcGIS Survey Analyst runs on

- Microsoft® Windows NT® 4
- Microsoft Windows® 2000
- Microsoft Windows XP

ArcGIS Survey Analyst requires one of the following:

- ArcView 8.3 or higher
- ArcEditor 8.3 or higher
- ArcInfo 8.3 or higher

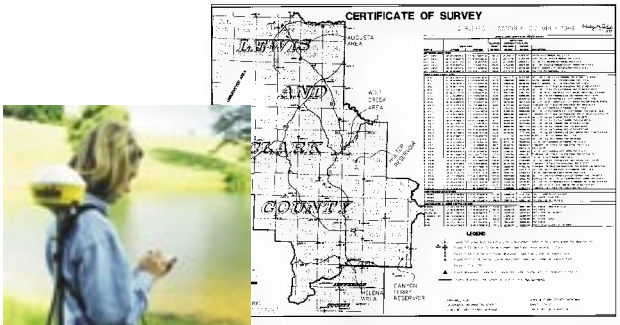
To learn more about ArcGIS Survey Analyst, visit www.esri.com/surveyanalyst.

Managing Survey Data

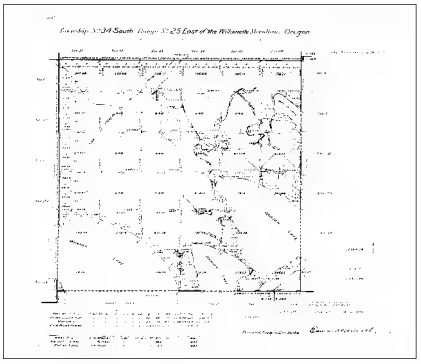
ArcGIS Survey Analyst maintains survey data in an integrated database, supporting the reduction of measurements and observations using survey computations (such as traverse and least squares adjustments). What makes ArcGIS Survey Analyst unique is that it is the only GIS on the market to allow feature linking and adjustment in the same application environment. This technology supports incremental improvement in the survey database and in GIS feature quality. It provides a robust set of tools and procedures to manage a survey data set in the geodatabase. A survey data set is structured to define associations with the feature classes in the data set with the survey information stored as projects within the data set.

Measurements normally collected in electronic or paper field books can now be imported and held in a database within a survey project. Bearings and distances along boundaries, angles and lengths along circular curves, and measurements acquired in field sketches can be stored as measurements in the survey data set using coordinate geometry (COGO) computations.

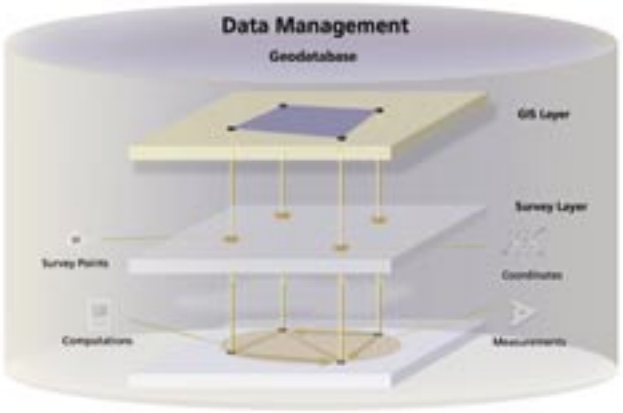
The survey data set/survey projects methodology of organizing data allows users to structure survey data sets in the manner that makes the most sense for their organization. A project may be anything from a field control survey to a COGO entry survey plan.



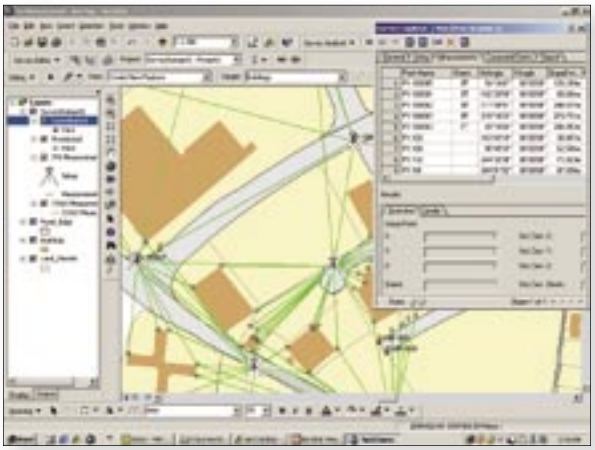
Add Data to ArcGIS Survey Analyst From Various Sources.



Use Survey Standard Computations to Determine GIS Coordinates.



Survey Data Within a Geodatabase.



Use GIS to Compute, Adjust, and Store Survey Measurements.

Link GIS Features to Survey Points.

Benefits to the GIS Analyst

The new data layer in ArcGIS Survey Analyst allows GIS analysts to improve the accuracy and value of their systems. Coordinates computed from accurate survey information allow GIS users to link features to survey points and then adjust the features to surveyed locations—improving the spatial quality of GIS features. This can be an incremental process in which features with survey data can be improved over time as new information becomes available. Core ArcGIS tools also provide the ability to digitize new features from the surveyed point locations defined by Survey Analyst.

Benefits to the Surveyor

A key benefit of the ArcGIS Survey Analyst extension for traditional surveyors is that their work can now be used extensively in an integrated manner within a GIS framework. Previously, surveyors would complete a job by taking their measurements in the field with survey equipment, loading the measurements into a survey package for reduction (survey computation), using a drawing package to create survey maps/plats/drawings, and then (if required) exporting the data to shapefiles or a GIS for other analyses. Once the job was complete, the data was not managed in a database. With Survey Analyst surveyors can store measurements (distance, angle, etc.) and coordinates in the survey layer of a geodatabase. The survey layer maintains measurements, computations, and coordinates. Now survey work can be held in a continuous database supporting a GIS system for complete spatial analysis.

Adjust GIS Features to Survey Points.

For more than 30 years ESRI has been helping people manage and analyze geographic information. ESRI offers a framework for implementing GIS technology in any organization with a seamless link from personal GIS on the desktop to enterprisewide GIS client/server and data management systems. ESRI GIS solutions are flexible and can be customized to meet the needs of our users. ESRI is a full-service GIS company, ready to help you begin, grow, and build success with GIS.

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Visit ESRI's Web page at

www.esri.com

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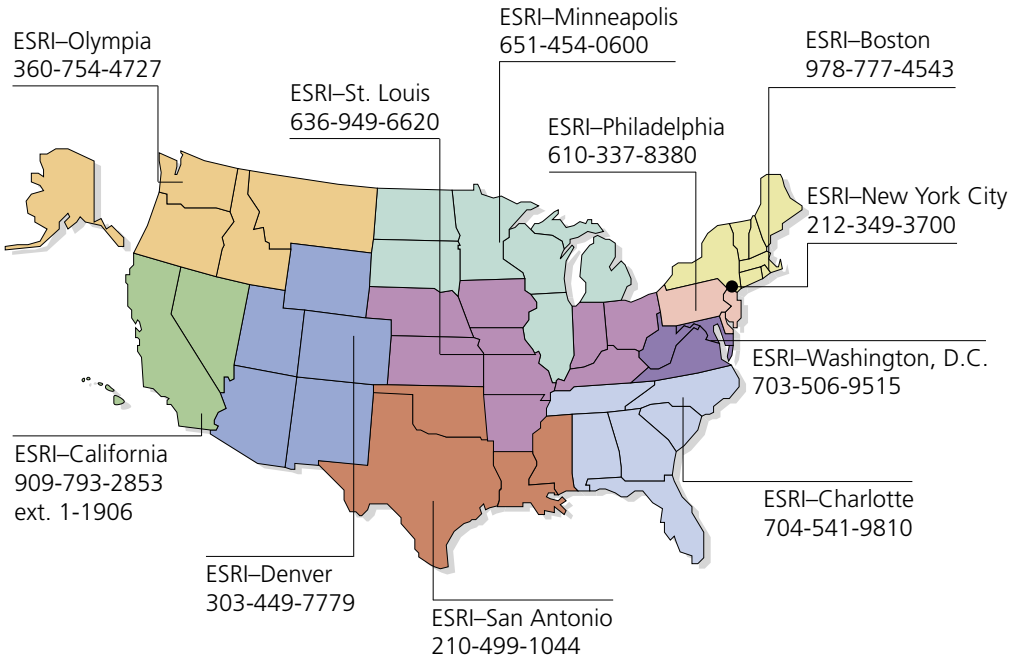
Regional Offices



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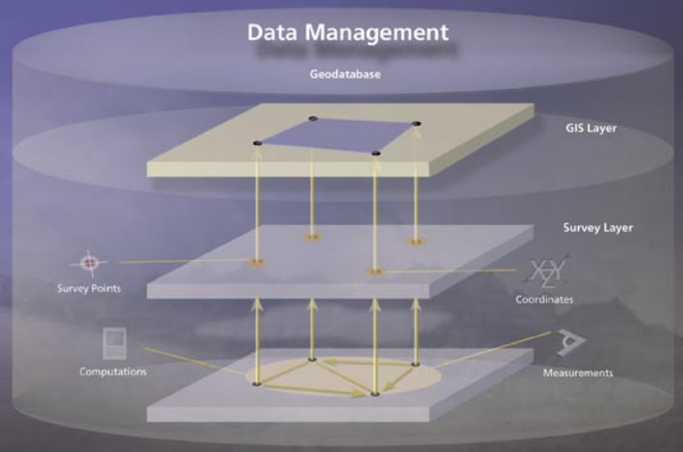
ArcGIS® Survey Analyst

Bridging the Technology Gap Between Surveying and GIS

Data

Add data from data collector files, ASCII, and through COGO.



Surveyor

With ArcGIS® Survey Analyst Users Can

- Create, edit, and manage GIS features using survey measurements.
- Integrate survey measurements using observations from field notes, survey equipment, and data collections into a GIS database.
- Manage and process survey data with a set of comprehensive tools.
- Store survey measurements, points, and computations in a geographic information system (GIS) database for future analysis.
- Perform basic coordinate geometry (COGO) computations.
- Perform survey computations such as traverse and least squares adjustments.
- Create custom importers and tools using a standard development environment.

GIS Technician

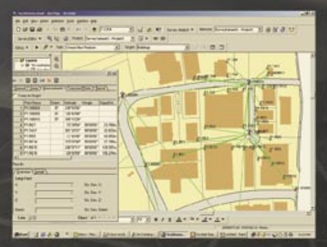
Key Benefits of ArcGIS Survey Analyst

- Improve spatial quality and evaluate the accuracy of existing features based on surveyed locations.
- Incrementally improve feature geometry quality by linking survey features to GIS features.

Computations

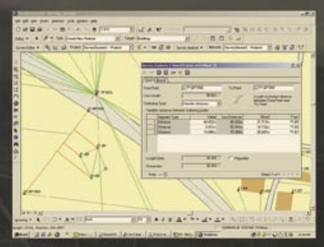
Traverse

The traverse is a sequence of measurement setups that start at a known location and end at another known location, with the intermediate setups being at points with unknown coordinates.



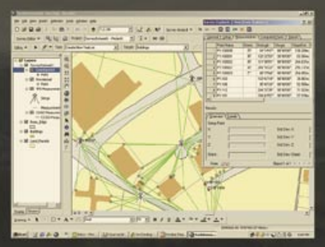
Resection

Computes coordinates for a setup location using the horizontal circle readings to three visible reference points.



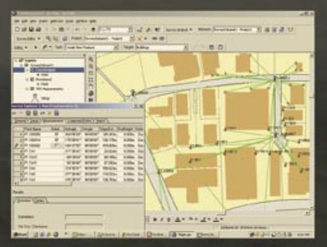
Station/Offset

The station and offset computation can be used for calculating the coordinates along a path.



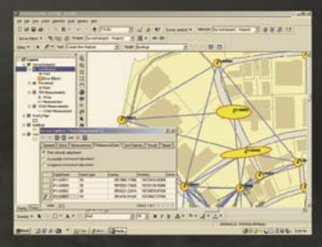
Freestation

Computes coordinates at an unknown setup location, using angles observed on the horizontal circle, and the distances measured to at least two known reference points.



Tacheometry

Computes coordinates from the observations made using a single instrument setup at a point with a known coordinate.

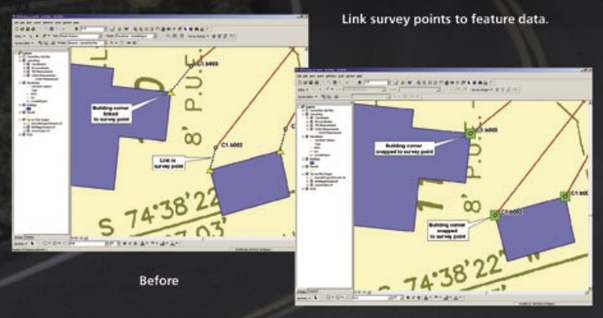


Least Squares Adjustment

Leverages redundancy in the measurement network. Allows identification of mistakes made in measurements and computes coordinates for survey points including statistical quality information.

- **ArcGIS Survey Analyst** — Store survey data as part of a geodatabase.
- **ArcGIS Spatial Analyst** — Use survey data to improve spatial data accuracy.
- **ArcGIS 3D Analyst™** — Simplify the workflow for spatial data editing and management.
- **ArcGIS Geostatistical Analyst** — Manage measurement data from different sources.
- **ArcGIS Tracking Analyst** — Store measurements, survey points, and computations for later use.
- **ArcGIS Publisher** — Associate survey data with geographic features.
- **ArcGIS StreetMap™ USA**
- **ArcGIS StreetMap Europe**
- **ArcScan™ for ArcGIS**
- **ArcPress™ for ArcGIS**

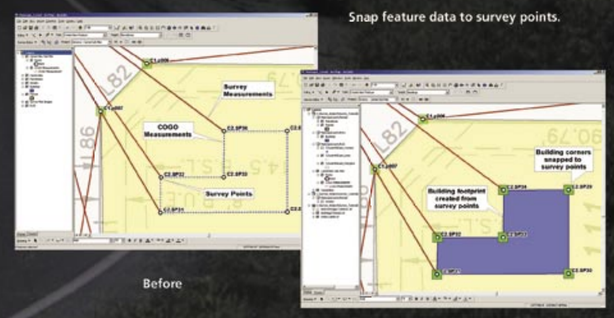
GIS Feature Editing With Survey Accuracy



Link survey points to feature data.

Before

After



Snap feature data to survey points.

Before

After

ArcGIS Survey Analyst

For more information call **1-800-447-9778** *or visit ESRI's Web page at* **www.esri.com/surveyanalyst**