

Gray & Pape Bridges the Gap Between GIS Experts and Field Researchers *with TerraGo Software*

CASE STUDY

Challenge: Gray & Pape saw an opportunity to improve processes for enabling archaeologists and architectural historians to collect field data on cultural resources. This data needed to be incorporated into ESRI ArcGIS for analysis and reporting in support of infrastructure and other projects.

Solution: Gray & Pape used TerraGo software to create GeoPDF® maps and imagery so that experts in the field could use the TerraGo Toolbar™ to easily collect geo-referenced field data while observing numerous architectural and archaeological resources.

Results: Improved accuracy and speed through a roundtrip, digital workflow from ArcGIS to the field and back again. In addition, Gray & Pape used GeoPDF maps as a reporting format to visually present and digitally transmit key project data.

Technology: TerraGo Publisher™, TerraGo Composer™, TerraGo Toolbar™, TerraGo GeoPDF® maps, ESRI ArcGIS, Adobe Acrobat and Adobe Reader.

Gray & Pape, Inc., is a consulting firm specializing in cultural resources management (CRM), including archaeology, history/architecture, and historic preservation planning services. The firm prepares cultural resources studies, such as analyses of cultural landscapes, and archaeological and architectural surveys, evaluation, and mitigation. Clients use the studies and survey results to plan mitigation activities and related expenditures for archaeological and architectural resources. The firm's clients include consultants and project managers, as well as public relations, land planning, engineering, and construction professionals.

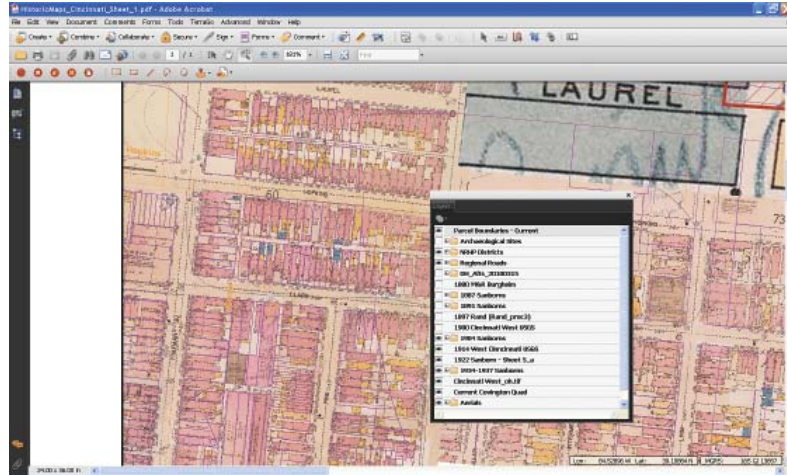
Collecting Field Observations at Hundreds of Historical Sites Without GPS or GIS

Gray & Pape's highly specialized analysts and researchers are experts at identifying archaeological and architectural resources for a wide range of projects. Although a typical project for Gray & Pape includes the firm's in-house GIS experts and client GIS resources, the archaeologists and historic architects who analyze sites and collect information in the field have little or no GIS experience—nor do they typically work with GPS devices.

The firm's projects have in the past relied on a paper-based field data collection process. Maps used in the field were printed and markings on the maps, as well as field notes, were captured on paper before being returned to a GIS technician for analysis. As expected, field subject matter experts did not use GIS tools to help them further research sites and analyze data, including viewing historical maps and images. Gray & Pape's GIS team saw the need and the opportunity to create a bridge in the workflow to enable seamless and easy digital sharing of GIS data and field observations between the GIS experts and the archaeologists and architectural historians conducting research.

"The person who has the expertise to look at these various historical maps and make a professional judgment on the sensitivity of a given area is not the same person who has GIS expertise." —Gray & Pape GIS technician

Various highly detailed historical maps, usually accessed as bound paper volumes, are shown here as layers in one GeoPDF map, with modern data layers helping the user to analyze and reference the past with the present.



Enabling a Digital Collaboration Environment

TerraGo software gives users the ability to extend the access and application of their geospatial assets by creating highly portable GeoPDF files—interactive geo-referenced PDF maps and images—out of complex GIS data. With TerraGo GeoPDF files, users can more effectively capture intelligence from the field and “roundtrip” the data back into GIS. Working with GeoPDF files is simple and highly intuitive, offering vast improvements over paper-based processes. Users open GeoPDF files with Adobe Reader to view map layers and attributes, and they add content with the free TerraGo Toolbar, an Adobe Reader extension.

To bridge the gap between the back office and the field, Gray & Pape implemented a TerraGo solution that included:

- TerraGo Publisher™ for ArcGIS to create custom maps and imagery in TerraGo GeoPDF files.
- TerraGo Composer™ to assemble GeoPDF maps and reports into desired configurations.
- The free TerraGo Toolbar™ to enable its mobile researchers to record field data on the GeoPDF maps and export shapefiles with notes and markings to be integrated back into the GIS environment.

On a recent project that involved identifying historically significant structures to assist in future infrastructure planning, Gray & Pape field experts conducted “windshield” surveys while traveling to many sites to observe and map locations of hundreds of historical buildings. Each area of interest was identified using aerial and topographic maps that were converted to portable GeoPDF maps, which are easily opened in Adobe Reader in the field. After making notations and marking sites on the GeoPDF maps, completed maps and field notes were sent back to Gray & Pape’s GIS expert to import the data into ArcGIS.

“This software is a great workaround for not having a GPS unit in hand,” said Gray & Pape’s GIS technician, noting that even with a GPS device, mobile researchers would only be able to locate their current point, not geo-reference a point nearby, create rich observations, or draw shapes and lines that represent essential data. Within GeoPDF files, users with the free TerraGo Toolbar can reference latitude and longitude, measure distances, make notes, draw shapes, insert images, and export data for ArcGIS or other GIS systems with just a few clicks on a PC.

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— Gray & Pape
GIS technician

Survey results are easy to share with all project participants using GeoPDF map reports.

Another Gray & Pape project required layering historical maps over a project area map to help identify parcels or structures that have not changed for 150 years. This provided rich, dynamic GIS-like data presented in layers and easily studied by experts to observe site snapshots over time in a geospatial context.

"The person who has the expertise to look at these various historical maps and make a professional judgment on the sensitivity of a given area is not the same person who has GIS expertise," said Gray & Pape's GIS technician.

User-Friendly Geo-Referenced Field Data Collection: Improved Accuracy and Faster Turnaround

Using TerraGo software and GeoPDF files, Gray & Pape was able to implement an all-digital collaboration workflow. According to the firm's GIS technician, "We're able to condense and simplify some fairly complex GIS technology and get it out to the people in the field in a simple and straightforward package they can use."

For one project, Gray & Pape was able to distribute more than 80 pages of GeoPDF maps, collect markups, and import back into ArcGIS for a complete roundtrip of data. The maps showed aerial imagery and USGS topographic data. Field experts used TerraGo Toolbar's sticky note feature to plot a GeoMark for each historical building, cross-referencing field notes to a unique number assigned to each GeoMark. The completed maps and field observations were electronically transmitted back to a GIS expert, who imported the GeoMarks to ArcGIS. This process allowed locations to be verified in the field and eliminated manual transfer of data to ArcGIS, saving time and improving accuracy.

In addition to supporting field data collection, TerraGo software has made sharing survey results easy. Gray & Pape can produce user-friendly GeoPDF map reports that enable a client to turn on and off multiple map layers and evaluate a project's cultural resources without using GIS software. All project participants can receive a robust GeoPDF map report on CD bundled with other deliverables.

Collaboration with TerraGo GeoPDF Maps

A TerraGo GeoPDF map is a geo-referenced version of an Adobe PDF file that presents GIS and mapping data. With free Adobe Reader software, a user can view a digital map offline with longitude and latitude coordinates embedded and displayed on the screen. In addition, a user can add layers and objects, including comments, pictures, video, shapes, lines, and more. The file can serve as a platform to transfer data from a complex GIS system to a user and from a user back to the GIS system, enabling roundtrip collaboration.

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About TerraGo Technologies

*TerraGo Technologies delivers software applications that empower geospatial collaboration for enterprises that rely on maps, images and related location-based information. More than 800 organizations, including many defense and intelligence agencies, utility companies, public safety departments, and environmental engineering teams, depend on TerraGo software. The TerraGo Publisher™ Suite allows organizations to consume and optimize data from any source and create a geo-enabled PDF, also known as GeoPDF® files. The TerraGo Collaboration™ Suite offers desktop, Web-based and mobile software applications that automate geospatial collaboration and information gathering. When used in conjunction with TerraGo Composer™, customers are able to configure easy-to-use maps and images while embedding relevant business context, forms and workflows. With a strong ecosystem of partners, including Adobe, ESRI, ERDAS, Intergraph, BAE Systems and Trimble, millions of professionals use geospatial data that has been enabled by TerraGo in order to be more productive, improve quality and make better decisions. **For more information, visit www.terragotech.com.***