



Mobile Assessment Extension (MAX)

Project Description

The Mission Assurance Division (MAD) of the Naval Surface Warfare Center (NSWC) in Dahlgren, Virginia, performs vulnerability assessments on Department of Defense (DoD) critical infrastructure assets. Teams visit military installations, collect information, and insert it into an enterprise-level Oracle database to generate both static and dynamic products.

DoD needed a mobile geospatial tool to collect and validate onsite data in a form that would easily translate to the database. Result: Zekiah developed the Mobile Assessment Extension (MAX) tool.

Client Concerns

Assessment teams originally collected data using manual processes and returned it on paper or in unstructured documents such as Word and Excel files. This practice required manually re-entering data into a web-form interface for inclusion in the enterprise-level Critical Infrastructure Program (CIP) database.

The client wanted to collect basic asset information in a more structured manner, using ArcGIS geospatial tools familiar to Dahlgren-based analysts, to improve the spatial quality of asset locations and ease the transfer of information into the database.

How Zekiah helped the DoD gather critical infrastructure asset information from installations



The Zekiah Solution

Zekiah's geospatial development staff first evaluated available mobile devices for use by onsite teams. After eliminating PDAs as too small and standard laptops as inconvenient when walking or driving, the Tablet PC platform was selected for MAX to provide an ideal combination of size and portability. Also, the Tablet PC's built-in handwriting and speech recognition provide more natural data capture tools for mobile assessors.

Tablet PCs run full, standard versions of Microsoft Windows, Microsoft Office, and ESRI's ArcMap, allowing the onsite team to use familiar tools.

ArcMap enables the preparation of detailed site maps, including installation-level geospatial data layers, aerial photography, and satellite imagery. Such detailed spatial data allows assessors to easily establish the "ground truth" of assets in the field.

In addition, a GPS receiver can be used to capture assets for locations not readily available prior to going on site. Thanks

to the ArcGIS interface, all it takes is a mouse click on a map.

The client also wanted the tool to be extendable and movable to a web environment, so Zekiah used the Visual Basic.NET (VB.NET) development environment, taking an object-oriented approach that eases creation of a modular tool.

To enhance portability, a Microsoft Access version of the Oracle data structure was created, allowing a low-overhead data solution in the field. Users can script data back to the main database in an environment with which they are comfortable.

The bottom line: MAX is an efficient, reliable assessment tool that provides a higher level of consistency than previous assessments.

Developed by
Zekiah for



Mobile Assessment Extension (MAX)

❖ How Zekiah helped the DoD gather critical infrastructure asset information from installations

Technology used or developed for this project.

- VB.NET
- Microsoft.Net
- ArcGIS extension using ArcObjects
- Microsoft Jet Database Engine
- ADO.NET
- Object-oriented design
- Panasonic Toughbook Tablet PC
- Windows XP Tablet PC Edition
- TeleType GPS Receiver

A highly successful, high-profile project.

You can judge the importance of MAX by the people who evaluated it. Zekiah presented the project to:

- Staff from the Pentagon's Office of the Assistant Secretary of Defense for Homeland Defense
- Staff from the United States Secret Service
- Senior staff from the National Geospatial-Intelligence Agency
- The Homeland Security Industry Manager of ESRI



How Zekiah's wide-ranging expertise came into play.

The MAX project benefited from Zekiah's intelligent, thorough approach in the following areas:

R&D Support

The project used the earliest tools supplied by ESRI for .NET development and GPS integration. At the outset, the .NET wrappers for ArcObjects were still in beta. The project also involved testing the handwriting recognition capabilities of the Tablet PC platform.

Engineering and Scientific Support

Zekiah streamlined the workflow used by infrastructure engineers to collect the data elements about critical infrastructure assets necessary for infrastructure protection and mission assurance.

System Description Document and Technical Data

A Software Requirements Specification was written to support the development of MAX. Zekiah developed a user manual, too.

Software

An ArcGIS extension utilizing ArcObjects was developed under the Microsoft .Net environment and using VB.NET. The tool integrated a standard Microsoft Access database into the ArcGIS environment to allow user interaction via geospatial tools.

Configuration Management Support

Zekiah provided source code control and version control through Microsoft Visual SourceSafe.

Information Systems/Information Architecture/Information Technology

The current architecture uses ArcGIS 9.0, the .NET Framework version 1.1, and VB.NET version 2003.



ZekiahTech

Main Office
 103 Centennial Street, Suite G
 La Plata, MD 20646
 Phone: 301-392-3788
 Fax: 301-392-3789
www.zekiah.com