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DEFENSE

Users
U.S. Army Corps of Engineers and the U.S. Marine Corps

Organization
U.S. Army Corps of Engineers, Pd CTIS, Alexandria, Virginia, USA

Challenge
Provide military engineers with simple and easy-to-use tools required for mission success

Solution
Commercial Joint Mapping Toolkit ArcGIS® Runtime SDK for WPF

Results
Reduced storage footprint, added functionality, user-friendly interface, and lower maintenance cost

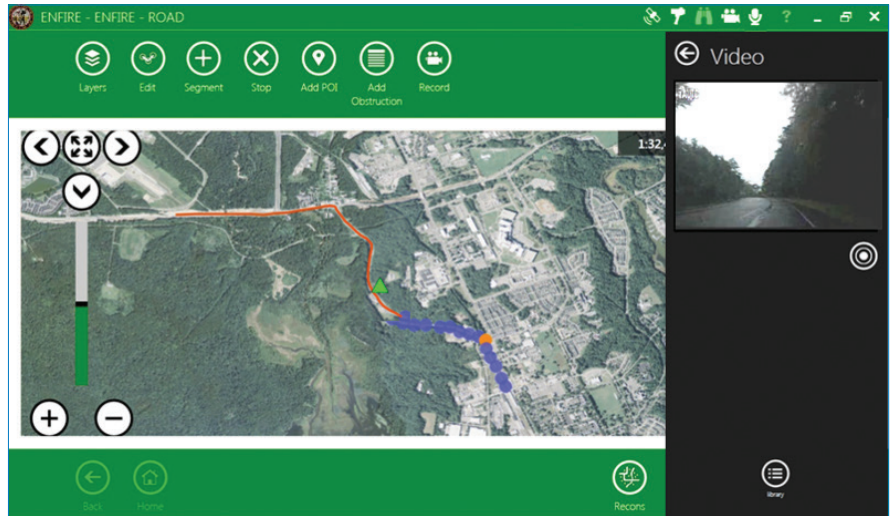# Military Engineering, Tactical Toolsets

The Instrument Set, Reconnaissance and Surveying toolset, known as ENFIRE, provides US Army and Marine Corps engineers with a means to facilitate rapid collection and dissemination of terrain information to commanders in support of worldwide military operations. ENFIRE is used for route, road, bridge, airfield, minefield, hydrographic survey, and improvised explosive device (IED) reconnaissance and reporting. ENFIRE facilitates rapid collection and sharing of information in real time to other ENFIRE sets, mission command systems, and decision-makers at all echelons.

The Challenge

Previous versions of ENFIRE included ArcGIS for Desktop software. ArcGIS for Desktop is a robust product geared toward geospatial professionals and has a large digital footprint. The workflow for common military engineering tasks takes time to learn. What military engineers needed was a more focused, lightweight application with a smaller digital footprint—that would be easier for non-geospatial professional users to learn, use, and maintain.

The Organization

ENFIRE is produced and managed by Product Director Combat Terrain Information Systems (Pd CTIS), U.S. Army Corps of Engineers. Pd CTIS provides geospatial and surveying systems, tools, training, and support to enable route clearance, reconnaissance, construction, and terrain management in support of military operations and humanitarian assistance missions.

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The Solution

Pd CTIS saw an opportunity to save costs by using the National Geospatial-Intelligence Agency's (NGA) Commercial Joint Mapping Toolkit (CJMTK). In an effort to develop and improve ENFIRE and its applicability to the multiple mission areas it directly supports, Pd CTIS looked to industry and government research and development (R&D) partners for new technologies to test and integrate. CJMTK provided the ArcGIS Runtime Software Development Kit (SDK), enabling Pd CTIS to rapidly build applications with a smaller digital footprint using out-of-the-box developer controls, templates, and samples. Developers were also able to use the most current tools and functionality required to continually enhance ENFIRE capabilities. The flexibility of ArcGIS Runtime SDK for WPF easily supported disparate data types collected by the accompanying ENFIRE sensor and measurement devices employed by military engineer teams, as well as underpinned long-term science and technology (S&T) goals for the ENFIRE program.

The most recent version of ENFIRE (v7.0), planned for fielding in fiscal year 2017, moved from Esri's desktop client to ArcGIS Runtime using NGA's CJMTK solution. Since CJMTK is based on ArcGIS, developers were able to select and use only the tools and functionality required, thus streamlining development. ENFIRE (v7.0) will include additional functionality, such as Open Geospatial Consortium, Inc. (OGC), GeoPackage import and export; Wi-Fi/Bluetooth wireless peripheral communications; and multidomain data publication and sharing.

The Results

Soldiers and Marines will have an extensible, ArcGIS Runtime technology-based application that's tablet oriented. The new CJMTK-based interface provides Soldiers and Marines with new applications and functionality, takes up less digital storage space, and is easy to use. This is a fluid mechanism for data interoperability and reuse beyond primary mission-specific tactical data collection, analysis, and reporting. Other benefits include decreased sustainment costs, compliance with OGC standards, and less training required to use the tools—which, in turn, optimize the return on investment to the army and end user.