Integrated GIS-Work Management Solution

Challenge

The main challenge is to integrate GIS with Work Management Application for web access in Office (500 Users) and mobile access in field (300 Users) with the following functionalities:

- Prepare GIS Data into a standard format from different systems having data in different GIS formats
- Display up to date GIS Maps based on exact Work Location
- Create, view and update sketches (work related instructions on the map) for work to be performed or completed
- Capture incorrect / missing / new GIS Asset & Network Data (Location as well attributes) using redlines improving Field Based Data Collection
- Perform Network Tracing with constraints thus analyzing the impact on Customers before undertaking any maintenance activities
- Display GIS Data from other Utilities thus improving safety of workers particularly with excavation activities

Solution

The architecture for the application was built on existing hardware (Hammerhead Tablet PCs running on Windows 98, 128MB RAM, 20GB HD, Grayscale Display for Field, Office Desktops), software (Autodesk MapGuide) and communication infrastructure (Mobitex Radio Network with limitation of 15kb per message in text format only) thus providing a solution which works with existing client environment.

The application will be integrated with Asset Management and Network Modeling systems to provide an efficient process for management of Assets, Network of Water Utility.

Automated Routines using FME have been written to extract data from disparate GIS systems, transform data into MapGuide format and load into MapGuide Server thus helping the client leverage the investment made on existing GIS systems.

Office Users will allocate work to Field Crews using the integrated GIS-Work Management Application. Office Users create detailed step-by-step work related instructions on the map using sketches. Sketches are dispatched to the Field along with work details using Mobitex Network. The Sketches highlight the exact work location and also help the Field user minimize abortive works because of incorrect work location or insufficient verbal instructions. Versioning of Sketches is provided so as to audit the work instructions provided by Office Users vis-à-vis the actual work performed.

Field Crew will log into the Central Servers using Mobitex Network to retrieve the work related data along with associated sketches and redlines. Field Crew can update the sketch or create new sketches to inform the office users on the work performed in
the field thus enabling the office users to allocate the work to the same crew / another crew if work is incomplete close the maintenance activity if work is completed.