Florida Department of Transportation
State Safety Office (SSO): All Roads Base Map (ARBM)
Enterprise 24x7 Inc. Project Summary

Overview

The Department of Transportation (DOT), State Safety Office had a need for services to provide Information Technology (IT) resources meeting the specific following requirements for Knowledge, Skills, and Abilities for the GIS All Roads Base Map Project:

- Knowledge of the principles, practices and techniques of system development and maintenance life cycles.
- Knowledge of Geographic Information Systems principles, design and practices.
- Knowledge of Object-Oriented Programming principles, design and practices.
- Knowledge of FDOT Linear Referencing Systems.
- Knowledge of FDOT Spatial datasets and Roadway Characteristics Inventory (RCI)
- Skill in developing project plan/schedule and accurately estimating time requirements for project tasks.
- Skill in customer service.
- Skill in coding, thoroughly testing, and debugging complex applications using web based and object-oriented programming languages, using Oracle, Oracle Spatial and/or DB2 databases.
- Skill in coding with the ESRI suite of GIS Products including ArcIMS, ArcObjects, and ArcSDE
- Skill in coding with Visual Studio .NET, VB.NET, and ASP.NET
- Skill in interpreting and communicating technical information related to computer programming and data processing, both verbally and in writing.
- Ability to develop and manage information systems documentation in accordance with the Department's standards.
- Ability to develop detailed user instructions and documentation.
- Ability to plan, organize, coordinate, and prioritize work assignments for him/herself or lower level programmers/analysts.
- Ability to evaluate and resolve computer application and system problems.
- Ability to work effectively with users to identify and document requirements for the maintenance or development of computer systems.
- Ability to analyze processes and workflows to design efficient information solutions.
- Ability to prepare complex computer program specifications.
- Ability to prepare computer program test plans and to create test databases and test environments.

Before 2009, the Turnpike Office of FDOT purchased the TeleAtlas Street Network, version 4, as the base for its Turnpike State Model. They had invested considerable time and effort to tag the TeleAtlas Street Network segments that corresponded to the State Highway System (SHS) with an FDOT Roadway Id. GIS routines were developed to automate this migration of Roadway Ids from the FDOT Planning Base Map to TeleAtlas Street Segments. When the FDOT Safety Office began this project, Turnpike agreed to share this dataset with Safety Office. The first task was to migrate the information from Turnpike's copy of the version 4 TeleAtlas Street Network to version 8.3 of the TeleAtlas Street Network. GIS routines were developed to automate this process, and GIS tools were created to assist in the editing of segments that required a manual manipulation.

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Once the FDOT roadway Ids belonging to the SHS had been placed on the TeleAtlas Street Network, version 8.3, the Safety Office began expanding the network to include the Roadway Ids belonging to the Highway Performance Monitoring System (HPMS) sample roads. Turnpike had already developed GIS routines to conflated Roadway Ids from the FDOT Planning Base Map to the TeleAtlas Street Network. These routines were adapted to automate the conflation of roadway Ids belonging to the HPMS sample from the FDOT Planning Base map to the TeleAtlas Street Network. After these routines were completed, a substantial amount of hand editing remained, and the GIS editing tools mentioned above were used to complete this task. At this point, roadway Ids that were in the FDOT Planning Base map were also in the All Roads Base map. This constituted what will be referred to as the "primary" routes.

Since the Safety Office had been required by the Federal Safety Office the task to generate crash analysis for non-State maintained (aka "off-system" or "secondary") roads, the Safety Office began the process to tag all remaining non-private, roadway segments in the TeleAtlas Street Network with a FDOT Roadway Id. FDOT previously did not assign a roadway Id to these roads since they were not state maintained.
By 2009, there was a FDOT roadway Id on every segment in the TeleAtlas Street Network, version 8.3. There were over 450,000 roadway Ids for the 2 million segments in the network.
In 2010, the FDOT purchased the NavTeq Street Network as a replacement for the TeleAtlas Street Network. In the Fiscal year 2009-2010, new routines and procedures were developed and implemented to migrate the FDOT route information in the TeleAtlas Street Network to the NavTeq Street Network.
Enterprise 24x7 Inc provided IT consulting services to assist DOT with the support of programs, processes and other activities implemented for the purpose of developing, deploying and maintaining the GIS All Roads Base Map Project.

E24X7INC Services

The **Applications Development Technical Lead** (ADTL) coordinated the systems analysis and applications development activities with the direct and indirect staff. He directed the development teams in the areas of scheduling, technical direction, future planning and application standard development practices. The ADTL participated in quality improvement activities for the development team. The ADTL met scheduled milestones to ensure project/ program objectives were delivered in a timely manner and he had an in-depth knowledge of the principles, theories, practices and techniques for managing the activities related to planning, managing and implementing systems analysis and applications development projects and programs. The FDOT Safety Office has been tasked to transfer FDOT information onto a commercially available digital street network, and this individual oversaw that process. This process involved assembling FDOT-maintained, tabular and spatial data and providing instructions to Safety staff for the transfer of information to the digital street network. The ADTL was responsible for creating a documented procedure for the transfer and created quality assurance procedures to insure the transfer was completed and accurate to within the tolerances agreed upon with the FDOT-SSO. The ADTL trained the FDOT-SSO staff in the use of the tools that were developed for this purpose, and throughout this process, confirmed the accuracy using the developed quality assurance procedures. When

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Safety personnel completed their portion of the task, The ADTL processed the data that created the linear referencing system using the digital street network.

The **Web Application & GIS Components Architect** (**WAA**) developed, maintained, and supported applications for the organization's Internet/Intranet sites and GIS application. The WAA gathered and analyzed requirements. The WAA programed all or selected components of web applications. The WAA documented components and procedures used by the web applications. The WAA developed automation techniques to enable end-user content publishing. The WAA programed, tested and implemented mapped graphic images, forms, web pages and a GIS web application. The WAA handled client browser support inquiries; maintained links to external sites and accuracy on internal links while ensuring up-to-date information. The WAA researched, evaluated and recommended new Internet and GIS tools and components for use in assigned tasks. This individual was actively involved in the transfer of information to the digital street network along with FDOT-SSO staff. The WAA assisted in training FDOT-SSO staff. The WAA provided answers to questions Safety Office staff had while transferring information to the digital street network.

The **Project Manager (PM)** was responsible for overall coordination, status reporting and stability of the complex and cross-functional project-oriented work efforts. The PM managed multiple projects simultaneously. The PM established and implemented project management processes and methodologies for the FDOT-SSO to ensure the projects were delivered on time, within budget, adhered to high quality standards and met customer expectations. The PM was responsible for tracking key project milestones and adjusting project plans and/or resources to meet the needs of customers. The PM partnered with senior management of the FDOT-SSO to identify and prioritize opportunities for utilizing IT to achieve the goals of the section. The PM possessed extensive knowledge and expertise in the use of Project Management methodologies and tools and understood human resources policies and practices as well as change management techniques. The PM was a liaison between the Technical team, the client and the company. This individual created a Statement of Work and a Project Plan for each project, defined project deliverables, identified project risks, reviewed monthly billings versus worked hours, verified time-sheet versus assigned tasks, created and updated spread-sheet with billings to date, remaining amount, and remaining hours. The PM ensured the project operated within the budget and communicated with the client and the team regarding delays, risks and issues as quickly as possible

Technologies Leveraged

- ArcIMS
- Oracle Database
- .NET
- MS-Access
- MS Office
- ArcObjects
- DB2
- Java
- VB
- MS Project
- ArcSDE
- SQL/PLSQL
- J2EE
- C#
- SharePoint

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