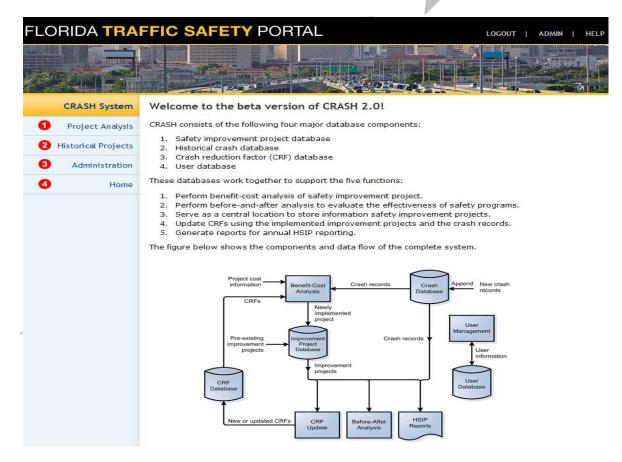## Department of Transportation (DOT):
CRASH Application

Overview: While the Florida Department of Transportation (FDOT) maintains a comprehensive crash database for the state roadway system, it did not have a central database for safety improvement projects. Consequently, historical data for safety improvement projects were maintained separately at various district offices in various formats, limiting accessibility for the transportation analyst and impeding the development of Crash Reduction Factors (CRFs). A web-based application, called the Crash Reduction Analysis System Hub (CRASH), was developed to systematically maintain a statewide safety improvement project database which facilitates the continual process of updating CRFs. The system, (http://www2.dot.state.fl.us/TrafficSafetyWebPortal/CrashLogin.aspx), allows the following tasks to be performed in an automated manner:

1. Recording and maintaining improvement projects,
2. Updating CRFs based on the latest available improvement project and crash data, and
3. Applying calculated CRFs in the benefit-cost analyses of specific projects.

In addition, the system provides multiple functions for data retrieval and exportation for different analysis and reporting purposes. To enter the CRASH database, the user must first select **CRASH** from the menu located on the left side of the screen. The user will then be directed to the **CRASH Login** screen, here he or she needs to input a Username and Password to proceed to the screen shown below.

System Components

CRASH is designed as a Microsoft ASP.NET web application that works with an Oracle database. The system in its initial version consisted of the following four major database components:

1. Safety improvement projects since 1992.
2. Historical crash records from 1984.
3. Crash reduction factors and associated statistics.
4. User management information.

The initial screen of the system includes the following four functional components working with the back-end database; to access any of these functional components, click the corresponding button shown in the left-hand column:

1. **Project Analysis** : This functional component allows the District user to perform the following functions:
   - Start a New Improvement Project: To perform a new benefit-cost analysis for a project.
   - Edit Improvement Projects: To make changes to one or more previously saved analysis projects.
   - View Improvement Projects: To view one or more previously saved analysis projects.

2. **Historical Projects** : This functional component allows the District user to perform the following functions:
   - Add a Historical Improvement Project: To enter information for an existing project on which analysis has been performed.
   - Edit Historical Improvement Projects: To add post-construction information for projects that have been completed or are under construction.
   - View Historical Improvement Projects: To view projects that have been completed or are under construction.
   - Generate HSIP Reports: To generate the standard Highway Safety Improvement Program (HSIP) reports.
   - Perform Before-and-After Evaluation: To generate before-and-after statistics for selected improvement projects to evaluate their effectiveness.

3. **Administration** : This functional component is mainly used by the system administrator or a designated person in the FDOT Central Office to perform the following functions:
   - View Crash Reduction Factors: To generate the list of current Florida CRFs and to view detailed summary statistics associated with the calculation of each CRF.
   - Update Crash Reduction Factors: To update the crash reduction factors after the new improvement project and data are added (for system administration only).
   - Maintain Safety Improvement Types: To add and edit safety improvement project types (for system administration only).
   - Assign Safety Improvement Types: To review improvement projects and assign improvement types to projects (for system administration only).
   - Append New Crash Records: To append crash records from a new data year (for system administration only).

4. **Home :** This link returns the user to the Florida Highway Safety Portal.

Enterprise 24x7 inc. was contracted to:

- Migrate CRASH into the DOT Intranet and Internet sites, adhering to the DOT-IT Standards for the Web-Application development, and modify the code as required by the formal and informal .NET Code review, Form 508 review, Web-Application review, database review and SQL/PLSQL review. The University which originally developed the application, failed several attempts to migrate the application due to incompatibility of the Application code with the DOT requests.
- Coordinate with DOT RTS, BSSO and other assigned web developers to complete the final web CRASH migration into production.
  - Review the Web CRASH Code and the review notes.
  - Participate with RTS and other assigned web developers to complete the outstanding efforts raised during UAT for the Web CRASH application
  - Revise, as needed, all the necessary scripts to create/modify the Application objects
  - Participate in the final data migration for the implementation of the web CRASH application
  - Conduct UNIT and SYSTEM testing. Address issues noted during the UNIT and SYSTEM testing. Address issues noted during the UAT testing.
  - Assist in the migration into PRODUCTION.
  - Attend any required OIS migration meetings/correspondence/interactions,
  - Draft migration package for final PRODUCTION transfer.
  - Revise, as needed, the final migration documentation.
  - Revise, as needed, all the necessary scripts to create/modify the database objects
  - Provide support during PRODUCTION Migration
  - Final production verification
- Develop further enhancements, updates and fixes to CRASH

Description of Services: The **Senior Web Applications Programmer** develops, maintains, and supports applications for the organization's Internet/Intranet sites. Gathers and analyzes requirements. Programs all or selected components of Web applications. Documents components and applications. Develops automation techniques to enable end-user content publishing; programs, tests and implements mapped graphic images, forms and HTML, .NET pages; handles client browser support inquiries; maintains links to external sites and accuracy on internal links while ensuring up-to-date information. Researches, evaluates and recommends new Internet tools and applications for use in assigned responsibilities. The senior level Web Applications Programmer has experience in a variety of the more difficult Web tools and languages and is responsible for coordinating with the three groups involved in the final tasks required for the web CRASH to deploy it to Production. This developer will work with RTS & BSSO other assigned web developers to implement desired enhancements for CRASH as identified by the project sponsor and will respond to issued identified during UAT and post-production issues.

The **Business Analyst** (level: Expert) serves as a liaison between the business community and the IT organization in order to provide technical solutions to meet user needs. Possesses expertise in the business unit(s) they support, as well as, an understanding of the IT organization's systems and capabilities. Analyzes business partner's operations to understand their strengths and weaknesses to determine opportunities to automate processes and functions. Assists in the business process redesign and documentation as needed for new technology. Translates high level business requirements into functional specifications for the IT organization and manages changes to such specifications. Educates the IT organization on the direction of the business. Negotiates agreements and commitments by facilitating communication between business unit(s) and IT from initial requirements to final implementation. Possesses an understanding of technological trends

and uses this knowledge to bring solutions to business units supported to enhance the enterprise's competitive edge. This Senior level analyst is responsible for working with customers and other team members to identify and analyze the business needs and requirements driving the enhancements to CRASH & related applications. The solution will be aligned with business and IT strategies of the Agency and comply with the organization's architectural standards. Involved in the full systems life cycle, this consultant will be responsible for business analysis to collect website needs and the website requirements to support the solution that is required to support the business processes in the Safety Office.

Project Manager (level: Manager) is responsible for overall coordination, status reporting and stability of project oriented work efforts. Establishes and implements project management processes and methodologies for the IT community to ensure projects are delivered on time, within budget, adhere to high quality standards and meet customer expectations. Responsible for assembling project plans and teamwork assignments, directing and monitoring work efforts on a daily basis, identifying resource needs, performing quality review; and escalating functional, quality, timeline issues appropriately. Responsible for tracking key project milestones and adjusting project plans and/or resources to meet the needs of customers. Coordinates communication with all areas of the enterprise that impacts the scope, budget, risk and resources of the work effort being managed. This individual will ensure the project is run in budget, and will communicate with the client and the team in case of delays, risks and issues as quickly as possible.

Technology/Environment:
- .NET
- Java
- Oracle Database
- Source Safe
- C#
- SQL/PLSQL

Company Services Provided:
- Web Applications Programmer
- Business Analyst
- Project Manager