Development of a One Stop Shop for Rural Traveler Information

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Overview

- Introduction
- Background
- Project tasks
- The Prototype
Introduction

• Real-time traveler information is a valuable tool in protecting and enhancing both traveler safety and mobility.

• Real-time traveler information services have thrived in two primary contexts:
  – Urban-focused and statewide or regional systems
    • Typically conform to specific jurisdictional lines

• Variation in the level of information provided and how to access it.
Introduction

• Existing systems do not efficiently serve rural travelers
  – Travel spans multiple jurisdictions
  – Information generally scattered over numerous web- and non-web-based sources
  – Travelers must spend significant amounts of time assembling information

• Solution: a One Stop Shop for rural traveler information
  – Web-based platform that provides route-centric, real-time, highway-based traveler information based on an origin-destination specified by the user
Background

- Caltrans has recognized the need for improved traveler information for some time
- Progress accelerated recently through the California/Oregon Advanced Transportation Systems (COATS) Integrated Corridor Management project
  - Created a web-based platform to acquire and share multi-jurisdictional data streams
- Transition from agency data sharing to providing that information to the public in one location
• Presently in a prototype stage
  – Coverage area – Northern California and Southern Oregon
• Brings a variety of real-time information together in one place
  – Current weather
  – Forecast weather
  – DOT field elements and information
    • CCTV, CMS messages, RWIS, incidents, constructions, chain requirements
  – Locations of interest
    • Rest areas, weight stations, mountain passes, vista points
Background

• Project/development tasks
  – Assess traveler needs
  – Concept of Operations
  – Requirements
  – Prototype information delivery mechanism development
Assess Traveler Needs

• Review current practice
  – Literature review – documents discussed website development and potential uses of traveler information
  – Survey of existing websites - a majority of states provide travelers with varying amounts of information
    • Level of detail and timeliness varies significantly
• Conclusion - no website exists providing a single, one stop location for all available traveler information
Concept of Operations

• Established high-level Con Ops for prototype website
• Focused on overall operations of the envisioned website
  – Anticipated user groups and needs
  – Data types provided by website
  – Components and functions of the website
  – Anticipated plan for prototype implementation
Requirements

• Current and expected needs of website
  – Functional - what the website is supposed to do
  – Performance - measurable system capabilities
  – Interface - system’s hardware and software interfaces
  – Data – Establish the data acquired, stored, managed and disseminated
  – Enabling - aspects of the website whose function enable it to properly fulfill its purpose
System Architecture

Presentation Tier

CLIENT

Web Browser
JavaScript
Google Map API
HTML
DHTML
AJAX
CSS

HTTP

SERVER

Apache Web Server
PHP
CGI

MySQL Database

DATA TIER

Application Logic Tier

Data Quality Control

Data Fetching and Parsing

Laser Generation

PNG

XML
Server Configuration

- The prototype system is running on a LAMP (Linux, Apache, MySql, PHP) server with the following software and hardware components:
  - **Software:**
    - Debian Linux 5.0
    - Linux Kernel 2.6.26-1-amd64
    - MySQL 5.0.51a
    - PHP 5.2.6-1
    - PERL 5.8.8
    - Apache 2.2.9
  - **Hardware:**
    - Dell PowerEdge 2950 2U rack-mount server
    - Two Quad-Core Intel® Xeon™ 3.0 GHz X5450 CPUs
    - Two 300GB hard drives in a RAID 1 array
    - 16 GB memory
CMS Message

One Stop Shop for Traveler Information

CCTV – CMS – RWIS – Incidents – Chain Requirements – Construction

[Map showing travel information]

Updated at 2010/03/03 8:27 PM

Chains required 25 miles ahead
### Chain Requirement

#### One Stop Shop for Traveler Information

- CCTV – CMS – RWIS – Incidents – Chain Requirements – Construction

#### Sishiyu Summit NB
- Last Updated: 03/03/10 06:49:12
- Temp: 32°F
- Snow Depth: 2.54
- Snow Off Road: 2.54
- Pavement Condition: packed snow
- Driving Restrictions: Carry chains or traction tires.
- Others:

#### Map Options
- [Map]
- [Satellite]
- [Hybrid]
- [Terrain]
Caltrans D2 CCTV

One Stop Shop for Traveler Information

CCTV – CMS – RWIS – Incidents – Chain Requirements – Construction

Location: Hilt Sandhouse
Updated: 2010-03-30 07:34:03

Hilt Sandhouse
Preset 8

Montana State University
College of Engineering
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Caltrans D2 CCTV

One Stop Shop for Traveler Information

CCTV – CMS – RWIS – Incidents – Chain Requirements – Construction

Location: North Hill
Updated: 2010-03-03 07:45:20

NORTH HILT PRESET 1
Route Planner – Weather Forecast

[Image of a weather map with a graph showing elevation changes along a route.]

[Logo of Montana State University College of Engineering, Western Transportation Institute]
Route Planner – Forecast Snow Amount

[Map showing snow amount forecasts along a route]

Montana State University
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Route Planner – Forecast Precipitation
Route Planner – Wind Forecast
A little experiment …
Google Traffic picked up the stopped traffic from the incident, but …

… it did not clear the delay until over an hour after actual clearance.

The results are mixed … we’re not convinced Google Traffic is ready for rural …
Results

- The project and prototype has been well-received.
- A second phase is planned.
- The coverage area will be expanded.
- We continue to investigate data sources for inclusion.
Acknowledgements

• The California Department of Transportation for vision and financial support
• The COATS Steering Committee members for review and input
Links

- http://oss.weathershare.org/
- http://www.westernstates.org/Projects/OSS/
- http://www.westernstates.org/
Questions?