Rural Traveler Information Phase 1:

Rural Traveler Information Needs Assessment and Pilot Study

Executive Summary

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EXECUTIVE SUMMARY

Real-time traveler information services have thrived in two primary contexts: urban-focused systems and regional systems. Urban systems, strengthened by an extensive sensing and technology infrastructure, are able to offer significant volumes of information, updated at regular frequencies. Regional systems offer information over a larger geographic area, and can therefore more readily serve travelers on less regular trips, such as recreational or longer distance travel. However, these systems generally provide information on specific areas or highway segments, meaning that prospective travelers may need to consult multiple links to determine the travel conditions they will experience, and make a prudent decision regarding when to leave, which route to take, and how to prepare for the trip.

The objective of this project was to put a variety of route-oriented real-time and near real-time information together in a single web-based location in a user-friendly format that does not stop at jurisdictional boundary lines (state, district or county lines, for example). This would allow travelers making a trip in or through rural areas to have current travel information on a route-specific basis and across a wide geographic area, customized for a specific origin and destination, which will help them to make their trip more safely and with a minimum of delay. This project focused on a limited geographic area -Caltrans District 1 and District 2, and Oregon - to provide a proof-of-concept of this approach. While this scale of implementation will yield some direct benefits for the selected area, researchers believe that the principal value of this effort is in demonstrating the feasibility and attractiveness of a One-Stop Shop website for real-time route-specific traveler information for rural areas. This report presents the results of work culminating in the development of a prototype website. Project tasks included a review of practice, compilation of concept of operations and website requirements documents, and development of the prototype website.

Based on the information identified during the course of the review of practice, no work had been performed that provided users with all available traveler information in one location *and* the ability to specify an origin/destination without regard to jurisdictional boundaries or political subdivisions and receive all available information for the route(s) they would travel. While some states did provide all of their available information in one location, users were still required to identify their route(s) of interest in order to obtain all available information and were limited to travel within the state. No state had taken the final step of developing a website that provides route-specific information. As a result, research and development related to such a website was clearly needed.

The high-level concept of operations for the One-Stop Shop prototype specified that the website should provide users with a mechanism to specify their origin and destination, which would link them to a map displaying recommended routing as well as all available traveler information. This would eliminate the need for users to identify their routing and seek available data for their trip through the traditional, manual approach. Based on the concept of operations, the research team established requirements to guide the development of the One-Stop Shop website. Requirements translated the system concept/concept of operations into a series of statements describing what the system should do to accomplish its intended function. The requirements topics applicable to this work included functional, performance, interface, data, and enabling aspects of the website.

The research team developed the prototype One-Stop Shop using various data elements from sources within Caltrans and the Oregon Department of Transportation, as well as from other

agencies such as the California Highway Patrol that provide wide coverage in the rural areas of Caltrans District 1 and District 2, and Oregon. The user interface created for the prototype was a web-based map built using Google Maps. Custom markers (icons) presented point-based information such as commercial vehicle enforcement sites, CCTV camera images, incident and construction locations, and dynamic sign messages in their appropriate locations. Raster graphics were superimposed on the map to represent data such as forecast conditions over the region of interest. The system incorporated a route planner, which allowed the user to select a route via Google Maps; it then displayed an elevation profile of the route along with select data layers including forecast information. The system used Dynamic HTML, Javascript and general AJAX (asynchronous JavaScript and XML) capability to retrieve and display data on the map, and for periodic updates of the displayed data. This display was accomplished with Dynamic HTML, CSS, Javascript and Flash.

When first accessing the One-Stop Shop website, a user sees a view of the region which displays a series of icons related to DOT field elements, including CCTV camera images, CMS messages, incident and construction locations, RWIS station sites, and chain requirements (during winter weather). In addition to the default information presented, the user may toggle on or off additional data streams. These streams include current and forecast weather for the region, and the location of mountain passes, vista (scenic) points, rest areas and truck scales (commercial vehicle sites). When a user selects any of the active icons on the display, the site-specific information associated with the icon is presented.

Finally, users are presented with a mechanism to enter their origin and destination for custom route mapping. When selected, this feature provides users with an overview of their route, the selected elements of interest on that route, and map points indicating the specified origin and destination. The user also is provided with an option to generate a route profile. When selected, this feature displays forecasted weather for the displayed area and a profile (elevation and distance) of the route. This ability to specify a route in order to identify and view information along it and display its profile represents a significant departure from the approach presented by currently available DOT traveler information websites.