Theory into practice

Peter BG Shoemaker's take on intelligent mobility New Mexican style

Intelligent mobility is one of those concepts within the world of ITS and transportation that is beginning to buzz. Conferences are being dedicated to it, papers published, sales pitches honed and budgets prepared. And, as with most things both transnational and ITS-related, we're in that period of mutual incomprehension as we struggle to get our definitions aligned and reach agreement on first principles. What is clear, however, is the strong connection between technology – the bits and atoms – and social practice – the whys and hows – that intelligent mobility encourages.

An unlikely place to get oriented to thinking about intelligent mobility in these terms is the New Mexico DOT ITS Operations group, based out of a small building just across the street from an unusually green public park in Albuquerque's downtown. This group, led by Charles Remkes, has made its advanced traveler information system NMRoads (www.nmroads.com) an example of how to serve the needs of the traveling public while creating a compelling platform to attract traditionally siloed transportation stakeholders to come together.

The result is a clear example of how a focus on both traveler mobility needs and institutional enlightened self-interest can wring enormous value out of ITS investments and create the foundation for truly intelligent mobility.

CREATING A USEFUL TOOL FOR THE TRAVELING PUBLIC

Originally launched as a static site in 2007, NMRoads – developed with the help of Albuquerque-based RealTimeSolutions – has evolved dramatically in the half-decade since. It isn't, however, the laundry list of features that makes NMRoads interesting as a tool for helping travelers make better decisions. Rather it is the underlying philosophy – stressing familiar utility – that makes the site work.

Dealing with information overload: One of the benefits of increasingly more sophisticated data gathering and analysis in the ITS community is that mobility-oriented systems can treat travelers as individuals. For NMRoads, the base interface is a map. What shows up on that map depends almost entirely on what the individual user selects from among the available layers of data.

Caption

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There are five primary layers with thirty or so distinct selections. Users can choose all or only a couple (such as weather conditions, and incident reports). Having more data available than any one person is likely to use goes against the grain of any number of design schema, but is increasingly important in meeting public expectations.

Streamlining the experience: Tied tightly – at least conceptually – to the availability of rich data layers on NMRoads is a small suite of personalization tools. NMRoads encourages users to register. The benefit? Personalization and notification.

Route personalization allows users to select from a list of predetermined routes (e.g. I-40 Westbound through Albuquerque), select which days and times they want monitored, whether or not they want specific or general notifications, and then whether they'd like to be notified by text or email. Road segment personalization works similarly, although based on user-selected mile markers. In both cases, users benefit from an interface to the massive amounts of data available that is sensitive to their particular needs.

Away from the desk and eyes on the road. While NMRoads has had a stripped-down mobile web version of the site available for some time, Remkes and his team have just launched a smartphone application for both Android and Apple. This application successfully mimics the functionality of the desktop and adds a couple of new features, one that might be expected and the other not. The expected: NMRoads can determine a user's current location and build the map and desired layers around that location. The unexpected: a hands-free mode. Users indicate what travel-related information they're interested in (e.g. construction delays), how often they'd like to be notified, and over what distance of travel. The app then delivers that information audibly during the trip.

Now you're talking my language. In some parts of the country a substantial portion of those using the roadways don't have English as their first language. New Mexico tops this list, with nearly 30 per cent of the state's citizens speaking Spanish. NMRoads addresses this by providing the option for hands-free audible Spanish language notifications in the mobile app, again demonstrating sensitivity to the real world needs of the application's audience.

While user-centered design is old hat for vehicle manufacturers, it has a less rosy history among technologists. This is changing of course – Apple being the current gold standard – and will exert a profound influence on a whole range of products, not least, those we use to support our transportation decisions. The abundance of information available, and the ways that information is delivered through NMRoads, offers a strong example for the development of intelligent mobility interface and design schema.

A USEFUL AND ATTRACTIVE TOOL FOR BUILDING AND SUPPORTING MOBILITY

In some ways, the more interesting story about NMRoads is not the public face, but how the project has created and continues to evolve a model for how various agencies and outside organizations – as well as internal DOT functions – can cooperate using NMRoads as a common backend platform. There are at least three activities that are useful in looking at NMRoads in these terms. >>>

Consolidating applications: The NMRoads architecture was designed around robust, scalable, and open access.

Caption

One of the byproducts of this design has been the capacity for NM DOT to collapse a number of separate applications and interfaces into NMRoads. Among these are those managing dynamic message signs (DMS), CCTVs, roadside assist help truck dispatch, and a slew of others. Where a manager or dispatcher might have had eight or ten applications up and running at any one time, NMRoads now permits a single interface, fostering enormous efficiency gains.

Creating a common delivery platform: NMRoads is a NMDOT product, which means that it natively has access only to the data the department controls. Practically, for the traveler, this could result in a skewed or incomplete picture of what might be happening on New Mexico roads, and what other options might be available. Yet, as an agency serving the state's citizens, Remkes's group has had to think outside the traditional lines of demarcation.

Currently, NMRoads takes data feeds that expand the basic offering, including weather related information from National Oceanic and Atmospheric Administration, arterial probe data from INRIX, and limited transit information from the local express train, RailRunner. All three of these data sets are available to users of NMRoads, and Remkes and John DiRuggiero, the ITS Ops web developer, tell *Thinking Highways* that more are on the way.

Providing new third-party opportunities. Where the silos take a beating, however, isn't in data in, but in data out. NMRoads serves as a hub for information that enhances the operational efficacy and reach of a number of organizations within New Mexico. For instance, NM Motor Transportation Police uses the application to aid in identifying and intercepting unauthorized oversized vehicles, the Bernalillo County Fire Department uses it to determine road conditions, the local media uses it to provide up-to-date traffic conditions and travel advisories to their audiences, and others.

WHAT'S COMING?

Remkes's group is certainly not resting on its laurels. He tells TH that there's a good-sized pipeline of ideas and projects that they've identified, and in some cases, are working on, to enhance NMRoads. Top of this list is bringing in city and county data as it becomes available. New Mexico's growth over the last 10 years has been significant, and greater integration, through NMRoads or the proposed consolidated traffic management center, has become a necessity.

Also down the road is greater integration with transit. And from there, enhanced services such as cross-modal trip planning. As part of that, but also separately useful, will be integrating data from the parking availability systems that are being deployed by some New Mexico municipalities.

On the backend, in addition to continuing to encourage agencies to participate either in the provision of data or the use of it, Remkes and his team want to enable mobile administrative access to NMRoads. This would allow, among other things, field personal to update data in real time, streamlining both time to site and reporting requirements.

Regardless of the available technology, and the predilection amongst many technologists to just do it if it's possible, building a common good like NMRoads is a continual balancing act between capability and public utility and acceptance. Reports from the field suggest that Remkes and team are getting it right. But as user expectations shift, mobility services providers are going to have to move quickly and decisively if they're to provide value.

NMRoads is a good start, and other states are emulating it. Ray Herne, the group's Public Information Officer, notes that the real product they're engineering is innovation itself. That will be important for everyone for what happens next – where intelligent mobility really begins to come into its own, and we're all able to agree not only on definitions but also on the underlying value.

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