Beth Osborne and Rayla Bellis

Is "innovative DOT" an oxymoron?

DOTs work to adapt a more innovative approach to transporation needs

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It is not enough to keep building yesterday's roads.

America's transportation needs are changing, the global economy is shifting, and despite advances in automobile safety, too many people are struck and killed each year on U.S. streets. Mayors from some of the nation's largest cities along with the U.S. Secretary of Transportation have called on transportation planners and engineers to design and build streets that are safe for everyone. And all of this is happening against a backdrop of infrastructure in desperate need of repair.

Changing how streets are designed and built can help address all of these issues. Many communities, counties, states and departments of transportation (DOTs) are adopting policies to consistently design and construct their streets to accommodate all anticipated users, including pedestrians, bicyclists, public transportation users, motorists and freight vehicles. The practical implementation of this work usually falls to transportation planners and engineers, and doing it well requires a completely new approach to their work.

Change, however, is often easier said than done. Agency procedures, liability concerns and a lack of technical understanding can all make

it challenging for DOTs to change their practices. And when agencies do begin to use a more innovative approach, it can sometimes seem like an afterthought.

"I've seen a lot of engineers who plan a whole project, start to finish, and then try to add on something for people who are biking or walking," said Beth Osborne, senior policy advisor at Smart Growth America, a national non-profit that helps DOTs review and improve their practices. "That's how you end up with a 84-ft-wide, 45-mph road with a bike lane stuck on the side. You might as well build a sidewalk along the interstate. It is in no way convenient or safe for people biking or walking. But in a lot of people's mind, that's a success, because they gave accommodation to bicyclists."

Adopting a more innovative approach takes commitment on the part of the DOT, and a willingness on the part of staff to change their rules and practices. A new workshop series is designed to help overcome both sets of hurdles.

Multimodal Development and Delivery (M2D2)—a project of Smart Growth America in partnership with Nelson Nyygard; Gresham, Smith and Partners; AECOM; Michigan State University's Eli Broad College of Business; and Whitman, Requardt & Associates—helps DOTs build internal capacity to plan, design, construct, operate and maintain context-sensitive transportation networks that work for all modes of travel. Through a series of training initiatives, DOTs update standards and practices to meet and balance the needs of motorists, freight handlers, bicyclists, pedestrians, transit riders and other travelers in a variety of contexts.

"We help engineers get out from behind the windshield," Osborne said. "That means rethinking how a street is designed and built, yes. It also means thinking about how streets influence land use, or the broader neighborhood. How will kids use this street? How will older adults? Could the street do more than it currently does? Will this be a great place to drive or a great place to live?"

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All of a part

M2D2 covers all the perspectives involved in multimodal projects, and helps DOTs understand the policies and procedures that are standing in the way of building roads for all users. The workshops usually cover five primary topic areas.

The process starts with a discussion of how land use and transportation interact, a topic not included in most traffic engineers' training. Local zoning rules and procedures can impact DOT investments, and DOTs' actions can impact land use—but the relationship between the two is rarely discussed. M2D2 familiarizes DOT staff with how the two fields are constantly interacting, and empowers staff to work effectively with local community partners whose decisions impact the ultimate outcomes of their projects.

The second phase discusses all the different users to design for: drivers, transit riders, bicyclists, pedestrians and trucks. "Engineers often aren't trained to design for people who are not in a car," said Rayla Bellis, program manager at Smart Growth America. "They are often pushed to prioritize moving cars and trucks safely at high speeds, which means designing wide streets with wide lanes. But all of this makes a street much more dangerous for someone walking. So how do you find that balance? Many of the people we work with just want to know how to handle these different priorities that seem to be in conflict."

The workshops also address how to incorporate trucks safely and efficiently. Multimodal projects are sometimes done in coordination with economic development efforts, and with those come a whole new set of commercial needs for a street. Where will trucks deliver, how many times a day, and at what times? The workshops help DOT staff think through these questions and design the roadway appropriately.

And finally, transportation-demand management and intelligent transportation systems are other ways many DOTs can get travelers to shift their time or way of travel in a way that makes the road work better and safer for all users, improving their services. A workshop covers these techniques, and how DOT staff can use them to complete the street and get more value out of the investment.

The final M2D2 workshop is always a summary review. Facilitators make an effort to talk participants through every barrier, tradeoff and concern. "Once that's all on the table, we can help staff figure out whether agency culture, procedure, or rules need to change," explained Osborne. A set of formal recommendations includes the workshop's full findings and suggestions for how to address them.

In practice

Several states are already putting M2D2 into practice. The program was first created with the Michigan Department of Transportation (MDOT) in 2013. It was an opportune time for MDOT to take a fresh look at its planning, design and operations. New complete streets policies had been passed at both the state and local levels, and new light rail, streetcar and bus rapid transit systems were being built. More and more Michigan residents were riding bicycles as a form of transportation (not just recreation), and formal greenways, bike lanes, bike-sharing services, regional and statewide trail systems, and national bike-route designations were being built to serve them. Demographic trends toward more urban living were spurring an emphasis on place-making, transit-oriented development and other land-use changes in the state. And new technologies such as real-time travel information, advances in freight logistics, and the emerging field of autonomous vehicles made MDOT want to plan proactively.

"Our community partners' expectations were changing, but the training and guidance we were giving our staff—while encouraging new ideas—continued to rely on the same old ways of making decisions," explained Tony Kratofil, a Michigan Metro Region engineer.

MDOT trunk-line standards for planning, design and operations have historically centered around the provision of facilities that allow for the safe and efficient travel of cars and trucks, and are based on the performance of those vehicles and the behavior patterns, expectations and needs of the operators of vehicles. These standards have evolved over time to provide more consideration for other surface-transportation modes in some instances, but do not necessarily fully consider the co-operation of these modes in the same space, or how the modes need to interface at the human dimension to facilitate the safe and efficient movement of people between the modes within the same space. At times, various modes have competing needs within the same space and MDOT's guidance and standards offered little clarification as to how to resolve these conflicts effectively or how to prioritize which needs are most critical for a given situation.

State trunk lines also tend to be the main streets and arteries of Michigan communities, connecting centers of economic and quality-of-life activities, as well as often being host to many adjacent economic and commercial activities. They are inherently the focus of attention for the movement of people, the areas desired by people for multimodal access, and the areas where mode-transfer needs to occur for a seamless transportation experience to exist. Keeping them running smoothly was not only a transportation imperative, but an economic one as well.

The project ultimately resulted in a plan for making systematic revisions to agency procedures, practices, standards and manuals to address the needs of all travel modes in a way that reinforced and advanced MDOT's core mission.

"Doing the best thing for a multimodal environment shouldn't have to be an exception to the standard," said Kratofil. "[We] brought national experts to the table to advise us as we transitioned to a more holistic, multimodal approach to planning, design, construction and operations." At present, Smart Growth America is assisting MDOT with implementing their operational and policy revisions.

Further practice

Meanwhile, in Vermont, the Vermont Agency of Transportation (VTrans) wanted to update the state's roadway design standards and related documents in order to keep pace with the state of the practice in highway engineering and meet the diverse needs of state residents and communities. They wanted to make sure their standards were as good as possible, so M2D2 helped them take a fresh look.

A gap analysis and brainstorming with people from outside the agency—including county transportation authorities, regional planning commissions, the Federal Highway Administration, Federal Transit Administration, Vermont Natural Resources Board, trade associations and advocacy groups—informed the recommendations of how VTrans could change its roadway design standards and better engage external partners during the process.

The M2D2 team also worked with VTrans staff and other partners to develop a work plan for updating the standards to enable a more context-sensitive approach to design and balance the needs of all modes of travel.

"The M2D2 initiative has formed the foundation of our efforts to improve our design standards and associated guidance," said Kevin Marshia, deputy chief engineer for VTrans. "It brought an important big-picture perspective to our internal and external partners that will be extremely valuable moving forward."

And in Florida, Smart Growth America has partnered with the Florida Department of Transportation (FDOT) to help implement the department's new Complete Streets Policy, adopted in September 2014. The M2D2 workshop series helped FDOT in developing a "Complete Streets Implementation Plan with an approach for updating agency design standards and guidance and other manuals and policies to integrate a complete streets framework into all levels of decision-making.

"M2D2 has been extremely effective in helping us implement our new Complete Streets policy," said Billy Hattaway, FDOT District One secretary. "We have been able to accelerate the progress of developing our implementation plan and educate our team, who will assist us in changing the culture of our organization."

The recommendations suggested changes to FDOT's project development documents, performance measures, its roadway design standards, programming decisions about which programs to fund, and traffic engineering guidelines.

State DOT responsibilities have become more complicated than they were decades ago. In the last century, agencies have been tasked with moving more vehicles much more quickly. Now leaders also are asking DOTs to support economic development, move freight, support an aging population and incorporate multiple transportation modes in a single right-of-way.

These new demands are an opportunity for DOTs. Transportation planners and engineers can help solve not only transportation challenges, but economic and social challenges too. M2D2 was designed to help show them how. M2D2 projects will continue into 2016, helping state DOTs across the country learn innovative ways to better serve their residents and their state.

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