Application of Technology Transfer Principles to Minnesota T^2 Program

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Since the early 1980s, the national network of Local Technical Assistance Program (LTAP) centers administered by the Federal Highway Administration has evolved into an effective mechanism to translate and communicate technologies and information to local transportation agencies. Through its evolution, this national LTAP network has employed core principles to effectively transfer information from where it is created to where it is actually used. The technology transfer principles presented in this paper go beyond the more routinely discussed methods or strategies of technology transfer, such as publications, training, and video programs. Instead, the emphasis on the core principles provides transfer agents with the foundation needed to successfully transfer information and technologies to their customer groups; such a foundation is necessary for all technology transfer methods used. The objective of this paper is to illustrate the following core principles of technology transfer through a presentation of their specific application to the Minnesota Technology Transfer (T^2) Program: (*a*) know your customer's needs, (*b*) be accessible, (*c*) be practical, (*d*) create cooperative partnerships, and (*e*) follow up on implementation.

In 1993 the Minnesota Technology Transfer (T^2) Program joined the national network of technology transfer centers to provide assistance to Minnesota's local transportation community. The T^2 centers are the chief component of the Local Technical Assistance Program (LTAP), a technology transfer initiative of the Federal Highway Administration. LTAP was created in the early 1980s to assist local transportation officials in meeting the growing demand on local roads, bridges, and public transportation. Today, with T^2 centers in each state plus Puerto Rico and a strong T^2 interest in European countries, there is a tremendous growth of activity in providing assistance to low-volume roads personnel.

Local transportation communities cannot take advantage of the value of technologies and innovations without the process of technology transfer, namely, the movement of technology from where it is created to where it will be used. The T^2 center plays a central role in transferring transportation technology and information from the federal and state levels to meet the needs of local transportation officials; it acts as a link between transportation innovators and the users of the new information (*1*). Although T^2 centers serve primarily as a communications mechanism and translation medium for technology derived from state and federal sources, they also promote information exchange among all potential sources of information [e.g., local agencies, professional and trade associations, other departments of transportation (DOTs)].

As agents of transportation change at the local level, T^2 centers accelerate the understanding and use of research results and innovations by performing the following functions: (*a*) identification of the priority in-

formation and technology needs of local transportation practitioners, (*b*) transfer of information about new technology in a manner that is easily understood and implementable, and (*c*) follow-up on the information and technology that has been transferred to promote successful implementation (*2*).

The activities of the T^2 centers are broadly defined by the following LTAP requirements (*3*):

1. Develop a comprehensive mailing list of local transportation officials;
2. Develop and distribute a quarterly newsletter on new technology, its applications, and training;
3. Provide information services and resources in response to local inquiries;
4. Provide technical assistance in response to local questions;
5. Administer or conduct courses; and
6. Evaluate program services.

Although the LTAP requirements provide a level of consistency among the T^2 centers, clearly no two centers are alike. Each center offers unique technology transfer services and programs driven by the special characteristics and needs of its customer—the local agency transportation personnel in each state. In some states, local transportation is managed primarily by professional registered engineers. Conversely, in other states, local transportation is managed by nonengineer staff members who are responsible for several hundred miles of roadway with minimal staff. Because of the wide range of skills and capabilities among states' local transportation officials, T^2 centers must identify the types of technology transfer strategies that will match effectively with their particular customer needs (*4*). A wide variety of technology transfer tools exists from which the centers tailor their particular T^2 program, such as on-site demonstrations; user fact sheets, manuals, and guides; training workshops and conferences; microcomputer software development, and "on the road" traveling resource vans—all developed in a format that reflects the particular needs and capabilities at the local level. It is this type of flexibility of the LTAP—tailoring projects and services to the needs of the communities the T^2 centers serve—that makes this particular technology transfer effort so effective.

Organizational Positioning of Minnesota T^2 Program

The Minnesota T^2 Program is housed within the Center for Transportation Studies (CTS) at the University of Minnesota. The center is relatively new, having been established in 1987. Although initially reporting to the Civil and Mineral Engineering Department, CTS currently reports to the Vice President for Research and Dean of the Graduate School. This organizational change more appropriately reflects the multiple disciplines required to address today's transportation issues. As a multidisciplinary resource center, CTS serves transportation decision makers and professionals through strengthening the university's transportation research, education, and outreach activities.

The establishment of the T^2 Program within CTS reinforces CTS's role as the focal point for transportation research, education, and information in Minnesota. The CTS Advisory Board and Executive Committee have emphasized the importance of the center's having a strong information outreach program to transfer the results of research projects to implementing organizations. The T^2 Program, of course, dovetails nicely with this existing CTS emphasis; it strengthens already-established CTS activities of newsletters, mailing list operations, conference and short course services, and participation by local government. The Minnesota T^2 Program, with its emphasis on training, particularly links technology transfer to the education role of CTS. It is for this reason that the T^2 Program resides within the center's broader education-extension function. Both CTS programs, T^2 and education extension, complement and strengthen the other. The design and development of T^2 services during CTS's first year of operation were accelerated because of the administrative infrastructure already in place for CTS education-extension programs. On the other hand, T^2 activities and workshops heightened awareness and demand of CTS education-extension services statewide, strengthening CTS as a transportation education resource throughout Minnesota. The Minnesota T^2 Program Director, who also serves as the CTS Education-Extension Director, oversees all T^2 courses and non-T^2 education programs of the center.

Core Principles

The first year of operation for the Minnesota T^2 Program was a time for creating and learning. As one of the newest of the 51 centers, the Minnesota staff had the benefit of learning from the successes of the other established centers. From the lessons shared among the T^2 centers and from listening to the particular needs and concerns of Minnesota's local community, five core principles emerged as critical elements of an effective technology transfer program for local government in Minnesota: (*a*) know your customer's needs, (*b*) be accessible, (*c*) be practical, (*d*) create cooperative partnerships, and (*e*) follow up on technology implementation.

The following paragraphs describe the activities and programs of the Minnesota T^2 Program in terms of its application of each principle. In recognition of the early development phase of the Minnesota program, planned strategies to strengthen the program's incorporation of the core principles will also be presented.

Know Your Customer's Needs

To provide the right technology transfer assistance at the right time, it is imperative that a clear understanding of the customer exists if the T^2 center is to match available technology with user needs. With the advent of the new Minnesota T^2 center, there was an opportunity to create a fresh look at the Minnesota T^2 customer and build a program based on what was actually needed from the perspective of the local practitioners.

The strategies of T^2 centers to assess the needs of their local T^2 clientele range from formal surveys and questionnaires to informal feedback resulting from networking activities. Although technology transfer is a process that takes many forms—reports, trade journals, videos, conferences to name just a few—the most popular method of exchanging information and technology with local agencies is through training workshops (*3*). Because training is a cornerstone of the LTAP, the Minnesota T^2 staff completed a training needs assessment to identify the training needs of the transportation engineering and maintenance staff in Minnesota's counties, cities, and townships.

The methodology and survey were developed with assistance from members of the Minnesota T^2 Program Steering Committee representing local government, as well as the Minnesota Department of Transportation. The survey consisted of a listing of over 50 job tasks performed within the following broad categories:

- Construction and inspection
- Design
- Maintenance
- Materials
- Risk management and safety
- Traffic operations

Surveys were distributed to each county engineer, city public works director, township chair, and township clerk. These individuals were asked to seek the input of their engineering and maintenance staff in completing the survey.

The survey response included replies from 47 of 87 counties (54 percent), 28 of 118 cities (24 percent), and 415 of 1,791 townships (23 percent). Within each local agency, training needs were anticipated to vary, particularly among different employee groups, reflecting the various work roles relating to road, street, and bridge maintenance. For this reason, the survey questions and responses were separated into four groups: (*a*) professional engineers, (*b*) technical engineering staff, (*c*) maintenance supervisors, and (*d*) maintenance operators.

To generally illustrate the results of the T^2 assessment, Table 1 ranks the 10 highest training priorities for each of the four groups. Although there were clear differences in the priorities for each, the results indicated some overlap. For example, all four top-10 lists included work zone safety; three of the four included erosion control and turf establishment. Although the findings indicated a number of courses needed by more than one group, it would be a mistake to assume the specific information needs are the same. It is for this reason that focus groups—a small sampling of respondents expressing the training need—will be conducted to further define the course content needed. The information gained from the survey needs assessment provides the Minnesota T^2 Steering Committee and staff further information to determine the training direction and emphasis of the Minnesota program.

Other valuable sources of information used by the Minnesota T^2 staff to define needs and to get to know their customers better include feedback from course evaluations, newsletter comment forms, and informal discussions at professional meetings and conferences. Regardless of the mix of formal and informal assessment approaches used to define T^2 services and programs, the chief component of any successful T^2 activity is to recognize the right information to provide at the right time. For example, to train highway personnel on sophisticated equipment that their limited budgets will not allow is not providing meaningful training at the right time. Clearly, the T^2 staff must understand the practical realities of any training effort to be most beneficial to local personnel (*4*).

Be Accessible

To create a successful T^2 program, it is imperative that the T^2 center is highly accessible to the local transportation community it serves. A center that is more accessible will be a center that is more likely to be used. Numerous strategies and tools are available to centers to be highly accessible to the communities they serve, such as customer data base development, localized training programs, participation in professional meetings and committees, information computer networks, toll-free phone lines, electronic bulletin boards, program brochures and catalogs, and on-site resource assistance. Minnesota T^2 has employed a number of these

TABLE 1 Ten Highest Training Priorities

PROFESSIONAL ENGINEERS	TECHNICAL ENGINEERING STAFF
1. Tort liability	1. Roadway construction/inspection
2. Work zone safety	2. Erosion control/turf establishment
3. Safety elements: design	3. Geometric design
4. Traffic engineering	4. Safety elements: design
5. Bituminous materials	5. Surveying
6. Geotextiles/fabrics	6. Materials/QC testing
7. Pavement rehabilitation	7. Work zone safety
8. Accident analysis	8. Bituminous materials
9. Metric conversion	9. Metric conversion
10. Erosion control/turf establishment	10. Geotextiles/fabrics
MAINTENANCE SUPERVISORS	**MAINTENANCE OPERATORS**
1. Gravel road maintenance	1. Snow/ice control
2. Snow/ice control	2. Gravel road maintenance
3. Roadside maintenance	3. Roadside maintenance
4. Maintenance management	4. Equipment maintenance
5. Culvert installation/rehabilitation	5. Culvert installation/rehabilitation
6. Work zone safety	6. Work zone safety
7. Roadway construction/inspection	7. Maintenance management
8. Safety hardware	8. Roadway construction/inspection
9. Erosion control/turf establishment	9. Traffic signs
10. Gravel road design	10. Paved road maintenance

strategies to strengthen its accessibility, which are described in the following.

As previously mentioned, the LTAP requirements for the T^2 centers include the creation and maintenance of a mailing list of local transportation officials. The development of a comprehensive mailing list is an essential first step in becoming an accessible resource to local agencies. Through using an up-to-date and accurate mailing list, local transportation personnel will receive the information they need to access available technology transfer services and resources directly. When CTS was established in 1987, a simple data base was created for a mailing list. Building upon the existing CTS mailing list, CTS developed a customer data base that extends beyond use as a mailing list. The CTS T^2 Program customer data base can be used for targeted course mailings indicating for each individual his or her membership on any of the numerous CTS committees, various organizational and geographic categories, and the CTS publications and announcements received. Each month 2,000 receive the CTS monthly report and each quarter over 4,000 receive the T^2 newsletter, *Technology Exchange*.

Similar to other T^2 centers, the general approach of the Minnesota T^2 Program to foster the accessibility of training workshops is to offer one-day workshops at multiple locations around the state. The one-day training format in localized areas enables more participants to attend by minimizing travel and time away from their jobs. Workshops must also be financially accessible to agency personnel operating from limited budgets. Offering courses at minimal cost through subsidizing program expenses enables local agencies to make the training available to as many employees as possible.

Attending or participating in professional meetings and conferences provides T^2 staff an excellent opportunity to listen to and understand the transportation problems and issues for which the local practitioners are seeking solutions. For example, Minnesota T^2 staff have created opportunities to participate in annual professional meetings through offering facilitation support for structured group problem identification and resolution discussions. Involvement in such group dialogues enables the T^2 staff to be aware of key local transportation issues (e.g., wetland mitigation, management systems, tort liability) and provides an opportunity to informally explore how the T^2 center can provide assistance in addressing their most pressing issues (*3*). Presenting information during professional meetings and conferences on T^2 programs and resources goes a long way in communicating what services the customer can expect from the center. During the first year of operation, the Minnesota T^2 staff conducted over 25 informational presentations marketing the services of the new T^2 center. As most T^2 centers, the Minnesota center has created an informational brochure describing the T^2 services available and how local officials can obtain the assistance they need.

Computerized information networks are quickly growing in popularity among local agency personnel nationwide. Electronic bulletin boards and information networks provide locals with the capability of easily accessing a myriad of new technologies and information (*3*). To make these networks available to Minnesota's local personnel, the Minnesota DOT State-Aid for Local Government Division provided each county and city with the computer hardware needed to use the electronic bulletin board network. The T^2 staff has also taken advantage of this network to quickly disseminate timely information, as well as to request local input on T^2 activities. The partnership between the T^2 Program and the Minnesota DOT library has made transportation information resources more accessible to locals than ever before. With only a phone call, Minnesota T^2 customers' information needs are matched electronically with nationwide networks of transportation research information and technology transfer resources.

Technology transfer activities that provide "face-to-face" training and technical assistance are preferred because users have the opportunity to interact directly with the information source—the instructor or technical expert—as well as share information with their peers. T^2 methods such as on-site circuit rider programs or on-site demonstrations provide the direct interaction preferred while meeting locals on their own turf (*5*). The Minnesota T^2 Program is currently working with the DOT maintenance office in establishing a circuit-rider program for maintenance employees in the DOT districts and local agencies.

Be Practical

The central challenge to all T^2 centers is to provide information in a useful format that helps local officials solve transportation problems. Information transferred to local personnel must have an immediate and practical application in the daily operations of the local user (*6*). The first principle, "know your customer's needs," provides the basis for creating T^2 programs and resources that are needed and that fit the practical realities of the local user.

When repackaging or translating information to meet the particular user needs and capabilities, T^2 staff must ensure that information is communicated in a clear, simple, and uncomplicated style and format (*3*). In other words, the tool or resource created must be user friendly. Lengthy research reports that include academic jargon have no place in a meaningful technology transfer effort at the local level. Instead, reports must be written for the level of need and capability of the intended audience, including step-by-step instructions, easily understood illustrations, and simple language (*7*).

The research implementation activities of the Minnesota Local Road Research Board (LRRB) has provided many practical technology transfer resources for the local Minnesota community, such as research implementation summaries and reports, manuals, and videotapes. Recognizing that videotape is most often the preferred transfer mechanism of the local user, the Minnesota LRRB has invested local resources for the creation of video programs for topics such as crack sealing, seal coating, and bituminous overlay, to name just a few. These tapes are then distributed to each county and city for their use and application. Videotapes are viewed at the local level as a valuable and practical resource as a refresher for previous training and as a stand-alone, "ready-when-needed" training resource for individuals or small groups (*3*).

When determining the emphasis of the Minnesota T^2 Program quarterly newsletter, *Technology Exchange*, the T^2 Steering Committee members strongly advised a practical content emphasis. Each issue of the *Exchange* contains practical features, including new technologies and timely information reflecting local needs, success stories of local technology applications, a listing of new publications and videotapes available, and a calendar of events and courses of interest to local agency personnel.

Create Cooperative Partnerships

The process of technology transfer or the multidirectional exchange of transportation technology and innovations is shared by many individuals and organiza-

tions. The transfer of information and technology to ensure its application at the local level is a tremendous task, in part because of its many sources and the diversity of local application needs. To carry out the function of technology transfer at the local level necessitates the involvement of many players. When forming the new Minnesota T^2 Program, an important first step was to first identify the existing organizations and structures that provided information and technologies to local transportation personnel. The T^2 staff found that a very active technology transfer effort existed at the local level in Minnesota; the primary players included the FHWA, Minnesota DOT, and the Minnesota LRRB.

Early in the development of the Minnesota T^2 Program, it was clear that the primary agents of the existing technology transfer effort to local government—FHWA, Minnesota DOT, and the LRRB—must become key partners in delivering T^2 services to local agencies. Such a partnership was formally established through creating the Minnesota T^2 Program Steering Committee. The Steering Committee comprises these key partners as well as representatives of the local community the program serves—county, municipal, and township officials. The Steering Committee partnership has been a driving force in the formation of the T^2 Program, and its direction will remain essential as the program continuously redefines its services and programs to meet the ever-changing transportation technology needs of Minnesota's local community.

To strengthen the existing local technology transfer activities, a primary characteristic of the Minnesota T^2 Program is its linking role among those involved in local T^2 activities. Figure 1 illustrates the central role of the Minnesota T^2 Program in the Minnesota T^2 network among its key partners, customers, and other T^2 providers. The T^2 Program reaches out to the many players to help facilitate and coordinate the ongoing technology transfer activities through creating cooperative partnerships and technology transfer ventures. The core benefit

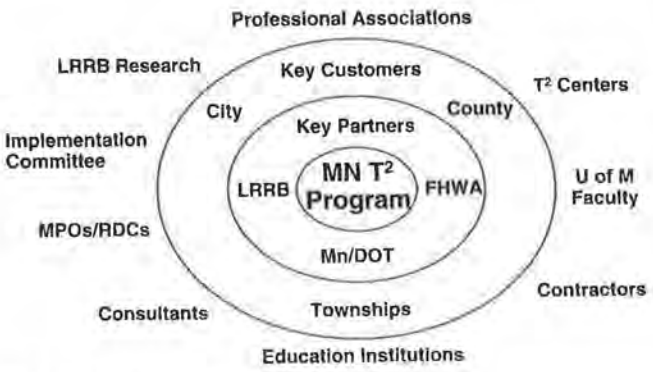

FIGURE 1 Minnesota T^2 network.

of such cooperation is the expanded value of limited resources for technology transfer accomplished through reducing duplicate efforts and establishing shared technology transfer priorities.

The benefits of the Minnesota T^2 partnership network are many. For example, as a result of the partnerships formed with Minnesota DOT offices—State-Aid, Maintenance Operations, Materials Research/Engineering, and Traffic Engineering—and with local professional associations, and neighboring state T^2 centers, the Minnesota T^2 Program offered over 25 training workshops to over 1,500 local transportation personnel in its first year of operation. The partnership with the DOT has also played a central role in the development of articles for the quarterly publication *Technology Exchange*. Through the DOT's active involvement, timely articles on new technology and information in areas such as safety, traffic operations, maintenance operations and equipment, and materials are more accessible to the local community than ever before.

Because of the Minnesota DOT library's extensive collection of transportation information resources, the Minnesota T^2 Program and the DOT library created a formal partnership to extend the existing DOT information services to users at the local level. T^2 Program funds are used to supplement the resources needed to expand services to local agencies, including lending publications and videos, reference support, and resource catalog development. In the fall of 1994, CTS staff moved into new office space that includes plans for a staffed information services area that will allow T^2 customers, students, and faculty to easily research and access information resources.

A strong relationship with technology transfer personnel from the division and regional FHWA office as well as T^2 personnel from the state DOT is essential to a successful program (*4*). Technology transfer staff from the Minnesota T^2 Program, division FHWA office, and the DOT Research Administration Office meet on a monthly basis to integrate and exchange information to ensure the efficient implementation of transportation innovations and the optimization of T^2 resources and opportunities.

Although the primary technology transfer partnerships have been highlighted, many other professional organizations play a significant role in the process of technology transfer. These organizations are (a) professional associations at the state, regional, and national levels, such as the Minnesota County Engineers Association, the City Engineers Association of Minnesota, the Institute of Transportation Engineers, the National Association of County Engineers, and the American Public Works Association; (b) trade associations, such as the Asphalt Institute; and (c) other T^2 centers and state DOTs (*3*).

Through collaborative partnerships, organizations involved in technology transfer can work together, pool resources, and share information to more effectively move transportation technology and innovations from where they are created to where they will be used.

Follow Up on Implementation

Ensuring that information and technology are applied effectively once delivered to the local user is a particularly challenging task for T² centers that are operating with minimal staff and striving to meet a broad range of T² needs. Although T² centers do not have a standard process for quantifying the benefits (i.e., dollar savings) resulting from the center's activities and user applications, most rely on workshop evaluations and user feedback to generally assess the effectiveness of the T² effort (2).

An effective technology transfer process includes examining the user implementation of new information and technology. T² program staff need to know if their training, resources, and assistance at the local level are actually being used and successfully applied. If not, T² staff must explore what further training assistance may be necessary (e.g., additional training focusing on more specific details of workshop topics, hands-on assistance, or refresher updates on changes in the information and materials originally presented). However, this presents a rather simplistic view of the barriers to successful implementation of transportation technology and information in our local agencies.

To borrow a concept from the quality improvement philosophers, when looking at job performance (or the application of new information and technology as in this context), it is important that educators (or technology transfer agents) examine the "system" within which the individual performs. The performance system comprises the conditions under which an individual carries out his or her work, including available materials, operable equipment, time, relationships with coworkers, and so on. Such conditions either enable or inhibit individuals from performing or, as in this case, from applying new technology or information to their job (8). If a desired local application is not occurring and if T² personnel determine that the T² workshop successfully accomplished what was intended (i.e., developed required skills and knowledge), then T² agents may also need to examine the system conditions under which the local application is attempted. For example, is the local roads manager or decision maker offering support to adopt the new technological change? Are the resources (i.e., funding, equipment) necessary for technology application available? Obviously, this presents a tremendous challenge to transportation technology transfer agents to look beyond training issues to also examine system factors that may lead to an understanding of why the local user is not successfully implementing the new methods and technology presented in T² programs.

Admittedly, since its creation in 1993 the Minnesota T² Program's focus has been on developing and delivering services and training for local personnel, not on monitoring the actual application of information and technology at the local level. Still, feedback from course implementation evaluations and from locals receiving technical assistance is very valuable. Such feedback has strongly influenced workshop modifications and directions. In addition, the Minnesota T² newsletter, *Technology Exchange*, brings innovations to the attention of potential users through highlighting new applications in Minnesota and nationwide. Displaying local success stories of the actual benefits gained from technology transfer implementation can be highly effective in encouraging further applications (3). There is no question that local personnel place a high value on the experience of their peers and rely on word-of-mouth testimonies as the primary source of information to evaluate a new technology (7).

New Challenges to Minnesota T² Program

As a new technology transfer resource for Minnesota's local transportation agencies, the program's developmental framework for the first year consisted of creating key T² partnerships, assessing local T² training needs, and creating a program infrastructure to deliver T² services. As a program that is beginning to build momentum in the technology transfer community, new challenges are presented that must be addressed to improve and enhance T² services to locals. These new challenges include (*a*) building and maintaining program credibility, (*b*) expanding program emphasis to meet broad-based needs, (*c*) coordinating T² programs with local technology transfer providers, and (*d*) following up T² implementation. First, as a new T² program, the T² Program Steering Committee and program staff must continue to build and maintain the program's credibility with local transportation officials. That can only be accomplished by "doing the right things, at the right time, for the right people." This will require continuous learning about the local transportation technology issues and a clear understanding of the role of the T² program in addressing the priority issues.

Second, as with all of the LTAP centers, demands on the Minnesota T² Program are growing and diversifying—this growth is both legislatively and locally driven. The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 requires centers to expand

their services to urbanized areas and Native American tribal governments; to provide assistance in establishing local bridge, safety, and pavement management and systems; and to provide assistance in promoting recreational travel and tourism efforts in local communities. Education and training needs are being requested to support transit systems in addition to roads and highways. Minnesota regional development commissions and metropolitan planning organizations are also looking to the Minnesota T^2 Program for educational assistance in transportation planning. Here, the challenge to CTS is to define which of these needs are most appropriately met through the T^2 Program or the center's education-extension program.

Coordinating technical training and assistance with other technology transfer providers presents a third challenge for the Minnesota T^2 Program. As discussed previously, many organizations in Minnesota are involved in providing training for local transportation agencies, such as the Minnesota DOT offices, professional organizations, trade associations, and community and technical colleges. The challenge is to orchestrate the activity of the various providers so that each serves a particular niche of the wide range of training that is needed at the local level. The Minnesota T^2 Program can play a linking role with these providers to facilitate the sharing of training information and the establishment of different yet integrated training plans resulting in the elimination of duplicate efforts and maximizing limited training resources.

Finally, the Minnesota T^2 Program will need to establish data collection and feedback mechanisms to better determine what further assistance, beyond the initial T^2 activity, is needed to implement new information or technology at the local level and the local transportation improvements resulting from T^2 Program services. It is this kind of information that will provide the T^2 staff with the feedback necessary to better understand the T^2 Program's effectiveness—namely, whether the information and technology transferred are actually being used and are making a difference in transportation at the local level.

Conclusion

The strength of the national network of LTAP T^2 centers is in its capacity to allow each center to adapt its technology transfer services and programs to the particular needs of its local agency customers. Although each center offers a unique program using a variety of technology transfer approaches, there is a shared foundation on which all centers build and strengthen their program. This shared foundation is the suggested core technology transfer principles as discussed in this paper. However, the principles themselves are uniquely applied as discussed in their particular application to the Minnesota T^2 Program.

Because technology applications and customer needs are continuously changing, technology transfer agents must also continuously prepare for and respond to new transfer opportunities. The dynamic process of technology transfer presents an ongoing challenge to transfer agents to gather data and customer feedback to assess the value and impact of the technology transfer activities. As a relatively new T^2 center, the Minnesota T^2 Program is faced with some fundamental challenges, such as establishment of the program's credibility, expansion of the program's emphasis to meet broad-based needs, partnership coordination, and implementation follow-up. The Minnesota T^2 Program, along with the national network of LTAP centers, will capitalize on these new challenges as it continuously redefines its programs and services.

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