Leveraging Technology and Innovation

Roles and Relationships within a Reorganized FHWA

A key principle of FHWA reorganization, completed during 1999, was to place the Agency's products and services as close to the customer as possible. This includes efforts to leverage technology and innovation, which is one of the Agency's guiding principles as defined in the *FHWA National Strategic Plan*: "... FHWA will be an international leader in researching, developing, and advancing technology to ensure the most efficient, effective, and environmentally sensitive intermodal transportation system. .... Technology deployment will be a key factor to accomplish strategic objectives in all goal areas."

FHWA will Leverage Technology and Innovation... Promote the use of technological advancements and innovations by States and local governments... Technology deployment will be a key factor to accomplish strategic objectives...

-Guiding Principle, *FHWA Strategic Plan*

The purpose of this paper is to outline key roles and responsibilities ... to carry out this Guiding Principle in support of Agency goals...

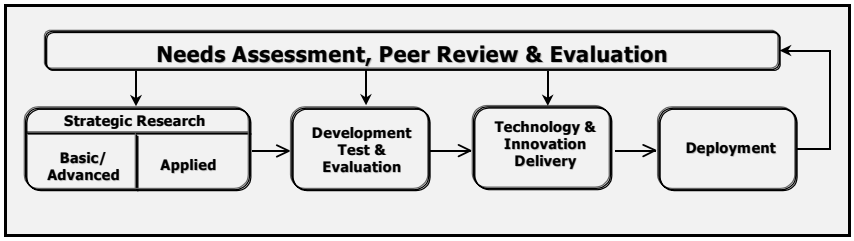
The purpose of this paper is to outline the key roles and responsibilities of various FHWA organizational components to carry out this guiding principle in support of the Agency's goals and objectives. Alignment of resources and expertise in line with these roles and responsibilities is a continuing process aimed at improving the Agency's ability to provide outstanding service. Active offices include the Core Business Units (CBUs), the Research Development & Technology (RD&T) Service Business Unit (SBU), other SBUs, the Resource Centers (RCs), and our chief delivery and deployment component, the Division Offices (DOs). It takes each one contributing and working in unison and with our external partners to do the job successfully.

Building upon the many strengths of past and present FHWA programs and leveraging the organizational changes to create greater successes in the future requires recognition of both formal and informal roles, responsibilities, and relationships necessary to successfully develop and deliver innovative solutions. This process of working together will use both our traditional communication and coordination methods and new methods that will be initiated as we expand our activities agency-wide in the technology and innovation arena.

Technology and Innovation ... includes advances in processes and services for a wide range of topic areas including policy, planning, environment, design, highway safety, construction, maintenance, system management and operation.

At the outset, it should be recognized that "technology and innovation" as used in this paper includes advances in processes and services for a wide range of topic areas including policy, planning, environment, design, highway safety, construction, maintenance, system management and operation. Internal business process changes are not included within this purpose.

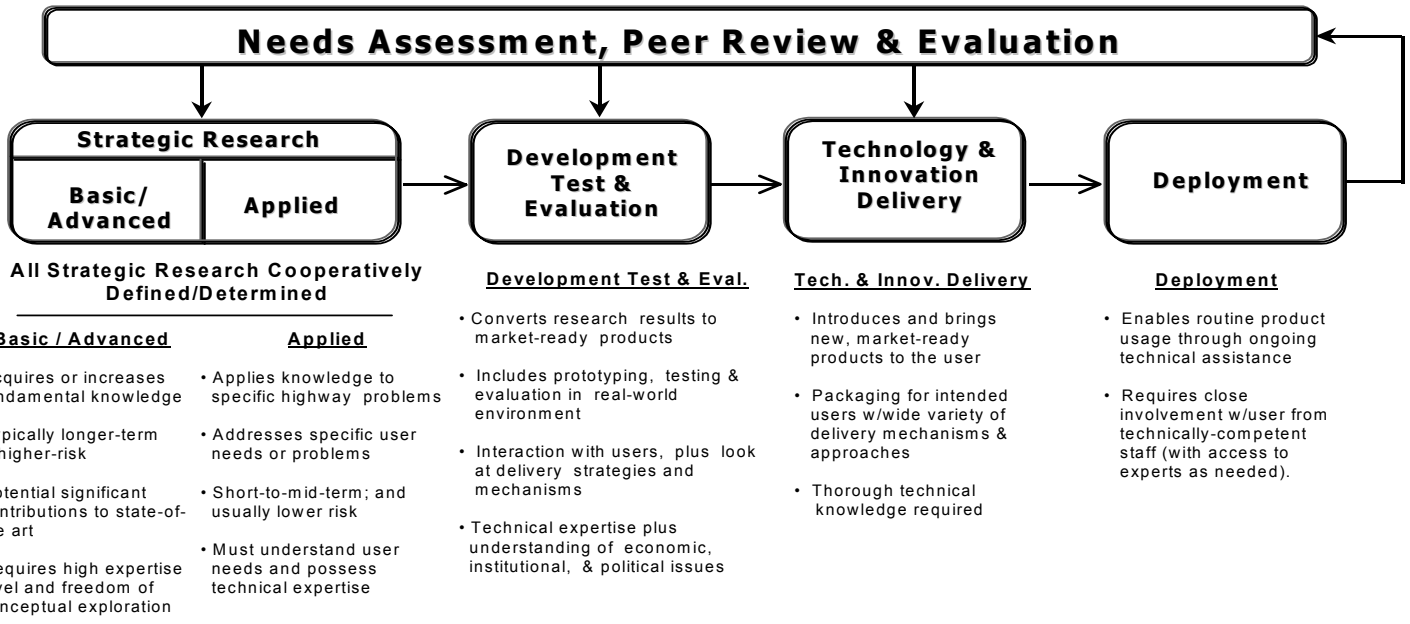
Technology / Innovation Process Features and Characteristics



The major elements of an innovation process are shown here as a series of sequential, linear activities. Real-world experience in advancing innovation clearly does not follow such a discrete set of steps; in fact, many of the steps occur in parallel, "loop-backs" between integrated activities are frequently necessary and beneficial, and products can enter the cycle at different stages. This dynamic nature of innovation is natural and healthy. For clarity, this paper will use this simple sequence of steps as a basis for discussion of the roles and responsibilities of FHWA organizational elements.

Figure 1, below, includes a set of bullets briefly describing the functions or characteristics of each element of this process. Precise "boundaries" between elements should not be looked at as defining strict roles or limits on activities, as the dynamic nature of the process needed to meet customer needs for advancing innovation requires flexibility and willingness to adapt tasks to unique needs.

Figure 1

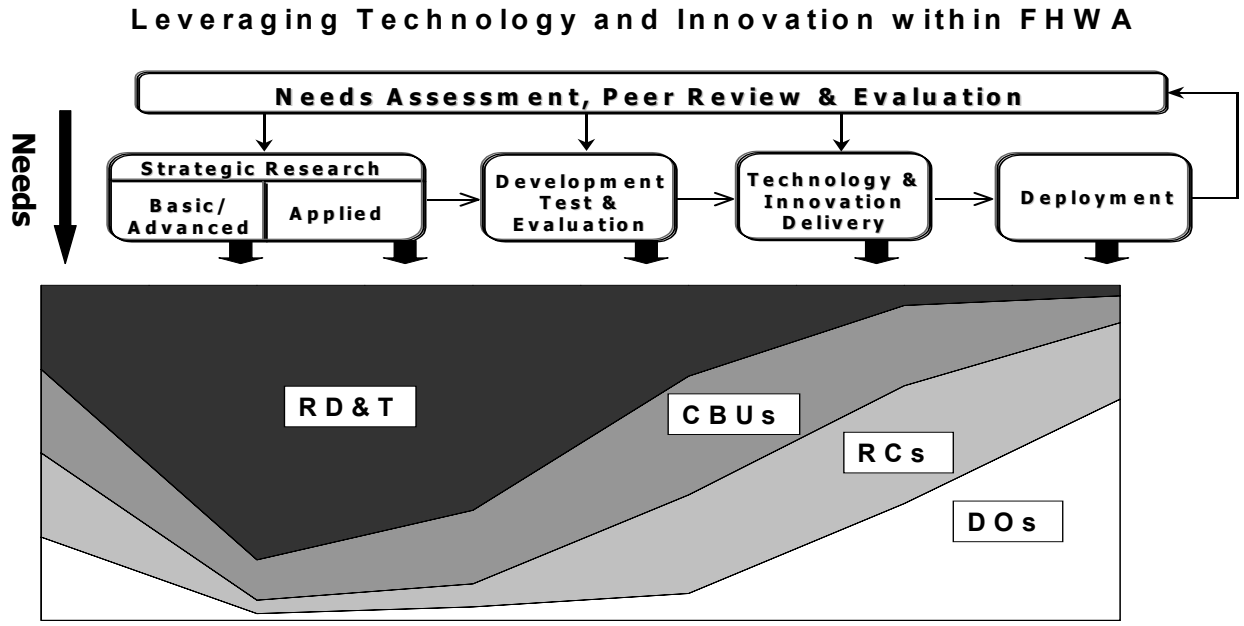


Functions / Characteristics of Technology & Innovation Process

FHWA Organizational Responsibilities in the Process

Figure 2 presents an approach to visualizing the relative degree of responsibility, leadership, participation, and interest which various FHWA organizational elements have within each step of the process. The relative influence of different FHWA offices is shown as varying depths in the area chart. For instance; division offices take a leadership role and are most active in "delivery" and "deployment;" the role of the RD&T SBU is most prevalent in the "strategic research" element, but others (most notably the Environment & Planning CBU) also actively pursue strategic research). Note that while RD&T is the only SBU specifically identified in this figure, other SBUs including Professional Development and Administration actively participate in the process. Professional Development, for instance, is responsible for a wide range of training and education efforts which support technology and innovation delivery, especially through programs of the National Highway Institute (NHI) and the Local Technical Assistance Program (LTAP).

Figure 2



Following is a synopsis of primary roles:

Needs Assessment, Peer Review, and Evaluation - These functions are shown as a continuous set of activities which take place throughout the innovation cycle, with feedback into each phase to drive decision-making. All elements of the Agency should be involved in these efforts; with each bringing their particular perspectives. A coordinated, comprehensive approach to these functions which ties priorities to achievement of

All elements of FHWA should be involved in Needs Assessment, Review, and Evaluation.

FHWA strategic and performance goals is necessary. As strategic goal owners, CBU leaders (along with the Policy SBU Director) are responsible for defining strategic research priorities and program and project plans within their business area, and developing budget proposals to carry out necessary work. Similarly, all SBUs and RCs participate in planning and development of a program of Agency-wide R&T activities.

This continuing process of needs assessment and program definition relies heavily on external outreach to create a national R&T program which recognizes the priorities and participation of all stakeholders. The National R&T Partnership Initiative brings together Federal, state, local, academia, and private sector participants to collaborate on development of a national R&T agenda. This effort is strengthening current relationships and broadening the range of contacts which benefit FHWA in defining and executing R&T programs, in addition to expanding opportunities for collaborative work. This effort is being focused by five working groups in the areas of infrastructure renewal, safety, operations & mobility, planning & environment, and policy analysis & system monitoring; and CBUs and Policy SBU are taking a lead role in working with these groups. (Activities in the planning and environment area are being advanced by the Surface Transportation-Environment Cooperative Research Program Advisory Board, a National Academy of Sciences Committee established in accord with Sec. 5107 of TEA-21.)

External outreach is critical to development of a national R&T program. The National R&T Partnership Initiative brings together Federal, State, local, academia, and private sector participants. This strengthens current ties and broadens FHWA's contacts with the

In addition to responding to customer and partner needs, attention is also given to research which informs the Agency as a corporate customer; e.g., policy-oriented issues where FHWA itself is the user of the information. FHWA also participates with other US DOT modal administrations and external entities (such as DOD and DOE) in development and execution of strategic R&T program efforts.

Strategic Research - The primary organization responsible for conducting research is RD&T. Other elements of FHWA conduct research and many participate in the research phase, this is especially valuable to assure that projects remain focused on producing "real-world" benefits. It should be noted that the Planning & Environment CBU is responsible for research in their business area; in addition, the Policy SBU is responsible for preparation and execution of policy-related initiatives supported by R&T funds. In some cases, other CBUs will also conduct contract research in specific areas, such as freight topics. Also, the Intelligent Transportation Systems (ITS) program is managed by the DOT-wide ITS Joint Program Office, with execution of ITS research projects being the responsibility of various offices within several modal administrations.

Research is primarily the responsibility of the RD&T SBU; with Policy and Planning & Environment having responsibility in their business areas.

Development, Test, and Evaluation - As the innovation process moves to production of market-ready products, prototyping and evaluation in real-world conditions is an essential task. This phase involves more interaction with users, along with more focus on delivery strategies and mechanisms. These aspects call for a greater degree of participation and leadership from CBUs and growing involvement of RCs.

Greater leadership and participation from CBUs and growing involvement of RCs is called for during Development, Test, and Evaluation phase

Technology Delivery - Responsibility for packaging and delivery to customers rests with the Resource Centers and the CBUs (and Policy SBU) within Headquarters. In serving the needs of multiple Division and State customers, the RCs are well-positioned to be aware of priority needs and opportunities, and to deliver appropriate solutions and assistance. As the direct link to State, local, and other customers; Division Offices have a critical role in linking needs to appropriate products. The Professional Development SBU, through the NHI and the LTAP, also contributes critical resources to building the skills necessary for expanded adoption of innovation; and increased use of CBU and RC staff as course instructors will reinforce our ability to provide services.

Responsibility for delivery to customers rests primarily with the RCs, and with CBUs & Policy SBU within Headquarters. Division Offices provide critical link to State-level needs.

Deployment - After focused efforts in packaging and delivery of products, technical expertise and assistance is needed as customer support during routine adoption and use. This is a primarily a function of Division office staff; with significant RC involvement and assistance as needed from CBUs, RD&T and other SBUs.

Deployment is primarily a Division Office function; with significant RC involvement and support from CBUs and SBUs as needed.

Communication / Coordination Linkages

Routine, open, and broad interaction among FHWA elements throughout the activities outlined above is essential to success in meeting customer and partner needs. Frequently, the most effective channels for this interaction have developed informally, with motivated staff working to assure success through collaboration. FHWA management should assure that communication linkages are defined and remain robust in support of the process. Examples of relevant efforts to date include initial work to create "Communities of

Advancing "Communities of Practice" and "Technology Facilitation Action Plans" will improve communication

Practice" which are intended to foster improved knowledge sharing on specific topic areas among all staff, and recent work on "Technology Facilitation Action Plans" by RD&T which define schedules for R&T product development and delivery, including identification of participating staff members throughout various FHWA offices. (This initiative is currently focused on programs in operations, infrastructure, and safety; use for other areas such as environment and planning and policy is not yet determined.)

Agency-wide coordination of the technology / innovation delivery process received particular attention with discussion at the senior leadership retreat in January 2000. The discussion recognized that, while the FHWA restructuring was intended to create a closer connection to potential users of technology and services, it is also true that decentralizing the function does present an increased challenge in terms of setting a strategy and communicating a "corporate message" for FHWA. A decision was made that RD&T should coordinate technology and innovation delivery for FHWA. In addition, in order to assure close coordination between offices, CBUs and RCs will designate "points-of-contact" for the technology and innovation functions. These contacts will serve on a working group facilitated by RD&T for the purpose of defining an agency technology deployment strategy, identifying priority initiatives and needs, sharing information regarding good practices, improving communication of the R&T "story", and defining a framework for the measurement/evaluation of technology deployment by FHWA.

RD&T will coordinate Agency-wide innovation / technology transfer, with a CBU / RC working group

R&T Program Resources

As part of R&T program allocations under the previous organization, the Office of Technology Applications distributed a significant amount of funding authority to FHWA field offices for their direct use for a variety of technology delivery purposes. These funds have been very successfully applied by the field to further adoption of technology and innovation, and the FHWA Management Council has continued this support with allocation of R&T funds to the RCs. These funds have been provided directly to the RCs through an "advice of funds" from the FHWA Office of Budget. In addition to these funds provided directly to field offices, CBUs delivery programs are expected to include elements which provide funds to field offices to support specific program areas.

Field offices continue to receive R&T delivery funds, in addition to program-specific funds from CBUs

Appendix - Expanded Discussion

FHWA Roles & Responsibilities for Leveraging Technology and Innovation

The following material has been prepared to offer additional information on the types of activities and relationships anticipated within FHWA. This discussion especially focuses on roles and opportunities for Resource Center staff, as this organizational level is a new entity and has a unique position within the Agency's innovation process. A matrix which highlights key features within each element of the technology / innovation process follows this narrative.

This material should not be viewed as formal FHWA policy, and circumstances which exist for particular programs or projects should determine the specific manner in which Agency offices work together and with external partners and customers to assure success.

Needs Identification / Prioritization / Evaluation — Innovative solutions that fulfill partner and customer needs are a primary objective for FHWA. Solutions aimed at meeting the priority needs of customers will require far less "selling" by FHWA because the "pull" from the partners and customers will be strong for the adoption and deployment of the technology. To achieve this, the key is to clearly understand and translate customers current and future needs and then to tailor our delivery systems to always be on the target. As noted in the main body of this paper, external outreach and participation by key stakeholders in this process is critical to success.

RD&T will coordinate development of an overall national R&T agenda and will facilitate Management Council action on FHWA's R&T program and budget. The agenda will be derived, in part, through the use of subject area marketing analysis in the transportation community and interaction through and partnership with national and international organizations such as the Transportation Research Board, Civil Engineering Research Foundation, Organization for Economic Cooperation and Development, the National Cooperative Highway Research Program, and others.

As strategic goal owners, CBU managers will lead and coordinate creation and execution of R&T plans in subject areas which address strategic and performance goals, primarily through the development and use of multi-year program plans, or roadmaps. They will perform market analysis in those subject areas to understand the size and characteristics of the customer-base, what they need, what they are willing to spend, opportunities for shared programs with external partners, and the practical and political constraints on implementation. The multi-year program plans will present for each priority area or initiative the comprehensive set of projects and activities necessary to identify, develop, test, evaluate, and deliver technology products. These program plans should be developed in cooperation with FHWA partners such that a comprehensive coordinated plan that identifies products, milestones, and key responsibilities is maintained.

The prioritization and program planning process that is built upon our strategic objectives and which contribute to FHWA's R&T program plans should involve field technical specialists, not

from the perspective of entitlement, but rather because of the skills and capabilities of these specialists in the future. Networks of specialists will continue to evolve naturally over time and these professional linkages will be used as sources of counsel and information exchange. Field perspectives related to problems and issues experienced at the delivery end of the transportation program will make their way into the discussions of the biggest opportunities for FHWA in future programs.

The identification and translation of customer and partner needs is also an important role for FHWA's technical specialists in the field, as specialists at the Division level will continue to be the primary point of contact with most of our customers and partners. Through close working relationships of division staff with the technical staff of the Resource Centers, RC specialists will acquire knowledge about the array of needs from among State and local DOT's. In many cases the needs of these State and local partners and customers can be satisfied through existing and improved systems of sharing better practices—a primary responsibility of the Divisions where the Resource Centers and CBUs / SBUs can provide support.

The technical staffs of the Resource Centers will become primary points of contact to ensure an effective feedback loop with the CBU's and RD&T in understanding the perspectives and needs of our primary partners and customers regarding future technology initiatives. It is important to understand that initial discussions about the contents of national R&T agendas will produce input that includes multiple overlaps and conflicts. Sorting through this input requires an understanding about the extent to which problems and needs are either understated or overstated. This validation process can effectively be performed by Resource Center specialists.

Another potential role for the Resource Center staff is as the focal point and facilitator of the outreach and input activities in the field, a necessary part of the agenda setting collaboration. Improved relationships and technical/professional peer-to-peer activities with a wide range of technical experts at Divisions, State and local DOT's, universities, research laboratories, and other partners and customers would provide an open and productive venue for input, evaluation, and validation as our national plans are formulated.

At the product level, the evaluation of new technologies relative to its acceptance, utilization, and effectiveness will continue to best be accomplished by field personnel. The ability to understand perspectives that might be "uniquely" local in nature as a factor in the evaluation process will be housed in the Resource Centers. The process of identifying and selecting partners at State and local DOT's and with other customers is completed when those same partnerships are used to do the evaluation. This process will involve networks of specialists from both RD&T and the CBUs through the feedback mechanisms that are formed and will grow stronger as a result of restructuring.

Scanning — A continuing and increasingly more effective method to advance the "state of best practice" in the transportation industry is to scan for new ideas. Identifying cutting edge technologies and processes through scanning will involve participation by RD&T and CBUs as well as the Office of International Programs. CBUs will also have a role in identifying existing solutions in other highway organizations or industries for needs identified in roadmaps.

Similarly, since a primary role for the Resource Centers involves the ongoing challenge to create an environment for our partners and customers to continually "raise the bar" in building better transportation facilities, it is reasonable to expect that Resource Center specialists would be integral members of many teams that do scanning.

Attempting to differentiate scans around "cutting edge technologies" or "existing technologies" or based on geography may not be effective. Scans have high potential payoff where participants see the potential of new technology (existing or cutting edge) and are able to apply perspective and mental comparison with current methods, practices, and techniques; thereby, they are able to apply the new concepts to help solve problems. This capability, to make the mental connection between existing problems and the opportunities created in seeing new technologies, can be supplied by field personnel, especially the specialists in the Resource Center.

Advanced / Applied Research — The advanced research program is intended to include studies of those technologies which are on the leading edge of the research spectrum. It will be carried out to the extent possible through various partnerships and cost-sharing arrangements with the public and private sectors. FHWA's advanced research program is an RD&T responsibility but the most advanced technical specialists among other Headquarter staffs and Resource Centers should participate in the discussions of the program.

For the most part, applied research is to be administered centrally by RD&T, although the lead for planning and environment, right-of-way, and policy remain decentralized in the respective CBU and SBU. The role of field personnel in the applied research function is primarily one of information exchange, including the formation of and delivering of expectations among technical specialists within and outside FHWA. For both advanced and applied research, the Planning and Environment CBU and the Policy SBU have responsibility in their topic areas; other CBUs may also manage efforts in specific or unique topic areas such as freight.

Development — Taking prototypes from the research stage to the market ready stage (concept proven, being made field-deployable) will require cooperation among all major participants in FHWA's technology program. Field testing and evaluation and the resulting modifications that improve the market readiness of new technology will best be accomplished through shared responsibilities and interests. Interests and involvement in the later stages of the research cycle will for new technology become a natural expansion of the interest and involvement in earlier phases of research and development. Knowledgeable specialists at the Resource Center level will complement CBU and RD&T specialists in making technologies ready for the delivery and deployment stages. Continued evolution and growth of expectations about new technologies will come from continuous involvement at the peer-to-peer level among technical specialists at all levels of the Agency.

For those new technologies which are in the development stage, there will be a continuing need to partner with leading edge States and locals to identify field test and evaluation sites. This will be done in cooperation with technical specialists at the Resource Centers who understand the interest and readiness of field partners and customers. The evaluation plans will be developed by

Headquarters units and will be implemented with active participation by the Resource Center specialists.

Technology Delivery — FHWA's primary focus for delivering technology as a basic premise of our stewardship role is through sharing and promotion of "better practice" technology to customers such as State DOTs, localities, Metropolitan Planning Organizations, and other Federal agencies. At more robust levels, it also extends to the promotion of leading edge or "best practices" concepts, practices, and technology to those customers capable of dealing with the advanced concepts in the various areas of transportation technology.

The Division offices are a primary point of delivery of better practice activities and for advancing greater acceptance and use by State and local-level customers. The Divisions can also play a significant role in the determination of areas of potential interest and opportunity for advancing States and locals to the highest level of proven performance known as the "state of best practices." Not all States are ready, willing, or able to test and deploy the "state of best practice" as their standard operating procedure. Assessing and influencing their sense of readiness is an emerging role for FHWA field engineering staffs.

Based on identified needs and program plans, the CBUs have a lead role within Headquarters for packaging of technology products for delivery, which should be done in close cooperation with resource centers and divisions. The delivery programs which are created should be an integral part of multi-year program plans, and actively involve key partners including States, localities, and the private sector. Professional Development and RD&T support these delivery programs with their program and staff resources.

The Resource Centers have a primary role in providing technical, training, and program assistance and services to FHWA's State and local partners. In the short term, RC specialists will be requested to provide these partners with consulting and trouble shooting services. Success at this first step will have significant bearing on the acceptance of the RCs in the evolving technology role; all key FHWA offices involved in the R&T program must work in unison to ensure the success of this and subsequent stages. The RCs – aided by Headquarters' staff where needed for specific issues – will provide a staff capability to:

- Assist the Divisions in the needs assessment, problem identification, and evaluation.
- Generate alternative solutions to customer problems and opportunities.
- Share information on the changing "state of best practice," helping to create and foster a sense of the future of a particular technology.
- Assist in the identification of areas of "better technologies" for the States and divisions to evaluate for their unique needs and situations–in short, putting solutions in the hands of those that need it.

Technologies that are past the development stage will need professional marketing and promotion packages readied for the field to deliver. This delivery stage will be a joint field and headquarters activity that has its origins in collaborative discussions about the deployment process. Resource Center and division specialists will continue their partnering with CBU and RD&T specialists, and together they will create professional, informative, and effective

technology sharing packages, demonstrations, etc. This continued partnership creates a sense of collective ownership by both the field and headquarters and should ensure a smooth and effortless transfer process. The development of "Technology Facilitation Action Plans" by RD&T which define schedules for R&T product development and delivery, including identification of participating staff members throughout various FHWA offices, will support this process.

Professional Development will support the evolution of Resource Center technical experts and others through training on technologies and the techniques of technology transfer and marketing. The RD&T Office of Research and Technology Services also will provide expertise and guidance on technology transfer and marketing efforts. The P.D. Office will also administer and coordinate the Local Technical Assistance Program (LTAP) and will foster education and training through the LTAP Centers. Field offices should actively coordinate and support the LTAP; while in Headquarters, RD&T and the CBUs will work with the Centers to support technology transfer to locals.

The delivery of training through the National Highway Institute (NHI) also directly supports delivery through providing education and professional development tools to greatly expand adoption of state-of-the-art innovations.

Delivery of technology involves more than providing today's solution; it also should incorporate an awareness of what innovations are "over the horizon" which users should be anticipating. In working with customers, the Resource Centers and some talented division office specialists will link expectations about future technologies with existing/future needs. The focus of synthesizing future needs into potential technology initiatives in the R&T program will be a primary feedback role of the Resource Center specialists. This would occur naturally in the future as an integral part of the R&T agenda-setting and multi-year programming process led by the CBUs and facilitated by RD&T. Field technical experts would be expected to become virtual team members of headquarters teams and contribute to that process on an ongoing basis.

Technology Deployment — To enable routine product usage, ongoing technical assistance to support those who make the decision to adopt a product is essential. In fact, the availability of on-going support is frequently a key factor in the purchase / adoption decision. Deployment involves continuous technical assistance, much of which will be of a routine nature. This also requires a close involvement with the user by technically competent individuals who have ready access to technical experts. Division offices staff would have lead responsibility for this customer support element of the R&T program, with support from Resource Center and appropriate CBU staffs.

DISTRIBUTION OF R&T FUNCTIONS[1]

Stage of R&T Process	RD&T; other SBUs where noted	Core Business Units[2]	Resource Centers	Division Offices
Need Identification and Prioritization	• Coordinate / lead development of overall national R&T agenda. • Coordinate integrated FHWA R&T program and budget. • Provide marketing expertise support for subject area market analysis. • Coordinate FHWA participation in major national and international R&T efforts - TRB, CERF, OECD, NCHRP, etc.	• Lead/Coordinate development of subject area R&T strategic priorities and detailed program plans (roadmaps) • Market analysis at subject area level to understand size and characteristics of the customer-base, what they need, what they are willing to spend, and the practical and political constraints on R&T implementation, etc.	• Acquire / synthesize the array of needs among State and local customers. • Point of contact to ensure an effective communication / feedback loop among field and CBUs / SBUs. • Facilitate field outreach / input activities as appropriate.	• Maintain primary contact with customers and partners. • Identify and translate customers' and partners' needs.
Scanning	• Scan for cutting edge technology; which is not ready for near term application. • **HPI**—Support international scans.	• Scan for existing solutions in other highway organizations or other industries, that could meet the needs identified in multi-year program plans.	• Initiate scans for existing solutions among States and localities	• Provide input on connection between exiting problems in States and local jurisdictions and opportunities for the use of new technologies.
Advanced Research	• Conduct research to develop or adapt solutions for highway application which have potential for significant improvement but will not be ready for near term application and/or involve high risk. Requires conceptual thinking and exploration free from the constraints and demands of current problems or solutions	• Give input to advanced research agenda through helping to identify the more fundamental problems and issues to be addresses over the long term. • Planning & Environment CBU and Policy SBU plan and conduct efforts in their topic area; other CBUs may also take lead in specific or unique areas.	• May also give input to advanced research agenda through imparting the field perspective on fundamental problems and issues.	

Stage of R&T Process	RD&T; other SBUs where noted	Core Business Units[2]	Resource Centers	Division Offices
Applied Research	• Conduct research and manage contract research to develop and apply knowledge to solve specific highway problems identified in CBU program plans; may be short-term or long-term, but is typically lower-risk. Currently performing this function in areas of infrastructure, operations, and safety; potential expansion to other areas, as requested. • Provide research management, policy, legislative expertise. • Operate research laboratories. • Operate technical functions in support of research: machine and electronics shops, computers.	• Conduct research and manage contract research to develop and apply knowledge to solve specific highway problems identified in CBU roadmaps. • Currently performed by Planning and Environment CBU and Policy SBU; other CBUs may also take lead in specific or unique areas.	• Participate in research contained in R&T program plans as appropriate; based on technical expertise among specialists. • Provide input in the development of technology delivery methods.	• Provide input in the development of technology delivery methods.
Development	• Prototype and beta test research results/products. • Include adequate field test, evaluation, and verification as part of appropriate research projects. • Operate technical functions in support of development: machine and electronics shops, computers.	• Demonstrate beta-tested products for testing and evaluation by prospective users, in cooperation with RCs.	• Cooperate with demonstration through coordination with States, finding demo sites, etc.	• Monitor field testing and evaluation of technologies in States.

Stage of R&T Process	RD&T; other SBUs where noted	Core Business Units[2]	Resource Centers	Division Offices
Delivery	• Provide marketing support to CBUs. • Provide more general information dissemination / communication (web site, exhibits, general reports and brochures) • **PD—**Provide training support to CBUs / field / external customers. • **PD**—Coordinate LTAP.	• Package for delivery to the RCs and Divisions; aimed toward needs of ultimate customer. Marketing expertise needed to focus on needs of users in specific business area.	• Perform activities required to bring new, market-ready products to the customer: marketing of technologies to users (flyers, exhibits, reports); demonstrations; development of training; delivery of training; technical assistance. • **LTAP**—Delivery to local governments.	• Serve as primary point of delivery for States and locals for better practices activities. Determine areas of potential interest and opportunity for advancing the delivery of technologies to Sates and locals.
Deployment	• Very limited involvement; only in special cases, when requested	• Limited involvement, as support to RC &/or DO when requested	• Provide technical assistance support to Divisions; and to others such as CBUs as requested.	• Serves as primary lead in the provision of on-going technical assistance. Where needed, seeks technical expertise from RC / CBU.
Evaluation	• Evaluate/measure the overall R&T process, including management and T^2 processes. • Evaluate/measure the R&D laboratories.	• Evaluate/measure the effectiveness of the technologies used, on a nation-wide basis.	• Gather data on use of new technologies by States and evaluate/measure their effectiveness.	• Interact with State and local contacts relative to the acceptance, utilization, and effectiveness of new technologies. on an on-going basis.

1. Note: At all stages, a significant degree of input and coordination is assumed to be necessary across the units.

2. This column includes Policy where appropriate, although it is not a Core Business Unit.