

## MOVING TO A MORE COMPREHENSIVE, USER-FRIENDLY SYSTEM

Considering the diversity and complexity of the process, the resources, and the challenges, technology transfer successes do occur. There are many aspects to be addressed in the consideration of developing a more comprehensive, user-friendly information system for technology transfer.

**Technical Education and Skills** - It is a major tenant of successful technology transfer that the process must be conducted in a person-to-person mode. Knowledge transfers through personal interaction, thus the creation of data bases of technology information should be considered a viable tool for the process, but there are many other aspects required for success. Principal among these is the involvement of an individual with a technical background in the area of interest and someone knowledgeable of the federal system and the means to search available information systems.

**Knowledgeable** - The availability of information is not as universally known as it should be. Continued outreach and marketing efforts are needed to make business and industry knowledgeable of resources for technology transfer access.

**User-Friendliness** - Electronic access to information in the technology transfer process is wide-spread and of varying utility. Many of the systems mentioned in this report are difficult for the average person to use. Some do **not have search** capabilities and require paging through lists of information to find something potentially applicable. Effective systems offer a search capability that extends across all data at a time and permits boolean<sup>1</sup> search methods

**Currency of information** - Some systems are updated continuously, while others are changed only on an annual basis. Updating of large systems is a labor-intensive process. Consolidated systems must rely on the originating agencies to keep information current and maintain constant liaison to ensure the most recent information is available.

**Need for Facilitators** - The role of intermediaries (RITCs, MTCs, SBDCs, and extension services) in the technology transfer process is vital in reaching small and medium size businesses. These intermediaries can be most effective when they have technical staff members who understand technology and applications as well

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<sup>1</sup>.boolean searching allows for the selection of several terms to search for at one time and other options to limit the search to obtain the desired results.

as know how to **search efficiently for** information. Unfortunately, most SBDC's do **not** have this kind of staff, nor are many able to afford the expertise. Their linkages with universities are mostly from the business aspect and not enough from the technical aspect. These intermediaries **need to be educated in** understanding the technology transfer and commercialization process as well as trained in skills such as effective information search and retrieval.

**Formats for cataloging technology** for the purposes of technology transfer have been developed by most of the agencies conducting R&D, While they are all somewhat different, they cover the major **elements** of describing the technology in abstract form, provision for keywords, and discussion of applications. For the most part, these forms capture the essential elements of the technology. Regarding the creation of a standardized form or format, this may assist in the process **if it** could be developed in cooperation with all R&D agencies and implemented across all Federal agencies. Formats and taxonomies for cataloging technology have essentially become of questionable utility now that rapid search software can access and identify information sought from millions of records in a few seconds time. The appropriate organization to address this issue is the Interagency Committee on Technology Transfer chaired by the DOC Technology Administration.

A comprehensive resource **for use by intermediaries** is also essential; however, the creation of a master data base of all technology accessible by all people is **a** goal which most likely cannot be achieved due to the basic facts involving security and proprietary rights. These two considerations will always stand in the way of complete public access to technical information.

Cost is a major consideration for small businesses who cannot afford the expensive rates of commercial technology access services.

There will always be conflicts between services provided by the government and those offered by the private sector. The difference between the two will most likely be the amount of value added in terms of tailored, personal interactive services for individual companies. These services will be the determining factor in the willingness of business and industry to pay for services.

### Taking a Holistic View

The objectives for improving the process of technology transfer on the part of the Federal Government should take a holistic view of the problem, and not focus on just the creation of a sophisticated access system.

Continued Congressional support of the existing grass roots infrastructure of small business development centers, the Regional Technology Transfer Centers, Manufacturing Technology Centers, and other technology extension activities is essential to the picture.

To enhance the effectiveness of the intermediaries, Education and Training courses in technology transfer and commercialization should be developed specifically for the intermediary organizations and provided under the auspices of a national organization with the appropriate expertise.

Also in taking a holistic approach, Government leadership should envision an organization that is chartered and adequately funded to address the majority of the issues of technology transfer by:

- Assembling a resident staff of experienced technology transfer professionals
- Establishing a network of technology transfer specialists across the Nation to assist in outreach and technology transfer activities.
- Developing a proactive national outreach program.
- Establish cooperative working agreements with Federal agencies, laboratories, and universities conducting federal research to acquire information and provide outreach and access services.
- Creating a national information system on Federal R&D programs, technology, resources, and sources of assistance.
- Providing a gateway service with both direct computer access and experienced technology analysts to assist in locating appropriate technology, expertise, and/or resources in the Federal system,
- Developing educational and training courses for technology transfer professionals and intermediary organizations to help them address the many-faceted challenges of technology transfer.
- Sponsor and fund special cooperative programs to ferret out and commercialize viable Federal technologies.
- Investigate methods of measuring success in technology transfer activities and developing recommendations for better tools and techniques.
- Conduct special studies to assist in the formulation of legislation, policy and programs dealing with technology transfer.

#### **Current Assessment**

Considering all of the organizations involved in technology transfer, the cross-cutting organizations who have the most expertise and influence on the process

are the Federal Laboratory Consortium, the National Technology Transfer Center, and the National Institute of Standards and Technology.

Intermediary technology transfer facilitators (SBDCs, MTCs **and State** extension activities can play a vital role in the technology transfer process, but they need more training in the technology transfer and commercialization process and in specific skills and techniques to be effective.

Considering all of the organizations and activities ongoing to facilitate technology transfer of Federally-developed technology, the NTTC appears as the best postured **to lead in the development of programs methods and** metrics and in becoming the central fast-access point for new technology for American small and medium sized businesses,

### Opportunities

Considering all of the aspects of, challenges, and participants in technology transfer, the most sensible opportunities for enhancing the current practice is to continue and perhaps increase support to the NTTC, and to provide training **and** other assistance to the other intermediary organizations (SBDCs, RTTCs, MTCs) as facilitators to small and medium size **business and industry**.

The current Federal sponsorship of the NTTC expires in FY 95. Consideration should be given to either additional funding, or to establishing the center as a Federally Funded Research and Development Center with provisions for annual federal funding support. Sponsorship of the Center might also be more appropriately placed with the Department of Commerce rather than NASA.

Most legislation regarding Federal technology transfer is focused on transfer of technology from the laboratories only<sup>49</sup>. Because only about half of the Federal R&D expenditure is in the laboratories, consideration should be given to emphasizing Federally-sponsored technology from other sources as well.

Any new innovations in facilitating federal technology transfer should be reviewed by the Interagency Committee on Technology Transfer chaired by the DOC Technology Administration and considered for implementation by the NTTC.