

defined as the application of government-supported R&D by the private sector and state and local government users.

The term "technology transfer" is somewhat misleading because it implies that a technology can be picked up from one place and set down in another, as if the transfer process is simply the final step in an R&D project. Indeed, many government programs do start to encourage utilization of research only after the R&D results have been generated. Unfortunately, this "technology push" approach is usually unsuccessful. The most effective approaches to increased research utilization begin much earlier in the innovation process - as far back as when ideas are generated and selected for development (Roberts and Frohman, 1979). All too often, technology transfer is blamed for failures in commercialization when the real problem is mistakes in selecting the technologies for development.

Successful technology transfer and utilization require close attention to market needs - a clear identification of the user, his or her needs, and the user's reaction to types of technical solutions (Myers and Marquis, 1969). This is accomplished most effectively through close government-industry collaboration. The OBCS R&D program exemplifies this approach to technology transfer.

There are many ways in which close public-private cooperation can occur, and an appropriate partnership arrangement in one instance may not work well in another. No single mold or model fits because of the complexity of the technology transfer process. While useful "rules of thumb" exist, there is a great deal of variety in the ways that successful technology transfer unfolds. Figure 1.1 characterizes some of the reasons for this diversity.

Technologies originate from many sources - universities, company laboratories, independent inventors, government laboratories, and foreign