

# U.S. tech heading for dead end

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The U.S. high-tech industry is headed toward second-rate status in global competition. If such a disaster is to be avoided, we must manage technology better. At the same time, there must be a substantial increase in funding by the federal government for commercial research and development.

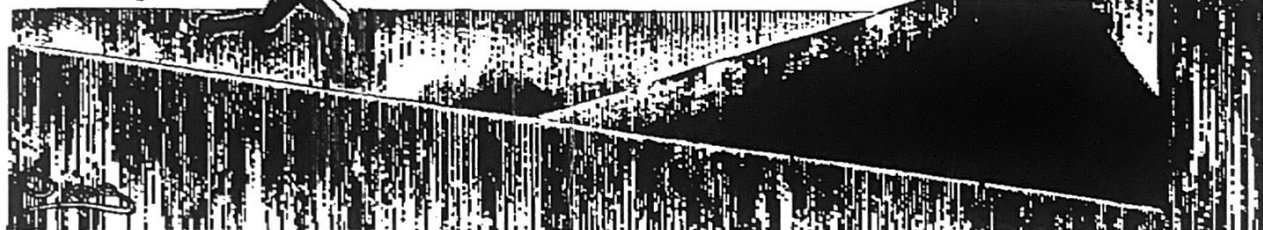
To manage technology better, we must increase technological cooperation at home and abroad. We must utilize available resources more effectively and gain access to foreign technologies. At the same time, more equitable technology flows must be achieved between the U.S. and foreign countries.

Technological cooperation must be expanded in both R&D and manufacturing. In the U.S., we have already seen a considerable increase in cooperation in R&D among larger companies, universities and government agencies (federal and state).

These efforts must be expanded to include more participation by smaller businesses. Small businesses are a major source of innovative products and services. These objectives

can be achieved only if the federal government provides more money for commercial R&D. This would stimulate the expansion of cooperation and share the cost and risk of getting next-generation high-tech products into the marketplace.

Foreign governments, especially in Japan and Germany, have assumed a significant portion of the cost and risk of coop-



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erative programs to develop generic technologies with broad commercial applications. This support has been a major factor in helping those countries establish dominant positions in a number of high-tech markets.

A similar approach is called for in the U.S. The federal government must provide information, encouragement and part of the funding for technology development programs such as uni-

versity and company consortiums, both large and small. Government laboratories should participate when appropriate. The selection of technology to be developed should remain the primary responsibility of the private sector.

Manufacturing should be a critical focus of these efforts. Expanding cooperation in the manufacturing of high-tech products is key because many U.S. high-tech companies are lagging in the use of advanced manufacturing technology. This is especially true for small and medium-size firms that lack affordable access

accomplished through interregional cooperation whereby a state or a group of states in the U.S. establishes cooperative activities with counterparts in other countries.

An international, interregional program should have three major components: formation of small-enterprise joint venture companies; cooperation in establishing advanced manufacturing service centers; and cooperation in applied research.

The underpinning for interregional cooperation in applied research is the large number of research centers in many countries. Though they are creating useful results, most do not have funding commensurate with their capabilities and the need

our university research and leading-edge, small-company technology.

The U.S. is not afforded equivalent opportunities in Japan because most of the research in that country is under the control of private companies, and because Japan does not have the same kind of extensive, innovative small-business sector. However, regional efforts are under way there to foster the start-up of high-tech companies.

Considering the support in Japan and Europe for high-tech small-business development and the emergence of high-tech private companies in the Soviet Bloc — and many research centers — there is an unprecedented opportunity for international,

interregional technological cooperation. At the same time, equitable technology flows can be achieved.

Implementing such an audacious, comprehensive program

on a global scale is not as formidable a task as it might first appear. Every state has organizations and programs for assisting small companies and fostering applied research. Similar activities exist in most other countries. Thus, for the most part, a support infrastructure is in place. With U.S. dedication to the program, the U.S. competitive position can be greatly strengthened in world markets.

to such technology. As a result, they are at a serious competitive disadvantage in global markets.

We should establish advanced electronics manufacturing service centers, where companies pay for the services as they are used, with no investment required in center facilities.

International technological cooperation must be more broadly based, involving many more organizations. This can be

for their output. Through cooperation, existing resources are leveraged and output increased significantly.

In addition to increasing returns on research, interregional cooperation can be an important vehicle for establishing more equitable technology flows between the U.S. and foreign countries. By far, the most serious imbalance is with Japan, which has virtually unlimited access to