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LOTS OF RESEARCH, LITTLE DEVELOPMENT

EUROPE'S TECHNOCRATS ARE REFOCUSING THEIR COSTLY PROJECTS

Only days before President Bill Clinton unveiled a massive new spending plan for U. S. high tech in late February, a European Community official threw in the towel on high-definition TV, the flagship of Europe's own research and development programs. The admission of failure was symbolic of Europe's mounting frustration over the negligible commercial return so far on nearly $20 billion of public R&D spending since the mid-1980s. For non-interventionists on both sides of the Atlantic, it was also proof of the futility of government meddling in industrial affairs.

But don't count out the Old World yet. Europe's big problem with its industrial R&D policy has been lack of coordination across borders. Yet in managing Big Science research, Europe's cooperative record has been a model for the world (page 16). Now, with an eye on Big Science's success, the industrial policy mavens are getting their act together. Clinton's big shift in technology policy is giving them an additional prod. It is furnishing the political ammunition they need to ram through plans to refocus R&D funds on industrial goals. Until now, the EC has funded mainly basic or "precompetitive" research. But many Eurocrats and industrialists are pushing Brussels to take the next step: Back more Tokyo-style developments with clear commercial goals—targeted at winning back strategic markets from the U. S. and Japan. "Either we move R&D close to the market, or forget it," says a German EC research official.

The Clinton agenda, coming at a crucial time for Europe, could tip the balance in the debate. Within the next few months, the EC will set a budget refocusing its extensive R&D programs for the next six years. Some new directons are already becoming clear. Responsibility for Esprit—the EC's largest R&D program, which funds information technologies—will soon be transferred from research to industrial affairs policymakers. "The message," says an executive at a major British technology firm, "is that R&D and industrial policy are now linked."

In industrial R&D, efforts have clearly stumbled. The EC's deficit in the trade of high-tech goods more than tripled since the mid-1980s, to more than $40 billion last year, as Europeans lost ground in everything from semiconductors to soft-

ROBO-COUP: KUKA IS ONE CASE IN WHICH COLLABORATIVE R&D PAID OFF

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ware and biotechnology. "We should have more to show for our money by now," says Jean-Jacques Duby, former science director at IBM Europe and a technology adviser to the French government.

From the beginning, say critics, the EC's decision to fund precompetitive technologies mainly elicited proposals from industry with only marginal value to companies slugging it out in the marketplace. Because there was little motivation to apply results, public funds often merely padded research payrolls. The Eureka program—managed by European governments outside the auspices of the EC—does favor more commercial developments. But it, too, has so far delivered less than promised. The sheer breadth of its hundreds of usually unrelated projects—from developing aluminum composites to stopping microbial decay of frescoes—left it with modest achievements.

Europe's biggest success—Airbus Industrie, the aircraft consortium—was set up in 1969 as an independent commercial venture outside the EC's R&D jurisdiction. But two recent high-profile EC projects with similar strategic commercial intent—in HDTV and semiconductors—have been glaring disappointments. The analog HDTV scheme fell victim to advances in digital technology in the U. S., and Europe was too far behind Japan to catch up in commodity memory chips.

> When the time came for market rivals to share proprietary secrets, progress often stalled

FEELING THE HEAT. Europe also learned that market rivals rarely can lay down their arms and really cooperate as development partners. For instance, one $12 million Esprit consortium of Siemens and four other German and Italian rivals traded reams of research on methods for hooking up temperature sensors and other industrial devices into a common process-control information network. But when it came to sharing information on the proprietary hardware and software needed to develop a working system, progress stalled.

Projects that combined companies with complementary skills worked better. With the help of two German partners providing ultraviolet lenses and specialty glass from the EC's Esprit information technologies program, for example, Dutch semiconductor-equipment maker ASM Lithography has increased its market share outside Japan against leaders Nikon and Canon from 8% to 13% in the past three years. And German robot maker Kuka is winning new orders from European carmakers, thanks to software it got from Paris-based Bertin and controller units from neighbor AEG under the Esprit project.

To be sure, the EC succeeded in goals such as setting Europewide technical standards and getting insular companies that had long been coddled by protective governments to work together for the first time across national borders. Even archrivals Olivetti, Groupe Bull, and Siemens are cooperating to make their computers operate over networks.

Now, as the EC begins transferring more money from research to industrial policymakers, other benefits may arrive. One such benefit may help spur European governments to buy more products developed under its programs. Moreover, instead of scattering money widely, officials now plan to concentrate funds in relatively few hands. That way they can push priority fields such as image processing for multimedia computing. But political roadblocks loom. Less-proficient countries such as Greece and Portugal are sure to balk if they're cut out, while Britain and others will likely fight against any scheme smacking of extensive government intervention.

In the end, Europe still faces a daunting problem. When EC programs made technological gains, European companies often failed to seize the opportunity. Two U. S. companies, Sun Microsystems Inc. and Hewlett-Packard Co., rushed out the first products incorporating software advances developed under Esprit, for example. And Motorola Inc. gained valuable patents on European digital-phone technologies. No strategy or torrent of money will pay off unless European industry moves faster to harness new technology.

By Jonathan B. Levine in Paris, with John Carey in Washington

EUROPE'S LAGGING TECHNOLOGY PROGRAMS

*The European Community and national governments sponsor a wide range of technology projects—which have failed so far to improve competitiveness**

EUREKA

More than 650 projects in 10 fields. Of the biggest: JESSI, a $3.6 billion semiconductor research effort, was scaled back and refocused. A $740 million attempt to develop an HDTV standard failed. Just 17% of corporate participants claim significantly improved competitiveness because of Eureka.

Cost through 1996: $15 billion.

ESPRIT

Includes 915 projects on information technologies. Made technical advances in multiprocessor computers, software engineering, computer-integrated manufacturing, display panels. But fewer than half of all projects have produced much of value in strategic markets.

Cost through 1994: $9.8 billion.

BRITE

Some 1,130 projects in advanced materials and manufacturing technology. Has made progress in some areas such as aluminum recycling, shoe production, plastic engine parts. Only one-third have shown any commercial value.

Cost through 1994: $3.2 billion.

RACE

A two-phase program to develop a high-capacity communications network by 1995. Technical goals largely achieved, but heavy-handed regulation and lagging commercial investment mean a five-year delay.

Cost through 1994: $2.8 billion.

*Costs typically split among governments, industry, and academe

DATA: BUSINESS WEEK, EUREKA, EUROPEAN COMMUNITY