

Linking an optical cable to every house

Brussels

WHO knew that Europe is building the hardware and software for a broad-band communications network that will begin to be a reality six years or less from now? The goal is to develop, by 1995, the technical ingredients required for a digital communications network capable of distributing through optical cables both high-definition video signals and huge quantities of data. Brussels seems confident that the project will succeed.

In many ways, the RACE project is what Pierre Aigrain, the French government's chief adviser on science and technology in the late 1960s, was then pleading for (to the EEC). But the new project's ambitions go far beyond Aigrain's hopes. One of the objectives, for example, is that all European dwellings, not simply business offices, should eventually be connected to the network. Meanwhile, there will be high-definition television for all, and pan-European mobile cellular telephony.

According to Roland Hüber, the director in charge of what is called Directorate F (a branch of DGXIII, the Commission's telecommunications ministry), RACE has now let 85 contracts to groups of companies and other organizations (on the Commission's usual 50:50 basis). More than 230 companies are involved, including all the major manufacturers of telecommunications equipment in Europe (together with AT&T and IBM). There are also 89 universities and other independent research organizations, as well as 11 PTTs. Collaborators from the European Free Trade Area are welcome.

As a means of organizing a major tech-

nical project, RACE is itself an innovation (which has been replicated in many of the Commission's projects). The pattern is determined by the circumstance that the Commission is merely the stimulator of innovation, not its eventual executor. Even so, the first step seems to have been to define objectives and to carry out a critical-path analysis for their attainment. But the objectives are not merely technical — the programme supposes RACE must also demonstrate useful applications of broadband networks, which means stimulating demand, and must then study some of the almost sociological problems that are bound to arise so as to demonstrate to eventual investors in the network that their money will be returned.

A further difficulty is that the Commission's funds cannot possibly be stretched to cover all the developments that will be needed for such a project, whence the decision that the Commission should advertise all the tasks that will have to be carried out, but to let contracts for the critical nodes and for a proportion of the others, leaving it to the competitive instincts of the disappointed applicants to pursue projects with their own resources.

The earlier phases of RACE (which began formally at the beginning of 1988) are largely technical, ranging from software development to the investigation of indium phosphide as an alternative to barium niobate in optical switching. Now, while the first crop of projects is under way, the Commission is looking for demonstrations of applications.

Even these phases of the programme offer everybody something. One of the

pilot application projects approved this year, for example, involves 15 European museums (the majority in West Germany) which have undertaken to develop means of displaying museum objects on workstation screens, together with associated sounds and images, so as to make museum collections generally available. The project requires the development of techniques for managing archives by means of expert systems. RACE is interested because similar techniques could be applicable in business. There are also two publishing projects — one involving the rapid transmission and processing of information that may be provided in different forms, the other more specifically concerned with the transmission and local production of newspapers.

A large part of the explanation for the change of climate is that the Commission can now boast of having won the collaboration of Europe's traditionally quarrelsome PTTs. One theme running through the report of a strategic audit of the project carried out by a team in which PTT managers were prominent is that national governments must quickly make up their minds about the regulatory framework within which the communications network will operate.

RACE is one of the EEC's more obscure acronyms (standing for R&D in Advanced Communications for Europe), but the word epitomizes the sense of urgency in its conception. The project owes its existence to the recognition in 1985 that the development of broad-band communications systems in Japan and the United States was ahead of that in Europe, and to a calculation that European companies and PTTs, left to their own devices, would not be able to bridge the gap.

By 1986, the Commission was asking for 800 million ECU to support its work-plan, but the request was trimmed to 550 million ECU in the framework budget eventually agreed. Now the Commission is asking that some of the funds should be restored, as it has emerged that many of the projects it has backed will need five, not three, years to complete.

The management of the programme sets great store by the biannual meetings at which all the project teams are represented. Otherwise, projects are autonomous and, as with other industrial research supported by the Commission, members of the project teams make their own arrangements for sharing patent rights and, in due course, such profits as may flow from their development. But the Commission has the right to require that patent rights should be licensed on reasonable terms to other European companies. Beginning in 1992, it is intended that there should be demonstrations of the kinds of integrated networks that may be built from the components that will by then have been developed, at

APPLIED BIOLOGY

Travelling a slow road to new technology

Brussels

THE Commission's research strategy gives applied biology a central place, but progress has been slower than people in Brussels were hoping as long ago as 1980, when the Commission began modestly to support biotechnology projects. Not that enthusiasm has dimmed, but regulatory hesitations by some member states are one cause of delay. Another is that the European blend of well-established pharmaceutical and chemical companies and small start-up companies does not easily lend itself to the kind of financing with which the Commission is most familiar.

The Commission nevertheless maintains a kind of cheerleading organization called the Concertation Unit for Biotechnology in Europe (or CUBE) which is a fertile source of ideas and, occasionally, of smallish pro-

grammes backed by Commission funds. One of its tasks is to steer Europe towards applications of biology that will not further increase present embarrassing overproduction of many kinds of foodstuffs, whence the strategy of encouraging the development of new kinds of crops having a greater nutritional value or containing important industrial raw materials. Using biotechnology in pest control is another goal, as is the development of techniques for using the whole of a crop plant — not just, as in the case of cereals, the seeds.

The name for the new programme, launched last year, is ECLAIR. The budget is a comparatively modest 72 million ECU over five years. But the programme side-steps contentious questions about the release into the field of genetically engineered organisms. □