Information technology

Send more bits

The age of electronic mail is about to dawn in Europe, not traditionally the leader in new information and communications technologies. Before the year is out, most European telecommunications administrations are expected to introduce a new international standard that will allow word processors to communicate with each other through existing telephone and data transmission networks.

With its penchant for confusing names, the information technology community is calling the new service "teletex". It is, however, a far cry from teletext, the broadcast information service. Teletex is either a sophisticated form of telex or a standard that allows computer terminals to communicate with each other.

The teletex standard was adopted by CCITT, the international telecommunications standards agency, at the end of last year. Europe's enthusiasm for it stems from the present difficulty of linking incompatible word processors over telecommunications links. The United States, which might be expected to be the largest market, is reluctant to adopt the standard, chiefly because the already-large word processor market makes it worthwhile for manufacturers to adopt their own communications standards.

Theoretically, it should be possible to write teletex-compatible communications software for any type of word processor. The practical difficulties, however, have persuaded manufacturers to design specific teletex machines. Among the leaders are Siemens of West Germany, which already produces teletex equipment compatible with the German data network. Other companies, either selling teletex machines in some countries or promising them soon, include Philips, ITT Creed and IBM.

Teletex's chief attraction is that, in many instances, it can deliver documents much faster and more cheaply than the ordinary telex or the post. As it is basically a word processor, it can also relay information in different formats, unlike telex. Most telecommunications administrations will be introducing services with transmission rates of 1.2 kbits per second, doubling this later on. Using the lower data rate, a typical A4 page of text (*Nature*'s page size) will take roughly 30 seconds to transmit.

The cost of using the service will depend on the charging policy of the different telecommunications administrations. British Telecom, for example, will be making a "small" service charge but will thereafter charge for time at the ordinary tariff. At current rates, one A4 page would cost 12.9 pence to send a distance of more than 56 kilometres between 8 a.m. and 1 p.m. over the public telephone network. Forty-three A4 pages, however, could be sent within the same city after 6 p.m. for only 4.3 pence. These charges should be compared with the cost of a first class stamp, now 15.5 pence.

The capital cost of equipment is still uncertain, but manufacturers expect teletex machines to cost no more than sophisticated word processors.

The service to be launched throughout Europe this year will be relatively simple, but a facsimile standard is expected later. British Telecom's service will initially be suitable only for communicating between teletex machines through either the public telephone or packet-switched data networks. However, the service is expected to expand in 1983 to allow communications from teletex to telex machines.

West Germany, which introduced its own teletex standard in part compatible with the international standard, has already launched a service. Manufacturers that have supplied to the West German market, however, may not be able to sell their equipment in other countries without first modifying it for other networks.

US companies showing an interest in teletex seem to be those with a strong interest in Europe. IBM is planning a teletex version of its display writer word processor and Western Union is also apparently developing teletex. Canada, however, is not showing its neighbour's reluctance. It also plans to introduce a service this year.

Judy Redfearn

French electronics

Rushing ahead

Has the French electronics plan come too late? M. Abel Farnoux and his team at the Ministry of Research and Technology in Paris have laboured for eight months to produce a grand plan for the whole French electronics industry, from primary materials right through to consumer products and computer components. Its coherence and grandeur are marvellous to behold, but news is still awaited from the Council of Ministers about the scale on which it will be financed. Twelve months ago the new government was full of expensive plans; more recently, the finance minister reckoned up the bill.

Nevertheless, Farnoux and his chief — science minister Jean-Pierre Chevènement — are pushing the plan strongly. The plan must be implemented "within a year" to be effective, they say.

Alongside industrial expansion, it would increase research and development in electronics and related fields by two-thirds, relative to the 1980 figure of FF 12,000 million, to FF 20,000 million in 1986. The strategy would cover the whole industry and not just the present strong points of telecommunications and telematics, and it would be aimed at bringing France closer to the levels of the United States and Japan. (Electronics for the French defence industry, third in the world's armaments league after the United States and Soviet Union, is also included in the strategy but has been omitted from published versions for security reasons.)

Nevertheless the published report says that electronics is a "basic technology at the heart of our defence and communications systems". Strength in electronics would also permit "indispensable gains in productivity" in other industries; open up vast consumer markets; contribute to energy conservation in new energy technologies; directly and indirectly reduce the French trade deficit; and (a point added for Mitterrand?) play a major role in "cultural" affairs.

The industry (or *filière*, as the French call a collection of industries taking a raw material to a product) must be treated as a whole, says Farnoux; for him it is all or nothing. Japan and the United States must be met head-on: it is no answer to manufacture American and Japanese products under licence, says the report. European cooperation should be sought, particularly in the development of new micro-electronic consumer products.

Division of the world electronics market, according to the recent French report

Country	Production ($10^9)	% Of world production	Trade balance ($10^9)
USA	134	46	+4
Japan	46	16	+13
West Europe	76	26	−6
(Germany	23	8	0)
(France	17	6	−0.2)
(UK	15	5	−0.2)
Others	35	12	−11

In France at least, a big training programme will be necessary: up to 1990 the report envisages the creation of 75,000 "engineer-researchers", 25,000 senior technicians and 400,000 skilled workers.

If the report were adopted in full, there would be 14 national projects, including a large French scientific and industrial computer, chip manufacture, electronic publishing, computer translation and others. M. Chevènement has announced the setting up of working parties on each project, independently of the report's adoption by the Council of Ministers.

On research, new units would be set up combining both academic and industrial interests. Government investment in research would rise (50 per cent of the French electronics industry is now nationalized, with 30 per cent in American hands and the rest in private French ownership) but mechanisms would have to be found to give a better return on each franc. The weak areas in current research are seen to be information and communication science, solid-state physics and chemistry. Mathematics and robotics are considered well advanced.

One final recommendation may not be well received by M. Chevènement, however. After a long exercise in gathering the instruments of technology politics under one roof, the minister is now faced by a proposal to create a secretary of state for electronics.

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