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SOUTH AFRICA

SABC Seeks To Introduce Satellite TV

55000060 Johannesburg *FINANCIAL MAIL* in English
20 Oct 89 pp 32, 34

[Text] What sparked the information revolution? The microcomputer is generally regarded as the catalyst—and so it is, for business. For most the distinction belongs, surely, with TV. That's why—equally surely—it is a medium governments seek to control.

Control is two-edged—it applies most obviously to content but also to distribution. The information people receive through TV is likely to comply with the same laws governing content and presentation as other local sources of information. So South Africans, for the most part, watch the TV government wants them to watch.

It's far more difficult to control distribution; and this is precisely where satellite TV is set to change many of the ground rules that have governed broadcasting. Europe is at the forefront of this technological revolution but the changes it triggers will influence TV throughout the world.

By the early Nineties South Africans could have access to satellite TV, says SABC [South African Broadcasting Corp.] chairman Christo Viljoen. Indeed, the SABC should conclude an investigation into its possible introduction by year-end.

It sounds quick and impressive—though there is actually nothing new in the use of satellites to relay TV transmissions. The SABC and M-Net use international services such as Intelsat to receive coverage of news and sporting events from abroad. The SABC uses the satellite service to relay TV1 from Johannesburg to outlying areas, such as Walvis Bay, Queenstown and Matjiesfontein, and stereo Radio 5 signals to Cape Town. Intelsat is also used by SA Posts & Telecommunications (SAPT) to facilitate voice and data transmissions to overseas telephone and datacommunications networks.

The technology that is turning the European broadcasting industry upside-down enables TV signals to be beamed by satellite directly to the homes of viewers. It is no longer necessary for broadcasters to have a large network of relay stations on the ground to carry transmissions. The VHF and UHF transmission bandwidths used by terrestrial networks in Europe are highly congested. By using satellites to transmit signals from space, broadcasters are no longer confined to VHF and UHF and can use an almost endless range of transmission frequencies.

The first commercial TV satellites were launched last year. By the end of 1990 more than a dozen are expected to provide European viewers—who've fitted special antennae—with more than 100 channels.

The emergence of satellite TV has coincided with a considerable push towards deregulation in Europe.

Public and private broadcasting authorities are facing increasing competition from companies using satellite TV to gain a stake in lucrative electronic media. Lowering trade barriers in Europe has opened the way for pan-European rather than just national TV services.

The cost of setting up a satellite service is immense. Most players in Europe are consortia formed by media moguls such as Time-Warner, Gulf & Western, Rupert Murdoch, Robert Maxwell and Alan Bond. The British Satellite Broadcasting consortium will have invested £1bn to get its service going.

Services offered by these groups fall into three categories: pan-European channels targeting multinational audiences; regional services aimed at speakers of a common language (such as German-speakers in Germany, Austria and Switzerland); and purely national services.

Introducing satellite TV has not been easy. Some satellite launches were delayed, reception provided by the antenna—or dish—has not always been good, and there have been doubts about the effectiveness and accuracy of beaming and scrambling satellite signals. The UK tabloid press had a field day with stories about Sky TV being received by people using anything from dustbin lids to tin cans and coathangers instead of a dish. Sky TV's forecast of 2.5m UK subscribers by year-end has proved woefully short, with so far only 125,000 households signed up.

Companies providing satellite TV services are faced with many problems, not all of them technical. Introduction of multinational TV raises many economic and legal issues concerning copyright, collection of revenues and freedom of information. Sovereign states will no longer be able to control the information provided to their citizens. Programmes and even advertisements acceptable in, say, Holland and West Germany may be offensive to people in Italy or Spain.

Many of these problems have yet to be resolved. However, new transmission technology such as the Multiplexed Analogue Components standard—better known as MAC—could provide solutions to many of the technical, economic and legal problems. Promoted by a consortium of European electronics companies, including Philips, Bosch and Nokia, MAC is already finding favour with many satellite TV consortia. Designed as a successor to the PAL, Secam and NTSC technology standards, on which TV has been based for the last 40 years, MAC is well suited to satellite services.

MAC signals use digital data to provide up to eight high quality sound channels—which can be used for multi-language as well as quadraphonic music transmission—vastly improved resolution and colour and high levels of encryption or scrambling. Broadcasters hope to use MAC technology to target transmissions to specific countries or regions and even bar individual subscribers

if, for example, payments are overdue. Most broadcasters in Europe have shown interest in MAC. Broadcasters in the US and the Far East have yet to commit to the system and this may retard its growth.

The latest version of MAC, D2-MAC, is touted as the basis for High Definition TV (HDTV) which will provide viewers with large cinematic pictures of near photographic resolution and hi-fi multi-track sound. Proponents of D2-MAC are confident of introducing HDTV in Europe by 1992, though this may prove optimistic.

The SABC, which like most of its European counterparts uses PAL transmission, already employs an early version of MAC, B-MAC, to relay TV1 programmes via the Intelsat satellite. If it opts for satellite TV it will almost certainly use MAC.

The chances of SA launching its own satellite are remote—SAPT has long argued against such moves—but the SABC could lease a satellite already in orbit. It has subscribed to the Intelsat communications satellite since 1986. Deputy Director-General for Technology Neel Smuts believes the use of a satellite to transmit programmes direct to the public could be feasible as early as 1992.

Though it would require substantial investment—"we're doing some sums," says Smuts—satellite TV offers considerable benefits to both the SABC and viewers. The SABC has 144 transmitting stations which bring TV1 to about 88 percent of the population. Seventy-nine also provide TV2, TV3 and TV4 to about 80 percent of the population. The cost of building further transmitting stations is high, says Smuts, and the increase in coverage marginal. Satellite TV would enable all areas to receive TV.

By using encrypted MAC signals the SABC could emulate M-Net and ensure that transmissions are received only by people with decoders paying regular subscriptions. Collection of licence revenues is a growing headache for the SABC. About 50 percent of the 4m TV sets estimated to be in operation last year did not have licences—an estimated revenue loss to the SABC of R50m.

The use of MAC-based satellite transmissions would ensure that viewers pay up front before being granted access to the service. Viljoen last month forecast the demise of the TV licence by the end of the Nineties. A

satellite TV service would enable the SABC to offer theme channels—films, sport, current affairs or leisure—each of which would have a separate charge.

Smuts admits that it will be many years before satellite TV could replace terrestrial transmission in SA. The two services would have to run parallel. He says the SABC could launch a satellite service as an additional channel that would require viewers to pay an extra charge as well as install decoders and receiving dishes.

This would provide the SABC with an encrypted service that could compete directly with M-Net. With nearly 400,000 subscribers signed up since the service was launched in October 1986, M-Net has shown that many South Africans are willing to pay for an enhanced or specialist TV service. Whether they are keen to fork out for additional services is open to question.

M-Net now leases SABC transmission towers to send encrypted signals to subscribers. M-Net head of programming Tim Ellis doubts satellite TV will pay in SA. "The costs would be exorbitant," he says. M-Net believes antennae that could receive satellite TV would cost up to R4,000 and a suitable decoder a further R1,000.

A couple of hundred South Africans, however, have spent upwards of R5,000 each on dishes that allow them to pick up international TV transmissions relayed by satellite for viewers in Europe, the US and some parts of Africa. The legality of such devices is still in doubt. SAPT is appealing against a ruling in the Supreme Court last year that it is not empowered by the Radio Act to seize private satellite receiving equipment.

The use of private satellite dishes to pick up international TV broadcasts is increasing throughout the world, particularly in India, the Middle East and South America, despite concerns from broadcasters that it is a serious threat to international copyright.

In SA owners of private satellite dishes will not be able to gain access to services that use the new MAC or equivalent encrypted signals. Our political status and relatively small economy make it unlikely commercial satellite TV stations from abroad will find it worthwhile to broadcast to SA, at least in the short term. But viewers willing to pay for satellite dishes will continue to be able to tap into other countries' broadcasts.

LAOS

Ham Radio Equipment Installed for 'First Time'

*BK1711022089 Vientiane Domestic Service in Lao
0000 GMT 17 Nov 89*

[Text] Recently, a group of Japanese ham radio operators gave and installed some ham radio equipment to the LAO NEWS AGENCY worth 824,000 yen, or about US\$5,000. The equipment included a 100-watt high frequency radio transceiver, many antennae, and other accessories for radio installation.

The installation of the equipment has been completed. The equipment can now be used for specialized radio communications with both inside and outside sources.

This is the first time this kind of radio transceiver has been installed in our country. It is anticipated that installation of similar equipment will be encouraged in many localities in our country to facilitate local radio communication links.

THAILAND

Government To Get Share in Satellite Venture

*90WT0012b Bangkok SIAM RAT in Thai
26 Sep 89 p 6*

[Excerpt] [Passage omitted] After traveling to Hong Kong to see a satellite on 21 and 22 September at the invitation of the Thai Saet Company, Mr Montri Phongphanit, the Minister of Communications, said that he had spoken with the Thai Saet Company and requested that the government be allowed to have a share in the company after the Thai satellite is launched. It appears that the company would be willing for the government to have a share. The company will make a proposal regarding the amount of the share to the Ministry of Communications in about 10 days.

Mr Montri said that he accepted the other details of the project in principle. The committee has considered the project and recommended that a concession be granted for the satellite. After the proposal is made concerning the number of shares the government is to receive, then the proposal will be submitted to the minister for consideration immediately as it was already discussed many months ago.

"The satellite of the Thai Saet Company will be in great demand in Thailand as it will be more effective in transmitting clear signals because of its proximity to Thailand. It will be 30,000 km over the earth. The Palapa satellite on which Thailand now rents a transmission channel is over Indonesia. It has been stipulated that the rental rates must be lower than the rents charged Thailand for other satellites," Mr Montri said. He also said that Thailand presently rented a transmission channel on the Indonesian satellite which was far away and so less effective.

The satellite project and concession was valued at about 3 billion baht in the second proposal of the Thai Saet Company which passed an initial review. The company paid a 20 million baht guarantee for the negotiations. The concession was for 30 years.

The Thai Saet Company was a joint venture of the Locksley (Bangkok) Company Ltd. and the Piyanan Company Ltd. Asia Saet was a joint venture of three large companies in Asia: the Cable and Wireless Company, China International Trust and Investment Corporation and the Hatchisan Waempao Company Ltd. The satellite of Asia Saet will be launched from China in 1990.

Stock Exchange Plans Satellite Communications Links

*90WT0012a Bangkok NAEO NA in Thai
9 Oct 89 pp 7,8*

[Excerpt] [Passage omitted] Mr Sansoem Wisuwan, the director for computerization of Thailand's Securities Exchange, told LOK THURAKIT NAEO NA that the Samat Thelkhom Company, which was one of two parties to be granted a concession by the Ministry of Communications to invest in satellite communications, had encouraged the Securities Exchange to use a satellite system to send information.

The Securities Exchange had made an initial study and had discovered that satellite communications was a more efficient data transmission system than telephone lines and the rates were lower.

For this reason talks had begun, and the Securities Exchange had requested the Samat Thelkhom Company to perform a technical trial. The company set up a satellite communications dish on the Sinthon Building free and experimented with transmitting data by satellite from the Securities Exchange to Rangsit, the location of the company's central office. There were no technical problems.

There will be additional trials involving satellite data transmission from the Securities Exchange to Hat Yai soon to check for technical problems a final time.

The reason that Hat Yai was chosen for the signal transmission experiment was that the Samat Thelkhom Company had brought in the Sahawiriya Company, a computer sales company, to cooperate in the project. The Sahawiriya Company had its central office in Hat Yai.

We understand that there is a plan to join the satellite system with a computer system. The data transmitted by satellite would go directly to a computer at the receiving end. At the transmission end data from a computer would be transmitted by satellite. This would be like an on-line system in which computers used a satellite link to be on-line instead of telephone lines or microwaves as is now the case.

If the experiment to send data from the Securities Exchange to Hat Yai proceeds without technical difficulty, the Securities Exchange will consider using the satellite system for transmitting all types of information in the future and especially for transmitting to the countryside so that the countryside will be able to receive information about stocks at the same time as people in Bangkok.

The Securities Exchange will not run this system itself. It may grant a license or concession to private parties and allow them to invest in it just as Channel 7 did for transmitting the stock report each day. Those parties would have to discuss renting the use of the satellite system of the Samat Thelkhom Company. It may be that the Samat Thelkhom Company itself will request that it provide the data transmission service.

Mr Wirasak Sukanarak, the Deputy Director of the Securities Exchange, said that adopting the satellite transmission system would not only advance their information system but would also provide the opportunity for offices representing brokers to be set up in the countryside and for stocks to be bought and sold by computer. In the future the countryside might be able to order purchases and sales of stock by computers linked to a satellite.

He felt that if there were investment to bring the satellite system into use then brokers would use the system a great deal.

Sources in the Samat Thelkhom Company revealed that the project of the Sin Asia Securities Company and the Sahawiriya Company to use a satellite transmission system for sending information on stocks between Bangkok and the countryside was not related to the project of the Samat Thelkhom Company with the Securities Exchange.

If Sin Asia and Sahawiriya actually carry out their project, they will have to rent the satellite transmission system of the Samat Thelkhom Company. They do not have the right to proceed on their own because they have not been granted a concession by the Ministry of Communications and do not have a satellite channel.

VIETNAM

BTI To Install Fiber-Optic Link in Vietnam

*90AN0006 Chichester INTERNATIONAL
TELECOMMUNICATIONS INTELLIGENCE in
English 22 Sep 89 p 12*

[Excerpt] British Telecom Overseas Division has now confirmed British newspaper reports that British Telecom has been awarded a \$6.4 million contract to install a 285-mile fibre-optic telephone link from Ho Chi Minh City to Nha Trang in Vietnam by the Directorate General of Posts and Telecommunications based in Hanoi. The digital, fibre-optic cable will have a capacity of 480 simultaneous telephone calls and will also be able to carry TV and radio signals.

This contract is the first phase of a proposed new 1,200-mile communications link stretching between Ho Chi Minh City and Hanoi. Hardware for the first stage will be provided by STC Cable Products Division, GPT and Philips Communications Industry of West Germany.

BTI said it expects also to win the second phase, from Nha Trang to Hanoi, for which Vietnam hopes to obtain Western financial aid. The first phase is being financed by Vietnam.

This is BT's second recent success in Vietnam, having already provided a 10,000-line crossbar telephone exchange, "recovered" from BT's UK network. The company is currently working with DGPT on upgrading telecommunications services in Ho Chi Minh City, formerly Saigon.

The announcement is a further example of heightened telecommunications activity in Vietnam. During the past year telecommunications development contracts have been placed with companies from Australia, Cuba and France.

Australia's OTC International recently opened an A\$7 million, 500-channel capacity Intelsat standard "A" satellite earth station in Ho Chi Minh City following the signing of a six-year contract last October. The earth station links Vietnam and the outside world by telephone, providing initial direct links to Thailand, Japan, Singapore, Hong Kong, Canada, France and the UK. OTCI plans to bring a fourth earth station into operation in Hanoi later this year.

The OTC and France's Alcatel CIT signed an agreement with the Directorate General of Posts and Telecommunications in Vietnam at the beginning of this year to develop and manage the country's telecommunications network. Through this agreement, Alcatel Telspace in France and Alcatel's Australian subsidiary, Alcatel-STC, were awarded a contract to install a Vista station in Hanoi to provide direct links between Hanoi and Sydney via an Intelsat Pacific satellite. Alcatel Telspace also received an order to install a standard "B" earth station at Da Nang to provide international connections between Hanoi and France via an Intelsat Indian Ocean satellite. This station, to be operational by the end of this year, will use IDR (Intermediate Data Rate) digital transmission technology to complement Vietnam's digitalised network which is being installed by Alcatel CIT.

Australia's AWA Communications is supplying digital microwave and associated equipment to help establish modern public telecommunications facilities in the country.

In March, Alcatel CIT signed a contract to supply E10 digital switching equipment, with a 12,000-line capacity, in Hanoi. Alcatel CIT has an agreement to supply 53,000 digital telephone lines and associated transmission equipment for Hanoi and Ho Chi Minh City.

Cuba has assisted in the basic installation of a microwave link between Da Nang and Hanoi. The microwave link supports 266 telephone channels, 206 two-way telegraph channels, one black/white TV channel, and a radio channel.

BT said that telephone density in Vietnam (population 65 million) is currently 2 per 1,000 head of population and that the communist republic "is planning to upgrade its analogue network and significantly increase services by the end of the century." BT had previously indicated to ITI that it had made no announcement concerning the award of the contract, which, it said, was made public by "leaks from Vietnam." [passage omitted]

**Tien Giang Radio Station Commissions
Transmitter**

*BK0911152189 Hanoi Domestic Service in Vietnamese
1100 GMT 9 Nov 89*

[Text] On 8 November 1989, the radio and television station of Tien Giang and the radio and television technology corporation of Ho Chi Minh City's postal service

organized a ceremony to inaugurate the Tien Giang Transmission Station. The 10-KW medium-wave transmitter manufactured and installed by the Radio and Television Technology Corporation of Ho Chi Minh City's postal service has been working very well. With a radius of 200 Km, the transmitter's waves cover the provinces of Tay Ninh, Dong Nai, Hau Giang, Minh Hai, and Song Be, the Vung Tau and Con Dao Special Zone, and other localities, thus satisfactorily meeting local needs for economic, political, and national defense information.

This is the first joint project completed by the Radio and Television Technology Corporation of Ho Chi Minh City's postal service and the radio and television station of Tien Giang with financial aid from the provincial party and people's committees and various sectors, such as the financial and planning sectors, in the province.

BRAZIL**Reportage on Supercomputer Acquisition****INPE To Be First**

90ET0015I Sao Paulo O ESTADO DE SAO PAULO in Portuguese 19 Oct 89 p 9

[Article by Jose Paulo Kupfer and Leda Beck]

[Text] The National Institute of Space Research (INPE), linked to the Ministry of Science and Technology, will be the first Brazilian entity to operate a large-scale scientific supercomputer. The INPE scientists have been working on the project for more than 2 years and the bidding for the purchase of equipment was finally opened on 9 August. "Internationally, there are no restrictions of any kind on imports," explained Pedro Dias, the Institute's director of meteorology, "nor do we see the possibility of any restriction by the U.S. Government, since the equipment will be used for a specific purpose, with all the safeguards."

To date, the INPE has already been approached by seven groups in response to the announcement soliciting bids and the deadline for tender proposals is 30 October. The director of the INPE believes that 30 to 45 days after that date the winner will be named. The timetable calls for the installation of the equipment in the beginning of 1991, in the INPE Center for Weather Prediction and Climate Studies, in Cachoeira Paulista (Sao Paulo) and the predicted investment is about \$30 million. The groups include Clay Research, the world's largest manufacturer of supercomputers; at least two Japanese companies (NEC and Fujitsu); the North American firm, Unisys; IBM; and two smaller groups who want to supply parts of the system.

"The project does not call for just a supercomputer," confirmed INPE's director of meteorology. "We also want a storage system for meteorological data, a telecommunications system, and training and maintenance programs. The winning bidder should supply and integrate all this, in addition to arranging for \$22 million in foreign financing." The minimum performance of the machine is 235 megaflops—or roughly 235 million calculations per second. The solicitation also calls for applied software packages for mathematical statistics and graphics.

Specific Task

The U.S. Government has a policy of impeding the export of very powerful machines with possible military applications, supercomputers being a typical example. "But our machine will be dedicated to weather prediction and climatic simulations," explained Dias, who also heads the INPE Center for Weather Prediction and Climate Studies. Although the INPE functions in Sao Jose dos Campos, its Center for Climate Studies is in Cachoeira Paulista, also in Sao Paulo State. There the institution will begin construction next month on a

special building to house the supercomputer. "It will not have terminals and it will not be possible to access it through the telecommunications system," assured the INPE director. That telecommunications system will be used by the INPE center in Brasilia and will access the system for the storage of weather data—and not the supercomputer itself. Just the construction of the building, which will provide space to house two supercomputers operating simultaneously, should cost \$6 million.

Japanese Participation

90ET0015J Sao Paulo O ESTADO DE SAO PAULO in Portuguese 19 Oct 89 p 9

[Text] Tokyo—Installed in Brazil more than 20 years ago, the NEC Corporation has been limited up to now to the telecommunications sector. This appears to have more to do with the market reserve adopted by this country and with conflicts with local associates than with any kind of strategic decision by the company. The aggressive way in which the company set forth its tender proposal for the INPE supercomputer is certainly an indication that the Japanese NEC could have more ambitious plans for the Brazilian market.

The NEC's participation in the bidding for the installation of the first supercomputer in Brazil is not in itself indicative of such intentions. After all, the product is to be imported in its entirety and, moreover, it will operate in an area far outside the boundaries of the reserve market for computers. Not even the potential demand for these powerful machines in this country, at least in the coming years, could inspire plans for local production. Even so, no one among the executives of Japan's NEC denies that winning the INPE competition would serve as an important spearhead for future market penetration by the company in sectors of advanced technology, such as communications satellites.

"If we could, we would like to operate in the area of computers and, to this end, we have considered the possibility of transferring technology to a Brazilian company," revealed Tadashi Suzuki, executive vice president of the NEC Corporation, between sips of tea, in one of the meeting rooms of the company headquarters in Mita District, in Tokyo. Suzuki, whose highly successful career includes a 7-year stay in Brazil in the 1970's and, more recently, the presidency of the strategic NEC corporation in America, guarded further information regarding this matter behind a polite smile, but he added that there had already been conversations with a Brazilian partner—businessman Roberto Marinho, president of the Organizacoes Globo and an associate of MEC in Brazil—regarding the formation of a company legally equipped to operate in the computer sector.

With more than 70 factory units installed in about 30 countries, producing more than 15 million items, from supercomputers and satellites to video cassettes and video games, the NEC is looking to the future, convinced that the communications sector will not survive unless it

is integrated with the computer sector and certain of the increasing inevitability that production will be transferred to centers where the markets are seen to be attractive. "The NEC is prepared to bring in the technology and capital to bring about this local production, including in Brazil, which is an important market for us," Suzuki anticipated.

International Alliance

90ET0015K Sao Paulo O ESTADO DE SAO PAULO in Portuguese 19 Oct 89 p 9

[Article by Silvana Quaglio]

[Text] Brasilia—An international alliance in the area of computers, involving developing countries with similar industrial characteristics, could be created to confront the union among the advanced nations which, by means of agreements and alliances, seek to protect their technology and their position in the world market in the sector. This was the theory set forth yesterday by Ambassador Sebastiao Rego Barros in a lecture delivered to the Conference on National Computer Policy, organized by Senator Severo Gomes, (PMDB [Brazilian Democratic Movement Party]-Sao Paulo), in the Federal Senate.

"We have strategic and practical reasons to look in this direction," declared the ambassador, who has been following the development of the national computer industry. The alliance should bring together Brazil, Argentina, China, India, and probably the Eastern European countries. According to Rego Barros, it would be a difficult task, but politically possible, to bring about the union.

Based on the example of the developed countries, the ambassador also argued for government participation in the development and consolidation of the computer industry. In his view, the important thing is to assess the available instruments that could be used to ensure the strengthening of the computer industries, in developed countries and otherwise.

In the ambassador's assessment, Brazil's Computer Law is not xenophobic or overprotective; on the contrary, the National Computer Policy, Barros said, has few instruments for providing incentives to the industry. He noted, for example, that in the United States the Reagan administration invested \$26 billion in 5 years in the development of the state-of-the-art technology called for in the Strategic Defense Initiative. Barros also cited the case of Korea, whose government ordered 5,000 microcomputers from the country's computer industry, even before it was established. In this way, the Korean Government managed to outfit its schools and, at the same time, to bring about the growth of the industry.

The United States is working within the GATT (the UN organ that regulates international trade) with the intent to establish standards for services, too, and not just for consumer products and capital goods, standards which could result in a new code of ethics for international trade. According to Rego Barros, the tendency is to establish stricter rules for exportation, and this could bring into question the legality of the Befiex plan, which calls for the concession of incentives for production destined for the foreign market.

Definition of Supercomputer

90ET0015L Sao Paulo O ESTADO DE SAO PAULO in Portuguese 19 Oct 89 p 9

[Text] They made it possible to design the NASA [National Aeronautics and Space Administration] space bus, the computerized topography equipment, and the MX missile, which saved the U.S. Navy \$25 million because it could test the missiles with computerized simulation. Supercomputers, which a little more than a decade ago moved out of science fiction into governmental or university research institutions of the great powers, have now penetrated the giant companies of the developed countries and are becoming part of the daily life of the citizens.

What particularly defines them is the extraordinary speed with which they process data and a fabulous memory capacity, all based on the technology of parallel processing; that is, instead of a single central processor, as in the case of microcomputers, the supercomputer has a set of processors. Developing commercial software for this technology is an extremely complex matter, but there is increasing interest in this equipment, at least in the North American market. Hence the emergence of the vector processors, for example, for IBM's top-of-the-line model. This is the 3090, which is speeded up by the vector processor. According to the experts, this does not make it a supercomputer.

Like IBM, many other North American manufacturers are proposing to put "minisupers" on the market, based on parallel processing, but with substantially less speed and memory capacity and at a much lower price, which would put them within reach of smaller users. The minisuper, then, is smaller than the supercomputer but larger than the traditional mainframes (the 3090, for example, is a mainframe when it is not equipped with the vector processor).

Recent studies indicate that the world market for supercomputers will jump from under \$1 billion per year, where it stands today, to about \$6 billion in 1993. Two important changes have occurred in this market in the last 18 months: the entry of the Japanese in the business and the increased processing power of the minisupers. After Cray, the second and third largest manufacturers are, in order, Fujitsu and Hitachi.

IRAN

PTT Minister on Expansion of Telephone Networks

*NC1711182689 Tehran ETTELA'AT in Persian
8 Nov 89 p 2*

[Excerpts] [Passage omitted] Post, Telegraph, and Telephone [PTT] Minister Engineer Gharazi reviewed his ministry's past performance and future plans in an exclusive interview with our correspondent. He said: In the first 5-year plan, the government will provide more than 1.5 million telephone connections to subscribers all over the country. One million of these will be of the progressive digital type, of which we hope to have 4.5 million by the end of the plan period.

The PTT minister added: More than 10,000 rural telecommunications offices will be set up in villages, and 82,500 channels will be added to the national and international telecommunications network.

Engineer Gharazi continued: We will intensify our application of the latest technology in the next 5-year plan and we hope to set up a factory to manufacture digital switches. The production of fiber optics and the use of satellites has also been envisioned in the ministry's program under the 5-year plan. The PTT minister added: New services, such as paging and facsimile systems, will also be expanded under the 5-year plan. He added: The network of computerized telephone exchanges will be equipped with tele-telex facilities, computerized city terminals, and the replacement of multi-telex telegraph systems by equipping the telegraph networks with the latest teletype facilities such as tele-conference and video-telex which are envisaged in the ministry's program under the 5-year plan. [passage omitted]

Expansion of Fiber Optics Network in the Country:

Regarding the use of fiber optics, Engineer Gharazi said: The fiber optics project has been envisaged in two separate stages for urban and remote areas under the long-term program of the Iranian telecommunications company as follows:

The use of fiber optics has been envisaged for use between city trunk centers after 1989 and the first phase is being implemented. In future years all trunk centers will utilize the fiber optics system. The distance between Tehran and Karaj is 50 km and this system will serve 12,000 channels. In the next phase this will be expanded to Qazvin. [passage omitted]

Allotment of Telephone Connections in Tehran and Bigger Cities:

Regarding the allotment of telephone connections to applicants in Tehran and the other big cities, the PTT minister said: Of 700,000 applications dating back to the pre-revolution era, 650,000 have been granted. [passage omitted]

Expansion of Intercity and International Telecommunications Channels:

On the subject of the expansion of intercity and international telecommunications channels, Engineer Gharazi said: A total of 24,980 long-distance channels were linked in 1988. The ultimate capacity of the coaxial cables for Tehran-Esfahan is 7,200 telephone channels and a system of 140 megabytes per second will be added to the Tehran-Karaj fiber optic cables which will increase the number of channels to 27,590 by March 1990. In this way a six-stage project which had been suspended due to delay in setting up the pylons will be completed.

He added: In the past few days large intercity exchanges in the provinces of Gilan and Kohkiluyeh va Boyer Ahmad became operational. This has opened up immense possibilities for intercity communications. Engineer Gharazi said: The expansion of the intercity network in Tehran, which is under way, will we hope become operational during the 10 Days of Dawn celebrations [1-11 February] and satisfy the demands of the people to a great extent.

ISRAEL

Cable Communications for 1990 Described

*90WT0007A Tel Aviv MA'ARIV in Hebrew
29 Sep 89 p 2b*

[Article by Ytizhaq ben Horin: "This Will Be the Year of Cable"]

[Text] This will be the year of cable. In [the Jewish year] 5950 they will try to make our heads swim with an endless number of cable channels and wrap the cable around our necks. Licensed robbers will replace the pirates. They will rob us of our time. High finance entrepreneurs are preparing a real revolution for us, a change in our life styles, exploiting our hours of free time and creating new consumption habits.

Whoosh, you press the channel selector and a wave of programs floods the screen. Satellite broadcasts from the United States, the USSR, West Europe, and Africa. The entire world is in your home. English, French, Turkish, Russian, German, Arabic, and Swahili can all be heard in your living room. Local programs, special channels for sports, children, pop. Too many to watch them all. What should you give up? We are not talking about dreams here. It really is right around the corner.

The CNN Network. It will broadcast from the United States 24 hours a day with live newscasts from all over the world. Live NBA games with Michael Jordan and Magic Johnson; the whole world will be like one big village.

Your local neighborhood council chairman will also have a part in this celebration. He will get broadcast time just like the President of the United States. Even the

birthday party in the garden next door will be shot. Local politicians will get extensive television exposure through the broadcast studio. Department heads at City Hall will have to explain their successes and failures to the citizenry.

Three companies are already at advanced stages of the installation process for the expensive reception equipment composed of antennas and giant dishes. In November 1989 they will begin test broadcasts in three cities: Petah Tiqwa, Bat Yam and Beersheba. Cables are already being run to residents' homes. After a few weeks they will begin regular broadcasting. Tel Aviv is next in line, and rights have also been granted to Jerusalem and Haifa.

Everyone has been talking and arguing about the commercial channel. With the public hardly aware of it, cable TV is coming on line. Within a short time, marketing representatives of the cable companies that won the bid in your area will be knocking on your door to offer you a subscription that will enable you to hook up right then and there to 24 broadcast channels.

The cable companies are investing half a billion dollars (about one-third of it foreign capital), in setting up the infrastructure, establishing reception and broadcast centers and laying the cable network—like the telephone network—for every house in Israel. Most of their profit will come from subscription fees and, beginning in 1991, from advertising (if they have government approval by then).

An optimistic estimate forecasts the connection of 70 to 80 percent of the 1.1 million households in the country. In Holland and Belgium 80 to 90 percent are connected. America is also going wild over cable, despite the large supply of broadcasts. In England it has been a failure. What would constitute a failure here? If only 40 percent of the households subscribe, that would be the break-even point.

"There is no comparison between what has been called cable broadcasting up until now and what is going to be. For the moment the pirates broadcast on one channel several hours a day, using stolen video without broadcast rights. The legal cable companies will broadcast 24 channels at one time," says Yosef Lapid, the chairman of the company that set up four of the six cable companies that have thus far won bids.

The Council for Cable TV has divided Israel into 30 areas. It has attached unprofitable areas to attractive ones so as to assure the establishment of cable nets throughout the country. The companies that won Rishon LeZiyyon also have to broadcast in Ma'alot. The cable company that will operate in Bat Yam and Holon will also broadcast in Qiryat Shemona, in Zefat, and in the Golan Heights. The cable TV companies in Ramat Gan will operate a station in Bet She'an.

Within 2 years, most of the households in the country will be connected, and within 4 years the cable TV era

will have reached the last home in the most deserted village in the Negev mountains.

The chairman of the Cable Broadcast Council, David Harniq: "Financial capability, variety of proposed programming, customer tariffs, technological capability, the rate at which cable would be laid and previous experience in the matter—these were the criteria for choosing the winning bids. We had to choose from some very good proposals. The groups involved, both in Israel and abroad, are serious. A small country like Israel, which is considered somewhat risky, attracted mighty corporations from abroad. It improves the experience, knowledge, financial strength, and international contacts of those who win the bids."

The companies, meanwhile, are refusing to publish timetables for the start of broadcasting, for establishing a price list for connecting subscribers to the cables, for subscription fees and for down payments for the channel selectors and remote controls.

Wherever cables are being laid, marketing representatives of the winning companies will go to sign up customers. The main channel of each company will offer broadcasts in a format similar to that of the Broadcast Authority. According to the terms of the bid, each company must distribute new local editions (twice a week for 15 minutes). In fact a TV studio will broadcast activities dealing with all aspects of the town and region, such as interviews with the mayor, reports of traffic snarls, direct reports from the soccer field, etc.

"This will be a revolution in the Israeli lifestyle," says Yosef Lapid. "At a subscription fee of 1 and ½ or 2 shekels a day—the cost of a can of juice—every man, woman, child or senior citizen will be able to sit in his home and find something after his own heart. The day will come when sociologists and economists will calculate the implications of this revolution on traffic tie-ups, on the sale of popcorn and air conditioners, on trips away from home and on family life, and there will be a decrease in the renting of video tapes and an increase in the purchase of TV sets."

MTB will begin test broadcasts in Bat Yam on 5 November, and 150 households will receive the broadcasts free until January. During this period the cable company will test the cables, the quality of broadcasting at its antenna farm, and the desires of viewers. On 1 January they will begin full broadcasting on 24 channels. By then cable-laying will be completed to 3,000 households.

The situation is similar at the Gold Channels Corporation, which will begin broadcasting at about the same time in Petah Tiqwa and at ICS Cable Systems, Inc. in Israel, which is laying cables in Beersheba and is starting to broadcast.

Ro'i Raviv, deputy director of marketing and programming for ICS: "We are in a good position. We will start

broadcasting around the end of November or the beginning of December. We are laying cable in neighborhood E in Beersheba, 5,400 households. We will complete the entire neighborhood in about 2 and ½ months.

"Five independent channels will be operated in Beersheba immediately: a main channel that will broadcast 10 hours a day in the Israeli format as well as a sports channel, a children's channel, a film channel, and a music channel, each of which will broadcast for several hours."

'Amos Lasqer, then general manager of Gevanim, which is starting operations in Rishon LeZiyyon, estimates that 70-80 percent of the households in the city will be connected to cable TV. Within 2 years cable-laying will be complete throughout the city for a length of 200 km. He promises 24 channels, including channels from the whole world, excellent reception of channels currently broadcasting in Israel and the surrounding countries, and independent broadcasts.

Still, there is competition from pirates. 'Amos Lasqer: "That is the responsibility of the authorities; it is not ours. I suspect that some of the pirates will disappear. Some will lower their prices and broadcast X-rated films and new stolen films."

But among the companies, that are investing up to \$30 million in one broadcast area, there is already fear of the pirate system, which rakes in \$200 million a year and thumbs its nose at the legal authorities.

Hundreds of thousands of Israelis are connected to pirate broadcasts and enjoy viewing new and forbidden stolen films (which are forbidden for cable broadcast until they have first been screened in the movie theaters and then made available in the video libraries).

"For the moment the public has an illegal service for which there is no substitute. When we begin to operate, I hope the legal authorities will deal with the issue," says Moshe Minin, one of the owners of Cable Net, which won the bid to broadcast in Haifa.

Just in the last few days a commission composed of the general director of the Communications Ministry, the Jerusalem district prosecutor, and the head of the police Investigations branch, has recommended the establishment of a special unit with police responsibility. The government will allocate millions of shekels to fight the pirates.

The cable companies believe that whatever the police don't do, competition will. It is their rosy forecast that no pirate will be able to withstand the competition of 24 channels, even if he does offer X-rated films.

- MTB—The Dankner, MA'ARIV, and Hanania Gibstein group plus the U.S. Shamrock Corporation won the bids for broadcasting in Bat Yam, Holon, Qiryat Shemona and Zefat.

- The Golden Channels—Composed of 'Oreq (60 percent), Tadiran, and YEDI'OT AHARONOT won the bids for Jerusalem, Petah Tiqwa, Ramat Gan, and Bet She'an.
- TBL—Composed of Discount Investments and United Cable from the United States won the bids for Tel Aviv and 'Emeq Yizre'el, Ashdod, and Ashqelon.
- ICS—A joint venture of Re'uven Hecht of Israel, the Heisten Group, bankers from the midwest and Bob Shalom, the owners of the movie cable company [as published], one of the largest in the United States won the bids for Beersheba, Rehovot and Acre.
- Gevanim—Kur Electronics, the Monitin group and Radipoizhen, which operates a large cable company in Switzerland won the bids for the areas of Lod Ramla, Rishon LeZiyyon, Ma'alot and Karmi'el.
- CableNet—Under the ownership of Avraham Minin, General (Reserves), Avraham Rotem of Israel and Tuna Electronics of France won the bid to broadcast in Haifa.

[Box, p 2b] What Will You See and How Much Will You Pay?

In exchange for your connection costs, a deposit for the channel selector and your monthly subscription fee you will be able to watch:

- The channels that exist today: the two broadcast authority channels, the two Jordanian channels, and the Middle East channels. Reception will be cleaner.
- Satellite broadcasts of channels from all over the world via huge improved dishes, the likes of which no private individual could place on his roof (it is also illegal). Two channels from the USSR, two Turkish channels, World Net and CNN from the United States, RAI from Italy and channels from West Europe (France and Germany). It will also be possible to receive the broadcasts of the Astra satellite, which broadcasts on six channels, including the SKY network. Broadcasts of American programs from Ethiopia and Bophuthatswana. Every local station will have to reach an agreement with the various broadcast stations.
- Independent broadcasts, to include the main channel that will broadcast most hours of the day and night and another three to four special channels for films, sports, children, and music, each of which will operate several hours a day. In contrast to the broadcasts received directly from the satellite, all of the independent broadcasts will be translated into Hebrew. According to the assistant manager of ICS (Beersheba) it will cost about \$120 to \$130 for installation, a deposit of \$80 to \$90 for the channel selector, and subscription fees of \$20 and up per month. According to the manager of Gevanim (Rishon LeZiyyon): connection costs to the subscriber's home will be about \$100. The monthly subscription will be about \$17.

OMAN

Mobile Phone Agreement Signed

55004503 *Muscat TIMES OF OMAN in English*
2 Nov 89 p 10

[Text] The Government on Wednesday last week signed two agreements for 1,000 mobile telephone units at a total cost of RO585,006.

Under the agreements, Oman Holdings International and a French company will supply the units to the General Telecommunications Organisation.

Posts, Telephones and Telegraphs Minister, Ahmad Bin-Suwaydan al-Balushi signed for the government.

Mobile telephones were introduced to Oman in 1984 with the setting up of a 4,500-line exchange and now covers most of the country's main roads.

Currently, there are 31 main mobile telephone stations in the country, and at the end of September this year the number of subscribers stood at 1,966 compared with 747 a year before.

SAUDI ARABIA

Telecommunications Facilities in Western Region Described

90OL0044A *Riyad AL-RIYAD in Arabic* 4 Aug 89 p 3

[Article by Salih al-Ruways: "Over 485,000 Telephone Lines Operating in Western Region"]

[Text] Engineer Ghassan Rashad Kayyal, acting-director general of communications for the western region, said that the Ministry of Post, Telephone, and Telegraph [PTT] in the last Hegira year realized many objectives and accomplishments in all the various communications services in the western region. All the goals were exceeded which were set in the current plan, which is being implemented at high rates of performance and production efficiency to realize its objectives and get ready for the fifth development plan which, God willing, will get under way this year.

As of the end of last Shawwal [the beginning of last June], a total of 485,982 lines have been in operation, an increase of 21,085 lines over the same period in 1408 AH [1988]. Furthermore, 10,488 additional lines have been added as of the beginning of the current year up until the end of Shawal, 1409 AH, bringing to 24,824 the total number in operation by the end of the current fiscal year.

Kayyal added that, as of the beginning of the current fiscal year up until the end of last Shawal, 4,295 switchboard lines have been added to the Western Region Communications network. This is aside from 87 out of 153 telephone exchanges scheduled for completion by the end of the current fiscal year, bringing the overall number of exchanges to 3,319.

Eng Ghassan Kayyal went on to say that, thanks to the PTT ministry's support of studies undertaken by Western Region Communications and its efforts to clear the congestion and ease the pressure on some telephone switchboards with a view to raising their operating capacity and meeting the growing demand for telephone lines, several lines have been moved from some switchboards to others in accordance with exact operating and technical criteria. Consequently, 200 telephone lines have been moved from the Bab Makkah switchboard at the Jiddah communications zone to the Yanbu' al-Bahr switchboard at Yanbu' zone. Likewise, 4,000 lines have been moved from the Royal Authority's switchboard in Yanbu' to the Mashrafah switchboard in Jiddah, in addition to putting the 6,000-line Sulaymaniyah switchboard in operation.

Kayyal explained that within this framework, a project to expand the boundaries of the Bab Makkah switchboard is under way to accommodate part of the Sahifah 2500-line switchboard and part of the 1500-line Mujamma' switchboard to meet the growing demand for telephone services.

Eng Kayyal added that another accomplishment the PTT ministry has realized in the Western Region Communications zones is raising the number of operative lines to 2,459 as of the end of Shawal, 1409 AH. This is an increase of 144 lines over the same period of the year 1408 AH, distributed over vital and strategic locations to serve the largest possible segment of the population. A large number of these locations have also been equipped with direct dialing worldwide.

In addition to these accomplishments, Eng Kayyal pointed to the Western Region's successful implementation of the PTT plan for last year's pilgrimage season and achievement of its objectives aimed at providing the highest standards of telecommunications services to pilgrims to the Kaaba and the holy sites. This was illustrated by the increase in the number of international circuits to 1,135, up by 169 circuits over the 1408 AH season, and that of internal circuits to 1,280, an increase of 127 circuits. Likewise, 17 international exchanges have been equipped with a total of 239 lines and 2,223 operative lines have been supplied to each of Makkah, the holy sites, Madinah and Jiddah, 1081 of which have direct dialing. This is in addition to numerous other telegraph and telex services that made it possible for God's guests to contact their parents and families throughout the world.

Eng Ghassan Kayyal concluded his statement by saying that another accomplishment Western Region Communications has realized is the successful implementation of the ministry's programs aimed at developing and upgrading the skills of national personnel working for Western Region Communications through training on state-of-the-art equipment and technical innovations in modern international communications, as well as its success in achieving the objectives of the communications Saudization plans. The rate of Saudization of leadership positions

has reached 100 percent and the overall rate of Saudi personnel is 75.9 percent. This was in response to the directions of His Excellency Dr 'Alawi Darwish Kayyal,

minister of PTT, which had a great impact on the realization of these objectives and accomplishments and on other civilizational accomplishments the ministry has achieved.

EUROPEAN AFFAIRS

EUREKA Audiovisual Program To Promote HDTV

*90AN0002 Brussels EUROPE in English
2-3 Oct 89 pp 11-12*

[Article: "EUREKA Audiovisual Officially Adopted by 26 European States and by the European Commission"]

[Text] Following French President Mitterrand's initiative and the conclusion of the Rhodes Summit in December, ministers or representatives of 26 European states (the Twelve, the other member states of the Council of Europe except San Marino, and four Eastern countries: Hungary, Poland, USSR and Yugoslavia), as well as the president of the European Commission, Jacques Delors, met in a diplomatic conference during the Audiovisual Assizes. The Assiezs took place 30 September to 2 October in Paris and brought together professionals in the sector, who adopted a common declaration on EUREKA Audiovisual. It is a flexible programme based on the same principles as EUREKA technology and envisions creating a real European audiovisual market.

To attain this objective, EUREKA Audiovisual will have to favour:

the launching of concrete cooperation actions and projects in the European audiovisual industry, including in its technological aspects, in order to strengthen the creation and production capacity of European companies;

the widest distribution of European programmes, the multiplication of intra-European exchanges and a larger share for Europe on the world market;

the development and the broadest distribution of production in European countries with limited geographical or linguistic areas;

the promotion of European technology, notably HDTV, for the production and distribution of audiovisual films and programmes.

To help achieve these different goals, the creation of an Audiovisual EUREKA Coordinating Committee (composed of representatives from signatory states and the European Commission) has been decided, in whose work a representative of the Council of Europe will be a participant.

The existence of a certain rivalry between the European Commission and the Council of Europe on the European audiovisual dossier was confirmed. The Council of Europe strongly insisted on being associated with the new initiatives and careful consideration was given to the wording agreed. It was decided that the secretariat of EUREKA Audiovisual will receive logistic support from

the European Commission and that the Council of Europe will study measures of logistic support it could provide.

France did not succeed in getting a decision on the creation of another body it was calling for, a European audiovisual observatory responsible for gathering and processing existing information and statistics and then putting them at the disposal of professionals and the Coordinating Committee. Two "schools" developed over this issue, one in favour of this new body, the other preferring the creation of a network linking different national organisations; the declaration simply calls on the committee to "examine the questions relative to the creation and functioning of an observatory."

The committee will prepare, based on concerted effort among coordinators and the professional milieu of their countries, recommendations intended to improve the structures and general conditions of the audiovisual market. The committee will then be able to propose the convening of ministerial conferences with a view to adopting new guidelines likely to promote EUREKA Audiovisual. It will be aided by the small and flexible secretariat, which will be placed under its responsibility.

The coordinators will be responsible for circulating information relative to the EUREKA audiovisual projects that are submitted and for providing necessary information to the committee in order to judge the project's compliance with the goals and criteria of EUREKA Audiovisual. The latter are defined in an annex to the declaration. For example, a project could obtain the support of EUREKA Audiovisual notably if it is implemented in the framework of cooperation agreements involving companies from more than one European country (and, as far as possible, from at least three), and if it provides adequate financial commitments on the part of participating companies. Another annex defines the relationships between EUREKA Audiovisual, the EC, the Council of Europe and other existing cooperation frameworks (notably technological EUREKA, with which the committee can verify the possible complementarity of respective projects). EUREKA audiovisual projects are not intended, according to the statement, to be substituted for existing cooperation frameworks, but their goal is rather to extend and complete them. This satisfies the European Commission, which has launched the MEDIA programme at its own initiative and which is experiencing real success. The Commission, while favourable to its enlargement to European countries that are not EC members, insisted on stressing the Community framework of MEDIA. The Euroimages programme will likewise keep its specificity. It is also explicitly indicated that the EC "can participate in EUREKA audiovisual projects, notably through its programmes."

Audiovisual Assizes Allows Professionals To Draw Up Guidelines on Programmes, Market Structure and Technology for All of Europe

Inaugurating on 1 October the European Audiovisual Assizes, organised jointly by the French Government and the European Commission, President Mitterrand called on participants to define the means that will allow Europe "to affirm its cultural personality." It must urgently do so for a dual reason: the American supremacy in programmes and the Japanese superiority in technology. Participants worked in different groups: "programmes", "market structures and the rules of the game", and "technology". The results of their efforts will constitute the first conclusions ever reached by all parties of the European audiovisual sector and will allow the European Commission to study possible evolution of its policy. The Commission's task will be facilitated if the Council manages to adopt the "TV Without Frontiers" directive; the EEC would then have a clear legal framework.

CANADA

Transborder Satellite Services Policies Under Review

55200009a Toronto *CANADIAN COMMUNICATIONS REPORTS in English Vol 16 No 18, 30 Sep 89 pp 2-3*

[Text] The procedures for transborder telecommunications via satellites between Canada and the US are now under review by the DOC.

The domestic arrangements went into effect in 1982 following an exchange of letters which recognized that transborder satellite activities were a joint responsibility involving entities in both countries and the use of satellite facilities in each country. Under the agreement, Telesat Canada was named operator of Canadian-based earth stations, and the party responsible for negotiating arrangements with US satellite carriers.

Technological advances, changing markets and the expiry in 1990 of some existing international arrangements indicate a need to revamp satellite policy in some areas, the DOC says. Primarily, the concern is with business services and point-to-point video transmission.

As part of its review, the Department is calling for comments on the arrangements for access to Canadian and US satellite and earth station licensing in relation to transborder service. And if operators other than Telesat should be involved, what accountability and regulatory requirements should be put in place?

As well, the DOC would like to hear from interested parties who provide or use the services. Specifically, how will the services be used in future and what is the market for them. Comments on the business services covering the newer applications of two-way micro terminals (VSAT), and the use of fixed satellites to provide certain mobile services would also be welcomed.

Written submissions should be addressed to Paul Racine, director general telecommunications policy, 300 Slater St., Ottawa, K1A 0C8.

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Telesat To Provide Satellite Backup for Fiber Network

55200009b Toronto *CANADIAN COMMUNICATIONS REPORTS in English Vol 16 No 18, 30 Sep 89 p 4*

[Text] Telesat Canada has signed a \$35 million contract to provide 12 full satellite channels and related earth station services to back up voice circuits on Telecom Canada's fiber optic network, now nearing completion.

The two-year agreement, with options for a third year, is one of the largest service contracts ever negotiated by Telesat. First services under it will begin Jan. 1, 1990.

Twelve RF channels on the 14/12 GHz satellite Anik C3 will be dedicated to link earth station sites at Halifax, Montreal, Toronto, Chipman, Alberta and Vancouver.

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DOC Signs Agreements for Integrated Circuit Development

55200009c Toronto *CANADIAN COMMUNICATIONS REPORTS in English Vol 16 No 18, 30 Sep 89 p 6*

[Text] The DOC has signed an agreement with Spar Aerospace covering joint research into miniature hybrid and monolithic microwave integrated-circuit development for use with communications satellite subsystems. Work to be done is valued at \$70,000 a year.

Another DOC agreement, with MPB Technologies of Dorval, is valued at \$50,000 a year. It covers joint research into miniature high-speed digital integrated circuits based on gallium arsenide. The technology is particularly suited to signal-processing systems where very high speeds are required, and cannot be achieved with silicon circuits.

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New Broadcasting Bill Introduced in Commons

55200008 Toronto *THE TORONTO STAR in English 13 Oct 89 p A13*

[Text] Ottawa (CP)—New broadcasting legislation that spells out the Canadian Broadcasting Corp's commitment to arts and culture has been introduced in the House of Commons.

The bill, similar to one that did not make it through Parliament before the election last November, would replace the 21-year-old Broadcast Act.

It would put more emphasis on Canadian programming and recognize the different programming needs of English- and French-language audiences.

It would also give cabinet the power to set out broad policy directions for the Canadian Radio-television and Telecommunications Commission.

The bill splits the jobs of president and chairman at the CBC.

In anticipation of the change, Prime Minister Brian Mulroney recently appointed civil servant Gerard Veilieux as CBC president and broadcaster Patrick Watson as chairman-designate.

Bell's Centrex To Offer New Service Options

5520009d Toronto CANADIAN COMMUNICATIONS REPORTS in English Vol 16 No 18, 30 Sep 89 p 6

[Text] Two additional new service offerings within Bell Canada's Centrex 111 telecom lines are aimed at broadening the market for the technology, down to customers with telecom operations as small as two lines.

Branch Centrex will allow customers to extend Centrex 111 to their branch locations within the exchange, and will also support Centrex Data service, providing for switched digital data transmission, to 56-kilobits-per-second. Small Centrex will provide the small market with a full range of voice and data services and features. Until now, Centrex has generally been considered the domain of large customers with extensive telecom needs.

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DENMARK

Impact of Phone Equipment Sales Liberalization

90WT0014A Copenhagen BERLINGSKE TIDENDE in Danish 2 Nov 89 p 14

[Editorial: "Telephone Symphony"]

[Text] These days and weeks, pages are turned, even entire chapters, in the history of Danish telephones. The nation's regional telephone monopolies have thrown themselves into a charm advertisement which not only transgresses the, up to now, holy regional borders, but also forms a counterpart to a similar advertisement offensive from a private telephone chain that just emerged. The whole thing gives a very chaotic effect because some snags have appeared in the phased liberalization which is now being implemented within EC. But from the starting problems come the knowledge that the market for all recognized makes of telecommunication equipment and its supportive mounting equipment will become free from 1 July of next year.

This is causing the upheaval. The entire Danish telephone system has until now been in the hands of five telephone companies, either state owned or with state majority ownership. The whole thing has been paternally managed under an honorable concession law from 1897. The state earns good money from this, around 1 billion

kroner a year plus VAT [value-added tax], while there is a ceiling on the telephone shareholders dividends.

But it is only the commercial part of the activities—namely, the selling of the equipment that is being liberalized. This step is, however, natural. Nobody within the electric companies cares which brands of well-known electric irons or lamps people plug in to their sockets. But the main telephone network itself, which is dug into roads and streets, will remain under officially controlled monopolies just as the electric network. In principle, the electric network could also be liberalized but that would probably lead to excess capacity and unparalleled waste of resources, just as constant digging would tire the commuters. These networks must be viewed as a part of the country's infrastructure, even with the risk that the tariffs will be used as indirect taxes.

At any rate, Minister of Communications Torben Rechenendorff has in this context touched on the idea of a united telephone company. Denmark is, in fact, a very small country to carry five telephone companies, and uniting them could give room for great operational advantages, as well as technical and leadership strengthening. On the other hand, such a step must be based on clear stipulations. The merger should only encompass the network structure and its operation, while the commercial activities would be separated into special companies in order to avoid havoc. The united company would be best served as a streamlined corporation with a business management rather than a political one. And the consumers would be served at a clearly defined cost.

Such an operation will probably be difficult. The telephone companies' private stockholders may feel that it is too much to separate the commercial income. Added to that are other technical and financial problems. But the minister is right, however, to consider the possibilities of the issue in a situation when the technological development in a world characterized by competitiveness is pulling toward larger dynamic units. The discussion about a possible privatization can easily wait.

FRANCE

Thomson Presents First HDTV Set

90AN0018 Paris LES ECHOS in French Aug 89 p 5

[Text] In late 1990, Thomson will sell, for Fr 30,000, its first television sets resulting from the EUREKA 95 HDTV (high-definition television) program. Presented at the International Broadcasting Exhibition (IFA) in Berlin, the set, which is compatible with all existing standards, weighs 70 kilograms (154 pounds) and has a screen with a diagonal measurement of 90 cm (35.1 inches). The French company, which has opted for the new 16 x 9 screen format, is in the process of investing Fr 400 million in its Videocolor tube factory in Italy and almost \$100 million in the United States, all within 18 months.

Initially, the production of these new large tubes will adhere to the current 4 x 3 format. European demand for large sets, although still modest, has doubled this year to 190,000 units. The director of Thomson's tube division hopes to turn a profit from the investment in the 16 x 9 format by 1992. At that point, sales should amount to more than 150,000 sets per year, cutting the cost per set in half.

Next month, the EUREKA 95 directorate, composed of Philips, Thomson, and Bosch, will meet to define the second phase of this project, which has already cost ECU 300 million since 1986. In Berlin, French Minister of Post, Telecommunications, and Space Paul Quiles—with the support of his West German counterpart—announced that member-states will “step up their efforts” between mid-1990 and 1995.

However, it is also true that funding for EUREKA is split 50/50 with industry. Pierre Garcin, head of Thomson Consumer Electronics (TCE), called for up to a 100-percent increase in funding in order “to be able to proceed more quickly.”

French Firm Modernizes Moroccan Telephone Network

90WT0008A Paris *LE MONDE* in French
21 Oct 89 p 29

[Article by Veronique Maurus: “Alcatel to Modernize Moroccan Telephones”]

[Text] On Friday 20 October in Rabat, Alcatel signed a series of contracts, valued at 900 million francs, for equipping and modernizing the Moroccan telecommunications network. It is one of the largest Alcatel contract in several years. The overall contract accounts for almost one-fourth of the group's export turnover. Signed on the occasion of the visit to Morocco of Paul Quiles, the French PTT [Post and Telecommunications] minister, a large share of these contracts will be financed through credits, benefiting from preferential terms, as part of the French-Moroccan financial protocol.

Alcatel contracted to supply, install, and place into service, between now and 1992, some 147,000 telephone lines (out of a total of 930,000 lines scheduled by that dateline). To achieve this goal, the group will deliver modern Alcatel E-10-type telephone exchanges, similar to those installed in France and valued at 350 million francs. In addition, it will have to ensure the transmission and connection of the lines to the final subscribers; further negotiations are still needed for this last project, estimated at some 500 million francs. Through its subsidiary Submarcom, Alcatel will also supply the equipment which will enable Morocco to participate in the underwater fiber optics cable project linking Morocco to Portugal and France and, subsequently, to Great Britain, for a sum of 85 million francs.

Finally, Alcatel CIT will install (for 25 million francs) the first Moroccan packet data transmission network earmarked for a clientele of computer-equipped companies. These contracts, extensively financed by France, should allow Morocco to catch up most of telecommunications lag it had accumulated.

IRELAND

Plans for Multipoint Microwave TV Transmission

55500011 Dublin *IRISH INDEPENDENT* in English
12 Sep 89 p 5

[Article by James Morrissey in Limerick]

[Excerpt] Licences for multi-channel television transmission via the Multipoint Microwave Distribution System will be awarded within a “matter of weeks,” Minister for Justice and Communications, Mr. Ray Burke said in Limerick yesterday.

The Minister was speaking at the first European demonstration of the MMDS multi-channel television transmission system.

Mr. Burke emphasised the Government's determination that those living in rural areas should have the same choice of television viewing as those in urban locations.

It is estimated that the introduction of MMDS will provide for the distribution of up to 11 channels to some 650,000 homes around the country. Approximately 350,000 of Ireland's one million homes currently have access to cable services—the majority in densely populated areas.

MMDS is regarded as the most cost-efficient and effective method of bringing multi-channel television transmission to areas outside the major cities.

Mr. Burke said that it would be simply uneconomic to “cable” rural Ireland and added this was what influenced the Government to pave the way for the introduction of MMDS—a local delivery system for the distribution of video, voice and data signals by radio waves to individual homes and other locations, from central transmitters with ranges of up to 40 miles.

Also known as “wireless cable” the cost of MMDS is expected to compare favourably with the more modern cable systems.

The Department of Communications has designated 29 licence areas covering the country.

[Passage omitted]

ITALY

Italian Research Center Joins Open System Testing

89MI0469 Milan *ITALIA OGGI* in Italian
16-17 Sep 89 p 41

[Text] The CSELT [Turin Telecommunications Study Center], part of IRI-STET [Institute for the Reconstruction of Industry - Turin Telephone Finance Co.], has joined the OSTC (Open System Testing Consortium). The OSTC was established by the EC to promote the development of the European telecommunications market and includes among its members British Telecom, France Telecom, as well as the German and Danish telecommunications companies. The consortium offers effective procedures to test the compliance of telecommunications products with international and European standards.

As stated in a press release: "The consortium is pursuing an open-door policy with respect to other qualified organizations, by supplying all the parties with test instruments under the same conditions. This is considered an important factor for the development of open systems."

NETHERLANDS

Netherlands, Singapore PTT's To Cooperate

89AN0353 Chichester *INTERNATIONAL TELECOMMUNICATIONS INTELLIGENCE* in English
15 Sep 89 p 4

[Text] On September 4th, 1989 Singapore Telecom and PTT Telecommunications, the Netherlands, signed a memorandum of understanding (MOU) to increase communications services between the two countries and to establish future telecommunications joint ventures.

The official signing of the agreement took place at The Hague, Netherlands and was viewed in Singapore via a new videoconference service between the Netherlands and Singapore which was launched at the MOU ceremony.

Mr Koh Boon Hwee, chairman of Singapore Telecom, said "the significance of today's agreement is that it helps better position Singapore Telecom for the future, by providing further links into the European market, which is extremely important as we move toward 1992 and the changes that will come."

For Singapore Telecom, the move is also a strategic one in terms of its growth potential. "Singapore Telecom sees increasing internationalisation as one area of continued high growth. The possibility of joint efforts with organisations such as PTT Telecom will enhance that growth," Mr Koh added.

Singapore is the first country in Asia to sign such an agreement with the Netherlands. Discussions are also

currently underway to establish new services and for joint promotions of services in both countries.

Customer needs were cited as a major reason to establish overseas relationships such as this. Mr Koh said the tie-in with PTT Telecom enhances Singapore Telecom's existing international framework and will make for more economic and effective services.

PORTUGAL

Benefits From Franco-Moroccan Agreement

90WT0013A Lisbon *DIARIO DE NOTICIAS* in Portuguese
23 Oct 89 p 19

[Text] Within 2 weeks the president of Radio Marconi, Sequeira Braga, will sign an agreement in Morocco on telecommunications, in connection with the underwater cable project to be financed by France. According to a ministry source in Rabat, the French have procured financing totaling 560.5 million French francs for the project linking them with Morocco via Portugal by means of a fiber optics underwater cable. The new project will substantially improve telecommunications between Morocco and France; and Portugal should benefit from the new underwater cable (from Casablanca to Sesimbra) scheduled for completion in 1992.

The French minister of post and telecommunications, Paul Quiles, has just signed an agreement in Rabat with his Moroccan counterpart, Mohamed Laenser, aimed at modernizing the telecommunications network and constructing a new underwater cable, a project that will also benefit Portugal.

The new French project, also financed by the Moroccans with 85 million French francs, will allow for the installation of 147,000 new telephone lines in the interior of Morocco, and will facilitate telecommunications between the latter country, France, and Portugal.

Sequeira Braga went to Morocco to sign the agreement calling for Portuguese cooperation in the project, and also with a view toward expanding the activity of Radio Marconi to that country and to the Magreb region.

TURKEY

Turkish TV Relay Station Installed on Border

NC1411231589 Athens *Domestic Service in Greek* 2200
GMT 14 Nov 89

[Text] ATHENS NEWS AGENCY has reported from Istanbul that the Turkish PTT organization today put a new relay station into operation for the second program of Turkish television. The relay station is situated in the town of Ipsala in Eastern Thrace on the border with Greece. Responsible sources note that the installation of a relay station on the Greek-Turkish border is targeted at the Turkish-speaking Muslim audience of western Thrace.

UNITED KINGDOM**Plans for New Telephone Routing Technology**

55500010 London *THE DAILY TELEGRAPH*
in English 25 Sep 89 p 9

[Article by Roger Highfield: "Telephone Technology
May Speed UP Calls"]

[Excerpt] A computerised telephone system which sends
calls by the fastest route could be introduced in Britain
in the next 12 months.

British Telecom's system, Dynamic Alternative Routing,
will be the first of its type in the world operating on a
large network.

The system will reduce wrong numbers, make better use
of spare capacity, and respond efficiently to failures and
overloads.

Dr Frank Kelly, of the Statistical Laboratory at Cam-
bridge University, developed DAR with Mr Martin
Whitehead at British Telecom's laboratories in Martle-
sham, Suffolk.

Although it is relatively simple to describe the behaviour
of an individual telephone exchange or computer, and to
control it, it is much more complex to do so with a vast
network of computers or exchanges that are "talking" to
each other.

There are two ways in which a call can be guided through
a network, but neither works well. One central computer
can direct the network, or each computer or exchange on
the network can route calls randomly. [passage omitted]

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