

The commercial connection

Satellites have been used for some time, largely through international joint-ventures, to provide telephone and television links both across and between continents, supplemented by land-based or undersea cables. But now their potential is being exploited in a special way via SatStream – one of a new generation of British Telecom services for businesses.

SatStream is due to begin in 1984, and will use small dish aerials on or near customers' premises, linked by radio to European Communications Satellites to provide business communications in the UK and across Western Europe. It will be particularly useful for contact with remote locations such as offshore oil production platforms.

One potential application – high-speed facsimile – has already been successfully demonstrated. A three-metre dish aerial on the roof of the Financial Times building in London transmitted words and pictures via a European test satellite to Frankfurt, where the newspaper's international edition is printed.

SatStream enables copies of newspapers to be transmitted 30 times faster than is possible at present. Using multi-point facilities news agencies will be able to distribute information to different locations simultaneously, as will large organisations such as banks, oil companies and many other multi-nationals.

A global service

Modern technology has already given Britain the most advanced international telephone system in the world, with some 99 per cent of British Telecom's customers able to dial direct to over 100 countries. It has also helped keep down the costs of calls. In real terms, international telephone calls are generally cheaper now than they were in 1965, when the first INTELSAT satellite was launched. British Telecom's satellite technology offers a global service without costing the earth.



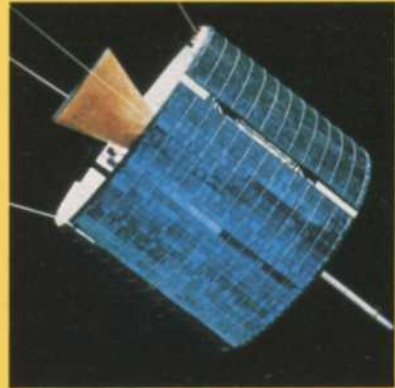
The Telecom Technology Showcase
Baynard House
135 Queen Victoria Street
LONDON EC4V 4AT
01-248 7444

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The Telecom Technology Showcase

Satellite communications





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Every day people use the telephone to speak to someone on the other side of the world as easily as if they were next-door neighbours. The world has nearly 500 million telephones which can span continents and oceans at the turn of a dial or the touch of a button.

This global network, where voices, facts, figures and pictures speed between nations and individuals, is largely made possible by satellite 'exchanges' 37,000km in space. A typical satellite telephone call goes from home or office to local exchange, international exchange, and then to the huge dish aerial at an earth station. It is then beamed by radio to a satellite, where it is amplified and then beamed down to an earth station in another country. Computer-like devices on board the satellites are used to divide the radio spectrum into separate routes and to switch telephone calls, computer data and television pictures between the different routes so that messages can be directed to particular earth stations or even to other satellites.

Two-thirds of all inter-continental telephone calls pass through the satellite network. So do telex, data and facsimile calls, and telegrams and television broadcasts, giving worldwide coverage of major events such as the Olympic Games and the Royal Wedding. Even telephone calls and telex cables to ships at sea can be sent by satellite.

How it all began

British Telecom has been in the vanguard of global satellite communications since the first experimental transmission in the early 1960s. Its earth station at Goonhilly Downs in Cornwall was one of three that pioneered satellite tests in 1962.

Goonhilly was also the first European earth station to take part in telephony tests, transmit colour television, receive colour television direct from Canada, transmit live television via satellite from Europe to America and receive television from Australia.

Systems for all seasons

Goonhilly, and Britain's second earth station at Madley, near Hereford, connect the UK by satellite with over 80 countries. There are more than 200 earth stations and 300 aerials in the system run by the 120 or so nations using the International Telecommunications Satellite Organisation (INTELSAT) System. They work to 13 satellites 37,000km above the equator. The satellites of the INTELSAT system have grown in capacity from Early Bird's 240 simultaneous



Engineers working on one of the dish aerials at Goonhilly earth station

telephone calls in June 1965 to the 12,000 plus two television channels of INTELSAT V, launched in December 1980.

Another satellite system will enter full service in 1983 under the European Telecommunications Satellite Organisation (EUTELSAT), providing links between national telephone networks in Europe. This system will serve the longer routes over 800km. Britain will be linked to the network through Madley, which is initially planned to carry a total of 400 simultaneous telephone calls on routes to Austria, Italy, Portugal, Switzerland, Turkey, Yugoslavia and Scandinavia. There will be about 15 European earth stations by the mid-1980s.

Links across the oceans

A third organisation, INMARSAT – the International Maritime Satellite Organisation – provides direct communications with ships at sea. A special aerial at Goonhilly works to a satellite over the Atlantic Ocean, while coverage of other oceans is through the Norwegian earth station at Eik for the Indian Ocean, and through Singapore for the Pacific. British Telecom was instrumental in developing the INMARSAT service, which uses two satellites supplied by the European Space Agency and maritime facilities on three INTELSAT satellites.