IRIDIUM

technical background

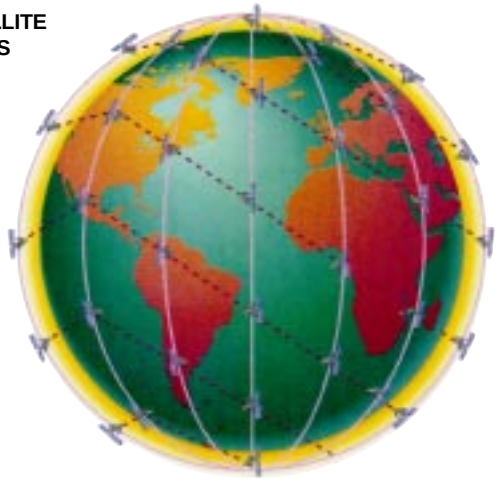
Overview

The Iridium System is a satellite-based, wireless personal communications network designed to permit any type of telephone transmission–voice, paging, fax, or data–to reach its destination anywhere on earth. It will revolutionize communications for business professionals, travelers, residents of rural or undeveloped areas, disaster-relief teams, and others who need the features and convenience of a wireless handheld telephone with a single worldwide number. The system is being financed by an international consortium and will be operational in 1998. Motorola is the prime contractor.

Subscribers will use handheld Iridium telephones transmitting through digital facilities to communicate with any other telephone in the world. Unlike conventional telecommunications networks, the satellite-based system will track the location of the telephone, providing global transmission even if the subscriber's location is unknown. In areas where compatible cellular service is available, the dual-mode telephone will provide the option of transmitting a call via the local cellular system.

Iridium telephones will provide high-quality voice connections and will interface with laptop computers, personal digital assistants, palmtop organizers, and other communications equipment.

INTERSATELLITE CROSSLINKS



The System

Quality communication is ensured by the Iridium System's space segment, which will include a constellation of 66 satellites located 780 kilometers (485 miles) above the earth's surface. Compared to geostationary communications satellites located 35,900 kilometers (22,300 miles) above the earth, the low orbit of Iridium satellites will allow more tightly focused beams to be projected on the ground, providing transmissions that are clear and strong. The receiving antenna is small enough to fit on a handheld telephone. The small, lightweight Iridium satellites (689 kilograms or 1,500 pounds) will be electronically interconnected to provide continuous worldwide coverage. Communications will be relayed via satellite and through ground station gateways, where billing information and user location data will be stored. Intersatellite and ground-control links will take place in the Ka-band frequencies. Telephone and messaging communications will take place in the L-band frequencies. Services within various countries will be provided through telecommunications authorities and service providers.

How the System Works

When an Iridium telephone is activated, the nearest satellite–in conjunction with the Iridiurn network–automatically will determine account validity and the location of the user. The subscriber will select among cellular or satellite transmission alternatives, depending on compatibility and system availability, to dispatch a call.

If a local cellular system is unavailable or incompatible, the telephone will communicate directly with a satellite overhead. The call then will be transferred from satellite to satellite through the network to its destination–either another Iridium telephone or an Iridium ground station. Iridium System gateways interconnect the satellite network with land-based fixed or wireless infrastructures worldwide.

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