

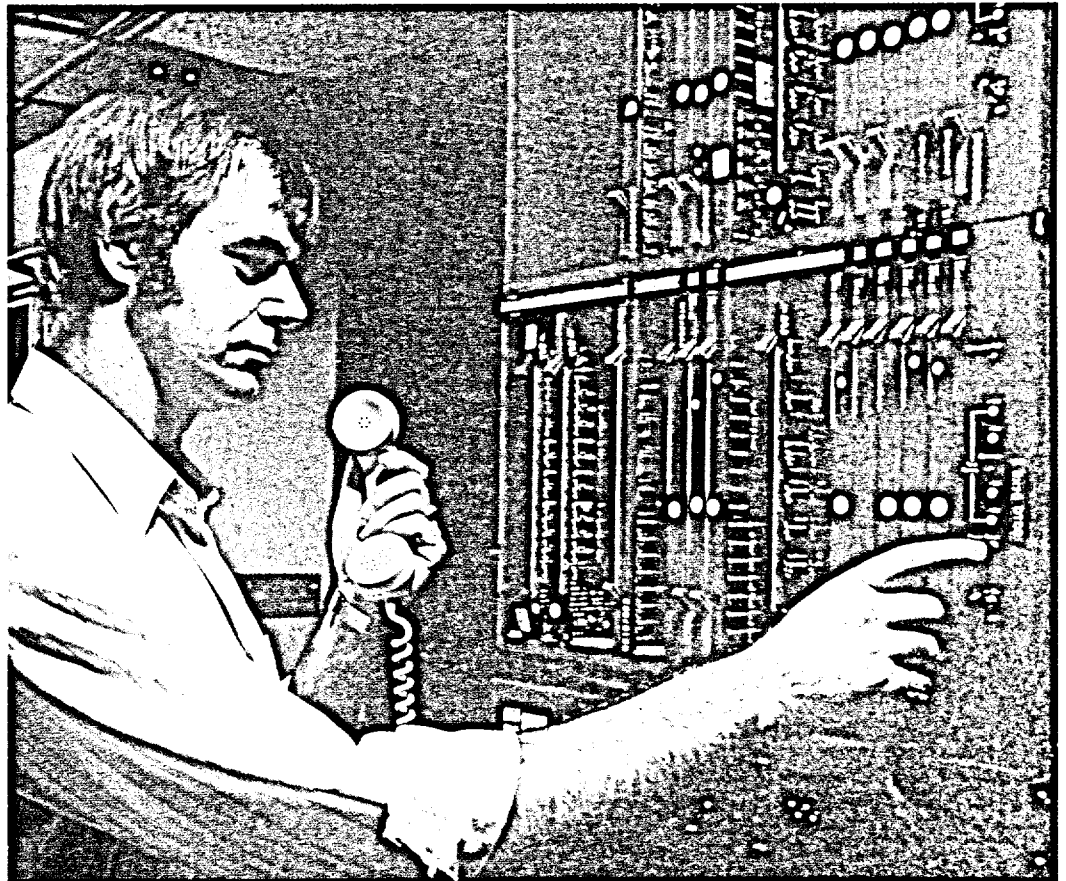
The Technology

The merging of various communications technologies into integrated information systems has largely been possible through the use of a common technological "language" — binary digits, or bits. In digital systems, information is reduced to binary codes (series of Os and Is) and transmitted as groups of discrete pulses. Any kind of information — numbers, text or images — can be encoded in digital form, the primary way in which information is represented in computers.

By contrast, in traditional telecommunications systems, information is transmitted in analog form, that is, as a continuous wave pattern following the changes of a voice signal or other signal. Analog transmission is adequate for such uses as ordinary telephone conversations, but not for high speed data transmission and processing. When an analog signal is amplified, any noise or distortion it picks up, or is inherent in the transmission system, is also amplified. The human ear and eye can easily adjust to such signal

corruptions and interpret the received information correctly, but computers cannot. Hence the need for a transmission format that computers can interpret without error.

In a digital system it is the presence or absence of a pulse that is important, not its loudness, softness or exact shape. Thus, as long as the presence or absence of a pulse can be identified, the information received will be far less susceptible to errors due to transmission impairments such as noise and distortion. In addition, information that is already in digital form (i.e. information from computers) need not be converted to analog form for transmission. These considerations can make it advantageous to convert voice or image information to the digital mode.



Northern Telecom technician turns on the power for a new peripheral unit, called a digital trunk carrier.