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AT&T Bell Laboratories President Discusses the Evolution of the Intelligent Network

GENEVA -- In his keynote remarks for the Technical Symposium at Telecom '87, Dr. Ian M. Ross, President of AT&T Bell Laboratories, identified three major challenges that face today's world telecommunications industry.

Dr. Ross cited the need for universal deployment of the Integrated Services Digital Network (ISDN), the migration of existing data-only networks toward ISDN, and the development of more sophisticated user systems for intelligent network management.

"Our goal is to allow the peoples of the world to reap the full benefits of the Information Age," Ross said. "It is a goal we will achieve, because we share a common vision -- a vision supported by technological foresight, internationally accepted standards, and systems engineering skills of a high order."

This common vision includes an open architecture, universal ports based on globally uniform access standards, broadband access even at the residence, and network services on demand.

"These will be powerful services that will let anyone move information in any form -- voice, data, image or video -- anytime, anywhere," Ross said.

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Key to achieving the vision is ISDN, a set of international standards with which network offerings can be designed. "ISDN has given us a highly flexible tool for serving customer needs as and when they develop," Ross said.

Ross described the first U.S. implementation of ISDN by the McDonald's Corporation, Oak Brook, Illinois. "Linked to an AT&T 5ESS (TM) central office switch in an Illinois Bell central office, McDonald's headquarters locations are initially using ISDN services for digital telephones, voice/data terminals, facsimile and modem pooling," he said, while data applications have "figured importantly in early testing."

Multivendor ISDN trials are scheduled or already underway at more than 20 local exchange companies in the United States, and trials are underway or planned in at least 19 other countries in North America, Europe, the Far East and Australia.

"ISDN offers tremendous advantages to data users," Ross said, pointing out that today's data networks are typically single-function dedicated networks implemented on different machines using different proprietary protocols. This use of multiple networks is costly and inflexible: "When corporations have added an application, they have had to add a new network," he said. "All this is the inevitable result of not taking the network approach."

If data users were starting from scratch, they could immediately profit from exploiting ISDN capabilities. "Instead of several terminals on each worker's desk, they could usually get by with just one, with only one twisted pair leading to it, and they could use ISDN's rich signalling system to customize data services provided by the public telecommunications network," Ross said.

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However, large data networks already exist and ISDN is not yet ubiquitous, nor does it yet have all the features users may need. "So if data users are to exploit the advantages of ISDN, we, their vendors and their service providers must find evolutionary paths for migrating today's data networks to networks based on ISDN," said Ross.

"As users rely more upon their information networks, they need better ways to guarantee reliability and to manage network configurations and features from one end of the network to the other," he said. This capability is called network management, a relatively new concept. "What is most new about the concept is that it means giving customers an expanding range of end-to-end control over the elements in their own networks." Many network management functions exist in only partial form today, if at all, he said.

In addition to the three major challenges that will command the attention of the telecommunications industry in the coming years, Ross noted other technologies that may begin to play a role in the evolving global network--including wideband packet switching, photonic switching, and new computer architectures.

Ross also stressed the importance of properly managing the growing complexity of network technology. "In responding to the burgeoning needs of the information age, we are creating systems that are orders of magnitude more complex than our older voice networks," Ross said. "Only by ensuring that these new systems operate as reliably, evolve as gracefully and are as easy to use as voice networks today, can we deliver the benefits of our common vision of the Information Age to the world."

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