

Integrating Integrators with Satellites and Telecom

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Academics help infotech firms develop new products that link land-based communications and space

Researchers at a University of Maryland science center are working with information technology companies to teach satellites, televisions, telephones and computers how to understand each other.

Making these different media speak a common language will be especially important in the development of a global information infrastructure, where wire can't reach out and touch everyone.

"One media can not provide all the information transfer that's needed in all cases. The ability to combine multiple networks with different mediums will be very important in the future," said Len Golding, a Hughes Network Systems vice president.

Satellites are the key to making a global information path that will allow a Boston businessman and a Russian scientist to send software, digital photos, and video back and forth in real time. But teaching satellites how to understand the protocols and language of computers, coaxial television cable and phone lines takes a combination of technological know-how few companies have. Thanks to a NASA-funded research center, that's not stopping the infotech industry.

At least 70 students and faculty at the Center for Satellite & Hybrid Communications Networks in College Park, Md., are helping private firms develop products that merge terrestrial communications with satellites. And considering the convergence of computers and communications in the last decade helped to create a \$30 billion federal infotech market, communications companies hope this merger will be similarly rewarding. It's already paying off for some firms working with the government-funded center.

Take Hughes Network Technologies, for instance. Sixteen months ago the Germantown, Md., firm developed a raw technology that would allow personal computers to capture loads of information by receiving the data at high speeds through a satellite dish. But there was one problem. The system could not communicate with the world's greatest source of information available to PC users -- the Internet.

Hughes went to the University of Maryland center for help in January of last year, and five months later researchers had developed a computer card that allows PCs to receive information off the Internet via satellite without requiring any special modifications to the communications software or the

machine the user is trying to reach. The breakthrough was instrumental in Hughes' introduction of DirecPC late last year, said Douglas Dillon, a Hughes advisory engineer.

"Without the piece developed with the center, DirecPC would lose one of the three legs the product is standing on," said Dillon. The other two applications DirecPC offers are software delivery over the computer and real-time multimedia transmission that lets business executives watch a meeting live on their screens. Hughes expects DirecPC's turbo Internet access, which can quickly download large volumes of information

from the Internet, to be the service that attracts individuals to subscribe.

Hughes' experience with the NASA-sponsored center is echoed by other companies that have tapped the multidisciplinary expertise the University of Maryland offers industry. Comsat Laboratories is hoping it, too, will be able to sell services and products around a technology they developed with the center, said Prakash Chitre, a scientist with the Clarksburg, Md., firm.

Comsat's new research involves a technology that itself was only recently introduced -- frame-relay networks. The technology shortens the time networks need to transmit data and increases the amount of information that can be sent over the system. Working with the College Park center, Comsat has been able to make frame relay networks communicate with satellites. "The technology is a great advance for data communications," Chitre said.

In addition to Comsat and Hughes, Loral Qualcomm Satellite Services in Greenbelt, Md., Martin Marietta of Bethesda, Md., U.S. Sprint in Herndon, Va., and Superconducting Core Technologies, Inc. in Boulder, Co., have all worked with the center on research they probably would not have undertaken alone.

Technologies the center explores are too risky for businesses to finance on their own, said John Baras, director of the center. Companies don't have the expertise in satellite communications, soft- and hardware technologies, artificial intelligence, and network management to do the work alone, he said.

Since opening its doors in Nov. 1992, the University of Maryland center has been a resource for private firms, other universities, non-profit organizations and the National Institute for Standards and Technology in Gaithersburg. The center receives about \$600,000 a year from corporate partners, but is mostly supported by NASA, which allocated the research facility \$2.9 million for 1995. Despite declining federal science budgets, there's no sign the College Park center will be a target for cuts.

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