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Wireless High-Speed Data to Climb into the Ring Soon

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The fanfare over xDSL and cable modems has made it easy to overlook a new contender for high-speed data access—Yet, over the next several years, at least half-a-dozen wireless contenders—both terrestrial and satellite—will join the fray. Given some of the inherent advantages of wireless over wireline in rolling out dispersed new communications services, wireless competition will likely be formidable. With xDSL and cable modems still providing service to less than 1% of homes, the window is hardly closed to the wireless alternative.

Technology Futures, Inc. (TFI) is launching a study on access alternatives that is sponsored by the Telecommunications Technology Forecasting Group (TTFG), which is comprised of major LECs. The study will evaluate the prospects for various wireline and wireless technologies to compete with copper loop technology for voice and non-voice applications. The new study will complement previous TFI studies on the impact of cellular/PCS on LEC voice revenues; the demand of mass market, high-speed data services; and the modernization of the landline network.

There are several wireless technologies to watch:

- *Broadband CDMA systems* such as Siemens' CDMAlink, Ericsson's "Experimental" System, Alcatel's 9900, and InterDigital's TrueLink. These operate at the same or similar frequencies as PCS, and offer packet services at

data rates up to 384 Kb/s to fixed receivers. These systems are being tested now, and service availability is estimated for 1999.

- *Local multipoint distribution systems (LMDS)* such as ones manufactured by Bosch Telecom and Alcatel Telecom. These are similar to high-bandwidth cellular systems using fixed receivers. These systems operate at much higher frequencies (27.5 and 30 GHz) than cellular/PCS, affording them higher bandwidth but higher line-of-sight requirements. They are intended to provide the gamut of services including voice, two-way data at 2 Mb/s or more, and television. The service is available in a limited offering by Cellular Vision in New York City, and the FCC is auctioning spectrum. Look for widespread service availability in 2000.
- *Broadband LEO (low earth orbit) satellites* such as Teledesic or Motorola's Celestri. These will offer packetized data service at rates up to 16 Mb/s and channelized service from 64 Kb/s to 155 Mb/s on a worldwide basis. These systems are expected to be operational in 2002.
- *Third-generation (3G) cellular systems*, also known as the IMT-2000 standards (operating at PCS frequency range), will provide global roaming and data rates of 384 Kb/s for low mobility receivers and 2 Mb/s for fixed receivers. Final specifications are due in 2000, and operational systems can be expected in 2002.

In the background are smart antenna and microcell technologies, which can increase the effective bandwidth of a given wireless system, as well as ameliorate some of the line-of-sight problems at the higher rates.

It remains to be seen whether these wireless technologies will be niche players in mass market, high-speed access or one of the big contenders. With fiber-in-the-loop apparently on the sidelines for now, all of the major contenders—xDSL, cable modems, and wireless—must work in noisy, electromagnetic environments with limited bandwidth. This tends to level wireless' disadvantages with respect to its competitors. Given that 15 years is likely to go by before fiber-in-the-loop is universally available, the window of opportunity appears to be wide open for high-speed wireless technologies.

If you believe that TFI could be of assistance to your organization in developing a fast follower strategy, please contact Larry Vanston, John Vanston, David Smith, or any other member of the TFI consulting staff.