

Next New Things

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Broadband, wireless, and convergence are key drivers for emerging services, systems and devices.

Broadband. Always-on broadband access via cable modems and telco DSLs is enabling long-anticipated applications such as on-demand multimedia including music and movies, interactive multiplayer games, growth of e-commerce, growth of online advertising, integration of telecommuters in their companies' virtual private networks (VPNs), and site monitoring and management services (security, appliance management, energy management).

As broadband-equipped households become integrated in an growing global connected community, tipping points for new services are recognized and then quickly reached. For example, IP telephony and IP multimedia services, dependent on always-on Internet connections, are increasingly disrupting longstanding telecommunications structures. Now that over 26% of US households have broadband access, IP telephony has emerged as the preferred solution for phone services offered by cable operators and by AT&T; even incumbent LECs such as Verizon are introducing VoIP.

Wireless. Within homes, offices, campuses, stores, hotels, airports, and other gathering points, broadband wireless gateways, *aka* WiFi hotspots, are expanding accessibility to the Internet and to enterprise networks for PDAs, laptop PCs, and specialized devices.

Standards also have been agreed for a wide-area broadband wireless system called WiMax which will most likely be implemented on otherwise fallow licensed Business Radio Services (BRS) frequencies formerly intended for "wireless cable" services; WiMax systems initially will support fixed and nomadic broadband wireless access and eventually may also support broadband mobility services. WiMax chips will be included in laptop PCs and PDAs like today's Intel Centrino chips for WiFi access. Meanwhile, wireless service providers continue to invest in wide-area always-on

2.5G and 3G wireless networks that will support mobile Internet and data network access, m-commerce, and multimedia applications. These various solutions will be both competitive and at the same time often packaged to users as complementary features of multi-faceted wireless services.

In addition to consumer applications, proliferation of wirelessly-enabled IT applications for enterprises will support distributed work forces at lower cost and allow for more productive interactions with customers and business partners.

Convergence. Consumer electronics, personal computing, and communications are converging through digital access to, and processing and storage of, voice, data, audio, and video content. Thus, cable subscriber video devices (SVDs) are evolving into gateways for home-networked digital video recording (DVR), on-demand video, IP telephony, interactive games, and high speed Internet access, as well as plain old TV programming services. PCs already double as audio and video players and are contending to become home entertainment gateways. PDAs are morphing into mobile cellular PCS handsets and vice-versa. Cellphones and PDAs also serve now as MP3 music players, digital cameras, and video cameras, with slots for removable memory chip-cards, in addition to supporting WiFi Internet access.

In-home networking of valuable content will be supported by deployment of effective digital rights management systems that inhibit piracy while allowing economic authorized use.

Many of the emerging converged services and applications are already clichés in newsweekly magazine stories. Nitty-gritty challenges that will need to be overcome include initially higher cost and weight and size penalties of multi-function devices and the need to sort out multiple protocols and standards. Some users stubbornly will prefer devices that do one thing very well over converged devices with numerous bells and whistles. But the trends are clear and the means to support these new capabilities cost-effectively are now coming into view.