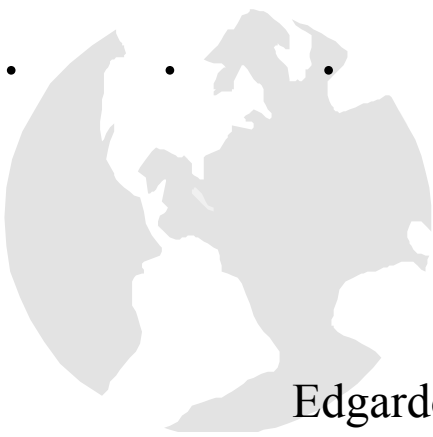




Leveraging Wireless Pervasive Networks Towards the Ubiquitous Computing Model



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" Wireless local area networks are a star player in the wireless communications field, with growth projected at 100 percent per year for the next three years. Users can deploy wireless LANs to transmit data, voice and video within individual buildings, across campuses, and over metropolitan areas. Some of the computer and communications industries' leading vendors are introducing Personal Digital Assistants (PDAs), modems, wireless microprocessors and other devices and applications in support of wireless communications. " **(Starobinski)**

The IT industry will continue to invest in research and development of wireless technology while diversifying their existing product lines to accommodate an increasing mobile computing customer base. The advent of mobile computing technology in the mid nineties after many years and millions of dollars of research of has brought about greater latitude in how users interface with computers. Opportunities for changes in the market-share pecking order will be many whereas the advent of a significant industry inflection point brought about the improvement of existing technology will be highly unlikely unless new technology radically changes the conventional computing lifestyle towards a majority driven ubiquitous computing model.

" Wi-Fi is just the first step, though. Hard on its heels are four equally innovative technologies -- WiMax, Mobile-Fi, ZigBee, and Ultrawideband -- that will push wireless networking into every facet of life, from cars and homes to office buildings and factories. These technologies have attracted \$4.5 billion in venture investments over the past five years, according to estimates from San Francisco-based investment bank Rutberg & Co. Products based on them will start hitting the market this year and become widely available in 2005." (Green)

In essence, wireless computing consists in computing unhindered by the use for wires and cables within networks and/or for use in accessing the Internet. Ubiquitous computing is a concept that involves the potential future use of wireless technology where access to the Internet and all the LANs interfaceable through the Internet would be achieved through towers and satellites. Ideally, ubiquitous computing would work like modern day cell phone systems utilizing GSM satellites (Europe) and/or radio towers (North America).

Mobile computing is a necessity and reality for many different types of computer users. Traveling business executives access the Internet and their respective corporate Intranets on their laptops, blackberries, PDAs, and cell phones. The prevalence of these technologies among the latter group is not limited much by the sophistication of wireless technology but due to a variety of other non-related product usability factors such as limited laptop battery life, small PDA screens, inappropriate PDA keyboard sizes, etc. Many home and corporate networks utilize wireless networking technology. Even though the technology is cheap and available some users prefer to use wires when dealing with large pervasive networks given that signal availability is sometimes encumbered by distance, building architecture, and furniture. When these conditions are present network administrators and CIOs will put up with the unaesthetic wires to avoid worrying about connectivity issues later. It is expected that when technology will be able to overcome these last remaining obstacles that we may see a complete disappearance of networking cables within the corporate environment.

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" Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of our lives. " **(Weiser)**

A ubiquitous computing model has an easier chance of taking hold in the European market first if the technology were to piggy back on the existing GSM cell phone satellite system. GSM has enabled Europeans to pay less for ubiquitous cell phone usage than LAN lines. That is not the case in North America where cell phone technology is still heavily reliant on proprietary frequencies running off of towers that do not guarantee coverage in all places.

If economically feasible a ubiquitous computing model unhindered by land line connectivity constraints would most likely boost high speed Internet usage and increase the potential market for a variety of new cross platform information driven services. Opportunities for a greater integration between television, cable, and the Internet would ensue. We already see the beginning as news organizations and entertainers have begun to achieve a greater interaction with audiences via online games, contests, trivia challenges, blogs, etc. Customer relationship management at a corporate level could be tailored even further. We see the beginnings of that today where for certain IT products a specialist can remotely interface with customer systems to try to fix potential problems. It is not unrealistic to suppose that in the future cars will have a computer interface accessible via a wireless connection with customizable permissions to enable mechanics or your dealers to advise about automotive maintenance and mechanical issues. We have seen the start of Internet and automotive interaction with the growing use of Internet car navigators.

Wireless technology and the potential advent of a future ubiquitous computing model will provide many diversification opportunities for IT, telecommunication, and media companies. However, unless our lifestyles change dramatically the bulk of computer use will continue to be done at home or at the workplace. Therefore wireless computing will continue to be a niche market and eventually become part of an accepted way of doing things. A strategic inflection point involving companies that leverage their ability in bringing wireless technology related service to the market to displace current IT industry leaders will remain highly unlikely

The IT industry will continue to invest in research and development of wireless technology while diversifying their existing product lines to accommodate an increasing mobile computing customer base. The advent of mobile computing technology in the mid nineties after many years and millions of dollars of research has brought about greater latitude in how users interface with computers. Opportunities for changes in the market-share pecking order will be many whereas the advent of a significant industry inflection point brought about the improvement of existing technology will be highly unlikely unless new technology radically changes the conventional computing lifestyle towards a majority driven ubiquitous computing model.

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