

Twelve Technologies for 2000 to 2010

We identify 12 high-impact technologies for user enterprises, including wireless Web technologies, biometrics, content-based retrieval, natural language processing, Bluetooth and speech recognition.

Core Topic

Electronic Workplace: Technology Futures

Key Issues

Which advances will trigger a revolutionary leap, rather than an evolutionary crawl, in the power of information technology?

Which emerging and embryonic technologies should early adopters be examining for competitive advantage?

Note 1

Methodology

Using a modified Delphi method, a group of Gartner analysts from a cross-section of technology and business areas created a list of high-impact technology areas. Each analyst then voted for up to 10 of the technologies that will be of highest impact within 10 years, with the emphasis on those that are currently undervalued.

Gartner analysts from a range of technology disciplines have identified technologies that enterprises should be examining for competitive advantage (see Note 1). The focus is on technologies that will be transformational within the next 10 years but are not generating the level of activity or attention that they warrant within user enterprises (see Figure 1).

Wireless Web Technologies (including Web phones and WAP) were unanimously judged a key technology area. Although the wireless Web is generating considerable attention, we believe the ultimate impact of true "spontaneous" computing (see Note 2) is still largely unrealized in terms of opportunities and challenges.

Biometric Identification (e.g., fingerprints, face and voice) will emerge as the only way to truly authenticate an individual, which will become increasingly important as security and privacy concerns grow.

Content-Based Retrieval will enable information seekers to retrieve a broader range of media types, including audio, images, video and text, without the need for human indexing.

Natural Language Processing (NLP) will be the means of providing content-based retrieval and analysis of texts and will also play a role in the next-generation speech interfaces that support natural language command and control.

Bluetooth offers short-range wireless transmission (an alternative to radio frequency) that will enable wireless peripherals, including wearable configurations. It may also support wireless e-cash schemes (e.g., a vending machine communicating with and billing to a mobile phone).

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Figure 1
Technology Radar Screen



Dates indicate the point at which the technology begins the steepest part of its adoption curve.

Source: Gartner

Note 2

Spontaneous Computing

An era of spontaneous computing will begin around 2007, predicated on the availability of ubiquitous, reliable wireless connectivity that will provide any time, any place access to information and messaging through highly portable or wearable systems with speech interfaces.

Spontaneous computing will allow users to obtain real-time information at the point where they need it (e.g., a sales representative in contract negotiations conferring with a remote sales manager). This responsiveness will create a fundamental change in the way users view information access and creation. Instead of being the center of attention, information processing will become a secondary activity achieved while the user is performing some other task (driving or sitting in a meeting), leading to true multitasking.

Acronym Key

ISP	Internet service providers
XML	Extensible Markup Language
WAP	Wireless Application Protocol

Speech Recognition is gaining ground as a more flexible alternative to touch-tone automation and as a means to access Web information over the telephone. The use of speech recognition in text entry and command and control will grow as natural language capabilities strengthen.

Webtops are Web-based personal portals — virtual desktops resident on the network — that give users access to their information and applications from wherever they gain access to the Internet. Their success will be linked to the growth of software provisioning via application service providers (ASPs).

XML for content and data exchange is a standard feature in Web products. However, the real impact will not be realized until application developers address the highly complex area of defining common, cross-application semantics on top of XML.

Embedded Miniature Computers, which have also been characterized as “ubiquitous computing,” will provide the ability for many everyday objects (e.g., household appliances, doors, clothing and food packaging) to collect and analyze data and communicate with users, vendors or other objects.

Pattern Recognition techniques (e.g., neural networks) will enjoy a resurgence of interest, particularly as a means to analyze automatically the growing amount of data that is being collected by retailers, marketers, Web sites, and in the future by miniature microphones, cameras and other sensors embedded in the world around us.

E-Cash, including e-wallets and online currencies, has not yet reached anywhere near the critical mass required to be a viable alternative to hard currency. It will take many more years for the industry to develop appropriate business models (e.g., billing to phone companies or ISPs for online purchases) and delivery mechanisms (e.g., a multipurpose smart card for an e-wallet) and to determine policy on issues such as traceability, but e-cash is an inevitable evolution in consumer behavior.

Display Technologies, such as digital ink, light-emitting polymers and heads-up displays, will deliver the power of computing and connectivity to new environments where conventional screens are inappropriate (e.g., packaging, signage, furniture, clothing and hands-free mobile applications).

Bottom Line: Technology and business planners should evaluate these technologies as part of their technology portfolios to determine the impact on future IT and business directions.

