Instant messaging: Lessons in pervasive computing

Chats, online meetings and pages, instant messaging may be among the most popular forms of information technology today. Instant messaging is available on a variety of platforms and its penetration into non-technical communities makes it the pioneer of pervasive computing. Its importance is reflected in the US Federal Communications Commission's restrictions on the approval of America Online's merger with Time Warner. Instant messaging provides lessons on four key attributes of pervasive computing: access, context, community and flexibility.

You raise your hand at the city council meeting and speak into the microphone. As you begin your protest of the new road through your neighborhood, you simultaneously see supporting facts from your best friends on the visor display you are wearing. Friends at home provide quick answers to a question about the local demographics, and, with a word, you are able to provide a 360-degree simulation of the road to the council, one that illustrates some dangerous blind spots. The highway contractor is there, too. He makes his points with the jargon of his profession, but you get a realtime translation on your display. Within his many comments is an offer to use rerouting and stop signs to improve safety. You have found the starting point for a compromise.

How this happens

By any measure, instant messaging (IM) is a genuine phenomenon. Worldwide, cell phone users send more than 9 billion short text messages every month. Barnes & Noble has over 800 transcripts of chats with authors online. Over 60 million people use AOL Instant Messenger, or AIM, on their personal computers -- a fact that no doubt led the US Federal Communications Commission to make the guarantee of interoperability of AOL IM services before offering "advanced IM-based high-speed services," such as videoconferencing, a key condition for approval of its mega-merger with Time Warner.

The variety of ways IM manifests itself attests to its vitality and popularity:

Chat -- This is the most basic form of IM. It is used for casual conversations with friends, making quick business
arrangements and holding impromptu meetings. Chats are used for back channel conversations during teleconferences and to meet new friends.

**Chat rooms** -- These are the med chats that may include two people or hundreds. They bring together people with common interests, sometimes around a specific topic.

**Interviews** -- Many media and special interest sites use regular chats with experts and celebrities to draw audiences. Often, these are associated with other media, including live television shows.

**Pages and short text** -- We've moved from the days when pagers prompted subscribers to call their service to pagers providing phone numbers, sports scores, stock quotes and short messages from friends. This has evolved into full-fledged, wireless chat.

**Live help desk** -- It is no longer unusual for online help to lead to a live chat with help desk personnel. In fact, some sites will even include realtime video of their friendly faces.

Variations in IM continue to proliferate. Expert finder systems provide access to professionals as part of static, searchable reference documents. Multicity.com and others provide realtime translation of chats. There are variations of IM with voice and, in the case of the IBM Babble project, visual representations of the speaker that provides cues regarding their levels of participation. In itself, instant messaging is of growing importance in attracting customers, handling complaints, providing services and augmenting applications. It has attracted new users to IT and muscled its way onto a variety of platforms. It has changed the way meetings are held and provided a water cooler for virtual teams. But since IM is at the leading edge of pervasive computing, it has lessons beyond its own specific uses:

**Access** -- Customers do not distinguish between different platforms. They expect a single IM application, along with its "buddy" lists to carry over from cell phones to pagers to PCs.

**Context** -- Expert finder systems leverage the context of the reference to target the right professional. A cell phone with global positioning system (GPS) capabilities can provide messages (such as where a restaurant is) based on location. When a help desk application opens, the support person may already have the customer record and information that classifies the problem.

**Community** -- In practical terms, chat has been a way for people with common interests to find each other. Retailers actively leverage this to build relationships and loyalty. The spectrum of IM involvement extends from enabling the deaf community to interact more efficiently with the hearing community to the use of chat by teens to define themselves.
**Flexibility** -- The range of uses of IM is certain to continue to proliferate. Voice availability is on the frontier, and integration into e-mail, games, conferencing applications (such as Microsoft NetMeeting conferencing) and searches will become a basic requirement. IM also raises the bar for realtime in all applications. This is already seen in some cases where it has supplanted bulletin boards and other asynchronous online applications. Aimster takes things in another direction, growing new applications from an IM base.

How do these attributes apply elsewhere in pervasive computing? Consider an application for a tourist: It will be expected that the traveler will be able to make itinerary adjustments from a phone, a PDA or a public kiosk in realtime, contacting a live person as required. Location information will be an assumed part of the transaction (as well as, perhaps, a record of the day that might indicate a recommendation on where to get a quick meal). The tourist will even be comforted by the ability to share experiences in detail in realtime, providing blow-by-blow updates to his or her best friends so he or she can create a shared, emotional accent for the new adventures.

**What this means to you**

The variety of often incompatible IM technologies in use (IBM Babble system, Sun Microsystems Java Internet Relay Chat software, Microsoft NetMeeting conferencing, Lotus Sametime application, AOL Instant Messenger software) hinders the effective application of this technology. Compatibility problems reflect larger problems with proprietary applications and point to the continued need to advance standards here and generally in pervasive computing technologies.

Adoption of IM is rocketing upward, with new, creative applications appearing on a regular basis. Even though proprietary applications create barriers, the integration into other applications is well along. Still, IM is -- in many aspects - not fully evolved. Rules for privacy, accessibility and personal safety are not well developed. There are no sanctions for spamming or for individuals who drop into chat rooms just to shout insults.

Inclusion is not complete, though translation programs provide a good start. The real business value is not well understood, and usage guidelines are incomplete. Perhaps the greatest potential for IM is as part of a larger, more developed knowledge management system. A key requirement of knowledge communities is access, and IM provides a route to finding and reaching the person who knows. IM has already shown its value in online education. As it becomes more integrated into conferencing, e-mail and Web pages, it is likely to enliven other media and help them become more useful.

**Tek to watch**

- Peer-to-peer
- Extensible Markup Language (XML)
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- Java technology
- Pervasive computing
- Avatars
- Expert finder
- GPS

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Other sites of interest

Aimster
http://aimster.com/

Definition - instant messaging
http://webopedia.internet.com/Internet_and_Online_Services/
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**Chat/instant_messaging.html**

**Instant messaging resources**
http://www.pulver.com/im/
http://www.ultimateresourcesite.com/instantmessaging/
programs/notenow.htm

**Realtime translation**
http://multicity.com/

**Reviews of Avatar Chat Clients**
http://coverage.cnet.com/Content/Reviews/Compare/Chat/ss05.html

**Unitedmessaging**
http://www.messagingonline.com/

**About this publication**
*Executive Tek Report* is a semimonthly publication intended as a heads-up on emerging technologies and business ideas. All the technological initiatives covered in *Executive Tek Report* have been extensively analyzed using a proprietary IBM methodology. This involves not only rating the technologies based on their functions and maturity, but doing quantitative analysis of the social, user and business factors that are just as important to its ultimate adoption. From these data, the timing and importance of emerging technologies are determined. Barriers to adoption and hidden value are often revealed, and what is learned is viewed within the context of five technical themes that are driving change:

**Knowledge Management:** capturing a company's collective expertise wherever it resides -- databases on paper, in people's heads -- and distributing it to where it can produce the big payoffs.

**Pervasive Computing:** combining communications technologies and an array of computing devices (including PDAs, laptops, pagers and servers) to allow users continual access to the data, communications and information services.

**Realtime:** "a sense of ultracompressed time and foreshortened horizons, [a result of technology] compressing to zero the time it takes to get and use information, to learn, to make decisions, to initiate action, to deploy resources, to innovate" (Regis McKenna, *Real Time*, Harvard Business School Publishing, 1997.)
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Ease-of-Use: using user-centric design to make the experience with IT intuitive, less painful and possibly fun.

Deep Computing: using unprecedented processing power, advanced software and sophisticated algorithms to solve complex problems, and derive knowledge from vast amounts of data.

This analysis is used to form the explanations, projections and discussions in each Executive Tek Report issue so that you not only find out what technologies are emerging, but how and why they'll make a difference to your business.

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