

“Harnessing The Internet’s Multimedia Potential”

by: S. Ann Earon, Ph.D.

President, Telemanagement Resources International Inc. (TRI)

Manahawkin, New Jersey

The current state of the multimedia market is both dynamic and confusing. Today’s multimedia solutions include communications by telephone, local area networks (LAN), and the Internet. They also cover a range of interactivity levels from two-way collaborative working groups to one-way remote presentations to retrieval of data. Some products are stand-alone, while others are integrated into other products. Multimedia communications include conferencing, data collaboration, streaming, messaging, and retrieval services. Following are definitions of each of these types of communication.

Videoconferencing – Videoconferencing is conferencing that employs voice and video communications. Newer solutions integrate data conferencing as well.

Data collaboration – Data collaboration is audioconferencing supplemented with graphics display. The graphics can include slides, computer images, documents, objects, still-frame video images, annotation on an electronic surface, and facsimile transmission. The data part of the conference may or may not use the same network as the voice traffic. A data conferencing configuration growing in popularity is a combination of audioconferencing via the standard voice phone network together with simultaneous data sharing over the Internet.

Streaming -- Streaming, also known as webcasting or netcasting, is the transmission of live or pre-recorded audio or video to PC’s that are connected to the Internet. Streaming is best suited for “one to many” communications. The two most popular software programs that support streaming are RealNetworks RealPlayer and Microsoft’s Windows Media Player. Each of these programs enables a personal computer to play the video/audio feed as it is being received by the PC rather than waiting for the entire file to download.

Messaging -- Messaging services facilitate exchange of information including electronic mail traffic, e-mail to fax, telex, and paging services.

Retrieval Services -- Retrieval services offer users the ability to obtain information from a variety of different sources. These might include viewing movies, accessing banking data, or obtaining information available from any library.

The Internet has worked its way into the mainstream corporate environment, as well as into many homes. The Web browser has become the user interface of choice for a wide range of applications from e-mail to Web surfing, to telephony, to multimedia communications.

Multimedia tools based on Internet technology are easy to use. With server-based products, a simple URL can give hundreds of users easy access to data from any system with Internet access.

Multimedia communications are any easy way for remote and local meeting attendees to stay on the same page of a presentation. Sample applications follow:

- A human resources trainer in San Francisco wants to teach new managers in Boston about new company policy. Using videoconferencing on an ISDN (integrated services digital network) and multimedia communications to show her PowerPoint presentation, the trainer conducts an interactive session. At the end of the session, the trainer transfers her PowerPoint file to the other end using the ISDN link. Videoconferencing enhances the question-and-answer period between the two sites.
- A student is seeking information about a class she was unable to attend. She has the option of retrieving the information by viewing the professor's course via streaming or she can access the lecture notes through a retrieval system.
- An individual traveling away from his home and office has the ability to obtain messages in a variety of formats. These include email, fax, telex, and pagers. No longer must he remain unwired, as many of these services are available from wireless devices.
- Individuals in a conference room in Chicago have attached an electronic whiteboard to a PC in the conference room, which is connected to an analog telephone modem which links a PC and whiteboard in a conference room in the organization's Dallas facility. Any information written on the whiteboard at either site appears on the PC and whiteboard at the other site. Conference attendees discuss and edit the information while communicating over a speakerphone, which uses a separate audio line. This same software can run over a local or wide area network.
- A corporate CEO wants to present the latest financial results to analysts dispersed in 100 locations worldwide. Using the Internet and remote presentation application software, he uploads his images to a Web server. Users access the presentation via a standard desktop Web browser when given the URL and password. The audio is connected via a multipoint phone call using the regular telephone network and an audio bridging service. The audio may also be digitized and sent over the Internet. Feedback is received via a chat window for text messages. Additionally, the audio and slides are recorded, archived on a Web server, and made available for playback at any time for anyone who was unable to attend the briefing.

Applications and Benefits

Multimedia communications are used across many markets and applications. Today many companies are realizing that a real competitive advantage can be attained by including corporate communications, training, distance learning, and information delivery in the same concept.

Generic applications of multimedia communications are too numerous to mention. Any place in any company where meetings take place – finance, manufacturing, product development, marketing, sales, human resources, engineering, training, -- is an appropriate location to use multimedia communications technologies to connect dispersed staff without travel, to bring in a remote expert for consultation or staff training, to interview job candidates or witnesses, to make a presentation to a vendor or customer, to

view data and presentations on a delayed time basis, and to receive messages at any time or place.

The use of multimedia communications has the potential of increasing productivity and efficiency by reducing unproductive travel time, preventing meeting delays, creating shorter and more structured meetings, allowing for greater reach of a message since individuals can obtain information when it is convenient for them, and faster exchange of information. Multimedia communications also allow for an increased number of participants. It is difficult to get information to everyone at the same time. With multimedia communications, all individuals who need data, can get the data when it is easiest for them. Additionally, people who would never have obtained information in the past, can now easily do so.

Some of the applications/solutions for which multimedia communications are appropriate:

- Vertical Target Markets: general meetings, client discussions, negotiations, investor relations, training, crisis management
- Applications: academic, corporate, and government training, specialist consultation, information sharing for businesses and consumers
- Target Markets Based on Company Size: meetings, client conferences, negotiations, product development, package design, public relations, product announcements, press conferences, employee & investor relations, telecommuters, consumer information
- Functional Areas: marketing, finance, engineering, sales, legal, human resources, manufacturing, consumers
- Other: client conferences, customer support, product development, and training.

Provider Requirements

Many telecommunications providers already have the network in place to provide the multimedia services discussed above, while others will need to improve their infrastructure.

Requirements to meet the market demands include network bandwidth, billing services, scheduling packages, routers and servers. It is important for the providers to determine which services best meet the needs of their market and then determine the technology required to support those services.

Additionally, providers need to determine if they plan to offer hardware as well as network to their customers. As an example, for videoconferencing a provider could choose to offer network bandwidth, bridging services, and/or videoconferencing codecs to end users. For streaming, a provider could decide to sell routers and servers or develop a service providing access to these devices within a central office.

Customer Requirements For Multimedia Communications

Many organizations today are investing in multimedia tools and solutions that support relationships with employees, customers, and suppliers. Multimedia, computing, and communications tools are constantly changing and improving their value to users. Following are key trends to watch in this industry.

1. Circuit switched ISDN networks are the current choice for videoconferencing, but packet switched IP will be the network of the future of multimedia. However, the transition will not take place overnight. The transition is evolutionary instead of revolutionary due to the time and cost associated in upgrading networks. Each carrier makes its own decision on what services and products to support. Until a large enough infrastructure is in place that is standardized, there will be pockets of offerings, but not a national or global offering supported by all.
2. Technology is enabling multimedia networks capable of handling audio, video, and data. These networks support real-time functions such as videoconferencing and IP broadcasting, as well as store & forward applications like cache-based streaming, email, file transfers, and transaction processing.
3. The Internet has become a fundamental communications vehicle for both corporate and consumer customers. The Internet is becoming a low cost, easy-to-use platform for remote presentations, meetings, and two-way conferencing. The browser is the user interface of choice for a wide range of applications. The Internet will lead to an entirely new computing environment where applications will reside on public networks. Users will not have to develop or own the applications; they will simply have the services provisioned on a “pay as you go” basis. This presents a significant revenue opportunity for telecom providers. It also presents the need to develop a billing and service offering structure, along with a staff, to support these offerings.
4. Already a new generation of multimedia equipment has improved on reliability, interoperability, and ease-of-use, at continuing to drop prices. Devices for videoconferencing include set-top boxes which have dropped in price from upwards of \$50,000 per unit to less than \$5,000. These appliances are expanding the market in two important ways: companies that have committed to videoconferencing technology for remote meetings now find they can extend the penetration of the equipment within their organizations; small organizations that have been unable to justify the cost of conferencing find the appliances are well within their budgets with features and functionality meeting 80% of previously higher priced products.
5. In the future, sophisticated tools will monitor all aspects of network performance, as well as the terminal subsystems (audio, video, etc.) and provide early warning of impending problems, diagnostic capabilities, fast problem resolution, and remote call set-up and monitoring. These devices can be installed at a network provider site, at an integrator’s site, or on the customer premises. Some remote management tools are available today, while more sophisticated versions are being developed for deployment within the next 12 months.
6. Multimedia communications are becoming part of the corporate mainstream.

Organizations are finding collaborative data sharing and remote presentations via electronic whiteboards or PC-based software to be very valuable additions to audio and video conferencing. Web-based remote presentations allow any user with Internet access to attend a meeting visually while the audio portion is carried over an IP network or the public switched telephone system.

7. Broadband access will soon explode. Telephone companies and the cable TV industry promise to bring multi-megabit data services to home and business for a fraction of today's costs. The performance and ease-of-use of new broadband access communications will cause an explosion of interest in many applications ranging from videoconferencing, to streaming content creation, distance learning, entertainment, access to news services, web collaboration, and e-commerce.

The Future

The future for multimedia communications is bright. Dynamic changes in the global communications environment – decreasing network and equipment costs and the need for businesses to compete in a global economy – will propel the adoption of multimedia communications at a rapid rate. Three important technology trends are influencing the growth of multimedia communications: price, standards, and infrastructure.

Price

Prices for equipment have fallen dramatically in the past two years, while ease-of-use and quality have improved. As a result there has been increased penetration of multimedia communications within organizations who have been video-savvy and are now seeking the next improvement. The drop in price has also meant that smaller firms have now discovered the affordability of multimedia communications. The advent of this technology over the Internet enhances the reach of communications to more people, even those in remote areas. From a data perspective the price is now often free. The most notable offerings being made by Microsoft and their Netmeeting product line.

Vendors have begun to develop standardized user interfaces to make it easier for users to work with any system. Any analogy would be a universal remote control for a VCR. In the past, each system had its own unique report control, now universal devices are available to operate all systems. The same is becoming true to multimedia interface devices.

Standards

The United Nation's International Telecommunications Union was formed in 1865. Its objective was to publish telecommunications-oriented recommendations after studying technical, operational, and tariff-based issues. Its recommendations affect all forms of telecommunications. International telecommunications standards for multimedia communications have made it easier for people to interconnect. The Internet has helped users who might never have exchanged information in the past, readily available to one another by either dialing a call or clicking a button. In addition to Web access, the PC is a gateway to entirely new Internet-centric multimedia communications solutions.

Network Infrastructure

Organizations have adopted the Internet at record-breaking speeds. Multimedia-savvy IP networks are inevitable as computers and communications converge. Broadband access will soon be a reality. The new generation of multimedia tools ride on networks that are easy to use and readily available. Productivity gains can be achieved without changing work habits. Multimedia communication solutions provide small and large organizations with the tools they need to make faster and better decisions, increase productivity, educate faster, and save time and the burden of excessive travel.

The convergence of multimedia applications with high performance user networks makes collaboration the essential tool for organizations during the next decade. The Internet will make multimedia communications a normal and necessary tool.

Dr. S. Ann Earon has been a researcher and consultant in multimedia communications for 23 years. She holds a masters in instructional technology and educational administration from Northeastern University, and a Ph.D. from Boston College in business, speech & communications, and education. She is a member of the Teleconferencing Hall of Fame and currently chairs the Interactive Multimedia & Collaborative Communications Alliance (IMCCA). <mailto:AnnEaron@AOL.com>