Streaming in Manufacturing

by

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Abstract

In the manufacturing world, the word “streaming” conveys visions of processes and equipment being optimized to their most efficient operation within a facility. However, in this case, streaming is being used to refer to the distance learning that is taking place in the manufacturing world. “Streaming” is synonymous with streaming media such as streaming video or streaming audio. This research paper analyzes what streaming media is, how it is utilized, and who is developing it. In addition, it briefly details the latest in streaming media product development.

Streaming in Manufacturing

Chrysler Corporation's <http://www2.chryslercorp.com> mission is to become the premier car and truck supplier of the world by the year 2000. In order to meet this objective, many manufacturing operations are streamlined where productivity is maximized. However, it is not just the maximization of equipment to its utmost efficiency to become the best. Companies such as Chrysler have to be on the leading edge of technology – not only in manufacturing equipment but also in employee training.

Obtaining maximum efficiency is the way to beat the competition. Even though equipment may be on the leading edge, the employees must have the knowledge and skill to use it correctly and effectively. "The U.S. corporate training market soared to more than $60 billion in 1997, about $20 billion of which was spent on technical training" (Bernstein, 1998). It is apparent that companies are realizing the need for information technology (IT) training.

Traditionally, companies have used the traditional training method of sending their employees to an offsite school. However, costs associated with this type can be high, not to mention only a select few individuals can attend at one time. In today's marketplace, there are many ways companies can go about training their employees. One of the newest and foremost technologies being used is streaming media. This research paper analyzes streaming media by detailing what it is, who utilizes it for educational purposes and the three main streaming developers. In addition, it briefly details the latest in streaming media product development.

Streaming, What?

"Streaming is the merging of two existing systems: broadcast audio and video and computer networks. Rather than using the airwaves or cable to deliver the broadcast, streaming uses computer networks. These well integrated networks simply read the digital audio and video information as just another form of data" <http://www.firstconf.com/c43/xing.html>.

The popularity of streaming is a result of companies' needing to increase the speed and effectiveness of communication within the organization while stretching the dollar. Constraints such as time and distance are alleviated since streaming can be client dependent. Therefore, this strategic training direction can result in many benefits for companies.

Streaming in Use

One company who is taking advantage of streaming media is Ford Motor Company. Ford Motor uses "best practices" to train employees how to best operate their manufacturing processes. Valuable procedures are detailed and entered into a corporate database. However, in order to replicate these "best practices", they must be taught to other employees not only to those located regionally but also globally.

Ford Motor uses streaming video technology to enhance the training effectiveness of the "best practices" replication process throughout the organization. Streaming video clips are attached to the "best practices" files in order to make them more useful. So far, the company has been able to deploy the replication process in 19 countries on five continents. Darlene Wolford, manager of the best practices replication process for Ford Motor, says "the process has proved to be worth about $500 million over the past couple of years, both in terms of ease of use and in terms of replicating and implementing innovative procedures throughout the company. This puts Ford among only a handful of companies who are looking to leverage the latest Web-based multimedia" (Adhikari, 1998).

CNBC Dow Jones Business Video of New York also utilizes streaming audio and video <http://www.cnbc.com>. CNBC is a division of MSNBC that provides the latest in business news. CNBC uses this technology to provide business-related information as well as interviews and analysis from CNBC worldwide. The students in this case consist of clients of major online brokerage houses such as The Wall Street Journal Interactive <http://www.wsj.com>, NASDAQ.com <http://www.NASDAQ.com>, and Discover Online.

Michael Wheeler, president of CNBC Dow Jones, is convinced more businesses will use streaming media. He feels this way because "people remember 20 percent of what they read and 70 percent of what they see and hear." Morgan Stanley and Fidelity have already contracted with CNBC Dow Jones to create audio and video slides for them too (Adhikari, 1998).

One last example of a company using streaming media for educational purposes is MIT Sloan School of Management in Cambridge, Massachusetts <http://web.mit.edu/sloan/www>. Students can find out about courses and professors by accessing streaming video over the Internet. Traditionally, students had to gather this information at lunchtime presentations offered over a three-day period twice a year.

Anne Drazen, assistant dean and chief technology officer at Sloan, decided to put these presentations on the World Wide Web. Presentations are limited to five minutes each. The presentations are taped and then sent for digitization. Anne Drazen says, "the old way was grueling" (Adhikari, 1998).

These are just a few examples of companies who are utilizing streaming media. To learn more about other companies who are utilizing this technology, there is a Streaming Media Conference at the Grand Hyatt in San Francisco on November 9-10, 1998. Details of this upcoming conference can be seen on <http://www.firstconf.com/c43>. Let's meet the industry leaders next.

Streaming Developers and Their Products

The three prominent companies in streaming media development are RealNetworks, Microsoft Corporation, and Xing Technology Corporation. Each of these companies is providing state-of-the-art programs such as RealSystem G2, NetShow, and StreamWorks 4.0 respectively. Detailed below is a highlight of each company's background and their respective product information.

RealNetworks is located in Seattle, Washington. Their primary mission is to develop and market software products to enable personal computer users to send and receive audio, video, and other multimedia services using the World Wide Web (WWW) <http://www.real.com>. Currently, RealNetworks is a recognized leader in the streaming media market with products such as RealSystem, RealAudio, RealVideo, RealText, RealPix, RealServer, RealPlayer, and SureStream. This paper shall focus on RealSystem G2 since it is their latest development in streaming media.

RealSystem G2 is "the first open, extensible standards-based streaming media system, which delivers new rich media experiences to users through the synchronization and playback of multiple media types" ("RealNetworks and CBT Systems..", 1998). It incorporates the industry's newest authoring standard, Synchronized Multimedia Integration Language (SMIL). RealSystem G2 combines state-of-the-art streaming audio and video with a complete set of multimedia data such as streaming text, images, and slides. In addition, "this new system, coupled with a complete cross-platform, client-server transport system, will scale to meet the dynamic needs of the rapidly growing enterprise training market, and will automatically deliver the highest quality multimedia experiences to users whose connection speeds range from 28.8 modems to higher speed local area networks (LANs)" ("RealNetworks and CBT Systems..", 1998).

Another major developer in the streaming arena is Microsoft Corporation <http://www.microsoft.com>. Microsoft's mission is "to create software for the personal computer that empowers and enriches people in the workplace, at school and at home" <http://www.microsoft.com/mscorp>. Microsoft's streaming media product is called NetShow.

NetShow is very similar to RealSystem G2 since it includes a comprehensive suite of authoring tools and streaming services. Audio, video, illustrated audio, animations, and other multimedia are just a few. Windows Media Player, which is a subpart of NetShow, uses Advanced Streaming Format (ASF) to deliver media over the network or the

Internet. NetShow can be delivered over a wide range of bandwidths including 28.8 Kbps. This is just another example of the newest technology that can be used in the distance education field. Additional information on NetShow is available on <http://www.microsoft.com/NTServer/Basics/netshowservices>.

Xing Technology Corporation <http://www.xingtech.com> developed StreamWorks 4.0 for streaming media applications. Xing is a provider of software-based digital video creation and delivery tools. StreamWorks can be used on a variety of clients such as Windows, Macintosh, or Unix to deliver audio and video content either live or on-demand. StreamWorks delivers the highest quality video and audio streaming over existing networks and broadband environments in both MPEG-1 and MPEG-2.

RealNetworks, Microsoft, and Xing Technology seem to be the three most prominent developers in streaming media. It has yet to be determined which one will reign as the top streaming media developer. Copies of their players can be downloaded from their respective web sites. Also, First Conferences lists various interviews on their web site where RealPlayer or NetShow can be selected <http://www.firstconf.com/c43/video.html>.

Conclusion

Streaming media in conjunction with high-end multimedia systems has the ability to bring training topics to life. This creates a dynamic and engaging learning environment. Ellen Julian, senior research analyst, education and training, International Data Corporation states “Interactive training over the Internet provides learners-regardless of time zones and geographical barriers-with complete flexibility and convenience in accessing a high-quality learning experience” (“RealNetworks and CBT Systems..”, 1998). I would say that I have to agree with her. Streaming media is a forthcoming multimedia training experience that many corporations such as Chrysler begin utilizing.

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