THE INTEGRATION OF PERFORMANCE LOGS WITH DIGITAL VIDEO FOR REVIEW OF SIMULATION TRAINING SESSIONS

John W. Lutz, Thomas Dongill, John J. Schaefer III
University of Pittsburgh Medical Center (UPMC),
Peter M. Winter Institute for Simulation Education and Research (WISER) Pittsburgh, PA 15261

Abstract

Full-scale simulation education sessions are often recorded using standard videotape for playback during post-session debriefing. Use of the Laerdal SimMan allows automatic generation of Extensible Markup Language (XML) performance logs of these sessions. Recently there have been developments in Internet-based digital video recording that allows the combination of these logs with video over the Internet.

Background

Full-scale simulation education sessions are often recorded using standard videotape for playback during post-session debriefing. Rewinding and queuing the video tape to the appropriate spot to make educational points can be time consuming and frustrating for the instructors and students alike. New software has been developed that allows the digital recording of video on relatively inexpensive equipment. The software allows the user to programmatically queue the video to desired points instantly.

The latest version of Laerdal SimMan allows the automatic creation of Extensible Markup Language (XML) data logs of the students performance during simulator sessions. Different Extensible Style Sheet Language (XSL) files can be applied to these XML data files to allow formatting that highlights correct and incorrect steps taken during the simulation session.

METHODS

Schematic of the combination of the XML data, XSL style sheet and digital video file.

There are preliminary versions of software available that allows digital video recording on a central server with playback available through a customized ActiveX™ object over the Internet via a standard web browser. Playback can be indexed to specific time points during the recording using standard web programming techniques.

METHODS

The student or instructor can choose the simulation session they want to view, which will bring up the XML data formatted in one of several styles depending on what needs to be emphasized. Each event and comment in the log file is time stamped. The timestamps in the log file are programmatically hyperlinked to pop open a window that will display the video at that selected time. Controls are built into the video window that allow the user to fast forward, pause and rewind as needed. The video can be shown as “picture in picture” to allow the real-time display of the SimMan vital sign monitor or a second video source along with the primary video source.

This technique allows the instructors and students to “zero in” precisely on problems that occurred during the session. Then can then see, and more importantly, learn to correct, those problems.

Recent developments have allowed for the convergence of these two technologies using standard web programming techniques.

Discussion

We have used standards-based web programming techniques to take the time stamps provided in the XML log files and create web links to the time index. This allows participants to easily correlate their actions during the sessions with the results in the log files.

Conclusion

The recent development of Internet-based digital video recording allows the combination of data files to specific portions of video recordings, facilitating the review of education simulation sessions by the participants over the Internet.