A Web Based Multi-display Presentation System

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ABSTRACT

In this demonstration, we are going to illustrate how to give a presentation using multiple displays connected to the Internet.

Categories and Subject Descriptors

H.4.3 [Communication Applications]: Computer conferencing, teleconferencing, and videoconferencing. H.5.1 [Multimedia Information Systems]: Video, Audio input/output; Artificial, augmented, and virtual realities; H.5.2 [User Interfaces]: Interaction styles, User-centered design, Graphic User interfaces (GUI), Prototyping; H.5.3 [Group and Organization Interfaces]: Computer-supported cooperative work, Collaborative computing.

General Terms

Management, Documentation, Design, Experimentation.

Keywords

Computer assisted presentation authoring, multimedia venues, presentation authoring, rich media presentation, device control.

1. INTRODUCTION

Many meeting environments are equipped with multiple displays connected to the Internet. Users in these environments may use multiple displays to convey information to audience members during presentations. In this paper, we call these presentations multi-display presentations. Existing presentation authoring and playback tools lack handy functions to support devices beyond a single display. We designed a presentation authoring and replaying tool called EPIC (Environment Picking Image Canvas.) to help people using multiple displays in their presentations.

Unlike the specialized display system that requires all displays connected to one PC [1], EPIC assumes that every display is connected to an individual PC, and all PCs are connected to the same network. This design makes our system scalable for arbitrary display configurations.

Our early EPIC version only supports displays connected to the same Intranet. It also requires a display control server on each display-connected computer [2]. These requirements make it a

little hard for installing and maintaining a system. Additionally, in teleconferencing scenario where the presentation control software and displays are connected to different Intranet, people need to do extra network connection setup for using this software. We tackled these problems by displaying EPIC presentations using web pages.

In this demonstration, we want visitors to gain hand-on experience on authoring multi-display presentations using EPIC. All users are also encouraged to show their authoring result using WebPages.

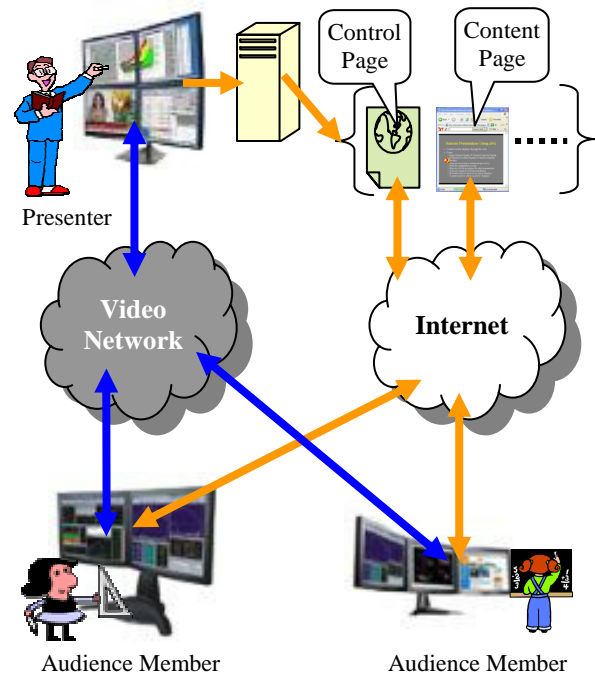## 2. WEB BASED MULTI-DISPLAY PRESENTATION

Figure 1. System configuration for web based multi-display presentation in a teleconferencing scenario

We developed a Web based multi-display presentation tool which can be used to control slide presentations on multiple computers connected to the Internet. This tool does not require a specific control server on any computers connected to presentation displays. It is scalable to the number of displays that a presenter wants to use. It is scalable to the number of parties who want to

view a presentation. It can synchronize presentation slides on multiple displays. It supports presenter and audience members to interact with presentation materials. Additionally, it can be mixed with any existing teleconferencing systems for a remote presentation.

Figure 1 illustrates the configuration of our system in a teleconferencing scenario. Depending on available videoconferencing systems, the video network in this configuration can be a specific network or the Internet. Our web based multi-display presentation tool is used to assist presentations during a teleconference.
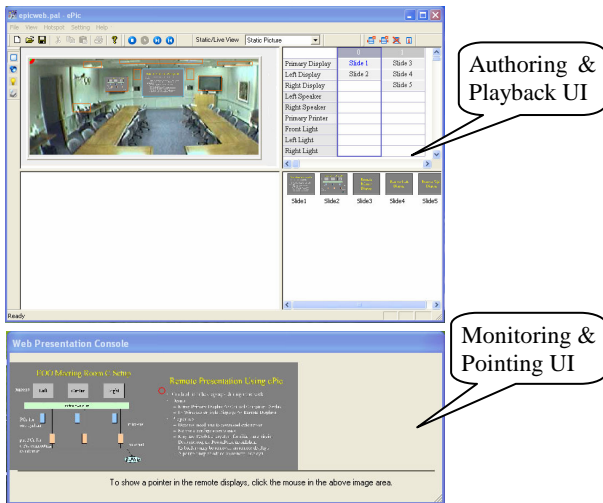

Figure 2. ePic authoring and web presentation UI

By using our system, a presenter can use the ePic 'Authoring & Playback UI' shown in Figure 2 to edit a multi-display presentation and save the authoring result on a web server as content pages, control pages, and a presentation navigation page. While content pages are generated mainly based on presentation material, the control pages are generated for synchronizing presentation contents on various displays. The presentation navigation page is designed for the presenter to navigate the presentation without the 'Authoring & Playback UI'. With this navigation page, the presenter can give the presentation with any computer connected to the Internet.

When the presenter presses presentation navigation buttons in the 'Authoring & Playback UI' or a presentation navigation web page, our system can dynamically update 'current-show' information in control pages. Additionally, the 'Monitoring & Pointing UI' pops out during a web presentation. This UI allows the presenter to monitor current show and move a red-dot pointer on current show to highlight an important statement or image region. The red-dot position on this UI will be transformed into pointer positions on remote displays and saved in control web pages.

To view presentation contents, remote audience members have to connect their displays to web pages listed on an index page for a presentation. During the presentation, the Java Scripts embedded in web pages will contact presentation control pages periodically. When the information posted in these control pages are modified,

the displayed content pages will be modified accordingly. Besides the content page updates on remote displays, the pointer on remote displays (Figure 3) will be moved to locations according to pointer position information saved in control pages. Moreover, if the presenter permits audience members to interact with the presentation material, audience members may interact with the presentation display or upload their extra slides. These interactions will be captured by Java Scripts and sent to the presenter's web server. The presenter's web server will modify corresponding control pages and content pages based on audience members' interactions with their displays. In this way, all presentation participants can interact with the presentation material during their discussion.
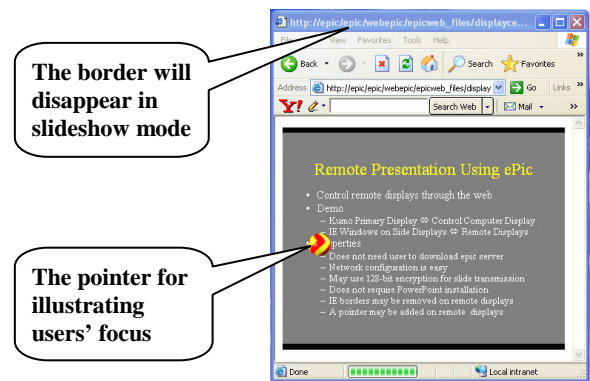

Figure 3. A displayed slide at a remote site

4. SUMMARY

In this demonstration, we will show a web based presentation system which can support a presentation using multiple displays connected to the Internet. The system has following advantages:

1. It does not require a specific control server on any computers connected to presentation displays.

2. It is scalable to the number of displays that a presenter wants to use.

3. It is scalable to the number of parties who want to view a presentation.

4. It can synchronize presentation slides on multiple displays.

5. It supports presenter and audience members to interact with presentation materials.

6. It can be mixed with any existing teleconferencing systems for a remote presentation.

7. It provides a remote pointer to mark the presentation focus.

8. It only requires basic Internet access for audience members.

5. REFERENCES

[1] Datapath, Data/video wall products, year 2004 web link: http://www.datapath.co.uk/datavideowall%20prods.htm.

[2] Zhang, H.J., Liu, Q., Lertsithichai, S., Liao, C.Y., and Kimber, D. (2004), A Presentation Authoring Tool for Media Device Distributed Environments, *Proceedings of ICME'2004*, Taipei, Taiwan.