XMSF Conferencing with Network EducationWare

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Presentation Overview

• Introduction - motivation
• NEW software
• User interface
Motivation for NEW

• Experience shows instructor-led education is most effective

• Synchronous course delivery from live instructors via Internet is practical today
  – Audiographic delivery is most cost-effective
  – Best when combined with asynchronous delivery

• How to make this affordable?
  – *Simulteaching* to in-person and Internet students
  – Dialup using inexpensive personal computers
  – Record as it is taught, for missed classes/review
  – No-cost, open-source software
Simulteaching Setup

- LAN connected to Internet
- Internet
- Workstation Multimedia Workstation
  - Workstation Display/Tablet
  - Clip-On Microphone
  - Workstation Keyboard and Mouse
  - Recording of Class
  - Classroom Projector

- Instructor Multimedia Workstation
  - Transport Layer Multicast Server
  - Web and Database Servers
    - one or more logical servers
- Student Multimedia Workstations
  - Video Camera
  - Clip-On Microphone
Attributes of NEW

- Works on inexpensive PC
- Works over dialup modem
- Quality: well designed, doesn’t break
- Simple, robust, easy to use
- Scalable to large numbers of students
- Works despite firewalls and NATs
- Authentication and floor control
NEW Modules and Communications

Recorded Sessions

Record/Playback (REC/PLAY)

User Workstation Software

Whiteboard (WBD)

Prepared Slides
PDF, PostScript, HTML or JPEG

TLM Client (TLMC)

Video Send/Receive (VIC)

Audio Send/Receive (SF)

Server Software

Floor Control/Chat Client (FC)

TCP or UDP tunnel

TCP connections

Record/Playback Control Client (RC/PC)

MySql Database

NEW webpages

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User Workstation Software

TCP connections
System Structure

• Multi-platform target architecture
  – first release client is Windows-only

• Thirteen building blocks
  – all communicate via Internet Protocol
  – allows flexible configuration

• One server instance per session
  – peer-to-peer client supports range of modes
  – lecture, seminar, conferencing
  – two-way audio (also text questions and chat)
Assembled Tools - Teaching

Network EducationWare
Synchronous Internet Distributed Education

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NEW Audio User Interface
(Speak Freely)

LISTENING...
TESTING...
TALKING...

NEW Speak Freely
Voice Level Mic Gain
Send Stop
Sound Test About
Speaker/Earphone Gain
27%

NEW Speak Freely
Voice Level Mic Gain
Send Stop
Sound Test About
Speaker/Earphone Gain
80%

NEW Speak Freely
Voice Level Mic Gain
Send Stop
Sound Test About
Speaker/Earphone Gain
3%

Pullen  NEW for XMSF Deep Dive
NEW Floor Control User Interface

- To take the floor (or request it, if the session is moderated) click here.
- Type a message to the instructor (only) here.
- Type a message to everybody here.
- A URL typed here will show in everybody’s browser, if you have the floor.
- The instructor sees floor requests in pink.
- To see a user's name, hold the cursor over their floor control cell (mpullen, in this case).
- Gray means logged out.
- A URL typed here will show in everybody’s browser, if you have the floor.
NEW Record User Interface

NEW RECORDING CONTROL

- Click to stop
- Click to pause
- Record time indicator
- Click to record
NEW Play User Interface

NEW PLAYBACK CONTROL

- Click to stop
- Click to pause
- Click to play
- Click to go back one slide
- Click to go forward one slide
- Slide while paused to move forward/backward in file
- Click to select file (to play a different file, restart NEW Clients)

Welcome To NEW

Total Time: 0:04:56

0:02:00
Talking Head Video Interface
(NEW also supports downloaded video clips)
Scaling Up Course Management

• Started with one course per semester
  – Ran it on desktop computer
• Now have twelve per semester
  – Need a real server
  – More than that: webpages and a database
• Learned how to scale up
  – And stay cost-effective
NEW Webpage Functions

- User authentication
- Download/install software
- Connect to live class
  - Spoken input and video optional
- Connect with a recorder for teaching
- Class chat room
- Review: playback, teaching slides
- Instructor email to class
- Upload/download slides and recordings
- Database and server administration
Welcome to the NEW Distance Education System

Instructor: Mark Pullen  Course: HSCI740

Select:

- Preparation
  - Download/install software
  - Test your connection

- Live Class Connection

- Communication
  - Chat room
  - Email all students

- Review
  - Streaming playback
  - Download playback
  - See class slides

- Uploads/Downloads
  - Submit Slides
  - Download Slides

- Submit Recordings

- Course records
  - View course status
  - View course roster
  - Update session/add comment
  - Add student (all sections)
  - Update student (all sections)
Why NEW for XMSF

• Low-cost Internet conferencing
• Allows distributed meetings and courses
• Software model consistent with XMSF
  – Free for all academic/government purposes
  – Source posted on netlab.gmu.edu
• Linux version available in Spring 2005
• MacOSX version when resources allow
For more information:

http://netlab.gmu.edu/NEW

(in particular, see Quick Start page)