NEW

Network EducationWare

Winner Best Software System
First International Competition for Non-Commercial
Web-Based Education

J. Mark Pullen and Priscilla McAndrews
Department of Computer Science and C^{4}I Center
George Mason University
Fairfax, VA 22030
{mpullen, pmcandre}@netlab.gmu.edu

© 2006 J. Mark Pullen & Priscilla McAndrews

Goals of *NEW*

1. Maximize accessibility of live classes over the Internet while preserving interaction
   - Usable with 56K modem or better connection
   - Remote student receives same voice and graphic as classroom student
     - Imperceptible delay
   - Optional video
     - needs better network connection
   - Class available in real time or afterward from recording
     - "Space-shift" or "time-shift" attendance

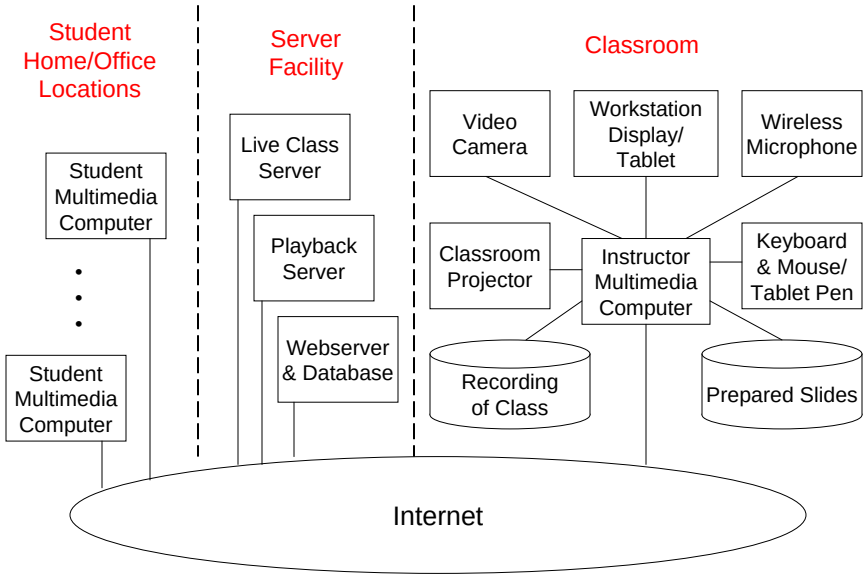
© 2006 J. Mark Pullen & Priscilla McAndrews

Goals of *NEW*

2. Minimize effort and cost to students, faculty and supporting institution
   - Runs on typical student PC or laptop
   - Inexpensive Linux or Windows server
   - No charge for software
   - Authoring in any graphic tool
     - Use existing slides
   - "Simulteaching" model lets network students attend an existing in-classroom course
     - No need to pay for another delivery

© 2006 J. Mark Pullen & Priscilla McAndrews

Simulteaching Setup

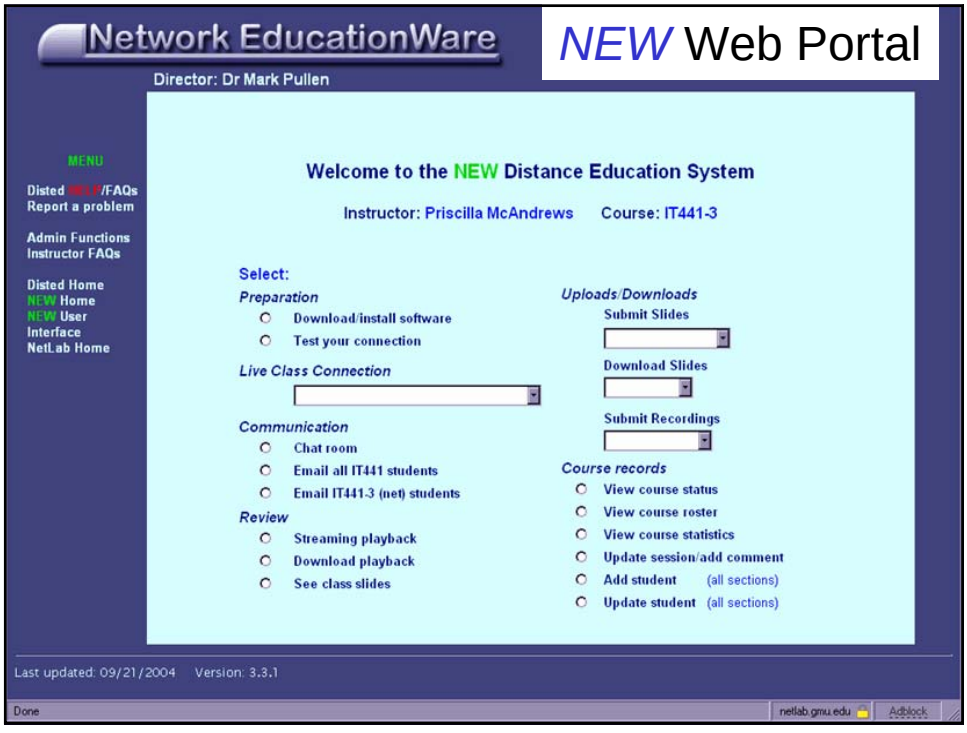


© 2006 J. Mark Pullen & Priscilla McAndrews

NEW Web Portal

- Simple interface to complex functions
  - Software load and test
  - Live access in multiple forms
  - Playback access in multiple forms
  - Chat rooms
- Focal point for course management
  - For instructors, database management and statistics
  - For administrators, server and webpage management
- Scalability

© 2006 J. Mark Pullen & Priscilla McAndrews

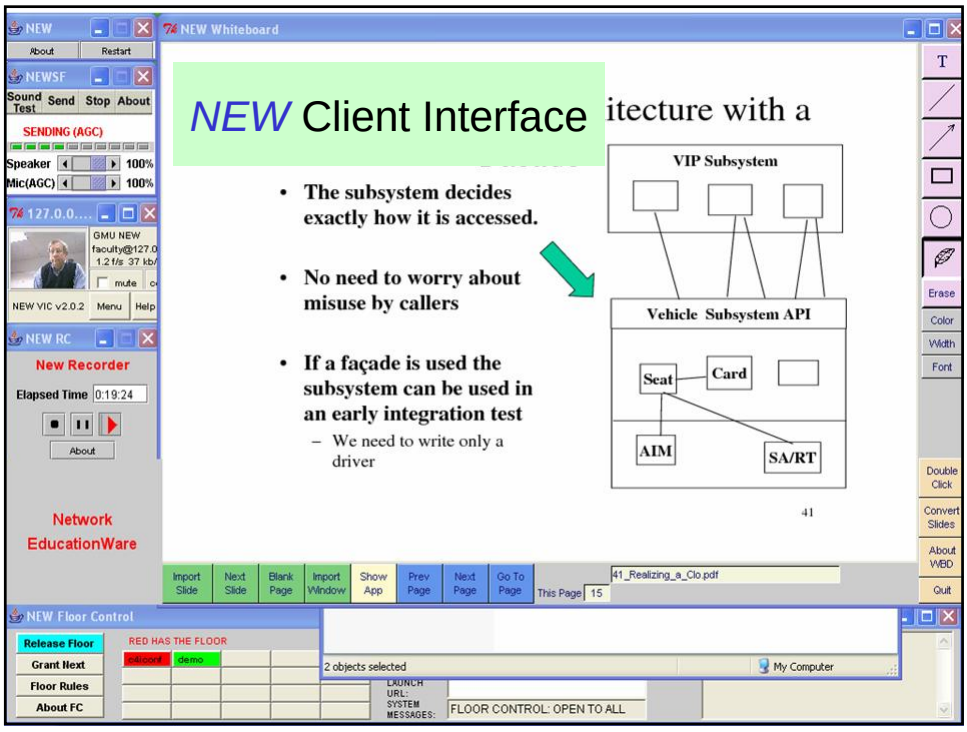


NEW Open Source Client Tools

Streaming Internet Course Delivery

- Audio
  - Speak Freely by John Walker (GUI by GMU)
- Whiteboard
  - WBD by Loughborough University UK (extended by GMU)
- Video
  - VIC by U of CA and University College London
- Floor control
  - NEWFC by GMU
- Record and Play controls
  - RC and PC by GMU
- Master Client (controls client configuration)
  - TLMC by GMU

© 2006 J. Mark Pullen & Priscilla McAndrews

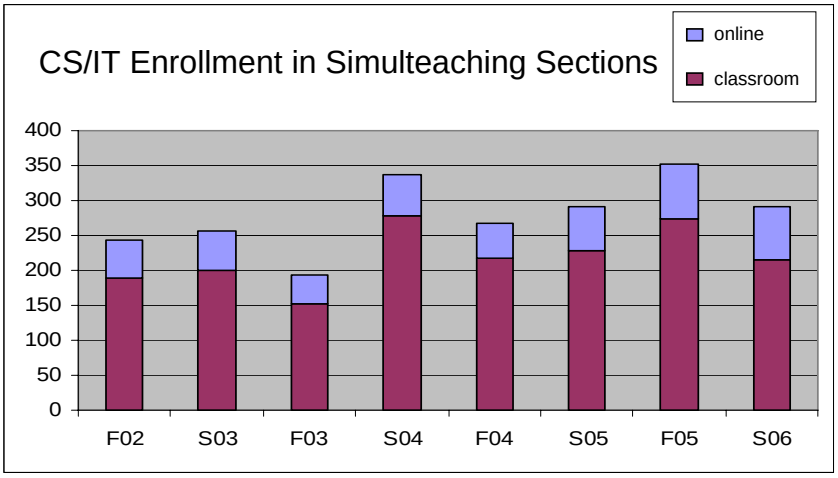


NEW Client Configurations

- All use the same basic client
- Student
  - Basic client
  - Listen-only client
  - Video client
- Instructor
  - Teaching configuration
  - Recording configuration
  - Extra whiteboard for classroom
- Playback

© 2006 J. Mark Pullen & Priscilla McAndrews

NEW Usage Statistics



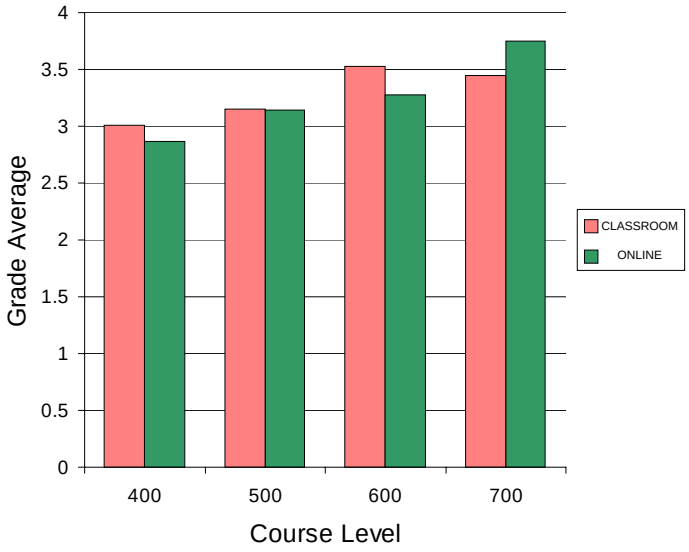
© 2006 J. Mark Pullen & Priscilla McAndrews

NEW Usage Patterns Spring 2006

	Classroom	Online	All
Total enrolled	216	75	291
NEW users	92	75	167
Average live connections per active live user			14.0
Average playback connections per active playback user			6.6

© 2006 J. Mark Pullen & Priscilla McAndrews

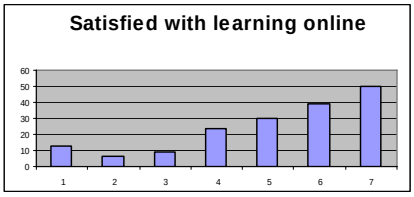
Grade Outcomes: “No significant difference”

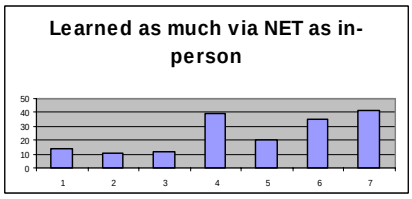


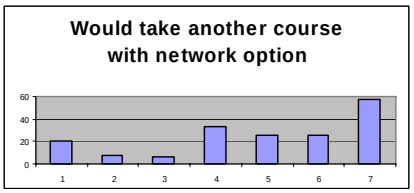
© 2006 J. Mark Pullen & Priscilla McAndrews

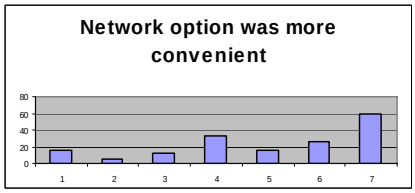
Student Course-End Survey

Typical online student comments: The online mode allowed me to attend the lecture without commuting to school… I never head a problem connecting to NEW server and joining the class… one simply logs into the system and chooses a live connection from a web page menu … I find NEW to be a great tele-learning tool.









© 2006 J. Mark Pullen & Priscilla McAndrews

Ongoing *NEW* Development

- Present development of NEW is aimed at cross-platform capability
- Linux version is available for beta-testing
- MacOSX beta version planned for Fall 2006
- Functionality also continues to increase
  - OpenOffice spreadsheet integrated with whiteboard Spring 2006
  - Recording Editor planned for Fall 2006

© 2006 J. Mark Pullen & Priscilla McAndrews

NEW Publications

http://netlab.gmu.edu/NEW

Integrating Synchronous and Asynchronous Internet Distributed Education for Maximum Effectiveness, *Proceedings of the IFIP World Computer Congress TC3 – Education*, Santiago, Chile, August 2006 (Pullen)

Scaling Up a Distance Education Program in Computer Science, *ACM Special Interest Group on Computer Science Education (SIGCSE) Bulletin,* to appear (Pullen)

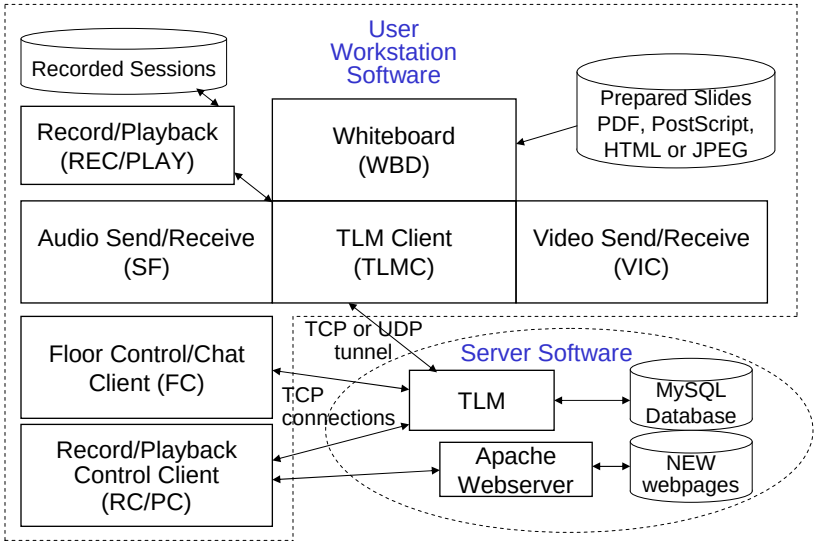
A Web Portal for Open-Source Synchronous Distance Education, *Advanced Technology for Learning Vol 2 No 1*, IASTED (Pullen & McAndrews)

An Open-Source Web-Based System for Synchronous Distance Education, to appear in *IEEE Transactions on Education Vol.48 No. 4 (*Snow, Pullen & McAndrews)

Low-Cost Internet Synchronous Distance Education Using Open-Source Software, *ASEE Computers in Education Journal Vol 25 No 5* , to appear (Pullen & McAndrews)

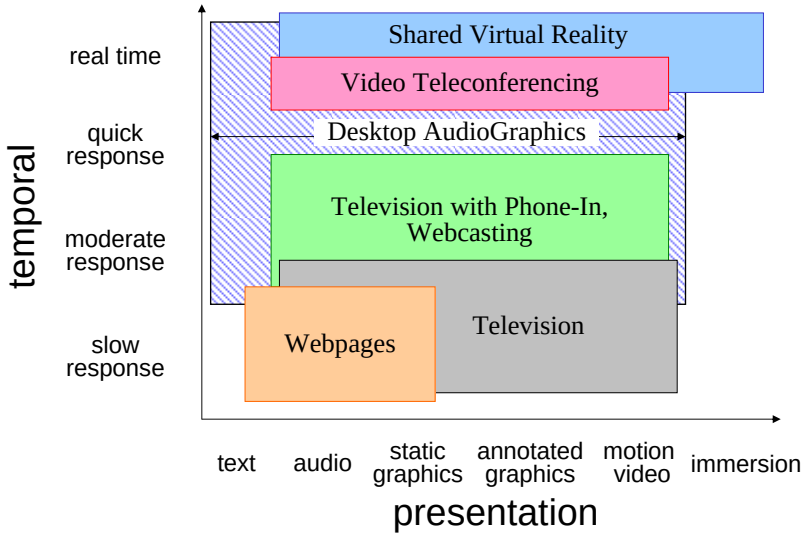
© 2006 J. Mark Pullen & Priscilla McAndrews

NEW Software Components



© 2006 J. Mark Pullen & Priscilla McAndrews

Temporality of Student Interaction



© 2006 J. Mark Pullen & Priscilla McAndrews

© 2006 J. Mark Pullen & Priscilla McAndrews