



# Evolving the Sakai + BigBlueButton Integration



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# Overview

- Overview
- Community
- BigBlueButton 0.8
- Sakai Integration (Demo)
- Road map 0.81 and beyond
- Feedback and Q&A!

# Questions

- Who has heard of BigBlueButton (prior to this session)?
- Who is using BigBlueButton?
- Who is using BigBlueButton integrated with Sakai?

# Overview

- BigBlueButton is an **open source web conferencing system** for **distance education**
- **Goal:** Provide remote students a **high-quality** learning experience
- **Pain:** Cost, low adoption, inability to integrate

# Use Cases

- Virtual Office Hours
- Small Group Collaboration
- Staff meetings
- Remote Teaching (< 25 students)
- Pre-registration advising

# Interface

The screenshot displays the BigBlueButton web interface. At the top, a browser window shows the URL `test-install.blindsidenetworks.com/client/BigBlueButton.html`. The interface is divided into several sections:

- Desktop Sharing:** A blue box with a line pointing to the top-left corner of the main content area.
- Audio:** A blue box with a line pointing to the microphone icon in the top-left corner of the main content area.
- Chat:** A blue box with a line pointing to the chat window on the right side of the interface.
- Slides:** A blue box with a line pointing to the 'Teacher (moderator)' section at the bottom left, which includes a list of users and a 'Mute All' button.
- Video:** A blue box with a line pointing to the video dock at the bottom right, which shows a video feed of the 'Admin User (you)'.

The main content area features a 'Welcome to BigBlueButton' message, a list of users (Admin User, Craig Greens), and two video thumbnails labeled 'Teacher Overview' and 'Student Overview'. The bottom status bar shows a progress bar and a '1/1' indicator.

**Desktop Sharing**

**Audio**

**Chat**

**Slides**

**Video**

# BigBlueButton Community

- **1200+ members** on developer mailing list
- Active community: **14k+ messages**
- **GSOC 2010**
- **Forked 328 times on GitHUB**
- Localized into **35 languages**
- **WebFWD 2011**
- Install in **30 minutes** (or your money back!)



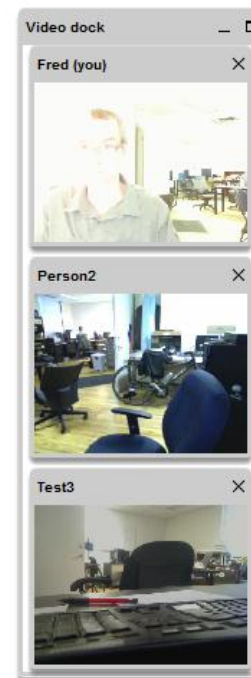
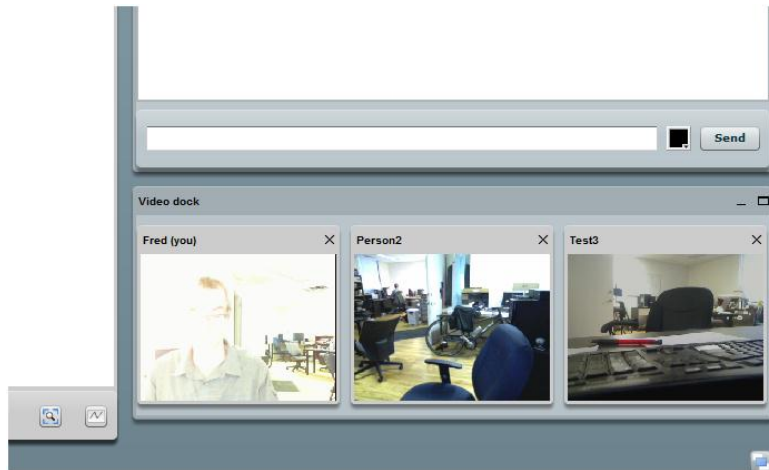
# BigBlueButton 0.8

- Recording of sessions
- Lower latency audio
- HTML 5 playback
- Integration with Matterhorn
- Upload of slides via API





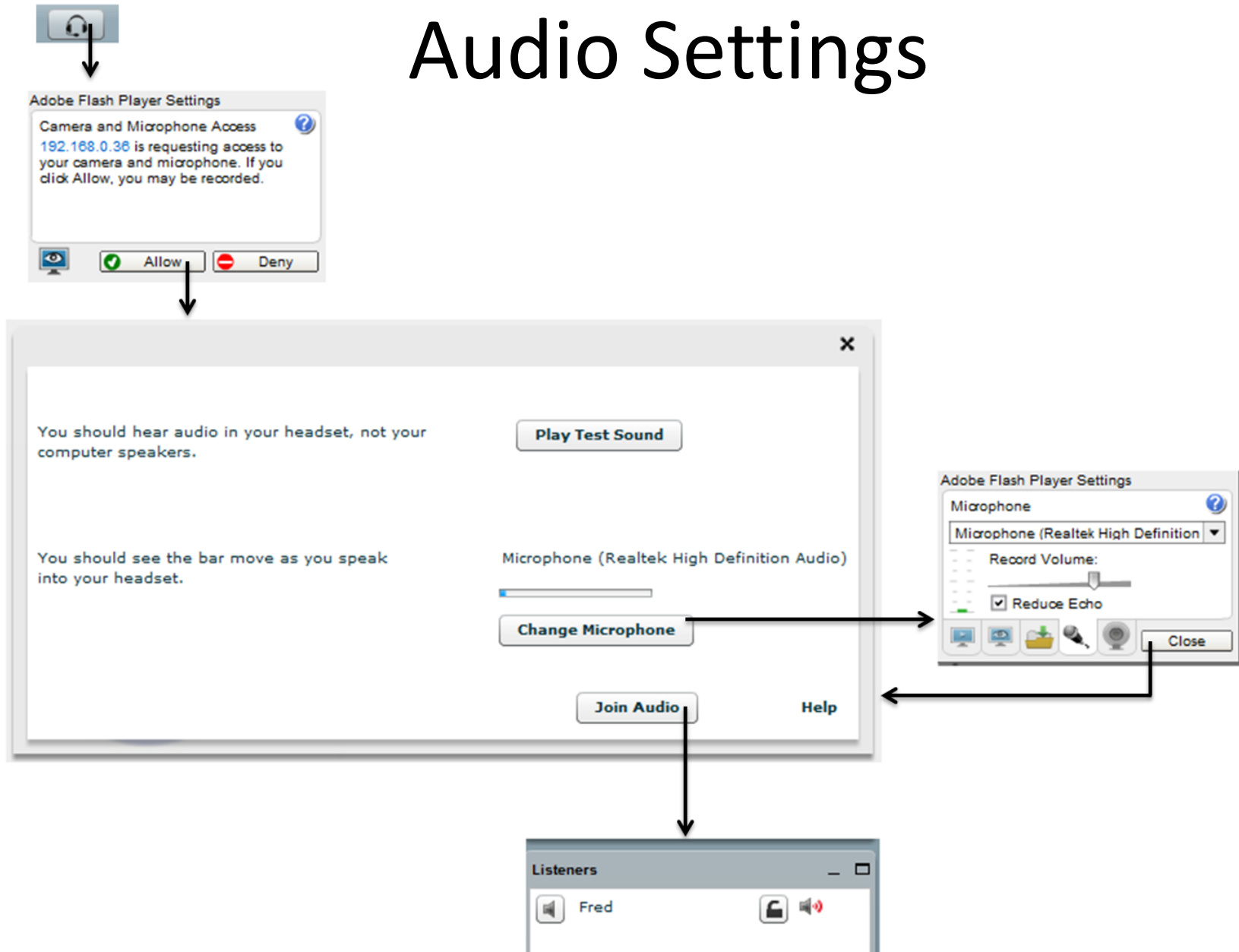
# Video Dock



[on Inc.](#)



# Audio Settings



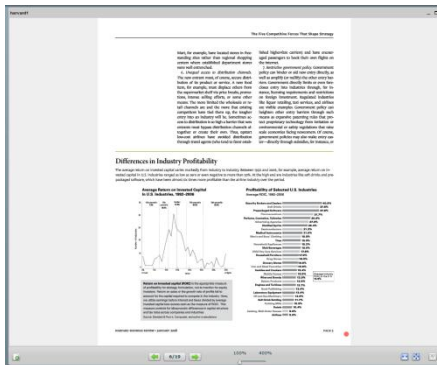
# Fit to Width

low-cost airlines have avoided distribution through travel agents (who tend to favor estab-

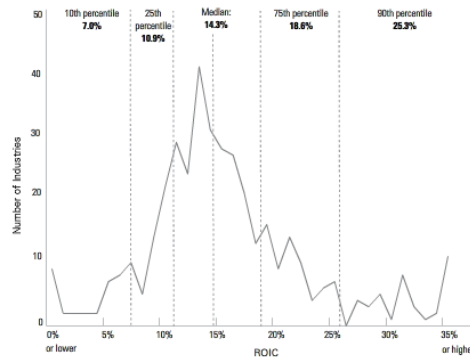
government policies may also make entry easier—directly through subsidies, for instance, or

## Differences in Industry Profitability

The average return on invested capital varies markedly from industry to industry. Between 1992 and 2006, for example, average return on invested capital in U.S. industries ranged as low as zero or even negative to more than 50%. At the high end are industries like soft drinks and prepackaged software, which have been almost six times more profitable than the airline industry over the period.



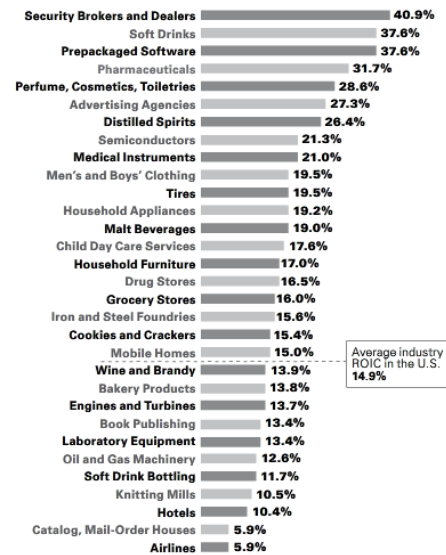
Average Return on Invested Capital in U.S. Industries, 1992–2006



**Return on invested capital (ROIC)** is the appropriate measure of profitability for strategy formulation, not to mention for equity investors. Return on sales or the growth rate of profits fail to account for the capital required to compete in the industry. Here, we utilize earnings before interest and taxes divided by average invested capital less excess cash as the measure of ROIC. This measure controls for idiosyncratic differences in capital structure and tax rates across companies and industries.

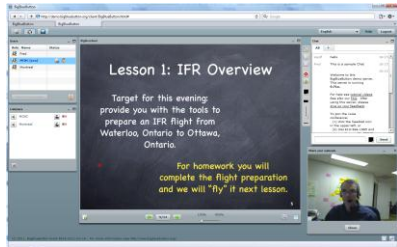
Source: Standard & Poor's, Compustat, and author's calculations

Profitability of Selected U.S. Industries  
Average ROIC, 1992–2006



# Record and Playback

1. Capture and archive **individual** media and events
2. Create a **workflow** to process and publish recordings
3. Make the workflow **extensible**
4. Extend the BigBlueButton API
5. Provide **HTML5 playback** of recordings



Redis

FreeSWITCH

Red5

media (**slides + audio**) +  
events.xml



Archived



Processed



Published



slides.rb

slides.rb

Archived

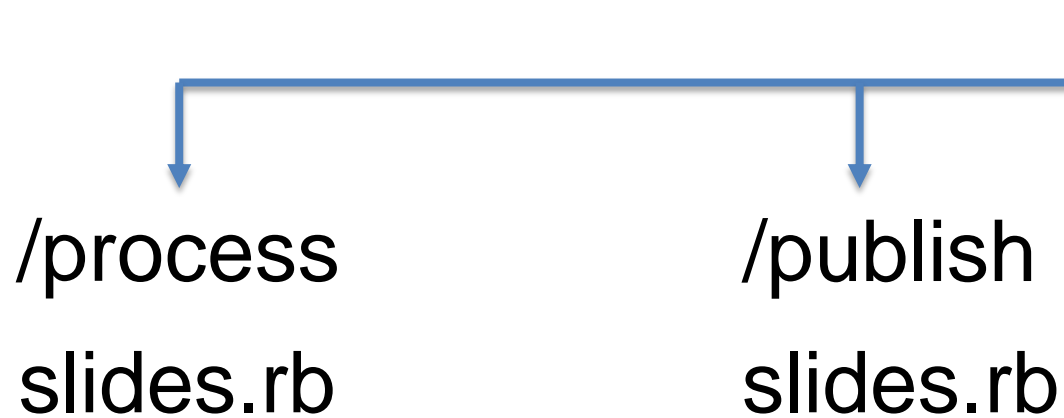


Processed



Published

/usr/local/bigbluebutton/core/scripts



## Strong courses available to TIM students



- Specifically tailored management courses (TTMG)
- Graduate courses from the Ottawa-Carleton Institute for Electrical and Computer Engineering (OCIECE)
  - Department of Systems and Computer Engineering, Carleton University
  - School of Information Technology and Engineering, University of Ottawa
  - Department of Electronics, Carleton University
- Other courses as approved by the TIM director

**ME4359 (Carleton):** Hi folks. I'

**ME4359 (Carleton):** I'm Professor Steven Muegge in the classroom at Carleton University in Ottawa.

**ME4359 (Carleton):** Please call me Steve. :-)

**ME4359 (Carleton):** We're getting set up now. Class will start at 6pm (EST).

**Steve (laptop):** Hi Mel. Sorry. We started on mute.

**Steve (laptop):** You should have audio now.

**Mel M.:** Hi Steve - it is alright, I can hear now

**Steve (laptop):** That's robert talking -- one of our grad students near graduation.

**Fred:** Hi Steve

**Fred:** Can you share your webcam?

**Steve (laptop):** Yes. Should be available beside ME4359 in the users window.

**Fred:** I can see it!

**Mel M.:** please be close to the mic when speaking as it was hard to hear some speakers

**Steve (laptop):** Sorry. It's up now.

**Fred:** yes

**Steve (laptop):** steven.muegge.net

**Mel M.:** how will be the course materials communicated? email? online room? etc..

**Fred:** Mel can now mute/unmute himself (new feature!)

**Steve (laptop):** Thanks Fred. <grin>

**Fred:** Can you see a preview window of you vide?

**Fred:** We support Steve!

**Fred:** This lecture is being recorded as well

**Fred:** (I'll mail you the link after the class Steve)



# Integration with Matterhorn

<http://opencast.org/matterhorn>



**Matterhorn** is a free, open-source platform to support the **management of educational audio and video content**.

Institutions will use Matterhorn to **produce** lecture recordings, manage existing video, serve designated distribution channels, and provide user interfaces to engage students with educational videos.

# Setup Meta-data

Meta data  
that gets  
passed  
through  
the  
processing

Meeting Information

Meeting Name: Test Meeting Matterhorn

Your Name: Markos Calderon

Metadata Details

Title: Test

Subject: Test

Description: a simple test for matterhorn integration

Creator: Markos Calderon

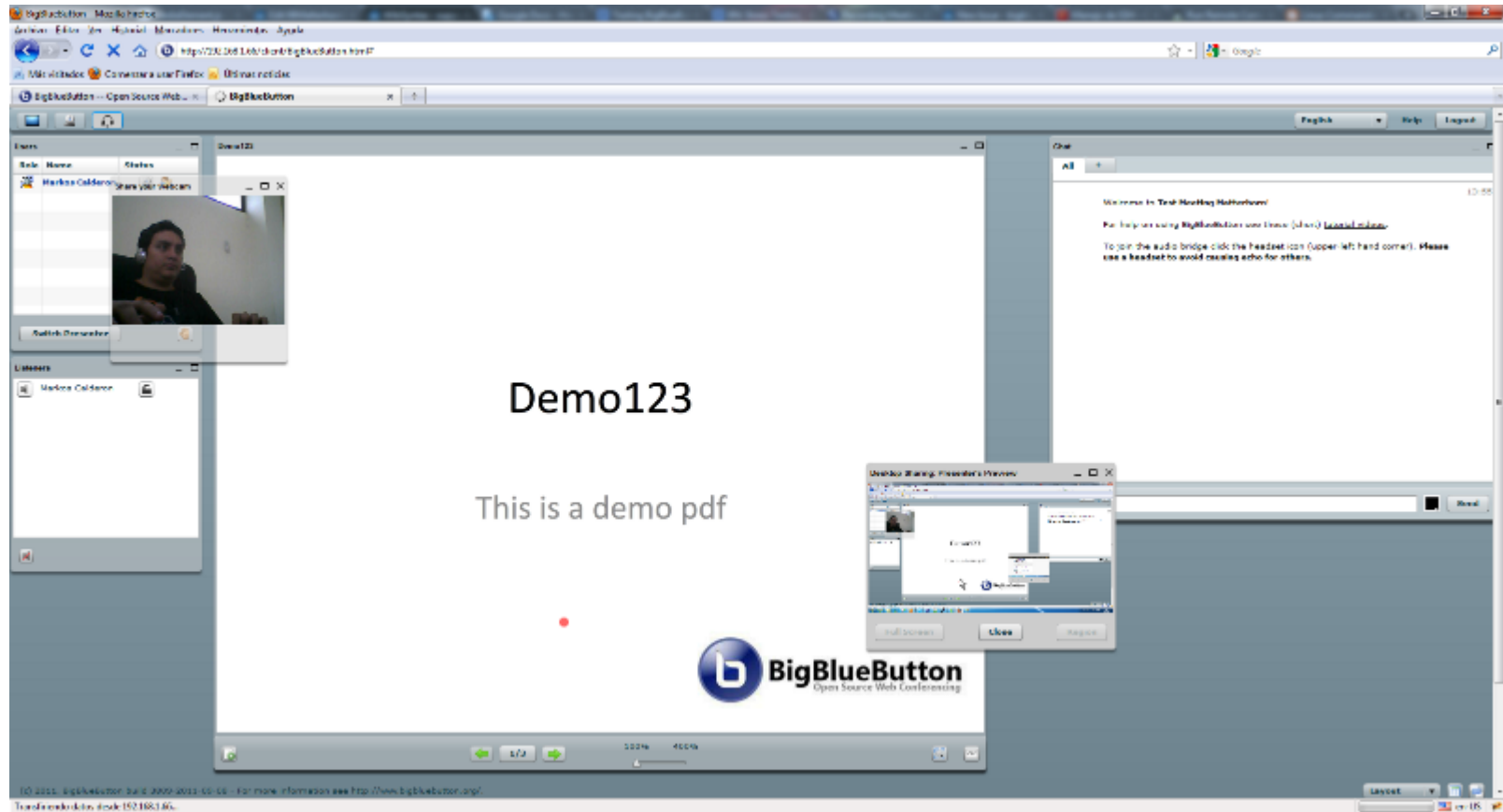
Contributor: Fred Dixon

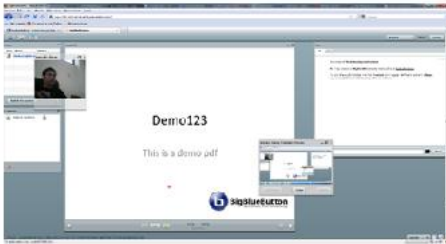
Language: English

Identifier: Test001

Create

# Use BigBlueButton





media (**desktop + video + audio**) + events.xml



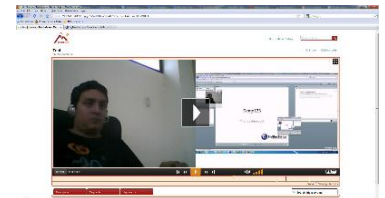
Archived



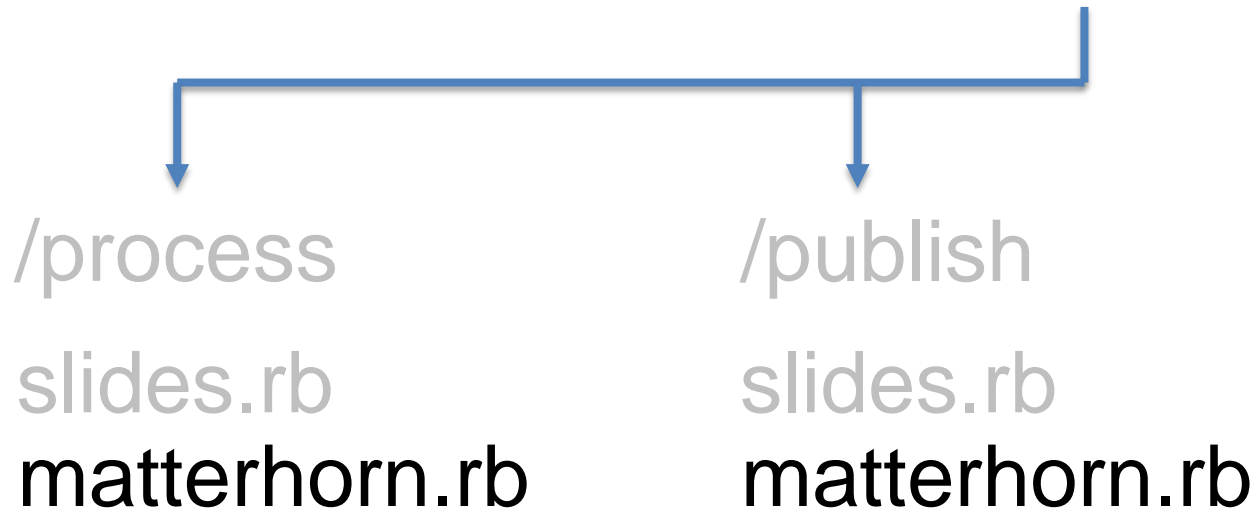
Processed



Published

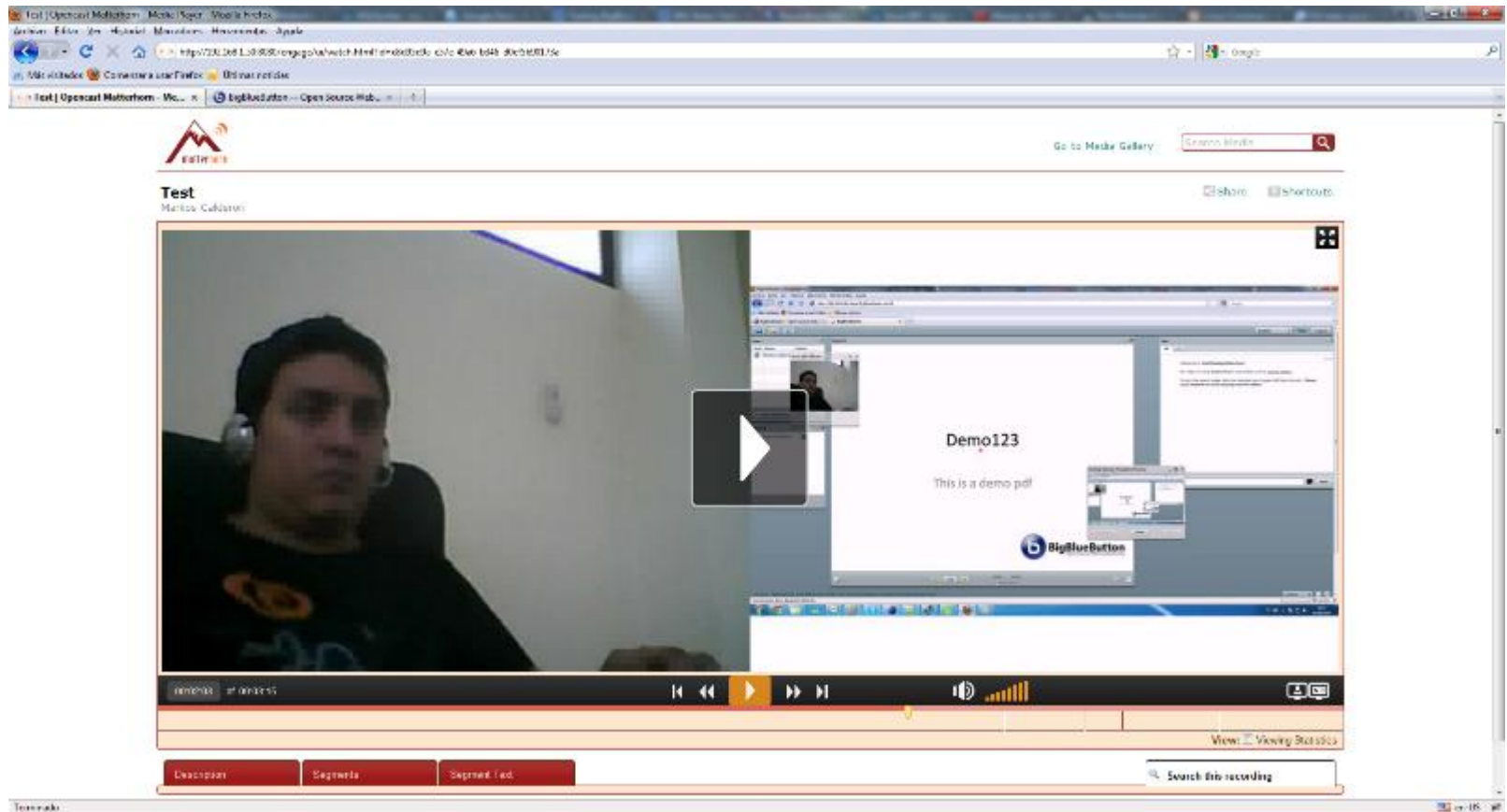


/usr/local/bigbluebutton/core/scripts



Add only two files to provide  
integration with Matterhorn

# Playback in Matterhorn!



- LMS Integration



# Integrations

Moodle 1.9 & 2.X

Sakai 2.x.x



Drupal



Moodle 1.9: [link1](#), [link2](#), Moodle  
2.0: [link](#)



Sakai



Tiki Wiki CMS Groupware



eFront



WordPress



Joomla



RedMine



Foswiki

# Typical Setup



+



Asynchronous  
(non-real time)

**Synchronous  
(real-time)**

LMS  
Gradebook  
Portfolio  
etc.

**Slides  
Video  
Audio  
Desktop  
sharing  
Chat**

Home

Announcements

Assignments

Syllabus

Schedule

Sequenced content

Resources

Forums

Wiki

Drop Box

Gradebook

Tests & Quizzes

Messages

MEETINGS

Meetings

Recordings

Create Meeting

Permissions

Meetings ▲	Status ◆	Join open date ◆	Join closed date ◆	Created by ◆
<a href="#">Admin User</a>	Available			Fred Dixon
<a href="#">test3</a>	Available			Fred Dixon
<a href="#">test5</a>	Available			Fred Dixon
<a href="#">test</a>	Available			Fred Dixon
<a href="#">Test</a>	Available			Fred Dixon
<a href="#">test</a>	Available			Fred Dixon
MCW demo	Finished	2012-04-11 15:42:00 GMT-4	2012-04-11 18:30:00 GMT-4	Sakai Administrator

Version 1.0.7-b3\_20120413\_174500

## MEETINGS

[Meetings](#)

### 1. MEETING INFORMATION

Please specify a meeting title and description. The later will be displayed when a participant joins the meeting.

Title:

Description:

Welcome to the meeting

Recording:

☐

Meeting duration:

minutes

### 2. PARTICIPANTS

Please specify who can participate on the meeting.

Add participant:

All site members ▼

Add

Participant list:



User: Fred Dixon (ffdixon)

as

Moderator



### 3. AVAILABILITY

Please specify if this meeting will be always available, or only after and/or before the specified dates.

**Join open date:** ☐

**Join closed date:** ☐

### 4. NOTIFICATION

Please specify whether an email notification should be sent to all meeting participants.

**Notify participants:** ☐

[Save](#)

[Cancel](#)

## MEETINGS

[Meetings](#)

### MEETING DETAILS


**Title:** Admin User

**Description:** Welcome to the meeting

**Status:** Available ([Join meeting](#) )

**Recordings:** (0 recordings)

**Host** <http://server116.longsightgroup.com/bigbluebutton/longsight>

**Connected users:** 0 

- Road map

# Sakai Integration

- Sakai CLE
  - Meeting Tool 1.0.7 (support for Record and Playback)
  - Feedback ...
- Sakai OAE
  - Create an OAE Widget for the client interface
  - Create service for storing meetings and recording information



# BigBlueButton 0.81

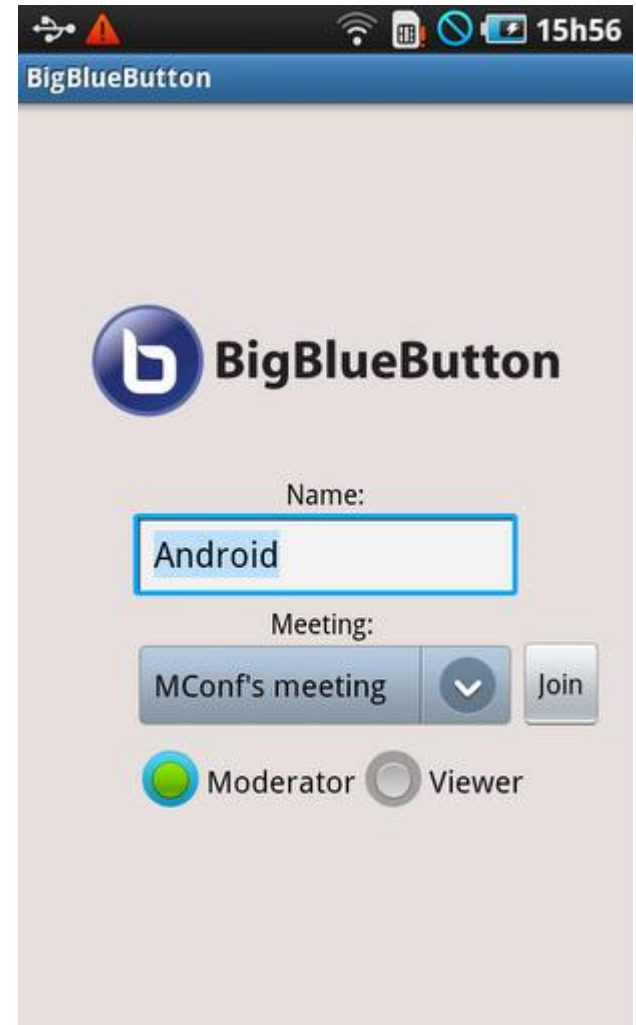
- Capture all content in presentation area for playback in HTML5
- Support for students with disabilities
- Layout Manager

# Future Roadmap

- Core Values (in order)
  1. Stability
  2. Usability
  3. Features
  4. Modularity
- Building on the core
  - Scalability
  - HTML5 and other platforms

# BigBlueButton on Android

- Android version of BigBlueButton now in development by team in Brazil
- See
  - <http://bit.ly/iaE7NJ>



# Polling Module

- Seneca College  
The Seneca  
Centre for  
Development of  
Open Technology
- See
  - <http://bit.ly/wxF61H>



# Future Roadmap (post 0.81)

- Record and Playback
  - Addition of video and desktop sharing
- Additional components
  - Synchronized video playback
  - Polling Module
  - Shared Notes
  - Breakout rooms
- Text tool for whiteboard
- Increase speed of desktop sharing

# Modularity

- Modularity of Architecture
  - Easier to integrate with other voice systems
- Modularity of client-side components
  - Easier to add/remove 3<sup>rd</sup> party modules
- Layout manager
  - Control layout of BigBlueButton

# HTML5 and Other Platforms

- Implement three phases
  - ~~Playback of recordings~~
  - Viewer
  - Full two-way
- Other platforms
  - iPad/iPhone

# Other feedback

- How are you using BigBlueButton?



# Goal of BigBlueButton

To enable **universities and colleges** to provide remote students a **high-quality learning experience**



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# How to get involved

- Starting point:
  - <http://bigbluebutton.org/>
- Community:
  - [bigbluebutton-users](#)
  - [bigbluebutton-setup](#)
  - [bigbluebutton-dev](#)
- Twitter: bigbluebutton
- Sakai Integration supported through Jira Tracking System