CloudSocial: A New Approach to Enabling Open Content for Broad Reuse

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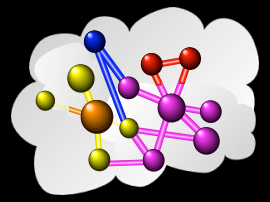
University of Michigan

February 6, 2009



Disclaimer

Report on nascent projects....

Outline

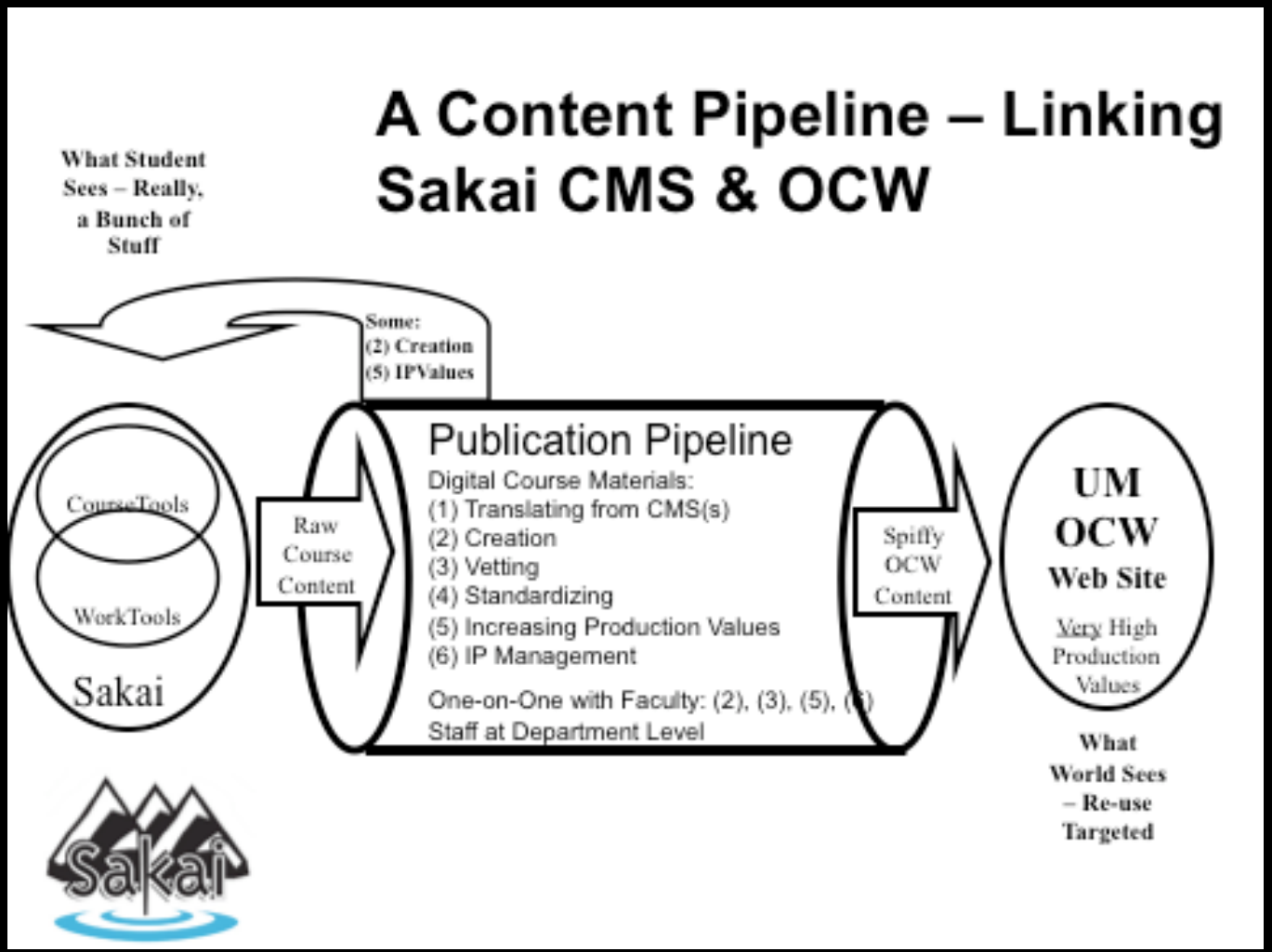
- Connecting the LMS and OER - A brief hsitory
- University of Michigan Medical School - Beyond the LMS
- CloudSocial - www.cloudsocial.org
- IMS Standards - www.imsglobal.org
- CloudCollab - www.cloudcollab.com
- Summary

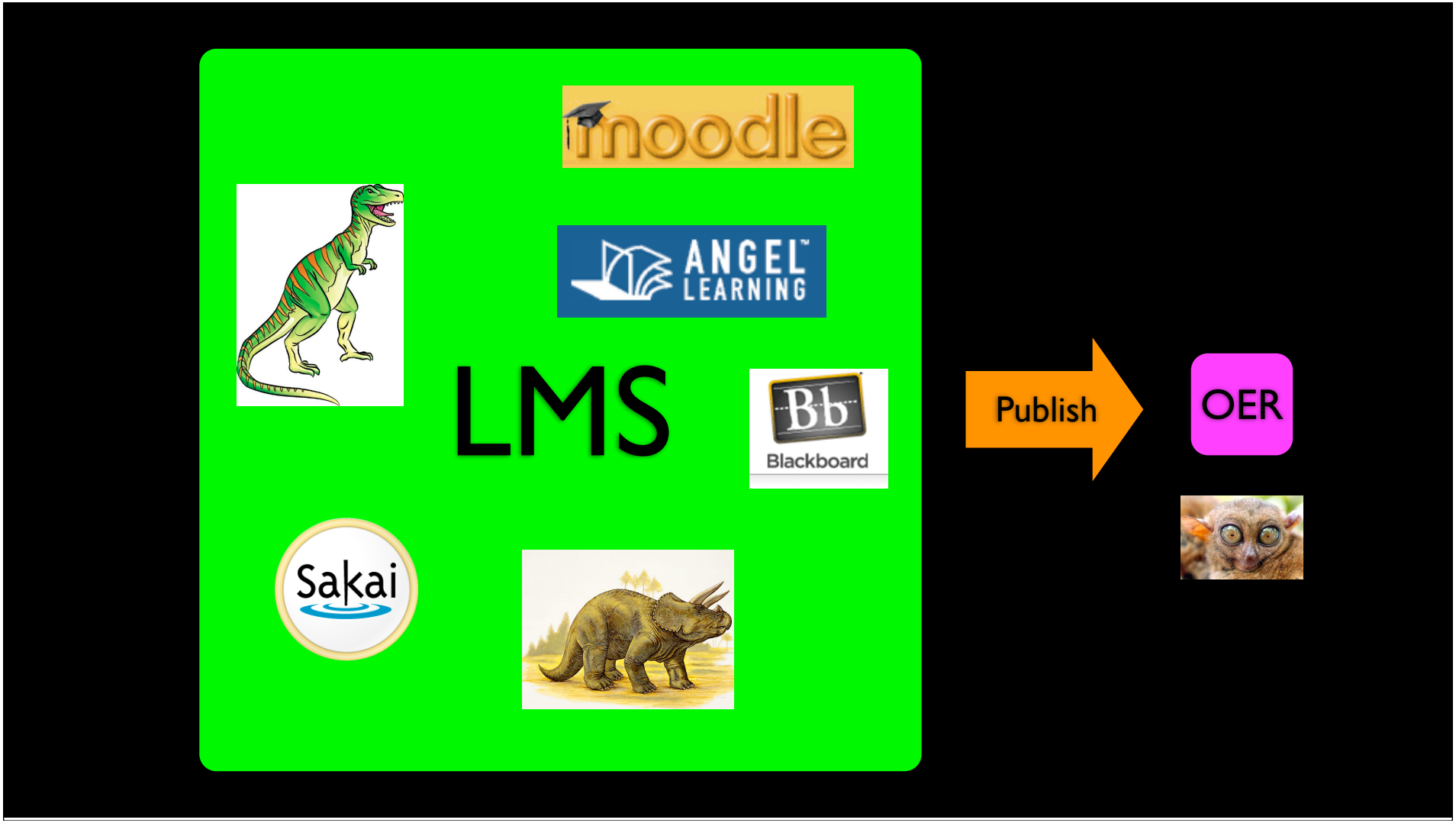
Warning : This is all under construction

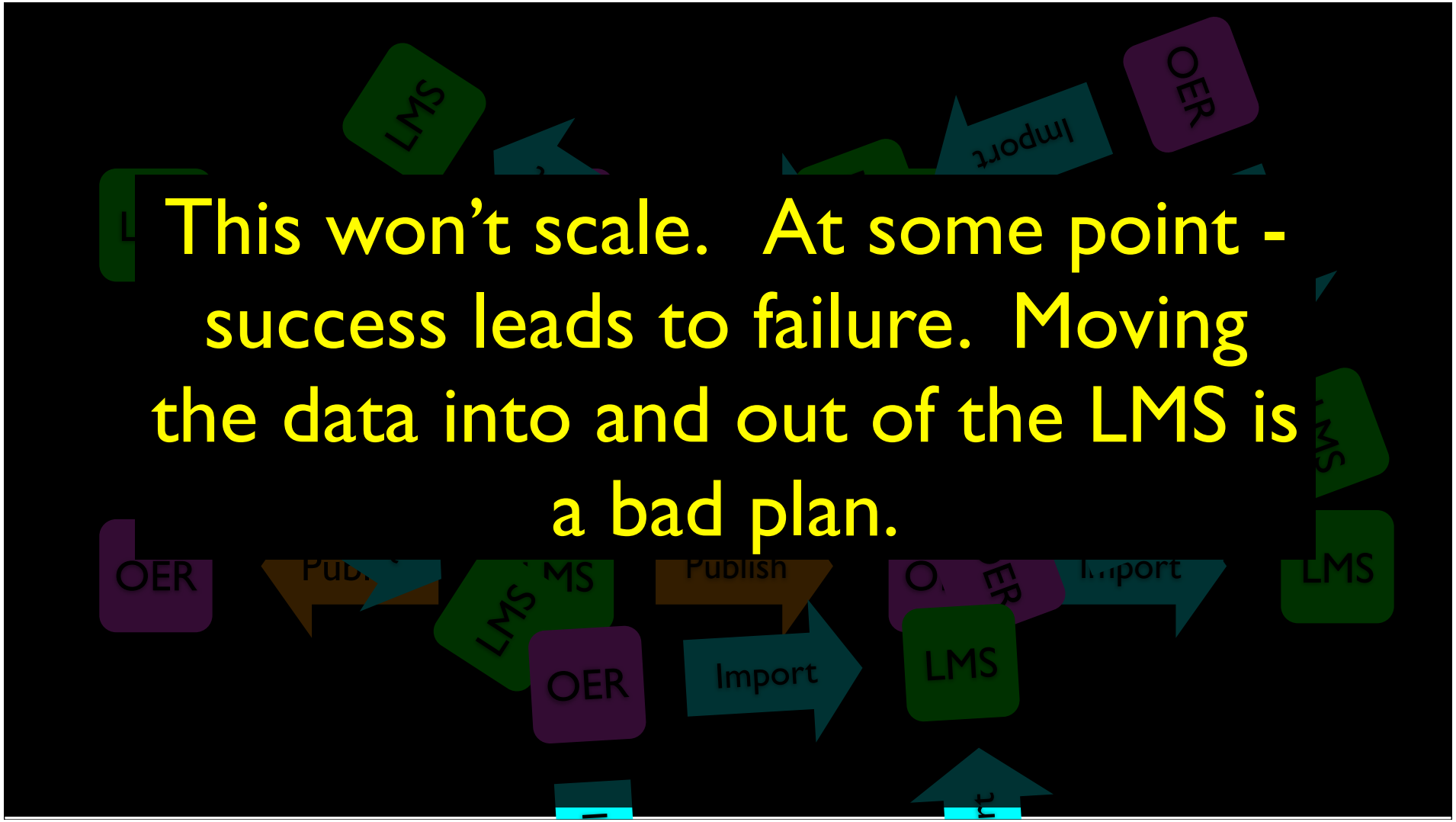
Timeline

- 2002 - 2003 - Joseph/Chuck - Experimenting in LMS
- 2004 - 2006 - Joeseph/Chuck Sakai Project
- Joseph's obsession: Better Flow between LMS and OER
- 2006 - Present - Joseph/Ted - OER open.umich.edu
- 2007 - Present - Next Generation LMS - Michigan Medical School
- 2007 - Present - Chuck is Teaching Full Time
- 2008 - Present - Chuck works part time for IMS

A Content Pipeline – Linking Sakai CMS & OCW

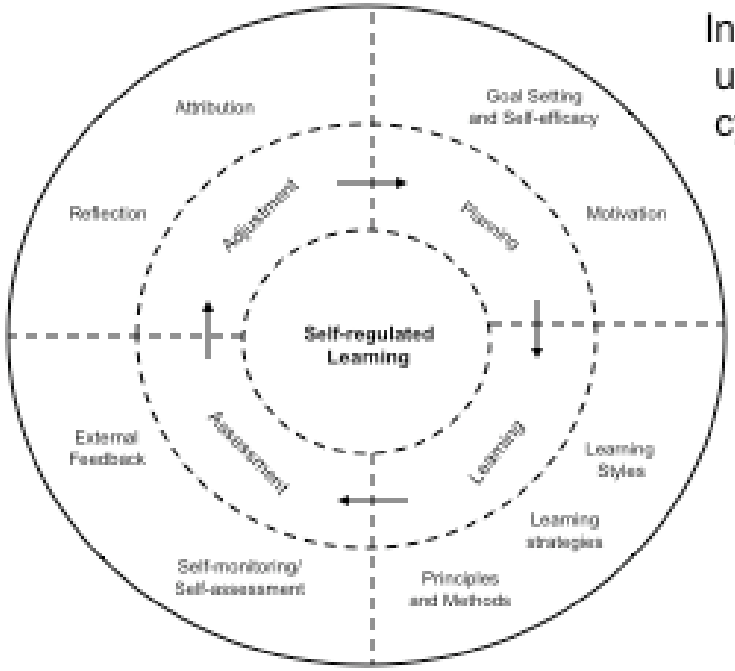



moodle
ANGEL LEARNING
LMS
Bb
Blackboard
Sakai
Publish
OER


This won't scale. At some point - success leads to failure. Moving the data into and out of the LMS is a bad plan.
LMS
OER
Import
Publish
LMS
OER
Import
LMS
OER
Import
LMS

Brainstorming
Beyond the LMS

A Model for Self-regulated Learning*



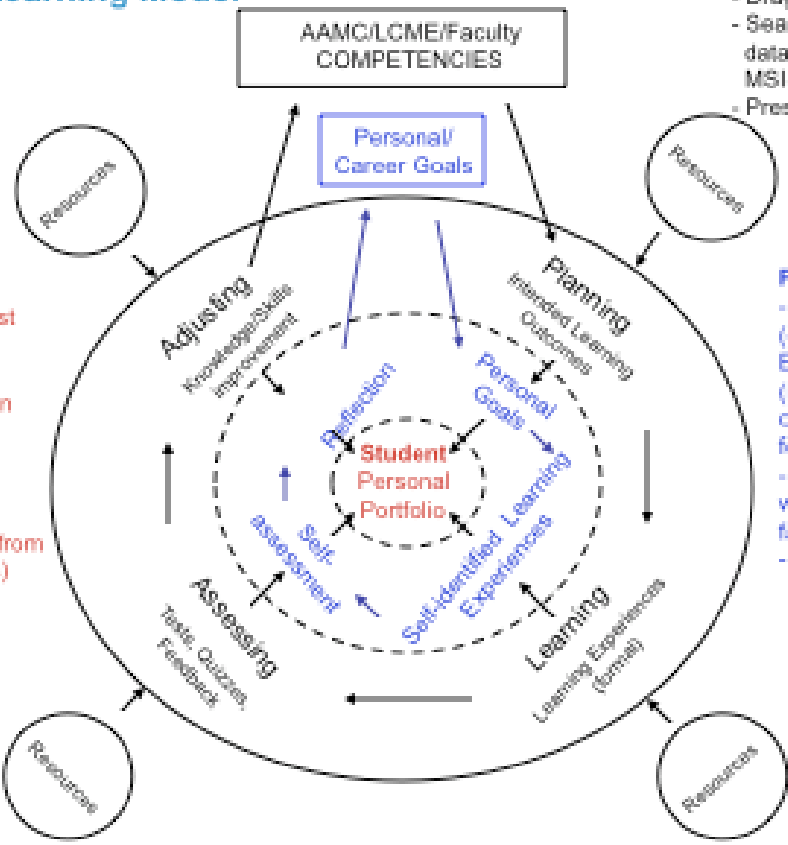
Inner ring is the users's learning cycle.

Outer ring is the institution's learning cycle.

*White CB, Gruppen LD. 2007. Self-regulated Learning in Medical Education. Association for the Study of Medical Education: Understanding Medical Education.

Learning Management System: Self-regulated Learning Model

Characteristics across levels
- Search engine
- Drag and drop
- Seamless access to web and databases (Sakai, Portal, MSIS/Oracle, PubMed, etc.)
- Presentation functionality



Personal Portfolio
-Series of folders, at least w/ student access only
- Customizable
- Personal representation learning/aspirations
- Journaling
- Repository (eg, patient letters)
- Can draw in materials from either/both outer circle(s)

Personal Goals
- Independent (community service), Enhancement (interest in orthopedics) or Deeper extension of formal curriculum
- Expectation: students will populate (review w/ faculty mentor 2x/yr)
- Several layers of access

University of Michigan Medical School

Next Generation LMS

University of Michigan Medical School

- Self Regulated Learning
- A blending of the individual needs and the instituional needs
- LMS cannot constrict content
- Lifelong Education
- Competency tracking across courses and throughout life
- Portfolio is implicit
- Informal and formal learning
- Support for ad hoc learning
- Support for setting personal goals
- Open Educational Resources are foundational
- Don't worry about resources
- We know this takes time - we are patient

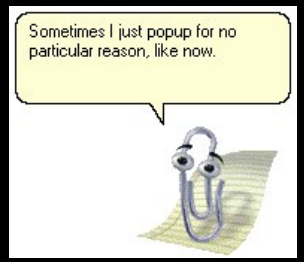
Brainstorming

University of Michigan Medical School

- Met every two weeks with Dean, Faculty, Educational Designers, Open Michigan staff, Software Developers
- Brainstormed - Gave presentations, shared big ideas
- Installed and played with LMS/Portfolio Systems: Sakai, Moodle, LAMS, Mulhara, Pebble - debated strengths and weaknesses
- Summer 2008: Dean Fantone said, "Enough Talking!"

Conclusion from Brainstorm

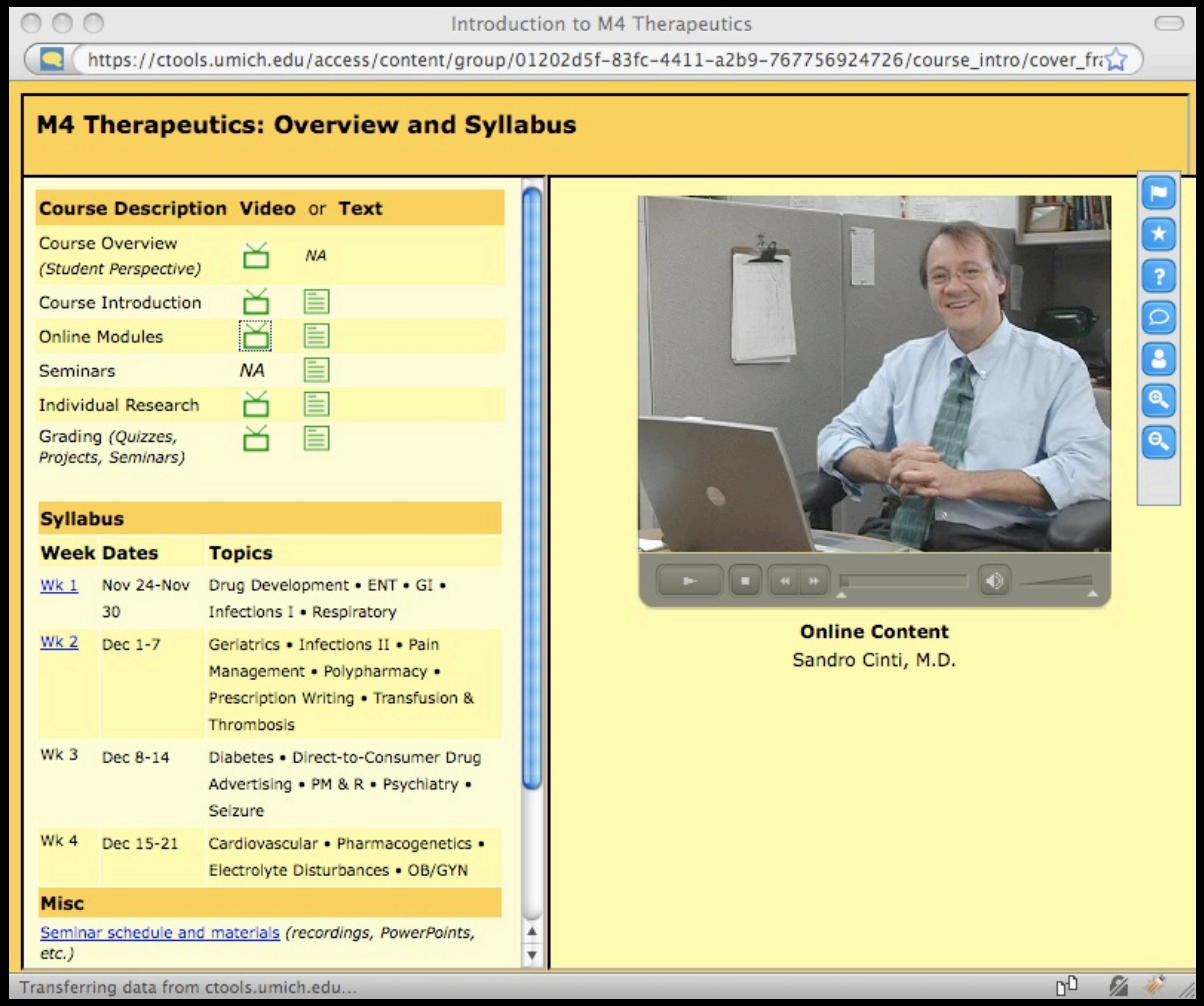
- The scope of this was the entire web - it was not one application
- PubMed - we cannot pull that into an LMS
- Google Searches and random surfing to learn
- If we wanted to build software - it had to be "everywhere" - it had to follow the user as they went around the web
- Our software needed to be an "assistant" - the Microsoft "paperclip"



The Dean's Challenge

University of Michigan Medical School

- Advanced Medical Therapeutics Course - Fourth Year Students
- Four weeks - nearly all online - well produced web content
- Often done from hotel rooms while students interview for internships
- What could we do with that course?
- Failure *was* an option - we should push it and risk it



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Tools:

Tracking / Presense
Comment / Twitter
NotePad
ToDo List
Question/Answer
Quiz Tracking

Results of First Pilot

- Good News
  - Everything worked technically
  - Faculty loved the idea
  - Students loved the idea
  - The TODO was the most popular tool
  - We learned a lot - terriffic feedback
- Bad News
  - Students work very much alone and at weird times
  - Their time perspective was - “get this over with as quickly as possible”
  - No time to ask a question and get an answer
  - No time to care what other students were thinking

Positive Effects

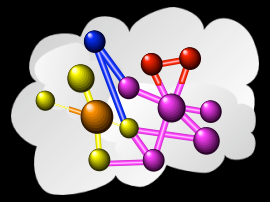
- Forced us to deploy CloudSocial in production
- Built PHP Framework to allow a new tool to be written in 2 days and a new feature to be added in a few hours
- Validated techincal the "Tool Mashup" protocol was sound
- Proved that we "caused no harm" - Medical School is more confident
- Changed our perspective from "will this work" to "what can we do"

Next Steps

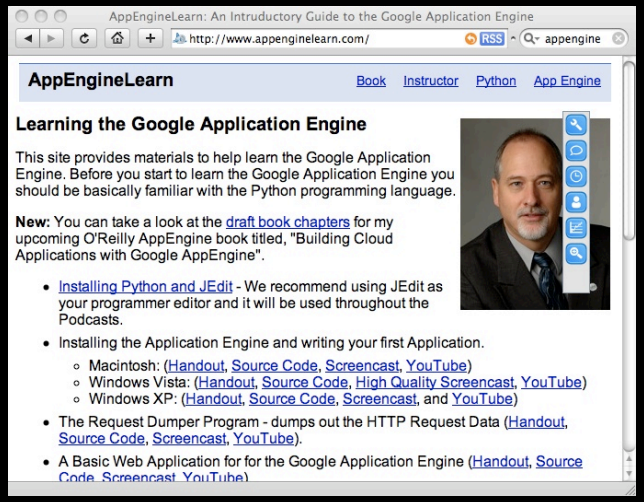
- Longitudinal Case Study Course
  - No prepared web content
  - Group work - 12 groups with faculty mentors
  - Use Google, PubMed, whatever they find
  - Looking at ShiftSpace.org
- Open Content Anatomy Web Site
  - Used heavily by students in Year 1
  - Used from many different directions
  - Large, intricate body of valuable content
  - Mostly freely available on the web
  - OER-like

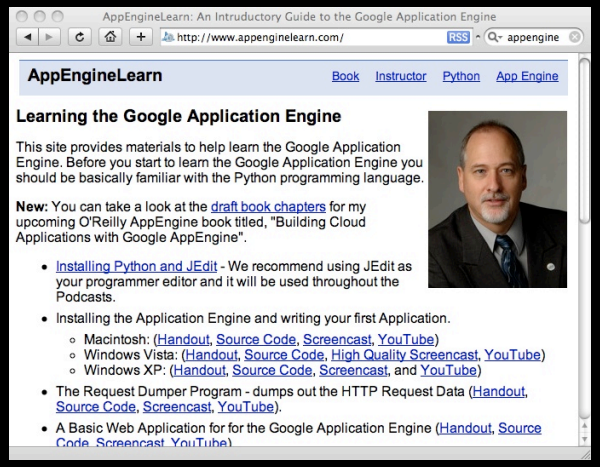
CloudSocial

(aka “the paperclip”)
www.cloudsocial.org

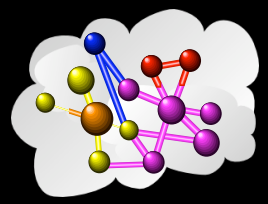


When the page loads, the CloudSocial run time reads tool list and displays menu.

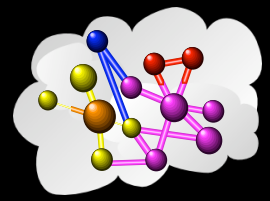





```
<script type="text/javascript"
    src="http://www.cloudsocial.net/js/ile-main.js">
</script>
<script type="text/javascript">
  ile_init("ILE_33936-10-27_KEY");
</script>
```

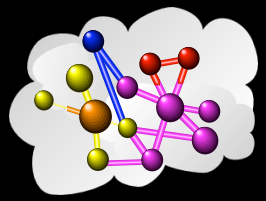


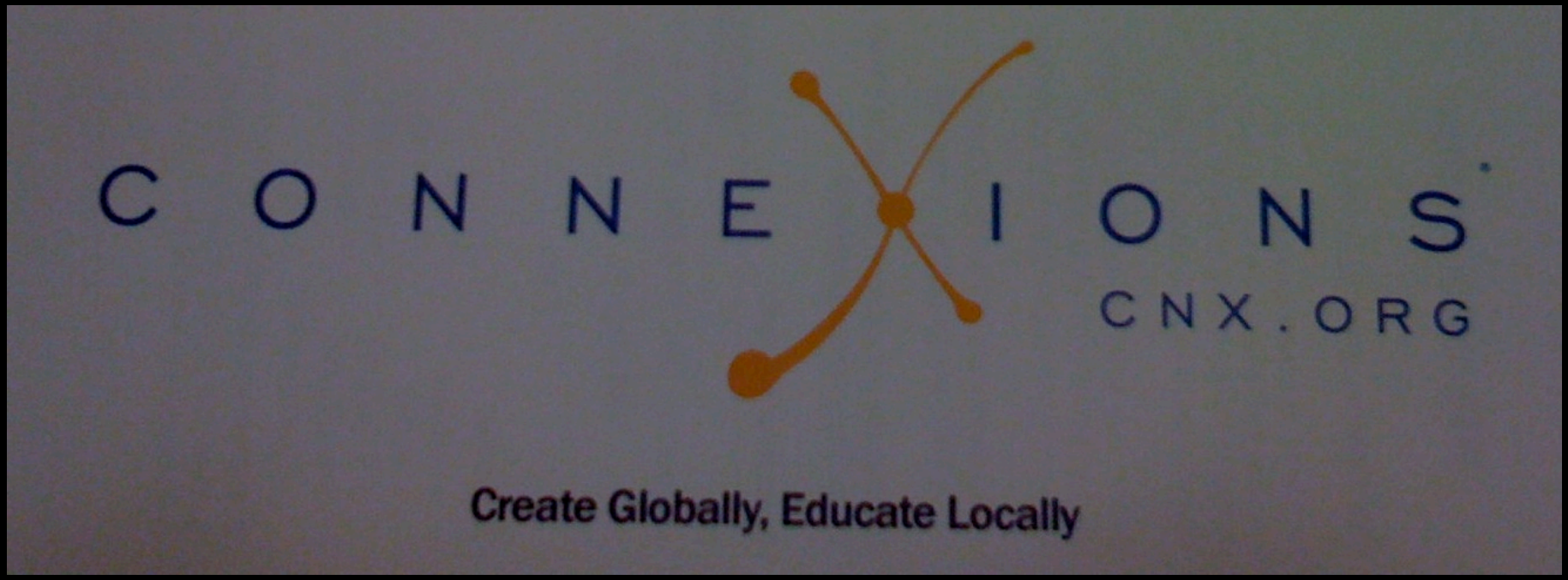
CloudSocial Agenda



- Stop creating/editing content in Learning Management Systems
- Stop creating content for a particular course
- Create contextualizale resources - put them on the web with decent URLs to the page level - Add the CloudSocial RunTime to all pages
- Contextualize your own material for your students using CloudSocial *the first time you teach*
- New Problem: How to best Collectively Create and Manage Materials

CloudSocial Agenda

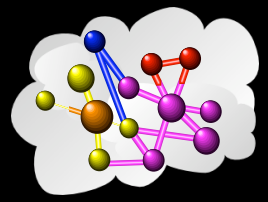




"Create Globally, Educate Locally --- www.cnx.org"

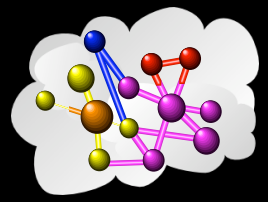
Trends in Teaching and Learning

- Move toward the "web" as the source of learning content
- Move toward open participatory learning and open educational resources
- A hybrid approach towards learning where organizational boundaries and educational structure is less clear
- Move toward social learning - learning and exploring with groups



Making Content the Focus

- Content lives on the web - on any server using any technology
- Instead of moving the content into lots of LMS systems...
- Bring your LMS systems "with you" as you visit different sources of content on the Internet

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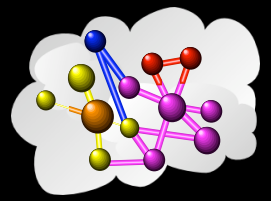
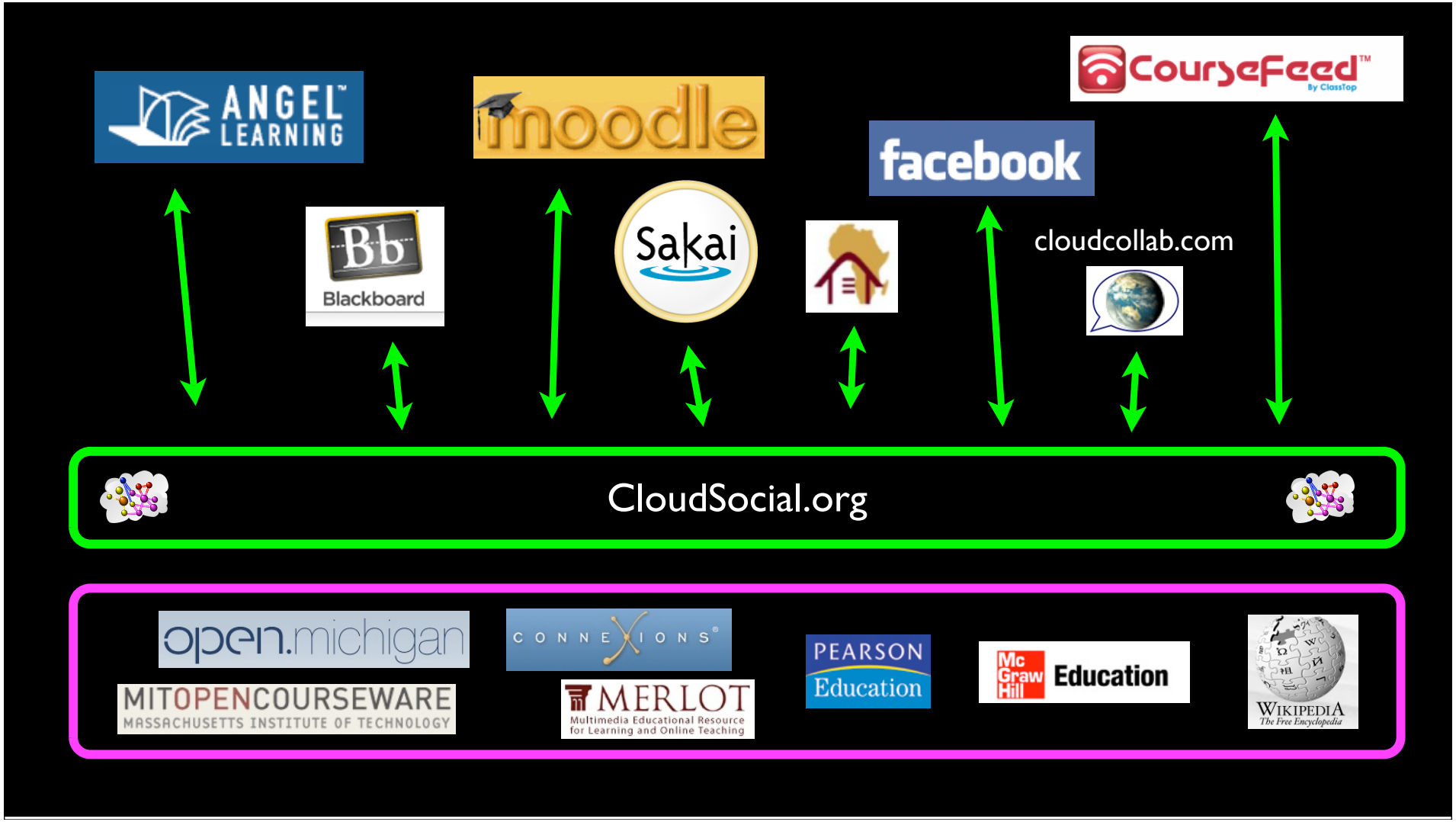
Learn More...
Transmission Control Protocol
The Transmission Control Protocol (TCP) is one of the core protocols of the Internet Protocol Suite. TCP is so central that the entire suite is often referred to as "TCP/IP." Whereas IP handles lower-level transmissions from computer to computer as a message makes its way across the Internet, TCP operates at a higher level, concerned only with the two end systems, for example a Web browser and a Web server. In particular, TCP provides reliable, ordered delivery of a stream of bytes from one program on one computer to another program on another computer. Besides the Web, other common applications of TCP include e-mail and file transfer. Among its management tasks, TCP controls message size, the rate at which messages are exchanged, and network
Join or Sign in
Members (15)
The TCP/IP model (RFC 1122)
Application Layer
BGP · DHCP · DNS · FTP · Gopher · GTP · HTTP · IMAP · IRC · NNTP · NTP · POP · RIP · RPC · RTCP · RTP · RTSP · SDP · SIP · SMTP · SNMP · SOAP · SSH · STUN · Telnet · TIME · TLS/SSL · XMPP · (more)
Transport Layer
TCP · UDP · DCCP · SCTP · RSVP · ECN · (more)

CloudSocial.org



- CloudSocial is not an LMS
- CloudSocial acts as an intermediary between content owners and learning systems
- CloudSocial allows any LMS to embed itself in content for learners who visit that content launched from their LMS
- CloudSocial does not touch, store, or handle learning activity data - learning activity data remains on the LMS systems which provide the tools


ANGEL LEARNING
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By ClassTop
facebook
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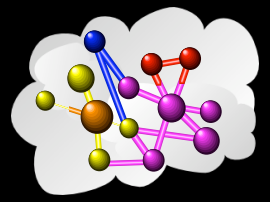
Sakai
cloudcollab.com
CloudSocial.org
open.michigan
CONNEXIONS
PEARSON
Education
Mc Graw Hill
Education
MITOPENCOURSEWARE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
MERLOT
Multimedia Educational Resource for Learning and Online Teaching
WIKIPEDIA
The Free Encyclopedia

Inverting the Content/LMS

- Today we focus on putting Content into as Many LMS systems as possible
- In the future there will be many sources of content - not just LMS systems - it will be hard to get interchange formats working in all these systems (including legacy)
- So lets put the LMS Into the Content.



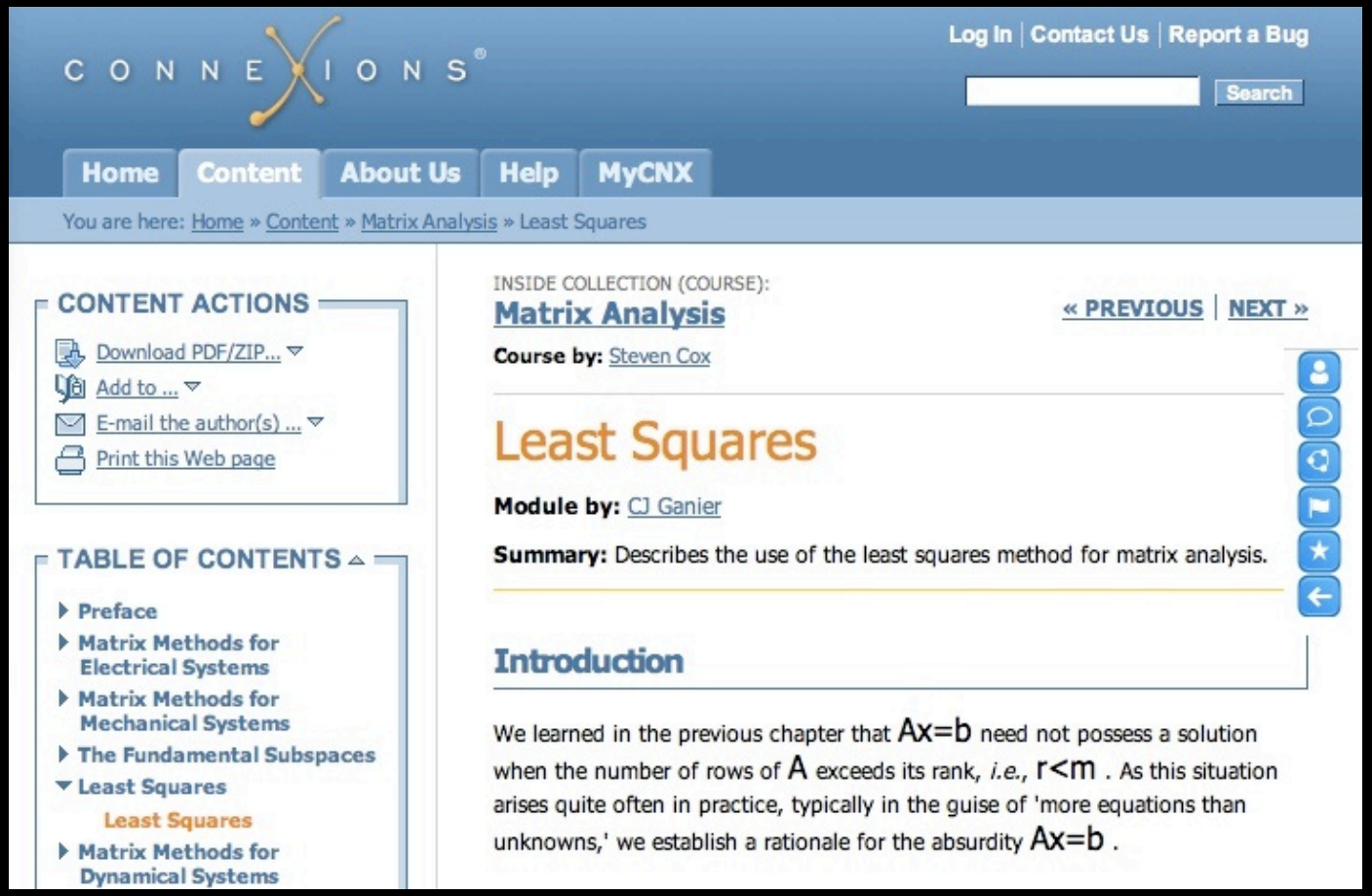

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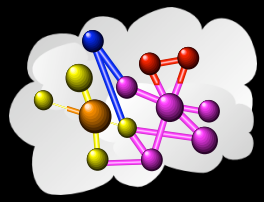
TABLE OF CONTENTS
Preface
Matrix Methods for Electrical Systems
Matrix Methods for Mechanical Systems
The Fundamental Subspaces
Least Squares
Least Squares
Matrix Methods for Dynamical Systems
INSIDE COLLECTION (COURSE):
Matrix Analysis
« PREVIOUS | NEXT »
Course by: Steven Cox
Least Squares
Module by: CJ Ganier
Summary: Describes the use of the least squares method for matrix analysis.
Introduction
We learned in the previous chapter that Ax=b need not possess a solution when the number of rows of A exceeds its rank, i.e., r<m . As this situation arises quite often in practice, typically in the guise of 'more equations than unknowns,' we establish a rationale for the absurdity Ax=b .

First Launch



Launch

Content Server

Redirect

Config

"LMS" System

Tool

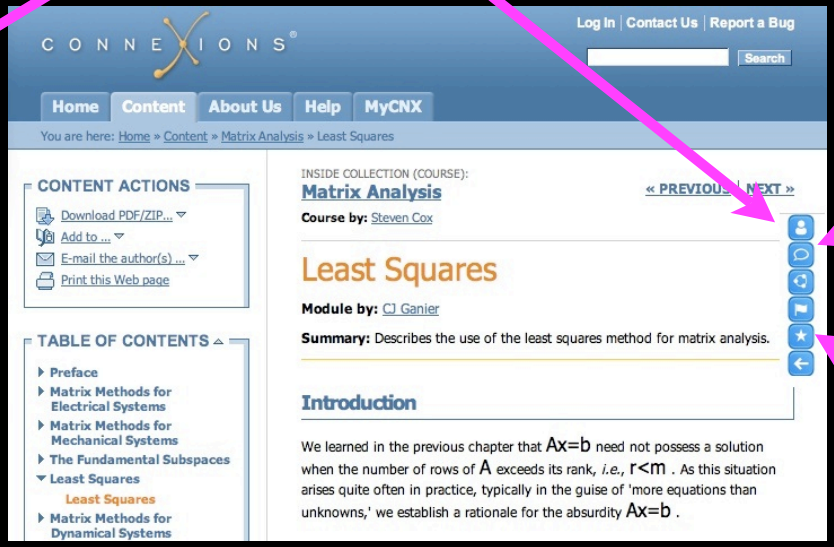
Tool

wikipedia tcp.htm

GET

Content Server

Tool



CloudSocial Session Established

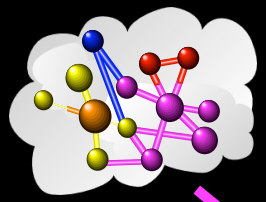
Switch to new page

Content Server

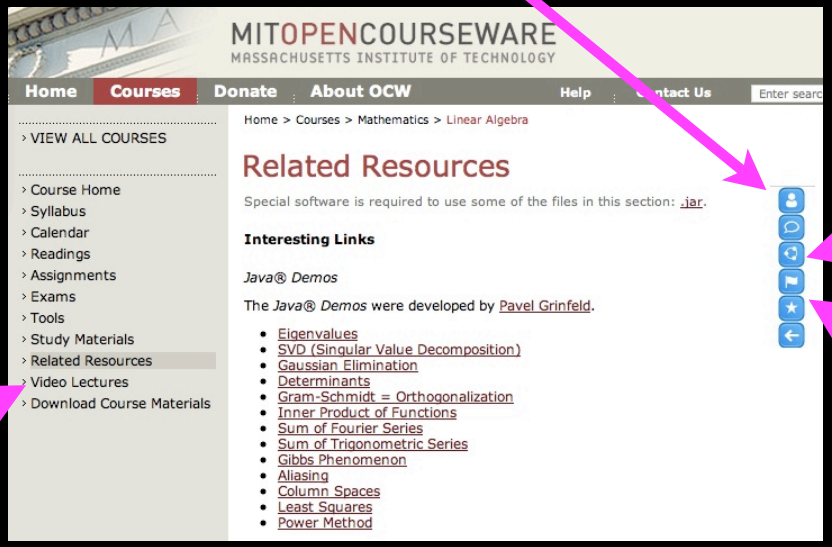
Content Server

Content Server

GET



Config



LMS System

Tool

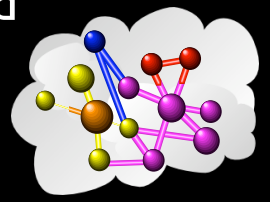
Tool

Tool

CloudSocial Session Established

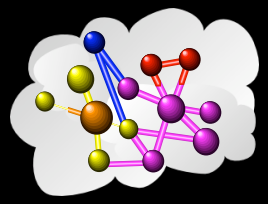
Technical Steps

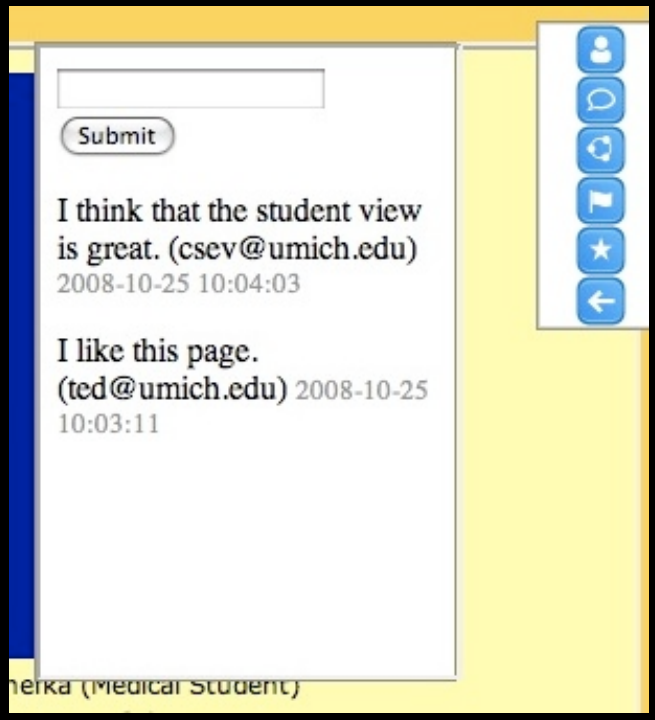
- User selects external content from within the LMS (or other system supporting groups of people)
- LMS contacts CloudSocial servers and establishes session context for user/course/insitution combination
- User is redirected to the content
- Content contacts CloudSocial servers using Ajax/JavaScript and pulls down menu for course and displays



Tool Context

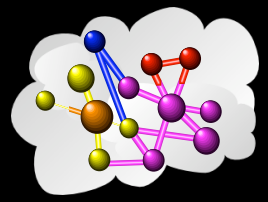
- CloudSocial maintains context for the tools
- Institution / Course / Role / User / Page
- Page context is optional





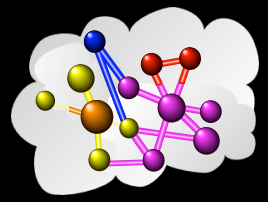
Learning Tools in the Cloud

- The CloudSocial servers only hold a tiny bit of tool configuration for a course - they are not the "LMS"
- If done properly, the tools that follow the user around the web can be running back on their campus.
- Think of a toolset from each of the major LMS vendors - this insures that sensitive data stays "back home" - and that the user experience is consistent with the rest of their learning
- The "embedded Moodle" toolset (kind of like Moodle blocks)



Underlying Technology

- This is all based on IMS Learning Tools Interoperability (LTI)
  - LMS Launch into CloudSocial uses LTI
  - CloudSocial launching to individual tools uses LTI
- This means that a piece of content can be used with any LMS that makes its tools available over IMS Learning Tools Interoperability.
- A mix of tools can be supported



IMS Standards

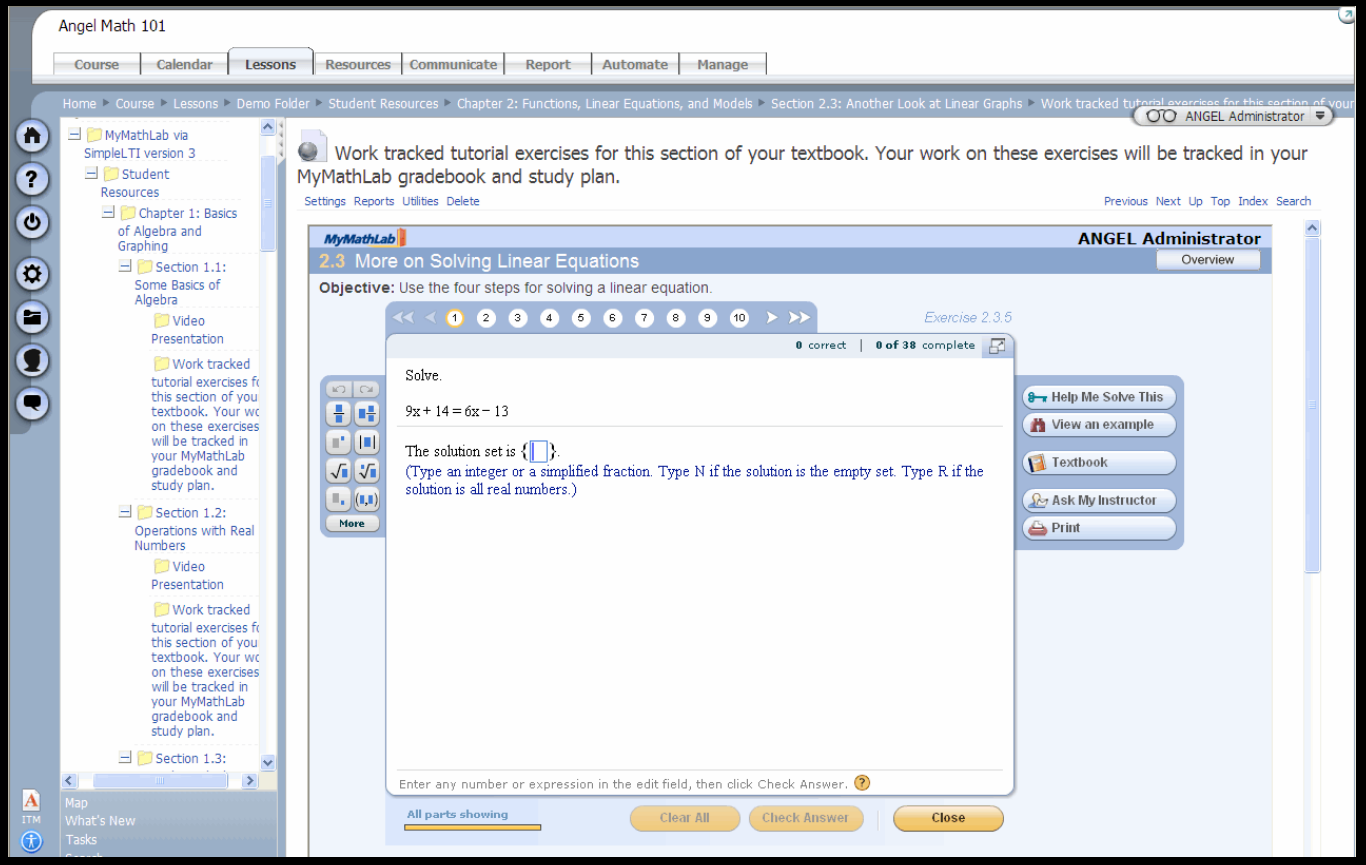
Dr. Charles Severance
Developer Network Coordinator
IMS Global Learning Consortium
cseverance@imsglobal.org

Two IMS Standards

- IMS Learning Tools Interoperability - Tool "mash up"
  - User Identity, Course, Roster, Role
  - Run-Time Services
- IMS Common Cartridge - Course Import/Export/Exchange
  - Web Content, Discussion Forums, QTI Materials, and LTI (soon)
  - LTI in Common Cartridge allows large/high-value content to be referenced rather than included

IMS Developer Network

- Lets not just write specs - lets write code while we write specs!
- Demos - feedback to the spec development process
- It is a "developers network" - I call folks up and we hack
  - BlackBoard, Wimba, ANGEL Learning, Sakai, Moodle, McGraw-Hill, Pearson, Microsoft, ...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Manage
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MyMathLab via SimpleLTI version 3
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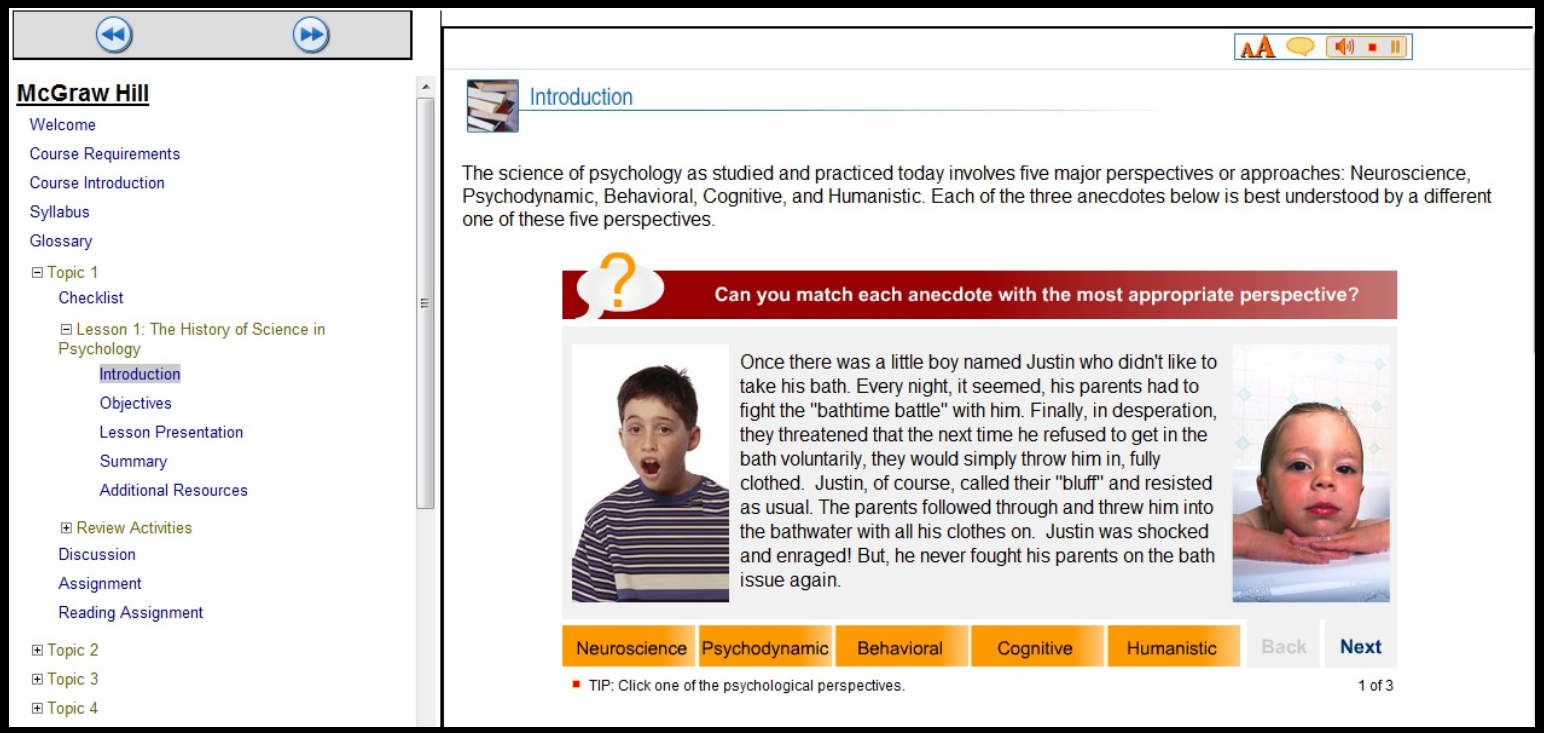
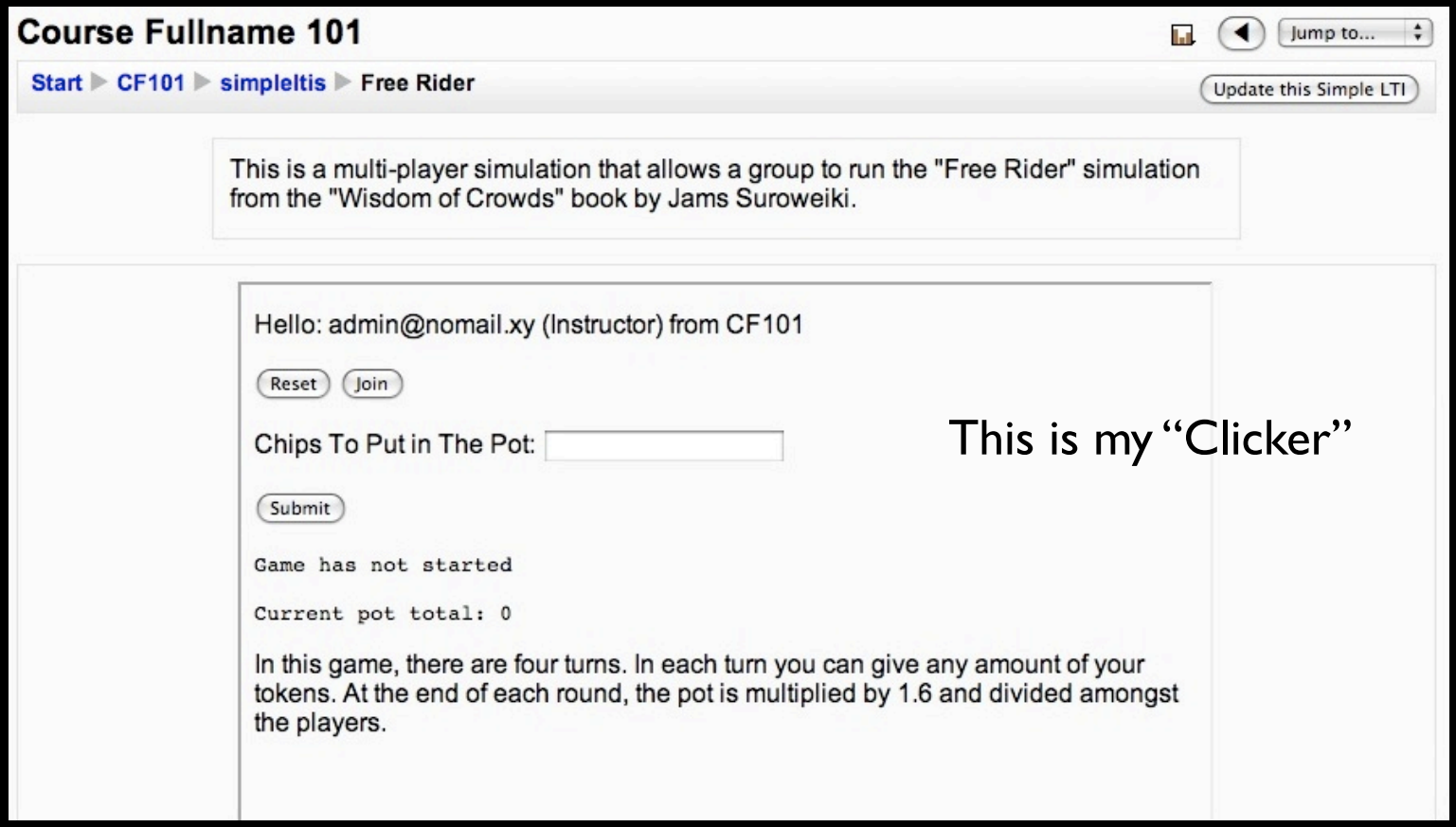
Section 1.1: Some Basics of Algebra
Video Presentation
Work tracked tutorial exercises fo this section of you textbook. Your wo on these exercises will be tracked in your MyMathLab gradebook and study plan.
Section 1.2: Operations with Real Numbers
Video Presentation
Work tracked tutorial exercises fo this section of you textbook. Your wo on these exercises will be tracked in your MyMathLab gradebook and study plan.
Section 1.3:
Map
What's New
Tasks
Work tracked tutorial exercises for this section of your textbook. Your work on these exercises will be tracked in your MyMathLab gradebook and study plan.
Settings Reports Utilities Delete
Previous Next Up Top Index Search
MyMathLab
ANGEL Administrator
2.3 More on Solving Linear Equations
Overview
Objective: Use the four steps for solving a linear equation.
1 2 3 4 5 6 7 8 9 10
Exercise 2.3.5
0 correct | 0 of 38 complete
Solve.
9x + 14 = 6x − 13
The solution set is {}.
(Type an integer or a simplified fraction. Type N if the solution is the empty set. Type R if the solution is all real numbers.)
More
Help Me Solve This
View an example
Textbook
Ask My Instructor
Print
Enter any number or expression in the edit field, then click Check Answer.
All parts showing
Clear All
Check Answer
Close


McGraw Hill
Welcome
Course Requirements
Course Introduction
Syllabus
Glossary
Topic 1
Checklist
Lesson 1: The History of Science in Psychology
Introduction
Objectives
Lesson Presentation
Summary
Additional Resources
Review Activities
Discussion
Assignment
Reading Assignment
Topic 2
Topic 3
Topic 4
Introduction
The science of psychology as studied and practiced today involves five major perspectives or approaches: Neuroscience, Psychodynamic, Behavioral, Cognitive, and Humanistic. Each of the three anecdotes below is best understood by a different one of these five perspectives.
Can you match each anecdote with the most appropriate perspective?
Once there was a little boy named Justin who didn't like to take his bath. Every night, it seemed, his parents had to fight the "bathtime battle" with him. Finally, in desperation, they threatened that the next time he refused to get in the bath voluntarily, they would simply throw him in, fully clothed. Justin, of course, called their "bluff" and resisted as usual. The parents followed through and threw him into the bathwater with all his clothes on. Justin was shocked and enraged! But, he never fought his parents on the bath issue again.
Neuroscience
Psychodynamic
Behavioral
Cognitive
Humanistic
Back
Next
TIP: Click one of the psychological perspectives.
1 of 3



This is my "Clicker"

IMS

This is my "Clicker"

IMS

IMS Advertisement

- IMS needs more academic participation
- Specification development is members-only because we effectively do it all under mutual NDA - It is kind of fun, actually
- But we feel that this is the only way to align interoperability and data interchange specs on "Day One"

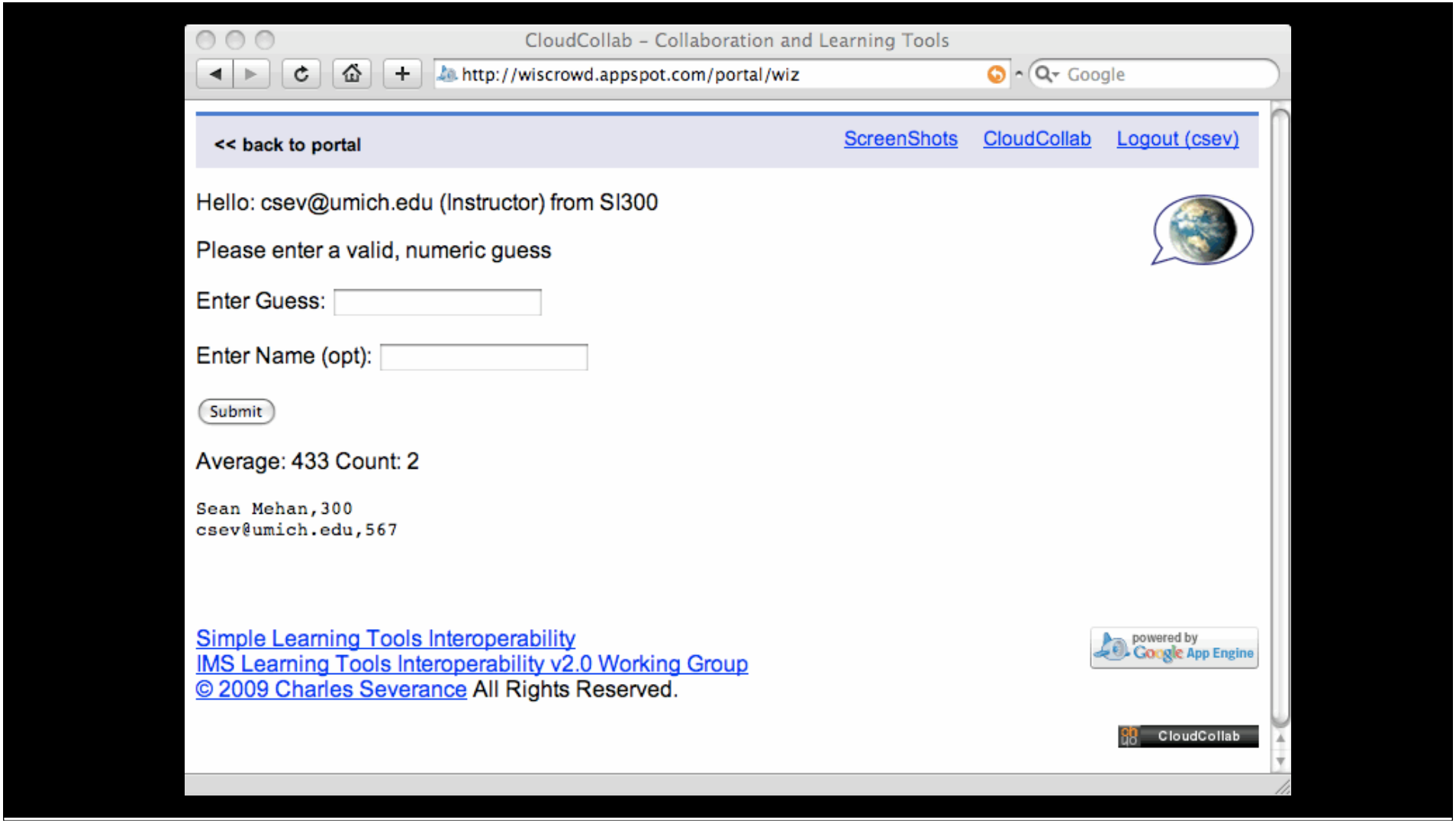
www.imsglobal.org

CloudCollab

Yet Another Open Source Learning Management System
www.cloudcollab.com

CloudCollab Differences

- Written in Python - Hosted on Google App Engine for free - so *every* teacher and student can have their *own* LMS in production ....
- Intends to be reference implementation of IMS Standards
- Multi-Tenancy Capable using IMS LTI - Can host tool instances for multiple LMS systems, multiple courses, and multiple organizations
- Flexibility: Can be a LTI "tool container", personal learning environment, small group LMS, small school LMS


CloudCollab - Collaboration and Learning Tools
http://wiscrowd.appspot.com/portal/wiz
Google
<< back to portal
ScreenShots
CloudCollab
Logout (csev)
Hello: csev@umich.edu (Instructor) from SI300
Please enter a valid, numeric guess
Enter Guess:
Enter Name (opt):
Submit
Average: 433 Count: 2
Sean Mehan,300
csev@umich.edu,567
Simple Learning Tools Interoperability
IMS Learning Tools Interoperability v2.0 Working Group
© 2009 Charles Severance All Rights Reserved.
powered by Google App Engine
CloudCollab

More CloudCollab Differences

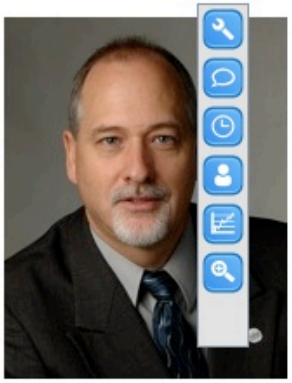
- Tool Development is simple - Framework takes care of the detail
- Wisdom of Crowd guessing tool: 110 lines of Python (includes data models) and 21 lines of HTML.
- O'Reilly Book: "Building Cloud Applications with Google AppEngine"
  - May 2009
  - Early version at www.appenginelearn.com

AppEngineLearn: An Intruductory Guide to the Google Application Engine

http://www.appenginelearn.com/ RSS appengine

AppEngineLearn Book Instructor Python App Engine

Learning the Google Application Engine



This site provides materials to help learn the Google Application Engine. Before you start to learn the Google Application Engine you should be basically familiar with the Python programming language.

New: You can take a look at the draft book chapters for my upcoming O'Reilly AppEngine book titled, "Building Cloud Applications with Google AppEngine".

- Installing Python and JEdit - We recommend using JEdit as your programmer editor and it will be used throughout the Podcasts.
- Installing the Application Engine and writing your first Application.
  - Macintosh: (Handout, Source Code, Screencast, YouTube)
  - Windows Vista: (Handout, Source Code, High Quality Screencast, YouTube)
  - Windows XP: (Handout, Source Code, Screencast, and YouTube)
- The Request Dumper Program - dumps out the HTTP Request Data (Handout, Source Code, Screencast, YouTube).
- A Basic Web Application for for the Google Application Engine (Handout, Source Code, Screencast, YouTube)

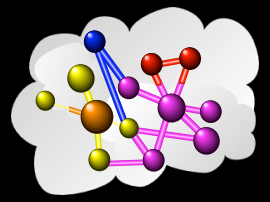
CloudCollab Summary

- Very early days - 4000 lines of code - 1 developer
- Two tools - both games for my Social Computing Course :)
- I am not in a rush - My main goal is thatI work to make development is easy - testing with grad students who have 1 programming course
  - www.cloudcollab.com
  - wiscrowd.appspot.com - Demo server

Overall Summary

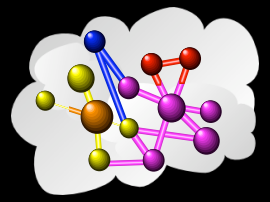
Distributed Learning Operating System

- The same content can be used by millions of students simultaneously - with each having a view that is controlled by their "course"
- A course launched from Moodle (or any LMS) could use Moodle tools
- The learning data can be kept exclusively on a campus's servers to comply with legal issues
- At the same time these launches can come from other social systems like LinkedIn or Facebook



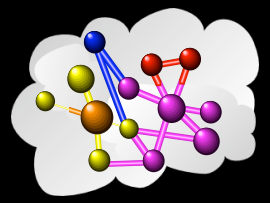
Looking Ahead

- Build and harden the technology
- Document the technology for ease of use and development
- Deploy CloudSocial services in a consortium model that is trusted and seen to be "owned by all" - like handle.net
- Convince content owners to use the technology
- Make it easy to build new tools that can plug in



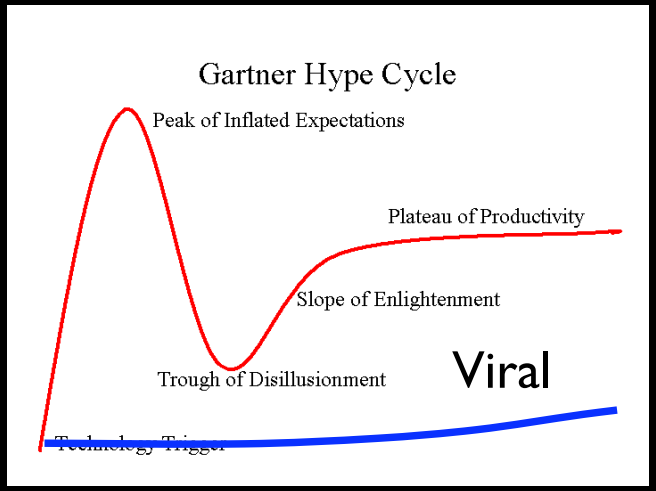
Possible Content Partners

- Individual faculty members
- open.umich.edu
- Commercial Publishers
- ConneXions
- EduCommons
- MIT OCW
- Wlkipedia
- ???



My Approach

- I am a faculty member and IMS Consultant - I do this in my spare time
- This is fun - there is no rush
- I am involving lots of students
- I want to stay ahead of the hype curve
- I want a few good collaborators who can help make it right



Thanks

- IMS Global Learning Consortium, the William and Flora Hewlett Foundation, the University of Michigan Medical School, Microsoft, Pearson Education, McGraw-Hill Higher Education, ANGEL Learning, Blackboard, LearnGauge, Wimba, Sakai Foundation, Google Summer of Code, and the Software Engineering for Information Systems Group (GESSI) at Universitat Politecnica de Calalunya.

- Joseph Hardin, Ted Hanss, Joe Fantone, Casey White, Raj Mangrulkar, Chris Chapman, Mike Bleed, Gaurav Bhatnagar, Noah Botimer, Ali Asad Lotia, Clint Newsome, Eileen Quintero, Amanda Visconti

Summary

- CloudSocial inverts the relationship between content and LMS
- Put the LMS into the Content instead of putting the content into the LMS
- Allows millions of learners independently walking through the same content simultaneously viewing the material from different contexts
- This is at the formative stage - many paths forward

http://groups.google.com/group/cloudsocial