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UNC - School of Medicine Curriculum Management

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Cignex Technologies

Overview

- UNC Chapel Hill School of Medicine Background
- Existing curriculum system
- Problems and motivation for change
- Why Plone
- Why Cignex
- Implementation
- Post Mortem
- Demo and Q&A

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School of Medicine - Background

- Established in 1879, the School of Medicine is a top-ranked public medical school and oldest in NC
- Medical student body: 649
- 4 year undergraduate medical program that leads to a MD
- 2,972 applications were received for the 160 places in the Class of 2008
- Full-time faculty: 1238
- Approximate 1/3 of faculty are very active in the MD curriculum
- Ranks 17th of the NIH funding list
- Largest single source of NC physicians

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Existing Curriculum System

- Users include medical students, faculty and administrators
- The first two years of the curriculum are entirely online
- All medical students have a required laptop to access online curriculum materials
- Key elements presented online are the course schedule and course resources
- Resources can be owned by multiple types of users
- Resources can be documents (.doc, .pdf, .txt), web resources (urls) and multimedia files (.mpg, .mov, .rm)

Existing Curriculum System

- 2000 plus statically linked web pages
- Most page design accomplished through Dreamweaver
- Pages and resources added on request
- New or updated resources are uploaded manually and linked in by web designers
- Some resources (e.g. quiz answer sheets) have a finite life span and must be removed from the site manually

Problems and Motivation for Change

- Inefficient Content Management:
  - Multiple tools used to create content
  - Manual management of broken links and integrity of information was error prone and time consuming
  - Content delivery was varied and lacked workflow
- Inadequate Infrastructure:
  - Ever growing number of digital learning resources had become difficult due to inefficiencies in the process
  - Resource delivery took anywhere from a few hours to days
  - Delivery of resources was by physical transport due to email attachment restrictions

Problems and Motivation for Change

- Dissatisfied User Base:
  - » Increasing push to have an on demand publishing system to speed up content delivery
  - » Expectation that learning materials be immediately available for each course
  - » Demands that content always be the most up to date version available
- High Maintenance Costs:
  - » Consistent look and feel to the existing site was maintained for all courses by manual processes
  - » Mixed content and presentation limited the re-use of resources and introduced a good deal of duplication
  - » High human and system costs resulted from the manual maintenance of this static environment

Why Plone

OR - The process that lead to Plone

- School of Medicine CMS committee formed to conduct needs analysis
  - Make up of team
  - Discovery process
  - Initial needs analysis
- Internal requirements for the system included:
  - Integration of existing LDAP
  - Integration with Oracle DB
  - Ability to run on current UNIX environment - Sun Solaris
  - Highly scalable application framework
  - Cost effective
- Looked at several proprietary and open source solutions:
  - Proprietary: Vignette, Oracle Portal - *Expensive*
  - Open Source: Various PHP solutions, Bricolage, Mason, OpenCMS - *Cost effective, but none exactly right*

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Why Plone

- Fit all system needs
  - LDAP
  - Oracle integration
  - Runs on existing UNIX environment
- Strong security and workflow model
- Open source, so the price was right (e.g. cost effective)
- Use what you need rather than buy unused features
- Don't pay for software licenses, pay for development to meet specific business model

Why Plone

- Easy to get started
- Have a site up and running in 5 minutes - Great for proof of concept
- Large and active user community group
- Completely customizable look and feel
- Other local knowledge bases on campus

Why Cignex

- Introduced to Cignex via Zope and Plone developer training
- Cignex presented a well defined process
  - Concept development
  - Planning and analysis
  - Solutions design
  - Development
  - Integration and deployment
- Cignex project management and documentation framework
  - Requirements document
  - Design document
  - Issue Tracker
  - Weekly status reports
- Forced us to closely examine our entire process and business logic
- Because Cignex was a paid consultant, they got answers and decisions were made

Implementation

- Resource Manager:
  - Provides multiple resource types… file, link and references
  - Asset library for resource reuse
  - Tracks revisions of resources
  - File content stored on local file system, not the ZODB and indexed for search, with support for Powerpoint, Word, Excel, and PDF formats.
  - Builds on ATManagedFile, ATVocabularyManager, PortalTransforms, and ATReferenceBrowser.

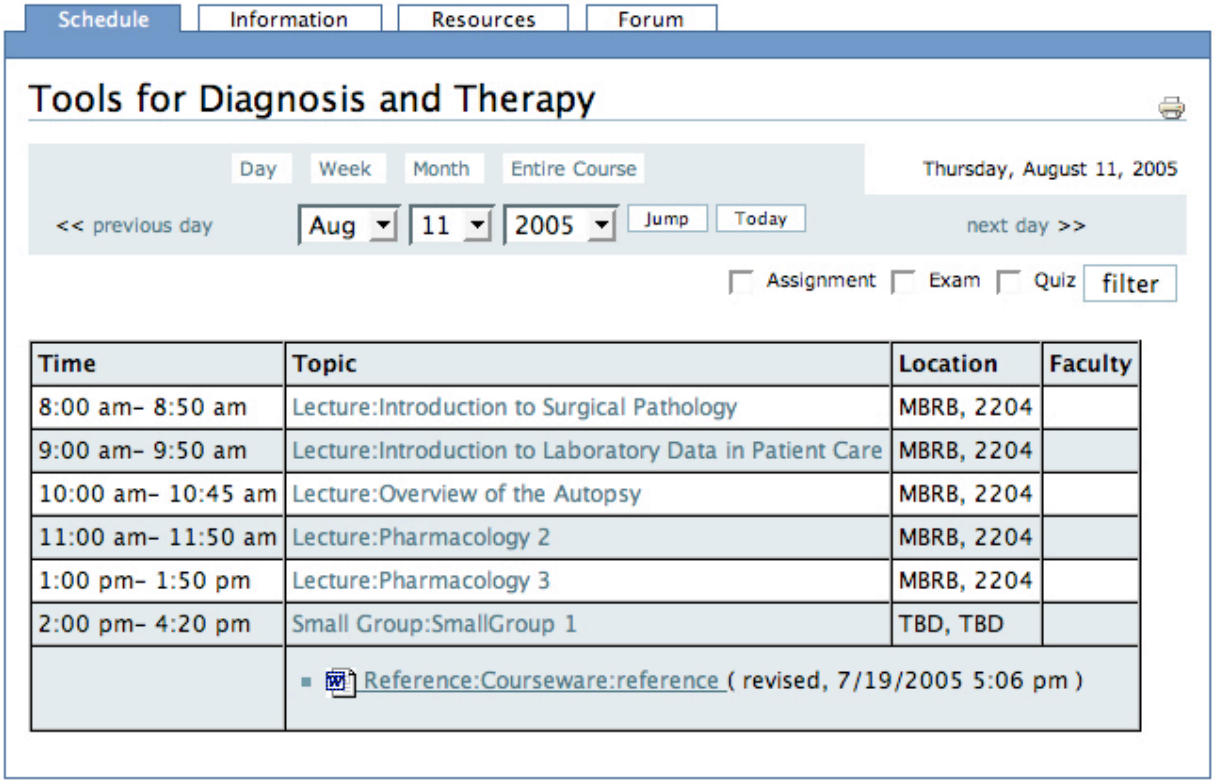
Implementation

- CurriculumManager
  - The Core of the system presents multiple calendar views displaying courses and topics
    - Topics are extended system events
  - Courses and topics support delegation to users with appropriate roles for management.
  - LDAP Backed User Search Widget
  - Basic iCalendar Integration.
  - Builds on Calendaring, ATVocabularyManager, and python-icalendar projects.

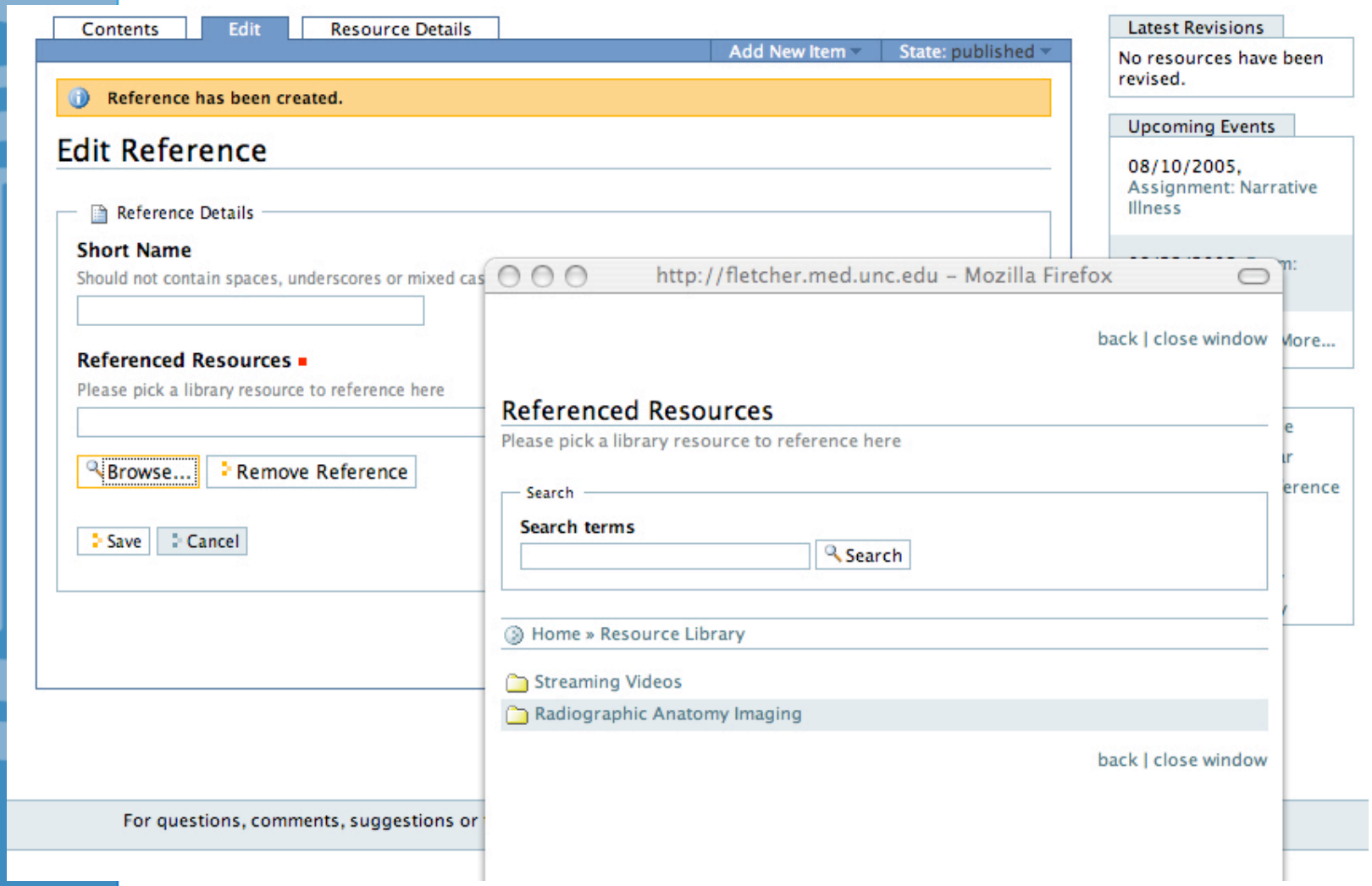
Implementation

- Development Lessons Learned:
  - Good reuse is crucial - focus on the application and not the plumbing
  - ATVocabularyManager - great for admin managed vocabularies, ui needs work though.
  - ATManagedFile - lots of functionality, but the code looks bad for future extensions. The blob project at plope.com, looks promising.
  - CalendarX versus Calendaring
    - Pretty UI versus Extensibility
    - W/ Calendaring, every custom calendar view reduced to five lines of code.
  - Catalog security filtering inadequate out of the box when containers are private

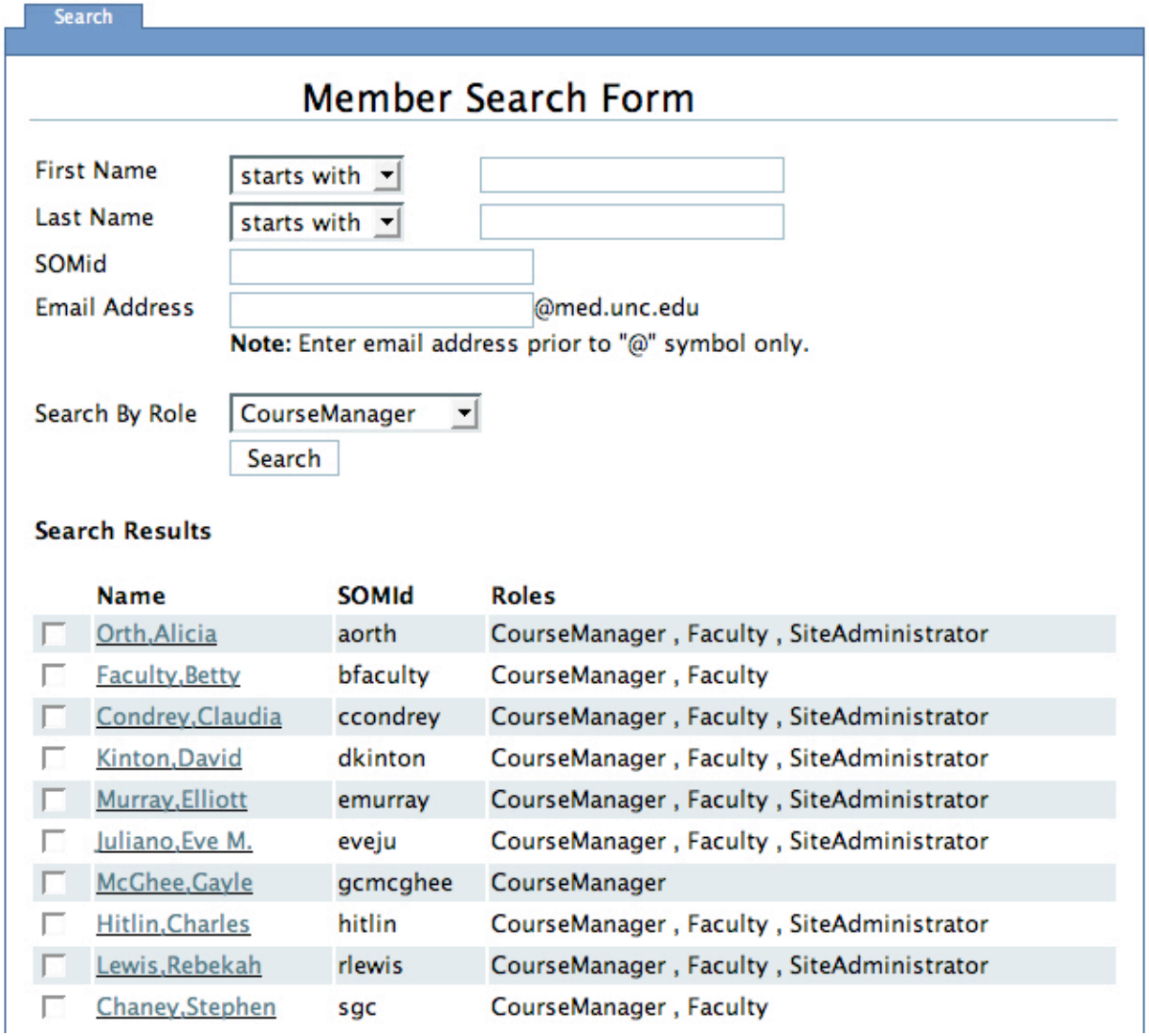
Topic Day View



Referenced Resources



Manage Members



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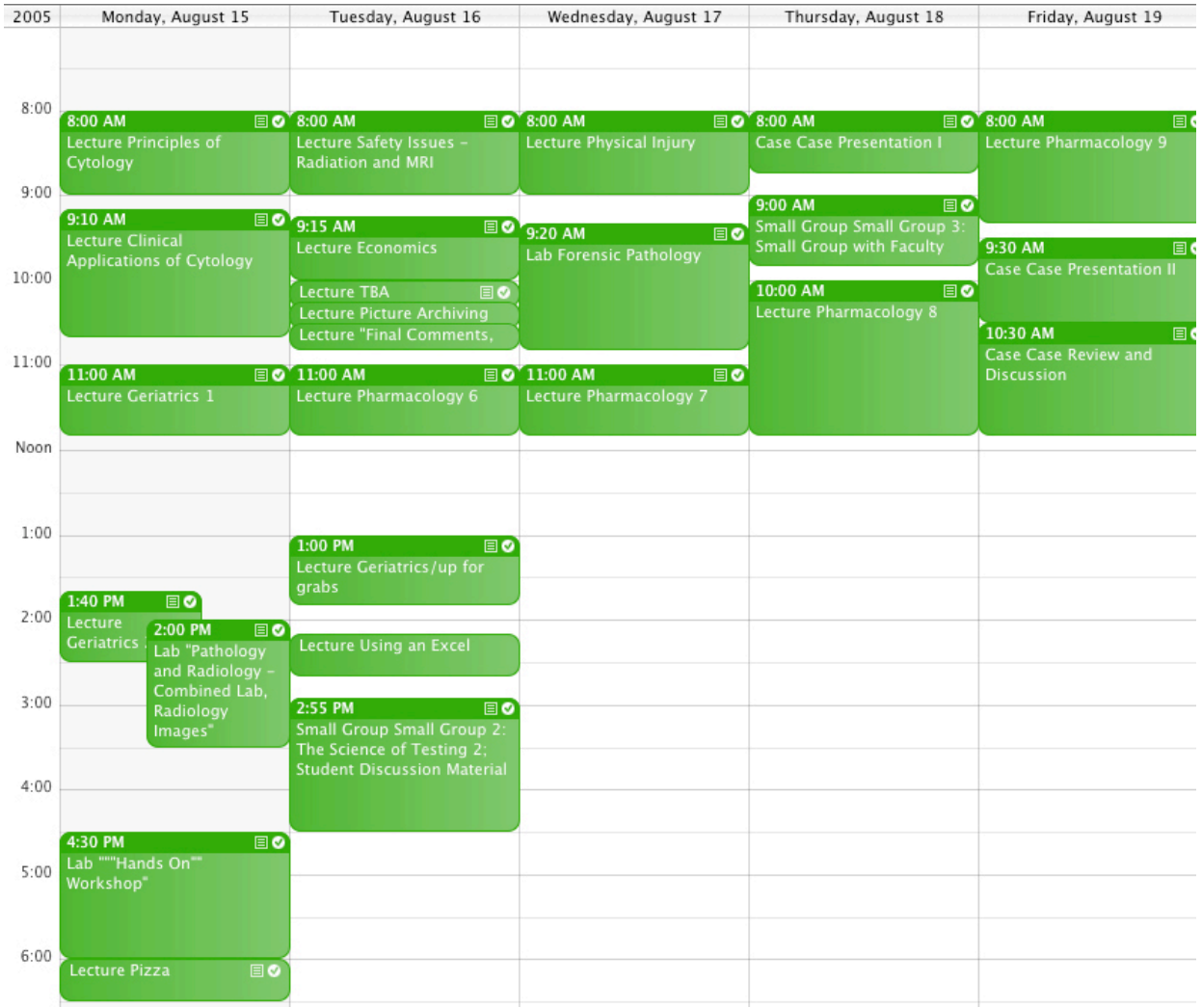
iCalendar Integration



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Post Mortem - Lessons Learned

- Initial User Interaction
  - Faculty and administrative response to demonstrations of the beta software was very favorable
- Looking Backwards:
  - We did not know our own business process as well as we thought
  - The problem we needed to solve was discovered to be more complex then originally believed
  - We were not able to complete everything we initially wanted to do
  - Difficult issues or decisions were sometimes tabled for future discussion
  - Initial needs analysis had a tendency to focus on feature lists and screen designs rather than business process

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Post Mortem -

The Good, The Bad, The Ugly

The Good, The Bad, The Ugly; A Retrospective

- The Good:
  - Initial user reaction was extremely favorable
  - Plone (and Zope/Python) have proven to be flexible and rich tools
  - The development process proceeded smoothly and mostly on schedule
  - The delivered system meets and exceeds specifications
  - Costs were almost exactly inline with quoted time and effort estimates months earlier
  - The analysis and design of this system has given focus to other projects
  - The end user response has been excellent
  - Cignex proved to be an invaluable partner and delivered a great application

The Good, The Bad, The Ugly; A Retrospective

- The Bad:
  - The project was severely under specified. The requirements document could have been expanded by 100%
  - Use Cases were never done
    - These should have been done early in the process with user's input
    - At one point *post hoc* use cases were done on screen mock-ups to resolve process issues
  - Communication between internal staff broke down at times
  - Mindset switch when transitioning from static web pages to designing dynamic applications built on business process is key - This is still occurring

The Good, The Bad, The Ugly; A Retrospective

- The Bad Continued:
  - Without the upfront training for web developers in Plone or Object Oriented design, misconceptions existed
  - Hardware requirements should have been investigated and tested early in the process
  - Performance goals and systems level software configurations should have been fully mapped out in the design phase

The Good, The Bad, The Ugly; A Retrospective

- The Ugly:
  - Some core Plone UI semantics were mixed in order to satisfy user needs
  - Some requirements proved unworkable upon use of live system resulting in 11th hour fixes
  - Regression of the final beta ran right into production time lines - one month over goal
- BUT……

Plone Works!

- “The ‘Bad’ and ‘Ugly’ are learning experiences for a green staff. Despite our deficiencies Plone provided the flexibility and power we needed to produce a content management system that met our requirements in a reasonable amount of time and effort.”
  - Walt Martin - UNC Chapel Hill School of Medicine
  - Plone Developer and Systems Analyst

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Demo and Questions