Training researchers with Sakai

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Centre for Sustainable Chemical Technologies

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Outline

1 Introduction
2 Why Sakai for research?
3 Centre for Doctoral Training
4 SEWPROF Initial Training Network
5 Electronic Laboratory Notebooks
6 Conclusions
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Who am I?

• Computer scientist & mathematician by training
• Brief flirtation with computational systems biology
• At University of Bath:
  • Academic Digital Technologist, CSCT
  • Technical Data Co-ordinator, Research360 project (secondment, now over)
Centre for Sustainable Chemical Technologies

• Cross-disciplinary research centre
• Develop new molecules, materials and processes for sustainability
• EPSRC-funded Centre for Doctoral Training

bath.ac.uk/csct
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Research vs Learning & Teaching

Similarities

• Busy, busy users!
• Diversity of technical inclination

Differences

• Relationships between users
• External collaborators (within and outside higher education)
• Longevity of information
• Highly user-led
Where are we looking?

<table>
<thead>
<tr>
<th>Same place</th>
<th>Different place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>Continuous task</td>
</tr>
<tr>
<td>Remote interactions</td>
<td>Communication &amp; co-ordination</td>
</tr>
</tbody>
</table>

Same time

Different time
Requirements

Virtual Research Environment

- Robust file sharing ✓
- Collaboration options ✓
  - Wikis, forums, mailing lists, calendar, …
- Fine-grained access control ✓
- Integration with enterprise systems ✓
- Ability to shrink wrap the problem ✓
  - i.e. as simple/complex as required
Our Sakai installation

- App server: virtual machine hosted by Computer Services (BUCS)
- Database server: centrally-managed shared MySQL5 service
- Mostly unmodified Sakai CLE
- Straightforward integration with central services:
  - LDAP/CAS for user information and single sign-on
- Temporary/external user accounts managed by BUCCS
- Default site roles: Owner, Organizer, Member, Observer
- Customized skin with our branding

Very little customization required
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What is a CDT?
Centre for Doctoral Training
Centre for Sustainable Chemical Technologies

• Funded by a Research Council
  — EPSRC
• Train PhD students in cohorts
  — 12–18/year
• Strategic research area
  — Sustainable chemical technologies
• Highly collaborative
  — 18 commercial partners
• Integrated (“1+3”) PhD course
  • Year 1: small research projects & intensive training
  • Year 2–4: main PhD research & additional training

bath.ac.uk/csct/dtc
Centre administration

- General knowledge base
- Research project proposal submission and allocation
- MRes project report archive
- Public engagement coordination
- Events:
  - Weekly student seminars
  - Occasional larger events
- Meeting room diary
Research groups and projects

- Project worksites for each PhD student & co-supervisors
- Customization on request for research groups
- Ad-hoc user-created worksites for particular projects

Examples
- Research groups:
  - Hill
  - Scott
  - Chuck
  - Walsh
- Research sandpits
- Research360 project
Typical research group use

- File sharing (Resources)
- Wiki
- Mailing list (Email archive)
- Schedule
- Forums
- Drop box
  - Not to be confused with DropBox…
- Polls
Computational materials group

Central knowledge base for research group

- Minutes of group meetings
- Documentation on codes and clusters used
- Diary of group meetings
- Archive of presentations, documents, data and other files

Customizations

- Enable jsMath processing for wiki
- Add additional programming languages for syntax highlighting
What is SEWPROF ITN?

“SEWPROF aims to develop inter-disciplinary and cross-sectoral research capability for the next generation of scientists working in the newly-emerging field of sewage epidemiology.”

- €4m, 4-year project
- 16 Partners (including University of Bath)
- 11 Early Stage Researchers
- 3 Experienced Researchers
- 11 countries across the EU

www.sewprof-itn.eu
SEWPROF ITN

Requirements

Across 11 countries:

- Co-ordinate activities
- Share data, documents and other information
- Plan meetings
- Keep up-to-date with each other’s research
SEWPROF ITN

Implementation

• Wiki: general knowledge base
• Resources:
• Forum: social space for students
• Groups allow control over who can access what:
  • Management team
  • Researchers
  • Core and non-core partners
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Why Electronic Lab Notebooks?

Paper lab books are:

• Easy to damage accidentally (e.g. liquid, fire)…
• …and easy to lose (e.g. public transport)…
• …yet difficult to back up!

Also:

• Supervisors want easy access to students’ notebooks
• Research groups and collaborators need better access to shared knowledge
• Institutions want more protection for their main asset
• Funders and publishers are pushing for data publication
Sakai as an ELN?

Key requirements:
- Access control ✓
- Attach files ✓
- Remote access ✓
- Predefined templates ✓
- Robust storage ✓
- Structured import & export?
- Mathematical formulae?
- Visualise data ✗
- Alternative taxonomies ✗
- Chemistry-specific functions ✗

Options:
- Wiki
- Blog (Clog)
- Portfolio
- Resources (plus OSP forms)
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Observations

Sakai as a Virtual Research Environment

• Slow but steady uptake
• Plenty of interest from across campus
• Positive feedback from users
• Simple introductory documents & screencasts help
• Some interesting spontaneous innovations
  • OneNote synchronisation via WebDAV works
  • Student baking competition
Challenges

- Data curation & wiki gardening
- Confusing array of access control options
- Tablet/smartphone access not perfect
The future

Would like:

- Easier entry, manipulation & display of structured data
- Integration with institutional services: calendar, data archive, …
- Shallower learning curve for developers
- Better documentation for REST web services
That’s all folks…

Any questions?

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