Whisper
The Role of Digital Libraries

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Academic Knowledge Transfer and Management

- Current approaches are largely ad-hoc
- Lack of integration among solutions
- General purpose mechanisms not tailored to specific needs of academics
Current Practices in Academia

• Version Control - Hotmail
• Group Collaboration - Yahoo! Groups
• Digital Libraries - Institutional or Individual WebDAV enabled directories
• Electronic Journals - targeted at journals, not users
Agenda

- *Hypotheses*
- Related Work
- Features
- Architecture
- Validation
Achieving Integration

• How can the disparate functions required by academics when creating, manipulating, and transferring knowledge be (re)integrated?
Hypothesis

- Model academic information flow pathways
- Identify aspects of friction within the flows
  - Friction = Lost context of work, Lost work, Duplicated effort and data, Delays
- Results in a better understanding of inefficiency in academic knowledge transfer
  - Identify targets for improvement of the flows.
Knowledge Transfer Model

![Diagram of Knowledge Transfer Model]

- **Consume**
  - Discussions
  - Electronic Messages
  - Written Documents
  - Journals
  - Conferences
  - Speeches

- **Produce**
  - Discussions
  - Electronic Messages
  - Written Documents
  - Speeches

- **Entity**
  - Individual
  - Project
  - Community

- **Community**
  - Discussions
  - Journals
  - Conferences

- **Individual**
  - Discussions
  - Electronic Messages
  - Written Documents
  - Speeches

- **Project**
  - Discussions
  - Electronic Messages
  - Written Documents
  - Speeches
Hypothesis

• An information system based on the model
  • Web-based
    • Integrates substantial portions of the process of academic knowledge creation and transfer flows
  • Dramatic reduction in flow friction for represented pathways
    • Improved efficiency in knowledge exchange
Whisper: Web Information Sharing Project

• Support Knowledge Transfer in Academia
  • Digital Libraries for Individuals
  • Versioned file repositories for Projects
  • Electronic Journals for Communities
  • Integrated into one web-accessible system
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Knowledge Workshops

- Drucker’s “Knowledge Worker”
- Engelbart’s “Knowledge Workshop”
  - Augmentation, not automation
  - NLS, circa 1968 [Engelbart 1968]
  - Hypertext, e-mail, threaded discussions, more!
Digital Libraries

• Research focused on transition from traditional libraries to electronic libraries
  [Gonçalves+ 2004]

• Content generally must be accepted by traditional print dissemination method before addition to digital library

• UpLib - closest in concept to Whisper’s Digital Libraries for the individual  [Janssen and Popat, 2003]
Other Sources

- Content Management
  - Focused on document life-cycle and development process management for organizations

- Organizational Memory
  - Tools to enable organizations to record, recall, and alter knowledge [Conklin 1997]

- Augment Journal, USENET groups, Wikis
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Needs of the Individual

- Access to research-related documents
- Method for managing associated notes
- General file space
- Informal methods of knowledge transfer
- External access management
- Overview of current and past work
Features for the Individual

- Personal Digital Library
  - Access via web UI or directly with WebDAV
  - Commentary associated with each item
  - User-defined keywords associated with each item
    - Keywords are ordered hierarchically and provide the “natural” order
    - Items can appear at multiple points in the hierarchy
Features for the Individual

- Versioned File Space - Subversion
- WebLog (blog)
- Access controls
- Dashboard
Needs in a Project

• Manage data and files
• Facilitate communication between members
• Capture project history, including decisions and assumptions
• Track progress
Features for a Project

• Digital Library

• Wikis
  • Provide external web presence for project
    • Distribution of results and artifacts
  • Also provide internal documentation
  • Historical documentation supported by versioning
Features for a Project

- Versioned File Space with per-file commentary
- Project message boards
- Administration
Needs of a Community

- Manage administration
- Facilitate communication between members
- Organize and publish research
- Capture community history
Features for a Community

• Electronic Journals
  • Provide journal and conference publishing
  • Full papers (original works)
    • Full peer-review
  • Links to externally published papers in other journals
    • Editorial review for relevance
Features for a Community

- Message boards
- Wiki
- Governance
Inter-Whisper Interaction

- Access to Individuals
- Access to Projects
  - Full participation
- Access to Communities
  - Local or Global
  - Full participation
Agenda

• Hypotheses
• Related Work
• Features
• Architecture
• Validation
External System Interaction
Agenda

- Hypotheses
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Adoption Strategy

• First use will be limited to laboratory setting
• Each beta will increase audience
• Provide “hook” features to drive adoption at other institutions
Metrics

- Automatically gather metrics from all users, projects, and communities

- Metrics will not include personal data

- Example Metrics:
  - documents in Digital Library
  - files in Repository
  - versions per file
  - comments posted and where
  - projects joined
  - communities joined
  - keyword searches within Whisper
  - files copied from others
  - requests per day
Metrics Usage

• Identify Knowledge Transfer actions
  • Keyword searches of other user’s digital libraries, followed by copying a document into the seeker’s digital library
  • Submission to a journal, with publication
  • Active participation in community discussions
Qualitative Assessment

- Compare student group project experience with and without Whisper
- Compare Masters Research experience with and without Whisper
- Compare workflow before using Whisper with workflow after N months
- Compare sources and magnitudes of friction
Expected Impact - Digital Libraries

• Users will have better control over their electronic documents

• A new first-tier knowledge resource for users with access to large digital libraries
  • Will browse more often than others
  • More likely to look in Whisper before general Internet, existing electronic journals, or physical library
Expected Impact - Community Journals

• Faster dissemination of publishable work

• More refined journal themes

• Users more likely to search active Whisper journals for links to external journals than the journals themselves
Expected Impact - Tool Integration

• One environment for academic work
• Inspiration to Project to Publication
• Provide details and history to community
Roadmap

- Current Status - 4 months in
  - Back-end infrastructure and administration
  - Front-end PHP interface allows login
- End of July - basic user interaction
- End of September - digital libraries
- End of December - basic electronic journals
Questions and Answers