The Role of Wiki Technology in Student Global Software Development: Are All Students Ready?

Dr. Christelle Scharff
Dr. Olly Gotel
Pace University, USA
Prof. Vidya Kulkarni
University of Delhi
Prof. Longchrea Neak
Institute of Technology of Cambodia, Cambodia

http://atlantis.seidenberg.pace.edu/wiki/gsd2007
Outline

- Motivation:
  - Offshore outsourcing
  - Issues for CS education and CS students
- Our response and vision:
  - Responding to offshore outsourcing
  - Setting for 2007
  - Wiki technology in student global software development
  - Findings
- Setting for 2008?
Offshore Outsourcing
Issues for CS Education and CS Students in the US

- Decline in CS enrollment
- Entry-level jobs migrating to service-providing countries
- We can NO longer prepare students for the dotcom world:
  - What technical and “softer” skills will CS students need to employ to work and communicate as productive members of a multi-cultural software development team?
  - What roles will CS students play in a global market place?
  - What new opportunities arise?
Responding to Offshore Outsourcing

- Provide real-life Offshore Outsourcing software development experiences:
  - Provide a balanced and first-hand view of the advantages, disadvantages and potential of Offshore Outsourcing.

- Understand skills students require to be productive in Offshore Outsourcing software development:
  - What roles will students play in a global market place?
  - What process and communication model works for distributed software development?

- Expose students to a collaborative tool-based environment to support their working:
  - How to create a shared open source tooling environment to support development activities and collaboration?

- Expose students to realities of global supply chain management:
  - How to divide up a project into component parts for different parties to work on across time zones and cultures?

- Scaling up to large projects:
  - How to deal with RFPs?
  - How to improve and assure the quality of distributed projects?
  - How to integrate work and deploy into a market?
Development of a Single Software

- MultiLIB - ITC Computer Science Department Library Management System
- 8 Pace undergraduate students (Software Engineering course)
- 7 Pace graduate students (Software Quality Assurance course)
- 15 ITC undergraduate students (Software Engineering course)
- 6 University of Delhi graduate students (Database Design course)
- 2 extended sub-teams (librarian/admin/professor component and guest/student component) ended up in 1 extended team
Setting for 2007

Globalization

Software engineering process

USA
Managers
Developers
Auditors
Mentors

Entrepreneurs

RFP

CAMBODIA
Clients
Testers

INDIA
Sub-Contractors

Technology

[Logos and technologies icons]
Students’ Wikis

- 3 Wikis:
  - 1 for each sub-component:
    - http://atlantis.seidenberg.pace.edu/wiki/librarian2007
  - 1 for integration
    - http://atlantis.seidenberg.pace.edu/wiki/student2007/Pace_Integration

- Contents of the sub-component Wikis:
  - Contact information of the global sub-team and its members
  - Description of the software engineering process followed
  - Requirements, design and testing material
  - PowerPoint and video presentations

- Contents of the integration Wiki:
  - Architecture for the system
  - Database design
  - Feedback on user interface mockups
  - Deployment environment
  - Responsibilities of the team members
  - Integration and system-level testing documentation
Guest / Student Team – Front Page

Home

MULTILIB 2007
Student Wiki

Project

- Pace Files
- ITC Files
- University of Delhi Files
- 📐 Software
- 📃 Project Blog
- 🏛 CS 389 Project Homepage

Class

- In Class Exercises
Librarian / Admin / Professor Team – Front Page

Home

- AboutProject (Project description, team, contact information, etc...)
- http://gsd2007librarian.blogspot.com is the blog of the team
- ProjectFiles (for the files of the project)
- Email: gsd2007librarian@yahooogroups.com.
- ClassExercises (for in-class exercises)
- Don't know how to use a wiki, go to practice zone

Disclaimer: This wiki was created as a portal for information pertaining to the GSD Project in which students from Pace University (US), University of Delhi (India), and Institute of Technology of Cambodia participate in designing and developing a software for the library of the department of Computer Science at ITC. This wiki was designed for the librarian component of the project. For more information click on AboutProject.

last edited 2007-07-03 11:43:29 by scharffc
ProjectFiles

Here you will find the files for our project.

- Milestone
- Software Development Process
- Requirements
- Design
- Integration
- Testing
- Chats
- Pace Mid-semester Presentation
- Pace Final Presentation
- ITC Final Report (local project)
- ITC Final Presentation (local project)
- ITC Final Report (global project)
Pace Integration

- Development environment
  - Pace University matrix server
  - Red Hat Linux 7.2
  - Java 1.5.0.1
  - JSP 2.0
  - Tomcat 4.1.18
  - MySQL 4.0.2
  - HTML 4.01
  - Eclipse 3.2
  - SVN 1.2.0
- Common account: s06-cs389-s17

- Software
  - Prototype HTML pages of the librarian side
- Page layout
- Original Database script
- Database script after changes
- Features, work assignment and status
  - Brainstorming ideas, April 17, 2007
  - Brainstorming ideas, April 23, 2007
  - Student side - prioritized requirements
  - Librarian side - prioritized requirements
- Final Testing document
- MultiLIB code (Java, JSP, HTML, SQL)
  - Zip file
## Librarian Prioritized Requirements

These requirements have been prioritized by the Librarian from ITC.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Requirement Number</th>
<th>Priority</th>
<th>Assigned To</th>
<th>Status*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Librarian Account</td>
<td>FR1</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Administrator Account</td>
<td>FR2</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Interface</td>
<td>FR3</td>
<td>High</td>
<td>Librarian Team</td>
<td>Done</td>
</tr>
<tr>
<td>Librarian/Admin My Account Page</td>
<td>FR1-3</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Modify Book</td>
<td>FR4</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Modify Ebook</td>
<td>FR5</td>
<td>Medium</td>
<td>Yev</td>
<td></td>
</tr>
<tr>
<td>Modify Student Report</td>
<td>FR6</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Modify CD DVDs</td>
<td>FR7</td>
<td>High</td>
<td>Yev</td>
<td>Done</td>
</tr>
<tr>
<td>Modify Server item</td>
<td>FR8</td>
<td>Medium</td>
<td>Lorena</td>
<td>Will not be implemented</td>
</tr>
<tr>
<td>Add Resources</td>
<td>FR9</td>
<td>High</td>
<td>Lorena</td>
<td>Done</td>
</tr>
<tr>
<td>View Who Borrowed</td>
<td>FR17</td>
<td>High</td>
<td>Yev and Michael</td>
<td>Done</td>
</tr>
<tr>
<td>Viewing Borrowed, On-hold, and Reserved Resources</td>
<td>FR18</td>
<td>High</td>
<td>Yev and Michael</td>
<td>Done</td>
</tr>
<tr>
<td>Viewing and Updating Transaction Details</td>
<td>FR19</td>
<td>High</td>
<td>Yev and Michael</td>
<td>Mostly Done</td>
</tr>
<tr>
<td>Modify Policy</td>
<td>FR20</td>
<td>High</td>
<td>Yev and Lorena</td>
<td>Done</td>
</tr>
<tr>
<td>Help Page</td>
<td></td>
<td>Medium</td>
<td>Yianni</td>
<td>Done</td>
</tr>
</tbody>
</table>
Wikis as the Coordination Backbone of the Project

- Facilitate bonding activities:
  - Pictures, gift exchange and student’s video presentations
- Get up to speed on the project quickly
- Empower students at each location to contribute ideas
- Present the working philosophy to be followed
- Ensure transparency and shared awareness
- Improve progress monitoring
- Promote a better understanding of the software engineering process, practices and tools used in the project
- Increase productivity:
  - Easier to maintain than web pages
  - Turn-around time required to get feedback shorter
  - No claim of lost documents in email exchanges
Wikis as Facilitator of Quality Assurance Activities

- **Mentors:**
  - Internal eyes for the project
  - To raise any early concerns to the instructors

- **Auditors:**
  - External quality gatekeepers
  - To review the artifacts delivered and the processes used to deliver them

- **Wikis permitted instructors/mentors/auditors to:**
  - Have an up-to-date picture of the global project at any one moment in time
  - Track progress
Findings

Different levels of exposure to the Internet influence the willingness to use Wiki technology and affect the perception of its potential value

- Cambodia – Reluctant to use Wikis despite training
- India and US – Communication tools are more on the periphery than those tools actively used to support development

Need of more attention to communication tooling than engineering tooling when background exposure to ‘everyday technologies’ is dissimilar

- More in-depth study necessary
Setting for 2008

- Working on a real project using business contacts in Cambodia
- Looking for advice for setting up a tooling environment for 2008:
  - Framework that integrates development and communication activities
Thanks

- Students (ITC, Pace, Delhi)
- Faculty (ITC, Pace, Delhi)
- David Michael, PR Newswire, New York
- Guillaume Mailard, ILM Informatique, France
- Cedric Mainguy, Asiaform, Phnom Penh
- John Fox, Homeland Energy Inc., New York
- Doug Tidwell, IBM cyber-evangelist
- Chris Nelson, IBM senior software engineer
- Gary Thompson, Sun Microsystems
- NCIIA grant 2006-2008
- Seidenberg School of CSIS