IPRO 338 Final Report

Executive Summary

IPRO 338 project started in 2003 was designed to address the issue of knowledge transfer in the IPRO teams. Due to an 80% student turnover rate and few teams continuing across semesters a large amount of valuable project knowledge was being lost. To address this issue, the IPRO knowledge management tool – iKNOW, was developed to assist with capturing and cataloging the knowledge generated from IPRO projects during each semester. This semester, IPRO 338 was charged with the full implementation of IKNOW across the 36 teams in the IPRO Spring semester. However, since this report was completed prior to the iKNOW upload deadline, a full accounting of the number of compliant teams was unavailable.

Introduction

The original mission of IPRO 338 was to build, maintain, and implement a knowledge management system for the IPRO program. The goal for spring 2006 was improve and implementation iKNOW. IN order to accomplish this goal, the ten person team was broken down into two sub-teams: technology and implementation. The Technology sub-team was charged with improving the underlying technology creating the iKNOW system including improving search capabilities and adding in a Web Services system. The implementation team was responsible for the program-wide implementation of iKNOW through training and incentive programs.

Background

The IPRO project 338 was started six semesters ago. The project is sponsored by Topiary Communications, LLC. This company works closely with the 338 team to ensure knowledge transfer as their main commodity is software which allows major corporations capture, maintain and use a Knowledge Management System.

IPRO 338 originally set out to devise a solution to this problem and in the Fall of 2004, the team rolled out the first version of a revolutionary Knowledge Management System (KMS) dubbed iKNOW. IKNOW was designed to capture of knowledge from the various IPRO teams in a digital form known as Nuggets. These Nuggets would then contain information, process knowledge, data, conclusions, and the findings of the teams and store them in a centralized publicly accessible website. Though the semesters, iKNOW was incorporated search engine technology, parsing technology, new meta data theories and processes, new processes for process knowledge capture and a great deal more.

In the summer of 2005, the 338 team conceived a sister application to iKNOW now known as iGroups. IGroups was designed to address the issues which iKNOW was unable to address. IGroups helps facilitate intra-team communication and allowed for the IPRO office to keep the process knowledge which is a crucial part of knowledge management. To this day it is still being worked upon to improve it's functionality and usefulness.

The 338 has not only been concerned with developing software but also with process development, marketing, intense research into knowledge management, and how to best convey the ideals of Knowledge Management to others. For example, the fall 2004 team created rollout documentation, tutorial text and even videos about Knowledge Management! The team also worked closely with the 339 team in order to collaborate on the best way to go about creation of a KMS.

Purpose

The problem that IPRO-338 addressed is the lack of knowledge transfer from one semester to the next in the IPRO program. The solution to the problem was to build, maintain, and implement a computer-based knowledge management tool for the IPRO program. Thus, iKNOW was created. During this semester, the team’s purpose was to complete a full implementation of the iKNOW system.

Objectives

The overall objective was the full implementation of the iKNOW knowledge management tool.

Secondary objectives are listed below:

- *Technical team*
    - *Search Engine* - A good search engine is essential to retrieve the captured knowledge and hence, is a key component of our Knowledge Management system. The Search Engine sub-team worked on replacing the old AIRE search engine to the new Lucene Search engine to enhance the search capabilities.
    - *Web services*- The Web Services sub-team worked on developing a web service that served as an intermediate layer between iKNOW and external interfaces. This was essential to make iKNOW accessible for various outside parties, to integrate iGroups and iKNOW and to easily implement functionality upgrades to the system.
- *Implementation*- The Implementation sub-team's primary objective was to help the IPRO teams utilize iKNOW and iGroups. The sub-team also served as an interface between the system developers and users.

Research Methodology

We utilized a mixed methodology to include both technical and implementation aspects of the project. The implementation utilized the following methodology:

- Usability testing
    - Design test
    - Develop materials
    - Run tests
    - Report results
    - Act on recommendations
- Implementation
    - Visit all teams
    - Train all teams
    - Check up with teams
    - Implement changes
- Technical team
    - Take recommendations
    - Make changes
    - Test changes

Assignments

There were several assignments and deliverables that were set out in the beginning of the semester. These assignments were broken up into the two major sub-teams: technical and implementation.

Sub-teams	Milestones
Search Engine	**Week 4**- Find syntax bugs and simple errors **Week 8**- Simple implementation of rank based algorithms. **Week 12**- Implementation of several non-ranked based optimizations. **Week 15**- Random Fun Features
Web Service	**Week 8** – Deployment architecture completed **Week 10** - Retrieval operations implemented and tested **Week 12** - Update operations implemented and tested **Week 14** – Additive operations implemented and tested
Implementation	**Week 6 –** Obtain all lists and CDs **Week 10-** Fall '05 materials entered into the system **Week 10** – Training and Implementation Spr '06 **Week 10** – iKNOW issue resolutions **Week 15**- Spring '06 materials in iKNOW

Challenges

The Search Engine sub-team faced a significant task in order to improve the iKNOW search since the team had to learn a new technology and apply it to a system with which they had no prior experience. The Web services sub-team had to recode most of iKNOW functionality, design a central access point and ensure that the system correctly authorize and validate all data. The work was technically challenging and was a two-semester project. The implementation sub-team had to overcome the significant challenge of changing the organizational culture within IPRO teams so that team members would utilize the iKNOW system.

Accomplishments

The technical sub-team completed the transition into the Lucene 2.0 search engine. The upgrade meant better search results including relevancy-ranked searches and functional Boolean searches. Additionally, they implemented the Simple Object Access Protocol (SOAP) technology, an industry standard for unified access to the iKNOW system. The team also developed technology such that the iKNOW system could be upgraded without requiring changes to the application layer. The

Implementation team worked on training other IPRO teams to upload data to iKNOW and help them use both iKNOW and iGroups effectively. The sub-team uploaded data from 34 of the 36 teams for fall 2005. It also held a review session for each of the 36 teams during the semester to help them upload data on to iKNOW and conducted a usability survey for both the systems. The sub-team also conducted usability tests with 10 users and a usability report was prepared. The report outlined the feedback given from users and suggested key improvements in several areas. The sub team developed a certificate program where the different IPRO teams receive a certificate for completing all requirements of the IPRO program prior to IPRO day as regards the usage of iKNOW and iGroups. These requirements were formulated by the team leaders of the sub team and the IPRO administration.

Assignments

For the successful realization of the project plan, the team was divided into two task oriented teams. The Technology team focused on improving search constructs, and optimization of search engine results, and implementing web services. In addition to these teams, the Implementation Team trained other teams on the iKNOW system, and ensure complete implementation within the IPRO program. The teams did not only focus on just their tasks. On numerous occasions certain tasks required the attention of both sub-teams.

The Implementation Team consisted of Joy Robinson, Chris Lam, Abhinav Hasija, Jake Culrich and Sushanth Ramakrishna. Their primary task was to ensure the full implementation of the system by the end of the semester. This required them to initially visit all new and continuing IPRO's and train all team members on the iKNOW system. In addition to that, the implementation team also tracked down the non-continuing IPRO teams and entered their data into the iKNOW system. After successfully completing training the teams on the usage of the system, certain suggestions towards possible changes in the system were made by the users. These changes would facilitate easier use of the website. The implementation team and primarily Chris Lam focused on developing usability tests for the website, conducting them and then producing a report detailing his findings. At the same time, the implementation team worked extensively with Douglas Myer from the Technology team, and helped create a more intuitive upload screen for the system. Sushanth worked on drafting a list of FAQs, and Abhinav focused on developing "help examples" for the iKNOW system.

After the necessary changes were made, Joy and Abhinav visited all the IPRO teams, and informed them about the requirements for IPRO day, and the raffle being conducted by IPRO 338 on IPRO day. Abhinav also helped all the teams on the eve of IPRO day to finish their compliance requirements.

Obstacles

The full implementation of the iKNOW was a difficult task. There was a natural opposition by certain teams to comply with the guidelines. On many an occasion it was hard to explain to the teams why the implementation of the iKNOW system was important, because of this natural resistance by them to comply. Additionally, there was opposition by the certain faculty members. Eventually we were able to visit each team an impress upon them the ease of the system as well as the possible benefits of it, and we were able to get satisfactory compliance. This was also in turn done by giving incentives to the teams that finished uploads into the iKNOW system by IPRO day. The incentives included a certificate and their team being entered in a raffle with a chance to win three Ipod Shuffles. Dr. Ferguson arranged for the funding for the Ipods, and Joy and Abhinav dealt with visiting the teams in the last month of the semester and making them aware of the IPRO day requirements as well as the raffle.

In addition, our team also had a problem of attendance of the meetings and the lack of participation from within the team. This under the guidance of the team leaders resolved itself to a certain degree, and has led to reasonable finishing of the project. Attendance may still be an issue next semester.

Results:

1. Training of the IPRO teams on the iKNOW system.
2. Uploading of all the data, from Fall 2005 into the iKNOW system.
3. Conducting the Usability tests, and publishing a report on the findings.
4. Updating the meta data page depending on the suggestions made by users.
5. IPRO day Raffle.

Summary and Future Outlook

Spring 2006 has been a semester of accomplishments for IPRO-338. The technical teams improved the Knowledge Management systems significantly to make it more user-friendly and technically advanced. The implementation team ensured the successful implementation of iKNOW and iGroups throughout the IPRO program. Integration of iKNOW and iGroups, improvement of IPRO teams' usage of both the systems are future challenges that could be addressed with the foundation provided by this semester's work.

The planned iKNOW and iGroups integration will result in a single seamless tool easy to use and implement across different settings. This system will have more functionality in terms of being able to send confidential emails, track online file edits, auto generate reports for management and other additions.

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