IPRO 303 Project Plan

Fall 2007

Information Design for Plant Management to Predict Equipment Failure

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1.0 Objectives

The present IPRO is a continuing research based on the findings of the previous semester during which they concluded that planned maintenances in a coal fired plant are carried out by 'Engineering Specialists' and the 'Operations Manager" whereas unplanned outages are taken care of by the 'Shift Supervisor' . These findings lead us to our primary goals, namely:

- To conduct a "Day-in-the-Life" study for both the two categories of personnel described above by direct solicitation of information from plant personnel.

- Develop methods to gather this information such as surveys and/or interviews.

- Compile the gathered data into a comprehensive report which should benefit the sponsor in better understanding their potential users.

2.0. Background

A.

Smart Signal© (www.smartsignal.com) is a prominent provider of equipment warning systems in many industries. Their product works based on input from many sensors thought the power plant thereby monitoring all equipment and providing alerts should there be any unusual behavior. Based in Lisle, Illinois, the company has many major power plants as clients nationwide.

B.

Smart Signals©, is aiming to improve the user interface of their product so it suit better the end users in help them manage alerts they get from the software. For this they require a report on how their end users function which is the problem this IPRO needs to solve.

C.

This project is not technologically based but will only utilize interviews as a means to compile the required report on how the end users resolve day to day issue , this report will help our sponsor design an updated user interface.

D.

There has been previous research done on developing better user interfaces but studying the end user will help in providing a much better understanding of the pros and cons of the software.

E.

Ethical issues that we anticipate to face primarily are interview confidentially and disclosure of sponsor information to the person we will interview.

G.

Implementation will totally be based on compiling results of surveys into a final report.

3.0. Methodology/Brainstorm/Work Breakdown Structure

A. We are required to conduct a “Day-in-the-Life” study for key personnel responsible for maintenance at a coal fired power plant and report on their top priorities and their routine tasks and how they manage to categorize tasks based on task priorities. The approach towards this research has to be by direct solicitation of information from these personnel.

B. In order to accomplish the problem, the viable approach decided upon by the team is through direct interviews with the personnel described above. For this purpose the team was initially distributed into groups, namely the Questionnaire group which was responsible for developing different questions for the interview to extract the information from different personnel in a power plant. Another group called the Contact group was formed to research on different plants to be contacted and communicate with them describing our research and setting up direct or telephone interviews with their key personnel. An Interview will be formed and they will conduct interviews based on the questions developed by the questionnaire group and interview schedules provided by the contact group

C. It has been decided by the team that upon completion of the questionnaire, the questionnaire groups will be dissolved and an Analysis group will be formed which will devise a method to analyze the different answers to questions from the questionnaires since all answers will not be in a true/false format.

D. The Interviews will be recorded by the Interview group during interviews to be provided to Analysis group.

E. The future Analysis groups will be responsible for compiling answers from the interviews and doing a statistical analysis on them to show what problems are largely faced by the maintenance personnel working at coal fired power plants.

F. A team wholly responsible for ensuring timely delivery of IPRO deliverables in a timely manner has been made in the group called the Deliverables group. This team will collect information from other groups and members to include in the reports and will compile and submit all IPRO office deliverables such as Project Plan, Midterm report, etc. However since our final report since it includes our findings is the primary objective of our IPRO, it will be worked on by majority of the team.

G. N/A.

4.0 Expected Results

A.

To extract the required information, we need to design interviews and questions to be asked during those interviews that will help us understand how the maintenance personnel under study perform their duties.

We are also needed to list and contact the plants to get our interviews to get answers that provide us data for our research.

The interviews will be carried out in person or over the phone with the Plant Manager, the Engineering Specialist, and the Shift Supervisor.

The interviews will be aimed towards how these people conduct their daya to day and unplanned maintenance routines and the problems they encounter.

B.

The collected data will be the answers to our questions and will necessarily not be yes or no to be simple enough to be compiled into agree/disagree charts but will be opinions and idea that will vary a lot on how to handle different maintenance issues. This will help us create a trend on how majority of the power plant maintenances are conducted.

C.

The research will help better understand how the maintenance decisions are undertaken by the maintenance personnel and majority of the problems they are facing, how they prioritize their task and which software package they use and how it benefits them in their work. The resultant product from these answers will be our final report that will allow a person in a different field to understand issues of the maintenance personnel.

D.

Conduction of the interview will yield data that can be interpreted into a report that will be allow to understand the work carried out by the personnel in charge of maintenance.

E.

The expected results will be a final report showing details on how planned and unplanned maintenance operations are performed by the Engineering Specialist and the Shift Supervisor and what may aid them as a software in performing their duties.

F.

The sponsor Smart Signal© require this report which will help them better understand the end user for their software and help design a user interface that makes their product more appealing to the user and more useful as well as user friendly.

G.

Similar to the previous IPRO, this semester's aim is to provide a report to the sponsor to help redesign their user interface and thus the required deliverable is a report based on our research that will help make an improved plant maintenance software for Smart Signal©.

5.0 Project Budget

Since this is a project that requires gathering data thru interviews and surveys rather than developing any product, we estimate our budget to be based entirely on transportation and communication as shown below:

Particulars	**Cost**
Transportation (For Interviews and Field trips)	$200
Communication for Interviews (Fax, Telephone Cards)	$75
Photocopying	$25
Total	**$300**

6.0. Schedule of Tasks and Milestone Events

Our tasks and their schedules planned out to conduct this project are displayed in the form a Gantt charts in the next two pages, here the tasks are listed, inter related and scheduled.

7.0. Individual Team Member Assignments

A.

Name	Major / Minor	Skills	Work Experience	Sub-Group	Present contributions towards IPRO project progress
Omar Husain	Mechanical Engineering	- Computer programming (VB, C++, MATLAB). - Autocad. - MS Project and Project management skills. - Website Design	- Intern (product design) successfully completed at UT Houston Summer 2006 and Summer 2007. - Aircraft engineering intern at Air Sahara airlines(now JetLite Airways), India 2005	Project Manager & Deliverables	- Developed Project timeline. - Conduct meetings as project manager. - Maintain schedule for completion of tasks. - Written Project Plan.
Yewon Lee	Computer Science	-Computer Programming (Java,C) - Photoshop/Illustrator - Database (SQL)	Intern (Database Design) at Motorola	Deliverables	Project Plan
Ivan Voukadinov	Mechanical Aerospace	-Autocad -Vectorworks -MS Office	- Best Buy (3yrs)	Questionnaire	Developed and Presented Questionaire
Harshill Parikh	Electrical Engineering	-C, C++, MATLAB -Project Management Skills	- Summer Intern (Schneider Electric0 - Lab Test Intern	Questionnaire	Questions for Engineers
Harry Michael	Mechanical Engineering	-CAD - Communication Skills - Photoshop	- National Honors Society	Deliverables & Project Secretary	-Meeting Agenda & Minutes

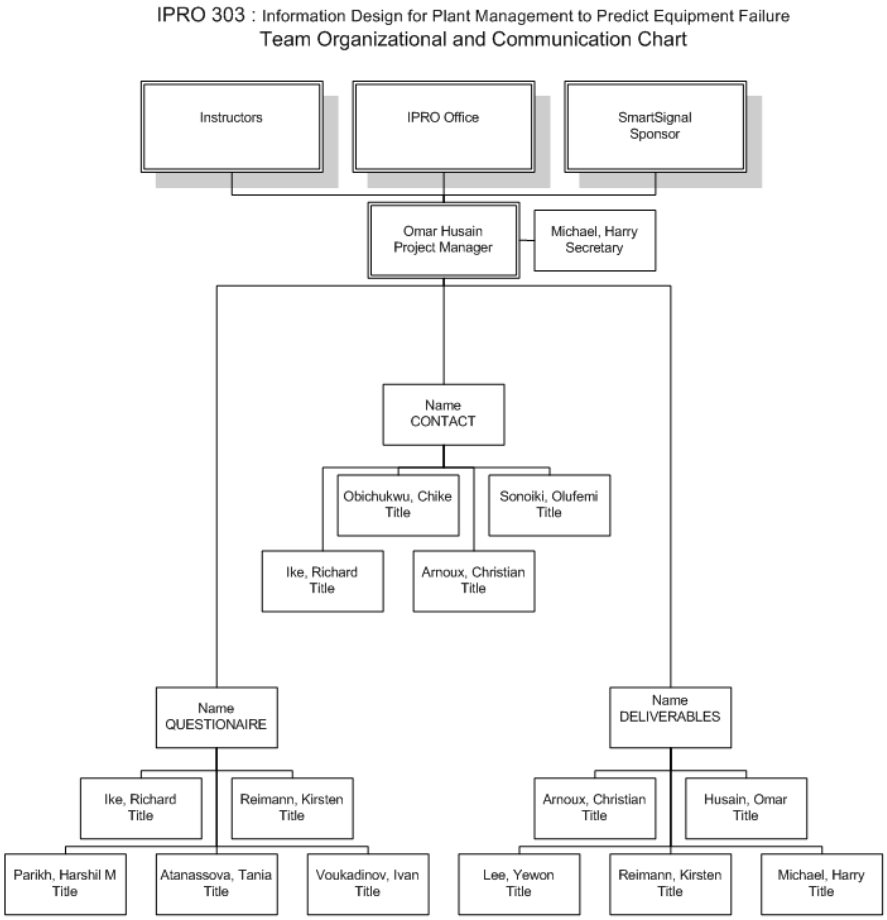
Christian Arnoux	Chemical Engineering	-Excel -Engineering Design /w AutoCAD -C++ Programming	Intern (UOP) Summer	Contact & Deliverables	-Ethics Workshop -Contact PowerPlants - Ethics Code
Chike Obichukwu	Electrical Engineering	- Public Speaking - MS Office, C++ -Project Management	Intern (Rockwell Collins Inc)	Contact	-Powerplant research -Contact Powerplants
Richard Ike	Mechanical Engineering	-Autocad, C++, MS Office, MathLAB	Research Asst. Product Personell (IIT)	Contact	-Email draft for contacting Powerplants.
Tania Atanassova	Arch. Engineering	-Autocad, MS Office -Building systems design	Drafter/Designer	Questionnaire	-Develop Questions -Review previous group's work
Kirsten Reimann	Chemical Engineering	-MATLAB, AutoCAD, Excel - Leadership (Kappa Phi Delta and AICHE)	Intern in R&D (UOP) Autocad Intenr (Elara)	Questionnaire & Deliverables	-Ethics Code - Contact old team
Olufemi Sonoiki	Mechanical Engineering	-MATLAB and AutoCAD	Co-op (All Cell Tech. LLC) Quality Assurance Intern (Benthos Pharma, Nigeria)	Contact	-Listing Powerplants

B. Team Leader

- Omar M Husain

C. Sub- Teams

Our group was subdivided into three sub groups as shown in the figure below to ease in distribution of tasks:



D. Sub- Team Leaders

The group of eleven members was divided into three teams where a person may be involved in more than one team however only one team leader and a secretary were appointed and all members of a sub-group would be responsible for tasks taken up by them individually.

E. Sub Team Responsibilities

1. Questionnaire Team
   - Compile Survey and Interview Questions

- Prioritize and Review questions

2. Contact Team
   - Compile list of potential interview and survey candidates/companies.
   - Contact these companies and schedule appointments to conduct interviews or mail in surveys.

3. Deliverables Team
   - Make all IPRO Office deliverables available in a timely manner.
   - Record progress of the team in form of meeting minutes and create and help adhere to a project plan and timeline.
   - Also responsible for IPRO day preparations.

F. Sub- Team Individual Responsibilities

1. Questionnaire Team

   - Tania Atanassova- Develop Questions and Review them.
   - Ivan Voukadinov - Develop Questions and Review them.
   - Kirsten Riemann – Contact old team and gather relevant information to include in question
   - Richard Ike -
   - Harshill Parikh – Contact engineering faculty to get relevant information about coal fired power plants

2. Contact Team
   - Chike Obichukwu – List powerplants and contact the
   - Olufemi Sonoiki – Maintain list of powerplant contacts.
   - Christian Arnoux – Arrange powerplant visits.
   - Richard Ike – Develop contact format for e-mail/Fax.

3. Deliverables Team

   - Omar Husain – Project Plan, Scheduling and management of Tasks, Meeting Agenda.
   - Yewon Lee – Project Plan
   - Harry Michael – Meeting Minutes and Agenda.
   - Kirsten Reimann – Code of Ethics
   - Christian Arnoux – Code of Ethics

8.0 Designation of Roles

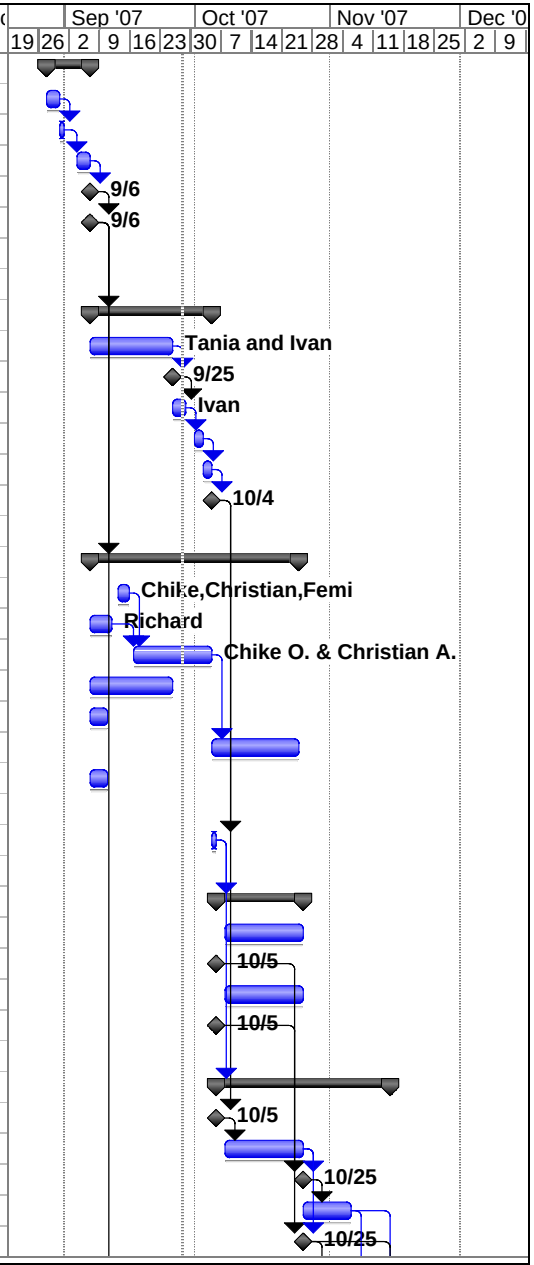
A. Assign Meeting Roles

- **Minute Taker and Secretary:** Harry Michael
- **Agenda Maker:** Omar Husain
- **Time Keeper:** Omar Husain and Harry Michael

B. Assign Status Roles

- **Weekly Timesheet Collector/ Summarizer:** Harry Michael
- **Master Schedule Maker:** Omar Husain
- **IGroups:** Omar Husain and Harry Michael

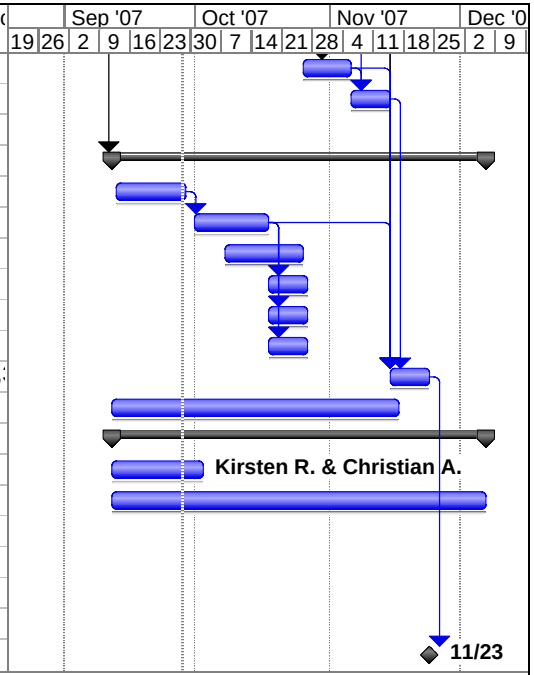
ID	Task Name	Duration	Start	Finish	Predec
1	**Team Organization**	**8 days?**	**Tue 8/28/07**	**Thu 9/6/07**	
2	Defining the Objective	3 days	Tue 8/28/07	Thu 8/30/07	
3	Deciding on an approach	1 day	Fri 8/31/07	Fri 8/31/07	2
4	Creation of Sub Groups based on tasks	3 days	Tue 9/4/07	Thu 9/6/07	3
5	Allotment of Positions	0 days?	Thu 9/6/07	Thu 9/6/07	4
6	Team Organizaion Complete	0 days	Thu 9/6/07	Thu 9/6/07	5
7					
8					
9	**Questionaire Team Tasks**	**21 days**	**Fri 9/7/07**	**Thu 10/4/07**	**6**
10	Compile Questions	14 days	Fri 9/7/07	Tue 9/25/07	
11	Presentation of Questions for team discussion	0 days	Tue 9/25/07	Tue 9/25/07	10
12	Prioritize and Categorize questions	3 days	Wed 9/26/07	Fri 9/28/07	11
13	Review questions with Psychology professor	2 days	Mon 10/1/07	Tue 10/2/07	12
14	Finalize Interview Questions	2 days	Wed 10/3/07	Thu 10/4/07	13
15	Submit Final Questions questions to Interview group	0 days	Thu 10/4/07	Thu 10/4/07	14
16					
17	**Contact Team Task**	**35 days**	**Fri 9/7/07**	**Wed 10/24/07**	**6**
18	Research Potential Companies (Coal Power Plants)	2.67 days	Thu 9/13/07	Sat 9/15/07	
19	Draft and Review Communication Letter	3 days	Fri 9/7/07	Tue 9/11/07	
20	Contact 1st Set of Powerplants and set up Interviews	14 days	Mon 9/17/07	Thu 10/4/07	19,18
21	Schedule Plant tours	14 days	Fri 9/7/07	Tue 9/25/07	
22	Submit interview schedules to Interviews group	2 days	Fri 9/7/07	Mon 9/10/07	
23	Contact Second Batch of Powerplants and Set up interviews	14 days	Fri 10/5/07	Wed 10/24/07	20
24	Submit Interview Schedules to Interview groups	2 days	Fri 9/7/07	Mon 9/10/07	
25					
26	**Regroup to dissolve Questionaire and Create Interview and Analysis**	1 day?	Fri 10/5/07	Fri 10/5/07	15
27					
28	**Interview group**	**14 days**	**Fri 10/5/07**	**Thu 10/25/07**	**26**
29	Go to 1st Batch of interview locations and conduct meeting/Interviews	14 days	Mon 10/8/07	Thu 10/25/07	
30	Submit Interview Results to Analysis group	0 days	Fri 10/5/07	Fri 10/5/07	
31	Go to 2nd Batch of interview locations and conduct meeting/Interviews	14 days	Mon 10/8/07	Thu 10/25/07	
32	Submit 2nd Set Interview Results to Analysis group	0 days	Fri 10/5/07	Fri 10/5/07	
33					
34	**Analysis Group**	**28 days**	**Fri 10/5/07**	**Wed 11/14/07**	**26**
35	Receive present Questionaire	0 days	Fri 10/5/07	Fri 10/5/07	15
36	Develop Approach to analyze questionaire answers into meaningful reports.	14 days	Mon 10/8/07	Thu 10/25/07	35
37	Receive Completed 1st Batch of Interviews	0 days	Thu 10/25/07	Thu 10/25/07	30,36
38	Analyze 1st Interviews	7 days	Fri 10/26/07	Mon 11/5/07	37
39	Receive 2nd Batch of Interviews	0 days	Thu 10/25/07	Thu 10/25/07	32,36



Project: Tasks and Timeline
Date: Fri 9/28/07

Task — Milestone — External Tasks
Split — Summary — External Milestone
Progress — Project Summary — Deadline

ID	Task Name	Duration	Start	Finish	Predec
40	Analyze 2nd Batch of Interviews	7 days	Fri 10/26/07	Mon 11/5/07	39
41	Dissolve into Deliverables and Provide results for Final Report	7 days	Tue 11/6/07	Wed 11/14/07	40,38
42					
43	**Deliverables**	**63 days?**	**Wed 9/12/07**	**Thu 12/6/07**	**6**
44	Project Plan	13 days?	Thu 9/13/07	Fri 9/28/07	
45	Midterm Report	13 days?	Mon 10/1/07	Wed 10/17/07	44
46	Website	14 days	Mon 10/8/07	Thu 10/25/07	
47	Abstract	7 days	Thu 10/18/07	Fri 10/26/07	45
48	Final Presentation	7 days	Thu 10/18/07	Fri 10/26/07	45
49	Poster	7 days	Thu 10/18/07	Fri 10/26/07	45
50	Final Report	7 days	Thu 11/15/07	Fri 11/23/07	45,41,:
51	Compile Minutes and Submit on 11/16	49 days?	Wed 9/12/07	Fri 11/16/07	
52	**Ethics**	**63 days?**	**Wed 9/12/07**	**Thu 12/6/07**	
53	Develop Code of ethics	16 days	Wed 9/12/07	Tue 10/2/07	
54	Monitor compliance with code of ethics in class	63 days?	Wed 9/12/07	Thu 12/6/07	
55					
56					
57					
58					
59	***Estimated Completion of Project***	0 days	Fri 11/23/07	Fri 11/23/07	50



Project: Tasks and Timeline
Date: Fri 9/28/07

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline