I. Team Charter

1. Team Information

Name:	Major/Minor	Skills & Strengths	What We Want to Gain From IPRO 347
Chiu, Daniel	Aerospace/Mechanical Engineering	Fluid Mechanics, Thermodynamics, Heat and Mass Transfer, Microsoft Office, Programing, AutoCAD, CadKey, KeyCreator, Qualified to use Crown Hall Shop, Handtools, Power Tools, Soldering	Daniel would like to learn how real companies in industry target problems. He is looking to better develop his team skills.
Cicero, Joseph	Mechanical Engineering	Statics, Dynamics, Materials, Thermodynamics, Technical Drawing, AutoCAD, Excel, Matlab, Power Tools, and Welding	Joe is hoping to learn new things about designing an automation system and a computerized catalog. He is looking to develop better team and problem solving skills and expects to learn much, work a lot, and to have a good time doing it.
Hill, Ross	Mechanical Engineering	Statics, Dynamics, Materials, Thermodynamics, Technical Drawing, AutoCAD, SolidWorks, Free Hand Drawing, Basic Construction, Hand and Power Tools	Ross is hoping to learn more about the creation and management of a software database as well as techniques and methods involved in the creation of a new mechanical system while further developing the team related skills he picked up on his previous IPRO.
Lee, Woong-Kyo	Aerospace Engineering	Fluid Mechanics, Thermodynamics, Heat and Mass Transfer, Engineering Materials and Design, Aerodynamics	Woong-Kyo desires to learn more about using design programs and how to apply them to solving problems while working on his communications skills.
Perry, Jonathan	Mechanical Engineering	Up through 300 level Mechanical courses, heat load calculations, designing AC systems, programming and database experience in C++, Java, C#, SQL, AutoCAD, small engine repair	Jon hopes to further his knowledge of programming with databases and is looking forward to improving his ability to organize and design larger computer applications. He is interested in his part of the project and looks forward to learning from other members of the group.
Powers, John	Computer Science	Java, Data Structures, Microsoft Access, Excel, Leadership	John is looking to expand upon his understanding of databases and successfully develop a useful database. He wants to develop the ability to integrate into a diverse team and work effectively when given tasks. He expects the project to be very interesting and he hopes it will teach him a lot about industrial applications of the knowledge he has learned in school.
Sanborn, Peter	Psychology	Automotive work, parts design and machining, acetylene welding, woodwork, Microsoft and Adobe-based software, broad knowledge of electronics and computer hardware	Peter wishes to better develop his interpersonal skills within a team setting.
Sarratt, Meagan	Psychology	I/O Psychology	Meagan wants to learn more about I/O Psychology through interaction with the client. She hopes to develop good PR skills while heading the communication between the IPRO group and the client. Meagan expects the group to ultimately succeed.
Williams, Robert	Electrical Engineering	Electrical Engineering, Java Programming Experience, C-based programming, Circuit building	Robert would like to experience new situations, and challenges, that will allow him to grow as a team member, a worker, and as a person.
Xu, Ran	Mechanical Engineering	Dynamics, Materials, Thermodynamics, Fluid mechanics, Technical Drawing, AutoCAD, SolidWorks, Basic Construction, hand tools, trilingual in chinese, cantonese and english.	Ran is hoping to learn more about using power tools and is looking forward to further developing the communication skills needed to work effectively in a project team. Overall he looks forward to gaining some experience in solving real world problems and working in a project team.

2. Team Purpose and Objectives

A. The objective of this project is two fold: First to identify methods and programs that can be used to create a cohesive and easy to navigate database for machine

shop tool storage and to implement that system so that it meshes with an existing computer system; second to identify methods, materials, and systems that can be used to automate a manual sorting and placement process and to achieve a working prototype of the mechanism. To accomplish these tasks, the team will:

- Research existing database programs and mechanisms to evaluate their usefulness in our endeavor.
- Evaluate programs and systems of our own design to see if they can better meet our objectives.
- Determine methods of synchronizing our program and mechanism into the existing computer and mechanical architecture.

3. Background

A. This project is being performed on behalf of Smith & Richardson, a precision machined parts manufacturing company. The project's tasks are to develop a tool management system as well as a feed mechanism design for the company.

B. There are two user problems that the project is facing. The first problem is that the company does not have a universal method for labeling their tools; this means that this IPRO needs to develop a method of labeling the tools, as well as a computer program to go along with the new labels. The second problem is that the company has a machine that requires a worker to feel around for the dimples on discs in order to feed them into the machine the correct way. The company wants this IPRO to build a machine that eradicates the need for this position.

C. This project will require both engineering and coding. Engineering will be used in order to build a machine that negates the need for the presence of a person in the process of making certain tools. The coding is necessary to create a new online management system for the company's tools.

D. There have been no prior attempts to solve either of the problems that this IPRO group is faced with.

E. There are no ethical issues with the investigation of these problems.

F. The business will have to spend money in order to invest in new computer programs and mechanisms, but, in the long run, it will save money by cutting down the time necessary for certain tasks. The societal cost is limited to the fact that a more efficient workplace might impact the amount of employees needed.

G. Not Applicable

H. Not Applicable

I. Not Applicable

4. Team Values Statement

All team members agree to: put forth our best effort; respect and cooperate with one another; communicate openly and freely with one another but keep client information confidential; gather on time and will strive to meet all our deadlines; and be honest and will work with the utmost integrity in all aspects of our endeavors.

Should any interpersonal problems amongst the team occur, the team will seek to tackle any challenge in a professional and open environment. The team will use any means of communication necessary to identify issues so that solutions can be found that will benefit the group and bring us closer to our objectives.

II. Project Methodology

1. Work Breakdown Structure

A. After visiting the plant on Friday, September 11th, our team will brainstorm ideas for implementing a process to solve both of the problems presented to us. Talking with the tool room operators will identify necessary features for the tool room database, while examining the welding disc machine will allow clear thought as to what is possible to make that machine automated.

B. Each possible solution will be thoroughly examined to determine which one will be best. The chosen solution(s) will be documented and discussed in class and on the IPRO discussion board. By utilizing these techniques and putting in hard work, the team should be able to accomplish both goals set for the semester.

C. Our group is split into two parts: one working on the welding machine, and the other on the tool room. Currently, the group has not elected team leaders, however, should the need arise, a leader will be chosen.

D. The current database team consists of JJ and Jon. Ben, Joe, and Woong-Kyo are on the machine team. The remaining members will be assigned when the required tasks become more apparent.

E. Work Breakdown Table and Gantt Chart

Tasks	Start Date	Duration (Days)	End Date
Project Plan	09/03/2009	8	09/11/2009
Planning Phase Tools	09/11/2009	24	10/05/2009
Planning Phase Machine	09/11/2009	24	10/05/2009
Midterm Reviews	09/21/2009	14	10/05/2009
Construction Phase Machine	10/05/2009	29	11/03/2009
Development Phase Tools	10/05/2009	29	11/03/2009
Ethics Reflective Report	11/04/2009	7	11/11/2009
Final Project Report	11/06/2009	14	11/20/2009
Testing/Implementation Both	11/03/2009	20	11/23/2009
Abstract/Brochure	11/16/2009	14	11/30/2009
Half-Way Customer Presentation	11/18/2009	12	11/30/2009
Poster	11/23/2009	7	11/30/2009
Final Presentation	11/11/2009	21	12/02/2009
Final Project Report	11/13/2009	21	12/04/2009
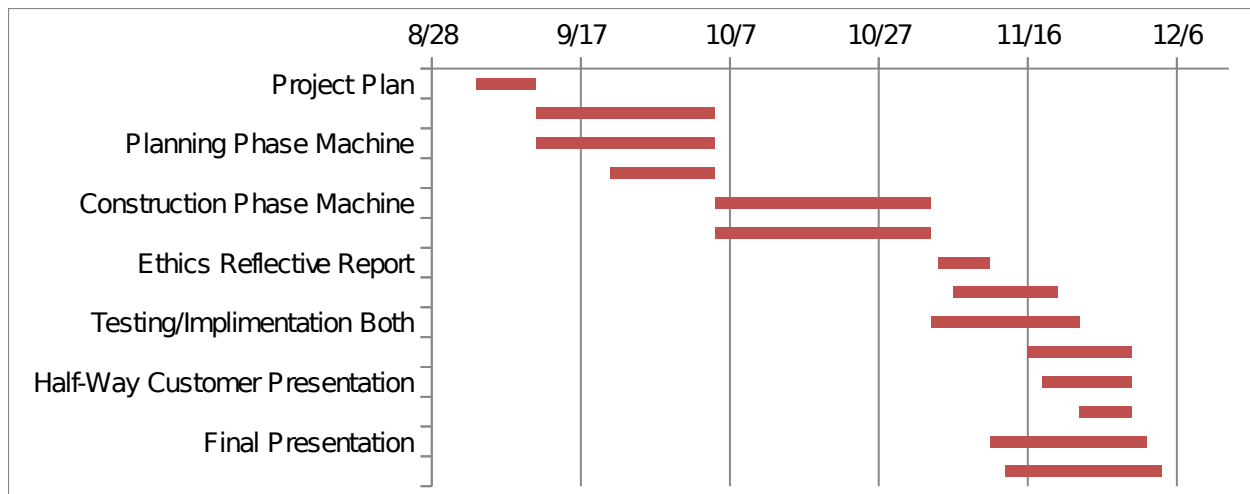
2. Expected Results

A. IPRO 347's expected activities include visiting Smith and Richardson Inc. to observe and analyze the tool room and the chaplet welding station. A computerized catalog will be designed and tested for the use of the tool room. If it is acceptable, it will be implemented to their existing tool room to streamline and simplify it. An automated system will be designed and tested for the use of the welding station. If it is acceptable, it will be implemented for the welding of the chaplets.

B. Data from existing automation systems and catalogs will be examined in order to better understand the basics of automation and cataloging procedures.

C. The purpose of this IPRO is to end up with two finished products for Smith and Richardson Inc. The finished computerized catalog and the automation system can be used as examples when designing for similar products or similar applications.

D. Our potential outputs through the execution of assigned tasks are to design an automation system and a computer cataloging system. In addition, knowledge about automation and cataloging is to be obtained and shared among group members.

E. The team is expected to deliver a working automation system for welding chaplets and a working computerized cataloging system for the tool room. Some prototypes may need to be built and some programs may need to be written.

F. The challenges that will be faced are lack of experience and lack of team working time. There is a risk of starting with one idea and then having that idea not work in the end. This will put added pressure to work to figure out solutions to each problem.

G. The final results of a completed automation system and a computerized catalog will contribute to making Smith and Richardson Inc. more efficient. Implementing these products may also eliminate jobs which can be good for Smith and Richardson Inc. but that can leave workers without jobs.

3. **Project Budget**

Travel

Mode	Rate	Milage	pass/cars	Trips	Total
Metra	$18.00	n/a	6	5	$540.00
Auto	$0.55	94.8	2	5	$521.40

Tangible Items

Parts					$750
Software					$300

Rentals

Item	Rate (/hr)	Time			Total
Shop	$75	25			$1,875.00

				Total	$3,686.40

4. **Designation of Roles**

A. Minute Taker: This person records the decisions, tasks assigned, and other information pertinent to the development of the IPRO group and project. This person must also make this recorded document available to the whole group.
    • Team Member: Meagan Sarratt

B. Agenda Maker: This person creates an agenda prior to the meetings. These agenda give structure to the meetings in order to utilize time.
    • Team Member: Ross Hill

C. iGroups Moderator: This person makes sure that the iGroups team account is organized.
    • Team Member: Daniel Chiu