IPRO 347
Developing a Document Control System
Final Report

Instructor: Phil Lewis

IPRO Team: Dustin Barksdale   Juan Carlos Espinosa
          Scott Gherardini   Kyle Knopp
          Maciej Krolikowski   Thomas Kudla
          Courtney McWethy   Brandee Toyama
          Harry Tran
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1. Abstract

The IPRO 347 team was sponsored by Abrasive-Form, Inc. to create a paperless solution for file storing. Abrasive-Form, Inc. currently stores their job folders in filing cabinets. Documents are added to the job folder from various departments as the project circulates throughout the company. Once the project is completed, the job folder is filed into the company's archives.

To date, this has led to several problems for Abrasive-Form, Inc. As the company expands, they have to dedicate large portions of their offices to store old job folders. A lot of time is wasted as employees travel to and from storage to look up information from the old job folders. Furthermore, because there are several departments within the company that reference the job folders, they are often misplaced or lost. In addition, if there were a disaster, such as a fire, all the files would be permanently lost.

In response to these problems, the IPRO 347 team has worked with Abrasive-Form, Inc. to develop an electronic content management system. Last semester, the IPRO team consulted Abrasive-Form, Inc. to determine the best possible solution for their problem. After initial consultation the team divided into subgroups to investigate possible digital content management solutions based on Abrasive Form, Inc.'s needs and wants. Four possible programs were presented to the company and, ultimately, the program SharePoint was selected. SharePoint was chosen because its features met the most of Abrasive Form, Inc.'s requirements.

This semester's job will be to create a fully working version of SharePoint from last semester's prototype. In addition, this semester's IPRO will also be responsible for full implementation of this working version on Abrasive-Form, Inc.'s servers and the creation of an instructional program and guide for the employees of Abrasive-Form, Inc so that the company may begin its transition to a paperless database by the end of the year.

2. Background

Abrasive Form is a contract-based manufacturer that specializes in precision grinding. They provide services for many metal industries, but focus primarily on the Gas Turbine and Aerospace Industries. Established in 1976, Abrasive-Form is a multimillion-dollar company with a modern 62,000 square foot plant in Bloomingdale Illinois, that houses 37 creep feed grinding machines.

As the unfinished products are received from the customer, Abrasive Form creates a "job number" and "job folder" for that batch of product. This number and folder collect all the relevant data regarding the processing done to that batch. Abrasive Form uses a program called "Vista" that generates a large part of the paperwork and tracks other activities throughout the completion of the project. A physical job file is created and collects all of the paper documents that are related to the processing of the job. Most of the documents contained in this folder can be summarized as: incoming receiving documents, contract review and PO documents, in process inspection documents, subcontracting documents, shipping documents, quality control certificates, job processing documents, and other miscellaneous documents. Each of these documents is generated during various processes along the path of receipt, processing, inspection, and shipping. Depending on the status of the job, i.e. open, pending, and closed, the job folder will be stored in one of many different areas. This can lead to the job folder being misplaced since there can be ambiguity about the status of the job.

There are various personnel that need access to the job files at assorted times for a range of reasons. These include Production, Quality Control, Sales, and Accounting. Access to these files may be required while the job is waiting to be processed, while it is in process, and several months after processing has been completed.

Abrasive Form has contracted the IPRO 347 to create a digital form of the job folder that can easily be accessible to all branches of the company remotely at their workstations. The folders should be searchable based on the job number,

the customer name, and the part number, as well as a time range for its creation. The access will allow viewing rights, printing, and emailing, and at no time will the documents be removed or altered from the database. There will need to be a procedure to quickly destroy the paper documents once they have been scanned into this system making the digital copy referenced by everyone.

This IPRO project has entered its second semester. The interviews conducted last semester along with the meetings with corporate management allowed a "needs and wants" list to be established which led to the successful creation of a prototype. The database management program chosen was Microsoft SharePoint because it meets all the sponsor's requirements while minimizing cost. Since the company already has several servers running, the implementation should be relatively inexpensive. This is not the first time a company has moved towards digital data storage and local network sharing. There are many examples of companies that have chosen to use digital storage successful. It is the responsibility of the IPRO team to implement a working version of SharePoint on Abrasive-Form's servers and find the best way to transition the company's employees to this new paperless record system.

3. Objectives

A   Main Objectives

To fulfill the customer's requirements for an online storage system using Microsoft Sharepoint database software.

B   Sub Objectives

    - Meet with the customer to determine final system requirements and finish coding.
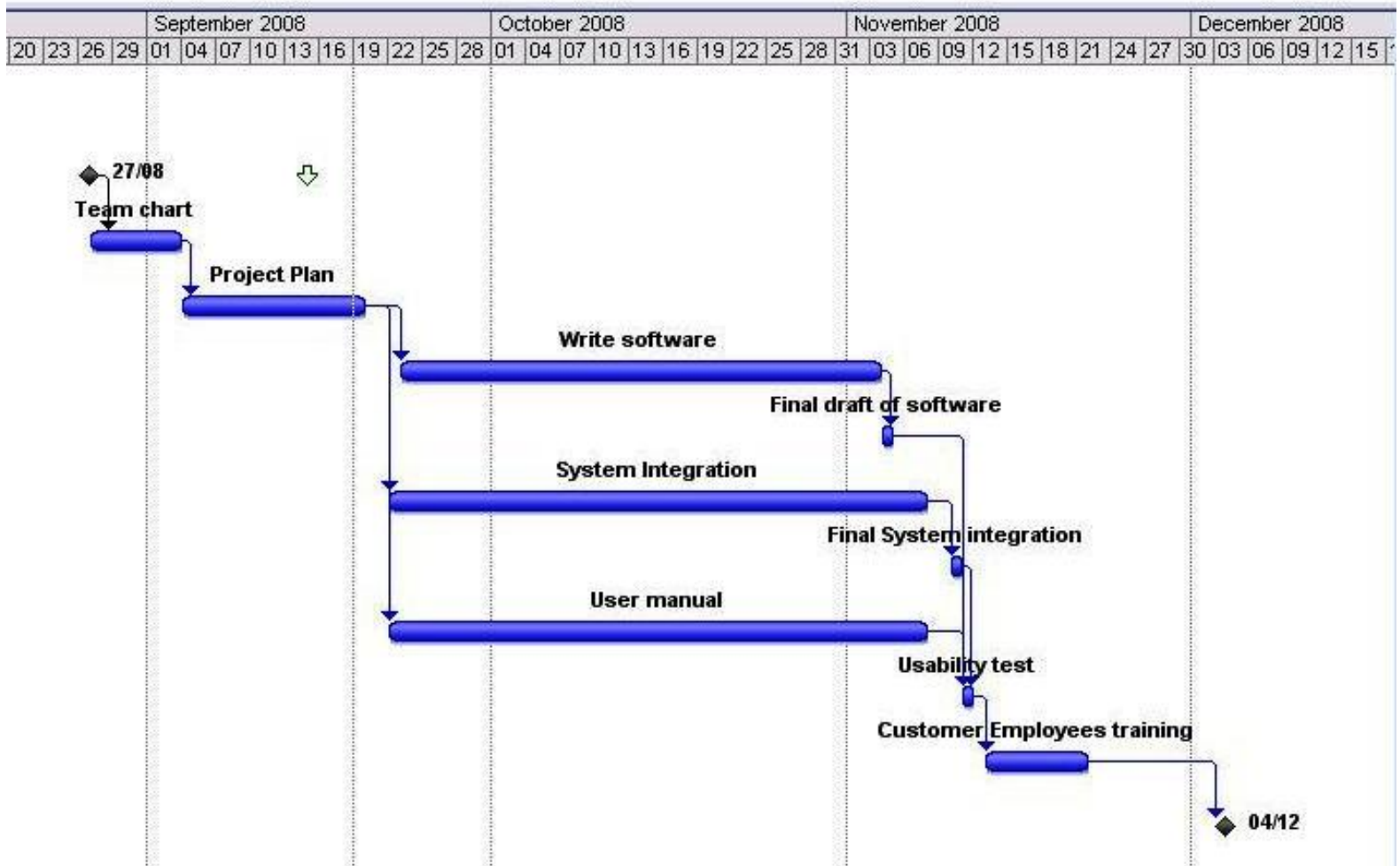
- Complete or re-write Sharepoint Database software to meet customer's specifications.

- Implement database system and train necessary peoples at client's workplace.

- Provide initial technical support and feedback after installation of system.

4. Methodology

A.   Work Breakdown Structure (WBS)
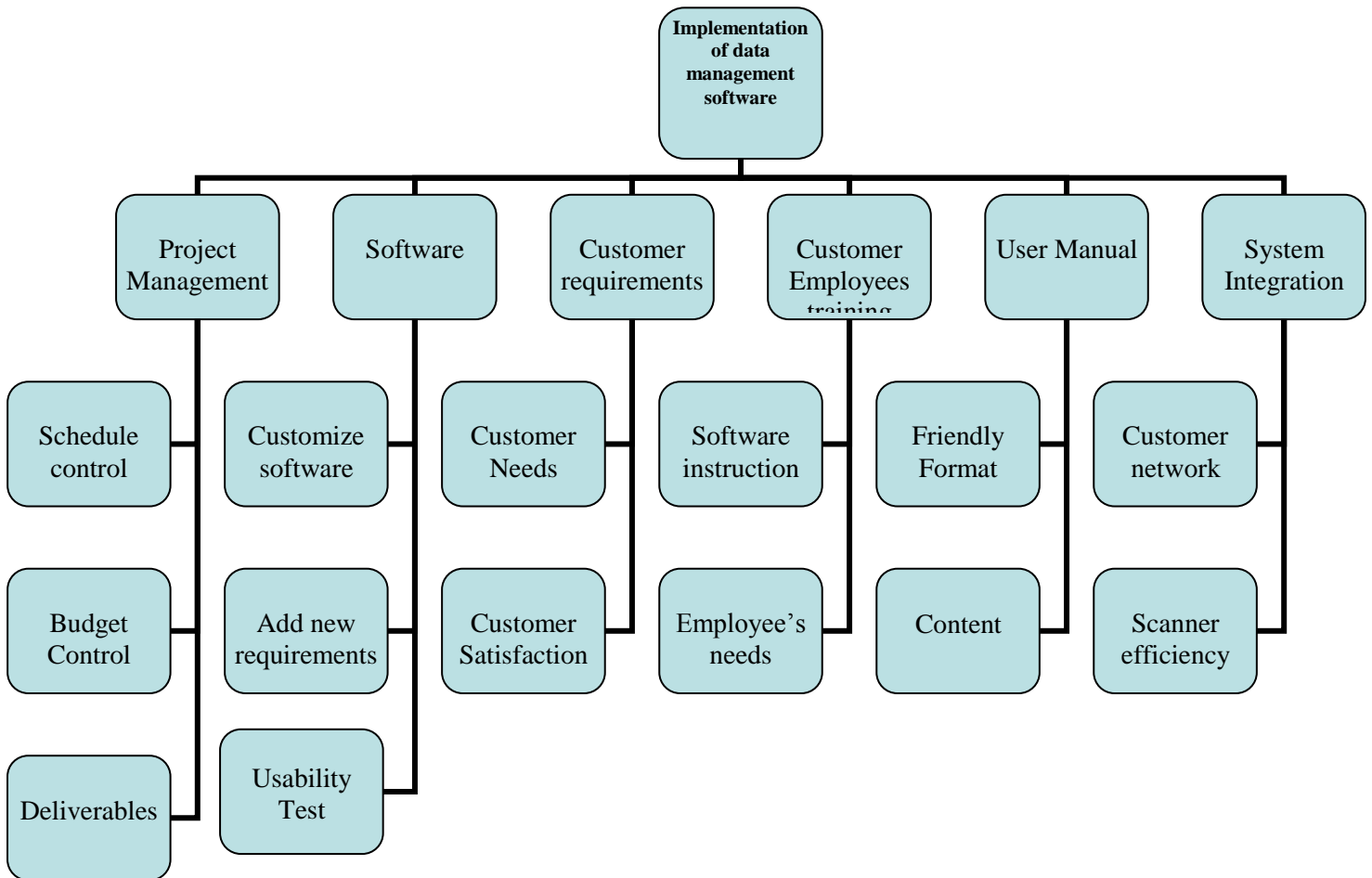
B. Gantt Chart

C. **Software Team:**

In order to modify the software, it was necessary to setup a local server to run the Sharepoint software. The server consisted of a desktop computer set up as a server to run the program and be remotely accessible. Without this piece of equipment, it would have been impossible to create the final template of the database, impossible for the User Manual and Training teams to learn to use Sharepoint, impossible to take screen shots for the user manual, and impossible to demonstrate the software either to Greg, the Abrasive Form contact with the IPRO team, or to those in the training sessions.

The team acquired a proper server computer that had a dual core processor and 3 gigabytes of RAM and installed an appropriate operating system, IIT's copy of Microsoft Sharepoint 2007 Server. This required the assistance of a non-IPRO student who was paid $20 for his services. An acceptable location, a storage room in Wishnick Hall, was found and commandeered. Dustin, Tom, and Maciej installed Microsoft SharePoint 2003 on the server. Afterward, there was the task of installing the template that Mark, the consultant, had made for the summer IPRO team. This took little time, but making the site viewable took the greatest amount of time during the project. The biggest obstacle was that no one knew how to setup remote access for the server. There were repeated attempts to contact the OTS Help Desk on campus, but they were not helpful. Finally an OTS member who had experience with SharePoint contacted the team, and he, Maciej, and Dustin got the server setup for remote access. They tested accessibility and resumed development of the template. Later, Mark was called for input on implementing a few of the features that were difficult to figure out--namely the search function. Mark was hard to get a hold of, but Tom eventually scheduled a meeting with him, and not only did he help implement more features, he also re-routed access to the site through more secure means. A week or two later, after giving access to Greg and giving him a demonstration on-campus, the team received an updated list of desired capabilities. They looked into making the new changes, which mainly consisted of adding/removing data fields and fixing data anomalies. This was a source of confusion for a while, but the team managed to find the right customization options, and Dustin proofread the changes as well as pinpointing the sources of the anomalies; thus, we created the current version of the server. I emailed a copy of this to Greg, then later followed-up with detailed instructions for installing the template. On the day of the training session at Abrasive Form, Dustin stood by at the server room on campus to make sure it was operational.

Along the way, notes regarding installation of SharePoint, generating a site template, uploading/installing a template, and

uploading/viewing/managing files were recorded and uploaded as resources for teammates to use either personally or for aids during the demonstrations with the sponsor.

Customer Requirements:

This team was responsible for the contact with the sponsor. They were in charge of gathering all the questions that the other team wanted to ask the customer, make a summary, organize the questions, and communicate to the customer. Their methodology was as follows:

Gather all the questions that needed to be asked during the class time. Then write an email with all the information in a straightforward format for the customer. This email was sent, and if there was no answer, a call was placed to the customer inquiring about the emailed questions.

Another task was to organize the visits to the company or the visit of the customer to IIT. In this situation the methodology was as follows:

Gather all the important information in class, including agenda, participants, possible times, and send a detailed agenda to the customer about the visit. The team would then wait for an answer and call the day before to remember the sponsor of the visit.

User Manual:

In order to write a manual, the first thing the team did was to login to the local server and work with the program. They explored the options and learned how to complete the tasks a user at the company would need to do. Because some of the employees would be "users" and others would be "administrators," it was necessary to explore both the basic tasks of locating and opening a file as well as adding new documents, job files, and customers. The manuals were the work of a three-person team, which had difficulty to fit everyone into the storage room at once to work. As a result, the user manual was written partially in

Microsoft Word by Brandee and partially in Microsoft Powerpoint by Courtney. The two versions were combined and refined into a Powerpoint document by Courtney. The complete content of the user manual was duplicated and additional pages added to explain the administrator tasks. New screen shots were as soon as the final template of the software was applied to the server. Using Microsoft Word, Kyle changed the manual from a landscape format to a portrait setup. He also applied page breaks in order to divide all of the information up easily, and page numbers, in conjunction with the table of contents, to help the employees find information quickly. After the manuals were complete, IIT's OCE office printed the booklets and bound them. A CD of the final manuals in .doc and .pdf formats was included with the twenty-five bound manuals.

Training:

The training for Abrasive Forms was based on the User Manual. The team tried to have the order of information in the presentations and the manuals match so the employees could follow along in their manual, as well as with the presentations. Both Harry and Kyle delivered the presentations. Two presentations were made, the first for the user group, and the second for the administrative group. At the end of each presentation, a volunteer was picked from the group, and they demonstrated a list of tasks on the computer. The beginning presentation helped them to learn the overall structure of Sharepoint while the final segment helped them to navigate through the program. The team found this system to be very successful as there were minimal questions at the end of each presentation.

System Implementation:

Because Abrasive Form has yet to acquire the hardware required to run the system, a CD contating the final template and straightforward step-by-step
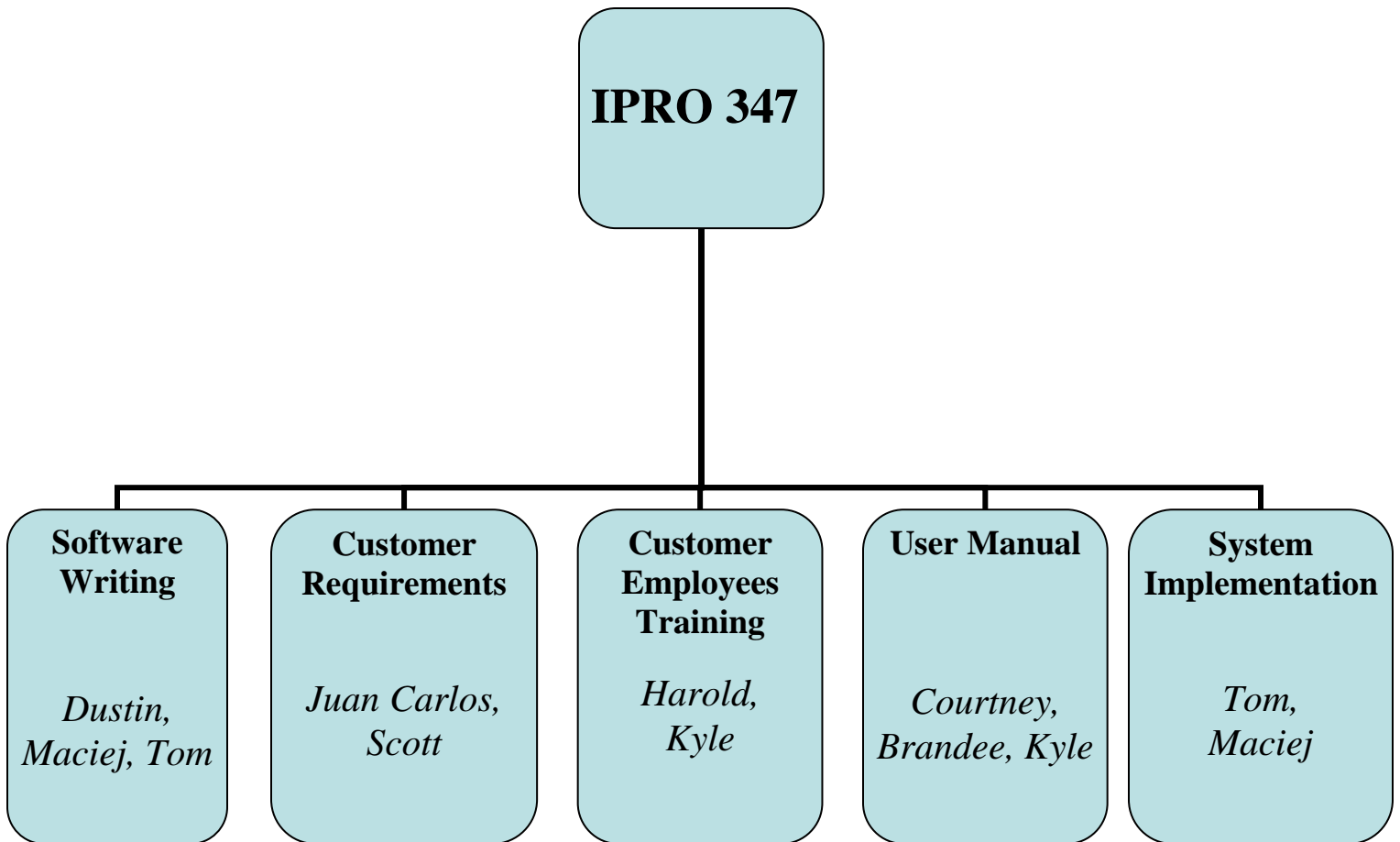
instructions of how to upload the template. Contact information for two team
members, as well as the instructor, was provided to Abrasive Form in case they
encounter difficulty implementing the new system. They expect this to be done
in January.

5. Team Structure and Assignments

A. Team Assignments

Team Member	Major	Excelled Skills	Professional Experience and Academic Interest	Task in IPRO
Dustin Barksdale	Computer Science	Java Programming Experience, Researching over the Internet	No professional experience. Interesting in designing software.	Write software
Juan Carlos Espinosa	Industrial Technology and Management	Project Management skills, Ganntt charts, Organization, work breakdown structures, and layouts. (Experience in industrial operations)	Project management in many associations, internships in purchasing, industrial quality and financial control.	Customer Requirements
Scott Gherardini	Mechanical engineering	Fast Learner	No Professional Experience. Interested in Electronics.	Customer Requirements
Kyle Knopp	Internet Communications	Verbal / Visual Communication, Web Design, Gantt Charts	Internship as document management and comprehensive review with CCC department on campus, interested in document management system and verbal communication.	User Manual + Training
Maciej Krolikowski	Biomedical Engineering	Verbal / Visual Communication, programming experience, hardware design	Neutral Engineering device construction and demonstration (2 years) Currently designing neutral probe controllers.	Write software + System Integration
Tom Kudla	Aerospace Engineering	SQL Experience	SQL database programming, BASIC stamp flight computer programming <Adler test satellite>	Write software +System integration
Courtney McWethy	Aerospace Engineering	Written Communication	No professional experience. Has taken one previous IPRO. Interested in rocketry and rocket design.	User Manual + Minutes
Brandee Toyama	Mechanical engineering	Visual design/communication, and written communication	Internships in consturcion company and Power Plant, experience working in cost department and drafting. Interested in Engineering Graphics/drafting and design.	User Manual
Harry Tran	Biomedical Engineering	Experience, Written Communication, Web	Neutral Engineering Software Programming	Training

Organization Breakdown Structure (OBS)

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| **Software Writing**

Dustin, Maciej, Tom | **Customer Requirements**

Juan Carlos, Scott | **Customer Employees Training**

Harold, Kyle | **User Manual**

Courtney, Brandee, Kyle | **System Implementation**

Tom, Maciej |

B. Each member of the team agreed to be on a particular task because that task played to her/his strengths. No changes were made to the team structure or assignments.

C. **Dustin Barksdale:** As a member of the IPRO team, Dustin attended the initial site visit to Abrasive Form and all semester meetings. As a member of the Software Team, Dustin was a part of setting up our local server. He participated in installing Microsoft SharePoint on the server. This required several updates and applications to be installed before SharePoint could become operational. Once the server was set up, Dustin repeatedly tried to

contact the OTS Help Desk on campus, but got little to no useful information for more than a week. He was eventually contacted by an OTS member who had experience with SharePoint. The OTS member, Maciej, and Dustin worked to get the server setup for remote access. The next task was installing the template developed last semester by Mark Sami, the consultant. Dustin helped with testing accessibility and the continued development of the template. Dustin was included when Mark was called for input on implementing a few of the difficult features--namely the search function. Dustin assisted with giving access to Greg, our contact at Abrasive Form, and giving him a demonstration on-campus. Once an updated list of desired capabilities was received, Dustin helped with making the new changes, which mainly consisted of adding/removing data fields and fixing data anomalies. Dustin proofread the changes as well as pinpointing the sources of the anomalies. This completed the current version of the server. Dustin emailed a copy of this to Greg, then later followed-up with detailed instructions for installing the template. On the day of the training session at Abrasive Form, Dustin stood by at the server room to make sure it was operational. For IPRO Day, he will spend a shift manning the booth, and presented the software team portion of the final presentation. Other contributions included Dustin writing notes regarding installation of SharePoint, generating a site template, uploading/installing a template, and uploading/ viewing/ managing files. He uploaded most of these as resources for teammates to use either personally or for aids during the demonstration with Greg.

Juan Carlos Espinosa: Juan Carlos was on the Customer Requirements team making him partially responsible for the contact with the customer. He collected questions from team members and submitted them to Greg via email. He, then, too the responses and forwarded them to the team

members who needed the information. As the customer liaison, Juan Carlos was instrumental in planning and executing Greg's visit to IIT during which the team demonstrated the Sharepoint software using the local server. Along with attending the initial tour of Abrasive Form's plant, Juan Carlos also assisted in the Personnel Training Session. Juan Carlos was responsible for a large portion of the IPRO deliverables. He collected and assembled parts of the Project Plan to develop a cohesive single form. He also took charge of the Midterm Review, developing a slide template and reformatting those slides submitted by each team to fit the template. With the reformatted slides, Juan Carlos built a well- organized presentation and helped present it to the judges. Due to his skills, Juan Carlos was also responsible for the Final Presentation, again using some slides developed by teammates. He was the opening presenter for the Final Presentation on IPRO Day, as well as manning the booth for a time.

Scott Gherardini: Scott was the other member of the Customer Requirements subteam. He assisted with emailing the company and distributing the responses to those needing them. He also attended the initial tour of Abrasive Form. Scott created the Ethics Statement in the middle of the semester. He took part in the creation of the IPRO Poster and the brochure for IPRO Day and picked them up after printing. Scott also participated in the selection of the team logo and mission statement by submitting several graphics that were not chosen and voting on the final options.

Kyle Knopp: Kyle was a member of both the User Manual and Personnel Training teams. For training, Kyle helped create the training presentation and delivered it to the clients. He also helped to create some of the training slides for the final presentation. Kyle reformatted the User Manual and

Administrator Manual to their final form. He got them printed up and delivered to the client in time for training. Outside his assigned teams, Kyle also helped setup the server initially. Kyle created the template that Scott used for the brochure. Kyle delivered the Midterm Review presentation with Juan Carlos and the user manual portion of the Final Presentation. Kyle attended the initial tour of Abrasive Form as well as the training visit. He also submitted a logo to our team for consideration.

Maciej Krolikowski: Maciej was a member of the Software and Implementation teams. As a returning member of this IPRO, he was able to help this IPRO continue the work from the previous semester, explaining things and giving some direction. He acquired the server, SharePoint 2007, arranged for the location in Wishnick Hall, and Internet access in the room. Maciej worked with both Mark Sami and the hired student in helping to setup the server and SharePoint. Maciej helped his team build and change the database according to Abrasive-Forms specifications. He kept the database populated even after site crashes. Maciej helped in the training session by interacting with employees and helping the employees navigate the site. He picked out hardware that was recommended to Abrasive-Form, and is staying in contact to insure a successful server startup at Abrasive-Form. Maciej manned the booth on IPRO Day. He also presented the closing slides of the Final Presentation, some of which he created.

Thomas Kudla: Tom was a member of the Software team as well as the Implementation team. He helped install Sharepoint and related software. He did quite a bit communicating with OTS despite the lack of results, but he did find an advisor for setting up the local server. At the Abrasive Form tour and preliminary meeting, Tom talked to the customer about specific software and hardware requirements. He handled software and user license

recommendations for the company's use with Sharepoint. Just as the other members of the Software team, Tom helped make changes to template to fit the customer's requirements.

Courtney McWethy: As a member of this IPRO team, Courtney attended the site visit at the beginning of the semester. She also took minutes at most of the team meetings and posted them to igroups. She assisted in the collection of information for and the compilation of that information into the skill set and availability schedule used throughout the semester. Courtney volunteered to complete the Final Report using information provided by the team members and her own knowledge. Courtney manned the IPRO Day booth for a time. Although she was not a presenter in the Final Presentation, she did answer one of the follow up questions. As a member of the User Manual team, Courtney created the user manual. She used several version of the Sharepoint template for the appropriate screen shots and updated them to the final version when it was finished. She learned to use the program in order to be able to describe its operation in the manual.

Brandee Toyama: Brandee created the logo for the IPRO team. As a member of the User Manual team, she helped write the User Manual and gave advise on its content. Brandee spent time presenting the partially completed manual to Greg during his campus visit. She participated in the Abrasive Form site visit at the beginning of the term to get a feeling for their needs and how their business is done. Brandee took meeting minutes when Minutes taker was unable to attend class. She manned the booth on IPRO Day and created the User Manual slides for the Final Presentation.

Harry Tran: As a member of IPRO 347, Harry was able to contribute using my skills in communication and computers. He helped with technical aspects in meetings such visual displays to practice presentations and going over documents as a group. In addition, Harry contributed to designing the logo of the group. Harry's other area of contribution was training the employees at Abrasive Forms. He helped to create a presentation and assisted in walking employees through how to use the software. Harry also helped by contributing this paragraph (minus some minor editing).

6. Budget

A.

Category	Original Request	Actual Spending	Explanation of Discrepancy
Travel	$1000	$200	We will no longer need $1000, as we did not visit the customer as often as we had predicted.
Services	$520	$520	We may need to hire a consultant that was used last semester for this project to get all of the information for our project and what help to complete it. We also need to hire a student for $20 to help us set up the server on campus, as OTS has refused to give us any assistance.
Printing	$20	$175.80	Our previous request was $20, as I was under the assumption that we would be printing 1 User Manual for our client, and 1 Administrator Manual.

			Our client then asked us to print all of the manuals for them. This totaled to $175.80, as quoted by Office Services.
TOTAL	$1540	$895.80	

7. Results

A. There are no research findings because this was not a research IPRO.

B. **Software Team:** Completed SharePoint Template. The result was an easy to use, customizable database that fit the customer's requirements. It is capable of storing all of the digitized documents in searchable and organized folders that can be sorted to quickly find files. As of now, the data is being stored on the server's hard drive, which was recommended to have a capacity of 1+ terabytes. This is upgradeable in the future, if needed. Backup- The team recommended some sort of backup system in case of disaster; even though this was out of our job description, the team felt it was very important. There were a range of options but probably the simplest would be using an offsite online backup such as MozyPro/SANS. Security: The documents within the database do contain valuable data that should not be compromised if possible. Since the server can be accessed off site, anyone with an Internet connection can attempt to connect. Therefore, a secure firewall that can prevent unwanted access was recommended (CISCO Firewall). Scanner-Printer Hardware: In order to digitize the documents, it is necessary to have a scanner that can keep up with the daily input and have the necessary quality to stand up to day to day abuse. The HP Scanjet 7800 was recommended and purchased by Abrasive Forms.

User Manual: Two manuals were produced to fulfill the customer's request. There were plenty of screen shots to illustrate every direction given. All foreseen tasks were documented.

Training: Overall, the training was a success. The Vice Presidents present at the presentation were very impressed with Sharepoint and its capabilities. There were no serious questions on how to navigate the system, or its functionality. Everyone seemed to understand how the program will work once it is implemented in their company. Also, everyone understood the manuals they were given, and the client was pleased to receive electronic copies of the manuals in case they will need to print more in the future.

Customer Requirements: All requirements and deadlines set forth by the company were communicated to the IPRO group. The project manager's visit at IIT was a success which aided in the overall success of the IPRO.

C.   Main Objective: To fulfill the customer's requirements for an online storage system using Microsoft Sharepoint database software.

This objective was met. The system should be operational by January.
        Sub Objectives:

- Meet with the customer to determine final system requirements and finish coding.

This objective was also met.

- Complete or re-write Sharepoint Database software to meet customer's specifications.

This is done. The template was turned over to the customer prior to IPRO Day.

- Implement database system and train necessary peoples at client's workplace.

This was not completed. There was a flawed communication between the IPRO team and Abrasive Form. The team believed that implementation would occur this semester. Abrasive Form was of the opinion that implementation would take

place after the end of the semester. As a result, they have not acquired the required hardware to implement. - Provide initial technical support and feedback after installation of system.

This has been done. Contact information for two members of the IPRO team and the instructor was left in case of problems.

D.   It was brought to the attention of the team that a confidentiality agreement might be required to protect the company and the school. Once this was seen a sa problem, inquiries were made. It was then discovered that the previous IPRO had signed a confidentiality agreement and that it blanketed the current team as well.

8. Obstacles

A. Software Team Obstacles:

- Obtaining a server that met system requirements
- Installing the operating system proved difficult, as there were many options that were unfamiliar
- Installing Sharepoint wasn't too difficult, but configuring to run as a site took a lot of time and patience
- Time was a major issue, as the software development did not necessarily coincide with other aspects of the project.

User Manual Obstacles:

- Getting up to date screen shots
- Being able to connect remotely to the server when it had shut itself down

Training Obstacles:

- Internet connection in company conference room
- People began to lose focus in between each loading phase

Customer Requirements:

- Occasionally members of the team bypass the group and ask the customer directly. When a person bypasses the group and neglects to tell them two emails are sent with the same question.
- Trouble in maintaining consistent communication with the company: The main contact at Abrasive Form left the company on several business trips and an alternate contact was not set up prior to his leaving.

B. Software Obstacles:

- A search was done until the proper equipment was found.
- Hired Eddie Martinez to install the operating system.
- Time and Patience
- Other parts of the project worked with what was available and updated their work when the template was updated.

User Manual Obstacles:

- Waited for Software team to finish template before taking final screen shots
- Let Software team know that the server needed to be rebooted.

Training Obstacles:

- No way to overcome this obstacle. The team worked with the slow connection.

Customer Requirements:

- Request that team members observe protocols or at least alert the customer requirements team to questions already emailed.
- Secondary contacts was created in order to maintain communication with the company.

C. The few of these obstacles could have been avoided. Having the system operational during the training session would have made the connection faster. Establishing a secondary contact at the beginning of the project would have kept

the team and sponsor in better contact.

D. No remaining barriers.

9. Recommendations

A. Software Recommendations: If the customer chooses to purchase the enterprise edition, there are many options that the team has not explored that may benefit the customer. The options should be looked into.

The server recommended should have at least a dual core processor, 3+ gigabytes of RAM, 1+ terabyte hard drive memory, and a backup power supply. The scanner recommended was the HP Scanjet 7800.

User Manual: Presenting the company with a survey once the system has been in place for a while to gauge their reaction and comfort with it would be helpful in determining if the customer is actually satisfied.

Customer Requirements: If there is a person responsible for the customer contact, he must be the only person to stay in contact with the customer. If there are too many people asking the same question, the customer may become annoyed and detect disorganization in the group. If a specific question must be made by one of the team members, then the customer contact responsible should communicate to the customer that someone else will be asking a question. Request the contact information of several employees at the sponsor company of the IPRO at the outset of the project to always have access to some one who can confirm requirements and setup meetings and deadlines for the IPRO group.

Training: Follow the same training format. It seemed to help the employees to be able to follow along in their manual. Also, they appreciated the volunteer section at the end of the presentation so that they could get more familiar with the system.

Software Integration: Keep a spare copy of the template, especially if you are going to make further changes.

10. References

A. This was not a research IPRO. There are no resources to reference.

11. Resources

A.   Dustin Barksdale:

        Approximately 32.5 hours - in class meetings.

        10 hours - researching Sharepoint's capabilities and modification

          techniques

        5 hours - setting up the server, getting a hold of OTS, talking to

          Mark

        22-25 hours - working with Tom and Maciej setting up the server,

          researching Sharepoint

B.   Juan Carlos Espinosa:

        $5 USD - One train ticket (Still not reimbursed)

        $75 USD - Lunch for the customer (Already reimbursed)

        32.5 hours - Class hours, two days per week

        ?? hours - Additional work before class to prepare the class and

          before the deadlines of the Project Plan, Midterm Review and the

          Final Presentation

        5 hours – Site visit

        5 hours – Training session

        30 minutes - The afternoon to perform the midterm review

        8 hours - IPRO day

C.   Scott Gherardini:

        32.5 hours – Class time

        5 hours – Site visit

        5 hours – IPRO Day

        ?? hours – Ethics Statement

        ?? hours – Poster

    ?? hours – Brochure

    ?? hours – Customer Relations

D. Kyle Knopp:

    32.5 hours – Class time

    7 hours - IPRO Day

    ?? hours – Reformatting User / Administrator Manuals

    5 hours – Site visit

    5 hours – Training sessions

    30 minutes – Midterm Review

E. Maciej Krolikowski:

    32.5 hours – Class time

    5 hours – Training session

    22-25 hours – Working with Tom and Dustin setting up the server,

     researching Sharepoint

F. Thomas Kudla:

    32.5 hours – Class time

    5 hours – Site visit

    22-25 hours – Working with Dustin and Maciej setting up the

     server, researching Sharepoint

    2 hours – IPRO Day

G. Courtney McWethy:

    32.5 hours – Regular classes twice a week

    5 hours – Site visit

    20 hours – Writing, formatting User and Administrator Manuals

    10 hours –Writing Final Report

    12 hours – Typing up minutes

    3 hours – IPRO Day

H. Brandee Toyama:

    32.5 hours – Class time

    5 hours – Site visit

    2 hours –Writing User Manual

    2 hours – IPRO Day

I.   Harry Tran:

    32.5 hours – Class time

    5 hours – Site visit

    5 hours – Training session

    7 hours – IPRO Day

12. Acknowledgements

A. Greg Zilinsky, Abrasive Form contact

    Greg allowed this IPRO to work with his company. He provided
    feedback on the project and answers to many questions.

B. Mark Sami, IIT Alumni and SharePoint consultant

    Mark assisted the Software team in several of their obstacles. He
    taught them the skills needed to implement the system at Abrasive
    Form.

C. Eddie Martinez, IIT student and Windows 2003 consultant

    Eddie set up the local server's operating system. The most time
    consuming part of the project was getting the server operational,
    and Eddie was instrumental in reaching this goal.