[IPRO 306] Improving Global Supply Chain Management

ILLINOIS INSTITUTE OF TECHNOLOGY

Faculty Advisor: John Caltagirone

Team Leader: Stephen Falk

Burim Bakalli | Martin Biller | Paramin "Bank" Chavalit
Andrew DiCosola | Joohyung "EJ" Eom | Ashika Sita Jayanthy
Monika Krauszowska | Alan Pang | Chetan Rawal | David Skiba
Michael Spytek | Michael Walters | Samuel Yonezawa | Shawn Zhan

Project Sponsor: SLOAN

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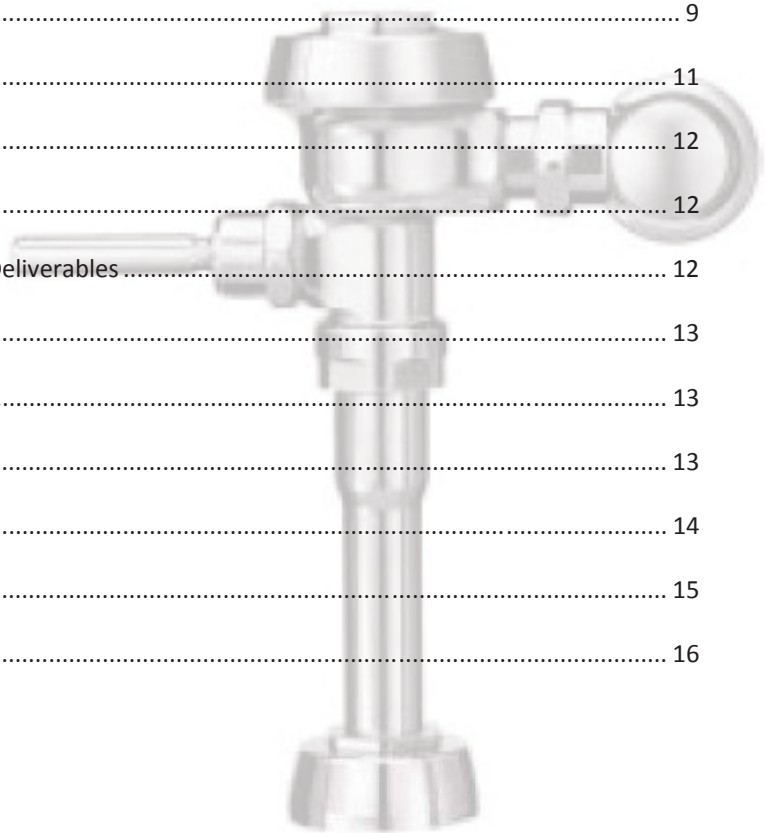

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I. Abstract

IPRO 306 team is tasked with assisting a major plumbing manufacturer, Sloan Valve, in improving the global chain supply as well as the overall effectiveness and efficacy of their equipment and processes. Sloan Valve has three projects with IPRO 306 will be involved, and they range in three different fields of the manufacturer. The projects which IPRO 306 will be involved are:

SKU Organization and Inventory management

Lean Implementation

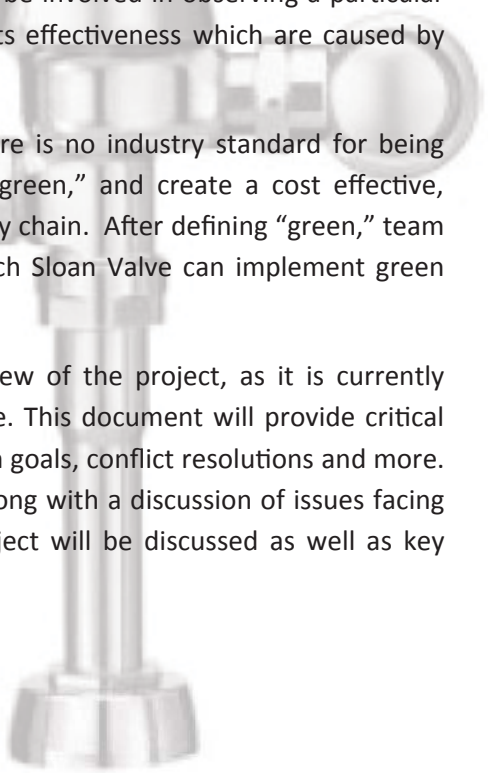
Green Supply Chain

SKU Organization and Inventory Management project seeks to address Sloan Valve supply chain and their ineffective use of the SAP inventory management system. Use of SAP went live nearly a decade ago, at the time little was known about the potential capabilities of the program. Many fields of data which were used to describe each individual piece of inventory went unused due to this lack of knowledge. Recently, it has come to the attention of Sloan Valve that the generalities which have been describing their inventories are unnecessarily broad. It is the vague nature of these descriptions which have led to needless errors while operating with SAP. These errors have cost Sloan Valve precious time, money and effort.

The Second project is Lean Implementation in which Sloan Valve is interested in their Overall Equipment Effectiveness (OEE). When downtime occurs on a machine, an employee must record the time and date of downtime, along with the reason. Currently, a paper form is used, and the information is handwritten. Afterwards these papers are collected and manually entered into an excel sheet. The goal of the project is to develop more efficient methods to track the downtown of several machines. The IPRO 306 team designated to work with lean implementation project will be involved in observing a particular machine and analyze its operation and determine its downfall on its effectiveness which are caused by different forces.

The third project is the Green Supply Chain. Currently, there is no industry standard for being “green.” The goal of this project is to establish a definition of “green,” and create a cost effective, consumer appealing, way to introduce this into the Sloan Valve supply chain. After defining “green,” team members will examine and create a strategy detailing ways in which Sloan Valve can implement green initiatives into the Sloan Valve supply chain.

The purpose of this document is to give a detailed overview of the project, as it is currently defined through our meetings and charters provided by Sloan Valve. This document will provide critical information about the project involving the team and its assets, team goals, conflict resolutions and more. In addition it will also provide a brief background on Sloan Valve, along with a discussion of issues facing both the company and the IPRO team. A methodology of the project will be discussed as well as key deliverables and a work breakdown structure of the project.



II. Team Information

The IPRO 306 roster, along with each individual's strengths, skills, and expectation can be found in appendices A & B.

Team Purpose

IPRO 306 is a team of students brought together to gain practical and professional experience working with industry leading global supplier. The team will play an important role in helping the company gain efficiencies through the strategic use of technology and process improvements as well as becoming in sync with current trends of being as environmentally friendly, "green", as possible in its global supply chain which extends around the world.

Team Objectives

Meet or exceed the expectations of Sloan Valve and Mr. Caltagirone

Overhaul the SAP inventory management system to allow for effective use of Sloan resources

Design and implement a green initiative that is both cost effective and appealing to consumers

Implement an efficient method to track machine downtime

Create a system which eliminates the amount of downtime and increases the OEE percentage throughout Sloan's manufacturing plants

Work effectively as a team, with passion and honesty, to achieve our outlined goals

Team Logo

III. Background

History

Sloan Valve is a 104 year old privately held manufacturer and global distributor of commercial valves and plumbing fixtures. The company was built on the invention of the Flushometer, a type of high efficiency, low maintenance valve that was a far departure from the valves that flooded the marketplace. However, through the perseverance of the inventor and founder, William E. Sloan, the Flushometer eventually became the standard in commercial construction. Over the years, Sloan has kept the innovative and determined spirit of its founder and has realized continuous growth through strategic acquisition and new product development.

Currently, the Sloan Valve network contains 8 different facilities: 4 manufacturing, 3 in the US and 1 in China, 1 foundry that supplies all of the castings for manufacturing, and 3 distribution centers (DC). The Franklin Park location serves as the corporate headquarters, as well as, a primary manufacturer and replenishes the distribution centers. Sloan currently employs over 500 people and has estimated annual sales over $50 million.

Current Issues

More and more companies are turning towards its supply chain to gain efficiencies or create a competitive advantage while still being environmentally friendly; Sloan Valve is no different. Because of the age of the entire company and the technology used is still operated manually, there are issues in regarding the supply chain. Sloan has decided to make their chain supply greener but there are a few issues which exist within the company. Sloan doesn't have a definition of "green" and this is part of a bigger issue worldwide as people have different perceptions of what green is and how is that applied. Sloan's global supply chain and distribution department wants a "Green" supply chain but the ground facts are that it does not have a strategy to implement such measures and it is not quantified. Sloan is faced with the current trends as customers want to align with an acceptable environmentally company.

The Franklin Park location serves as both a manufacturing facility, as well as storage for inventory which sometimes can work against each other. Often times there are problems with material department as there are possibilities of orders being created in error.

1. Inventory that is on hold is controlled manually which leaves room for errors
2. Orders are booked at the incorrect plant
3. Inventory exists at locations where it will not be utilized and cannot be identified easily.
4. No easy way to determine inventory is wrong location or SKU stocking plan by plant
5. No reports or procedures to manage inventory outside of standard cycle counting procedures.

These issues slow down Sloan's business as well as keep a high level of inventory.

The same location is also the biggest Sloan manufacturing plant of all its locations. It is equip with a lot of equipment which require care and attention by its operators. Workers need to take breaks and need to give a lot of time to equipment since they are manually operated. There is down time for all

equipment but this amount of down time is not tracked efficiently. Currently, Sloan's Overall Equipment Efficiency (OEE) tracking is done by hand, having operators complete a sheet determining the amount of time the equipment was operated and how much downtime was part of this operation and what were the causes. Sloan manually enters data into sheets into excel spreadsheet and calculated to get OEE percentages. There is no centralized system in place where all data is kept.

Technology & Historical Considerations

Currently, Sloan uses an ERP solution from SAP that includes a Material Management (MM) module. This module provides basic inventory functions, such as receipt of goods and the issuance of goods. Essentially it provides a macro level view of inventory focusing simply on stock levels, as well as orders, and where they are coming from. However, with the move to a distribution center style of management, the current system does not offer the advanced features to support these changes. In order to implement the types of processes that Sloan is requesting, a more robust solution is required.

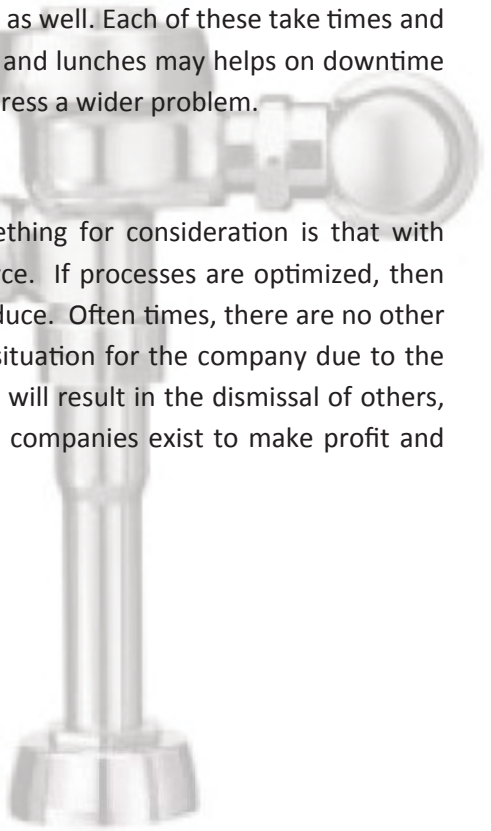
SAP offers many great features to its suite of software for Management which at times could make the system more complex. The current system has trouble locating correct inventories and being able to coordinate the movement and order of correct plant so the inventory could be at correct levels.

Sloan currently employs many green initiatives including the clean water filters for water reusability, its packaging and more. Since the trend of being as green as possible, the company has not been successful at developing a green supply chain as could not come up with a strategy and could not quantify the benefits to Sloan.

Overall Equipment Efficiency is very important to Sloan as it is the core of production and as a manufacturing company wants to have all its equipment running at all times. All staff are entitled to breaks and lunches. Equipment requires maintenance and they break as well. Each of these take times and that results in downtime for the equipment. Having coherent breaks and lunches may helps on downtime but centralized databases is the best solution for any company to address a wider problem.

Ethical & Societal Considerations

While there appears to be no obvious ethical issues, something for consideration is that with many efficiency efforts, one outcome can be a reduction in workforce. If processes are optimized, then there is a real possibility that the number of workers required will reduce. Often times, there are no other jobs available and workers are let go. While this may be an ideal situation for the company due to the savings realized, it can have an effect others if they know their work will result in the dismissal of others, especially in turbulent economic times. A difficult realization is that companies exist to make profit and maximize stakeholder benefit.



IV. Team Values Statement

Desired Behavior

Treat Sloan Valve as the customer. Strive to exceed their expectations

Produce to the best of our ability, utilizing our natural talents and developed skills

Ask questions when something is unclear

Respect the ideas of the team members and encourage an open dialogue

Sustain a professional attitude in all team interactions

Accept suggesting from others and receive

Any criticism on work performed should be received as constructive criticism

Conflict Resolution

IPRO 306 will follow the "A-E-I-O-U" model of conflict resolution. We will attempt to communicate all concerns to the group and seek alternative resolutions. By separating the person from the problem, we hope to keep civility and focus solely on the problem at hand.

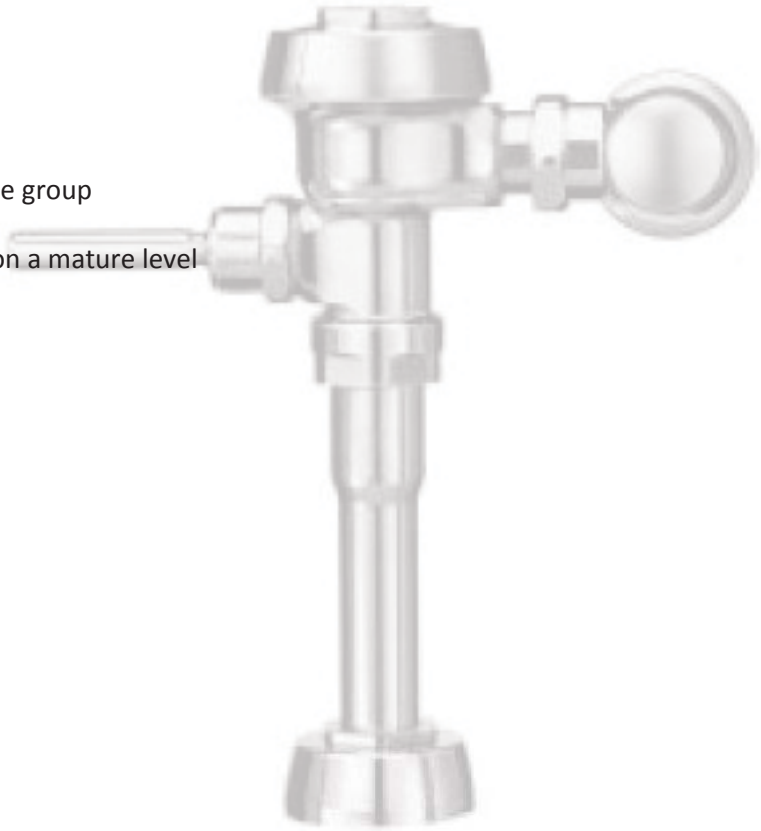
A-ssume others mean well

E-xpress one's feelings

I-dentify your desired scenario

O-utcomes expected to be made to the group

U-nderstanding by the group is done on a mature level



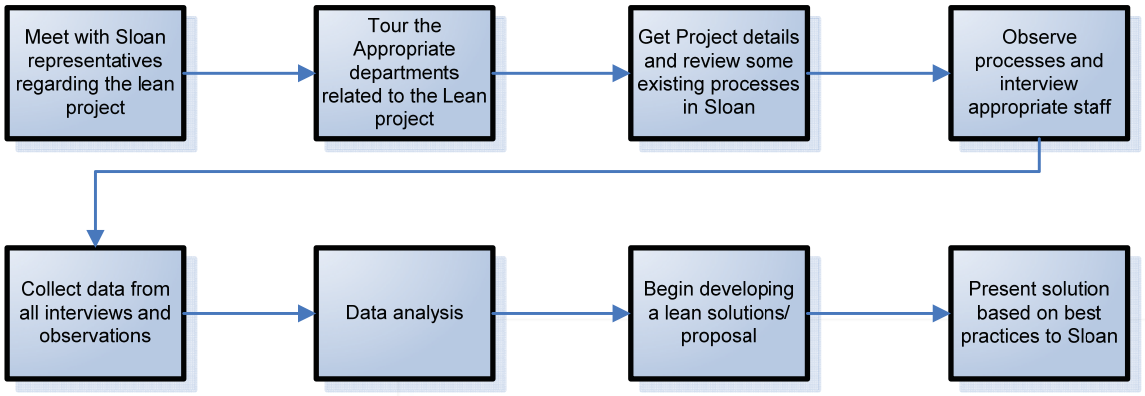
V. Work Breakdown Structure

Problem Solving Process

In order to best serve the project sponsor, the teams have decided to work on site at least once a week as long as the team sees it fit to meet at Sloan Valve. The team will also meet with the Project manager and other teams when seen fit and when there needs to be a review of procedures or deliverables. Each team will have a debriefing every week within their designated teams.

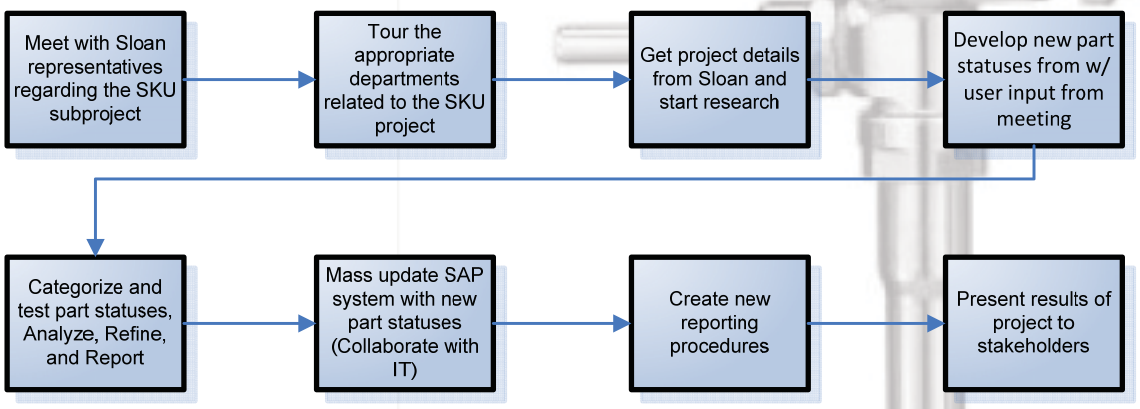
Lean Implementation

Below is a generic process for the Lean Implementation project. The team will observe and interview appropriate staff to gain information and data so it will be capable of performing a lean implementation of Overall Equipment Efficiency (OEE) tracking system.



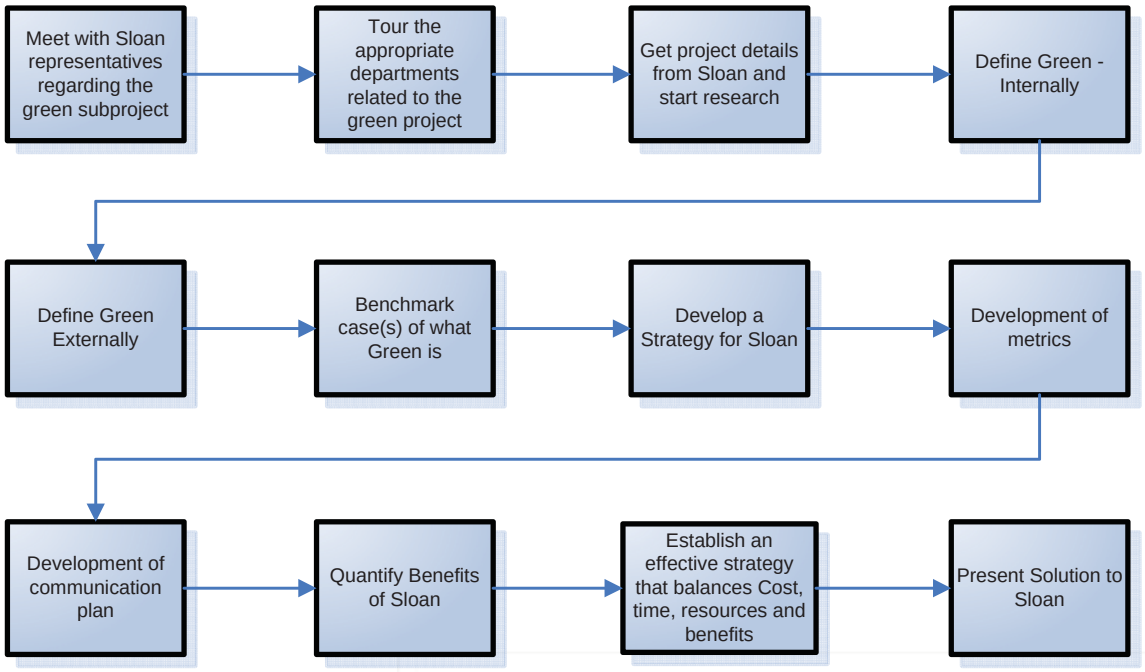
SKU Organization and Inventory Management

Below is a generic process for the SKU Organization and Inventory Management project. The team will research and investigate to gain information and data, so it will be capable of performing the setup of new part statuses and the update of SAP system.



Green Supply Chain

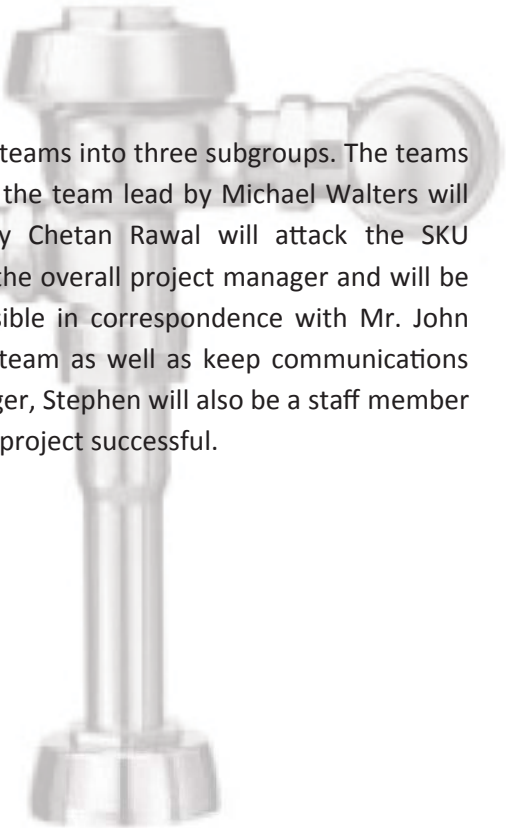
Below is a generic process for the Green Supply Chain project. After defining the term "green" as it applies to Sloan Valve, the team will design a green initiative that is both cost effective and appealing to consumers.

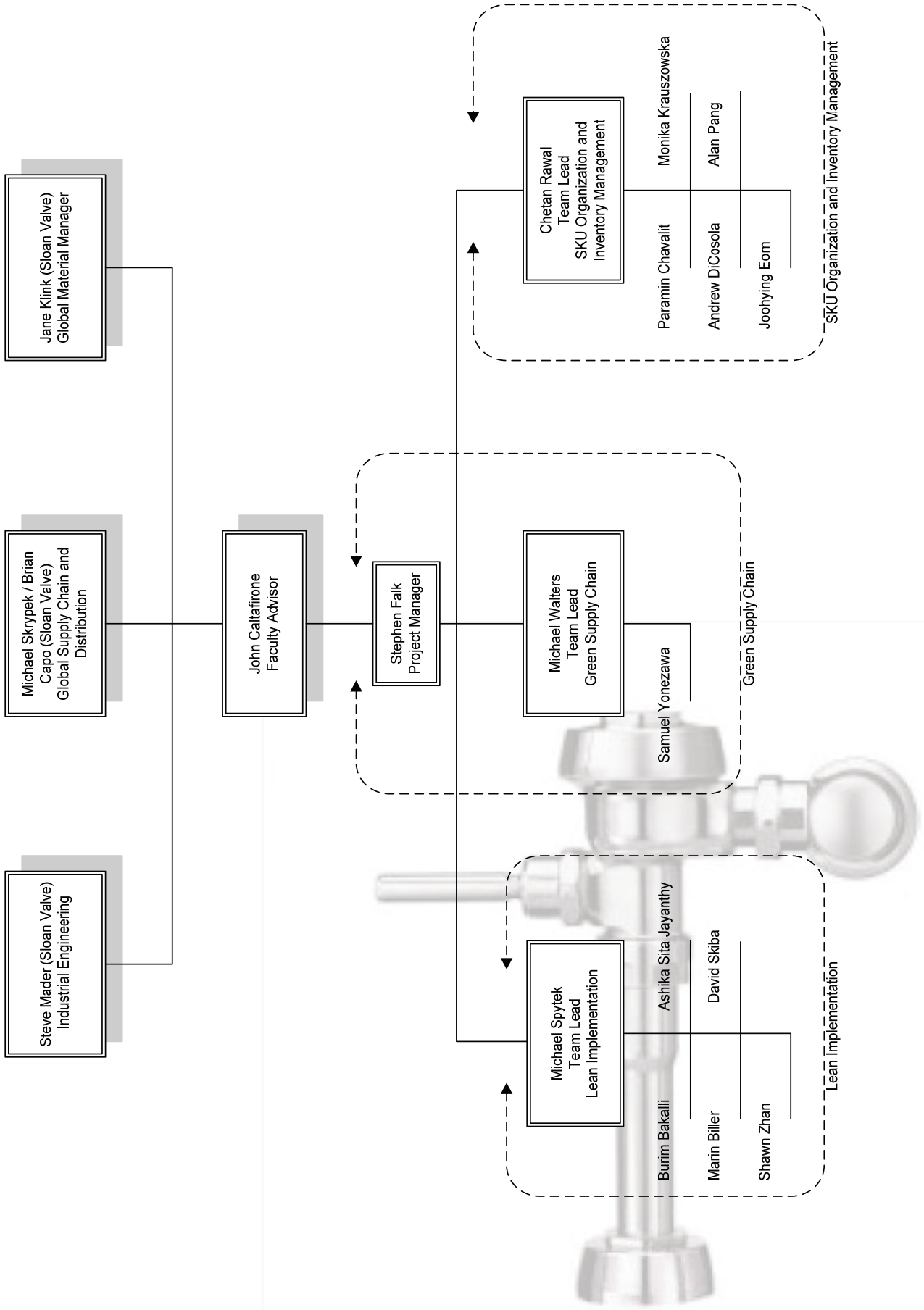


Team Structure

Due to the large scope of the project, we have divided our teams into three subgroups. The teams led by Michael Spytek will lead the Lean Implementation project, the team lead by Michael Walters will tackle the Green Supply Chain project, and the team lead by Chetan Rawal will attack the SKU Organization and Inventory Management project. Stephen Falk is the overall project manager and will be the designated person to coordinate the project and be responsible in correspondence with Mr. John Caltagirone, while all project leaders are designated to lead the team as well as keep communications open with Sloan management. In addition to being a Project Manager, Stephen will also be a staff member of the Green Supply Chain team inputting his skills into making this project successful.

Team structure chart is presenter below.

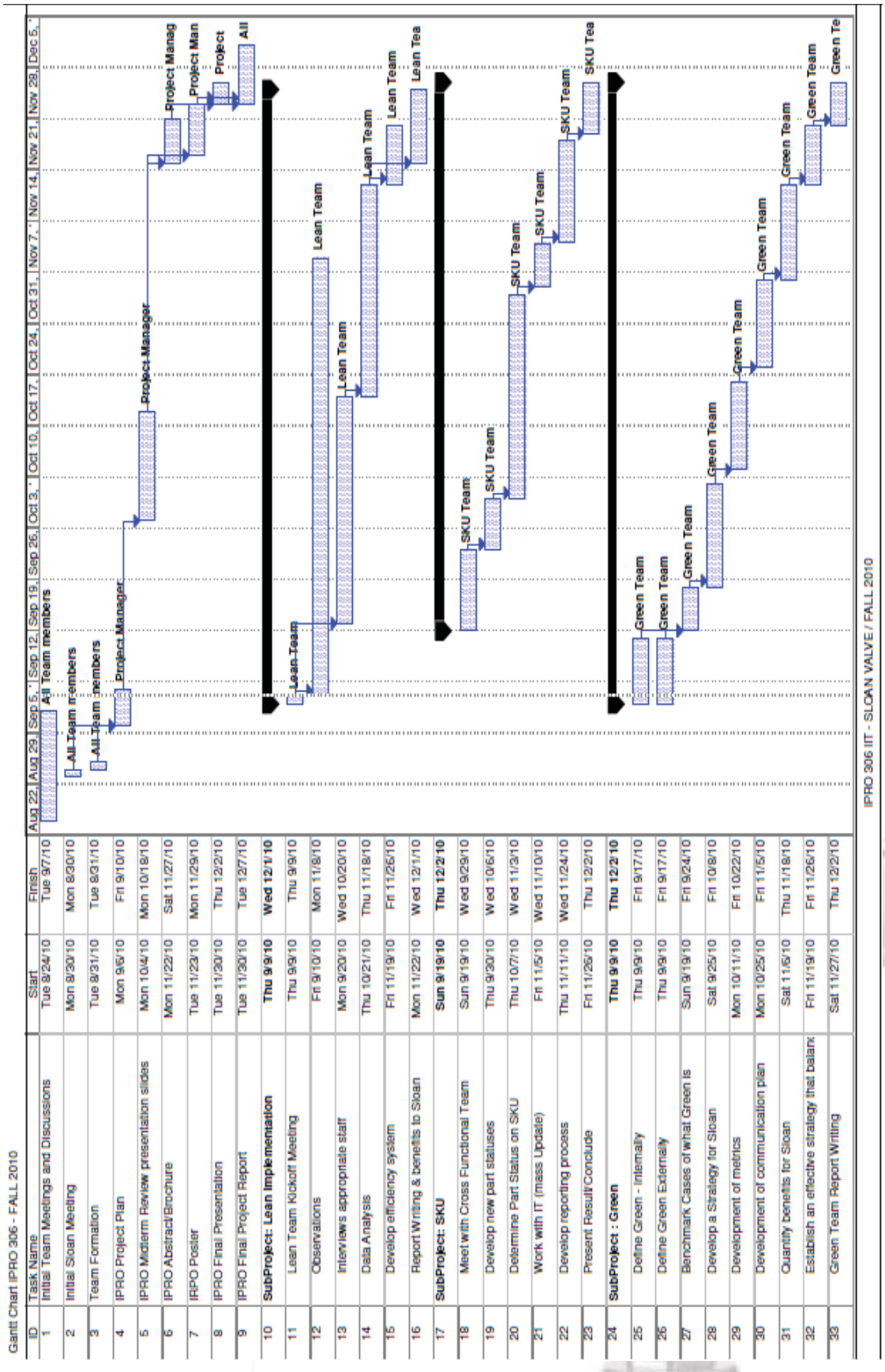



Jane Klink (Sloan Valve)
Global Material Manager
Michael Skrypek / Brian Capo (Sloan Valve)
Global Supply Chain and Distribution
Steve Mader (Sloan Valve)
Industrial Engineering
John Caltafirone
Faculty Advisor
Stephen Falk
Project Manager
Chetan Rawal
Team Lead
SKU Organization and Inventory Management
Paramin Chavalit
Monika Krauszowska
Andrew DiCosola
Alan Pang
Joohying Eom
SKU Organization and Inventory Management
Michael Walters
Team Lead
Green Supply Chain
Samuel Yonezawa
Green Supply Chain
Michael Spytek
Team Lead
Lean Implementation
Burim Bakalli
Ashika Sita Jayanthy
Marin Biller
David Skiba
Shawn Zhan
Lean Implementation

Gantt Chart

Gantt Chart IPRO 306 - FALL 2010

ID	Task Name	Start	Finish
1	Initial Team Meetings and Discussions	Tue 8/24/10	Tue 9/7/10
2	Initial Sloan Meeting	Mon 8/30/10	Mon 8/30/10
3	Team Formation	Tue 8/31/10	Tue 8/31/10
4	IPRO Project Plan	Mon 9/6/10	Fri 9/10/10
5	IPRO Midterm Review presentation slides	Mon 10/4/10	Mon 10/18/10
6	IPRO Abstract/Brochure	Mon 11/22/10	Sat 11/27/10
7	IRPO Poster	Tue 11/23/10	Mon 11/29/10
8	IPRO Final Presentation	Tue 11/30/10	Thu 12/2/10
9	IPRO Final Project Report	Tue 11/30/10	Tue 12/7/10
10	**SubProject: Lean Implementation**	**Thu 9/9/10**	**Wed 12/1/10**
11	Lean Team Kickoff Meeting	Thu 9/9/10	Thu 9/9/10
12	Observations	Fri 9/10/10	Mon 11/8/10
13	Interviews appropriate staff	Mon 9/20/10	Wed 10/20/10
14	Data Analysis	Thu 10/21/10	Thu 11/18/10
15	Develop efficiency system	Fri 11/19/10	Fri 11/26/10
16	Report Writing & benefits to Sloan	Mon 11/22/10	Wed 12/1/10
17	**SubProject: SKU**	**Sun 9/19/10**	**Thu 12/2/10**
18	Meet with Cross Functional Team	Sun 9/19/10	Wed 9/29/10
19	Develop new part statuses	Thu 9/30/10	Wed 10/6/10
20	Determine Part Status on SKU	Thu 10/7/10	Wed 11/3/10
21	Work with IT (mass Update)	Fri 11/5/10	Wed 11/10/10
22	Develop reporting process	Thu 11/11/10	Wed 11/24/10
23	Present Result/Conclude	Fri 11/26/10	Thu 12/2/10
24	**SubProject : : Green**	**Thu 9/9/10**	**Thu 12/2/10**
25	Define Green - Internally	Thu 9/9/10	Fri 9/17/10
26	Define Green Externally	Thu 9/9/10	Fri 9/17/10
27	Benchmark Cases of what Green is	Sun 9/19/10	Fri 9/24/10
28	Develop a Strategy for Sloan	Sat 9/25/10	Fri 10/8/10
29	Development of metrics	Mon 10/11/10	Fri 10/22/10
30	Development of communication plan	Mon 10/25/10	Fri 11/5/10
31	Quantify benefits for Sloan	Sat 11/6/10	Thu 11/18/10
32	Establish an effective strategy that balanc	Fri 11/19/10	Fri 11/26/10
33	Green Team Report Writing	Sat 11/27/10	Thu 12/2/10



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VI. Expected Results

It is expected that decrease of expenses due to reinforcement and reorganizing of process line. Establishing the new set of inventory statuses, Sloan Valve can use space of inventory efficiently. It makes shipping process faster and more conveniently. After getting reputation as an environmentally friendly company, Sloan Valve can appeal to consumer being good position.

It is Lean Team's goal to enhance the methods of collection of data within the different departments of Sloan Valve. Currently, there is a large amount of paperwork being generated during the data generation process. The Lean Team hopes to develop a computerized, comprehensive method of collecting data for all of the various efficiency variables being measured, and find a way to easily implement this at every level each department so as to make the Lean efficiency calculations simpler.

The goal of SKU team is to take Sloan's current ERP (enterprise resource planning) system streamline part statues and refine their supply chain. We expect to help establish a new set of inventory statuses which define items by the standards those departments from Manufacturing to Marketing all require. We will meet with these departments and discus their wants and needs for the new SAP statuses; we hope to bring an unprecedented era of efficiency for Sloan Valve in their usage of the SAP program. By redefining what a status can say about various inventory. Overall this project seeks to increase the efficiency of Sloan Valve's internal operations.

The goals of the Green Team are to make Sloan supply chain greener. It is expected that the team members will be able to create a comprehensive definition of "green" that is applicable to the needs of Sloan Valve. We expect to be able to find ways in which Sloan Valve will have a more environmentally friendly supply chain, without increasing the cost of production. In addition, we believe that we will be able to use these recommendations to allow Sloan Valve to market themselves as a "green" company, thus appealing to environmentally conscious consumers.

Lean Implementation Deliverables

Develop a more accurate and easily manageable method to gather data for efficiency calculations.

Streamline the process of entering collected data and using data to calculate efficiency.

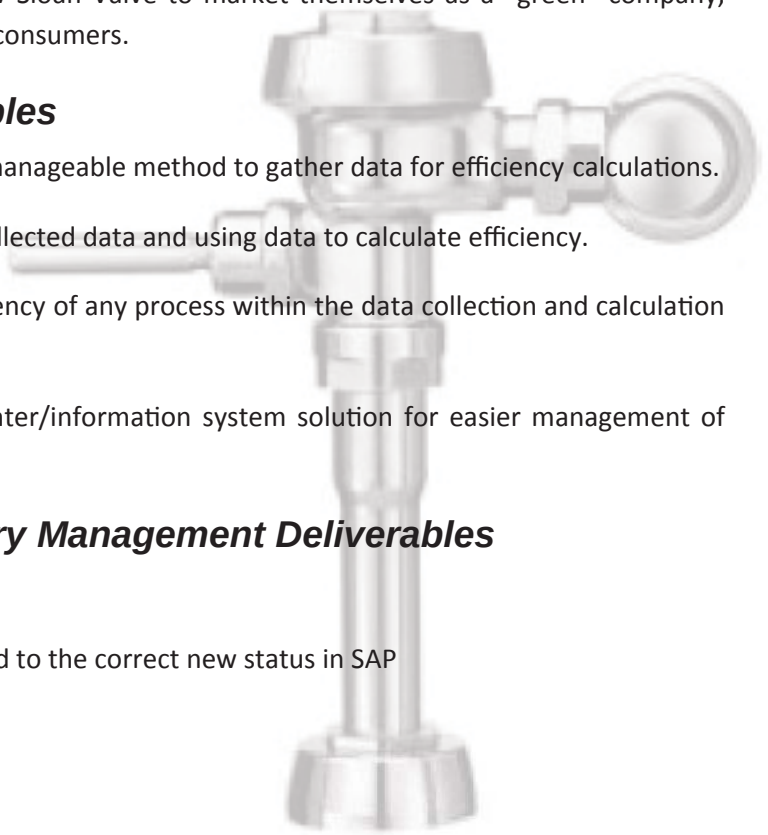
Provide suggestions to improve efficiency of any process within the data collection and calculation methodology.

Possible solution includes a data center/information system solution for easier management of data currently provided by hand.

SKU Organization and Inventory Management Deliverables

Develop new part statuses

All domestic part statuses are updated to the correct new status in SAP



Reports are created and owner buy in is achieved to maintain and control inventory based on new SKU statuses.

Presentation to stakeholders showing accomplishments

Green Supply Chain Deliverables

Strategy for Green Supply Chain

Metrics

Communication plan

Benchmark studies

Implementation plan

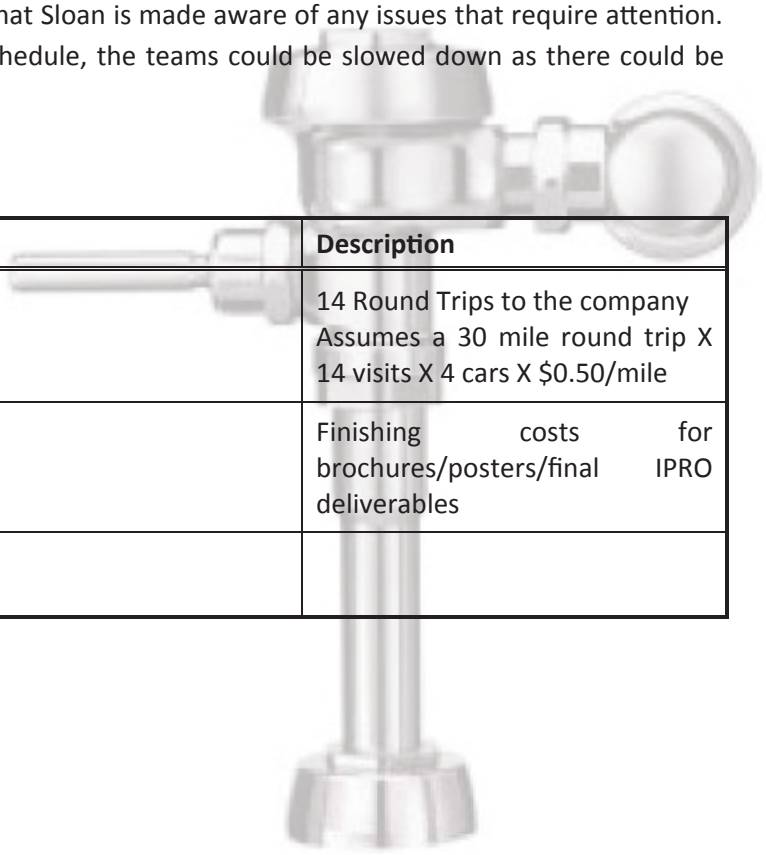
Potential Obstacles to Project Success

With any team project, there is always room for errors and obstacles as the team is split between three projects and they are conducted separately on separate time. Overall challenges will be present on the area revolving communication as a team and with the customer.

Communications will be difficult to be conducted between the teams as the team is working on three projects in a parallel level with different scopes and their own timelines. Each team meets on different days and this presents a problem to have a unified discussions on any challenges presented within the group or with the client. The overall project leader and the subproject leader must be diligent in communicating with the teams to ensure that Sloan is made aware of any issues that require attention. Due to the nature of Sloan and their busy schedule, the teams could be slowed down as there could be delays or even cancellations of meetings.

VII. Budget

Activity	Cost	Description
Transportation	$840	14 Round Trips to the company Assumes a 30 mile round trip X 14 visits X 4 cars X $0.50/mile
Printing/ Supplies	$100	Finishing costs for brochures/posters/final IPRO deliverables
Total	$940	



VIII. Designation of Roles

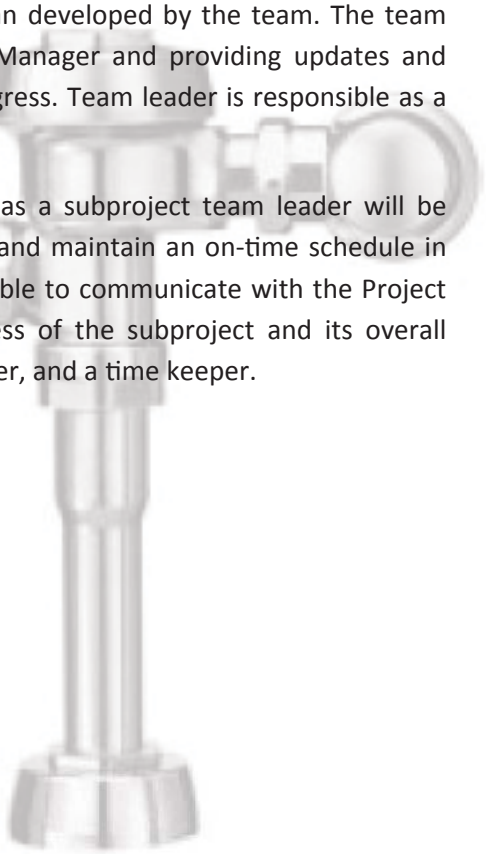
This semester, IPRO 306 was split into 3 sub-groups working on the three main projects assigned by Sloan Valve. Each sub-group has a designated Team Leader. An overall IPRO 306 Team Leader was assigned to maintain organization of IPRO deliverables. Each subproject leader is responsible in coordinating and assigning the appropriate person per team as a Minute Taker. In addition, each team leader is responsible for creating Agendas, and being a time keeper of each meeting. The assignments are as follows:

Stephen Falk – Project Manager – Stephen will be responsible for ensuring that the IPRO deliverables are completed on timely manner and uploaded to the IIT iGroups website on time. He will also be tasked to put all pieces of the project together while ensuring that major milestones are added to the iGroups website and that necessary information is delivered to the teams. As a Project Manager, Stephen will be playing a key role in keeping the team together and coordinating with the subproject team leaders to complete necessary deliverables associated with IPRO and Sloan Valve.

Chetan Rawal – SKU Team Leader – Chetan as a subproject team leader will be responsible to guide the SKU team to effectively complete work and maintain an on-time schedule in accordance with the Work Plan. The team leader will also be responsible to communicate with the Project Manager and providing updates and information about the process of the subproject and its overall progress. Team leader is responsible as a Agenda Maker, and a time keeper.

Michael Spytek – Lean Team Leader – Michael Spytek will be responsible to guide the Lean team in the process of performing a Lean implementation. He will also make sure that the team is doing its work properly and completing its work on time in line with the work plan developed by the team. The team leader will also be responsible to communicate with the Project Manager and providing updates and information about the process of the subproject and its overall progress. Team leader is responsible as a Agenda Maker, and a time keeper.

Michael Walters – Green Team Leader – Michael Walter as a subproject team leader will be responsible to guide the Green team to effectively complete work and maintain an on-time schedule in harmony with the Work Plan. The team leader will also be responsible to communicate with the Project Manager and providing updates and information about the process of the subproject and its overall progress of the project. Team leader is responsible as a Agenda Maker, and a time keeper.



IX. Appendix A

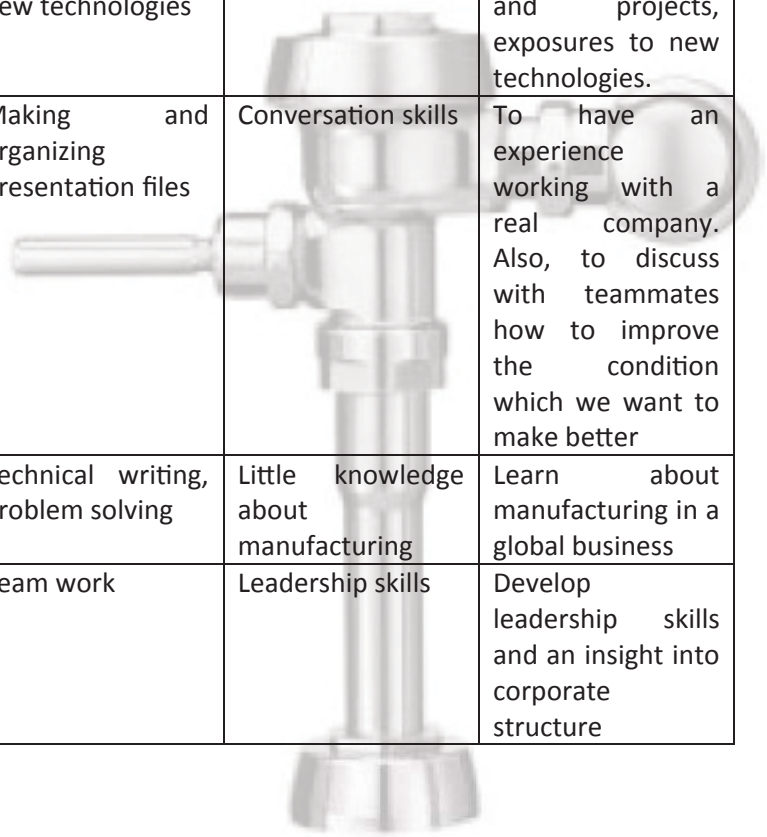
Team Roster

Team Member	Major	Email Address
Burim Bakalli	Information Technology Management – Database Management	bbakalli@iit.edu
Martin Biller	Business Administration	mbiller@iit.edu
Paramin Chavalit	Business – Finance/International Business	pchavali@iit.edu
Andrew DiCosola	Information Technology and Management	adicosol@iit.edu
Joohyung Eom	Mechanical, Materials, Aerospace Engineering	jeom@iit.edu
Stephen Falk	Materials Science and Engineering	sfalk@iit.edu
Ashika Sita Jayanthy	Molecular Biochemistry and Biophysics	ajayanth@iit.edu
Monika Krauszowska	Biochemistry	mkrauszo@iit.edu
Alan Pang	Architecture	Apang1@iit.edu
Chetan Rawal	Industrial Technology and Management	crawal@iit.edu
David Skiba	Mechanical Engineering	dskiba@iit.edu
Michael Spytek	Mechanical Engineering	mspytek@iit.edu
Michael Walters	Electrical Engineering	Mrwalters88@gmail.com
Samuel Yonezawa	Computer Science	syonezaw@iit.edu
Shawn Zhan	Applied Mathematics	szhan@iit.edu

X. Appendix B

Team Information – Skill Set and Expectation List

Team Member	Sub-Project	Strengths	Weaknesses	Expectations
Burim Bakalli	Lean	Databases, critical thinking, process elimination, information technology related topics	Inventory management, process, and procedures	Better understanding of how lean works, as well as the best way to implement it in the business world
Martin Biller	Lean	Logical thought, arduous, ambitious, team skilled	Need a coffee to start	Improve logical skill, improve teammates, get in touch with the industry
Paramin Chavalit	SKU	Problem solving on independent tasks, task completion, best of my ability	Procrastination on projects with too large of scope, technical programming	Familiarization with SAP, performing tasks to the expectations of Sloan
Andrew DiCosola	SKU	Problem solving, computers, networking and new technologies	Time management, public speaking	Working in teams, exposure to real world companies and projects, exposures to new technologies.
Joohyung Eom	SKU	Making and organizing presentation files	Conversation skills	To have an experience working with a real company. Also, to discuss with teammates how to improve the condition which we want to make better
Stephen Falk	Green	Technical writing, problem solving	Little knowledge about manufacturing	Learn about manufacturing in a global business
Ashika Sita Jayanthy	Lean	Team work	Leadership skills	Develop leadership skills and an insight into corporate structure



Monika Krauszowska	SKU	Hard working	Public speaking	Learn more about what Sloan offers to the public
Alan Pang	SKU	Organizational skills, time management, visual AIO fabrication	Communication, working with others, basketball	A finished product employed by Sloan Valve
Chetan Rawal	SKU	Strong educational background, knowledge of SAP, Team player	Lack of professional experience, programming	More exposure to SAP, learn team management and building skills, improve problem solving skills
David Skiba	Lean	Works well with others, communication	Time management, organization	Improve team working skills, gain some real world experience
Michael Spytek	Lean	Works well with others, work experience	Time management	To learn more about how large companies work
Michael Walters	Green	Communicates well with others	Staying organized for long term success	How other companies implement new strategies
Samuel Yonezawa	Green	Computer stuff	Not very good at planning specifics. More “big picture” than details.	A better understanding of the corporate way of doing things
Shawn Zhan	Lean	Analytical skills, math, computers	Patience	To develop a practical and effective improved lean implementation program for Sloan