

# Continuous improvements of the Global Supply Chain for a Plumbing Systems Manufacturer



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## Summary

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## I Abstract

The I PRO 306 team for the Spring '09 semester is sponsored by Sloan Valve Company, a long-standing family owned company, to assist in supply chain operations. Sloan Valve wishes to both streamline its processes and increase employee training and understanding of quality control systems. To this end, the I PRO team will assist them on these two projects.

In a time of economic weakness, it is important to most of the companies to cut costs. There are many approaches to this, but Sloan Valve Company has chosen to attempt to refine their supply chain operations in order to further standardize procedures and reduce overhead costs as well as ensure a higher level of accuracy inventory counts and the ability to serve their customer better.

The two aspects of this project include, firstly, an improvement to their scheduling system. The I PRO team will further integrate Sloan Valve's processes with their internal system to support production through the procurement and scheduling of materials while optimizing inventory levels, turns and in-stock levels. Through the development of a new production scheduling procedure, they hope to achieve a faster turnaround date for product and more accurate tracking of stock as well as giving the customer a more accurate estimation of delivery.

The second aspect is for the I PRO team to prepare and deliver a training course in a common quality control system, as well as assist Sloan Valve Company in the execution of a project related to this system to assist in supply chain operations. The goal of the team in regards to this is to use statistical analysis with the Six Sigma process in order to improve tracking and transfer of parts between departments through employee training and refinement of protocol. This will, in turn, help the company reduce costs and maintain more accurate counts.

## II Background

Sloan-Valve Company was started in 1906 by William Elvis Sloan. Mr. Sloan invented the Flushometer which was the first among the line of products they now produce and distribute globally. Their world headquarters is located in Franklin Park Illinois, which is also one of their largest manufacturing sites. Among the thousands of products produced at that facility, the manual flush valve in its various models is the main product created there. Castings are received from their Arkansas plant where they are then machined and assembled so they can be shipped out to their various distributors. The site employs up to 600 workers, and its estimated annual sales for 2007 were 50.4 million dollars.

The scope of this IPRO will involve both the development of a new production scheduling protocol and procedure, as well as the development of a college level Six Sigma training package. Currently the company does no scheduling which leads to delayed shipments, inaccurate delivery estimates and wasted man-hours and money on the creation of extra parts. The procedure currently employed by Sloan is a five day wait period where the order must be processed, produced, and shipped out regardless of the type or size of order and without any regard as to how long it will take to process. The company is also looking to overcome quality control problems with their products and management by developing a Six Sigma training package, which will ensure quality in their products and to their customers. Six Sigma is a world-renowned quality initiative used to monitor and reduce defects, analyze and improve processes and focus company objectives. This Six Sigma training would like to be implemented globally so that all their factories will produce the same consistent quality Sloan product. Sloan is presently in the early stages of implementing the Six Sigma program worldwide in their production processes, and this training package is meant to be able to provide a base for their employees to learn and implement the program. Currently there is no global standard within Sloan to ensure that a product made in the United States performs the same as one made in China. This project is overseen by the Vice President of the global

supply chain operations of Sloan Valve Steven Rodgers. Overcoming these two major tasks will help the company save money, become more efficient, and ensure good quality and customer service to help them maintain a healthy business. This IPRO will directly affect Sloan-Valve since the company hopes to use what is developed by the IPRO team.

There have been no previous attempts by the company to either employ a scheduling protocol or develop a Six Sigma training package. This is the first attempt by any IPRO team to take on this challenge and the goal is to finish by the end of the semester, providing a presentation to both the company and IPRO.

## III Objectives

### A Main Objectives

Serve the sponsor company, Sloan Valve, in their projects to reform their current business processes and train employees to increase their overall efficiency.

### B Sub Objectives

Create the scheduling protocol for Sloan Valve; this would include creating reports that would be used in the scheduling process and fixing errors in the current system data.

Develop a six sigma training package that will allow the employees to pass the Six Sigma green belt certification test.

Transfer the training program to Sloan Valve including appropriate handouts, lecture notes and review material.

Implement the six sigma knowledge in the development of six sigma program that reduces the defects in the company's material movements.

Determine what material master data fields are needed for MRP specifically scheduling and ATP (Available to Promise)

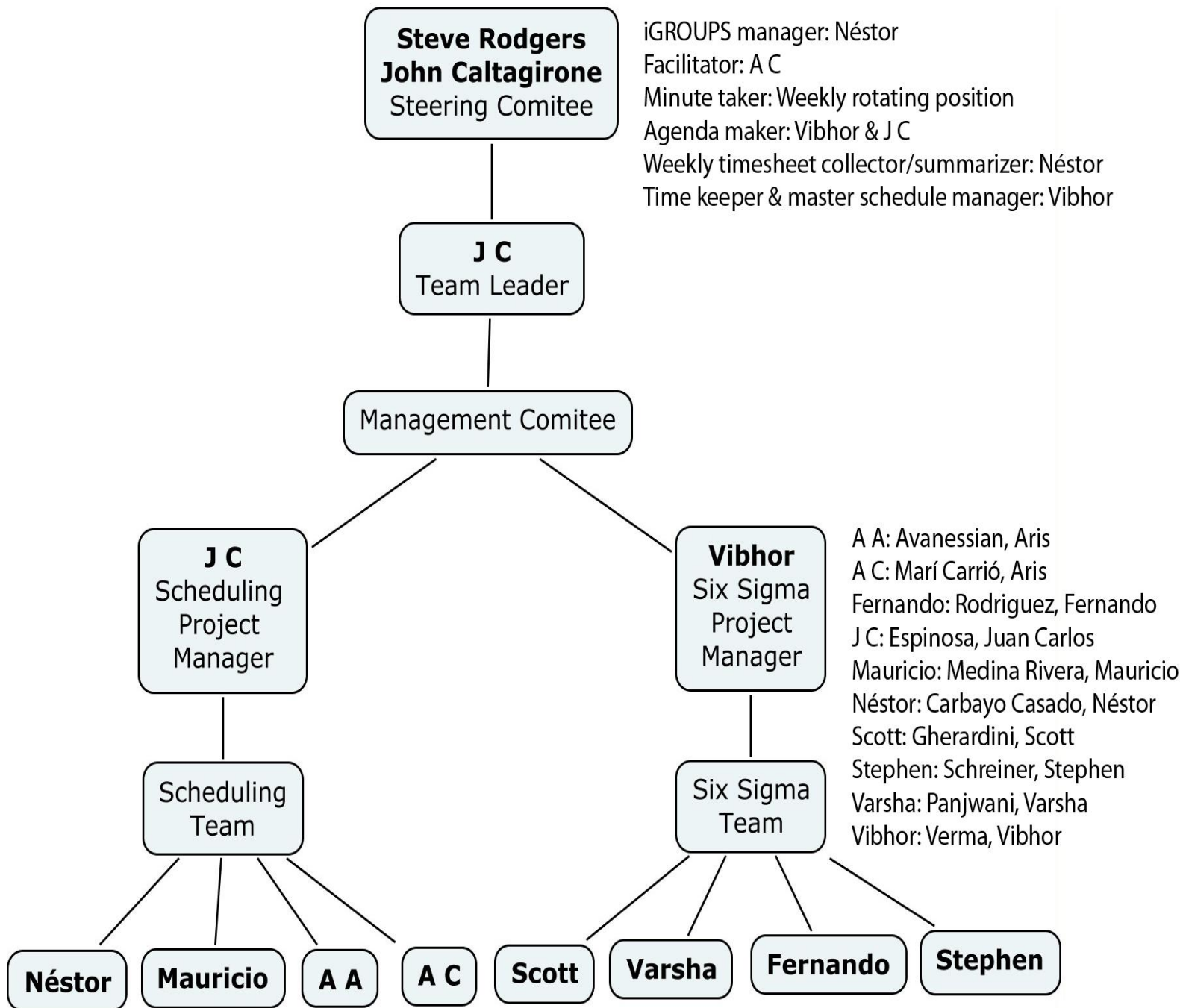
Verify and update current master data needed for ATP and production scheduling

Work with operations and materials to implement a Build to Schedule compliance deliverable for production

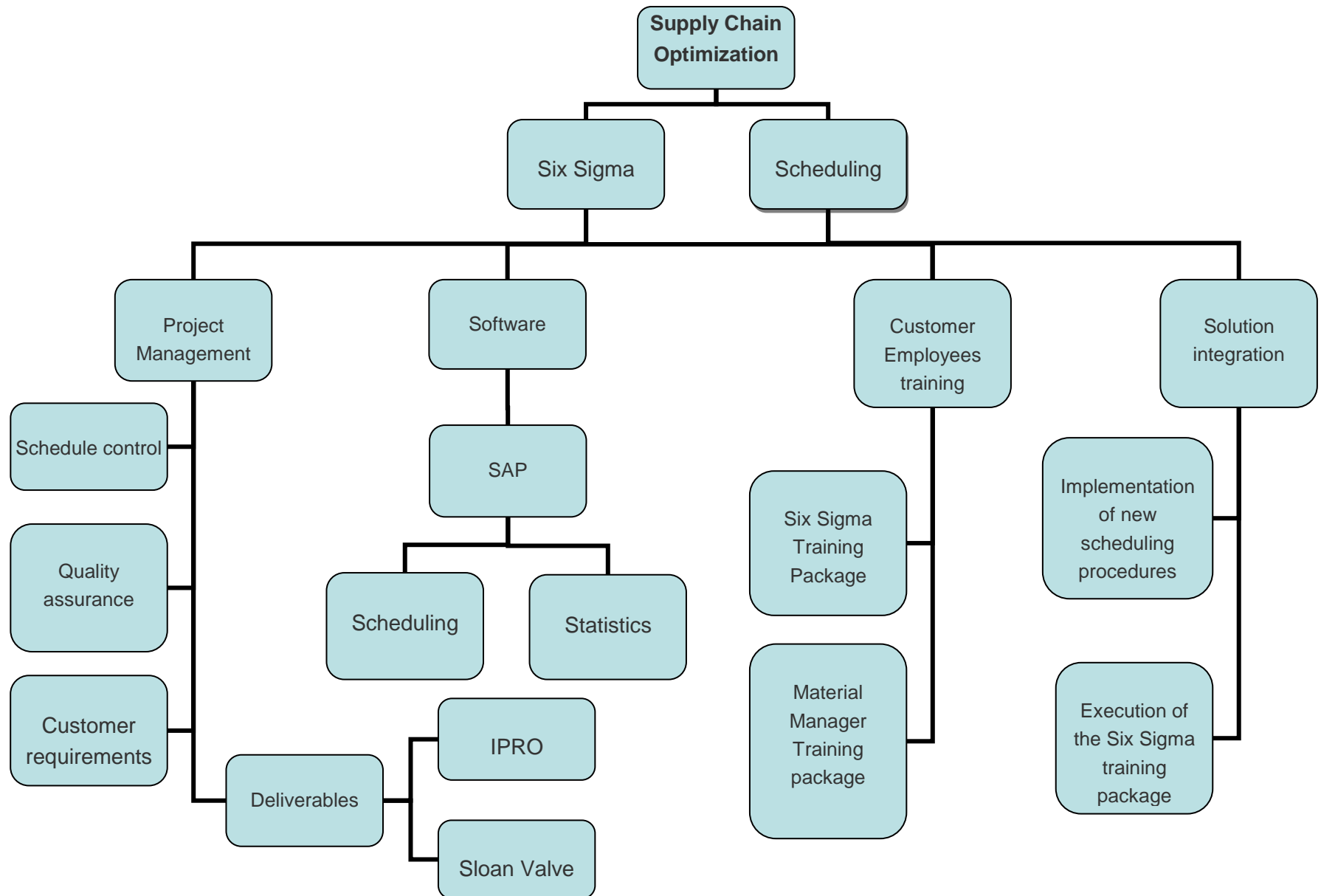
Transition from current scheduling system to new developed protocol

## IV Methodology

### A Organisation Breakdown Structure (OBS)



## B Work Breakdown Structure (WBS)







## D Methodologies Detailed – Scheduling Team

The scheduling team was headed by Sloan Valve Company employees Jane Klink and Darryl Jones. Under their direction, they worked with the company SAP enterprise database system in order to develop a solution for the company's resource scheduling procedures. In order to do so, they worked with the Sloan Valve IT department in order to setup access for the IIT team to utilize SAP in order to acquire the necessary data and tools to perform their task. The scheduling team's work primarily occurred on-site, where they met with and worked with Sloan employees every Wednesday in order to produce a solution to present to the company.

Using the SAP enterprise system, the team researched and determined which fields and what data would be necessary to develop a scheduling system to better track materials and product within the company, in order to develop a more efficient system to determine delivery times as well as what inventory is Available to Promise to customers and for current orders. They were in constant contact with numerous other Sloan Valve stakeholders who would be utilizing the new system and who would be impacted by the new procedures that they were assisting to implement. They also developed the necessary requirements of the new scheduling system and what tools Sloan Valve has available to it in order to optimize their scheduling process and develop a Build to Schedule procedure, as well as the prerequisite tools within SAP that would have to be used in order to transition to the new scheduling process.

After completing the new protocol for scheduling, they must communicate and implement it to the company and work on developing a metric to assess the effectiveness of the new process under a strict timeframe.

## E Methodologies Detailed – Six Sigma Team

The Six Sigma team was headed by Sloan Valve Company employees Eugene Short Jr, the director of Global Quality Assurance and the Global Quality Systems and Process Control Manager, Robert Briggs. Both of these are experienced with the Six Sigma program and are heading it's current implementation at Sloan Valve. They also had contact with Sloan Valve employee Franklin Echevarria, who is also an ASQ – The American Society for Quality - member, which is the certification body that tests and provides Six Sigma certifications. In order to assist the Sloan Valve Six Sigma initiative, they were tasked with producing a Six Sigma training package which met the requirements for an ASQ Six Sigma Green Belt certification.

In order to do this, the team worked closely with Robert Briggs, meeting with him as well as other employees in charge of quality initiatives at Sloan Valve, and working on-site every Friday. They drew on his experience leading numerous Six Sigma projects currently at Sloan Valve, and utilized the numerous resources that the team was able to acquire, including reference guides, syllabi and Black Belt and Green Belt study resources. Following the ASQ Syllabus, they produced a 6-part training package, primarily including a set of powerpoint presentations that address and teach the various requirements of the ASQ for Green Belt Certification, along with an array of handouts necessary to further detail and explain the various statistical techniques necessary for Six Sigma implementation. Biweekly review of the training package by the Sloan Valve leaders of the project ensured that they were satisfied with the product as provided by the IPRO team. The 6 parts represent an overview of the Six Sigma concept and project documentation, as well as addressing the five aspects of Six Sigma as summarized by DMAIC, defining, measuring and analysing a problem followed by improving the process and controlling the improvements in order to maintain quality.

They also assisted the Global Quality Assurance team at Sloan Valve by contacting and interviewing employees in charge of various internal operations relating to material movements within the Franklin Park location, and producing a Six

Sigma project charter addressing the concerns. By speaking with floor supervisors, and analysis of material movements within the company SAP database, they were able to locate some possible locations for improvement in regards to material movement across the factory floor in the Sloan Valve Franklin Park factory and detail those to Robert Briggs, who leads Six Sigma projects in all Sloan Valve locations worldwide through the local quality champions in those regions.

## V Budget

<i>IPRO 306 Budget</i>		
<b>Expense Type</b>	<b>Cost</b>	<b>Rationale</b>
Travel and food	\$960	Every Wednesdays (5 people) and Thursdays (5 people) for 16 weeks we travel to the company:  -Fuel:10 USD per trip, so 160 USD (information is already given to Mrs Keplinger)  -Meals: Each lunch cost 5 USD in the Company Cafeteria. Therefore, per week we need 50 USD. As we will go 16 weeks, so 800 USD for the whole period
Training Package Copies	\$300	Numerous copies of the extensive resources package for the Six Sigma training needed to be made.
Office Printing	\$100	- We will need to print final reports for the company
<b>TOTAL</b>	<b>\$1 360</b>	

## VI Team Structure and Assignments

### A Team Structure

Skill Set List

Team Member	Major	Phone Number	Regular e-mail	Excelled Skills	Not-So-Excelled Skills	Previous professional	IPRO task
JC	Master's degree in Industrial Technology	773-556-6290	<a href="mailto:espinosajuancarlos@yahoo.fr">espinosajuancarlos@yahoo.fr</a>	Project Management skills, Ganntt charts, Organisation,work breakdown structures, and layouts. (Experience in Kaizen projects and 5S	Code	Internship in SIEMENS implementing 5S Methodologies	Scheduling project
Nestor	Master's degree in Industrial Technology	312-662-8685	<a href="mailto:ncarbayo@iit.edu">ncarbayo@iit.edu</a>	Microsoft Paint, Tasks breakdown and assignment	»	Internship at Ford working with production	Scheduling project
Aris c.	Master's degree in Industrial Technology	312-480-9556	<a href="mailto:acarrio@iit.edu">acarrio@iit.edu</a>	I'm a great organizer and coordinator	Handwriting	None	Scheduling project
Mauricio	Master's degree in Industrial Technology	773-272-8667	<a href="mailto:maumedrivera@gmail.com">maumedrivera@gmail.com</a>	ISO 9001 (quality managment, Ganntt, reports, procedures, organization). Planning, programming.	»	7 years in a steel mill as chief in production workshops	Scheduling project
Varsha	Undergrad Industrial Technology and	978-394-1542	<a href="mailto:vpanjwan@iit.edu">vpanjwan@iit.edu</a>	Project Management, Problem Solving techniques, report writing skills, Ms Excel, Ms Access, PowerPoint and front Page	Software Development	None	6 sigma
Vibhor	Master's degree in Industrial Technology	630-687-0948	<a href="mailto:vverma13@iit.edu">vverma13@iit.edu</a>	Customer Service, Adobe, MS Smite, Business Development	Excel	None	6 sigma
Fernando	Master's degree in Industrial Technology	773-698-5199	<a href="mailto:frodrig2@iit.edu">frodrig2@iit.edu</a>	Experience with ISO 9001 and 14001 implementations. Problem solving, tolerant and good teamwork member	»	None	6 sigma
Aris A.	Undergrad in Architectural Engineering	847-915-1044	<a href="mailto:aavaness@iit.edu">aavaness@iit.edu</a>	Work well with computers and most software. Fast learner, easy to coordinate with and get along with people.	»	None	Scheduling project
Stephen	Computer Information Systems	630-229-4826	<a href="mailto:sschrein@iit.edu">sschrein@iit.edu</a>	Strengths are primarily in programming, modelling and database aspects as well as general tasks like documentation	Leadership, Getting around - I commute from Wheaton/Rice Campus	None	6 sigma
Scott	Mechanical Engineering (Undergraduat	847-990-0460	<a href="mailto:sgherard@iit.edu">sgherard@iit.edu</a>	Fast Learner	Public Speaking	IPRO with Abrasive Form implementing a Share Point Solution	6 sigma

## B Team availability

Availability Schedule to Visit Client

Monday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

Wednesday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

Friday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

Tuesday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

Thursday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

Saturday	8 to 9	9 to 10	10 to 11	11 to 12	12 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 9
JC											
Nestor											
Aris											
Mauricio											
Varsha											
Yibhor											
Fernando											
Scott											
Aris											
Stephen											

## VII Code of Ethics

### Overarching Principle:

Our group will display a professional attitude and conduct in the course of creating and implementing both a six sigma training course and a set of inventory scheduling protocols to improve the sponsor company's, Sloan Value, in-plant material movements and overall sigma rating.

#### 1. Law

**Canon:** It is important to obey confidentiality agreement between the IPRO team and Sloan Value and not disclose any information that may compromise the sponsor's business.

**Pressure:** To complete both a scheduling protocol system and six sigma training package without revealing any sensitive information to outside sources that may consulted to complete the project.

**Pressure:** To overcome vexing problems currently existing within the scheduling protocol system and completing the large amount of work in creating a six sigma training package.

**Risk:** To release company information that would harmful to the sponsor while trying to complete the project tasks in time for the deadline.

**Measure:** The team will make a conscious effort to prevent any sort of information leak that may occur in the course of completing the project.

#### 2. Contracts

**Canon:** The group will respect and achieve the sponsor company needs and requirements for all the items related to the scheduling system and six sigma training package.

**Pressure:** To deliver the existing and changing needs of the company in the allotted time.

**Risk:** To feign ignorance of company project requirements and not complete them.

**Risk:** To report to the sponsor that certain requirements are impossible to deliver because of difficulty to the group and not due to the scheduling software capabilities or a lack of reference material for the training package.



**Measure:** Each requirement for the scheduling system and six sigma training will be thoroughly researched, attempted, and documented to benefit the sponsor.

### 3. Professional Code

**Canon:** All group members will conduct themselves in a professional manner.

**Pressure:** To act in a professional capacity to the company.

**Pressure:** Requirements of the project may make it difficult to allow for changes to the system and finish by the deadlines.

**Risk:** The sponsor company's project requirements may be neglected due to difficulty with the project schedule.

**Measure:** Feedback from the company will be integrated throughout the creation, modification, and implementation of the scheduling protocol system and six sigma training package.

### 4. Industry Standards

**Canon:** The inventory scheduling protocol and six sigma green belt training package will be completed in accordance with the schedule, all the while keeping in mind the objectives set forth by the sponsor company.

**Pressure:** To create a scheduling protocol and six sigma training package conforming to the needs of the sponsor.

**Pressure:** Due to time constraints, doing all that is necessary to ensure that the scheduling protocol is functional and the training package is acceptable may be difficult.

**Risk:** Delivering a substandard scheduling protocol system and six sigma training to the sponsor.

**Measure:** By separating the projects into smaller segments and having constant feedback by traveling to the sponsor each week, we will ensure that the company's requirements are fulfilled.

### 5. Community

**Canon:** In the course of the project, the group will not overlook anything that would possibly concern the community, such as work place safety or unsound business practices.

**Pressure:** To be of service to and maintain good relations with the sponsor company.

**Pressure:** To maintain a professional attitude while working on this project, this includes a moral responsibility to community.

**Risk:** To overlook a danger to personnel or the members of the community to avoid causing trouble for the company.

**Measure:** To be forthcoming with concerns about the workings of the company and to attempt to resolve the situation before an incident occurs.

## 6. Personal Relationships

**Canon:** Each member will work to the best of their abilities toward this project and will set aside time to be available to the group.

**Pressure:** The added work of an IPRO interfering with a full academic schedule.

**Risk:** The group does not work effectively together.

**Risk:** Pushing large amounts of work onto others because of apathetic behavior.

**Measure:** Each person is accountable to the tasks he or she is assigned and the deadlines that accompany them.

## 7. Personal/Moral Values

**Canon:** To work at the best of one's abilities on the given tasks and to not manipulate the project to yield personal gain.

**Pressure:** Finishing the assigned work to meet the set deadlines.

**Pressure:** The group has access to and the ability to alter company information. The group also has knowledge of manufacturing techniques and job processing procedures that would be valuable to the rival corporations.

**Risk:** Selling sensitive information to competitors for personal gain.

**Measure:** Each person has signed a confidentiality form making them accountable to the company and made a commitment to the team regarding all aspects of this IPRO.

## VIII Results

### A Research Findings

No specific research was performed in this IPRO as it was not a research project.

### B Accomplishments of the Project Team

**Scheduling Team:** Complete Visualization of the benefits from the Implementation of the new machine scheduling protocol in all the plants will not be possible for 2 or 3 months. Nevertheless, the company had performed the same kind of scheduling project with the purchasing items in the past. Therefore, taking in consideration the results from this former experience, we can forecast that the expected results for our work will be:

- Increase the perfect order performance by 10%
- Reduce shortage of Work In Progress (WIP) part by 50%
- Reduce WIP inventory by 50%, from 2 days to less than one day of in-house process
- Double the inventory turns, and increase cashflow
- Minimize obsolescence through better planning
- Implementation of fix Lot sizes that will help the company to run efficiently and balance the inventory
- Eliminate unnecessary overtime

**Six Sigma Team :** The Six Sigma team was able to produce a comprehensive ASQ syllabus compliant training program, including an overview of Six Sigma and relevant organizational resources, concepts and tools as well as a multi-part powerpoint presentation meant to instruct Sloan Valve employees on using the Six Sigma process in order to improve quality and maintain those improvements, detailing the DMAIC stages in Six sigma, from Defining the problem, Measuring the current issues, Analysis of possible solutions, implementing the Improvements and Controlling the resultant improvements in the process. They also produced a working project charter for a Sloan Valve Company Six Sigma project regarding material movements within the Franklin Park factory. This training package is meant to fulfill an approximate 60 hour program, equivalent to that of a standard Green Belt training course which generally runs \$3000+ per person, allowing the company to run the training in-house and save the money that would have had to gone to enrollment of dozens of employees.

## C Objectives

**Main Objective :** The main objective was to assist the sponsor company, Sloan Valve, in supply chain optimization projects as needed and directed by the project leaders and management committee, which includes Jane Klink and Eugene Short. This objective was achieved as the IPRO Project Team addressed the numerous tasks presented to them by the sponsor company and adjusted their duties as requested by the management committee which are further detailed in the sub-objectives of the team.

### **Sub Objectives :**

**Scheduling Sub-Objectives :** The primary sub-objective of the scheduling team was to lay the framework for Sloan Valve Company to allow them to set up a schedule for each workcenter. By doing this Sloan Valve will be able to reduce their inventory between workcenters which will reduce their costs and allow the company to complete orders on time. A document to describe the daily operations of the scheduler was also created to go along with this in order to formalize the process and make sure it can be understood by future schedulers.

The second sub-objective of the Scheduling team was to come up with safety stock levels for each item that would allow them to have enough items on hand in order to complete orders on time yet at the same time keep inventory levels at a minimum. By creating this steady flow Sloan Valve will be able to save money and improve

conditions on the factory floor. The safety stock is calculated using a formula that takes into consideration what type of item, it's annual usage, as well as costs to manufacture.

The last sub-objective was to come up with the total in house production times, time it takes for a part to pass through the machines in each department, for each item. In order to do this all 700+ parts had to be individually looked up on SAP, and from that data each step had to be added up in order to come up with these times. This was important in order to know how long it takes for an item, from when it starts out as a raw material, to be fully completed. From this data each part can be scheduled appropriately so an accurate measurement of how long it takes to produce is known.

**Six Sigma Objectives :** The primary sub-objective of the Six Sigma team was to formulate a training package for internal use by Sloan Valve company in order to train it's current and future employees on the processes involved in the Six Sigma initiative and the necessary statistical tools to analyze current production techniques and optimize them. This objective was achieved, as the training program was completed and submitted to the Global Quality Assurance team at Sloan Valve for use.

The second sub-objective was to produce or locate and provide additional training materials for use alongside the IPRO produced training program. This sub-objective was also completed, as these materials were submitted together with the training package, including third-party resources such as study handbooks, official training tools from the ASQ certification body as well as background and supplementary resources produced by the IPRO team themselves.

The final sub-objective of the Six Sigma team was to assist a joint Six Sigma project within the company based on the training program in order to optimize material movement in the Sloan Valve Franklin Park factory. This objective was partially completed, as a project charter was produced and some materials were acquired and problems determined, but the Sloan Valve management committee determined it was better to focus on the training package and changed the objectives regarding this along the way.

## D Issues with Results

**Confidentiality Agreement with Sloan Valve :** In keeping in line with the confidentiality agreement signed by each member of the IPRO team, any results and materials to be presented external to the company, as well as necessary communications with external contacts pertinent to the project would be discussed with Sloan Valve contacts in order to maintain the ethical standard put forward.

## IX Obstacles

**Material Movements Project :** This project posed an obstacle for the team as the initial expectations were for us to work on it alongside the training package development, attempting to apply materials we were in the process of learning as we were learning them. We discussed this with the sponsor company, and they adjusted our project scope to best accommodate the problems while still allowing us to assist them to some degree on the project. This obstacle was unavoidable from our end, but did not create any major issues, and has certainly been corrected by this point, and with the background knowledge we have developed in the Six Sigma program, would be further addressable from this point forward.

**Training Package :** The initial impression the team had is that we were going to also be required to teach the package as we developed it, presenting to the Sloan Valve Company employees the material we develop. This was a misconception on our part, as once we had prepared for our first session, we were informed that they had not expected it of us. It was a minor obstacle at best as it just resulted in some additional work that turned out to be unnecessary, but not useless as preparing to do so deepened our understanding of the material and improved our ability to explain it as the training package required.

**Acquisition of Materials :** This proved to be a somewhat complicated obstacle we encountered more than once during the project. As Six Sigma is a highly valued corporate program, acquiring materials for teaching it was not always simple, as many programs and tools offered were either expensive or exclusive to particular organizations members. However, we managed to overcome the obstacle through continuous searching and locating more practical sources for materials to include in the training package. Another obstacle related to this was the acquisition of numerous copies of a large Six Sigma resource binder that one of the Sloan contacts provided to us. This was due to its extensive length and the lack of an electronic copy, thus finding an affordable way to transfer it into an electronic form or produce enough hard copies for use by the team and the company itself in the future was

difficult. This obstacle was successfully overcome by working with the company and the IPRO office, as well as external resources to produce sufficient, affordable copies of the materials.

**Calculation Methodologies** - At the beginning, we were trying to figure how to calculate the lot sizes. First, we tried with Wilson's formula but it didn't work. So, we tried an approximation, this was an empiric calculation using the ABC analysis. Using this method we were able to calculate the lot sizes, and developed the whole project.

**Data Collection** - Also, the lack of accurate data was a major disadvantage. The company does not have a hard-copy data. We solved that interviewing every production manager to get the data from their work-experience. This was useful in allowing us to get the right numbers to start our calculation, and inputting an accurate data into the company's records.

**Time Constraints** - The last obstacle was time. We didn't have enough time to see the impact of our project. We would liked to analyze how our project benefited the company. But, through approximations we got an idea about how important was our project in order to develop the production scheduling system.



## **X Recommendations**

This project has much potential to be continued. While the current tasks are essentially completed, the optimization of the supply chain is a task that always continues. Sloan Valve is continually seeking to improve the quality of its products and the quality of its processes. The scheduling project was a starting point for improving product monitoring, and can likely be continued through further refinement of the scheduling process, as well as refinement of many other internal processes related to inventory, the Available to Promise policy as well as numerous other supply chain functions. Likewise, the Six Sigma initiative at Sloan Valve is still in its growing stages, and they currently have more than a dozen Six Sigma projects in the works. Further implementation of the training package is a logical continuation for the project, as well as developing it for further certification efforts for Sloan Valve employees as they gain more experience with the Six Sigma process, allowing them to acquire black belt certifications and needing the additional training related to such a program. Additionally, completion of more Six Sigma projects becomes a possibility as the company builds the base of talent from which it can draw from for such projects through the proliferation of the Six Sigma initiative throughout the company. Given the completion of the training package, new IPRO students would be able to quickly learn the necessary tools and skills required to assist Sloan Valve Company in these projects, in order to further benefit them as our sponsor as well as the students in acquiring the skills for their own benefit.

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## **XII Resources**

### **Avanessian, Aris :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

Midterm Report

IPRO Day Booth Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

Presenter

### **Carbayo Casado, Nestor :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

IPRO Day Presentation Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

Presenter

### **Carrio, Aris :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT  
~100 Hours : On-site Work at Sloan Valve  
Additional Contributions :  
IPRO Day Booth Team  
Sloan Valve Project Meeting  
Sloan Valve Final Presentation  
Meeting Facilitator  
Presenter

**Juan Carlos Espinosa:**

Weekly Contributions :  
~16 Hours : Team Meetings at IIT  
~100 Hours : On-site Work at Sloan Valve  
Additional Contributions :  
IPRO Team Leader  
Scheduling Team Leader  
Midterm Report  
IPRO Day Presentation Team  
Sloan Valve Project Meeting  
Sloan Valve Final Presentation  
Presenter

**Gherardini, Scott :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

Ethics Statement

IPRO Final Report Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

**Medina Rivera, Mauricio :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

IPRO Day Booth Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

**Panjwani, Varsha :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

IPRO Day Booth Team

Midterm Report

Sloan Valve Final Presentation

Presenter

**Rodriguez, Fernando :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

IPRO Day Booth Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

Presenter

**Schreiner, Stephen :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

IPRO Final Report Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

Presenter

**Verma, Vibhor :**

Weekly Contributions :

~16 Hours : Team Meetings at IIT

~100 Hours : On-site Work at Sloan Valve

Additional Contributions :

Six Sigma Team Leader

IPRO Team Scheduler

IPRO Day Presentation Team

Sloan Valve Project Meeting

Sloan Valve Final Presentation

Presenter

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