

2010

# Improving Food Packaging Processes Using Process Mapping Techniques

## Project Plan

Project Sponsor: Land O' Frost  
Project Advisor: Phil Lewis

Remi Adenjinle  
Kathleen Baker  
Wojciech P. Blaszyński  
Pankti Gala  
Chathuri Gunasekera  
Adam Kuuspalu  
Crina Popa  
Olakunle Popoola  
Nicole Reigle  
Deepthi Veliyathuparambil

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## I. Team Charter

### Team Information

#### Team member roster

Name	Major	Email	Phone Number
Remi Adejinle	Chemical Engineering	radejinl@iit.edu	██████████
Kathleen (Kate) Baker	Chemical Engineering	kbaker6@iit.edu	██████████
Wojciech (Peter) Blaszyński	Biology	wblaszyn@iit.edu	██████████
Pankti Gala	Biomedical Engineering	pgala@iit.edu	██████████
Chathuri Gunasekera	Biomedical Engineering	cgunasek@iit.edu	██████████
Adam Kuuspalu	Biochemistry	akuuspal@iit.edu	██████████
Crina Popa	Architecture	cpopa@iit.edu	██████████
Olakunle (Kunle) Popoola	Chemical Engineering	opopool2@iit.edu	██████████
Nicole Reigle	Chemical Engineering	nreigle@iit.edu	██████████
Deepthi Veliyathuparambil	Chemical Engineering	dveliyat@iit.edu	██████████
Phil Lewis	Advisor	lewisp262@aol.com	██████████

#### Team member strengths

##### *Remi Adejinle, Chemical Engineering*

Remi is a fourth year chemical Engineering major. She looks forward to putting to practice everything she has learned in her major and as an Entrepreneurship minor. She is organized and has experience with Microsoft Office. She hopes to learn more about the food packaging process and the work place in general. She would like to gain more experience in working with teams and also improve her communication skills by the end of the IPRO.

##### *Kate Baker, Chemical Engineering*

Kate is a third year Chemical Engineering major. She has experience in batch reactors and process design. Kate hopes to gain valuable communication skills and observe business practices first hand.

##### *Wojciech (Peter) Blaszyński, Biology*

Peter is a junior majoring in biology. His main asset is familiarity with biology lab procedures and protocols, as well as general knowledge of biology and biochemistry. He also has good research skills, and is good with computers. One of his goals is to improve his communication and teamworking skills.

### *Pankti Gala, Biomedical Engineering*

Pankti is a fourth year biomedical engineering major. Her strengths include her organizational skills, Microsoft Office experience, and extensive experience when working with teams. She does not have any experience in the food packaging industry, but is very excited to learn something new and apply her skills to this project.

### *Chathuri Gunasekera, Biomedical Engineering*

Chathuri is a senior in the Biomedical Engineering department. She is familiar with the BME labs, including a variety of equipment and software (Scientific Micromaster Microscope, Viscometer Function Generator, etc). She also has experience in Microbiology and Pathology fields. Chathuri is interested in medical research and is excited to learn new things in this IPRO.

### *Adam Kuuspalu, Biochemistry*

Adam Kuuspalu is a senior in the Biochemistry department. He has extensive experience in the field of restaurant management which includes group training techniques and implementation. This will lend to positive feedback pertaining to the areas of food safety and group training. He would like to improve upon skills relating to research and program development.

### *Crina Popa, Architecture*

Crina is a 4th year architecture student with a specialization in Digital Design. She has experience working with software programs like Adobe Photoshop, Autodesk AutoCAD and Solid Works. She likes working in teams because it gives her the opportunity to deal with different kinds of people, listen to other people's opinion and find the best way possible to communicate.

### *Olakunle Popoola, Chemical Engineering*

Olakunle is a third year Chemical Engineering major. He looks forward to applying the theories and concepts he has learned in the classroom in the work place. He is an enthusiastic worker, with experience in C++ programming, Microsoft Office and Matlab. He hopes to gain experience in consultant business, working experience and communication skills.

### *Nicole Reigle, Chemical Engineering*

Nicole Reigle is a Junior in the Chemical Engineering Department. One of Nicole's strong points is time management, which will help improve Land O' Frost's scheduling department. She would like to improve her skills in researching and process design.

### *Deepthi Veliyathuparambil, Chemical Engineering*

Deepthi Veliyathuparambil is a third year Chemical Engineering major. She hopes to apply her knowledge to this project and further develop her research skills. She is determined and hard-working and loves a challenge. She looks forward to improving her public speaking skills through this IPRO.

## Team Identity

Name: Land o' Frost Formulation Improvement

Logo:



Motto: Great Taste, Low Cost

## Team Purpose and Objectives

A. The purpose of this IPRO is to better understand the interdependent relationship of the Formulation process and its impact upon through time, productivity, and quality. We seek to implement improvements to Land O' Frost in order to optimize their Formulation.

B. Objectives:

- Identify all inputs, outputs, assets, process parameters
- Observe plant activities
- Learn 5S methodologies
- Identify bottlenecks
- Evaluate performance
- Suggest improvements to Formulation
- Offer an improvement in packaging
- Follow up on suggestions made last semester

## Background

A. This project is sponsored by Land O' Frost, a company that has been in the meat processing business for 50 years. Land O' Frost offers a variety of lunch meats: turkey, ham, beef and chicken. The family owned business is always looking for ways to improve its products.

B. The production process at Land O' Frost has two functions: Formulation and Packaging. The Formulation function encompasses ordering raw materials, blending the recipe of each meat product, curing and baking. Formulation is a complex process with many variables.

Land O' Frost desires to better understand the interdependent relationships of these variables and their impact upon through time, productivity and quality. This IPRO team will implement and improve the Formulation processes with the suggestions and knowledge of the previous semester.

C. This IPRO team plans to employ the 5S methodology to identify bottlenecks, evaluate performance and suggest improvements to Land O' Frost.

D. The main ethical issue involved while investigating the problems in the company is misuse of information. In this competitive market, discretion of acquired documents and recipes is vital for the survival of the company. Hence, IPRO team members must make use of all the information they acquire only to the advantage of the company. Respecting employees of the company is also crucial for this study.

E. Inefficient utilization of available resources not only costs the company fortunes, but also affects the market adversely. Efficient uses of resources can keep the market fueled by keeping employees in their jobs and by increasing output for consumption.

F. This IPRO team will study the problems identified by the past IPRO group and the associated suggestions. Afterwards, the team will implement the past suggestions or improve them depending on the situation in order to overcome the company's difficulties effectively.

G. Follow the 5S methodology in order to conquer the company's problems which will eventually improve the company's products and productivity.

H. The team will visit the plant to observe its process thoroughly.

### Team Values Statement

A. Team members will adhere to a professional attitude and mannerism at all times. Some desirable behaviors include respect (opinions, ourselves, and others), honesty, cooperation, mutual contribution, punctuality, open discussion and listening to others' ideas.

B. Conflicts that arise in the IPRO team can be addressed through open discussion, either in class or through iGroups. Group leaders will facilitate these discussions and ensure that they are kept in lines with the project at hand. Personal conflicts that arise will be handled first, above any others, as to not isolate, insult or disrespect anyone. Professor Lewis will be utilized, where necessary, to facilitate these conflicts (personal and IPRO-related) and give insight on team and group dynamics.

C. The team succeeds or fails together, not the individual. As such, each team member will strive to reach for goals that are for the good of the task.

## II. Project Methodology

### Work Breakdown Structure

Although, implementing the suggestions that were previously laid down by last semester's IPRO 345 would be our prime aim this semester, we will be taking a different perspective to achieve it. From the communication between our contact person at the plant and us, we have decided to work on 2 main projects this semester which will be as follows:

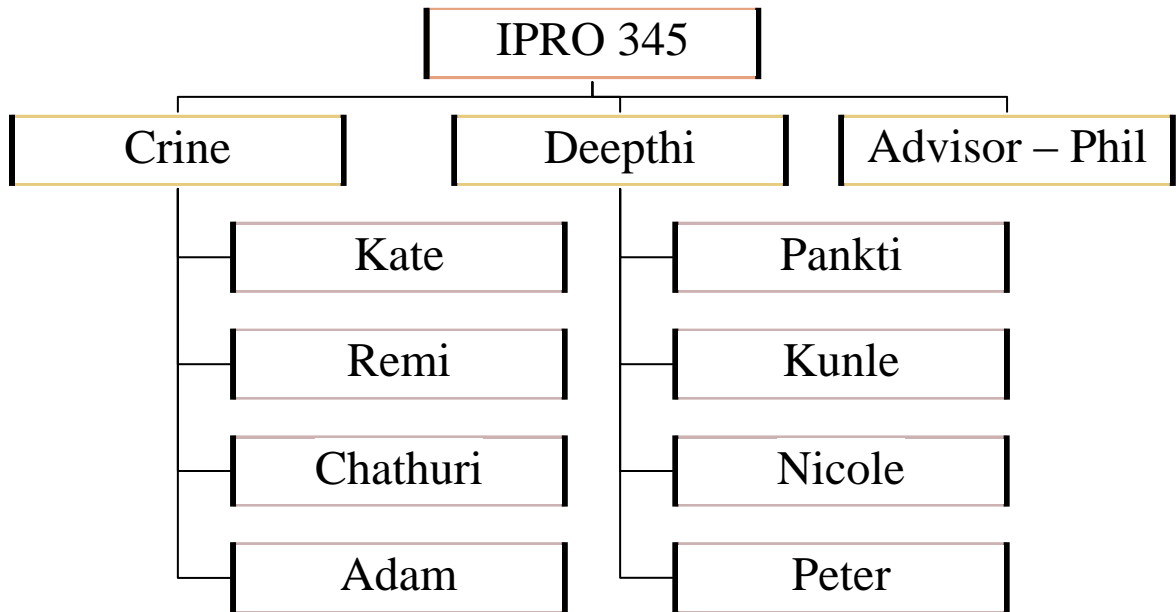
**1<sup>st</sup> Project:** This project will consist of tracking machine usage and frequency, general traffic flow, areas of congestion and the relationship between each machine as it relates to individual product lines. We will then compile a list of statistical data that can be analyzed in order to better organize the plants layout. The end of this project will require a proposed layout for the plant taking into account the primary product lines and specific areas of congestion. This project will consist of five team members.

**2<sup>nd</sup> Project:** Our second project would be to formulate the tools. In this project, we will catalogue different tools and note the best ones in practice from the feedback that we receive from the employees. We will then reduce the variety of tools within the plant. We will again have 5 members working on this project.

As a part of these two projects, we will be also researching on QualPro, a consulting agency that works with our sponsor. We will require this research to help us in our projects in order to ensure that we work parallel to their principles. We will be also incorporating the 5S methodologies to identify, eliminate and implement any inefficiency in the Land O' Frost's Formulation process in these projects. We expect to accomplish these projects by the end of this semester. In the case where we complete these projects ahead of time, we plan on studying areas which require further improvements.

Land O' Frost has been very cooperative and is enthusiastic about our project. We will strive to accomplish these projects by maintaining an open line of communication with our sponsor and ensuring communication between every member within the team. We expect to achieve all required tasks by the end of the semester.

Team Structure



Gannt Chart

Tasks	Start Date	Duration (days)	Members	End Date
Project Plan	1/27/2010	10	All	2/5/2010
Plant Visit	2/3/2010	1	All	2/3/2010
Midterm Review	2/22/2010	9	All	3/2/2010
Plant Visit	3/24/2010	1	All	3/24/2010
Ethics Reflective Report	3/15/2010	12	All	3/26/2010
Final Project Report (first draft)	3/22/2010	19	All	4/9/2010
Abstract/Brochure	4/5/2010	15	All	4/19/2010
Poster	4/5/2010	15	All	4/19/2010
Final Presentation	4/5/2010	19	All	4/23/2010
Final Project Report	4/12/2010	20	All	4/30/2010
Plant Final Presentation	4/19/2010	1	All	4/19/2010



Item	February				March				April				
	31-Jan	7-Feb	14-Feb	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar	4-Apr	11-Apr	18-Apr	25-Apr
Plant Visit													
Project Plan													
Midterm Review													
Ethics Report													
Final Project Report (first draft)													
Abstract/Brochure													
Poster													
Final presentation													
Final Project Report													

### Expected Results

A. The main goal of the project is process improvement, which will result in better and more efficient performance for our client, Land O’ Frost. As a team, the members will do the following activities:

- Collect new data from our client of their current assessments, combine them with what has been done or implemented by the plant and the previous IPRO team and come up with new ideas;
- Research failures and success stories of other plants of the same nature.
- Learn about the 5 S strategy implemented by Land O’ Frost, follow and apply the strategy in new deliverables;
- Analyze data through statistical method and use the results to seek out the best option;
- Make 6 visits to the site to familiarize ourselves with the processes and systems of the plant, disguising and receiving ideas from the current employees of Land O’ Frost, as well as listening to suggestion for improvement and possible implementations.

B. We expect to obtain the following data from research and testing:

- Cost effectiveness of current machines;
- Current machines on the market to find the best option in accordance with the cost effectiveness and the 5S of the plant;
- The plant’s current performance efficiency and potential efficiency;
- The average data of all the above in other plants in the meat processing business.

C. Potential products resulting from research include:

- A complete process map;
- An increase in performance efficiency;
- A higher potential efficiency.

D. Potential outputs to be produced include:

- Process map;
- Related fact finding;
- Process improvement suggestions.

E. The final product will involve a proposal including data analysis, possible statistical models, and specific suggestions on how to improve the processes of the plant with given evidence to the suggestions.

F. The challenges, risks and assumptions we anticipate affecting our results include:

- The team members lacking experiences in process improvement;
- Lack of knowledge on 5S;
- Lack of communication between team members that could slow down the progress of the project as a whole;
- Assuming that there is room for improvement when there might not be any, given the current environment;
- Suggestions for improvement that might have conflicts with the labor union the employees are a part of.

G. The results and proposal, if accepted by our client, will be applied to the Formulation part of the plant of Land O' Frost. If all goes according to plans, this will help increase the productivity and efficiency of the plant.

### Project Budget

Number of Cars	2
Total Miles per Trip	43.4
Reimbursement Rate*	\$0.50/mile
Estimated Number of Trips per Car	6
Total Reimbursement	\$260.4

### Designation of Roles

Minute Taker – Kate Baker

Agenda Maker – Pankti

iGroups Moderator – Deepthi