

IPRO 307 - Intermodal Container Facility Innovations for the Chicago Area with focus on Kankakee

I. Team Charter

A. Team Information

1. Team Roster

Raquel Alvarez
Panagiotis Bakos
Sarah Guan
Jaeha Jun
Miry Kim
Anna Kutryn
Cheryl Mcdermott
Lorenzo Perez
Yoshio Piediscalzi
Igor Seryapin
Erin Skvorc
Stephanie Soltesz
Nerijus Steponavicius
Philip Theisen
Bryan Woods
Jay You
Mourad Zgourdah
Matthew Pirkle
Faculty Advisor: Laurence Rohter

2. Our motto is “Run like a racecar,” referring to our group’s ultimate goal of providing quick, smooth and organized performance.

B. Team Purpose and Objectives

IPRO 307 is following the path of its predecessors in order to help improve the shipping transportations and facilities in Kankakee County, IL. While there have been other IPRO teams that have contributed to the modernization of the intermodal system at MI-Jack Shipping Company, our sponsor is now looking for us to further their research in this field. They would also like us to further the research in high speed intermodal along with a viaduct enhancement system.

One of our tasks is to select a location in Kankakee County to place the intermodal system. We have decided to break this into two locations with one being in-city and the other being out-of-city. Kankakee County has been selected because two major rail lines pass through it. There is also a highway that runs through the center of it. Therefore, it is an ideal

location for an intermodal yard. Also, there is a wind farm being built in Kankakee, so we will be able to save energy by thinking green.

In our selection process for a location, we may need to relocate some people. Therefore, our plan is to have affordable housing at our out-of-city location. We will design this affordable housing along with the warehouses and storage facilities, which go along with the design of an intermodal yard.

C. Background

I PRO 307 is sponsored by Mi-Jack Products based in Hazel Crest, IL (<http://www.mi-jack.com>). Mi-Jack Products is the largest manufacturer and operator of intermodal equipment and produces products that increase the efficiency of intermodal yards around the country. Because of the interest Mi-Jack Products have in the efficiency of intermodal yards, the company could benefit from proposals provided by I PRO 307 on the development of intermodal yards in Kankakee County.

Intermodal freight is the movement of containers and trailers by rail, truck or water carriers and is the fastest growing segment of the US freight rail industry. It stands as one of the most utilized ways to transport large shipments of cargo across the country. Most of this intermodal traffic is moved in containers. Chicago is the third largest intermodal port in the world and as a result, there are currently 19 intermodal yards in the Chicago region. These yards allow for approximately 700 miles of loading and unloading tracks over 2200 acres of land. Unfortunately, these intermodal yards often waste space and provide an influx of traffic to the surrounding area. As a result, intermodal yards can be inefficient, costing money to both rail road and trucking companies.

As a result of how fast intermodal freight is growing, container movement through intermodal freight is expected to double within 10 years. Instead of trying to expand the intermodal yards to allow for the increased amount of freight, our job is to select a new location in Kankakee County for an intermodal yard. The reason that Kankakee County has been selected is because two major rail lines pass through it. We are to use the existing crane technology as well as the use of loading buffers to create an efficient and effective intermodal yard.

When selecting a location in Kankakee County, there may be the need to relocate people. Therefore, we have developed an idea to provide affordable housing for them. The other issue that arises with big machinery is the safety of workers. Our design should be efficient, while preventing work injuries that would arise in a busy intermodal yard.

D. Team Values Statement

All team members are expected to:

- Treat all other team members with respect
- Be on time for meetings
- Come prepared to meetings

- Provide updates weekly on their project tasks
- Actively participate within the team
- Clearly articulate goals and accomplishments
- Share information through available technologies, such as Igroups

If a conflict should occur it will be handled in a professional manner. A resolution will be handled democratically under the leadership of the group leader.

II. Project Methodology

A. Work Breakdown Structure

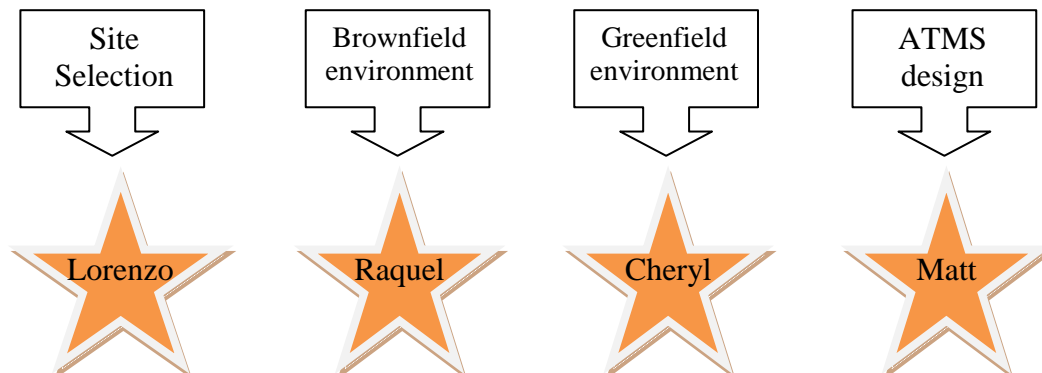
1. Define the problems:

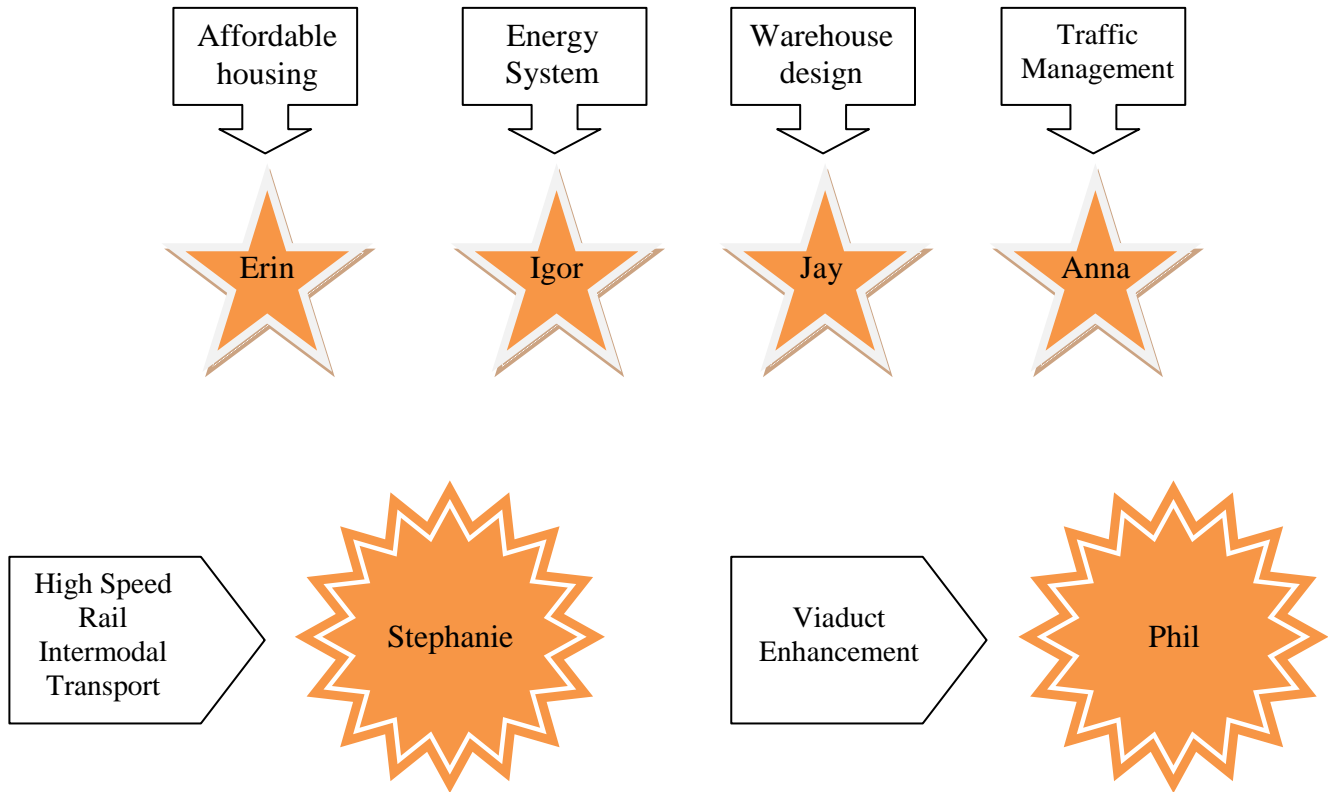
The initial task is to identify steps necessary for project culmination and to organize groups responsible for their completion. Our ultimate goal is to design 2 intermodal facilities for the Kankakee region— in-city and out-of-city—which will implement requested features. The project will include plans of site layout, ATMS (Automated Transfer Management Systems), chassis storage, affordable housing and warehouses. Additional concepts which are being explored within the IPRO are viaduct enhancement and high speed intermodal transport.

2. Team Structure:

Each meeting is run by a Meeting Leader, who was secretary at the prior meeting. These responsibilities rotate according to a schedule created at one of the initial meetings. Since organization is the key to team success, in case of absence of appointed leader/secretary the role is passed down to the next individual on schedule. This type of approach allows each member to experience the leadership position & provides a way for everyone to be involved in discussion. An agenda and set of notes are to be supplied for each meeting by the leader and secretary, respectively, and uploaded to appropriate folder on igroups.

Members will be divided into groups with designated leaders focusing on major areas of this project. These areas include: site selection, brownfield & greenfield environments, ATMS design, energy system, warehouse & affordable housing design, and traffic management. A foundation design group will be formed when that stage of the process is reached. Each week during the second meeting, the last 40 minutes will be devoted to group meetings. As to the conceptual models, each concept is to be further explored by a single individual throughout the semester.





To provide a satisfactory end product, **quality control** will be implemented depending on the task. In most cases, this will involve a review of prepared documents/calculations by an individual other than the author. Igroups will be used as an organizational tool to keep documents updated and filter out duplicate documents. In final stages of the project, estimation tools, which at this time are to be determined, will be required.

3. Work Breakdown

Major Tasks:

- Identifying possible site locations for both types of facilities
 - Determine possible zoning issues
- Designing site layout of each facility
 - Design of affordable housing
 - Standards of affordable housing in the area
 - Design of warehouses
 - Design of MEP Systems (Mechanical, Electrical, Plumbing)
 - Design of traffic
 - Research existing traffic system

Schedule

Task	Start Date	End Date	Team Members Needed	Hours Needed
Discussion of Project Scope	1/13/2011	1/20/2011	All	4
Group Organization & Task Assignment	1/20/2011	1/27/2011	All	4
Project Plan	1/25/2011	1/28/2011	4	4
Possible Site Locations	1/26/2011	2/1/2011	6	4
Traffic Assessment	1/27/2011	2/8/2011	2	5
Affordable Housing Assessment	1/28/2011	2/8/2011	2	5
Warehouse Design Research	1/28/2011	2/8/2011	2	5
Final Site Selection	2/1/2011	2/10/2011	All	2
Brownfield Environment Assessment	1/27/2011	2/17/2011	2	5
Greenfield Environment Assessment	1/27/2011	2/17/2011	2	5
ATMS Design	2/3/2011	2/17/2011	2	4
Energy System Research	1/28/2011	2/24/2011	3	5
Midterm Review	2/22/2011	3/1/2011	4	6
High Speed Rail Research	3/2/2011	4/14/2011	2	5
Viaduct Enhancement Research	3/2/2011	4/14/2011	3	20
Design of Site Layout	3/2/2011	4/19/2011	2	20
Design of Affordable Housing	3/2/2011	4/19/2011	2	20
Design of Warehouses	3/2/2011	4/19/2011	4	20
Design of Traffic Facilities	3/2/2011	4/19/2011	4	20
Abstract/Brochure	4/7/2011	4/25/2011	2	6
Exhibit / Poster	4/7/2011	4/25/2011	2	5
Final Oral Presentation	4/7/2011	4/27/2011	3	10
Final Report	4/7/2011	4/29/2011	3	8
Bold=IPRO Deliverable				
			Total Hours	192

B. Expected Results

- The design of two Intermodal Facilities
 - An out of city intermodal facility equipped with the ATMS and will also require an industrial park to be designed along with chassis storage. The total area of the facility would be 3,500 Acres
 - An in-city intermodal facility equipped with only the ATMS. Building the facility in-city might require the relocation of Kankakee residents; Affordable housing units will be designed.

- Determine the possibility of a high speed rail system that would be used for faster freight movement.
- Expand on the viaduct concept researched in the Previous IPRO.
 - Roads, High Speed Rail, and Freight Rail will be incorporated in the viaduct.

C. Project Budget

IPRO 307 Budget	
Description	Cost
Materials for viaduct model	\$ 150.00
Poster and Printing	\$ 600.00
Trip to Kankakee (50 Miles)	\$ 250.00
Total	\$ 1,000.00

D. Designation of roles

	<u>Name</u>	<u>Tasks</u>
1	Alvarez, Raquel	Brownfield Environment group leader
2	Bakos, Panagiotis	Energy System & Site Selection group member
3	Guan, Sarah	Brownfield Environment group member
4	Jun, Jaeha	Energy System group member
5	Kim, Miry	Site Layout group leader
6	Kutryn, Anna	Traffic management group leader
7	McDermott, Cheryl	Greenfield Environment group leader
8	Perez, Lorenzo	Site Selection group leader
9	Piediscalzi, Yoshio	Site Selection group member
10	Pirkle, Matthew	ATMS design group leader
11	Seryapin, Igor	Energy System group leader
12	Skvorc, Erin	Affordable Housing group leader
13	Soltesz, Stephanie	High Speed Intermodal head researcher
14	Steponavicius, Nerijus	Zoning & Site Selection group member
15	Theisen, Philip	Viaduct Enhancement head researcher
16	Woods, Bryan	Site Selection group member
17	You, Jay	Warehouse Design group leader
18	Zgourdah, Mourad	Site Selection group member

As stated above, assigned meeting role positions will be rotated through every member of the group at each meeting session.

Assigned Meeting Roles:

- Minute Taker – At each meeting the secretary position rotates between team members according to a previously set schedule.
- Agenda Maker – Just like the minute taker position, this position rotates between group members. This role is fulfilled by the note taker of the previous meeting.
- Time Keeper – This position is assumed by the Agenda Maker for the meeting they are running.
- Igroups Moderator – Individuals assigned to deliverables and other subtasks will be responsible for uploading their own work and/or research.
- Calendar Keeper – A single individual is responsible for keeping track of upcoming due dates and deadlines.