

# Midterm Report

## IPRO Team 307 Fall 2005

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Team Members:  
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## Revised Objectives:

The objective of this project is to evaluate the feasibility of Mi-Jack's Thru-port concept - which is a rail yard operated by computer controlled gantry cranes for intermodal container transfer between the major rail road companies. Eight tasks, each with its own leader, have been assigned to complete the objectives: Rail-line volume mapping, Website development, Fresh site evaluation, Recycled site evaluation, Brown field site evaluation, Animations, Environmental assessments, and Thru-port assessment.

The Volume Map subtask's goal is to create an electronic map using GIS software which contains information about the number of containers that are transported on every stretch of track in the region about Chicago. From this we will be able to see explicitly where the high traffic corridors are in relation to the potential sites for the Thru-port yard, and what potential impediments to easy transportation into and out of the sites are built into the existing rail infrastructure. This map will not only provide useful information in deciding between potential locations for the Thru-port sorting yard, but will be a useful reference for a variety of other intermodal projects in Illinois and the surrounding area.

The main objective for the website development subtask is to create and maintain an informative website that provides a general description of what we are trying to accomplish and how we are getting there.

The objective of the fresh site development subgroup is to evaluate a previously unused piece of land based on criteria decided by the group and compare the site to the recycled and brown field site.

The objective of the recycled site development subgroup is to evaluate a site that was previously a rail yard for the Thru-port idea. A switching yard owned by the Indiana Harbor Belt Railroad in Indiana was chosen to be evaluated.

The objective of the brown field site development subgroup is to evaluate the former Wisconsin Steel Works site as a possible location for the Thru-port rail yard. These former industrial sites that are now contaminated with industrial pollution are known as brown fields.

The objective of the animation subgroup is to design a working animation of the Thru-port concept and superimpose it on top of a site given previously built models from Mi-Jack. These animations will show the Mi-Jack cranes operating inside the Thru-port.

The objective of the environmental assessment subgroup is to design a list of environmental concerns and apply them to each of the three sites being evaluated.

The objective of the Thru-port assessment subgroup is to evaluate the Thru-port and know what will be required of each site to be able to hold the Thru-port concept and the impact the Thru-port will have on the intermodal industry.

## Results:

### **Rail Line Volume Mapping:**

- Constructed shape files for each individual railroad company's lines
- Coordinated high-definition satellite photographs of each yard
- Built map of entire Chicago area rail lines and facilities

**Website:**

- Designed a site of usable information that is easily accessible and usable
- Ensured that this website is maintained and correct throughout the semester
- Use site to keep records for further IPRO's use

Website URL: <http://www.iit.edu/~ipro307f05/>

**Fresh Site Evaluation:**

- Evaluated site in Rochelle for the Thru-port
- Designed a conceptual facility layout

Conceptual Facility Design

Please refer to the attached file - rochelle\_fresh\_site.dwg

**Recycled Site Evaluation:**

- Evaluating a switch yard in Indiana
- Created preliminary drawing of Thru-port coverage on site
- Environmental assessment of toxins

**Brown Field Site Evaluation:**

- Evaluated zoning at and around the site
- Created a conceptual track layout
- Assessing the major surrounding rail lines
- Dimensional analysis of site completed
- Preliminary evaluation of the site rehabilitation requirements and responsibilities

Conceptual Facility Design

Please refer to the attached file - wis-steel\_siteplan\_1.dwg

**Animation:**

- Rebuild Mi-Jack models
- Constructed VRML walk through models
- Reviewed original Mi-Jack animations

**Environmental Assessment:**

- Read previous environmental assessments
- Created a list of concerns to be addressed
- Found fresh site data in maps
- Found data layers of wetland locations
- Contacted groups to obtain data layers for site maps

**Thru-port Assessment:**

- Evaluated Thru-port layout and space requirements
- Evaluated Mi-Jack's cranes being used in Thru-port
- Created site evaluation spreadsheet to determine the best site
- Began development of cycle times and train scheduling

Thru-port and Crane summary

Please refer to the attached file – thruport.doc

**Updated Tasks:****Rail Line Volume Mapping:**

- Fix the shape files necessary to create maps
- Acquire the volume data and loaded into the files

**Website:**

- Revamp the menu system in such a way that this update process is easy
- Acquire a group picture of our team and advisors
- Create biography pages for each team member
- Continue inserting deliverables and project related material
- Acquire Google Earth flyover videos following major lines to the sites

**Fresh Site Evaluation:**

- Create track layouts from site to east and west coast lines

**Recycled Site Evaluation:**

- Cost analysis to renovate the existing site and incoming lines
- Create final site design

**Brown Field Site Evaluation:**

- Cost analysis to repair or increase the capacity of the rail lines coming to or from this proposed site
- Resolve all zoning related issues
- Visit proposed site to examine the Wisconsin Steel site firsthand
- Determine connecting nodes of existing tracks around site

**Animation:**

- Create usable VRML model
- Build or decide which animation will best display Thru-port concept

**Environmental Assessment:**

- Physical Impact analysis including traffic, noise, transportation conformity, and socio-economic impact analysis
- Obtain usable data layers from outside organizations
- Apply assessment criteria to each site being evaluated

**Thru-port Assessment:**

- Finish cycle time evaluation
- Determine best schedule based on cycle times and existing train schedules
- Complete site comparison spreadsheet

**Group:**

- Decide the best site based on the criteria created during the project
- Explain reasoning behind site decision

**Revised Schedule:**

November 1:	Physical Impact analysis including traffic noise Revamp the menu system Resolve all zoning related issues for brown field site
November 8:	Transportation conformity Acquire Google Earth flyover videos Visit and examine the Wisconsin Steel site Finish cycle time evaluation
November 15:	Get member biography pages up
November 17:	Final Report Draft Due
November 22:	Socio-economic Impact Analysis Create track layouts from fresh site to east and west coast lines Cost analysis to renovate the existing recycled site and incoming lines Create final recycled site design Determine connecting nodes of existing tracks around recycled and brown field site Determine best schedule based on cycle times and existing train schedules
November 24:	Complete site comparison spreadsheet Decide the best site
November 25:	Website URL Due
November 28:	Project Abstract Due, Practice Oral Presentation Give sponsor solutions for desired process
November 29:	Acquire volume data and incorporate it into the shape files Begin final considerations for website
November 30:	Final Oral Presentation (electronic file due) Professional Style Exhibit (electronic file due)
December 9:	I PRO Day – Project Presentation Final Report/Comprehensive Deliverables CD

December 5-12: IPRO Test Number Two

## Updated Assignments:

Each task before mentioned was assigned to one team member to complete, therefore, the assignments are the same as the updated tasks. The team member assigned to each task is as follows:

Team Leader	Paul Prusa
Rail Line Volume Mapping	Patrick Folz
Website Development	Brian Neiswander
Fresh Site Evaluation	Alija Hubjer
Recycled Site Evaluation	Doug Meyer
Brownfield Site Evaluation	Joshua Vogt
Animations	Alan Whitmore
Environmental Assessment	Purvi Patel
Thru-port Assessment	Christopher Tyson

## Obstacles:

The main obstacle of this project has been acquiring usable free data. Many organizations and companies data is proprietary and can not be distributed for use. Most of the data that is proprietary is not readily accessible to the outside public and requires contacting the organization, this results in waiting for responses and data to be given. Cooperation between the major train companies has never been the greatest so data that can be found, if any, is only for individual companies. Due to this uncooperative attitude not many full rail maps or data have been created or are creatable.

The Thru-port concept is almost ten years old and has not been revised much in the recent years. Most of the data corresponding to the Thru-port is buried deep inside Mi-Jack or proprietary causing problems using and receiving data.

A smaller, but still mentionable obstacle, is finding up to date material. As an example, our aerial photos of the Wisconsin Steel site show a long conveyor belt running through the site, but recently it was found that the conveyor was torn down.