Automated Shipping Container Transportation System Design
IPRO 307 Project Plan
September 15, 2005

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Team Members:
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OBJECTIVE:

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.

BACKGROUND:

For the United States, substantial numbers of shipping containers must be transferred from one side of the country to the other. As the major highway and railroad crossroads, Chicago is the third largest intermodal port in the world. For various reasons, substantial numbers of intermodal transfers also take place. In many instances, containers are even moved from one railroad to another by truck. Chicago has exhausted its street, highway, and rail capacity, in recent years, with meteoric container growth expected to continue. Congestion has skyrocketed with attendant increases in pollution.

The first semester IPRO team researched possible solutions for this problem. They developed preliminary designs for an elevated inter-yard transportation system and integrated an intra-yard GRAIL (Grid-Rail) system that utilizes linear induction motor technology. Second semester's team, analyzed the inter-yard network, estimated its costs, and drafted a detailed GRail shuttle design and shuttle flow chart. This group also specified a core and alternative regional connector network. Last semester's team further refine the concepts by proposing an actual working scenario for several specific yards, propose an inter-yard connection which considers the real world obstacles going through an existing urban area, and provide a detailed design and structural analysis for these two distinct systems.

This semester's team will evaluate a concept designed by Mi-Jack Products called Thru-port. Thru-port is a concept designed to help decrease the travel time of a container through Chicago by bringing all the major rail road company's trains with containers destined for other cities to one location. At this location the containers will be moved from train to train, decreasing the need for containers to be placed on trailers and driven

through Chicago to other rail yards, thus alleviating traffic congestion, pollution, fuel consumption, and road restoration costs. This semester's team will evaluate possible locations and site designs for the Thru-port concept and the impact it will have on the entire transportation industry.

METHODOLOGY AND EXPECTED RESULTS:

This section consists of the following issues of emphasis for this project:

Site Evaluation:

- Evaluate possible locations for the Thru-port
- Determine the accessibility to the Thru-port from major rail lines
- Determine rail road and site ownership
- Evaluate site conditions; dimensions, environment, zoning

Economic Feasibility:

- Compare land cost to the cost of building rail road connections
- Determine land rehabilitation, demolition and building costs
- Compare cost to put each possible site into operation

Website:

- Design a site of usable information for anyone who visits
- Use site to keep records for further IPRO's use

Long-Term Assessment:

- Determine the traffic diverted off streets, expressways and highways
- Evaluate impact on environment
- Determine time and fuel savings

Project Requirements:

- Delineate and divide various responsibilities among team members
- Develop and maintain up-to-date and thorough representations of the team's progress and milestones
- Continuing monitor individual participation and performance to ensure everyone gets a sufficient background of all aspects of the project

TIMELINE of MILESTONE EVENTS:

Deadline	*Tasks*
Aug 29	Organize group, discuss project plan and project objectives
Sept 27	Visit an existing rail yard
Sept 31	Finalize Project Plan
Oct 21	Mid-Term Progress Report Due
Nov 17	Final Report Draft Due
Nov 25	Website URL Due

Nov 28	Project Abstract Due, Practice Oral Presentation
	Give sponsor solutions for desired process
Nov 30	Final Oral Presentation (electronic file due)
	Professional Style Exhibit (electronic file due)
Dec 9	IPRO Day – Project Presentation
	Final Report/Comprehensive Deliverables CD
Dec 5-12	IPRO Test Number Two

RESPONSIBILITIES:

Project Aspect:	Task Leader:
Team Leader	Paul Prusa
Field Trip Report/Animations	Alan Whitmore
Rail Road Volume Maps	Patrick Folz
Thru-port Design	Christopher Tyson
Website	Brian Neiswander
Indiana Site Evaluation	Doug Meyer
Wisconsin Steel Site Evaluation	Joshua Vogt
Environmental Evaluations	Purvi Patel
Fresh Site Evaluation	Alija Hubjer

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