

# I PRO 305: Trailer Loading Optimization Group

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*Project Plan*

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## Team Charter

### 1. Team Information

#### A. Team Member Roster

Name	Major	Email	Phone Number
Buakong, Nuntana	INTM	nbuakong@iit.edu	██████████
Hinshaw, Benjamin	Computer Engineering	bhinshaw@iit.edu	██████████
Liu, Xingshuo	Business Administration	xliu70@iit.edu	██████████
McKeever, Sean	Computer Engineering	smckeev@iit.edu	██████████
Patel, Nixalkumar	INTM	npate147@iit.edu	██████████
Pekalski, Tom	ECE	tpekalsk@iit.edu	██████████
Shah, Parth	INTM	pshah44@iit.edu	██████████
Surendran, Prashanthan	Electrical Engineering	psurend1@iit.edu	██████████
Taylor, Donald	CS	dtaylor9@iit.edu	██████████
Veitch, Robert	CS	rveitch@iit.edu	██████████

#### B. Individual Strengths, Needs, and Expectations

Name	Strengths	New Knowledge/ Skills to Develop	Overall Expectations
Buakong, Nuntana	<ul style="list-style-type: none"> <li>• Knowledge in supply chain management</li> <li>• Analytical and research skills</li> <li>• Familiar with software ( MS Office, SPSS)</li> <li>• Programming</li> </ul>	<ul style="list-style-type: none"> <li>• Exposure to IT implementation project</li> <li>• Presentation Skills</li> </ul>	<ul style="list-style-type: none"> <li>• Develop project management Skills</li> <li>• Develop networking contacts</li> <li>• Enhanced working experience with a company</li> </ul>
Hinshaw, Benjamin	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Hard Working</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation skills</li> <li>• Leadership development</li> </ul>	<ul style="list-style-type: none"> <li>• Want to program a product that will actually be useful in everyday operations.</li> </ul>
Liu, Xingshuo	<ul style="list-style-type: none"> <li>• Problem solving skills</li> <li>• Hard working</li> <li>• Business perspective</li> <li>• Communication</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership development</li> <li>• Working experience with real projects</li> </ul>	<ul style="list-style-type: none"> <li>• Develop the product the company wants while learning to work with people more and gain</li> </ul>

Name	Strengths	New Knowledge/ Skills to Develop	Overall Expectations
	<ul style="list-style-type: none"> <li>• Teamwork</li> </ul>		some experience.
McKeever, Sean	<ul style="list-style-type: none"> <li>• Dedicated to the task at hand</li> <li>• Very organized</li> <li>• Very good at presenting</li> </ul>	<ul style="list-style-type: none"> <li>• Delegation of tasks</li> <li>• Develop trust w/ the members I work with in order to accomplish the goal(s)</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a practical application that will increase efficiency and has the potential for expansion in the future for our sponsor DSC logistics.</li> </ul>
Patel, Nixalkumar	<ul style="list-style-type: none"> <li>• Programming</li> <li>• Engineering Graphics</li> <li>• Supply chain logistics</li> </ul>	<ul style="list-style-type: none"> <li>• Presenting</li> <li>• DSC systems</li> </ul>	<ul style="list-style-type: none"> <li>• Gain experience towards career</li> <li>• Develop industrial skills</li> </ul>
Pekalski, Tom	<ul style="list-style-type: none"> <li>• Organized</li> <li>• Leadership</li> <li>• Getting tasks done on time</li> </ul>	<ul style="list-style-type: none"> <li>• Communication and presentation skills</li> <li>• Interpersonal skills</li> </ul>	<ul style="list-style-type: none"> <li>• Want to develop a product that will actually be implemented and improve the overall efficiency.</li> </ul>
Shah, Parth	<ul style="list-style-type: none"> <li>• Strong communication and presentation skills</li> <li>• Good with supply chain and logistics</li> <li>• Great skill using MS Office and especially MS Visio</li> </ul>	<ul style="list-style-type: none"> <li>• Teamwork</li> <li>• Interpersonal skills</li> </ul>	<ul style="list-style-type: none"> <li>• Experience the real industry scenario.</li> <li>• Gain knowledge from team members with different background.</li> </ul>
Surendran, Prashanthan	<ul style="list-style-type: none"> <li>• Experience in programming a real web based application for IIT.</li> <li>• Strong programming skills in JAVA and familiar with a few other programming languages such as C#.Net, Scala, C, C++.</li> <li>• Experienced developing software in previous IPRO.</li> </ul>	<ul style="list-style-type: none"> <li>• Teamwork</li> <li>• Presentation skills</li> </ul>	<ul style="list-style-type: none"> <li>• Expect to create a working software design, or at least a well developed architecture</li> </ul>
Taylor, Donald	<ul style="list-style-type: none"> <li>• Programming</li> <li>• English</li> <li>• Marketing</li> <li>• Mathematics</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation skills</li> </ul>	<ul style="list-style-type: none"> <li>• To apply principles of planning and engineering to developing a business-</li> </ul>

Name	Strengths	New Knowledge/ Skills to Develop	Overall Expectations
			class software product.
Veitch, Robert	<ul style="list-style-type: none"> <li>• Programming</li> <li>• Web programming</li> <li>• Databases</li> <li>• Team player</li> </ul>	<ul style="list-style-type: none"> <li>• Improve communication skills</li> <li>• Learn packing algorithms</li> <li>• Become better organized</li> </ul>	<ul style="list-style-type: none"> <li>• I want us to develop a fully functioning product that DSC will be happy to use.</li> </ul>

### **C. Team Identity**

#### **1) Name**

Trailer Loading Optimization Group (TLOG)

#### **2) LOGO**



#### **3) Motto**

We are ready for anything!

## **2. Team Purpose and Objectives**

### **A. Mission Statement**

To provide an efficient software solution for DSC logistics

### **B. Team Vision**

A working product that would maximize efficiency of loading trucks while minimizing mistakes

### **C. Team Objectives**

- Create a software solution to manage trailer loading process, which reduce time, costs, and improve efficiency.
- Increase overall performance of operations and organization through the software solution.

- Establish a unified trailer loading procedure to be ready for the company to implement.
- Create a team-based learning environment in which students from various concentrations and work effectively as a team to achieve the goals.
- Meet the objectives of the course.

### **3. Background Information**

DSC Logistics, a third party logistics company with several warehouses nationwide, operates as the distribution center for many companies of various sizes and locations across the United States. They currently have a number of computer systems available for processing incoming product, and storing and tracking the product efficiently. What DSC currently lacks is a solid system for efficiently loading product on to its trucks in preparation for shipment to its customer's locations.

The trailer loading process has been performed manually by skilled technicians who rely on experience to efficiently load the trailers. Solutions exist for automating the trailer loading process, but DSC has the unique problem of serving a variable number of customers, with varying needs, which may change relatively rapidly, rendering existing solutions less than adequate. In addition, DSC needs a product which can interface with its custom WMS (Warehouse Management System), which existing general purpose products will not be able to do.

By developing a trailer loading solution for DSC, we will be providing them with a more efficient way to operate, which will reduce waste, increase productivity and speed of delivery, and provide a better working environment for its employees. While researching existing trailer loading technologies and using the knowledge gained to create our own solution, we will have to take care to provide a solution that does not copy or infringe upon any existing product.

### **4. Team Values Statement**

	<b><u>Accountability</u></b>	<b><u>Communication</u></b>	<b><u>Attitude</u></b>	<b><u>Teamwork</u></b>	<b><u>Flexibility</u></b>
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<b>A</b>	Always shows up to meeting, has what's required finished and on hand, does his or her part	Always sending out information, keeps the group informed of all actions, responds promptly to requests	Always upbeat, focused on the job at hand, takes pride in what he/she contributes (very focused)	Willing to work with others, ask for help when needed, willing to help with anything that needs to be done	Willing to adapt to problems, looks for ways to solve/prevent them, tries to work through the problem
<b>B</b>	Shows up to meetings, completes work assigned, performs most of his/her job duties	Always sending out information, keeps the group mostly informed of all actions, responds late to requests	Cares for the project, focuses on the project, contributes just enough to the project	Willing to work with others, doesn't really ask for help when needed, willing to help with anything that needs to be done	Willing to adapt to problems, looks to others for ways to solve/prevent them, tries to work through the problem
<b>C</b>	Shows up to meetings, completes sub-average work, performs only a few of his/her job duties	Sends out some information, doesn't let every know what he/she is doing, responds late to requests	Cares some for the project, constructive help, and focus for the project	Works at the request of others, doesn't really ask for help when needed, willing to help with anything that needs to be done	Struggles to adapt to problems, looks for ways to solve/prevent them, doesn't really to work through the problem
<b>D</b>	Shows up every now and then, completes very little work, does not do his or her job	Writes very few emails, sends out very little information, does not respond promptly to requests	Doesn't care, has some constructive words, trouble focusing on the project	Works at the request of others, doesn't really ask for help when needed, doesn't off to go above and beyond	Unwilling to adapt to problems, looks to others for ways to solve/prevent them, doesn't really work through the problem
<b>E</b>	Never shows up, never completes work, unwilling to perform job duties	Never writes emails to keep group informed, does not contribute to ideas, does not	Doesn't care, has nothing constructive to say, does not focus on the project	Tries to do everything alone, never consults with the group, always does	Unable to adapt to changes, makes no effort to adapt, just doesn't try

		respond promptly to requests		his/her own thing	
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## II. Project Methodology

### 1. Work Breakdown Structure

#### A. Problem Solving

Step 1: Problem Definition

Step 2: Brainstorm solutions

Step 3: Delegate the tasks

Step 4: Implement solutions, compare the solution to the problem

(testing), analyze the results and document them in files in iGroups.

We will go to DSC in the fifth week of the semester in order to better identifying the problem and do more observations. Based upon what we learn at DSC, we will strive to make accommodations and exceed the expectations.

#### B. Team Structure

- 1) Research Team** - Xingshuo Liu (Team Leader), Parth Shah, Patel Nixalkumar , Buakong Nuntana, Tom Pekalski

This team is responsible for communications between DSC and the rest of the group. The first step of the research team is to look at existing software and solutions for trailer loading optimization. After enough information is gathered this team will evaluate the best solution for DSC's warehouses. Throughout the term of the project the team will constantly re-evaluate strategies and solutions. In collaboration with the Technical Team this team will constantly work on improving the software to reach a finished product within the given deadline.

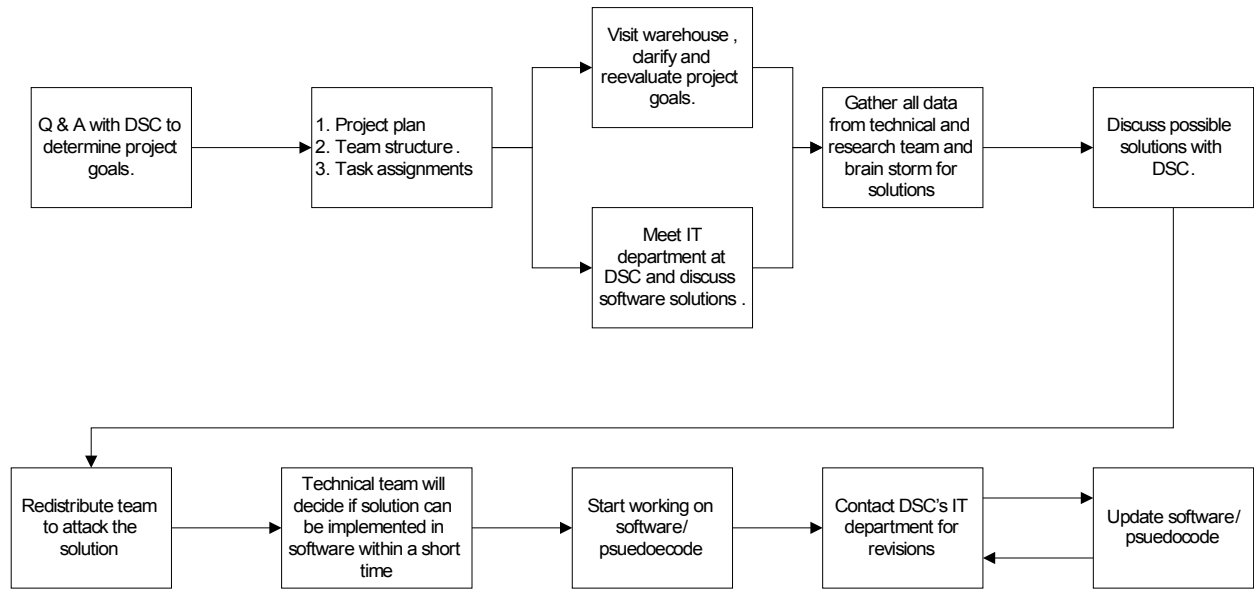
- 2) Technical Team** – Donald Taylor (Team Leader), Prashanthan Surendran, Robert Veitch, Sean Mc Keever, Benjamin Hinshaw



This group of students will be in direct contact with the IT department at DSC. They will be responsible for first deciding if the final product will be a completed software application or simply a prototype that would be later implemented by DSC's IT department. The main responsibility following this step will be deciding the features of the application. This will be done in collaboration with the research team. Given that the team is to develop a finished product, the Technical team will decide on the platform and language for the application. The final task of the technical team will be to write the code or pseudo-code (whichever is chosen).

If it is decided that the finished product will be delivered as pseudo-code there should not be a problem meeting the deadline. Given that DSC requests a final product which will be some form of software, this team will put its maximum effort to complete the software design. In this case the project might carry on to the next semester. Once we gather more details about the project from DSC, we may decide to subdivide the team further. We also plan on creating a small sub team which will be in charge of IPRO-DAY. This team will be responsible for completing the poster and making sure that the rest of the team completes their respective tasks before IPRO-DAY.

### **C. Work Breakdown**



## **2. Expected Results**

The IPRO 305 team expects to create an easy-to-use, affordable, graphical trailer loading optimization software. User will be able to input or upload the following data from company WMS database to the software:

- Truck size and weight,
- Pallet size and weight,
- Product quantity,
- Product identification,
- Loading and unloading order.

The software will be able to calculate total weight limit, loading and unloading priorities, loading space needed for shipment, and loading optimization level.

A principle goal of the software is to be able to:

- Reduce costs of shipping processes by accurate loading and fast shipment,
- Reduce time spending on loading and unloading products,
- Improve stability of products,
- Access information in real-time,
- Unify trailer loading process across the operating divisions,
- Minimize human errors from loading/ unloading wrong products,
- Upload outputs to company WMS or TMS systems,

- Improve trailer loading performance of employees,
- Improve trailer loading efficiency.

### **3. Project Budget**

Transportation to and from DSC Logistics warehouse in Des Plaines, Illinois

- \$200

### **4. Designation of Roles**

- Team Leader/Agenda Maker- Robert Veitch
- Minute Taker/Secretary- Tom Pekalski
- iGroups Coordinator- Xingshu Liu
- Time Keeper- Benjamin Hinshaw