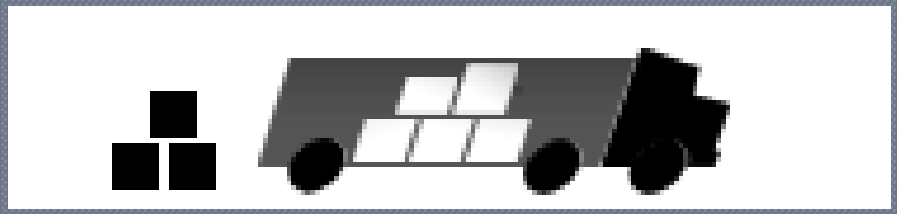
IPRO 305: Trailer Loading Optimization Group

Advisor: Herb Shields

Sponsor: DSC Logistics

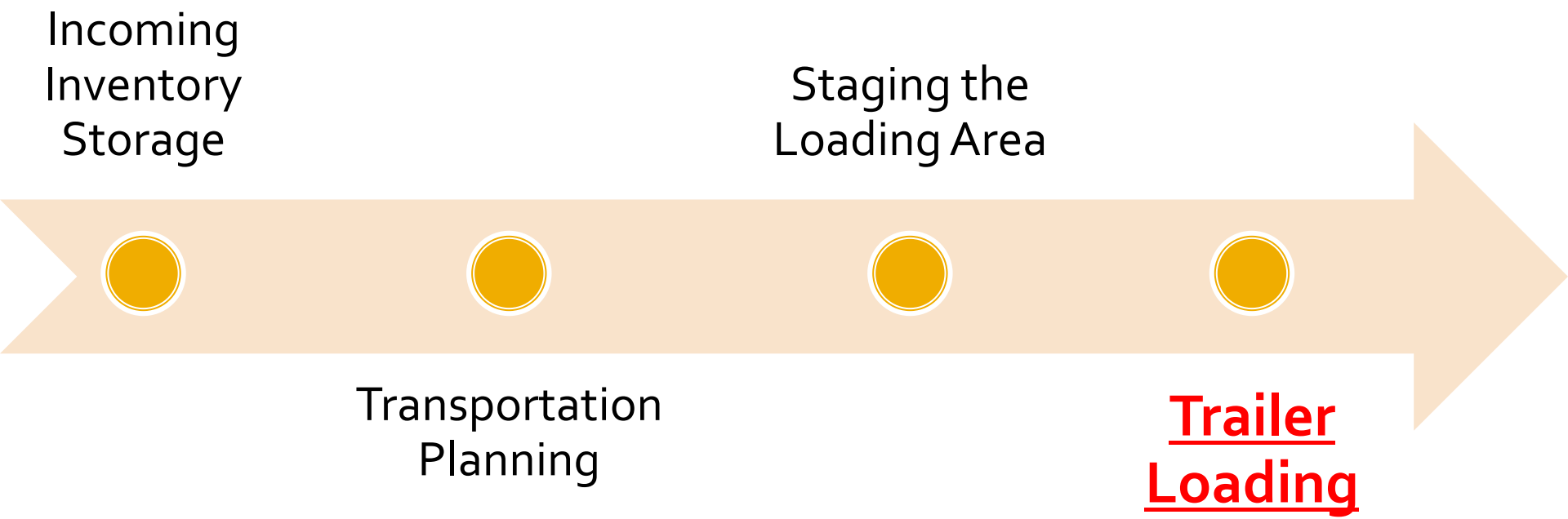


DSC Logistics

- Founded 1960 in Chicago
- Current CEO: Ann Drake
- Logistics and Supply Chain Management
- About 2000 Employees
- Warehouses Nationwide

DSC
LOGISTICS AND
SUPPLY CHAIN MANAGEMENT
ready for anything!

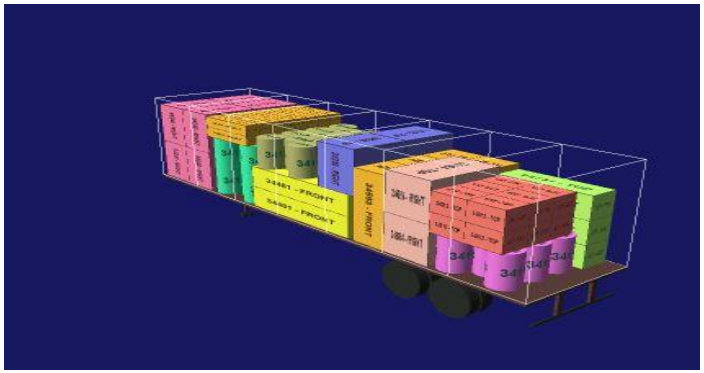
Problem Statement



Our Goal

- To provide an efficient software solution for DSC Logistics.

Main Factors:



- Order Stops
- Weight Distribution
- Orientation/ Stack-ability

Team Structure

Research Team

- Xingshuo Liu (Sub Team Leader)
- Nixalkumar Patel
- Nuntana Buakong
- Parth Shah
- Tom Pekalski

Technical Team

- Donald Taylor (Sub Team Leader)
- Robert Veitch (Team Leader)
- Benjamin Hinshaw
- Prashanthan Surendran
- Sean McKeever

Documentation

- Team minutes
- Igroups
- Conference calls
- Regular meeting
- Sub-team meeting

Ethical Issues

- Privacy of the Company
- Non-Disclosure Agreement
- Legal Legislation vs. Customer Satisfaction

Obstacles & Challenges

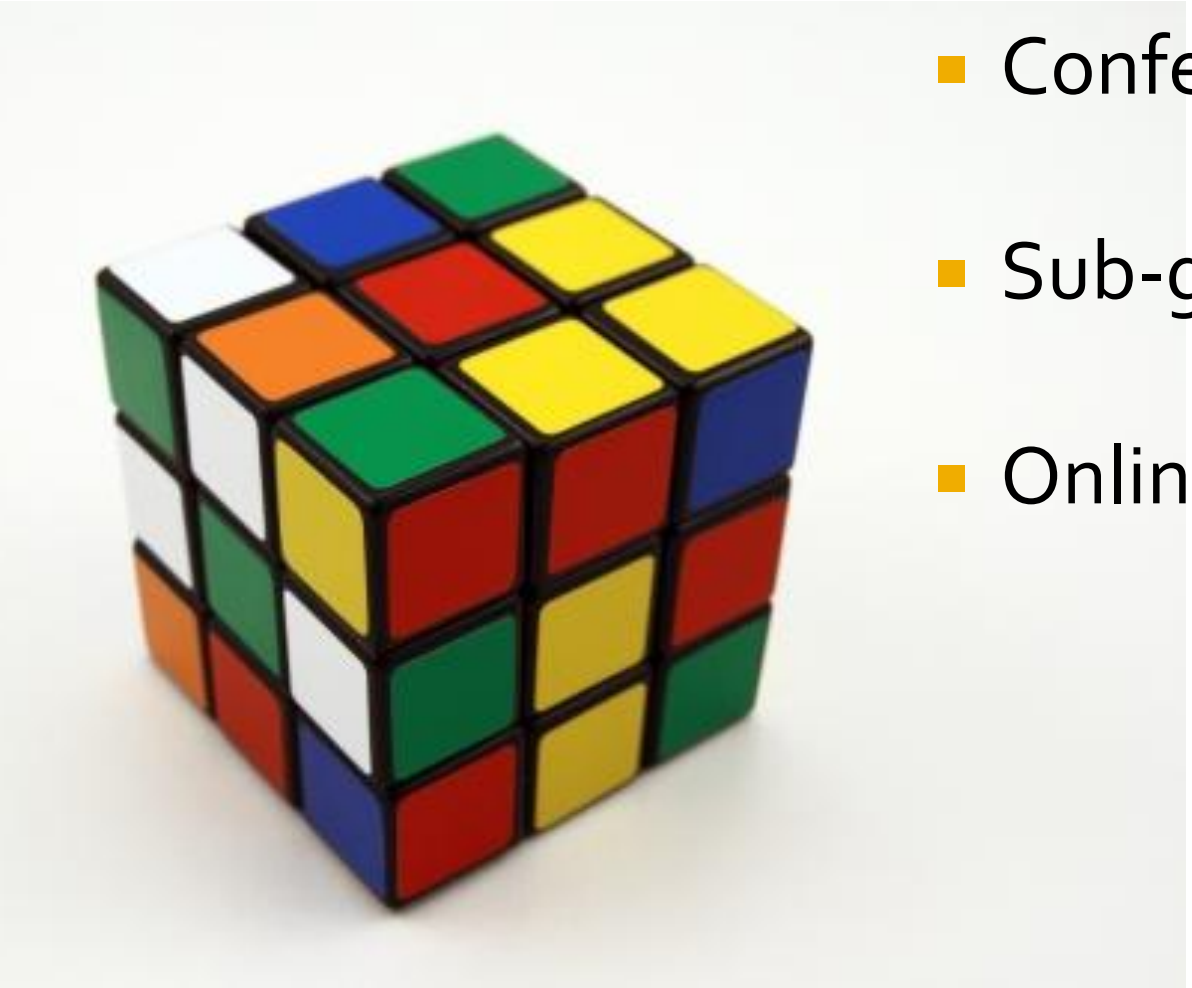
- Converting intuition into rules
- Adaptability of the software
- Constant upcoming problems
- Time constraint

Initial Research

- Reviewing existing technologies.
  - How they operate
  - Their functions/features

- Built software from ground up
  - Requirements/specifications
  - Easy user interface
  - Cost-efficient
  - Customization
  - Integrate with DSC's WMS and TMS systems

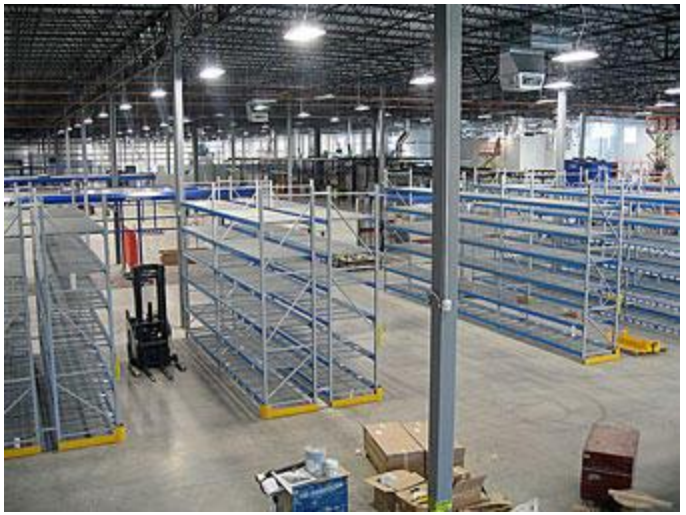
Problem Solving

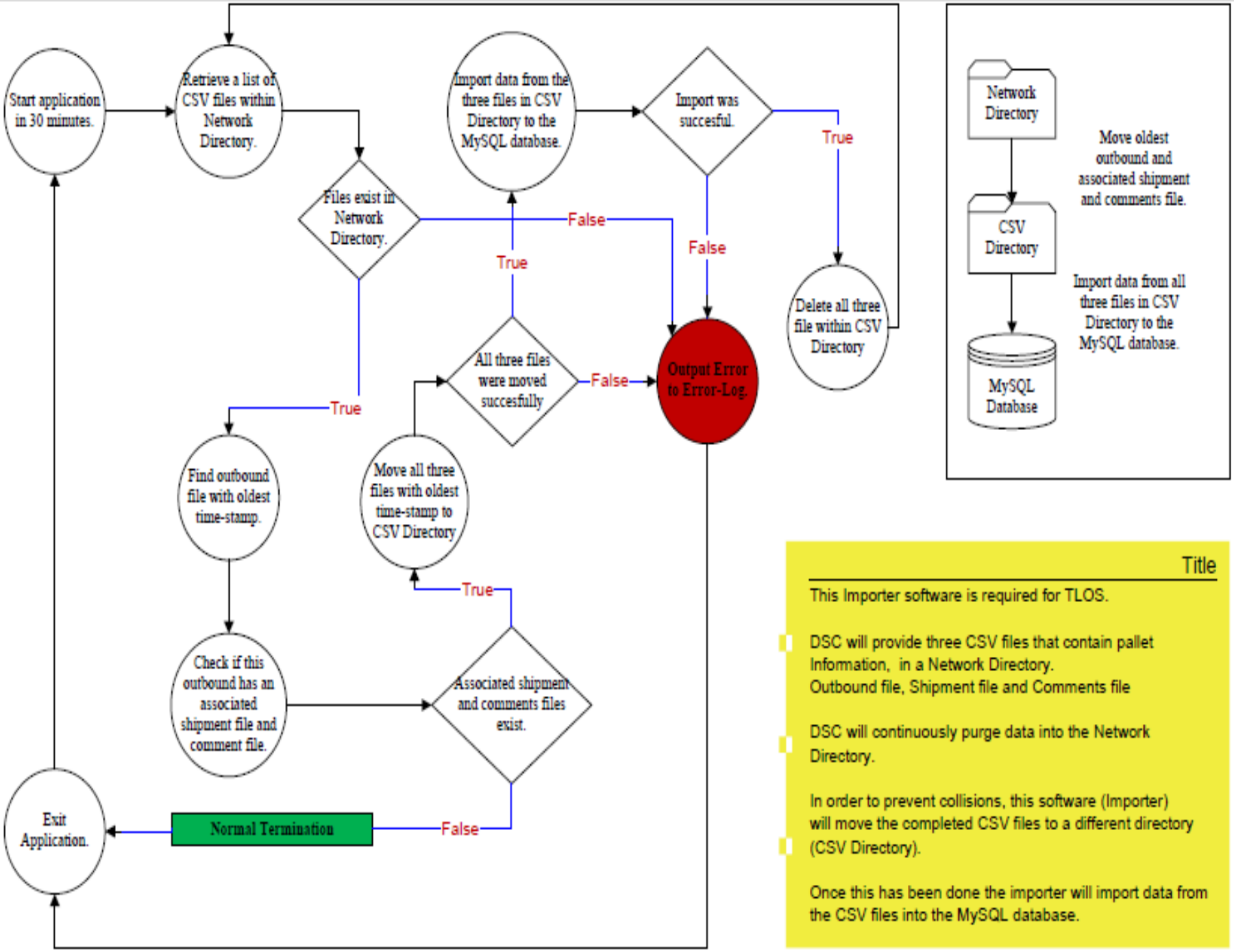


- Conference calls
- Sub-group meetings
- Online Resources

Warehouse Visit

- Visiting DSC
- Start working on the algorithm



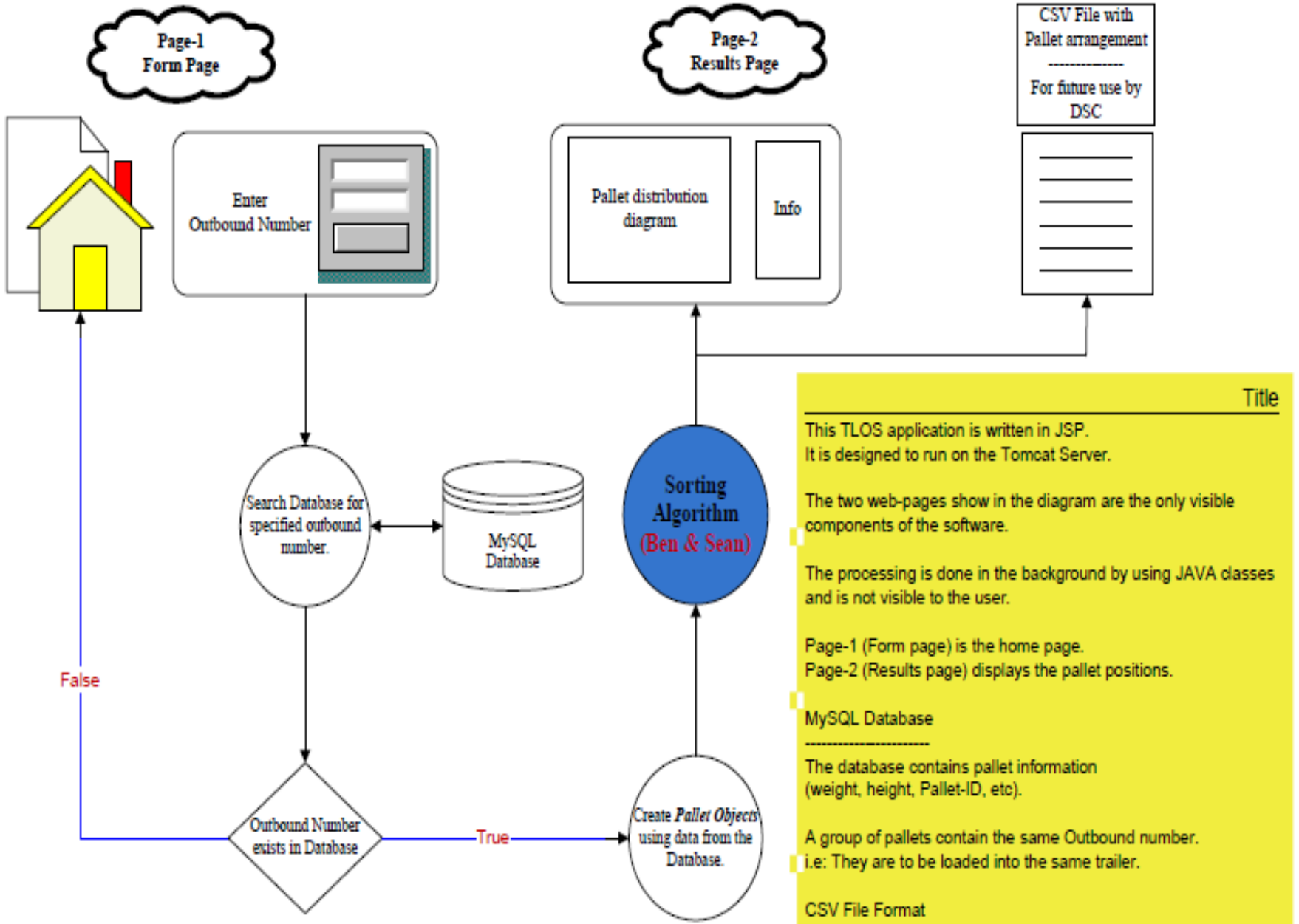


Title

This Importer software is required for TLOS.

- DSC will provide three CSV files that contain pallet Information, in a Network Directory.
  Outbound file, Shipment file and Comments file
- DSC will continuously purge data into the Network Directory.
- In order to prevent collisions, this software (Importer) will move the completed CSV files to a different directory (CSV Directory).

Once this has been done the importer will import data from the CSV files into the MySQL database.



Title

This TLOS application is written in JSP.
It is designed to run on the Tomcat Server.

The two web-pages show in the diagram are the only visible components of the software.

The processing is done in the background by using JAVA classes and is not visible to the user.

Page-1 (Form page) is the home page.
Page-2 (Results page) displays the pallet positions.

MySQL Database

The database contains pallet information
(weight, height, Pallet-ID, etc).

A group of pallets contain the same Outbound number.
i.e: They are to be loaded into the same trailer.

CSV File Format

The application also outputs a CSV file as shown.
The CSV file includes the same pallet positions displayed on page-2 for future use by DSC.

Algorithm

- HTML, Java script, CSS
- Background Script
- Processor Script
- Installer Script

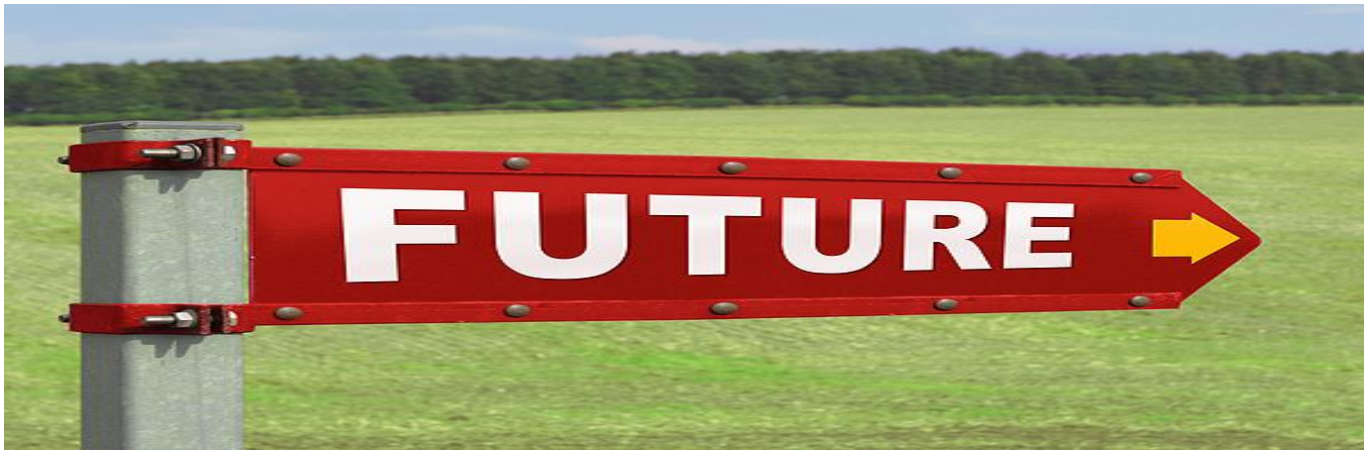
Web Based User Interface

Added Value

- Avoid overweight fines and associated costs
- Minimize labor time
- Axle weight calculation help minimize transient damage
- Minimize cargo damages
- Reduce transportation costs

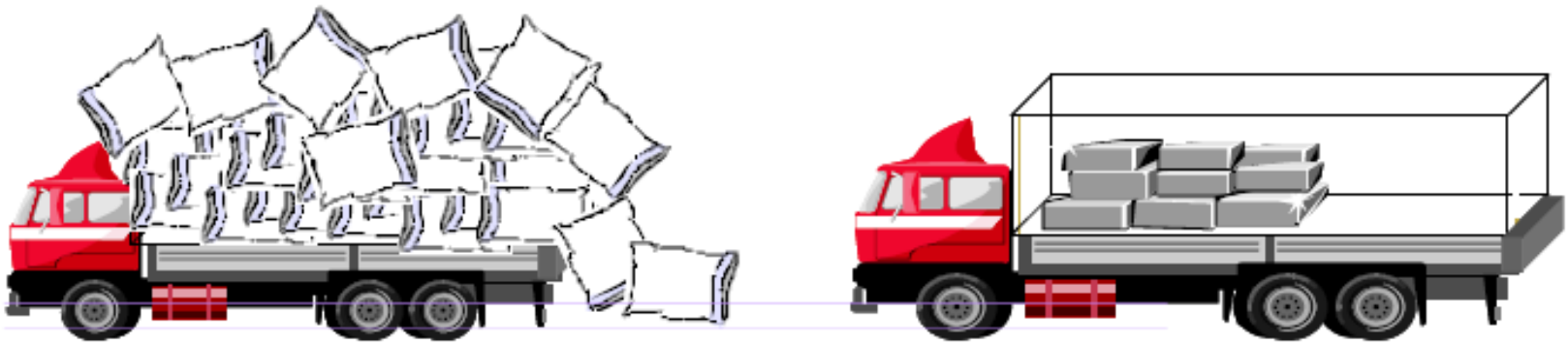
Future Applications

- Increase Adaptability
- Secure Login
- Dynamic Sorting Algorithm



Conclusion

- A more efficient way to operate
- Reduce waste
- Increase productivity and speed of delivery
- Provide a better working environment



Questions