

# Raw Material Inventory Process Improvement



Department of Industrial Engineering

**Team IENG02** 

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Cascading Style Sheet (CSS)

#### Introduction

FACULTY OF ENGINEERING

Michelin is a world-renowned tire manufacturing company, with three locations in Nova Scotia. This project is completed at the Pictou County plant. The Pictou County plant is the only plant in Nova Scotia that manufactures rubber for the tires and builds the tires.

Days Until Each Shipment 3

Shipment Status Delayed OnOrder Shipped

Shipment

#### **Problems with Current State**

- Shipment Tracking:
  - To track shipments, suppliers must be contacted by phone or email.
  - Can take 3-8 hours to track shipments.
- Review of Inventory Levels:
  - Data can be found on multiple different databases.
  - Format of the data is not easy to use.
  - Can take 2-3 hours per database to review all the data.

# **Project Scope**

- Shipment Tracking:
  - Eliminate need to contact suppliers.
  - Create an easy-to-use application for suppliers and Michelin.
- Review of Inventory Levels:
  - Extract, transform and load the data into MS Power BI.

### **Tools Used**

Shipment Tracking: **Front-end Back-end** HyperText Markup Language (HTML) MySQL

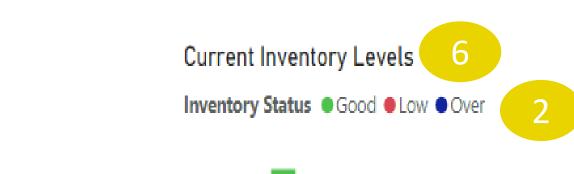
Construction of Dockhoord

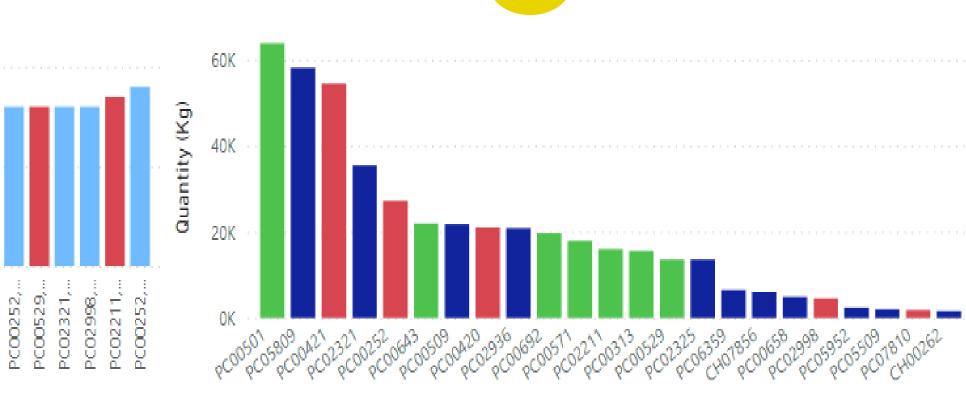
HyperText Preprocessor (PHP)

Construction of Dashboard:	
Extract	Transform & Load
SOI	DAX

JavaScript (JS)

#### Dashboard Design Days Left of Use Based on Current Inventory Levels Inventory Status ● Good ● Low ● Over Material Reference Inventory Status Over PC00420 PC00501 Family Code PC00529 PC00643





Material Reference

PC00252

PC00313 PC00420

PC00421 PC00501

PC00509

PC00529 PC00571

PC02325



600525 602803 60045, 60535, 60020, 600313 60021, 600450 600203 600203 60532 605322 605388 600253 60028 602803 601810 60045

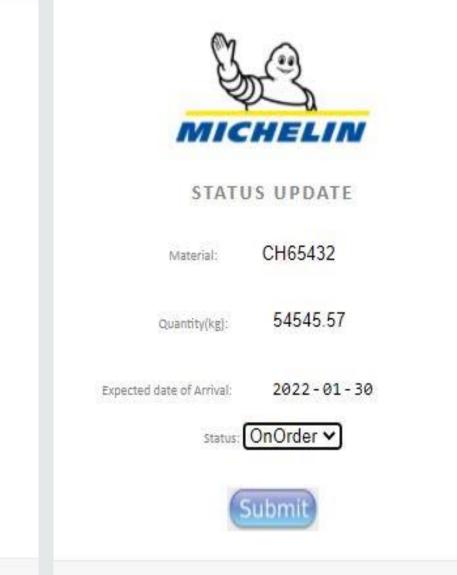
# Dashboard Design Details

- This visual uses the current inventory levels and consumption to calculate the days left of consumption per chemical.
- 2. The colour-coding is done as follows:
  - Red: Below minimum inventory.
  - Green: Between minimum and maximum inventory levels.
  - Blue: Above maximum inventory.
- This visual displays the remaining days until the arrival date per shipment.
- The colour-coding is done as follows:
  - Red: Delayed.
  - Light Blue: It is on order.
  - Green: It has been shipped.
- Click on a bar to view the quantity of expected material in kilograms.
- 6. This visual sums the current inventory per chemical by kilograms.
- User can filter by "Family Code", "Material Reference" and "Inventory Status".
- 8. This visual sums the current inventory per chemical by kilogram and displays it against the minimum and maximum stock levels.
- Review point 2 for the bar colour coding. The lines represents:
  - Red: Minimum stock level
  - Blue: Maximum stock level.
- 10. This visual displays the estimated inventory levels in the future, assuming constant consumption and that shipments arrive on time.
- .Similar to point 6, this filter allows the user to choose "Family Code", "Material Reference", and "Days in Future".
  - Days in Future allows the user to select how far ahead they would like to look.

# **Shipment Tracking Desired State**



		SOL 3		
		MICHELIN		
		ORDERS		
Material	Quantity(kg)	Expected Date of Arrival	Status	
CH65432	54545.57	2022 - 01 - 30	OnOrder	>
Material	Quantity(kg)	Expected Date of Arrival	Status	
PC76936	234.23	2022 - 02 - 07	OnOrder	>
Material	Quantity(kg)	Expected Date of Arrival	Status	
CH12345	2365.23	2022 - 02 - 28	OnOrder	>
Material	Quantity(kg)	Expected Date of Arrival	Status	
PC76936	4545.28	2022 - 05 - 09	OnOrder	2



- 1. Michelin submits new orders.
- 2. The supplier views all their orders. Suppliers can only view orders relevant to them.
- 3. Supplier updates shipment status, when applicable.

MICHELIN

MODIFY ORDERS

Material: CH65432 ✔

Supplier: SupA 🕶

Status: Shipped 🗸

Shipment Id: 1

Quantity(kg): 54545.57

Expected date of Arrival: 2022 - 01 - 30





3. Michelin updates order status to arrived, upon order arrival.

4. Michelin can view all current order specific information. Orders are ordered by the due date (ETA) ascendingly.

# **Project Impacts**

- Saves the supply chain team from hiring another employee.
- Saves 20 hours per week switching between interfaces.
- ▲ Identifies risks via minimum and maximum stock levels per product.
- Reduces the production risks, by allowing the team to expedite orders or modify production schedule to avoid downtime.