Beta Presentation
GHG Scope 3 Automation

The Capstone Experience

Team Kellogg's

Lily Albitar
Randy Carnahan
Michael Dittman
Ayoung Du
Shreesha Maddur
Jacob Zawacki

Department of Computer Science and Engineering
Michigan State University
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Project Overview

• Automating Kellogg's Green House Gas (GHG) emissions calculations
• Sending out custom reports with GHG calculations
• Creating interactive dashboards with GHG results
• Building a website that expands upon the Celonis dashboards
System Architecture

Cloud Env → Material Data → Data Pool → Material Name → Calculated Values → Data Studio → Emissions Dashboard & Report

Material Name → ML Workbench → Calculated Values → Data Pool → Material Name

API → Material Name → Emission Factors

Web → End User

Cloud Env

Material Data

SAP

Data Pool

Material Name

Calculated Values

Cloud Env

Material Data

On Premise Celonis Server (Kellogg’s)

ML Workbench

jupyter

Material Name

Calculated Values

Emissions Dashboard & Report

API

climatiq

End User
System Architecture

Backend Server

Final Values

Flask

Final Values

HTML
JS
CSS

Frontend

Emissions Dashboard

End User
Celonis Dashboard 1
Celonis Dashboard 2

- **CO2 Total**: 614,054,541 kg
- **CH4 Total**: 814,473 kg
- **CO2e Total**: 103,541,570 kg
- **N2O Total**: 45,631 kg
- **CO2e Other**: 2,147,843 kg
- **Total Emissions**: 794,002,591 kg

**CO2e Emission by Material**

- Rice Products: 250Mkg
- Sugar: 200Mkg
- Shortenings and Oils: 150Mkg
- Others: 100Mkg
- Others: 50.0Mkg
- Others: 0.00kg

**CO2e Emissions by Material**

- Bagged Ice: 4,102
- Chemical Sweeteners: 19,005
- Seeds: 17,814
- Specialty Grains: 154,870
- Barley Malt: 671,541
- Natural Sweeteners: 1,441,032
- Vegetables: 1,448,411
- Fruit: 1,512,211
- COLORS: 1,641,522
- Fiber: 2,144,875
- Fruit Flake & Puree: 2,332,543
- Raisins-All: 3,551,631
- Savory Blends: 3,881,547
- Spices: 3,998,415

**Total**

- 5,141
- 15,647
- 15,945
- 141,322
- 222,415
- 654,144
- 804,551
- 1,112,658
- 1,225,446
- 1,634,551
- 1,784,995
- 1,995,341
- 2,441,784
- 2,554,447
Website Homepage
Website Second page
Website Heat Map
What’s left to do?

- Features
- Stretch Goals
  - Miles between plants by road
- Other Tasks
  - Website UI fixes
  - Server bug fixes
  - Code refactoring
  - Implementation guide for clients
Questions?