Project Plan 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
Spring 2023
Project Sponsor Overview

- One of the original plant-based food companies
- Serves both the domestic and over 180 international markets
- Nourishing communities with famous brands: Nutri-Grain®, Frosted Flakes®, Pop-Tarts®, and Rice Krispies® Treats
Project Functional Specifications

• Calculate the total GHG scope 3 emissions for Kellogg's products
• Automate GHG calculations
• Shows GHG emissions data in an easy to digest dashboard
• Allows users to share real-time emissions data companywide with easy-to-use automations
Project Design Specifications

• Present relevant GHG emission data in charts and graphs in a Celonis dashboard accessible by Kellogg’s employees

• All calculations will be summarized and organized in an easy-to-read format that allows for data exploration

• Clickable components that allow the user to explore what each metric means and get a view of the underlying data
Screen Mockup: CO$_2$ Dashboard
Screen Mockup: CH₄ Dashboard
Screen Mockup: N$_2$O Dashboard
Screen Mockup: Misc. GHG Dashboard
Project Technical Specifications

• Extract material records from SAP database to Celonis via Celonis extractor
• Send GET request via action flows for each unique material type to get emission factor
• Compute emission totals for each material via PQL statements
• Build analysis dashboard and generate report with emission totals
• Create automation for emissions report distribution
Project System Architecture

Cloud

On Premise (Kellogg’s)

Data Integration

Material Data

Material Flow

Final Values

Dashboard

Material Data

Emission Factors

Emissions Dashboard

End User

Web

Material Data

Material Data

SAP

Celonis

Material Data

Material Data
Project System Components

- Software Platforms / Technologies
  - SAP
  - Celonis
  - Climatiq
Project Risks

• Risk 1
  ▪ Verifying accuracy of GHG emissions calculations
  ▪ Run past years’ SAP data through the automated dashboard and compare the results to the hand-calculated ones from previous years

• Risk 2
  ▪ Integrating Climatiq API with Celonis
  ▪ Explore the capabilities of the Celoxtractor and its compatibility with Climatiq API as well as working with Celonis experts

• Risk 3
  ▪ Number of Climatiq API requests from Celonis
  ▪ Find alternate way of pulling data from the Climatiq API

• Risk 4
  ▪ Relating internal material names to Climatiq activity ids
  ▪ Collaborate with ESG staff, meet with Celonis technical experts, go through Climatiq name mapping documentation
Questions?