Project Plan
Live Platform Real-Time Occupancy Status

The Capstone Experience

Team Herman Miller
Chris Chen
David Cho
Emma Taylor
Pooja Ippalapelli

Department of Computer Science and Engineering
Michigan State University
Fall 2020
Functional Specifications

• Simplify the process of searching for available desks
• Display available workspaces through an interactive Live-Platform dashboard
• Based on a user's seating preferences
• Updates workspace availability in real-time
Design Specifications

• Real-time visualization of workspace's open seating
• Users select their seating preferences (facility, floor, zone, etc.) in a dropdown menu
• A floor map will display available workspaces in green and unavailable spaces will be shown in red
Screen Mockup: Home Screen

The Capstone Experience
Team Herman Miller Project Plan Presentation
Screen Mockup: Floor View

Live Occupancy Dashboard

Click on a space to find available seating
Screen Mockup: Space View with Status
Screen Mockup: Zone View with Status
Technical Specifications

- Dashboard built and hosted on Klipfolio
- The dashboard invokes Lambda functions through an API call
- Lambda functions will query DynamoDB and MySQL RDS
- A stream will be enabled on the DynamoDB table to update in real-time
System Architecture

Client

Web Dashboard

Dynamic API calls

Klipfolio Dashboard

Klipfolio/AWS Technologies

Access Layer

API Gateway

Invoke Lambda function

Compute Layer

Lambda

Data transfer from database

Data Persistence Layer

DynamoDB

MySQL RDS
System Components

• Software Platforms / Technologies
  ▪ AWS Lambda with Node.js
  ▪ AWS API Gateway
  ▪ AWS DynamoDB
  ▪ Klipfolio
  ▪ MySQL RDS
  ▪ MapBox GL JS
  ▪ HTML / CSS / JS
Risks

• Lack of Access to Hardware
  ▪ **Description:** Without access to a desk and sensor set up, it will be difficult to ensure that the displayed status on the dashboard is correct (i.e. An unoccupied desk being incorrectly displayed as "occupied")
  ▪ **Mitigation:** Conduct virtual tests to ensure that the correct status is given

• The Data is in Different Platforms in DEV/UAT Environments
  ▪ **Description:** Data is stored across multiple databases increasing the risk of displaying incorrect occupancy results
  ▪ **Mitigation:** Work closely with clients to ensure the correct tables and relations are used. Test query results to ensure correct data is displayed in the result

• Desks Could be Assigned or Unassigned
  ▪ **Description:** Whether a desk is assigned is not clear in filtered results
  ▪ **Mitigation:** Filter results further to remove assigned seats from available spaces and display the workstation as unavailable on Klipfolio dashboard
Questions?