

MICHIGAN STATE
UNIVERSITY

Project Plan Presentation

Next Gen Smart Factory

The Capstone Experience

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*From Students...
...to Professionals*

Project Sponsor Overview

- WK Kellogg Co, is an American multinational food manufacturing company headquartered in Battle Creek, Michigan.
- Best known for being a leader in breakfast cereals, including iconic brands such as Kellogg's Corn Flakes
- In the summer of 2023, Kellogg's underwent a split, While WK Kellogg's Co maintains a focus on cereals, Kellanova specializes in snack foods.

WK Kellogg Co



Project Functional Specifications

- Existing software solution is reaching end-of-life and is unintuitive to end-user
- Need an innovative and simple web-based solution
- Solves usability issue by simplifying UI
- Implements application functionality using different tech stack that is more cost effective



Project Design Specifications

- The project outlines three main goals:
 - The app allows supervisors to create checks and tasks for the workers
 - Allows for operators to complete checks and tasks along with creation of manual checks
 - Allows those with administrator access to visualize historical data of completed checks across factories



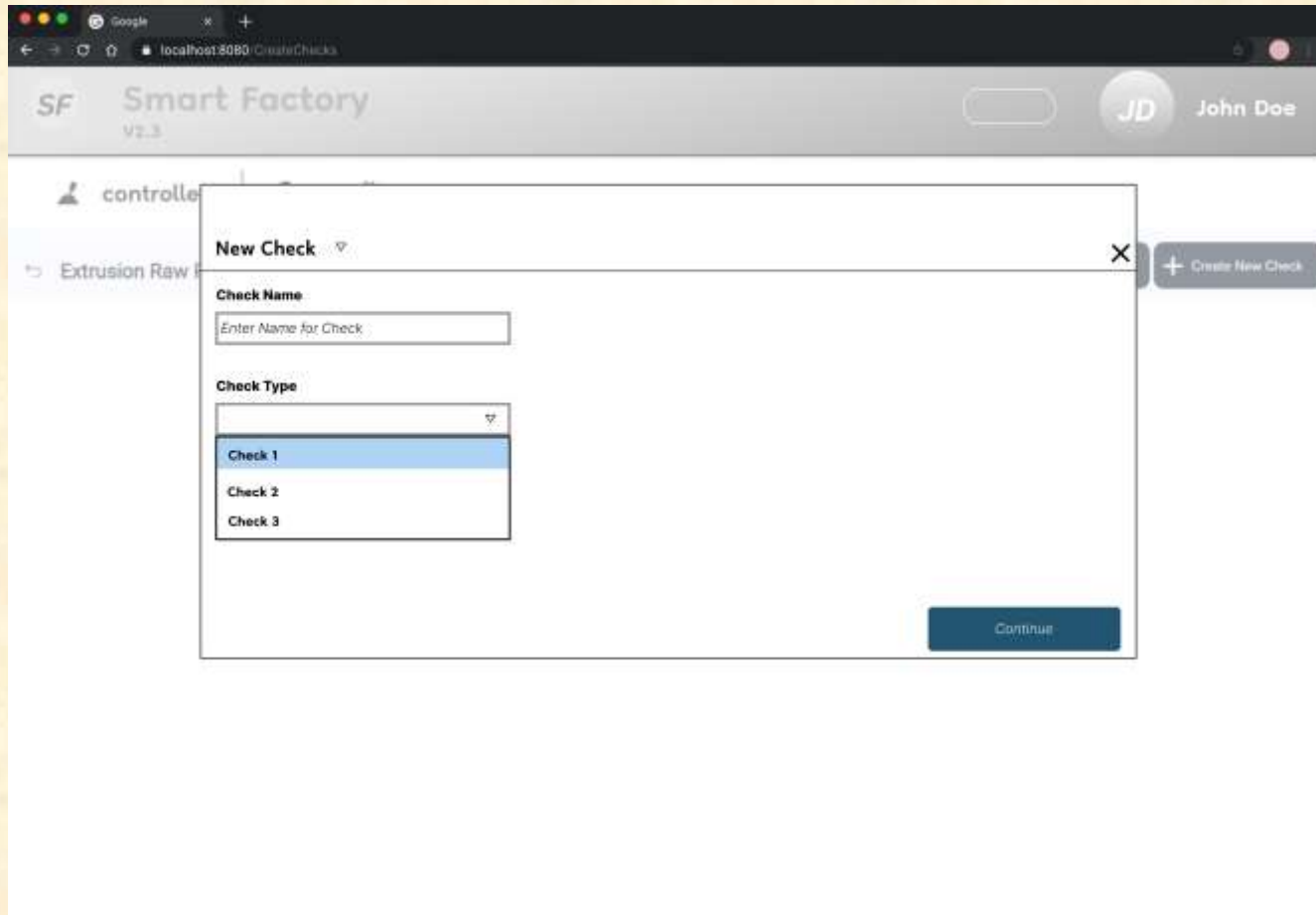
Screen Mockup: Checklist

The screenshot shows a web browser window with the URL `localhost:8080/ViewChecks`. The application header includes the logo 'SF Smart Factory V2.3' and a user profile for 'John Doe' (JD). The main content area is titled 'Raw Processing Area' and features a search bar with the placeholder text 'Search for a check', a 'Filter' dropdown, and two buttons: 'Copy Check' and '+ Create check'. Below the header is a table with the following data:

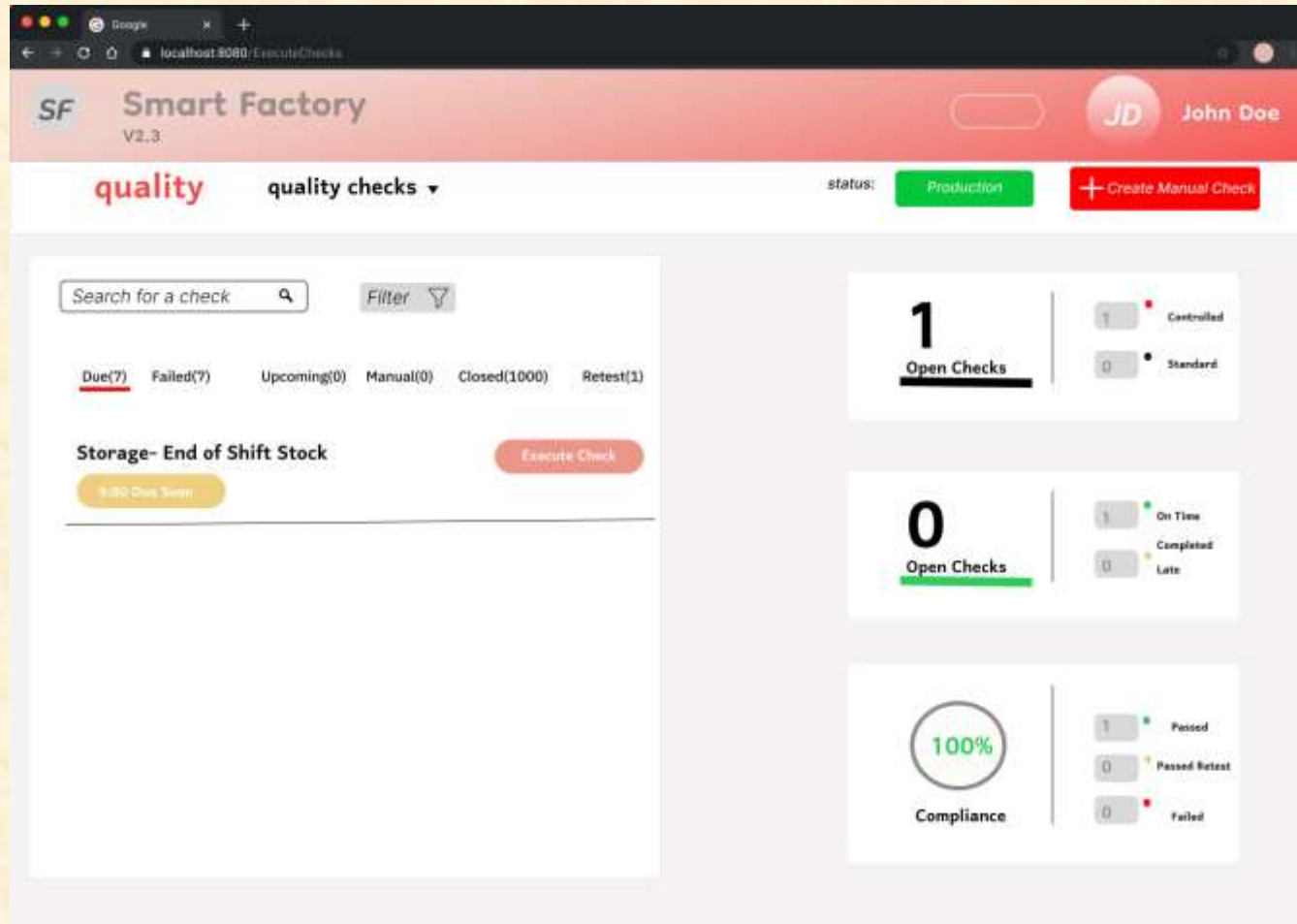
Check Description	WorkStation	Equipment Level 1	Product Level 1	Status	Input Types	Type	Trigger Type	Version	Reference Time
CCP	Control Room	EXT	Froot Loops	Published	2	CCp	Manual Types	15	9:00:00 PM



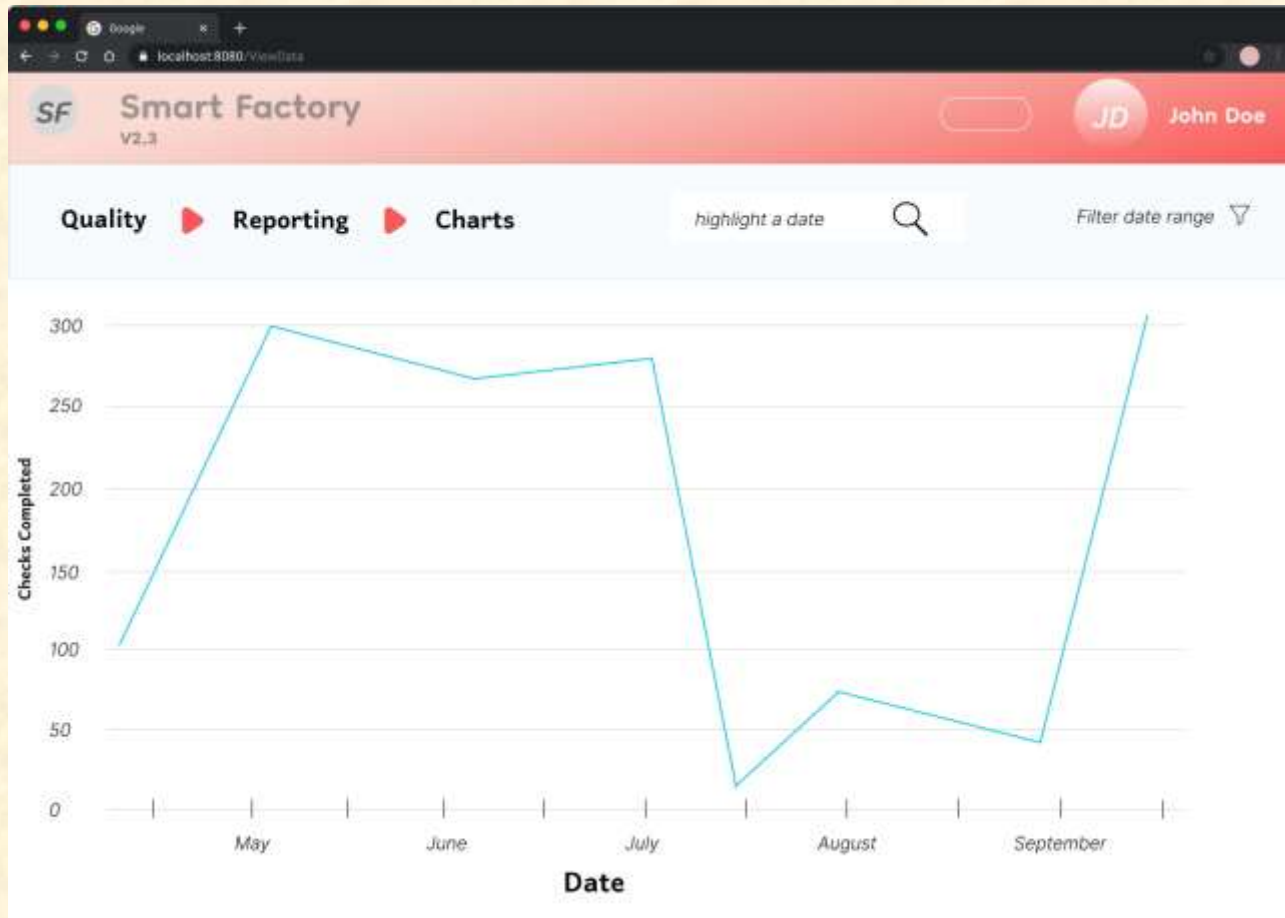
Screen Mockup: Create Check



Screen Mockup: Check Execution



Screen Mockup: Data Visualization

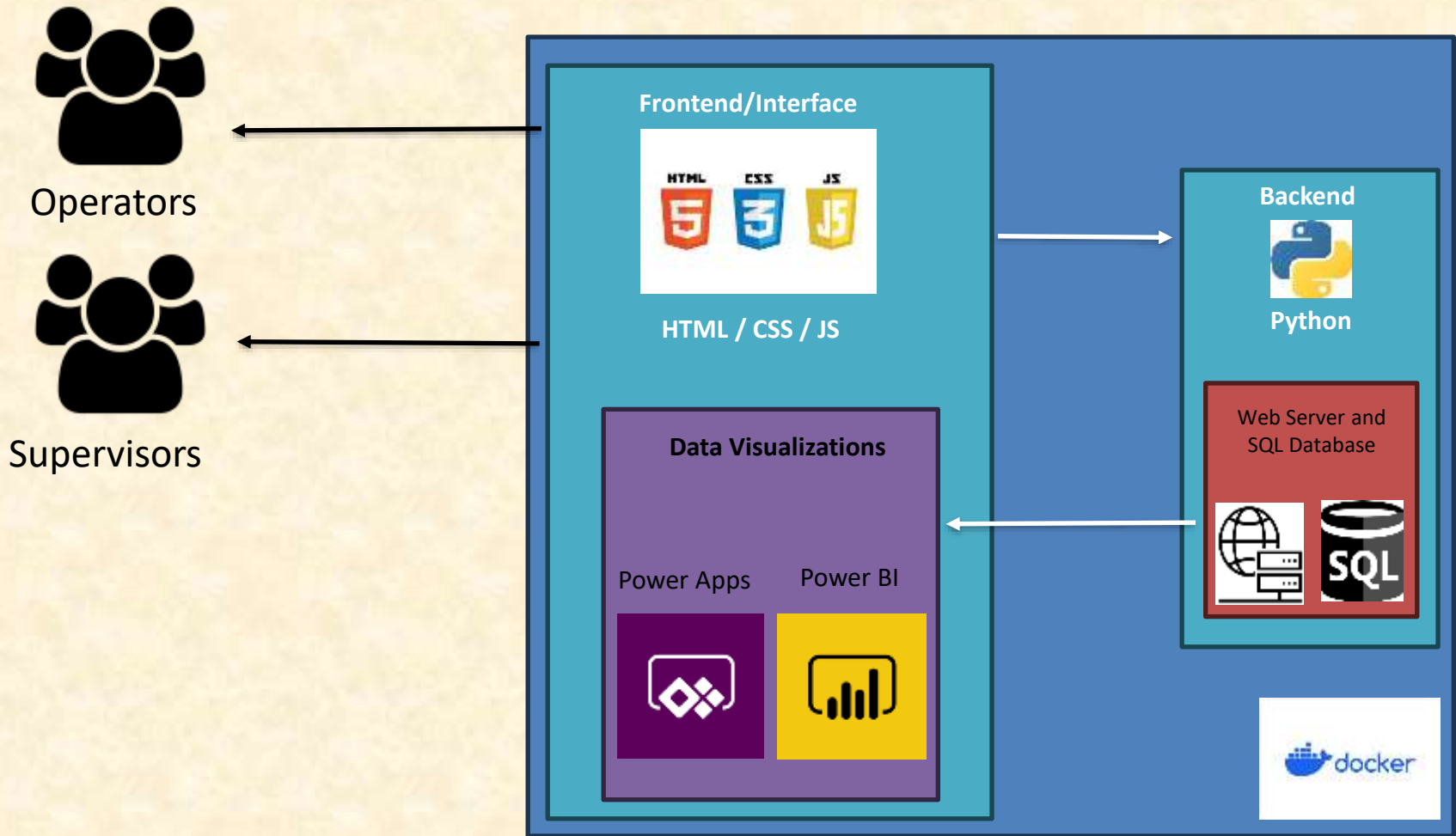


Project Technical Specifications

- **Front-End:** HTML/CSS/JavaScript
- **Back-End:** Python/MySQL
- **Data Visualization:** Power Apps / Power BI



Project System Architecture



Project System Components

- Hardware Platforms
 - MSU Server System
- Software Platforms / Technologies
 - Visual Studio Code
 - Microsoft PowerApps / Power BI
 - MySQL
 - Windows 11
 - Docker



Project Risks

- Risk 1 – Real World Usability
 - Ensure our software is usable in-practice by operators and administrators in factory
 - Learn detailed perspectives of users by visiting factory and watching operator training videos
- Risk 2 – Data Security
 - Ensure data cannot be accessed in unintended way
 - Maintain secure log-in protocols, ensure only supervisors can access data, and encrypt the data
- Risk 3 - Database Integration
 - Compatibility issues between the two data schemas may arise, leading to incomplete or erroneous data sets
 - We will coordinate tests and reviews to ensure seamless data transfer and alignment between the old data schema and the new one.
- Risk 4 – Balance Simplicity and Cost with Functionality
 - Ensure that our software is simple and cost-effective without losing key functionality
 - Clarify “must-have” features, so that UI is not cluttered with unwanted or costly features like the existing software



Questions?

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