MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Vulnerability Scan & Detect

The Capstone Experience

Team McKesson

John Bannon
Brady Johnson
Nicholas Felarca
Ananya Chittineni
Chris Nguyen
Demetrius Wilson

Department of Computer Science and Engineering
Michigan State University

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From Students…
…to Professionals

Project Sponsor Overview

- Nation’s largest pharmaceutical company, distributes pharmaceuticals and provides health information technology, medical supplies, and health management tools.
- Based in Irving, Texas
- Delivers a third of all pharmaceutical products used or consumed in North America
- Ninth-largest company by revenue in the United States and the nation’s largest health care company
- Employs over 80,000 people with $309 billion in revenue for 2024.

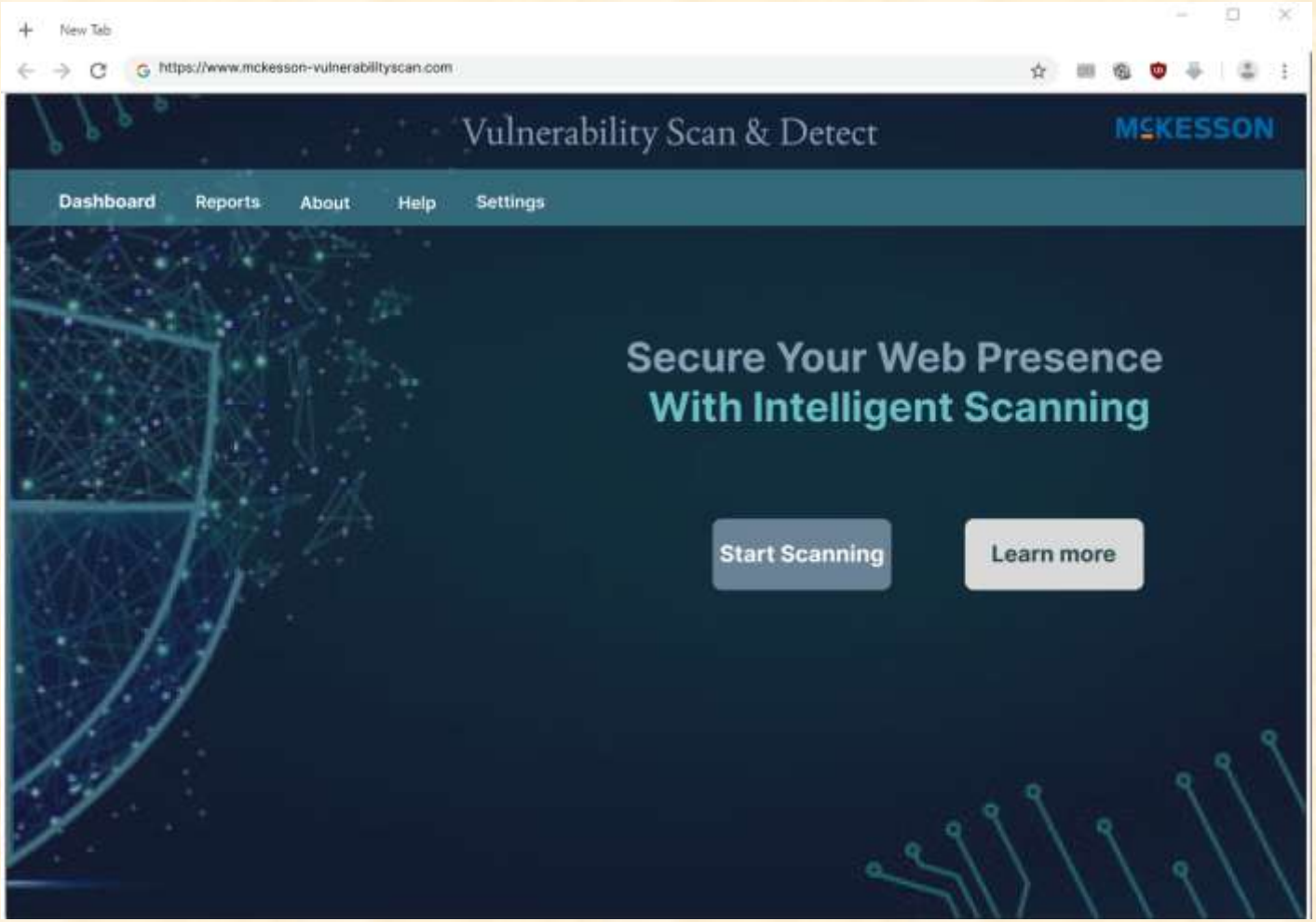
Project Functional Specifications

- McKesson has various client-facing and internal web applications that are tough to manually maintain; Risk of data breaches
- Improve web application security by analyzing web pages for vulnerabilities within an attractive web application
- Mitigates risk for cyber attacks by raising awareness of susceptibilities.

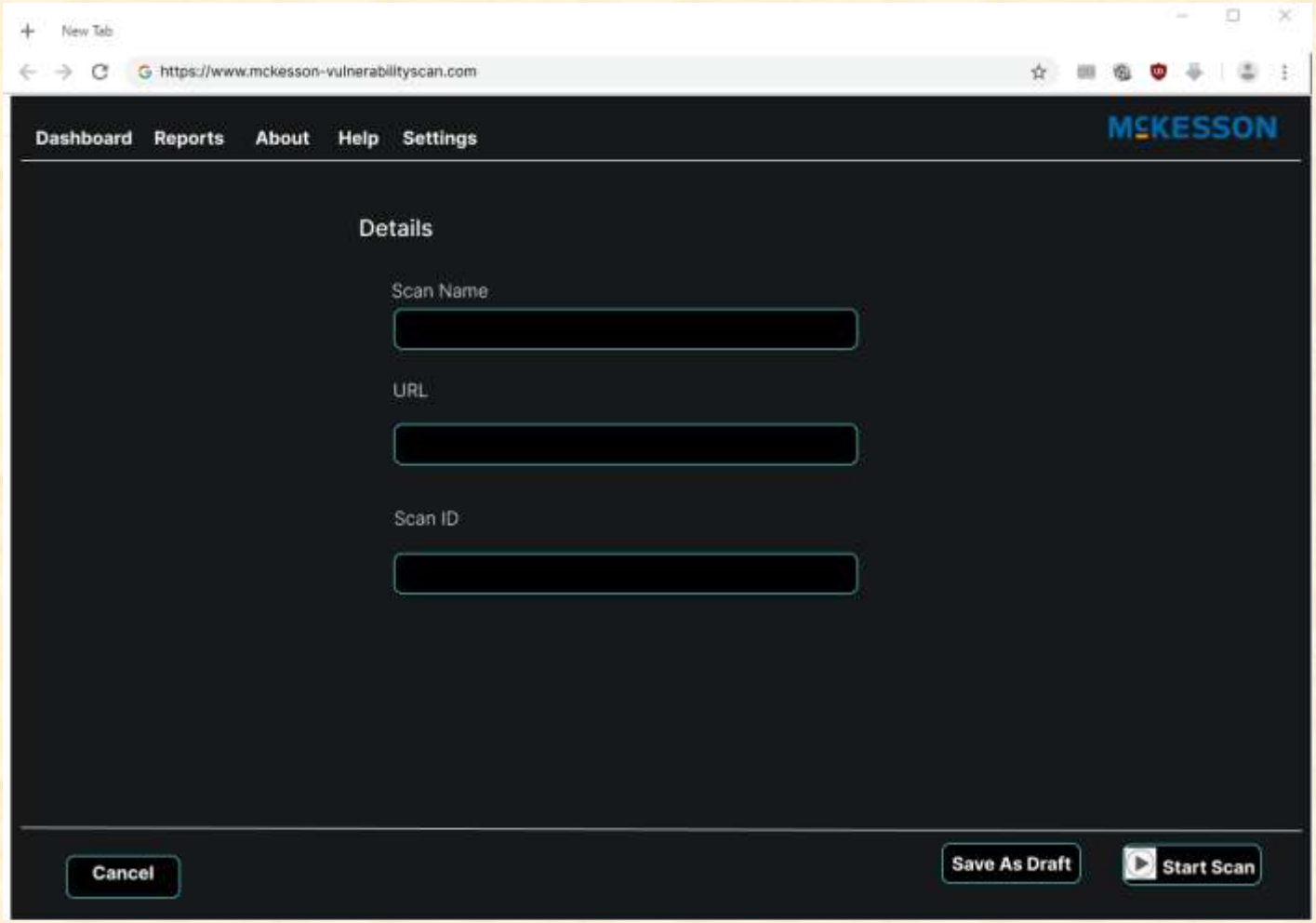
Project Design Specifications

- Tool that scans, records, and exports web application vulnerability information to a secure database
- Focuses on OWASP Top Ten security flaws
- Interactive web application that can initiate scans and visualize risk reports with PowerBI
- Allows for several user roles that enable different actions based on privilege

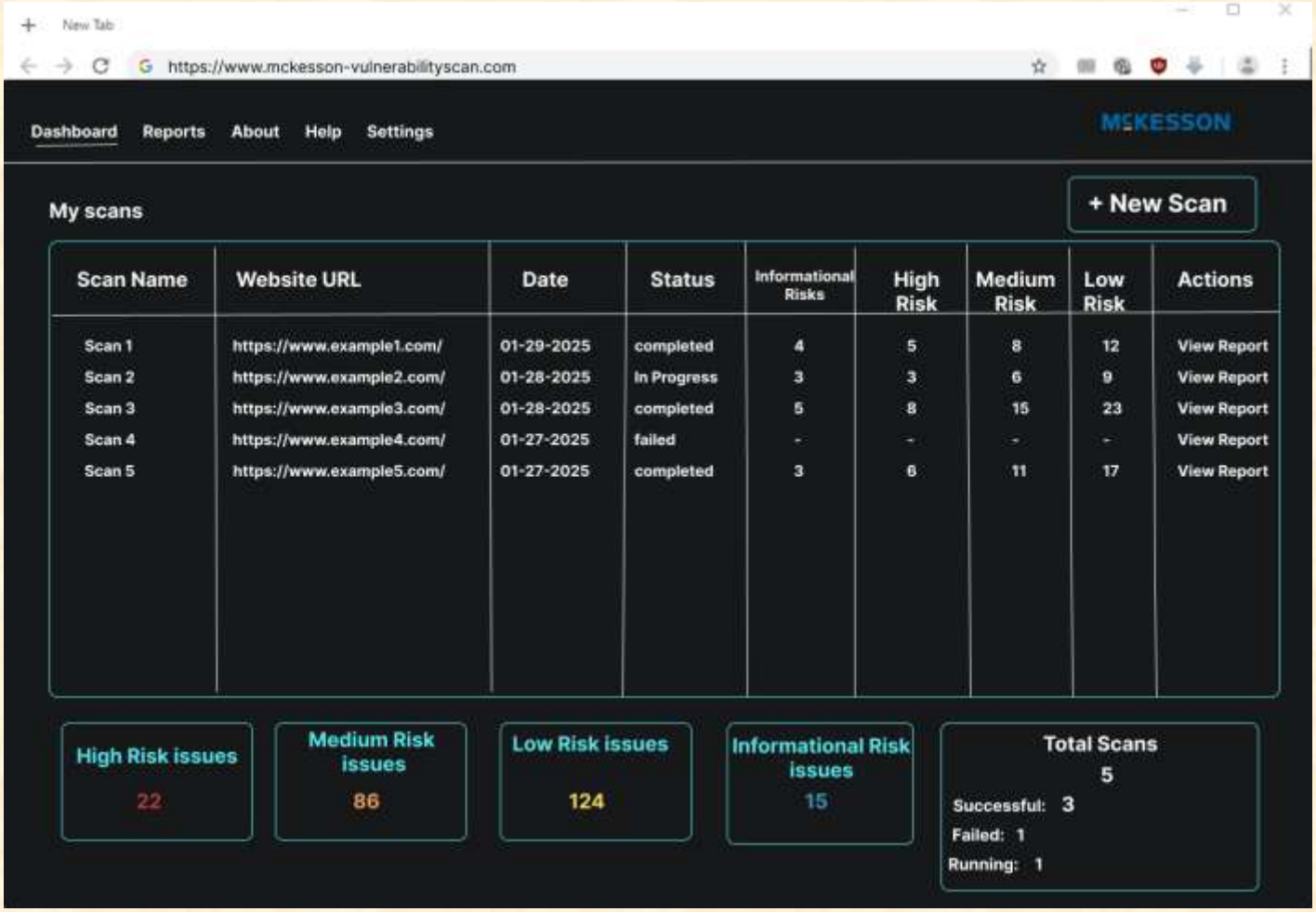
Screen Mockup: Homepage



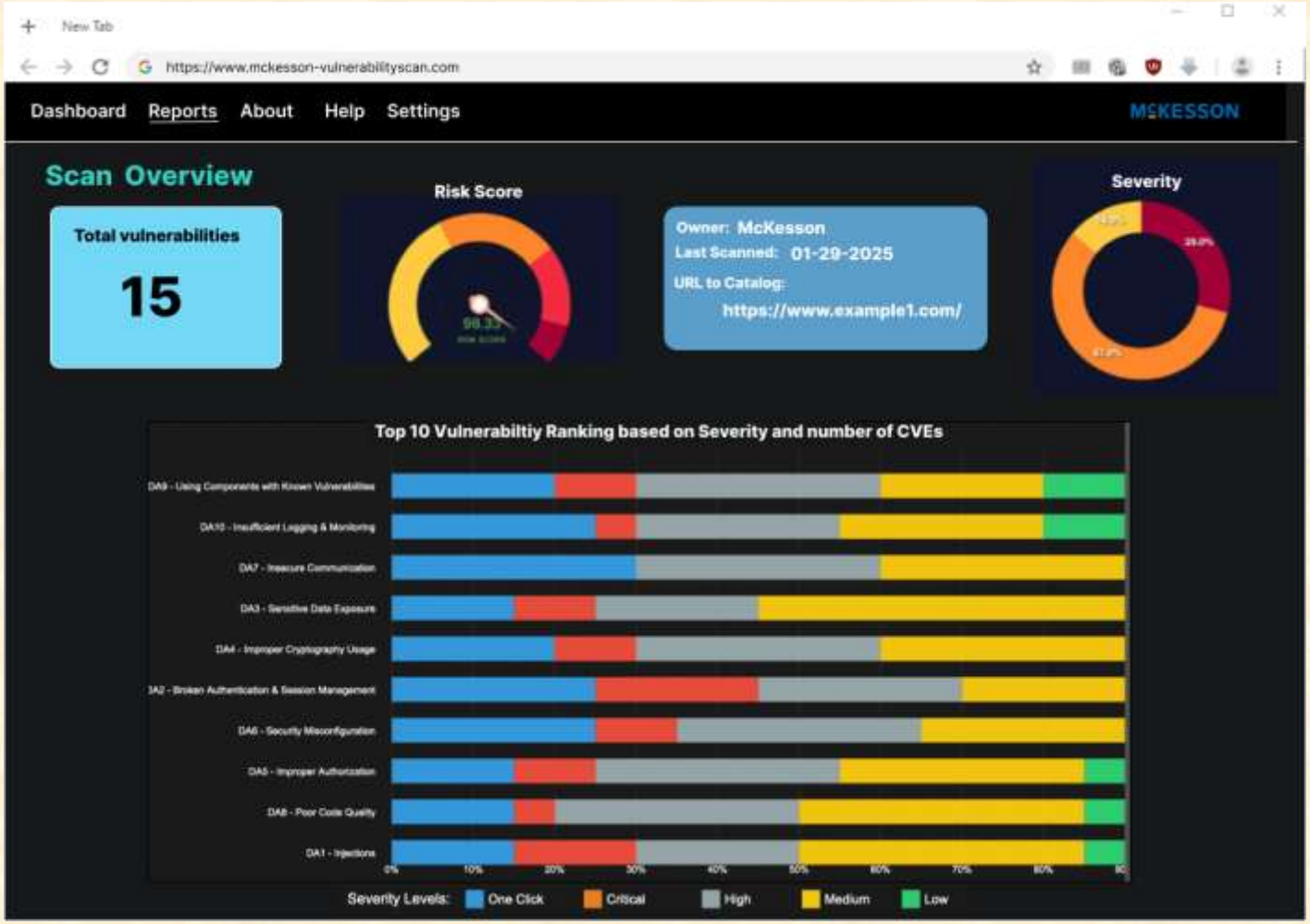
Screen Mockup: New Scan



Screen Mockup: Dashboard



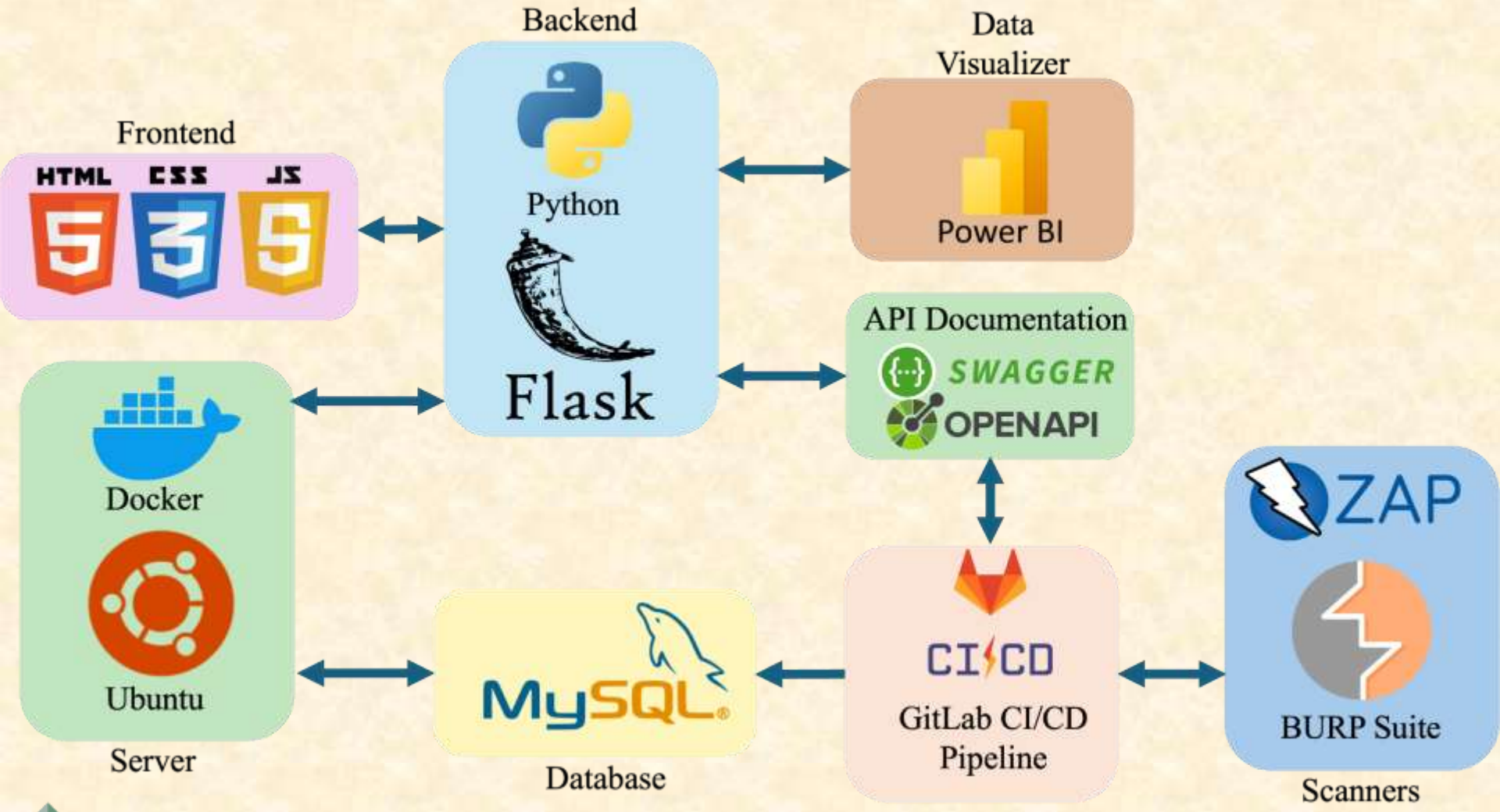
Screen Mockup: Reports



Project Technical Specifications

- Server Hosting: MSU DECS Ubuntu server
- Database: MySQL
- Back-end: Python / Flask
- Front-end: HTML, CSS, JavaScript
- CI/CD pipeline: GitLab
- Vulnerability Scanners: OWASP ZAP, BURP Suite
- Data Visualization: Power BI
- Software Communication: OpenAPI / Swagger

Project System Architecture



Project System Components

- Hardware Platforms
  - MSU DECS Ubuntu Server
- Software Platforms / Technologies
  - HTML, CSS, JavaScript
  - Python / Flask
  - PowerBI
  - OpenAPI / Swagger
  - GitLab CI/CD
  - Docker
  - OWASP ZAP and the Burp Suite
  - MySQL

Project Risks

- Website Authorization
  - Establish a layered authorization system with different levels of privilege
  - Implement principle of least-privilege
- Database Connections
  - MySQL server that can be accessed through several channels (web application, CI/CD pipeline)
  - Experiment with Gitlab CI/CD to facilitate direct communication with the database through ssh
- Secure and Robust Database
  - MySQL database must be robust against system failures and have secure endpoints
  - Create backups of the database periodically and ensure proper schema and encryption
- Integrate CI/CD Pipeline Tooling
  - Create a GitLab CI/CD pipeline to streamline scanning and exporting of vulnerability data
  - Iterative test and build sample pipeline applications and study documentation

Questions?