



Project Plan Presentation

Environmental Awareness with BeBot

The Capstone Experience

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

Project Sponsor Overview

- Meijer, a Midwest-based retail company
- Headquarters in Grand Rapids founded by Frederik Meijer
- Demonstrating environmental efforts in the Great Lakes Region
 - BeBot
- Partnered with GLPC



Project Functional Specifications

- Raise awareness for Meijer's environmental efforts and promote community engagement
- Engage users with educational modules and offer beach cleanup data for reference
- Encourage volunteering and corporate sponsorship on respective pages
- Gamifying community involvement challenges (e.g. leaderboards and badges)
- Adding social links and sharing functionality for achievements and participation milestones

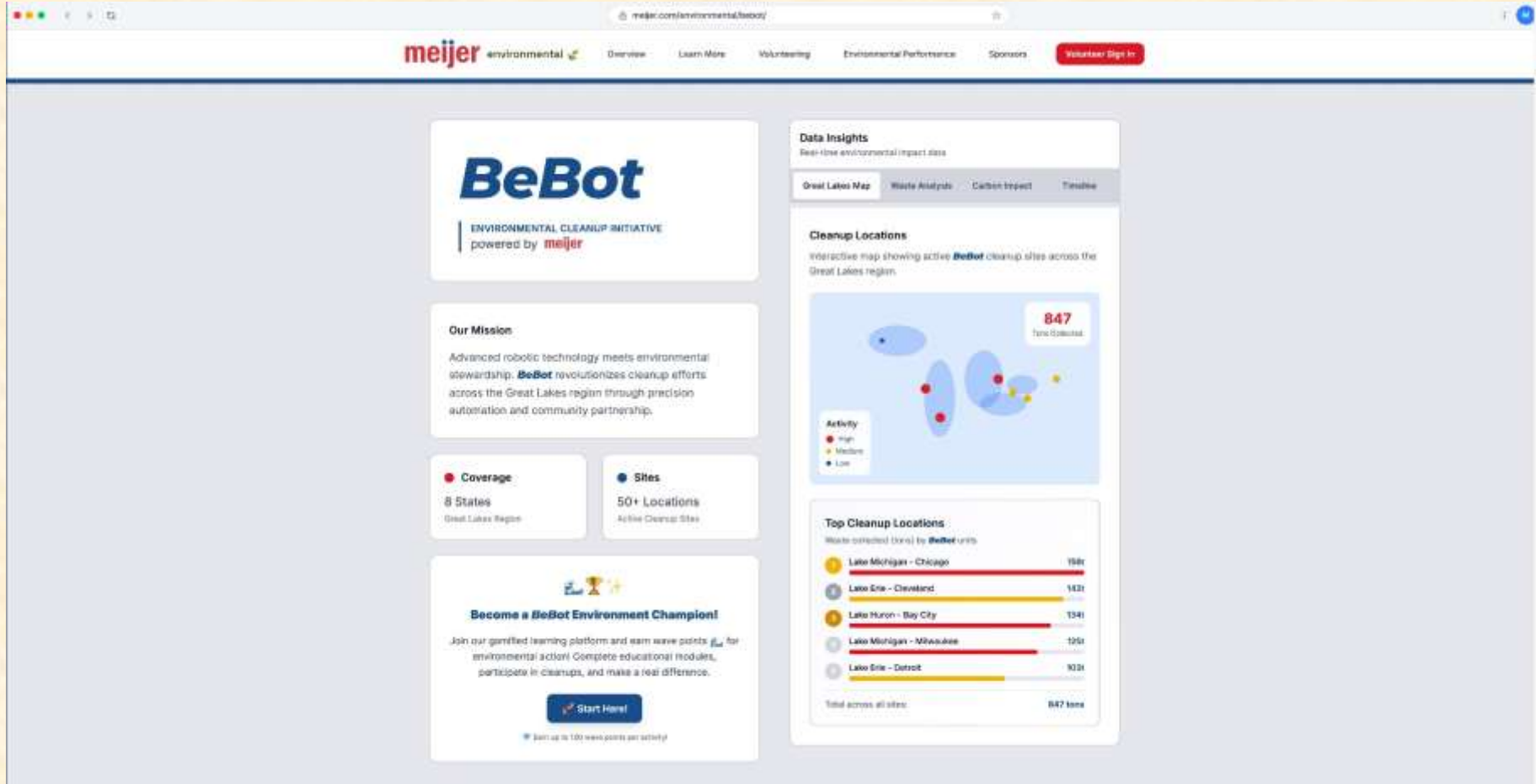


Project Design Specifications

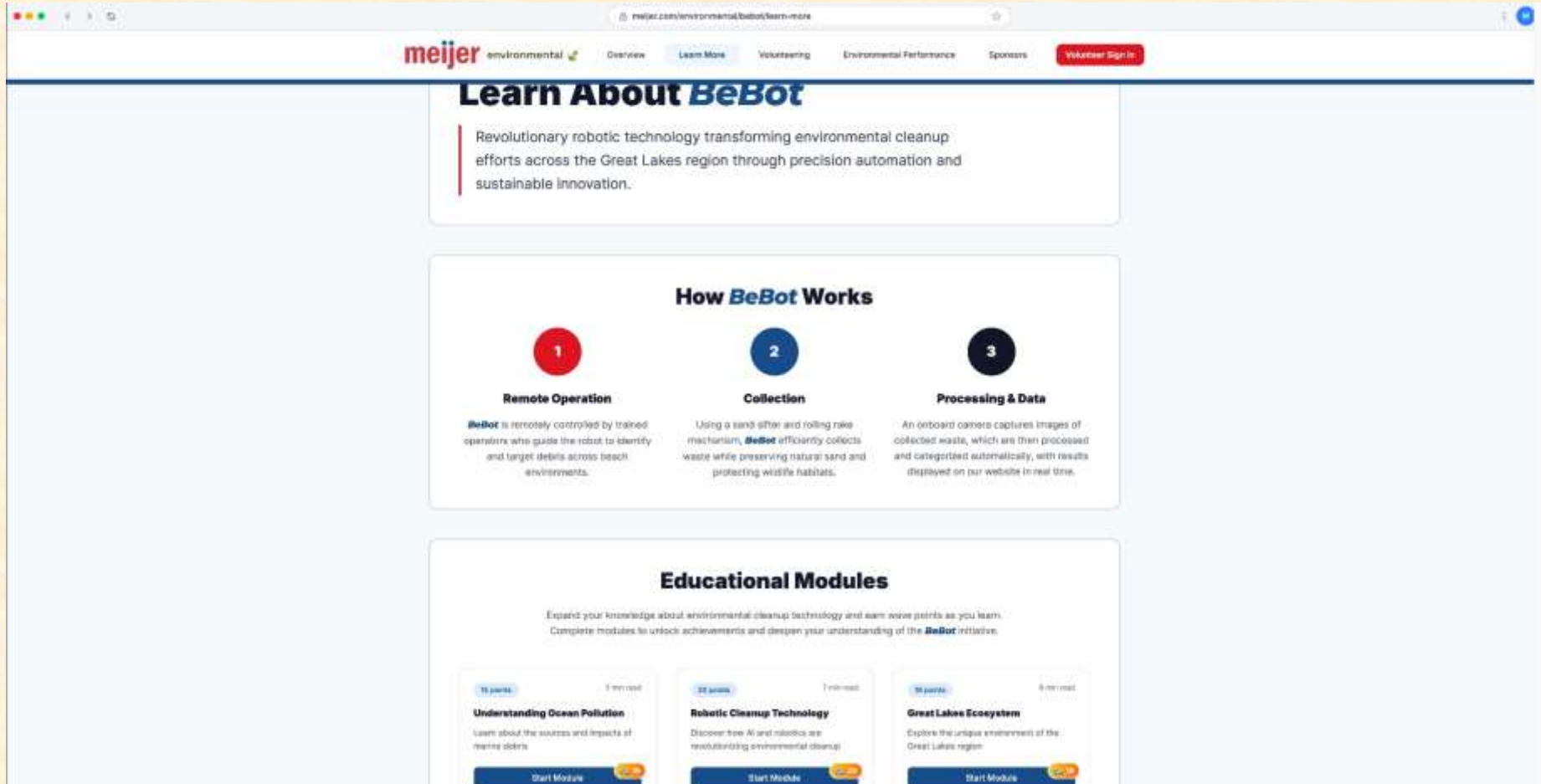
- Home screen on Web Application introduces BeBot with activity maps, waste collection analytics, carbon offset, and historical data
- Interactive educational modules teach the importance of sustainability
- Community engagement is encouraged through Wave Points and volunteer registration
- Display details of the BeBot data
- Current partners are featured, and sponsorship literature is available



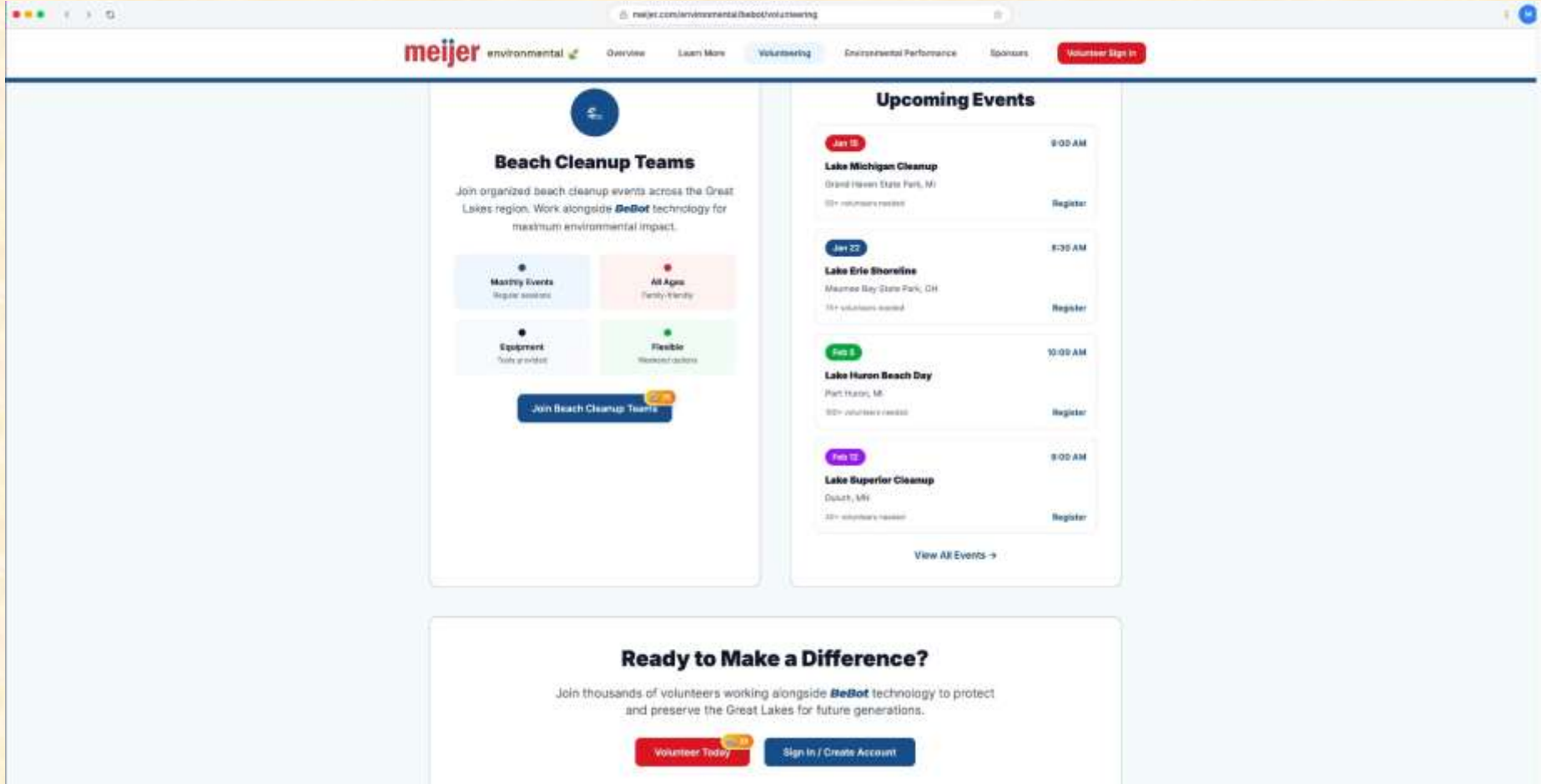
Screen Mockup: Home



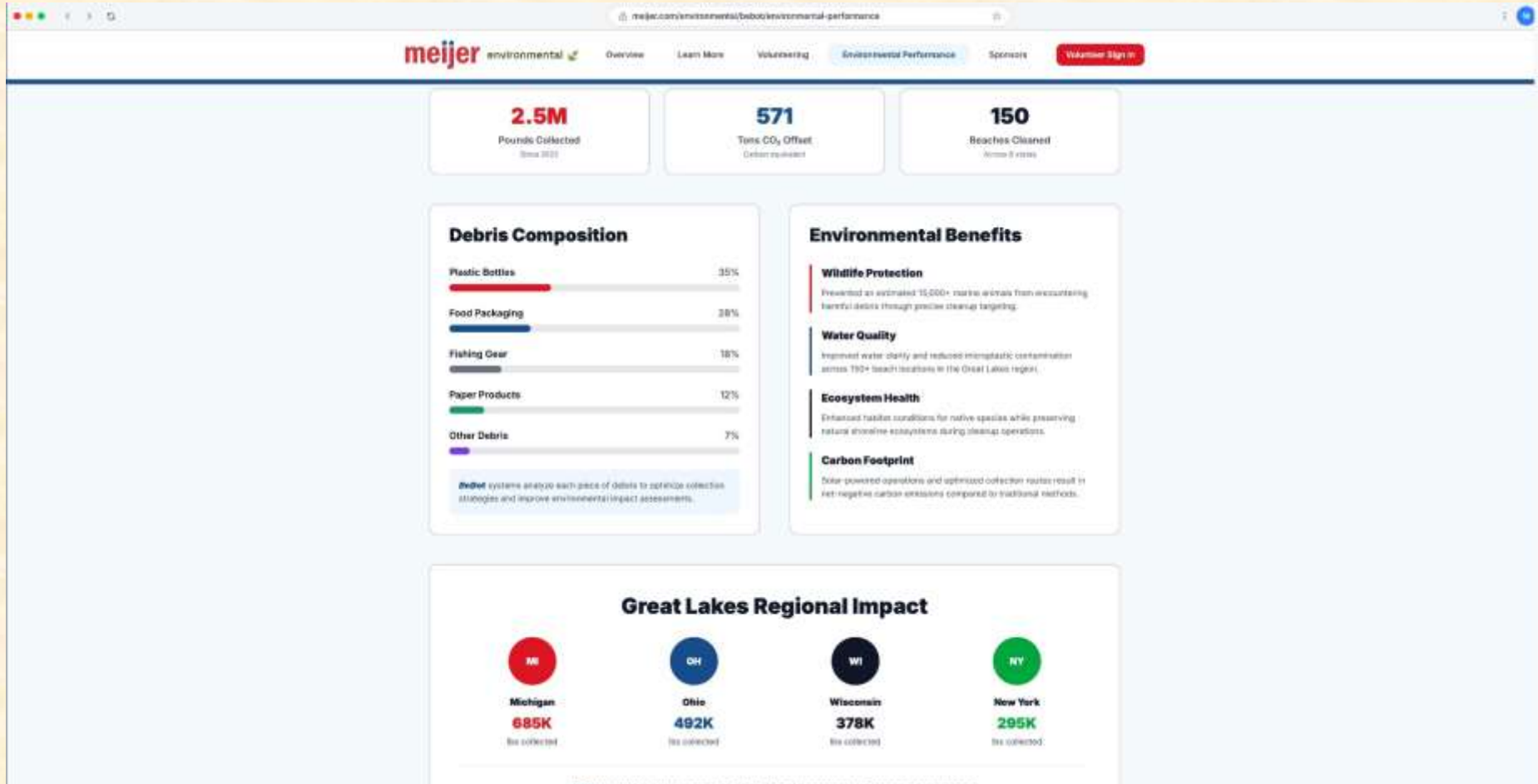
Screen Mockup: Learn More



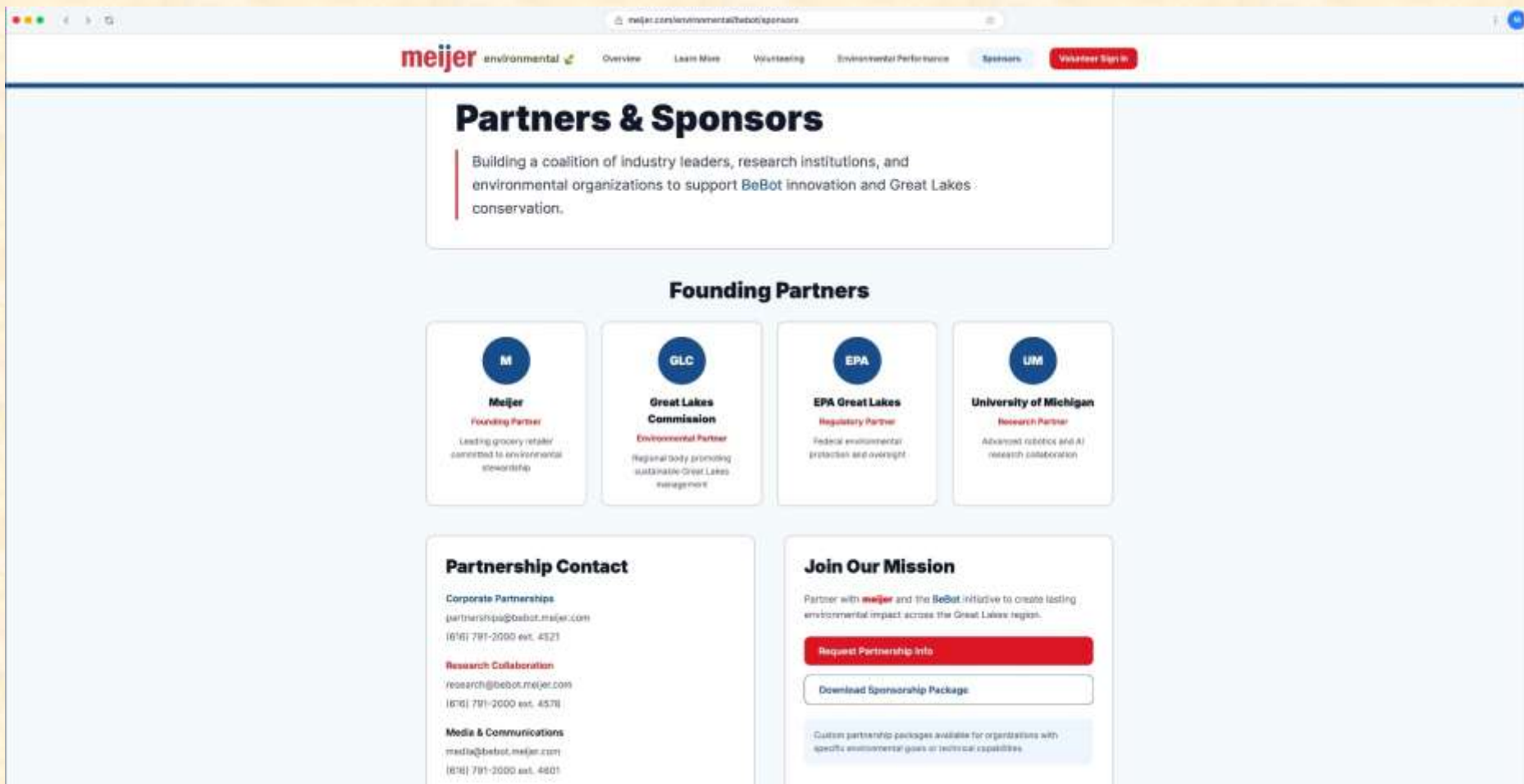
Screen Mockup: Volunteering



Screen Mockup: Performance



Screen Mockup: Sponsors

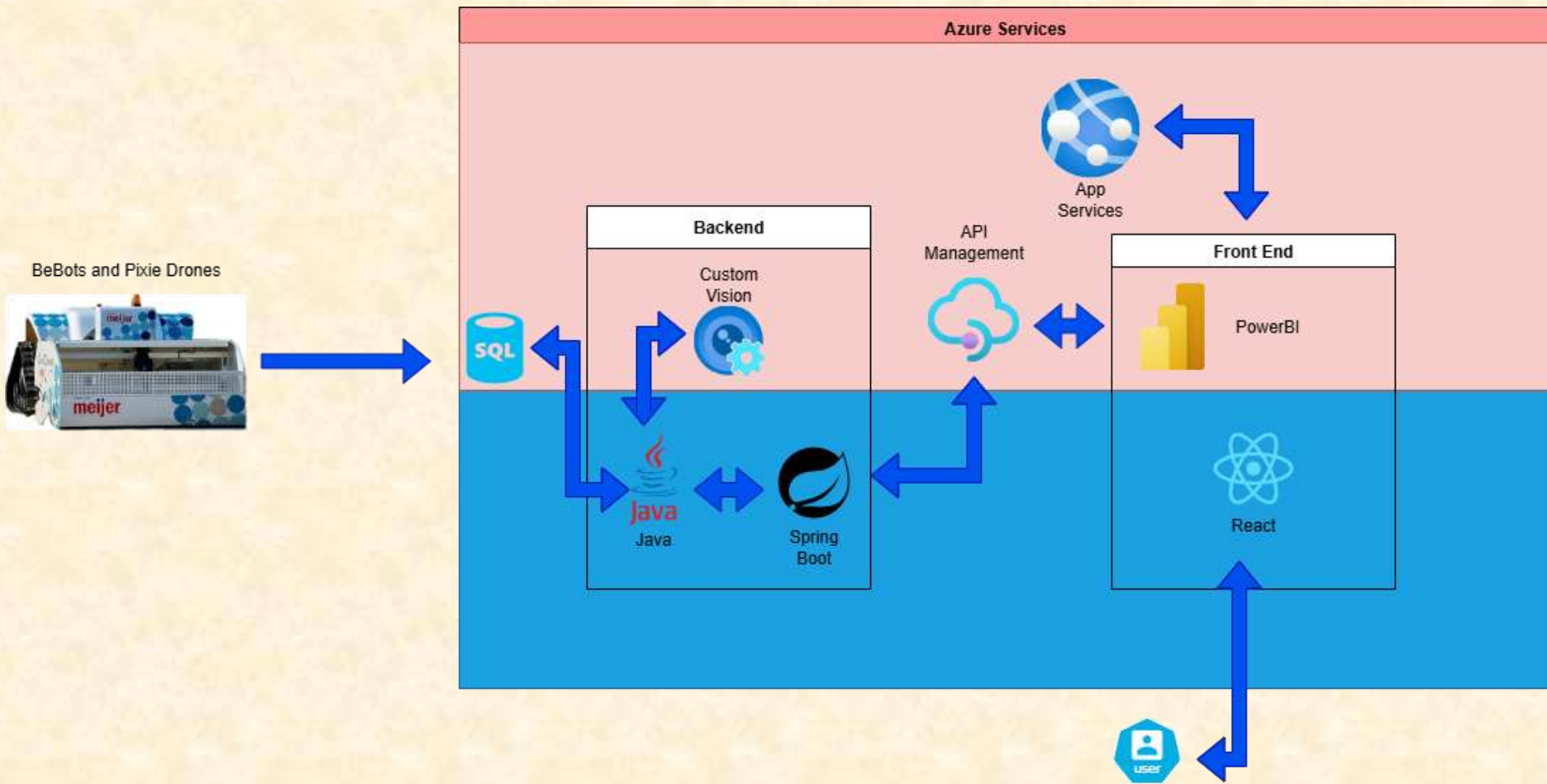


Project Technical Specifications

- Store collected images of waste in Azure SQL Database
- Utilize Java to integrate Azure Custom Vision to classify trash types
- Convert processed images into “Trash” objects with metadata included for analytics
- Write data to Azure SQL using Spring Boot
- Generate real-time dashboards through Power BI
- Host webpages in Azure App Services with React.js as our JavaScript framework



Project System Architecture



Project System Components

- Hardware Platforms
 - Camera
- Software Platforms / Technologies
 - Azure Custom Vision
 - Azure SQL
 - Azure API Management
 - Power BI
 - Azure DevOps
 - Java
 - Spring Boot
 - React.js



Project Risks

- BeBot's Missing Hardware
 - D: No incoming data from the robots
 - M: Simulate real-time processing using a phone camera
- Bad Actors/Server Requests
 - D: Restrict flooding
 - M: 2FA, Captcha, etc.
- Custom Vision/Real-time Updates
 - D: Handle frequent and constant requests, overwhelming the AI
 - M: SQL database as a buffer and sequencing calls to our API
- Power BI Affordability
 - D: Lack of budget to embed Power BI for data visualizations
 - M: Develop an alternative method in parallel



Questions?

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