MICHIGAN STATE UNIVERSITY

Project Plan Presentation

MSU – HFH Research Synergy Vanguard Portal (RSVP)

The Capstone Experience

Team Henry Ford Innovations RSVP

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From Students…
…to Professionals

Project Sponsor Overview

- Henry Ford Health is an innovative delivery engine
- Nationally recognized leadership
- Clinical disease management + other areas of expertise
- Located in Detroit, Michigan

Project Functional Specifications

- Henry Ford Health aims to connect its employees with research institutions, however the current process is tedious

- MSU – HFH RSVP aims to streamline the process between the two institutions

- Search algorithms and automated matching will work to facilitate meaningful collaborations
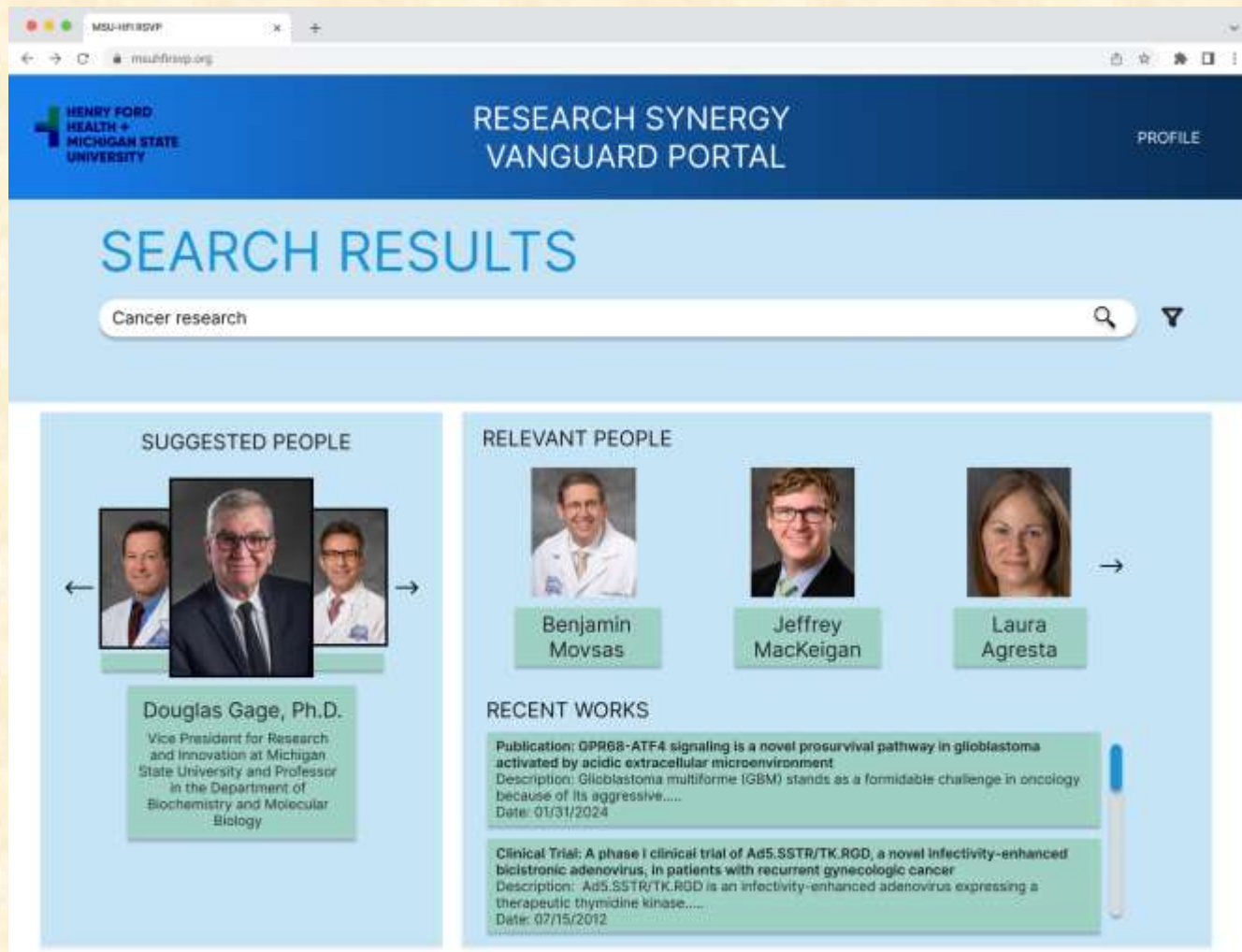
Project Design Specifications

- User account with an email sign up and user editable fields

- Search capabilities for desired users and concepts/topics

- Recommended user connections based upon specializations and personal interests

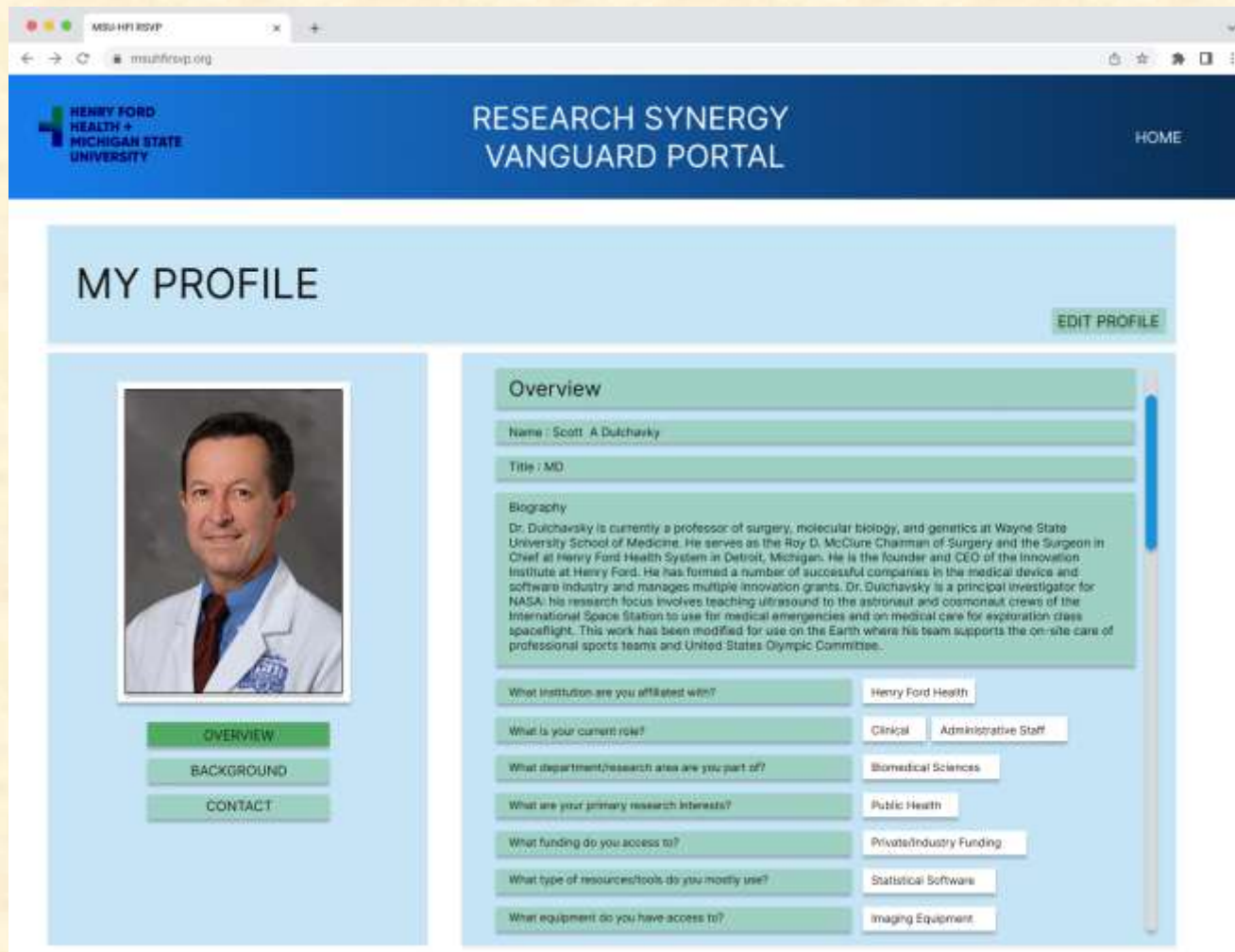- User pages are accessible from potential matches and search results
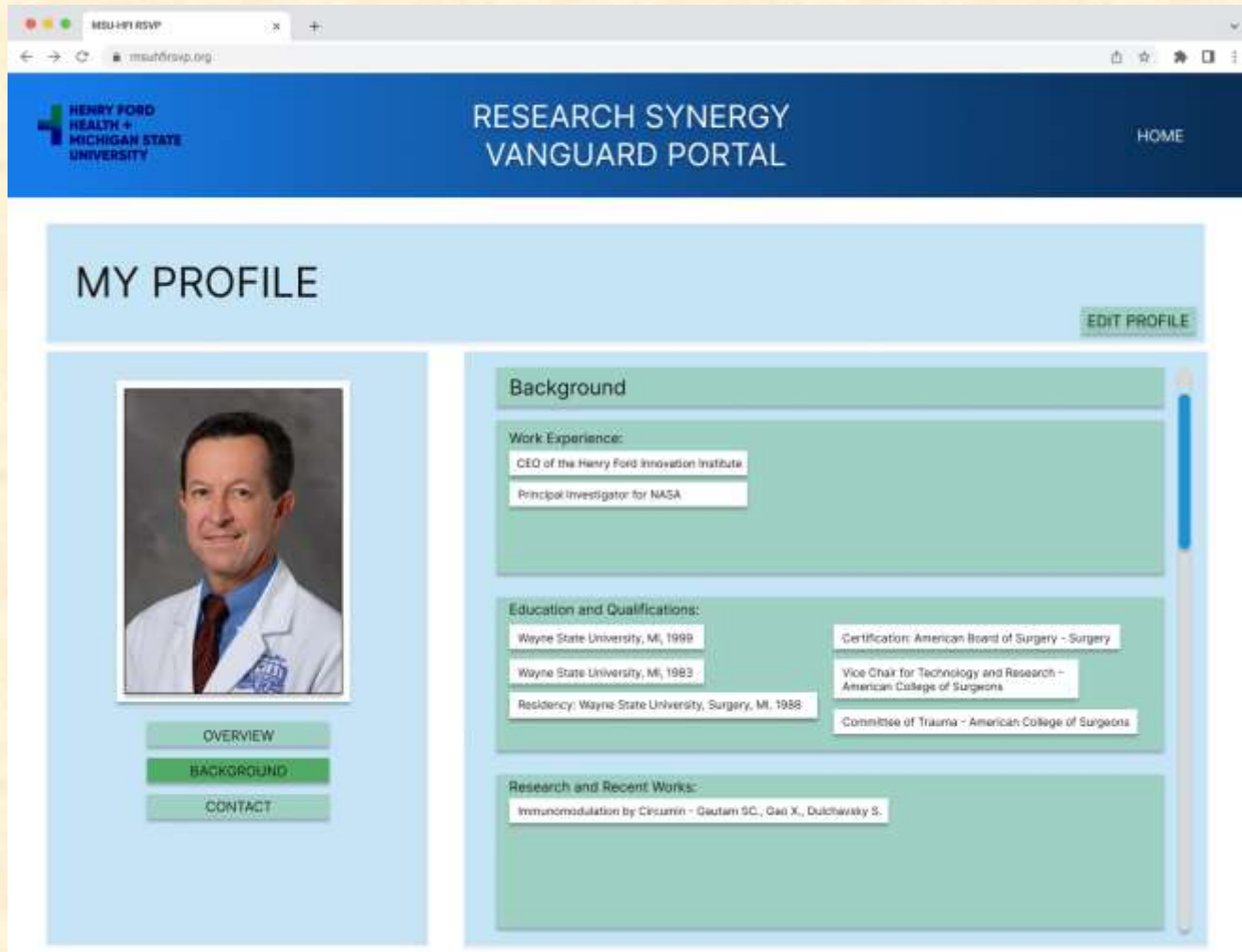
Screen Mockup: Home Page
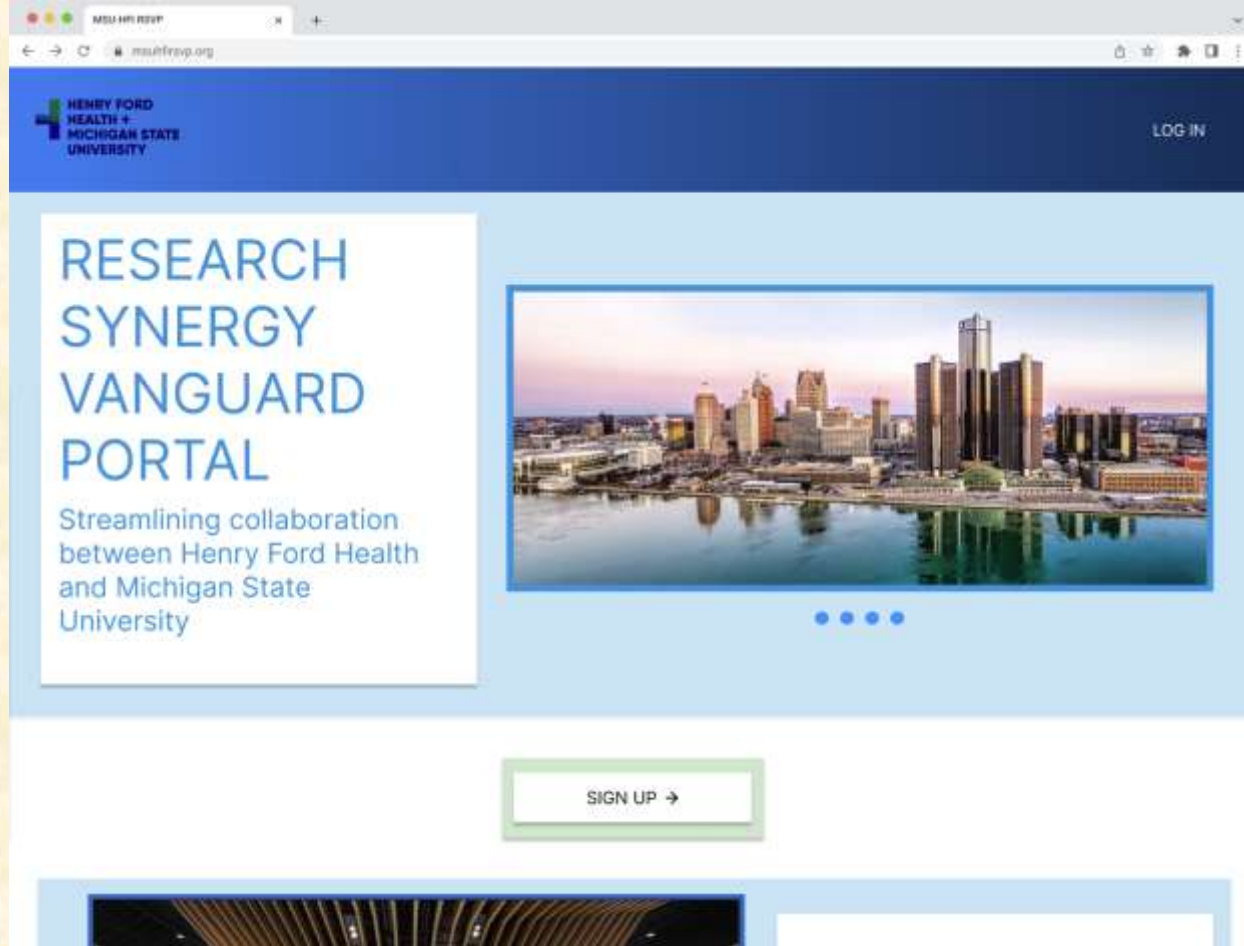
Screen Mockup: Search Page
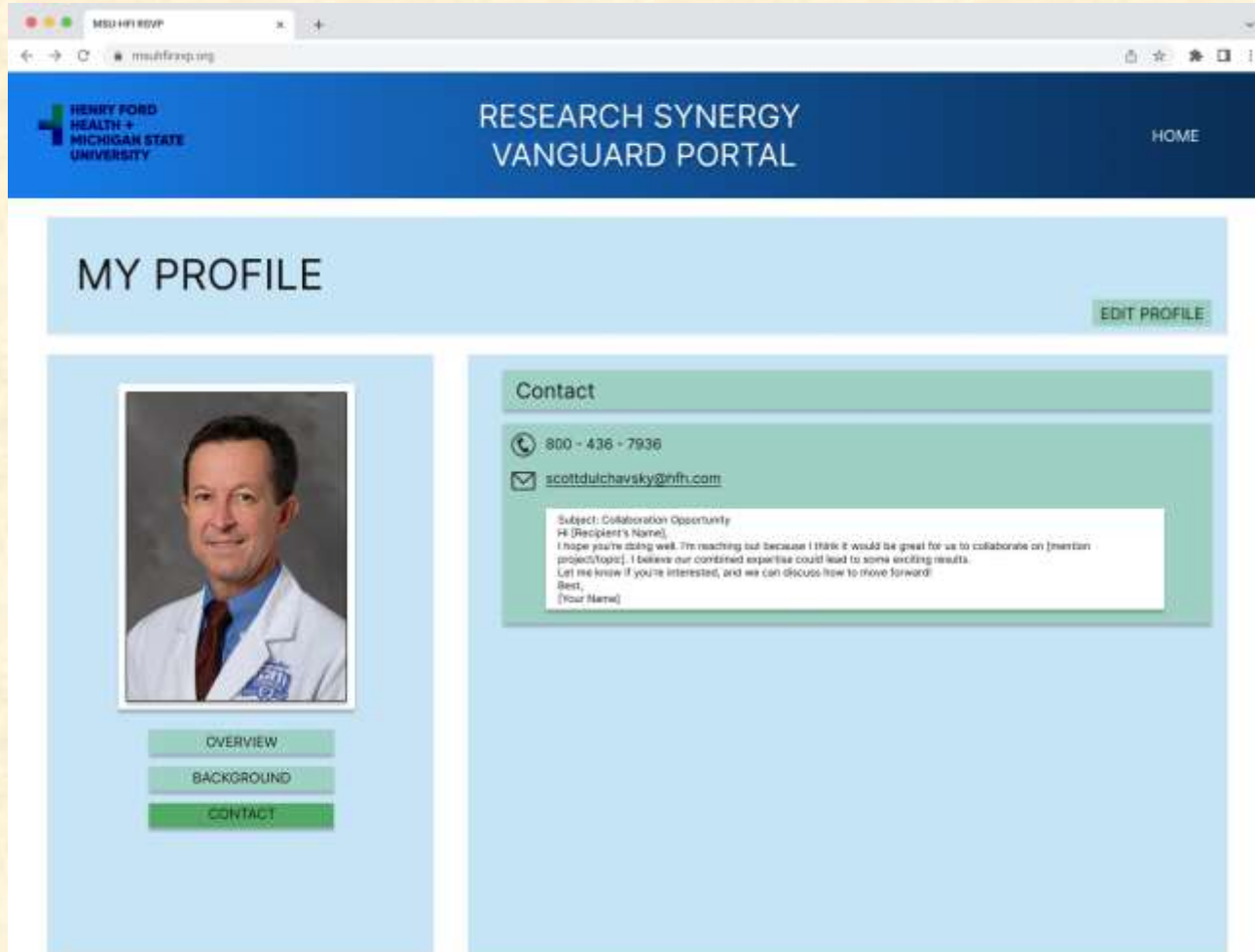
Screen Mockup: Overview Page

Screen Mockup: Background Page

Screen Mockup: Contact Page

Screen Mockup: Sign Up (Question 4)

# Screen Mockup: Sign Up (Question 8)

Project Technical Specifications

- Front end implemented with React-based portal using HTML, CSS, and JavaScript

- Back end powered by Flask which handles search queries and user profile management

- Back end database utilizes MongoDB

- Back end utilizes BERT (Bidirectional Encoder Representations from Transformers) to generate semantic embeddings which are processed by Elasticsearch to handle user searches

Project System Architecture
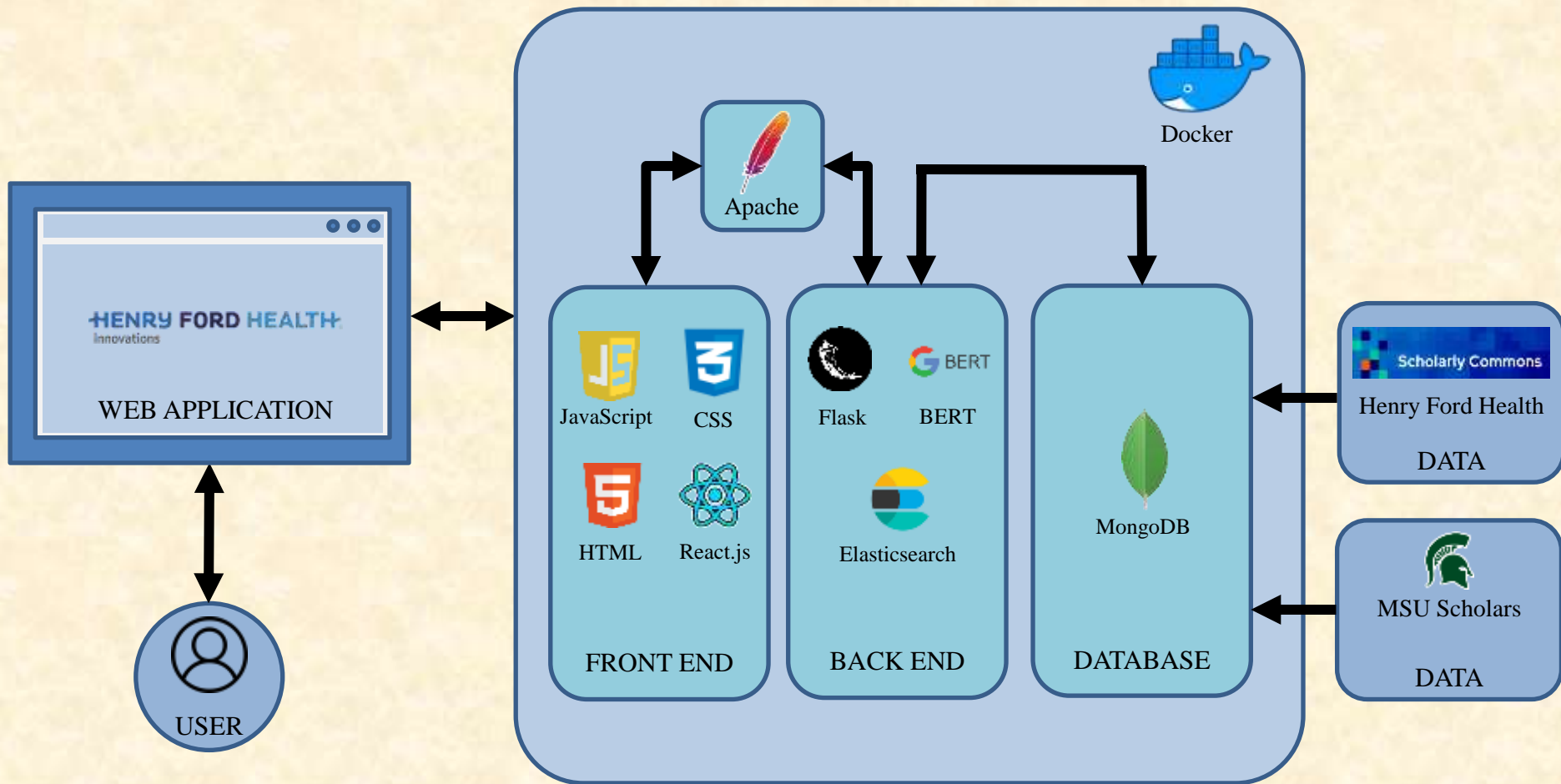
Project System Components

- Hardware Platforms
  - Physical Linux Server
- Software Platforms / Technologies
  - React (Front end)
  - Flask (Back end)
  - BERT (Back end)
  - Elasticsearch (Back end)
  - Python (Back end)
  - MongoDB (Database Management)
  - Apache (Server)
  - PyTorch (Back end)
  - Docker (Containerization)

Project Risks

- Risk 1
  - Running the BERT language model on a physical server
  - Implement search capabilities early in development to test our resources. If it performs poorly, host the platform on cloud.
- Risk 2
  - Procuring data from MSU Scholars or HFH Scholarly Commons
  - If access through an institution's API or raw data is not possible, we will populate the database with mock data through web scraping.
- Risk 3
  - Varying data standards and data organization
  - Expecting the two institutions to have varying data schemas, we will have to preprocess data and select the most essential aspects from both institutions to ensure a successful search engine

Questions?

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