MICHIGAN STATE
UNIVERSITY

Project Plan Presentation
3D Analysis of Dental Patient History

The Capstone Experience

Team Delta Dental 3DADPH

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Spring 2025

From Students…
…to Professionals

Project Sponsor Overview

- Dental Insurance Provider

- Processes millions of claims a year

- 90 million Americans covered by Delta Dental

- Delta Dental of Michigan is headquartered in Okemos, MI

Project Functional Specifications

- Processing millions of claims per year
  - Claims sometimes need to be reviewed
  - Either approved or denied by adjudicators
- Access to a patient's entire dental history
- Viewing and editing this data is time consuming
- The project will be able to
  - Upload and edit patient dental records
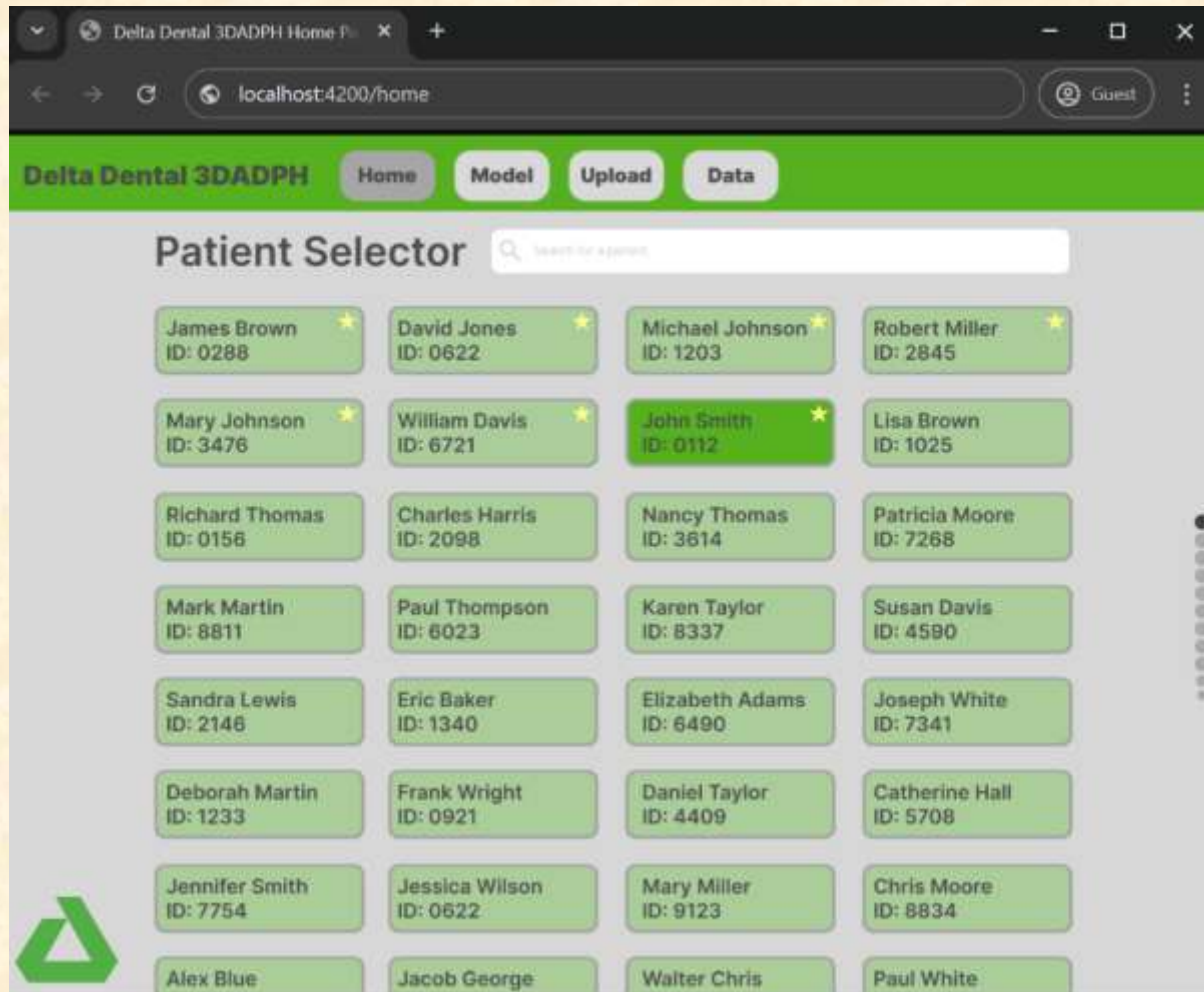 - View a 3D mouth model of these dental records

Project Design Specifications

- Upon entry to the application's home screen, you can search for a patient by name or ID

- When a patient is selected, the user is taken to the 3D model of their dental history

- The 3D model has information about past procedures performed

- Patient information can be edited and uploaded

Screen Mockup: Home Page

Screen Mockup: Mouth Model Page

Screen Mockup: Upload Claims Page

Screen Mockup: Data View Page

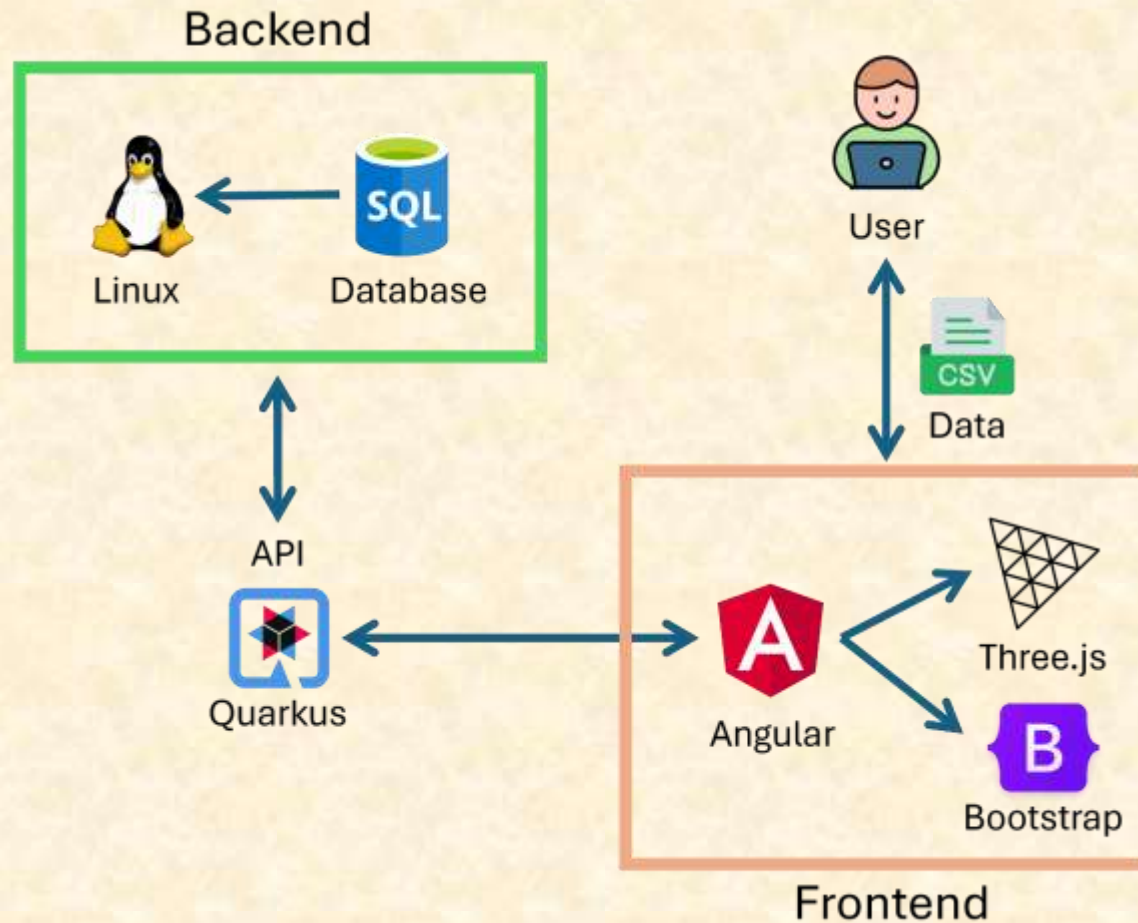# Project Technical Specifications

- Angular will serve as the frontend
  - Bootstrap provides preset style classes for the HTML elements
  - Three.js works with Angular to display the 3D model
- Java Quarkus allows Angular to connect to the database
- PostgreSQL database is hosted on a DECS Linux Virtual Machine
  - Two separate relations for patient information

Project System Architecture

Project System Components

- Hardware Platforms
  - DECS Linux VM

- Software Platforms / Technologies
  - Java Quarkus
  - PostgreSQL
  - Angular
  - Bootstrap
  - Three.js

Project Risks

- 3D modeling unique procedures
  - Making sure that the users can tell what procedures occur on which teeth
  - Speaking with the client and showing them various options for how procedures can be modeled on teeth
- Accuracy of the application
  - Adjudicators must use the app to approve or deny claims. To properly use the application the data must be accurate
  - Frequent communication with the client and testing
- Accounting for all procedure codes
  - There are 900 different codes for different dental procedures
  - Speak to the client and prioritize which procedures should have accurate displays

Questions?