MICHIGAN STATE UNIVERSITY

# Beta Presentation

## 3D Analysis of Dental Patient History

### The Capstone Experience


Team Delta Dental 3DADPH

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*From Students…*
*…to Professionals*

# Project Overview

- Delta Dental of Michigan, Indiana, and Ohio.
  - Headquartered in Okemos, MI
  - Processes millions of claims per year
- Claim approval could require human review
  - Adjudicators handle massive amounts of data
  - Viewing and editing this data is time consuming
- This project allows users to:
  - Upload and edit patient dental records
  - View a 3D mouth model based on dental records

# Team Member's Technical Tasks

Technical Tasks Assigned

- Ben Crimmins
  - Three.js integration with frontend
  - Tooth selection on model and tooth selection viewer
  - Visual Indicators on mouth model and timeline
- Lance Stemple
  - Creating the home page
  - Upload page for claims and ability to upload CSVs
  - Timeline (selecting claims and grouped claims menu)
  - Photos page table
- Jacob Robson
  - Upload page for patient information
  - Procedure data being viewable and editable in data page
  - Added viewable data to tooth selection viewer
  - Added in models for crowns and tooth removals
- Thomas Toaz
  - Create 3D adult and baby mouth models
  - Camera interface to snap users around the mouth
  - Create base materials/key for procedure classes
  - Create zoomable timeline
  - Allow user to highlight tooth surfaces
- Jasen Van Acker
  - Add UX features for photos page
  - Configure photo upload/view on photos page and database
  - Mouth model tooth details dialog for claim information
  - Tooth code mapping to display correct tooth names
- Sanju Kona
  - Data table with filtering capabilities
  - Data page CSV export
  - Patient typeahead and auto generation

Technical Tasks Completed

- Ben Crimmins
  - Three.js integration with frontend
  - Tooth selection on model and tooth selection viewer
  - Visual Indicators on mouth model and timeline
- Lance Stemple
  - Creating the home page
  - Upload page for claims and ability to upload CSVs
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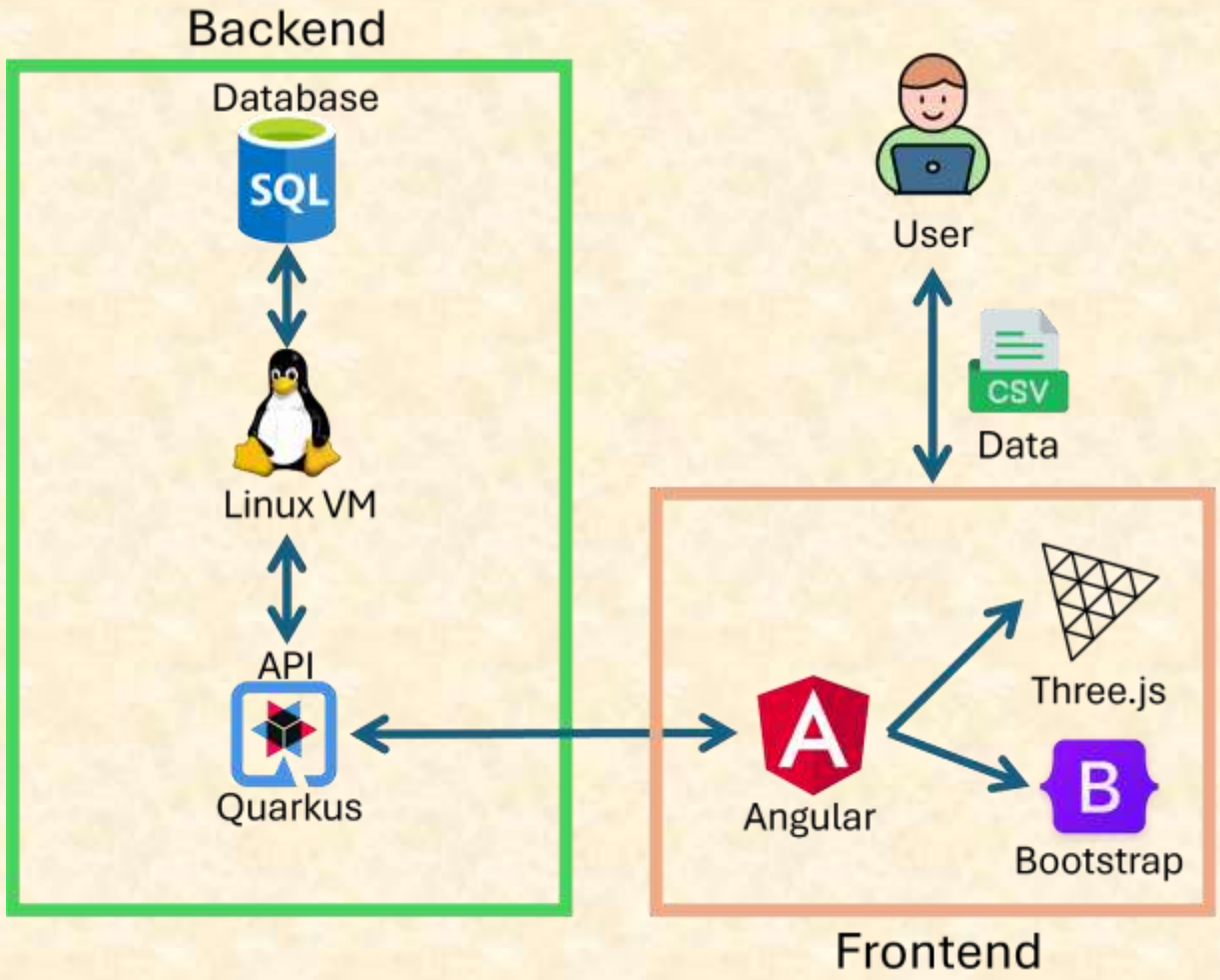
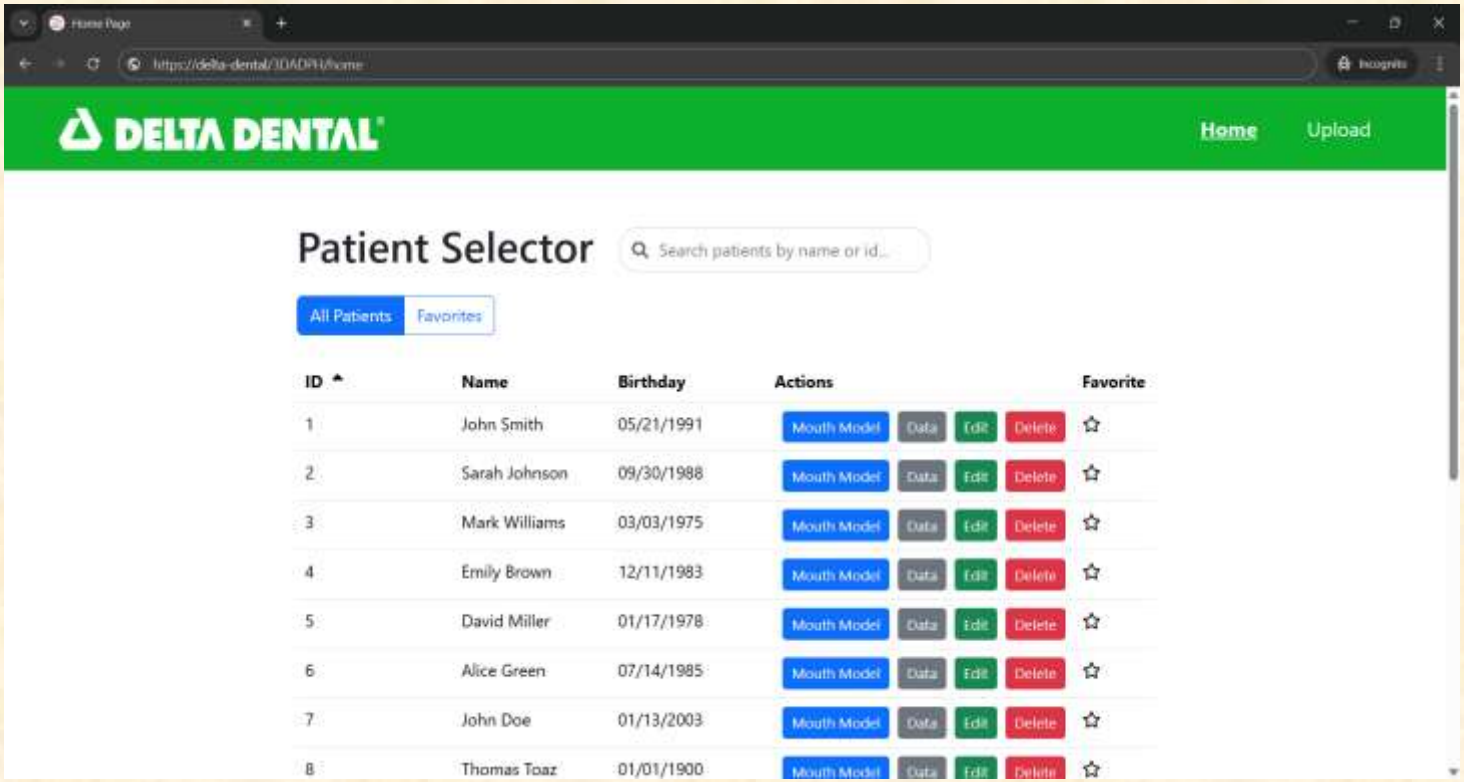
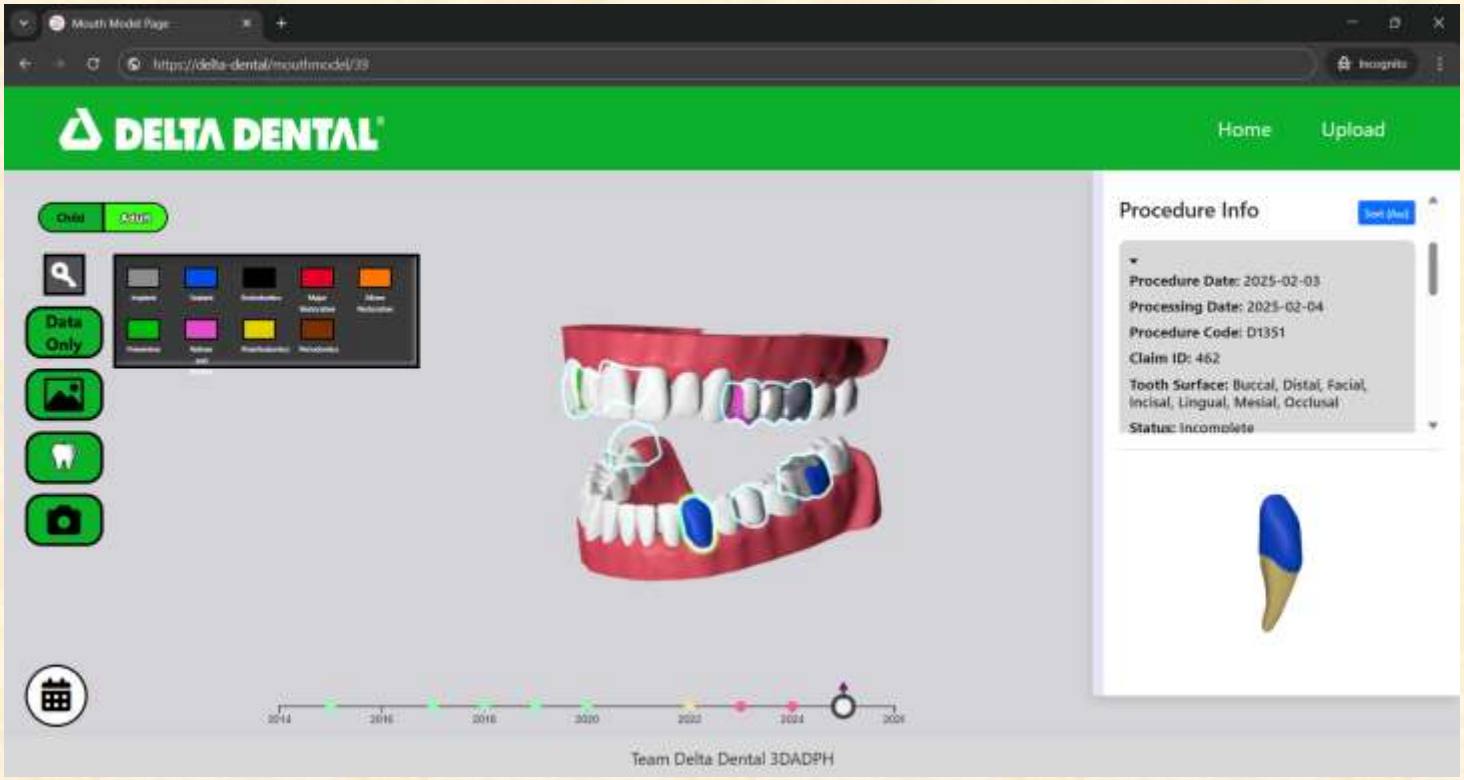
# System Architecture



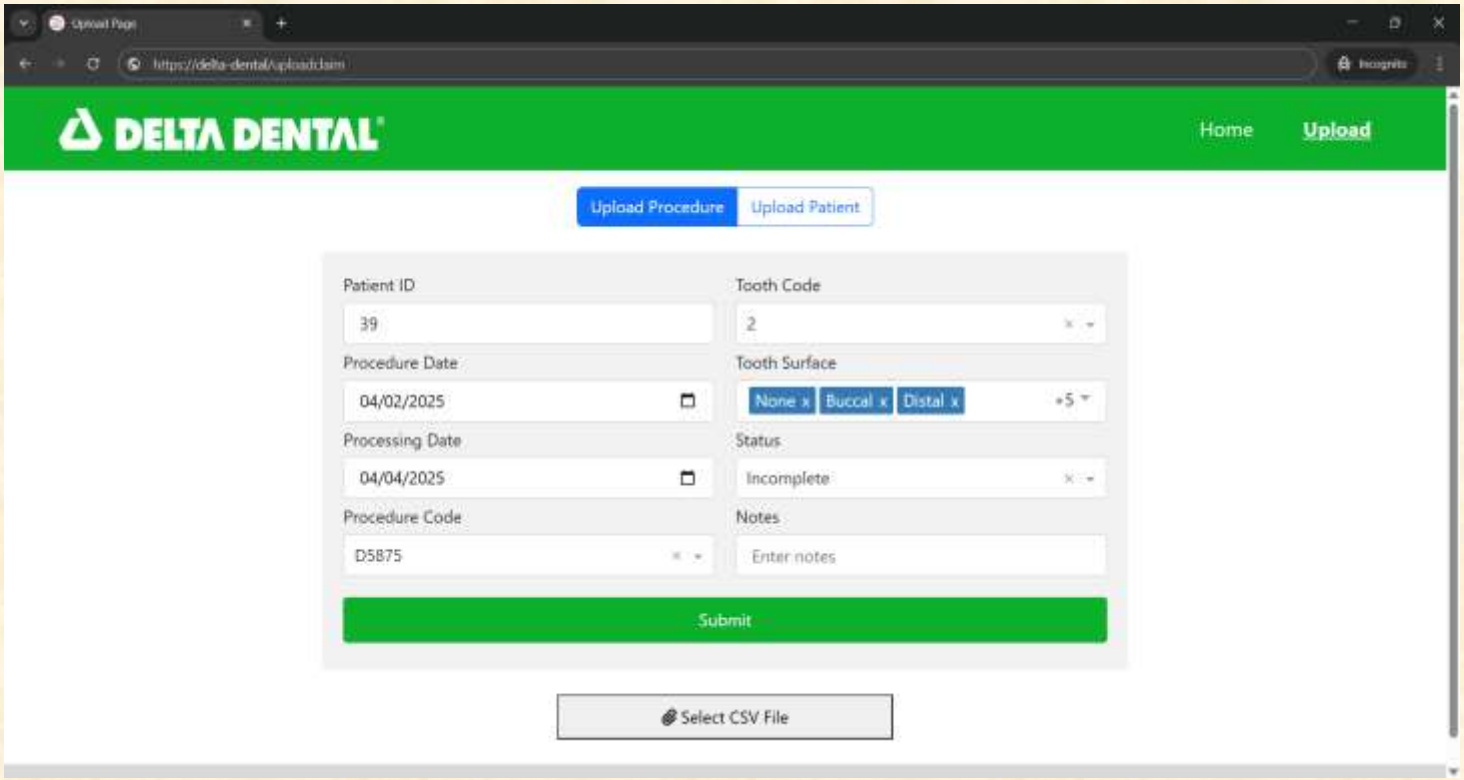
# Home Page


DELTA DENTAL
Home
Upload
Patient Selector
Search patients by name or id...
All Patients
Favorites
ID
Name
Birthday
Actions
Favorite
1 John Smith 05/21/1991
2 Sarah Johnson 09/30/1988
3 Mark Williams 03/03/1975
4 Emily Brown 12/11/1983
5 David Miller 01/17/1978
6 Alice Green 07/14/1985
7 John Doe 01/13/2003
8 Thomas Toaz 01/01/1900
Mouth Model
Data
Edit
Delete

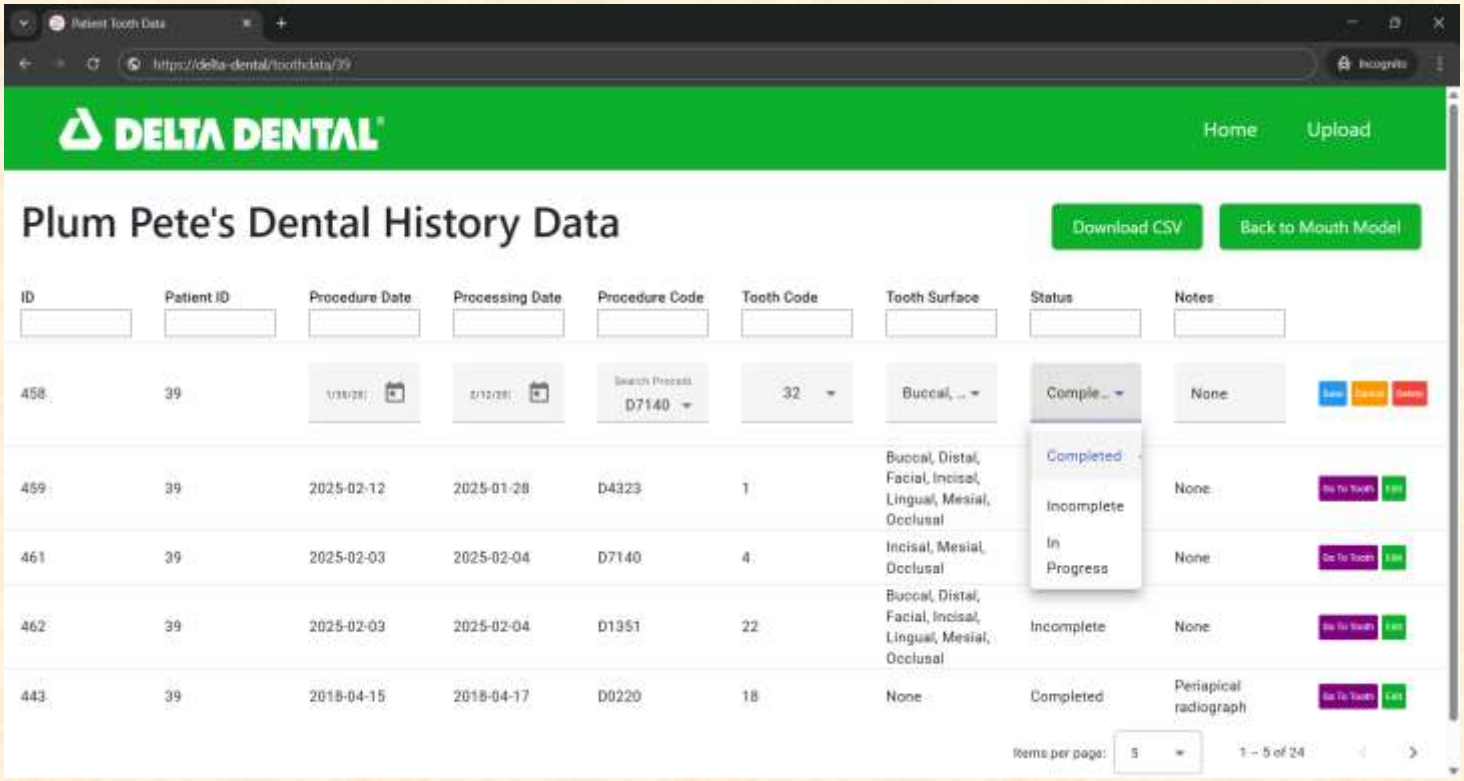
# Mouth Model


DELTA DENTAL
Home
Upload
Child
Adult
Data Only
Procedure Info
Procedure Date: 2025-02-03
Processing Date: 2025-02-04
Procedure Code: D1351
Claim ID: 462
Tooth Surface: Buccal, Distal, Facial, Incisal, Lingual, Mesial, Occlusal
Status: Incomplete
Team Delta Dental 3DADPH

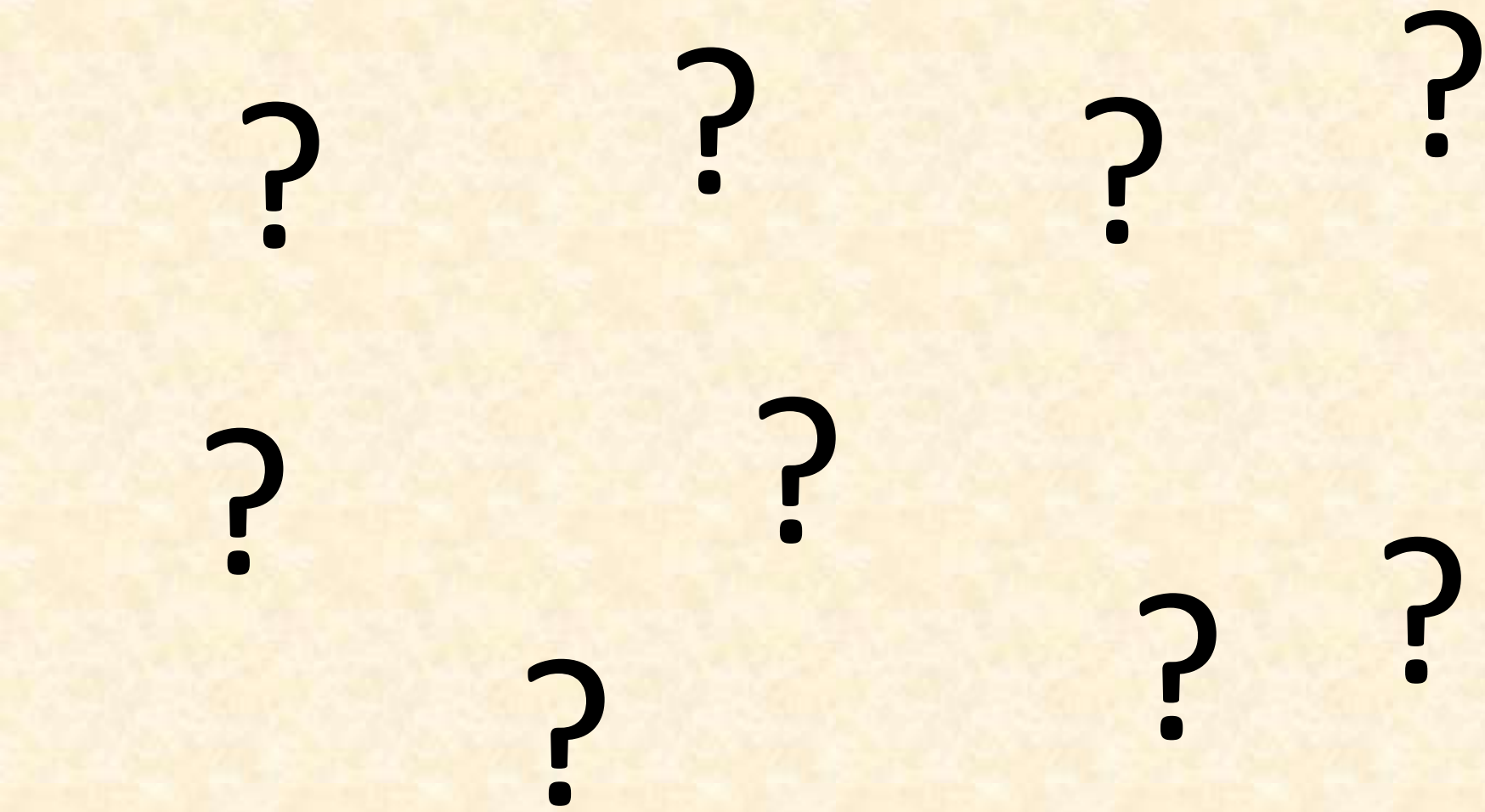
# Upload Patient/Procedure



# Patient Procedures Page



# What's left to do?

- Features
- Stretch Goals
  - Dark mode
- Other Tasks
  - Bug fixes
  - User interface updates

# Questions?