MICHIGAN STATE UNIVERSITY

Project Plan Presentation

AI Rule Metadata Generator

The Capstone Experience

Team Delta Dental AIRMG

Sricharan Devarapalli
Sainatha Paamujula
Akilesh Dhileepan
Alexander Simon
Aditya Aggarwal
Sit Soe

Department of Computer Science and Engineering
Michigan State University

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From Students…
…to Professionals

Project Sponsor Overview

- Headquartered in Okemos, Michigan, Delta Dental of Michigan is one of the largest dental insurance providers in the nation.
- While primarily serving the Tri-State area of Michigan, Indiana, and Ohio; Delta Dental of Michigan collaborates with other affiliates of the Delta Dental Plan Association

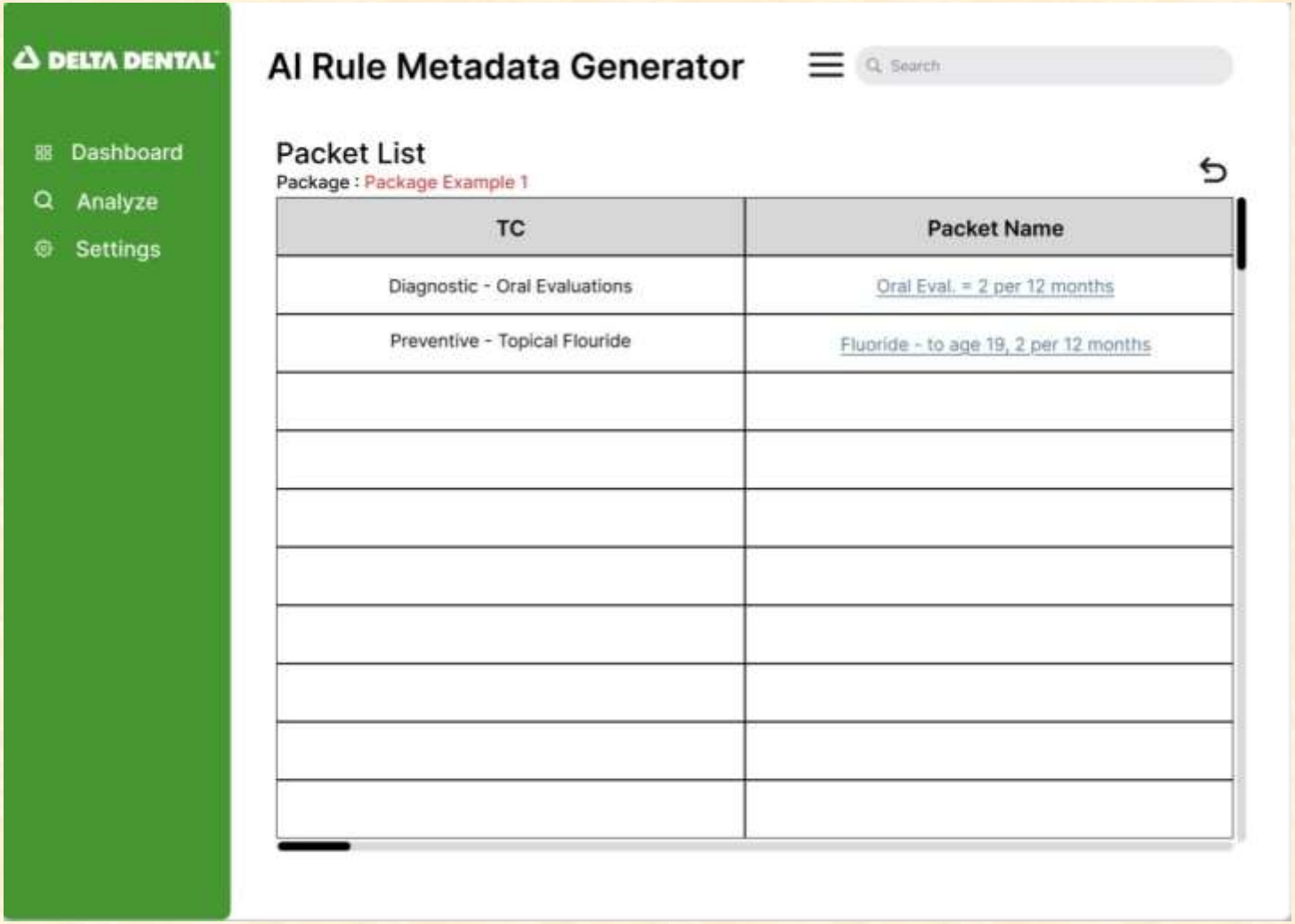
Project Functional Specifications

- Delta Dental needs to create unique packages for each all their customers ranging from individual families to large corporations
- This process can be time consuming and repetitive, leading to errors such as data/policy duplication, and missing information.
- To solve this, we will have a system where the user will be able to pick multiple files, either packets or rules, which then our AI model will be able to decipher and output a file of summarized metadata of those chosen parameters.

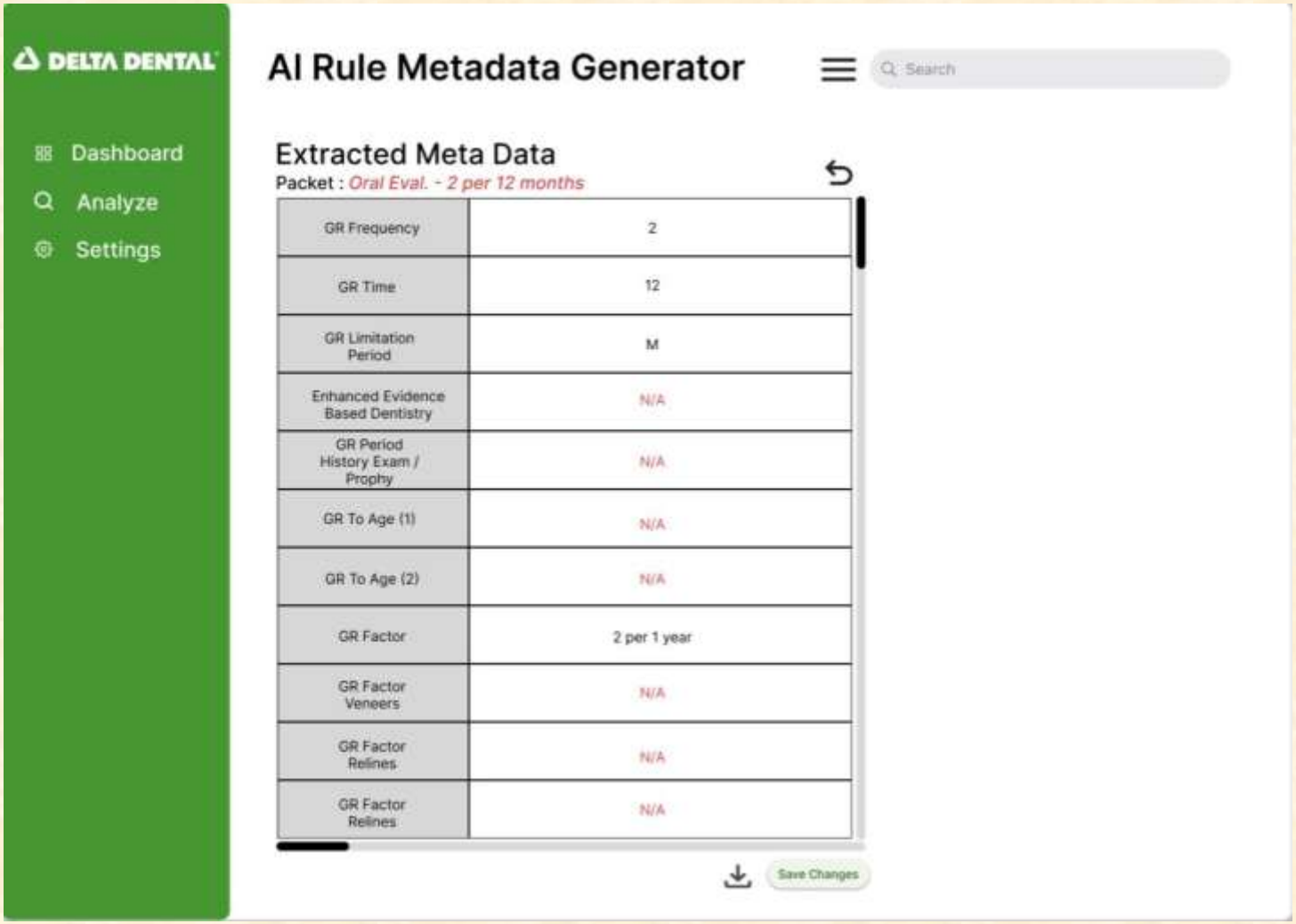
Project Design Specifications

- This application analyzes existing rule data to generate structured metadata reports and store these reports in a database.
- This metadata will be displayed in 3 different organized webpages
  - The first page is the main dashboard homepage where we display a list of packets to choose from
  - The user will be directed to a second webpage displaying metadata for that packet after choosing
  - Finally, we have an analyze page where the user can compare two or more different packets/packages and their metadata

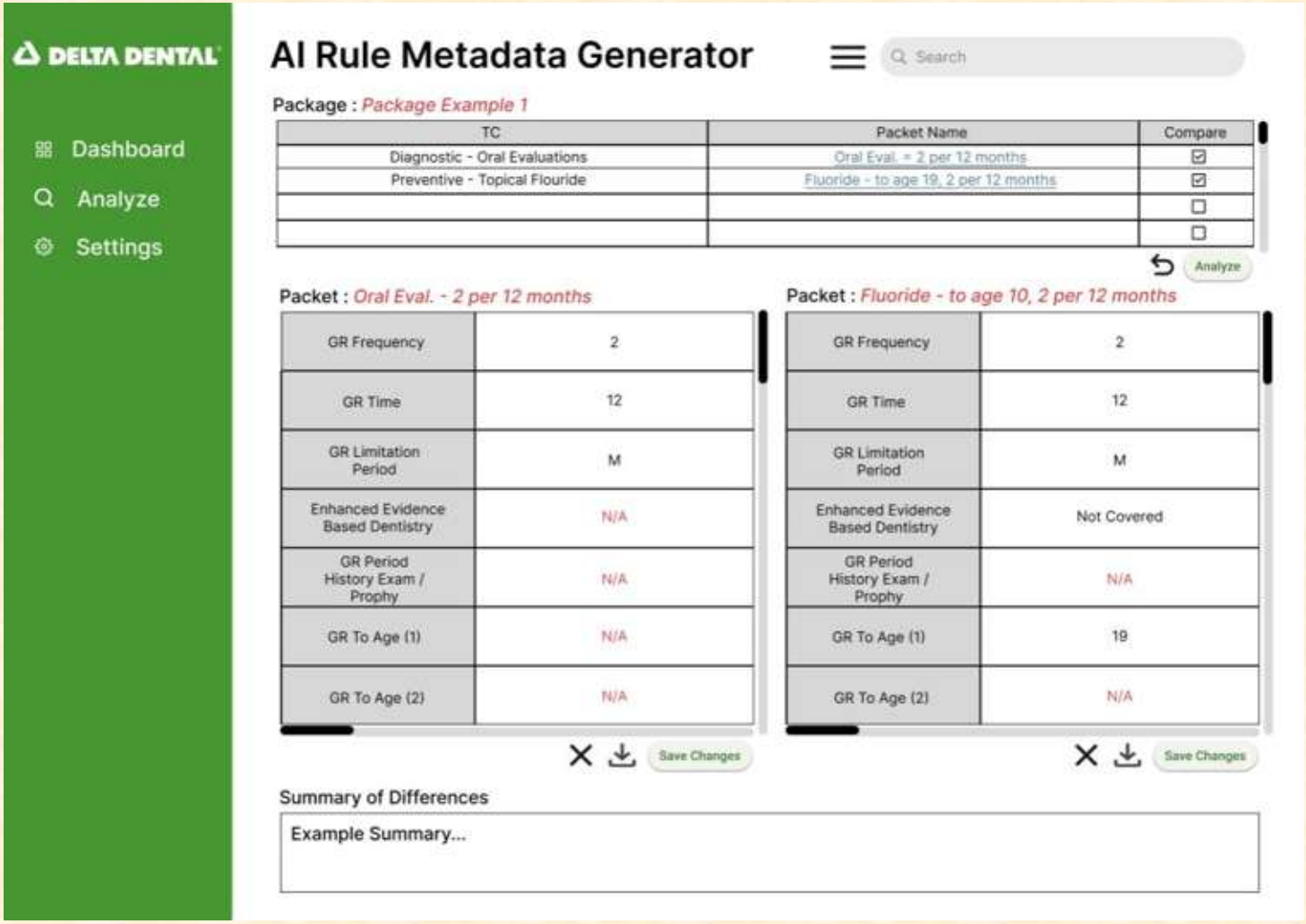
Screen Mockup: Dashboard Interface – Navigation View



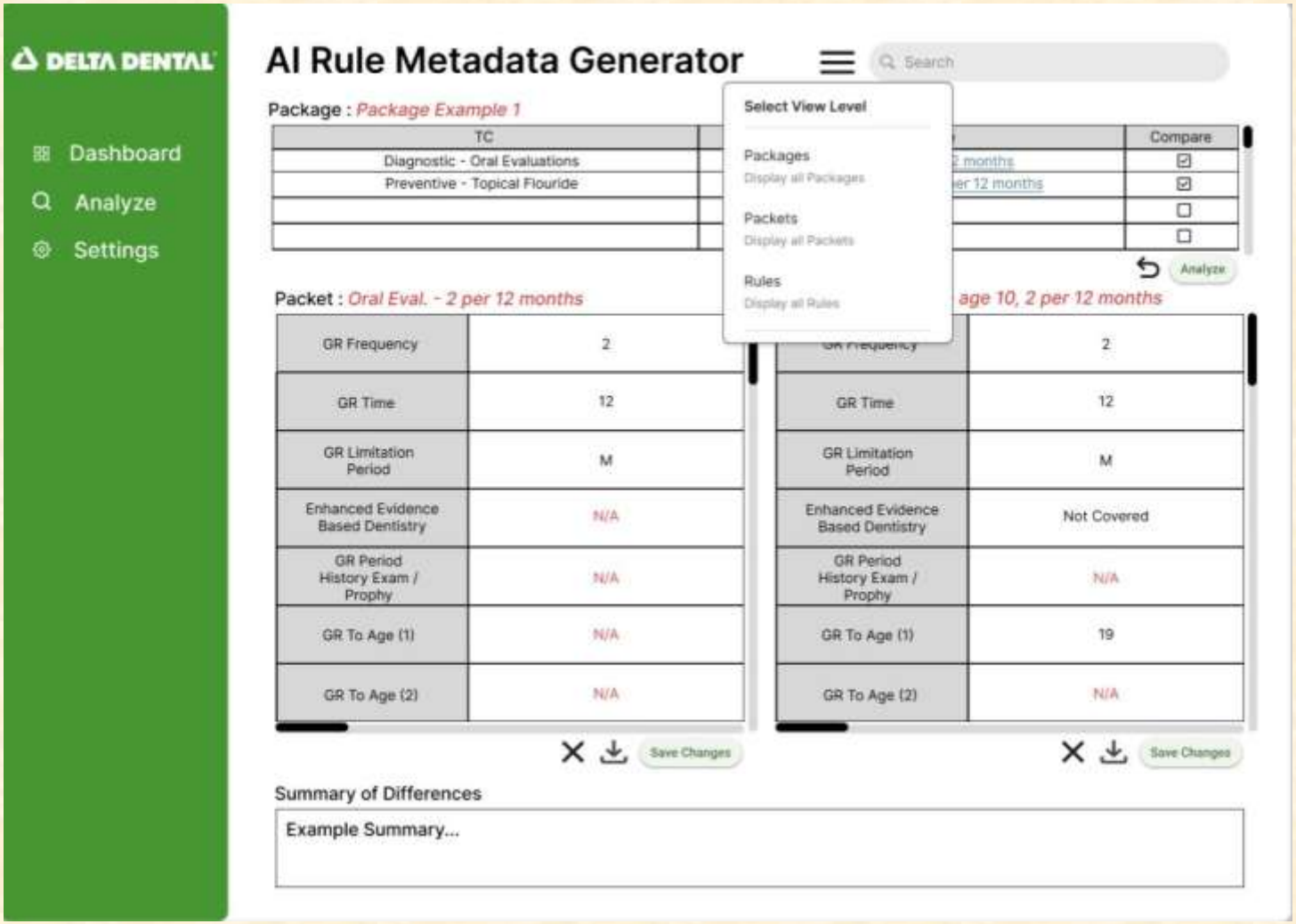
Screen Mockup: Dashboard Interface – Metadata View



Screen Mockup: Analyze Interface- Metadata Comparison View



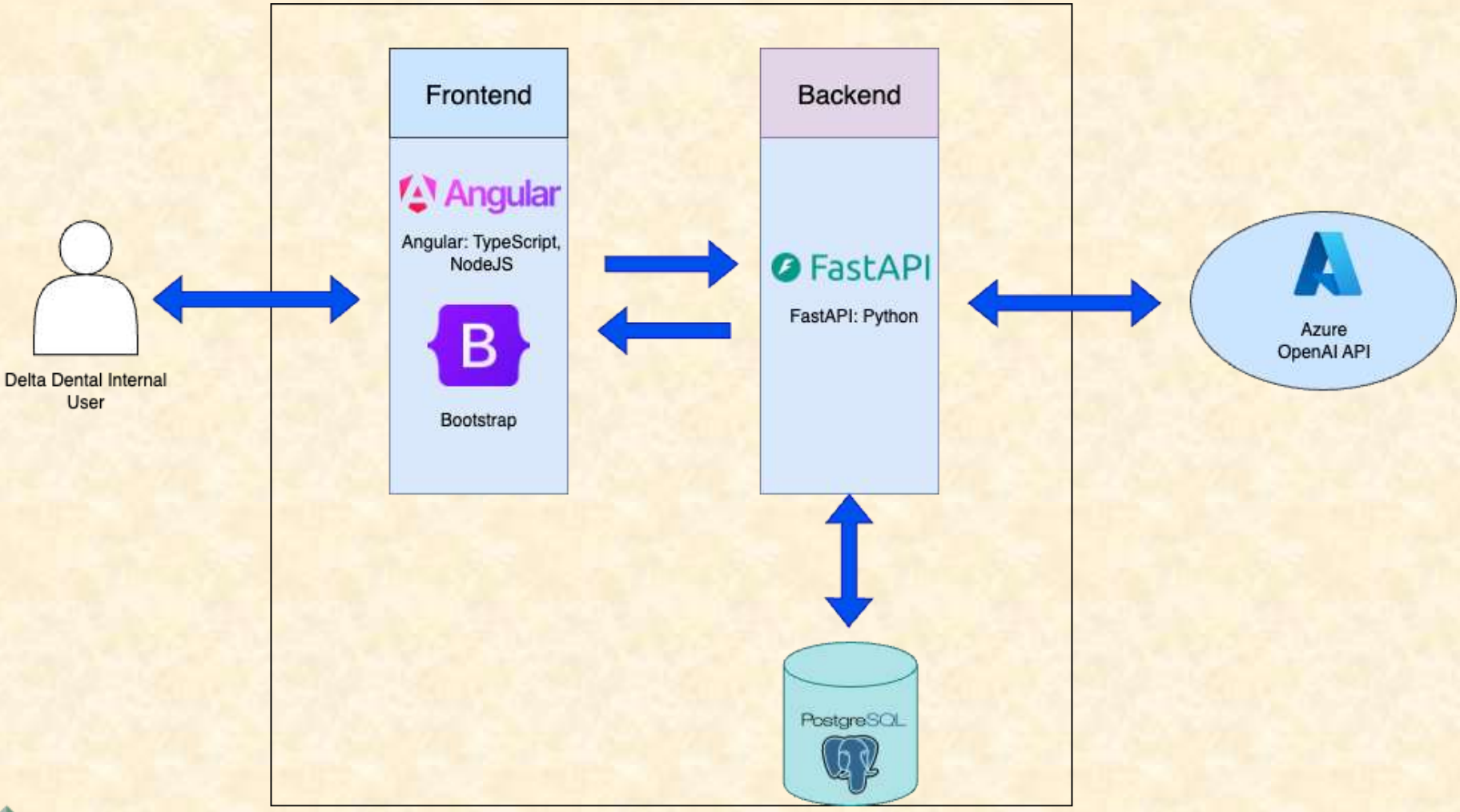
Screen Mockup: Level View Dropdown



Project Technical Specifications

- User interacts with our web-based application to generate metadata for packages, packets, and rules.
- Azure OpenAI API generates the metadata to store in our PostgreSQL database.
- Angular based frontend displays metadata fetched from database using backend FastAPI API endpoints.

Project System Architecture



Project System Components

- Hardware Platforms
  - None
- Software Platforms / Technologies
  - Python FastAPI
  - PostgreSQL
  - Docker
  - Azure OpenAI API
  - Angular
  - TypeScript

Project Risks

- Choosing right LLM Model
  - Have to balance cost effectiveness vs. accuracy of the LLM
  - Exploring multiple mini LLM models
- Prompt Engineering
  - Developing one fine-tuned prompt to achieve everything needed
  - Continuous testing and updating of the prompt
- API Design and Implementation
  - Need to implement an API that correctly capsulates all data with no errors in communication with the frontend
  - Develop extensive tests cases to ensure that all project components communicate well with each other

Questions?