MICHIGAN STATE
U N I V E R S I T Y

Project Plan Presentation
Domain-Specific Language Tooling Ecosystem

The Capstone Experience

Team Delta Dental dSLATE

Joseph Hughes
Jude Hansen
Henry Greer
Antonio Capozzoli
David Wells
Mitchell Ballinger

Department of Computer Science and Engineering
Michigan State University

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From Students…
…to Professionals

Project Sponsor Overview

- Delta Dental of Michigan is subsidiary of nation's leading provider of dental insurance

- Part of Delta Dental Plans Association
  - Nationwide system of independently operated dental health service plans
  - Offers coverage to 83 million Americans

- Subsidiary of Delta Dental of Michigan will distribute software to other Delta Dentals

Project Functional Specifications

- Improve accessibility and scalability of Domain Specific Language
- By building a centralized tooling ecosystem
- That streamlines rate calculation schemas
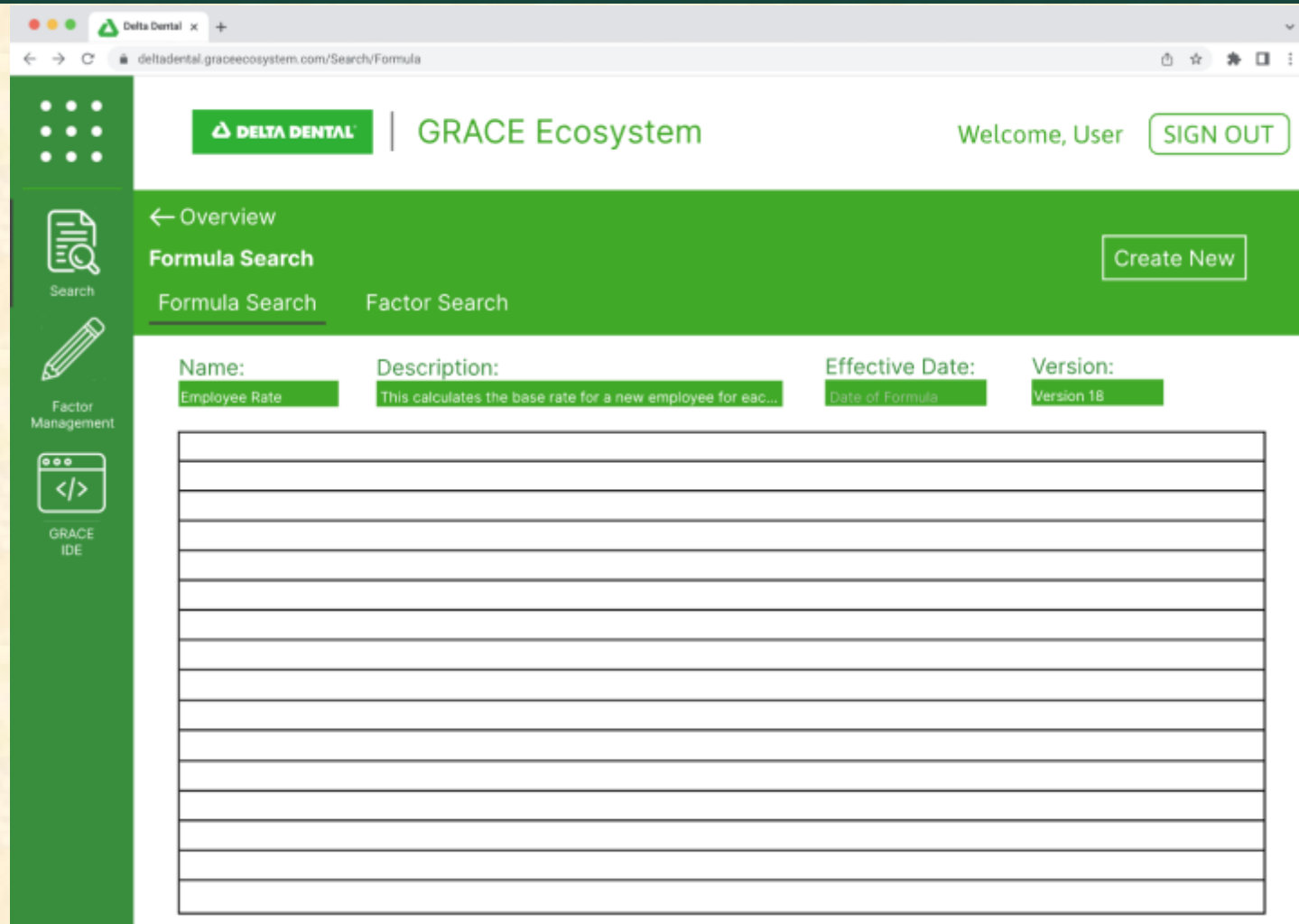- Through simplifying user interactions
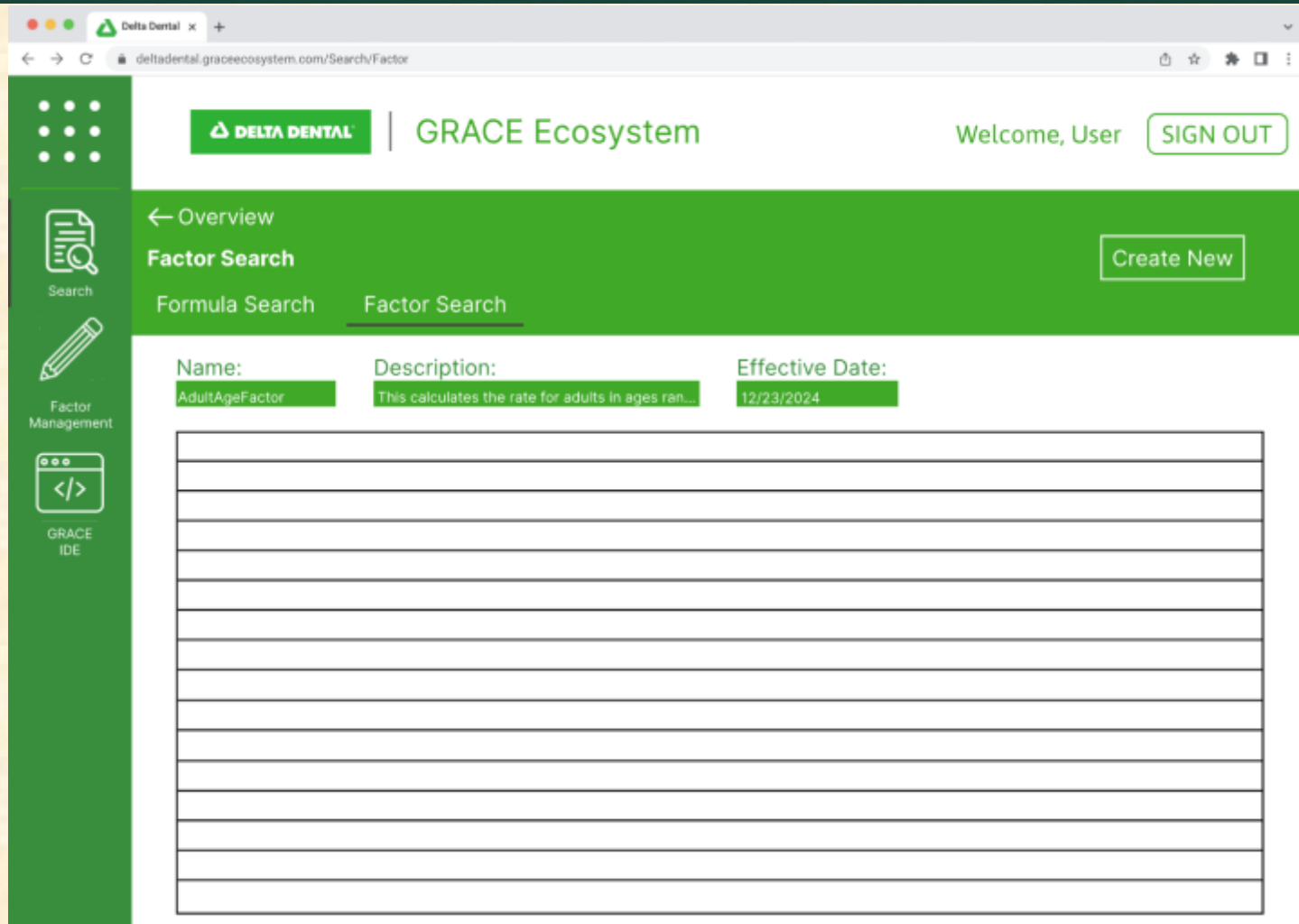
Project Design Specifications

- Web application

- Follows Delta Dental branding standards

- Sidebar navigation

- Rate calculation formula overview

- Factor management
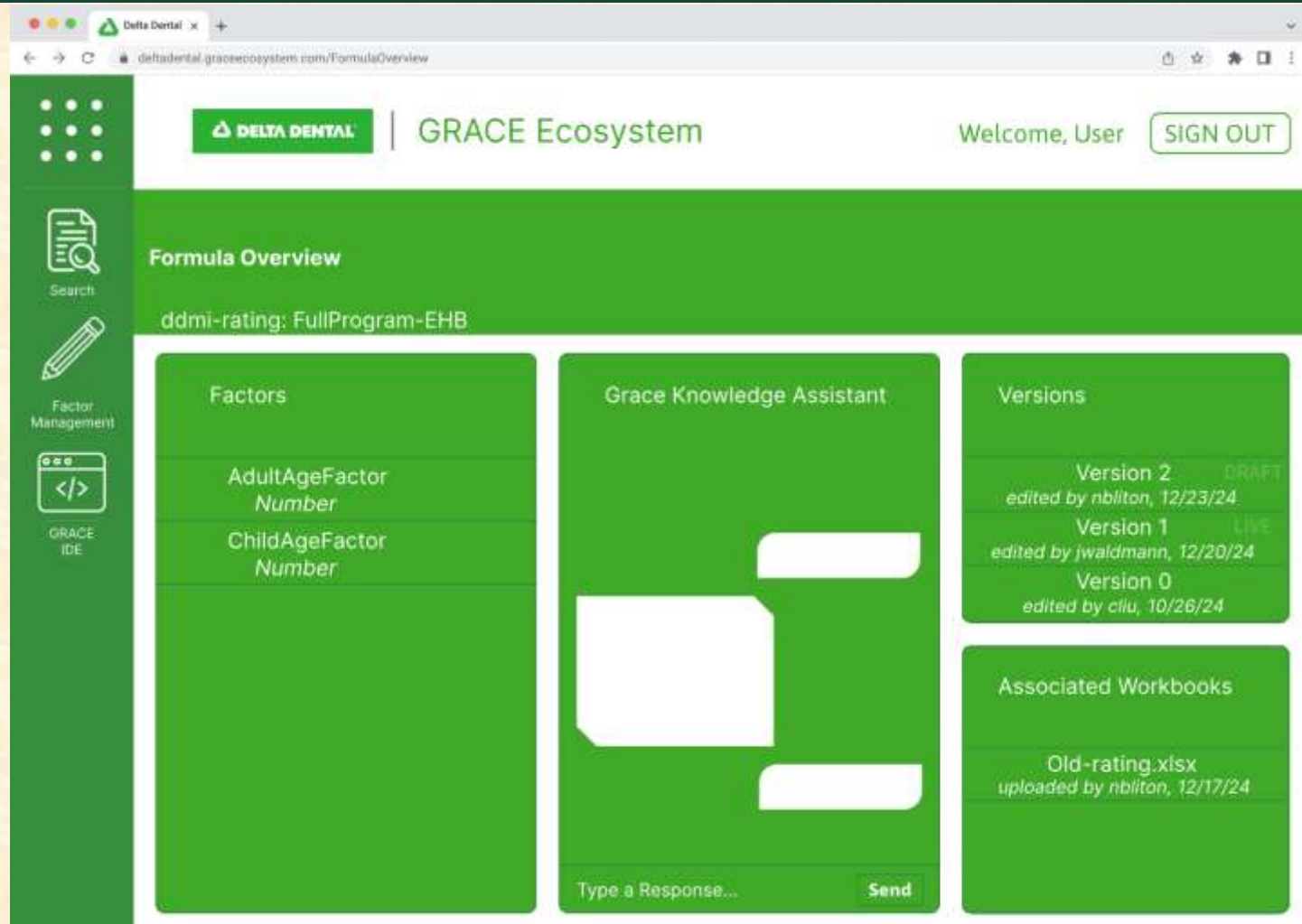
- N-Dimensional table

- Factor and Formula search

- GRACE IDE

Screen Mockup: Formula Search Page

Screen Mockup: Factor Search Page

Screen Mockup: Formula Overview

Screen Mockup: Factor Management

Screen Mockup: DSL IDE

Project Technical Specifications
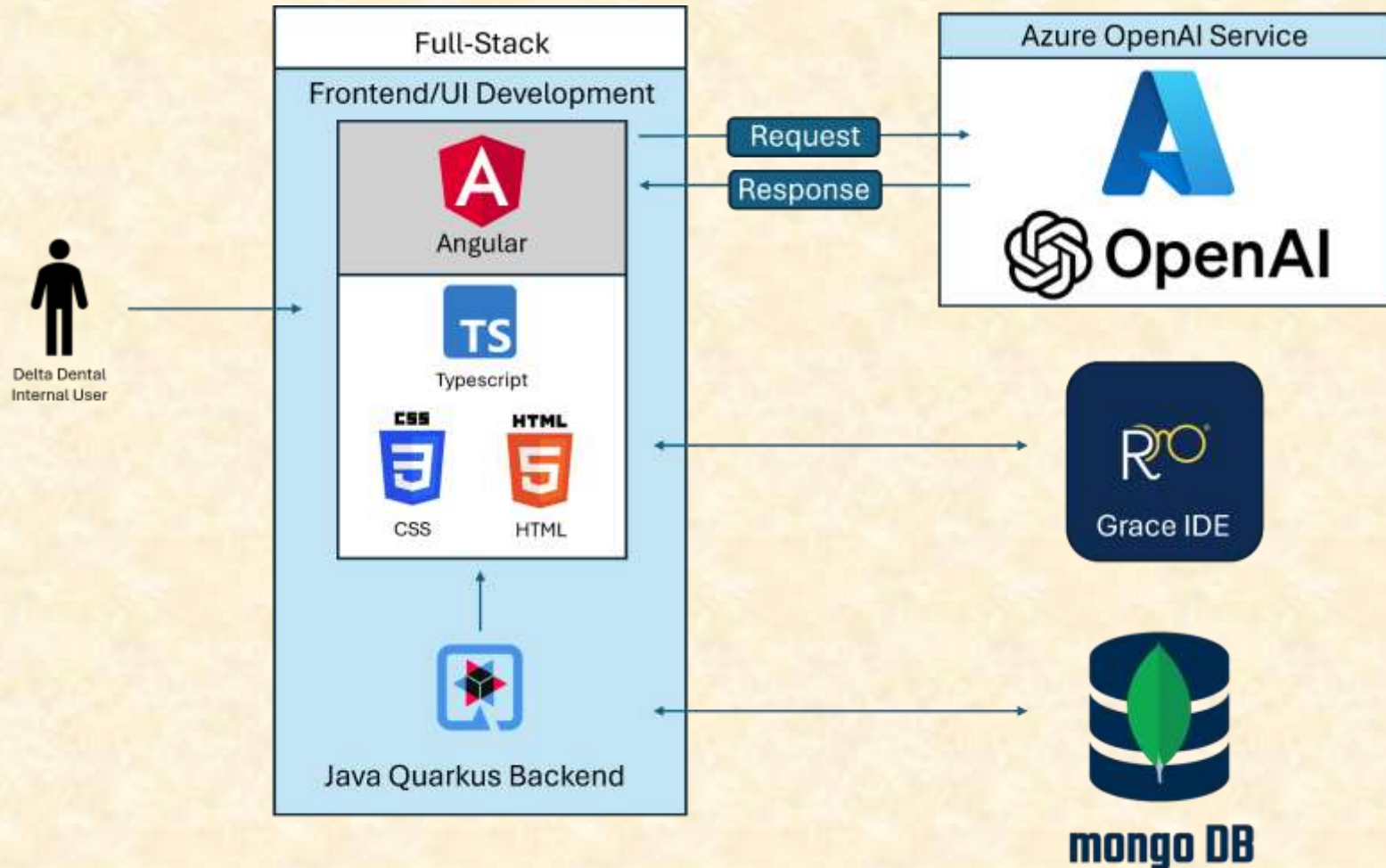
- Locally hosted web application

- Integrated AI assistant trained through prompt engineering

- Built-in IDE for editing DSL in real-time

- User-entered data stored in remote database

Project System Architecture

Project System Components

- Software Platforms / Technologies
  - Azure OpenAI Service
  - MongoDB
  - Angular Framework
  - Java Quarkus
  - Delta Dental GRACE IDE

Project Risks

- AI Knowledge Assistant
  - Training an AI assistant with limited data on DSL
  - Using prompt engineering techniques
- N-Dimensional Data Table
  - Representation of N-dimensional data tables where n is the number of labels that calculate a factor
  - Speaking with non-technical users and clear UI choices
- Integration of previous Capstone projects
  - Previous projects are written in different versions of languages and are deployed in multiple ways
  - Testing projects extensively in their own environment and integrated environment

Questions?