

MICHIGAN STATE

U N I V E R S I T Y

Project Plan Presentation

Smart Benefit Recommender Engine

The Capstone Experience

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*From Students...
...to Professionals*

Functional Specifications

- Recommend personalized insurance plans
- Automate process of aggregating data
- For either individuals or small businesses



Design Specifications

- Create a simple web application that can be accessed via browser on any device
- Segment customers by having them answer a minimal number of questions
- User will fill in several blanks, and be placed into a cluster based on their attributes
 - These clusters represent the optimal dental insurance plan for the end user to choose from



Screen Mockup: Choosing Path



DELTA DENTAL

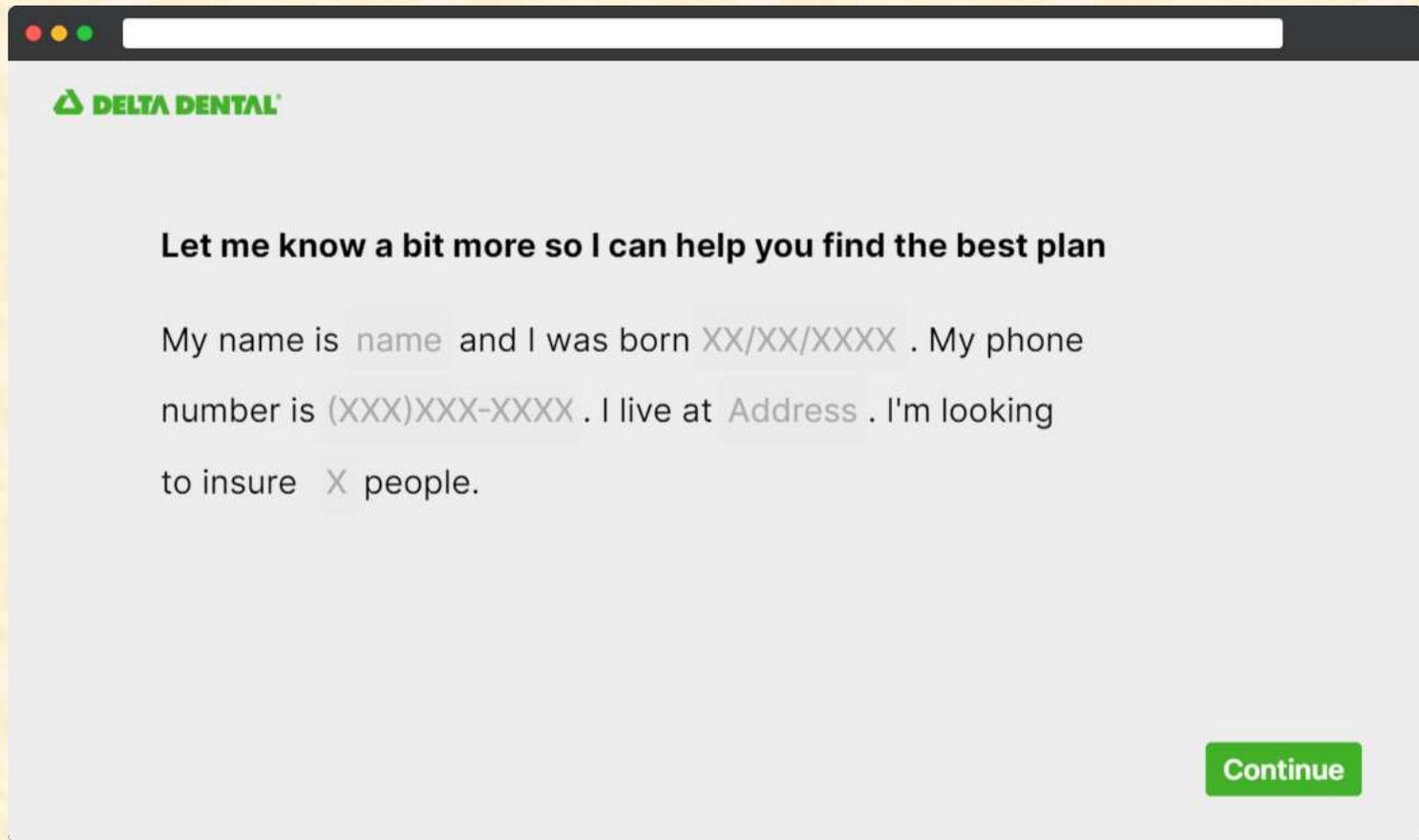
So tell me about yourself

I am Choose One

Continue



Screen Mockup: Individual



DELTA DENTAL

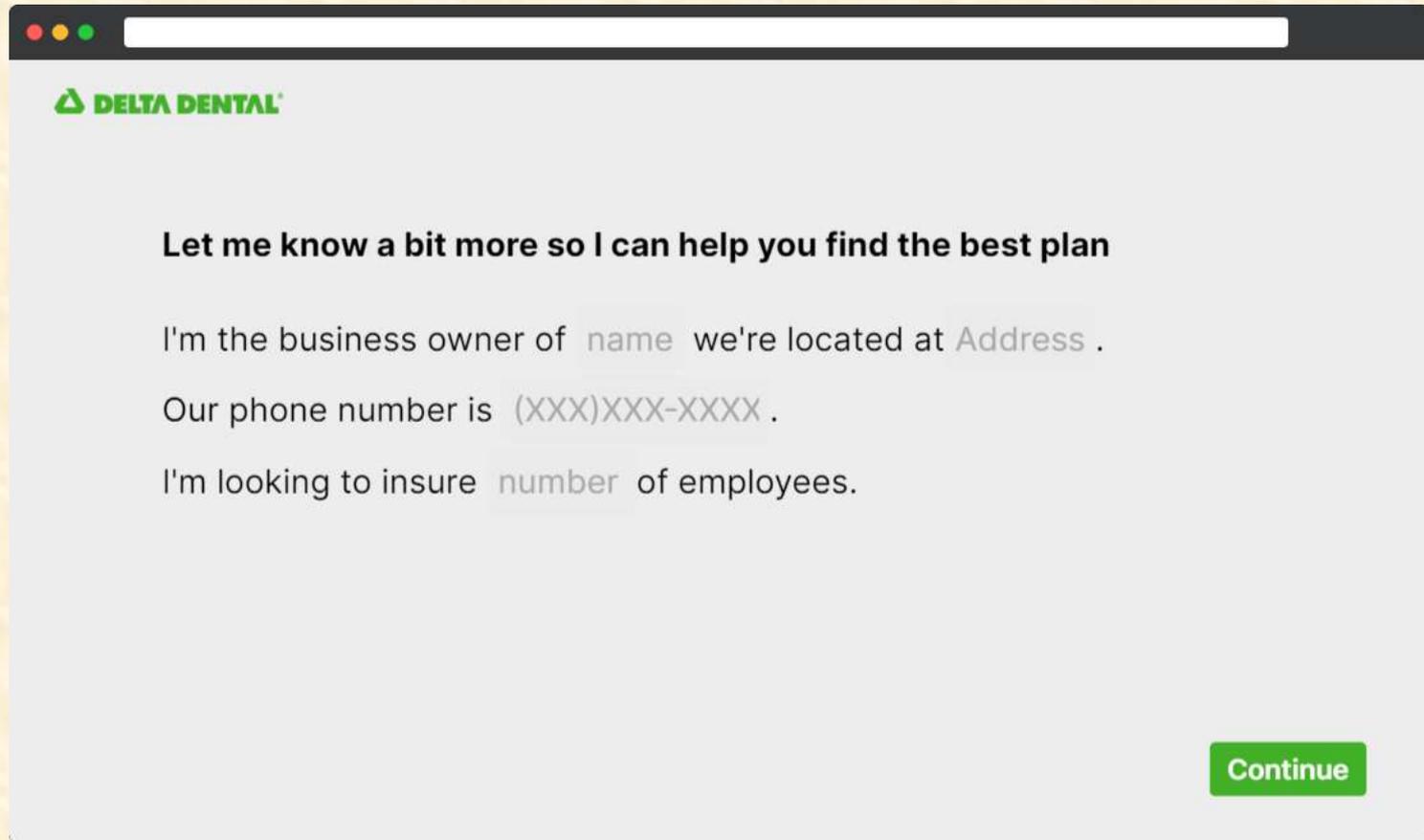
Let me know a bit more so I can help you find the best plan

My name is and I was born . My phone number is . I live at . I'm looking to insure people.

[Continue](#)



Screen Mockup: Small Business



The mockup shows a web browser window with the Delta Dental logo in the top left. The main content area contains a form with the following text:

Let me know a bit more so I can help you find the best plan

I'm the business owner of we're located at .

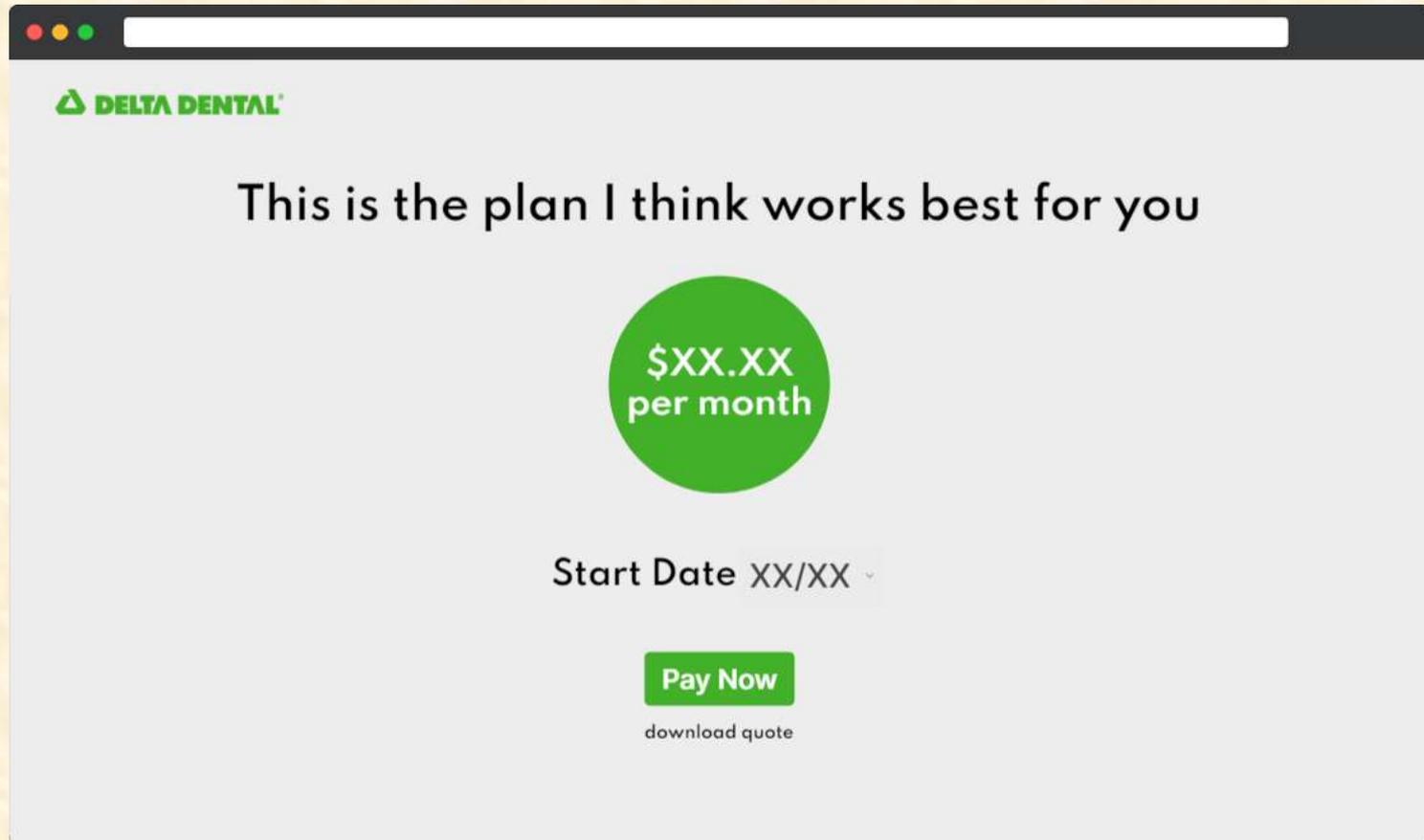
Our phone number is .

I'm looking to insure of employees.

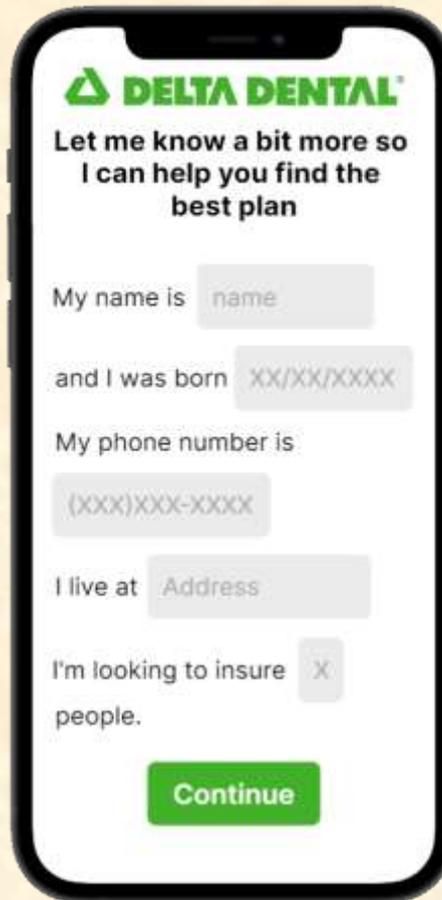
A green "Continue" button is located in the bottom right corner of the form area.



Screen Mockup: Recommend



Screen Mockup: Mobile Web Version



DELTA DENTAL

Let me know a bit more so
I can help you find the
best plan

My name is

and I was born

My phone number is

I live at

I'm looking to insure X
people.

Continue

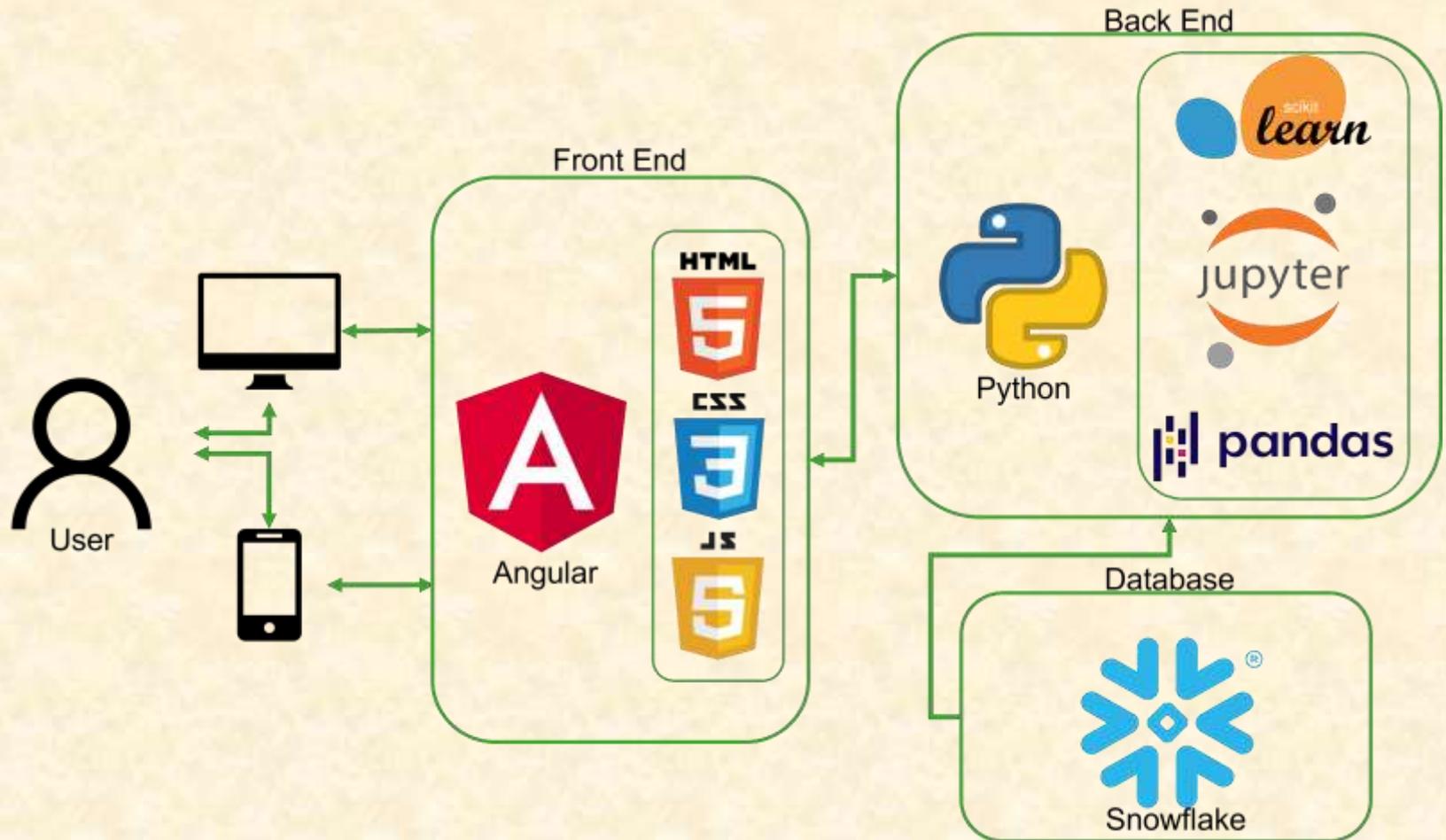


Technical Specifications

- Front-End
 - Collects information from user input.
 - Displays a recommended benefit plan to user.
 - Developed in Angular with HTML, CSS, and JavaScript.
- Back-End
 - Back-end code pulls Delta Dental Customer data from database.
 - K-means finds clusters in pre-existing customer data.
 - New user data mapped to nearest cluster/best benefit plan.



System Architecture



System Components

- Hardware Platforms
 - No specific hardware
 - Front-end runs in browser on any device.
 - Back-end runs in the cloud.
- Software Platforms / Technologies
 - Front-End
 - Angular
 - HTML/CSS/JavaScript
 - Back-End
 - Python: Jupyter Notebooks, Scikit Learn, and Pandas
 - Snowflake



Risks

- Risk 1: Data Cleaning
 - The individual dataset is extremely large dataset with few sparse columns making data cleaning less straightforward
 - Use additional factors (like column type) to determine whether to keep
- Risk 2: Data Clustering
 - The data might extremely similar and thus, there would not be many clear distinct segments to choose from.
 - During data exploration, identify and focus specifically on features that show a large distribution of data.
- Risk 3: Data Security
 - Malicious data like SQL injections entered into the data fields
 - Design architecture to minimize this risk and check input for SQL injections
- Risk 4: Accessibility
 - Making sure the website is accessible for both mobile and desktop user
 - Use website elements shared between both with a barebones version



Questions?

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