myMenu

Cooking up your lifestyle

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Introduction

myMenu is a meal planning application that leverages supervised machine learning to create customized meal plans for users.

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Motivation

Does not include all of the following in their algorithms:

- ✓ User’s personal goals
- ✓ Food preferences
- ✓ Biometric data

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How it Works: The Backend

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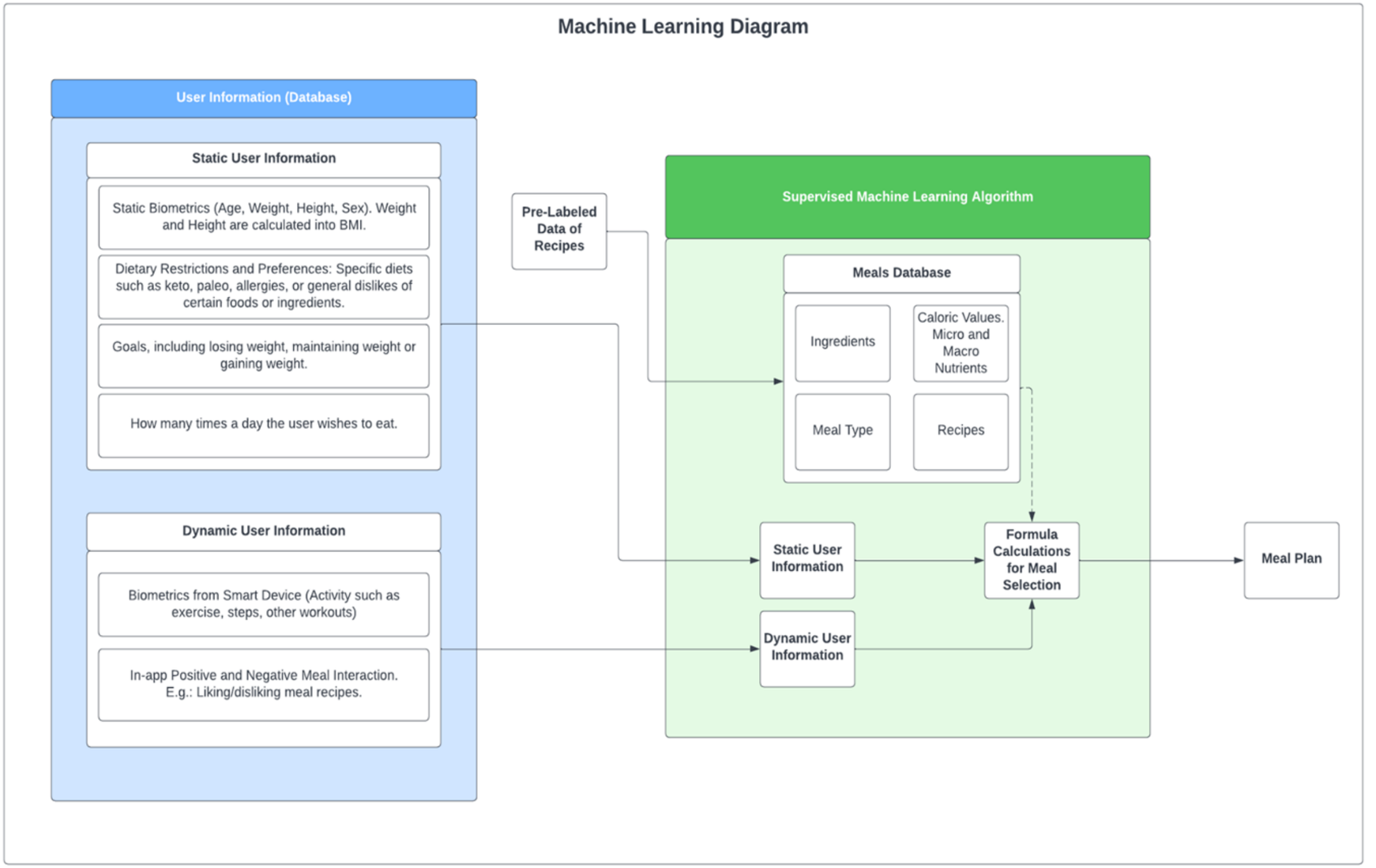
Machine Learning Diagram
User Information (Database)
Static User Information
Static Biometrics (Age, Weight, Height, Sex). Weight and Height are calculated into BMI.
Dietary Restrictions and Preferences: Specific diets such as keto, paleo, allergies, or general dislikes of certain foods or ingredients.
Goals, including losing weight, maintaining weight or gaining weight.
How many times a day the user wishes to eat.
Dynamic User Information
Biometrics from Smart Device (Activity such as exercise, steps, other workouts)
In-app Positive and Negative Meal Interaction. E.g.: Liking/disliking meal recipes.
Pre-Labeled Data of Recipes
Supervised Machine Learning Algorithm
Meals Database
Ingredients
Caloric Values. Micro and Macro Nutrients
Meal Type
Recipes
Static User Information
Dynamic User Information
Formula Calculations for Meal Selection
Meal Plan

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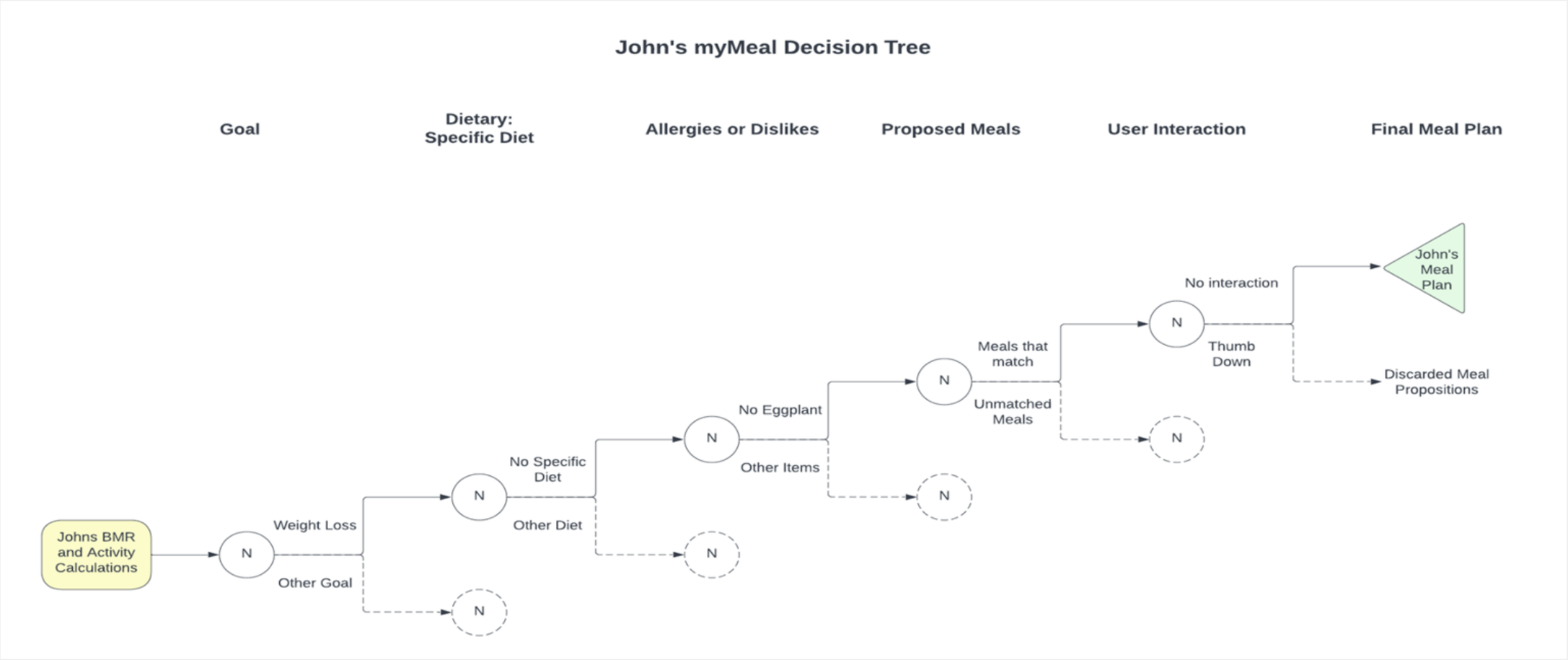
John's myMeal Decision Tree
Goal
Dietary: Specific Diet
Allergies or Dislikes
Proposed Meals
User Interaction
Final Meal Plan
Johns BMR and Activity Calculations
N
Weight Loss
Other Goal
N
No Specific Diet
Other Diet
N
N
No Eggplant
Other Items
N
N
Meals that match
Unmatched Meals
N
N
No interaction
Thumb Down
John's Meal Plan
Discarded Meal Propositions

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How it Works: The Frontend

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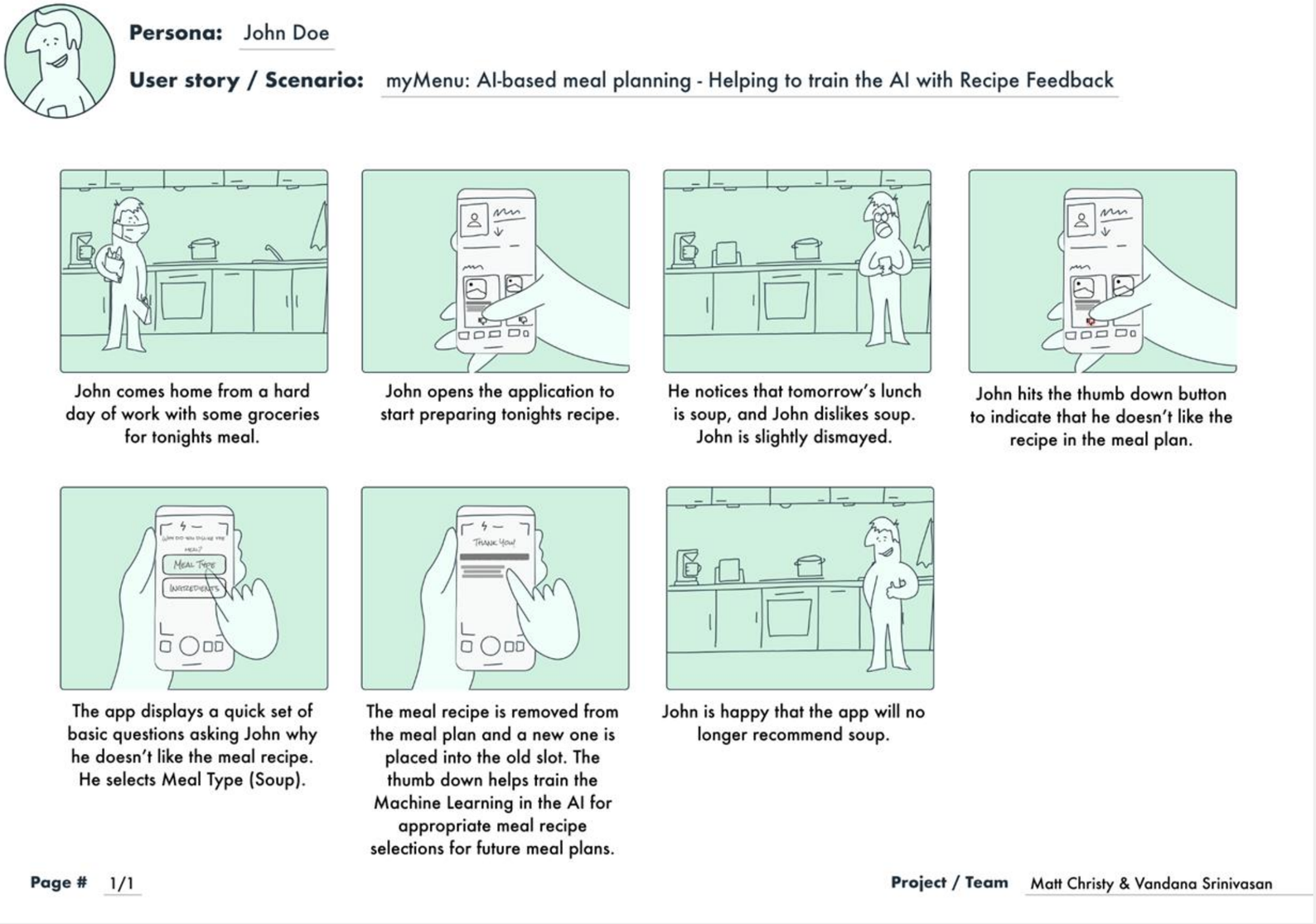
Soup


Persona: John Doe
User story / Scenario: myMenu: AI-based meal planning - Helping to train the AI with Recipe Feedback
John comes home from a hard day of work with some groceries for tonights meal.
John opens the application to start preparing tonights recipe.
He notices that tomorrow's lunch is soup, and John dislikes soup. John is slightly dismayed.
John hits the thumb down button to indicate that he doesn't like the recipe in the meal plan.
MEAL TYPE
INGREDIENTS
The app displays a quick set of basic questions asking John why he doesn't like the meal recipe. He selects Meal Type (Soup).
THANK YOU!
The meal recipe is removed from the meal plan and a new one is placed into the old slot. The thumb down helps train the Machine Learning in the AI for appropriate meal recipe selections for future meal plans.
John is happy that the app will no longer recommend soup.
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Project / Team Matt Christy & Vandana Srinivasan

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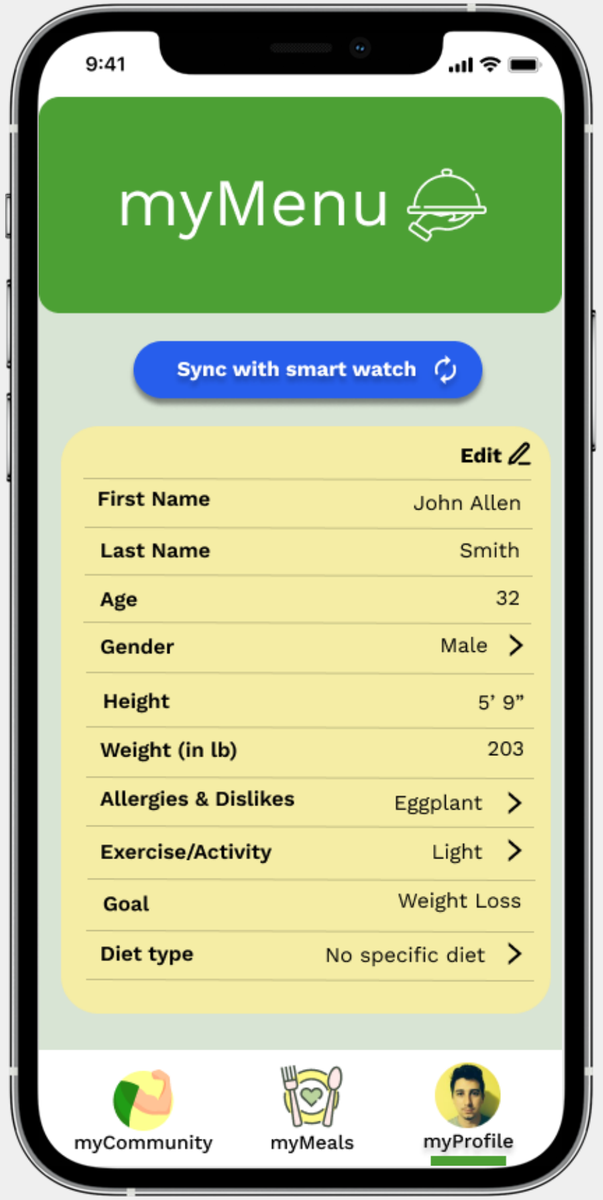
myProfile



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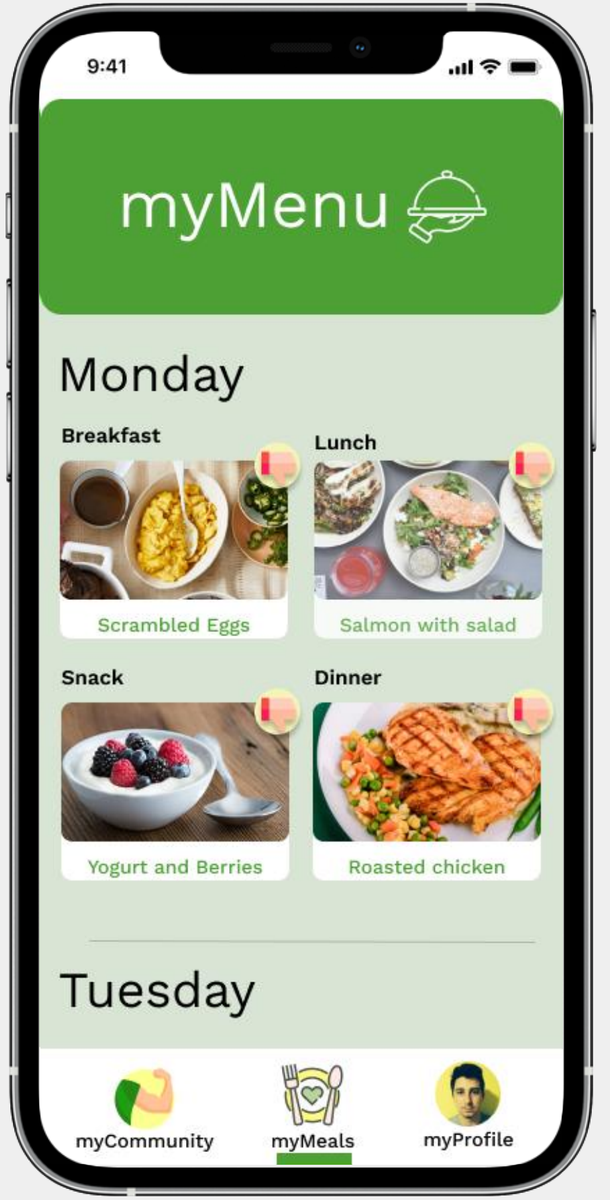
myMeals



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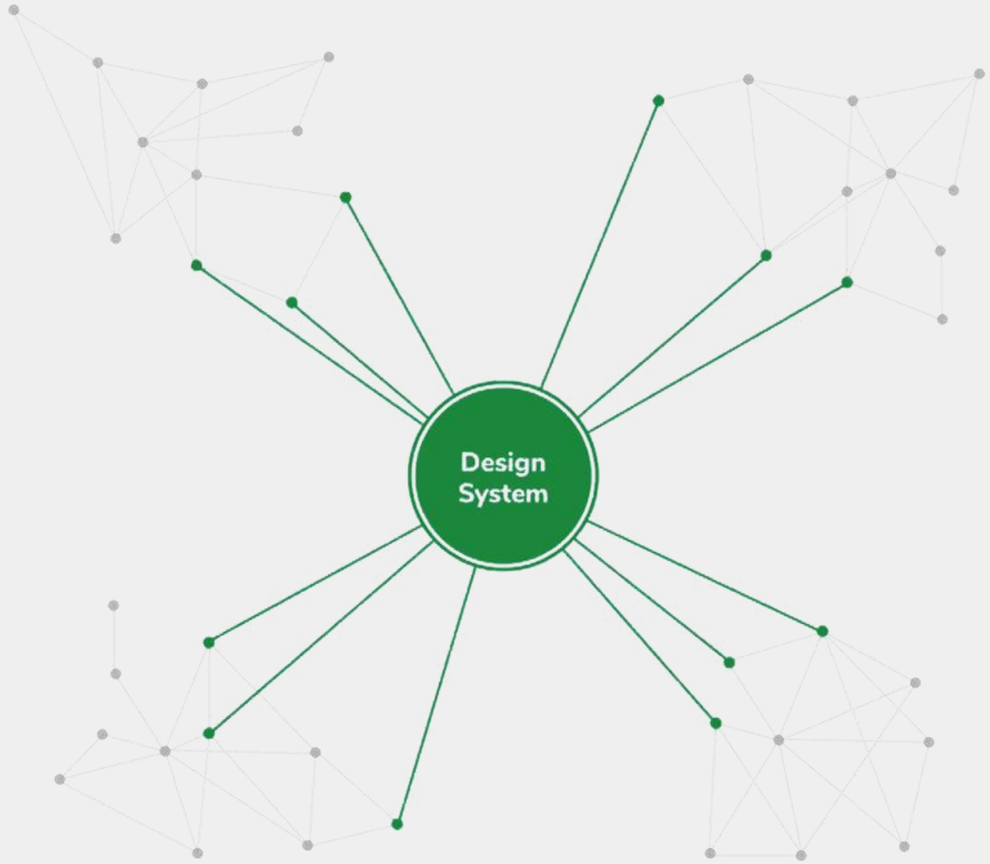
What we Learned: Proposal



✓ Gained understanding of existing applications and explored various options to create a system that differed in its mechanism in order to improve efficiency and user satisfaction.

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What we Learned: Conceptual

Possible Pitfalls:

- ✓ Socio-economic implications: some people can’t afford fresh and nutritious food.
- ✓ Ambiguity of liability if a specific recipe causes health issues, such as allergic reactions or other problems.
- ✓ App could cause problems with body dysmorphia or users prone to eating disorders.
- ✓ App doesn’t consider users who may be transitioning genders, which would affect caloric calculations.

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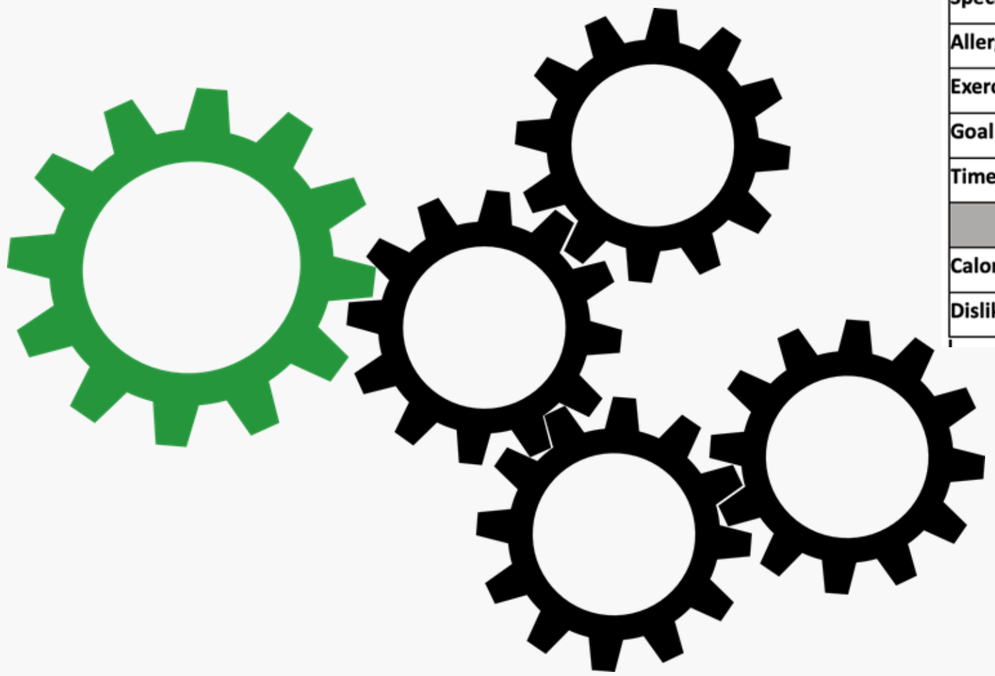
What we Learned: Concrete



Suzie				
Static Data				
Initial Biometrics	**Gender**	**Age**	**Height**	**Weight**
	26	Female	5'7"	140lb
Specific Diet	Keto			
Allergies or Dislikes	Peanuts			
Exercise	Moderately Active			
Goal	Maintain Weight			
Times/Day	5			
Dynamic Data				
Calories Burned	*Detected via Smart Watch*			
Dislike Information	*Controlled through thumb down*			

Jan				
Static Data				
Initial Biometrics	**Gender**	**Age**	**Height**	**Weight**
	42	Female	5'6"	120lb
Specific Diet	Low-Carb			
Allergies or Dislikes	Mushrooms			
Exercise	Sedentary			
Goal	Gain Weight			
Times/Day	3			
Dynamic Data				
Calories Burned	*Detected via Smart Watch*			
Dislike Information	*Controlled through thumb down*			

John				
Static Data				
Initial Biometrics	**Gender**	**Age**	**Height**	**Weight**
	32	Male	5' 9"	203
Specific Diet	None			
Allergies or Dislikes	Eggplant			
Exercise	Lightly Active			
Goal	Lose Weight			
Times/Day	4			
Dynamic Data				
Calories Burned	*Detected via Smart Watch*			
Dislike Information	*Controlled through thumb down*			

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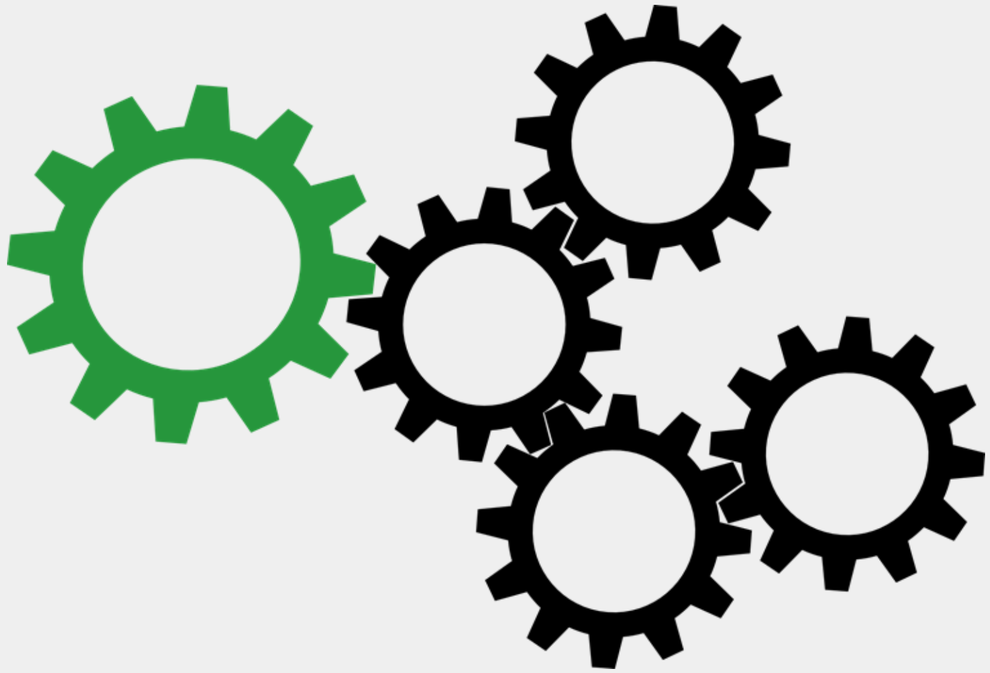
What we Learned: Concrete



Interval Periods and formula changes:

✓ Discard interval period

✓ Switched from BMI to BMR (formulas)

- *Women: BMR = 655 + (4.35 X weight in pounds) + (4.7 X height in inches) – (4.7 X age in years)*
- *Men: BMR = 66 + (6.23 X weight in pounds) + (12.7 X height in inches) – (6.8 X age in years)*

✓ Included Caloric Requirement Formulas (examples):

- *Sedentary (little or no exercise): BMR X 1.2 = daily calorie needs*
- *Lightly active (light exercise one to three times a week): BMR X 1.375 = daily calorie needs*

Reworked the decision tree

✓ After formula changes the decision tree also had to be modified

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Thank You