

# Ideation Documentation for Advancing Nutrition Science Through GeminiAI

*A Gen AI-powered initiative by Google Research*

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A Research Project by Google Research – Health AI Division

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June 2025

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## Hyderabad, Telangana

### 1. Problem Space Identification

In a world where dietary health is pivotal yet often neglected, individuals struggle with understanding the nutritional value of what they consume. Information is scattered across websites, apps, and labels — most of which are either too generic or complex.

Common challenges faced:

- Users lack real-time access to trustworthy food data.
  - Creating balanced, personalized meal plans is tedious.
  - Hiring a dietician or nutritionist is costly and inaccessible to many.
  - Most applications lack personalization and do not adapt to health profiles.
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### 2. Brainstorming & Need Analysis

The team initiated whiteboard-style ideation sessions to identify innovative, tech-enabled solutions. Core goals were defined:

- Provide real-time food nutrition breakdown.
- Tailor meal plans to personal health goals.
- Offer conversational support to replicate a coach.
- Use Generative AI to eliminate the need for rigid UI workflows.

Key Insight: Nutrition is not one-size-fits-all. Solutions must adapt to individual needs, goals, and preferences.

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### 3. Choosing Generative AI

Generative AI offers:

- Natural language interaction for a virtual coach.
- Personalized content generation (like meal plans).
- Efficient prompt-based data querying.

Google Gemini AI was selected for:

- LLM capability with deep contextual understanding.



- Seamless prompt integration.
- Trusted ecosystem within Google Cloud services.

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## 4. Ideation Outcomes

Project name: **NutriGen**

From ideation, three user-centric pillars emerged:

1. Tailored Meal Planning  
AI-generated 7-day meal plans based on health profiles.
2. Dynamic Nutrition Insights  
Search and analyze any food item using USDA FoodData.
3. Virtual Nutrition Coach  
Chat with an AI assistant to resolve dietary doubts and track progress.

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## 5. Problem-Solution Mapping

Identified Problem	Proposed AI-Based Solution
Hard to create weekly meal plans	Meal plan generator powered by Gemini
No access to professional nutritionist advice	Virtual nutrition coach via chat
Confusing nutrition data	Simple AI-interpreted breakdown of food insights
Lack of personalization in existing apps	Personalized recommendations based on health data

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## 6. User Persona-Based Scenario

Persona: Shruti (Age 24)

Goal: Improve iron intake, reduce processed sugar.

She logs in, fills her profile (anemia-prone, vegetarian), and chats with the virtual coach.

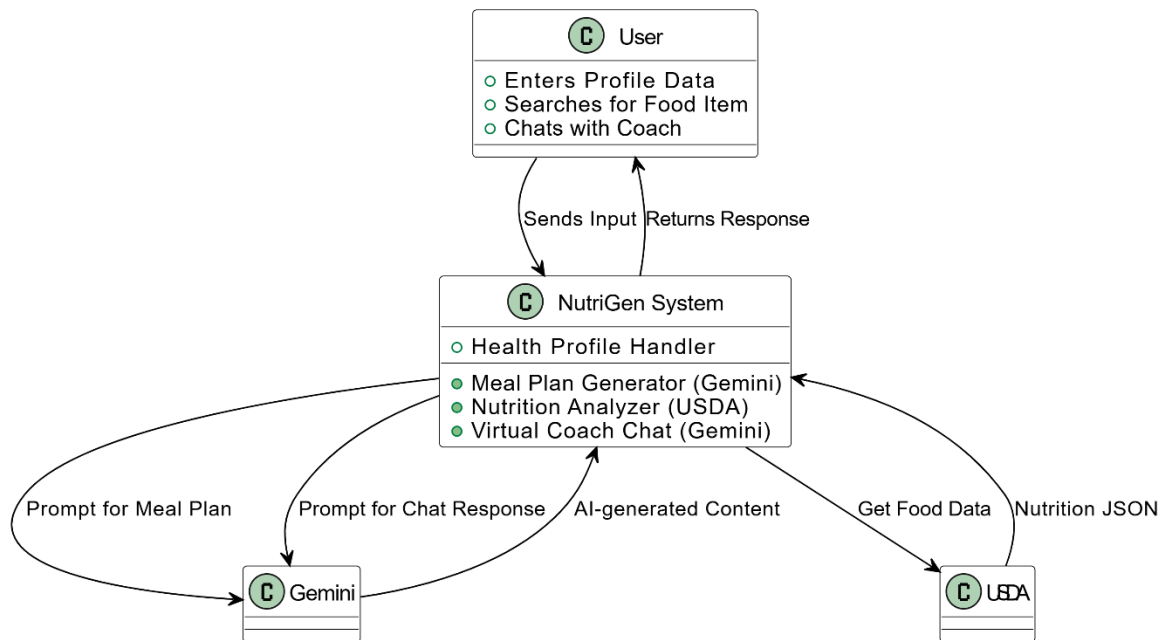


The coach suggests meals rich in iron, excluding meat. Shruti tracks her weekly streak, gets a grocery list, and learns to identify iron-rich foods.

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## 7. Ideation Flow Diagram

This flow diagram represents the high-level user interaction ideated before implementation:



## 8. Summary of Ideation

NutriGen is not just a project — it's a reflection of how AI can empower everyday users with meaningful health data. The ideation process helped the team:

- Identify real-world gaps in digital nutrition tools.
- Validate the use of LLMs like Gemini in solving those gaps.
- Align design goals with user-centric values.

This ideation phase laid the foundation for technical development, backend API design, AI prompt engineering, and UI/UX structure.

