F0: SmartCart

Interim Demo
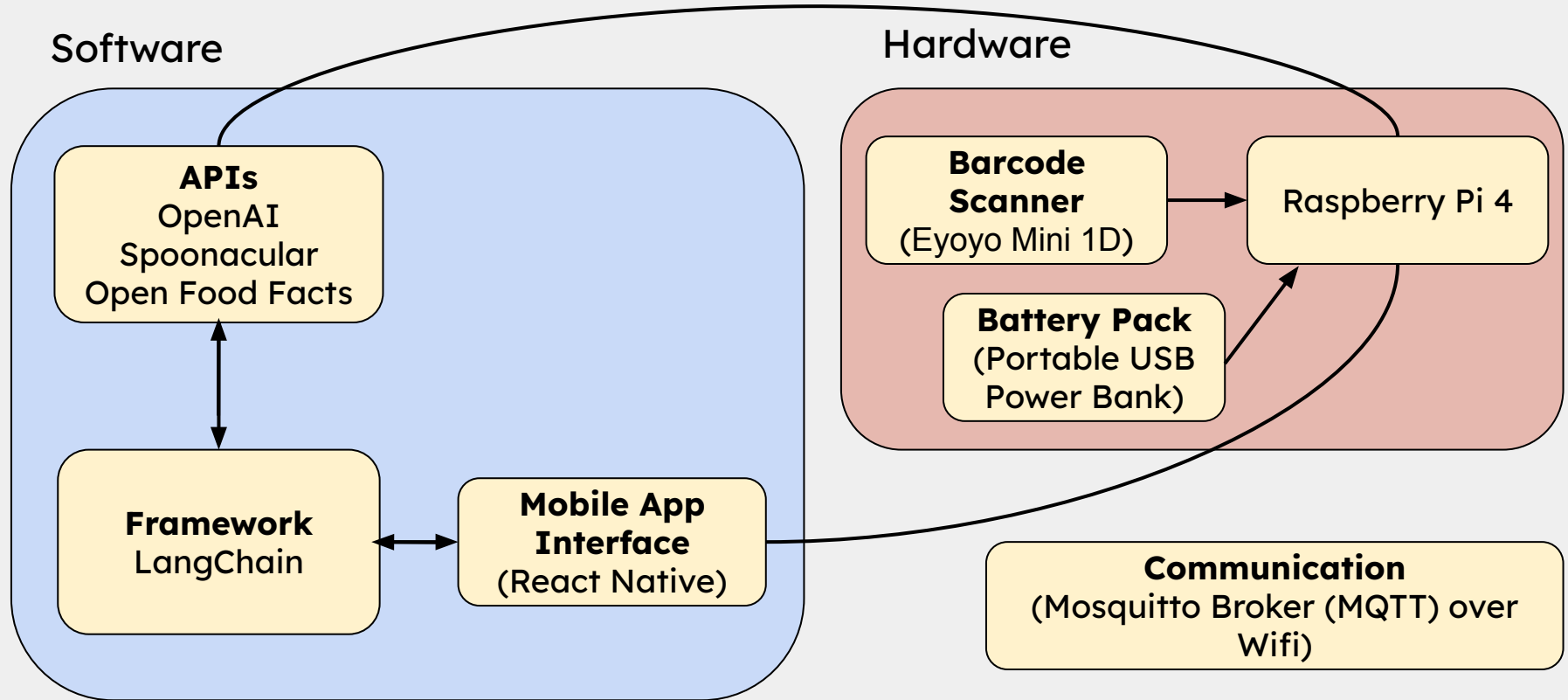
Aanya Rustogi
Lois Yun
Lekha Punya

Use Case/Application

SmartCart streamlines grocery shopping for students and busy professionals who need quick, no-thought meal solutions.—no second trips, no forgotten items, no wasted time.

Pain Points	SmartCart Solutions
In-store meal planning difficulties	Automated real-time meal planning
Unavailable items	Alternative substitutions
Forgotten items	Item tracking
Limited access to smart carts	Compact, cart-mounted smart assistant
Overspending	Dynamic budget monitoring and price optimization

System Specification

Software

Hardware

APIs
OpenAI
Spoonacular
Open Food Facts

Framework
LangChain

Mobile App Interface
(React Native)

Barcode Scanner
(Eyoyo Mini 1D)

Raspberry Pi 4

Battery Pack
(Portable USB Power Bank)

Communication
(Mosquitto Broker (MQTT) over Wifi)

Task Division

Lekha Punya

Aanya Rustogi

Lois Yun

Hardware & System Integration
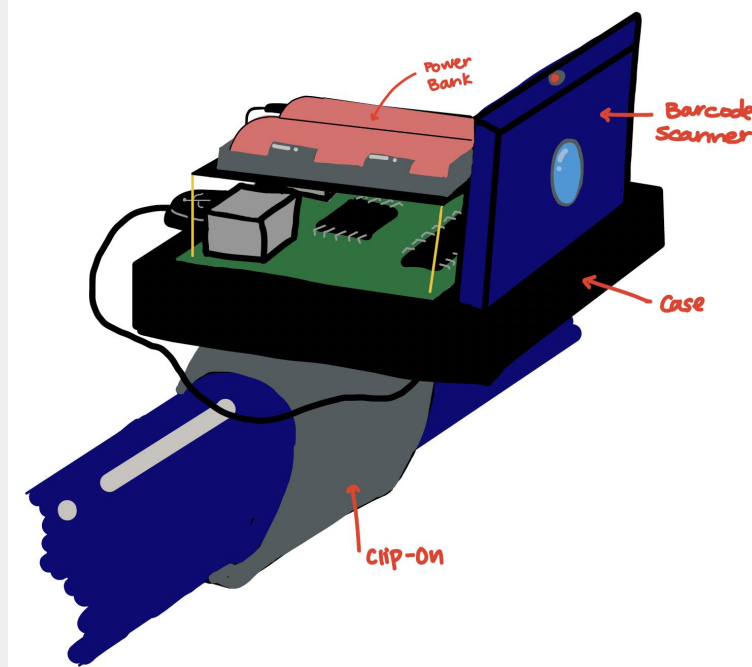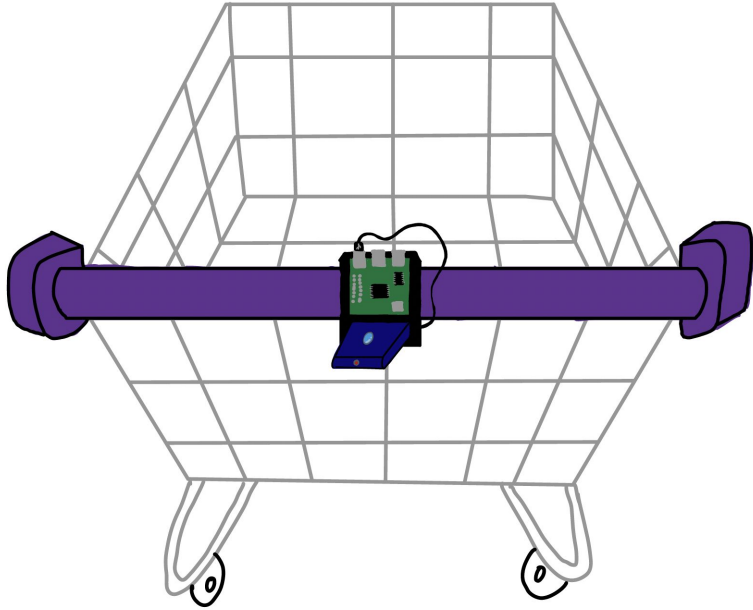
BackEnd Integration

Mobile App. Development

MQTT Integration

MQTT Integration

Unit & Integration Testing

Visual Design of the Hardware

Original Schedule from Design Doc

Task	Task Owner	Status	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11	Wk 12	Wk 13	Wk14
Hardware Setup							Spring Break						
Prepare Barcode Scanner + Rasberry Pi	Lekha	done			X								
Barcode scanner to Product recognition testing	Lekha	done				X							
Connect Battery Pack	Lekha	started											
Build Case (including clip on)	Lekha	done						X					
Mobile Application													
Design UI wireframe	Lois	done	x										
Set up React Native framework	Lois	done	x										
Develop UI for adding detected products to cart	Lois	done		x	x								
Integrate MQTT for Real-Time Updates	Lois & Lekha	done			x	x		x					
Develop Ingredient Substitution & Allergy Filter UI	Lois	done						x					
Optimize UI & debugging	Lois	started					x						
Software													
UPC to Product Mapping	Aanya & Lois	done			X								
Implement Barcode Scanner Integration & Lookup Queries	Aanya & Lekha	done			X	X							
Menu ingredients list generator	Aanya & Lekha	done				X	X						
DevelopAllergy Filtering (Keyword Matching + AI API)	Aanya & Lois	done					X						
Implement Meal Recommendation & Alternative Matching	Aanya & Lekha	done						X					
Optimize Query Performance & System Speed	Aanya & Lois	not started											
Unit/Integration Testing													
Deploy full system setup (scanner, Rasberry Pi, app)	All	started						X					
Conduct full pipeline test (item detection → app UI update)	All	done							X				
Optimize response time (<500ms per item)	All	not started											
Run live tests at Aldi & refine system	All	not started											
Finalize documentation & prepare for project demo	All	not started											
Slack	All	not started											

Latest Schedule

Task	Task Owner	Status	Wk 12	Wk 13	Wk14
Hardware Setup					
UPC on remote ssh	Lekha	started	■		
connect battery pack	Lekha	started	■		
make device portable	Lekha	not started	■		
testing case on Aldi shopping cart	Lekha	not started		■	
build optimizations (stability / latency)	Lekha	not started		■	
Mobile Application					
UI update on mqtt received items	Lois	started	■		
Shopping session flow	Lois	started	■		
UI update	Lois	not started	■	■	
Debugging	Lois	not started		■	■
Software					
Tracking grocery list items	Aanya	started	■		
Tracking price	Aanya	not started	■		
Edge cases in workflow	Aanya	started	■		
Optimize Query Performance & System Speed	Aanya	not started		■	■
Unit/Integration Testing					
Optimize response time (<500ms per item)	All	not started		■	
Run live tests at Aldi & refine system	All	not started		■	
Finalize documentation & prepare for project demo	All	not started			■
Slack	All	not started			■