

Software Engineering Project

September 2025 - Team 13

Milestone - 6



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- APIs
- YAML

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- Testing

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- Set up to run the app
- Tech Stack
- Issue Reporting and Pull Requests

MILESTONE 1&2

IDENTIFYING USERS

1. Primary Users

1.1. Retail Shop Managers / Owners

These are the main operational users who manage day-to-day business operations such as sales, inventory, and supplier coordination. They depend on AI-powered insights for better decision-making, forecasting, and marketing automation.

Their Key Goals

- Efficient stock and sales management.
- Gain actionable insights from AI (sales forecasting, trend analysis).
- Save time in supplier communication (AI-generated emails).
- Post social media updates effortlessly with AI-generated images and captions.

Sub-segmentation

- **Shop Owners:** Focused on profit optimization, supply chain efficiency, and overall business growth.
- **Shop Managers:** Focused on day-to-day operations—stock monitoring, supplier coordination, and social media content posting.

1.2. End Users / Customers

Customers interact directly with the application through a public interface to search, discover, and review textile products available at nearby shops.

Their Key Goals

- Search for matching fabrics by uploading photos.
- Browse trending designs or posts shared by shops.
- Provide reviews and ratings for shops or specific products.
- Identify best rated or trending textile stores nearby.

2. Secondary Users

2.1. Distributors / Suppliers

Distributors connect with multiple retailers through the system. They receive structured stock inquiries (with image attachments) and respond via integrated messaging or email.

Their Key Goals

- Receive organized requests for stock availability.
- View product images and respond efficiently.
- Track retailer-specific demand to optimize distribution.

2.2. Marketing Analysts / Agencies

These users leverage aggregated AI-generated insights to plan targeted textile promotions and campaigns.

Their Key Goals

- Understand trending fabrics, colors, and regional demand.
- Identify potential retail partners for collaborative marketing.

3. Tertiary Users

3.1. Manufacturers / Brand Representatives

They use aggregated market insights to forecast production and identify emerging textile trends.

Their Key Goals

- Identify top-selling materials and designs regionally.
- Plan seasonal production using AI-generated trend reports.

USER STORIES

1. Primary Users

1.1. Retail Shop Managers / Owners

- 1) As a shop manager, I want to upload my weekly sales data and receive an AI summary within 2 minutes so I can plan restocking efficiently.
- 2) As a shop owner, I want reorder suggestions grouped by distributor so I can save at least 10% on logistics costs per reorder cycle.
- 3) As a shop manager, I want AI to generate next-quarter demand forecasts based on seasonal and historical data so that I can plan fabric purchases for a month before the demand period begins.

- 4) As a shop manager, I want to upload a photo of a trending fabric and automatically send it to select distributors with an inquiry message, so that I can quickly check the availability of similar stock without composing emails manually.
- 5) As a shop manager, I want ready-to-post marketing images and captions for each new product batch within 1 minute of upload, so that I can instantly share updates on social media without hiring designers.

1.2. End Users / Customers

- 6) As a customer, I want to search nearby textile shops using a photo and get visually similar results within 5 seconds, so that I can easily find matching fabrics locally.
- 7) As a customer, I want to use an AI-enabled map to find nearby textile shops that have my desired fabric or clothing stock, so that I can easily locate and visit the most relevant store through a chat or voice-based interface.
- 8) As a customer, I want to review shops and see trending patterns so I can make informed purchase decisions.

2. Secondary Users

2.1. Distributors / Suppliers

- 9) As a distributor, I want to visualize which regions around me have rising or falling fabric demand on an AI-generated interactive heatmap, so that I can plan personalized promotions, stock replenishment, and targeted marketing campaigns in high-potential areas with minimal manual analysis.

3. Tertiary Users

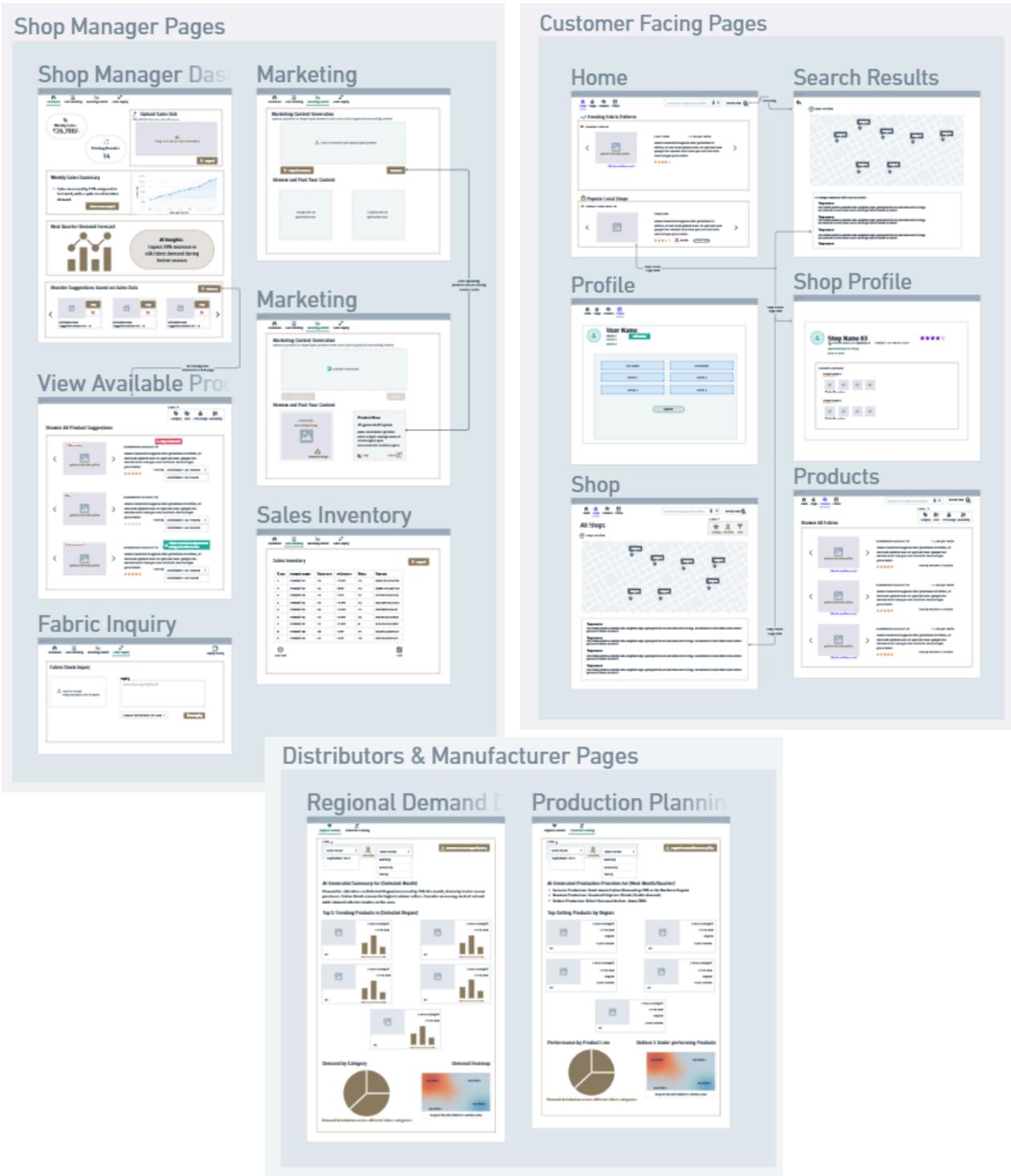
3.1. Manufacturers / Brand Representatives

- 10) As a manufacturer, I want AI to generate top-selling product reports by region and month, so that I can plan next month's production priorities efficiently.

Evidence of Interviews

Interviewer	User	Type of User	Proof
Afsal Sha	Store Owner/Manager	Primary	Click here
Rahul Varma	End-User	Primary	Click here
Matlin Jeleshiya D	End-User	Primary	Click here
Joseph Manoj Louis	Distributor	Secondary	Click here

WIREFRAMES



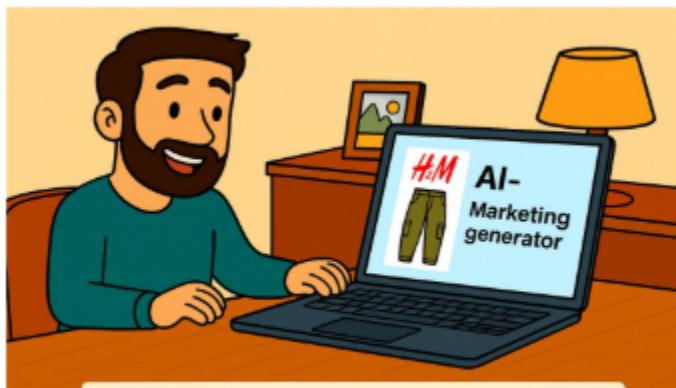
STORYBOARD



Storyboard 1 & 2



Storyboard 3



Storyboard 4



Storyboard 6

Storyboard 5

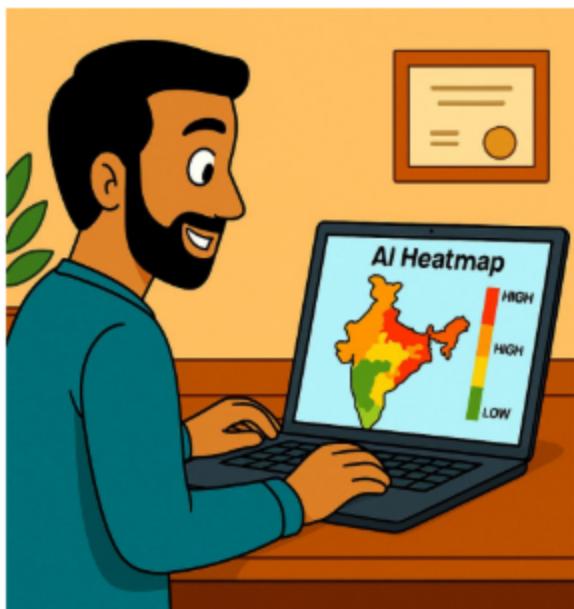


Storyboard 7

Storyboard 8



Storyboard 9



Storyboard 10

MILESTONE - 3

PROJECT SCHEDULE

- Our team uses **Jira** for project scheduling. We have a total of six Sprints, each aligned with one of the six milestones in the SE project document.
 - The project milestones were decomposed into discrete tasks to satisfy the deliverables defined in the project document. These tasks were assigned to team members based on their availability and skill sets.

Gantt Chart

[Click Here For Better View](#)

Gantt Chart Team 13

<input type="checkbox"/>	<input checked="" type="checkbox"/> SGPRI Sprint 1 1 Oct – 21 Oct (4 work items)	0	0	0	Complete sprint	...
Complete Milestone 1						
<input checked="" type="checkbox"/>	SGPRI-29 Conduct User Interviews - Afsal, Rahul, Jeleshiya, J...	USER RESEA...	DONE	<input checked="" type="checkbox"/> Oct 6	-	
<input checked="" type="checkbox"/>	SGPRI-30 Compile Interview Findings - Afsal	USER RESEA...	DONE	<input checked="" type="checkbox"/> Oct 8	-	
<input checked="" type="checkbox"/>	SGPRI-31 Draft SMART User Stories - Afsal	USER RESEA...	DONE	<input checked="" type="checkbox"/> Oct 9	-	
<input checked="" type="checkbox"/>	SGPRI-32 Report Submission	USER RESEA...	DONE	<input checked="" type="checkbox"/> Oct 10	-	
+ Create						

<input type="checkbox"/>	<input checked="" type="checkbox"/> SGPRI Sprint 2 8 Oct – 21 Oct (5 work items)	0	0	0	Complete sprint	...
Complete Milestone 2						
<input checked="" type="checkbox"/>	SGPRI-38 Create Storyboard Flow - Rahul	STORYBOAR...	DONE	<input checked="" type="checkbox"/> Oct 15	-	
<input checked="" type="checkbox"/>	SGPRI-39 Design Low-Fidelity Wireframes - Akash	STORYBOAR...	DONE	<input checked="" type="checkbox"/> Oct 15	-	
<input checked="" type="checkbox"/>	SGPRI-40 Collect User Feedback on Wireframes - Akash	STORYBOAR...	DONE	<input checked="" type="checkbox"/> Oct 17	-	
<input checked="" type="checkbox"/>	SGPRI-41 Update Wireframes Post-Feedback - Akash	STORYBOAR...	DONE	<input checked="" type="checkbox"/> Oct 21	-	
<input checked="" type="checkbox"/>	SGPRI-50 Report Submission - Akash	STORYBOAR...	DONE	<input checked="" type="checkbox"/> Oct 22	-	
+ Create						

□ ▾ SGPRI Sprint 3 22 Nov – 4 Dec (4 work items)		0	0	0	Complete sprint	...
Complete Milestone 3						
<input checked="" type="checkbox"/>	SGPRI-44 Prepare Project Schedule - Hari Govind J, Joseph	SCHEDULIN...	IN PROGRES...	Nov 5	-	HJ
<input checked="" type="checkbox"/>	SGPRI-45 Define Sprint Timeline - Hari Govind J, Joseph	SCHEDULIN...	IN PROGRES...	Nov 5	-	HJ
<input checked="" type="checkbox"/>	SGPRI-46 Set Up Scrum Meeting Schedule - Hari Govind J, Jos...	SCHEDULIN...	IN PROGRES...	Nov 5	-	JL
<input checked="" type="checkbox"/>	SGPRI-49 Report Submission - Hari Govind J, Joseph	SCHEDULIN...	IN PROGRES...	Nov 5	-	HJ
+ Create						

□ ▾ SGPRI Sprint 4 5 Nov – 15 Nov (5 work items)		0	0	0	Complete sprint	...
Complete Milestone 4						
<input checked="" type="checkbox"/>	SGPRI-52 Design Backend Architecture - Vyshakh, Ayush	BACKEND & ...	TO DO ▾	Nov 7	-	V
<input checked="" type="checkbox"/>	SGPRI-53 Implement Flask API Endpoints - Vyshakh, Ayush	BACKEND & ...	TO DO ▾	Nov 11	-	V
<input checked="" type="checkbox"/>	SGPRI-55 Integrate GenAI API - Vyshakh, Ayushh	BACKEND & ...	TO DO ▾	Nov 12	-	AM
<input checked="" type="checkbox"/>	SGPRI-54 Write Swagger YAML Documentation - Vyshakh, Ayu...	BACKEND & ...	TO DO ▾	Nov 13	-	V
<input checked="" type="checkbox"/>	SGPRI-57 Report Submission - Vyshakh, Ayush	BACKEND & ...	TO DO ▾	Nov 14	-	AM
+ Create						

□ ▾ SGPRI Sprint 5 16 Nov – 29 Nov (6 work items)		0	0	0	Complete sprint	...
Complete Milestone 5						
<input checked="" type="checkbox"/>	SGPRI-59 Conduct Unit Testing - Jeleshiya	TESTING & QA	TO DO ▾	Nov 19	-	MD
<input checked="" type="checkbox"/>	SGPRI-60 Conduct Integration Testing - Jeleshiya	TESTING & QA	TO DO ▾	Nov 20	-	MD
<input checked="" type="checkbox"/>	SGPRI-61 Write pytest Test Cases - Jeleshiya	TESTING & QA	TO DO ▾	Nov 25	-	MD
<input checked="" type="checkbox"/>	SGPRI-62 Log Bugs and Fix Issues - Jeleshiya	TESTING & QA	TO DO ▾	Nov 27	-	MD
<input checked="" type="checkbox"/>	SGPRI-63 Perform Code Review - Jeleshiya	TESTING & QA	TO DO ▾	Nov 27	-	MD
<input checked="" type="checkbox"/>	SGPRI-64 Report Submission - Jeleshiya, Joseph, Hari Govind J	TESTING & QA	TO DO ▾	Nov 28	-	MD
+ Create						

<input type="checkbox"/> <input checked="" type="checkbox"/> SGPRI Sprint 6 30 Nov – 6 Dec (7 work items)	0	0	0	Complete sprint	...
Complete Milestone 6					
<input checked="" type="checkbox"/> SGPRI-71 Working Prototype	FINAL IMPL...	TO DO ▾	Dec 2	-	AS
<input checked="" type="checkbox"/> SGPRI-72 Final Fix Issues	FINAL IMPL...	TO DO ▾	Dec 3	-	AS
<input checked="" type="checkbox"/> SGPRI-66 Prepare README with Setup Instructions - Afsal, Ra...	FINAL IMPL...	TO DO ▾	Dec 3	-	AG
<input checked="" type="checkbox"/> SGPRI-67 Record Demo Video - Rahul	FINAL IMPL...	TO DO ▾	Dec 3	-	RV
<input checked="" type="checkbox"/> SGPRI-68 Create Presentation Slides - Afsal, Hari Govind J, Jos...	FINAL IMPL...	TO DO ▾	Dec 4	-	HJ
<input checked="" type="checkbox"/> SGPRI-69 Compile Final Project Report - Hari Govind J, Joseph	FINAL IMPL...	TO DO ▾	Nov 5	-	JL
<input checked="" type="checkbox"/> SGPRI-70 Submission - Afsal	FINAL IMPL...	TO DO ▾	Nov 5	-	AS
+ Create					

Scrum Meetings Summary

We conducted our team meetings based on everyone's availability to ensure maximum participation and smooth coordination. During these meetings, we discussed our project goals, tracked progress, and planned upcoming tasks. In addition to the regular team discussions, we also held short follow-up meetings right after each client meeting to review the client's feedback and align our next steps accordingly.

- Team Meeting: Monday, Thursday, Saturday, 9:00 – 10:00 PM
- Client Meeting: Tuesday, 7pm to 7.30pm

Meeting Summaries

03-10-2025

- Finalized textile shops as project focus.
- Targeted shops with existing digital billing systems.
- Discussed problem statements for shop owners, customers, and distributors.

Decision: Proceed with this focused approach.

11-10-2025

- Configured GitHub for collaboration and version control.
- Discussed the importance of finalizing user stories before Milestone 2.

Decision: Combine user stories to complete Milestone 1 and start login screen development.

13-10-2025

- Discussed and prioritized user stories based on relevance and implementation effort.

Decision: Finalized key user stories for development.

14-10-2025

- Reviewed and finalized user stories.
- Client suggested adding map functionality.
- Assigned work across design, code review, and documentation tasks.

Decision: Agreed to implement finalized user stories and follow assigned roles.

27-10-2025

- Presented and reviewed wireframe for login and signup functionalities.
- Discussed improvements and upcoming Milestone 3 submission.
- Backend and documentation tasks planned.

Decision: Complete login/signup pages before next client meeting and update Jira for Milestone 3 tracking.

Kanban Board

TO DO 18	IN PROGRESS 4	DONE 9 ✓
<p>Design Backend Architecture - Vyshakh, Ayush BACKEND & API DEVELOPMENT 📅 Nov 7, 2025 ☑ SGPRI-52 </p>	<p>Prepare Project Schedule - Hari Govind J, Joseph SCHEDULING & DESIGN 📅 Nov 5, 2025 ☑ SGPRI-44 </p>	<p>Conduct User Interviews - Afsal, Rahul, Jeleshya, Joseph USER RESEARCH & REQUIREMENTS 📅 Oct 6, 2025 ☑ SGPRI-29 </p>
<p>Implement Flask API Endpoints - Vyshakh, Ayush BACKEND & API DEVELOPMENT 📅 Nov 11, 2025 ☑ SGPRI-53 </p>	<p>Define Sprint Timeline - Hari Govind J, Joseph SCHEDULING & DESIGN 📅 Nov 5, 2025 ☑ SGPRI-45 </p>	<p>Compile Interview Findings - Afsal USER RESEARCH & REQUIREMENTS 📅 Oct 8, 2025 ☑ SGPRI-30 </p>
<p>Integrate GenAI API - Vyshakh, Ayushh BACKEND & API DEVELOPMENT 📅 Nov 12, 2025 ☑ SGPRI-55 </p>	<p>Set Up Scrum Meeting Schedule - Hari Govind J, Joseph SCHEDULING & DESIGN 📅 Nov 5, 2025 ☑ SGPRI-46 </p>	<p>Draft SMART User Stories - Afsal USER RESEARCH & REQUIREMENTS 📅 Oct 9, 2025 ☑ SGPRI-31 </p>
<p>Write Swagger YAML Documentation - Vyshakh, Ayush BACKEND & API DEVELOPMENT 📅 Nov 13, 2025 ☑ SGPRI-54 </p>	<p>Report Submission - Hari Govind J, Joseph SCHEDULING & DESIGN 📅 Nov 5, 2025 ☑ SGPRI-40 </p>	<p>Report Submission USER RESEARCH & REQUIREMENTS 📅 Oct 10, 2025 ☑ SGPRI-32 </p>

Screenshot of partial Kanban Board of Team 13 from Jira

Frontend

Textile SaaS app

Dashboard Inventory Marketing Inquiry Profile shopowner1

Shop Manager

Welcome back! Here's your business overview.

Avg Order Value ₹23,275 +0% vs last period

Pending Reorders 3 -0% vs last period

Customer Rating 0★ +0% vs last period

Growth -86.9% +0% vs last period

Sales Summary Last 7 Days ↓ -90.1%

Sales decreased by 90.1% compared to last week
Linen showing highest demand (72.2%)

Total Quantity 21 **Total Revenue** ₹46,550

Daily Breakdown

Mon Tue Wed Thu Fri Sat Sun

Textile SaaS app

Dashboard Inventory **Marketing** Inquiry Profile shopowner1

Sales Inventory

Inventory Update **Export Inventory**

S. NO.	IMAGE	PRODUCT NAME	SALES QTY	PRICE/METER	STOCK	MIN STOCK	STATUS	SKU ID	ACTIONS
1		Govind Silk Silk	0 m	₹1,200	2	5	Critical	GOV-001	
2		Art Silk Silk	0 m	₹950	11	20	Critical	ART-001	
3		Bamboo Fabric Bamboo	0 m	₹1,700	3	10	Critical	BAH-001	
4		Kota Doria Cotton	0 m	₹1,300	38	15	Good	KOT-001	
5		Organza Silk Organza	0 m	₹1,900	33	12	Good	ORG-001	
6		Jacquard Woven Jacquard	0 m	₹2,400	32	10	Good	JAC-001	
7		Crepe Fabric Crepe	0 m	₹1,100	59	18	Good	CRP-001	
8		Rayon Printed Rayon	0 m	₹800	45	22	Good	RAY-001	
9		Net Fabric Embroidered	0 m	₹1,400	—	34	Good	NFT-001	

Textile SaaS app

AI Marketing Captions
Select inventory products, generate premium captions, and share to social media instantly.

SEARCH INVENTORY

Type product, SKU, or category

0/10 selected (Tap cards to add/remove)

Sorted by last updated

Wool Blend Fabric SKU: WOL-001 Wool 40 in stock	Chanderi Silk Cotton SKU: SLK-002 Silk 45 in stock	Velvet Fabric SKU: VEL-001 Velvet 25 in stock	Tussar Silk Fabric SKU: SLK-001 Silk 31 in stock	Rayon Printed SKU: RAY-001 Rayon 45 in stock	Organza Silk SKU: ORG-001 Organza 33 in stock	Pure Linen Fabric SKU: LIN-001 Linen 42 in stock
Net Fabric Embroidered ₹1,400	Kota Doria ₹1,300	Khadi Cotton ₹900	Jacquard Woven ₹2,400	Govind Silk ₹1,200	Georgette Fabric ₹1,200	Handloom Cotton ₹1,800

View History

Textile SaaS app

Inquiries

Distributor 1
Distributor

Search conversations...

Distributor 1
yes we do 6h
Replied

Yesterday

Initial Inquiry

Are there any products similar to this one?

Today

yes we do 08:52 AM

Type your message...

Textile SaaS app

User Profile
Manage your account and linked shops

Personal Information

FULL NAME Shop Owner 1	EMAIL ADDRESS shopowner1@example.com
CONTACT NUMBER +918000000000	ACCOUNT ROLE Shop_owner
REGISTERED ADDRESS N/A	

Linked Shops
1 shop registered

Primary Shop Active

SHOP NAME Royal Silk Emporium	CONTACT N/A
----------------------------------	----------------

Edit Profile

Textile SaaS app

Home **Products** **Shops** **Profile** **customer1**

Search for Shops, Fabrics, and Products...

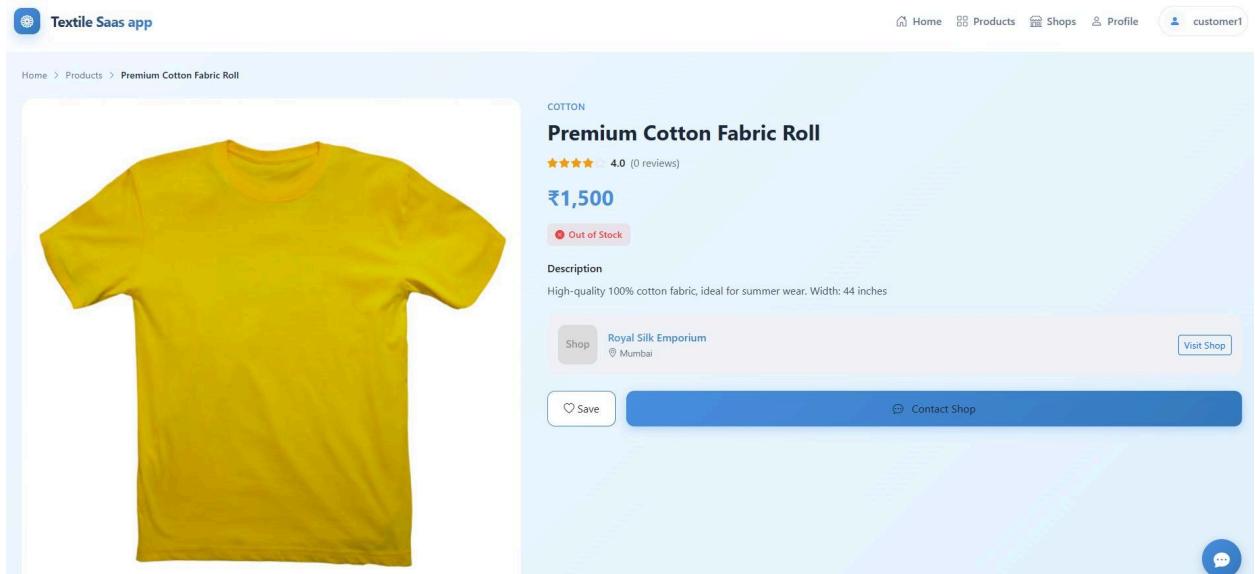
Trending Fabric Patterns
Discover the latest trends in textile fashion



Premium Cotton Fabric Roll
₹1,500 /meter
Premium quality fabric with excellent finish and durability.
★★★★★ (4.0)

[View Details →](#)

Find Nearby



The screenshot shows the profile page for 'Royal Silk Emporium'. At the top, there's a navigation bar with icons for Home, Products, Shops, Profile, and a user account labeled 'customer1'. The main header features a large, stylized 'shop' logo. Below the header, the shop's name 'Royal Silk Emporium' is shown with a star rating of 0.0 and a 'Popular' badge. It also lists its location as 'Zaveri Bazaar, Mumbai'. The page is divided into several sections: 'About' (describing it as a place for premium silk sarees and traditional wear), 'Product Categories' (listing Bamboo, Brocade, Chiffon, Cotton, Crepe, Georgette, Jacquard, Khadi, Linen, Net, Organza, Rayon, Silk, Velvet, Wool), 'Products (20)' (with a dropdown menu for 'All Categories' and 'Top Rated'), 'Contact Information' (listing the location as 'Zaveri Bazaar, Mumbai'), and 'Location' (showing a map of Mumbai with specific landmarks like Colaba, Kala Ghoda, and Watson's Hotel). A blue 'Assistant' sidebar on the right contains a message: 'Hi I'm the Textile Assistant. How can I help you today?'. A search bar at the bottom right says 'Ask about fabrics...'.

Textile SaaS app

Home Products Shops Profile customer1

Search fabrics, products, or shops...

Filters

All Categories Any Price Top Rated In Stock Only

40 products found

Category	Name	Price / meter	Rating	Store	Stock
COTTON	Premium Cotton Fabric Roll	₹1,500 /meter	4.0	Royal Silk Emporium	In Stock (28 available)
SILK	Tussar Silk Fabric	₹3,500 /meter	4.0	Royal Silk Emporium	In Stock (31 available)
LINEN	Pure Linen Fabric	₹2,200 /meter	4.0	Royal Silk Emporium	In Stock (42 available)
WOOL	Wool Blend Fabric	₹2,800 /meter	4.0	Royal Silk Emporium	In Stock (40 available)
SILK	Chanderi Silk Cotton	₹2,800 /meter	4.0	Royal Silk Emporium	In Stock (45 available)
COTTON	Handloom Cotton	₹1,800 /meter	4.0	Royal Silk Emporium	In Stock (45 available)

Textile SaaS app

Home Products Shops Profile customer1

Search for shops by name, location, or products...

Filters

All Cities Any Rating Top Rated

3 shops found

shop

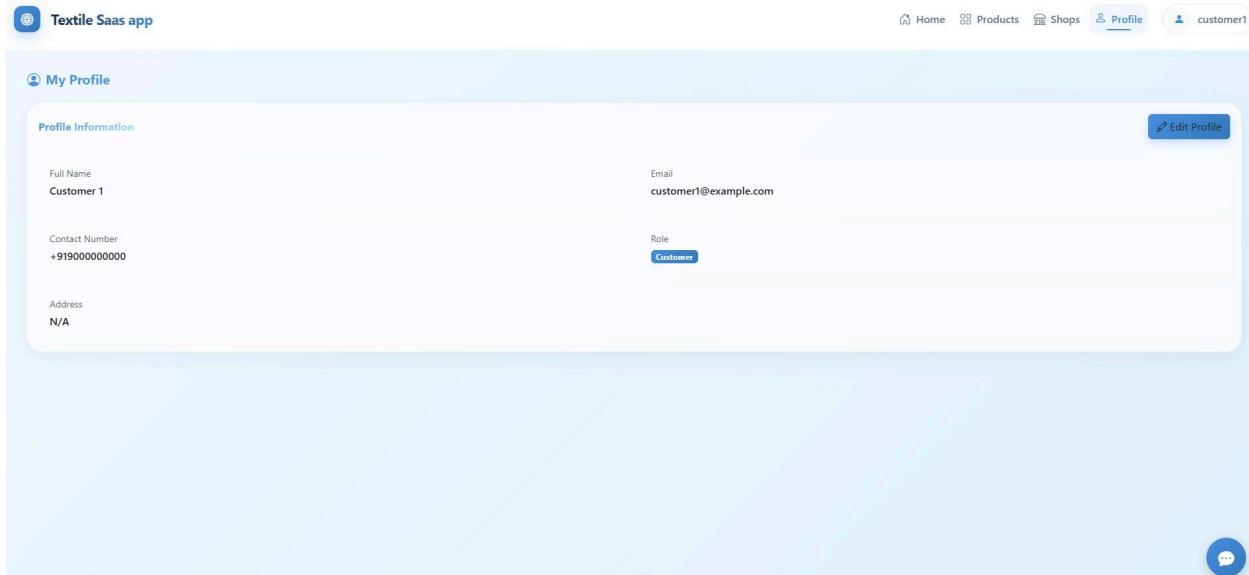
Royal Silk Emporium

0.0

Premium silk sarees and traditional wear

Zaveri Bazaar, Mumbai

20 products



The screenshot shows the 'Distributor Dashboard' of the Textile SaaS app. At the top, there's a navigation bar with icons for Home (active), Planning, Regional Demand, Inquiries, and distributor1. The main content area is titled 'Distributor Dashboard' with a subtitle 'Welcome to your distributor portal. Monitor shop stock levels and get AI-powered production recommendations.' Below this, there are four summary cards:

- 2 Shops Supplied
- 30 Products
- 3 Critical Products
- 100% Stock Health

Below these cards is a pink-highlighted section titled '3 Products Need Immediate Restocking' with a 'View All' button. It lists three products with low stock levels:

CRITICAL	Bamboo Fabric	Govind Silk	Sambalpuri Ikat
3 IN STOCK	Bamboo	2 IN STOCK	Silk
10 SAFETY LEVEL	30%	5 SAFETY LEVEL	40%
Royal Silk Emporium	Royal Silk Emporium	Fashion Hub Textiles	

At the bottom, there are two sections: 'Stock Alerts by Shop' (showing a green checkmark and the message 'All shops have healthy stock levels!') and 'Quick Actions' (with buttons for 'View Stock Heatmap' and 'AI Production Planning').

 Textile SaaS app

 Home  Planning  Regional Demand  Inquiries  distributor1

AI Production Planning

AI-powered insights for production optimization, stock replenishment, and targeted marketing

 **AI Strategic Analysis**

While both shops maintain **healthy overall stock levels**, **Govind Silk** (Royal Silk Emporium), **Bamboo Fabric** (Royal Silk Emporium), and **Sambalpuri Ikat** (Fashion Hub Textiles) require urgent attention due to stock falling below safety thresholds. (12 units) and critically low stock (3 units remaining).

 **AI Supply Chain Assistant**

 How can I help you today?
I have access to shop stock levels, demand forecasts, and supply chain insights for shops you supply to.

-  Urgent deliveries
-  Production priorities
-  Supply chain summary

Ask about supply needs, deliveries, produ 

 **Strategic Recommendations**

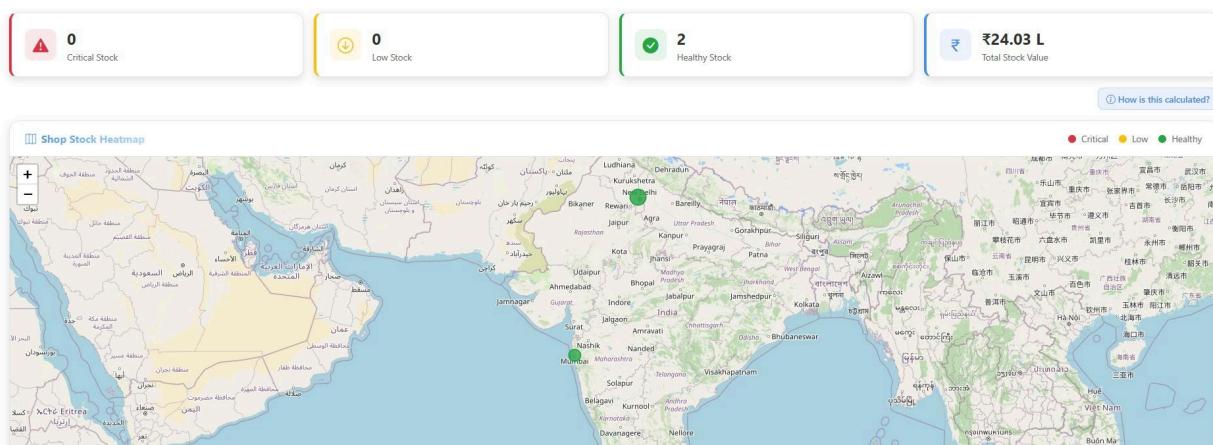
- Immediately restock **Bamboo Fabric** at Royal Silk Emporium with **10+** units to meet demand and replenish safety stock.
- Review safety stock levels for **Govind Silk** (Royal Silk Emporium) and **Sambalpuri Ikat** (Fashion Hub Textiles) – reduce safety stock if low sales persist, or investigate why inventory isn't moving.
- Conduct a **category-wide analysis** for Bamboo, Silk, and Cotton products to align safety stock with actual sales patterns, starting with **Bamboo Fabric** due to its high turnover risk.

 Restock Needed
65 units 



Shop Stock Levels

Monitor stock health across shops you supply - identify which shops need restocking



Textile SaaS app

Shop Inquiries

Royal Silk Emporium Shop Owner 1

Search inquiries...

All Pending Read Replied 1

Royal Silk Emporium Shop Owner 1 6h
yes we do Replied

Initial inquiry Yesterday

Are there any products similar to this one?
11:56 AM

Today

yes we do 8:52 AM

Class Diagram

[Click Here For Better View](#)

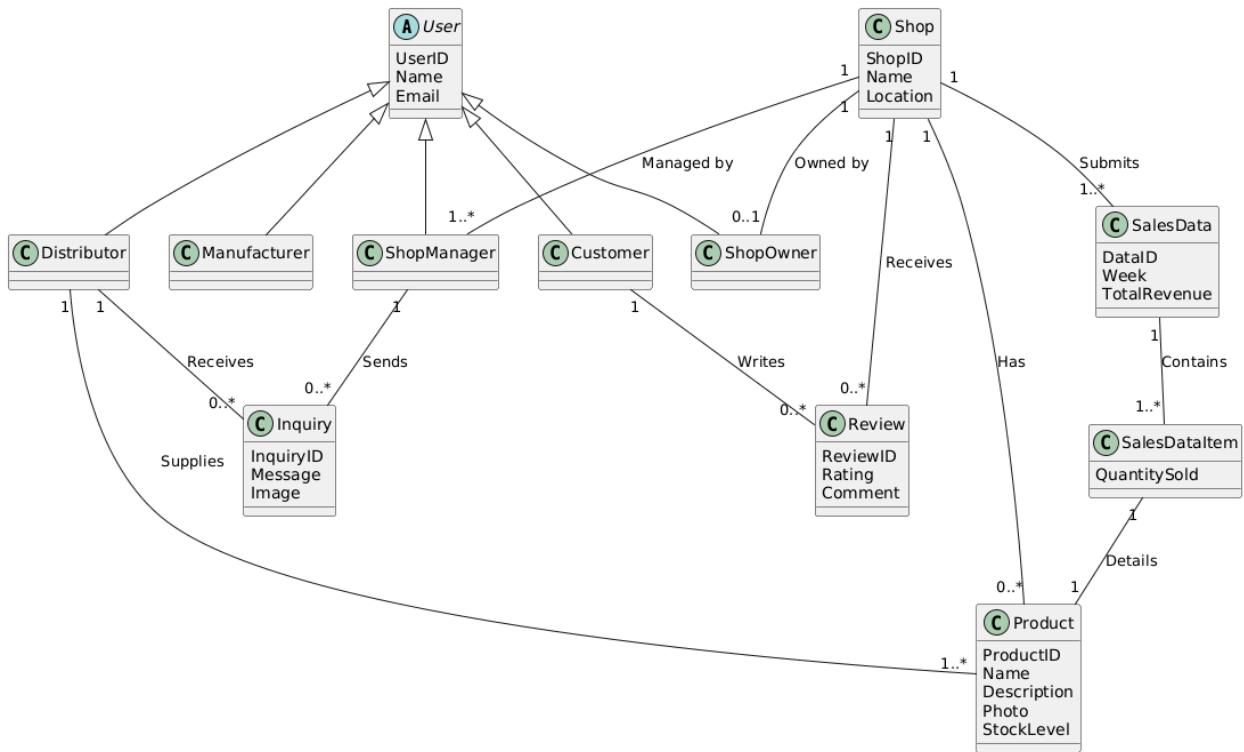
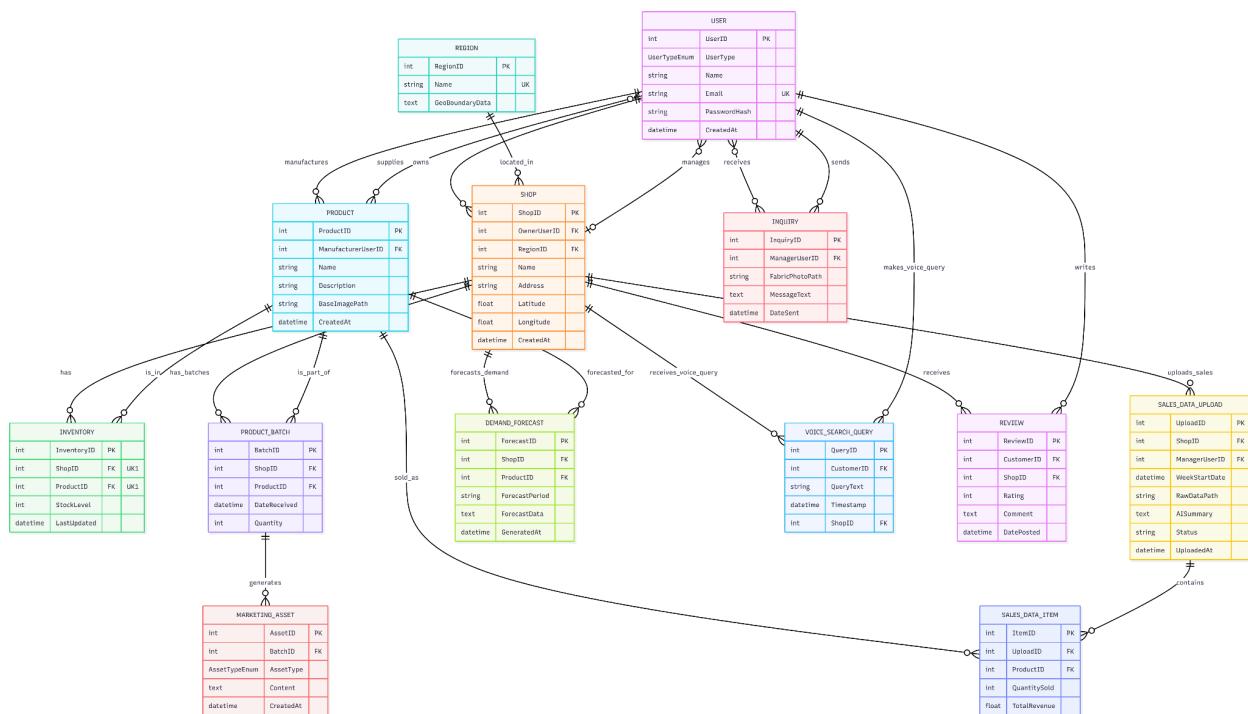


Fig 20: Team 13 Class Diagram (Above)

Fig 21: Team 13 ER Diagram (Below)

ER Diagram

[Click Here For Better View](#)



Use Diagram

[Click Here For Better View](#)

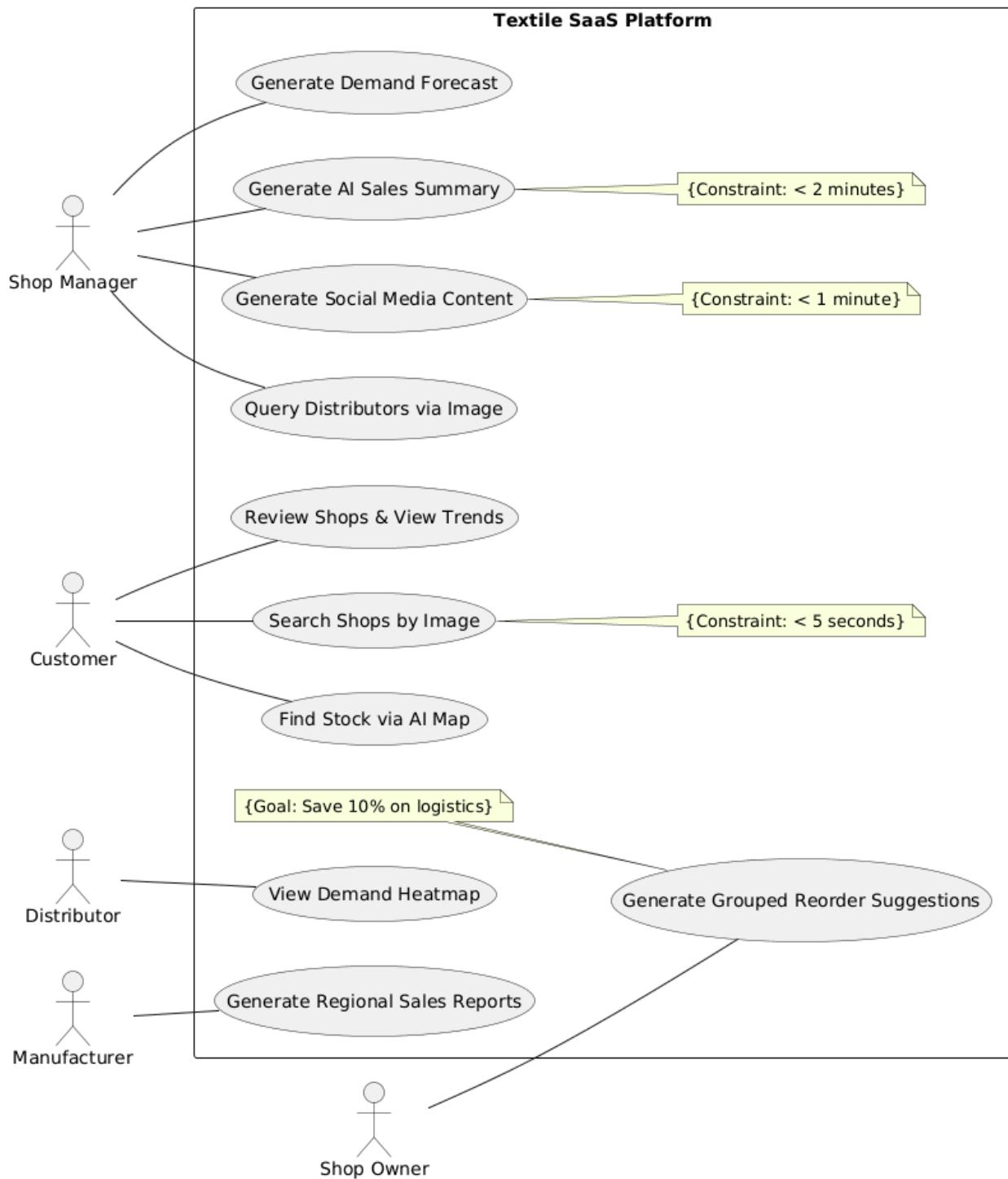


Fig 22: Team 13 Use Diagram (Below)

MILESTONE 4

API Endpoints:

Auth & Session Management

Endpoint	Method	Description
/api/v1/auth/login	POST	authenticate via username/email + password, returns JWT and user profile
/api/v1/auth/logout	POST	acknowledges logout so clients clear stored tokens
/api/v1/auth/register	POST	registers new users across roles, auto-creates shop for shop owners
/api/v1/auth/session	GET	fetch current authenticated user details
/api/v1/auth/verify_token	POST	validates JWTs for clients

AI Store Discovery & Image Match

Endpoint	Method	Description
/api/v1/ai-find-stores/	POST	finds stores via text or voice input using AI matching
/api/v1/compare-images/	POST	compares uploaded image against reference catalog to suggest similar fabrics

Catalog Browsing

Endpoint	Method	Description
/api/v1/catalog/load	POST	refresh product catalog data
/api/v1/catalog/search	GET	keyword + filter search over catalog with AI captions
/api/v1/catalog/view	GET	paginated catalog browsing

Customer Discovery & Shop Explorer

Endpoint	Method	Description
/api/v1/customer/discovery/*	GET	customer-facing discovery feeds and AI marketing captions
/api/v1/customer/shops/*	GET	detailed shop lookup with AI narratives

Distributor Operations

Endpoint	Method	Description
/api/v1/distributor/production-plan	POST	upload sales CSV/XLSX to get Prophet forecasts, Gemini AI insights, and priority actions
/api/v1/distributor/export-plan	GET	download production-plan CSV derived from live sales data
/api/v1/distributor/regional-demand	POST	combines forecasting and AI summaries for regional demand intelligence
/api/v1/distributor/regional-report	GET	download AI-driven regional report PDF
/api/v1/distributor/sample-format	GET	provides example input template

Inquiry Management

Endpoint	Method	Description
/api/v1/inquiry/history	GET	fetches inquiries for a user/shop
/api/v1/inquiry/submit	POST	submit fabric inquiries with optional image upload

Inventory Management

Endpoint	Method	Description
/api/v1/inventory/	GET	list inventory by shop
/api/v1/inventory/delete	DELETE	remove inventory entry
/api/v1/inventory/edit	POST	update inventory item
/api/v1/inventory/export	GET	export inventory sheet
/api/v1/inventory/import	POST	bulk import inventory via CSV/XLSX

Marketing Automation

Endpoint	Method	Description
/api/v1/marketing/allowed-extension s	GET	lists supported file types
/api/v1/marketing/generate	POST	AI-generates captions, posters, and sales trends from uploaded assets

PDF Services

Endpoint	Method	Description
/api/v1/pdf/generate	POST	builds structured PDF reports

Product Insights

Endpoint	Method	Description
/api/v1/products/	GET	filterable product list with AI captions
/api/v1/products/{product_id}	GET	detailed product info
/api/v1/products/suggested	GET	AI-driven product suggestions

Profile Management

Endpoint	Method	Description
/api/v1/profile/	GET	fetch current user profile
/api/v1/profile/update	PUT	update non-privileged profile fields

Analytics & Reporting

Endpoint	Method	Description
/api/v1/region-demand-heatmap/	GET	regional demand heatmap data
/api/v1/shop/dashboard	GET	AI analytics dashboard per shop
/api/v1/shop/sales/export	GET	export shop sales
/api/v1/shop/upload_sales_data	POST	ingest monthly sales files
/api/v1/top-selling-products/	GET	top external product sales by year
/api/v1/trending-shops/	GET	trending shops with AI insights

Static / Utility Endpoints

Endpoint	Method	Description
/datasets/{filename}	GET	serve static assets
/uploads/{filename}	GET	serve uploaded files
/docs	GET	serve Swagger UI
/health	GET	health check
/openapi.yaml	GET	return the API specification

API Support for User Stories

#	User Story	Supported Endpoints
1	Weekly sales upload + AI summary (Shop Manager)	/api/v1/distributor/production-plan, /api/v1/shop/upload_sales_data
2	Reorder suggestions grouped by distributor	/api/v1/distributor/export-plan, /api/v1/distributor/regional-demand
3	Quarterly demand forecasts	/api/v1/distributor/regional-demand, /api/v1/shop/dashboard
4	Upload fabric photo and send inquiries	/api/v1/inquiry/submit
5	Instant marketing images & captions	/api/v1/marketing/generate, /api/v1/marketing/allowed-extensions
6	Photo-based nearby shop search	/api/v1/compare-images/, /api/v1/customer/shops/nearby-shops
7	AI-enabled map via chat/voice	/api/v1/ai-find-stores/, /api/v1/customer/discovery/search
8	Review shops & see trending patterns	/api/v1/customer/discovery/trending-fabrics, /api/v1/customer/discovery/popular-shops, /api/v1/customer/discovery/nearby-shops

9	Distributor heatmap for promotions	/api/v1/distributor/regional-demand, /api/v1/region-demand-heatmap/
10	Manufacturer top-selling reports	/api/v1/top-selling-products/, /api/v1/distributor/export-plan

YAML -[\(Original YAML file\)](#)

MILESTONE 4

TESTING

1) Authentication & Core System

test_registerCreatesUserAndShop

- **Purpose:** Confirms shop owners get both user + shop created.
- **Input:** POST /api/v1/auth/register with role=shop_owner.
- **Expected:** 201; success=true; shop object created.

test_loginSuccessReturnsToken

- **Purpose:** Validates successful login issues JWT + shop_id.
- **Input:** POST /api/v1/auth/login with valid credentials.
- **Expected:** 200; access_token present.

test_loginInvalidCredentials

- **Purpose:** Rejects incorrect credentials.
- **Input:** Wrong username/password.
- **Expected:** 401; success=false.

test_verify_token_success

- **Purpose:** Ensures valid JWT returns decoded user.
- **Input:** POST /verify_token with valid token.
- **Expected:** 200; user data returned.

test_session_check_unauthorized

- **Purpose:** Confirms session route rejects missing token.
- **Input:** GET /api/v1/auth/session without token.
- **Expected:** 401 Unauthorized.

2) AI Store Discovery

test_missing_prompt_or_audio

- **Purpose:** Validates request requires text or audio input.
- **Input:** POST empty JSON to /ai/find-stores/.
- **Expected:** 400; error “prompt or audio required”.

test_aiFallback_to_keyword_search

- **Purpose:** Ensures keyword search activates when AI fails.
- **Input:** POST {prompt: "cotton"} with AI model mocked to fail.
- **Expected:** 200; fallback keyword matches list.

test_audio_without_gemini_key

- **Purpose:** Blocks audio transcription when key missing.
- **Input:** Audio file upload without GEMINI_API_KEY.
- **Expected:** 503; “missing Gemini key”.

3) Catalog Browsing

test_catalog_file_missing

- **Purpose:** Ensures catalog import fails gracefully if file absent.
- **Input:** POST /catalog/load.
- **Expected:** 404; “file not found”.

test_catalog_search_requires_keyword

- **Purpose:** Validates search keyword is mandatory.
- **Input:** GET /catalog/search without keyword.
- **Expected:** 400; “keyword required”.

test_catalog_view_limit

- **Purpose:** Tests pagination limit.
 - **Input:** GET /catalog/view?limit=2.
 - **Expected:** 200; returns exactly 2 products.
-

4) Customer Discovery Portal

test_trending_fabrics_success

- **Purpose:** Retrieves trending items with AI captions.
- **Input:** GET /trending-fabrics.
- **Expected:** 200; array with captions.

test_popular_shops_geocoded

- **Purpose:** Checks lat/lon is added when missing.
- **Input:** GET /popular-shops.
- **Expected:** 200; shops with valid coordinates.

test_nearby_shops_missing_coords

- **Purpose:** Validates lat/lon required.
- **Input:** GET /nearby-shops with no coords.
- **Expected:** 400; coordinate error.

5) Distributor Operations

test_production_plan_invalid_columns

- **Purpose:** Rejects CSV without required columns.
- **Input:** Wrong-format CSV upload.
- **Expected:** 400; error mentions Date/Product/Sales.

test_export_plan_no_data

- **Purpose:** Ensures proper error when no sales exist.
- **Input:** GET /export-plan.
- **Expected:** 404; “no sales data”.

testRegionalReportRequiresAuth

- **Purpose:** Confirms auth decorator protects endpoint.
- **Input:** GET /regional-report without token.
- **Expected:** 401 Unauthorized.

6) Heatmap Analytics

test_heatmap_success

- **Purpose:** Returns region-demand heatmap.
- **Input:** Valid date range.
- **Expected:** 200; normalized scores.

test_heatmap_invalid_dates

- **Purpose:** Validates date format.
- **Input:** Wrong date format.
- **Expected:** 400; invalid date error.

test_heatmap_no_data

- **Purpose:** Returns empty array for no dataset.
- **Input:** Date range with no entries.
- **Expected:** 200; empty list.

7) Image Comparison

test_compare_images_success

- **Purpose:** Returns similarity scores for reference images.
- **Input:** input_image + reference_images.
- **Expected:** 200; scores array.

test_compare_images_missing_input

- **Purpose:** Validates mandatory input image.
- **Input:** Missing input_image.
- **Expected:** 400 error.

8) Inquiry Management

test_submit_inquiry_success

- **Purpose:** Creates inquiry with optional image + AI result.
- **Input:** POST inquiry payload.
- **Expected:** 200; inquiry_id returned.

test_inquiry_invalid_shop

- **Purpose:** Rejects non-existent shop ID.
- **Input:** shop_id=999.
- **Expected:** 404 error.

test_inquiry_history_success

- **Purpose:** Fetches past inquiries by user.
- **Input:** GET /history?user_id=1.
- **Expected:** 200; list of inquiries.

9) Inventory System

test_get_inventory_success

- **Purpose:** Retrieves items for a shop.
- **Input:** GET /inventory/?shop_id=1.
- **Expected:** 200; items list.

test_edit_inventory_item

- **Purpose:** Updates quantity/price of an item.
- **Input:** PUT /inventory/edit.
- **Expected:** 200; update success.

test_delete_inventory_item

- **Purpose:** Removes item from inventory.
- **Input:** DELETE /inventory/delete?item_id=1.
- **Expected:** 200; deletion confirmation.

10) Marketing Automation

test_generate_marketing_image

- **Purpose:** Accepts image to produce AI caption & content.
- **Input:** POST image file.
- **Expected:** 200; generated assets.

test_generate_marketing_invalid_file

- **Purpose:** Blocks unsupported file formats.
- **Input:** .txt file.
- **Expected:** 400; invalid file type.

11) PDF Generation

test_basic_pdf_generation

- **Purpose:** Creates PDF using title + subtitle.
- **Input:** JSON body with title.
- **Expected:** 200; PDF returned.

test_pdf_invalid_json

- **Purpose:** Ensures proper error when JSON malformed.
- **Input:** Broken JSON.
- **Expected:** 400; error message.

12) Product Insights

test_get_products_success

- **Purpose:** Retrieves all products with AI captions.
- **Input:** GET /products/.
- **Expected:** 200; product array.

test_get_product_not_found

- **Purpose:** Handles invalid product ID.
- **Input:** /products/999.
- **Expected:** 404.

test_get_suggested_products

- **Purpose:** Returns fallback suggestions when no sales.
- **Input:** GET /products/suggested.
- **Expected:** 200; suggested list.

13) Shop Explorer

test_get_all_shops_success

- **Purpose:** Returns list of shops.
- **Input:** GET /customer/shops.
- **Expected:** 200; shops array.

test_get_shop_detail

- **Purpose:** Returns single shop details.
- **Input:** /customer/shop/1.
- **Expected:** 200; shop + products.

test_nearby_shops_invalid_coords

- **Purpose:** Validates coordinate format.
- **Input:** lat=invalid.
- **Expected:** 400 error.

14) Shop Management

test_update_shop_success

- **Purpose:** Updates shop information.
- **Input:** PUT /api/v1/shop/.
- **Expected:** 200; updated fields.

test_delete_shop_unauthorized

- **Purpose:** Prevents deletion from another owner.
- **Input:** DELETE /shop?id=1 as different user.
- **Expected:** 403 unauthorized.

15) Top Selling & Trending Analytics

test_get_top_selling_success

- **Purpose:** Retrieves top sold products + forecast.
- **Input:** GET /top-selling-products/.
- **Expected:** 200 list.

test_trending_shops_success

- **Purpose:** Returns high-performing shops.
- **Input:** GET /trending-shops/.
- **Expected:** 200; trending list.

MILESTONE 6

Application Setup | Technology Stack | Issues & Pull Requests

Running the Application

Prerequisites

Before starting, ensure the following are installed on your system:

- Python 3.10 or above
- Node.js & npm

1) Starting the Backend (Flask)

1. Open a terminal and move into the backend folder:

➤ cd backend

2. (Recommended) Create and activate a virtual environment:

- python -m venv venv
- Windows: venv\Scripts\activate
- macOS/Linux: source venv/bin/activate
- Install backend dependencies:
pip install -r requirements.txt`
- Launch the Flask server:
python [app.py](#)

- Default sample login credentials:
 1. Distributor : Username: distributor1 Password: Distributor123
 2. Shop Owner : Username: shopowner1 Password: ShopOwner123
 3. Customer : Username: customer1 Password: Customer123

2) Starting the Frontend (Vue.js)

- Open a new terminal window and navigate to the frontend directory:
cd textile-frontend
- Install all required npm packages:
npm install
- Start the frontend development server:
npm run dev
- After the server starts, open the URL shown in the terminal (usually: <http://localhost:5173>) in your browser.

3) End-to-End Application Flow

- Make sure the **Flask backend** is active on <http://localhost:5001>
- Ensure the **Vue frontend** is running (typically on <http://localhost:5173>)
- Log in using any of the demo credentials to explore all modules available to Distributor, Shop Owners and Customer.

AI / LLM Integration

Key Features

- **Generative AI Integration**
 - Provides intelligent text generation, summarization, and content analysis.
 - **Powered by:** Google Gemini and NVIDIA NIM API.

- **Retrieval-Augmented Generation (RAG)**
 - Supplies context-aware chatbots that use domain knowledge for accurate responses.
 - **Services Used:**
 - services/rag_service.py – General-purpose RAG assistant.
 - services/shop_rag_service.py – Shop-owner-focused RAG system.

- **Demand Forecasting**
 - Predicts future demand trends across regions and product categories.
 - Helps business owners plan inventory and optimize supply.
 - **Model Used:** Facebook Prophet.

- **Visual Intelligence**
 - Provides AI-based product image search and comparison using vector similarity.

- Useful for catalogue browsing, product matching, and visual discovery.
- **Service Used:** services/product_image_search.py
- **Tech Used:** FAISS vector search.
- **Voice Intelligence**
 - Enables product discovery through voice commands.
 - Converts speech to text for hands-free search and store finder.
 - **Route Used:** routes/ai_find_stores.py
- **Semantic Search**
 - Uses embeddings to understand user intent beyond keywords.
 - Provides accurate and context-aware product search.
 - **Tech Used:** NVIDIA NIM embeddings + FAISS vector search.

Business Logic Modules

- **Shop Management**
 - Includes inventory monitoring, sales analytics, and automated marketing content creation using AI.
 - Supports shop owners in decision-making and promotional activities.
- **Customer Discovery Features**
 - Offers semantic product search to help customers find the right items quickly.

- Supports “visual search” using uploaded images.
- Provides nearby shop location services for improved accessibility.

- **Distributor Tools**

- Delivers AI-powered production planning based on demand insights.
- Generates regional demand heatmaps for better distribution strategies.
- Helps track supply chain movement and stock flow across regions.

Database & ORM

- **ORM:** Flask-SQLAlchemy
- **Database:** SQLite (for development environment)

Security & Safety Layers

- Comprehensive JWT error responses (expired/invalid/missing/revoked)
- Role-based access control across all user types
- Prompt sanitization for safe AI output
- Keys & secrets stored through configuration-based management
- Proper database integrity with foreign keys (e.g.)

Development & Testing

- **Test Framework:** Pytest
- **Test Features:**
 - In-memory SQLite
 - Mocking external APIs
 - Automated JWT setup
 - Test fixtures for isolated components
- **Dev Mode:** Flask debug server on localhost:5001
- **Storage:** Local static folder for drawings and reference images

Utilities & Libraries

- **Standard Python Modules:** datetime, time, os, glob, json, base64, random, re, traceback

Configuration

- Configurable environment variables for:
 - API keys (Groq/OpenRouter)
 - Base URLs
 - Secret keys (e.g., generated via secrets.token_hex)
- Automatic creation of the /instance folder for persistent storage

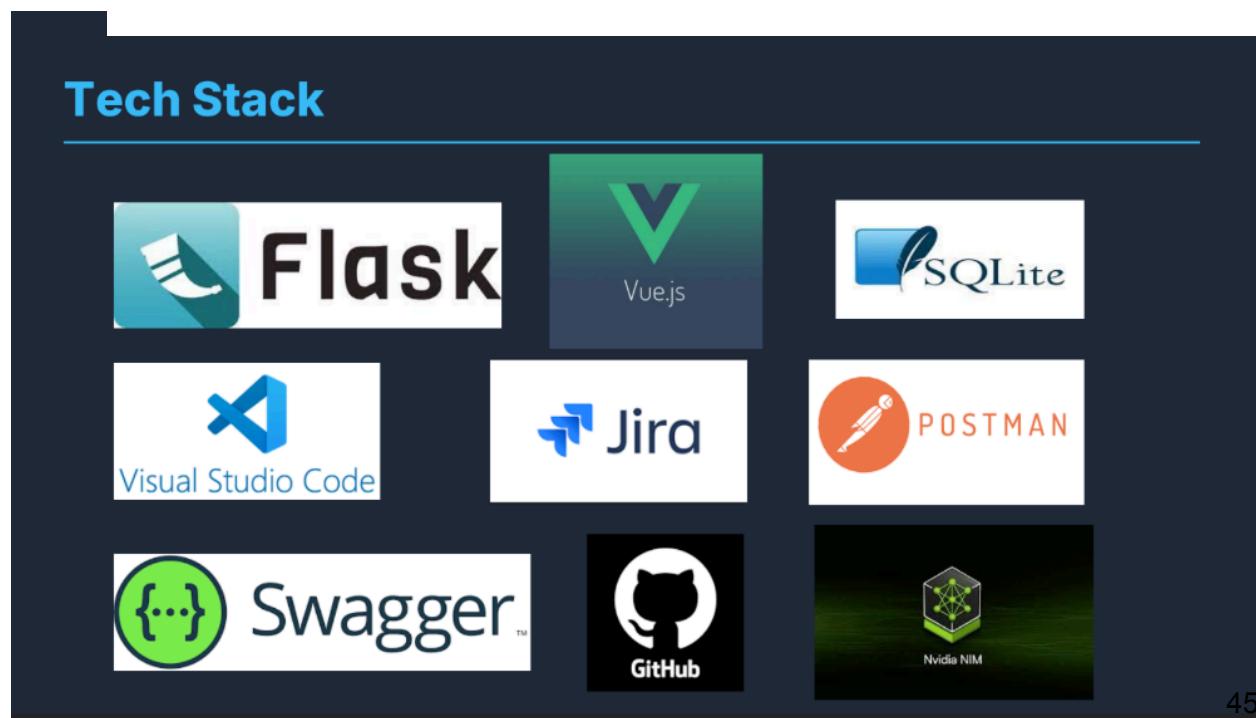
Tech Stack

Backend

- Framework: Flask 3.0 with Flask-SQLAlchemy
- Database: SQLite (development) with SQLAlchemy ORM
- Authentication: JWT with role-based access control
- AI Services: Google Gemini, NVIDIA NIM API, OpenAI
- Vector Search: FAISS with sentence-transformers
- Forecasting: Facebook Prophet for time-series analysis
- Image Processing: Pillow for image handling
- PDF Generation: FPDF for document creation

Frontend

- Framework: Vue 3 (Composition API)
- Build Tool: Vite with HMR
- UI Framework: Bootstrap 5 + Bootstrap Icons
- Routing: Vue Router 4
- HTTP Client: Axios
- Maps: Leaflet with OpenStreetMap
- Charts: Chart.js with vue-chartjs
- Voice Processing: @ricky0123/vad-web



Issues & Pull Requests

The screenshot shows a list of open issues on a GitHub-like platform. The search bar at the top contains the query "is:issue state:open". Below the search bar are filters for Author, Labels, Projects, Milestones, Assignees, and sorting by Newest. The issue list includes the following items:

- Image Similarity Search** (opened 3 days ago)
- Not Found** (opened 3 days ago)
- Dashboard UI** (opened 3 days ago)
- AI-powered insights export error on Shop Manager dashboard** (opened 3 days ago)
- Customer Page** (bug) (opened 3 days ago)
- Bug after Testing** (bug, enhancement) (opened 3 days ago)