



Team Name : Neuratech

Problem Statement - 1 : Global Catalog Registry

Team Members:

- 👤 Sumeet Gupta - MVC & API Development
- 👤 Saherish Kazi - Frontend & Authentication
- 👤 Atharva Bansod - Backend & API Integration
- 👤 Talha Ansari - Database Model & Integration
- 👤 Shashank Yadav - Application & Market Research



Prototype Video Link :
[https://youtu.be/4eGad8VdTyc?
si=vx0uGFbshy1Hndhj](https://youtu.be/4eGad8VdTyc?si=vx0uGFbshy1Hndhj)

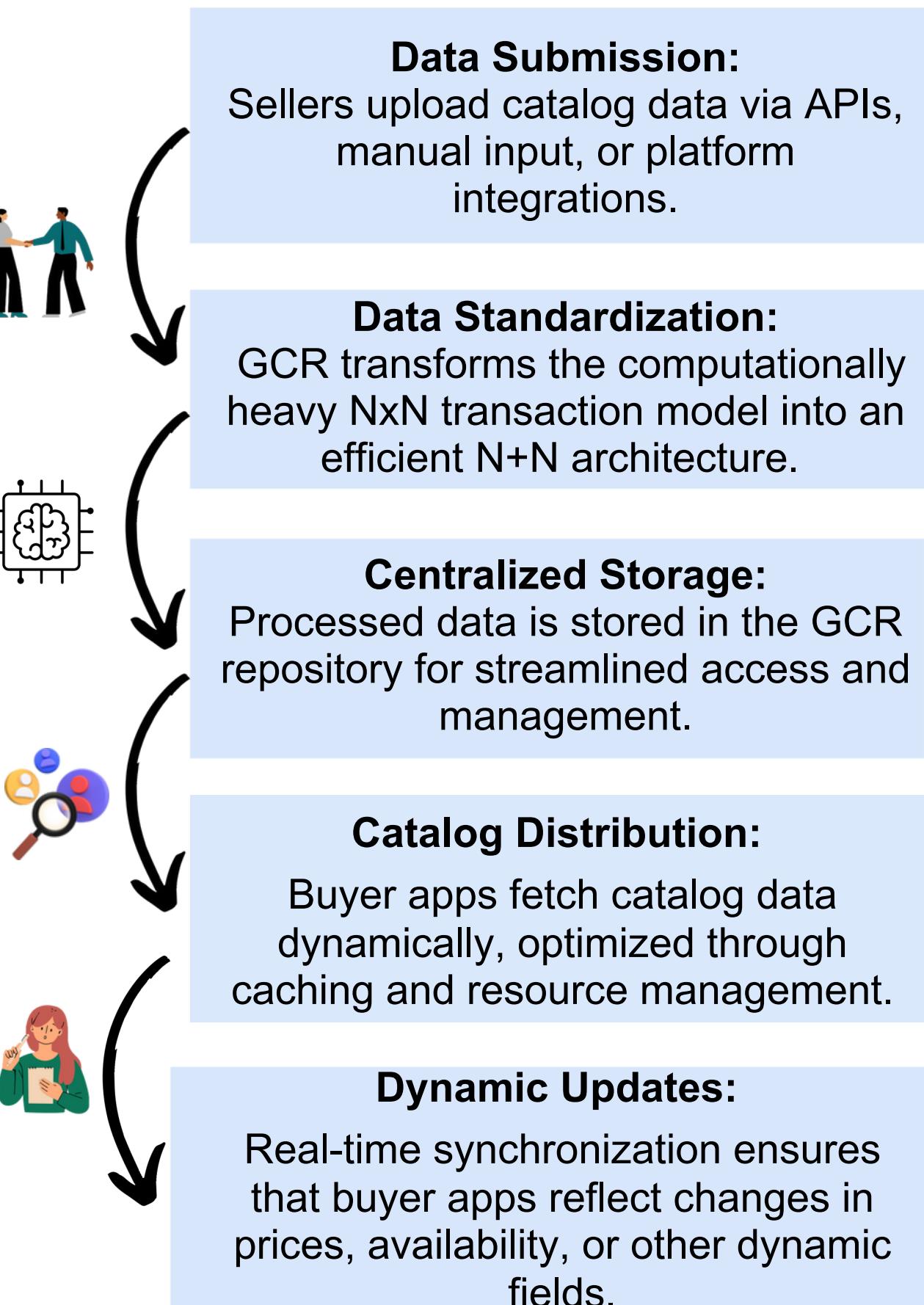
Prototype Hosted Link :
<http://gcrneuratechondc.vercel.app>

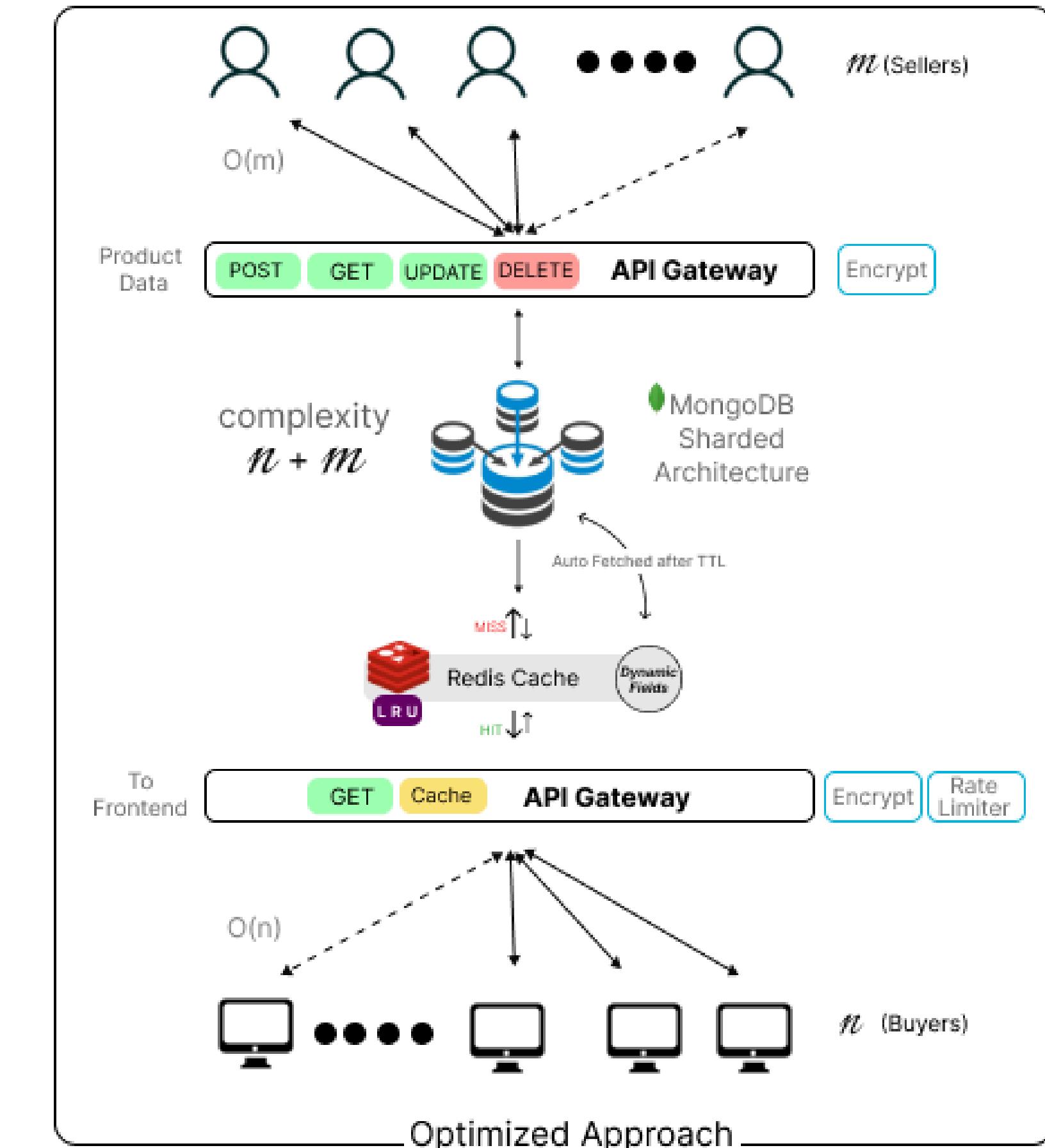
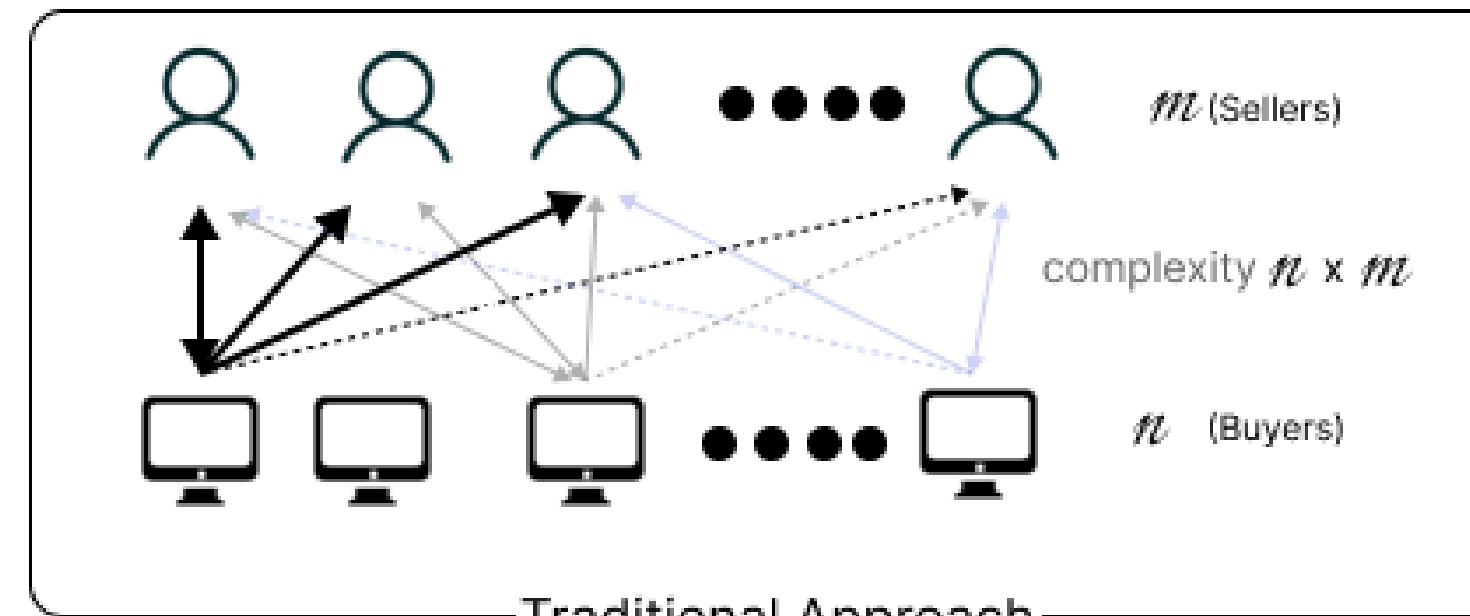
Current Challenges

The ONDC ecosystem faces challenges like computationally heavy NxN transaction model, inconsistent catalog formats, disrupting user experiences and complicating integration between buyer and seller apps. High storage and processing costs result from redundant data management. Migration issues arise due to fragmented catalog systems across platforms. Additionally, managing dynamic data like prices and availability efficiently is a significant challenge.

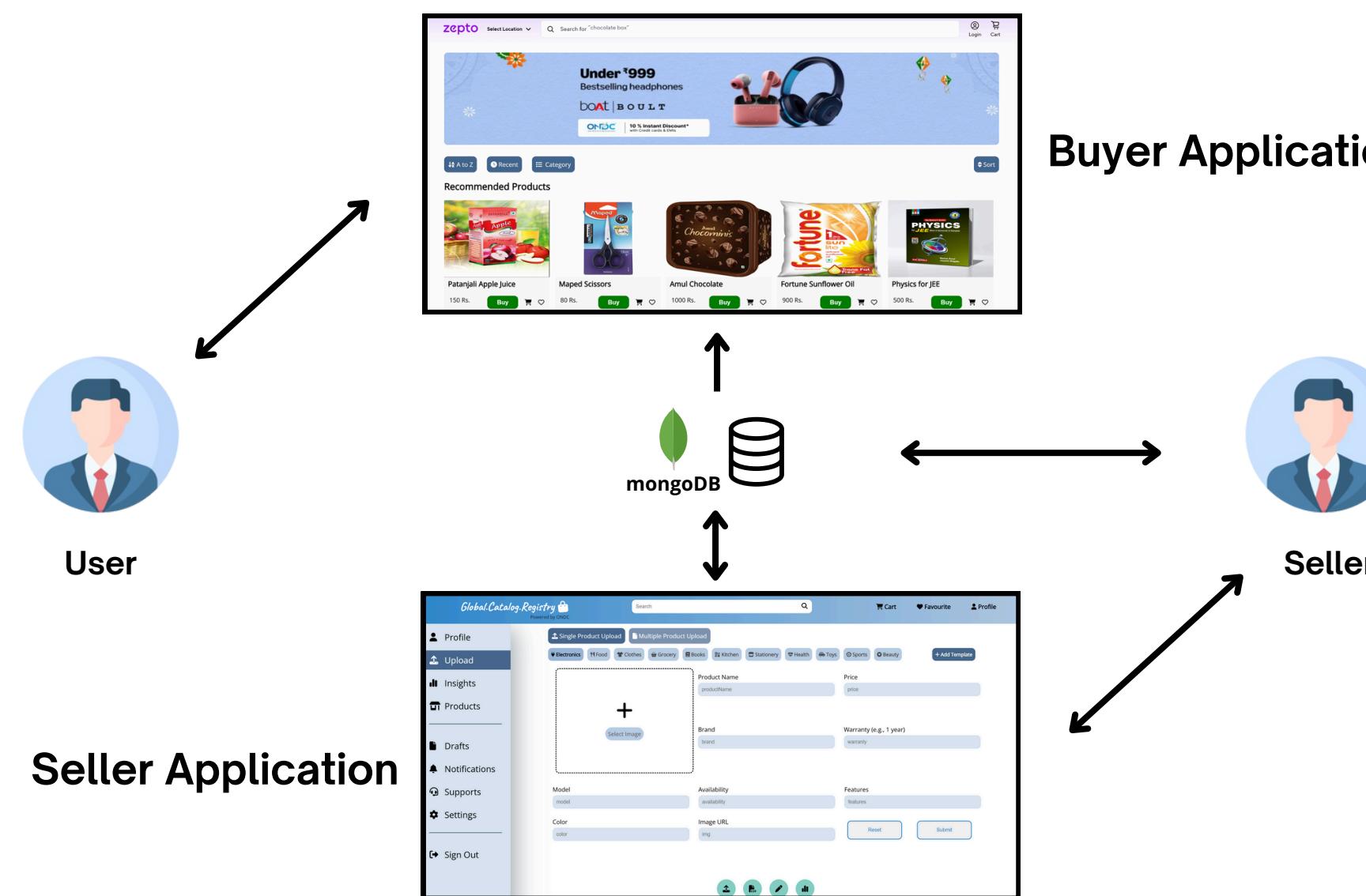
Proposed Solution

- Standardized Catalog Structure:** Define a unified format with fixed fields (e.g., product name, price, warranty) to simplify processing.
- Centralized Storage:** Create a scalable, efficient repository for all catalog data to eliminate duplication and efficient N+N architecture..
- Automated Ease Integration Tools:** Enable seamless catalog creation, updates, and synchronization between buyer & seller apps and the GCR.
- Pre-Built & Custom Templates:** Provide seed catalogs for common product categories to simplify onboarding for sellers.
- Dynamic vs. Static Data Handling:** Incorporate mechanisms to efficiently manage dynamic and static information.
- Unique Product Identification:** Introduce a system for uniquely identifying products while allowing sellers customization flexibility.





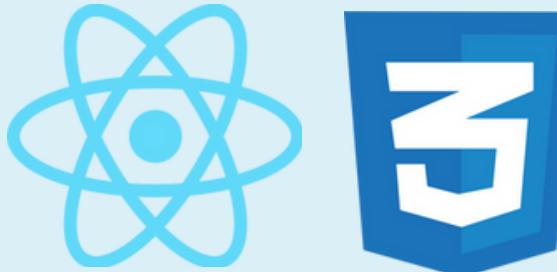
Technical Workflow Diagram



TECHNICAL APPROACH

Frontend & Visualisation

React.js, CSS, Chartjs



React.js, CSS & Chart.js are used for building dynamic and responsive user interfaces with a focus on performance and scalability.

Database & Storage

MongoDB, Redis, ElasticSearch



MongoDB is used for flexible, scalable NoSQL data storage, Redis is utilized for caching and session management, and ElasticSearch enhances search capabilities with powerful indexing.

Backend & Server

Nodejs, Express, RestAPI, Helmet



The backend is built with Node.js and Express.js to efficiently handle HTTP requests and RESTful APIs, while Helmet is used for enhancing security by setting various HTTP headers.

Hosting & Deployment

AWS, S3, RDS



For hosting, AWS provides a robust and scalable platform with services like EC2 for computing, S3 for storage, and RDS for database management, allowing seamless deployment and scaling of applications.

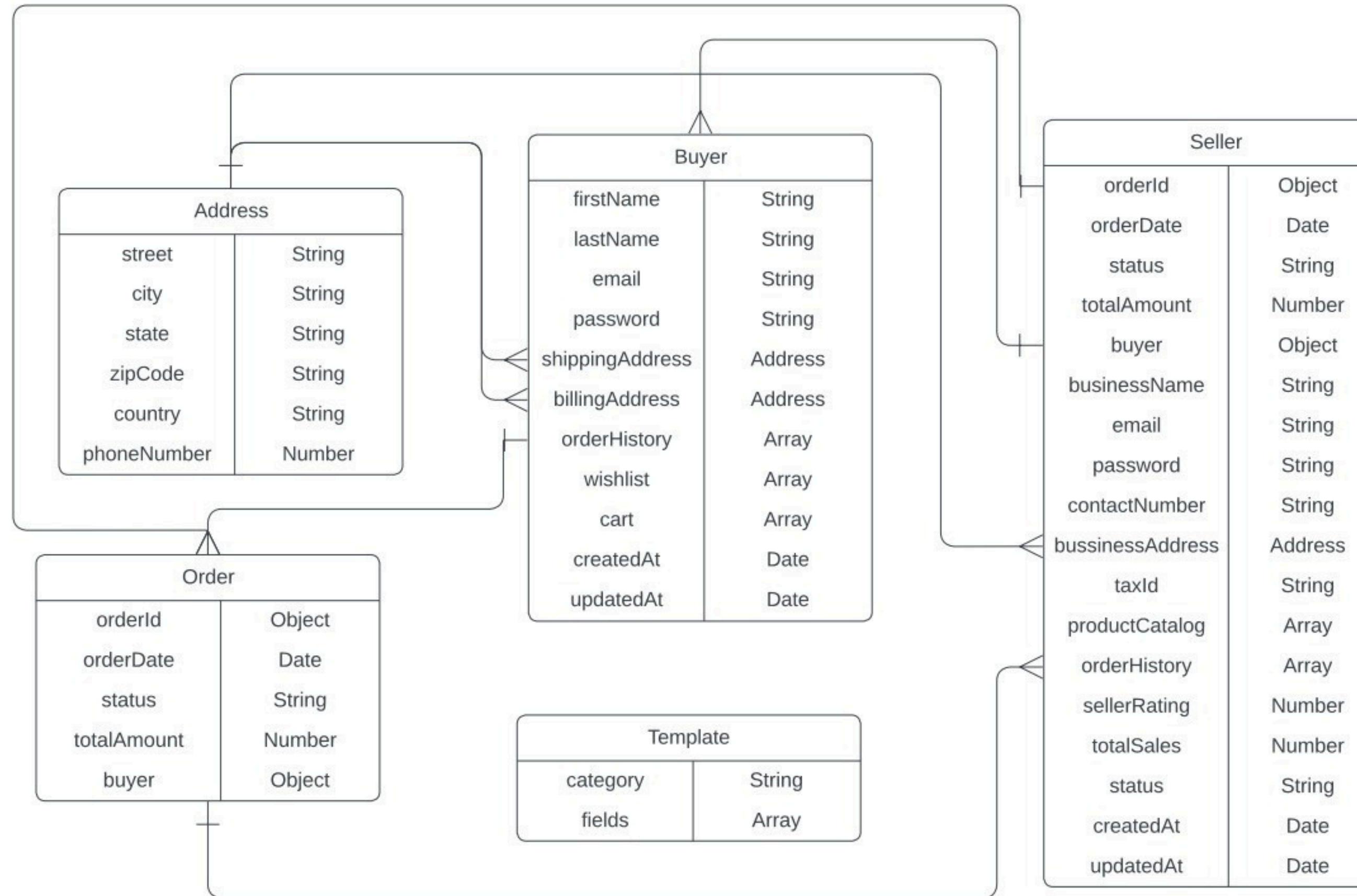
Scalability

Apache Kafka, Load Balancer



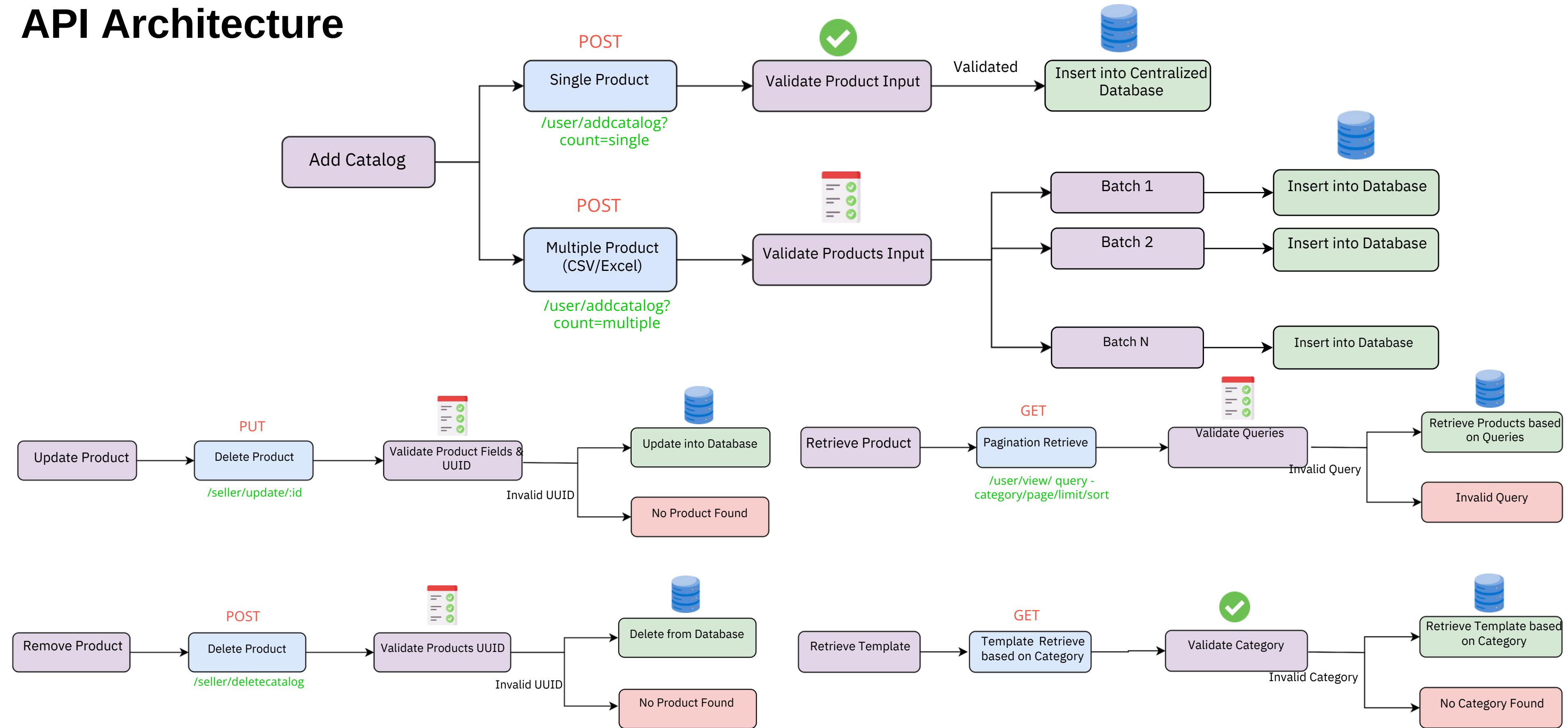
For scalability, we'll use Apache Kafka for real-time data streaming, Load Balancers to distribute traffic, and Microservices with AWS Auto-scaling for dynamic resource scaling based on demand.

Centralized Database Architecture

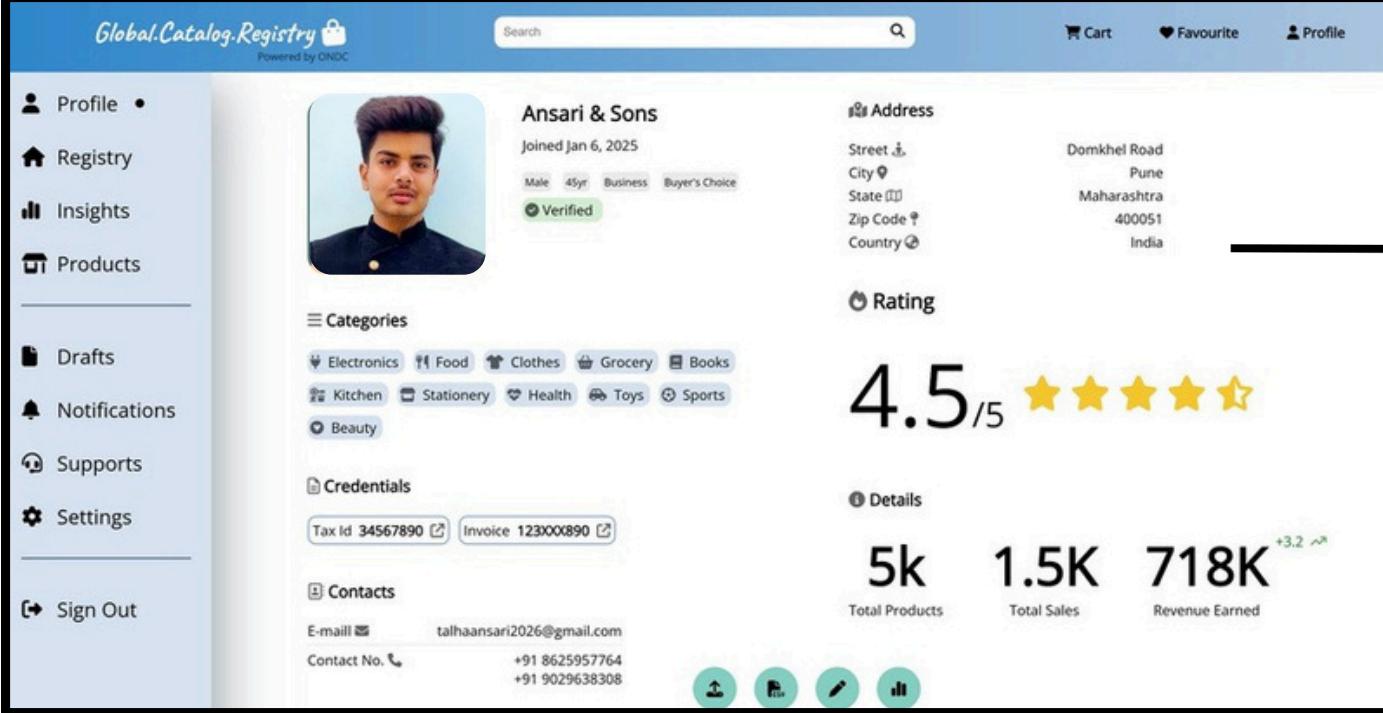


Catalog	
category	String
productName	String
productuid	String
brand	String
warranty	String
model	String
color	Array
img	Array
price	Number
availability	Number
weight	String
ingredients	String
expiryDate	Date
size	String
material	String
ageGroup	String
pages	Number
publisher	String
ISBN	String
skinType	String
applicationMethod	String

API Architecture

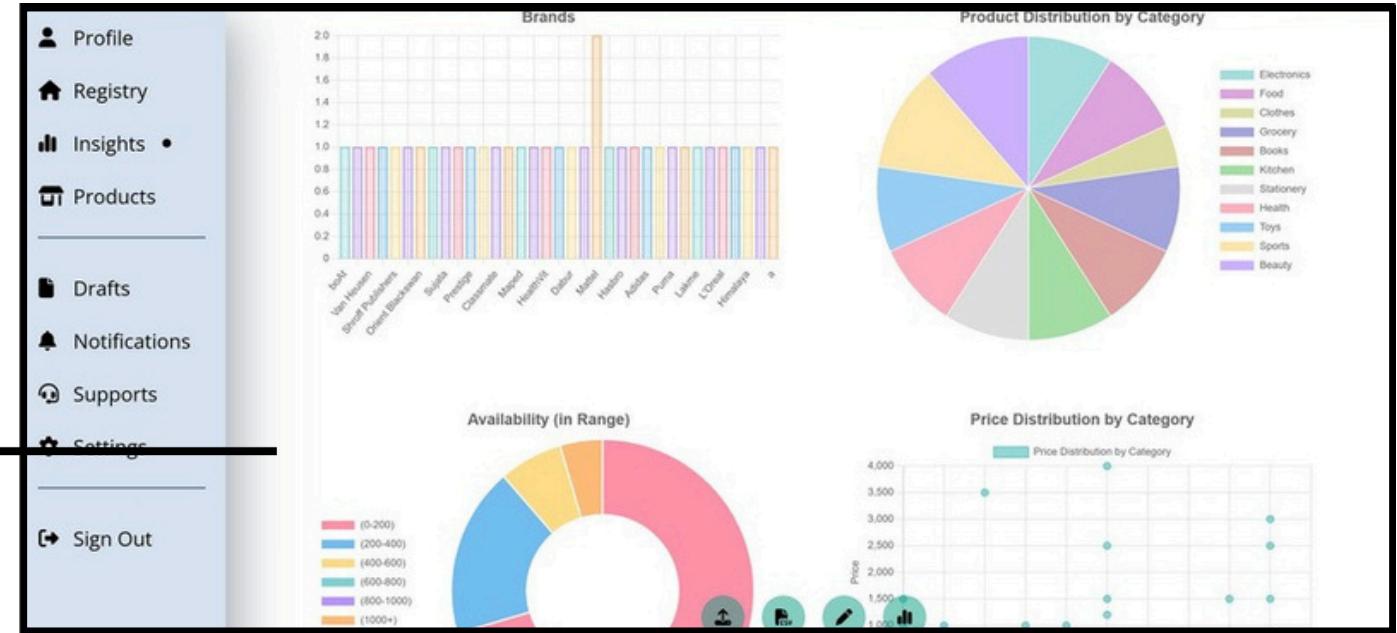


Seller Page

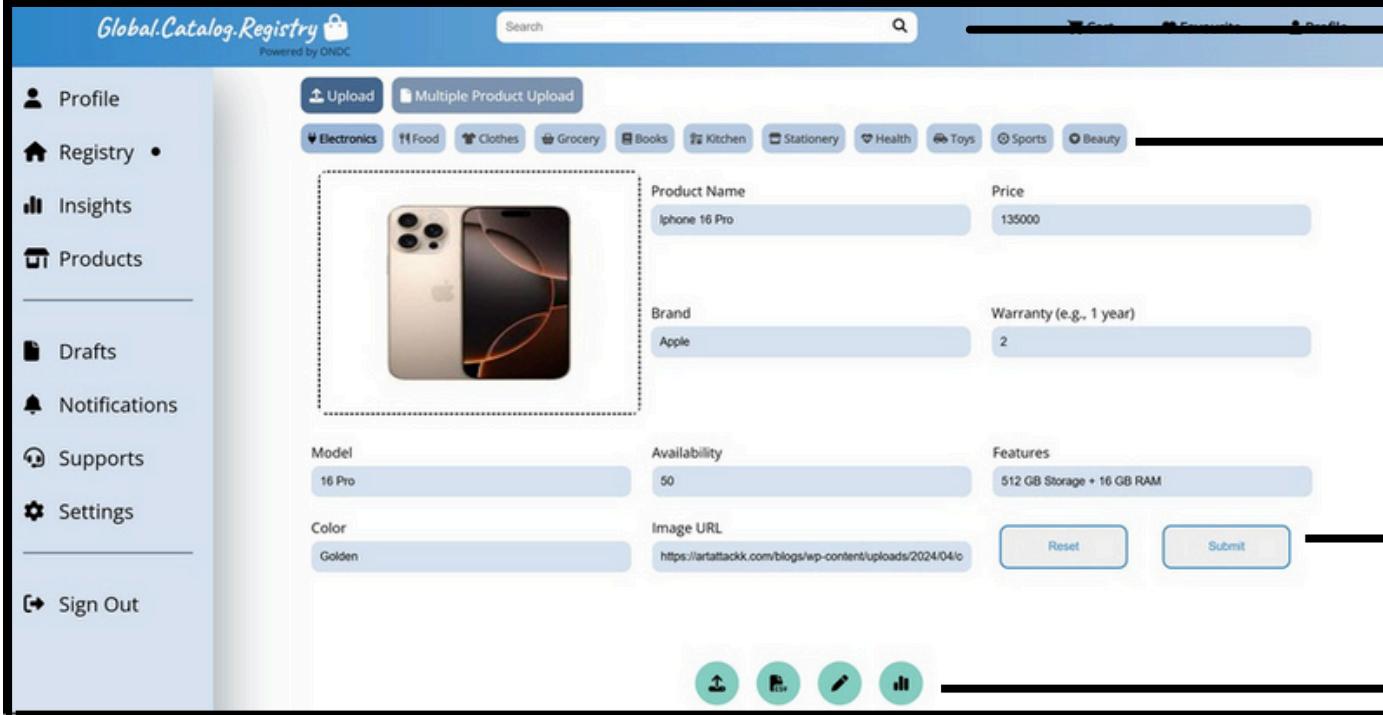


This section shows the Seller Profile Overview. It includes a profile picture of Ansari & Sons, joined on Jan 6, 2025, with a 'Verified' badge. Address details show Domkhel Road, Pune, Maharashtra, India. A rating of 4.5/5 with 5 stars is displayed. Key metrics are 5k Total Products, 1.5K Total Sales, and 718K Revenue Earned.

Seller Profile



Seller Dashboard



This section illustrates product upload options. It shows a 'Category Based Template' for a single product (iPhone 16 Pro) with fields for Product Name, Price, Brand, Warranty, Model, Availability, Features, Color, and Image URL. It also shows 'Multi Product Upload via CSV/Excel' with a preview table for the iPhone 16 Pro.

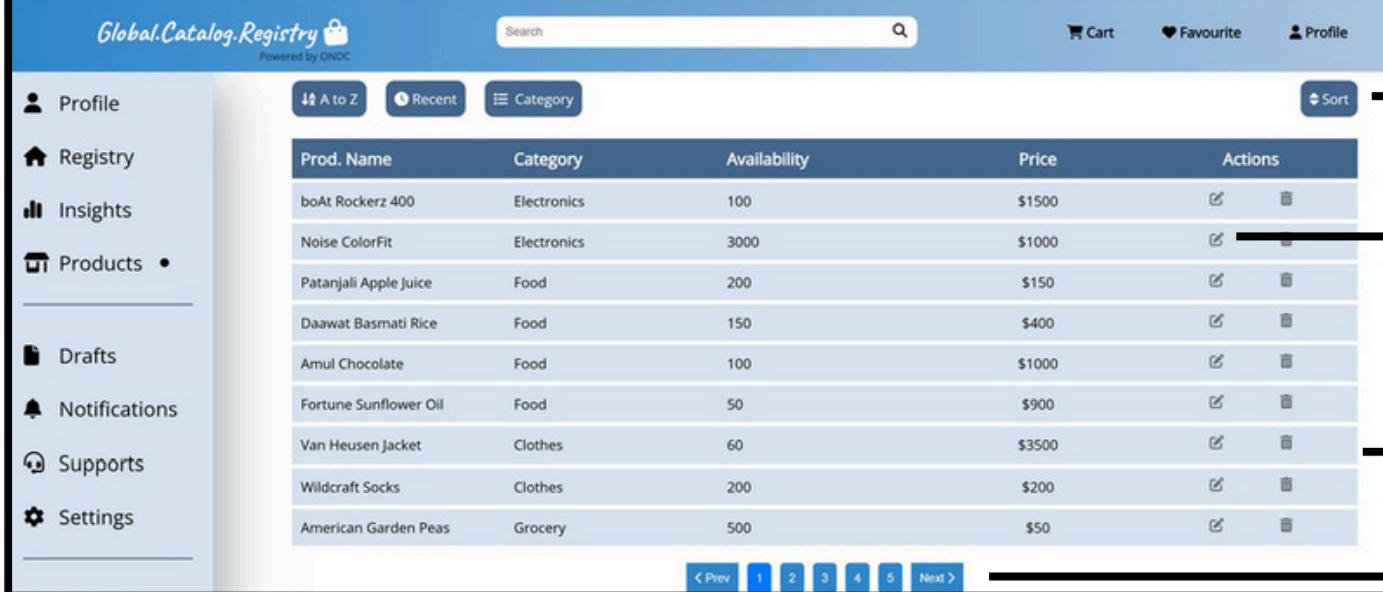
Search Products

Category Based Template

Multi Product Upload
via CSV/Excel

Single Product Upload

Quick Links for Features



This section shows the Product List and Pagination. It features a table with columns for Prod. Name, Category, Availability, Price, and Actions. The table lists items like boAt Rockerz 400, Noise ColorFit, Patanjali Apple Juice, Daawat Basmati Rice, Amul Chocolate, Fortune Sunflower Oil, Van Heusen Jacket, Wildcraft Socks, and American Garden Peas. Navigation arrows at the bottom indicate pagination.

Filter Options for Products

Edit Dynamic Data of Products

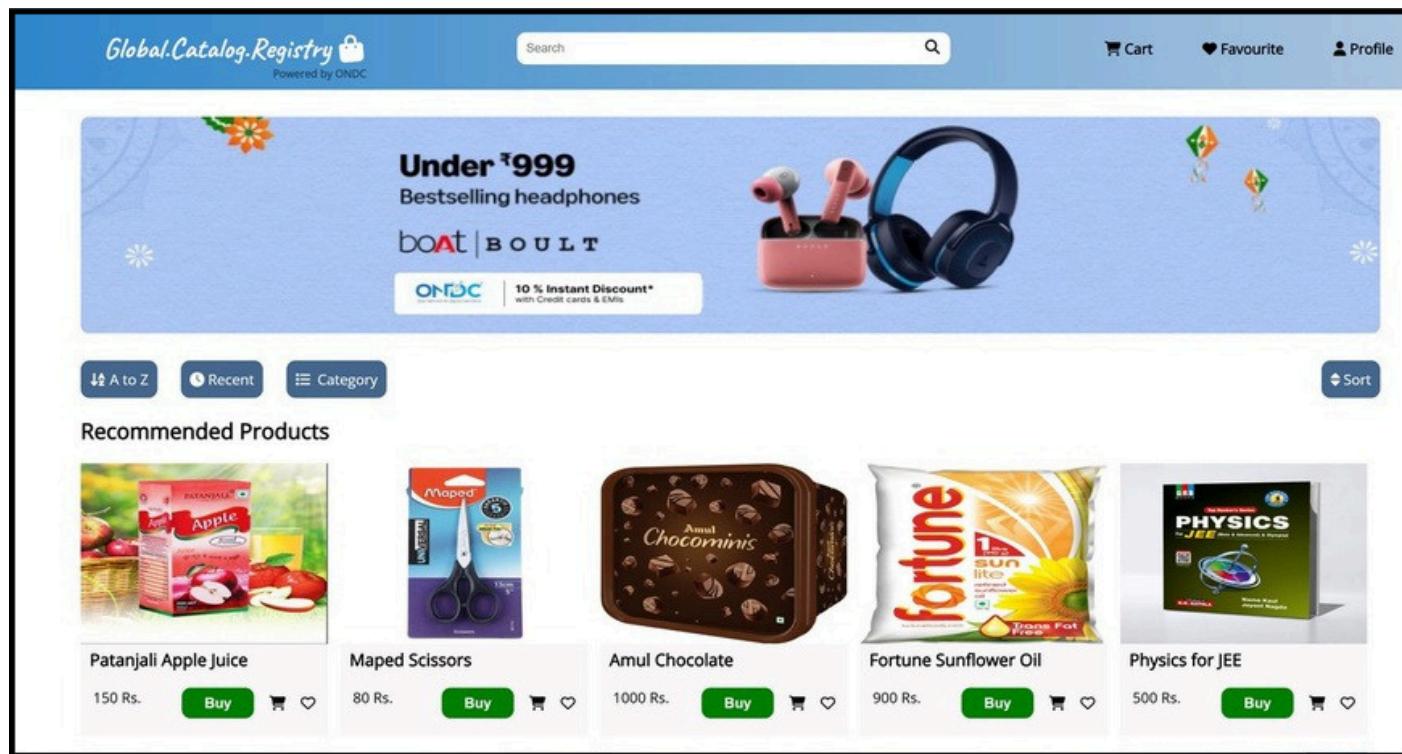
Product Data

Product List

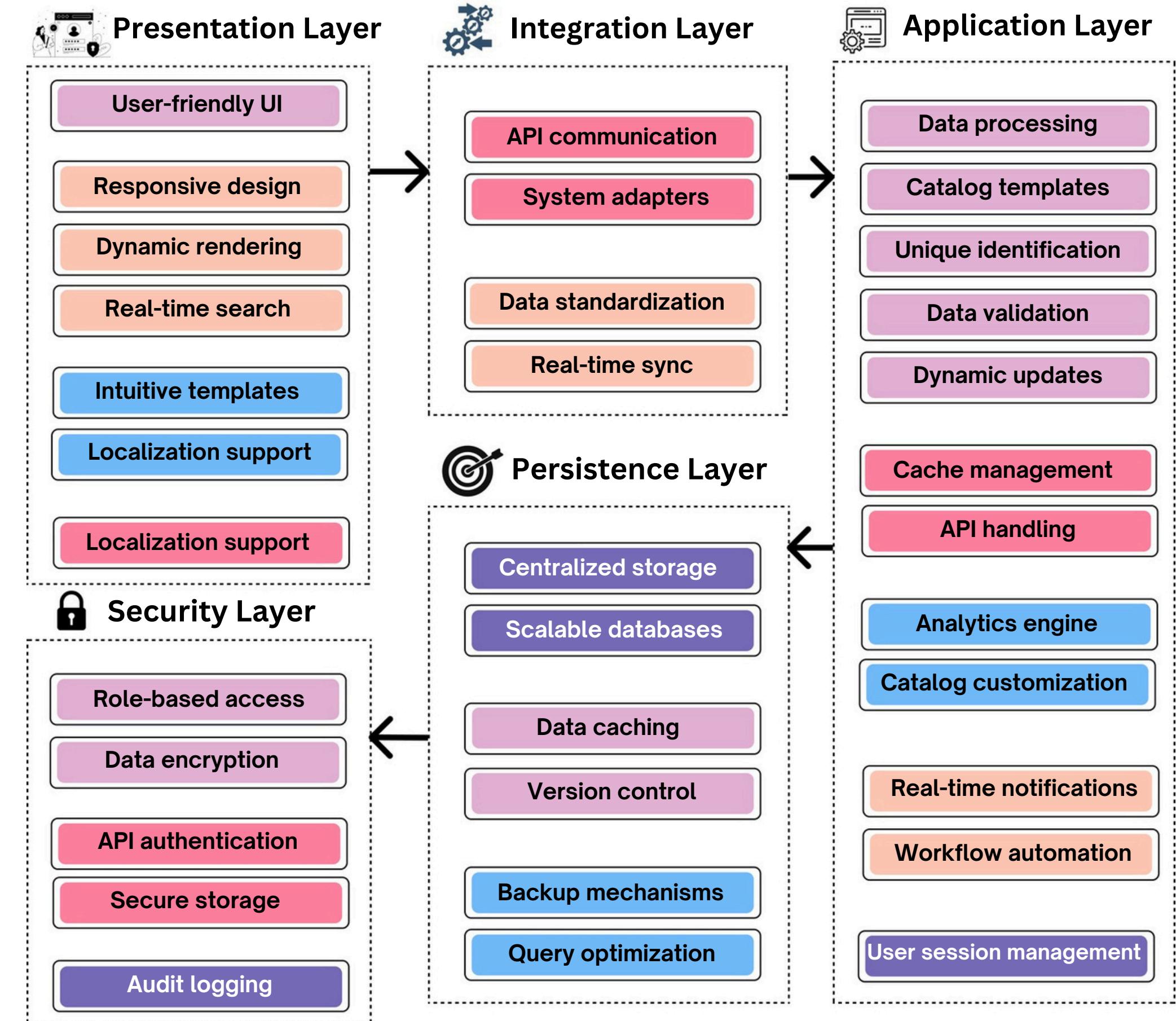
Pagination



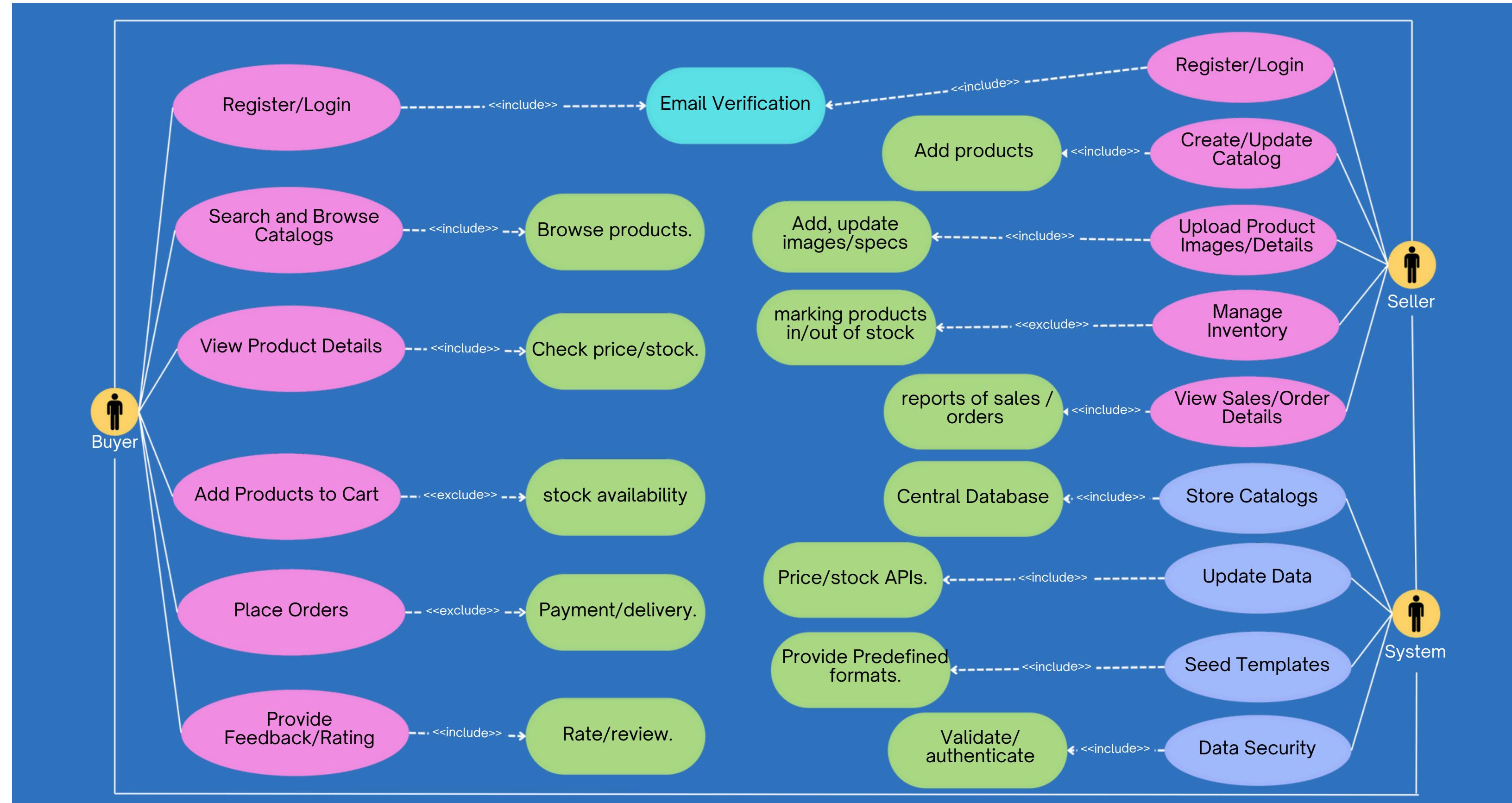
This section shows a detailed view of a product, the Noise ColorFit. It includes a large image of the smartwatch, its price (₹1000), units left (3000), and offers. Dynamic data like noise level (Noise), warranty (1 year), and color fit (ColorFit 2, Red) are shown. Buttons for 'Edit' and 'Delete' are present, along with a 'Best Selling' badge and 'In Stock' status.



Buyer Page

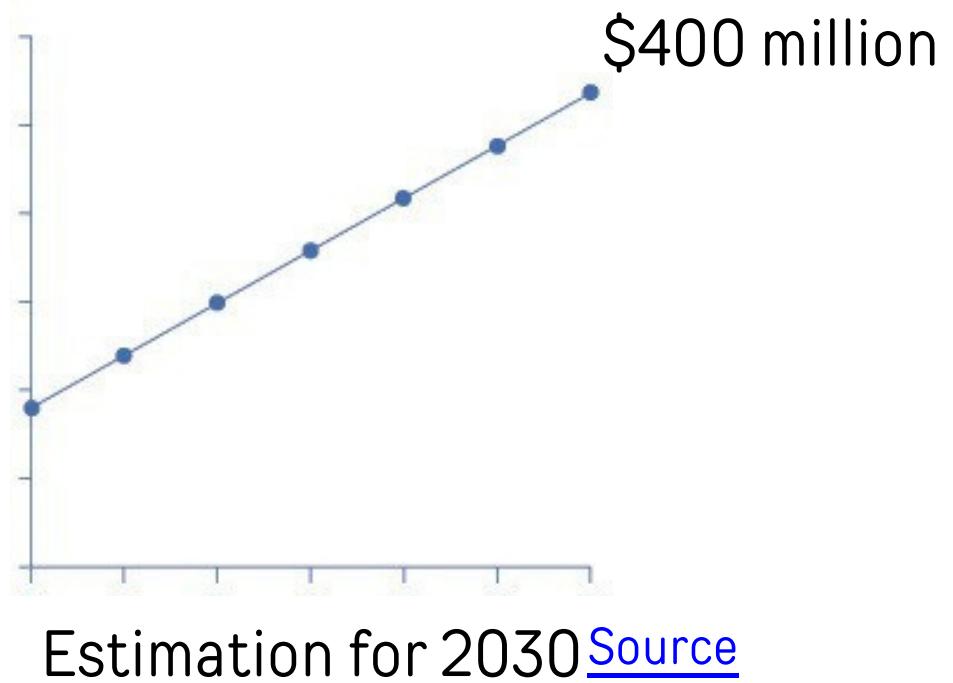


Use Case Diagram



Market Research & Analysis

- The ONDC is an initiative launched by the Government of India on April 29, 2022, aiming to democratize and decentralize the digital commerce landscape. [Source](#)
- Its primary objective is to create an open and inclusive ecosystem for e-commerce in the country, reducing entry barriers and removing digital monopolies. [Source](#)
- As of late 2022, ONDC has been established as private non-profit company, with mission to develop an open and inclusive ecosystem for e-commerce in India. [Source](#)
- The network has seen participation from various sectors, including retail, fast-moving consumer goods (FMCG), and agribusiness, with companies like Reliance Retail and Hindustan Unilever joining the platform. [Source](#)
- ONDC empower micro, small, and medium enterprises by providing them access to a larger customer base and the tools needed to compete with larger e-commerce giants. [Source](#)
- By establishing a unified structure for catalogs and transactions, ONDC aims to enhance interoperability among various e-commerce platforms, reducing inefficiencies and market concentration. [Source](#)
- The initiative focuses on supporting grassroots-level entrepreneurs and local retailers, enabling seamless selling in an open network. [Source](#)
- The government's investment of approximately \$23 million into ONDC underscores its potential to be a game-changer in this sector. [Source](#)



E-Retail Penetration by Country [Source](#)

