AI for Bharat Hackathon

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Problem Statement: Market conditions change fast. Sellers get data, not decisions.

Brief about the Idea: Sellers Are Flying Blind

Indian sellers competing against hundreds of sellers on Amazon, Flipkart, and Meesho—but they can't see what's happening in the market.

The **result**?

➤ Prices set by guesswork, not data
➤ Stockouts when demand spikes
➤ Overstock when demand drops
➤ Lost sales to better-positioned competitors

It's like playing chess blindfolded while everyone else can see the board.

The Solution: ShelfIQ - Your AI Co-Pilot

Think of ShelfIQ as your always-on market analyst:

🔍 **Watches** → Tracks competitor prices and market trends continuously 🧠 **Thinks** → AI predicts demand and calculates optimal prices 💡 **Advises** → Recommends specific actions: "Adjust your price" or "Restock soon" ⚡ **Alerts** → Notifies you instantly when competitors move or margins drop

In **simple terms**: ShelfIQ turns market data into **decisions you can act on automatically**.

What Makes ShelfIQ Different?

Meet Rajesh
Small seller I Flipkart & Amazon I Home Appliances I Pune

❌ Before ShelfIQ: Constant Fire-Fighting

Morning: Manually checks competitor prices for hours **Afternoon**: Misses competitor price drop → Loses sales **Evening**: Guesses inventory for Diwali → Wrong stock **Night**: Discovers selling at loss
Result: Stressed, reactive, losing money

✅ After ShelfIQ: Proactive & Growing

Morning: AI alert → Applies recommendation instantly **Afternoon**: Demand spike predicted → Restocks confidently **Before Diwali:** Accurate forecast → Perfect inventory **Continuous**: Margins protected automatically
Result: Calm, proactive, profitable

🔍 COLLECT → 🧠 ANALYZE → 💡 RECOMMEND → ⚡ EXECUTE

Conversational Commerce Intelligence
(Not Just Analytics)

Others: Show data → You decide
ShelfIQ: Recommend action → You execute

Most sellers aren't data analysts. They need decisions, not dashboards.

Action-First Architecture (Not Insight-First)
Every insight = Recommended action + One-click execute
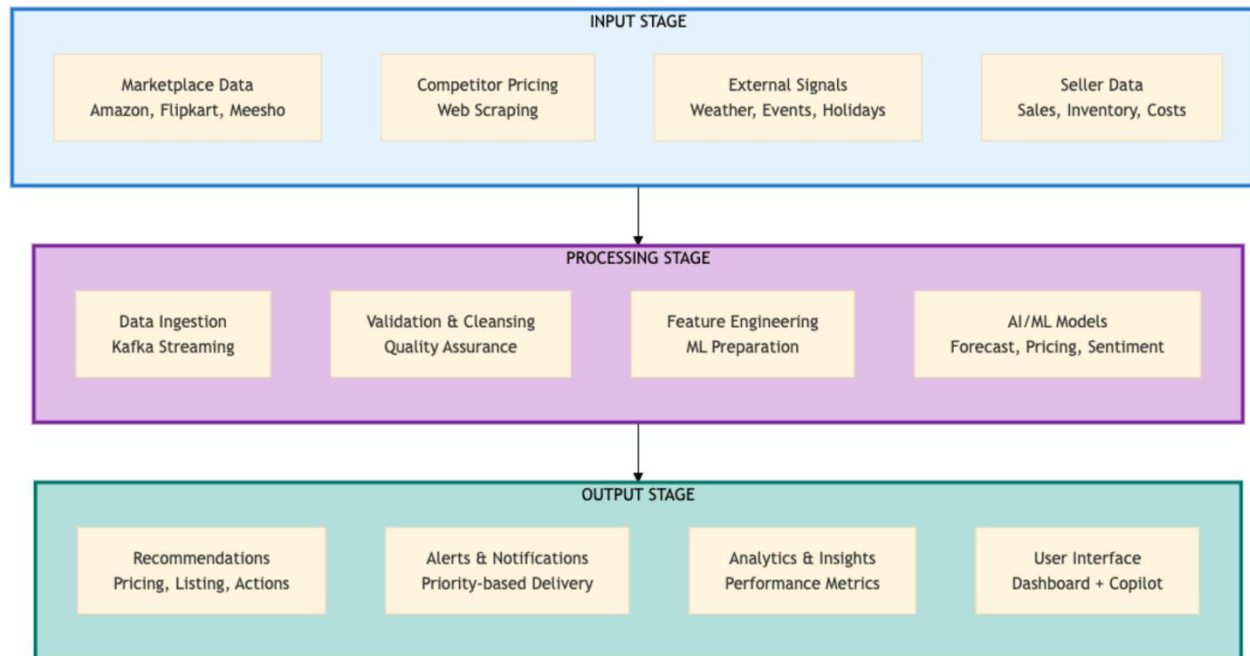
(Traditional: "Your listing has low visibility"
ShelfIQ: "Add these 5 keywords to your title. [Apply Now]
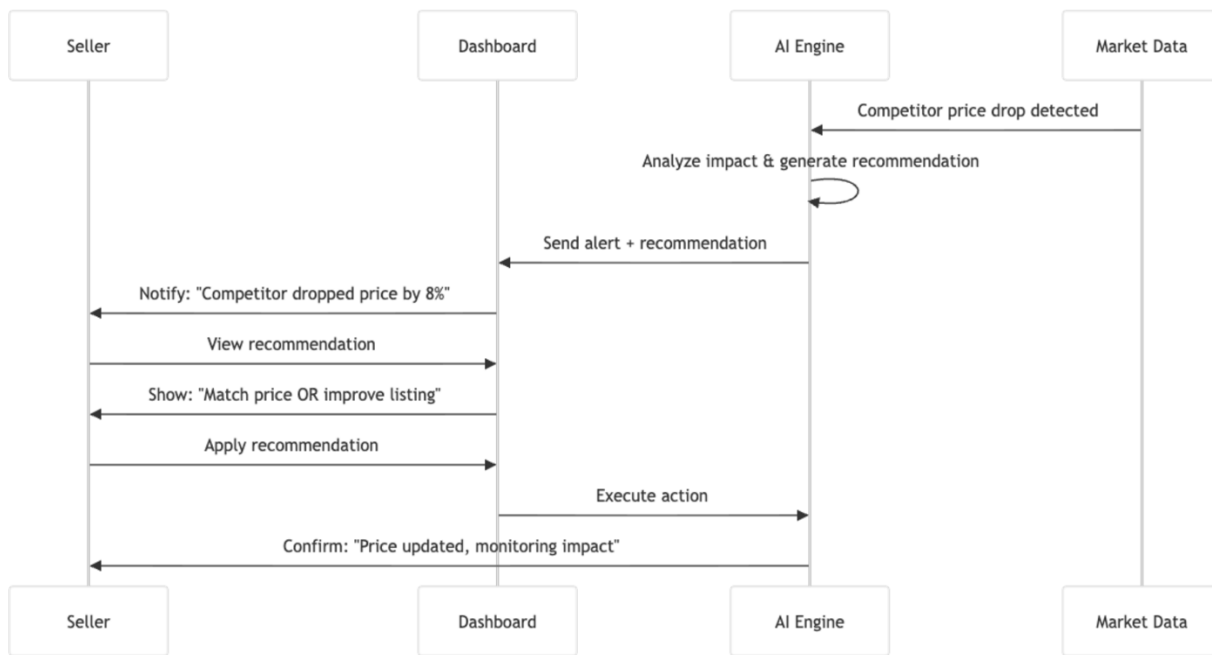Expected: +20% visibility")

India-First AI Models (Not Just Localization)
Trained on Indian festivals, regional pricing, marketplace behaviors *("Diwali in 2 weeks. Ethnic wear demand will spike 8x.")*
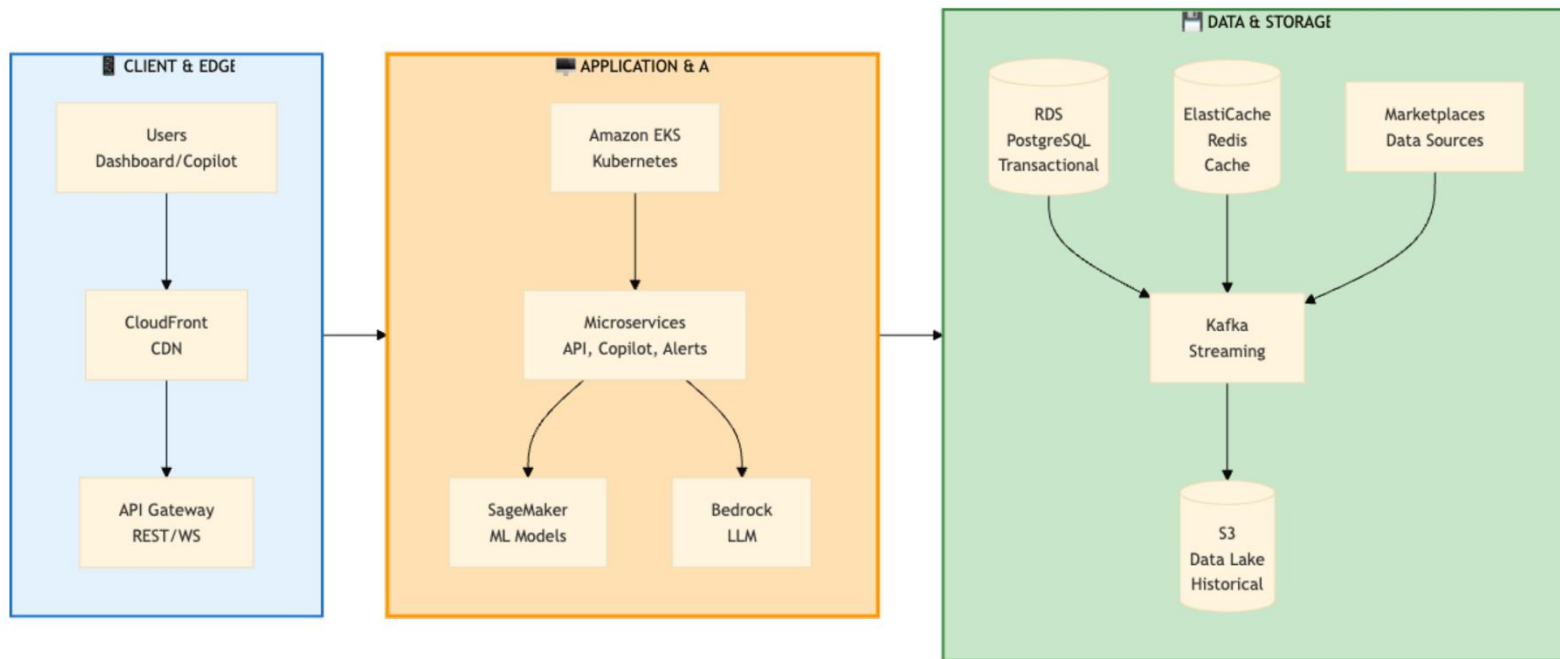
Process flow diagram or Use-case diagram

INPUT STAGE

Marketplace Data	Competitor Pricing	External Signals	Seller Data
Amazon, Flipkart, Meesho	Web Scraping	Weather, Events, Holidays	Sales, Inventory, Costs

PROCESSING STAGE

Data Ingestion	Validation & Cleansing	Feature Engineering	AI/ML Models
Kafka Streaming	Quality Assurance	ML Preparation	Forecast, Pricing, Sentiment

OUTPUT STAGE

Recommendations	Alerts & Notifications	Analytics & Insights	User Interface
Pricing, Listing, Actions	Priority-based Delivery	Performance Metrics	Dashboard + Copilot

Wireframes/Mock diagrams of the proposed solution (optional)

Architecture diagram of the proposed solution:

Technologies to be used in the solution:

Frontend: React 18 + TypeScript I Material-UI I Recharts I Socket.io

Backend: FastAPI (Python) I Node.js I GraphQL (Apollo) I Kong Gateway

AI/ML: • Forecasting: Prophet + LightGBM + LSTM • Pricing: Bayesian Regression + Optimization • NLP: DistilBERT I GPT-4 (Copilot) • Serving: TensorFlow Serving I MLflow
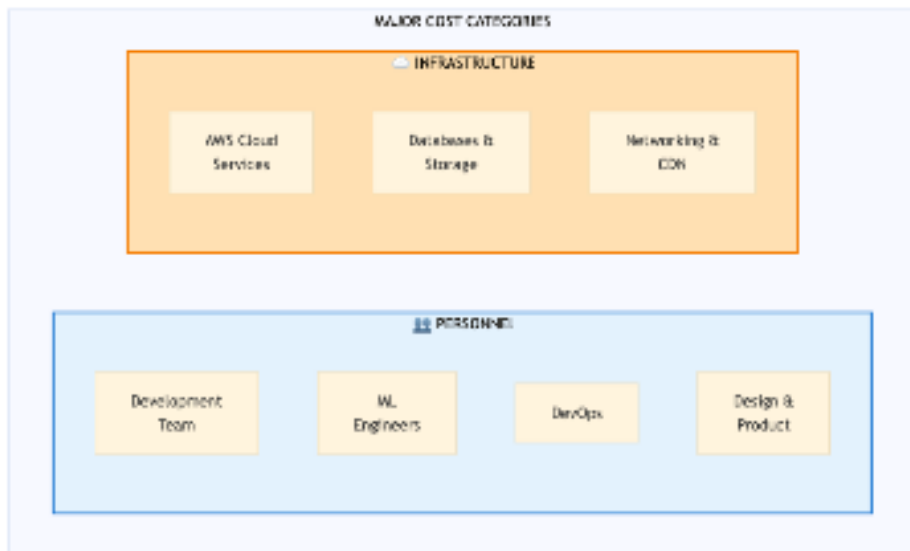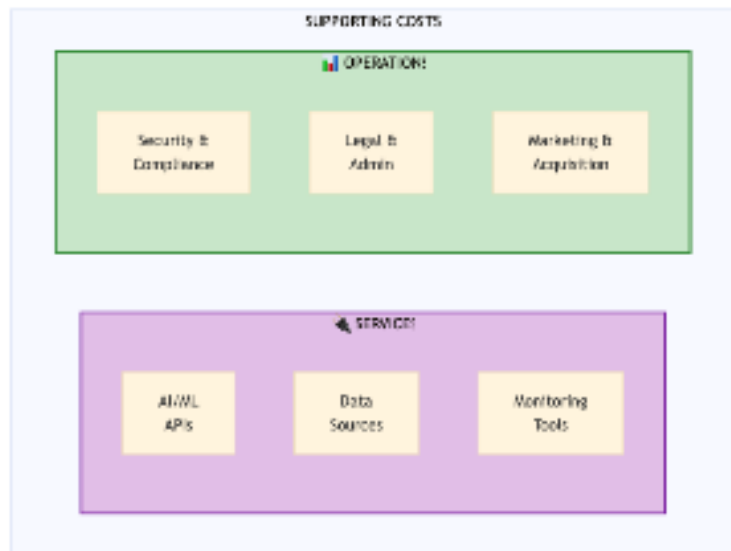
Data: Kafka I Flink I Airflow I Feast (Feature Store) I S3 Data Lake

AWS Services: • Compute: EKS (Kubernetes) • Database: RDS PostgreSQL I ElasticCache Redis • ML: SageMaker I Bedrock • Storage: S3 I Monitoring: CloudWatch

DevOps: Docker I Terraform I GitHub Actions I ArgoCD I Prometheus

Estimated implementation cost (optional):

SUPPORTING COSTS

📊 OPERATIONS

| Security & Compliance | Legal & Admin | Marketing & Acquisition |

🔧 SERVICES

| AI/ML APIs | Data Sources | Monitoring Tools |

MAJOR COST CATEGORIES

☁ INFRASTRUCTURE

| AWS Cloud Services | Databases & Storage | Networking & CDN |

👥 PERSONNEL

| Development Team | ML Engineers | DevOps | Design & Product |

AWS Services Used

- ✓ Amazon SageMaker for ML training and deployment
- ✓ Amazon Bedrock for conversational AI copilot
- ✓ Amazon EKS for container orchestration
- ✓ Amazon RDS and ElasticCache for data storage
- ✓ Amazon S3 and AWS Glue for data lake and ETL
- ✓ Amazon CloudWatch and AWS X-Ray for monitoring and observability

Bharat-Specific Features

- ✓ Multi-language support including Hindi, Tamil, Telugu, Bengali, and Marathi
- ✓ Festival demand intelligence for events like Diwali, Holi, and Eid
- ✓ Support for Indian marketplaces such as Flipkart, Meesho, and Amazon India
- ✓ Designed for Tier 2 and Tier 3 sellers with low-bandwidth optimized UI
- ✓ GST-aware pricing and compliance support

Social Impact

- ✓ Empowering MSMEs to make better pricing and inventory decisions
- ✓ Improving revenue stability for small sellers
- ✓ Supporting growth of new e-commerce entrepreneurs

Innovation

- ✓ Conversational AI copilot built specifically for Indian e-commerce sellers

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Thank You