SMART INDIA HACKATHON 2024

TITLE PAGE

- **Problem Statement ID** - SIH-1789

- **Problem Statement Title**- Hardware Inventory Management in the Police Department

- **Theme**-Smart Resource Conservation

- **PS Category**- Software

- **Team ID**- 39780

- **Team Name**- 405 Resolved

Video Link: https://youtu.be/jQG9_h1otCU

PDF Link :
https://drive.google.com/file/d/18vTZUFTBh5vTs7qYh0L9GqQmziBWL_11/view?usp=drivesdk

website link: https://surakshasanchay.vercel.app/

405 RESOLVED

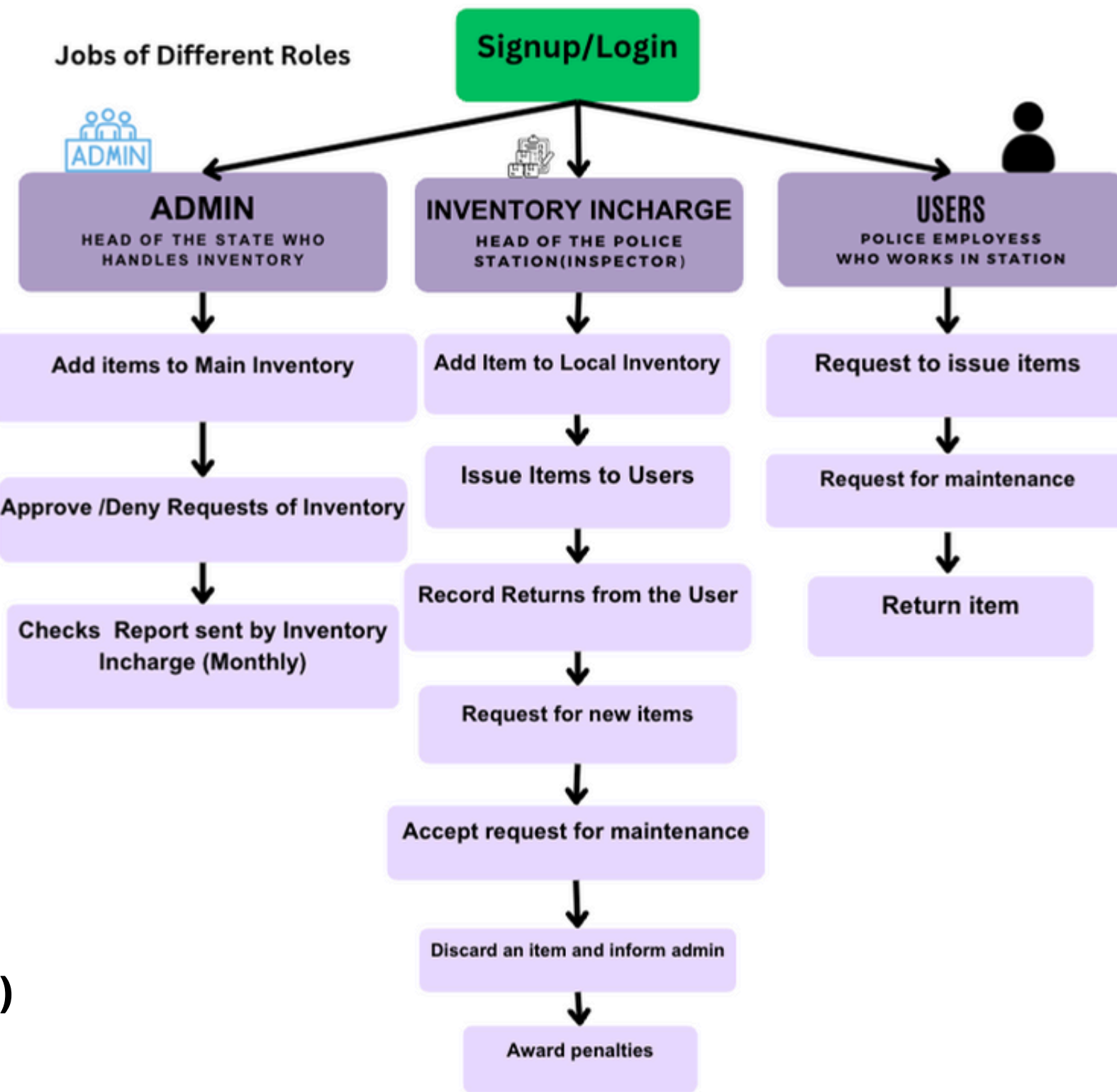SMART INDIA HACKATHON 2024

What is SurakshaSanchay?

SurakshaSanchay is a web-based platform designed to track and manage essential equipment like weapons, vehicles, and communication devices. It provides **real-time monitoring of inventory levels, asset allocation, and maintenance schedules, enhancing operational efficiency and accountability**. This streamlined online solution improves resource availability, empowering officers to perform their duties effectively.

How do we solve the problem?

A centralized system should be implemented for real-time tracking and updates, minimizing errors through **automated data entry** like RFID or barcode scanning. **Optimized resource allocation** can prevent over- or under-utilization of assets. **Maintenance and lifecycle tracking** will reduce downtime by scheduling timely replacements. **Strong security protocols**, such as encryption and role-based access, will safeguard sensitive data. **Accurate cost analysis** from inventory data will support budget forecasting and **effective financial management**.

How are we unique?

- **Automate Asset Tracking**
- **Inventory Reporting**
- **Maintenance Alerts**
- **Audit Logs and Monitoring**
- **Role-Based Access Control**

- **Intrusion Detection Systems (IDS)**
- **ML-Assisted Cost Analysis**
- **Smart Budget Forecasting**
- **AI Chat Bot & Multilingual Support**
- **Monitoring Usage Patterns**

Jobs of Different Roles

Signup/Login

ADMIN — HEAD OF THE STATE WHO HANDLES INVENTORY
- Add items to Main Inventory
- Approve /Deny Requests of Inventory
- Checks Report sent by Inventory Incharge (Monthly)

INVENTORY INCHARGE — HEAD OF THE POLICE STATION(INSPECTOR)
- Add Item to Local Inventory
- Issue Items to Users
- Record Returns from the User
- Request for new items
- Accept request for maintenance
- Discard an item and inform admin
- Award penalties

USERS — POLICE EMPLOYESS WHO WORKS IN STATION
- Request to issue items
- Request for maintenance
- Return item

For further details :
https://drive.google.com/file/d/18vTZUFTBh5vTs7qYh0L9GqQmziBWL_11/view?usp=drivesdk
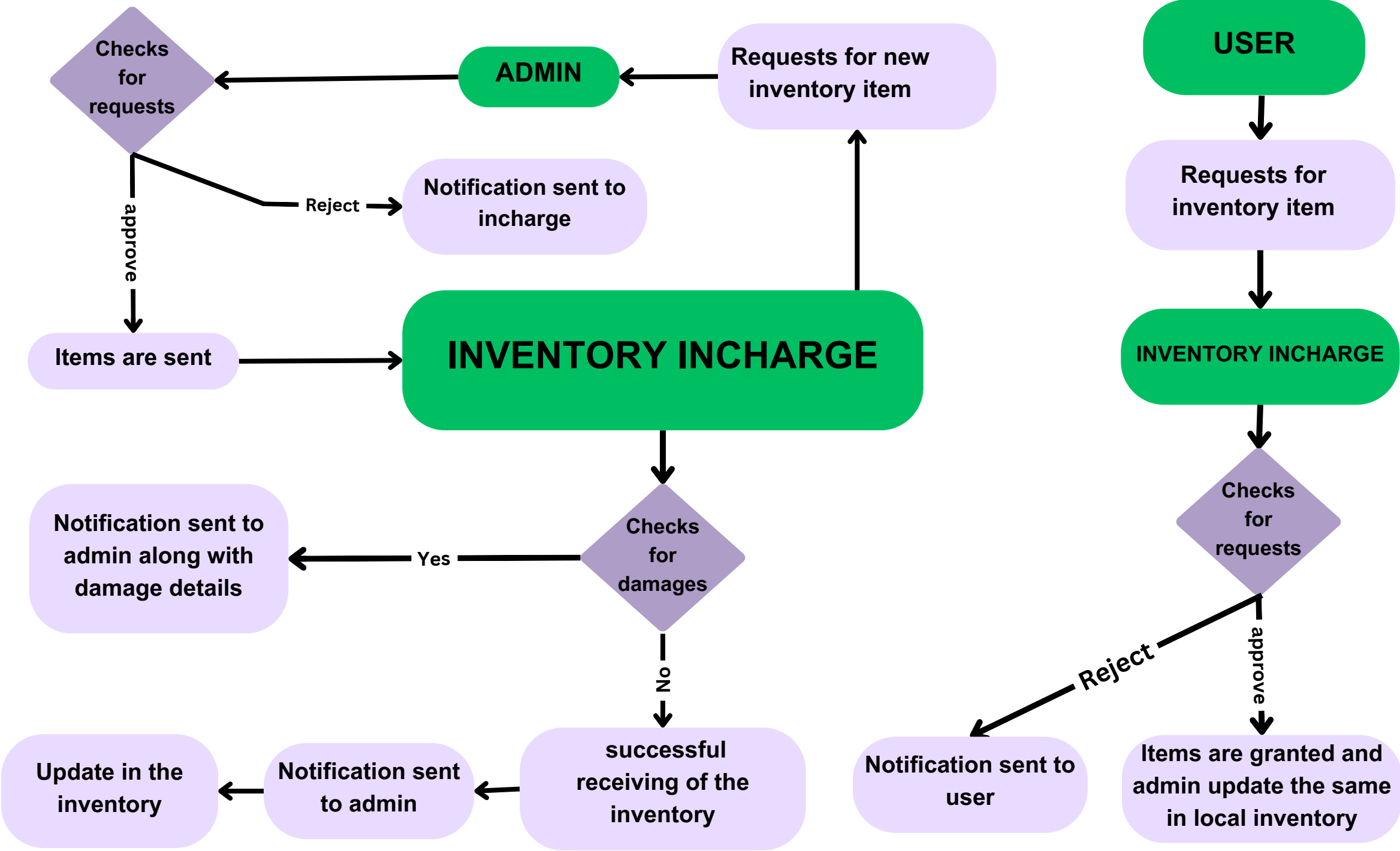
TECHNICAL APPROACH

ISSUING OF INVENTORY ITEMS
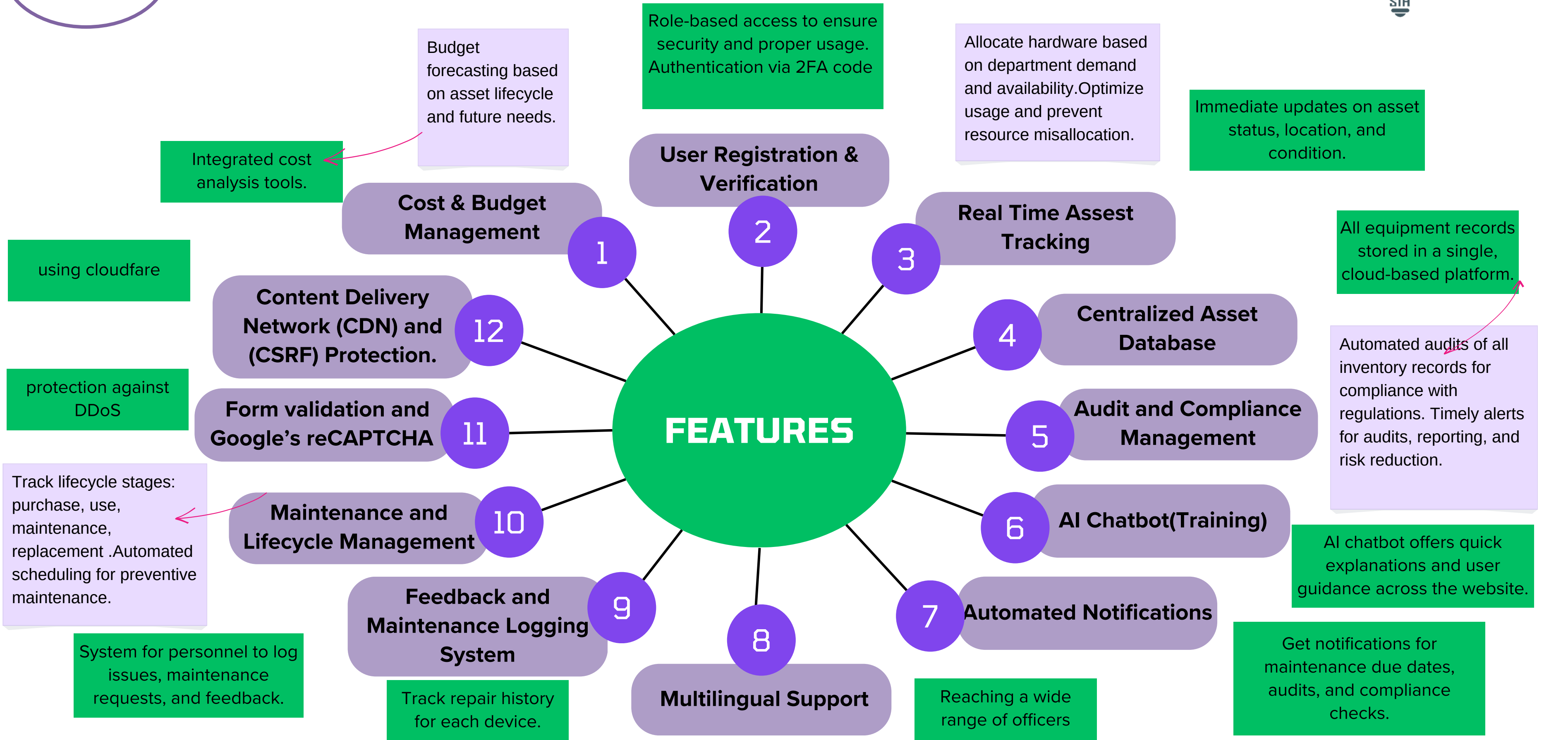
TECHHNOLOGY STACK

SMART INDIA HACKATHON 2024

Feasibility:

SurakshaSanchay provides an intuitive, **multi-device interface** for police inventory management. It integrates with **existing databases for real-time updates, offers cloud-based scalability and secure storage, and supports offline functionality** with data sync. Role-based access control ensures only **authorized changes**, while the platform can efficiently scale.

Support section for queries and maintenance of inventory

Provide live demo and tutorials and AI Chat Bot

SUPPORT & MAINTENANCE

LIMITED TECH LITERACY

Potential challenges:

- **Unfamiliarity and resistance to adopting the new digital system.**
- **Need for continuous support and maintenance to ensure system functionality.**
- **Manual data entry leading to potential inaccuracies in hardware tracking.**
- **Scalability concerns as the inventory grows over time.**

CHALLENGES AND PROPOSED SOLUTION

Challenge solutions:

- **Provide live demos, tutorials, and AI chatbot for onboarding.**
- **Create a support section for queries and feedback system for improvisation and maintenance.**
- **Implement automated tracking (e.g., barcode or RFID) to reduce errors.**
- **Use a modular, scalable architecture to handle inventory growth**

POTENTIAL ERRORS IN DATA

SCALABILITY CONCERNS

Automated tracking (e.g., barcode or RFID)

Modular, scalable architecture to handle inventory growth

IMPACT AND BENEFITS
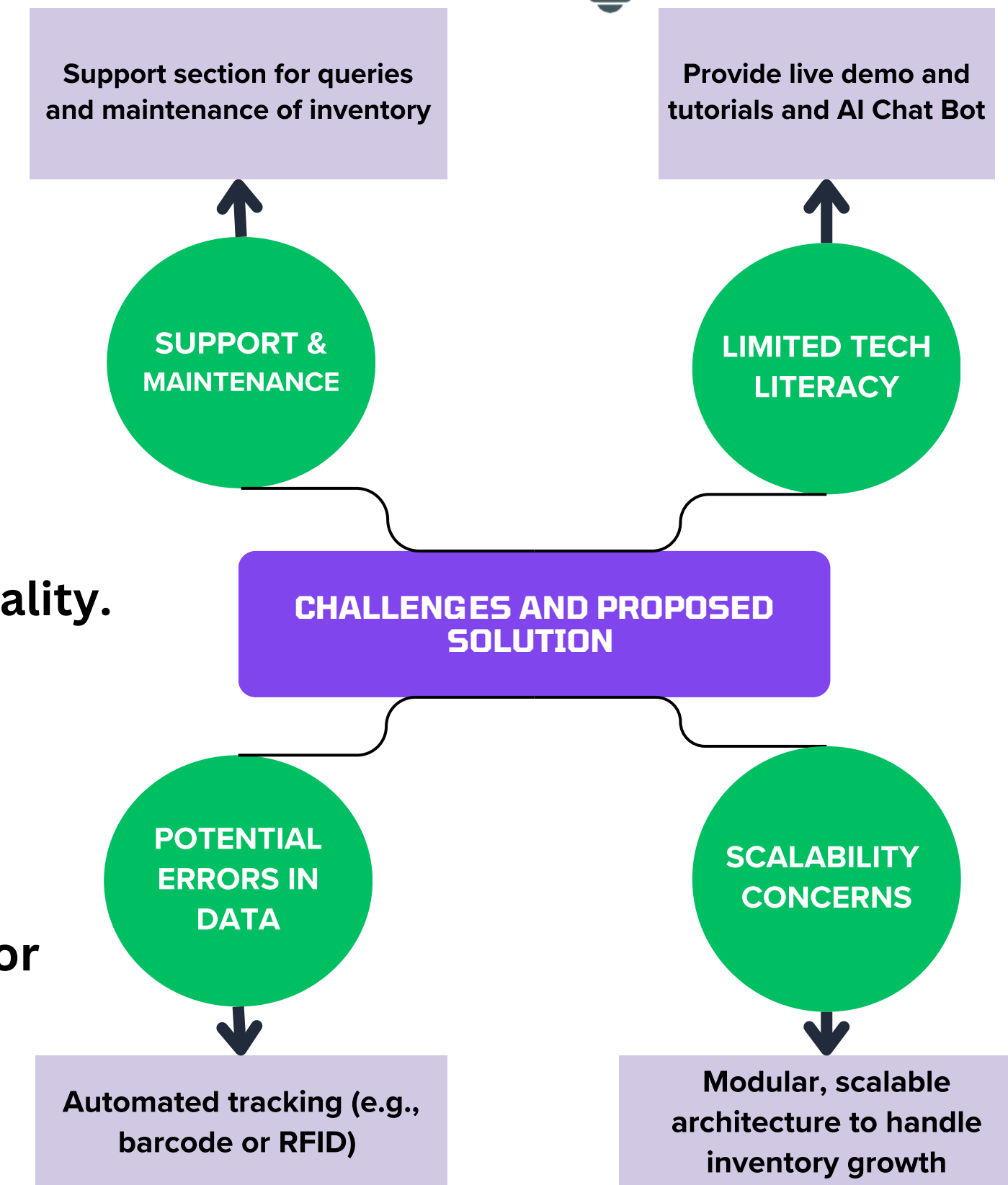
Potential impact on the target audience

ASPECT	TRADITIONAL SYSTEM	SurakshaSanchay	IMPACT/BENEFITS
Inventory Management	Decentralized, manual tracking, often inaccurate	Centralized, real-time tracking system with automation	Improved accuracy, real-time updates, and fewer missing assets
Compliance and Security	Prone to errors, lacks strong compliance monitoring.	Automated compliance tracking, security protocols in place.	Enhanced security, reduced regulatory risks.
Cost Management	Uncontrolled, hard to predict future expenses.	Data-driven financial planning and forecasting.	Improved budgeting, minimized unnecessary expenses.

Benefits of the solution (social, economic, environmental, etc.)

Social Impact	Enhanced Public Trust: Improved resource allocation fosters trust in the police department's efficiency and accountability. Empowerment Through Transparency: Real-time data and updates promotes community engagement and transparency.
Environmental Impact	Optimized Resource Usage: Efficient management reduces waste and lowers environmental footprint. Reduction in E-Waste: Timely lifecycle management minimizes electronic waste via proper device disposal & recycling.
Economic Impact	Cost Savings and Efficiency: Streamlined processes cut procurement and maintenance costs, freeing up budget resources. Better Financial Planning: Accurate inventory data enables informed budgeting and effective allocation of funds.

REFERENCES

research paper:-https://bprd.nic.in/uploads/training/1930072729Maintenance%20of%20Police%20Station%20records.pdf
(referred this paper to know the details of the maintenance of the records in police station)
research paper:-https://www.janaagraha.org/files/publications/Police-Station-Process-Document.pdf
(referred to understand operations in police station)
website referred:-https://www.mppolice.gov.in/en
(referred to know how current police department of Madhya Pradesh web site looks like)

Cost Management

Data Collection for Budgeting:
- Inventory Incharge: Collects data on hardware-related expenditures, such as maintenance costs, replacements, and new purchases.

ML-Assisted Cost Analysis:
- Machine Learning (ML) Model: Performs a detailed cost analysis based on the collected data and helps forecast future budgeting needs.

Report Generation:
- Inventory Incharge: Prepares a report based on cost analysis, which is verified by the admin.

Budget Allocation:
- Upon successful verification, the admin allocates the budget for hardware maintenance, replacements, and future purchases.
- Any updates in inventory, including new purchases, are recorded in the inventory system.

BUDGET FLOWCHART
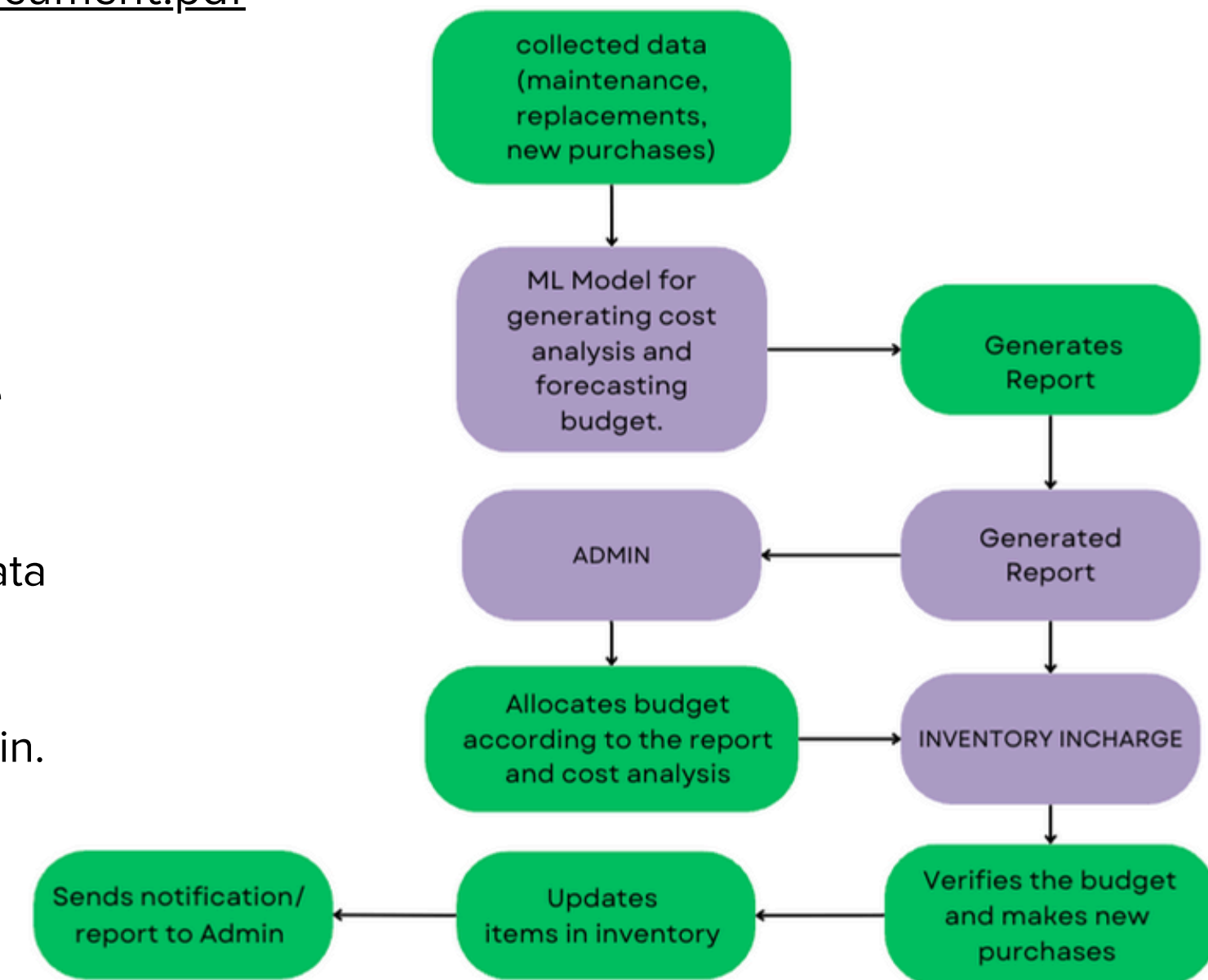
How are we unique

Dyanamic Map Allocation
a.Geographical view of inventory
b.Surplus and inactive items and transfer

2FA authentication(no random person can be added) and security(stateless api data anomysation)

Automated generated report
(Audit and Monthly Report)

Real time and in app notification timely

Hierarchical role based acess control. Admin Inventory Incharge use

Auditlog history

How are we unique

Awards and Penalties

ML MODEL AND DATA ANALYSIS
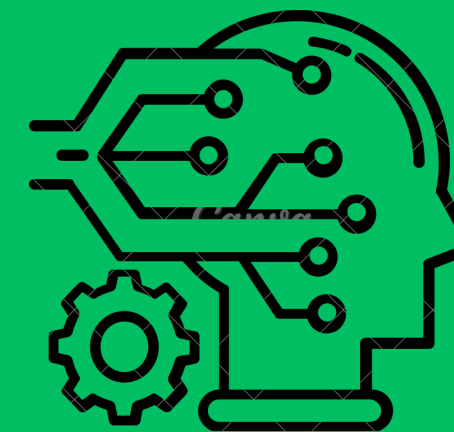
Track allocation history and current states
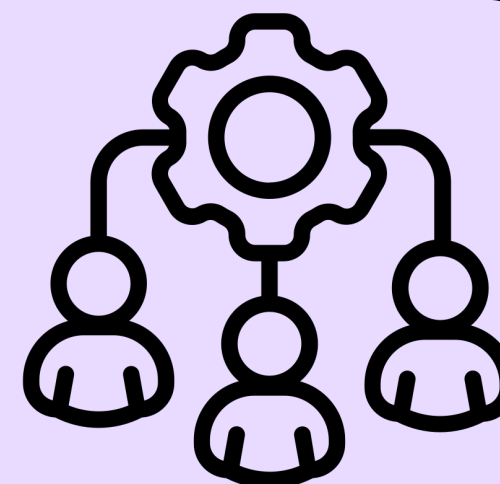
Scalibility of the website

Cloud Deployment: Hosted on Vercel, allowing seamless scaling with traffic demands.

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Scalability

Responsive Design: Ensures usability across all devices, enhancing accessibility.
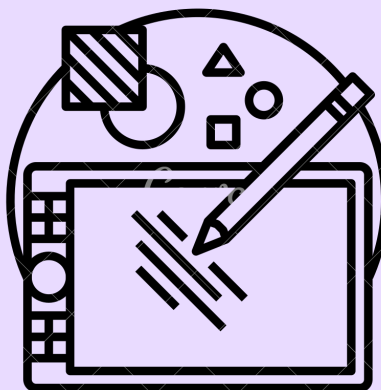
Database Scalability: Designed to handle growing data with efficient queries.

Business model
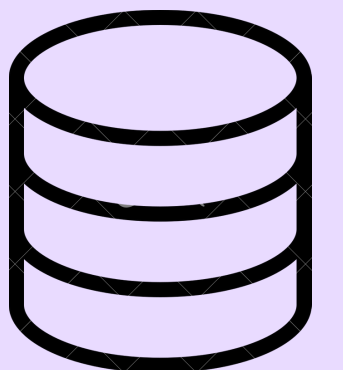
SaaS Model (Software as a Service)

Provide your platform as a subscription-based service to police departments, allowing them to manage inventory and operations efficiently with ongoing access to updates and support.

SaaS Model
- **Subscription Fee per Police Station per Month: ₹3000**
- **Number of Police Stations in Madhya Pradesh: 969**
- **Months in a Year: 12**

Formula:

Annual Revenue=Subscription Fee per Month×Number of Police Stations×12Annual Revenue=Subscription Fee per Month×Number of Police Stations×12

Steps:
1. **₹3000 × 969 = ₹29,07,000 (Monthly revenue for all police stations)**
2. **₹29,07,000 × 12 = ₹3,48,84,000(Annual revenue)**

Result:
- **SaaS Model Annual Revenue: ₹3,48,84,000per year.**

Business Model

B2G (Business-to-Government) Model

Partner directly with government agencies or law enforcement departments, offering your platform as an enterprise solution with long-term contracts for large-scale deployment and customization.

B2G Model
Contract Fee per Year: ₹41,50,000
Number of Contracts (e.g., Madhya Pradesh): 1
Formula:
Annual Revenue=Contract Fee×Number of ContractsAnnual Revenue=Contract Fee×Number of Contracts
Steps:
₹41,50,000 × 1 = ₹41,50,000 (Annual revenue for one state contract)
Result:
B2G Model Annual Revenue: ₹41,50,000 per year.

Surplus and Buy Notification(MVP)
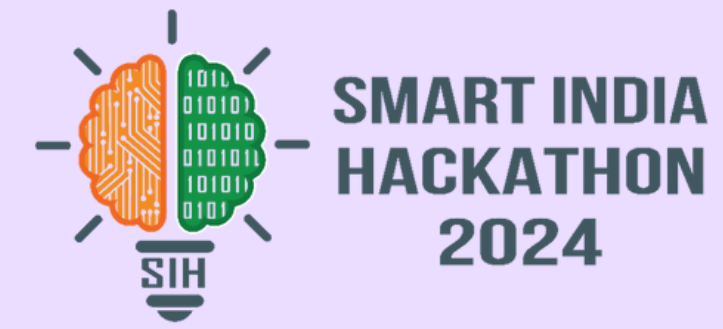
An integrated location-based map system visually represents hardware inventory levels across police stations, with red zones indicating low inventory and blue zones highlighting sufficient stock, enabling efficient resource management and quick decision-making.

Cost Saved
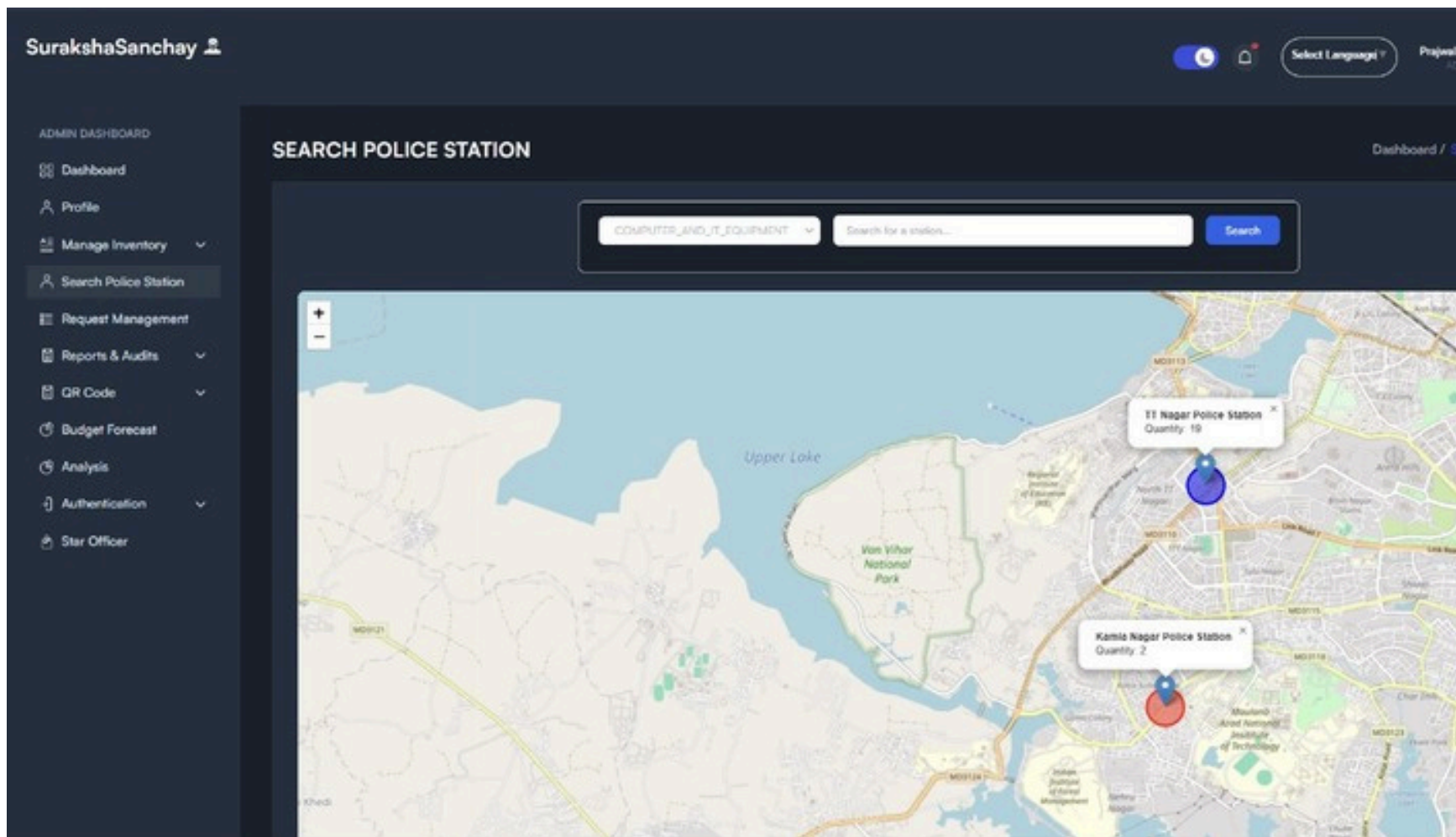
Category	Monthly Cost	% Reduction	Monthly Savings
Maintenance	200,000	70%	1,40,000
Inventory Holding	700,000	70%	490,000
Asset Loss	300,000	70%	210,000
Labor	600,000	50%	300,000

total savings
1,40,000+490,000+210,000+300,000=11,40,000

DATA ANALYSIS THROUGH GRAPHS
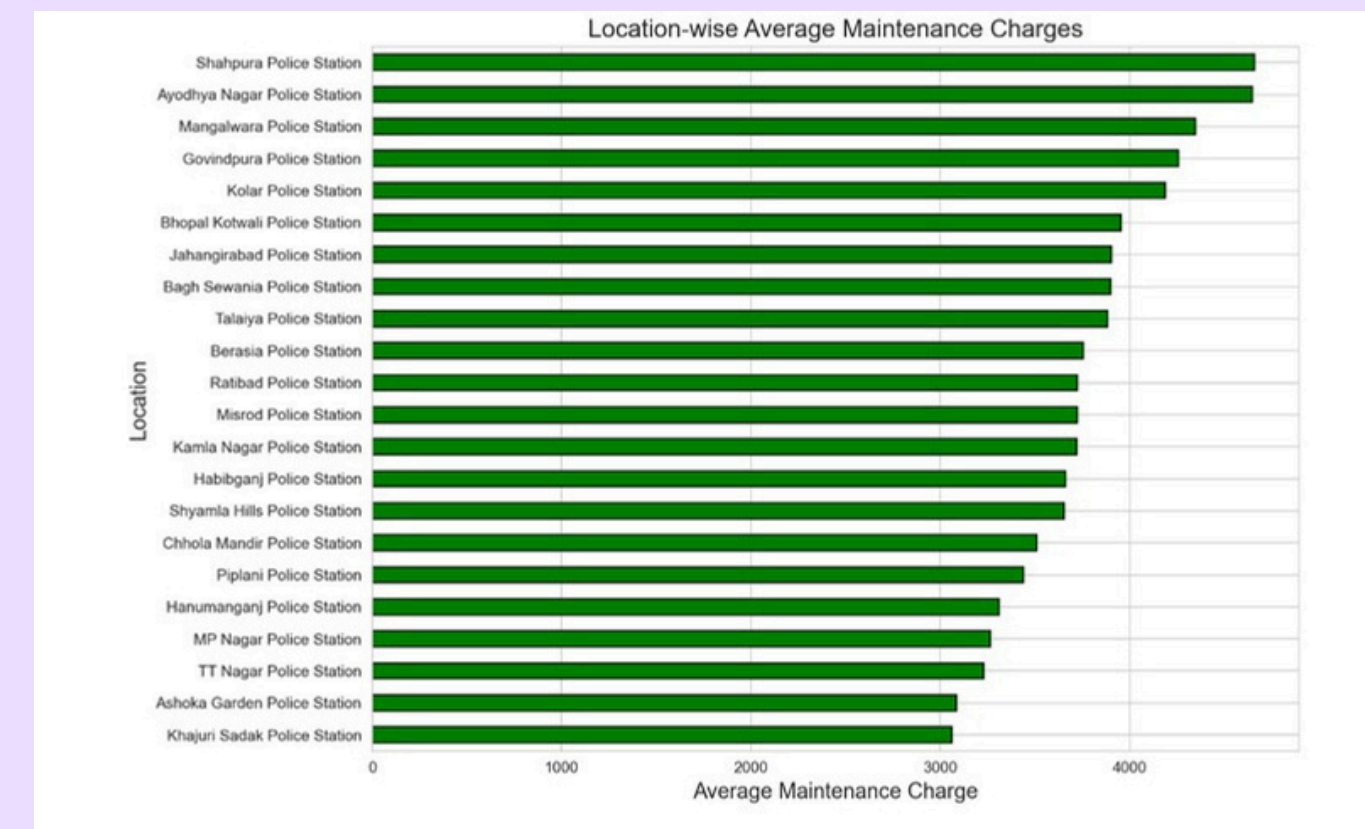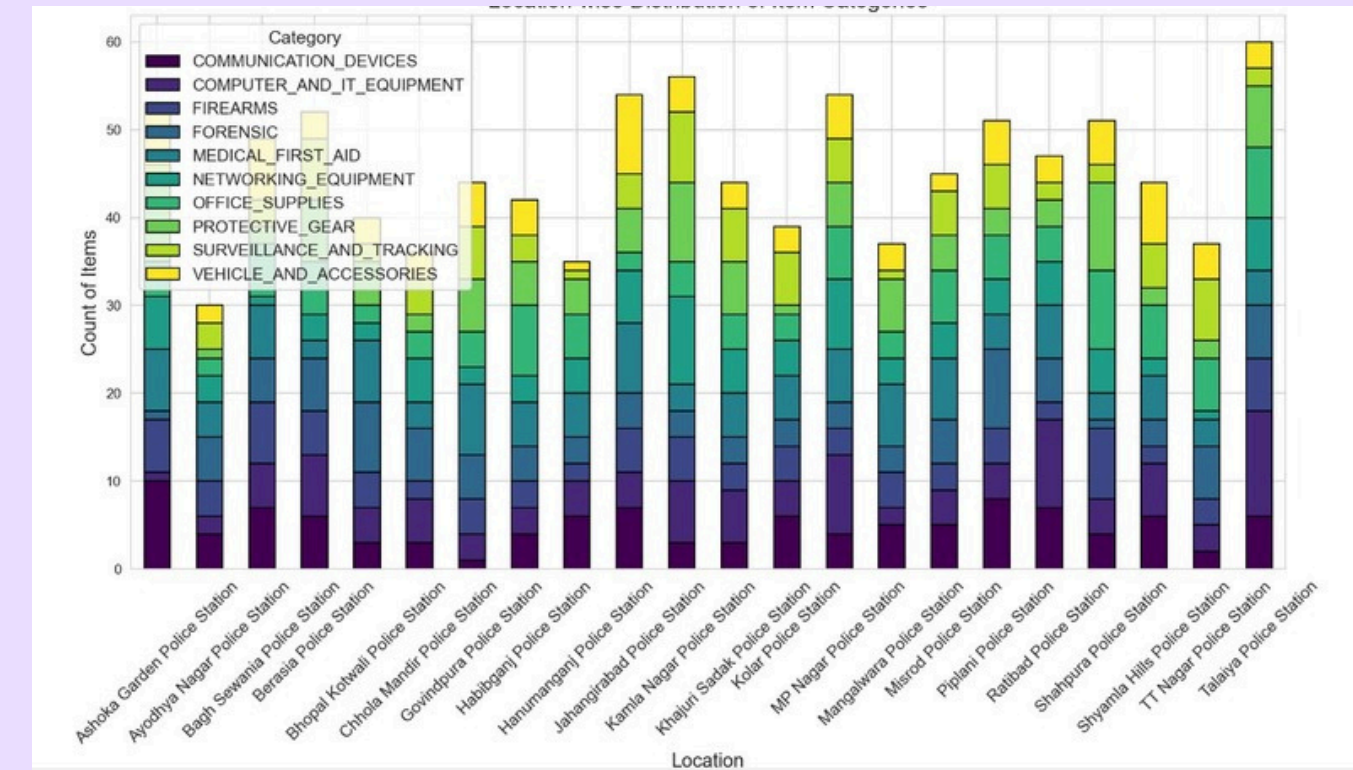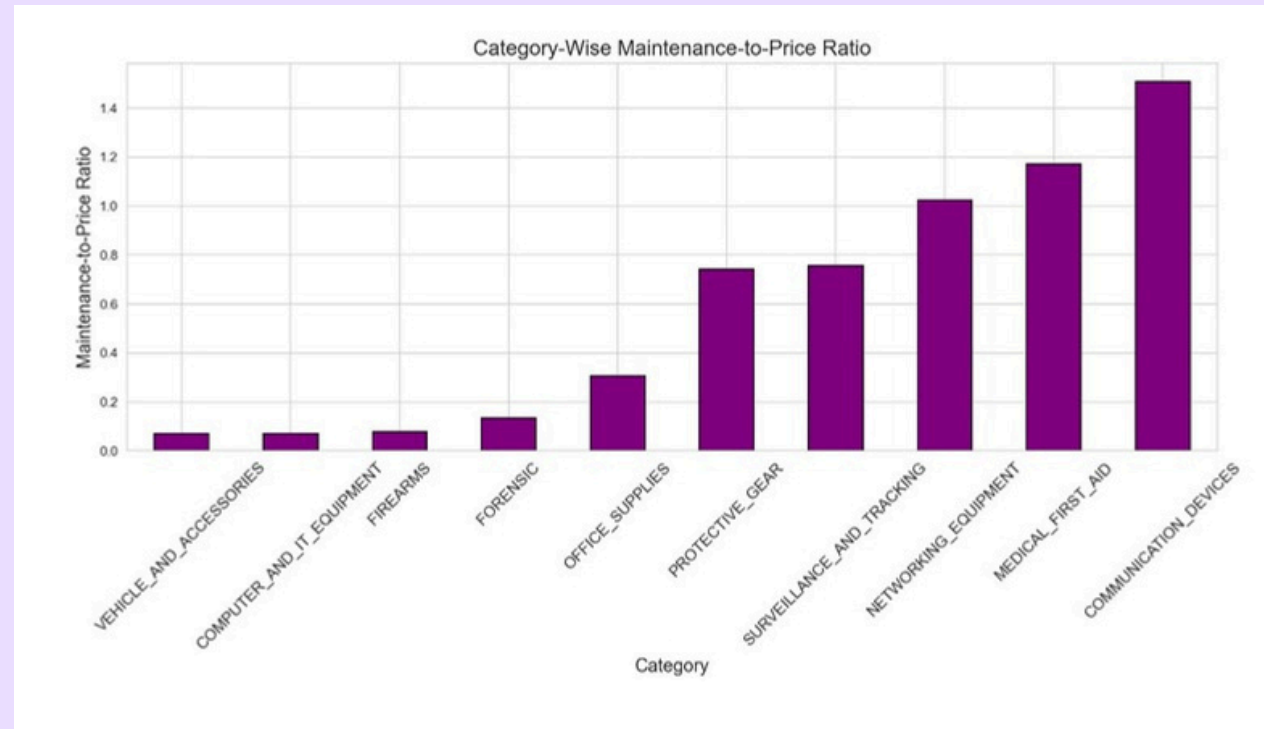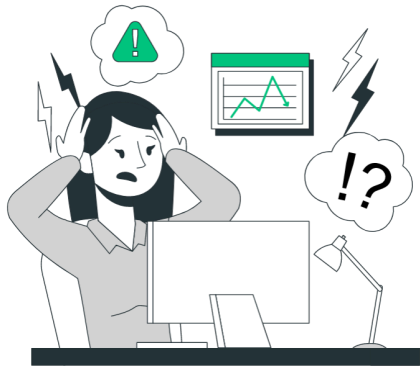
DRAWBACK AND SHOWSTOPPERS

Add drawbacks & showstoppers here

- 🧩 **Lack of Personalization – Generic plans that don't adapt to individual needs.**
- 🎮 **Low Engagement – Tedious methods lead to poor adherence.**
- 🌍 **Limited Accessibility – High costs, in-person visits, and remote area restrictions.**
- 🔀 **Fragmented Pathways – Separate platforms for different conditions.**
- 🛡️ **Data Security Risks – Vulnerability to breaches and compliance issues.**
- ⚕️ **Lack of Supervision – Missing critical health indicators.**
- 🤖 **Ineffective AI – Inaccurate, biased, or non-contextual recommendations.**
- ⚠️ **Medical & Legal Risks – Incorrect guidance may have serious consequences.**
- 🔗 **Poor Integration – Lack of sync with healthcare systems**
- 📶 **Digital Literacy Barriers – Hard to use for older adults & low-income users.**