SMART INDIA HACKATHON 2024

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- **Problem Statement ID - 1688**
- **Problem Statement Title - Development of handheld device/Mobile based Operation & Maintenance tool for asset & consumables inventories and finance management in context of drinking water supply scheme.**
- **Theme - Smart Automation**
- **PS Category- Software**
- **Team ID - MITADTSW343**
- **Team Name - Hunters of Artemis**

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CENTRALIZED ASSET MANAGEMENT
JAL JEEVAN MOBILE APPLICATION

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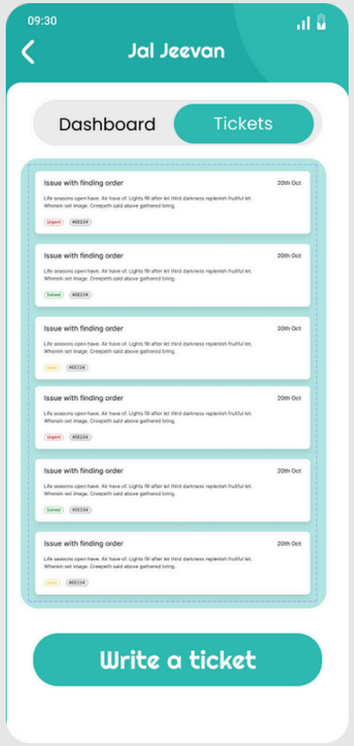
Login Page

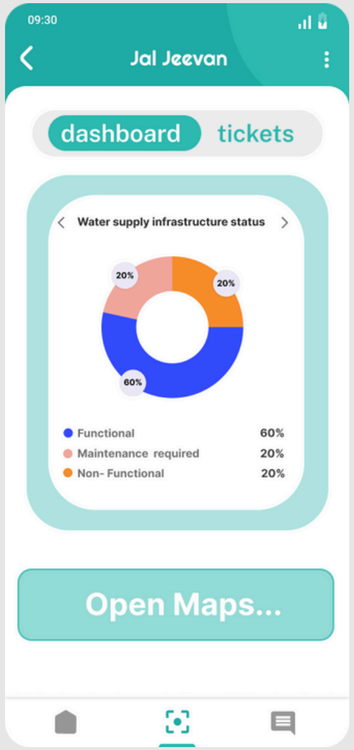
- **Login for 3 stakeholders**

1. Villagers (consumers)
2. GP (Gram Panchayat)
3. ZP (Zila Parishad)



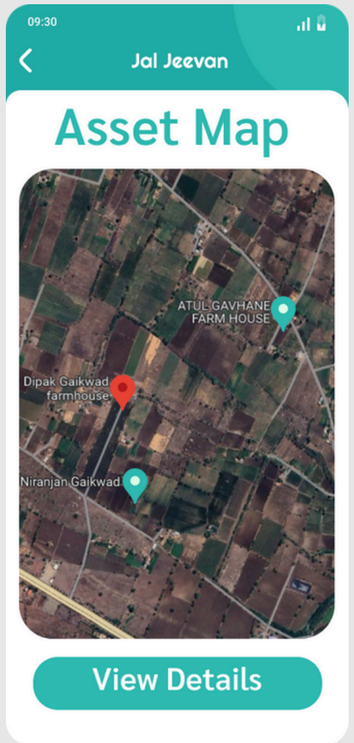
Villagers Ticket

- **Ticket Management:** View tickets with ID, subject, status, and date.
- **Create Ticket:** Open a form for new submissions.
- **Raise complaints** with water supply assets (taps, handpumps etc.)



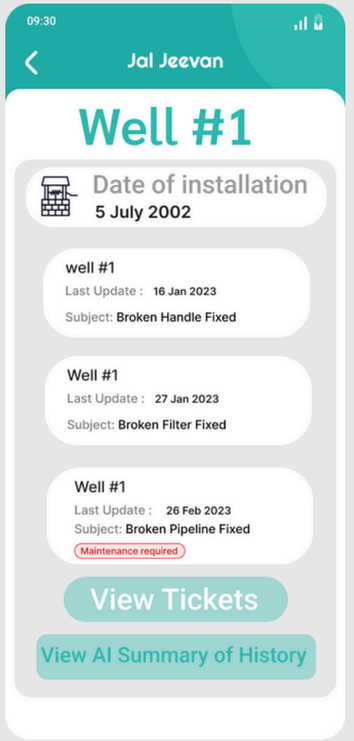
GP Dashboard

- **Donut chart** to **visualize** high-level overview of all JJM **asset status (functional, maintenance, non-functional)**.
- Navigation tabs switch between **dashboard** and **tickets**.



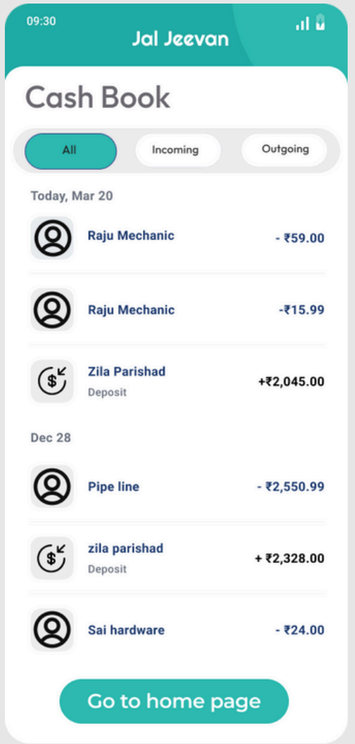
Asset Map

- **Interactive map** shows asset locations.
- Markers indicate **status of JJM assets by color** (functional, non-functional, maintenance required).
- **View Details:** view more asset info.



Asset History

- Shows **location, installation date** and **maintenance history**.
- Users can **view and manage tickets**.
- Provides **AI-generated summary of repair history.**



Cashbook

- Shows **recent transactions**
- View **outgoing payments** and **incoming credit.**
- Listed **by date** with amounts in rupees.

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TECHNICAL APPROACH

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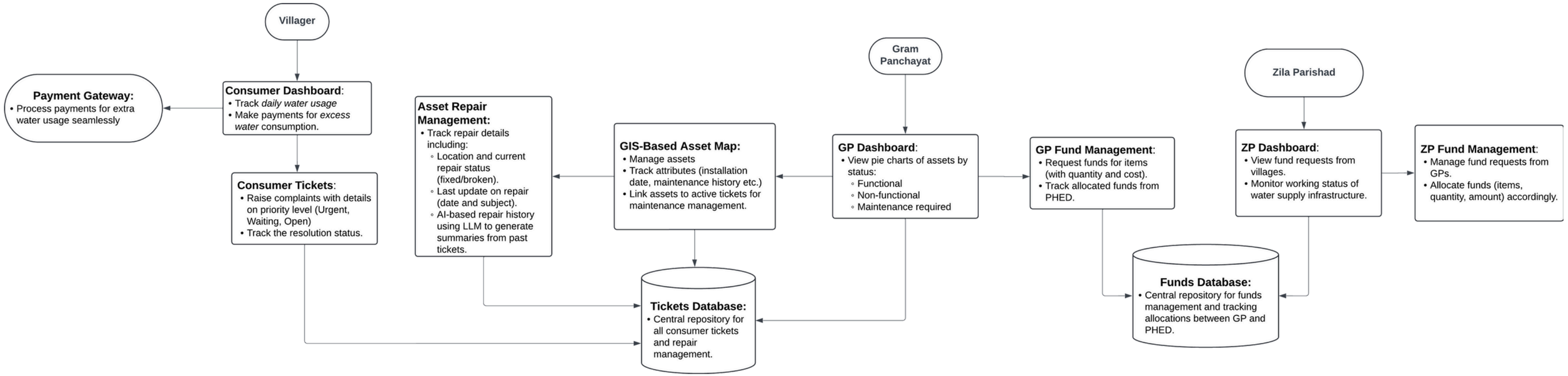
Architectural Diagram:



Required Technologies:

Frontend (app development): Kotlin
Backend: Django (Python framework) RESTful API
Database:
- Firebase authentication (Google Cloud)
- MySQL (relational DB)

GIS (Geographic Information System):
- Geocoding API (Google Cloud)
- QGIS (open source GIS)

Data Visualization: Power BI / Tableau

Local Language Translation: Android Localization Framework
NLP Model / LLM: OpenAI API (Python SDK)
Payment Gateway: Razorpay API
Development Tools:
- Android Studio (IDE)
- Postman (API testing)

Training Support:
- LMS for training
- WhatsApp for community support.

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FEASIBILITY AND VIABILITY

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Feasibility

- **Technical Feasibility:**

Leverages smartphones in rural areas, utilizes cloud-based storage, and integrates APIs with government and utility databases.

- **Operational Feasibility:**

Involves training for Gram Panchayat members, local support teams, clear issue protocols, and collaboration with stakeholders for accountability and process refinement.

- **Financial Viability:**

Funded by government schemes like Jal Jeevan Mission, revenue from user payments and business sponsorships, with potential grants for tech upgrades and data analytics services.

Viability

- **Market Demand:**

Increasing rural population and public interest in water conservation align with government initiatives for improved resource management.

- **Long-term Sustainability:**

Regular updates, feature expansion, scalability to other rural areas, and sustainable business models ensure longevity.

- **Stakeholder Support:**

Strong backing from local governments, NGOs, and advisory committees with community leaders.

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IMPACT AND BENEFITS

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Potential Impact on Target Audience:

- **Transparency & Accountability:**
  - *Real-time* water usage and payments tracking.
  - *Complaint status* updates via ticketing system.
  - Clear *asset tracking* (functional, non-functional, maintenance needed).
- **Efficient Fund Management:**
  - *Streamlined fund requests* and allocations (GP & PHED).
  - *Transparency* in fund usage and distribution.
- **Streamlined O&M:**
  - Real-time *repair tracking* and management.
  - *Dashboards* for quick response and proactive maintenance.
- **Improved Consumer Engagement:**
  - Villagers *track daily usage*, payments, and submit complaints easily.
  - Faster *issue resolution* boosts satisfaction.
- **Data-Driven Decisions:**
  - *Asset status, fund, and repair data* visualized for informed decision-making.
- **Financial Sustainability:**
  - Automated *payments* ensure stable revenue for operations.

Challenges and Risks:

- **Technological:**
  - Limited *mobile network coverage* in rural areas
  - Lack of *device accessibility* for field workers
  - *Integration issues* with legacy systems (e.g., SCADA, billing)
- **User Adoption:**
  - *Digital literacy gaps* among users
  - *Resistance* due to cultural barriers
  - *Slow transition* from traditional methods
- **Financial:**
  - Dependence on *unstable government funding*
  - *High ongoing maintenance costs* for the system

Strategies for Overcoming Challenges:

- **Capacity Building:**
  - Provide *digital literacy training*
  - Empower *local tech champions* to support peers
  - Establish *continuous feedback channels*
- **Infrastructure Development:**
  - Partner with *telecoms to improve network coverage*
  - Enable *offline functionality* for core tasks
  - Set up *community centers* for training and device access
- **Financial Planning:**
  - *Diversify funding* through partnerships and grants
  - Implement *tiered billing* based on water usage

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RESEARCH AND REFERENCES

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