**Housing and Urban Development Department**
Government of Jammu and Kashmir

# BEST E-GOVERNANCE PRACTICES OF J&K, H&UDD

# e-PARIWARTAN

Empowering Governance with Predictive AI and GIS Precision


**Ms. Mandeep Kaur (IAS)**
Commissioner/ Secretary
Housing and Urban Development Department, J&K

## Introduction

The Housing and Urban Development Department, Jammu and Kashmir believes that e-governance is an opportunity to transform the department's commitment to be citizen centric, provide cost-effective services and enhance governance through improved access to accurate information and transparent and responsive democratic institutions. Thus e-Governance is no longer an experiment in administrative reform. For both government organizations & citizens, its advantages are far reaching in comparison to investment in establishing e-governance.

## The Goal

The goal of the JKHUDD's e-PARIWARTAN project is to ensure maximum number of satisfied citizens by developing a hassle free, transparent & easy to use public service delivery system in Urban Local Bodies of Jammu and Kashmir.

## Rationale for the Reform

Jammu and Kashmir Housing and Urban Development Department (JKHUDD) is committed to provide transparent, accountable and efficient local governance through the use of modern technologies especially in management and administration fields. It has decided to embrace Information Technology in the form of e-Governance as a tool towards this goal. Better IT systems are required to integrate all the workflows seamlessly for a faster and efficient service to the citizens, employees, administrators and compotators.

The recent advances in ICT and the Internet provide opportunities to transform the relationship between governments and citizens, as well as contribute to the achievement of good governance goals. e-Governance will ensure that the interface between citizens and urban local bodies made smooth and resolves the problems encountered by people at present. The use of ICT can help greatly in improved service delivery, decentralization, better information management and transparency, citizen involvement in government and overall improvement in urban governance across departments.

# e-PARIWARTAN TECHNOLOGICAL ARCHITECTURE

## Empowering Governance with Predictive AI and GIS Precision

**GIS/AI based Public Works Management System (PWMS)**
- GIS based Work Creation with Automated Workflows
- Automated SOR and Rate Analysis
- AI Driven Works/ Funds Requirements Forecasting
- DMS and OCR based Data Entry

**GIS/AI based Facial Recognition System (FRS) & e-HRMS**
- GIS/AI based FRS Mobile Attendance App.
- Real Time Face and Liveness Detection
- Predictive AI based Trend Analysis
- AI based Fraudulent Attendance Detection

**Paperless Council Management System (PCMS)**
- Ward Representatives Login
- Online Submission of Questions & Resolutions
- Online submission of MoM, ATR and Public Representations.
- Single Portal for Create Meeting /Agenda

**Integrated SWM & Fleet Monitoring System using VTMS based on GIS/ DDN**
- DDN based D2D SWM Tracking
- AI based Fleet Requirement Analysis
- AI based Vehicle Maintenance Alerts
- Geo-fenced Vehicle Tracking using POI/ AOI
- GIS based Route Mapping/Deviation Alerts

**40 Nos. of End-to-End Digitized Citizen Services**
- Faceless and Seamless Digitized Services.
- Integrated with Digilocker, Umang, RAS etc.
- SSO, Digital Signatures/ Payment etc. Facilities.
- Online submission/ Tracking/ Delivery etc.
- QR Code based Verification System

**QR Code based Store and Asset Management System (AMS)**
- Digital Asset Register
- AI based Assets/ Funds Requirement Projection
- QR Code based Asset Identification
- Digital Requisition/ Allocation Process.

**GIS and DDN based Public Grievance Redressal System**
- GIS/DDN based Geo Fencing
- Data Analytics based Ward/ Employee Appraisal
- Auto Escalation to Higher Authorities on Predefined Logic.
- AI based Auto Allocation of Compliant Resolver.

**Hoarding/ M&M Booking, Building Construction Enforcement, Document Management System (DMS) & Others**
- Mobile App for Monitoring of Building Construction Permits and Enforcement of Illegal Constructions.
- DMS for Legacy Data with OCR Facility.
- Online Hoarding and Men & Machinery Booking System.

MODULE: 1

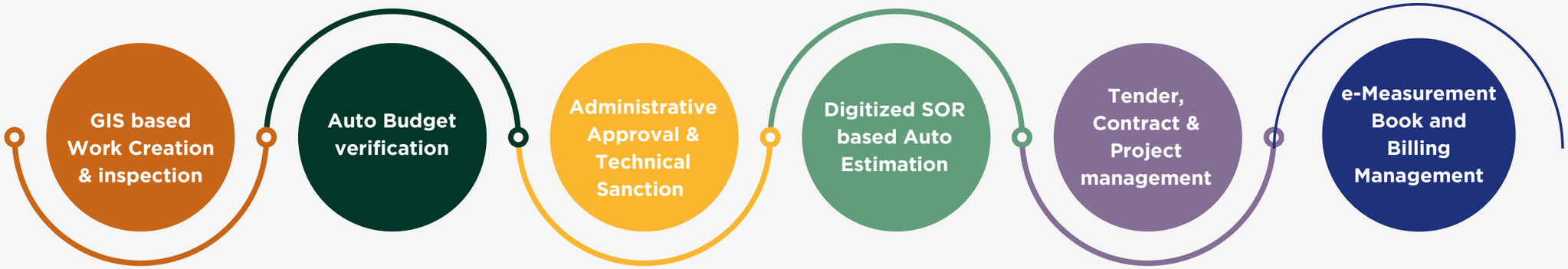
# GIS/AI based Public Works Management System (PWMS)

The Jammu & Kashmir Housing and Urban Development Department has developed the Automated Public Works Management System (PWMS) having AI-driven Predictive Intelligence & GIS features under e- PARIWARTAN project to Streamline and Digitize the entire Lifecycle of Public Works. The System begins with Citizens or Public representatives GIS/DDN based requests followed by GIS based Field Inspection through Mobile App, Automated Estimation through Digitized J&K PWD SOR 2022, Technical Sanction, Automated Budget Validation, Administrative Approval, Tendering, e-Measurement Book, Project Tracking as per Timelines, Work Inspection through Mobile App, Auto Notice/ Penalty, GIS based Work Validation, Billing Process etc. Auto GIS layers of Works like Building, Community Hall, Lanes/ Drains etc. transferred on GIS platform through API which can be Exported into KMZ/KML Files for Submission to PM Gati Shakti National Master Plan (PMGS-NMP) Portal. Predictive AI is used for Analyzing Historical Data which Helps in taking Future Decision related to Works Planning & Financing etc.

- Citizens/Public representatives requests
- GIS based Work Creation process
- Auto Budget/funds validation
- GIS Mapping with portable layers
- Estimate creation with digitized SOR
- DMS based auto data entry from OCR

- Tender Document Library
- Mobile based Pre/Post work inspection
- Auto Notice/Penalty
- e-Measurement book with mobile app
- Contractor & Work management
- Project Timelines verification

- Predictive AI based DSS
- Data analytics based forecasting
- Integration capabilities with National dashboard
- Scalable and sustainable solution
- Seamless & faceless platform
- Micro monitoring and steek analysis




- Estimate Template Import
- SOR/NON SOR Library
- Automated Work flow and documents
- Integrated DMS and Note sheet creation
- Digital Sanction Order

- Digital LOA/LOI
- Contractor blacklisting and verification
- Digital signatures integration
- SMS/E-mail Gateway integration
- Recovery of Initial SD, Performance SD.

MODULE: 2

# GIS/AI based Facial Recognition System (FRS) & e-HRMS

The AI-based Face Recognition Attendance System for JKHUDD utilizes advanced artificial intelligence and GIS precision to automate attendance marking process for field employees, ensuring accuracy, efficiency, and real-time monitoring. The system detects face liveness, matches them against a registered database, and marks attendance instantly. FRS uses technology that detects facial features quickly and reliably using a proven SDK (Software Development KIT). The SDK processes an image, detects human faces within it, and returns the coordinates of 70 facial feature points including eyes, eye contours, eyebrows, lip contours, nose tip, and so on. GIS and geo-fencing features integrated to ensures that field staff, especially sanitation workers, can only mark attendance from designated attendance points in the wards. Additionally, predictive AI enhances the system's functionality by analyzing historical attendance data, behavior patterns, and external factors such as holidays or absentee trends. This allows the system to forecast attendance patterns, optimize resource allocation, and proactively address potential staffing shortages.

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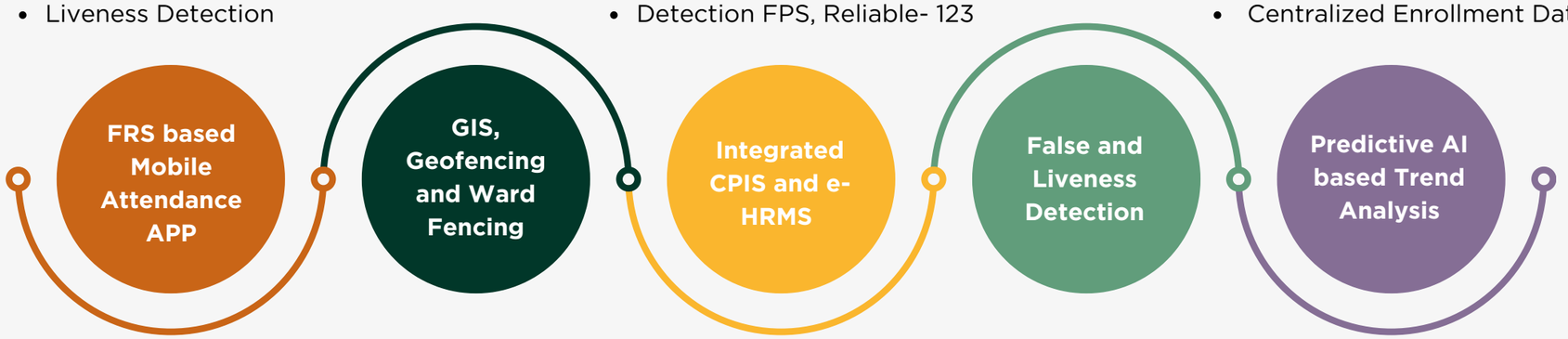
- Thermal Face Detection
- False Match Rate
- False Non-Match Rate
- 70 Facial Feature Points
- Liveness Detection

- Fake Attendance Detection
- Enrollment FPS- 71
- Matching Speed- 50 M/s
- Detection FPS, Fast - 649
- Detection FPS, Reliable- 123

- FAR and FRR Matching
- API Supported
- Predictive AI based Trends
- AI based Attendance Forecasting
- Centralized Enrollment Database




- Facial Recognition Adaptability
- Leave Management
- Email/SMS Integration
- Integrated with CPIS & e-HRMS
- Automated attendance reports

- Self Learning Tracker
- Physical Photo Detection
- Video Files Detection
- AI based Proxy Attendance Detection
- Camera/ Mobile Gallery Control

MODULE: 3

# Paperless General Council Management System (PCMS)

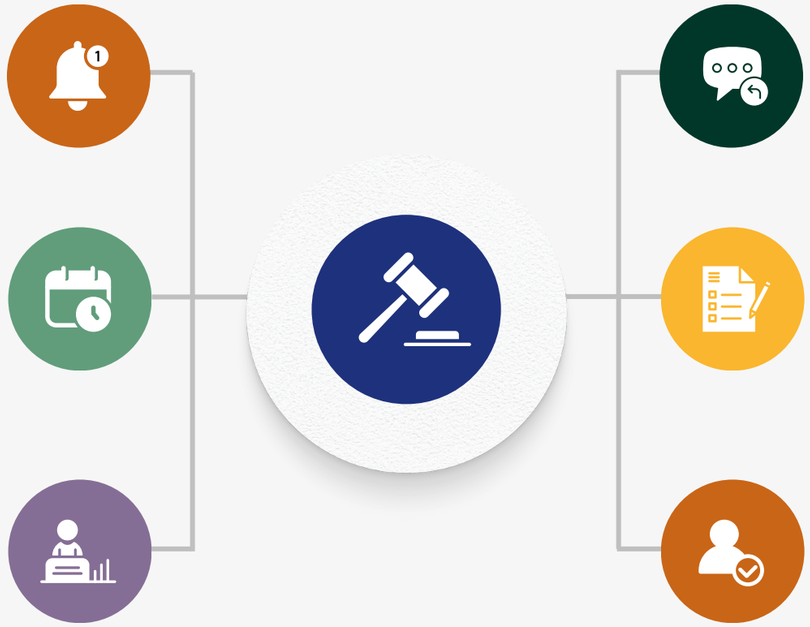
The Paperless Council Management System has been developed by JKHUDD to streamline Functioning of General House Proceedings Comprising of Elected Public Representatives. The System begins with Meeting Notice Creation for various Meetings of General House, Standing Committees, Administration etc. wherein Meeting Notices, Committee Types, Meeting Schedules, and Venues are Recorded. This is followed by Agenda Creation, Enabling the Preparation, Document Upload, and Publication of Meeting Agendas for Transparency and Accessibility.

The system also facilitates Mayor, Deputy Mayor, Standing committees Chairpersons, Ward Councilor's Questions and Resolution Creation, allowing Councilors to Submit Questions and Resolutions through a Dedicated Portal in a Time Bound Manner. Departments can then Reply to Questions & Resolutions by Uploading Responses and Publishing them for Official Reference. The MOM Creation Module ensures Accurate Documentation of Minutes of Meetings (MoM), including Resolutions and Key Discussion Points. Additionally, the ATR and Attendance Module enables the Upload and Publication of Action Taken Reports (ATR) and Meeting Attendance Records. This Digital Solution enhances Efficiency, Accountability, and Transparency in Municipal Governance in a Paperless Manner.

**Notice Creation**
- Notice with details
- Committee Type details
- Meeting time and venue

**Agenda Creation**
- Meeting Agenda preparation
- Upload the document
- Publish Agenda

**Councilor Q&R Creation**
- Councilor Portal
- Councilor Submit Question
- Councilor Submit Resolution



**Department Reply to Question & Resolution**
- Reply to Question and Upload
- Upload Resolution
- Publish reply for question & resolution

**MOM Creation**
- Minutes of Meeting creation process
- Upload meeting points
- Upload all the resolution

**ATR and Attendance**
- Upload Action Taken Report (ATR)
- Upload Meeting Attendance
- Publish ATR and Attendance

MODULE: 4

# Integrated SWM & Fleet Monitoring System using VTMS based on GIS/ DDN

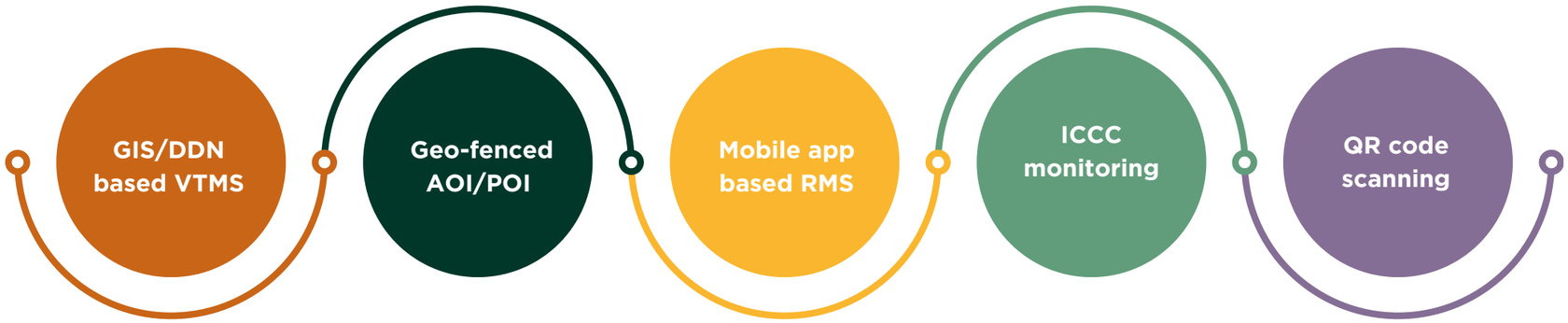
GIS/DDN/QR Code based Solid Waste Management System integrates GIS, AI, and QR technology for real-time waste collection tracking. Sanitation staff scans QR-coded Digital Door Numbers which is updated and monitored from Integrated Command & Control Centre. AI-based facial recognition ensures workforce attendance, while citizens can monitor collection status and lodge online complaints ensuring transparency and efficiency. The innovation is part of the Swachh Bharat Mission (SBM)-Urban and Smart City initiatives under the Ministry of Housing and Urban Affairs (MoHUA), Government of India. It aligns with Digital India and Smart Cities Mission, enhancing municipal waste management and urban governance.

Door-to-Door Garbage Collection Vehicle Tracking using Geo-Fenced Area of interest/Point of Interest for managing waste collection vehicles. The SWM vehicle monitoring done through ICCC is an advanced and centralized solution to modernize waste collection operations. QR code & DDN based revenue collection system through POS & mobile is integrated to boost digital payments initiative and prevent government revenue pilferage.

- Geo-Fenced AOI/POI
- Unique DDN Alloted to each Property
- QR Code Scanning for SWM Collection
- Mobile App for Revenue Collection
- POS for Revenue Collection
- Digital Payments

- Digital Certificates for D2D Collection & User charges Payments
- Identifies based on Waste Generation Patterns Areas Requiring Attention
- Assigns Unique Digital Identifiers to Properties for Precise Waste Collection
- Facilitates Vehicle Tracking and Ensures Systematic Waste Pickup
- Alerts for Route Deviations, Delays, or Operational Issues
- Live Dashboards for Waste Collection Status and Vehicle Performance

- Digitized Fleet details
- Digitized Job Card Creation
- QR Code based Fleet Identification
- Digital Vehicle Repair Details
- Digitized O&M Details
- Digitized Log Books & Trip Details




- UPI Payments through QR Scanning
- Dynamic QR code based Payments
- Digitized Revenue demand & Collection Register
- No Revenue Pilferage
- SMS/E-mail Notifications

- Real-time Tracking
- Citizens Complaint Mechanism
- Tool Free Number for Complaints
- Alert Mechanism
- Integration with ICCC

MODULE: 5

# 40 Nos. of End-to-End Digitized Citizen Services

The Jammu & Kashmir Housing and Urban Development Department (JKHUDD) has introduced 40 fully digitized End-to-End citizen services, revolutionizing the way urban services are delivered. This initiative provides a seamless, end-to-end online experience, eliminating the need for physical visits and reducing bureaucratic delays. Citizens can now submit applications effortlessly through a simplified process, ensuring greater convenience and accessibility. With real-time tracking, applicants can monitor the status of their requests, bringing transparency and efficiency to the system.

Key features of this digital transformation include online document verification, secure digital fee payments, and instant certificate downloads with digital signatures. These enhancements not only save time but also minimize the scope for errors and manual interventions, making the entire process more reliable. By leveraging technology, JKHUDD is fostering a more citizen-centric, accountable, and responsive governance model, in line with the broader vision of digital empowerment and smart urban development. This initiative marks a significant step toward modernizing public services and improving the overall ease of living for residents.

- Birth-Death Certificate
- Online Building Permission System
- NOC for Commercial Establishments
- Issuance of Street Vending License
- Application for Compassionate Appointment
- Registration of Diary Farms
- Registration of Pet Clinics
- License to Architect/ Draftsman
- Permission for Trade Fare/ Exhibition
- Permission for Street Light Installation

MODULE: 6

# QR Code based Store and Asset Management System (AMS)

The Asset Management System for JKHUDD is designed to systematically plan, procure, operate, maintain, and dispose of municipal assets, ensuring efficient service delivery and maximizing the value of public investments. This system facilitates the management of both movable and immovable assets across JKHUDD and its line departments, involving various stakeholders for streamlined operations and easy monitoring. By maintaining a comprehensive asset inventory, the system enables better planning for maintenance and inspection, ensuring that newly acquired assets are properly recorded and utilized for organizational benefits.

JKHUDD manages a wide range of assets, including IT equipment, stationery, health and safety equipment, mechanical and electrical items, vehicles, furniture, and fixtures across multiple offices such as the HQ office, section offices, and division offices. To ensure proper asset utilization and longevity, JKHUDD maintains an asset register to track asset transfers, movements, and depreciation processes. The system also supports asset planning and lifecycle management, aligning with JKHUDD's long-term goals and priorities.

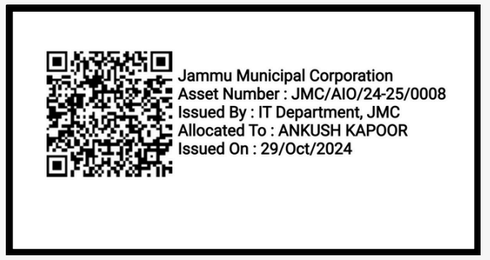
- Asset Details with Type, Sub type
- Store wise asset details
- QR code process
- Maintain creation to disposal details

- Asset details with Maintenance History
- Periodic Inspection
- Identify defect and Update details

**Asset Creation** → **Asset Allocation** → **Asset Maintenance** → **QR code based Verification** → **Asset Register**

- Asset Allocation details
- Transfer of Assets
- Return Process
- Inward / Out ward of asset

- Asset Insurance details
- Policy details start and expiry details are maintain




**( Sample Asset QR )**

MODULE: 7

# GIS and DDN based Public Grievance Redressal System

The Jammu & Kashmir Housing and Urban Development Department (JKHUDD) has implemented a GIS and Digital Door Number (DDN)-based Public Grievance Redressal System, revolutionizing urban governance and service delivery. This system enables citizens to register grievances seamlessly across various municipal services, including sanitation, civil works, illegal constructions, building permissions, urban infrastructure, and administration. By integrating Geographic Information System (GIS) mapping and unique Digital Door Numbers, complaints can be precisely located and efficiently routed to the relevant department for swift resolution. This data-driven approach enhances accountability, reduces response time, and ensures that urban services remain responsive to citizens' needs. AI based auto allocation of complaint resolver feature is the main feature.

With real-time tracking and automated escalation mechanisms, the system improves transparency and efficiency in grievance redressal. Citizens can register complaints online, track their status, and receive updates on resolutions, ensuring greater trust in governance. For departments like sanitation and civil works, timely identification of problem areas leads to improved service delivery.

**Heath & Sanitation**

**Civil Works**

**Illegal constructions**

**Building Permission**

**Veterinary Wing**

**Accounts**

**Street Lights**

**Municipal Vehicles**

**Administration Related**

**Urban Forestry Related**

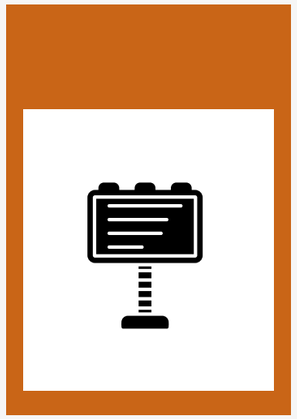
MODULE: 8

# Hoarding/ M&M Booking, Building Construction Monitoring, Document Management System (DMS) & Others

The Jammu & Kashmir Housing and Urban Development Department (JKHUDD) has introduced a comprehensive digital framework for managing hoardings, men and machinery, building construction monitoring mobile app, and document management. This initiative leverages technology to streamline operations, enhance transparency, and improve regulatory oversight. With a dedicated system for hoardings, authorities can efficiently monitor legal and illegal advertisements, ensuring compliance with municipal guidelines. Similarly, an integrated platform for managing men and machinery optimizes resource allocation, tracks asset utilization, and enhances operational efficiency in urban development projects.

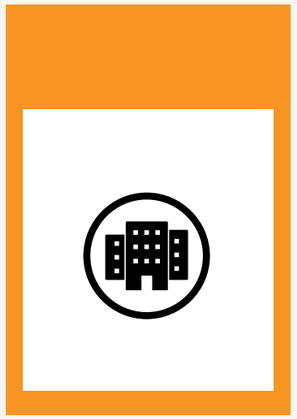
The building construction monitoring & illegal constructions enforcement mobile app strengthens regulatory mechanisms by enabling real-time monitoring of construction activities, preventing unauthorized developments, and ensuring adherence to approved plans. Additionally, the Document Management System (DMS) digitizes records, facilitates secure storage, and simplifies access to important documents for both officials and citizens. This not only reduces paperwork and administrative delays but also enhances transparency in approvals and compliance tracking. By streamlining enforcement and documentation, the system minimizes disputes, improves efficiency, and ensures smoother coordination between different departments. By implementing these digital solutions, JKHUDD is fostering a more accountable, efficient, and well-regulated urban governance system, aligning with the vision of a smarter and more sustainable urban future.

**Hoarding Booking**



**Men & Machinery Booking**

**Building Constructions Monitoring**



**Document Management System**

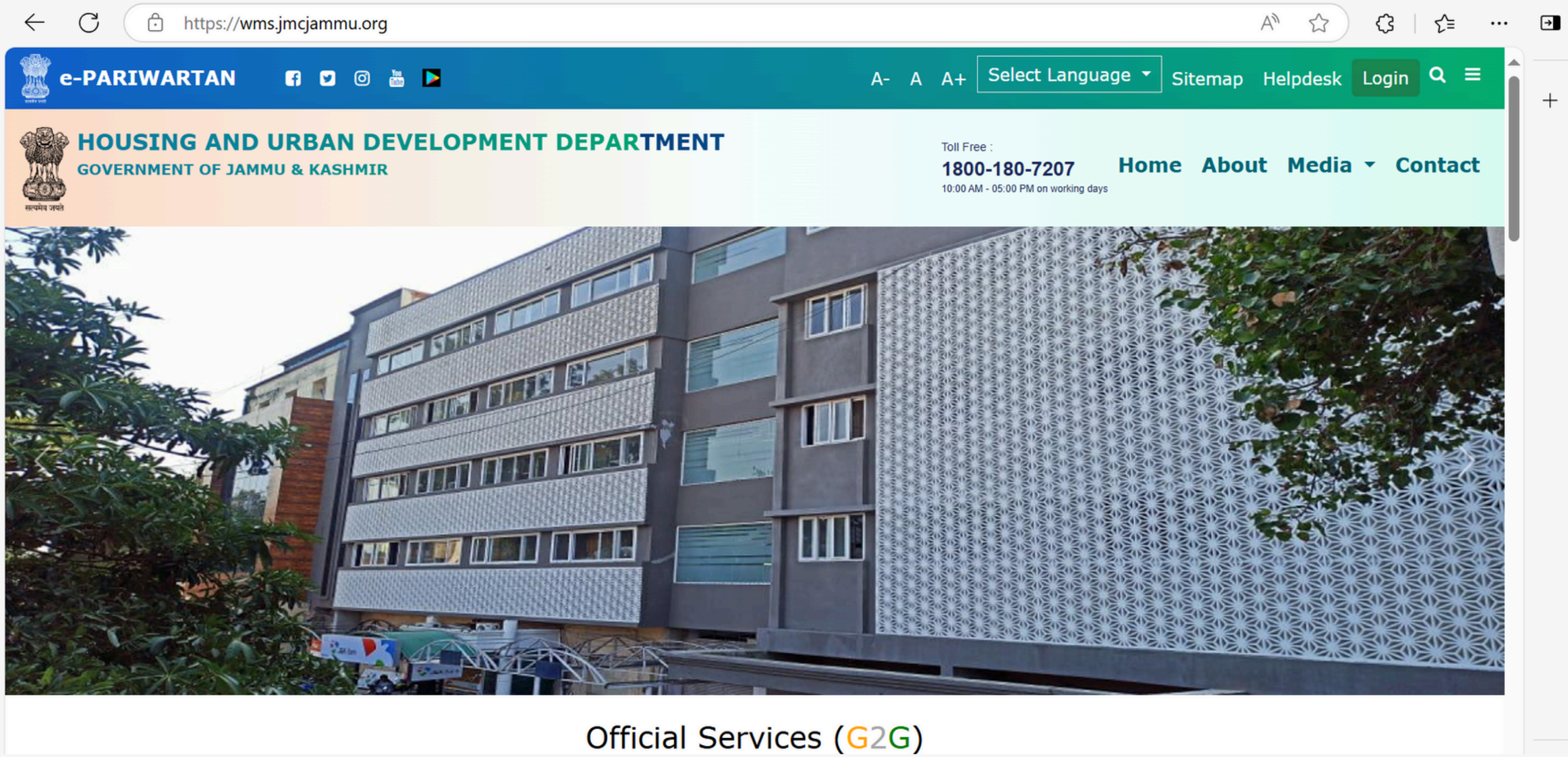
**Legacy Data Digitization**

**Digital Payments**

# ANNEXURES

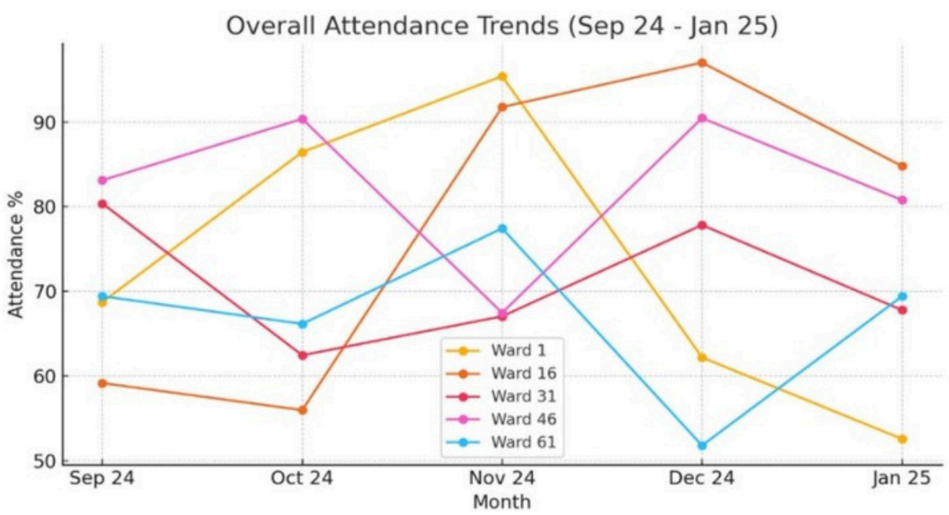
## (Relevant Screenshots)

# e- PARIWARTAN



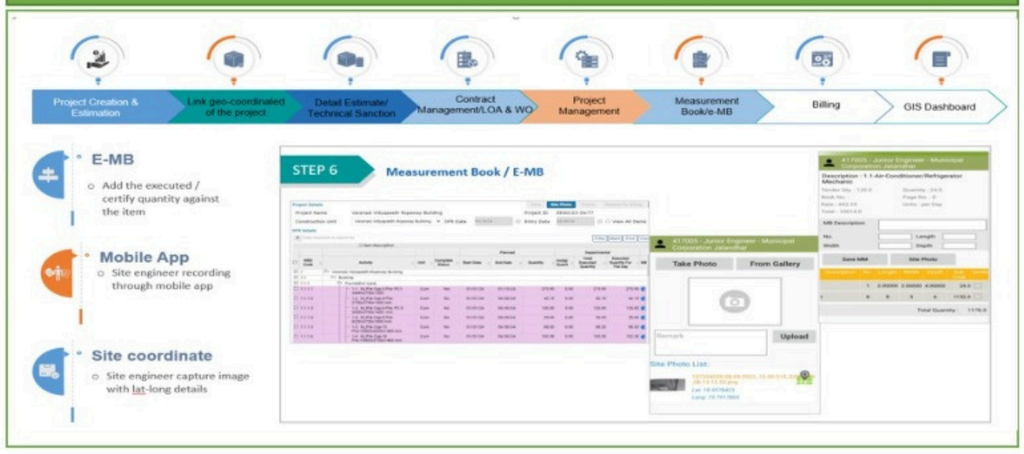
# GIS/ AI based Public Works Management System (PWMS) & FRS

## Attendance Forecasting using Predictive AI

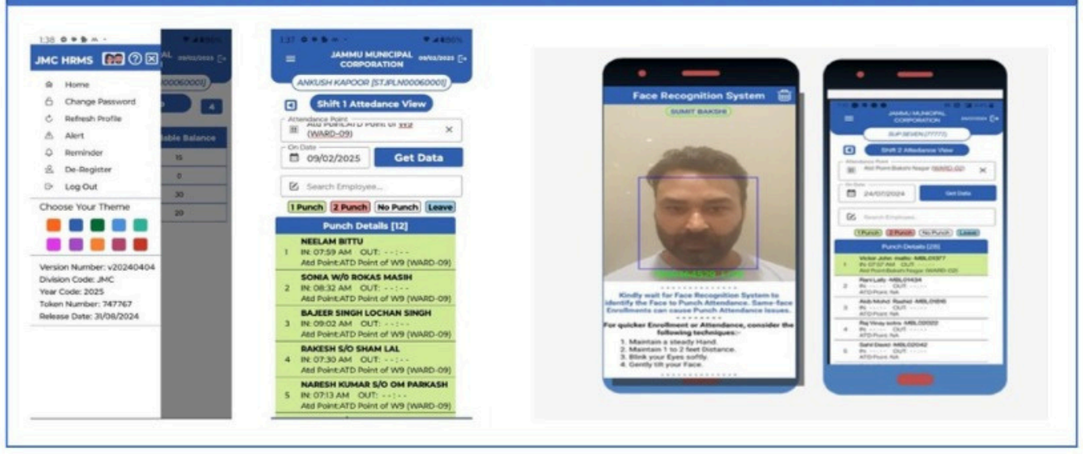



## GIS Based Fleet Management and Vehicle Tracking Management System

## GIS based Project Creation : Automated Estimates using digitized J&K PWD SOR 2022

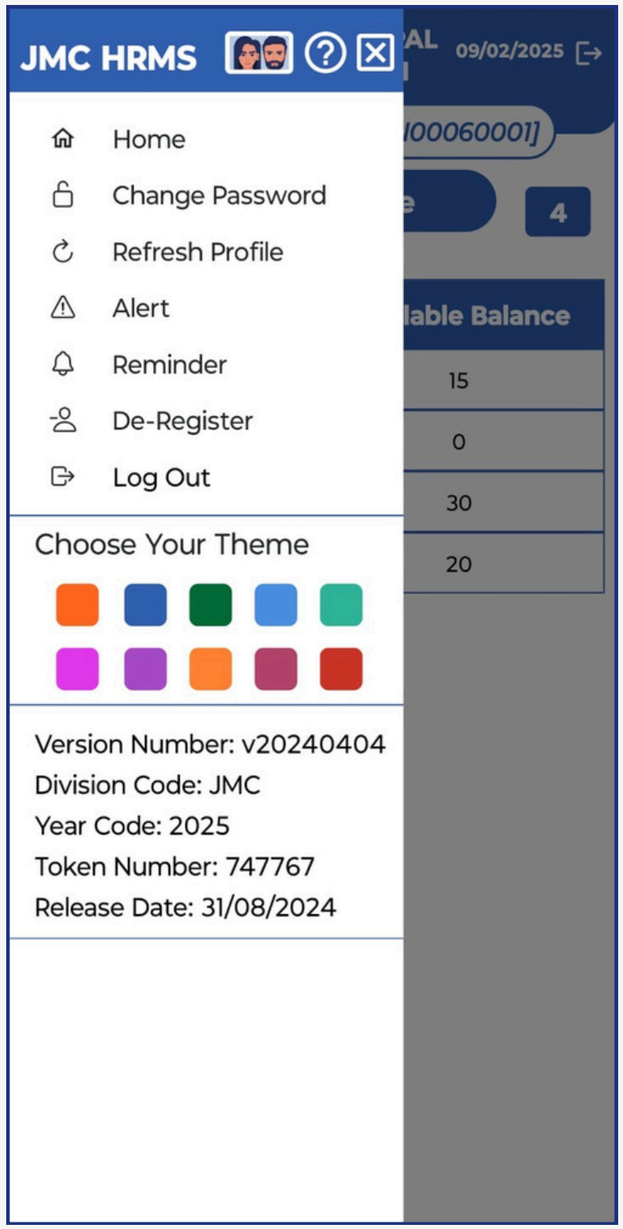


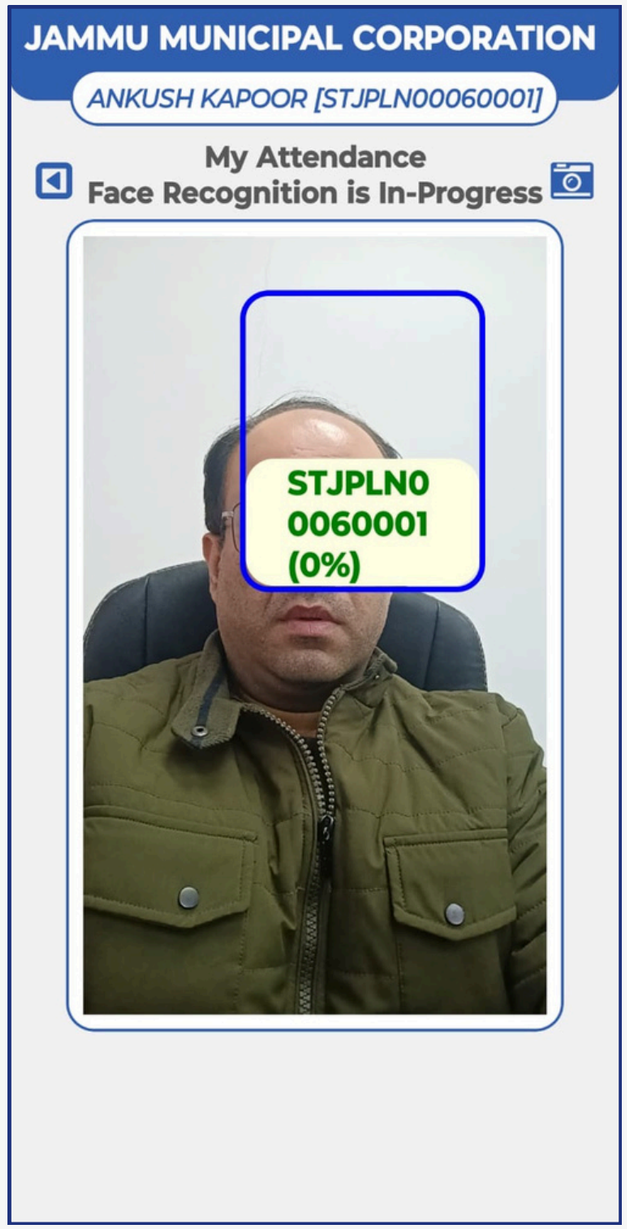

## Facial Recognition and GIS based Mobile Attendance

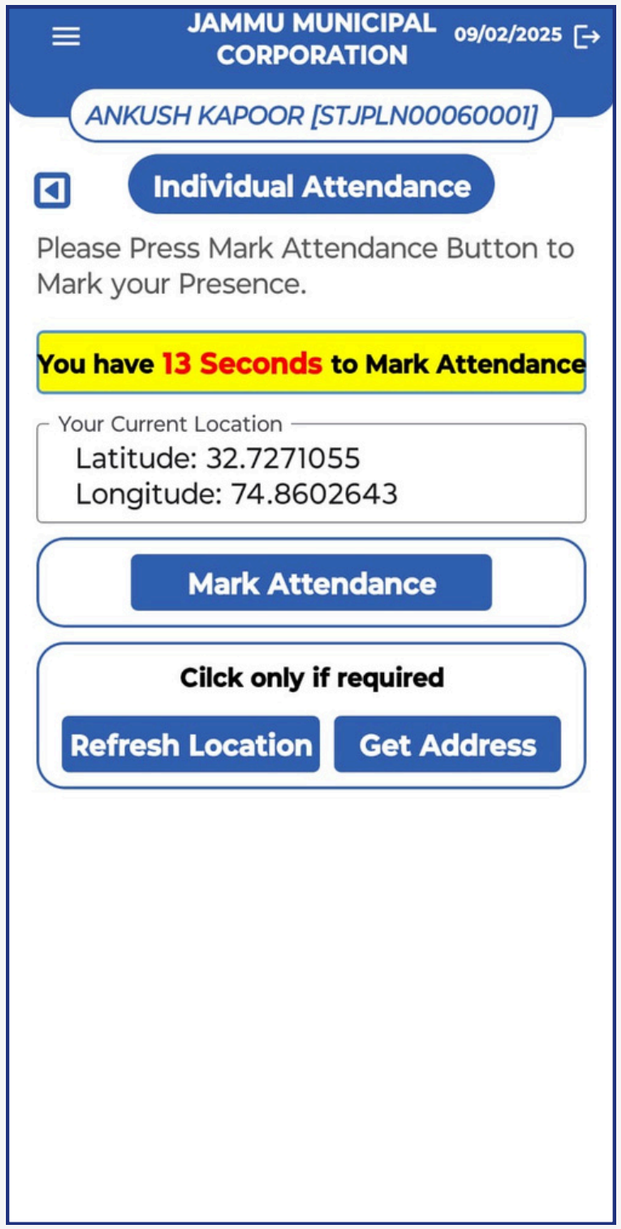


# Integrated SWM & Fleet Monitoring System using VTMS based on GIS/ DDN

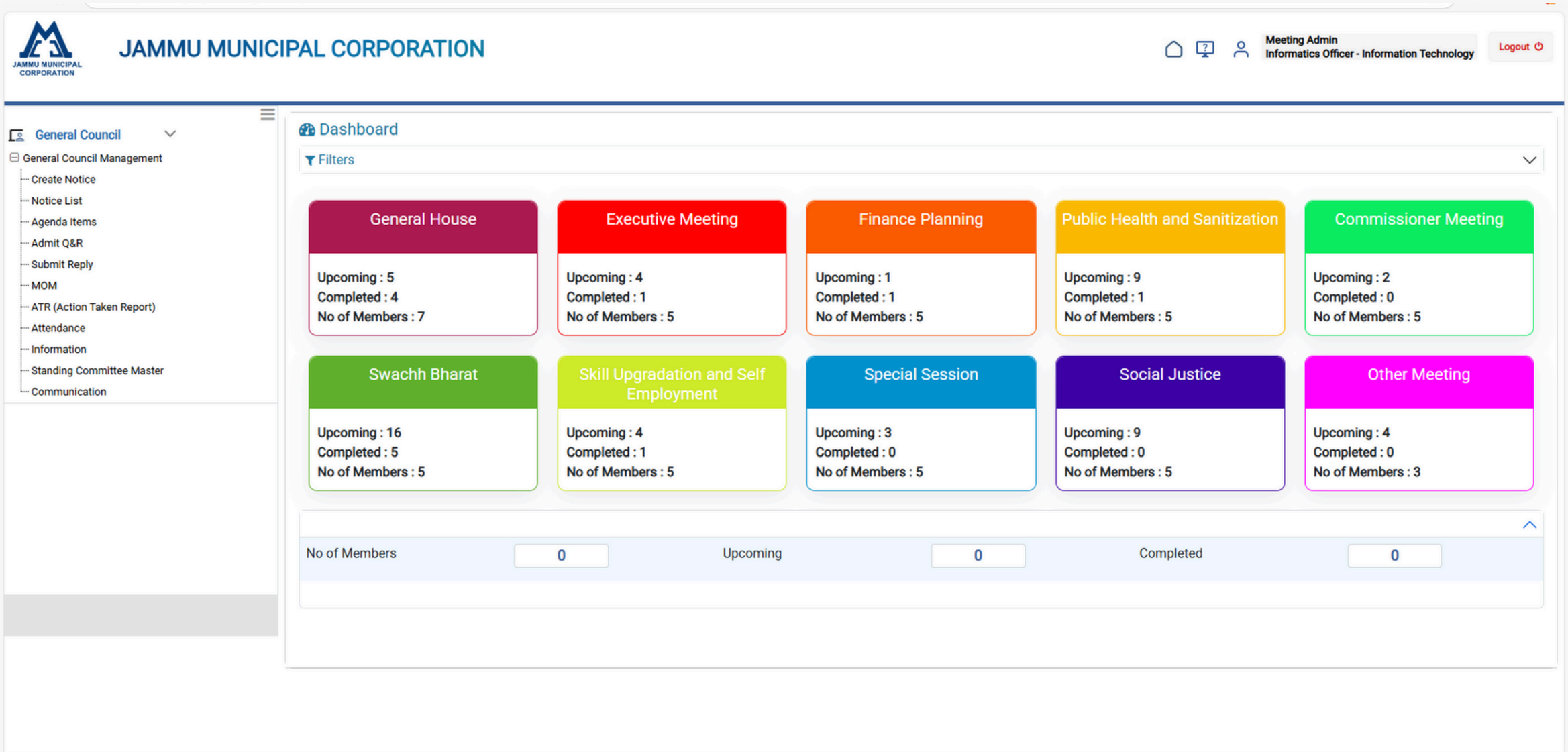
# Facial Recognition System (FRS) & e-HRMS



# Paperless General Council Management System (PCMS)



# Online Building Permission System and CLU Application Portal

# 40 Nos. of End-to-End Digitized Citizen Services

Form No. :- 5

Birth Certificate No. :- JK-ULB-BC/2025/08644

**UNION TERRITORY OF JAMMU AND KASHMIR**
**OFFICE OF THE REGISTRAR BIRTHS AND DEATHS**
**JAMMU MUNICIPAL CORPORATION**

## BIRTH CERTIFICATE

Issued under section 12/17 of the Registration of Births and Deaths Act, 1969 and Rules 8/13 of Jammu & Kashmir Registration of Births and Deaths Rules, 2022.
This is to certify that the following information has been taken from the original record of birth which is the register for

**JAMMU MUNICIPAL CORPORATION**
of Tehsil : **JAMMU**
of District : **JAMMU**
of Union Territory : **JAMMU AND KASHMIR**

| | | | |
|---|---|---|---|
| Name of Child | : [redacted] | Gender | : FEMALE |
| Date of Birth | : 05/10/1983 | Date of Issue | : 22/01/2025 |
| Date of Birth (In Words) | : FIVE OCTOBER ONE THOUSAND NINE HUNDRED EIGHTY THREE | | |
| Father's Name | : [redacted] | | |
| Mother's Name | : [redacted] | | |
| Place of Birth | : [redacted] | | |
| Address of Parents (at the Time of Child Birth) | : [redacted] | | |
| Permanent Address of Parents | : [redacted] | | |
| Registration No. | : 242 | Registration Date | : 07/01/1984 |
| Court Order / Affidavit No. | : | Court Order / Affidavit Date | : |

Digitally signed by VINOD SHARMA
Date:22-01-2025 11:40:07 AM
Registrar
Birth & Death
JAMMU MUNICIPAL CORPORATION

"Ensure Registration of every Birth and Death"
This document is digitally signed and hence no physical signature is required.

Reference No: JK-ULB-BC/2025/08644 To View: https://jansugam.jk.gov.in/t/UI78b/1A5357C6 Token No: 1A5357C6

**UNION TERRITORY OF JAMMU AND KASHMIR**
**JAMMU MUNICIPAL CORPORATION**

## PROVISIONAL DAIRY RENEWAL CERTIFICATE

**No. : JK-ULB-DF/2024/00056** **Renewal Date : 20/12/2024**
**Valid Upto : 19/12/2025** in Jammu Municipal Corporation Limits only

| | | |
|---|---|---|
| 1. Name of Applicant | : | [redacted] |
| 2. Address of Applicant | : | [redacted] |
| 3. Name of Proposed Dairy Unit | : GURDIAL MILK DAIRY | |
| 4. Address of Proposed Dairy Unit | : | [redacted] |
| 6. Total No. of Dairy Animals | : 13 | |

**VALIDATION AND RENEWAL**

| Period of Validity | Renewal Fee Paid |
|---|---|
| 1 Years | 800 |

Digitally signed by JASWANT SINGH
Date:19-12-2024 22:13:54 PM
Signature of Registering Authority
JAMMU MUNICIPAL CORPORATION

Terms & Conditions :
i.This registration is Provisional & subject to the fulfillment of conditions as per the latest guidelines issued by CPCB and other set norms & criteria.
ii.Jammu Municipal Corporation reserves the rights to cancel this registration as and when required.
iii.Jammu Municipal Corporation shall initiate legal action against the dairy owners for violating the set norms & conditions.
iv.The provisionally registered dairy unit must obtain consent to operate from the concerned JKPCC division.

This document is digitally signed and hence no physical signature is required

Reference No: JK-ULB-DF/2024/00056 To View: https://jansugam.jk.gov.in/t/Lnz7b/284F1107 Token No: 284F1107

# GIS/AI based Project Creation and Automated Estimates Using Digitized J&K PWD SOR 2022

## Estimate

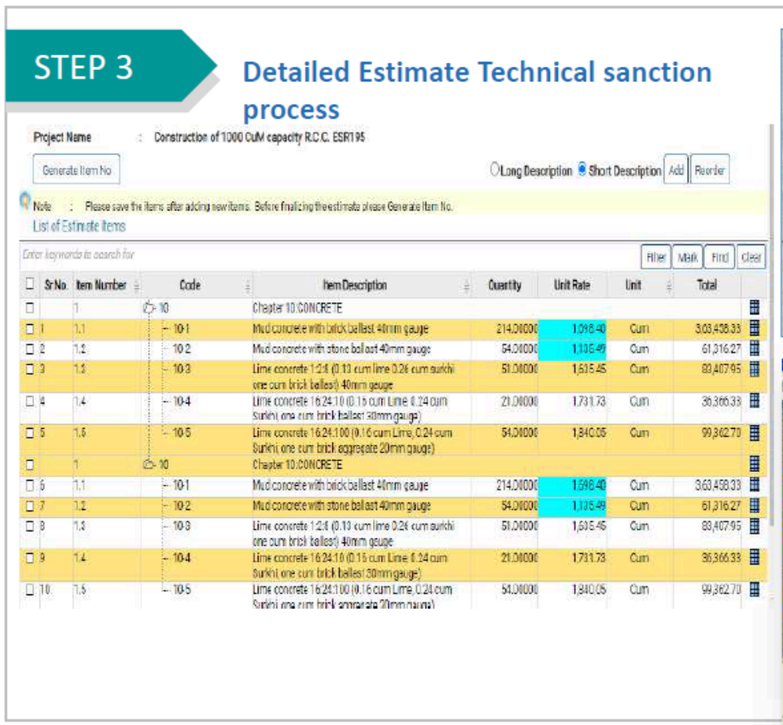
- Create the detailed estimate with SOR for the project

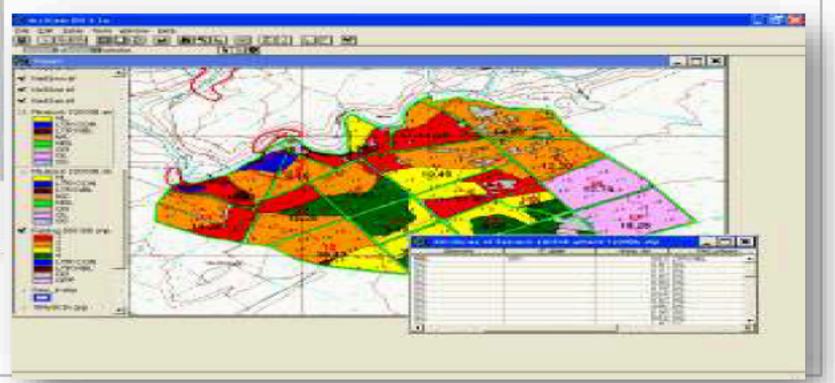
## Save the plot

- Edit and Save the GIS plot as per TS process

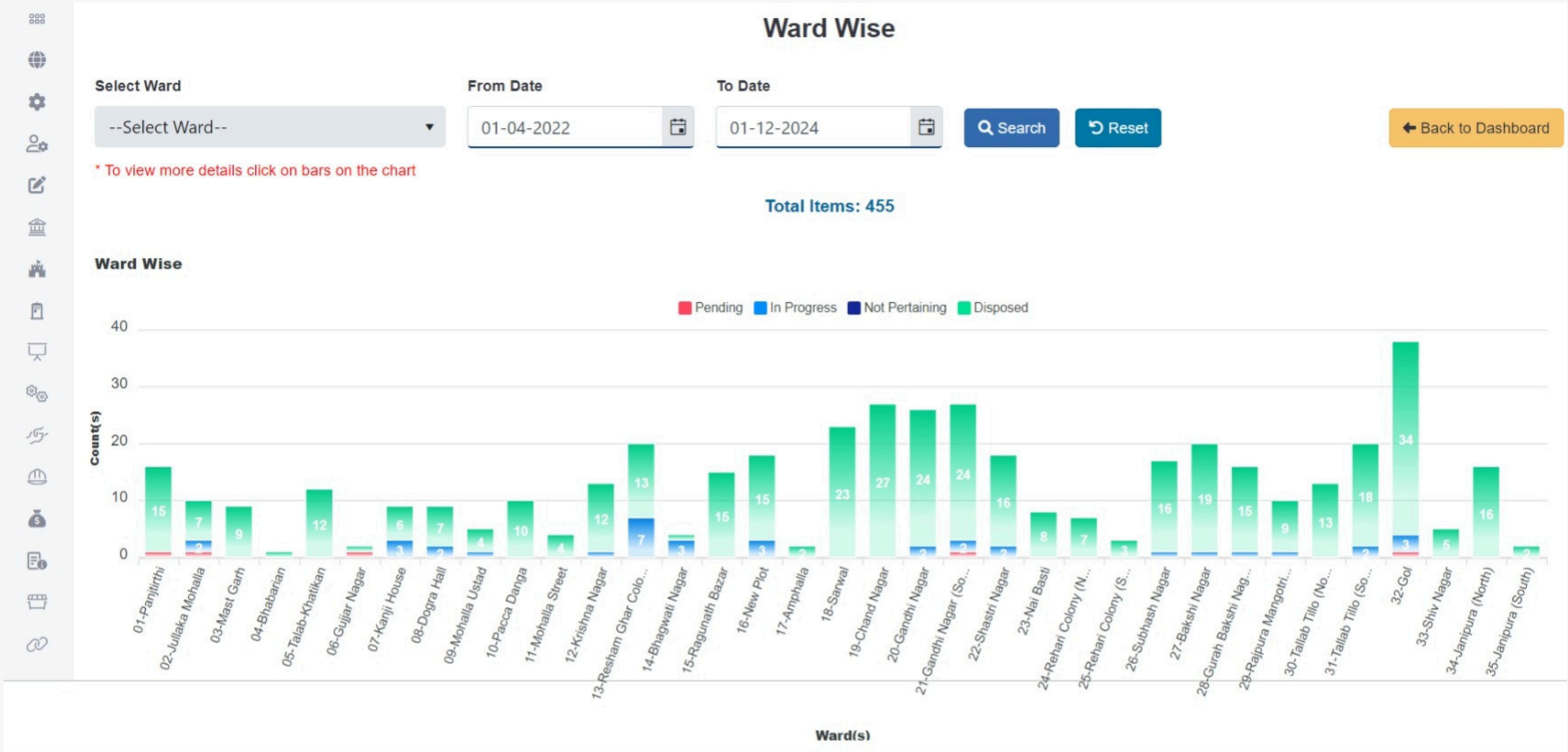
## Approve

- Update the plot and and proses for approvals

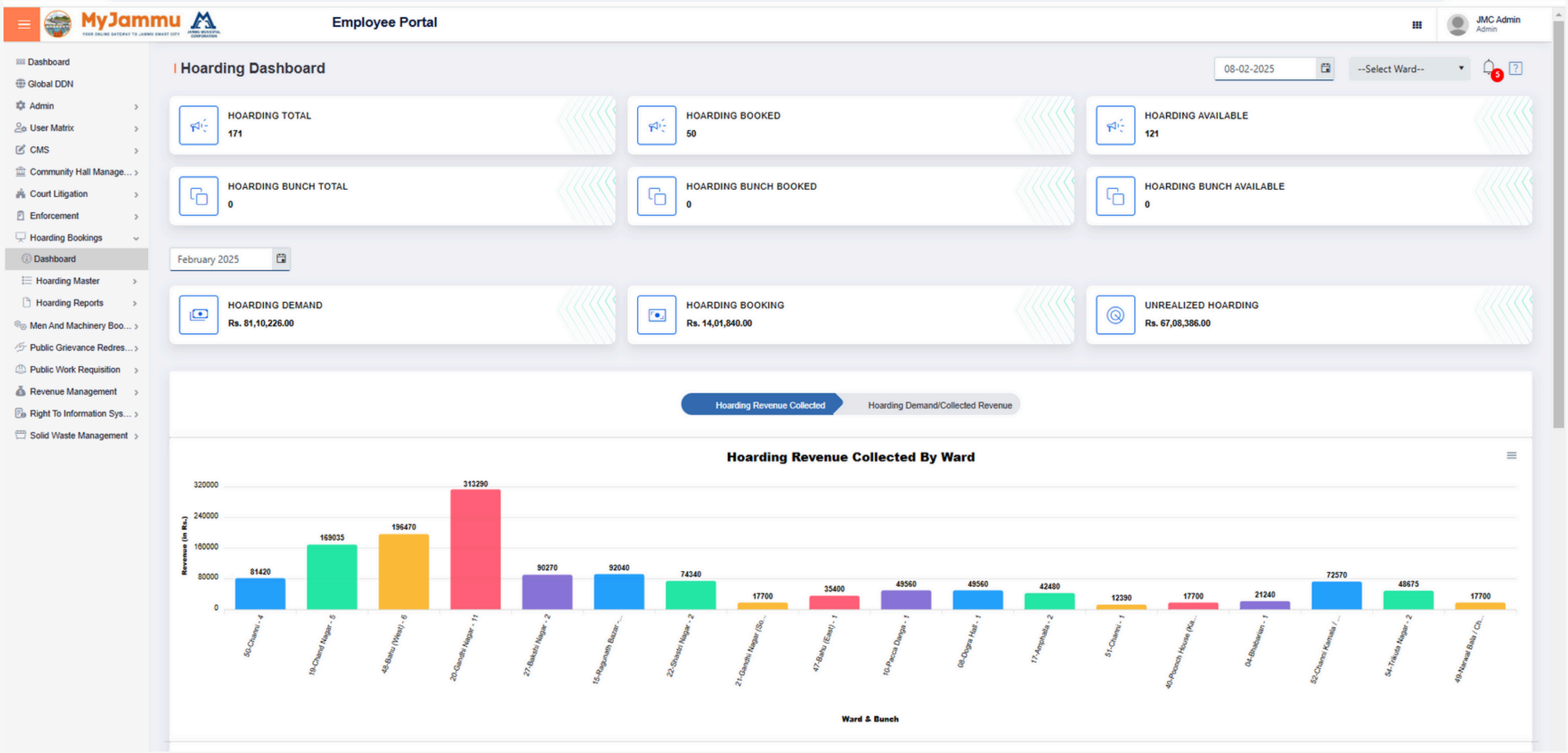




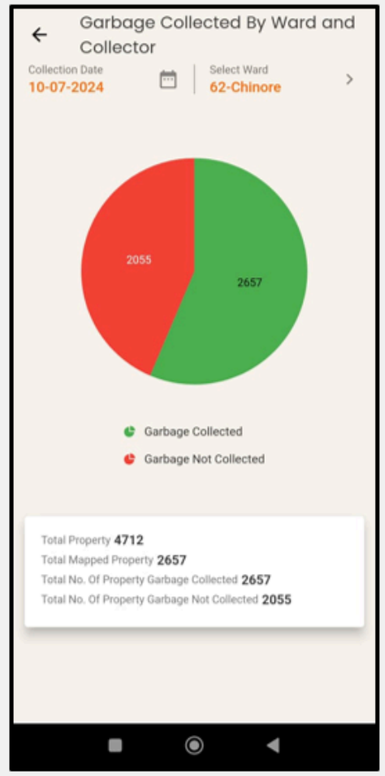
# GIS and DDN based Public Grievance Redressal System



# Hoarding Management System (HMS)



# DDN & QR Code Scanning based D2D Garbage Collection Tracking



# Online Digital Certificate for Door to Door Garbage Collection and Payment of User Charges

AI/GIS based Facial Recognition Mobile Attendance App for Sanitation Staff and other Field Functionaries with integrated ERP based e-HRMS

# Proxy & Duplicate Attendance Detection using AI

**In the below mentioned sample cases, AI technique detects that the same employee's are marking attendance through mobile App from different employee Id's and generate alerts.**

## CASE-1

7780900952.jpg STJUDD00010326.jpg

## CASE-2

856631674705.jpg 7006257583.jpg MBL01860.jpg

## CASE-3

8899259877.jpg 9541509252.jpg

## CASE-4

8493820147.jpg STJUDD00010686.jpg

# AI/GIS and Facial Recognition Based Attendance Mobile App

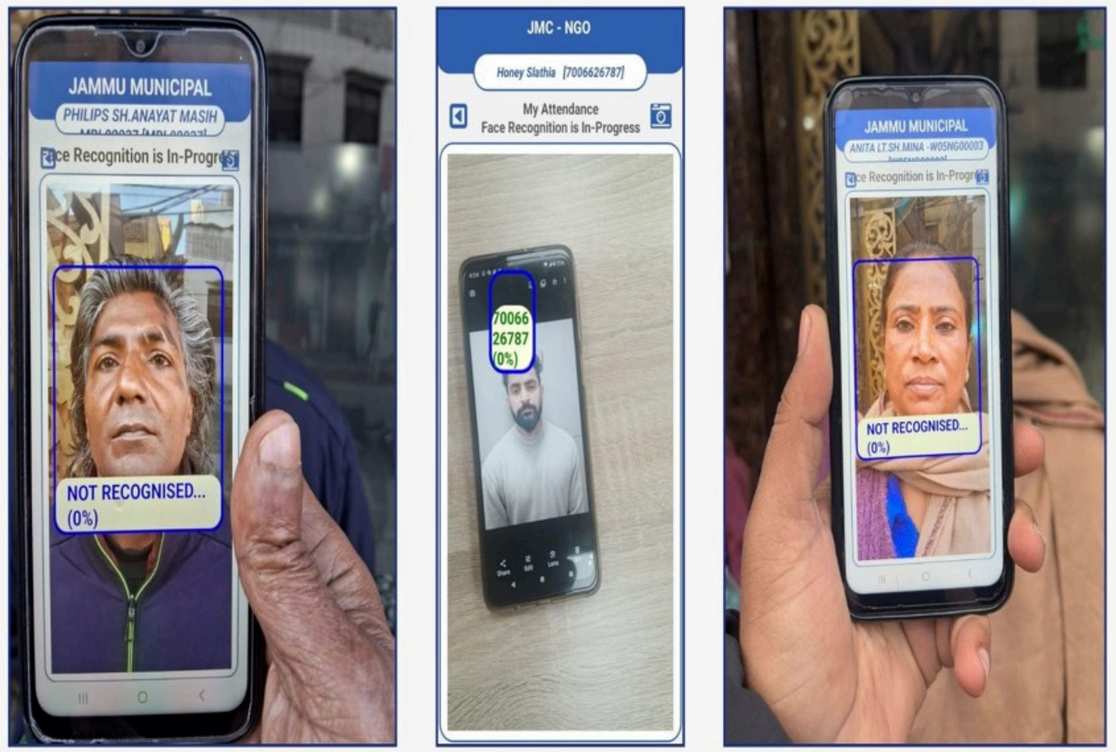
AI/GIS based Facial Recognition Mobile Attendance App for Sanitation Staff and other Field Functionaries with integrated ERP based e-HRMS

## Real-Time Facial Recoginition based attendance of Sanitation Staff & Outsourced Staff

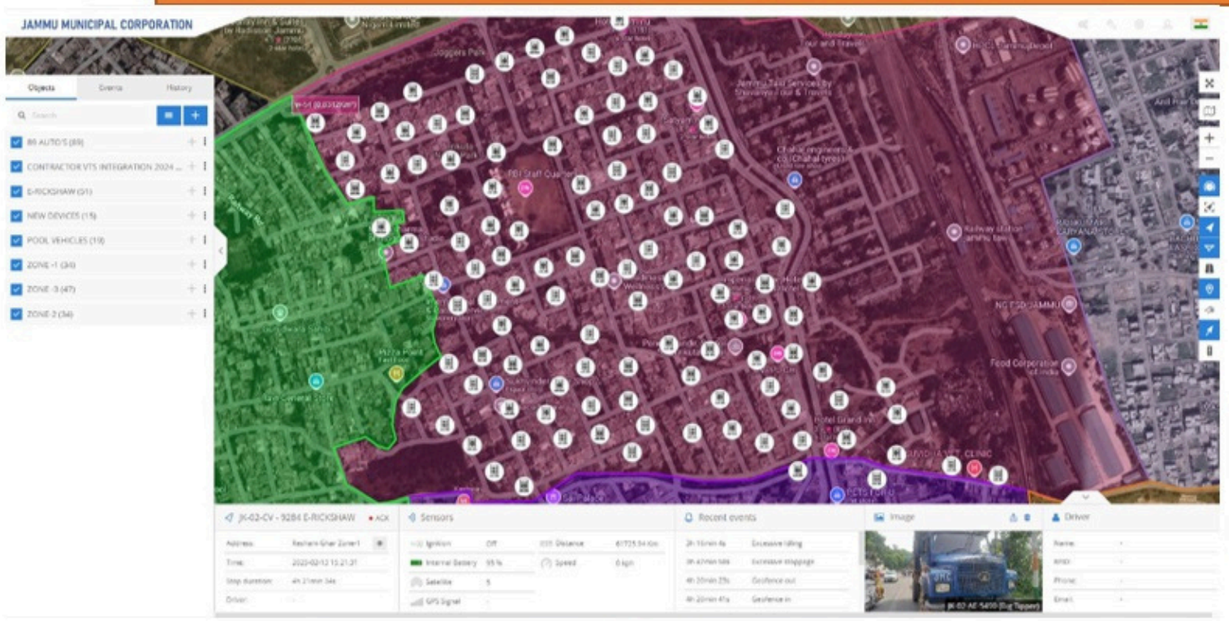
AI/GIS based Facial Recognition Mobile Attendance App for Sanitation Staff and other Field Functionaries with integrated ERP based e-HRMS

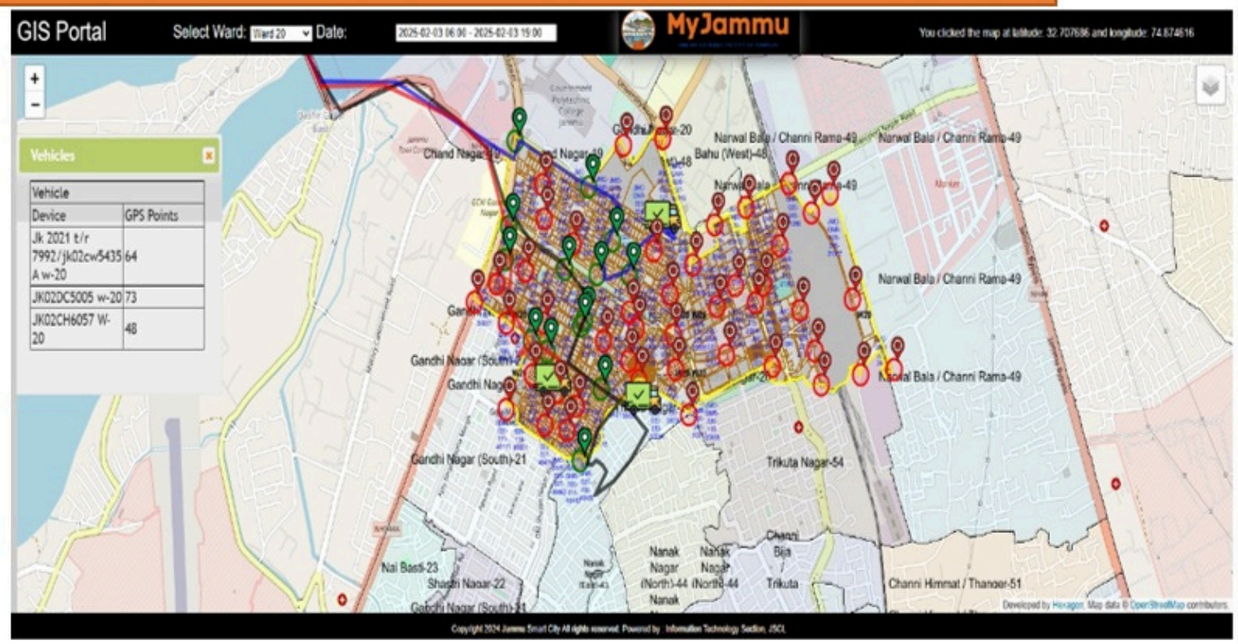
## Real-Time Liveness Detection & Thermal Face Detection

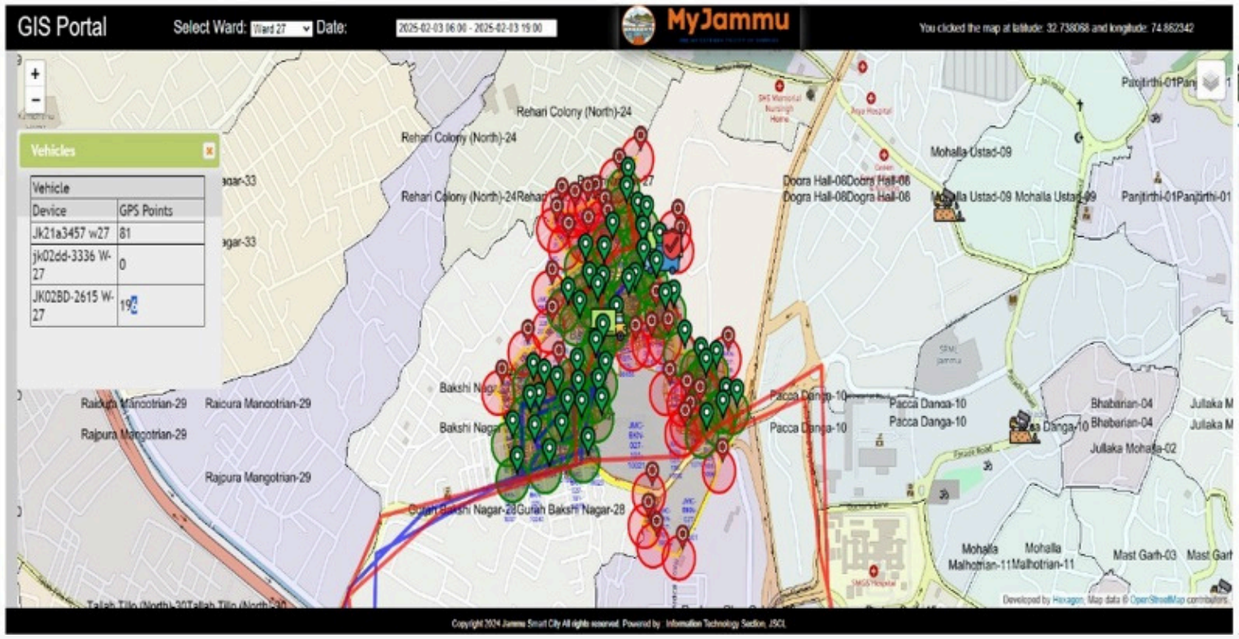
Sample cases where employees tried to mark attendance through either photograph or already stored images in their mobile phones but system denies attendance because of No Liveness or Thermal Face Detection.

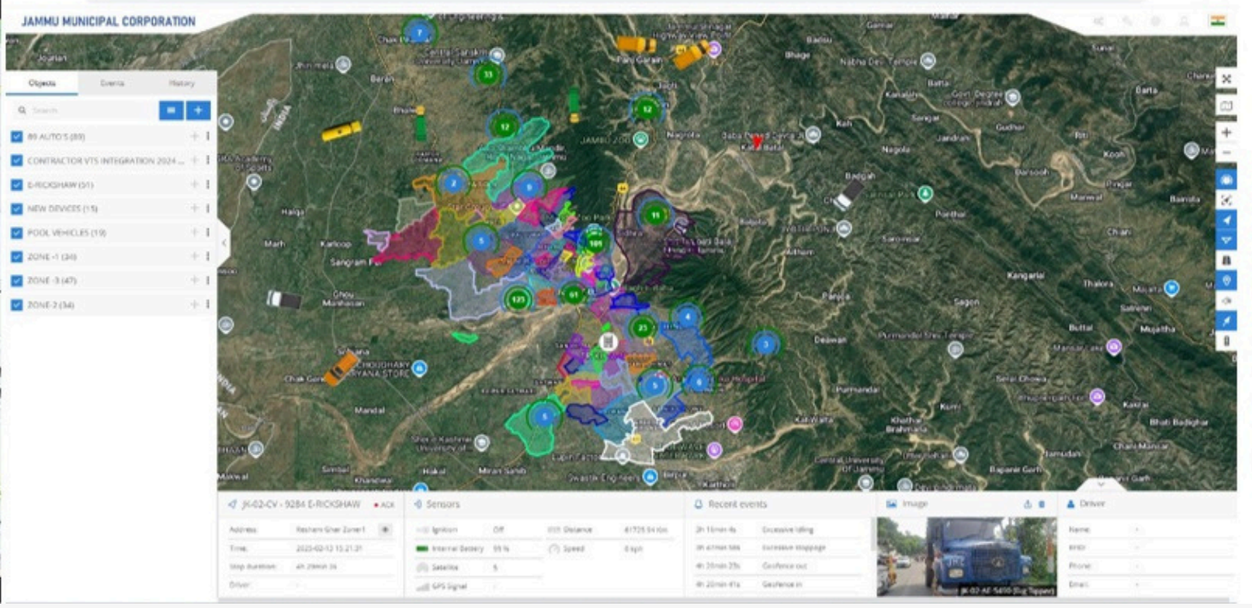


# D2D Garbage Collection Vehicle Tracking using geo-fenced AOI/POI

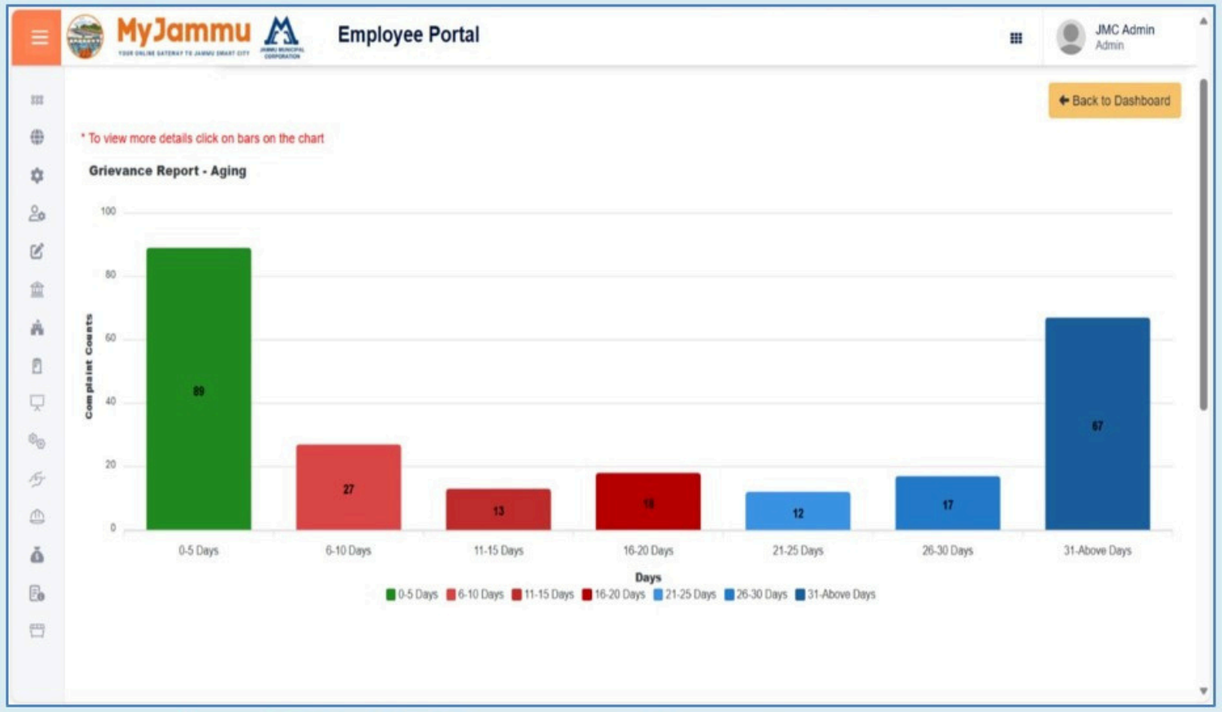


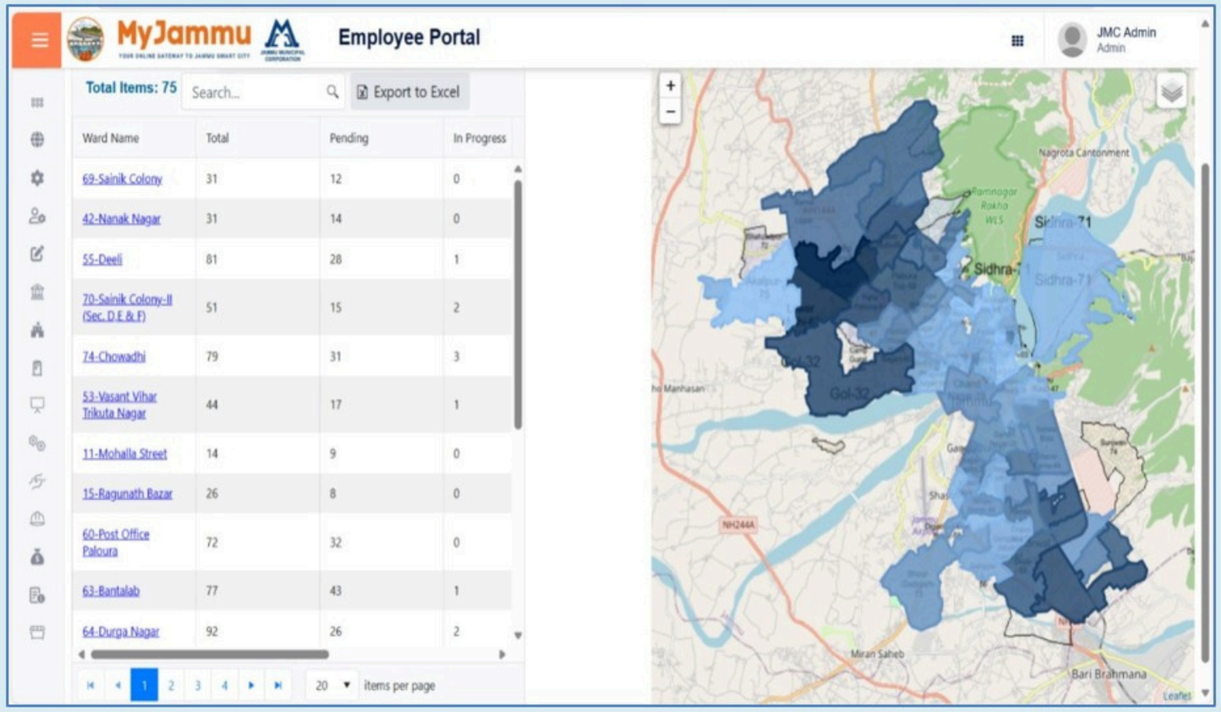



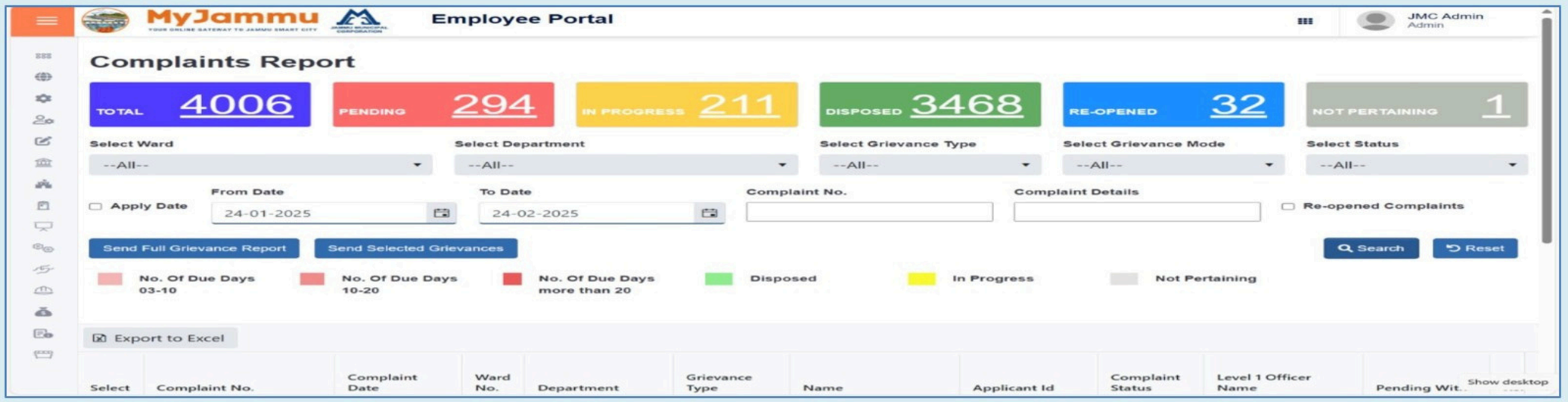



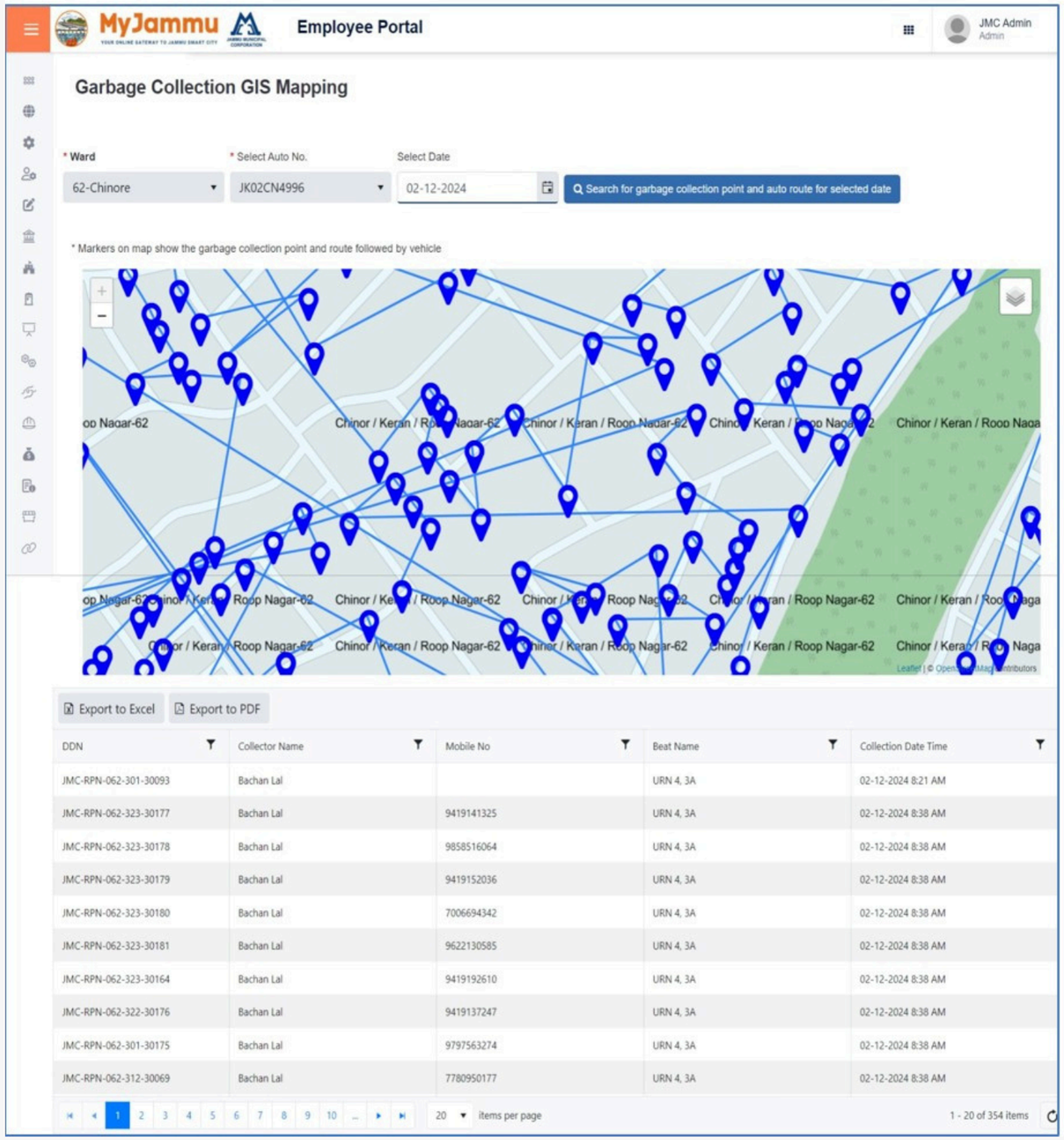
# Data Driven Grievance Reports

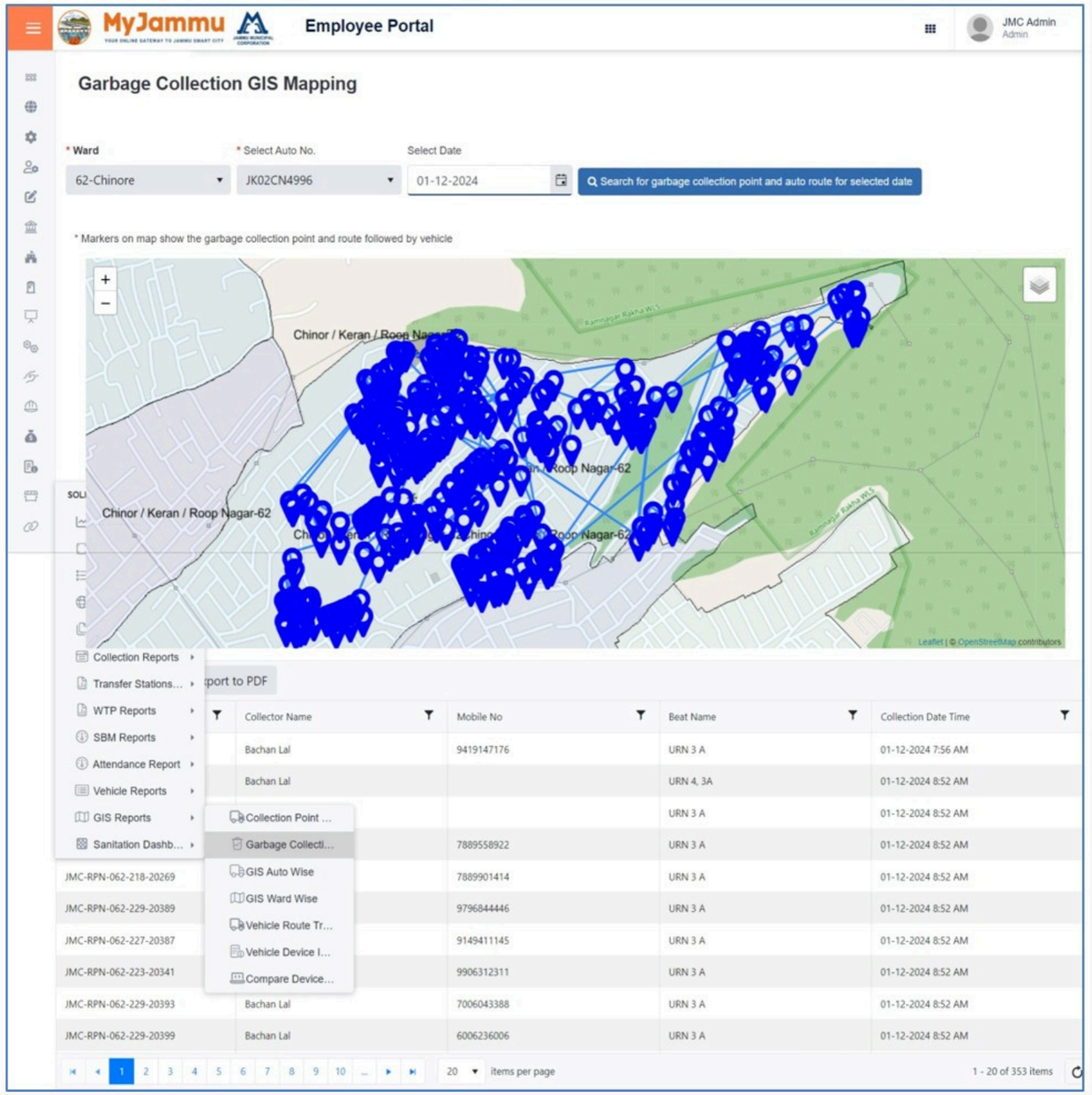


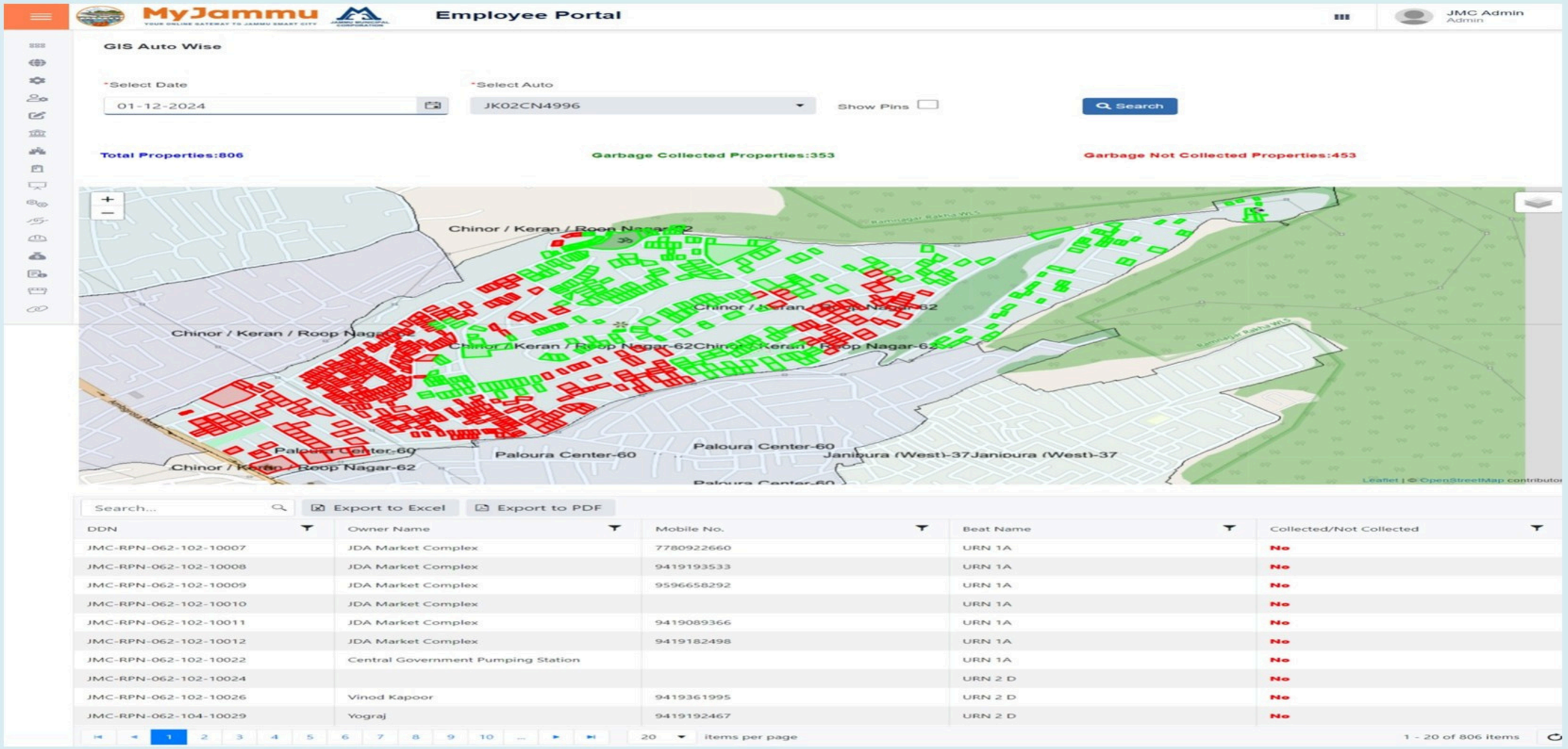



# GIS based Solid Waste Collection Reports



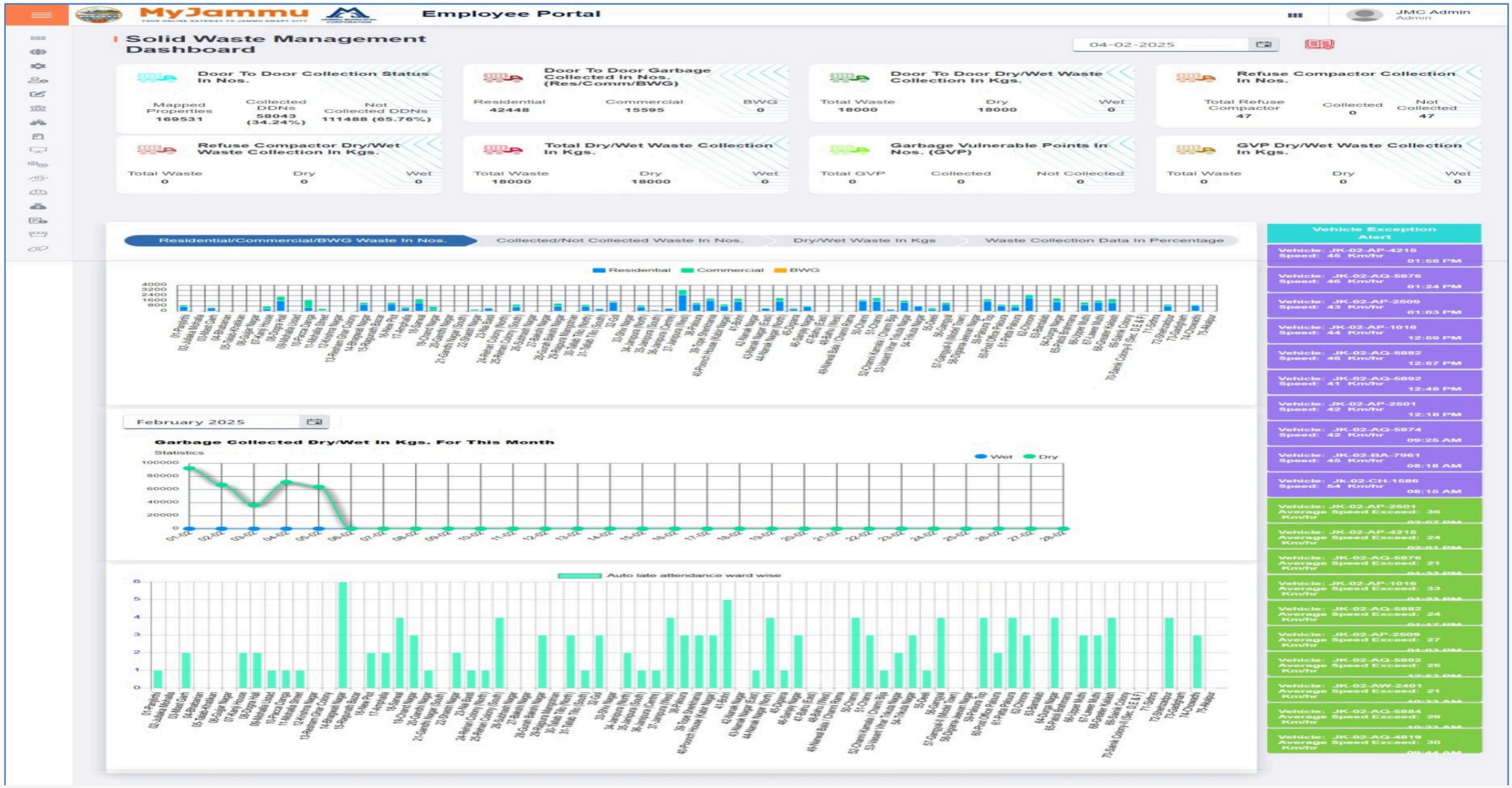



# GIS based Solid Waste Collection Reports




Ward Wise Report Depicting Collection Status on a GIS MAP. Green Depicting Garbage Collected while Red depicting Not Collected.

# Data Augmented Solid Waste Management Reports



# Housing and Urban Development Department
Government of Jammu and Kashmir

**PROJECT HEAD**

**Ankush Kapoor, Informatics Officer**
**Chief Information Security Officer (CISO)**
**Housing & Urban Development Department, J&K**
Mobile: 9419284745, 7780930535
E-mail: kapoor.ankush@jk.gov.in