Software Requirements Specification
&
Functional Requirement Specification

Project:

"Design, Development, Implementation and O&M of E-Governance Applications for ULBs of Jharkhand".

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Jharkhand Urban Infrastructure Development Company Limited

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1 Introduction

1.1 Background

The Urban Development and Housing Department plans to develop a World Bank-financed integrated e-governance application. The idea behind this ambitious project is to streamline the working of all the ULBs in Jharkhand. It is expected that this project will provide a tool to monitor various municipal services and generate incomes in the form of taxes, rentals, auctions, etc. Additionally, JUIDCO sought to create a sense of good governance among the masses through direct citizen participation. It is also expected that the revenue loss due to inefficient governance can be controlled to make Urban Local bodies profitable.

In Jharkhand, several e-government activities have been planned and implemented under ongoing projects. Several IT firms are working on several projects in the state for the implementation & maintenance of e-Governance initiatives/modules for ULBs and state departments. Due to the fact that these e-Governance initiatives are controlled by different entities and maintained in fragmented fashion, ULBs are forced to depend on different vendors for different services portals, which is time-consuming, and at the same time difficult to account for payments received from different services from different portals/vendors. Integration of all the applications would save processing time for both the back-end management in the ULBs and the front-end consumer experience.

Revenue collection is one of the key functions of urban governance. Through improved revenue collection in ULBs, citizen services and other infrastructure can be developed. This enables improved service delivery, maintenance, operations, and management of various public services. Thus, information about the quantum of revenue being collected and accounted for must be readily available, and such information must be available in real-time.

The Tax Collection Agencies are appointed by the Urban Development & Housing Department (UD&HD) through the State Urban Development Agency (SUDA), and their tasks and targets are regularly evaluated and monitored by the Project Management Unit. In the Revenue Management System (RMS), citizens can pay taxes and fees in real time with a real-time receipt, ensuring tight internal control over collection. Citizens' assessment forms are cross verified for any Revenue reform. Property tax reform is technology intensive. Jharkhand State has adopted the latest technologies in various stages of reform to take advantage of the reform opportunity. ULBs are preparing their accounts on Tally, which is not updated in real time. No system exists at present whereby centralized Financial Information is not available at State in real time. Thus, in the present assignment, RMS and Tally need to be integrated in a common platform as part of an Integrated Financial Management system. This will enable State to establish a web-based accounting system and identify municipal assets including commercial properties owned by ULBs. In addition, cross mapping of various data bases like Property Tax to Solid waste user charge to Water Connection to Trade Licensing to Building Permissions and other such services.

The municipal corporations are the leading institutions that provide local and citizen-centric services to the public living in cities. Their activities are regulated by urban planning, building construction, transportation, infrastructure, and mapping. To carry out these duties effectively, municipal governing authorities must be able to use spatial information effectively.

Since organizations and citizens make wide use of opportunities offered through digital platforms, it has become one of the priorities of governments all over. This is because they are using the internet in various fields. Due to the fact that providing services to citizens is one of the most significant responsibilities of municipal corporations, which involves extensive information exchange, it easily fits in the profile of the main target fields of e-government.

1.2 Purpose

This document describes the idea and implementation approach of integration and streamlining the business processes of all the ULBs in Jharkhand. This document discusses the problems and a typical approach to automation. The sections will begin with an explanation of the problem, then move on to discuss the solution and overall approach to solving it using technologies currently available. This solution is described with the help of different diagrams, which illustrate use case scenarios. The initial set of requirements indicates the complexity of the final system in terms of business logic and capacity building maneuvers. Owing to the lack of manpower in the ULBs, it will be necessary to design the system so that users can assume multiple roles for execution of work.

This document will act as a common understanding point between users of the system and the developers of the system. User requirements have been mentioned as use cases, whereas the developer's point of view is given in the non-functional requirements part of the document.

The Software Requirements Specification (SRS) document also serves to outline the technical requirements needed by the developers working on creating the system for automating the collection of automotive paint defect analysis. A detailed explanation of the proposed system to resolve the client's problem is provided in this document along with requirements, constraints, and detailed explanations. The intended audience for this document is stakeholders and the developers working on creating the system for the client. Developers and technology experts ensure that the system is technically and economically feasible.

The purpose of this document is to outline requirements for automation of all the ULBs in Jharkhand to be addressed at a functional level. This document defines a boundary around which the proposed system is designed to be fabricated. The use cases defined in this document have been drafted in a way that describes the user requirements completely. We have added necessary description wherever extra detail is required. It also describes nonfunctional requirements and other factors necessary to provide a complete and comprehensive description of the requirements for the software.

1.3 Scope

There are 50 urban local bodies consisting of 9 Municipal Corporations, 20 Nagar Parishads, 20 Nagar Panchayats and 1 Notified Area Committee (NAC), responsible for implementation of the Urban Development activities in their respective areas in the State of Jharkhand. There is a need to develop software to automate the processes in ULBS.

The scope of this SRS is to define functional requirements for e-Governance application with detailed study of the following automation modules:

- Property Tax Management System
- Water User Charge Management System
- Municipal Trade License Fee Management System
- Building Plan Approval Management System
- HRMS & Payroll
- Birth & Death Management System
- Accrual based Double Entry Accounting System
- Project and Fund Management System
- Procurement Management System
- Land & Asset Management System
- Asset Tracking and Monitoring System
- Marriage Registration Management System
- Pet Animal Registration System
- Legal Management System
- Solid Waste Management System
- Public Transport Management System
- Parking Management System
- Document Management System
- Grievance Management and Redressal System

Nonfunctional requirements like Performance, Reliability and Security are also covered in this document.

It also defines the plan and action about data integration and migration policy.

1.4 Existing System

Jharkhand is not an exception to introducing software technology to urban local bodies. There are a number of activities planned and implemented under several project initiatives. Currently, Property Tax, Water User Charge and Trade License modules are up and running in the state. These modules are serving the ULBs very well, both in terms of revenue and ease of use. Many agencies have been given the duty of collecting revenue for the government. Now that the process has streamlined to some extent, there is a need to integrate solutions maintained by different vendors into a common platform.

Apart from the above mentioned solutions, ULBs are using automation tools at local level. Various tools are used to deal with a variety of situations, such as Excel, Word, and Tally. It is also observed that a large share of day-to-day work at ULBs is still manual and requires more technology to make it more accessible and efficiently run.

A major concern with the existing system is the scattered nature of information. There is no central dashboard where everything can be mapped and monitored. Another concern is that revenue collection at different departments is not mapped for accounting purposes.

Following problems are being faced:

- ULBs are for citizens and citizens have no direct access to the system.
- There is no single point information available to the citizens.
- Lack of standardized processes at State level
- There is no clarity on roles and responsibilities of the users of the system
- Most departments are using manual method of record maintenance
- Lack of trained manpower
- No central reporting system.

A need is being felt about a central dashboard at the state level for monitoring and managing government information and services. A citizen's dashboard where all information regarding ULB interactions and services is available should also be created.

1.5 e-Governance Application Software Model

An e-Governance application is a custom-made web application that automates the entire process of different clusters of ULB services. On the one hand, it provides local citizens online access to the various services provided by the municipal corporation, on the other hand, it provides a computerized solution to official proceedings at the municipal corporation. By utilizing various online services under the modules of the e-municipal clusters, the application also aids in bridging the gap between citizens and municipal authorities.

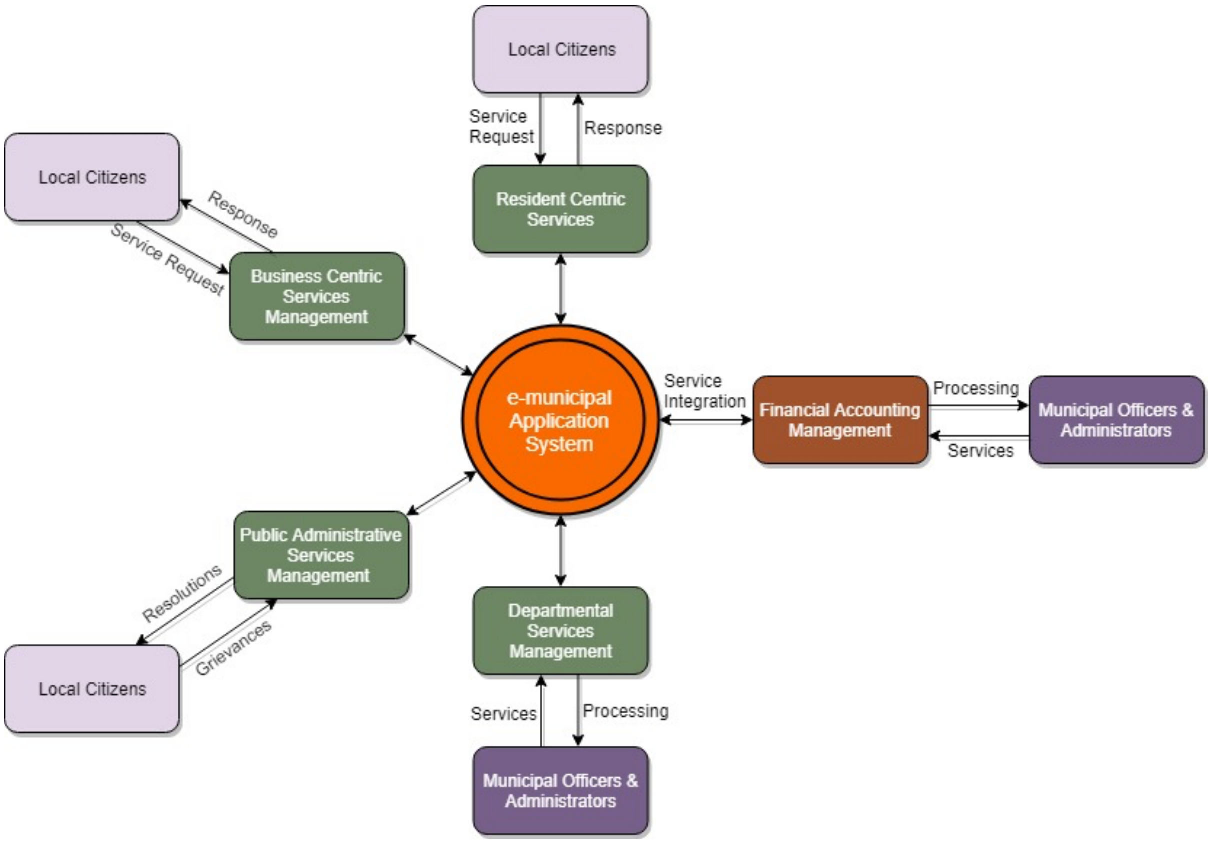


Figure 1: e-municipal application system model

1.6 Objectives of e-Governance

- Streamline revenue collection of ULBs
- Provide one stop, single window solution to the stakeholders and citizens at large
- Redefining goals and objectives with emphasis on citizen services
- Suggest reengineering according to the architecture and environment finalized
- Suggest the required software, middleware, network management solutions and distributed environment based on the redesign
- To provide single window system for delivery of services and information to citizens.
- To provide integrated and simplified services to citizens on anytime, anywhere basis.
- To decentralize service delivery to improve accessibility of information to citizens.
- To increase the efficiency and productivity of ULBs/ Parastatal bodies by improvement in own revenue based on best practices.
- To do business process re-engineering of all the activities for better service delivery.
- To integrate data and services of various departments
- To enhance efficient inter-departmental coordination.
- To provide timely and reliable management information relating to municipal administration for effective decision-making through effective financial management system.
- To adopt a standards-based approach to enable integration with other related applications.
- To monitor and supervision of various taxes and non-taxes revenues of ULBs on periodical basis.
- To put in place efficient and effective revenue collection and management system for ULBs in line with various laws of the State and manage all tax Collection agencies appointed by State or ULBs.
- To carry out the compliance of all directions issued by ULBs and State from time to time.
- To Ease in Information accessibility to all the stakeholders.
- Various citizen centric services like online issuance of Birth / Death, Grievance & Suggestions handling, Project/Ward works, various licenses, etc., can be easily accessible to the citizen.
- Reduction in the amount of time taken in issuing certificates, licenses and permits faster handling of public grievances.
- Increased revenue to the Corporation through efficient system of collection of taxes.
- Better organizational planning, control and data analysis for simulation and future planning.
- On-line information retrieval of standing orders and administrative documents.
- Inter-departmental exchange of information to avoid duplication of data entry.
- Improve accounting system and book keeping of ULBs/ Parastatal bodies.
- To review and study the existing e-Governance situation of the municipalities and how often they are being used, are there existing staff in all the ULBs to manage and maintain the platforms?
- To assess technical requirements for state level solution
- To assess Hardware & Software of ULBs and concerned department for new applications

- To assess ULBs users or working force capability to use the e-Governance applications
- To prepare Functional Requirement Specification (FRS) of the all the new applications
- To discuss FRS of new applications with the entire stakeholder before development for suggestions and improvement.
- To prepare AS-IS Study report of all the existing process and status report of all the existing e-Governance Initiatives in ULBs.
- Integration of existing applications
- To support interactions G2C, G2B and G2G
- To build platform for Government departments to present information and services.
- To minimize gap between Service providers and service consumers.
- To provide secure, anytime, anywhere information.

USERS	OTHERS
CHANNELS	Mobile Internet Egov Portal JSK/CSK SMS Call Centre
INTEGRATED SERVICES	Single Window Services
SHARED APPLICATIONS	Portal , Documents, Emails, ETC.
COMMON DATA SERVICES	• Company Registration Information • Google Map/GIS Data • Citizen Information Information • Government Specific
SHARED NETWORK & INFRASTRUCTURE	DATA CENTER & CLOUD
GOVERNMENT POLICIES & SKILLS	JHARKHAND MUNICIPALS ACT AND ITS FURTHER NOTIFICATIONS JHARKHAND ACCOUNTING MANUAL

E-GOVERNANCE FRAMEWORK

1.7 Overview

Despite all efforts, public administration still faces challenges due to a lack of timely information. Governments have always tried to combat the problem by constantly changing processes and methodologies. Unfortunately this move did not help change the system as expected. Governments all across the globe are now paying attention to the use of technology to create a common platform for both citizens and government. This will avoid any communication gap and delay in delivery of service.

The municipal corporations are the leading institutions that provide local and citizen-centric services to the public living in cities. Their activities are regulated by regulations in urban planning, building construction, transportation, infrastructure, and mapping. To carry out these duties effectively, municipal governing authorities must be able to use spatial information effectively.

Since organizations and citizens make wide use of opportunities offered through digital platforms, it has become one of the priorities of governments all over to make use of the internet in various fields. The provision of services to citizens is one of the most significant responsibilities of municipal corporations, which involves interaction with citizens. Therefore, it easily fits the profile of the main target areas of e-governance.

Figure 2: clusters of e-governance

The very goal of the system is to encourage participation of citizens in local governance and thereby eliminate middleman and make the system transparent and prompt. As detailed in the above picture all the components of the system has to actively interface with the system in order to achieve greater goal, It is very necessary to develop a system which is citizen facing.

1.7 Salient Features of the e-Governance Portal

- Single Window Access
- Use of icons/pictures/images and graphical interface
- Alternative lighter Home Page
- Consistent and Easy to Use interface
- Easy to navigate, search and browse
- Personalization/ Customization of the content

- Adaption of the look highlighting contents of importance
- Interface for the updating of information and service delivery for departments
- Well-designed home page conveying theme and purpose. Aesthetic and Ergonomic design
- Single sign on access all information and services on the portal
- An Interface to user to set/reset his/her own password. The portal should allow the user to fulfill his needs, wherever possible, through self-service
- Digital Dashboards to display key information on a single screen and allow an overall idea of the current status
- Comprehensive Content Management System to provide accurate and up-to-date content
- Grievance Management System Facility to register grievances of the stakeholders
- Feedback and analysis mechanism for constant improvement and enrichment of the portal for user satisfaction
- Search – A Search feature for user to find the relevant information or service on portal
- Alerts – Provision for user to receive SMS and e-mail alerts, based on the preferences entered by him/her
- Browser compatibility – Web pages will be designed to be compatible with commonly available screen readers

1.9 Abbreviations and Acronym

S.NO.	ABBREVIATIONS	FULL FORM
1	AM	ASSET MANAGEMENT
2	AOI	AUTOMATED OPTICAL INSPECTION
3	APAR	ANNUAL PERFORMANCE ASSESSMENT REPORT
4	APIs	APPLICATION PROGRAMMING INTERFACE
5	BCP	BUSINESS CONTINUITY PLAN
7	CFC	CUSTOMER FULFILLMENT CENTRE
8	CFO	CHIEF FINANCIAL OFFICER
9	CSK	CUSTOMER SERVICE KENDRA
10	CSR	CORPORATE SOCIAL RESPONSIBILITY
11	CSS	CASCADING STYLE SHEET
12	CV	CONTRA VOUCHER
13	DCB	DEMAND COLLECTION BALANCE
14	DD	DEMAND DRAFT
15	DDoS	DISTRIBUTED DENIAL-OF-SERVICE
16	DMS	DOCUMENT MANAGEMENT SYSTEM
17	DOB	DATE OF BIRTH
18	DoS	DENIAL-OF-SERVICE
19	DR	DISASTER RECOVERY
20	DSR	DYNAMIC SOURCE ROUTING
21	ECS	ELECTRONIC CLEARING SERVICE
22	EDoS	ECONOMIC DENIAL-OF-SUSTAINABILITY
23	E-GOVERNANCE	ELECTRONIC GOVERNANCE
24	E-MAIL	ELECTRONIC MAIL
25	EO	EXECUTIVE OFFICER
26	ESR	EVALUATION SUMMARY REPORT
27	FDR	FIXED DEPOSIT RECEIPT
28	FY	FINANCIAL/ FISCAL YEAR
29	G2B	GOVERNMENT TO BUSINESS
30	G2C	GOVERNMENT TO CITIZEN
31	G2G	GOVERNMENT TO GOVERNMENT
32	GEM	GOVERNMENT E-MARKETPLACE
33	GIS	GEOGRAPHIC INFORMATION SYSTEM
34	GPS	GLOBAL POSITIONING SYSTEM
35	GRN	GOODS RECEIVED NOTE
36	HOD	HEAD OF DEPARTMENT
37	HRMS	HUMAN RESOURCE MANAGEMENT SYSTEM
38	ICMP	INTERNET CONTROL MESSAGE PROTOCOL
39	ICT	INFORMATION COMMUNICATION TECHNOLOGY
40	ID	IDENTITY
41	IOT	INTERNET OF THINGS
42	IT	INFORMATION TECHNOLOGY
43	JSK	JAN SUVIDHA KENDRA
44	JUIDCO	JHARKHAND URBAN INFRASTRUCTURE DEVELOPMENT COMPANY LTD
45	KPIs	KEY PERFORMANCE INDICATORS
46	KYC	KNOW YOUR CUSTOMER
47	LOA	LETTER OF AWARD
48	MACP	MODIFIED ASSURED CAREER PROGRAM
49	MC	MUNICIPAL CORPORATION
50	MIS	MANAGEMENT INFORMATION SYSTEM

51	MMP	MISSION MODE PROJECT
52	MVC	MODEL VIEW CONTROLLER
53	NAC	NOTIFIED AREA COMMITTEE
54	NEFT	NATIONAL ELECTRONIC FUND TRANSFER
55	NMAM	NATIONAL MUNICIPAL ACCOUNTING MANUAL
56	NOC	NO OBJECTION CERTIFICATE
57	OS	OPERATING SYSTEM
58	P&L	PROFIT & LOSS
59	PAN	PERMANENT ACCOUNT NUMBER
60	PF	PROVIDENT FUND
61	PMC	PROJECT MANAGEMENT CONTRACT
62	PO	PURCHASE ORDER
63	PR	PURCHASE REQUISITION
64	PT	PROPERTY TAX
65	R&I	RECEIPT AND ISSUE SECTION
66	RAID	REDUNDANT ARRAY OF INEXPENSIVE DISK
67	RFID	RADIO FREQUENCY IDENTIFICATION DEVICE
68	RFQ	REQUEST FOR QUOTE
69	RMS	REVENUE MANAGEMENT SYSTEM
70	RO	REVENUE OFFICER
71	RPO	RECOVERY POINT OBJECTIVE
72	RTGS	REAL TIME GROSS SETTLEMENT
73	RTO	RECOVERY TIME OBJECTIVE
74	RV	RECEIPT VOUCHER
75	SAF	SELF ASSESSMENT FORM
76	SDLC	SOFTWARE DEVELOPMENT LIFE CYCLE
77	SLA	SERVICE LEVEL AGREEMENT
78	SMS	SHORT MESSAGE SERVICE
79	SOA	SERVICE ORIENTED ARCHITECTURE
80	SOR	SYSTEM OF RECORD
81	SPMS	SMART PARKING MANAGEMENT SYSTEM
82	SRS	SOFTWARE REQUIREMENTS SPECIFICATION
83	SUDA	STATE URBAN DEVELOPMENT AGENCY
84	TAN	TAX DEDUCTION ACCOUNT NUMBER
85	TC	TOTAL COLLECTION
86	TD	TOTAL DEMAND
87	TDS	TAX DEDUCTION AT SOURCE
88	TIN	TAX IDENTIFICATION NUMBER
89	TOR	TERMS OF REFERENCE
90	TPIA	THIRD PARTY INSPECTION AGENCY
91	UD&HD	URBAN DEVELOPMENT & HOUSING DEVELOPMENT
92	UDD	URBAN DEVELOPMENT DEPARTMENT
93	ULB	URBAN LOCAL BODIES
94	UI	USER INTERFACE
95	WEB	WORLD WIDE WEB
96	WoG	WHOLE OF GOVERNMENT
97	WSR	WORK SERVICE REQUEST
98	XSS	CROSS-SITE-SCRIPTING
99	XXE	XML EXTERNAL ENTITIES

1.10 References

- Jharkhand Municipal Act 2011
- Jharkhand Building Bylaws 2016 (Amendment 1 & Amendment 2)
- Advertisement Regulation, Jharkhand
- Lodge, Banquet Hall, Hostel and Dharamshala Regulations, Jharkhand
- Jharkhand Municipal Trade License Regulation 2017
- Jharkhand Municipal Tax Payment (Time, Process and Recovery) Act 2017
- Birth and Death Registration Act 1969
- Jharkhand Birth and Death Registrations Rules, Jharkhand
- Jharkhand Apartment (Flat) Ownership Act 2011
- Jharkhand Municipal Act Amendment 2016 (Property Tax)
- Jharkhand Municipal Act Amendment 2022 (Property Tax)
- Jharkhand Accounts Manual (Part 'A' and Part 'B')
- Right to Guarantee Service, Jharkhand
- Solid Waste Management Rules 2016
- Jharkhand Solid Waste User Charge Notification 2016
- Right to Information Act 2005
- Jharkhand Rainwater Harvesting Regulations 2017
- Ranchi City Data Policy 2020

2. Overview of Modules

Therefore, the system is proposed to be developed in multiple parts for multiple perspectives:

- Citizen Centric Services
- Business Centric Services
- Public Administration Services
- Departmental Services

2.1 Citizen Centric Services:

Citizen-centric services are focused on services where municipal corporations have direct interaction with residents. Both personal and business services come under the purview of this service. The details of the sub-domains of resident-centric services can be summarized from the diagram below.

Figure 3: Subdomains of resident centric services

- It is desired that every citizen who require some kind of service from the system need to register and have a citizen id.

- Citizens have a dashboard to keep track of the services.
- Citizen dashboard is the place where the citizen can apply for some service and get all kinds of notifications.

2.1.1 Property Tax

Property tax is a financial charge on a property which the owner of that property is required to pay. This financial charge is imposed by the municipal corporations on the property owners in exchange for the services that the municipal corporations provide within their jurisdiction area.

2.1.1.2 Property Tax Management System

Property tax management system is a sub-domain of resident-centric services. This module of the application system is designed to automate the entire process of the property tax system. Through robust application design, the property tax management system facilitates municipal corporations in identifying properties within their jurisdiction area, property classification, tax calculation, tax collection, collected tax reconciliation, property tax reports, and other specific (customized to municipal requirements) services pertaining to property taxes.

2.1.1.3 Enlisting and Classification of Properties

Identification of properties is a major challenge for municipal corporations falling under their jurisdiction. Field personnel, also known as tax collectors, work for the municipal corporations and inspect properties in the different wards. Tax collectors have the legal right to verify the properties in a given ward. Tax collector inspection helps municipal corporations identify properties with valid municipality holding numbers and unknown properties.

Tax collectors sharing their data with municipalities help reveal hidden facts about properties in their areas to local administrators. This data of known and unknown properties is uploaded to the property tax management system; the application processes it to generate structured data of properties in the municipal area. The execution also helps municipalities to auto generate holding numbers for unlisted properties thus establishing an enlisted, classified and structured property database of a municipal corporation.

2.1.1.4 Classification of Properties

Based upon the survey data received by the tax collectors the property tax management system classifies the properties as residential and commercial property. Furthermore, properties are classified according to their construction type, their location, and their business type (if they are commercial properties). This classification further helps the application system in calculating the property tax based upon the tax calculation rules of municipal corporations.

2.1.1.5 Property Tax Calculation Rules

Property tax calculation rules differ from municipality to municipality. Therefore the system will be designed in such a way that every municipality has its own set of rules to apply. Calculating tax rules will take precedence over default rules.

2.1.1.6 Property Tax Collection Mechanism

Property taxes will be calculated periodically (preferably annually). Once a property tax is generated, the citizen has multiple options for payment, viz.: -

- Online Mode Collection.
- Door to Door Collection.
- Collection via Jan Suvidha Kendra's.

2.1.1.7 Online Mode Collection

In an online mode of property tax collection, local citizens can view and pay their property taxes by visiting respective municipal websites and pay taxes using digital payment methods. An electronic receipt of payment with the valid digital signature of the authorized municipal authority is generated and provided to the citizen for his/her personal records.

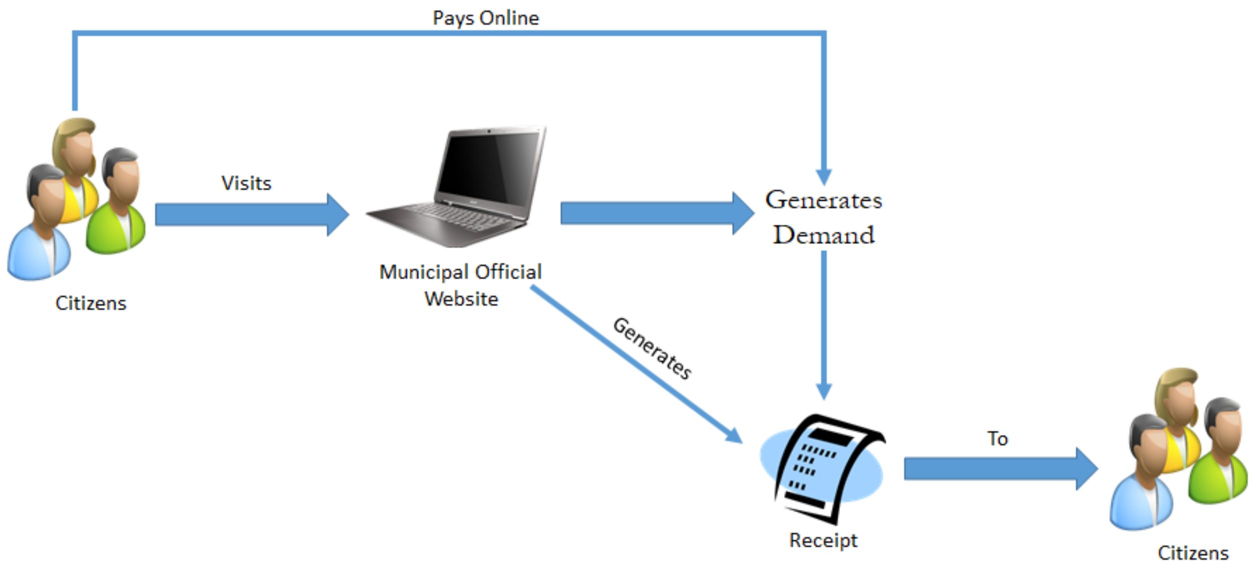


Figure 4: Property tax online payment

2.1.1.8 Door to Door Collection

Through a door-to-door collection system, the municipal tax collectors, using an internet-enabled tablet and mobile Bluetooth printer, visit the local citizens' homes and inform them about their property tax dues, which are collected in cash, check, or demand draft. A temporary printed receipt of collection is delivered against their tax payment.

These tax collectors then return to their reporting office to submit their collected tax amount and its allied details. The reporting office reconciles the details and amount received by the tax collectors and hands them the final signed receipts of paid taxes by the local citizens. Following this, the tax collectors deliver the final receipts to the local citizens from whom they have collected their taxes.

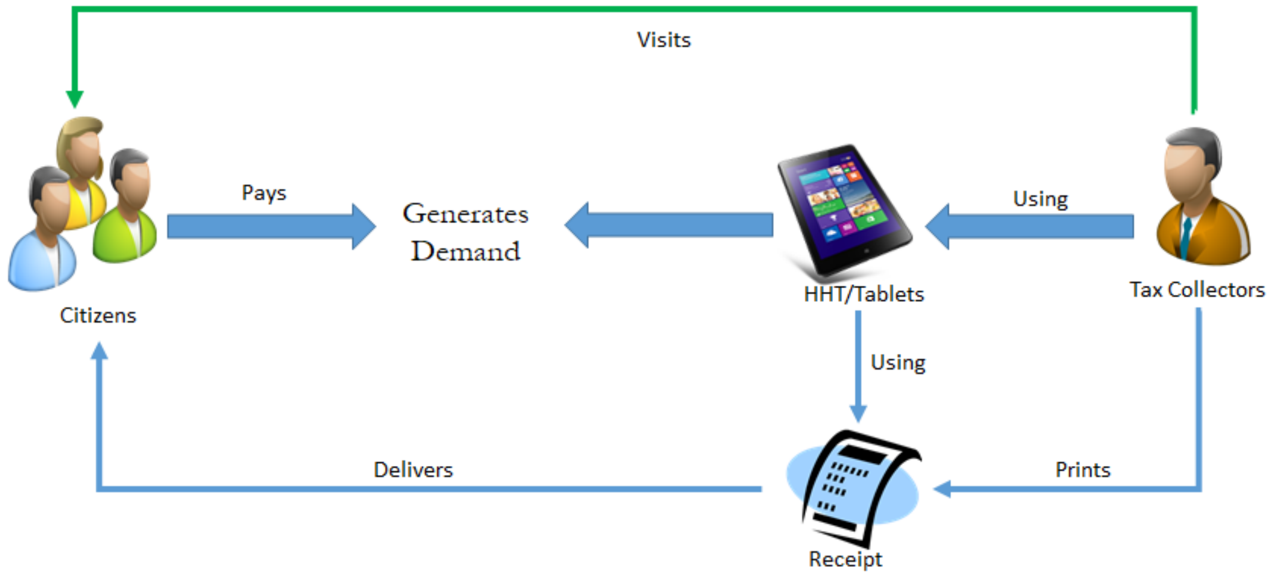


Figure 5: Door to Door Property Tax Collection

Any penalty or concession will be taken care of when a citizen opts to pay. A receipt will be issued to the citizen as soon as he/she pays the amount. An SMS and email will also be sent for confirmation.

2.1.1.9 Collection via Jan Suvidha Kendra's

A Jan Suvidha Kendra (JSK) is a special office of municipal corporations dedicated to the delivery of resident-centric services of municipalities. Citizen can pay property tax at Jan Suvidha Kendras in cash, cheque, and demand draft or by credit or debit card. A duly signed receipt of paid tax is delivered simultaneously by the Jan Suvidha Kendra.

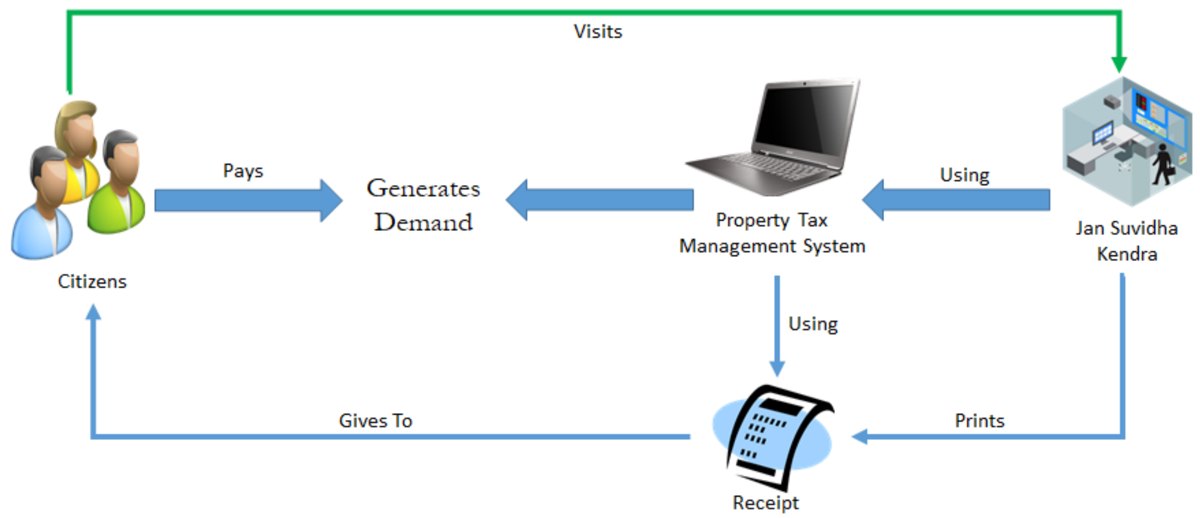


Figure 6: Property tax collection via Jan Suvidha Kendra's

2.1.1.10 Property Tax Management System - MIS Reports

A variety of customized reports stating various details and records of the property tax management system is designed and developed as per requirements of officials, executives and administrators of municipal corporations. Certain reports are also designed to be viewed by citizens for the ease of their knowledge and information retrieval.

2.1.2 Water User Charges

A water user charge is a financial charge that is billed to a local resident based upon the consumption of water supplied to them by the municipal corporation of their area.

2.1.1.12 New Water Connection

New water connection is an official request by a local resident to their municipal corporation seeking a new water connection for their premises.

2.1.1.13 Regularization of Water Connection

The act of regularizing a water connection through which an unknown, old, or illegal water connection is present in a citizen's premises when it is recorded and billed by municipal corporations is referred to as regularization of water connection.

2.1.1.14 Water User Charges Management System

Water user charges management system is another sub-domain of resident centric services. Essentially, this module of the application system automates the entire process of managing water charges. The robust application design of this water charges management system makes it easy for municipal corporations to provide new water connections, regularize old or illegal water connections, and bill and collect water charges from residents within their jurisdiction areas.

2.1.1.15 New Water Connection Mechanism

As discussed above, a new water connection is an official request by a local resident to their municipal corporation seeking a new water connection for their premises? The e-municipal application system provides three different modes for the application of each connection request. These are: -

- Online mode of application.
- On premises application through tax collectors.
- Application via Jan Suvidha Kendra’s.

2.1.1.16 Online Mode of Application

In the online mode of application citizens visit the official website of their municipal corporation. In order to apply for a new water connection, they fill out an online form and pay the connection fee online. Upon successful payment of a newly established water connection fee, an acknowledgement is generated which should be kept by the citizen for future reference. As well as serving as an acknowledgement, it also serves as a ticket for new water connection requests to the municipal authorities.

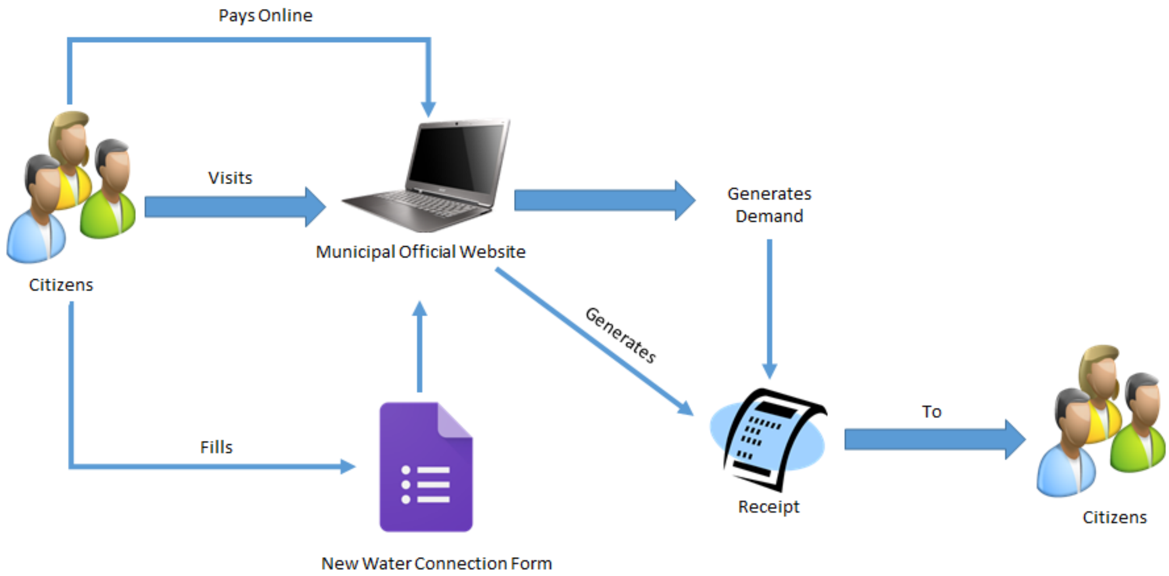


Figure 7: Online procedure for new water connection

2.1.17 On Premises Application Through Tax Collectors

Citizens can submit for a new water connection request via the tax collectors of their ward whenever they visit their premises for any official proceedings or through direct contact. Area tax collectors have privileged access to fill out and submit forms with basic details on behalf of consumers. They collect new connection charges in cash, check or demand draft. An electronic printout of the acknowledgement receipt is delivered by the tax collectors to the citizens for future reference and records.

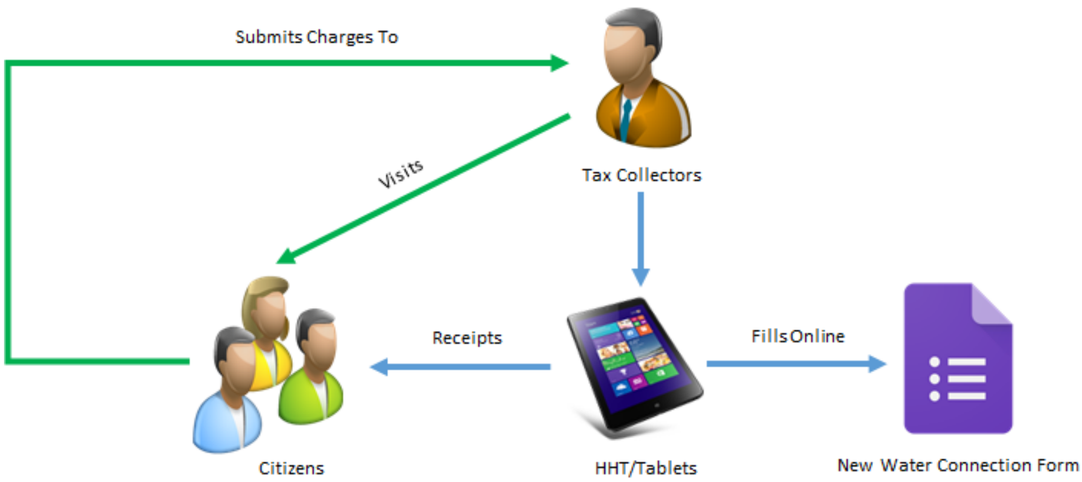


Figure 8: New water connection through Tax Collectors

2.1.18 New Water Connection through Jan Suvidha Kendra

Citizens can also apply for a new water connection by submitting and paying their fees at Jan Suvidha Kendra's.

2.1.19 Regularization of Old or Illegal Water Connection

Whenever the municipal corporation identifies a water connection that has not been billed and initiates a process to authorize it to begin billing for water consumption, it is referred to as regularization of water connection.

Municipal corporations inspect old or illegal water connections at citizens' premises through their tax collectors and other authorized flying officers.

Regularization of water connections can be done in a similar manner i.e. by filling a regularization form and paying the required fee at the Jan Suvidha Kendra's, online or via tax collectors.

2.1.20. Water Billings

Citizens are required to install a water meter at their premises. The purpose of this water meter is to calculate the water consumption of citizens. Area tax collectors are authorized to visit the citizen's premises monthly to note down the water consumptions and submit the details in the e-municipal system. The e-governance application system calculates the water bills based on the meter readings provided by the tax collectors and delivers them to citizens via SMS, email, online and printed copies.

2.1.21 Collection of Water Bills

Water bills can be collected through following modes by the citizens: -

- On premises bills paid to area tax collectors.
- Bills paid at Jan Suvidha Kendra.
- Online water bill payments.

2.1.3 Solid Waste User Charges

Solid waste charges are financial charges levied by municipal corporations against the disposal of household wastes of citizens.

2.1.3.1 Collection of Solid Waste User Charges

Solid waste is disposed by a team of municipal employees who collect waste from citizens' homes and dump it for disposal. These field employees carry with them an internet enabled HHT device or a tablet with printing facilities. On site, citizens pay for waste in cash, check, or demand draft. Receipts are then delivered to the citizens.

The Solid waste charges data is synchronized in real time with the e-governance servers, providing administrators with a real-time overview of collections.

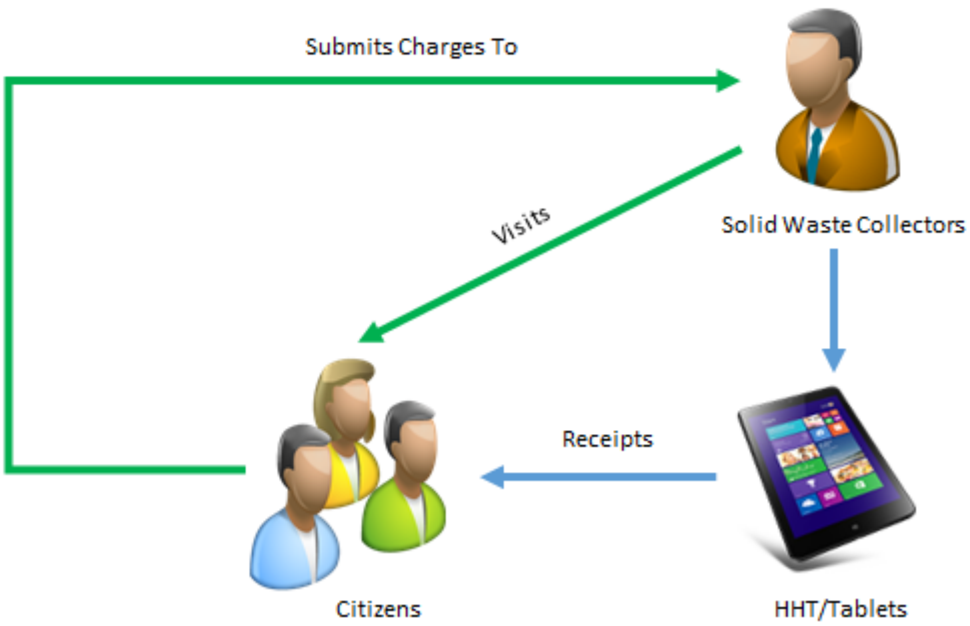


Figure9: Solid Waste Charges Collection

2.1.4 Birth and Death Certificates

Birth and death certificates are issued by municipal corporations to record the number of births and deaths within their municipal boundaries. This creates a structured database of people and population residing in their areas.

A birth and death certificate on the other hand is a mandatory requirement in various government and non-government procedures for citizens.

2.1.4.1 Birth Certificate

A birth certificate is a document stating proof of a child's birth along with a gender determination, and is issued by the municipal corporation in a particular area.

2.1.4.2 Online Birth Certificate Management

E-Governance facilitates the process of applying for and generating a birth certificate for a newly born child through the use of e-platforms. Parents of newly born children can apply for their child's birth certificate online, and the application is processed by administrators through an e-municipal application system.

2.1.4.3 Online Death Certificate Management

The e-government system allows for the application and generation of a death certificate for an individual using e-platforms. Through these platforms, relatives of the deceased individual can apply for his/her death certificate online; the application is processed and the death certificate is generated by the administrators using e-municipal applications.

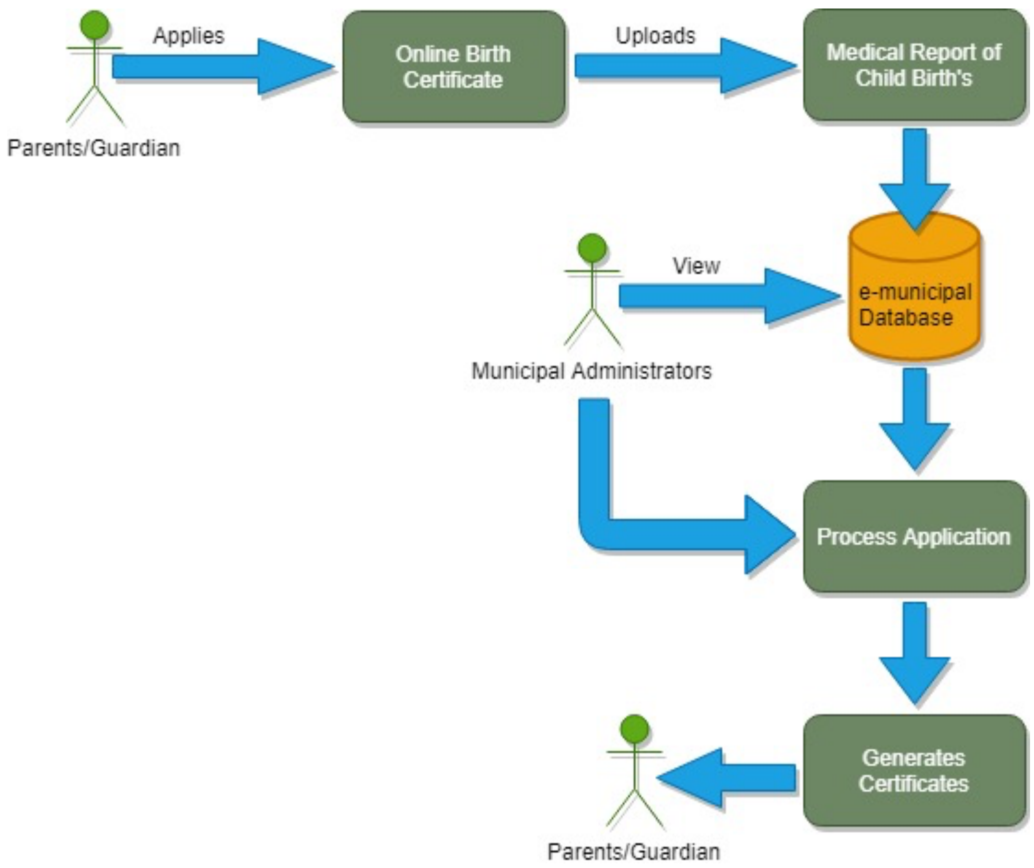


Figure 10: Online Birth Certificate Management System

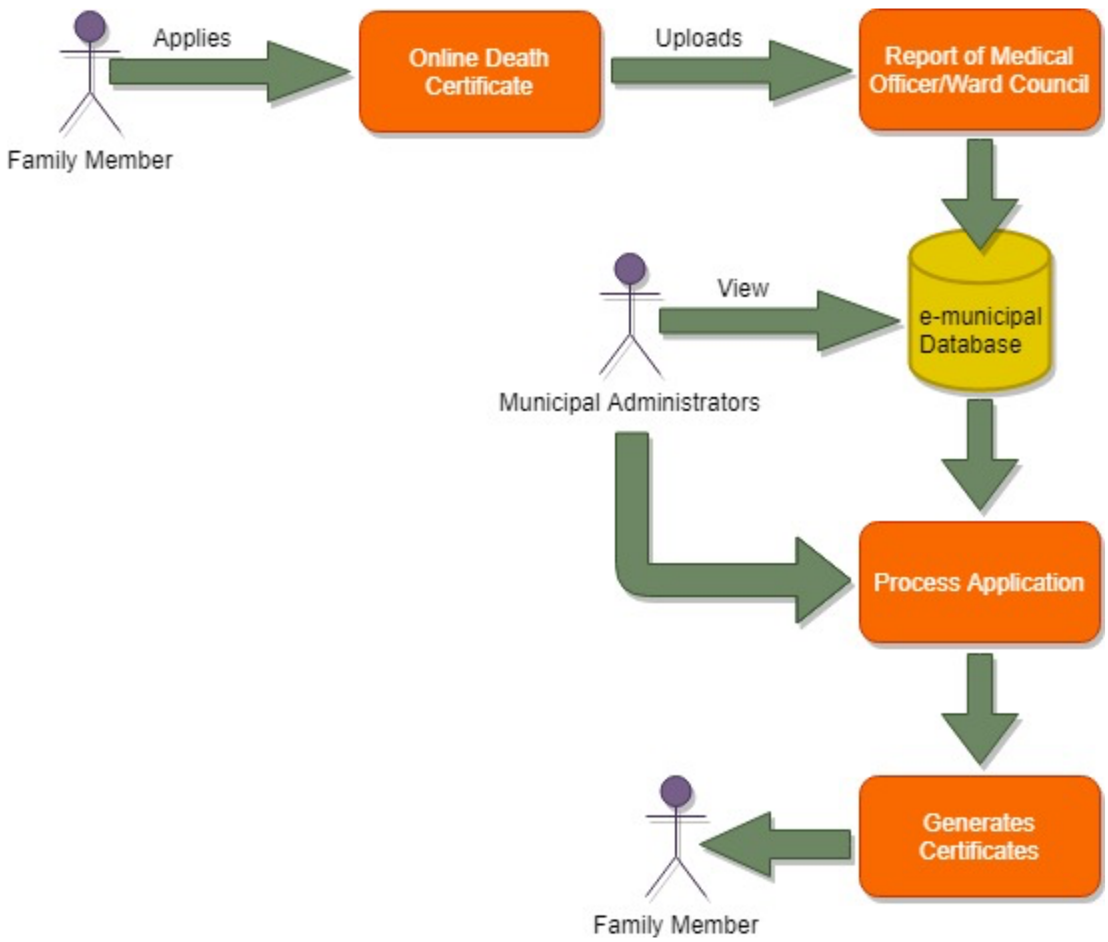


Figure 21: Online Death Certificate Management System

2.2 Business Centric Services

2.2.1 Trade License

Trade licenses are certificates granting citizens permission to conduct a particular trade or business for which they have applied for the license.

2.2.1.2 Trade License Management System

Trade license management is a module of e-municipal that automates the process for applying, surrendering, approving, rejecting, and receiving trade licenses online through the e-municipal application system.

2.2.1.3 Online Trade License Application

Citizens interested in particular businesses or trades visit the official website of their local municipal corporation and apply for a license. The online application for a business license consists of the applicant's personal and business details. It is followed by a payment method for the licensing fee which is paid to the municipal corporation.

License applications are sent to the concerned municipal authorities. Applicants receive notification via SMS and email whether the license has been issued or rejected. In order to view and download their issued license, the citizen re-visits the official website.

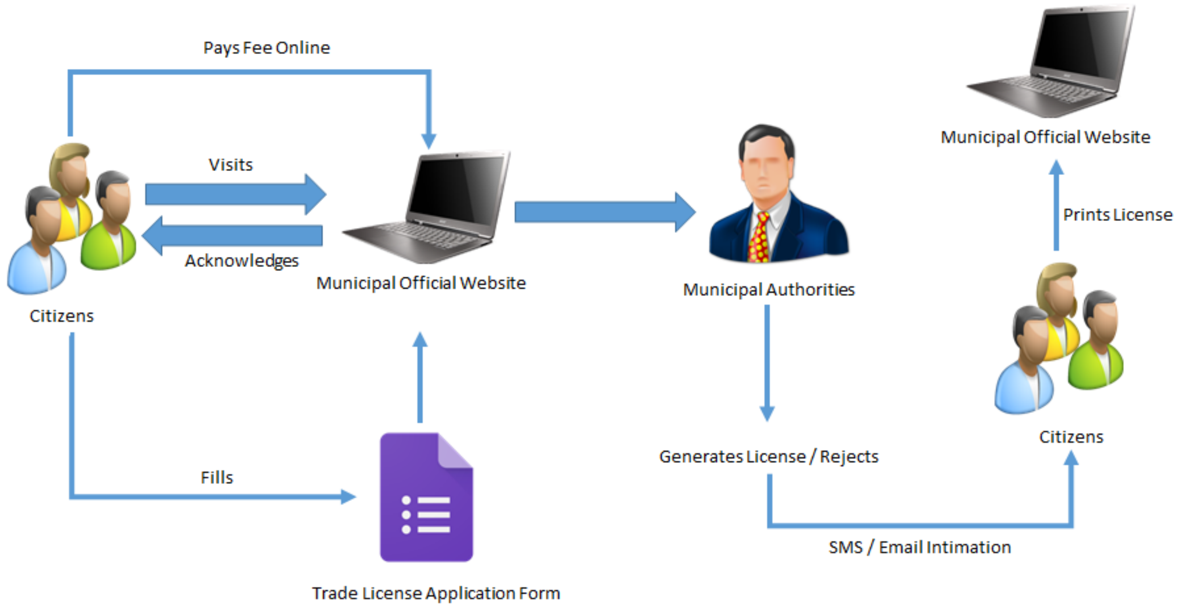


Figure 32: Online trade license application procedure

2.2.1.4 Online Trade License Renewal

An issued trade license can be renewed after its date of validity in the same manner as for a new application. The holder of the license sends the renewal request and fee via the official website of their municipality. The municipal administrators renew or reject the application using the trade license management system.

2.2.1.5 Revoking of Trade License

The e-municipal system gives municipal administrators the ability to revoke a particular trade license of a citizen for a valid reason and notify the citizen using digital formats like email and SMS.

2.2.1.6 Modes of Trade License Application

A trade license in e-municipal system can be applied in the following modes by the citizen: -

- Online using the official website of Municipal Corporation.
- Jan Suvidha Kendra’s.

2.2.2 Building Plan Approval

Building plan approvals are certificates that grant permission for civil construction based on construction plans submitted by municipal corporations to their citizens.

2.2.2.1 Building Plan Approval System

The building plan approval system of e-municipal automates the process of applying for building permits for houses, businesses, etc. Under newly created or modified categories. Through the building plan approval system, municipal administrators can review construction plans and approve or reject them.

2.2.2.2 Online Building Plan Application

Citizens planning for a new construction or modification to an earlier construction apply for municipal approval using this building plan approval system. On the other hand, citizens must visit the official website of their municipal corporation and fill out the building construction approval form followed by the submission of an architectural plan and the applicable fees. Municipal authorities, on the other hand, view, inspect, approve or reject the request based on valid reasons. An intimation to the citizens regarding their application status is provided using automated digital communications i.e. email and SMS.

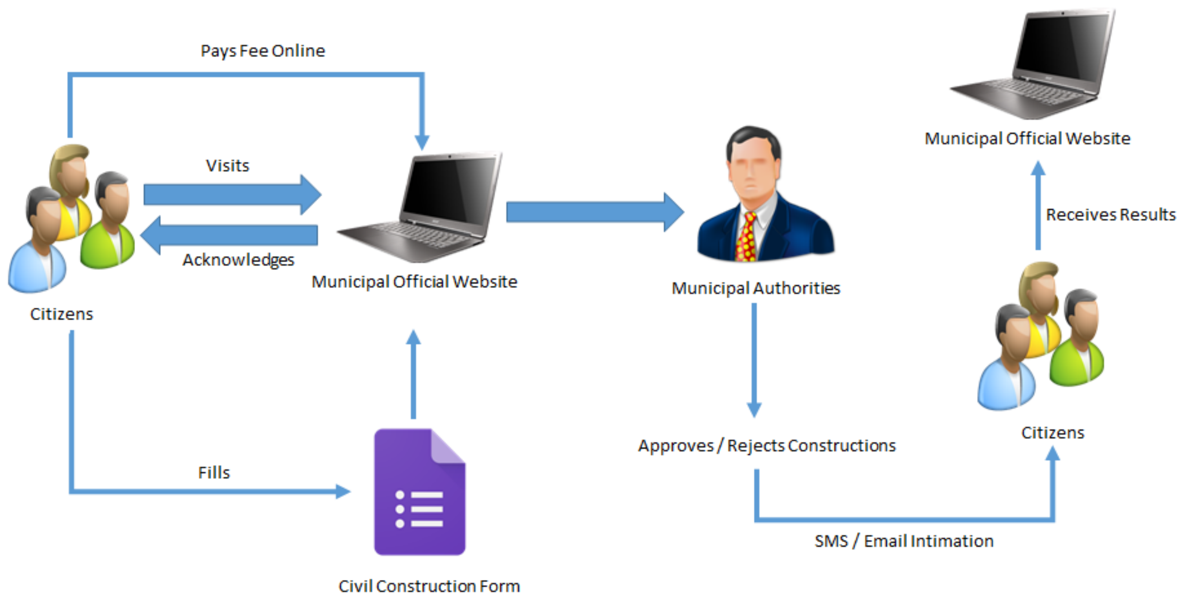


Figure 43: Online building plan application system

2.2.2.3 Modes of Building Plan Application

A building plan application in e-municipal system can be applied in the following modes by the citizen: -

- Online using the official website of Municipal Corporation.
- Jan Suvidha Kendra's.

2.2.3 Urban/Public Transport Management System

- Where the vehicles are now.
- How the vehicles are being drive.
- How much wasted fuel.
- How secure against theft.
- Are the drivers speeding?
- What the drivers do during the day.
- How much time is wasted in traffic?
- How often the drivers are late.
- Can organization advise clients of location status?
- How long they have spent at client location

Management of drivers and vehicles is one of the most crucial elements of the vehicle business. This is not just for minimizing costs, but also for keeping the organizations operating as efficiently as possible.

It is expensive to buy, equip and maintain vehicles, and no matter how many vehicles an organization has, vehicle costs probably make up most of the budget. It is common knowledge in the industry that the operating cost of most unmanaged vehicles is 10% to 15% higher than it should be. Besides the depreciation on the vehicles themselves, vehicle costs include items such as licenses, permits, fuel, maintenance, repairs, tyres, tolls, accidents, and fines. Based on the average running cost of a vehicle, it is probable that the vehicles are each costing you between Rs. 10, 000 and Rs. 30, 000 per year more than they need to.

Vehicle administration is time consuming and laborious. We all know how many forms need to be completed and how much time it takes at traffic departments whenever we need to handle anything related to vehicles or drivers; however, not everyone is aware of the extra requirements, such as the number of copies, the number of photos, the number of copies of ID books, the number of driving licenses, etc. This would necessitate multiple trips.

And last, but not least, organizations need a vehicle management system so that they can make informed decisions about the running of their vehicles. Are they using the right vehicles? Are they too expensive to maintain? Are they breaking down too often? At what point should they replace their vehicles, and when they do, which vehicle should they replace them with? Are the vehicles too heavy on fuel, and if they think they are, how would they know, and what do they compare the fuel consumption to? Can they identify possible fraudulent transactions?

2.2.3.1 Do Organization have the information they need?

- To increase productivity levels of your field operations.
- To increase service levels to your customer.

- To improve your on-demand responsiveness.
- To reduce operational costs and lower risk.
- To improve transparency.

2.2.4 Vehicle Management System

A vehicle management system is an optimal planning, supervision, and control system that monitors and controls the operations of vehicles based on the available resources. Considering internal and external influences, a special focus is put on the integration of organizational processes with modern information systems.

Modern markets are highly competitive, so every advantage counts. Management systems can provide significant savings, costs and operational efficiencies for organizations that rely upon vehicles fleets. With the right vehicle management system, one can see a return on the investments in a year or less in many cases as the efficiency of the organization increases.

2.2.4.1 Challenges

Figure 14: Vehicle management challenges

2.2.4.2 GPS for Vehicle Management System

A vehicle management system combines the use of automatic location of individual vehicles with devices that collect these vehicle data for a comprehensive picture of vehicle locations. Modern vehicle tracking systems commonly use GPS technology for locating the vehicle. Vehicle information can be viewed on electronic maps via the Internet or specialized software in computer systems and mobile devices.

2.2.4.3 Technical Architecture - GPS for Vehicle Management System

A GPS satellite tracks the location of vehicles equipped with GPS tracking devices and other information like the speed and idle status of the vehicle. GSM/GPRS/3G technologies are used to communicate these and other information to tracking servers. Vehicle owners or organizations can view these details using personal computers, Smartphones, tablets or other web enabled devices.

Figure 15: Technical architecture of GPS tracking of vehicles

2.2.4.4 Tracking Devices

A tracking device is a device that can be plugged into your vehicle in two ways: through the OBD port or through hardwiring. This equipment is installed by a professional expert, allowing you to track the vehicles using desktops, tablets or any internet enabled device.

Figure16: GPS tracking devices

2.2.4.5 Tracking Devices - Property

Speed Alerts

Set alert when the vehicle exceeds the posted speed limit of whatever road it is currently travelling on.

Speed Threshold

Set alert whenever the vehicle exceeds a certain speed.

Harsh Braking

Tracks the rate of deceleration of the vehicle, a major indicator of aggressive braking, and alerts when the vehicle exceeds a safe threshold.

Rapid Acceleration

Another major indicator of aggressive driving. Track the rate of acceleration of the vehicle and get alerts when the vehicle exceeds a safe threshold.

2.2.4.6 Vehicle Diagnostics

Geophone

Configured an alert for the vehicle travels into, out of, or both in and out of a customizable area. This can be useful for tracking employees with specific locations they must visit, or a driver on their commute to and from organization premises.

Maintenance Alerts

Easily schedule maintenance and reminders at regular intervals by either time passed or miles travelled for each vehicle. This feature makes it easy to keep on top of maintenance for both individual vehicles and fleets of any size.

Check Engine

Detect when the vehicles check engine lights on and sends the specific engine code so that one easily diagnoses the problem.

Ignition Events

The device instantly tracks when vehicle turns on and off.

2.2.4.7 Vehicle Security

Tampering

Set alert whenever a vehicle regains power after previously lost power i.e. the device was unplugged and plugged back in.

Tow

Set alerts whenever the vehicle is being towed, meaning that is being moved while the ignition is off.

Idle

The device can be configured to alert when the vehicle has been left stationary with the ignition on, which can be expensive and wasteful.

Battery Backup

Battery backup system provide up to an hour of power when unplugged, and will remain immediately alert when they have been tampered with.

2.2.5 Public Administration Services:

These services deal with the public's grievances against municipal corporations and their redress or resolution by the municipal governments in order to ensure better services and functionalities for the municipal departments and their employees.

2.2.5.1 Grievance Management System

Grievance management systems are modules of the e-municipal system that automate the process of grievance registration, processing, and resolution output through an efficient e-processing mechanism.

2.2.5.2 Types of grievances of municipal corporations

Municipal grievance can be of following categories: -

- Property tax and self-assessment issues.
- Water connections and bills issues.
- Municipal trade licenses issues.
- Waste collection and bills issues.

2.2.5.3 e-municipal grievance methodologies

- Redressal through call centers.
- Online grievance redressals.
- SMS based redressals.

2.2.5.4 Redressal through Call Centers

Grievances are submitted to call centers and the receiving executives tries to resolve the issue during the call. If on call resolution is not possible then a ticket is raised for the citizens and the matter is escalated to municipal authorities who then provide the solutions to the citizens.

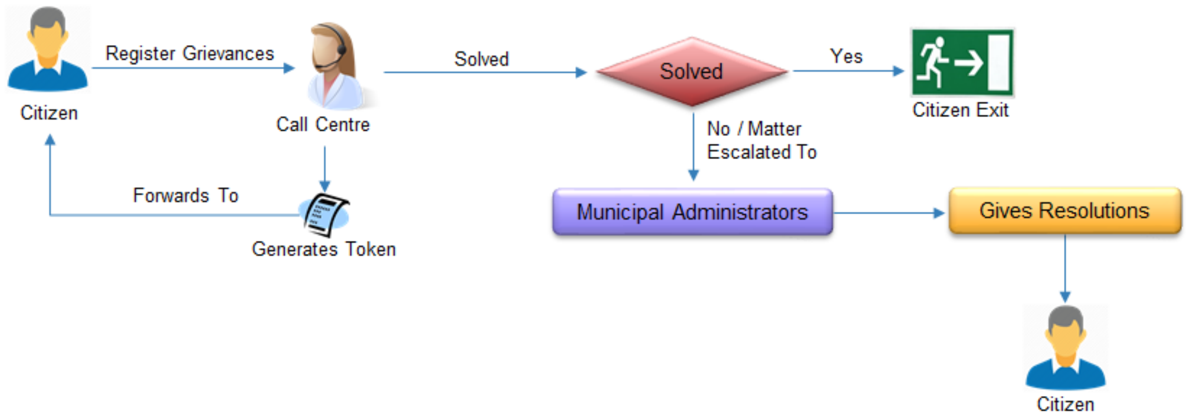


Figure 5: Grievance redressal through call centres

2.2.5.5 Online Grievance Redressals

Citizen can register their grievances through the official web portal of their municipal corporation. The application system generates a ticket for their submitted grievance and the matter is escalated to municipal authorities. Municipal authorities provide the resolutions and publish it on the web portals.

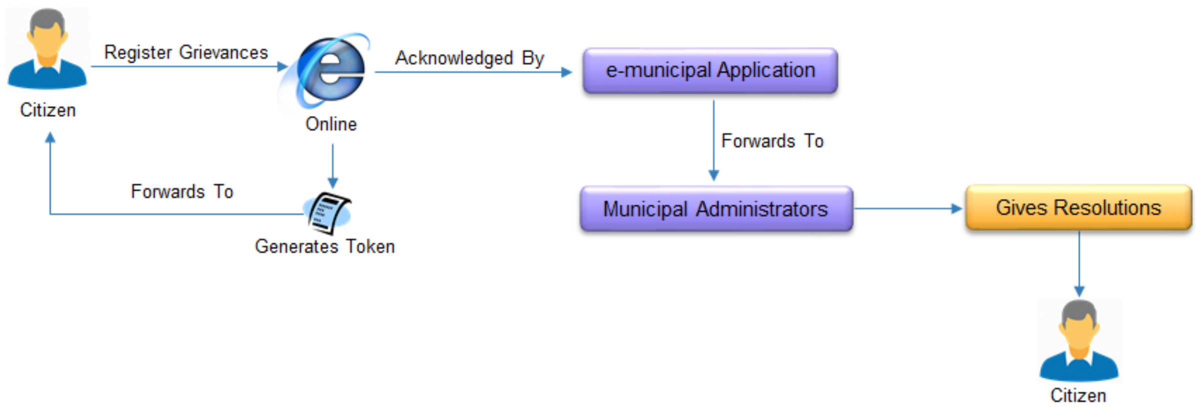


Figure 6: Online grievance redressals

2.2.5.6 SMS Based Redressals

Citizen can register their grievances through the SMS service of their municipal corporation. The application system generates a ticket for their submitted grievance and the matter is escalated to municipal authorities. Municipal authorities provide the resolutions and publish it on the web portals with a SMS intimation of resolutions to the citizens.

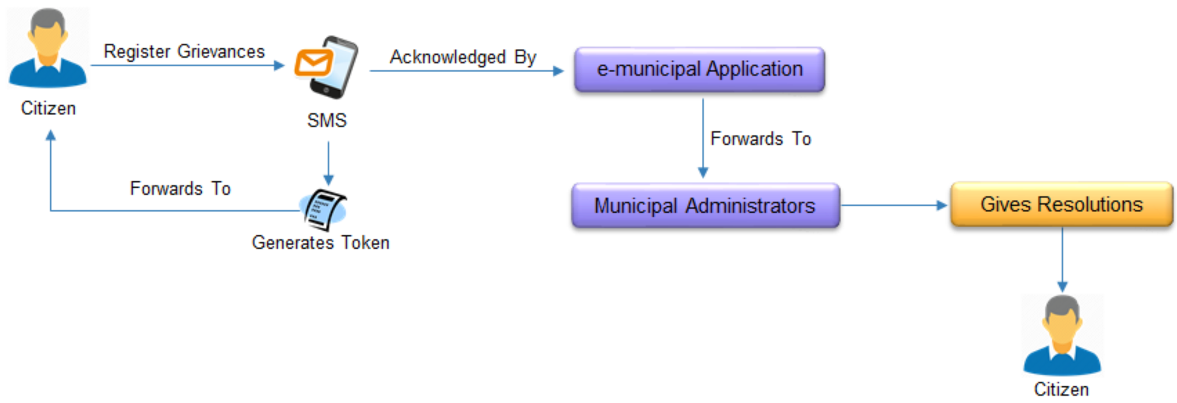


Figure 7: SMS based grievance redressals

2.2.6 Departmental Services

Departmental or official services are a cluster that concentrates on the internal work process of the departments of municipal corporations. This cluster is not associated to any citizen centric services rather it helps the municipalities to organize their departments that assists them in seamless processing thus helping in making a robust work culture of the organization.

2.2.6.1 Types of Departmental Services

- Asset Management.
- Inventory Management.
- HRMS & Payroll Management.
- Works Management.

2.2.6.2 Asset Management

Asset management is defined as the "coordinated activity of an organization to realize value from assets". In turn, Assets are defined as follows: "An asset is an item, thing or entity that has potential or actual value to an organization". This is deliberately wider than physical assets, which are an increasing focus for more organizations.

Asset Management involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve organizational objectives. This balancing might need to be considered over different timeframes.

Asset management also enables an organization to examine the need for, and performance of, assets and asset systems at different levels. Additionally, it enables the application of analytical approaches towards managing an asset over the different stages of its life cycle (which can start with the concept of the need for the asset, through to its disposal, and includes the management of any potential post disposal liabilities).

Asset Management is the art and science of making the right decisions and optimizing the delivery of value. A common objective is to minimize the whole life cost of assets. However, there may be other critical factors such as risk or business continuity to be considered objectively in this decision making.

2.2.6.3 Asset Management System

Asset management system is a module of the e-municipal application system which is designed to provide a solution for managing information related to assets and liabilities. Therefore, this system acts as a supporter for municipal authorities to schedule and manage their assets and liabilities.

2.2.6.4 Modules of Asset Management System

Asset Management System may encompass the following Modules: -

- Procurement module.
- Depreciation or Re-evaluation module.
- Annual maintenance and contract module.
- Vehicle management module.
- Maintenance management module.
- Asset numbering module.
- Premises module.

2.2.6.5 Procurement Module

It has Procurement Process which enables asset managers to consolidate their procurement needs and provide a comprehensive and configurable procurement workflow. Generate purchase indents, seek approval from managers, create purchase orders and reflect the financial transactions under appropriate accounting heads.

- Create Purchase Indent.
- Create Purchase Order.
- Issue Purchase Order to Vendor.
- Receive Items against Purchase Order.
- Post Invoice to Accounting.

2.2.6.6 Depreciation or Re-evaluation Module

The Depreciation or Revaluation Module integrates with the core fixed asset management system to provide a reliable platform for computing the depreciation value of any assets. This module generates powerful reports that show all the cost, accumulated depreciation value and remaining net book value. Reports can be filtered by many search criteria such as department/division, category or date range.

This module allows organizations to have an insight to the actual worth of its assets and make key financial decisions. All reports can be exported to Excel format to integrate with other accounting and financial systems.

2.2.6.7 Annual Maintenance and Contract Module

The annual maintenance module gives you complete control over scheduled or negotiated service contracts and repair work by your vendors. Set reminders and notifications by email for scheduled work and invoice from vendors on recurring billing accounts. Create, edit, store, track all vendors' contract proposals and have a complete reference for future deals whether the contract is approved, expired, open or closed.

Contract Proposals

Track a complete history of vendor's contract proposals. Create, edit, and send the requisitions in small and medium enterprise or vendors thus maintaining a complete record.

Recurring Invoices

Set recurring invoices against vendor's accounts and set reminders or email notifications for related events. All invoices are tracked and viewable within asset management system and can be synchronized with application.

Contracted Vendors Equipment:

- **Scheduled Services:** Preventative Maintenance Schedules can be automatically set for maintenance reminders or alerts so you don't forget. Set schedules for Annual, Semi-Annual, Quarterly, Monthly, Weekly, and Daily reminders.
- **Service Level Agreements:**
  - Line Item Contracts.
  - Service, Parts, Labor, Supplies.
  - Set customer contracts agreements and display different line items that can or cannot be viewable by customers.

Stored Document Management

From inventory photos to vendor's signatures, if you need something stored along with your vendors service data you can with asset management system. Pictures, documents, files, orders, tickets, equipment lists can all be accessible with one click with the accounts and items you need them to be associated with.

Repair Tracking

Complete accountability and tracking for repair services. Know when to schedule automatic reminders and have a repair history of service items. All information is updated automatically and corresponds with vendors, site, billing, inventory, and invoice items.

2.2.7 HR and Payroll Management

HR and payroll management refers to the management of the human resource or employees engaged for the seamless operations of the organizations goal whereas payroll management refers to the preparation and distribution of the salaries of the engaged human resource or the employees.

2.2.7.1 HR and Payroll Management System

HR and payroll management system is a module of e-municipal that helps in automating the various processes of human resource management and payroll management.

2.2.7.2 HR Management System

Human Resource management involves everything related to the employer-employee relationship and is about supporting and managing the organization's people, administration and its associated processes. It's perceived as a core business function essential to the organization's effective operation.
Many organizations in the public, private or government sector have their own designated specialized department, opening up a broad range of sectors for employees.
Human Resource has great scope for specialism and development within a particular HR function e.g. development, equality and diversity, recruitment and selection and administration etc.

2.2.7.3 Organizational Management - Core Processes

Organization management refers to the art of getting people together on a common platform to make them work towards a common predefined goal. Organization management enables the optimum use of resources through meticulous planning and control at workplace. Successful achieving of goals in an organization requires proper planning, organizing, staffing, leading, control, time management and motivation.

Planning

It refers to preparation of an effective business plan. It is essential to decide on future course of action to avoid confusion later on and plan out how organizations intend to do things.

Organizing

It refers to the judicious use of resources to achieve the best out of the employees and also the preparation of monthly budget for smooth cash flow.

Staffing

It refers to the recruitment of right talent for the organization. Poor management leads to unhappy employees who eventually create problems for themselves as well as organizations.

Leading

It refers to set clear targets for the team members and must make sure the team members work in unison towards a common objective. Leading decides what would be right in a particular position.

Control

The superiors must be aware of what is happening around them, to ensure this hierarchies should be well defined. The reporting mangers or the boss must review the performance of subordinates and guide them whenever required.

Time Management

An effective time management helps the employees to do the right things at the right time and helps in long run of an organization.

Motivation

Motivation goes a long way in binding the employee together. Appreciating employees for their good works and motivating them make them work for a longer period of time.

Solution

Implementation of organizational management demands a structure that can be deployed for successful operations within an organization. HR - Administration is amicably designed to re-engineer the process of resource management by providing an efficient automated way with paperless environment to manage employees, positions, job profiles, tasks implementation and activities with reporting structure along with the in-hierarchy organizational chart.

System Architecture - Automation Organizational Chart

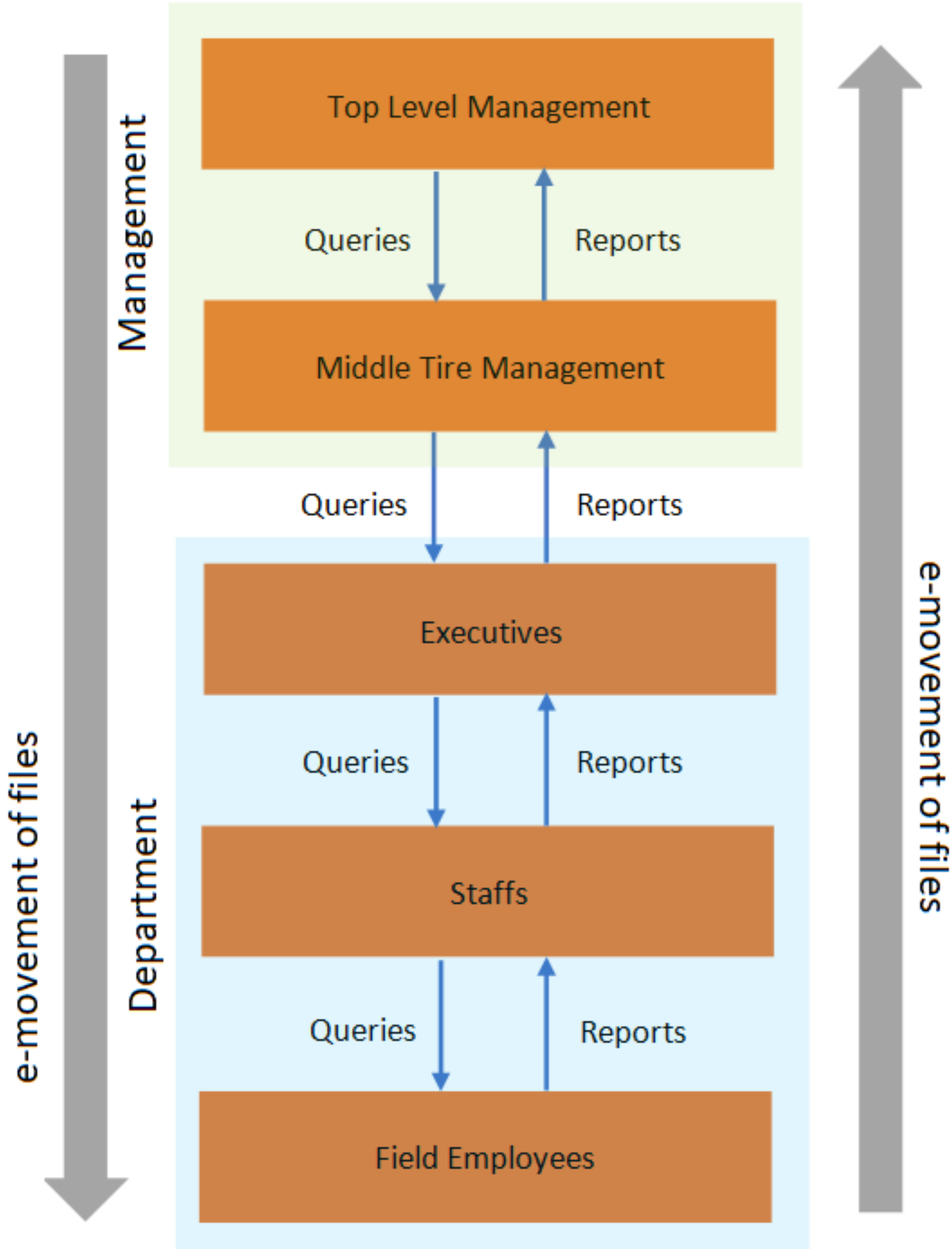


Figure 81: Automation Organization Chart

System Architecture - Employee Management

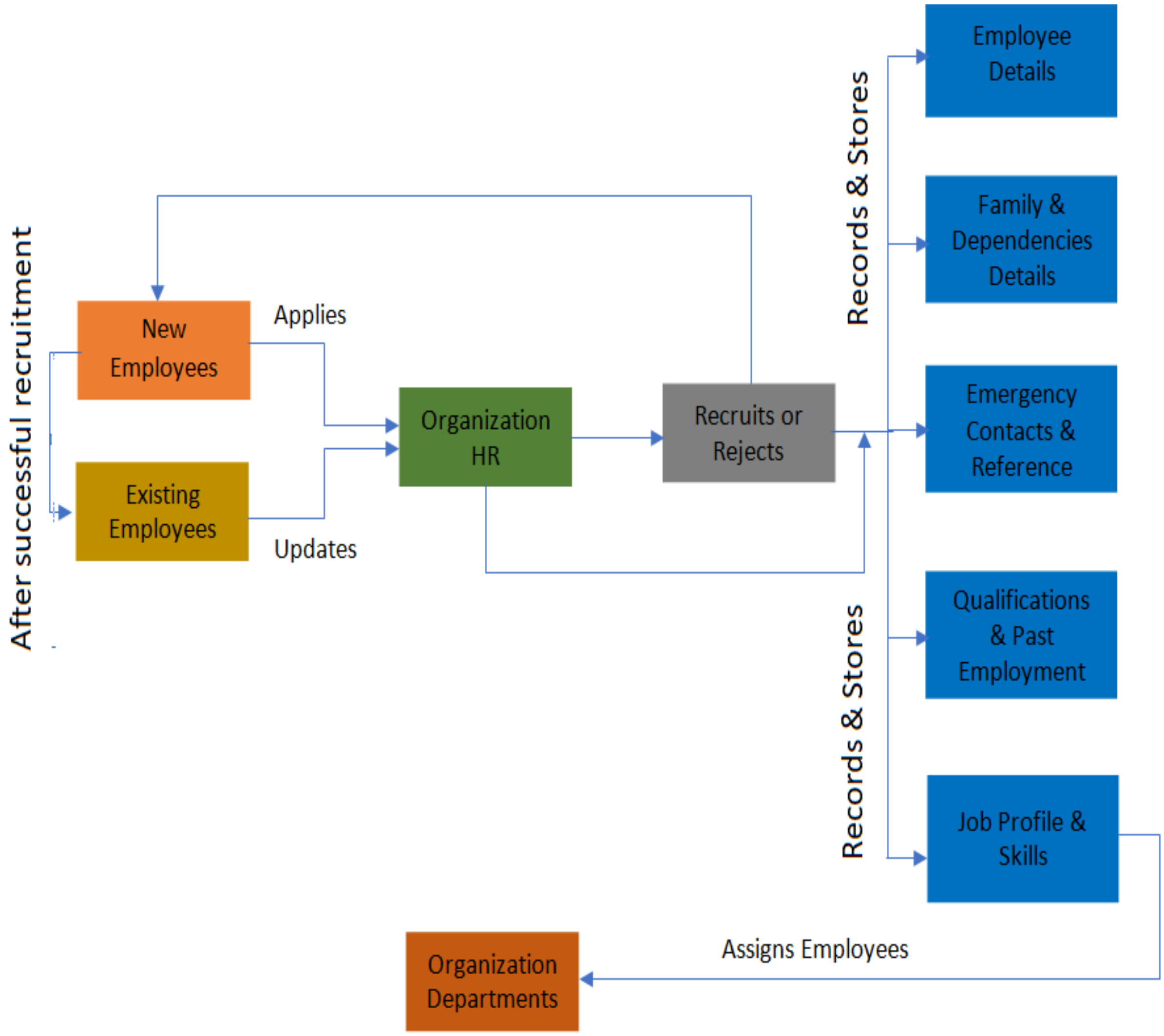


Figure 91: Employee management architecture

System Architecture - Departments and Reporting's

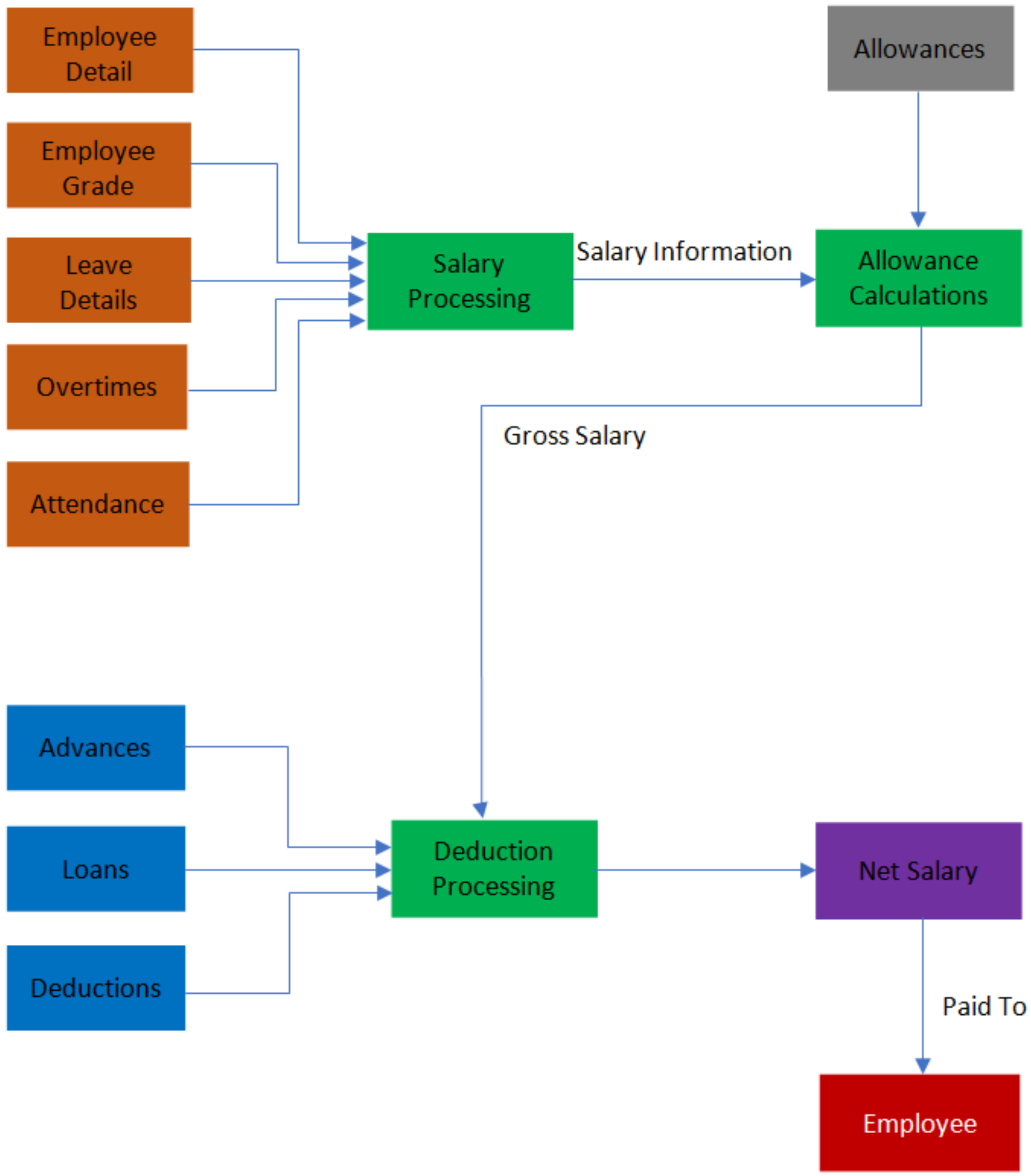


Figure 102: Departments and reporting architecture

System Architecture -Personnel Administration

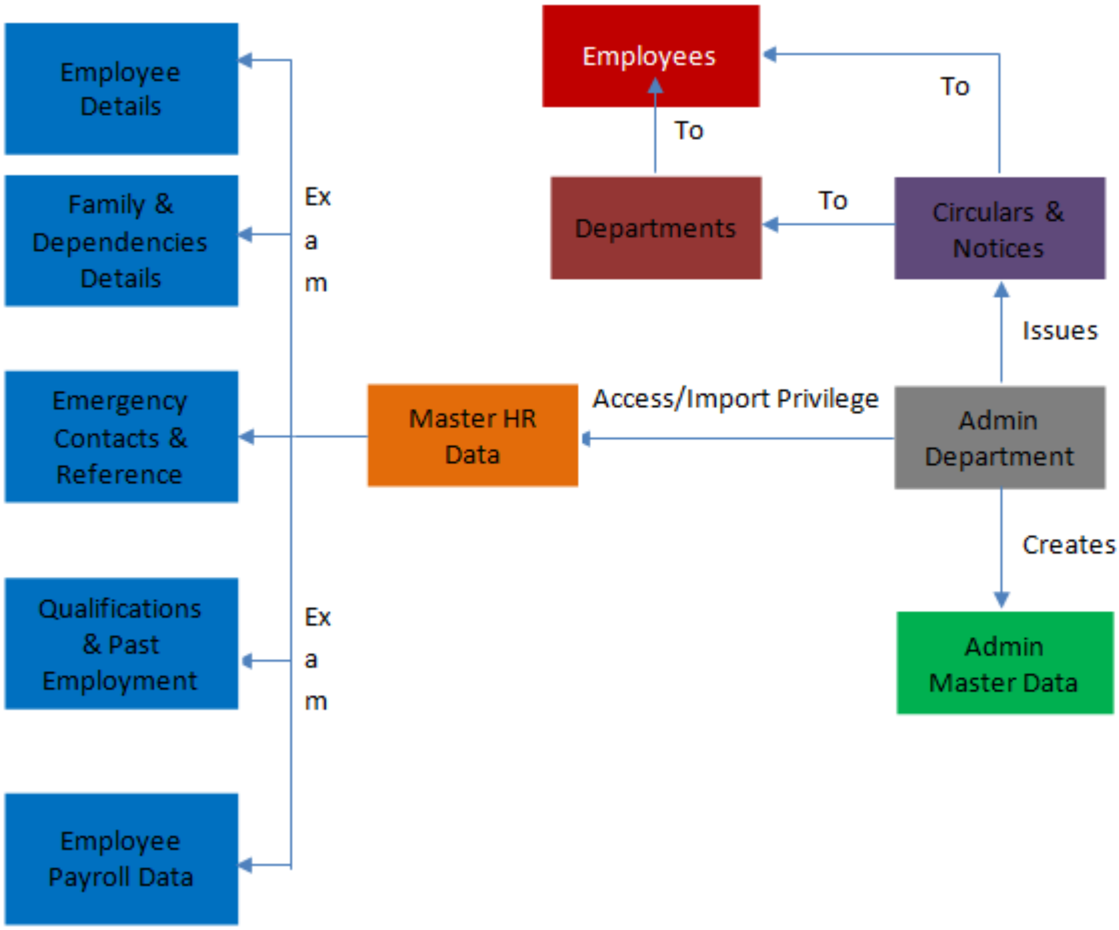


Figure 113: Personnel and administration architecture

System Architecture - Attendance Management System

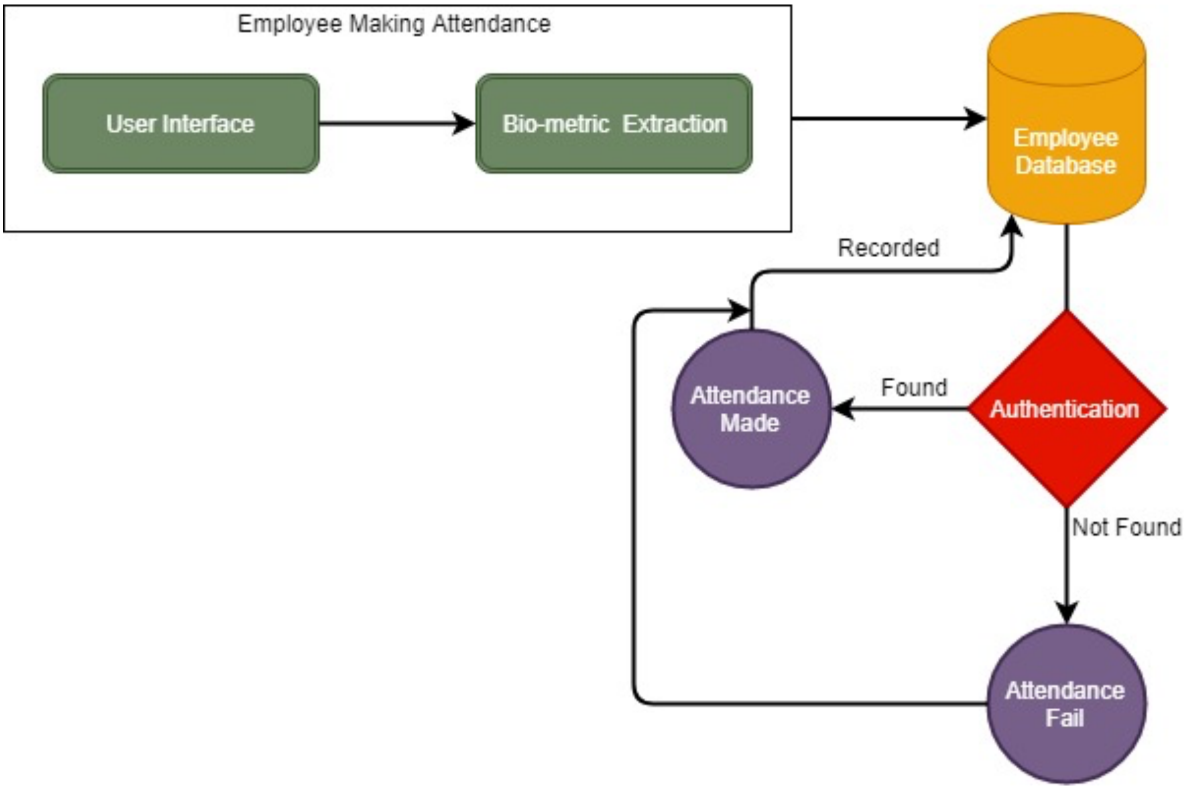


Figure 124: Attendance management architecture

2.2.7.4 Payroll Management System

Payroll management software provides discrete segments for leave management and payroll administration. It assists the finance or accounts department of the organization in preparing the salaries of the employees. The system records employee information, such as leaves, attendance, overtime, etc. From different subsystems of the application. Upon collection of data, the payroll management system calculates the salary of each employee of the organization. It generates the pay slips and sends the details to the bank to credit the employees' accounts.

2.2.7.5 Features of Payroll Management System

- Employee profile.
- Promotion and transfer details.
- User defined salary heads.
- Head formula creation.
- Professional tax slab.
- Dynamic salary structure.
- Loans and advance transactions.
- Insurance transaction.
- Increments.
- Attendance processing.
- Auto salary process.
- Arrear calculation.
- Pay slip generation.
- Pay slip mail facility.
- Pay bill generation.
- Monthly earning deduction details.
- Salary bank statement.
- GPF and CPF Calculation.
- Dynamic formula creation.
- Employee wise salary structure.
- Multi DDO and division support.
- Auto salary transfer to accounts.
- Import and export facility to excel.
- Salary slip mailing feature.
- Dashboard.
- Dynamic search on various parameters.

- Mobile alerts.
- Customized MIS reports.

System Architecture - Payroll Administration

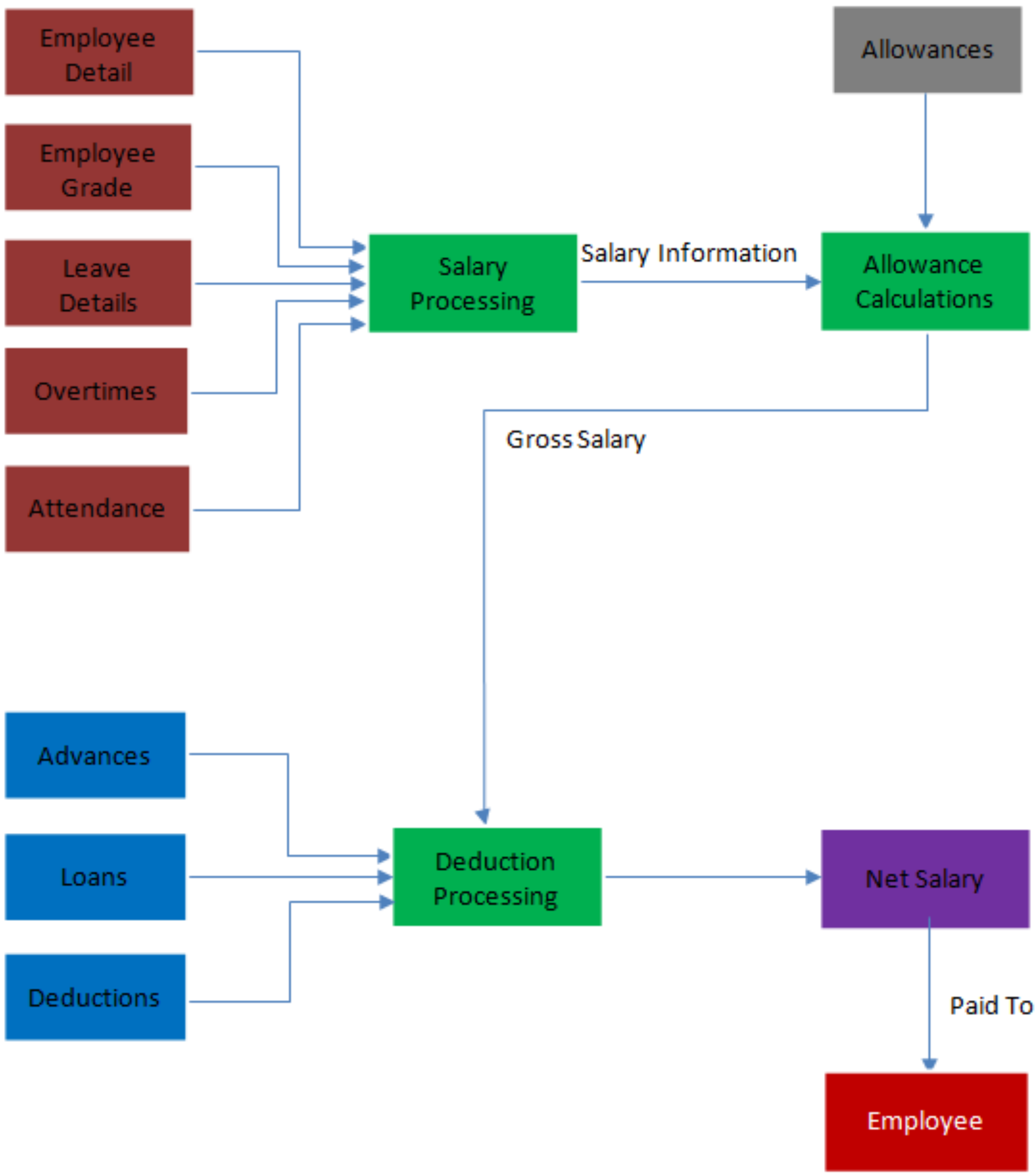


Figure 13: Payroll administration architecture

System Architecture - Leave Management

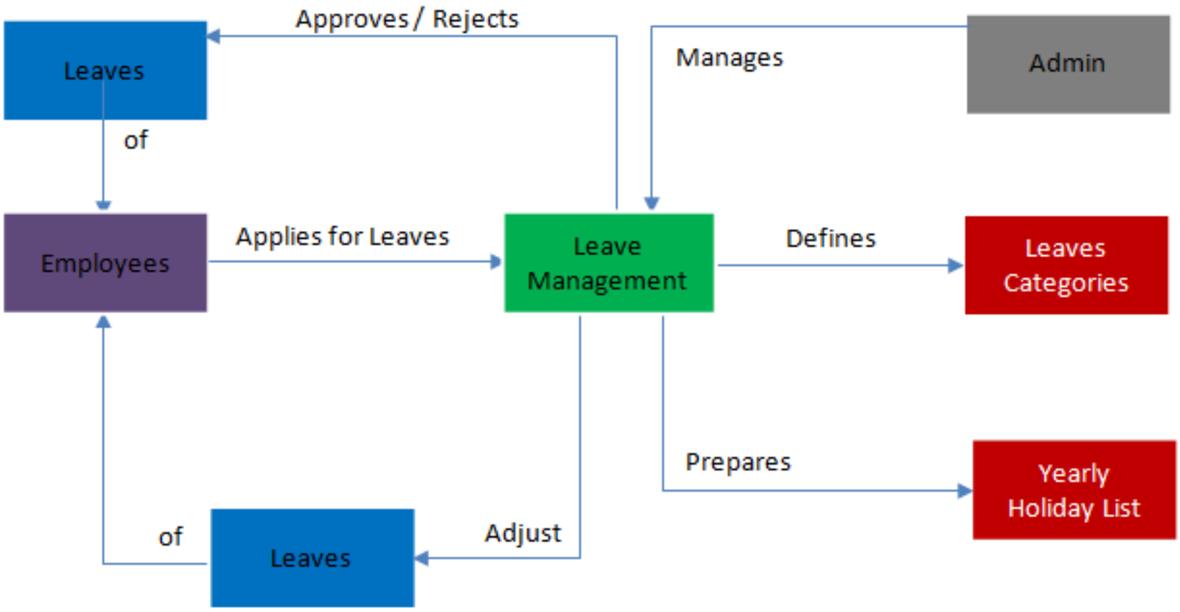


Figure 14: Leave management architecture

2.2.8 Financial Accounting Management

Financial accounting management is the process of analyzing an organization and its trade performance in the aggregate rather than by individual transactions. Financial accounting management is designed to increase efficiency, uniformity and customer service. It does so in part by providing a primary point of contact within customs for the account. It does so by establishing and supporting smooth working relationships among the many customs disciplines that interact with the accounts. For some accounts, that point of contact is an account manager, for others, it is an account management team. The account manager whether an individual or a team follows a series of steps to analyze the account's performance, coordinate the account's activities, identify trade compliance problems and work with the accounts to resolve those problems.

2.2.8.1 Accounting Management System Model

The Accounting Management System model provides a functional requirement for accounts managers, program managers and others who manage and control accounts for organizations as per the stipulated bylaws. This involves establishing uniform requirements for accounting information, accounting systems, reporting and accounts organizations.

An accounting management system model, assists in establishing standards and procedures for testing, implementing enhancements, fixes and other modifications in the accounting management system.

In order to provide a uniform basis for standardized accounting management systems, organizations integrate their unique requirements with the standard requirements. Accounting management systems in the organization must be designed to support the vision articulated by the accounting community. This vision requires accounting management systems to support the partnership between program and financial managers and to assure the integrity of information for decision-making and measuring of performance. This includes the ability to:

- Collect accurate, timely, complete, reliable, and consistent information.
- Provide adequate organization management reporting.
- Support organizational level policy decisions.
- Support the preparation and execution of budgets.
- Facilitate the preparation of financial statements and other financial reports.
- Provide a complete audit trail to facilitate audits.

In support of this vision, the organizations must establish and maintain accounting management systems with standard information and electronic data exchange, to support program delivery, safeguard assets, and manage tax payers.Figure 32, shows an Accounting Systems model that establishes uniform requirements for improving accounting management systems and information.

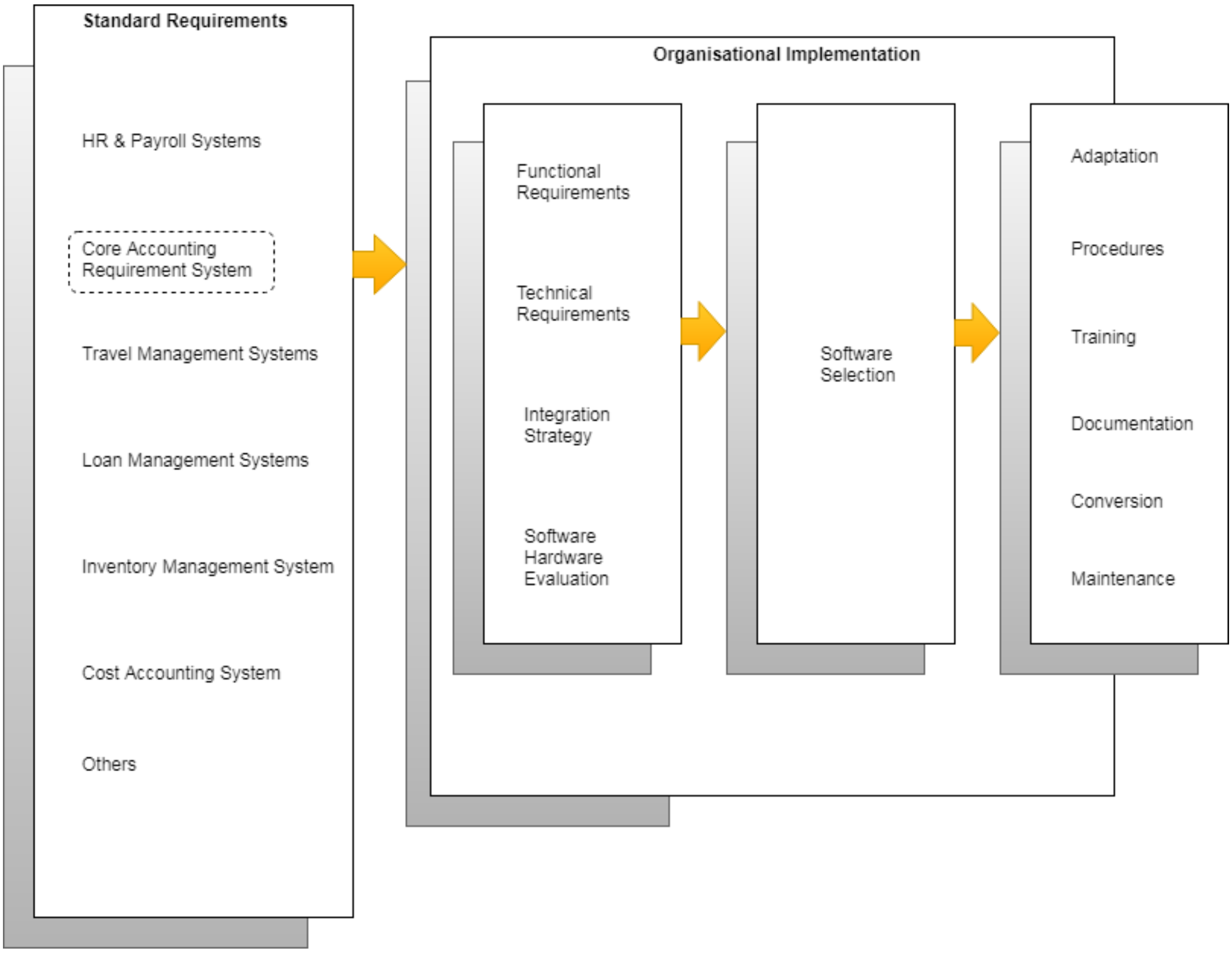


Figure27: Accounting systems model

It is critical that accounting management system plans support the organization's mission and programs, including planned changes and that the accounting management systems plans are incorporated into the organizations plans for information technology infrastructure and information systems as a whole. Further, system design efforts should include how system improvements, new technology supporting accounting management systems and modifications to existing work processes can together enhance organizations operations and improve programs and accounting management. Reassessing information and processing need and redesigning processes, procedures, and policies are essential steps to meet the user needs.

2.2.8.2 Integrated Financial Accounts Management System

Financial accounts management systems is a module of e-municipal that is designed with effective and efficient interrelationships between software, hardware, personnel, procedures, controls, and data contained within the systems. To be integrated, financial accounts management systems must have as a minimum, the following four characteristics: -

- Standard data classifications (definition and formats) established and used for recording financial events.
- Common processes used for processing similar kinds of transactions.
- Internal controls over data entry, transaction processing and reporting applied consistently.
- A design that eliminates unnecessary duplication of transaction entry.

Financial accounts management systems require that each organization must establish and maintain a single, integrated accounts management system. Without a single, integrated accounts management system to ensure timely and accurate financial data, poor policy decisions are more likely to occur due to inaccurate or untimely information. Managers are also less likely to be able to report accurately to the management. Also, upgrades to accounts management systems that are necessary to keep pace with rapidly changing user requirements cannot be coordinated and managed properly.

Having a single integrated financial management system does not necessarily mean that each agency must have only one software application covering all accounting management system needs. Rather, a single integrated accounting management system is a unified set of accounting systems and the financial portions of mixed systems encompassing the software, hardware, personnel, processes (manual and automated), procedures, controls, and data necessary to carry out accounts management functions. Integrated system however does not mean that all information is physically located in the same database. Integrated means that the systems are planned and managed together and linked together electronically in an efficient and effective manner to provide organization-wide accounting system support necessary to support the organizations accounting management needs.

2.2.8.3 System Architecture

Information systems that track financial events and summarize information to support the mission of an organization, provide for adequate management reporting, support organizational policy decisions necessary to carry out different responsibilities and support the preparation of auditable accounting statements.

Organizations accounting management systems fall into four categories: -

- HR & Payroll systems.
- Loans System.
- Inventory Systems.
- Assets Management.

These systems must be linked together electronically to be effective and efficient. Summary data transfers must be provided from departmental systems to central systems to permit summaries of management information and organizations financial performance information on a policies-wide basis.

Organizations can determine the optimal manner in which to support their own mission. When determining the physical design of the system, organizations should consider their philosophy, the technical capabilities available and the most appropriate manner to achieve the necessary integrated accounting management system. The accounting management systems architecture depicted in figure 33 shows the typical components of an integrated accounting management system. Although this does not necessarily represent the physical design of the system, it does identify the system types needed to support program delivery and financial event processing for effective and efficient program execution.

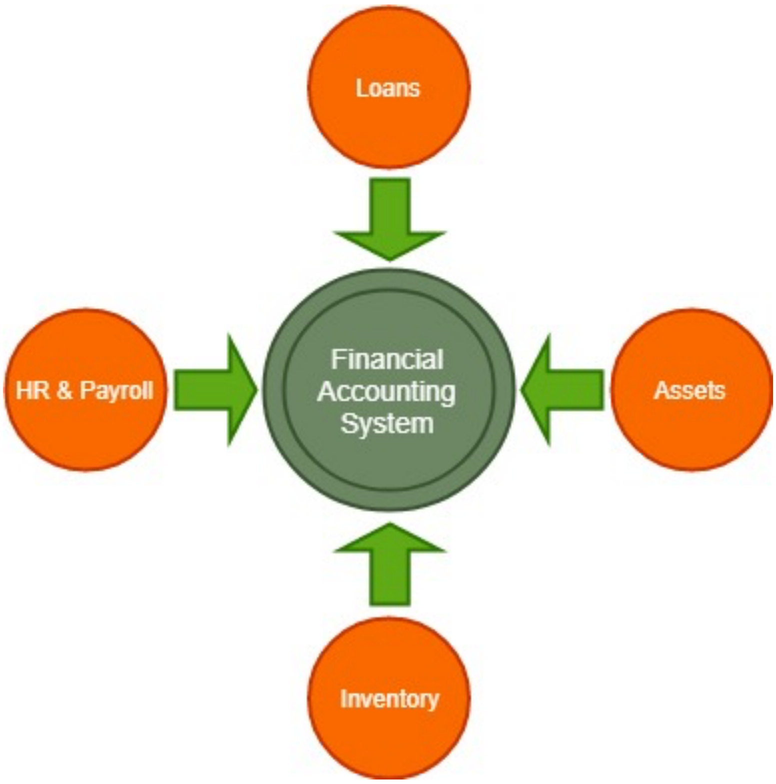


Figure28: Integrated accounting management system

2.2.8.4 Core Accounting Management System

The core accounting system management function consists of all the processes necessary to maintain the accounting system in a manner that is consistent with established accounting management laws, regulations and policy. It ensures that the capability exists for capturing, classifying, processing, storing and retrieving the accounting data organizations use in their daily operations. The core financial system management function establishes the reporting entity and framework for ensuring that data is shared among components of an organizations single integrated accounting management system. The Core Financial System Management function consists of the following processes: -

- Contra Systems

- Payment Vouchers
- Receipt Vouchers
- Journal Vouchers
- Purchase Vouchers
- Sales Vouchers, etc.

2.2.9 Vehicle Management Module

The planning and scheduling of planned and unplanned line maintenance activities of vehicles. Asset management system records asset utilization which updates the task list and the vehicle operational schedule. New maintenance orders are scheduled and executed and completed work is recorded in the asset history or logbook.

Manage Maintenance Program

A crucial part to operating a vehicle is to be able to manage your maintenance program. Asset management applications handles the definition of preventive (interval based) maintenance plans and condition-based maintenance. Fault deferral rules are used to defer non-critical faults where a set of rules manages what kind of faults can be deferred and on what type of vehicles. The solution supports the definition of life limits and maintenance instructions. Where modifications have been defined, through Airworthiness Directives or similar, the details of the modification can be defined in the solution. Template structures can be maintained by modification, which can introduce new alternates.

Master Configuration Manager

A vital part to the management of vehicles is to ensure that you have complete control of the configuration of it. Asset management applications integrates with engineering systems to provide the vehicle management solution with serial part information directly from engineering part revisions. The maintenance engineer defines the template structures for each platform of vehicle which are then applied to each individual vehicle.

Serialized Configuration

The definition of a Serial Structure handles all the activities required to build an entire serial structure and make it available for use in vehicles, such as locomotives etc. For serials that are available in inventory and defined as new or available after maintenance, the system has a best fit feature to help select the serial and arrange its next maintenance to coincide with its parent asset maintenance. This secures balanced usage of the vehicles and smooth and low throughput of the maintenance in the workshops.

Operate Asset

Asset management solution enables operators to drive efficiency from the available vehicle and operational requests from the end user. The operator can plan daily operations, assign vehicles to a sector series and produce the vehicle operation schedule. The Flight Log module within the solution allows the operator to view and record information about the operation during the usage of the vehicle which provides operation data and historical analysis to vehicle management.

Handle Fleet Forecasting

Based on operational budgets (e.g. miles covered) for the use of the vehicle for a number of years ahead, order history, fault history, and operational log history that are present in the application, you can calculate forecasts for preventive and corrective maintenance over the budget horizon (e.g. 5 years). The forecast calculation results in material needs for parts, components, and consumables, which, after simulation, may be transferred to inventory and reduced against work orders as they are generated. The forecast also shows capacity needs per workshop and resource.

2 Overall Description

2.1 Product Perspective

E-Governance applications have multiple perspectives in respect to usability. A citizen portal will be developed to make it so that all information can be found in one place. Citizens can apply for any service, manage grievances and follow-up, view bills, and calculate bills and many more things. Services will be available only when the user is registered with the e-Governance system. When registered, he/she can login and proceed to their respective dashboard.

Vendors who are associated as contractors can login and view transactions, communications and related information.

There will be a dashboard developed for the back office employees and agencies that render services on behalf of ULBs.

State level Financial Management dashboards will be designed to check transactions and monitor various financial activities.

Design of the e-Governance application would be composed of different layers namely presentation, application, data access and security layers which would provide the platform to house the applications suggested for use in each state level e-Governance System.

2.1.1 User Interfaces

The user will access the application through a Graphical User Interface. Web application will be completely menu based and user friendly. User interface will be designed keeping in mind the user’s perspective. User interface will be made mobile friendly. All the information related to a certain task will appear on the same screen. Whenever possible, the user will be provided with a list of options.

Field officers will use the mobile application to visit citizens for verification in their field. The data collected from the field will be directly visible in the base application for validation.

2.1.2 Hardware Interfaces

There is no direct hardware interface for e-Government applications. The web application runs on an application server hosted in-house on enterprise hardware.

Application will run on any Desktop, Laptop, Tablet, and Smart Phone. All the features of the application will be equally available on all the platforms.

On the server-side multiple Server Hardware, Load Balancer, Firewall will be required to setup. Backup systems should be installed for disaster recovery.

2.1.3 Software Interfaces

Web browsers are used by users of the e-Government portal with the system having a base operating system; in addition to the base operating system, software will be required for the Internet server, Database, application frameworks, and email servers.

2.1.4 Communication Interfaces

Internet connectivity is a must at both ends, namely client and server. SMS gateway server will be required to push messages to the destination. Email server will be configured for email delivery.

2.2 User Characteristic

Target user groups for the e Governance portal can be broad classified under following categories

- **Citizens**:-
  Guests: Visit e-Governance web site and get informed about the programs, notices and other information
  Registered citizens: After login they can apply for services and be notified thereafter
- **Backend User:-**
  ULB Employees: Participate in workflow and other administrative tasks
  Agency employees: Assigned routine activities for the ULB
- **ULB Registered Vendors:-**
  Contractors: Get paid for a service
  Suppliers: Material suppliers
- **Site Administrators:** Management of site, user roles etc.

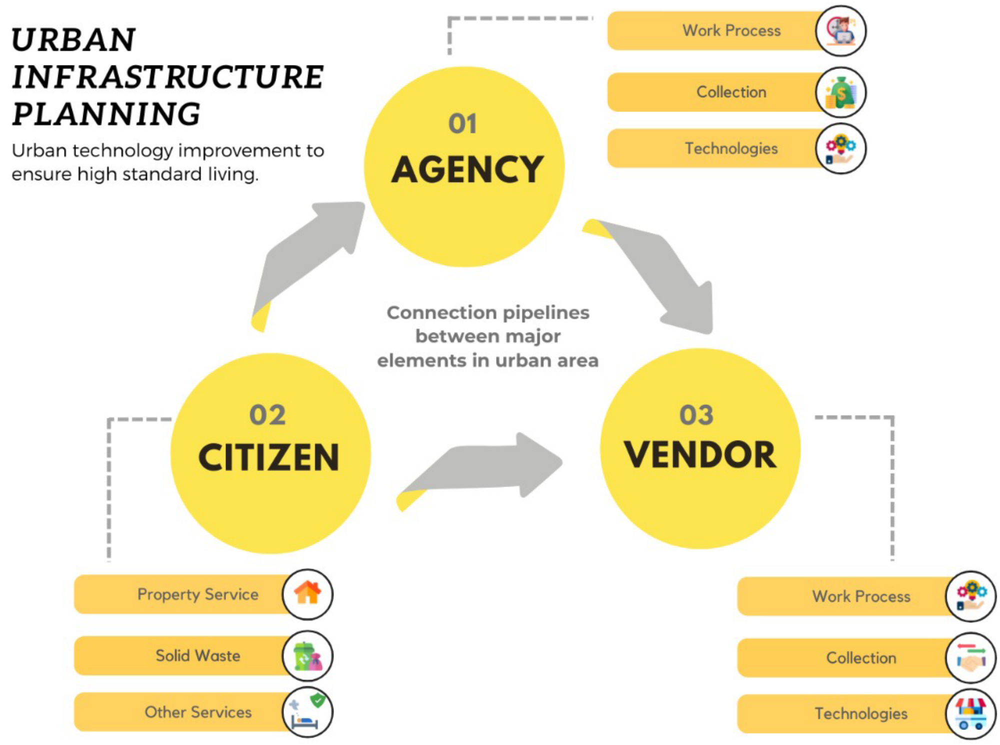


Figure29: ULB High Level View

2.3 Assumptions and Dependencies

- Modules will be rolled out gradually, Initially Property, Trade and Water User Charge modules will start working
- Initial release is only supported on Microsoft Edge, Google Chrome and Firefox browsers
- Data is an asset. It is valuable resource, as it has real and measurable value. Accurate and timely data is critical to quality and efficiency of service. Data input and its accuracy will depend on the user. Accountability of data will be defined

2.4 e-Governance – Product Functions

2.4.1 Product Functions

The major functions of the e-Governance Portal are listed below:

- **Citizen Registration**

- **Citizen Dashboard**
- **Workflow management**
- **Identity and Access Management** for Registered and non-registered users, Internal users, External Users, etc.
- **Property Tax Management** System
    - Self-assessment and Re-assessment of properties
    - Demand generation, collection and recovery management system
    - Maintenance of Demand Collection and Balances
    - Integration of Data Sets from different departments and other modules
    - MIS and Dashboard
- **Water User Charge** Management System
    - New Water Connection Management
    - Regularization of Illegal Water Connection management
    - Water meter reading and bill generation
    - Fixed water bill generation
    - Collection and recovery of water user charge management
    - MIS and Dashboard
- **Municipal Trade License** Fee Management system
    - New Construction building plan approval
    - Regularization of constructed building without approval
    - MIS and Dashboard
    - Data Set Integration with Property tax and other modules
- **HRMS and Payroll** Management System
    - Office and Field Attendance management system
    - Performance management system
    - Inter departmental transfer management system
    - Salary and payroll management system
    - Pension management system
    - MIS & Dashboard
- **Birth and Death Certificate Management** System
    - Issue of new birth and death certificate
    - Issue of duplicate copies of birth and death certificate
    - Online verification system of birth and death certificate
- **Accrual based double entry accounting system**
    - Income and Expenses statements
    - Integration with revenue generation modules (property tax, water user charge etc.)
    - Integration with Project and procurement management modules

P&L statements

Statutory Tax management

MIS

- **Project and Fund Management** System

  Fund monitoring management system (allocation of funds for specific projects)

  Project allocation and monitoring management system

  MIS and dashboard

- **Advertisement Tax Management** System

  Hoarding Management system

  Advertisement approval management system

  Penal management system

  MIS Dashboards

- **Procurement Management** System

  Tender management system

  Purchase management system (GEM)

  Goods challan management

  MIS & Dashboard

  Data set integration with accounts and Fund management

- **Land and Asset management** system

  Municipal Land/Property management

  Municipal Property Rent management system

  MIS & Dashboard

- **Asset Tracking and Monitoring** System

  Tracking of Movable and Immovable Assets

- **Marriage Registration** Management System
- **Legal Management** System
- **Pet Registration** System
- **Solid Waste Management** System

  Fleet management system

  Smart bins monitoring system

  Solid waste user charge management system

  Door to door coverage monitoring system (RFID based)

  Field force management system

  Smart Weight Management system

  Waste to energy monitoring management system

  MIS & Dashboard

- **Public Transport** Management System

Fleet management system (GPS based)
Online/on-spot Ticket and Billing management system
License approval management system (Auto Rickshaws & other public means of transportation)
MIS & Dashboard

- **Parking management** system
  Smart parking system (use IOT)
  Parking Fee Management system
  MIS & Dashboard
- **Grievance Management** and Redressal System

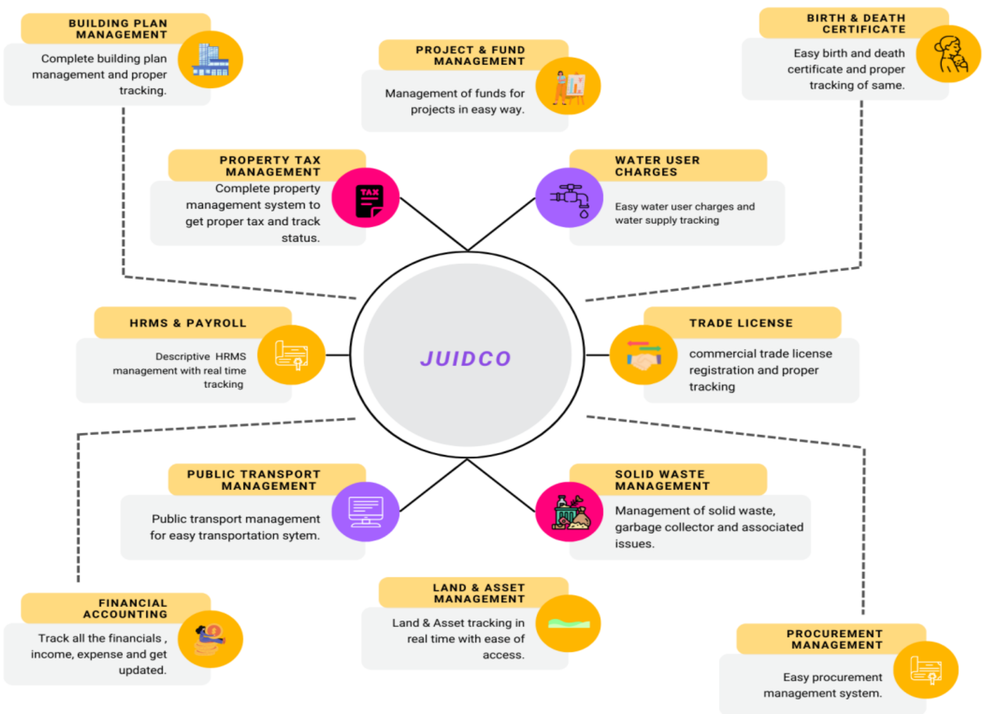


Figure30: Modules in Integrated e-governance system

2.4.2 System Requirement

By using e-government, all stakeholders and citizens will be connected on a common platform, eliminating unnecessary visits by citizens to the ULB. For effective governance it is required to be transparent in all the processes and workflows. ULB operations are being kept at the center and all services rendered to citizens as well as vendors and contractors will be able to interact with the system.

Citizen is required to register with the system by providing details that will be used in subsequent transactions with the system. After successful login, the citizen will get user id and password. Citizen dashboard, which displays all kinds of related information, can be accessed by entering a user id and password. Following activities can be performed using the dashboard:

- Can See all the properties in the state
- See all the notifications given by related ULB.
- Can see all the payment transactions against different services
- Can see the services availed in the past
- Apply for New property assessment
- Apply for Property reassessment
- Apply for Ownership change / Mutation
- Apply for property bifurcation
- Apply for property amalgamation
- Calculate Property Tax
- Pay Property Tax
- Apply for new Water connection
- Apply for water disconnection
- Pay water user charge
- Apply for trade license
- Apply for Disposal of Trade License
- Apply for Self-Advertisement Registration
- Apply for Private Land Advertisement Registration
- Apply for Vehicle Advertisement Registration
- Trade License Renewal
- See Solid waste user charge demand
- Pay solid waste user charge
- Apply for Banquet Hall/ Marriage Hall License
- Apply for Lodge/ Hostel/ Dharamshala License
- Pay Renewal Charge for Services provided by ULB

Other than citizens there are some agencies which are associated with the ULB. Some agencies work as contractors for different municipal projects. They need to know the status of the work as well as the associated financial transactions. A separate category of users should have their own dashboard.

Finally, a separate dashboard is required for ULB users for their day-to-day activities. For specialized work, ULB users will be classified into different roles. Generally, all applications interacting with a service require travel from different users for various kinds of validations, message generation, and notice generation. Therefore, there should be a mechanism for workflow management wherever necessary. These applications may need to be returned to the citizen for further action. There should be some provision to resolve these dependencies to avoid long waiting.

All the modules related to financial transactions need to be integrated with the Finance and Accounting module. This is required to converge all the related data to the financial dashboard.

Grievances and objections need to be given special care while designing the interface. This will increase the transparency in the application process.

2.4.2.1 Functional Requirement in e-Governance Application

User requirements have been placed under functional requirements. Functional requirements may involve calculations, technical details, data manipulation processing and other specific functionality that defines what a system is supposed to accomplish. Behavioral requirements describe all the cases where the system uses the functional requirements; these are captured in use cases. We considered the following parameters when creating the use case.

- **Objective for Functional Requirement** is: What the system does/ What the system should do
- **Result**: Product Features
- **Focus on**: User Requirements
- **Documentation**: Captured in use case
- **Essentiality**: Generally mandatory
- **Origin**: Define by the user
- **Testing Criteria**: Component, AOI, UI testing, Tested before nonfunctional Testing
- **Types**: External interface, authentication, authorization, business rules

2.4.2.2 Non-Functional Requirements in e-Governance Application

Non-Functional Requirements are the constraints, or the requirements imposed on the system. They specify the quality attribute of the software. Non-Functional Requirements deal with issues like scalability, maintainability, performance, portability, security, reliability, and many more. Non-Functional Requirements address vital requirements for software systems. Features of non-functional requirements are:

- **Objective**: How well the system does it
- **Result**: Product Properties
- **Focus**: User Expectations
- **Documentation**: Capture as a quality attribute
- **Essentiality**: They are mandatory, but desirable
- **Origin Type**: Usually defined by developers or other tech experts
- **Testing**: Performance, usability, security testing etc. Tested after functional testing
- **Types**: Usability, reliability, scalability, performance etc.

3. System Description

3.1. Citizen Portal

The primary objective of the Integrated e-Governance Services is to provide single window access to information and services provided by the ULB.

The portal is the user interface and delivery channel through which citizens can access the services delivered by ULBs. User should have direct access to the services being provided on the portal from their office/home/other locations.

3.1.1 Functional Requirements

3.1.1.1	There should be provision to display and add any event, news, announcement as per the requirement of the department in the portal. The content would be decided/ approved by the department.
3.1.1.2	The ULB Portal is critical element of the System Architecture, which provides secure and reliable message routing between service delivery channels, ULB information users/ providers (e.g., State Service Delivery Gateway, National Service Delivery Gateway etc.) and the Back Office system
3.1.1.3	For making such information and services accessible in a convenient manner, the Portal shall be established to provide a one stop source for all the information and services.
3.1.1.4	The portal will be developed as per the Govt. guideline and should be dynamic in nature.
3.1.1.5	Secure dynamic online self-registration for users: The portal must provide for the ability for users to register themselves in a user directory and then be assigned the related privileges/ entitlements based on their preferences and eligibility. This facility should also give the user the ability to edit details about themselves, such as username and password.
3.1.1.6	While registering the citizen as user, along with all the required details of Citizen, there should be provision to capture their Aadhaar details.
3.1.1.7	"Single Sign-On" capabilities across services: Single sign-on facility and single user credentials meaning that users can have one user ID and password, or a digital certificate, which they can use for all online public services.

3.1.1.8	Portal shall provide the printable formats for all the forms and user, upon filling up the details, can obtain the printout of the same, All the e-forms shall have appropriate field level and form level business validation build into it to ensure that scope for incomplete/ inaccurate information is eliminated and the information is captured for all the mandatory fields in the form.
3.1.1.9	Citizen should have a Dashboard protected by login and password.
3.1.1.10	All the properties, services, grievances, penalties, taxes, notices and other notifications should be shown on the dashboard
3.1.1.11	Citizen user should be given online payment options to pay for taxes, penalties etc.
3.1.1.12	Citizen user should be able to see past financial transactions.

3.2 Property Tax management System

Property tax is one of the main sources of revenue for the ULB. This module covers all the aspects of assessing the property for tax purposes. Residential and commercial properties, situated within the limits of ULB, are to be assessed for tax. As a result of such assessments, all assesses are required to pay property taxes. The information regarding all the new constructions, existing constructions and other extensions/ modifications, if any, will be provided by the Town Planning Department for tax assessment.

The main features of the property tax module include

- Assessment of the building for property tax based on the parameter such as residential status, annual rental value, rates of taxes, depreciation and the age of the building
- Serving of the demand notices for assessments and collection of taxes
- Acceptance, disposal and monitoring of the revision petitions received
- Monitoring of the appeals filed
- Collection of the taxes and maintenance of appropriate records etc.

Figure31: Property Management System

3.2.1 Functional Requirements- General

3.2.1.1	System should allow citizens to register their property on-line (self-assessment)
3.2.1.2	Assign the unique property ID based on the Process defined in the ULBs
3.2.1.3	System should have interface with GIS system (implement later)
3.2.1.4	System should have facility to deliver the service online
3.2.1.5	Portal should have all the information including the processes and documents required for the convenience of citizen
3.2.1.6	System should capture all the details required for application
3.2.1.7	System should have the facility to apply online and at ULB
3.2.1.8	System should have facility to download required forms
3.2.1.9	System should have facility for online payment
3.2.1.10	System should have facility to send the alerts through SMS and email
3.2.1.11	Capture description of property like mutation number, number of floors, area covered, land owner, co-owner, correspondence & permanent address, built year, Category of holdings (Residential, Commercial or industrial, Mixed Use, Government/ Semi-Government, Education Institutions, Others), category of road, Mode of collection, Contact number, individual room measurements, etc.
3.2.1.12	Facility to classify the property based on its type
3.2.1.13	Allow changing the category of holding
3.2.1.14	Provide tax calculator for users to calculate the property tax on a particular holding at any given rate and with multiple combinations of variables
3.2.1.15	Capable of exporting data stored in the database to excel as and when required by the user. Similarly, provision of data import from excel to the system should be there. System should support templates for defining the import and export structure
3.2.1.16	Calculation of rebate and Penalty to be shown as "others" and distinct from total Demand (TD) and Total Collection (TC). Within others, rebate, penalty, interest and adjustments to be clearly identified

3.2.1.17	En Masse demand generation needs to be made possible. It should be done for total, circle, revenue circle and ward wise
3.2.1.18	System should have a provision to tag property as suspect. Additional tags will be required for properties with incomplete data, and which have been marked as potentially incorrect size, as distinct from property does not exist
3.2.1.19	Batch mode upload of data collections required
3.2.1.20	Provision to provide incentives based on advance annual payment, as well as writing off or decrease of arrears based on payment to be provided
3.2.1.21	A complete audit trail for all transactions, as well as master updates
3.2.1.22	Provision for bar code on the demand
3.2.1.23	Capable of adding schemes for recovery of arrears
3.2.1.24	Mail merge exports and imports
3.2.1.25	Back up archival functionality
3.2.1.26	Dashboard display of status
3.2.1.27	Provision to make a qualitative and quantitative assessment of the tax paid and arriving at logical decisions that will help in decision making on which raids, inspections and imposition of penalties on the defaulters can be made possible
3.2.1.28	System to keep history of payment defaults, penalties imposed, discounts given etc. related to each holding

3.1.2 Functional Requirements- Filling of Property Tax Return

3.2.2.1	User can fill his/her property tax online or through CFC
3.2.2.2	System should accept digital certificate of the citizens for filling online return
3.2.2.3	System should generate acknowledgement receipt regarding filling of property tax
3.2.2.2	Agencies on behalf of ULB can collect tax and help the household to fill the return form.
3.2.2.3	All the calculation results should be show to the user before he/she decides to pay
3.2.2.2	System should show details of schemes of ULBs to educate users of the system about how to take benefit.
3.2.2.3	Acknowledgement for the tax return should be printed as well as sent to email, sms etc.

3.1.3 Functional Requirements- Inclusion of New Assesses

3.2.3.1	Entering/ adding the applicant details for new assessment
3.2.3.2	Entering / adding the details of SAF (Self-Assessment Form) for existing holding
3.2.3.3	Generation of a new assessment application acknowledgment receipt
3.2.3.4	Facility of modifying an existing record
3.2.3.5	Generation of the special notice to the assessed indicating the amount of tax to be paid
3.2.3.6	Entering of the revision petition application into the system
3.2.3.7	Generation of the acknowledgement for the appeal petition application receive

3.1.4 Assessment of Properties

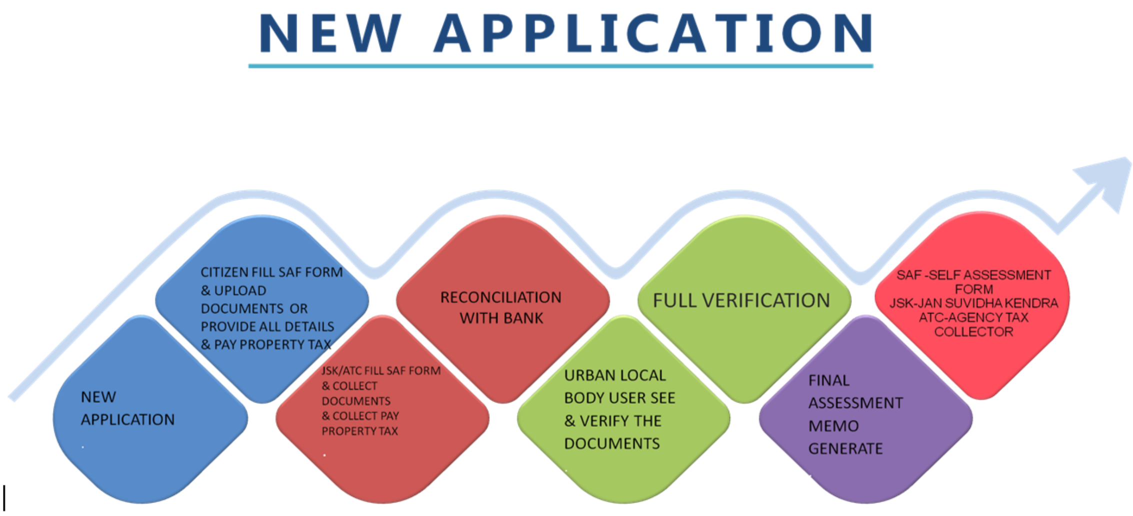


Figure32: New Property Assessment Application

3.1.4.1	System should calculate applicable tax liabilities for properties for which returns have been filled. And, flag those properties which have discrepancies
3.1.4.2	System should allow ULB officials to do sample checks of the returned filed
3.1.4.3	Calculation of Property Tax to be levied based on the building type, area, usage details etc.
3.1.4.4	Facility of modifying an existing record
3.1.4.5	Enter/add the assessment details and property tax levied
3.1.4.6	Property tax demands should be generated for those properties for which returns have not been filled and also for those properties against which less tax have been paid in the return
3.1.4.7	Frequency of generation of Demand should be flexible. It should be user defined (defined at admin level) and could be quarterly, half-yearly or annually
3.1.4.8	Enter/add the Arrear details and property tax levied for assessment
3.1.4.9	Generation of enter/ add the application details for exemption from property tax
3.1.4.10	Facility of entering/adding application details for write-off from property tax
3.1.4.11	Facility of issuing an acknowledgement

3.1.4.12	Facility for citizen to raise the objection (if any) after getting the demand notice
3.1.4.13	System should have the facility to send SMS alert to citizen for payment & due date
3.1.4.14	System should have the provision for online payment of property tax through portal & CFC
3.1.4.15	System should have all the irregularities in tax payment predefined, to automatically detect any suppression of fact and details on the part of the citizens in paying the tax. MIS should be generated listing suspect cases and reasons citing irregularities
3.1.4.16	System should have interface with to track the defaulters of house tax payment
3.1.4.17	System should have inbuilt check and balances to enable the Enforcement authorities to track citizens evading tax payment
3.1.4.18	System should have provision to make a qualitative and quantitative assessment of the tax paid and shall arrive at logical decisions that will help urban local bodies in decision making on which raids, inspections and imposition of penalties on the defaulters
3.1.4.19	System should have the facility to analyze and forecast revenue trends based on tax collection
3.1.4.20	For house tax assessment, the system should provide the complete flow of data of approval/rejection by Inspector, RO, EO, etc.

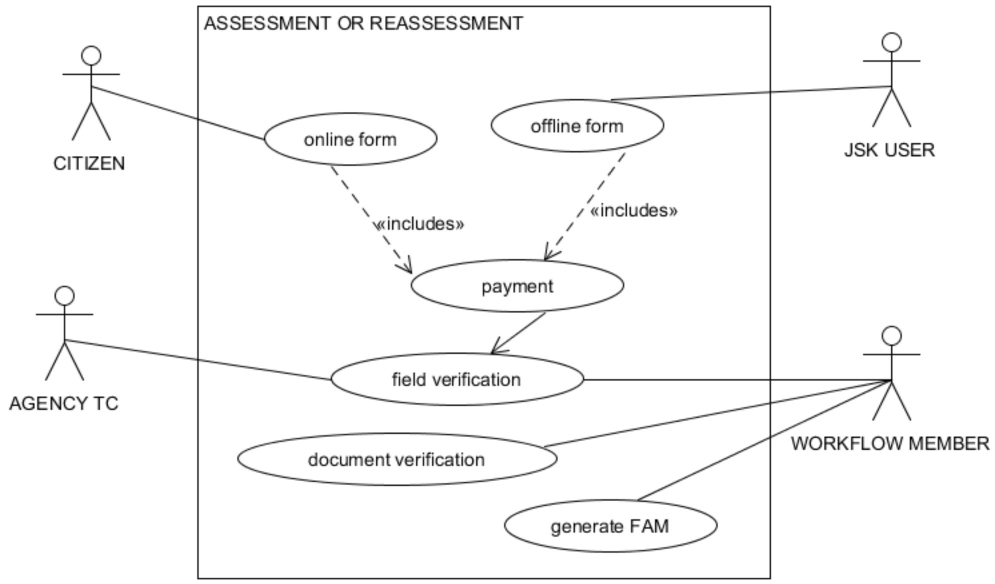


Figure33: Use Case Diagram for new Property SAF

3.1.5 Functional Requirement-Change of Ownership/ Mutation

3.1.5.1	Facility of entering/ adding the application details for title transfer of property
3.1.5.2	Facility of issuing an acknowledgement
3.1.5.3	System should ask for NOC from departments/sections before processing the service request
3.1.5.4	System should follow the numbering of holding
3.1.5.5	Facility of modifying/ deleting an existing record
3.1.5.6	Facility of entering/ adding the field verification details for title transfer property
3.1.5.7	Enter/add the approval details for title transfer property
3.1.5.8	Enter/add the fee payment details for title transfer property
3.1.5.9	Facility of generating the endorsement for the title transfer property after the property is transferred and the fees is paid

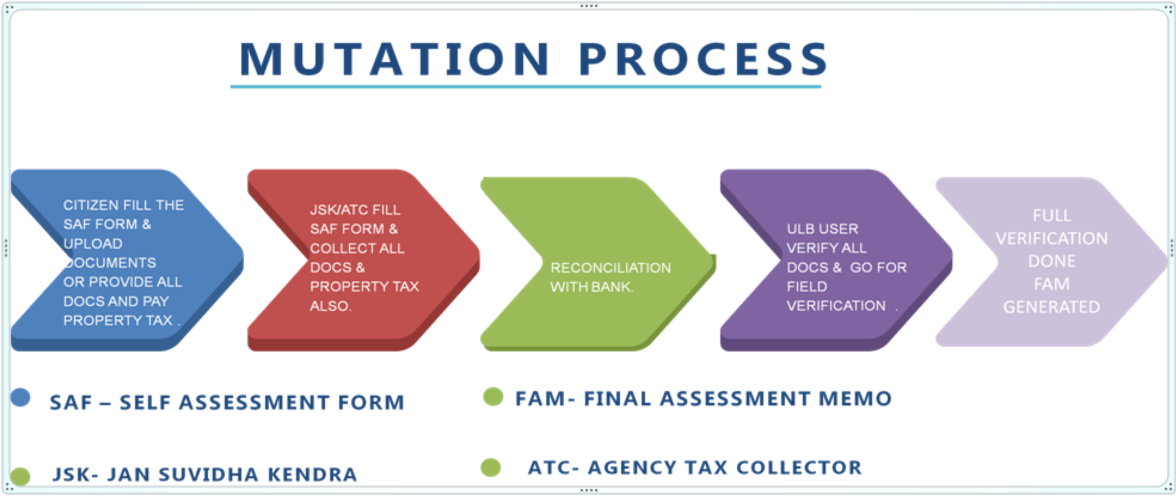


Figure34: Mutation Process

Use Case

MUTATION PROCESS
Pre- condition ○ Property must exist
Process ○ Facility of entering/ adding the application details for title transfer of property ○ Facility of issuing an acknowledgement ○ System should ask for NOC from departments/sections before processing the service request ○ System should follow the numbering of holding ○ Facility of modifying/ deleting an existing record ○ Facility of entering/ adding the field verification details for title transfer property ○ Enter/add the approval details for title transfer property ○ Enter/add the fee payment details for title transfer property ○ Facility of generating the endorsement for the title transfer property after the property is transferred and the fees is paid
Post Condition ○ Can generate Bills against new values
Exception ○ Error while documents upload & download ○ User denied payment

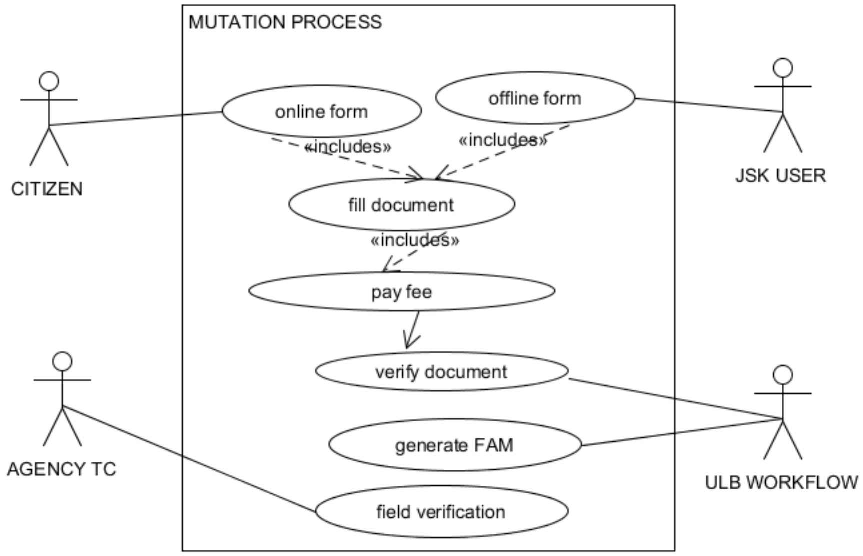


Figure35: Use Case Diagram for Property Mutation

3.1.6 Collection of Property Tax

3.1.6.1	Change property tax computations and determine arrears/refunds etc.
3.1.6.2	Generation of the details of Property Tax paid for the assessment
3.1.6.3	Generation of enter/ add the application details for exemption from property tax
3.1.6.4	Enter/add the application details for vacancy remission from property tax
3.1.6.5	Facility of entering/ adding the application details for write-off from property tax
3.1.6.6	Facility of issuing an acknowledgement
3.1.6.7	Integration with Accounting Module

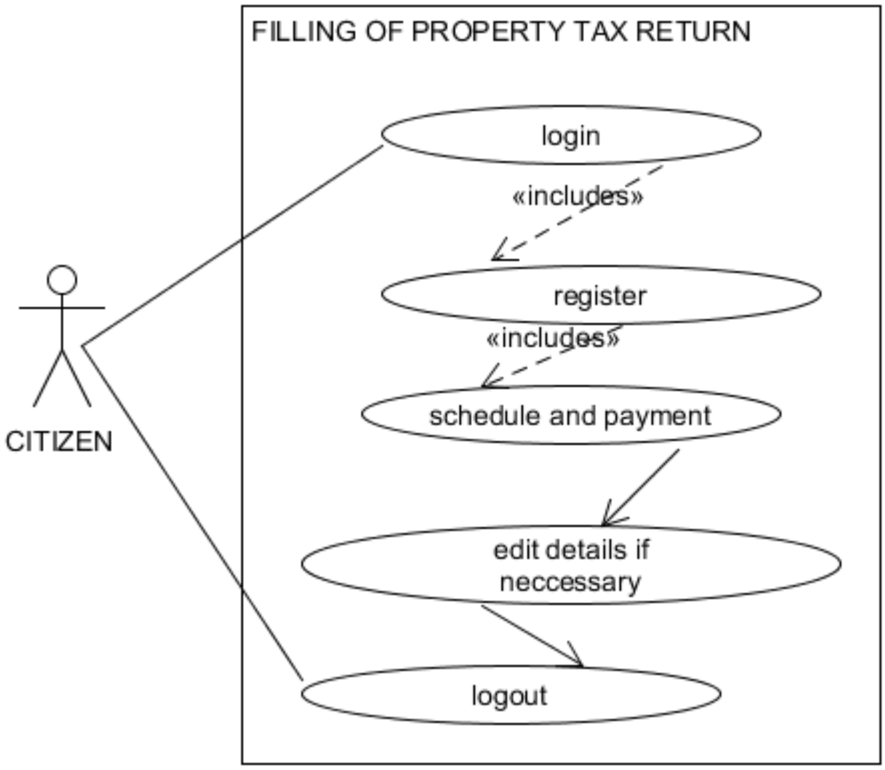


Figure36: Filling of Property Tax Return

3.1.7 General Revision

3.1.7.1	Accepting requests for Revision
3.1.7.2	System should provide information related to general revision and documents required for the same
3.1.7.3	Updation of the assessment database based on the field verification details.
3.1.7.4	Entry of the property modification details
3.1.7.5	Entry of the penalties details
3.1.7.6	Capturing of the approval details

3.1.8 Action Taken for Recovery of Tax

3.1.8.1	Add/Edit details of action for distrait
3.1.8.2	Flagging for legal cases filed, and information on these cases
3.1.8.3	Flags for investigation based on grievance filed by the assessed
3.1.8.4	Information on auction of property and recoveries

3.1.9 Indicative List of Master

3.1.9.1	Details of Circle(Addition/Modification/Search)
3.1.9.2	Details of Wards (Addition/Modification/Search)
3.1.9.3	Details of Revenue Circles (Addition/Modification/Search)
3.1.9.4	Details of Locations (Addition/Modification/Search)
3.1.9.5	Details of Apartments/ Complexes (Addition/Modification/Search)
3.1.9.6	Details of Use Factor (Addition/Modification/Search)
3.1.9.7	Details of Tenancy Factor (Addition / Modification / Search)
3.1.9.8	Details of Building Classification Type (Addition/Modification/Search)
3.1.9.9	Details of Roof Type Master (Addition/Modification/Search)
3.1.9.10	Details of Floor Types (Addition/Modification/Search)
3.1.9.11	Details of Tax Rates along with validity (Addition/Modification/Search)
3.1.9.12	Details of ARV matrix along with validity (Addition / Modification / Search)
3.1.9.13	Details of Discount along with validity (Addition / Modification / Search)
3.1.9.14	Details of Bill Collector Master Addition/Modification/Search)
3.1.9.15	Exemption details master (Addition/Modification/Search)

3.1.9.16	Occupier details (Addition/Modification/Search)
3.1.9.17	Details of Bank Master (Addition/Modification/Search)

3.1.10 MIS Reports

3.1.10.1	Overview Report (Data Fields for the report are No. of holdings, Total arrears, Total demand, Total collections and, Total arrears. The report should be generated as Overall, by circle, by revenue circle, by ward, by collector. Collections need to be shown against Arrears, current FY Demand and total. The figures for penalty and rebates are to be shown separately
3.1.10.2	Checklist for status of submission of SAF by the assesses
3.1.10.3	List of Defaulters (Assesses who have not paid taxes along with SAF by "particular day" every year) – Circle/ward/revenue circle/Locality-wise
3.1.10.4	Field Verification Checklists
3.1.10.5	Checklist for Holding Data
3.1.10.6	Special Notices
3.1.10.7	Bill Collectors Collection
3.1.10.8	Counter Collection, Direct bank remittance, CFC wise collection
3.1.10.9	Mode of payment wise collections
3.1.10.10	Ward wise Collection
3.1.10.11	Revenue Circle wise Collection
3.1.10.12	Locality wise Collection
3.1.10.13	Penalty on Late Payment Collection
3.1.10.14	Penalty on Unauthorized Construction
3.1.10.15	Arrears Register

3.1.10.16	Area Base Register
3.1.10.17	DCB Register
3.1.10.18	Defaulter register
3.1.10.19	Exemption Details Register
3.1.10.20	PT Register
3.1.10.21	Register of Appeals for the Year
3.1.10.22	Register of Distrait
3.1.10.23	Register of Warrants
3.1.10.24	Remittance/Daily Collection Register
3.1.10.25	Receipts/Payments Register of PT for the Year
3.1.10.26	PT Demand Register
3.1.10.27	Vacancy Remission Register
3.1.10.28	Write Off Register
3.1.10.29	Ownership Certificate
3.1.10.30	Valuation Certificate
3.1.10.31	Final Notice
3.1.10.32	Warrant Notice
3.1.10.33	Apartment Details, Complex Detail
3.1.10.34	Building Age wise Assessment List
3.1.10.35	Monthly List of Buildings Requiring Levy of PT or Revision of PT
3.1.10.36	Occupiers Other than Owners
3.1.10.37	DCB (Demand-Collection-Balance) Report

3.1.10.38	Ageing Report: Should report on total arrears as at end of any period in a classified category
3.1.10.39	ABC Analysis with data fields such as Holding ID, Name, Addresses, and Total Arrears. The report should be classified in different Value Bands. The report should be generated as summary report for ULB and also by collector, Ward, Circle, holding category (Purely Residential, Purely Commercial/Industrial and Others) , By type of Construction (Pucca, Asbestos, Others) and by category of Road (Principal, Main and Others)
3.1.10.40	Projections of Annual Demand with Revised 27-cell Matrix Rate structure :
3.1.10.41	Query ABC Analysis, List of all default customers [amount range, location (ward/centre)]
3.1.10.42	Query List of all flagged assesses where legal action is being taken and their status
3.1.10.43	Query List of flagged customers where recovery action being taken under section 155 b to g
3.1.10.44	Query List of all flagged assesses from whom payment by cheques are received and cheques dishonored when presented
3.1.10.45	Query Ward wise holding details as defined
3.1.10.46	Query Ward wise demand details
3.1.10.47	Query Holding details as according to the criterion of valuation laid down under Jharkhand Municipal Act 2011
3.1.10.48	Query Collection report based on mode of payments i.e. Cash, cheque, cards etc.
3.1.10.49	Query Collection report based on channel of collection – collector, CFC, internet, online etc.
3.1.10.50	Query Category wise list of all properties whose assessable area has changed (in percentage) as per user input
3.1.10.51	Query Details of payments / commissions paid for collection
3.1.10.52	Query The system should able to generate Collector's Performance & Movement in the Holdings report with figures from previous year, current year, % change
3.1.10.53	Demand Trend Reports

3.1.10.54	Realization Trend Reports
3.1.10.55	Timely realization Trend Reports
3.1.10.56	Method of payment Trend Reports
3.1.10.57	Arrear recovery Trend Reports
3.1.10.58	No. of holdings Trend Reports
3.1.10.59	Collection channel Trend Reports
3.1.10.60	Collection of penalty and interest Trend Reports
3.1.10.61	The report should be generated as summary report for ULB and also by collector, Ward, Circle, holding category (Residential, Commercial/Industrial and Others), By type of Construction (Pucca, Asbestos, Others) and by category of Road (Principal, Main and Others)
3.1.10.62	Time Series Report For a particular holding - original and revised area
3.1.10.63	Time Series Report Category-wise list of all the holdings whose assessable area has changed (in percentage or range of percentage) as per user input
3.1.10.64	Time Series Report Ownership change - for a particular holding with tenure
3.1.10.65	Exception Reports Difference between amount of tax return filled and actual tax liability calculated by the system based on the data available in the database
3.1.10.66	Exception Reports Status of Flagged/suspected holding - Overall, municipal circle wise, revenue circle wise, ward wise, and collector wise list of property which have marked as suspected along with the remarks and other details
3.1.10.67	Exception Reports Incomplete data reports
3.1.10.68	Exception Reports where data not received consistently
3.1.10.69	Exception Reports for areas where data changed often
3.1.10.70	Exception Reports Property size and demand decrease reports
3.1.10.71	Exception Reports Report for occupancy details changed often

3.1.10.72	Dashboard needs to offer various drill down and graphical report associated with property tax related data i.e. self-assessment, demand, collection, arrear etc.

3.1.11 Interface with Other System

3.1.11.1	Interface with workflow/document management system
3.1.11.2	Interface to use digital signature certificate
3.1.11.3	System should interface with Mailing & Messaging System and SMS application

3.1.12 Integration of data

3.1.12.1	Integration of Data Sets from Different Departments (e.g. Electricity/Land Records/Registration Departments) and other Modules (e.g. Water, Solid Waste/Municipal Trade License etc.) for Revenue Augmentation

3.2. Water User Charge Management System

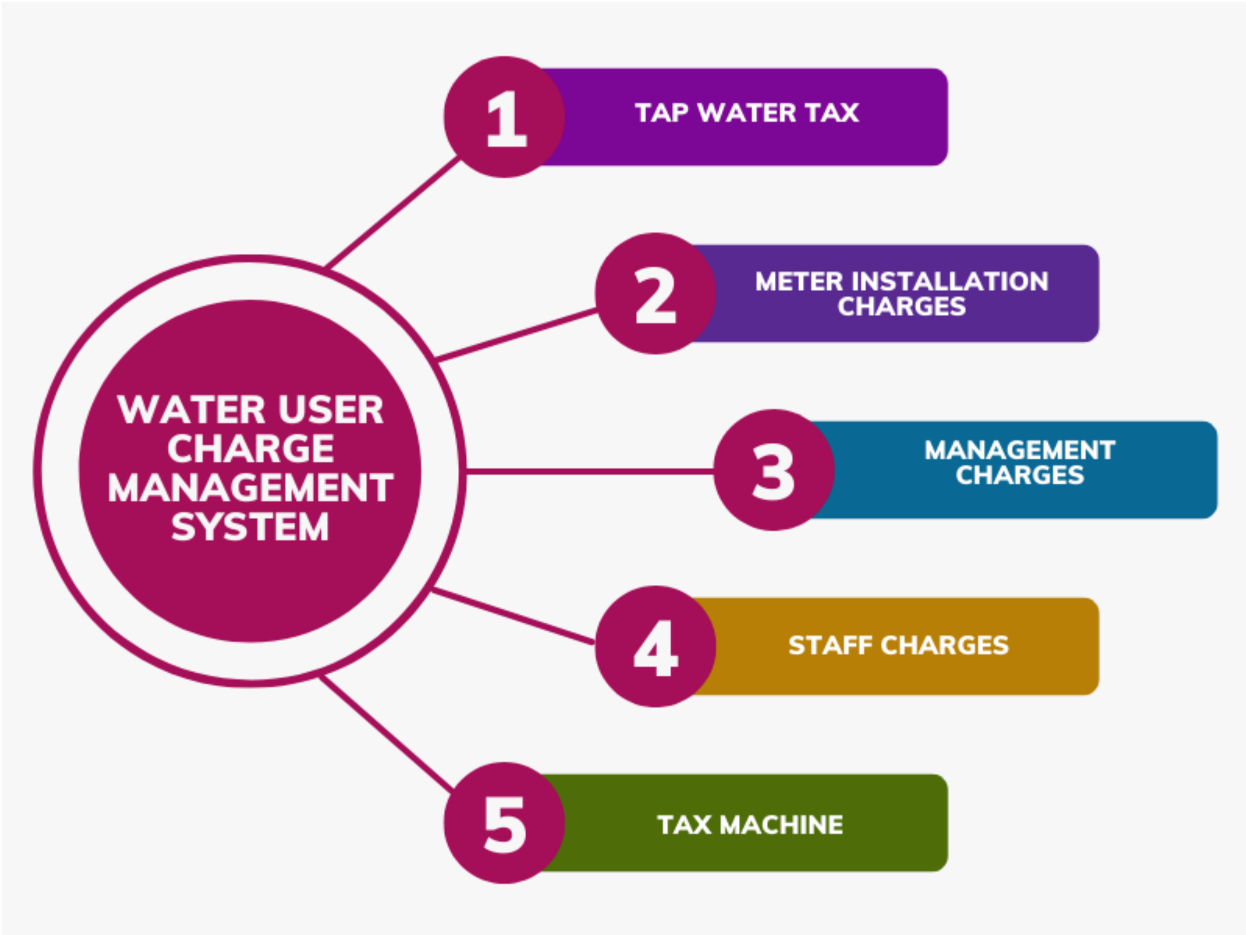


Figure37: Water user charge management

3.2.1	Manage licensed plumber
3.2.2	Adding/editing licensed plumber list associated with MC
3.2.3	New Water & Sewerage Connection (Residential, Commercial)
3.2.4	Procedure/Workflow approvals to set up water and sewerage connection
3.2.5	Regular Water Connection (Up to 15mm ferrule size)
3.2.6	Regular Water Connection (20mm to 40mm ferrule size)

3.2.7	Regular Water Connection (Above 40mm ferrule size)
3.2.8	New sewerage connection without road cut permission
3.2.9	New sewerage connection with road cut permission
3.2.10	New shallow water tube well connection for non-potable purpose
3.2.11	Temporary Water & Sewerage Connection
3.2.12	Setting up of bill criteria for under construction/temporary connection
3.2.13	Tertiary Treated Water Connection
3.2.14	Transfer of Water & Sewerage Connection
3.2.15	Conversion from Commercial Water Tariff to Domestic Water Tariff
3.2.16	Change of name for water connection
3.2.17	Temporary and Permanent Closing of Water & Sewerage Connection
3.2.18	System should have facility to define / view / update Meter Readings as per the user role. System should have facility to view the meter reading to citizen
3.2.19	System should have facility so that user would be able to view their accounts, payment history, last six months bill details, last six months payment made
3.2.20	System should have facility to apply for Refund of water security
3.2.21	System should have facility to apply for plinth level certificate
3.2.22	System should have facility to Sending acknowledgement mails/ SMS to applicant after submission / approval / rejection of application
3.2.23	System should provide facility to pay bill and connection fee submission online.
3.2.24	Recovery of the defaulter's bills
3.2.25	MIS Reports and Dashboard

3.3. Municipal Trade License Fee Management System

According to the Municipal Trade License Act permission is required from urban local bodies to set up trade in their jurisdiction. No premises can be used for any non-residential purpose without a Municipal Trade License. The owner or occupier of every place for the use of which for any purpose a license is required shall apply to the Commissioner/ Executive Officer/ Special Officer for such license not less than thirty days before the place is used for such purpose. The Competent Authority shall communicate either approval or refusal within 22 working days from the date of application. If the application is not processed within 22 working days, it is deemed approved. The authority to issue licenses in respect of trades or business specified in the schedule shall be the Municipal Commissioner/ Executive Officer/ Special Officer of the notified ULBs.

3.3.1 Procedure

- To set up or run a business unit in area of urban local bodies, applicant must submit its application by paying applicable Municipal Trade License fees.
- The disposal of application will be passed through four tier verification i.e., Primary verification by dealing assistant, secondary verification by section head, site inspection by Tax Daroga and approval/ refusal of application by Approved Authority.
- After primary verification on application details, dealing assistant will forward the application to section head for secondary verification. Section head will review the technical aspect of the application for recommendation on approval or disapproval to Approval Authority. The disapproval will depend upon the form not property filled or the documents not being in order. Approval Authority may instruct Tax Daroga for site inspection of the premise on which commercial activities is proposed to run, if necessary and indicate the specified checkpoint during the site inspection of the premise. Tax Daroga will submit the inspection report within 10 working days from the date of instruction received from Approval Authority. After reviewing the note/remarks on specified check point submitted by Tax Daroga, Approval Authority may issue or refuse the Municipal Trade License permit to the application within3 working days from the date of file submitted by Tax Daroga.
- A provisional license will be issued the same day to the applicant on trust and verify method, while for the final license the approval authority of Urban Local body may issue the Municipal Trade License within 9 days from the date of application where no site inspection is required and 22 working days where site inspection is required. In case of non disposal of application within above specified time, Municipal Trade License will be deemed approved.
- The approved license will be issued to the applicant under the trust and verify method within 1 day of submission of the application and the actual verification will be done after that. If the applicant

does not hear anything within 22 days, then the application is deemed to be approved. In case, after verification the papers and other details are not found in order, then the person/ entity will be debarred from applying for the license next 2 years and / or a fine of Rs. 1000/- to 5000/- may be imposed. The table below has exhibited to define the role and responsibility of hierarchy along with timeline to deliver the service.

Hierarchy	Days	Role & Responsibility
Dealing Assistant	3	• Review all documents and remarks on documents. • Forward the file to Section in Charge
Section In Charge	3	• Final Review of the application with attached documents and remarks • Prepare recommendation note for issuing certificate or Prepare objection note for rejection of issuing certificate • Forward the recommendation to approval authority or Send back the application to applicant if necessary
Executive Officer/ Special Officer/ Municipal Commissioner	3	• Review all remarks with documents • Send the file to Tax Daroga for site inspection of the premises along with referring checkpoints.
Tax Daroga	10	• Do site inspection on specified checkpoint given by Approval authority • Send the report on inspection to Approval Authority
Executive Officer/ Special Officer/ Municipal Commissioner	3	• Review all remarks with documents • Review all remarks onsite inspection • Issue Municipal Trade License Certificate or Reject the application to issue the certificate or Send back to the application to Section in charge/ Tax Daroga if necessary

Documents required for issuing Municipal Trade License

- **In case trader applicant is the owner of business premises**

  Enclose Land Possession Certificate/ Allotment Order/ Revenue Rent/ Sale Deed/ Correction slip/ Updated Holding Tax.

  Or

  If applicant has no Land/ Building of his /her own.

  Enclose Deed of Land Lease Agreement/ Rent Agreement/ Electricity Bill

- **If partnership Firm**

  Enclose Deed or Agreement

  Or

  If Business is Pvt. Ltd. Or Ltd Company

  Enclose Registration Certificate incorporating under the companies Act

  Or If applicant is individual

  Identity proof of Trade applicant

Municipal Trade License Fees

SL. No.	Built-up area (in sq. ft)	Rate Per Annum
1	UP to 100	300-
2	101 to 500	500/-
3	501 to 1000	1,500/-
4	Above 1000	2,500/-

3.3.2 Inspection at business place/ premises

The date of inspection may be informed to the applicant for hes /her presence at premises prior 2 working days. Tax Daroga may be authorized to do site inspection of the premise on the checkpoints given by Approval Authority. Applicant may be asked to submit affidavit for declaration on availing applicable NOCs/ Permit/ clearance if required as per business nature.

3.3.3 Municipal Trade License Renewal

Every Trade License shall expire at the end of the 12 months from the issue date of license. The grantee needs to apply for renew the license before 1 month from the date of expiry. Normally, there will not be an inspection of the trade premises for renewal. However, tax Daroga may carry out random inspection after the Municipal Trade License has been renewed as per the order of approval authority. Original Municipal Trade License will be mandatory document to renew the trade license to Urban Local Body. On the advent of online Municipal Trade License Management, the grantee may renew its Municipal Trade License through this online application.

3.3.4 Suspend / Revoke Municipal Trade License

Any license or permission granted earlier may at any time, be suspended or revoked by the approval authority of ULB, by whom it was granted under the following circumstances.

- It has been secured by the grantee through misrepresentation or fraud
- If any of the restriction or conditions of license or permission has been infringed or evaded by grantee.
- If the grantee has been convicted for the contravention of any of the provisions of the Act.

When any such license or permission is suspended or revoked, the grantee shall be deemed to be without a license or permission until the license or the permission is renewed or issued.

- The Approval Authority of ULB may send the hearing notice. The hearing date my be extended to maximum fifteen working days from the date of issuing the notice.

3.3.5 Surrender of Municipal Trade License

The grantee may surrender its Municipal Trade License within validity period. No fees will be levied on surrender of the Municipal Trade License. Original Trade License will be mandatory document for surrender

3.3.6 Amendment of Municipal Trade License

Once the license permission granted, it will remain in force till its validity period. The grantee may apply for change in the trade if he/she is changing the trade within the same premises, or in case the covered area of the trade is being increased or decreased. The renewed license will be given after depositing the relevant fee and required documents.

The fee structure for the amendment is given below

SL. No.	Built-up area (in sq. ft)	Rate Per Annum
1	UP to 100	150-
2	101 to 500	250/-
3	501 to 1000	700/-
4	Above 1000	1,250/-

3.3.7 Cancellation of Trade License

A License issued under the provision of these regulations shall be cancelled: -

- If the licensee fails to abide by the conditions laid down in the license.
- If the premises of the shop has been shifted without approval of the concerned authority.
- If container for disposing garbage and refuses is not available within the premises.
- If the license carries on or permits to be carried on, any other trade in the license premises, except the trade mentioned in the license; and if it becomes evident that the running of the trade has created a public nuisance and polluted the vicinity.
- If it becomes evident that the information submitted in is a misrepresentation of fact or mistake.
- If the licensee fails to display a notice board containing the nature of articles, which he is exposing or offering for sale in accordance with the instructions issued by the ULB from time to time;
- If found that the license has been sublet.
- If it is found that licensee is carrying on his business in an unapproved building.

3.3.8 Duplicate Municipal Trade License

Licensee can get a duplicate license by mentioning sufficient reasons. Duplicate licensee fee is Rs. 100/-

Figure38: Trade License System

3.3.9 Functional Requirements: Municipal Trade License

3.3.9.1	System should be able to capture/ edit/ delete the details of inspections done by a market license inspector
3.3.9.2	The system should have facility to assign the application to the respective Inspector for survey and verification
3.3.9.3	System should allow the inspector to enter the field visit details and filed visit report should be generated and automatically routed to the superintendent
3.3.9.4	System should allow the approving authority to approve or reject the report
3.3.9.5	Inspection workflow, cancellation or change in ownership information etc. process will be as per standard defined workflow in the proposed system

3.3.9.6	System should allow the SMS alerts to the applicant regarding the date of inspection / visit by the inspector, approval / rejection of the application
3.3.9.7	The system should generate the reports for which data was submitted after each inspection
3.3.9.8	The system should have Facility to create/edit/update the deficiency/Inspection report against the application
3.3.9.9	The system should facilitate Inspection Entry
3.3.9.10	System should have ability or facility to prepare and allow to verify the report prepare by inspector
3.3.9.11	System should have ability to allow approving or rejecting the report
3.3.9.12	System should be able to maintain& generate the records of show cause notice
3.3.9.13	System should have facility for Generation of Show cause Notice
3.3.9.14	System should be able to generate hearing notice
3.3.9.15	System should maintain the details of Hearing
3.3.9.16	System should have facility to enter the details of dishonored cheques
3.3.9.17	Capturing of the license fee/late fee details (Cheque/DD details, online, through banks etc.)
3.3.9.18	System should have the facility of Cancellation of License by Force
3.3.9.19	System should have provision to Issue new trade license
3.3.9.20	System should have ability to do the scrutiny of applications
3.3.9.21	The system should have provision for routing of the documents through the ULB Counter and online approval/rejection by market license department
3.3.9.22	System should have the facility to assign unique identification number based on license type, which will be used for all future transactions of the license
3.3. 9.23	System should allow the applicant to apply for a license for multiple years

3.3. 9.24	System should allow generation of license and intimation to applicant through SMS or e-mail
3.3. 9.25	The system should allow generating paper-based license
3.3. 9.26	The system should have provision to issue license for Rickshaw. This can be handled by parameterization process in common master module
3.3. 9.27	System should have facility to allow generating paper based license
3.3. 9.28	The system should have provision to record NOC, if required, for a new business
3.3. 9.29	The system should have provision to issue duplicate market license
3.3. 9.30	The system should have provision to renew the existing market license
3.3. 9.31	The system should have provision to change the name of the business
3.3. 9.32	The system should have facility for Change in Business
3.3. 9.33	The system should have provision to cancel the market license by application
3.3. 9.34	The system should have provision to transfer the license under nomination (hereditary)
3.3. 9.35	The system should have provision to transfer the license via any other mode than nomination
3.3. 9.36	The system should allow the online payment of license fee
3.3. 9.37	System should have the facility to define the rates for generic taxes on basis of various parameter like Flat / Slab wise, Value types – (percentage-Amount-Multiply) , depend on tax sub criteria
3.3. 9.38	System should have ability to Add / Edit/ Search / Delete charges
3.3. 9.39	System should be able to link the services with the charges associated with the services
3.3. 9.40	System should have ability to Add / Edit/ Search / Delete charges
3.3. 9.41	System should have facility to define rates for taxes specific to particular license category

3.3. 9.42	System should have facility for Maintenance of matrix for license fee details with an option to keep the records even after new rates become affective
3.3. 9.43	System should have ability to Add / Edit/ Search / Delete charges
3.3. 9.44	System should allow provisions for rebates/discounts etc.
3.3. 9.45	System should be able to define the renewal schedule of the license on the following criteria: Calendar Year wise/ Financial Year wise·/ For a fixed period from the date of license
3.3. 9.46	System should be able to identify and define the charges to be taken from Tax Master or Rate Chart for a particular service
3.3. 9.47	System should be able to define the Ward-Zone-Block Hierarchy
3.3. 9.48	System should have facility to define license type - sub type, category – subcategory
3.3. 9.49	The system should be able to print new market license based on the application number selected
3.3. 9.50	The system should re-print market license based on the license number selected.
3.3. 9.51	The system should be able to generate reminder notice for market license renewal based on individual license number
3.3. 9.52	The system should be able to generate reminder notice for market license renewal based on license category
3.3. 9.53	The system should be able to generate the list defaulters who have not renewed their license after the license renewal date has expired
3.3. 9.54	The system should be able to generate the renewal notice for the defaulters who have not renewed their license after the license renewal date has expired
3.3. 9.55	The system should allow intimating the applicant about the payment of license fee through SMS/ email
3.3. 9.56	System should automatically send the alerts to the License holder 30 days before the license/registration expiry

3.3. 9.57	The system should be able to generate the report containing: License details/ License holders details/ Business details
3.3. 9.58	The system should maintain the details about License holder details, like, owner name, shop /rickshaw, address, purpose, date of issuance, license number etc.
3.3. 9.59	The system should be able to generate report showing the summary of demand/Collection/outstanding amount of market department revenue
3.3. 9.60	The system should be able to generate any other fixed format and Ad-hoc reports as desired
3.3. 9.61	System should print Reports showing Changes in License Types, Business Partners, Cancellation Licenses, etc.
3.3. 9.62	System should have Facility to forecast the impact of reduction / deduction of License Fee
3.3. 9.63	System should print Reports w.r.t. Bills / Notices generated
3.3. 9.64	System should allow the Generation of receipt for the payment
3.3. 9.65	System should generate the Reports showing the number of licenses approved/rejected
3.3. 9.66	System should generate the Report showing the number of licenses pending for approval/rejection
3.3. 9.67	The system should have Integration and Interface to use digital signatures on various resolutions passed, estimates approved and proposals rejected
3.3. 9.68	System should print reports related to E-Mail / SMS to be sent to the owner upon transactions
3.3. 9.69	System should allow printing the license, sending the license through e-mail
3.3. 9.70	System should automatically send the alerts to the License holder 30 days before the license/registration expiry
3.3. 9.71	System should allow the SMS alerts to the applicant regarding the date of inspection / visit by the inspector, approval / rejection of the application

3.3. 9.72	System should allow generation of license and intimation to applicant through SMS or e-mail
3.3. 9.73	System should sent reminders for renewal of license 30 days prior to the expiry
3.3. 9.74	System should allow officials to send the digitally signed certificate to applicants through e-Mail and send details of license through SMS
3.3. 9.75	The system should have the facility to deliver the service online& through Municipality Counter
3.3. 9.76	The portal should have all the information including the processes and documents required for the convenience of the citizen
3.3. 9.77	System should capture all the details required for application
3.3. 9.78	System should have the facility to apply online and through the ULB Counter
3.3. 9.79	System should have a facility for online payment and through the ULB Counter
3.3. 9.80	System should have the facility to download form, online filling and submission of form
3.3. 9.81	System should ability or allows the online payment of license fee
3.3. 9.82	The system should have a facility for online payment and through the ULB Counter

Process flow diagram for trade licensing

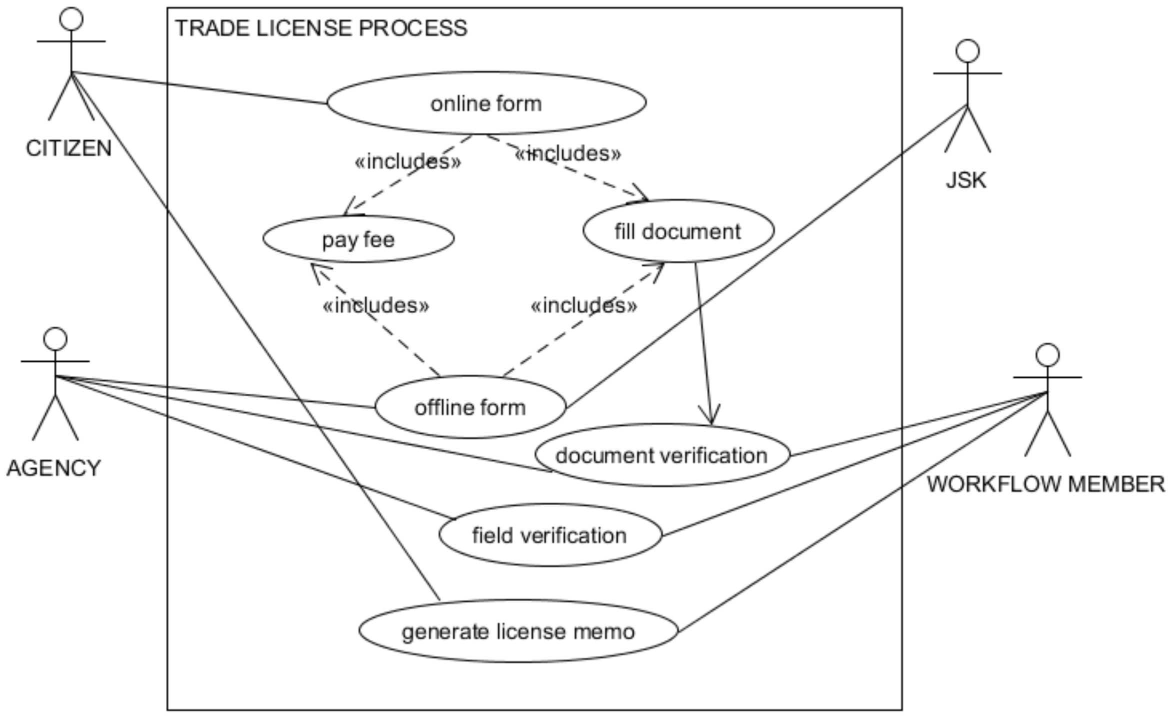


Figure39: Trade License Use Case

3.4. Building Plan Approval Management System

In the local bodies, the town planning section issues permission for construction of buildings, based on specific set of rules and regulations. The building permission module facilitates quick processing, disposal of building plan permissions, standardization of collection of building fee & other charges, to automate the technical scrutiny, effective monitoring of file processing and have transparency, accountability and accessibility to the information and status of the building applications, retrieval of data at any future date

The main features of the building plan approval modules are

- Approval of building proposal of various types and nature of buildings
- Approval of layout proposal
- Processing and disposal of Government references, court cases, Chief Minister Cell reference, Lok Ayukta references etc.
- Planning and implementation of developmental activity such as road widening, junction improvements, development of parks, play grounds, subways, parking lots, bus bays etc.
- Calculation of various fees such as admission fee, developmental charge, regularization charges, building license fees, scrutiny fees, demolition charges etc.
- Collection of the fees and maintenance of appropriate records.

This module should also be synchronized with Master Plan of the ULB. It should be able to provide information related to new construction, existing construction, planning and implementation of developmental activity such as road widening, junction improvements, development of parks, play grounds, subways, parking lot, bus bays, residential area based on the Master Plan of the ULB.

3.4.1 Functional Requirements: Building Plan Approval

3.4.1.1	System should have facility to categorize the building plan under Cinemas, Multiplexes, Marriage Halls, Commercial complex, Housing and Hospital, etc.
3.4.1.2	System should have facility to deliver the service online & through CFC
3.4.1.3	The portal should have all the information including the processes and documents required for the convenience of citizen
3.4.1.4	System should capture all the details required for application
3.4.1.5	System should have the facility to apply online and through CFC

3.4.1.6	System should have facility to download required forms
3.4.1.7	System should have facility for online payment and through CFC
3.4.1.8	System should have facility to send the alerts through SMS and email
3.4.1.9	System should track delays in approval steps and maintain an audit log of the approval process steps
3.4.1.10	Interface with Mailing & Messaging System and SMS application
3.4.1.11	Integration with Payment gateway
3.4.1.12	Integration with other modules

3.4.2 Functional Requirements: Empanelment and Architects

3.4.2.1	System should have facility to capture the empanelment process for the Architects
3.4.2.2	System should maintain the records of empanelled architects for all the ULBs
3.4.2.3	System should have facility to import the list of empanelled architects
3.4.2.4	System should allow Architects to make payment online for empanelment
3.4.2.5	System should allow de-listing of any of the empanelled Architects from the list
3.4.2.6	System should capture actions taken against any Architects for any violation

3.4.3 Functional Requirements: Sanction of Building Plan

3.4.3.1	System should have facility for uploading the soft copy of the building plan along with the application
3.4.3.2	System should allow uploading other necessary document along with the application

3.4.3.3	System should allow municipal officials and empanelled architects to access/download the same for verification of particulars
3.4.3.4	Owner of the land /Applicant will upload the building plan as per Building bye-laws with other supporting documents
3.4.3.5	ULB will verify the documents and drawing and may give their comments within 15 days
3.4.3.6	Owner / Applicant may have to upload the revised drawing after incorporating the comments given by the ULBs
3.4.3.7	If there is no comment from the ULBs within 15 days of submission of comments, software will automatically generate a challan for the owner of the land to pay the prescribed fee
3.4.3.8	Owner / Applicant will make the payment of the prescribed fee online/offline
3.4.3.9	Empaneled certified Architect will approve the plan with their digital signature
3.4.3.10	Based on these an acknowledgement should be generated and given to the applicant
3.4.3.11	System should generate application reference for Building Plan Application/ Layout Application for the applicant and facilitate online tracking of the status of the application
3.4.3.12	System should sent e-mail/SMS notification to the applicant and empaneled architects to whom that application has been sent
3.4.3.13	System should allow empaneled architects to ask for additional documents/information from the applicant
3.4.3.14	System should allow architects to approve/reject plans and give comments on the same
3.4.3.15	System should have provision to generate digitally signed notice and communicate the same through SMS/Email
3.4.3.16	System should generate unique ID for each approved building plan
3.4.3.17	System should link Holding Tax and Utility data with Building plan ID
3.4.3.18	System should have facilities for Online Fee calculation
3.4.3.19	The detailed workflow of approval of the plan needs to be mapped in the document management system

3.4.3.20	Online help should be available to the user for each system function. Topics covered in the user manual shall also be available through the online help

3.4.4 Functional Requirements: Issuance of Completion Certificate

3.4.4.1	System should allow the owner of the property to upload the progress of construction (photographs of the property) at pre-defined stages
3.4.4.2	In case of violation of the above, system should send alerts (SMS / e-Mail) to the concerned ULBs
3.4.4.3	System should have provision for designated officer to lodge the details of the site visit. Following which the documents needs to be approved by the document management system
3.4.4.4	System should have provision to generate digitally signed notice and communicate the same through SMS/Email
3.4.4.5	System should have integration with property tax module to update the details of the property after issuance of completion certificate

3.4.5. (Functional Requirements) Approval of Modification and Additional Construction

3.4.5.1	System should allow the designated officer to enter the field visit details
3.4.5.2	System should be able to generate notice to the concerned property owner. The same should be communicated through email and SMS
3.4.5.3	System should have the facility to apply online or through CFC for compromise
3.4.5.4	System should be able to generate composition fee assessment report as per the details entered
3.4.5.5	In case of no compromise; the system should have the facility to update the action taken

3.4.6. (Functional Requirements) Registration of Builders

3.4.6.1	System should allow registration of builders under various categories defined by the ULBs
3.4.6.2	System should allow builders/promoters to provide details about the sale of the flats/plots etc.
3.4.6.3	System should allow tracking of sales/transfers of flats / plots etc.

3.4.7. (Functional Requirements) MIS Reports

3.4.7.1	System should generate list of empanelled architects and no. & details of building plans approved / rejected by any particular architects
3.4.7.2	System should be able to generate a full range of reports relating to sanction of building plan, change of ownership, Issuance of completion certificates, violations, Lat-Longs, etc.
3.4.7.3	System should able to generate the any other fixed format and Ad-hoc reports as desired
3.4.7.4	Dashboard needs to offer drill down and graphical report regarding plans approval, rejection, Architects etc.

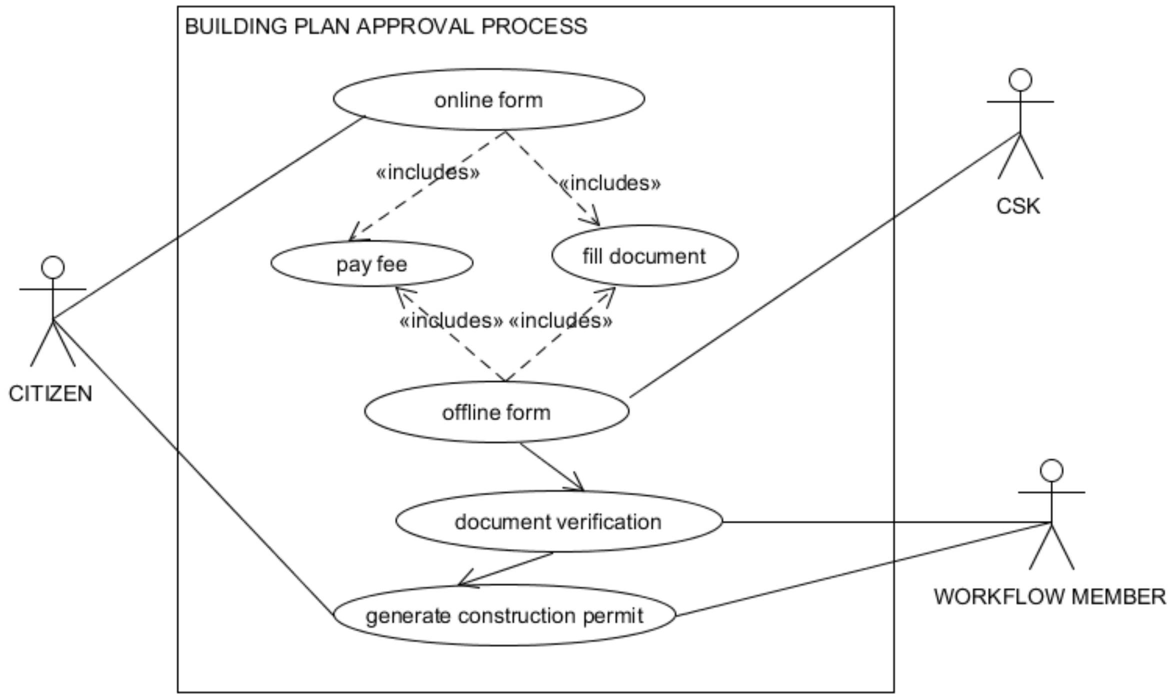


Figure 40: Building Plan Approval Process

3.5. Functional Requirements: HRMS and Payroll

The employees form a major asset base of all state departments including the municipalities. Efficient and effective utilization of this asset viz. the available human resource is important to ensure effective administration of these departments. The state Governments, being the single largest employers in most states, recognize the need for an integrated information technology solution to address the need s and streamline its complex and dispersed payroll and human resource management system.

The key functions under proposed human resource management system module are

- Recruitments/ Appointments
- Promotions and non-gazette staff
- Regularization of staff
- Department promotional committee meetings
- Increments
- Seniority matters
- Processing of annual confidential report
- Processing of transfer of charge
- Probation
- Deputation (Foreign/Other)
- Compulsory waits
- Processing of Leave Travel Concession (LTC) request.
- Medical reimbursements
- Travel & tour management
- Leave management
- Retirements
- Resignations
- Government provident fund
- Processing of bills
- Service Register

Indicative sub modules are:

- Manpower Planning Module
- Staff Salary & Pension Processing
- Work Force Recruitment Module
- Compensation Management Module
- Payroll Processing Module
- Training development module

- Advance and Loan Module
- Work Force Administration Module
- Leave Management Module
- Disciplinary Action and Grievance Module

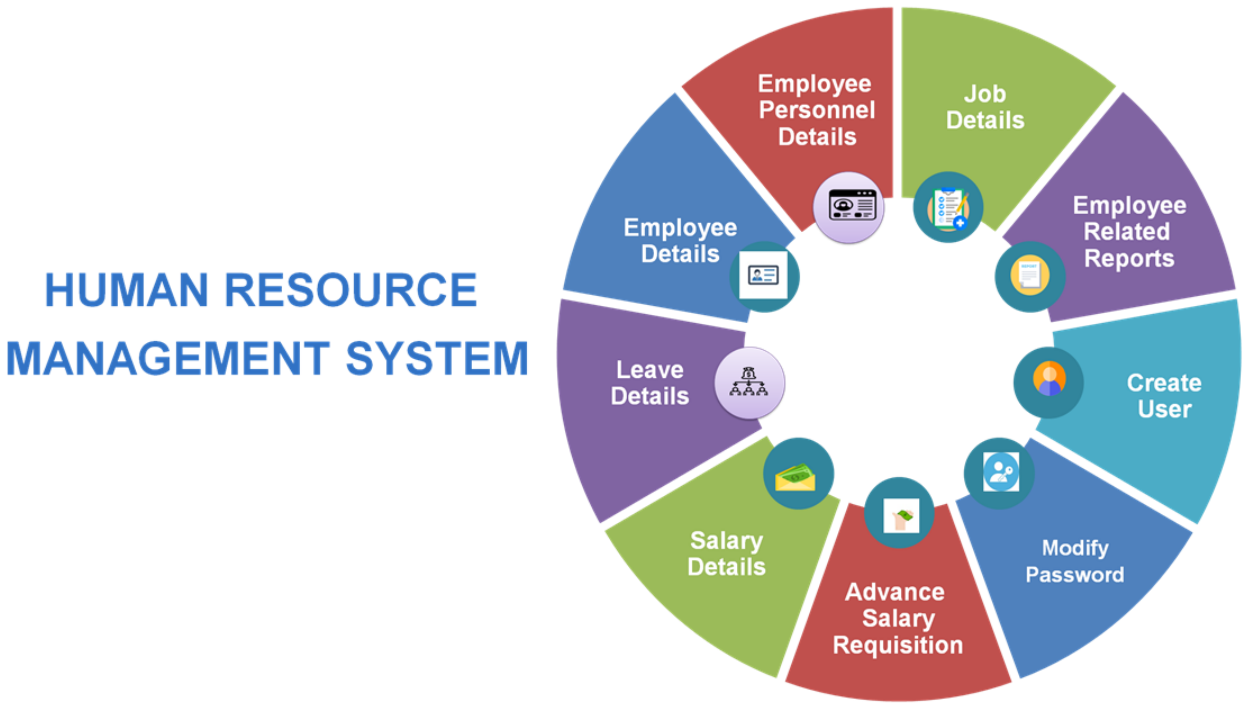


Figure 41: Human Resource Management System

3.5.1 Functional Requirements: HRMS & Payroll

3.5.1.1	The system should have following defined masters. This is tentative masters, additional masters and sub masters are to be defined to ensure maximum configurability of the system. • Location Master • Department Master • Calendar Year • Holiday Master • Cadre Master • Reservation Master

	• Sanction Post & Opening Balance Master • Pay Band & Grade Pay Master • Pay Scale Master • Leave Master • Loan Advance Configuration Master • Employee Master • Bank Master • IT Section Master / Taxation Rules • Allowance/Deduction Master
3.5.1.2	The system should have provision for adding sanctioned post for recruitment
3.5.1.3	System should have facility to maintain Vacancy Computation details year wise and class wise
3.5.1.4	Indent Should be classified in Sanctioned Post, Contractual Appointments, Outsourced Employees, and Daily Wages &Deputation Post
3.5.1.5	System Should have facility to store and Print the Job Advertisement Details
3.5.1.6	System should have provisions to Apply & receive the Job Application documents/information Online
3.5.1.7	System should have facility to capture the Candidate details from Application
3.5.1.8	System Should have facility to generate and Print the Admit Cards
3.5.1.9	System should have facility to capture the Candidate details from final Merit List & Application Store (Roll No, Name, Post Address Grade Pay and Other Details)
3.5.1.10	System should have the facility to generate the offer letter
3.5.1.11	System should have facility to generate and print the selected candidate Joining Documents Details
3.5.1.12	System should have facility to generate and print the Joining Letter along with the list of selected candidates
3.5.1.13	System should have facility to generate and print the list of selected Appointment Letter

3.5.1.14	System should have facility to generate and print the list of selected Appointment Documents
3.5.1.15	System should have facility for Addition, Modification, Cancel, and Search of Employee Details
3.5.1.16	System should assign the unique ID to each Employee
3.5.1.17	System should capture the Standard employee
3.5.1.18	System should have facility to assign the basic pay band & Grade Pay
3.5.1.19	System should have facility to add /Modify/Cancel and Search the Pay Fixation
3.5.1.20	System should have facility to capture the Candidate details from Employee Data (Employee ID, Name, Post, Address, Grade and Other Details) & Pay Fixation
3.5.1.21	System should have the capability to manage the employee transfer
3.5.1.22	System should have the capability to manage Annual Performance Assessment Report (APAR)
3.5.1.23	System should have facility to capture the Employee Feedback against the predefined Criteria / Points
3.5.1.24	System should have the facility to manage the increments for the employees
3.5.1.25	System should have the facility to manage Modified Assured Career Program (MACP) for the employees
3.5.1.26	System should have the facility to manage Compassionate employment
3.5.1.27	System should have the facility to manage Employee Demotion/Reversal
3.5.1.28	System should have the facility to manage Employee Ad-hoc Promotion
3.5.1.29	System should have the facility to manage Employee Suspension
3.5.1.30	System should have the facility to manage Employee Separation
3.5.1.31	System should have the facility to manage Advance Request / Advance Adjustment for the employees

3.5.1.32	System should have the facility to manage the events for the employees
3.5.1.33	System should have the facility to manage the payments for the Utility Bills of the employees with auto deduction form salary
3.5.1.34	System should have the facility to manage Telephone Bills payment for the employees
3.5.1.35	System should have the facility to manage the Rent Payment of the employees
3.5.1.36	System should have the facility to manage the Reimbursement Request of the employees
3.5.1.37	System should have the facility to manage the Request for Higher Education by the employees
3.5.1.38	System should have the facility to process the request for NOC for Passport / Visa
3.5.1.39	System should have the facility to manage Asset Declaration process / Asset Purchase Request of the employees
3.5.1.40	System should have the facility to manage the advances and loans request by the employees for events like house construction, marriage, medical purpose, etc.
3.5.1.41	System should have the facility to manage the Request for Employment Outside Organization
3.5.1.42	System should have the facility to process the leave request and approval
3.5.1.43	System should have the facility to process the compensatory off request and approval
3.5.1.44	System should have the facility to manage the daily attendance of the Office and Field employees
3.5.1.45	System should have the facility to manage the tour program and travel advances for the employees
3.5.1.46	System should have the facility to manage the festival advance request by the employees
3.5.1.47	System should have the facility to process the Employee complaint & Grievance
3.5.1.48	System should have the facility to generate Show Cause Notice

3.5.1.49	System should have the facility to generate Charge Sheet
3.5.1.50	System should have the facility to manage the Departmental Enquiry
3.5.1.51	System should have the facility to manage the penalty levied on the employees along with the details of the final penalty imposed
3.5.1.52	System should have provision for employees to appeal against any penalty
3.5.1.53	Performance Management System
3.5.1.54	System should have the capability to generate the MIS reports and as per the finalized requirements

3.5.2 Functional Requirements: Payroll and Pension

3.5.2.1	System should have provision for Payment rules for department / location / personal level along with the following definitions • Define Pay Code • Define Deduction Code • Define Basis Formula • Define Reimbursement • Define Benefit Code • Define Loan and Advance • Define Provision Master • Define Perquisites Category • Define Deduction Details • Define Professional Tax Slabs • Define TDS Calculation Slabs
3.5.2.2	System should generate & Print Employee Subscription details
3.5.2.3	System should have facility for managing Employee wise Loans & Recoveries details
3.5.2.4	System should have the functionalities for the Investment Declaration for Income Tax

3.5.2.5	System should have the capability to generate the MIS reports and as per the finalized requirements
3.5.2.6	System should have facility to manage the Employee wise PF Subscription details
3.5.2.7	System should have facility to add/modify /Search the Pension Detail for the employees
3.5.2.8	For pension matters the personnel management system and accounts must be integrated. There must be provision in system to route the pension application in the portal for approval
3.5.2.9	System should have facility for Proper audit of reports to make pre audits regarding the pension and retirement benefit calculation
3.5.2.10	System should have facility to generate and Print Pension Copy

3.6. Birth and Death Certificate Management System

The registration of birth and death is one of the major functions of public health section. The births and deaths, which take place in the hospital are recorded and reported to the municipalities. For non-hosp8ital events, the concerned parties can make necessary applications to the municipalities. Delay in registration of the events requires clearances from various authorities. Once the event is registered, ULB issues the necessary certificate. In the case of non-hospital event, the certificate is issued after necessary scrutiny and inspection. At any given point of time, corrections to birth/death details can only be done by the Registrar of births & deaths. Necessary records are maintained by the health section.

Figure 42: Birth and Death Certificate

3.6.1 Functional Requirements: Birth & Death Management

3.6.1	System should have facility for Addition, Modification, Deletion, and Search of Hospital Data
3.6.2	System should be able to print list of hospital

3.6.3	Hospital Master should get automatically updated after the hospital registration
3.6.4	Service Charges Master
3.6.5	System should have facility to define fees for Birth & Death registration as defined in process
3.6.6	System should have facility to define charges as per Slab (data range) /flat/year / lump sum basis
3.6.7	System should have facility to maintain the details of Registrar
3.6.8	System should have facility to define designation of the employee
3.6.9	System should allow role wise authorization to user
3.6.10	System should have facility at designated level to check the registration details entered in the system to avoid typographic mistakes as well as mal-practice before generating registration number
3.6.11	The use of the facility should be at the discretion of ULB
3.6.12	System should provide functionality to authorize/ Reject / on Hold Birth & Death registration
3.6.13	System should have facility to request for Birth Certificate by the empanelled Hospitals
3.6.14	System should have facility to generate online certificates by empanelled hospitals. Empanelled hospital can issue the birth certificate to citizens but nursing homes cannot issue directly. For nursing homes approval of registrar is required
3.6.15	System should authorize registered nursing homes to enter details of the new born but should not allow the issue of birth certificate
3.6.16	System should allow citizen to apply online for birth certificate in case delivery taken place at home
3.6.17	System should have facility to pay fees online
3.6.18	System should have facility to update citizen about the status of their application through SMS/ Email alerts
3.6.19	System should have facility of multilevel approval system. Should be configurable

3.6.20	System should have facility to upload important documents like Aadhaar card, photo Ids etc.
3.6.21	System should allow edit of parent names in case of adopted child
3.6.22	System should allow edit of details to authorize user in case data entered is wrong
3.6.23	System should have facility to upload Birth and Death registration data available in soft format through data upload facility
3.6.24	System should allow the Birth registration correction through ULB counter / Online through web portal
3.6.25	System should have the facility to capture Applicant details from the user profile in case of Citizen Login ID, Otherwise application form should have the facility to capture the applicant details in case on CFC/ ULB counter
3.6.26	System should have facility to upload service related required document online
3.6.27	System should have facility for Govt. official to add/modify/delete the Birth and Death details by based on the approval/right as per process
3.6.28	System should allow the Death registration correction through ULB counters / Online through web portal
3.6.29	System should have the facility to capture Applicant details from the user profile in case of Citizen Login ID, Otherwise application form should have the facility to capture the applicant details in case on ULB counter
3.6.30	System should have facility to upload service related required document online
3.6.31	System should have facility for Govt. official to add/modify/delete the Birth and Death details based on the rights assigned as per process
3.6.32	System should have facility for online payment as well as through ULB counters for this service
3.6.33	System should have facility to collect charges through online payment
3.6.34	System should have facility to collect payments in offline mode
3.6.35	System should have the provision for Registrar to approve or reject the request

3.6.36	System should have facility to resubmit the required doc or to correct the application details in case of rejection / on hold status through citizen log in
3.6.37	System should have facility to send email and SMS alerts to the applicant about the status of the process
3.6.38	System should have facility to track online application with Unique ID
3.6.39	System should have facility to make online/offline payments for the issuance of new Birth/Death certificates
3.6.40	System should generate the critical statutory reports related to Birth and Death based on record maintained in database for same
3.6.41	System should have facility to generate report on the basis of Birth by level of education of father and birth order
3.6.42	System should have facility to generate reports on Father's Literacy wise in a particular year
3.6.43	System should have facility to generate report on the basis of Birth by level of Occupation of father
3.6.44	System should have facility to generate report on Father's Occupation wise in a particular year
3.6.45	System should have facility to generate report on the basis of Birth by level of education of mother
3.6.46	System should have facility to generate reports on Mother's Literacy wise in a particular year
3.6.47	System should have facility to generate report on the basis of Birth by level of occupation of mother
3.6.48	System should have facility to generate reports on mother's Occupation wise in a particular year
3.6.49	System should have facility to generate Hospital wise Birth details report
3.6.50	System should have facility to generate Sex and Month of occurrence Birth details report
3.6.51	System should have facility to generate Other MIS/Ad-hoc report as desired

3.6.52	System should have facility to generate reports for Summary of Birth wise Sex Ratio as per data captured
3.6.53	System should have facility to generate different Death related statutory reports
3.6.54	System should have facility to generate reports for Child Mortality Report as per data capture in the system
3.6.55	System should have facility to generate reports for Death as per sex and month of occurrence
3.6.56	System should have facility to generate report for Birth and Death Application Status
3.6.57	Portal should be multilingual (English & Hindi)

Use Case

ISSUE OF BIRTH & DEATH CERTIFICATES
Pre- condition Authenticated Authorized
Process System should be able to print list of hospital System should have facility to maintain the details of Registrar The use of the facility should be at the discretion of ULB
Post Condition Keep record of number of birth & death details Make system effective and fast process Payment process
Exception Error while documents upload & download User denied payment

USE CASE DIAGRAM

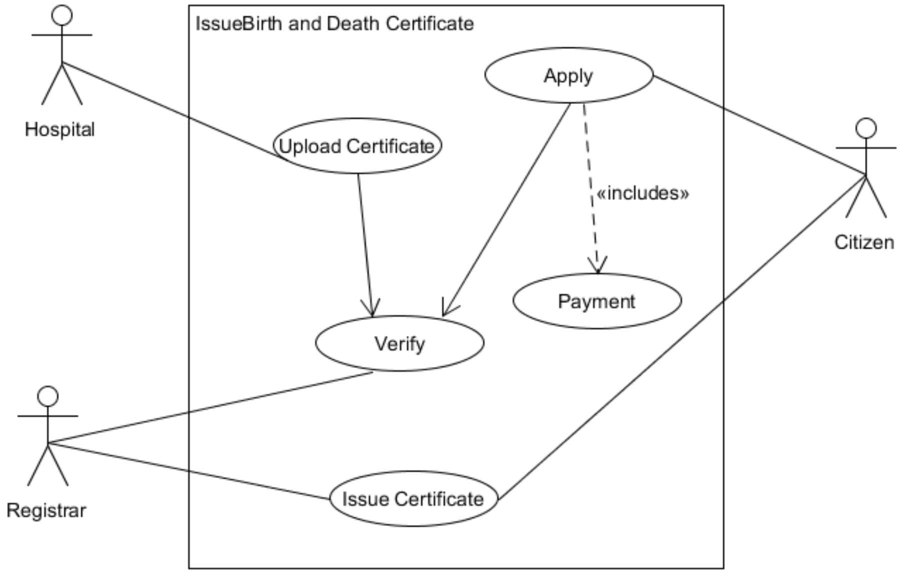


Figure 43: Birth and Death Certificate Issuance Use Case Diagram

3.7. Accrual Based Double Entry System

The accounting system being followed in Municipalities is different from the normal accounting system followed in commercial practice. The accounting system is designed to seamlessly record the entire financial transactions taking place in various departments of the municipalities

The main feature of the financial accounting module is:

- Accrual accounting
- Assets/ Liability recording
- To record all receipts from different modes of payment
- To record all payments
- To generate all records required under the law
- To generate statements required by various authorities for budgeting and decision making
- To maintain accounts required under the law

Indicative sub-modules are:

- Revenue and Receivables
- Purchases and Payables
- Inventories
- Cash and Bank
- Closing of Accounts
- Budgeting
- Cost Management Procedures
- Investments
- Year End Adjustments
- Integrated Payment Gateway
- General Ledger and Cash module
- Receipt Module
- Assets Module
- Budget Module
- Reporting module

3.7.1 Financial Year

3.7.1.1	The system should allow user to define fiscal year

3.7.1.2	The system should provide the facility to close the accounting to any particular year as and when needed
3.7.1.3	The system should have Flexibility to define fiscal year including start month and end month
3.7.1.4	The system should have provision for separate logical periods for annual closing activities
3.7.1.5	The system should allow closing of fiscal periods to restrict transaction posting
3.7.1.6	The system should allow keeping multiple periods open across financial years or within financial year
3.7.1.7	The system should have ability to reopen closed period, subject to valid authorization
3.7.1.8	The system should allow adding, editing and viewing provision on this form
3.7.1.9	The system should generate closing exception reports before year-end
3.7.1.10	The system should ensure at year-end close all entries are in balance and all periods have been closed
3.7.1.11	The system should carry forward prior year-end account balances to new fiscal year as beginning balances during year-end close
3.7.1.12	The system should allow previous financial year entry after next financial year entry. Once system has information for multiple years in a single organization system can allow user to toggle between different financial years

3.7.2 Chart of Accounts

3.7.2.1	The System should have a facility to configure Chart of Accounts
3.7.2.2	The system should allow user to define Chart of Account on each organization level
3.7.2.3	The hierarchy and codification will be independent for all child organizations
3.7.2.4	The system should allow user to search based on Chart of Accounts list
3.7.2.5	Chart of Accounts should be able to handle Fund, function and object wise coding as per NMAM (National Municipal Accounting Manual)

3.7.3 Budget Head

3.7.3.1	The system should allow user to create Budget Head as per organization requirement
3.7.3.2	The system should allow user to create unique budget code based on defined parameters
3.7.3.3	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.3.4	The system should create budget code based on budget-entered criteria
3.7.3.5	The system should allow user to select multiple options on the screen to search

3.7.4 Bank Master

3.7.4.1	The system should have the ability to maintain bank master, branch master and branch details
3.7.4.2	The system should have the ability to add bank details such as bank name, branch details, address, city name etc
3.7.4.3	The system should allow user to ADD, EDIT, SEARCH, VIEW provision
3.7.4.4	The system should enable user to select multiple options on the screen to search
3.7.4.5	The system should display all the matching products based on the search
3.7.4.6	The system should display only 10 matching result on the current screen
3.7.4.7	The system should enable user to navigate between the search results
3.7.4.8	The system should optionally allow user to print the bank account list
3.7.4.9	The system should notify the user when no matching product is found on the search

3.7.5 Vendor Master

3.7.5.1	The system should have the facility for maintenance of master database of all contractors / vendors
3.7.5.2	The system should have the ability to maintain Bank Account Details of all vendors, suppliers and customers

3.7.5.3	The System should have the ability to manage Vendor Details (Name, Address, PAN, TAN/ TIN, etc.)
3.7.5.4	The system should have the ability to maintain Bank Account Details of all vendors
3.7.5.5	The system should validate authorization (Maker – Checker) concept
3.7.5.6	The System provides the functionality of registering the contractor & suppliers with an approval process involving their personal details, firm details and license details, and account details as the amount would be directly credited to their respective current /savings account
3.7.5.7	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.5.8	The system should allow authorization process at departmental level optionally
3.7.5.9	The system does not allow transactions against unauthorized Vendors
3.7.5.10	The system should able to allocate system date (sys date) automatically for each entry
3.7.5.11	The System provides the functionality of registering the contractor & suppliers with an approval process involving their personal details, firm details and license details, and account details as the amount would be directly credited to their respective current /savings account
3.7.5.12	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.5.13	The system should allow user to search data on Vendor Type, Vendor Sub Type Vendor Name and Status optionally
3.7.5.14	The system should optionally allow user to print the Vendor list

3.7.6 Receipt Budget

3.7.6.1	The system should have the ability to enter existing approved receipts budget of organization
3.7.6.2	The System should support budget upload from excel sheets with proper validations

3.7.6.3	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.6.4	The system should optionally allow user to print the budget provision details

3.7.7 Expenditure Budget

3.7.7.1	The system should have the ability to enter existing approved expenditures budget
3.7.7.2	The System should support budget upload from excel sheets with proper validations
3.7.7.3	The form should have Add, Reset, Edit, View, Save, Print and Search buttons.
3.7.7.4	The system should have Flexibility to change budget figures during a fiscal year / period
3.7.7.5	The system should have facility of tracking of expenditures visa- via budget at any level
3.7.7.6	The system should have facility of enquiry of budget availability
3.7.7.7	The system should have facility of Automatic rejection of expenditure booking within the system if the cumulative expenditure amount is beyond the budget
3.7.7.8	The system should have Support for "budget availability" check and creation of Purchase Commitment during Purchase Requisition or Purchase Order entry
3.7.7.9	The system should support the monitoring of various budget types such as original budget, supplementary budget, budget carry-forward (unutilized budget amounts carried forward from previous years), budget transfers
3.7.7.10	The system should support budget and actual expenditure inquiry or reporting by a department should be restricted to the data pertaining to that department only. The authorized budget users such as the Budget Officer and the officials of the budget section should however have complete access
3.7.7.11	The system should able to search budget head on the basis of various parameters such as Fund, Function, Field and Account Head
3.7.7.12	The system should have facility to keep validation on such Budgeting heads, which are used in Transaction, such budgeting heads should not be allowed to Edit or Delete. However before used in any transaction it should be allowed for Edit or Delete

3.7.7.13	The system should have the ability to generate report on comparison between actual and estimated cost/expenditures
3.7.7.14	The system should notify the user when no matching product is found on the search
3.7.7.15	The system should optionally allow user to print the budget provision details

3.7.8 Budget Appropriation (Distribution)

3.7.8.1	The system should allow user to appropriate / disburse budget
3.7.8.2	The system should support budget and actual expenditure inquiry or reporting by a department should be restricted to the data pertaining to that department only. The authorized budget users such as the Budget Officer and the officials of the budget section should however have complete access
3.7.8.3	The system should support various types of budget reservations such as budget blocking (where one can block a percentage of budget funds for a fixed price before releasing it later), budget reservation (temporary reservation of budget at purchase requisition time or other user-defined intervals), budget commitments (where funds are committed due to purchase or project obligations)
3.7.8.4	The system should allow user to distribute budget head based on Budget type, Budget head wise, Account code wise
3.7.8.5	The System processes and maintains all budget iterations
3.7.8.6	The system should have ability to support user-defined budget availability controls to specify which accounts do not allow actual exceed budget or otherwise
3.7.8.7	The system should Support various types of budget reservations such as budget blocking (where one can block a percentage of budget funds for a fixed price before releasing it later), budget reservation (temporary reservation of budget at purchase requisition time or other user-defined intervals), budget commitments (where funds are committed due to purchase or project obligations)
3.7.8.8	The system should have budget definition and control in an integrated on line manner at the time of procurement

3.7.8.9	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.8.10	The system should allow multiple budget head allocation against single department
3.7.8.11	The system should keep audit trail data of budget allocation
3.7.8.12	The system should allow search based on financial year, budget types, budget code and account head

3.7.9 Budget Re-Appropriation

3.7.9.1	The System should have the ability to prepare Budget Appropriation between different budget heads through approval process
3.7.9.2	The system should validate authorization (Maker – Checker) concept
3.7.9.3	The system should have approval / disapproval functionality
3.7.9.4	Re-appropriation would not result in any change in the closing balance of sanctioned budget
3.7.9.5	The system should provide the facility to allow multi-level appropriation structure in line with organization's budgeting requirements
3.7.9.6	The System should retain and allow access to narrative justification for budget Adjustments (re-appropriation)
3.7.9.7	The System allows users to perform appropriation budget adjustments with appropriate security authority within the financial powers
3.7.9.8	The system should allow user to send request to Administrative Department / Finance Department for Re-appropriation
3.7.9.9	The system should be able to perform re-appropriation within two or more budgetary heads in the same group or between different groups
3.7.9.10	The System should be able to keep track of such budgets heads, which are considering for re-appropriation process and system should be able generate MIS and respective reports based on transaction carried out on respective budget heads

3.7.9.11	The system should capture "Transaction date" and "Remark" for further reference for user (Department HOD)
3.7.9.12	The system should keep track and maintained records of all balances within system (before and after-appropriation process) for both the budget code i.e., Original estimate amount and re-appropriate amount
3.7.9.13	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.9.14	The system should allow user to search on Financial Year, Department, Budget Head and Budget type

3.7.10 Additional/ Supplemental Budget

3.7.10.1	The System should allow preparation of supplementary budget / Additional allotment
3.7.10.2	The system should validate authorization (Maker – Checker) concept
3.7.10.3	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.10.4	Whenever additional allotment is sought, the source must also be indicated. As such, additional budget would result in an enhancement in the budgetary allocation under one or more budget heads
3.7.10.5	The system should allow User to send request to Administrative Department/Finance Department for additional requirement
3.7.10.6	Under Section of the Municipal Corporation Act, on recommendation of the Standing Committee, the Corporation may increase budget grant to meet the special or unforeseen expenditure by additional allotment. However, such additional sanction should not be resulting reduction of working balance below the prescribed statutory minimum balance
3.7.10.7	System should have facility to perform additional budget allotment on already defined budget heads within system
3.7.10.8	System should be able to keep track of such budgets heads, which are considering for additional budget process and system should be able generate MIS and respective reports based on transaction carried out on respective budget heads
3.7.10.9	System should be able to provide facility to select desired budget heads code
3.7.10.10	System should be able to keep track and maintained records of all balances within system before and after additional budget process
3.7.10.11	After additional budget process, system should be able to allow booking of payment voucher as per new updated balance provision

3.7.11 Revised Budget

3.7.11.1	The system should have budget revision provision through approval process or proper access rights

3.7.11.2	The system should support revised budget upload from excel sheets with proper validations
3.7.11.3	The system should pull the budgeted estimate in the form for the current financial year
3.7.11.4	The system should populate the re-appropriation, re-allocations, surrenders, revised requirements for the remaining months etc. done as on the date for preparation of revised estimates
3.7.11.5	The system should validate that the revised total does not exceed the approved budget
3.7.11.6	The form should have Add, Reset, Edit, and View, Save, Print and Search buttons

3.7.12 Estimation

3.7.12.1	The system should have the ability to plan and prepare budget
3.7.12.2	The system should have ability to create department-wise estimated provision, revision for income and expenditure
3.7.12.3	The system should have budget estimation functionality through approval process or proper access rights
3.7.12.4	The system should validate authorization (Maker – Checker) concept
3.7.12.5	The system should have ability to export the budget data into text or excel format that can be used by the publisher for publishing
3.7.12.6	The system should support flexible budgeting for different funds and their sub-levels within the multidimensional fund hierarchy
3.7.12.7	The system should facility to automatically upload into the system the budget estimates provided by all the departments in a template
3.7.12.8	The system should Provide flexible budget hierarchy to define budgeting level (what level should be budgeted), account posting level (level where accounting entries will be posted) and budget availability control level (budget level where active budget availability checks are performed)

3.7.12.9	The system should have ability to provide for Revenue and Expense Budgets (can be based on last year's actual performance or approved budget as an initial version for budget planning) as well as Capital or Development Budgets
3.7.12.10	The budget preparation screens should be secured and be accessible by a select group of authorized budget users only such as the Budget Officer, Budget Section personnel in Finance Department etc.
3.7.12.11	The system should have online availability of budgeting instructions and guidelines for the budget users
3.7.12.12	The system shall be role-based and have built-in workflow to manage the activities of budget preparers, reviewers, and approvers
3.7.12.13	The workflow shall include budget submission, review, and reject functionality Facility for direct manual entry of amounts for individual budget items apart from formula builder and percentage revaluations
3.7.12.14	The system should have Ability to consolidate budgets of various departments, regions, branches into one budget
3.7.12.15	The system should have budget definition and control in an integrated on line manner at the time of procurement
3.7.12.16	The system should have Flexibility to change budget figures during a fiscal year / period
3.7.12.17	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.12.18	The system should have ability to consolidate budgets of various departments, fields and funds into one budget
3.7.12.19	The system should generate an audit log for all modifications made after final submission of budget at different levels
3.7.12.20	The system shall be role-based and have built-in workflow to manage the activities of budget preparers, reviewers, and approvers
3.7.12.21	The workflow shall include budget submission, review, and reject functionality Facility for direct manual entry of amounts for individual budget items apart from formula builder and percentage revaluations

3.7.12.22	The system should allow maintaining the confidentiality of the budget estimates after it has been finalized by final approval and is due to be presented in the board

3.7.13 Opening Balances Entry

3.7.13.1	The system should allow user to enter opening balance against available account heads
3.7.13.2	The system should enable user to enter the search text on the screen
3.7.13.3	The system should display all the matching products based on the search
3.7.13.4	The system should enable user to navigate between the search results
3.7.13.5	The system should notify the user when no matching product is found on the search
3.7.13.6	The form should have Create, Reset, Edit, and View, Save, Print and Search buttons
3.7.13.7	The system should optionally allow user to print the opening balance details
3.7.13.8	The system should allow user to search opening balance optionally on selection of Opening Balance Type, Account Head, Fund and Field
3.7.13.9	The system should notify the user about save / update

3.7.14 Receipt Entry

3.7.14.1	The system should allow user to enter / to generate receipts through online / offline modes as per organization requirements
3.7.14.2	The system should have receipt integration with Deposits, Grants, Loans, Advances, Investment and Bill transactions
3.7.14.3	The system should have facility to capture the different mode of receipts like DD/cheque/cash etc
3.7.14.4	The system should allow user to enter the customer Cheque / DD / FDR / RTGS detail information

3.7.14.5	The system should validate authorization (Maker – Checker) concept. If maker-checker concept is not applicable, then system should post receipt voucher entry directly after receipt entry
3.7.14.6	The system should post Receipt Voucher (RV) entry based on defined voucher template. If receipt modes are RTGS, WEB and NEFT then the system should post Contra Voucher (CV) entry based on defined voucher template after Receipt Voucher (RV) entry
3.7.14.7	The system should provide printable version of receipt
3.7.14.8	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.14.9	The system should enable user to search on the basis of Receipt Number, Receipt Date, Receipt Amount and Payee Name from searchable drop down list
3.7.14.10	The system should notify the user when no matching product is found on the search
3.7.14.11	The system should provide functionality to save the date with timestamp
3.7.14.12	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.14.13	The system should have provision to see or view details of receipt after it has been saved successfully in the system

3.7.15 Bank Transitions - Transfers, Petty Cash Deposits/ Withdrawals

3.7.15.1	The system should allow user to contra transactions, which specially relates Bank Accounts
3.7.15.2	The system should validate authorization (Maker – Checker) concept
3.7.15.3	The system should provide facility to transfer funds from one bank account to another within the same fund as well as across funds
3.7.15.4	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.15.5	The system should allow user to petty cash withdraw from designated bank account against cheque

3.7.15.6	The system should allow user to deposit petty cash amount into designated bank account
3.7.15.7	The system should allow user to enter bank transfer entry within two bank accounts
3.7.15.8	The system should display standard denomination for petty cash deposit entry
3.7.15.9	The system should allow user to optionally print contra voucher, deposit slip and cheque printing
3.7.15.10	The system should notify the user about any conflict in the current configuration
3.7.15.11	The system should allow user to search on Transaction date, Transaction type, Transaction number, Bank account and Transaction mode optionally
3.7.15.12	The system should enable user to enter the search text on the screen
3.7.15.13	The system should enable user to select multiple options on the screen to search
3.7.15.14	The system should display all the matching products based on the search
3.7.15.15	The system should display only 10 matching result on the current screen
3.7.15.16	The system should enable user to navigate between the search results
3.7.15.17	The system should notify the user when no matching product is found on the search
3.7.15.18	All withdrawals through cheques from the Bank Account(s) should be accounted on the credit side of the Bank Book
3.7.15.19	All deposits from petty cash should be accounted on the debit side of the Bank Book
3.7.15.20	The system should be able to post all transactions (Receipts, Payments and Deposit Slips) against these transactions

3.7.16 Bank - Pay in Slip

3.7.16.1	The system should have the ability to manage Cheque/ Cash Deposit Slips into Bank
3.7.16.2	The system should have provision to prepare bank Pay-In Slip

3.7.16.3	The system should have facility to deposit collection in the forms of Cash, Cheque, Demand Draft, FDR, and Pay Order to respective bank
3.7.16.4	The System should be able to provide Create, Reset, Save, Back, Search and Print button master form
3.7.16.5	The system should enable user to select multiple options on the screen to search
3.7.16.6	The system should notify the user about any conflict in the current configuration
3.7.16.7	The system should notify the user when no matching product is found on the search
3.7.16.8	The system should allow searching based on Deposit Slip Number, Deposit Slip Date, Amount, Bank Account Number – Name, Deposit Slip Mode and Field
3.7.16.9	The system should also have facility to capture total coin amount further this amount should be considered for Total amount
3.7.16.10	The system should post Contra Voucher (CV) entry based on voucher template

3.7.17 Cheque Dishonor

3.7.17.1	The system should have the ability to handle dis-honoring of cheques
3.7.17.2	The system should be able to provide various options to make Cheque dishonor entry
3.7.17.3	The details of the realization/return of the cheques/drafts shall be entered in the Receipt Register
3.7.17.4	The system shall reverse the entry passed by preparing Bank Receipt Voucher
3.7.17.5	The system should also be able to provide facility to search the dishonored Cheque

3.7.18 Investments

3.7.18.1	The system should have Investment management functions, which covers Opening Receivables Investment, Regular Investment, Renewal of Investment and Withdrawal of Investment transactions-master integration
3.7.18.2	The system should Help to make decisions about financial investments and borrowings with information about cash shortages and surpluses in the short term
3.7.18.3	All conventional investment instruments such as fixed term deposits, commercial papers, and securities should be covered by the system
3.7.18.4	The processing of the instruments should be fully supported from trading through back office to accounting
3.7.18.5	The system should generate alerts for user regarding investment maturity details
3.7.18.6	The system should allow only registered users to enter the transactions
3.7.18.7	Details of investment made from Municipal Fund, various Earmarked Funds and Specific Grants should be recorded in the Investment Register
3.7.18.8	On disposal of investment of the Organization, the profit earned or loss incurred on disposal of investment should be recorded as income or expenditure in the Income and Expenditure Statement
3.7.18.9	In case of Special Funds Investments or Grants Investments, the profit realized or loss incurred should be adjusted in the Special Fund or Grant
3.7.18.10	The system should allow user to search on investment number, type, date, and amount and investment bank name
3.7.18.11	Interest on investments should be recognized as and when due. At period-ends, interest should be accrued proportionately
3.7.18.12	Dividend on investments should be recognized on actual receipt

3.7.19 Deposits Payables

3.7.19.1	The system should have deposits management functions which covers opening payables deposits, regular deposits, deposit refund and deposit adjustments
3.7.19.2	The system should have receipt, work order, bills and payments integration with deposits
3.7.19.3	The system should have the ability to restrict / display warning messages in case the budgetary limits are exceeded based on the configuration
3.7.19.4	The system should facilitate collection of earnest money, security deposit and retention money deposit online / offline mode
3.7.19.5	The system should allow user to searching based on deposit number, deposit date, deposit amount, depositor name, deposit head and deposit type
3.7.19.6	The system should allow claimants to fill a form which will have the deposit id from which the amount was lapsed
3.7.19.7	The system should make necessary entries in the books of account and the deposit register

3.7.20 Grants Management

3.7.20.1	The system should have grants management functions, which covers opening payables grants, regular grants receipts, grants payments and refund of grants transactions-master integration
3.7.20.2	The system should have the ability to maintain Grant Utilization Details
3.7.20.3	The system should have the ability to maintain investment details of the grants/ funds received
3.7.20.4	The system should have the ability to track disbursement details/ payment details against the different grants
3.7.20.5	The System should provide balance amount of Grant at any point of time

3.7.20.6	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.20.7	The system should display Grants Receipts, Payment orders, Payment vouchers and Refund details within one integrated form
3.7.20.8	The system should have direct linking with Receipts, Payment orders, Payment vouchers and Refund details with grant account
3.7.20.9	The system should validate grant amount as well budget amount

3.7.21 Loans/ Borrowings Management

3.7.21.1	The system should have loans management functions which cover opening payables loan, regular loans receipts, principal and interest repayments and principal and interest installment transactions
3.7.21.2	The system should allow user to searching on loan number, account head, loan amount and department
3.7.21.3	The system should generate a Unique Loan number for Fresh Loans
3.7.21.4	The system should show the loan number whenever any transaction related to a particular borrowing is carried out
3.7.21.5	The system should allow user to edit the incorrect loan entries
3.7.21.6	The system should continuously generate alerts till repayment has been made. The system should generate alerts (through mail / SMS) …… days in advance on the fixed date of loan repayment installment and payment of interest for the
3.7.21.7	Loan Officer
3.7.21.8	The system should allow the user to create the payment of interest and loan repayment requisition (e-sanctions)
3.7.21.9	The system should allow user to transfer the interest/loan Installment amount directly into Financial Institution's account through the Online Disbursement System
3.7.21.10	The system should update the organizations Liabilities Account
3.7.21.11	The system should maintain a scanned / soft copy of the sanction order in the system

3.7.22 Administrative Approval for Expenditure

3.7.22.1	The system should have the ability to perform administrative approval / disapproval of works linked to budget availability
3.7.22.2	The system should have Support for "budget availability" check and creation of Purchase Commitment during Purchase Requisition or Purchase Order entry
3.7.22.3	The system should have availability of an online approval mechanism for expenditure sanctions of all types of requests through estimation sheets for a schemes/works, purchase proposals; supply orders/work orders etc.
3.7.22.4	The system should have the ability to restrict/display warning messages in case the budgetary limits are exceeded based on the configuration
3.7.22.5	The system should allow user to enter requisition details
3.7.22.6	The system should allow user to searching on from date, to date, order number, department, budget head and status
3.7.22.7	The system should allow user to authorize the requisition of source department
3.7.22.8	The system should have real time data integration of payment / expenditure and budgetary figure

3.7.23 Work Order Entry

3.7.23.1	The system should allow user to enter Work Order entry against works / supply
3.7.23.2	The system should have the ability to perform administrative approval / disapproval of works linked to budget availability
3.7.23.3	The system should have the ability to restrict / display warning messages in case the budgetary limits are exceeded based on the configuration
3.7.23.4	The system should have Add, Reset, Save, Edit, and Search provision

3.7.23.5	The system should have facility to search the Work Orders based on Work Order number, Work Order award date, Vendor Name, Department, Expenditure head and Work Order amount range

3.7.24 Bills/ Invoices Entry

3.7.24.1	The system should have the ability to entry details of invoice bills
3.7.24.2	The system should have the ability to record / modify raised invoices before authorization
3.7.24.3	The system should have the ability to restrict / display warning messages in case the budgetary limits are exceeded based on the configuration
3.7.24.4	The system should have the ability to approve bills / vouchers based on workflow
3.7.24.5	The system should book the liability on entry of these amounts and an appropriate entry should be made based on double entry accrual based accounting principles
3.7.24.6	The system should have ability to prompt/automatically deduct all deductible charges such as TDS, works contract tax, surcharge on these taxes at the time of vendor bill processing
3.7.24.7	The system should have Ability to automatically account for all these deductions based on pre-determined criteria
3.7.24.8	The system should have the facility for calculation of tax deducted at source
3.7.24.9	The system should facilitate to view the bill raised by vendor and should able to link bill details with Purchase/ work order
3.7.24.10	The system should have ability to block certain vendor's invoices so that they cannot be paid unless cleared by appropriate authority
3.7.24.11	The system should have the ability to generate report on comparison between actual and estimated cost/expenditures
3.7.24.12	The system should facilitate the user to view the status of bill raised or claim submitted

3.7.24.13	The system has a feature of capturing all billing details for the concerned work, expenditure heads of payment, total deductions and net payment
3.7.24.14	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.24.15	The system should have flexibility to process payment of all invoices at one go, however, strictly on due date basis
3.7.24.16	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.24.17	The system should notify the user about any conflict in the current configuration
3.7.24.18	The system should notify the user when no matching product is found on the search
3.7.24.19	The system should facilitate to search bills or claims on basis of Bill Type, Bill number, Bill date, Vendor Name and Department
3.7.24.20	The system should have ability to track duplicate invoice based on vendor and invoice number
3.7.24.21	The system should provide the functionality to user to make modification in the rejected bill entry and resubmit or raise a fresh new bill entry
3.7.24.22	The system should record whether the bill being paid is the first bill, running bill or the final bill payment
3.7.24.23	The system should able to appropriate classification in terms of both expenditure head and the period in which the expenditure has been accounted with reference to the nature of the bill and the date of the bill respectively
3.7.24.24	The system should allow user to print payment order optionally
3.7.24.25	The system should generate notifications for the contractor (through SMS / email / voice message etc.) at each of the defined stages
3.7.24.26	The system should have direct integration with Deposit master
3.7.24.27	The system should allow user to select unpaid deposits against deposit refund bill entry
3.7.24.28	The system should have multi session interface

3.7.25 Cheque Book Entry

3.7.25.1	The system should have the ability to maintain the chequebook details
3.7.25.2	The system should have facility to capture Chequebook leaf details bank wise as well as account wise within same bank
3.7.25.3	The system should able to capture cheque number details ("from" and "To" cheque no.), Employee name, Issuer name, and No. of leaves in Checkbook
3.7.25.4	The system should be able to provide Create, Save, Reset, Search and Edit buttons on entry form
3.7.25.5	The system should allow user to search chequebook details based on Bank Accounts (Which have chequebook entry)

3.7.26 Cheque Book Utilization

3.7.26.1	The system should have facility for track check details
3.7.26.2	The system should allow user to Search, View, and Reset

3.7.27 Bills Payment Entry

3.7.27.1	The system should allow disbursement of payments (salary, contractors / suppliers, administrative expenses, PF, profession tax, etc.)
3.7.27.2	The system should have the ability to facilitate Loan& Advance Installment Payments
3.7.27.3	The system should have the ability to authorize / approve the payment through workflow optionally
3.7.27.4	The system should have the ability to facilitate payment against invoices
3.7.27.5	The system should allow search on Payment No., Vendor name, Payment date, Payment amount, Bank A/c. optionally

3.7.27.6	The system should notify the user when no matching product is found on the search
3.7.27.7	The system should be able to check bank balance sufficiency before the payment voucher concurrence
3.7.27.8	The system should have the ability to restrict/display warning messages in case the budgetary limits are exceeded based on the configuration
3.7.27.9	The system should facilitate entry of the consolidated salary and statutory (PF, PT etc.) payment amounts for each department in the accounting
3.7.27.10	The system should have the ability to maintain Check details, Check Printing
3.7.27.11	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.27.12	The system should have functionality for processing of payments for vendors with automatic vendor account posting
3.7.27.13	The system should allow payment for following scenarios: advance payment ad-hoc, Advance payment only against purchase orders, Payment against one or multiple invoices - matching amount, Payment against one or multiple invoices - partial amount, Payment against one or multiple invoices – ad-hoc amount
3.7.27.14	The system should validate that the entire dues recoverable including advance provided to supplier has been recovered before making the final payment to the supplier. Further, it should be ensured that only net amount has been paid to the Vendor
3.7.27.15	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.27.16	The system should allow printing of payment advice along with Cheque, which may be sent across to vendors along with their payment
3.7.27.17	The system should allow user to print payment voucher optionally
3.7.27.18	The system should record the payment details on the face of the bill as well as on the bills received register
3.7.27.19	At the time of making payment for running bill, the system should tag on the payment particulars of all earlier payments made against the same work order giving sequentially

	particulars of work completed, payments made, deductions effected and the security retained about the said work
3.7.27.20	System should have facility to send a SMS and email to the registered Vendor's mobile number / email id after the amount is credited along with the work name and amount credited

3.7.28 Advance Management

3.7.28.1	The system should have advances management functions, which covers opening receivables advances, regular / permanent advances, repayments and adjustments of advance
3.7.28.2	The system should have ability to capture and report capital and revenue advances separately
3.7.28.3	The system should have ability to integration data between Advance master with Bill / Invoices Entry, Payments and Receipts interface
3.7.28.4	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.28.5	The system should allow EDIT / UPDATE provision for records which are entered manually and which status is open
3.7.28.6	The system should allow receipt provision for records have receivable balance and status is open
3.7.28.7	The system should allow adjustment provision for records have receivable balance and status is open
3.7.28.8	The system should allow Payment Order provision for records have no balance and status is close
3.7.28.9	The system shall enable user to select multiple options on the screen to search i.e. Advance Number, Date, Amount and Name, Advance Type and Advance Status
3.7.28.10	The system should allow the user to enter all the invoices for advance received at the front desk from the contractor/supplier/service provider for advance payments

3.7.28.11	The system should allow user to make advance payment directly to the contractor's bank account
3.7.28.12	The system should provide details of the advances that have been paid till date to the contractor/supplier service provider before any new payments
3.7.28.13	The system should record in the advance register all details regarding the amount of advance given, the purpose of advance given, the person to whom it is given, etc.
3.7.28.14	The system should account for recovery/adjustment of advance payment while making the next payments to the contractor

3.7.29 Direct Payment Entry

3.7.29.1	The system should allow user to enter payment entry (Direct) without billing / invoice entry
3.7.29.2	The system should be able to do the payment for all the recoveries that are deducted as part of the bills
3.7.29.3	The system should validate authorization (Maker – Checker) concept
3.7.29.4	The system should have the ability to authorize/approve the payment through workflow optionally
3.7.29.5	The system should be able to handle statutory payments (PF etc.) for employee
3.7.29.6	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.29.7	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.29.8	The system should notify the user about any conflict in the current configuration
3.7.29.9	The system should enable user to enter the search text on the screen
3.7.29.10	The system should notify the user when no matching product is found on the search

3.7.29.11	The system should allow search on Payment No., Payment date, Payment amount, bank account, and account head
3.7.29.12	The system should allow user to print payment report optionally

3.7.30 TDS Payments

3.7.30.1	The system should allow user to make TDS payment entry
3.7.30.2	The system should be able to do the payment for all the recoveries that are deducted as part of the bills
3.7.30.3	The system should validate authorization (Maker – Checker) concept
3.7.30.4	The system should have the ability to authorize/approve the payment through workflow
3.7.30.5	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.30.6	The system should allow direct payment transaction against TDS deductions and all statutory liabilities of government like Education Cess, Employee Guaranty Cess etc.
3.7.30.7	The form should have Add, Reset, Edit, View, Save, Print and Search buttons
3.7.30.8	The system should notify the user about any conflict in the current configuration
3.7.30.9	The system should enable user to enter the search text on the screen
3.7.30.10	The system should notify the user when no matching product is found on the search
3.7.30.11	The system should allow search on Payment No., Payment date, Payment amount, bank account, and TDS type
3.7.30.12	The system should allow user to print payment report optionally
3.7.30.13	The system should have ability to maintain TDS acknowledgement
3.7.30.14	The system should allow user to maintain TDS acknowledgement on quarterly basis
3.7.30.15	The system should allow user to entry of revised acknowledgement after original acknowledgement

3.7.30.16	The system should maintain acknowledgement date and unique transaction number

3.7.31 ECS Payments

3.7.31.1	The system should integrate ledger A/c with ECS Payment
3.7.31.2	The system must handle multiple modes of payment including electronic and must generate output as required by banks
3.7.31.3	The system should allow Online Disbursement System to transfer the bill amount to the contractor's bank account directly through direct debit facility (ECS, etc.)
3.7.31.4	The system should allow Online Payment/remittance of Tax

3.7.32 RTGS Payments

3.7.32.1	The system should support RTGS mode of payment along with cash and cheque mode of payments
3.7.32.2	The system must handle multiple modes of payment including electronic and must generate output as required by banks
3.7.32.3	The system should have the ability to generate RTGS payment order

3.7.33 Voucher Entry

3.7.33.1	The system should provide functionality for manual voucher entries – Receipt Voucher, Contra Voucher, Journal Voucher and Payment voucher entry
3.7.33.2	The system should allow creation and posting of entries online or in batches
3.7.33.3	The system should allow definition of recurring transactions and periodicity of recurrence
3.7.33.4	The system should Create these automatic transaction based on predefined criteria

3.7.33.5	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.33.6	The form should have Create, Reset, Edit, View, Save, Print and Search buttons
3.7.33.7	The system should provide search button based on voucher number, date, amount and account head
3.7.33.8	The system should notify the user about any conflict in the current configuration
3.7.33.9	The system should enable user to enter the search text on the screen
3.7.33.10	The system should enable user to select multiple options on the screen to search
3.7.33.11	The system should display all the matching products based on the search
3.7.33.12	The system should display only 10 matching result on the current screen
3.7.33.13	The system should enable user to navigate between the search results
3.7.33.14	The system should notify the user when no matching product is found on the search
3.7.33.15	The system should validate authorization (Maker – Checker) concept
3.7.33.16	The system should print vouchers from the system before and after posting with the status shown separately
3.7.33.17	The system should update all budget, cash and bank balances after voucher entry through automate process

3.7.34 Cheque Issuance Entry

3.7.34.1	The System should have the ability to record Check Issuance Details
3.7.34.2	The system should ensure updating of cheque register on printing of Cheque as well as update the payment voucher with details of Cheque no.
3.7.34.3	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.34.4	The system should have Add, Edit, Reset, Save, Print and Search buttons

3.7.34.5	The system should allow user to update multiple payment cheque issuance date in single session
3.7.34.6	The system should allow user to skip (unselect) cheques while entering issuance date
3.7.34.7	The system should allow user to searching Payment - From Date, To Date, Payment Entry Number, Payment Entry Type, Vendor and Bank Account optionally
3.7.34.8	The system will generate save message after cheque issuance entry

3.7.35 Stop Payment Order

3.7.35.1	The system should have stop payment provision
3.7.35.2	The system should prepare a stop payment order in which details regarding the cheque No. name of the payee, reason for stopping the payment etc. should be recorded
3.7.35.3	The system should prepare a Journal voucher and pass necessary entry in the books of accounts to reverse the original payment entry
3.7.35.4	System should be able to provide facility to mark particular cheque for stop payment and also able to capture details related to Stop Payment for respective cheque

3.7.36 Cancellation / Re-Issue of Cheques

3.7.36.1	The system should have the ability to record cheque cancellation details
3.7.36.2	If a cheque is cancelled before the entry is made in the Bank Book, no further correction is required. However, if the entry for cheque has already been recorded in the Bank Book, the entry should be reversed
3.7.36.3	System should be able to provide facility to cancel the issued cheque against payment voucher and able to re-issue the new one against the same

3.7.36.4	When a signed cheque for which entry for payment has been recorded is cancelled, the entry for payment should be reversed
3.7.36.5	The system should return and highlight the field, which have inconsistencies / error for user to rectify the error
3.7.36.6	The system should have provision to record the reason for cancellation
3.7.36.7	System should be able to show all relevant information related to Payment voucher, Vendor, Cheque details, and bank details etc. Here on this form system should be able to capture the new information. Following would be the expected Fields • Reason for cancellation • New cheque Details • Cheque Number • Cheque Date • Bank name • Bank account number
3.7.36.8	System should be able to use above captured details in the form for cancellation cheque report
3.7.36.9	System should be able to provide search option to search required voucher details

3.7.37 Bank Reconciliation

3.7.37.1	The system should have bank reconciliation functionality
3.7.37.2	The system should maintain Bank Reconciliation Statement
3.7.37.3	The system should allow defining the criteria for bank reconciliation and carries out bank reconciliation based on pre-determined criteria
3.7.37.4	The system should provide functionality to provide a manual and automatic reconciliation process
3.7.37.5	The system should provide functionality for users to make correction during the reconciliation process

3.7.37.6	The system should allow uploading of bank statements into the system
3.7.37.7	The system should consider only such entries of Cheque / DD / Pay Order for which Deposit slip or Payment voucher is prepared
3.7.37.8	The system should be able to provide functionality to capture Clearance date
3.7.37.9	The system should provide facility to show BOTH or transaction entries for Receipt and Payment according to selected date range
3.7.37.10	The system should have EDIT, SAVE, RESET, SEARCH and BACK facility on transaction form

3.7.38 Corrections and Reversal

3.7.38.1	The system should allow user to reversal entry against Receipts, Deposit Slips, Bills and Payments.
3.7.38.2	The system should allow user to searching transaction on transaction number, transaction date and transaction amount optionally
3.7.38.3	The system should have a facility to reverse transaction for current financial year only along with facility to capture Remark / Reason and approval details for deleting the receipt
3.7.38.4	The system should have Reconciliation entry reversal function. This form is used to reverse the wrongly entered bank reconciliation entry
3.7.38.5	The system should allow user to search deposit slip on Slip number, Slip date, Slip mode, Bank account, Instrument Number and Slip amount optionally
3.7.38.6	The system should have a facility to reverse bank reconciliation entry for current financial year only along with facility to capture Remark / Reason and approval details for reversal the deposit slip
3.7.38.7	The system should be able to reverse all the account entries related to bank balance
3.7.38.8	Provision for uploading data of opening balance, etc.

3.7.39 Registers, Books of Accounts and Reports

3.7.39.1	The system should have ability to generate analysis reports with user-defined parameters with flexible selection criteria and grouping options
3.7.39.2	The system should allow user to view, print cash book report on daily basis
3.7.39.3	The system should allow user to view, print Statement of Outstanding Liability for Expenses
3.7.39.4	The system should allow user to view, print function-wise income subsidiary ledger
3.7.39.5	The system should allow user to view, print function-wise expenditure subsidiary ledger
3.7.39.6	The system should allow user to view, print the Trial Balance
3.7.39.7	The system should allow user to view, print the Statement of Cash Flow
3.7.39.8	The system should allow user to view, print the Balance Sheet
3.7.39.9	The system should allow user to view, print the Income and Expenditure Statement

3.8. Advertisement Management

3.8.1 Advertisement Management System

This module handles licensing of advertiser for the use of advertisements boards, hoardings and other outdoor media devices (OMD) for personal, professional or business use. This licensing requires the advertisers to apply and pay a prescribed fee for each board and hoarding erected in the cities and towns to get an authorization for advertisings.

3.8.2 Objectives of Advertisement Management System

- Online application system for the advertiser's application
- Online official proceeding of applications of advertisements
- Digital payment transactions
- Generation of e-license

3.8.3 Scope of Advertisement Management System

- Citizen Portal for Registration Application
- Registration of users for availing services related to advertisements
- Agency Dashboard where Approved/ Rejected advertisement applications along with payment transactions, current bills and other notifications can be shown.
- Back office dashboard application for workflow management and other related works.

3.8.4 System Description

3.8.4.1 Applicant Registration

- Application form based upon the advertisement rules to register an applicant for an ULB or more than one ULB.
- Payment and exemption of registration fee for applicant based upon existing ULB rules (See Annexure A - Advertisement Rules 2020).
- Payment of ULB wise registration fee using digital payment gateways based upon the existing advertisement rules.
- An applicant requires paying separate fee for each applied ULB.
- Successful registration of applicant should grant them a permission to apply for an advertisement license using a respective form.
- An advertisement license fee is required to pay based upon the application data rules (See Annexure A - Advertisement Rules 2020).
- Applicant must have a privilege to check their application real time status from SUDA.

3.8.4.2 Rules:

- Both owner and self-advertiser shall seek permission for installing an OMD from the ULB by registering themselves.
- Registration shall be valid for a period of five year from the date of registration.
- Registration fees shall increase by 5% every year.
- Registration fees shall be deposited within time period specified by ULB which in no case shall be more than 10 days.
- Registration process shall start minimum one month prior to start of new financial year.

3.8.4.3 Process of Registration

- Before registration, the Municipal Commissioner/ Executive officer/ Special officer shall ensure that:
    - The registering entity, any one of its directors, owners, proprietors, and partners has not been debarred by ULB or any other Government agency under any business.
    - The registering entity, any one of its directors, owners, proprietors, and partners do not have any outstanding dues with ULBs as on the date of registration.
    - Such approval shall be provided by Municipal Commissioner/ Executive Officer within thirty days of submission of application and shall issue an approval.

3.8.4.4 Approval of OMD

- Application for any OMD shall be made by registering entity by submitting required information.
- The application form shall be accompanied with the following.
  - License fee as the ULB may, specify by an order as per rule, from time to time which shall be non-refundable and non-adjustable in any manner whatsoever.
  - An undertaking that the registering entity is solely responsible for all acts/ deeds towards display of advertisement.
  - A drawing showing the locality plan in color, indicating the proposed position (GPS) coordinates of the OMD and the distance in relation to any other structure, building, OMD situated within a radius of twenty-five meters from the proposed OMD.
  - Complete specifications showing the dimensions of the OMDs and location.
  - The design and the structure of the OMD certified by a Structure Engineer, certifying and safety aspects from the point of view of its foundation which can bear extreme wind condition, earthquakes, soil baring capacity.
  - If proposed OMD is to be attached to, or displayed on, the façade of a building, an graphical presentation showing elevation and measurement of OMD and the position of every existing OMD on the building or as a specified by the ULB from time to time.

3.8.4.5 Evaluation and Scrutiny of Application

- While evaluating an application from OMD, Municipal Commissioner/ Executive Officer shall ensure:
  - That the application is in compliance with these regulations and the Act
  - That the application shall not be contravention of any directives of an court.
- An approval shall be for a maximum period as set out below and as detailed in Annexure
  - Type A and Type B : equal to the agreement period between urban local bodies and concerned agency
  - Type C, Type D: one year
  - Type E: As specified on the case-to-case basis
  - Type G/ self-advertisement: 1 year
  - Type I: 1 years and
  - Type J: 1 years

In case of tie among common zone among the bidders mentioned in Annexure X1 then the work will be awarded to such highest bidder who provide guarantee for a highest no of OMD for advertisement in terms of revenue. Such guarantee shall be through open auction among such shortlisted bidders.

- Municipal Commissioner/ Executive officer after following due process shall within 30 days, in writing or electronically, notify its decision to the applicant as per format attached as Annexure X
- The license fees shall be payable to the Municipal Commissioner/ Executive Officer to evaluation of an application shall not be withdraw by the owner prior at least three months.
- Where the registering entity propose to make any change in the approved application, an additional license fee shall be payable by the register entity to the ULB for making any changes with prior approval. Such approval shall be valid for a period as set out in by-law.
- All agreement/ tender for OMD type granted by ULB shall be valid till the end of the Financial Year with the execution mentioned in above clause.

3.8.4.6 Withdrawal & Amendment

- Municipal Commissioner/ Executive Officer may withdraw an approval granted or amend any condition or impose a future condition in respect of such approval if, in the opinion of the Municipal Commissioner/ Executive Officer, the OMD concerned: -
    - Is or has, as result of change to the nature of the environment or the amenity of the neighborhood, streetscape or urban design existing at the time of such approval, become detrimental or the area in which it is located by reason if its size, intensity of illumination, quality of design, workmanship, material or its existence.
    - Constitutes, or has become a danger to any person or property.
    - Is obscuring a critical and aesthetically important natural feature, architectural feature or visual line of civic, architecture, historical or heritage significance,
    - Is or has become prohibited in terms of these regulation or any other law.
    - Is the part of thereof falls either through an accident or any other cause.
    - Have any edition made to it except for the purpose of making it secure under the direction of the Municipal Commissioner/ Executive Officer
    - Have any changes thereof
    - Upon the building or structure or property demolished or destroyed; and
    - Related to any other site/location, as may be decided by the Municipal Commissioner/ Executive Officer in public interest, safety, aesthetics etc.
- In case of partial or complete withdrawal of permission by Municipal Commissioner/ Executive Officer registering entity shall have to remove or amend within seven days the OMD at the risk or cost and refund the balance amount of license fee shall be given to the owner within 30 days of such withdrawal without any interest.

3.8.4.7 General Requirements OMD

- After approval, OMD shall not be altered, removed, re-erected or upgraded, other than for maintenance work which may be required for the upkeep of an OMD, without prior written approval of the Municipal Commissioner/ Executive Officer.
- Every power cable and conduit containing an electrical conductor for the operation of an OMD shall be positioned and attached so that it is not unsightly.
- No OMD shall be connected to any electricity supply without the prior written permission of the electricity supply authority/ Power Distribution Company and such provisions shall, on request by an authorized official, be presented the them by registering entity of the OMD concerned.
- The electrical connections and components in all the OMDs shall be in accordance with relevant Bureau of Indian Standard, Indian Electricity uses and designed to ensure there is no safety of traffic risk
- Generators which are running on diesel/ petrol kerosene or any m\bio fuel causing noise. Air or water pollution shall not be allowed for providing power for illumination of any OMDs.
- The registering entity of the OMKD shall ensure that disposal of any type of material including media or display is disposed of as per the Environment Prot6ection Act.
- The Licensee shall provide evidence of public liability insurance of the advertising devices. During the term and at its sole cost and expense, the licensee shall obtain and keep a public liability insurance policy for their respective rights, interests and liabilities to third parties in respect of accidental death of, or accidental bodily injury to , persons; or accident damage to property
- At any time during the License period, the Licensee shall provide evidence of a valid Insurance of the Advertisement device to ULB's Authorized Officer, on demand.

3.8.4.8 License Fee

- The license fee shall be payable by the owner in advance on annual basis at such rate as
  - 1st Installment by 30th April
  - 2nd Installment by 30th September
- ULB shall divided municipal limits into the zone as described after 3 years or earlier with prior permission
- In addition to the license fee, the registered entity shall deposit bank guarantee of an amount equivalent to the quarterly license fee payable to the ULB in advance valid for license period. In case or renewal, fresh Bank Guarantee is required for the renewal amount and period.
- If not paid within timeline, then one percent interest per month or part of the month will be charged.

Inspections

- Municipal Commissioner/ Executive Officer can order inspection of any OMD.

3.8.4.9 Administrative Proceedings

- The department must have an administrative account with overall privileges to manage and operate advertisement management system.
- The administrator should have rights to generate official users of the system and should also have the rights to grant privileges to the created users.
- The administrators shall have the rights to change, add or remove data from the application as and when required.
- The official users of ULB should have all the rights in electronic mean that are required for processing of an application. These are: -
    - Forwarding and reverting application form one user to other including revert back to applicants
    - Electronic approval and disapproval system
    - Electronic message and comment system wherever required
    - Generation and rejection of license application
    - Customized reports viewing
    - Bank reconciliation
    - Data related to OMD within a ULB area
    - Fee and license calculation rules

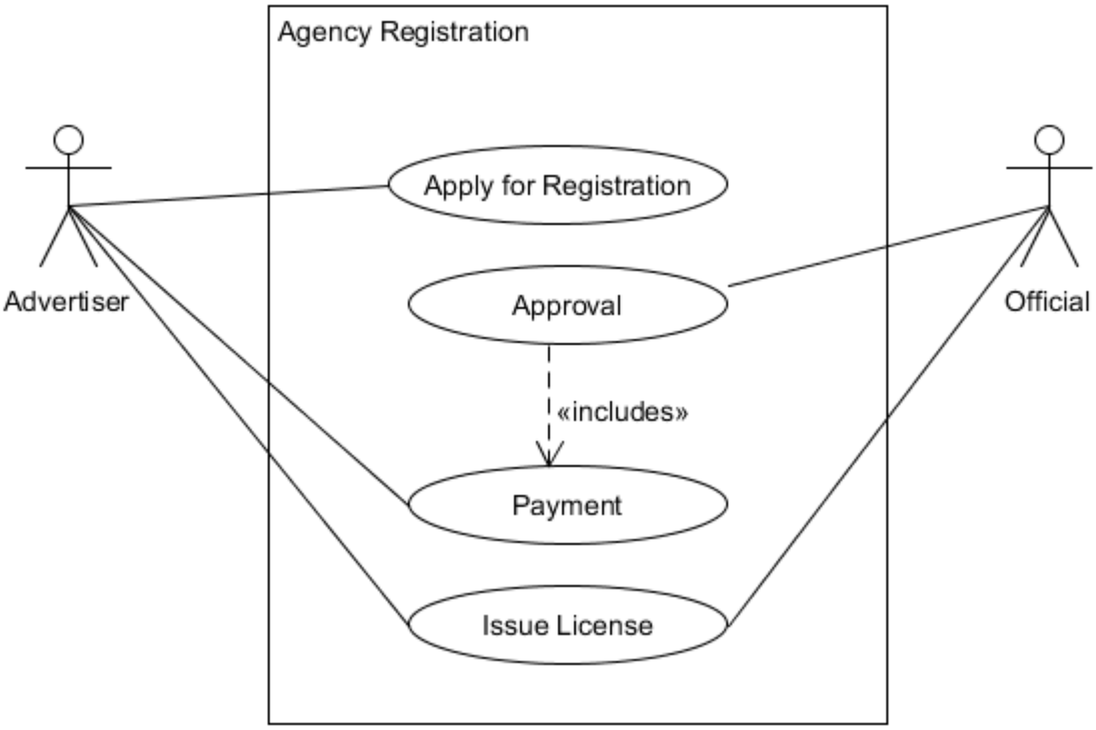


Figure 44: Agency Registration Use Case Diagram

3.8.4.10 Salient Feature of Advertisement Management System

- Regulations and all notification related to outdoor media may be made available to general public by means of display of information on the website of e-Governance
- Online registration of entity may be enabled and the registering entity may be assigned a Unique Identity number which shall be password protected for all future correspondence with ULB in matter related to the outdoor media.
- All existing and proposed outdoor media may be GPS tagged and may be available with ULBs on GIS map of the city.
- All applications for the installation of Outdoor Media shall be submitted online
- Each outdoor media site may have unique code assigned to it which shall convey its Authorization, ownership, location, type of media size, advertisement/ license fee payable, validity of agreement of display of advertisement and any other information which is opinion of urban local bodies is required to be.
- Approval of all OMD shall also be given electronically by Municipal Commissioner/ Executive Officer
- All notices shall be sent electronically to the defaulters registering entity.
- E-Governance portal should contain Advertisement related elements.

3.8.4.11 Functional Requirements for Advertisement Management System

3.8.1	Agencies can apply for registration
3.8.2	Verified Agencies get Unique ID
3.8.3	Portal should implement Payment Gateway
3.8.4	Gather all necessary information for the KYC process to verify the Agency's identification, such as identity evidence, address proof, and contact information
3.8.5	The system need to email or SMS the applicant with the status of their reservation
3.8.6	Agencies can apply for new hoarding with location and other details
3.8.7	Approved hoardings can be allotted to respective agency
3.8.8	Creation of Hoarding ID
3.8.9	Renewal of hoarding
3.8.10	Hoarding Billing
3.8.11	Hoarding assigned to an agency can be revoked
3.8.12	Agency Renewal
3.8.13	The system should be able to recognize and mark cheques that have been dishonored
3.8.14	Agency Dashboard
3.8.15	Self-Advertisement application
3.8.16	Self-Advertisement workflow approval
3.8.17	Self-Advertisement renewal
3.8.18	Private Land Advertisement application
3.8.19	Private land advertisement approval
3.8.20	Private land renewal
3.8.21	Vehicle Advertisement application

3.8.22	Vehicle Advertisement approval
3.8.23	Vehicle Advertisement renewal

3.9. Solid Waste Management

ULB's employ various methods for removal of garbage and debris under the supervision of health wing. The solid waste is collected and transported to the dumping grounds. The process involves Route optimization, i.e. shortest path from the collection point to the dumping yard using GIS and GPS enablement. The solution should capture real time data using GPS device to be installed in the vehicles to be used for carrying solid waste in the ULB. This solution using GIS data should be able to do route optimization of the vehicles. This should also help to maximize all the infrastructure facilities used and making decisions about the sorting area, disposal area, vehicle routes, optimize the number of collection points & transport of garbage, maximize the collection coverage, optimize fuel efficiency. As solid waste management involves cleaning, transporting and dumping, this module deals with the following-

- Allocation of manpower for sweeping and garbage removal, monitoring and recording of the work executed
- Allocation of the vehicle for garbage removal, monitoring and recording of movement of vehicles.
- Planning of the resource for effective utilization of manpower and vehicles
- Monitoring of the resource for effective utilization of manpower and vehicles
- Monitoring and recording of garbage collection and dumping at the dumping grounds

Indicative Sub-Modules are

- Vehicle Monitoring and Tracking
- Weighment & Dump yard Monitoring
- Garbage Collection Planning

3.9.1 Functional Requirement: Solid Waste Management

3.9.1.1	Vehicle allocation against a Ward, ULB Ward, or Private Ward should be supported by the system
3.9. 1.2	The system should allow for shift allocation against a vehicle
3.9. 1.3	It should employ GIS technologies to map out revised routes
3.9.1.4	It should have the ability to add, edit, and delete • Vehicle Route • GPS Device ID • Vehicle ID • Geo Fenced Bins
3.9. 1.5	It should be able to record: Real-time data transmitted from GPS Devices • Vehicle Position • Vehicle Speed • Geo Fenced Bins Info
3.9. 1.6	The system should allow for the assignment of several collection points to a single vehicle
3.9. 1.7	System should enable management of the dumping area
3.9. 1.8	The system should be able to automatically generate the status of bins that have been picked up or left unpicked
3.9. 1.9	The system should have a way to keep track of the number of landfills.
3.9. 1.10	Vehicle data should be able to be recorded by it
3.9. 1.11	Vehicle data should be able to be recorded by it
3.9. 1.12	The system should have the ability to connect to the Weighment Bridge and gather the necessary data
3.9. 1.13	The system should include functionality for keeping Private Ward and Ward No. ULB Ward

3.9. 1.14	System must provide provisions for in order to arrange the collection of garbage effectively, it is important to collect information about the municipal area, population, and category-by-category amount of waste collected and disposed of
3.9. 1.15	The system should enable the allocation of labor to each Ward and vehicle
3.9. 1.16	The system should allow for the issue of job cards
3.9. 1.17	If Express service is selected or not, it should be indicated on the Job Card
3.9. 1.18	To track the status of each bean, the system needs to have the ability to recognize garbage beans and link those to the garbage collection procedure
3.9. 1.19	The system should produce a report on vehicle utilization
3.9. 1.20	The system should support online requests for express services
3.9. 1.21	The system should enable the concerned official to create an express service online
3.9. 1.22	The contractor should be able to update its daily register through the system, and the sanitary inspector should be able to accept or reject it each day
3.9. 1.23	The system should include a feature that allows the corporate or ward official to produce the performance certificate
3.9. 1.24	There should be a feature in the system that allows the sanitary inspector to update the rubbish lifting register

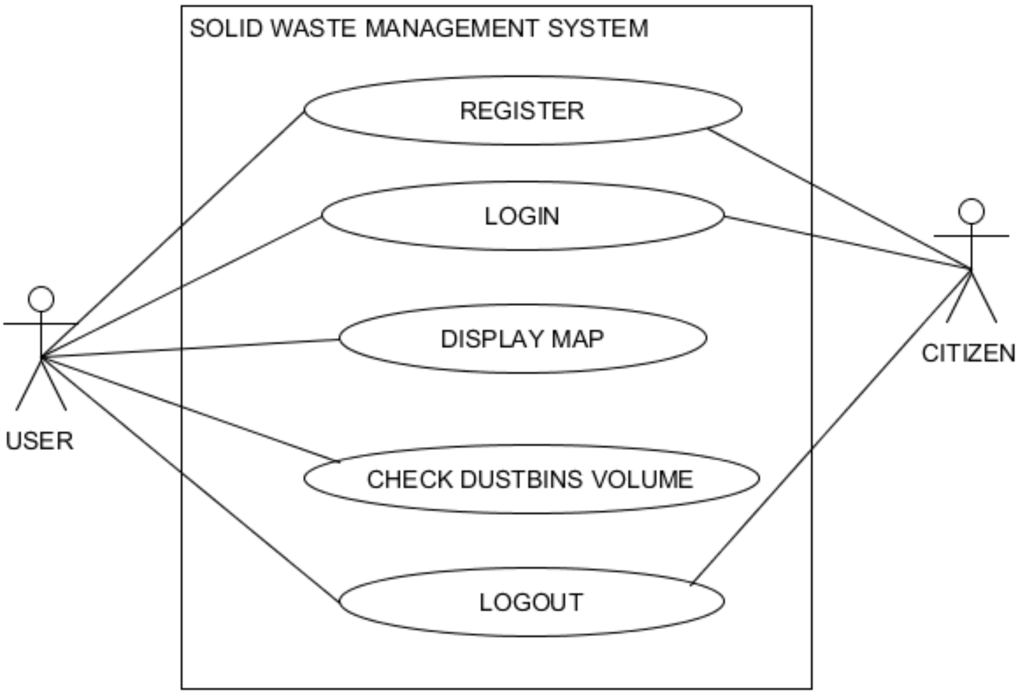
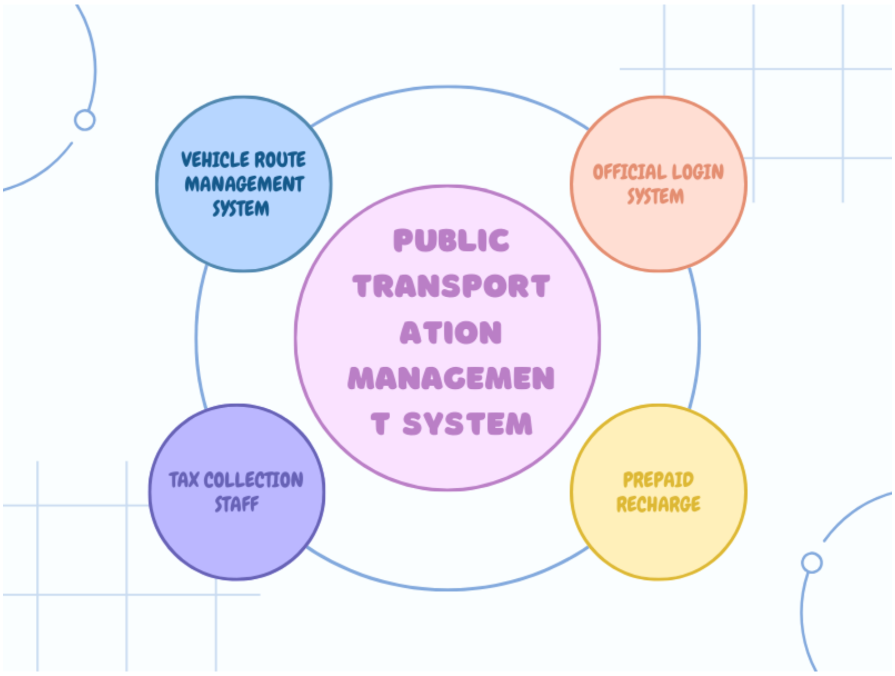


Figure 45: Solid Waste Management System Use Case Diagram

3.10. Public Transportation



3.10.1 Functional Requirement: Public Transport Management

3.10.1	Access real-time position and movement data for cars with a GPS vehicle tracking and fleet management system
3.10.2	Based on category and numbering, the system will be able to record vehicle master • Recording the details of the fuel storage at the gasoline refueling pump and the diesel pump • Information about the vehicle and workshop supplies • Identify and document the car warranties • Specify and note the vehicle's dimensions • Specify and document the vehicle's passenger capacity. • Specify and document the warranty/expected life span.
3.10.3	Management of Fuel • The system must be capable of documenting and keeping track of fuel usage and storage activities

	• The system must have the ability to track when fuel is received from oil firms • Automated end-of-day fuel reconciliation
3.10.4	Vehicle Maintenance • Specifying the reason for the repair • The decision of the authority • Details of Vehicle Issuance • Vehicle receipt and input of repair information • Acquisition of New Items (like Tyres , Battery, etc.) • The bus's driver noticed systemic flaws throughout the day • The option to upload different statutory certificates with their current states of validity, such as an explosives license or a factory license • Statutory specifications and Certificates • Shall be able to record if an oil change, unit change, or other job is incomplete due to a lack of a unit or material • Staff-reported errors
3.10.5	The technology will be able to plan routes for any car
3.10.6	The technology should assist in keeping track of how routes are being followed and foreseeing upcoming events
3.10.7	At the bus counter, the system should include an on-the-spot ticket booking option that will be logged
3.10.8	The system has to offer an online method for purchasing advance bus tickets that will be tracked
3.10.9	Concession Category Master should have information about several forms of concessions

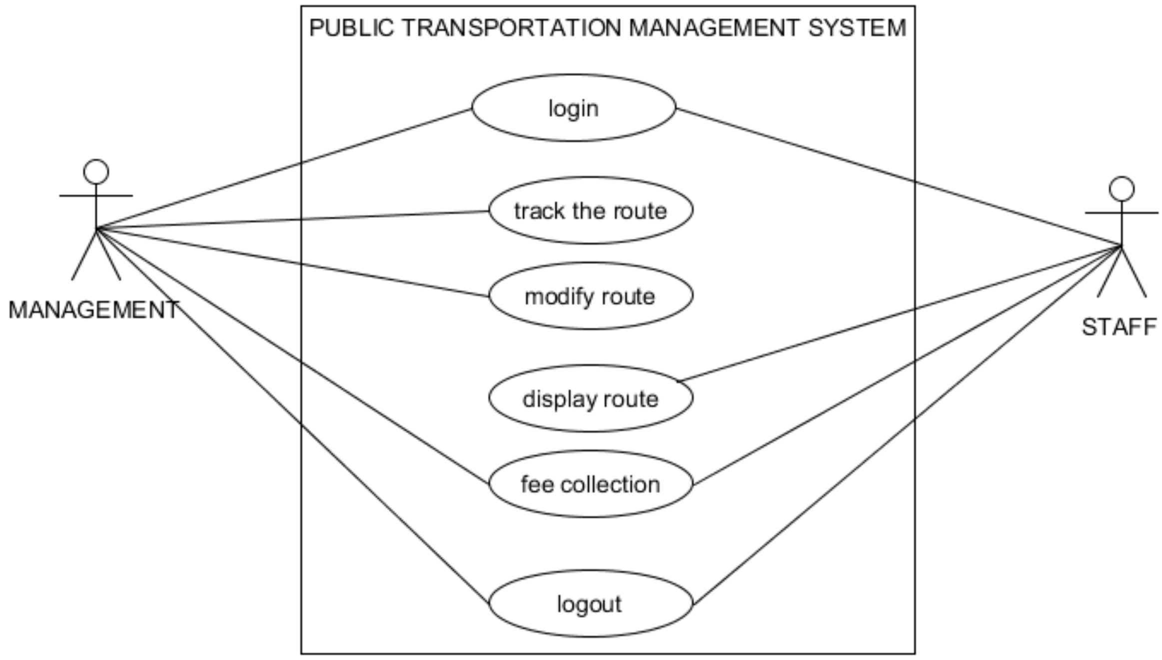


Figure 46: Public Transport Management System

3.11. Project and Fund management system

The municipalities execute various maintenance and developmental work through the engineering wing. All civil engineering works such as building of roads, bridges, culvert, storm water drains, building, parks and playgrounds etc. are carried out with proper planning, authorizations and allocation of the funds. Apart from this, ULBs also assist various departments of the State Government in implementing the departmental schemes for the welfare of the people in the municipal area. The schemes need to be monitored to achieve the desired objective and the funds allocated are utilized for the said purpose.

The main features of this module are

- Preparation of cost estimation for the projects
- Assist in preparation of tender document
- Monitor the tendering process and award of work
- Monitor the progress of work in term of measurements. Material issues, execution time etc.
- Monitor the budget allocation and perform a variance analysis
- Assist in preparation of the bills
- Monitor the bill payments and release of EMDs/ Security Deposits
- Recording and accounting of the grants/ funds received for implementation of the schemes
- Generating necessary reports needed for monitoring the implementation of schemes

Indicative sub-modules

- GIS based Estimation Support Tool
- Automated Measurement Book
- Project Planning and Monitoring

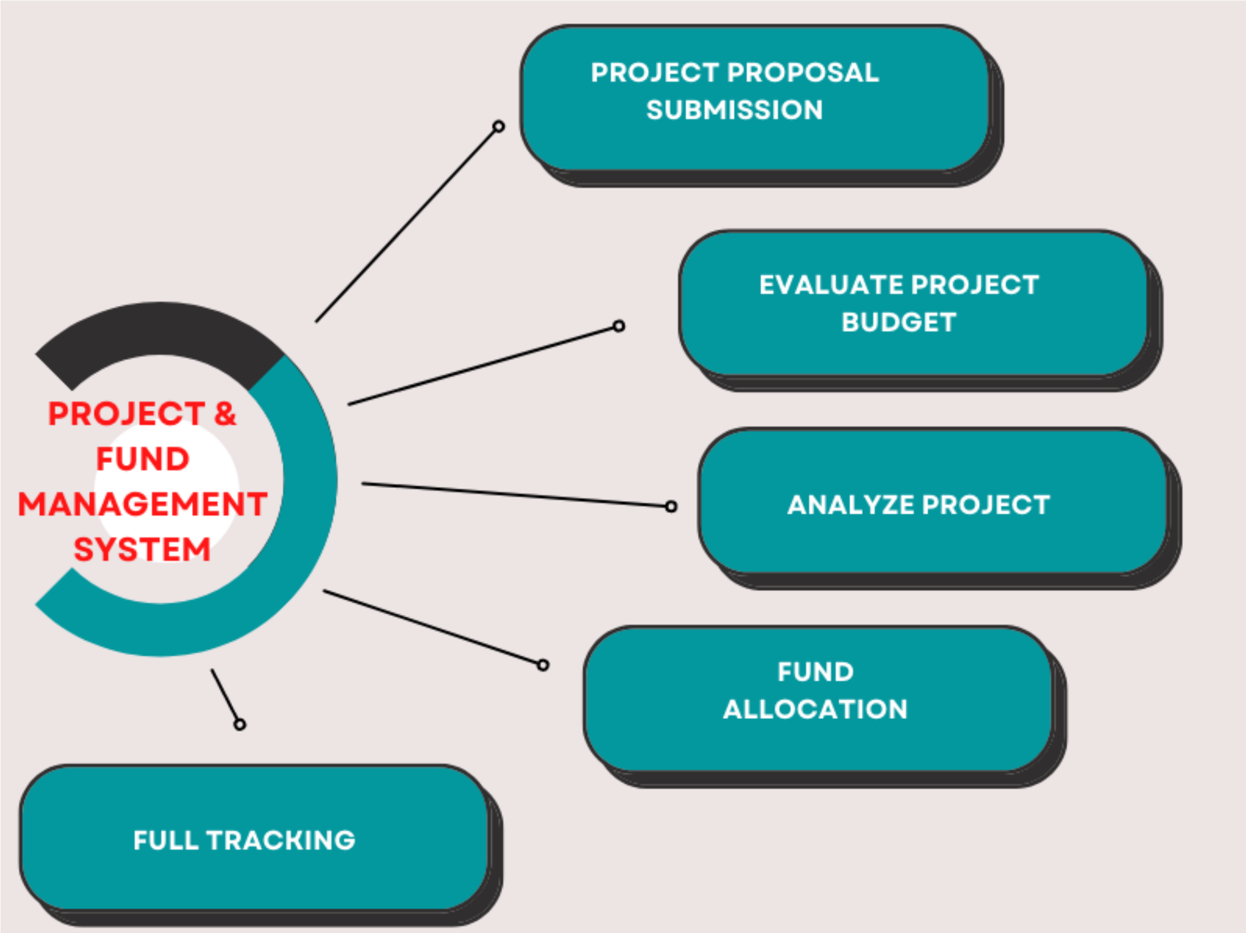


Figure 47: Project and Fund Management System

3.11.1 Functional Requirement: Project & Fund Management

3.11.1	The system should have a mapping feature that connects election and administrative wards
3.11.2	The system should have project type masters
3.11.3	The programmer needs masters for the Work type
3.11.4	Locations should have masters in the system
3.11.5	Project Status should have masters in the system
3.11.6	The system needs masters for the review process
3.11.7	There should be masters for items and special items in the system (For Estimation)

3.11.8	The system should contain masters for each rate type (SOR/Market Rates/DSR/ESR/WSR/Special Item Rates), among others
3.11.9	Milestone should have masters in the system
3.11.10	The system should allow for updating of rates and rate schedule details
3.11.11	Rate Analysis and Rate Estimation should be included in the system
3.11.12	The system should have options for selecting SOR, market rates, DSR, ESR, WSR, and CSR rates
3.11.13	The system should have a mapping feature that connects election and administrative wards.
3.11.14	The system should have project type masters
3.11.15	It should be possible to update the project progress and measurement book through the system
3.11.16	The system should include a feature for preparing estimates following field visits
3.11.17	All components for preparing estimates should be able to be entered into the system
3.11.18	The system should allow both online and offline estimate review and approval
3.11.19	The system should have functionality for updating project progress and recording measurement book data
3.11.20	The system should have a feature for measuring and verifying project progress
3.11.21	The system needs to allow for the updating of site inspection details and work photos
3.11.22	The system should allow for the review and approval of invoices submitted by vendors
3.11.23	The system should support payments to vendors made with cash, checks, money orders, and other payment methods
3.11.24	The system must allow for the capture of receipts in all forms, including cash, checks, demand draughts, purchase orders, and more
3.11.25	The system should allow for billing for additional or surplus items
3.11.26	The system should include functionality for handling vendor advance payments

3.11.27	The system needs to support the creation of abstract sheets
3.11.28	Rate Analysis should be possible in the system
3.11.29	The system should support the creation of recapitulation sheets
3.11.30	The system should have a feature for recording negotiation details
3.11.31	The system must have a DSR maintenance feature
3.11.32	The system needs to allow for the update of tendering, bid evaluation, and agency fixation information
3.11.33	The system must include a feature for recapitulating electrical and civil operations
3.11.34	The system needs to provide a way to handle excess quantity
3.11.35	The system needs to have a way to handle extra items
3.11.36	The system should have the ability to produce a completion certificate
3.11.37	The system should include functionality for handling Period Extensions
3.11.38	The system needs to support adding specifications for special items that are not covered by the standard DSR
3.11.39	The system should allow for the definition of various milestones and time limits, as well as its updating and the explanation for any delays
3.11.40	It should be possible to manage and update project scheduling using the system
3.11.41	The system must allow for the issuing of Notices to Agency and Vendor (For delay , Poor Quality, any other reason)
3.11.42	The system should have options for Using the pre-established parameters to determine the penalty
3.11.43	The system should allow for updating of Agency / Vendor Status (Black listed, Restricted for period)
3.11.44	The system should allow for project-by-project comparison of budgeted and actual spending

3.11.45	The system should have functionality for updating information about (bridges, wastewater treatment facilities, roads, etc.) as well as information about the projects' yearly maintenance
3.11.46	A mechanism for managing quality control (PMC/TPIA Report) should be included in the system
3.11.47	The system should be able to produce a Work Comparison report that compares the plan to the actual work
3.11.48	The system should be able to produce Payment Detail Reports, including those for Invoices Raised, Payments Made, Tax Deducted, Balance Payment, and others
3.11.49	The system needs to support printing work orders
3.11.50	The system should provide functionality for creating Milestone Monitoring Reports
3.11.51	The system should include functionality for creating Project Summary Reports
3.11.52	For the following, the system should be able to produce reports: • Measurement Sheet • Rate Analysis Sheet • Abstract Sheet • Recapitulation Sheet • Tender Checklist • Tender Notice • Estimate sheet • No dues Certificate • MB Abstract Report • Extra Item Report • Contractor wise pending Bills • Ward wise pending Details • Project-wise comparison of Budgeted Expenditure vs. Actual • Contactors Register • Confidential Register of Contractors • Road register (Traffic / Road history / Defect liability) • PWD register (Works manual/ accounts manual/) • Bridges register (history / annual maintenance / Continuous monitoring) • Technical Bid Comparison

	• Financial Bid Comparison
3.11.53	The system should be integrated with the department of purchases and stores (Invoice Processing with respect to GRN)
3.11.54	System integration with e-Tender and e-Procurement Module is necessary
3.11.55	System integration with Solid Waste Management System is required.
3.11.56	The system should include a data input suite for entering MB history
3.11.57	The system should allow for the updating of contractors' data (Black listing of Contractors)
3.11.58	It should be possible to manage Support Parent/Child Relations for Project and Sub-Projects in the system

3.12 Procurement Management System

E-Procurement combines the use of internet technology with procurement best practices to streamline the purchasing process of the ULBs and reduce costs. The e-procurement module aims to automate the activities related to the procurement of works as well as goods.

This module should also handle the procurement and contract management process. The procurement management process should set-forth procurement methods and establish standards for obtaining goods and services. The procedures defined under the process should include guidelines for the solicitation, award administration of purchase orders/ contracts for various categories of purchases as per procurement policy manual. This department also monitors the performance of the vendors and updates the vendor master List.

The contact management process should include contract requisition, contract planning, deciding scope of work for contract, bidding and finally award purchase order to a selected vendor. The department should be able to carry out pre-tendering, tendering, tender evaluation, award & commitment and post award activities, which are associated with the development and award of contracts. It should start from the receipt of a requirements plan form the user department till contracts signatures and should include regulatory and approval activities during contract signature and issuance of final accounts.

Under the works procurement the module aims to automate the following functions of the ULBs:

- Vendor performance Rating
- Enabling of the competitive bidding (tendering) process on internet
- Enabling of the dynamic pricing (Auction) process on internet
- Under the goods procurement scenario, the module aims to automate the4 following functions in addition to those listed above:
- Rate contract management
- Online RC catalogue-based procurement
- Vendor Registration
- Purchase Process
- Expediting Process
- Monitor Performance Metrics
    - Pre-tendering Procedures
    - Preparation of Terms of Reference/ Scope of work
    - Preparation of Tender document
    - Bidders List, Single Source Tendering & Approval of Tenders
- Tendering Procedure
    - Tender invitation, Collection/ Dispatch Tenders

- Site Visits & Pre-Tender Clarification Meetings
- Tender Period, Extension of Tender Period & Pre-Tender Clarifications
- Submission of Tenders, Late Tenders & Tender Opening
- Tender Cancellation

- Evaluation Procedures
    - Technical Evaluation, Commercial Evaluation & Final Evaluation Report
    - Technical & Commercial Evaluation
    - Basis of Rejection of Bids
    - Price Negotiation & Revised Proposals
    - Extension of Tender Validity Period
- Contract award Procedures
- Contact Variations Procedures
- Contract Management
    - Extension of Time
    - Claims/Dispute Management
    - Contract Termination
    - Contract Close out
- Bonds & Bank Guarantees
    - Tender Bonds
    - Advance Payment Bonds
    - Performance Bonds
    - Any other Contractual Bank Guarantees
    - Record, Tracking & Reporting

Inventory management

The stores departments in the ULB handle the entire store and inventory of stationeries, electric equipment's, computers and all other materials. The module will track in detail the indenting of the materials, stock updates, replenishment points etc. To accommodate a just-in-time philosophy, stock/Inventory department should be able to monitor parameters like reorder points, safety stock levels and economic order quantity for all items in the store. The system should have an interface with the e-Procurement system. The application should help the ULB for maintaining the monitoring inventories in the store. Using the preventive maintenance application, to plan upcoming maintenance and inspection work, can help the ULB to determine which items will be needed in the future.

Indicative Sub-Modules are-

- Material Indent Management
- Stores/ Stock Management

3.12.1 Functional Requirements: Procurement

3.12.1.1	The vendor performance should be calculated by the system using the user-defined weightage
3.12.1.2	You must perform the computations listed below: ▪ Determine the vendor's material quality during the previous six months ▪ Determine the vendor's delivery efficiency for the previous six months ▪ Determine the percentage of inactive vendors ▪ Evaluations of the past six months' worth of vendor bid responses ▪ Determine the vendor price performance percent ▪ Determine the percentage of vendor technical performance ▪ Determine the Weighted Average Score using the user-specified weightage ▪ Determine the overall percentile ranking of each vendor and group them into buckets that you define
3.12.1.3	Based on the prior calculations, the system should be able to produce a report and submit it to the inventory team for inspection and approval

3.12.2 General (Enabling tendering on internet) Rate Contract Management

3.12.2.1	The system should be able to conduct all tender-related processes electronically (through the internet) - The system should be able to conduct Concerning the rate contract – • It will be possible to purchase goods using a rate contract list • Updating and maintaining the Electronic (Online) Rate Contract (RC) Catalogue

3.12.3 Enabling Auction on internet

3.12.3.1	The system should be able to handle the dynamic pricing (Auction) procedure (through Internet)

3.12.4 Vendor Registration

3.12.4.1	The system should be able to get documents and information related to vendor registration from the website. Note: The website will not accept the form unless all required fields are filled out, and it will provide the vendor the option to upload supporting papers. The system will get the vendor registration data from the website. In a tabular structure, the vendor registration form will have the following columns: • The Material Group • Category Sub I, • Category Sub II, • List of items, • Item Information, • The item's brand and manufacturer, etc. • Vendors can choose from the list of available Material Groups on the website. If a seller can give something that isn't on the list but is needed, Vendors may include such in the registration form as well
3.12.4.2	The vendor registration information should be reviewed by the vendor management supervisor and sent for evaluation and approval in accordance with the system's prescribed workflow
3.12.4.3	A Vendor Registration Code should be generated by the system, and the vendor master list should be updated Note: The vendor code and item classification are connected so that the system prompts the user for the approved vendor list when the item is selected

3.12.5 Purchase Process

3.12.5.1	The system should enable the User Department to submit a purchase request for goods or services
3.12.5.2	Before accepting a PR, the system should allow the head of inventory and warehouse to review the codification and stock availability
3.12.5.3	According to the workflow outlined in the process maps, the system should enable the Procurement Team to examine and approve the PP
3.12.5.4	The Assistant Head of Procurement should be able to issue an RFQ and designate a vendor from the Vendor Master List using the system
3.12.5.5	The system should enable the user department's assistant head of procurement to conduct commercial and technical evaluations and record the outcomes of the bids submitted in response to the RFQ
3.12.5.6	The system should enable the Assistant Head of Procurement to accept or reject the vendor that the User Department has chosen
3.12.5.7	The system must enable the Assistant Head of Procurement to keep track of any price-reduction negotiations
3.12.5.8	The system needs to enable the Assistant Head of Procurement to issue a purchase order and send it for review and approval in accordance with the work flow

3.12.6 Expediting Process

3.12.6.1	The system should produce and deliver a report to the buyers' inbox listing all upcoming POs with promised dates in the upcoming two weeks
3.12.6.2	The system should create a report of unpaid orders dating back to the promise date and email it to the buyer

3.12.6.3	The number of times a PO has been expedited should be tracked by the system

3.12.7 Monitor Performance Metrics

3.12.7.1	The system should be able to record the information from the process flow and produce a report that can be delivered to the manager of procurement and inventory These specifics are: - • Determine the number of POs awaiting approval (category wise) • Determine how many POs are due for delivery (category wise) • Determine how many POs are awaiting technical evaluation (category wise) • Determine the number of PR, RFQ, and POs that each buyer has in line for processing and create an ageing report • Determine the number of RFQs filed under technical) • Analysis (category wise) • Capture stock levels for products below safety stock and minimum stock • Produce reports using bar charts based on user inputs. • At the conclusion of each month, the system should be able to produce the Procurement Matrix Report and send it to the Inbox of the Procurement Team.

3.12.8 Pre-tendering Procedures - Preparation of Terms of Reference

3.12.8.1	According to the workflow outlined in the process maps, the system should enable the Originating Department to create detailed TOR/SOW & PR and submit it to the Contracting Department for assessment and approval
3.12.8.2	The system should enable the Contracts Engineer to provide the PR request a special job number

3.12.9 Pre-tendering Procedures - Preparation of Tender document

3.12.9.1	According to the workflow outlined in the process maps, the system should enable the contracts engineer to produce the tender documents and send them for evaluation and approval

3.12.10 Pre-tendering Procedures - Bidders List, Single Source Tendering & Approval of Tenders

3.12.10.1	The system needs to enable the initiating department to put together good arguments for single source tendering and offer the contracts engineer a list of bidders

3.12.11 Tendering Procedures - Tender Invitation, Collection/Dispatch Tenders

3.12.11.1	The Tendering Officer should be able to post the Tender Documents to the ULB website for online purchase using the system. In addition: • As the Tender was being uploaded, • The type of tender must be selected by the tendering officer. If the tender is open, it will be posted on the Tenders Section of the ULB website. The Tender Invitation Letter will include a URL and password to access the Tenders page if it is a closed tender. • The bidder logs in and selects the tender from the website. It will direct him to the Mandatory Registration Page, where Bidder will input his details & upload essential papers. Then the bidder pays the non-refundable cost online. The bidder will have access to the tender document after the bank has authorized the payment
3.12.11.2	The system will receive from the website the bidders' registration and payment information
3.12.11.3	The Contracts Engineer should be able to create the Tender Invitation Letter using the system's template
3.12.11.4	The system must to enable the contracts engineer to fax or email the tender invitation letter to each authorized vendor using the system ID. All faxes and emails sent to the suppliers should be tracked and recorded by the system

3.12.11.5	The system should produce and submit to the Tender Committee a list of all vendors who have bought the open or closed tenders

3.12.12 Tendering Procedures - Site Visits & Pre-Tender Clarification Meetings

3.12.12.1	The system should enable the contract holder to accept requests and automatically create emails notifying all bidders of site visits using the tender email ID
3.12.12.2	The system should enable the Contracts Engineer to use the Tender Email ID to distribute the tender bulletin and communicate the meeting's content
3.12.12.3	The Contracts Engineer should be able to use the system to produce a list of attendees for the Pre-Tender Clarification Meeting

3.12.13 Tendering Procedures - Tender Period, Extension of Tender Period & Pre-Tender Clarifications

3.12.13.1	The system should enable the contract holder to draught a request to shorten the tender period to less than two weeks and submit it for review in accordance with the workflow
3.12.13.2	The system should enable the contract holder to draught a request to extend the tender period and submit it for review in accordance with the workflow
3.12.13.3	The system should enable the receipt of bids via tender email ID by the Tender Committee Secretary

3.12.14 Tendering Procedures - Submission of Tenders, Late Tenders & Tender Opening

3.12.14.1	The system should enable the receipt of bids via tender email ID by the Tender Committee Secretary
3.12.14.2	During the tender opening, the system should enable the Tender Committee Secretary to prepare the Tender Opening Protocol Form

3.12.14.3	The system should enable the Tender Committee to see the list of all vendors who have bought the tenders (open/closed) and compare with all bids while reviewing

3.12.15 Tendering Procedures - Tender Cancellation

3.12.15.1	Cancellation Request and submit it for review in accordance with the workflow.
3.12.15.2	The cancellation notice and refund message should be sent to all bidders using the tender email ID by the contracts engineer utilizing the system (wherever applicable)

3.12.16 Evaluation Procedures - Technical Evaluation, Commercial Evaluation & Final Evaluation Report

3.12.16.1	The system should enable the contracts engineer to forward the bids to the contract holder for technical review
3.12.16.2	The system need to enable the contract holder to create a request for technical clarification and receive clarification from the bidder
3.12.16.3	The Technical Evaluation Report should be able to be prepared by the Contract Holder and sent to the Contract Owner for approval
3.12.16.4	The Commercial Evaluation Report should be able to be prepared by the Contracts Engineer and sent to the Head of Tendering and Contracting Manager for approval
3.12.16.5	The system need to enable the contract holder to examine both the technical and commercial evaluation reports and to create a single final evaluation report with recommendations
3.12.16.6	The system shall enable the contract holder to submit the final evaluation report and recommendations for approval to the Tender Board Focal Point or Secretary of the Concerned Committee (TC/EC)

3.12.17 Evaluation Procedures - Technical & Commercial Evaluation

3.12.17.1	The Technical Evaluation Report should be accessible to the Contract Holder through the system
3.12.17.2	The Commercial Evaluation Report should be sent to the Head of Tendering and Contracting Manager for approval through a system that enables the Contract Holder to receive it
3.12.17.3	The system should enable the contract holder to see both the technical and commercial evaluation reports and to compile a final evaluation report with suggestions
3.12.17.4	The system shall enable the contract holder to submit the final evaluation report and recommendations for approval to the Tender Board Focal Point or Secretary of the Concerned Committee (TC/EC)
3.12.17.5	The system should enable the Tender Board Focal Point or Secretary of the Concerned Committee (TC/EC) to publish and distribute the Minutes of the Meetings for the assessment of the Final Evaluation Report to all parties involved

3.12.18 Evaluation Procedures - Basis of Rejection of Bids

3.12.18.1	The system should permit the Originating Department to reject bids if they don't meet the specifications for the materials
3.12.18.2	The system should enable the originating department to draught a non-conformance report and deliver it to the appropriate committee for approval or bid rejection

3.12.19 Evaluation Procedures – Price Negotiation & Revised Proposals

3.12.19.1	The system should enable the Contract Holder to evaluate the Final Evaluation Report and choose whether to enter price negotiations or submit a fresh bid
3.12.19.2	The system should enable the Originating Department to submit the price negotiation request for approval to the proper authorities

3.12.19.3	The system should enable the Originating Department to request approval of the updated proposal from the relevant authority
3.12.19.4	The originating department should be able to send the updated proposal to all technically qualified tenders via the system
3.12.19.5	The originating department should be able to create the final report using the following information thanks to the system: • Original costs • Price revisions at each rebidding step • Final costs prior to negotiation • Costs after negotiations • The justification, if any, for excluding some bidders from rebidding or negotiation • A thorough reason for resubmitting a proposal or ending negotiations

3.12.20 Evaluation Procedures - Extension of Tender Validity Period

3.12.20.1	The system should enable the contract holder or contracts engineer to draught and submit a request for an extension of the tender validity period
3.12.20.2	The system should enable the Contracts Engineer to notify the bidders of the extension of the tender validity period

3.12.21 Contract Award Procedures

3.12.21.1	The system should enable the contracts administrator to draught a purchase order (PO) for a Letter of Award (LOA) and submit it for approval and evaluation
3.12.21.2	The system should enable the contracts administrator to draught a letter of agreement and transmit it for review and approval to the focal contracts engineer, the tendering head, the originator, and the contract holder
3.12.21.3	The contracts administrator should be able to transmit the LOA to the contractor for acceptance and receive his acknowledgement using the system

3.12.21.4	The system should enable the contracts engineer to create forms and agreements
3.12.21.5	The Tendering Officer should be able to upload the entire signed contract document into the database library with the system
3.12.21.6	The Purchase Order should be able to be updated by the Contracts Administrator and sent to the Contracting Manager for approval
3.12.21.7	After receiving clearance from the contracting manager, the system should enable the contracts administrator to send a purchase order to a contractor

3.12.22 Contract Variations Procedures

3.12.22.1	For any change in quantity, scope of work, or final contract value, the system should enable the contract holder to produce a variation order and transmit it to the contract owner for evaluation and approval

3.12.23 Contract Management - Invoice Management

3.12.23.1	The system should enable the Contract Holder to receive the Department's invoice, examine, and approve it before sending it to the Finance Department

3.12.24 Contract Management - Extension of Time

3.12.24.1	The system should enable the Contract Holder to analyze Time Extension Requests submitted by the Contractor, generate an evaluation report, and submit it for approval to the relevant Approval Authority
3.12.24.2	The contract owner or contracts engineer should be able to inform the contractor of the decision on the time extension request through the system

3.12.25 Contract Management – Claims/Dispute Management

3.12.25.1	The system should enable the contract holder to examine and forward claims and dispute requests from contractors to the contracts engineer for action
3.12.25.2	The final recommendations and assessment report for resolving claims and disputes should be prepared by the contract holder and sent to the necessary committee for review and approval
3.12.25.3	The contracts engineer should be able to submit a variation order or approval letter to the contractor via the system

3.12.26 Contract Management - Contract Termination

3.12.26.1	Using the appropriate system, the Contract Holder should be able to draught a request for contract termination and submit it to the appropriate Committee for approval
3.12.26.2	The system should to enable the Legal Manager to draught the written termination/cancellation notification
3.12.26.3	The system should enable the Contracts Engineer to send the Contractor the Termination Notice that has been duly signed by the appropriate party

3.12.27 Contract Management - Contract Close out

3.12.27.1	The contract engineer should receive notification from the system when the contract can be closed, and the contract holder should be able to decide when this can happen
3.12.27.2	The contracts engineer should be able to close the contract and notify the contractor of the closure via the system

3.12.28 Advance Payment Bonds

3.12.28.1	The Advance Payment Bonds received from the Contractor should be updated by the Contracts Administrator using the system
3.12.28.2	The Contracts Administrator should receive a warning from the system alerting them that the Advance Payment Bond will soon expire
3.12.28.3	Set the reminder to go off one month prior to the expiration
3.12.28.4	The system ought to enable the Contract Holder to prepare the Bond Release Request and transmit it to the Contracts Administrator for distribution to the Bank
3.12.28.5	After receiving proper approval from finance, the system should enable the Contract Administrator to prepare a bank letter with instructions and an unrecovered sum and send it to the bank
3.12.28.6	The Advance Payment Bond will soon expire, and the system ought to remind the Contracts Administrator of this in a subsequent notification. Set the reminder to go off one week before the expiration

3.12.29 Performance Bonds

3.12.29.1	The system must to enable the Contract Administrator to draught a bank letter instructing the bank to renew the bond for an additional three months and send it to the bank following proper Finance approval
3.12.29.2	The system should make it possible for the contracts administrator to update the information on the performance bonds that were obtained from the contractor
3.12.29.3	The Bond Release Request should be prepared by the Contract Holder/Owner and sent to the Contracts Administrator for further distribution to the Bank via the system
3.12.29.4	The second communication should inform the Contracts Administrator of the Performance Bond's impending expiration. Set the reminder to go off one week before the expiration

3.12.29.5	The system should enable the Contract Administrator to draught a letter to the bank instructing them to renew the bond for three more months and send it to the bank following proper Finance approval

3.12.30 Any other Contractual Bank Guarantees

3.12.30.1	The Contracts Administrator should be able to update the system with new information regarding Contractual Bank Guarantees obtained from the Contractor
3.12.30.2	The Contracts Administrator should receive a reminder from the system before the Contractual Bank Guarantees expire. Set the reminder to go off one month prior to the expiration
3.12.30.3	The Bond Release Request should be prepared by the Contract Holder/Owner and sent to the Contracts Administrator for further distribution to the Bank via the system
3.12.30.4	The second notification should inform the Contracts Administrator of the Bank Guarantee's impending expiration. Set the reminder to go off one week before the expiration
3.12.30.5	The Contracts Administrator should be able to update the system with new information regarding Contractual Bank Guarantees obtained from the Contractor

3.12.31 Record, Tracking & Reporting

3.12.31.1	The system must enable the Contract Administrator to draught a letter to the bank instructing them to renew the bond for an additional three months and submit it to the bank following proper CFO approval

3.12.32 Generic

3.12.32.1	The system should keep track of all approved performance bonds, advance payment bonds, and any other contractual bank guarantees. It should also produce a monthly report for all instruments that are due to expire in that month and transmit it to the contracting manager

3.12.32.2	System must adhere to the Workflow for evaluation and approval as outlined in the Process Maps, Contracting Procedures Manual, and Procurement Procedures Manual

3.13. Land and asset management system

This module will help to manage the complete lifecycle of an asset in the ULB including inventory, procurement, and contract and work management. The system should provide insight for all the enterprise assets as well as Land (Owned or Managed by ULB) and work process for better planning, controlling and closely aligning them with the overall strategy of the ULB. It should provide tolls for long and short term planning, preventing and reactive schedule management, resource optimization and key performance indicators. It should also enable managing vendor contract with comprehensive support for purchase, lease, rental, warranty, rate, master and user-defined contracts. It should also help in aligning service levels with business objectives by defining service offerings and establishing Service Level Agreements (SLAs). It should maintain latest information on the location and other attribute information of all assets including Land (Owned or Managed) of the ULB and provides a spatial knowledge base for any spatial decision

Indicative Sub-Modules are-

- Asset Management System
- Land Management System
- GIS based Asset Mapping
- Owned & Hired Vehicle Management
    - Vehicle Registration
    - Vehicle Log
    - Invoice Processing
    - Repair & Maintenance
- Asset Register

3.13.1 Asset Planning

3.13.1.1	It should be possible for the system to create demand projections and transmit them for assessment and approval in accordance with work procedures
3.13.1.2	A user should be able to log target service levels in the system
3.13.1.3	Future service levels and equipment replacement requirements should be predicted by the system
3.13.1.4	The system needs to calculate total life-cycle and capital operational costs
3.13.1.5	The system should be able to record the criticality and risk profile of asset categories
3.13.1.6	Asset lifecycle plans ought to be able to be entered into the system
3.13.1.7	The system should enable users to monitor AM System and record AM Policy, Strategy, and Objectives
3.13.1.8	User should be able to record and define asset delivery strategy and plan using the system

3.13.2 Asset Creation

<table>
<tr><td>3.13.2.1</td><td>By entering the following data, the system ought to enable the user to manage the acquisition and transfer of land for assets:
Ownership transfer and other relevant legal formalities data.
Request for acquiring land for ULB assets.
Final Land Acquisition Data.</td></tr>
<tr><td>3.13.2.2</td><td>By logging this data, the system should enable users to track the status of asset delivery:
Project Site Inspection Reports,
Project Outputs prepared and provided by the Contractor,
Project Plan Project Status reports,
Project Escalations & Action points,</td></tr>
<tr><td>3.13.2.3</td><td>Handover Plans and Acceptance Criteria should be able to be recorded, reviewed, and approved by the system</td></tr>
<tr><td>3.13.2.4</td><td>The system should be able to record the asset monitoring and handover acceptance processes</td></tr>
<tr><td>3.13.2.5</td><td>Conformity with the handover plan, correction of issues and violations found during asset transfer</td></tr>
<tr><td>3.13.2.6</td><td>The following should be able to be recorded by the system: Budgets for operations, results of operations plans, validation comments, and feedback</td></tr>
<tr><td>3.13.2.7</td><td>The system ought to have a feature that allows the user interface to display the Asset description for related Asset Code</td></tr>
<tr><td>3.13.2.8</td><td>The following points against asset operational Objectives and KPIs should be able to be recorded and monitored by the system:

(a) Asset Operational Performance

(b) Improvement Plans and Recommendations</td></tr>
</table>

3.13.3 Asset Maintenance

3.13.3.1	The system should be able to save a list of spare parts and consumables and make suggestions for their purchase
3.13.3.2	The system should be able to determine whether the list of supplies and equipment is within the approved plans and budget
3.13.3.3	The whole technical document related to the asset should be stored in the system. The document should have a link to open it
3.13.3.4	The system should be able to record information about all the lands that the ULB owns or manages
3.13.3.5	The list of assets to be taken into consideration for disposal, renewal, upgrading, and asset assessments regarding the Master Plan should be able to be entered into the system
3.13.3.6	Asset Decommissioning Status, Audit/Inspection for Asset Disposal, and the Asset Disposal Plan should all be able to be recorded by the system
3.13.3.7	Keep an eye on asset improvements or renewals. The system ought to enable user inspection and monitoring of asset renewal and upgrade
3.13.3.8	High Level Maintenance Objectives should be able to be entered into the system, and it should be able to produce KPIs to track performance
3.13.3.9	The following should be able to be recorded by the system: Budgets for maintenance • Output from the maintenance plan • Validation Comments/Feedback
3.13.3.10	The following points should be able to be recorded and tracked by the system against asset maintenance goals and KPIs. • Performance of Asset Maintenance • Plans and recommendations for improvement

3.13.4 Asset Operation

3.13.4.1	The system must be able to connect the asset register to the asset management strategy in order to offer instructions for asset operation and maintenance

3.13.5 Asset Disposal

3.13.5.1	The complete old asset data should be moved to the new system in accordance with the new asset codes, and new asset coding should be established
3.13.5.2	The system should enable users to create customize reports as needed

3.13.6 Asset Registration

3.13.6.1	Every asset should be assigned a special number by the system. To establish uniform Asset numbers, the same asset numbering methodology should be used
3.13.6.2	The system should be able to save and display the current state of a specific asset whenever necessary
3.13.6.3	The system should have the ability to save and display the current criticality of a specific asset whenever necessary
3.13.6.4	The system ought to be able to assign each asset a special number. To establish uniform Asset numbers, the same asset numbering methodology should be used
3.13.6.5	The system needs to have the ability to store and show any required Asset types and duties
3.13.6.6	To identify and track an asset with a manufacturer, the system should have the ability to store and display manufacturer serial numbers (kept by the manufacturer) and codes (maintained by ULB against a specific manufacturer) as needed
3.13.6.7	The system should have the ability to retain and display the asset's installation date as needed

3.13.6.8	The system should have the ability to store and display supplier serial numbers (those kept by the supplier) and codes (those kept by ULB against a specific supplier) as needed in order to identify and track assets with the supplier
3.13.6.9	The system ought to have the capability of storing and displaying the asset owner's information as needed
3.13.6.10	The system should be designed with the ability to save and display the asset's commission date as needed
3.13.6.11	The system should have the ability to save and display the person or position in charge of asset maintenance as needed. History of maintenance comprising date and kind of maintenance, next maintenance due date, consequences (if applicable), downtime needed, action taken, manpower needed, and costs
3.13.6.12	The system should have the ability to save and show the warranty coverage term and expiration date as needed. For more information, a link to Content Management/DMS should be available, which is where the detail document relevant to the warranty of the specific asset is kept
3.13.6.13	The system should have the capability to store and display data as needed. • Original existence • Original remaining life, • revised remaining life, • replacement due date, • and the most recent review date of the asset life • Expected disposal date or life-expiration date Any signs of a disability
3.13.6.14	To retain GL transaction information like control account, cost adjustment account, shrinkage cost account, invoice price variance, currency variance, purchase price variance, receipt price variance, etc., the system should have the ability to store and display assets as needed
3.13.6.15	The system should be able to save and display any potential returns or scrap values as needed
3.13.6.16	The system should have the capability to save and show Book Value of an Asset as needed

3.13.6.17	The system should have the capability to store and display data as needed. Technique, date of "disposed off" asset
3.13.6.18	The system should be able to save and show the depreciation method, rate, and amount as needed
3.13.6.19	The system should have the capability to store and display data as needed. If the previous cost is unknown, the first valuation
3.13.6.20	The system ought to support the usage of sub ledger accounting collecting charges for the upkeep performed (materials, labor, and other services). By asset, location, project, and custodian, these sub ledgers might accrue charges
3.13.6.21	The system has to have the ability to save and show asset register failure classes as needed. A failure hierarchy includes failure data as a component. Failures include the date of occurrence, issues, causes, and solutions
3.13.6.22	Maintaining segment, length, location, and linkage with engineering design should be possible with the system
3.13.6.23	The system should include a feature that allows it to store and display contractual information, standards, procedures, manuals, asset specifications, and other documents that are kept in a content management or document management system as needed
3.13.6.24	The system should contain the ability to add an item number, a current balance (other than zero), and instances of it so that it can be utilized in other places. Each component should specify the location, the time of use, and particular jobs, such as inspection, overhaul, and others
3.13.6.25	When necessary, the system should have a feature that allows for the temporary transfer of assets between cost objects
3.13.6.26	The system should have the ability to save and show important Performance Indicators as needed
3.13.6.27	The system should have the capacity to store and display records structured into orderly hierarchies as needed, since this would make it easier to discover records and ensure that they are not accidentally duplicated
3.13.6.28	The system should have the ability to record and show the hazards and precautions, lockout tag out, and other information as needed

3.13.6.29	The system should have the ability to save and display the asset's related risk as well as its evaluation, mitigation, and backup plans as necessary
3.13.6.30	All asset-related paperwork should be able to be stored and shown as needed in the system's central inventory, which should have a link to the asset
3.13.6.31	The system should have the capability to save and show design parameters, such as diameters, materials, drawings, and others, as needed

3.13.7 Vehicle Management (Purchase) (Hiring of Vehicle)

3.13.7.1	The system should have a feature that allows for the creation of a generic template for the car purchase agenda
3.13.7.2	The mechanism needs to allow for the online submission of the council resolution
3.13.7.3	The system needs to allow different involved authorities to request and receive Performa invoices
3.13.7.4	The system should include a feature that allows the relevant authorities to review and forward the resolution
3.13.7.5	The system should allow vendors to submit applications online and include tools for attaching supporting documents
3.13.7.6	The system should allow the appropriate authorities to examine, forward, and approve the application online
3.13.7.7	The system should make it easier to create work orders by offering the common template

3.13.9 Vehicle operation & Maintenance

3.13.9.1	The ability to assign a driver to a certain vehicle should be provided by the system
3.13.9.2	The system needs to contain a feature that allows you to upload the service center bill you received
3.13.9.3	The system includes a feature for maintaining a record of the vehicle's log book
3.13.9.4	The system should offer options for sending bills to the proper authorities for approval based on their value

3.14 Market Section/ License Module

The ULB also issues different licenses to Hostels, Restaurants, Hawkers, Hospitals etc and look after the works like hazardous waste disposal etc. In this, a ULB may issue licenses of different categories Sanitary Zone and ward wise. The module under this category may

- Able to issue licenses trade category wise
- This should include provision of application for a new license as well as renewal
- Different categories trade rates be mentioned
- Provision of late fee as well as provision of defaulter list

Indicative sub modules

- Issue of Hoarding / Advertisement License
- Hawkers Licenses
- Rickshaw Licenses

3.14.1 Functional Requirement: Market Section

3.14.1	Banquet/Marriage Hall Registration
3.14.2	Banquet/Marriage Hall Renewal
3.14.3	Lodge Hostel Dharamshala Registration
3.14.4	Lodge Hostel Dharamshala Renewal
3.14.5	Shop Bills
3.14.6	Toll Payments
3.14.7	Fines and Penalties

3.15. Asset Tracking and monitoring system

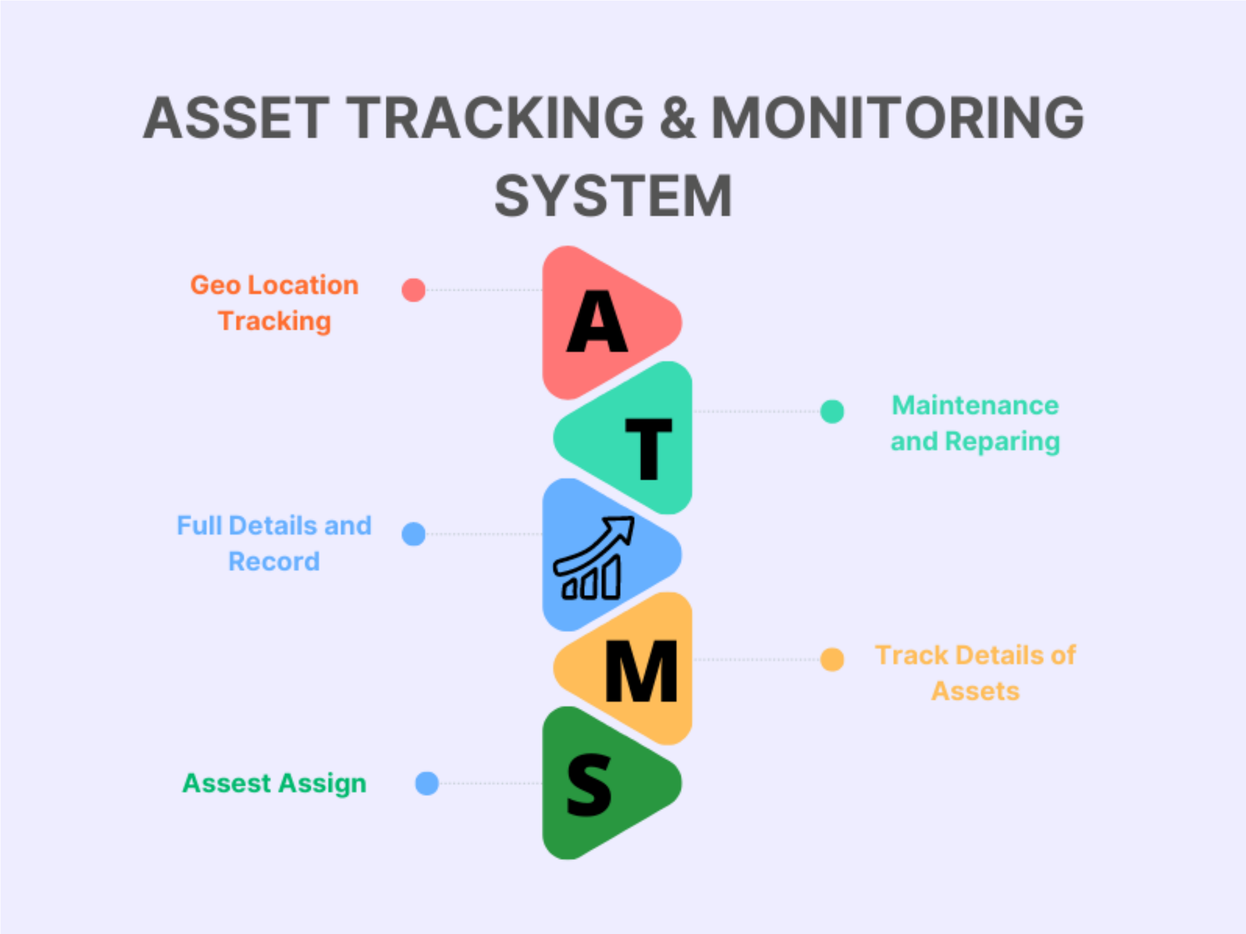


Figure 48: Asset Tracking and Monitoring System

3.15.1 Functional Requirement: Market Section

3.154.1	The system must be capable of keeping track of both moveable and immovable assets (GIS and GPS based)
3.15.2	The ability to choose the necessary Asset Type Name (such as Movable or Immovable) from a drop-down list should be provided by the system
3.15.3	The asset classification part of the system should have the ability to define the necessary classifications for each asset type name

3.15.4	The system should allow users to add or delete entries for classification using the Add and Delete buttons, respectively
3.15.5	When necessary, the system should have the ability to update the Asset Classification entries from the Active list
3.15.6	The ability to define the Location Code and the corresponding Location Name should be built into the system
3.15.7	The system should have a feature that allows you to define the Department Code and the associated Department Name
3.15.8	The system should be able to prevent multiple records with the same Department Code and Department Name from being created
3.15.9	The system should allow users to define the necessary Group Name and enter the required Group Code in the required format
3.15.10	The system should allow users to choose the appropriate Transaction Type (such as Debit or Credit) from a drop-down menu
3.15.11	Every Process Type should be able to have one of each Debit and Credit Transaction type supported by the system
3.15.12	The capability to define the Value Type for the selection of each record based on the relevant Process Name should be provided by the System
3.15.13	Asset Id, Asset Name, Asset Serial Number, and Asset Description values should all be able to be entered in the Asset Registration section
3.15.14	The system needs to allow users to choose the necessary Asset Type and Classification Name from the corresponding drop-down forms
3.15.15	The System should provide the option to choose the Asset's source (i.e., either Direct Fixed Asset or Integrated from Stores)
3.15.16	To track the Ownership of an Asset, the system needs to have the ability to note who it has been assigned to
3.15.17	The asset registration date should be earlier than the asset capitalization date, and the system should be able to capitalize the asset at that time

3.15.18	The ability to map the asset's Latitude and Longitude coordinates through GIS integration or as entry values should be provided by the system
3.15.19	The ability to retain the Opening Balance for Assets acquired from the Legacy System should be provided by the System
3.15.20	Based on the inputs of the Asset Life Start and End Dates, the System should have the ability to automatically generate the Asset Life in Years
3.15.21	The option for choosing the necessary Schedule Type for the registering Asset should be provided by the system
3.15.22	The system should have the ability to obtain the appreciation percentage, which will be used as the basis for the schedule count's auto-population
3.15.23	The system should have the ability to obtain the depreciation percentage, which will be used as the basis for the auto-population of the salvage value and schedule count
3.15.24	The ability to determine whether an asset is sellable or not should be provided by the system
3.15.25	If the asset was purchased from a store, the system should allow users to enter the asset's procurement details, including the purchase date, the vendor's name, the value of the purchase, and other information
3.15.26	The system should have the option to automatically input the asset improvement details from the Works module integration
3.15.27	If the Asset falls under the Building Classification, the System should have the ability to offer the Asset's Construction Details, such as Construction Start Date, Completed Date, Constructed Value, etc.
3.15.28	The system should allow users to enter asset insurance details such as insurance number, service provider, and insured amount, among others
3.15.29	The system should include the ability to add or attach information about any legal documents, including asset-specific information such document name, number, and details
3.15.30	The Appreciation/Depreciation Schedule should be prepared by the System with the option to pick the necessary Asset Type, Classification, Schedule Period, and Financial Year

3.15.31	The system should be able to submit the Schedule data for Appreciation/Depreciation into General Ledger after receiving the necessary approvals
3.15.32	Asset revaluation should be managed by the system, and the cause for it should be recorded
3.15.33	Once the asset has been revalued, the system should have the ability to record the specifics of the General Ledger posting
3.15.34	The system should have functionality to control the asset retirement process
3.15.35	The system should have the ability to log the specifics of the Asset Retirement General Ledger posting
3.15.36	The system should include functionality to control the Asset Sale process and record posting to the General Ledger
3.15.37	The system should be able to produce the necessary MIS Reports once they are finished

3.16. Marriage Registration

3.16.1	The system must be able to uphold the criterion for marriage fees
3.16.2	Marriage Laws/Acts Master shall be maintained by System
3.16.3	The system must keep a religion master
3.16.4	A citizen registration/Details Master shall be present in the system
3.16.5	The system must provide a submission feature, for rebuilding a marriage
3.16.6	Online registration with general marriage-related information, the names of the husband, wife, witnesses, and priest
3.16.7	The system must have a feature that provides a checklist of all the paperwork needed to start a new marriage registration
3.16.8	The system must allow users to view already-registered marriages
3.16.9	The system must be able to record the thumb impression information and photos of the husband and wife applying for the marriage certificate
3.16.10	Based on the entered Date of Birth, the system must have a feature that can determine the age of the husband or wife
3.16.11	The system must include a feature to produce the marriage certificate
3.16.12	The system must allow for the reissue of an existing certificate
3.16.13	When a mistake is made during the application process, the system must allow an authorized user to update the marriage certificate
3.16.14	The system must include an internal process for approving the certificate, which includes having the registrar confirm the witness
3.16.15	A fee receipt will be generated by the system when a marriage certificate is issued
3.16.16	In the event that the system cannot generate the necessary papers, a rejection certificate will be issued
3.16.17	The system must produce collection reports

3.16.18	The system must allow users to search records with a generated unique number, their name, registration date, and registration location
3.16.19	Daily, monthly, and yearly receipt issued reports will be generated by the system
3.16.20	The system must be able to produce reports on applications that were refused and the reasons why
3.16.21	The system must be able to create the number of Certificates that are issued in a specific time frame (from date - to date). You could base your search criteria on Date (From To) and Certificate kind
3.16.22	On the basis of the date, the system must be able to produce full reports about applicants and the progress of their applications
3.16.23	The system will produce reports on marriages based on religion
3.16.24	The system must be able to produce reports on interfaith marriages
3.16.25	The system will produce reports on remarriages
3.16.26	System shall give Ageing Information of Approval Application

3.17. Pet Animal Registration

Figure 49: Pet Animal Registration

3.17. Functional Requirements: Pet Animal Registration

3.17.1	It should be possible to define many pet categories in the system
3.17.2	The applicant's details, owner information, address, and contacts for a pet animal should all be able to be entered into the system
3.17.3	All information about a pet animal, including its sex, breed, color, DOB, the name of the veterinary who treated it, and vaccinations, should be able to be entered into this system either online or through a departmental system
3.17.4	The system must to be able to upload documents like vaccination records and DOBs
3.17.5	Based on workflow, the system should be able to escalate the application
3.17.6	The system is able to create registration certificates that are cost-effectively sent to the concerned owner after being approved by a veterinary officer

3.17.7	Every year, the registration may be renewed, and the owner is responsible for paying the renewal payments

3.18. Legal management system

The module shall support the senior management to keep track of Legal/ Court case proceedings and efficiently manage calendars, representations etc. The module should provide electronic case summaries, calendar dockets and reports, and issue auto alerts and escalations for stakeholders. The system shall provide customizable reports and powerful search functions and should be able to upload and manage legal documents. Feature of multi search facilities be there to track the legal cases through case no, file no, keywords for all the Legal/Court Cases.

Indicative sub modules

- Legal Case Monitoring

3.18.1 Functional Requirements: Legal Management

3.18.1	The ability for users to add, alters, and deletes Advocate details should be provided by this system
3.18.2	The user should be able to add, alter, and delete different court details using this system
3.18.3	The system should include a way to categorize the type of court
3.18.4	The system must include a feature that defines the hierarchy of court types
3.18.5	The system need to serve as a repository for numerous laws and regulations
3.18.6	The system would need to enable users to create, alter, and delete entries
3.18.7	Acts, Rules, and Laws should be able to be searched by the system
3.18.8	Users should be able to add, alter, and delete records pertaining to Judge information using the system
3.18.9	Through this form, the user should be able to enter all relevant case information and add, change, or delete case details as needed
3.18.10	The system should keep track of case information per office. The court type, court name, lawyer's name, party type, party description, hearing dates, start date, and other relevant information should be included as they will be the set details for a specific case

3.18.11	The system ought to support assigning an attorney and an officer, as well as registering new cases
3.18.12	Each case should receive a unique ID from the system
3.18.13	The system needs to permit entry of the hearing date
3.18.14	The system should be able to provide alerts to the officer regarding the hearing date
3.18.15	The system should allow for the insertion of hearing information
3.18.16	The system should include a feature for recording case decision
3.18.17	The system should include a feature to record legal opinions
3.18.18	The system should include a calendar docket
3.18.19	The information on the appointed attorneys should be kept in the system
3.18.20	The system should keep track of the specifics of any papers or proofs used by the inquiry commission. It should allow users to upload scanned or digital copies of documents (evidence) in opposition to case IDs
3.18.21	The system should produce dates for the next hearing, the lawyer meeting, and other events for the concerned party and concerned ULB Officials
3.18.22	The system should keep track of each proceeding's records, which will be connected to the appropriate case id. The system would keep track of all cases, as well as information on summons and each case's appointed attorney
3.18.23	The system should record all the information needed for the process to run smoothly
3.18.24	The system should make it easy to create a response sheet
3.18.25	The system shall give users the ability to add, modify, remove, upload, and download the online application information needed to register for the Empanelment of Lawyers
3.18.26	The system should make it easier to examine and validate the report
3.18.27	The system should make it easy to review and remark
3.18.28	The system should support adding the information

3.18.29	The system should make it easy to enter case information in stages; if earlier stage data is not entered, the following stage cannot be completed
3.18.30	Receiving applications should be facilitated by the system
3.18.31	The system needs to make it easier to assess and formulate recommendations
3.18.32	System should produce a list of advocates for the specified date period, broken down by gender and date
3.18.33	The system should be able to produce information on a specific case
3.18.34	The system should be able to produce daily proceedings based on the court or case chosen
3.18.35	The system must be able to produce instances relevant to each department
3.18.36	A system should enable the Municipality to monitor its cases and provide online access to the relevant cases and their details
3.18.37	The system must offer an interface for SMS applications and messaging systems

3.19. Parking management system

Figure 50: Parking Management System

3.19.1 Functional Requirements: Parking Management

3.19.1.1	The Smart Parking Management System (SPMS) should make it possible to have situational awareness of the parking lot's occupancy in real time
3.19.1.2	The smart parking system should use various tools, such as mobile applications and digital display boards placed across the city, to give residents a real-time, location-based picture of parking lots' accessibility and proximity
3.19.1.3	Using SMART parking solutions, the SPMS should make it possible for the department or any other designated third party to manage parking lots
3.19.1.4	The above features should be accessible by the smart parking solution with the least amount of manual labor. For open parking lots, closed parking lots, and roadside parking, the smart parking solution is envisioned and executed as necessary
3.19.1.5	A central software application installed at the command centre should receive occupancy reports from the smart parking solution regarding parking lots

3.19.1.6	Both a mobile app and a website should indicate parking space availability for each location in real time
3.19.1.7	Camera-based parking lot solutions will be used by the smart parking solution
3.19.1.8	Receive and provide information to wireless parking location devices, such as reservations made using mobile apps and display units
3.19.1.9	Parking information is received and sent to a mobile app
3.19.1.10	The parking block time should be settable from the server and presented in the mobile app for users
3.19.1.11	The control center and parking location displays should be updated with the bookings that were received via the mobile app
3.19.1.12	The parking block time should be settable from the server and presented in the mobile app for users
3.19.1.13	Receive and provide information to wireless parking location devices, such as reservations made using mobile apps and display units
3.19.1.14	The control center and parking location displays should be updated with the bookings that were received via the mobile app
3.19.1.15	A digital signboard near the parking lots' entrance must show the total number of slots and any open spots for parking
3.19.1.16	The real-time modification of parking rates and the real-time transmission of rules to portable terminals should be made possible by the smart parking solution
3.19.1.17	The user should be informed about demand-based parking fees via a sign board at the entry gate

3.19.2 Mobile Wireless Devices

3.19.2.1	Obtain parking availability data from the command center
3.19.2.2	Allocate parking spaces to neighborhoods residents and issue tickets

3.19.2.3	Create tickets for mobile users using mobile devices' QR code readers
3.19.2.4	Update the allocation information on the control central web server
3.19.2.5	The Smart Parking Application will deliver the determined amount
3.19.2.6	Boom barrier operations are integrated with the local display unit, and records will be maintained in SPMS for information on parking status
3.19.2.7	If the entry and leave points are close to one another, a similar device at the exit position should function as a money collection device
3.19.2.8	The amount should be calculated manually in the event of network outage and updated to SPMS later

3.19.3 Mobile App Functional Requirements

3.19.3.1	Obtain parking availability data from the command center
3.19.3.2	citizen module and an officer module should both be present in the application
3.19.3.3	The user should be able to find the closest parking lot based on his geographic location using the citizen module. The same details must be made available along with a route on a map
3.19.3.4	The public should have real-time access to a map of all parking lots showing the precise amount of space that is available
3.19.3.5	The user should be informed of the most recent parking space availability while locating the closest parking lot
3.19.3.6	The application needs to feature a compliance officer module so that the department's approved inspector or operator can verify that the slot occupancy matches the payments that the citizen has paid
3.19.3.7	The public should be able to generate a MIS report to see how full parking lots are functioning

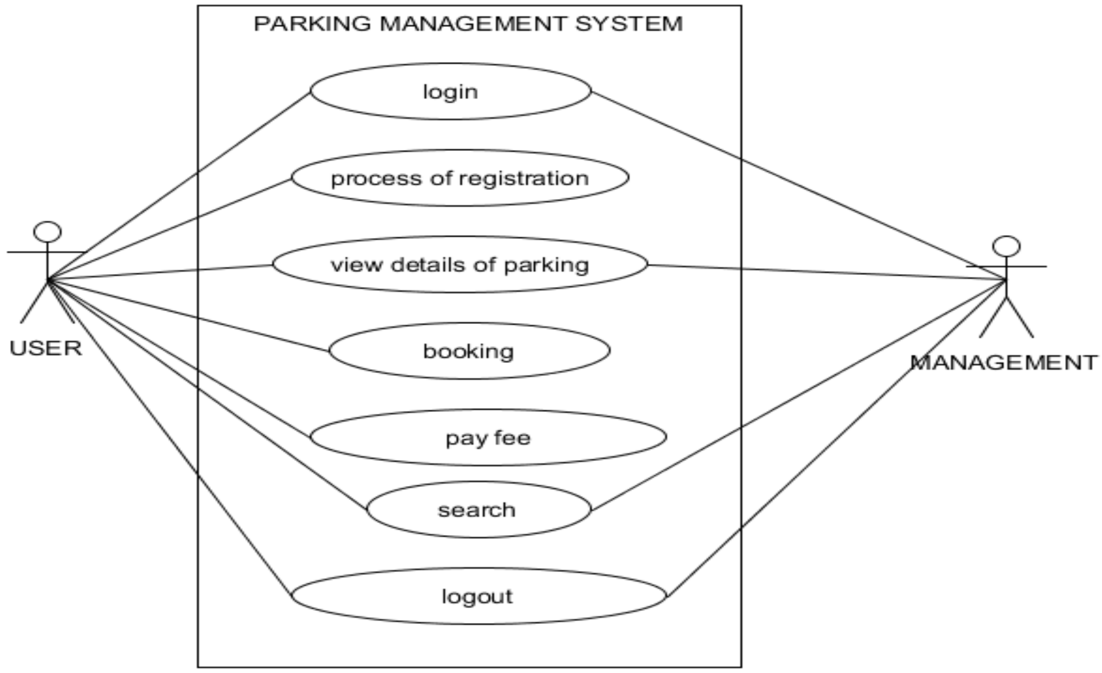


Figure 51: Parking Management Use Case Diagram

3.20. Grievance management system

As municipalities provide various public utility services, they receive a large number of complaints/ suggestions pertaining to its services. Grievance redressal module is basically meant for redressing the grievances of citizens in a "timely and effectively" manner.

The main features of the module are

- Registration of the complaint/ suggestion
- Issuance of acknowledgement
- Capturing of status of the complaint till it is resolved
- Generation of necessary reports for proper monitoring

Indicative sub modules are:

- Grievance Handling
- Right to Information act (RTI)

3.20.1 Functional Requirements

3.20.1.1	The system shall make available to ULB/UDD/Citizens (via the portal) the whole data of all complaints and the status of those complaints at any given time through straightforward queries and aggregates, with the option to search, filter, and sort
3. 20.1.2	The system should contain a search function that allows for full text searches as well as keyword and metadata searches
3. 20.1.3	Possible ways for citizens to notify the municipality of their complaints
3. 20.1.4	Status of the complaints that have been filed with the Municipality
3. 20.1.5	Maintain the level of resentment felt by the populace
3. 20.1.6	Track the department or section that must take action
3. 20.1.7	Keep track of the number of days that it must be resolved
3. 20.1.8	Mention the complaint's nature (financial or non-financial)
3. 20.1.9	Information on the personnel responsible for resolving complaints (mapped to the department section)
3. 20.1.10	Department and sector maps are available

3. 20.1.11	Keep the Citizen Charter and Policies in place
3. 20.1.12	Maintain the Citizen Charter and Policies

3.20.2 Grievance registration

3. 20.2.1	Accept applications for alleged grievances
3. 20.2.2	Citizens should be able to directly enter their complaints into the system. Citizens should be able to use the system to file a complaint even if they haven't registered on the portal
3. 20.2.3	The system should allow filing complaints using photos or pictures
3. 20.2.4	The system should make it easier for citizens to complain about and offer feedback on the ULBs' services
3. 20.2.5	The system should to permit citizens to send SMS complaints (text and picture)
3. 20.2.6	Create an acknowledgment with a special token number and provide it to the applicant
3. 20.2.7	The registration code should be included in an SMS sent to the complainant
3. 20.2.8	According to established compliance guidelines, the system should enable citizens to view and escalate complaints to higher levels, including UDD
3. 20.2.9	If the issue is not resolved within the allotted period, the system will escalate it. The complainant may, however, decide to escalate, which may be permitted based on pre-established rules
3. 20.2.10	Permit division heads to assign the complaint to the relevant Officer
3. 20.2.11	The system should allow users to file complaints via social media, such as Facebook
3. 20.2.12	Update the status of the filed complaint
3. 20.2.13	Give the officer in charge permission to assign the complaint to an employee and to update the status
3. 20.2.14	Integrate with other modules, such as those that use the Grievance ID and Property Tax/Water User Charge

3. 20.2.15	Being able to update status by providing complaint number
3. 20.2.16	Based on established compliance guidelines, the system should enable citizens to view and escalate complaints to higher levels, including UDHD. At each entry point, a token number needs to be produced for each complaint
3. 20.2.17	The system should enable citizens to: • File grievances • Review the complaint's status • Intensify complaints • Download registered complaints • Print the complaints out • Express your opinion of the offered remedy
3. 20.2.18	Arrangement with other systems: • Integration with SMS and Mailing & Messaging Systems • Integration with Citizen Helpdesk
3. 20.2.19	Workflow and document management system integration
3. 20.2.20	Compatibility with every other module

3.21. Document Management System/ e-Dak

3.21.1 Functional Requirements

3.21.1	Dak includes every type of written communication such as letters, telegrams, interdepartmental notes, files, wireless message, telex, fax message, email etc., which is received by post, messenger or by other means
3.21.2	The dak is generally received in the central registry, from where it is distributed to the different sections through the help of "work allotment chart"
3.21.3	The DAK Management System is made up of several modules: • modules to keep track of the letters in the section for receipts that come from other offices • modules for diarizing correspondence and sending it to another section or officer • modules for sending letters from parts of the office received in the receipt section • modules for file transfer from sections to sections that were generated or received files modules to update master directories, change passwords, and other system maintenance tasks
3.21.4	Important characteristics of the letter management system e Dak: • Letters sent from an individual or section are also received for further action after being forwarded by that individual or section • Dispatch of letters: Letters to be sent outside the workplace by an individual or section are sent through packages and generate various reports according to the type of letter being sent, such as messenger, speed post, courier, registered post, parcel, etc
3.21.5	Posting: After posting, update the dispatch letter details, such as the date and reference number
3.21.6	Queries: About the status of the diary letters, letter numbers, senders, etc
3.21.7	Detailed report on the opinions balance, total receipts, and dispositions made for a specific time period

3.21.8	Periodic reports on outstanding receipts in a specific section or across all sections are provided via email to the individual, with a copy going to their reporting officer
3.21.9	Reports of letters that have been diarized/sent for management, sections, and persons
3.21.10	Task management: Letters diarized in the R&I section are forwarded to the appropriate sections for further action, so they are not diarized again in the section
3.21.11	Important characteristics of the e-Dak management system files: • Preparing and sending files by person or department within the workplace • Electronic file receipt and destruction, including forwarding to others and file closure • Tracking of documents based on many criteria, such diary number, file number, subject, etc. Statistical pendency report on all received files; Individuals, sections, and their reporting officer can access all pending files in a section or across all sections
3.21.12	administrator login for password resets, user activation/deactivation, etc

Use Cases

ID: UC-01	Property Tax: Filling of Property Tax Return
Description	It defines any returns, declarations, reports, bills, claims for refund, information returns or other documents (including any related or supporting schedules, statements or information) filed or required to be filed in connection with the determination, assessment or collection of any Property Taxes or in connection with the administration of any statutes, laws, rules, regulations, orders or awards of any Governmental Authorities relating to any Property Taxes.
Actors	Citizen, Back Office
Key Features	• Integration with self-assessment • Digital certificate of the citizens for the filling of online returns
Expected Benefits	• Reduce of time • Access anywhere and any time

ID: UC-02	Property Tax: Inclusion of New Assesses
Description	Facilitation of property holders by the government to be included in the revenue system and making them an integral part of the development. The process embeds an easy filing of a Self-Assessment form.
Actors	
Key Features	• Easy inclusion of the new property records to the system. • Helps centralization of the land records for proper monitoring and strategy building.
Expected Benefits	• Easy to handle • Authorized • Update the data

ID: UC-03	**Property Tax: Assessment of Properties**
Description	It is a process of assessing a new property in order to be included in the revenue generation process. This helps the governing body to apply genuine taxes to a specific property owner. The process of new assessment ensures transparency in revenue generation process. The process includes filling of a self-assessment form for a particular holding number. Its further proceeds to a quarterly demand generation and tax collection for that property.
Actors	Back Office, Agency TC
Process Description	• Filling of an online Self-Assessment form with required documents. • Based on the property details and documents given, a tax demand is generated and the citizen pays the tax. • Citizens has the convenience of offline payment through JSKs or Agency Tax collectors on field. • Consumer has the option to choose from multiple payment methods including cheques or demand drafts which goes through a process of reconciliation with the bank. • After a successful payment verification, the application is forwarded to different levels. • First the document verification is done by the dealing assistant. • Then Field verification by the ULB tax collector and ATC. • On the successful verification of the documents by Executive officer a Final Assessment memo is generated.
Exceptions	• Documents upload error • User denied payment

ID: UC-04	**Property Tax: Change of Ownership/ Mutation/Amalgamation, Bifurcation**
Description	When there’s a change in the ownership of the property the process of mutation is used to corroborate those changes into existing property records.
Actors	

Process Description	• Citizen fills online SAF form and provide existing documents as well as the new documents. • Citizen has the option to avail the same process offline through JSK or ATC. • JSK collects the required documents and fills the form on behalf of the customer. • ATC visits the consumer to provide the same services. • A demand is generated as per the given data and citizen pays their holding tax. • On successful verification of the payment made, the application moves through different levels and on approval by the executive officer the final assessment memo is generated.
Exceptions	Document upload error User denied payment

ID: UC-05	**Property Tax: Collection of Property Tax**
Description	Property tax is a **real estate tax**, which can be considered a regressive tax. It is calculated by a local government where the property is located and paid by the owner of the property. The tax is usually based on the value of the owned property, including land.
Actors	Citizens and ULBs
Process Description	• Most citizens pay their property tax online. • Our property management system identifies the customers whose tax is not paid. • Citizen has the facility to pay tax through ATC and Agencies. • If the amount paid by the citizen is more than the actual generated demand, the difference gets adjusted for the next payment of the property • If payment is not submitted on time, then a penalty is added on the property tax.
Exceptions	• Defaulter list may increase • User denied payment

ID: UC-06	**Property Tax: Action Taken for Recovery of Tax**
Description	The legal team takes action for the recovery of the tax from the property owners who holds or refuses to pay their taxes.

Actors	Back Office
Process Description	• Check the details of defaulter property owners. • Three times a notice is sent to the defaulter citizen. • If the citizen fails to make the payment in that duration an advertisement is given in local newspaper • After that legal team collects the account details and freeze the account of the property owners. • The account balance is checked and if the balance matches with property tax amount, then they deduct it from the account. • If the default citizen's account doesn't have that much amount, then the legal team move for the auction process and capture the assets of the citizen • In duration of the auction process if the citizen come to pay the tax, then the process is on hold but if the legal team take money from the choose bidder then the recovery is done
Exceptions	• User denied payment • Documentation error

ID: UC-07	**Water User Charge: New Connection**
Description	The local urban body ensures the availability of the water resource for the each and everyone. In order to standardize the supply chain and maintain a constant lookout for this service the local authorities encourages the citizens to be a registered consumer of the water resource.
Actors	
Process Description	• Citizen applies online for a new water connection. • This process is initiated by filing of an application form and providing required documents. • Consumer makes a payment for the new connection and the application is forwarded to the concerned department for further action. • Consumers also have the option to avail the service offline through JSK or Agency TC. • Where they perform all the required actions on behalf of the citizen. • On thorough verification and approval of the consumer request a consumer number is generated.
Exceptions	• Denial of payment • Document upload error

ID: UC-08	**Water User Charge: Regularization of connection**
Description	Regularization of water connection is a process to convert unauthorized water consumers into authorized water consumers
Actors	
Process Description	• Manage consumer number • Water connection with water meter within 30 days from the date of order and inform the municipal corporation in prescribed format • Check type of house • Type of connection • Consumer number generate • Payment process • Application for regularization is submitted by the Agency TC on behalf of the citizen.

	• Consumer is advised to acquire the water meter and inform the local body within 30 days of the order. • A consumer number is generated, and consumer makes the required payment.
Exceptions	• New consumer added • Revenue started comes • Keep data maintain

ID: UC-09	**Water User Charge: Meter reading and Bill Generation**
Description	Water charges are monitored based on the meter readings. A bill is generated accordingly.
Actors	
Process Description	• Monthly bill generation as per the meter reading. • Consumers can pay their water bill online. • Consumers can view the last 6 months bills details • Citizens have the option of a two-way communication through SMS, WhatsApp or e-mails • Listing of Defaulters • If consumer fails to make the payment for 3 continuous month the water connection is terminated, and a penalty is added.
Exceptions	Consumer Denies Payment

ID: UC-10	**Water User Charge: Fixed Meter Bill Generation**
Description	When a registered consumer does not have a water meter, a fix amount is generated for them as their water charges.
Actors	Citizen, Agency Tc, Back Office
Process Description	• Similar to the regular bill generation except water meter reading not is required. • It takes into consideration the built-up area of the plot using water connection.
Exceptions	• Less resource efficiency • revenue risk

ID: UC-11	**Trade License: Application of new License**
Description	A trade license is a **permission to carry on a specific trade or business at the premises for which it has been issued**. It does not assure any kind of property ownership and not even allowed to do any other business rather than for which it is issued.
Actors	Citizen, Jsk, Agency Tc, Back Office, Workflow Candidates
Process Description	• Applicants apply online for trade license • Fill trade application form, upload the related documents and pay the license fee • Applicants have the option to opt for offline methods. • JSK or TC can carry forward the process on behalf of the citizen. • On successful verification of payment done by the citizen the application is then forwarded to the different level. • On final approval by the executive officer, the license no. is generated. • Consumer can always download the soft copy of their License.
Exceptions	• Process can be lethargic. • Correct bifurcation of eligible trade properties.

ID: UC-12	**Trade License: Renewal**
Description	The application for renewal of the license is to be made within thirty days from the date of its expiry.
Actors	Citizen, Jsk, Agency Tc, Back Office, Workflow Candidates
Process Description	• Fill trade application form, upload the related documents and pay the license fee • Applicants have the option to opt for offline methods. • JSK or TC can carry forward the process on behalf of the citizen. • On successful verification of payment done by the citizen the application is then forwarded to the different level. • On final approval by the executive officer, the license no. is generated. • Consumer can always download the soft copy of their License.
Exceptions	• Correct bifurcation of eligible trade properties.

ID: UC-13	Building Plan: Empanelment of Architects
Description	The architects have to submit the application, complete with all documents. Empanelment of architect from fresh applicants.
Key Features	• System should have facility to capture the empanelment process for the Architects • System should maintain the records of empaneled architects for all the ULBs • System should have facility to import the list of empaneled architects • System should allow Architects to make payment online for empanelment • System should allow de-listing of any of the empaneled Architects from the list • System should capture actions taken against any Architects for any violation
Expected Benefits	Maintain record Payment process

ID: UC-13	Building Plan: Sanction of Building Plan
Description	Typically, to build or renovate, a land or a developer has to approach the concerned authority and get approval for this.
Key Features	• Applicant will upload the building plan as per Building bye-laws with other supporting documents • ULB will verify the documents and drawing and may give their comments within 15 days • Owner / Applicant will make the payment of the prescribed fee online/offline • Building Plan Application/ Layout Application for the applicant and facilitate online tracking of the status of the application • sent e-mail/SMS notification to the applicant and empanelled architects to whom that application has been sent • generate unique ID for each approved building plan • link Holding Tax and Utility data with Building plan ID • facilities for Online Fee calculation • workflow of approval of the plan needs to be mapped in the document management system

Expected Benefits	Easy to track the property Details maintained Payment process

ID: UC-14	**Building Plan: Issuance of Completion Certificate**
Description	Completion of certificate is a legal document given by the concerned authority which signifies the building/complex is constructed by approved plan.
Key Features	• The owner of the property to upload the provision to generate digitally signed notice • Progress of construction (photographs of the property) at pre-defined stages • Send alerts (SMS / e-Mail) to the concerned ULBs • Provision for designated officer to lodge the details of the site visit
Expected Benefits	Proper documentations Authorized

ID: UC-15	**Building Plan: Registration of Builders**
Description	Registration is necessary by the promoters, builders and real estate's agents to sell, advertise, market, purchase or book properties.
Key Features	• Allow registration of builders under various categories defined by the ULBs • Allow builders/promoters to provide details about the sale of the flats/plots etc • Allow tracking of sales/transfers of flats / plots etc
Expected Benefits	All process work legally Aligned and effective Authorized

ID: UC-16	**HRMS: Office and Field Attendance Management**
Description	An attendance management system tracks employee working hours, login time, logout time, breaks. The process for track the attendance is used by the different types of apps. For office attendance management used bio metric apps, face recognition app, mobile app. For field attendance management system use mobile app.
Key Features	• Leave management • Time and time out • Payroll • Reporting • Calendar integration • Employee self service • Advanced analytics • Salary • Off role
Expected Benefits	Accurate data maintain Maintain record Employee details Payment process

ID: UC-17	**HRMS: Performance Management**
Description	Performance management is a ongoing process of between a supervisor and a employee that occurs throughout the year
Key Features	• Planning • Monitoring • Reviewing • Rating • Rewarding
Expected Benefits	Performance goal settings Monitoring performance Developing capacity to platform Evaluating performance

	Rewarding high performance

ID: UC-18	**HRMS: Inter Departmental Transfer**
Description	An interdepartmental transfer of permanent employees can occur on a voluntary or involuntary basis.
Key Features	• From one department to another • Knowledge • Persuasion • Decision • Implementation • confirmation
Expected Benefits	• Retain employee • Employee satisfaction

ID: UC-19	**HRMS: Salary and Payroll Management**
Description	Payroll is defined as the process of paying salary to a company's employee. It starts with making a list of employees to be paid and ends with recording those expenses
Key Features	• Employee salary processing • Employee monthly salary report • Employee salary calculation & tax deductions • Employee pay scale & increment information's • Attendance employers contributions process • Maintain pay slips & pay sheets
Expected Benefits	• Record all info for future process • Authenticate

ID: UC-20	HRMS: Pension Management System
Description	Aa regular income paid by a government or a financial organization to someone who no longer works, usually because of their age or health:
Key Features	• View Pay Code

	• View Deduction Code • View Basis Formula • View Reimbursement • View Benefit Code • View Loan and Advance • View Provision Master • View Perquisites Category • View Deduction Details • View Professional Tax Slabs • View TDS Calculation Slabs
Expected Benefits	• Proper maintain records of the employees • Effective • Authenticate

ID: UC-21	**Birth & Death Certificate: Application and Certificate**
Description	It a process to get the birth & death certificate after applying by the applicant
Key Features	• Hospital Data • Get automatically updated after the hospital registration • Facility to define fees for Birth & Death registration as defined in process • To maintain the details of Registrar • As proof of age for employment • Keep continuous record of birth & death certificate
Expected Benefits	For admission to schools Use to make documents

ID: UC-22	**Birth & Death Certificate:Duplicate Certificate**
Description	Birth & death certificate is also help to make duplicate copy of birth & death
Key Features	• To maintain the details of Registrar • Keep continuous record of birth & death certificate
Expected Benefits	Use to make documents

ID: UC-23	**Solid Waste Management: Fleet Management**
Description	Solid waste management is a process of collecting, segregation, disposing of waste collection. Integration a fleet management system with the solid waste management provides end-to-end automation, monitoring and tracking the waste collection
Key Features	• Collection • Waste handling and separation • Storage and processing • Segregation and processing • Transfer and transport • Weighing the waste collection • Disposal
Expected Benefits	• Authenticate • Refuse • Reduce • Reuse • Recycling • (Rot)Decomposing • Reevaluate

ID: UC-24	**Solid Waste Management: Smart Bin Monitoring**
Description	Smart Bin is a smart way to manage the waste collection. They have wireless ultrasonic fill level sensors embedded inside which detect how full the bins is and then.
Key Features	• Reduce • Recycle • Reuse
Expected Benefits	• Improve efficiency • Reduce the number of bins required • Drive down our carbon emission • Encourage recycling • Decomposing waste

ID: UC-25	Solid Waste Management: User Charge Management
Description	User charge management is a process to collect the charges for the collection of waste.
Key Features	• Households • Large restaurants and hotels • Medium restaurants and hotels • Small restaurants and hotels • Bar and restaurant • Hospitals • Academics • Public places • Parks • Road cleanings
Expected Benefits	Environment clean Effective Authenticate Payment process

ID: UC-26	Solid Waste Management: Door to door coverage monitoring
Description	Door to door coverage monitoring is used to track the waste collection from door to door , the RFID monitoring system is helps to track the waste collection collect or not appropriately
Key Features	• Collection of solid waste from residential • Slums • Collection of solid waste from commercial • Daily collections • Healthy and safety
Expected Benefits	• Regular data collection • Robust methodology • Control group

ID: UC-27	Solid Waste Management: Field Force Management

Description	Field force management process is defined to managing resources that are used at locations outside of the company property.
Key Features	• Time sheet management • Work assignment and progress tracking • Time and attendance monitoring • Reporting data • Remainders and alerts
Expected Benefits	• Easily tracking • Data recorded • Easily handled

ID: UC-28	**Solid Waste Management: Smart Weight Management**
Description	By the RFID technology when the triple trucks loaded the waste collection go for dump the waste collection, then the RFID used on the barricades of the dumping yard and detect all things like weight of waste collection, truck details, staffs details etc.
Key Features	• Measurable • Attainable • Relevant • Time-bound
Expected Benefits	• Payment process • Tracking • Storing data

ID: UC-29	Public Transport: Fleet management
Description	Bus and public transport fleet management system is a best solution for tracking transportation and utilization
Key Features	• GPS vehicle tracking • Fleet alarms • Fuel management • Route planning • Monitoring • Track way of driving
Expected Benefits	• Customer satisfaction • Payment process • Authenticate • Better service

ID: UC-30	Public Transport: On-line/ on spot ticket and billing
Description	On-line /on spot ticket and billing is the process to help the public to get online booking facility or on spot ticketing and for billing process.
Key Features	• Objective • Motivation • Existing system design • Requirement analysis • Feasibility study • Future scope
Expected Benefits	• High automation • 24/7 availability of customers • Fee payments • Performance analytics • Cost reduction

ID: UC-31	Public Transport: License Approval Management
Description	License approval management system is a system where public transportation have the license permission to drive the vehicle.

Key Features	• Public ownership • Research & development • Subsidies & taxation • Labor regulations • Regulatory controls • Safety & standards
Expected Benefits	• Economical regulations • Safety regulations • Environmental regulations

ID: UC-32	**Document Management**
Description	Document management system is a system or process used to capture, track and store documents such as letters,, telegrams, interdepartmental notes, files, wireless message, telex, fax message, email etc., which is received by post, messenger or by other means
Key Features	• File structuring • Integrations • Scanning • Indexing • Mobile access • Sharing • security
Expected Benefits	• Less time consumption • Easy to access • No scanning problem • Handle large number of data storage easily • Free for paperwork • Less paperwork • Keep document in organize way

ID: UC-33	**Grievance Management: Grievance Registration**
Description	An official complaint by an employee that they have unfairly. A grievance is a complaint, it can be formal when citizens have
Key Features	• Citizens should be able to directly enter their complaints into the system. • Citizens should be able to use the system to file a complaint even if they haven't registered on the portal • Allow filing complaints using photos or pictures • Make it easier for citizens to complain about and offer feedback on the ULBs' services • To permit citizens to send SMS complaints (text and picture) • Create an acknowledgment with a special token number and provide it to the applicant • Included in an SMS sent to the complainant • Update status by providing complaint number • File grievances • Review the complaint's status • Intensify complaints • Download registered complaints • Print the complaints out • Express your opinion of the offered remedy
Expected Benefits	• Customer satisfaction • TAT fixed • Proper use of process

ID: UC-34	**Grievance Management: Grievance Settlement**
Description	By using easy process to solve the problem of citizens as soon as possible.
Key Features	• Workflow and document management system integration • Compatibility with every other module • Integration with SMS and Mailing & Messaging Systems • Integration with Citizen Helpdesk • Being able to update status by providing complaint number

	• Based on established compliance guidelines, the system should enable citizens to view and escalate complaints to higher levels, including UDHD. At each entry point, a token number needs to be produced for each complaint • After giving solutions close the complaint number
Expected Benefits	• Customer satisfaction • Government has the opportunity to gather direct feedback from citizen providing a platform/feedback mechanism for continuous improvement • Better governance of citizens services/facilities

ID: UC-35	**Advertisement: Hoarding**
Description	Advertisement hoarding a large flat structure on which advertisements can be posted. A person with hoarding disorder experiences distress at the thought getting rid of the items.
Key Features	• Gather all necessary information for the KYC process to verify the Agency's identification, such as identity evidence, address proof, and contact information • should implement Payment Gateway • need to email or SMS the applicant with the status of their reservation • Agencies can apply for new hoarding with location and other details • Creation of Hoarding • Renewal of hoarding
Expected Benefits	• Visible and versatile • Outdoor advertising effectively • Targeting variety of demographics • Providing 24/7 exposure • Providing services

ID: UC-36	**Advertisement: Private Land**
Description	A land that is not owned by the government. Private property is a legal designation for the ownership of the property by non-governmental legal entities.
Key Features	• Application for advertisement in private land • Get private land advertisement approval
Expected Benefits	• Two way communication • Easy to spread the message • For sale purpose • Authenticate • Payment process

ID: UC-37	**Advertisement: Vehicle**
Description	Advertisement is a communication way in which a product, brand or services is promoted. Of the use of vehicles, it is also advertising the adds or products.
Key Features	• Vehicle Advertisement application • Vehicle Advertisement approval • Authenticate • Submit tax of advertisement
Expected Benefits	• Two-way communication • Easy to spread the message • For sale purpose • Authenticate • Payment process

ID: UC-38	**Advertisement: Self Advertisement**
Description	Self-advertisement is the act of advertising and promoting oneself, gaining publicity.
Key Features	• Full self-advertisements application • Workflow of approval master may check the whole criteria and give approval
Expected Benefits	• Two-way communication • Easy to spread the message • For sale purpose • Authenticate • Payment process

ID: UC-39	**Procurement Management: Rate Contract**
Description	Rate contract means an agreement for supply of goods/materials between owner and vendor, for a fixed period of time.
Key Features	• To purchase goods using a rate contract list • Updating and maintaining the Electronic (Online) Rate Contract (RC) Catalogue • Purchase requisition • Review of requests • Negotiation & contract • Quotation requests • Budget approval • Receive goods and services • Invoice approval payment
Expected Benefits	• Record keeping

ID: UC-40	**Procurement Management: Tender Management**
Description	The process of systematically and efficiently managing the contract creation, execution and analysis for maximizing operational and financial performance.
Key Features	• Tender identification • Tender evaluation • Invite companies for participations • Documentations and bidding • Project management
Expected Benefits	• Contract management • Support sustainability • Supplier relationship • Strategic sourcing • Auction

ID: UC-41	**Procurement Management: Auction**
Description	An online auction is a service in which auction users or participants sell or bid the products via the internet.
Key Features	• Convenience

	• Transparent • Unlimited geographically • Universal • Save time
Expected Benefits	• For buyer • Interactive • Authenticate • Payment process

ID: UC-42	**Procurement Management: Vendor Management**
Description	Vendor management is a process of organization use to manage their suppliers.
Key Features	• The vendor registration information should be reviewed by the vendor management supervisor and sent for evaluation and approval in accordance with the system's prescribed work flow • A Vendor Registration Code should be generated by the system, and the vendor master list should be updated • The vendor code and item classification are connected so that the system prompts the user for the approved vendor list when the item is selected • Requisition • Payroll and invoice • Reporting analytics • Time tracking • Payment process
Expected Benefits	• Increase efficiency • Reduce operational costs • Maintain compliance • Improvement in vendor processes

ID: UC-43	**Procurement Management: Purchase**
Description	The purchase process is the steps a business goes through to complete a transaction, for purchase of goods or services
Key Features	• Before accepting a PR, the system should to allow the head of inventory and warehouse to review the codification and stock availability • According to the work flow outlined in the process maps, the system should enable the Procurement Team to examine and approve the PP

	• The Assistant Head of Procurement should be able to issue an RFQ and designate a vendor from the Vendor Master List using the system • To enable the user department's assistant head of procurement to conduct commercial and technical evaluations and record the outcomes of the bids submitted in response to the RFQ • To enable the Assistant Head of Procurement to accept or reject the vendor that the User Department has chosen • To enable the Assistant Head of Procurement to keep track of any price-reduction negotiations • To enable the Assistant Head of Procurement to issue a purchase order and send it for review and approval in accordance with the work flow
Expected Benefits	Good quality work Control and tracking Track purchase orders More visibility Backup of data

ID: UC-44	**Procurement Management: Performance Metrics**
Description	Performance metrics is defined as data representative and figure of an organizations actions, abilities, and quality
Key Features	• Transparent • Reliable • Contextualized • Consistent • Proper aligned
Expected Benefits	• Help to make decision • Drive performance • Good internal and external public relations • Monitor and evaluate

ID: UC-45	**Procurement Management: Contract Award**
Description	Contract awarding is the method used during a procurement in order to evaluate the proposals taking part and award the relevant contract
Key Features	• Final clarifications

	• Complete contract in schedules • Contract formation • Tender validity • Sourcing of tendering • Evaluation and selection • Receiving clearance from the contracting manager
Expected Benefits	• Clarity in business • Preventing communications and agreements • Purchase agreement • Duration • Delivery time • Risk of loss • Payment • Disclaimer of warranty • Refund and cancellations policies

ID: UC-46	**Procurement Management: Invoice Management**
Description	Invoice management is a process by which businesses receive an invoice from a vendor, pay the supplier and record the payment.
Key Features	• Contract Holder to receive the Department's invoice, examine, and approve it before sending it to the Finance Department • Payment information • See terms and conditions • See invoice number • See Reference number
Expected Benefits	• Maintain records • Efficient Tax fillings • Track payments • Business analytics support • Legal proof service • Track inventory • Easy customization • Save time • Invoicing • Fast and simple • Bank connections

ID: UC-47	Procurement Management: Claim/ Dispute Management
Description	Claim/dispute means all disputes or claims concerning contract price, time payment, and interpretations of the agreement.
Key Features	• Identifications of claims • Impartial assessment of claims • Cause effect analysis • Variations order • Calculations • Detailed statement of claim and supportive documents • Dispute resolutions proceedings
Expected Benefits	• Reduce stress • Confidentiality • Save times • Resolve • Recover • Prevent • Inform

ID: UC-48	Procurement Management: Contract Termination
Description	Termination of a contract means that the parties are no more liable under the contract.
Key Features	• The Contract Holder should be able to draught a request for contract termination and submit it to the appropriate Committee for approval • To enable the Legal Manager to draught the written termination/cancellation notification • The Contracts Engineer to send the Contractor the Termination Notice that has been duly signed by the appropriate party • Termination by performance • By mutual agreement or consent • Illegality
Expected Benefits	• Transparency • Authenticate • Effective • Efficiency

ID: UC-49	**Procurement Management: Performance Bond**
Description	A performance is also called as a contract bond, is issued by an insurance company or a bank or guarantee satisfactory completion of a project by a contract
Key Features	• Payment guaranteed • Tender guaranteed • Advance payment guaranteed • Performance guaranteed • Conditional & unconditional guaranteed • Secured and unsecured guaranteed
Expected Benefits	• Increase timely project completion • Assure compliance with contract • Resolve contractor problems • Raise obligations if contractors defaults

ID: UC-50	Land & Asset Management: Asset Planning
Description	Asset planning is the practice of increasing cost over time by acquiring, maintaining, and trading investments. It is a process of developing, operating, maintaining, upgrading, and dispose the assets.
Key Features	Maintenance planning Lifecycle Real time tracking Reporting User friendly Mobile compatibility Reduce time Make effective Efficient
Expected Benefits	Reduce customer complains Reduce loss Maintenance equipment's Budgeting

ID: UC-51	Land & Asset Management: Asset Creation
Description	Asset creation is simplified says that add the asset in the asset management. Asset creation basically interconnection with marketing and design function.
Key Features	• Creative request • Proof commenting and approval • Deliverable • File & asset management • Maintenance • Generate revenue • Value in market • Scrap value
Expected Benefits	• Check in and check out • Reduce maintenance expenses

	• Tracking asset • Increase productivity

ID: UC-52	Land & Asset Management: Maintenance
Description	Asset maintenance is help to align the organization goals. The equipments or the property or any type of assets may keep record for further requirements
Key Features	• list of spare parts and consumables and make suggestions for their purchase • list of supplies and equipment is within the approved plans and budget • asset should be stored in the system • record information about all the lands that the ULB owns or manages • consideration for disposal, renewal, upgrading, and asset assessments • Asset Disposal Plan should all be able to be recorded by the system • user inspection and monitoring of asset renewal and upgrade • Budget for maintenance
Expected Benefits	• Reduce customer complain • Increase customer value • Improve efficiency • Budgeting • Equipment maintenance

ID: UC-53	Land & Asset Management: Asset Registration
Description	Asset registration is basically like a list which enter the asset details to maintain the records
Key Features	• Eliminate Spreadsheet • Use asset tracking software • Asset code number should be understandable • Compliance
Expected Benefits	• Maintenance • Depreciation • Complete information

ID: UC-54	**Pet Animal registration**
Description	Pet Animal registration management system is to manage the details of pet owner with pets. It helps in keeping records of the animals and citizens. It performs in ease in medical and conditions of pet
Key Features	• Categories the pet • License • Vaccination • Authenticate • Details • Owner details
Expected Benefits	• Maintain records • Payment process

ID: UC-55	Legal Management System
Description	Legal management system helps regulate the cases in order and provide help to place cases of citizens with an ease
Key Features	• Events • Outcome • Fees • Recording • Conclude • Legal case • Parties • Jurisdiction • Fillings • Exhibits • Costs
Expected Benefits	• E-billing • Knowledge and control • Case assignment • Case and documents management • Budgeting • External supplier

ID: UC-56	Parking Management System
Description	Parking management system helps regulate the parking lots in the area and to manage the payment for the parking efficiently
Key Features	• Multi parking option • Multi location option • Staff management • Vehicle management • Pass management • E- payment process
Expected Benefits	• Reduce traffic & pollution • Real- time monitoring • Optimized parking • Reduce costs • Enhance services • Increased revenue

ID: UC-57	Marriage Registration
Description	Marriage Registration management system is the system to manage the details of citizens marriage. It helps the management work regarding marriage effectively and efficiently. It performs in ease in accessibility of citizens marriage details
Key Features	• Control by government • Investigation of bride and groom information • Marriage registration • Marriage verification
Expected Benefits	• Prevent child marriage • Provides social security and acceptance • For other documentation it helps

4. Design Constraints

4.1 Design Objectives

The main aim of the e-Governance Application is to provide services to the citizens of Jharkhand State. It is also equally critical for ULB's internal processes to adhere to guidelines and to follow Standard Operating Procedure. There are other users who will interact with the system broadly categorized into vendors/contractors/suppliers and agencies working for the ULBs. Seeing all kinds of users and the nature of the proposed system, the following design suggestions should be considered:

Objectives of Software Design

Design Suggestions:

- Use Single Page Application Architecture
- Use Restful APIs
- Adopt Agile Methodology
- Provide web-based user interface
- Log every transaction
- Test UI on many browsers
- Ensure correctness of data
- Find ways to connect to the citizens and all the actors on related events.

4.2 Design Considerations

4.2.1 Quality of code

- Ensure clean code which follows best practices across the team
- Use code linting tool to ensure bug free application
- Ensure proper developer comments
- Should not use CSS hacks
- Well-structured coding standard
- Try high performing coding technique
- Check JavaScript errors
- Remove unnecessary piece of code

5. Performance Requirements

By design the system will be responsive with very low latency. There may be a large number of concurrent users working on the application. If there are peak hours when most users will interact with the system and thus generate high traffic, the system should be equipped with a robust infrastructure to cope with it. Proper attention should be paid to assure that the application must not deteriorate with an increase in volume of data or number of active users. Application level performance can be improved by load balancing and caching techniques.

Response time for average request should be as follows:

- 90% of the responses for static web application should be within 1-5 seconds
- 5-10 second: For user operation on data (for e.g. sorting of data in a column) or (5 to 50 records per page up to max of 100,000 records)
- 10-20 second: For user awaiting response from the system upon executing a transaction (for e.g. a query/update)
- 1 minute – Unacceptable response time

Defining an access control mechanism would help maintain enterprise-level performance by limiting the number of users consuming different services. However, regular performance tuning initiatives like purging and archiving of data are to be adopted to ensure optimum performance

6 Software Systems Attributes

6.1 High Availability

Although e-Governance application is not such an application which serves uniformly during the day and night, it is necessary to create an environment where the application runs continuously for a sufficient length of time. Availability of all components - such as the operating system, the application, the hardware, and the network solution - is essential to making an application highly available. High availability combines software with industry-standard hardware to minimize downtime by quickly restoring essential services

6.1.1 Guidelines for achieving High Availability

High availability can be achieved by tightening the system at various levels. Every level is equally important in order to achieve true highly available system

- Network level
  - Routers and Gateways which are failover capable
  - Failover capable firewalls
  - Failover capable load balancers/dispatchers
  - Define clusters in combination with load balancing and failover to enhance the level of system availability and system response time
- Hardware level
  - Use load balancing across web servers
  - Use application server cluster
  - Use data server cluster
  - Use RAID enabled data storage
- Application level
  - Categorize all the business process as
    - Business processes with most stringent High Availability requirements with RTO (Recovery Time Objective) and RPO (Recovery Point Objective) near to zero
    - Business processes with slightly relaxed High Availability requirements with non-zero RTO and RPO
  - Use system log
  - Continuously monitor for bugs
  - Continuously tracking database usage
- Other

- Keep a **backup plan** ready for every module working separately
- At the point of failure state of the transactions need to be preserved
- If at all failure happens it should fail gracefully by saving any transaction (if possible), Logging transactions may also help recover later
- **Proper cleanup procedure** to be run before failure. Administrators and Users of the system should be notified for the reason and severity of the problem
- Application must be **monitored in real time** to ensure it is still running and triggering automatic failover if it isn't
- **Operations management integration**: Applications may incorporate management APIs to raise alerts, enable full monitoring and management, and write error logs that may also be monitored
- **Connection management**: The client part of the application should be designed to handle connection failures and automatically establish connections to alternate providers
- **Transaction-aware design**: Application design must explicitly anticipate handling of and recovery from transaction failures

6.2 Scalability

Scalability is the ability of a system, network, or process, to handle growing amounts of load in a capable manner by means of deploying additional resources, if required. This is without any noticeable degradation of its performance.

In case of e-Governance application, horizontal as well as vertical scalability is an essential design consideration, as it is envisaged that the number of end user /Agency User/ULB User will increase with growth in population and reach of municipal services among masses. It is estimated that ULBs are likely to double their coverage and transactions in the next few years. It will be necessary to introduce additional hardware with an increase in load. The following types of measures to be taken with:

- **Administrative scalability**: Number of ULBs may increase in future
- **Functional scalability**: new functionality may need to be added.
- **Load scalability**: Number of users may increase

To address the scalability challenge, a modular design will be adopted. Interactions among the various services and integration with the existing application will be achieved using open standards. There will be a clear-cut demarcation between data, business rules, and presentation and application layers. This will enable the implementation team to plug in new applications and enhancement features at any point of time to address the application-level scalability requirements.

Guidelines to achieve Scalability

- Provisions to add extra instance of web server should be there. Right at initial configuration load balancer to be used so that an extra server can be plugged parallel to the main server
- Database should also be configured with load balancing and create separate read replica
- Use modular application design so that new modules can be added without any hassle

6.3 Reliability

Reliability can be achieved by ensuring bug free application by

- Application errors
- Ambiguity
- Oversight
- Misinterpretation
- Careless coding

Unexpected errors or crash conditions limit trust of the user on the application. System may behave differently for different inputs

Reliability Guidelines

- Various testing, verification and validation to be ensured from initiation of the project development
- Write automatic scripts to check error conditions so that it can be rectified long before users of the system trace the bug

6.4 Usability

It comes without saying that every new application should have highly usable interfaces and processes. Usability directly affects the number of hours one should spend to train the user. Usability is a quality attribute that assesses how easy user interfaces are to use. Interfaces should be designed keeping in mind the users of the screen. For citizens who visit the web portal occasionally, the interface should be designed so that the required information can be found without any learning. On the other hand users of the Administrative module will use the system every day therefore their screen can be customized to handle complexity.

Usability is defined by 5 quality components:

- **Learn ability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency**: Once users have learned the design, how quickly can they perform tasks?
- **Memorability**: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- **Satisfaction**: How pleasant is it to use the design?

Usability Guidelines

- Create simple interface for citizens. Use illustrations wherever required. There should be some explanation for every input field
- Try to use list instead of textboxes wherever possible
- For administrative users focus should be more on presenting all the related information in a single screen
- Support ergonomic requirements

6.5 Extensibility

An application is extensible only when it has the capability to extend its functionality without any structural changes on the existing module. Any new guideline from the state government or ULB administration should easily be incorporated only by extending functionality. This can be achieved by using several object-oriented techniques

Guidelines for Extensibility

- Modular design
- Use Object Oriented approach
- Rule based algorithm
- Use parameters instead of fixed coding

6.6 Maintainability

Software maintainability is the degree to which a live application can be modified to accommodate changes. Software maintenance incurs a huge percentage compared to its development cost; therefore different measures should be taken post production

Following are the main categories of maintenance

- **Corrective maintenance**: Reactive modification of a software product performed after delivery to correct discovered problems
- **Adaptive maintenance**: Modification of a software product performed after delivery to keep a software product usable in a changed or changing environment
- **Perfective maintenance**: Modification of a software product after delivery to improve performance or maintainability
- **Preventive maintenance**: Modification of a software product after delivery to detect and correct latent faults in the software product before these become effective faults

Maintainability Guidelines

- **Write short units of code**: shorter units (that is, methods and constructors) are easier to analyze, test, and reuse
- **Write simple units of code**: Units with fewer decision points are easier to analyze and test
- **Write code once**: Duplication of source code should be avoided at all times, since changes will need to be made in each copy. Duplication is also a source of regression bugs
- **Keep unit interfaces small**: Units (methods and constructors) with fewer parameters are easier to test and reuse.
- **Separate concerns in modules**: Modules (classes) that are loosely coupled are easier to modify and lead to a more modular system
- **Couple architecture components loosely**: Top-level components of a system that are more loosely coupled are easier to modify and lead to a more modular system
- **Keep architecture components balanced**: A well-balanced architecture, with not too many and not too few components, of uniform size, is the most modular and enables easy modification through separation of concerns
- **Keep your codebase small**: A large system is difficult to maintain, because more code needs to be analyzed, changed and tested. Also, maintenance productivity per line of code is lower in a large system than in a small system

- **Automate development pipeline and tests**: Automated tests (that is, test that can be executed without manual intervention) enable near-instantaneous feedback on the effectiveness of modifications. Manual tests do not scale
- **Write clean code**: Having irrelevant artifacts such as TODOs and dead code in you're codebased makes it more difficult for new team members to become productive. Therefore, it makes maintenance less efficient

6.7 Security

The security requirements of the Software Development Life Cycle (SDLC) are essential to the success of any software project. In addition to schedule overruns and increased development costs, poor quality requirements that are not clearly defined, synchronized with business logic and haphazardly collected are the primary causes of these problems. Transactional services and workflow services also have high security requirements. The application will include identities of Government officers and other stakeholders, online payment, inter departmental transactions, workflows which are critical with respect to security. In order to prevent vulnerabilities and write secure code, adequate safety measures would be incorporated during development. The system should have protection against unauthorized creation / modification of data and unauthorized viewing of data

Vulnerabilities and attacks in functional requirements

- **Functional Requirement**: Business Rules

  Vulnerabilities: Non-cooperation and incomplete knowledge of user in ignoring exceptions to the normal organizational operations, sometimes customers don't know exactly what they need, Communication gap between system analyst and the user, Unavailability of customer, lack of proper knowledge

  Attacks: Security Misconfiguration, Broken Authentication and Session Management, Man-in-middle attack
- **Functional Requirement**: Administrative functions

  Vulnerabilities: Missing strong access control system

  Attacks: Sensitive Data Exposure, Broken Access Control
- **Functional Requirement**: Authentication

  Vulnerabilities: Low security provided at the user login system

  Attacks: Broken authentication and session management, Man-In-Middle, DDoS, and Buffer overflow, XSS
- **Functional Requirement**: Authorization levels

  Vulnerabilities: Role's ambiguity

  Attacks: Sensitive Data Exposure, Data theft
- **Functional Requirement**: Audit Tracking

  Vulnerabilities: Clocks not synchronized across the servers, Inconsistent log format

  Attacks: Insufficient Logging &Monitoring
- **Functional Requirement**: External Interfaces

  Vulnerabilities: Incorrect port configuration, unintended access to the system

  Attacks: XML External Entities (XXE), Sensitive Data Exposure
- **Functional Requirement**: Certification Requirements

Vulnerabilities: Invalid or Expired digital certificates

Attacks: Broken authentication and session management

Vulnerabilities and attacks in non-functional requirements

- **Non-Functional Requirement**: Availability

  Vulnerabilities: Invalid Network starvation and resource starvation

  Attacks: Buffer overflow, Sync flood, ICMP flood
- **Non-Functional Requirement**: Integrity

  Vulnerabilities: malicious actor inserts himself as a relay or proxy into a communication session between people or systems.

  Attacks: Man-In-Middle, Session hijacking
- **Non-Functional Requirement**: Confidentiality

  Vulnerabilities: unauthenticated, remote attacker to access sensitive data.

  Attacks: Packet sniffing, phishing and Pharming, dumpster diving, wiretapping, key logger, social engineering
- **Non-Functional Requirement**: Scalability

  Vulnerabilities: Cloud service provider activates more and more resources to meet the SLA for the availability of the service for the customer, which eventually adds extra billing cost leading to EDoS

  Attacks: Economic Denial of Sustainability (EDoS) Attack - To put financial burden over cloud consumer by consuming metered bandwidth of web application hosted over cloud
- **Non-Functional Requirement**: Scalability

  Vulnerabilities: Cloud service provider activates more and more resources to meet the SLA for the availability of the service for the customer, which eventually adds extra billing cost leading to EDoS

  Attacks: Economic Denial of Sustainability (EDoS) Attack - To put financial burden over cloud consumer by consuming metered bandwidth of web application hosted over cloud

Following security considerations are to be made:

<u>Application Security</u>

- Whether all important assets and installation environment are identified
- Whether SRS inputs are consistent, cohesive, feasible, tested and validated
- Whether inter-relationship with other inputs as well as other linked products are taken care of and no conflict with other requirements
- Whether security audit review is performed
- Whether Process like encryption to sensitive data has been provided in software development
- Whether usable protocols, Encryption Strength, usage of processes, etc defined correctly

- Whether Implementation of Security Controls like Hashing, Digital Signatures, etc. have been defined
- Whether protection from DOS attack, Buffer Overflow, abuse cases and threat modeling has been taken care of
- Whether specifications have been read and understood and all inputs, outputs and interfaces between hardware, software, personnel, and procedures included
- Whether system boundary and data sensitivity or criticality defined
- Whether threats and relevant sources of attack identified
- Discussed the working of the product and determined areas of disagreement or ambiguity
- Whether vulnerabilities have been found out using any security tools or checklists
- Whether current and planned security controls understood
- Whether attack scenarios for exploits of vulnerabilities mapped out
- Whether impact analysis is performed, and mitigation strategy is developed
- Whether mitigation strategy developed
- Whether countermeasures to mitigate risks considered

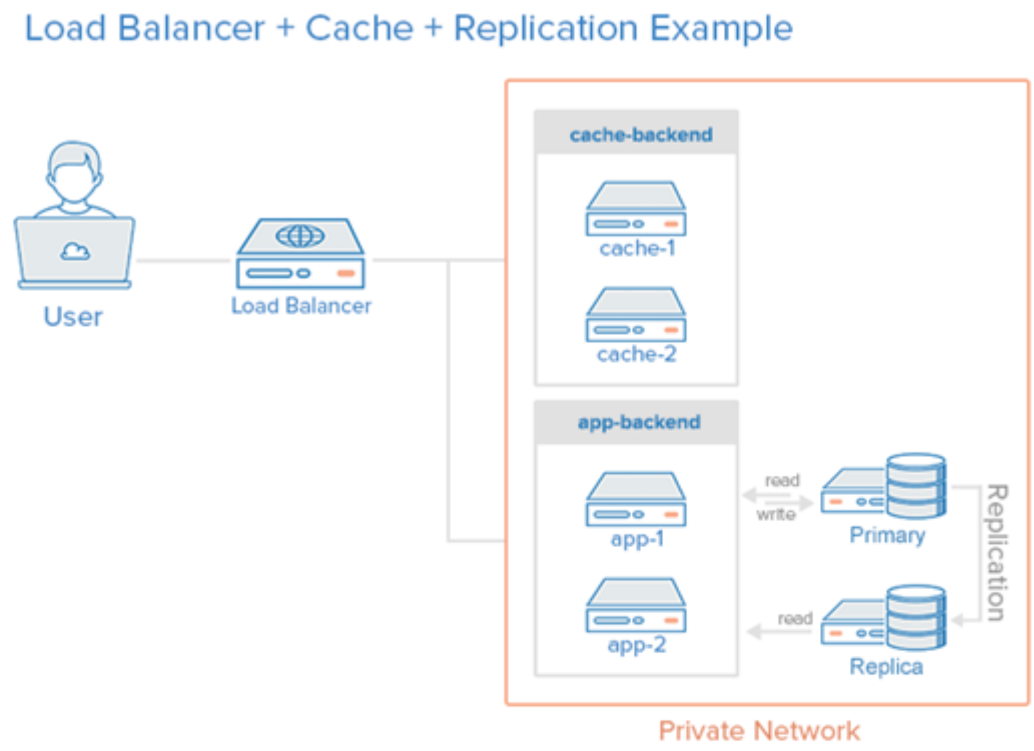
Database Security

- Whether only required necessary privileges to users have been provided
- Whether Lock and expire done for default user accounts
- Whether all default database user passwords, administrative accounts passwords are changed
- Whether rules and guidelines for password complexity has been set up
- Whether testing user has been disabled to gain access to the production database through database links or linked servers
- Whether only database administrators and system administrators has access to database server, files, SYSDBA and SYSOPER roles
- Whether hardening of operating system (OS) and encryption of network traffic done
- Whether unauthorized administration of the Oracle Listener has been prevented to secure database
- Whether security engineers have reviewed database design changes.
- Whether only the database components, modules or functionality that your application is intending to use are installed
- Whether a disaster recovery (DR) strategy for every production database is set up to ensure business continuity plan (BCP)
- Whether the default configuration for database and operating system in order to prevent easy access to data has been changed
- Whether network firewalls, Intrusion Detection System (IDS), antivirus and antispyware programs are in place to protect the database environment

- Whether production data is not used in a development or testing environment to protect the privacy and confidentiality of the data
- Whether different types of auditing of database activities is planned to check for any violation of security in access control, authentication, activity tracing, change management

7. Implementation

7.1.1 Installation Layout



7.1.2 Resource Estimate

Peak Time

- No of Citizen visit the site at peak hour: 5000 citizens
- Memory requirement per citizen: 100MB
- Apache handling capacity = 30 request per second
- Apache Memory Usage = 30 * 100 =3000 MB
- Database Memory = 3000 MB
- Indexes in Memory = 1500
- OS Overhead = 500MB
- Total Memory Required for 30 users per second taking up to 100 MB each = 8GB RAM

7.1.2 Load Testing Tools

- JMeter

7.1.3 Resource Monitoring Tools

- Combination of Prometheus and Grafana

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