Technical Proposal

Smart Urban Virtual Interactive Digital Helpdesk Assistant (SUVIDHA) – 2026

1. Project Title

Smart Urban Virtual Interactive Digital Helpdesk Assistant (SUVIDHA)

A Unified Self-Service Kiosk for Civic Utility Services

2. Problem Understanding

Urban civic utility offices in India face challenges such as long queues, manual paperwork, fragmented service counters, lack of transparency in grievance handling, and limited accessibility for elderly and digitally less-literate citizens. Separate systems for electricity, gas, water, and municipal services lead to inefficiencies and poor citizen experience.

There is a strong need for a **single, citizen-centric, digital self-service platform** that can streamline service delivery, reduce administrative burden, and improve transparency while complying with Government of India regulations.

3. Proposed Solution

SUVIDHA is a **touch-based, multilingual, unified self-service KIOSK system** designed to deliver essential civic services through a single digital interface. The kiosk enables citizens to independently perform routine tasks such as bill payments, complaint registration, service requests, and document access without staff assistance.

The system is built using a **secure, scalable microservices architecture**, ensuring high availability, modularity, and ease of future expansion across multiple cities and departments.

4. Key Features

- Multilingual and accessibility-friendly kiosk interface
- Secure OTP-based citizen authentication
- Unified access to Electricity, Gas, Water, and Municipal services
- Online bill payment with receipt generation
- Complaint and grievance registration with real-time tracking
- Service request and application management
- Emergency alerts and service advisories display
- Admin dashboard for monitoring kiosk usage and analytics
- Compliance with DPDP Act, IT Act, and accessibility standards

5. System Architecture Overview

The SUVIDHA system follows a **layered microservices architecture** consisting of:

5.1 Presentation Layer

- Touch-based Kiosk UI built using React.js / Angular
- Supports multilingual navigation and accessibility options

5.2 API Gateway Layer

- Acts as a single entry point for all requests
- Handles authentication validation, request routing, and logging

5.3 Backend Microservices Layer

- Authentication Service
- Utility Services (Electricity, Gas, Water)
- Complaint & Grievance Service
- Payment Service

- Notification Service
- Document & Receipt Generation Service

Each service operates independently and communicates via secure REST APIs.

5.4 Data Layer

- Relational Database (PostgreSQL / MySQL)
- Stores user sessions, transactions, complaints, logs, and analytics

6. Technology Stack

Frontend

- React.js
- HTML5, CSS3, JavaScript
- Responsive and touch-optimized UI

Backend

- Node.js / Python (FastAPI)
- REST-based microservices

Database

- PostgreSQL / MySQL

Security

- JWT-based authentication
- OAuth2 principles
- TLS-encrypted communication

Payment Integration

- Secure payment gateway integration (demo environment)

7. Security & Compliance

- Token-based authentication and role-based access control
- Encrypted data transmission
- Secure session handling and auto logout
- Audit logging for all transactions
- Compliance with:
    - Digital Personal Data Protection (DPDP) Act
    - IT Act guidelines
    - Government cybersecurity directives

8. Deployment Strategy

- Deployable on physical kiosk hardware
- Web-based deployment for demonstration and testing
- Supports on-premise, cloud, or hybrid infrastructure
- Scalable for multi-city and multi-department rollout

9. Expected Deliverables

- Fully functional unified civic services kiosk interface
- Secure authentication and payment workflow
- Admin dashboard with analytics and reporting
- Technical documentation (architecture, APIs, deployment)
- User manual for citizens and administrators

10. Impact & Benefits

- Reduced queues and manual workload in civic offices
- Faster service delivery and improved citizen satisfaction
- Enhanced transparency in grievance redressal
- Inclusive design supporting diverse user groups
- Scalable solution aligned with Smart City 2.0 vision