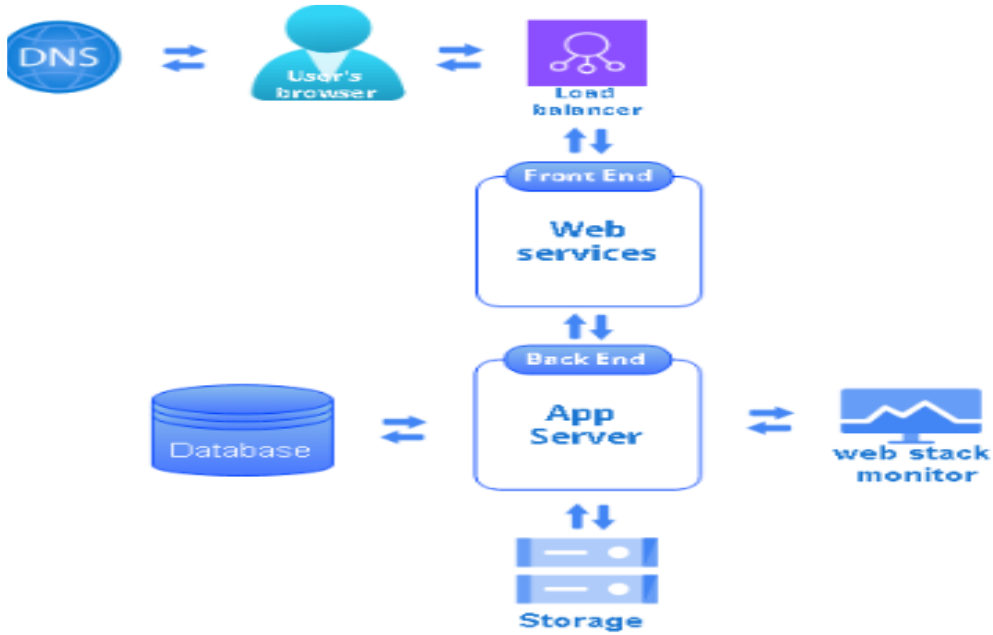
Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	26 June 2025
Team ID	LTVIP2025TMID53123
Project Name	ResolveNow: Your Platform for Online Complaints
Maximum Marks	4 Marks

Technical Architecture – ResolveNow

ResolveNow is built using a **client-server architecture**, ensuring smooth interaction between users, agents, and admins. The system is divided into three main layers: **Frontend**, **Backend**, and **Database**. RESTful APIs connect the layers, enabling secure and efficient data exchange. Real-time chat and notifications are supported using **Socket.IO**.



Architecture Guidelines – ResolveNow

- The system includes core blocks:

    1. **Frontend:** React.js (Material UI, Bootstrap)
    2. **Backend:** Node.js + Express.js (REST APIs)
    3. **Database:** MongoDB (User, Complaint, Chat, Feedback data)

- **Infrastructure:**

    1. Local setup for development
    2. Cloud deployment via Vercel (frontend), Render or Railway (backend), MongoDB Atlas (database)

- **External Interfaces:**

    1. Gmail SMTP for emails
    2. Google OAuth for login
    3. Optional: Twilio for SMS

- **Data Storage:**

    1. All structured data in MongoDB
    2. Files/images stored via Firebase or AWS S3 (optional)

- **ML Model (Optional):**

    1. Future-ready for smart routing or auto-prioritization using ML

Table-1: Components & Technologies

S.No	Component	Description	Technology
1	**User Interface**	How user interacts with the application (Web UI, etc.)	**React.js**, **HTML**, **CSS**, **JavaScript**, **Material UI**, Bootstrap
2	**Application Logic-1**	Logic for complaint submission, status update, and routing	**Node.js**, **Express.js**
3	**Application Logic-2**	Voice-to-text service for verbal complaints (future enhancement)	**IBM Watson Speech to Text (STT)**
4	**Application Logic-3**	Chatbot to guide users during complaint submission (optional)	**IBM Watson Assistant**
5	**Database**	Data storage for users, complaints, chats, etc.	**MongoDB (NoSQL)**
6	**Cloud Database**	Cloud-hosted data services (optional)	**MongoDB Atlas**, **IBM Cloudant**
7	**File Storage**	Image or document uploads for complaints	**Local Filesystem**, **Cloudinary**, or **AWS S3**
8	**External API-1**	Weather integration if complaint is weather-related	**OpenWeatherMap API** (example)
9	**External API-2**	For user identity verification	**UIDAI Aadhar API**
10	**Machine Learning Model**	Predict complaint urgency or sentiment (future scope)	**Sentiment Analysis Model**, **ML Classifier**
11	**Infrastructure**	Hosting backend/frontend on cloud/local	**Localhost**, **Render**, **Railway**, **Cloud Foundry**, **Kubernetes**

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology Used
1	**Open-Source Frameworks**	Libraries and frameworks used	**React.js**, **Express.js**, **Node.js**, **Mongoose**, **Socket.io**
2	**Security Implementations**	Authentication, Authorization, Data Protection	**JWT**, **bcrypt.js**, **CORS**, **HTTPS**, **SHA-256**, **Helmet**
3	**Scalable Architecture**	Modular design for performance and growth	**3-tier architecture**, **Microservices-ready**, **REST APIs**
4	**Availability**	Ensures uptime, handles traffic	**Load Balancers**, **Cloud Deployment**, **Clustered MongoDB**
5	**Performance**	Optimized code for response time and user experience	**Axios**, **CDN**, **Caching (Redis optional)**, **Lazy Loading**

References

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