Project Title

Resolve – Online Complaint Registration and Management System

Team ID : LTVIP2026TMIDS78964

Project Associates : Hema Durga Kokkirala

Jyothirmayi Ramisetti

Jaya Kanth Vemuluri

Jayasri Madem

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Project Overview :

ResolveNow is a web-based Online Complaint Registration and Management System developed to simplify the process of submitting, tracking, and resolving customer complaints. The system provides a centralized platform where users can register complaints, monitor updates, and communicate with assigned agents, while administrators manage complaint assignments and overall workflow.

The application is built using the MERN stack, with React.js for the frontend, Node.js and Express.js for backend services, and MongoDB for data storage. It includes role-based dashboards for Admin, Agent, and Ordinary Users, ensuring organized access control and efficient complaint handling. Key features such as complaint tracking, secure authentication, chat interaction, and automated email notifications enhance transparency and improve response time.

Overall, the project aims to provide a structured digital solution that improves customer satisfaction by enabling real-time updates and efficient complaint resolution through modern web technologies.

1.2 Purpose :

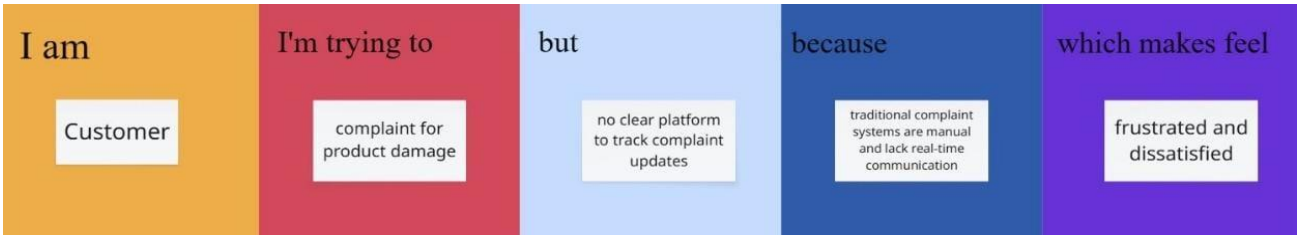
The purpose of the ResolveNow project is to develop a centralized web-based platform that simplifies the process of registering, managing, and resolving customer complaints efficiently. The system aims to replace traditional manual complaint handling methods with a structured digital solution that enables users to submit complaints online, track their progress in real-time, and communicate directly with assigned agents.

Another key objective of this project is to improve transparency and response time by introducing role-based dashboards for Admin, Agent, and Ordinary Users, along with automated email notifications for complaint updates. By integrating modern web technologies such as React.js, Node.js, Express.js, and MongoDB, the system ensures secure data management, organized workflow, and enhanced customer satisfaction through faster and more reliable complaint resolution.

2. IDEATION PHASE

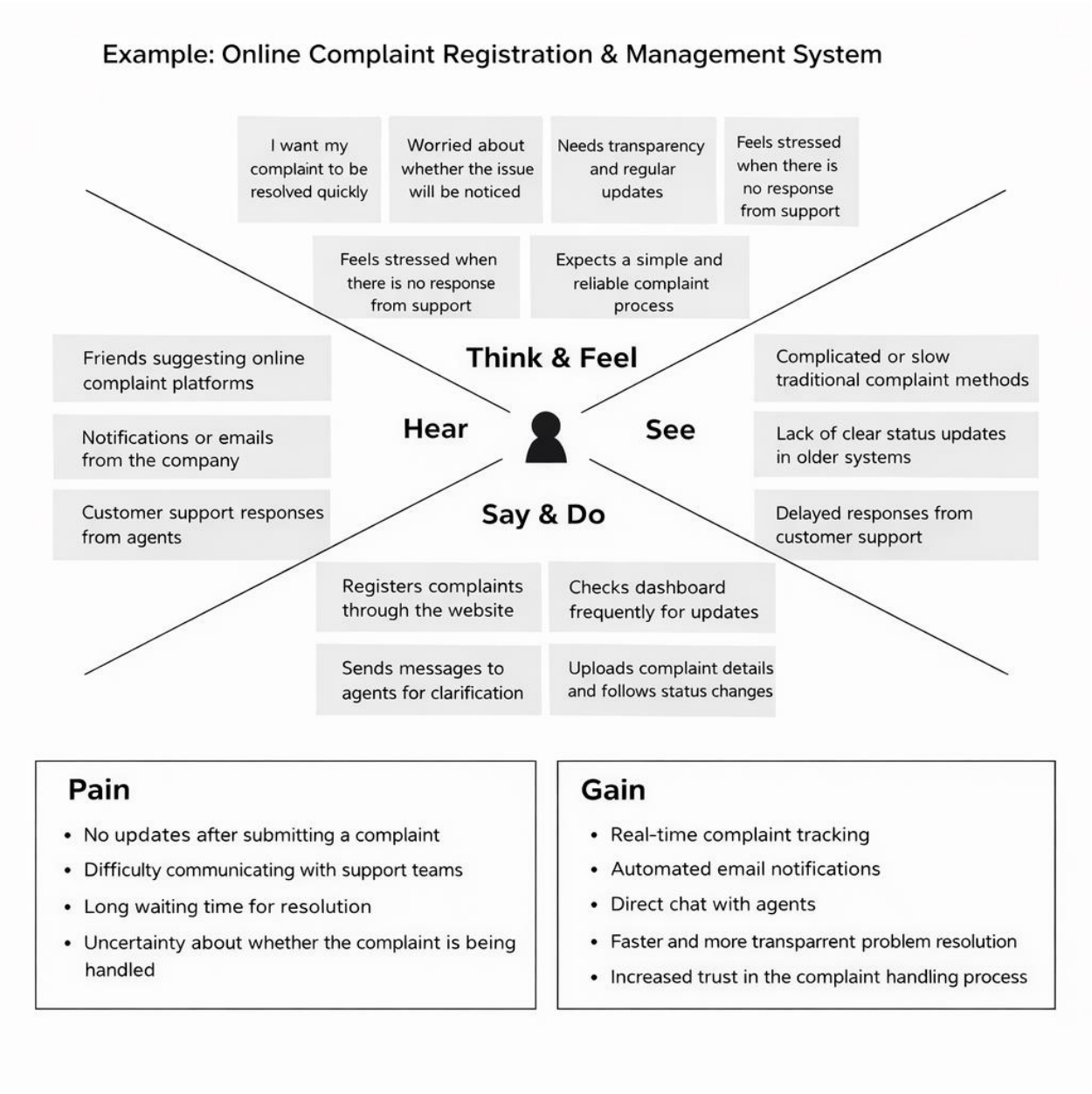
2.1 Problem Statement :

Customers who purchase products or use services often need a simple and reliable way to register complaints and track their resolution status. They aim to submit issues quickly, receive timel updates, and communicate effectively with support agents; however, traditional complaint handling systems lack centralized platforms, real-time tracking, and proper communication channels. These barriers exist due to manual workflows, fragmented support processes, and the absence of automated digital solutions, which lead to delayed responses and poor transparency. As a result, customers may feel frustrated, uncertain, and dissatisfied when they cannot monitor their complaint progress or receive updates promptly, highlighting the need for an efficient online complaint management system like ResolveNow. Customers who purchase products or use online services often face difficulties when trying to register complaints and track their resolution status. They aim to submit issues quickly, receive timely updates, and communicate effectively with support teams, but traditional complaint handling systems lack centralized platforms, real-time tracking, and proper communication channels. These barriers exist because many organizations still rely on manual processes or disconnected tools that delay responses and reduce transparency. As a result, customers feel frustrated, uncertain, and dissatisfied due to the lack of visibility and slow resolution of their problems.



2.2 Empathy Map Canvas :

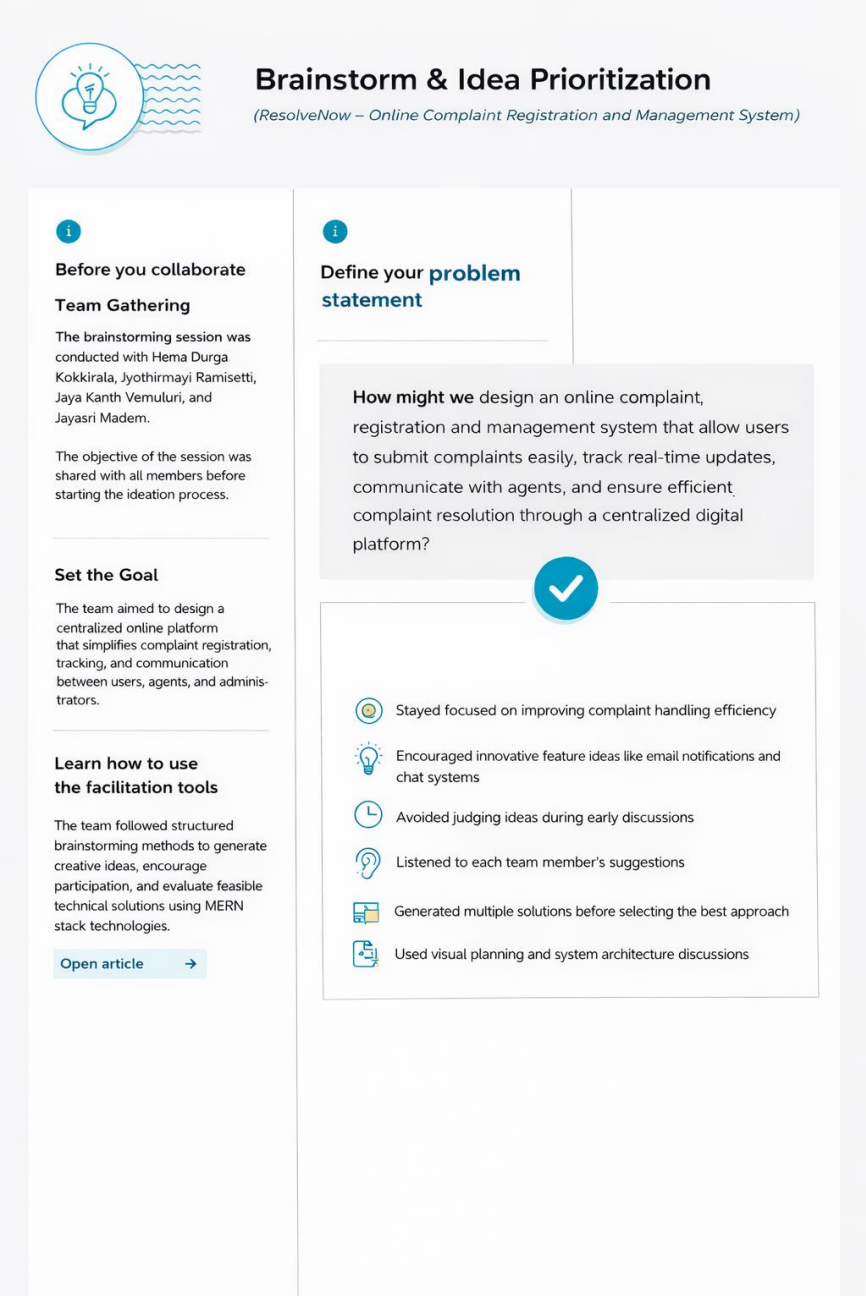
The empathy map for the ResolveNow system focuses on understanding the thoughts, emotions, behaviors, and challenges faced by users while registering and tracking complaints online. Customers usually think about quick issue resolution, transparency, and regular updates, while feeling stressed when responses are delayed. They hear feedback from support agents, notifications from the platform, and suggestions from others to use digital complaint systems. Users see common problems such as slow traditional complaint handling methods and lack of real-time status tracking, which motivates them to look for better solutions. Through the platform, they say and do actions like submitting complaints, checking dashboards for updates, and communicating with agents through chat features. The empathy map highlights user pain points such as uncertainty, delayed responses, and poor communication, while the gains include automated email notifications, real-time tracking, faster resolutions, and improved trust in the complaint management process.



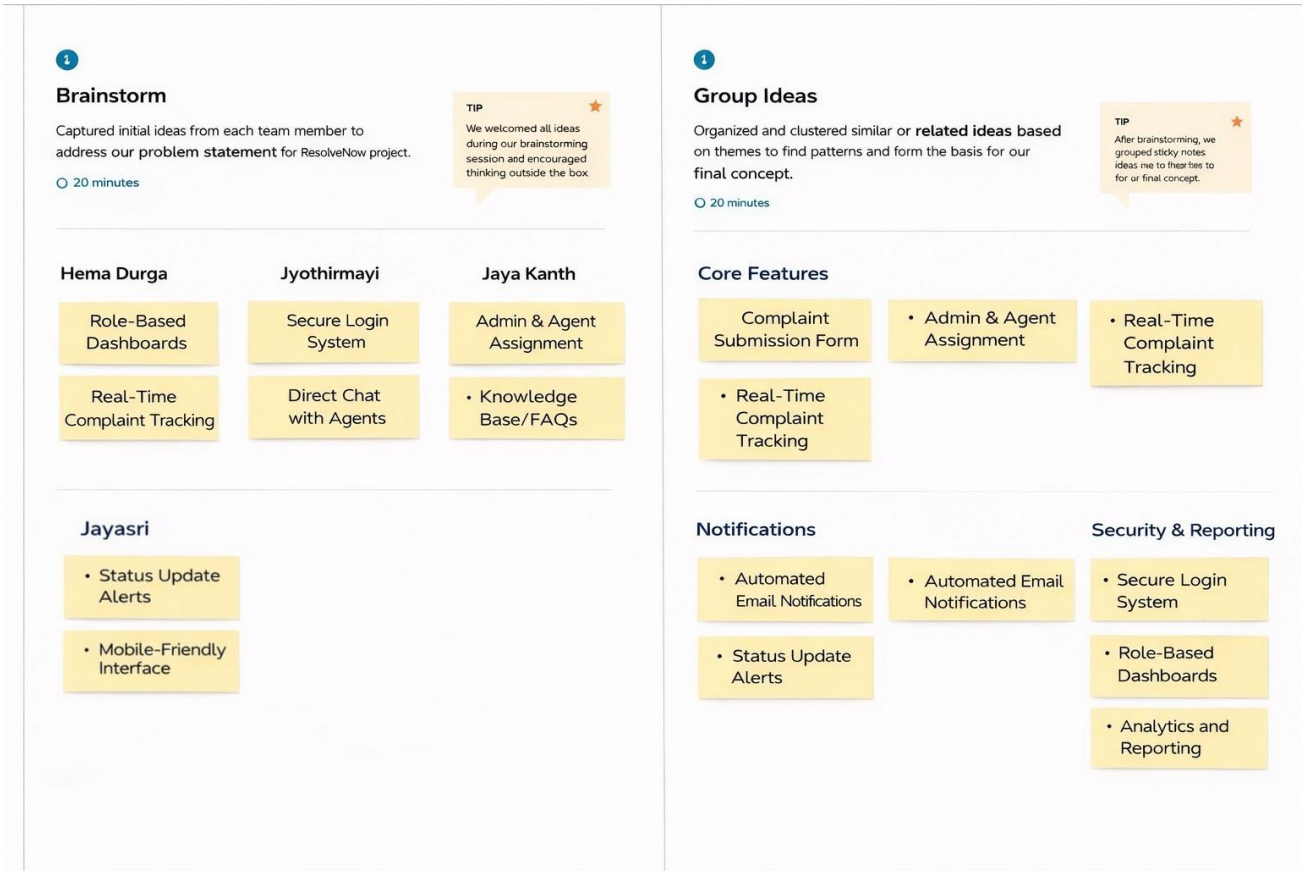
2.3 Brainstorming :

During the brainstorming and idea prioritization phase, the team focused on identifying practical solutions to improve traditional complaint handling systems by encouraging open discussions and collaborative thinking. Various ideas such as online complaint registration, real-time status tracking, role-based dashboards, automated email notifications, and direct communication between users and agents were explored. The team prioritized solutions that enhance transparency, reduce response time, and improve customer satisfaction while ensuring feasibility with modern web technologies like React.js, Node.js, Express.js, and MongoDB. By evaluating ideas based on usability, scalability, and real-world impact, the concept of ResolveNow was finalized as a centralized digital platform designed to streamline complaint management and provide a seamless user experience.

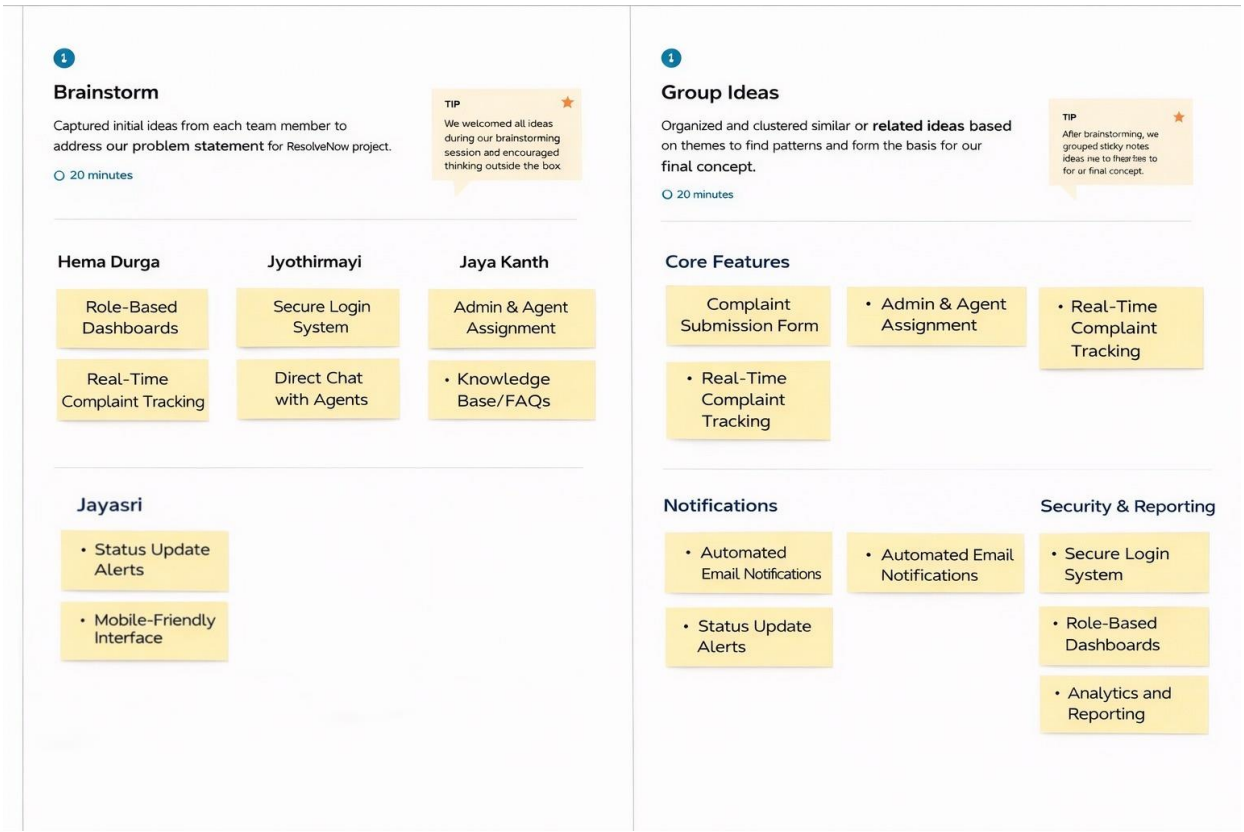
Step-1: Team Gathering, Collaboration and Select the Problem Statement



Step-2: Brainstorm, Idea Listing and Grouping



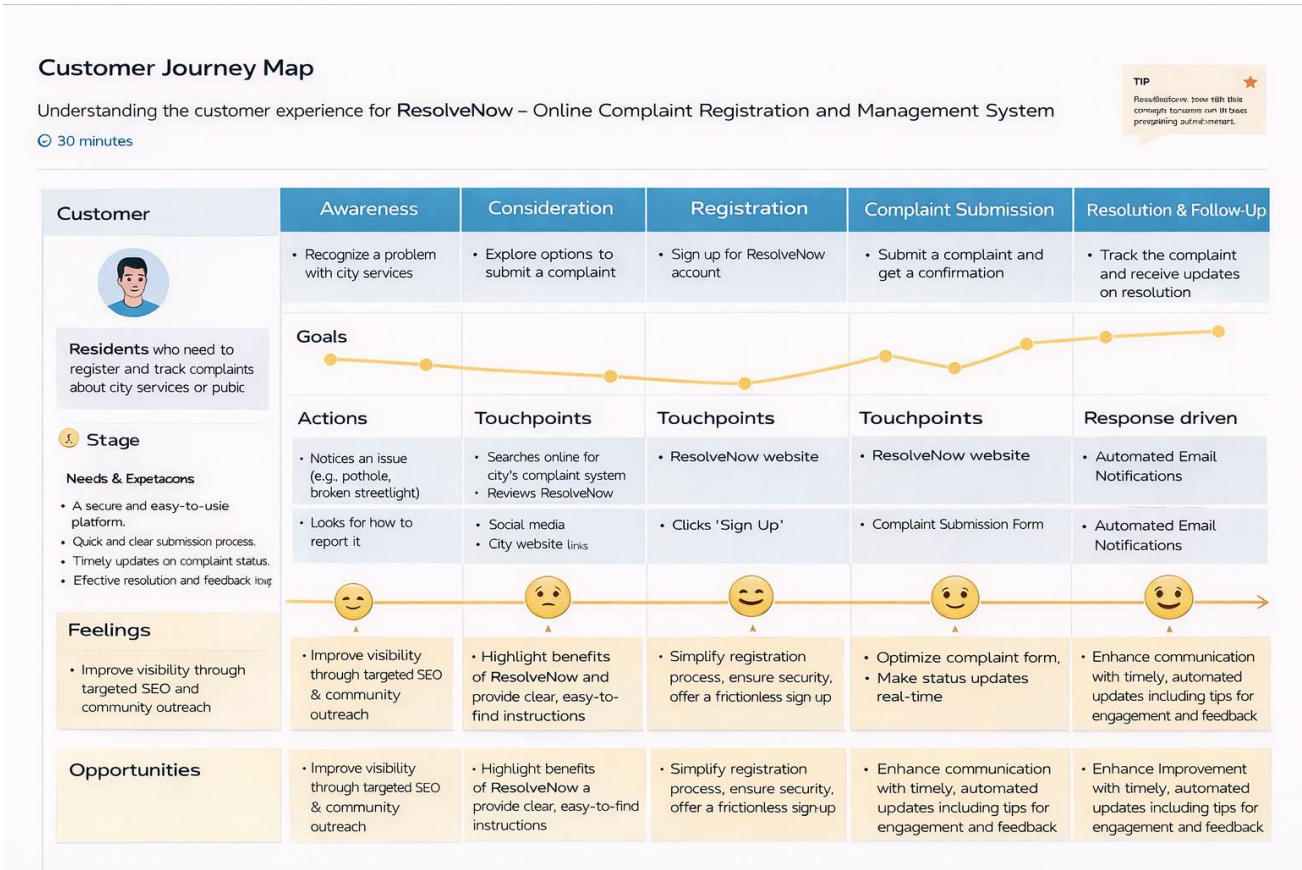
Step-3: Idea Prioritization



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map :

The Customer Journey Map illustrates the complete experience of users interacting with the ResolveNow platform, starting from identifying an issue to receiving a final resolution. Initially, users become aware of the system when they face a problem and look for a reliable complaint solution. During the consideration and registration stages, they explore the website, create an account, and understand how the system works. In the complaint submission phase, users enter detailed information and receive confirmation along with real-time updates and email notifications. The resolution stage focuses on communication between agents and users, status tracking, and final feedback after the issue is resolved. This journey helps identify user needs, emotions, and touchpoints at every stage, enabling the platform to improve usability, transparency, and customer satisfaction through a smooth and structured complaint management process.



3.2 Solution Requirement :

The proposed ResolveNow system requires a full-stack web application that enables users to register, submit complaints, track status updates, and communicate with assigned agents through a centralized platform. The solution must support role-based dashboards for Admin, Agent, and Ordinary Users, along with secure authentication, real-time complaint tracking, and automated email notifications. The

system should be developed using React.js for the frontend, Node.js and Express.js for backend logic, and MongoDB for efficient data storage, ensuring scalability, usability, and secure management of complaint-related information.

Functional Requirements :

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through form with Name, Email, Password, Phone and User Role (User / Agent / Admin)
FR-2	User Authentication & Login	Secure login using email and password, role-based redirection to dashboards
FR-3	Complaint Submission	Users track complaint status in dashboard with real-time updates
FR-4	Complaint Tracking	Admin assigns complaints to agents based on role and availability
FR-5	Agent Management	Real-time messaging between user and assigned agent
FR-6	Chat Communication	Real-time messaging between user and assigned agent
FR-7	Email Notifications	Automatic emails for registration, complaint submission, assignment and status updates
FR-8	Admin Dashboard Management	Admin monitors users, agents, and all complaints from centralized panel

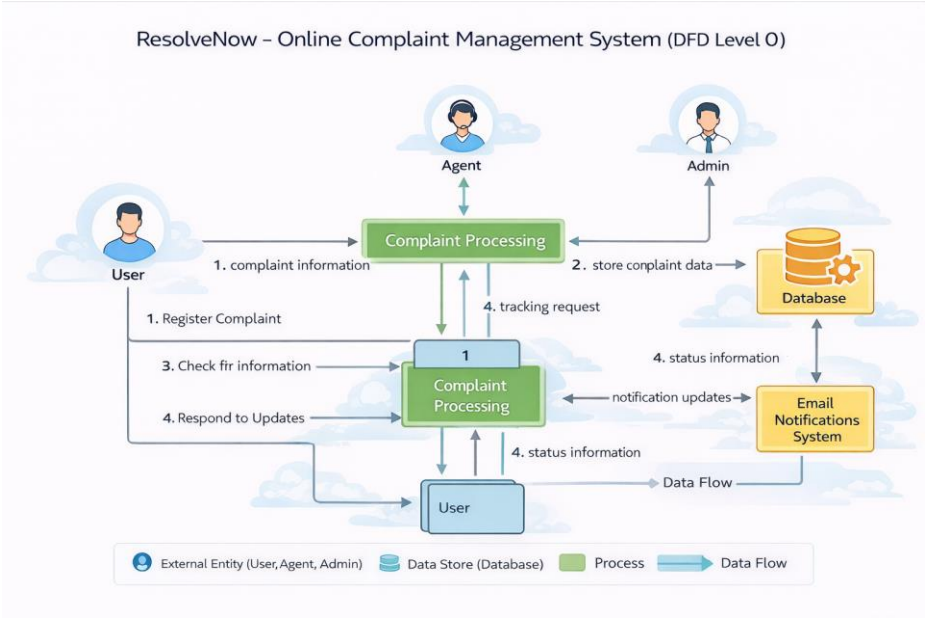
Non - Functional Requirements :

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Simple and responsive UI using React.js, Bootstrap, and Material UI for easy navigation
NFR-2	Security	User authentication, role-based access control, protected API routes and secure email handling

NFR-3	Reliability	MongoDB database ensures consistent storage and retrieval of complaints and user data
NFR-4	Performance	Fast API response using Express.js and optimized frontend rendering
NFR-5	Availability	System accessible anytime through web browser with centralized server architecture
NFR-6	Scalability	MERN stack allows scaling to support more users, agents, and complaints without major redesign

3.3 Data Flow Diagram :

The data flow of the ResolveNow – Online Complaint Registration and Management System illustrates how information moves between users, agents, administrators, and the database. Initially, users register and submit complaints through the frontend interface, which sends data to the backend server for processing and storage in MongoDB. The admin reviews and assigns complaints to agents, while agents update complaint status and communicate with users through the system. Whenever updates occur, the backend triggers email notifications to inform users about complaint progress. This structured data flow ensures secure handling of information, efficient complaint processing, and real-time communication between all system roles.



3.4 Technology Stack :

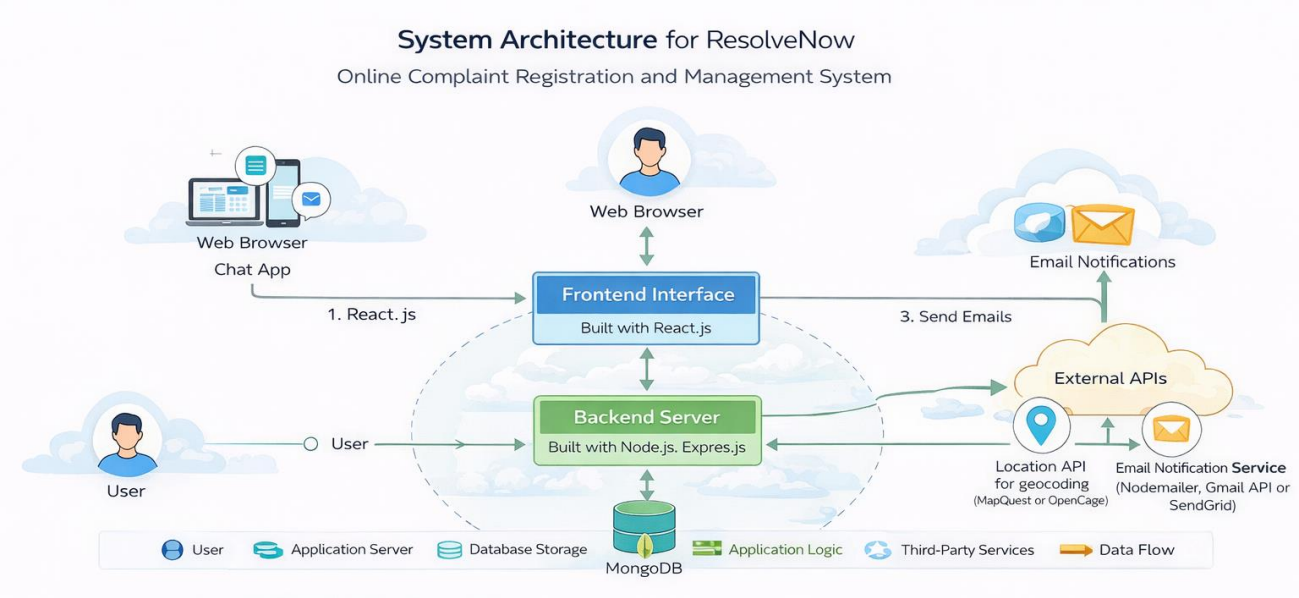


Table-1: Solution Architecture Components :

S.No	Component	Description	Technology
1.	User Interface	Web-based interface where User, Agent, and Admin interact with the system dashboards, complaint forms, and chat features	React.js, Bootstrap, Material UI, HTML, CSS
2.	**Application Logic-1**	Handles authentication, role-based login, complaint submission, status tracking and routing requests between frontend and database	Node.js, Express.js
3.	**Application Logic-2**	Manages admin operations like assigning complaints to agents and managing user data	Node.js REST APIs
4.	Application Logic-3	Sends automated email notifications when users register, complaints are assigned or status is updated	Nodemailer, Gmail SMTP
5.	Database	Stores user details, complaints, assignments, and chat messages securely	MongoDB, Mongoose
6.	Cloud Database	Optional deployment environment for hosting database in scalable cloud infrastructure	MongoDB Atlas (Cloud)
7.	File Storage	Stores application files and static assets such as images and UI resources	Local Storage / Public Folder
8.	External API-1	Email notification service integration for sending automated alerts to users	Nodemailer with Gmail App Password
9.	External API-2	Real-time communication between user and agent through chat system	Socket.io / WebRTC APIs

10.	Machine Learning Model	Not applicable in current system (No ML features used)	-
11.	Infrastructure (Server / Cloud)	Deployment of backend server and frontend application in local or cloud environment	Localhost, Node Server, VS Code

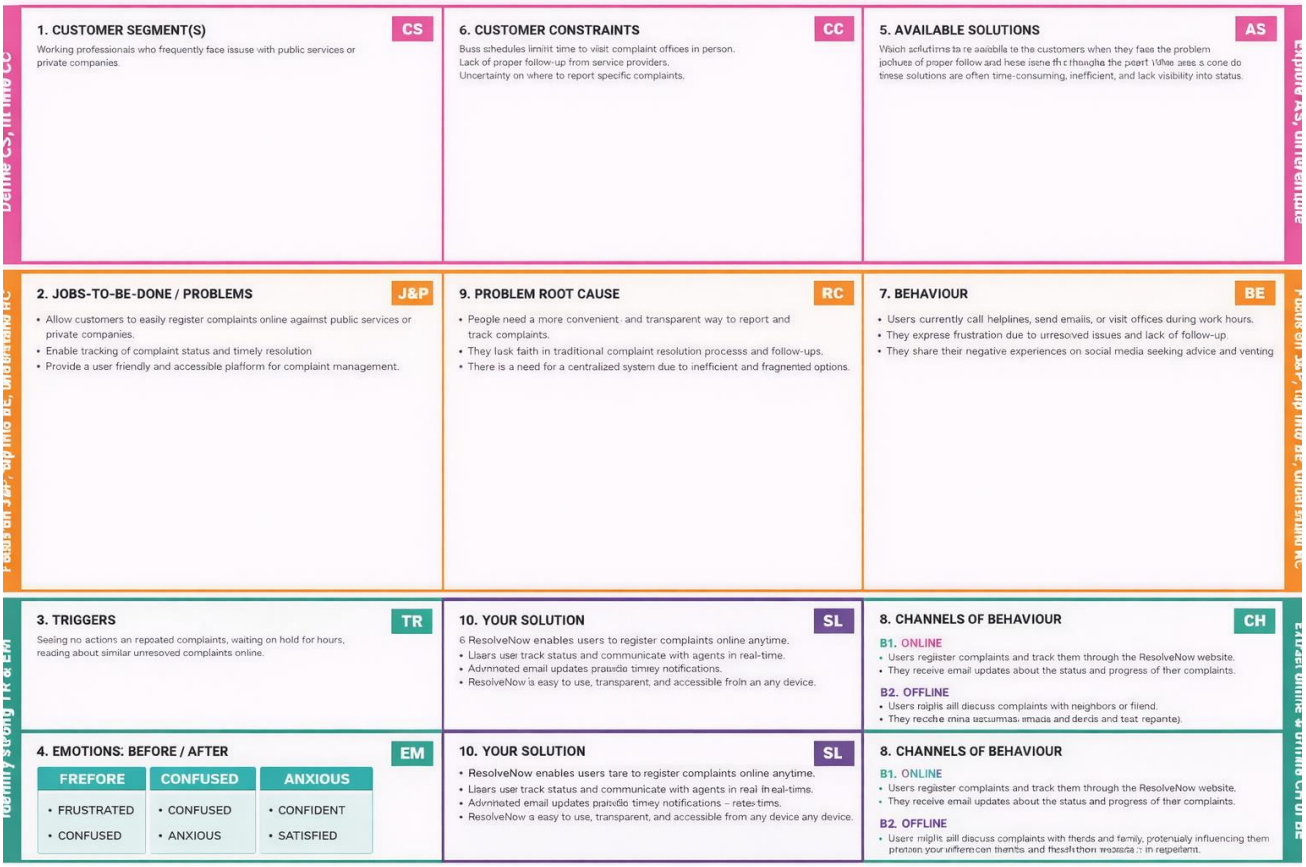
Table-2: Application Characteristics :

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Full-stack development using open-source MERN stack	React.js, Node.js, Express.js, MongoDB
2.	Security Implementations	Role-based authentication, protected APIs, email security using app passwords	JWT/localStorage, Nodemailer, MongoDB
3.	Scalable Architecture	Modular frontend and backend allowing addition of new roles and features	MERN Stack Architecture
4.	Availability	Web application accessible through browser anytime	Node.js Server, MongoDB
5.	Performance	Optimized API calls using Axios and efficient state management	React.js, Express.js

4. PROJECT DESIGN

4.1 Problem Solution Fit :

The ResolveNow system is designed to address the challenges faced by users in registering complaints and tracking their resolution status efficiently. Many customers experience delays, lack of transparency, and poor communication in traditional complaint handling processes. ResolveNow provides a centralized digital platform where users can easily submit complaints, receive real-time updates, and interact with assigned agents. By aligning the solution with customer needs such as transparency, quick response, and reliable notifications, the system ensures an effective problem–solution fit that improves user satisfaction and operational efficiency.



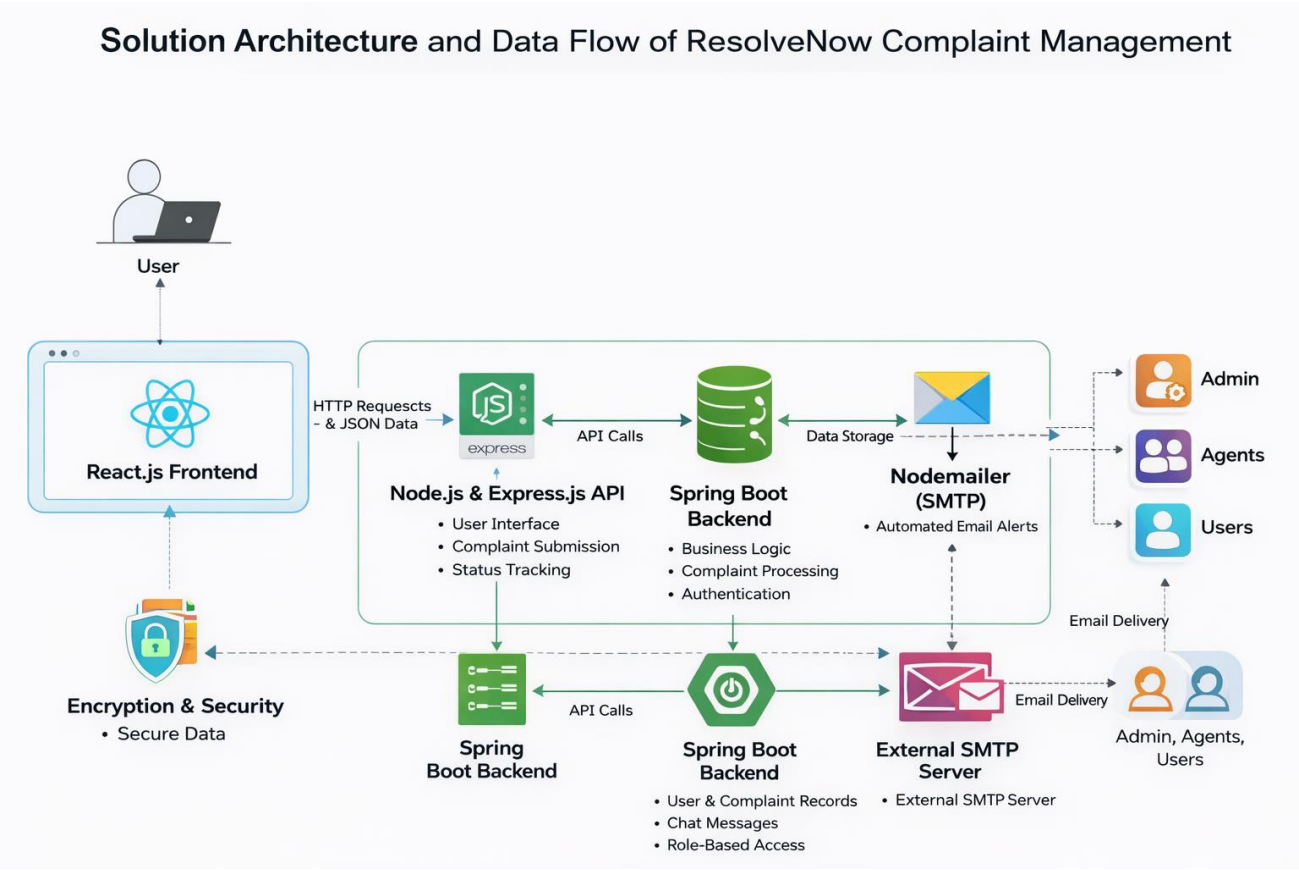
4.2 Proposed Solution :

The proposed solution, **ResolveNow – Online Complaint Registration and Management System**, is a web-based platform designed to simplify complaint handling through a centralized and user-friendly interface. The system enables users to register complaints, track their status, communicate with assigned agents, and receive real-time email notifications for updates. With role-based dashboards for Admin, Agent, and User, the platform improves transparency, ensures faster resolution, and enhances overall customer satisfaction while maintaining secure and efficient data management.

S.No	Parameter	Description
1.	Problem Statement (Problem to be solved)	Many users face difficulty in registering complaints and tracking their status through traditional manual systems. Lack of transparency, delayed responses, and poor communication between users and service providers lead to dissatisfaction and inefficient complaint resolution.
2.	Idea / Solution Description	ResolveNow is a web-based complaint registration and management system developed using MERN stack. It allows users to submit complaints, track progress, communicate with agents, and receive real-time email notifications. Admins manage users and assign complaints, while agents update status and resolve issues efficiently.
3.	Novelty / Uniqueness	The system provides role-based dashboards (Admin, Agent, User), real-time complaint tracking, integrated chat system, and automated email notifications. The centralized platform improves communication and transparency compared to traditional complaint handling methods.
4.	Social Impact / Customer Satisfaction	The platform improves customer trust by providing transparent updates and faster complaint resolution. Users feel more confident and satisfied due to continuous communication, notification alerts, and easy access to complaint history.
5.	Business Model (Revenue Model)	The system can be deployed as a service platform for organizations such as municipalities, e-commerce companies, or service providers. Revenue can be generated through subscription models, enterprise licensing, or customized deployment for organizations.
6.	Scalability of the Solution	Built using React.js, Node.js, Express.js, and MongoDB, the system supports scalable architecture. It can handle increasing users, complaints, and notifications by scaling backend services and database resources without affecting performance.

4.3 Solution Architecture :

The solution architecture of **ResolveNow – Online Complaint Registration and Management System** follows a client–server model that connects the frontend, backend, and database to ensure smooth complaint management. The React.js frontend allows users, agents, and admins to interact with the system through role-based dashboards, while the Node.js and Express.js backend processes requests such as registration, complaint submission, assignment, and status updates. MongoDB securely stores user and complaint data, and Nodemailer is integrated to send automated email notifications. This structured architecture ensures scalability, secure data flow, and efficient communication between all components of the system.


Solution Architecture and Data Flow of ResolveNow Complaint Management
User
React.js Frontend
HTTP Requescts
- & JSON Data
express
API Calls
Data Storage
Node.js & Express.js API
• User Interface
• Complaint Submission
• Status Tracking
Spring Boot
Backend
• Business Logic
• Complaint Processing
• Authentication
Nodemailer
(SMTP)
• Automated Email Alerts
Admin
Agents
Users
Email Delivery
Encryption & Security
• Secure Data
Spring
Boot Backend
API Calls
Spring Boot
Backend
• User & Complaint Records
• Chat Messages
• Role-Based Access
External SMTP
Server
• External SMTP Server
Email Delivery
Admin, Agents,
Users

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning:

The project was developed using an agile sprint-based approach where tasks were divided into multiple iterations including registration, dashboard development, complaint management, tracking, and email notification integration. Each sprint focused on delivering specific features while maintaining a consistent velocity of 20 story points per sprint. The calculated average velocity of 2 story points per day helped the team estimate workload efficiently and ensure timely delivery of project milestones.

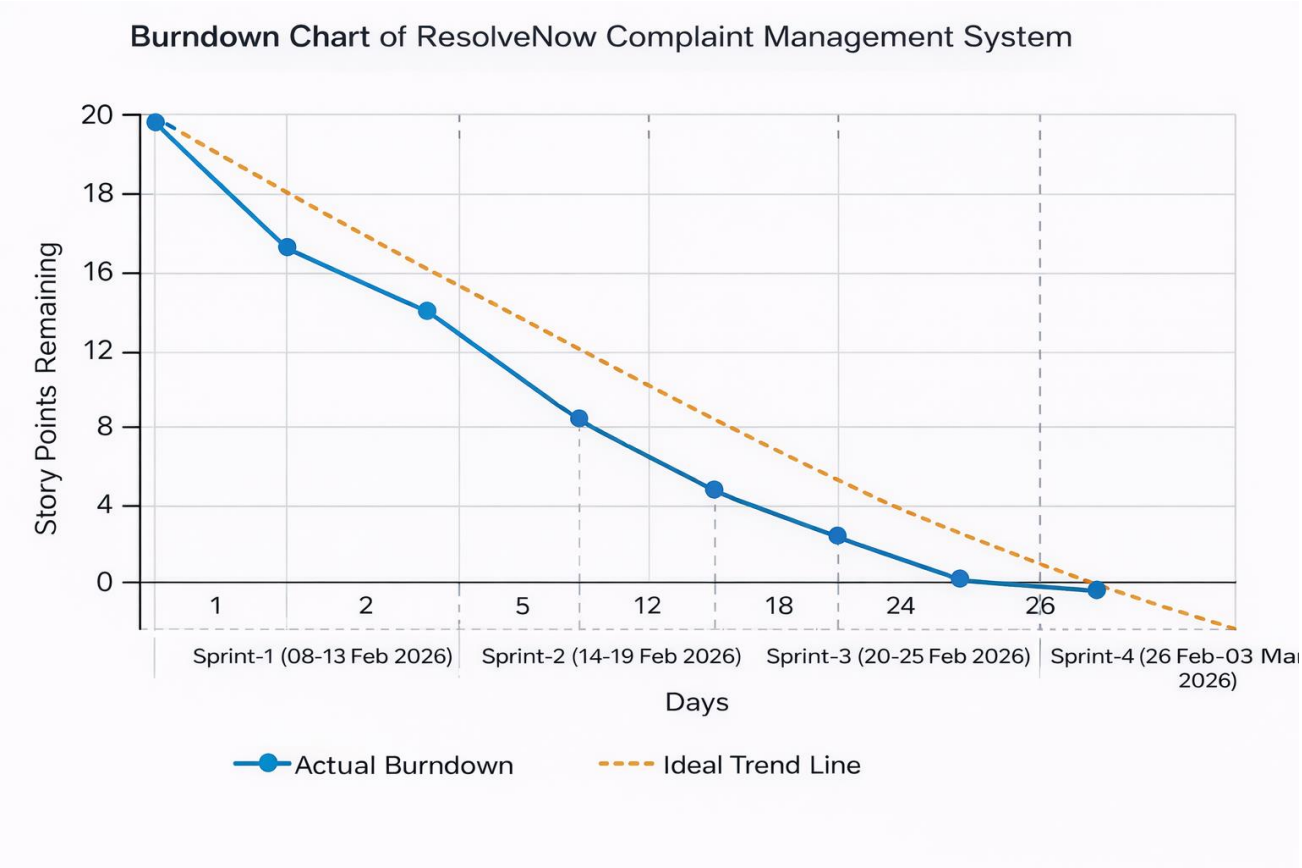
Product Backlog, Sprint Schedule & Estimation :

Sprint	Functional Requirement (Epic)	User Story Number	User Story/Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	User can register using email and password	2	High	Hema Durga, Jyothirmayi
Sprint-1	Registration	USN-2	User receives email notification after registration	1	High	Jayakanth
Sprint-1	Login	USN-3	User login using email and password	1	High	Jayasri
Sprint-2	Dashboard	USN-4	Role-based dashboard for Admin, Agent, User	3	High	Hema Durga
Sprint-2	Complaint Management	USN-5	User submits complaint with details	3	High	Jyothirmayi
Sprint-3	Assignment	USN-6	Admin assigns complaint to Agent	2	Medium	Jayakanth
Sprint-3	Tracking	USN-7	Admin assigns complaint to Agent	2	High	Jayasri
Sprint-4	Email Notifications	USN-8	Email notification on status update	3	High	Team
Sprint-4	Chat System	USN-9	User and Agent communication	3	Medium	Team

Product Backlog, Sprint Schedule & Estimation :

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date(Planned)	Story Points Completed	Sprint Release Date
Sprint-1	20	6 Days	08 Feb 2026	13 Feb 2026	20	13 Feb 2026
Sprint-2	20	6 Days	14 Feb 2026	19 Feb 2026	20	19 Feb 2026
Sprint-3	20	6 Days	20 Feb 2026	25 Feb 2026	20	25 Feb 2026
Sprint-4	20	6 Days	26 Feb 2026	03 Mar 2026	20	03 Mar 2026

Burndown Chart :



6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing :

Test Cases :

Test Case ID	Test Scenario	Test Steps	Expected Result	Actual Result	Pass/Fail
TC-001	User Registration	Step1: Open SignUp Page Step2: Enter details Step3: Click Register	User account created successfully	Account created and stored in database	**Pass**
TC-002	**User Login**	Step1: Enter email & password Step2: Click Login	User redirected to correct dashboard based on role	Dashboard loaded correctly	**Pass**
TC-003	**Complaint Submission**	Step1: Open Complaint Form Step2: Enter complaint details Step3: Submit	Complaint saved and visible in Status page	Dashboard loaded correctly	**Pass**
TC-004	**Admin Complaint Assignment**	Step1: Admin Login Step2: View complaints Step3: Assign Agent	Status updated and visible to user	Complaint registered successfully	**Pass**
TC-005	**Agent Status Updtae**	Step1: Agent Login Step2: Update complaint status	User receives notification email	Status updated successfully	**Pass**
TC-006	**Email Notification**	Step1: Register or Update complaint Step2: Check Email	Message stored and displayed in chat	Email received through Nodemailer	**Pass**
TC-007	**Chat Feature**	Step1: Open Chat Window Step2: Send message	Message stored and displayed in chat	Chat working correctly	**Pass**

Bug Tracking Table :

Bug ID	Bug Description	Steps to Reproduce	Severity	Status	Additional Feedback
BG-001	Dashboard redirect issue for Admin/Agent	Step1: Login as Admin Step2: Dashboard not loading correctly	**Medium**	**Closed**	Fixed by adding Gmail App Password
BG-002	Email notification not sending initially	Step1: Submit empty comment field	**High**	**Closed**	Added required field validation
BG-003	Complaint form validation error	Step1: Submit empty comment field	**Low**	**Closed**	Added required field validation
BG-004	Dev Server allowedHosts error	Step1: Run frontend	**Medium**	**Closed**	Updated browserslist configuration
BG-005	MongoDB connection delay	MongoDB connection delay	**Low**	**Closed**	Resolved after service restart

User Acceptance Testing :

Defect Analysis :

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Subtotal
By Design	2	1	1	0	4
Duplicate	1	0	0	0	1
External	0	1	0	0	1
Fixed	6	3	2	2	13
Not Reproduced	0	0	1	0	1
Skipped	0	0	0	1	1
Won't Fix	0	1	0	0	1
Totals	**9**	**6**	**4**	**3**	**22**

Test Case Analysis :

Section	Total Cases	Not Tested	Fail	Pass
User Registration & Login	8	0	0	8

Dashboard & Role Management	7	0	0	7
Complaint Management	10	0	0	10
Admin Panel	5	0	0	5
Agent Dashboard	5	0	0	5
Email Notifications	6	0	0	6
Chat System	4	0	0	4
Database & API Integration	5	0	0	5

The defect analysis indicates that most identified issues were resolved during development, particularly related to dashboard navigation, email configuration, and database validation. Test case analysis shows that all functional modules including user registration, complaint tracking, role-based dashboards, and email notifications were successfully validated, resulting in a high system reliability and stable application performance.

7. RESULTS

7.1 Output Screenshots :

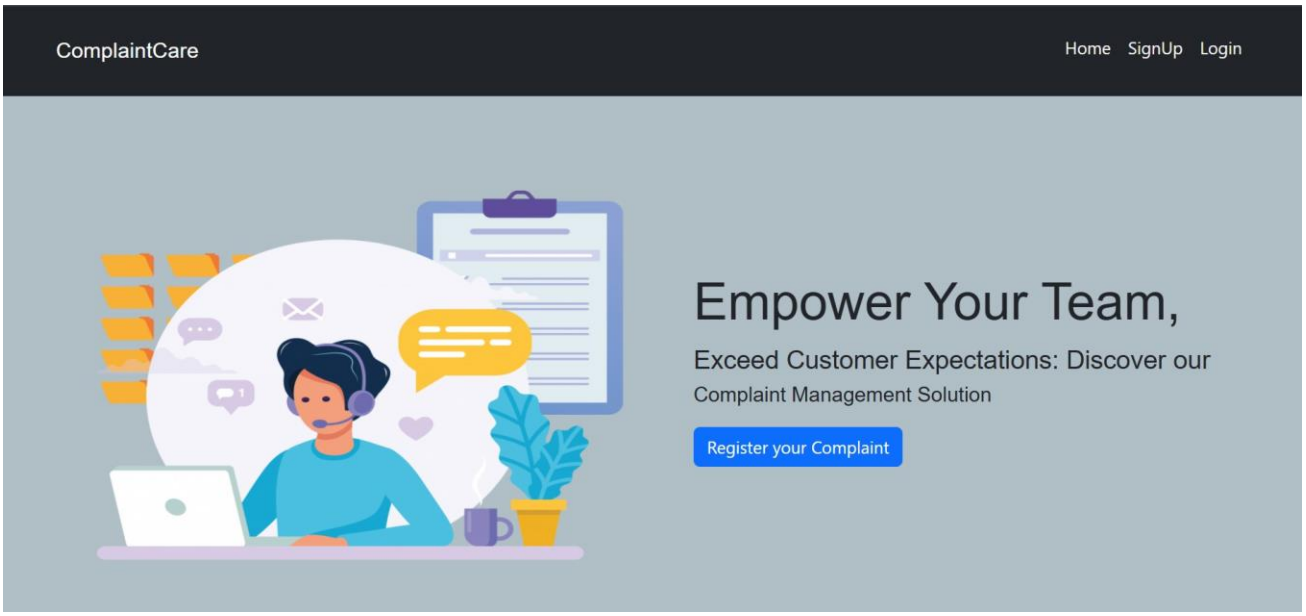


Fig 1: Home Page

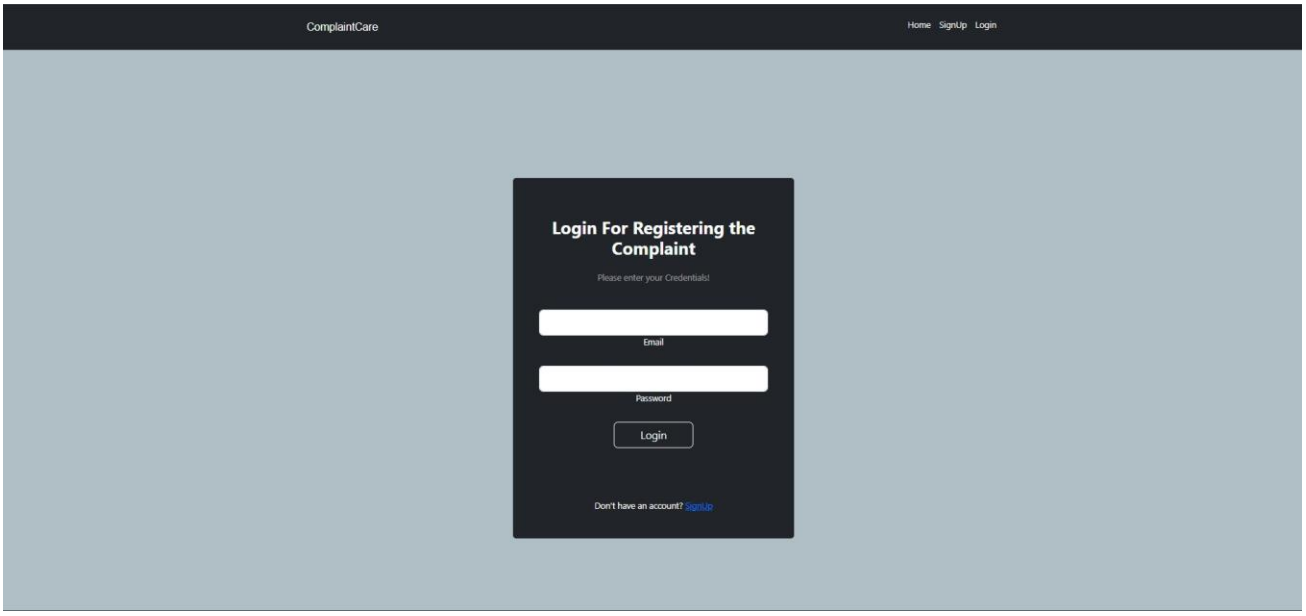


Fig 2: Login Page

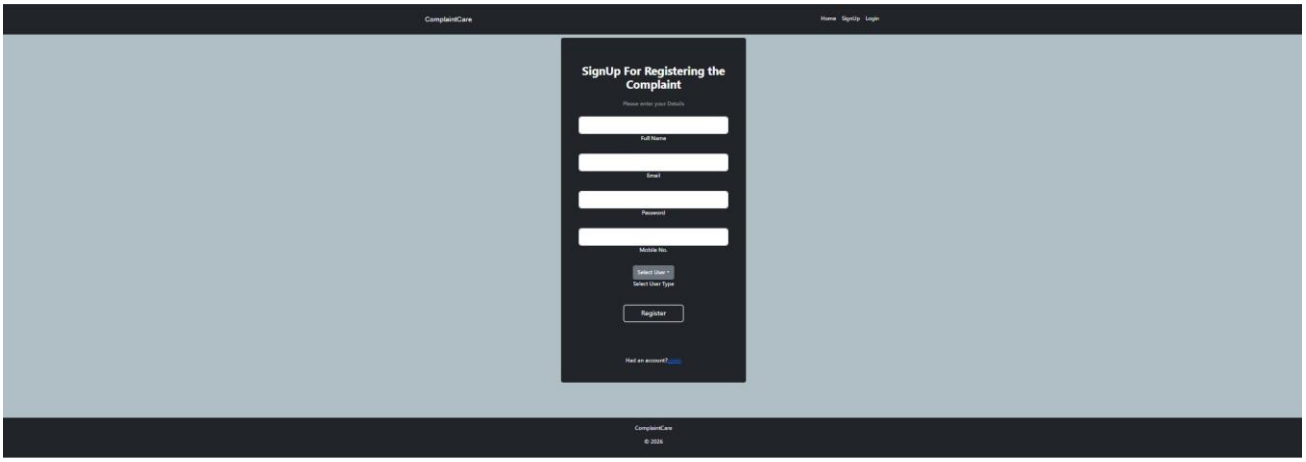


Fig 3: Registration Form

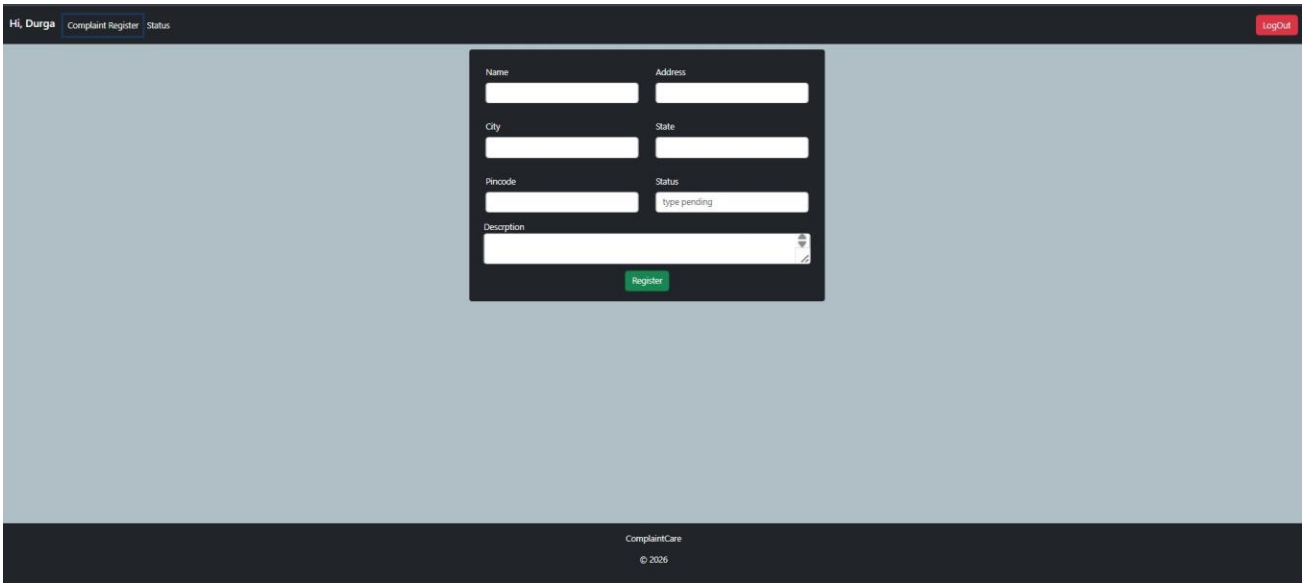


Fig 4: User Page

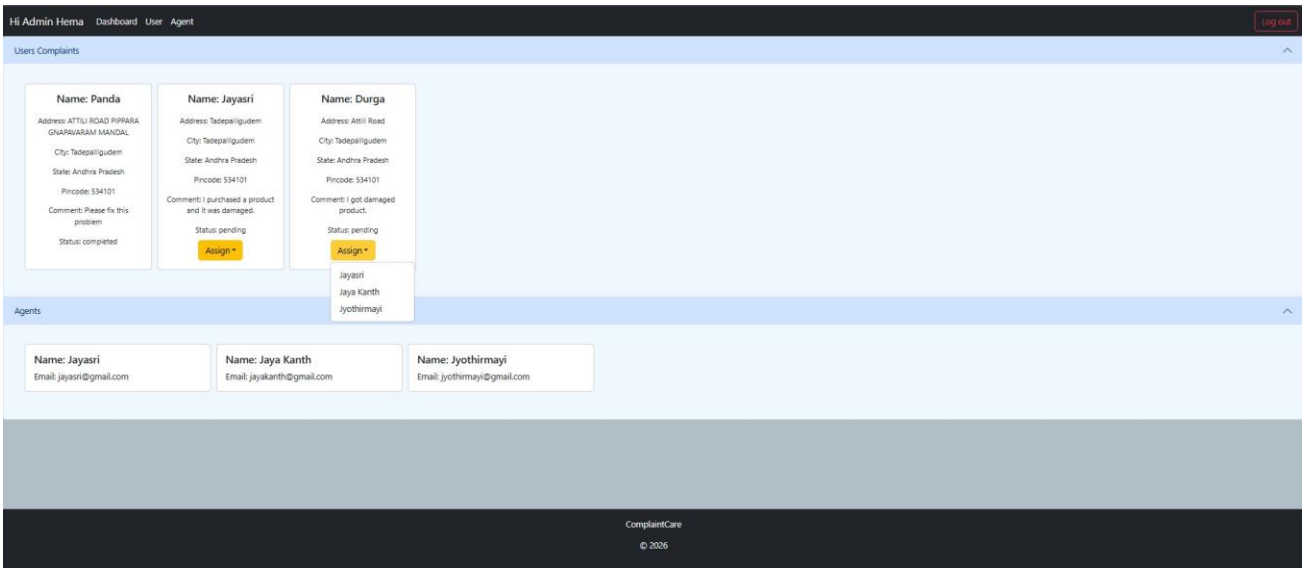


Fig 5: Admin Page

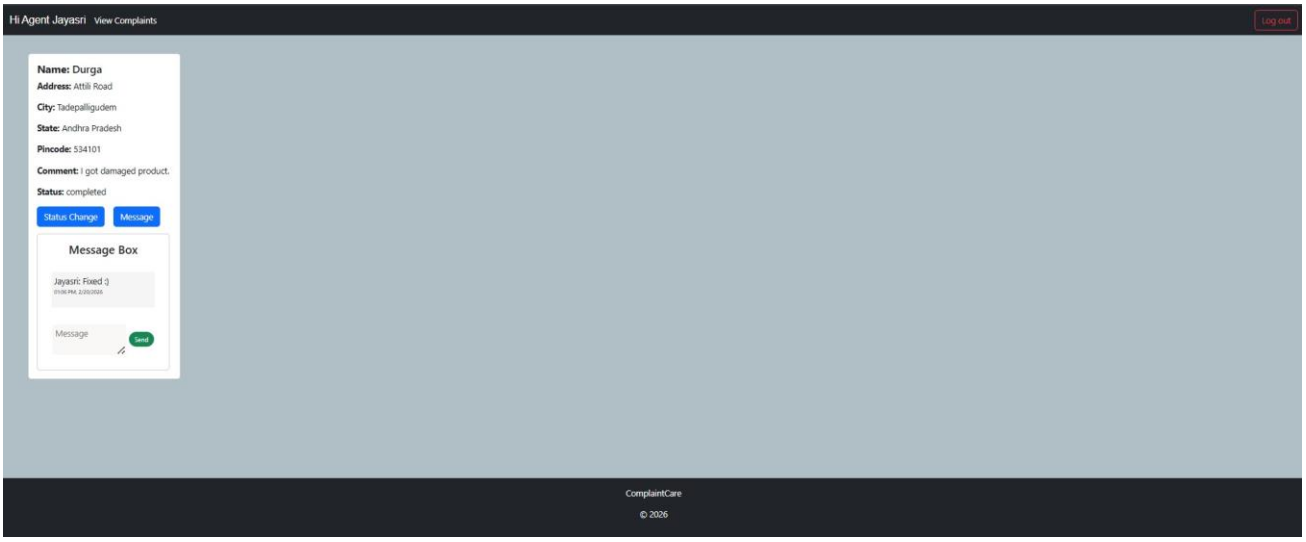


Fig 6: Agent Page

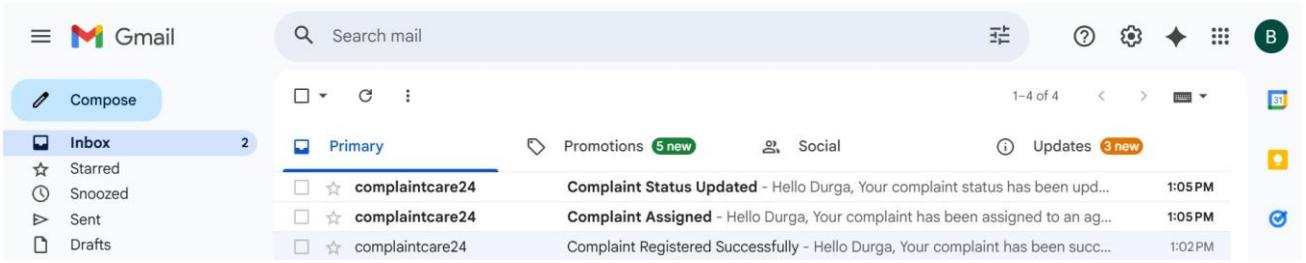


Fig 7: Email Notifications

8. ADVANTAGES & DISADVANTAGES

Advantages of the ResolveNow System

1. **Centralized Complaint Management**
   All complaints are stored in one platform, making tracking and monitoring easier for users, agents, and administrators.
2. **Role-Based Access Control**
   Separate dashboards for Admin, Agent, and User improve security and ensure each role performs specific tasks efficiently.
3. **Real-Time Complaint Tracking**
   Users can monitor complaint status updates instantly, which increases transparency and trust.
4. **Automated Email Notifications**
   The system sends email alerts for registration, complaint submission, assignment, and resolution updates, reducing manual communication.
5. **Improved Communication**
   Built-in chat functionality allows direct interaction between users and agents, leading to faster issue resolution.
6. **Scalable MERN Architecture**
   Using React.js, Node.js, Express.js, and MongoDB makes the system flexible and scalable for future enhancements.
7. **User-Friendly Interface**
   Bootstrap and Material UI provide a clean and responsive design that improves user experience.

Disadvantages / Limitations of the ResolveNow System

1. **Internet Dependency**
   Since it is a web-based application, users require an active internet connection to access the system.
2. **Basic Security Implementation**
   Current authentication uses simple login validation; advanced security features like OAuth or multi-factor authentication can be added in future.
3. **Manual Agent Assignment**
   Complaints are assigned by admin manually instead of using AI-based automated routing.

4. **Limited Analytics Dashboard**

   The system currently focuses on complaint handling but lacks advanced analytics or reporting features.

5. **Email Notification Dependency**

   Email functionality depends on external SMTP configuration, which may require proper setup and maintenance.

9. CONCLUSION

The **ResolveNow – Online Complaint Registration and Management System** successfully addresses the challenges of traditional complaint handling by providing a centralized, secure, and user-friendly digital platform. Through features such as role-based dashboards, complaint tracking, real-time email notifications, and agent–user communication, the system improves transparency, efficiency, and response time. The implementation using the MERN stack (React.js, Node.js, Express.js, and MongoDB) ensures scalability, performance, and modern web standards. Overall, the project demonstrates how technology can streamline complaint management processes, enhance customer satisfaction, and support organizations in delivering faster and more reliable services.

10. FUTURE SCOPE

The **ResolveNow – Online Complaint Registration and Management System** can be further enhanced by adding advanced features and improving scalability. Future improvements may include integrating **AI-based complaint categorization** to automatically assign complaints to suitable agents, developing a **mobile application** for easier access, and implementing **real-time push notifications** along with email alerts. The system can also be extended with **analytics dashboards** to monitor complaint trends and performance metrics. Additional enhancements like **multi-language support**, cloud deployment, chatbot assistance, and stronger security mechanisms such as advanced authentication and encryption can make the platform more intelligent, accessible, and enterprise-ready in the future.

11. APPENDIX

Project Demo Link :

https://drive.google.com/file/d/1rvmn2YABKr0aLgoNstAIIIIgngnjjYnZ/view?usp=drivesdk

Project Github Link :

https://github.com/hemadurgakokkirala/ResolveNow-Online-Complaint-Registration-and-Management-System