Project Report

1. INTRODUCTION

1.1 Project Overview

This project is developed in ServiceNow to manage operational support tickets effectively.

In this system:

- Users and groups such as **Certificates** and **Platform** are created.
- Roles are assigned to groups to maintain proper access control.
- A custom table called **Operations Related** is created to store ticket details.
- The Issue field includes predefined options like:
    - Unable to login to platform
    - 404 error
    - Regarding certificates
    - Regarding user expired
- ACLs are configured to secure the table using role-based permissions.
- A Flow is created in Flow Designer to automatically assign tickets to the correct group based on the selected issue.

Overall, the system ensures secure, automated, and efficient ticket management.

1.2 Purpose

The purpose of the project **"Streamlining Ticket Assignment for Efficient Support Operations"** is to automate the process of ticket assignment and improve support efficiency using ServiceNow.

This project aims to:

- Reduce manual ticket routing
- Ensure tickets are assigned to the correct support group
- Implement role-based access control for security
- Improve response time and operational efficiency

By automating ticket assignment based on issue type, the system minimizes errors and ensures that each issue reaches the appropriate team without delay.

2. IDEATION PHASE

2.1 Problem Statement

Customer Problem Statement Template:

Create a problem statement to understand how users experience the ticket support process. This template helps our team focus on real issues in ticket routing so we can design a faster and more reliable support system.

A clear customer problem statement helps the team find the best solution for ticket delays and misrouting. It also helps us see the system from the user's point of view, so we can improve their support experience and satisfaction.

Section	Content
I am	A user who submits support tickets for technical or platform issues.
I'm trying to	Get my issues resolved quickly by the correct support team.
but	My tickets are sometimes assigned to the wrong team and resolution is delayed.
because	Ticket assignment is done manually without an automatic routing system.
which makes me feel	Frustrated and dissatisfied with the support service.

Problem Statement Table:

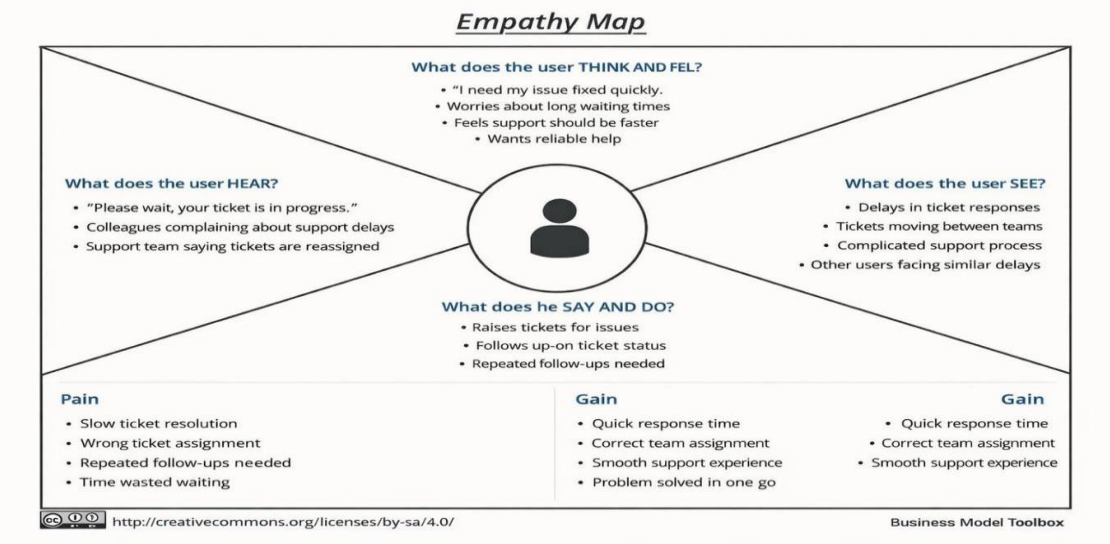
I am (Customer)	I'm trying to	But	Because	Which makes me feel
A user who submits support tickets for technical issues	Get myproblem solved quickly by the right team	My tickets are sometimes sent to the wrong team and delayed	Ticket assignment is done manually	Frustrated and unhappy with the support service
A support agent handling many tickets daily	Resolve tickets efficiently and on time	Tickets come without proper routing and increase my workload	There is no automatic ticket assignment system	Stressed and overloaded

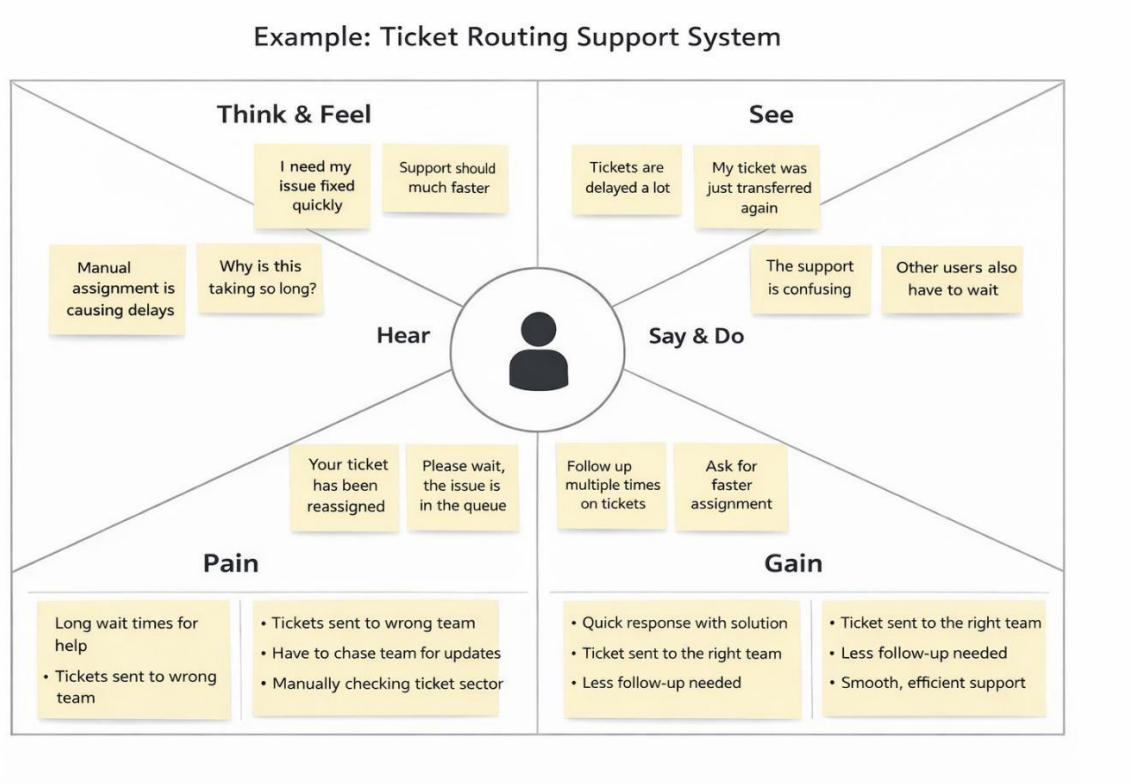
2.2 Empathy Map Canvas

An empathy map is a simple visual tool used to understand how users experience the ticket support system. It captures user behaviors, needs, and frustrations while raising or handling support tickets.

It helps the team clearly understand users' expectations from the support process. By creating this map, the team can see the problem from the user's point of view, including their goals, challenges, and feelings when tickets are delayed or misrouted.

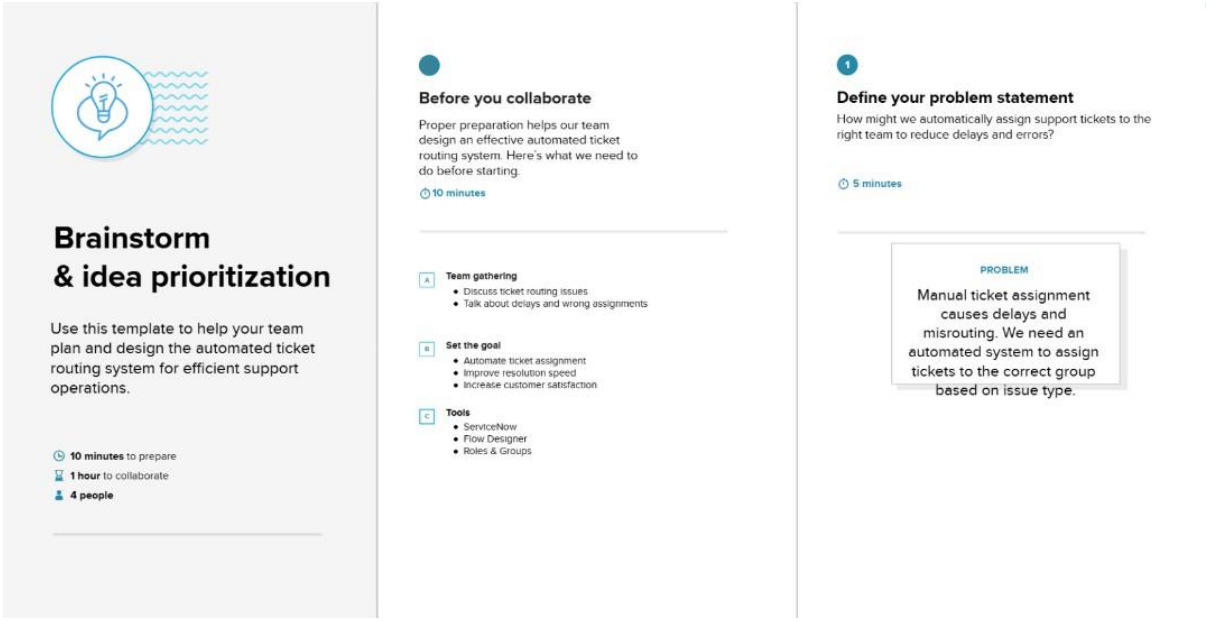
Understanding these insights helps design a better automated ticket routing solution that improves response time and user satisfaction.



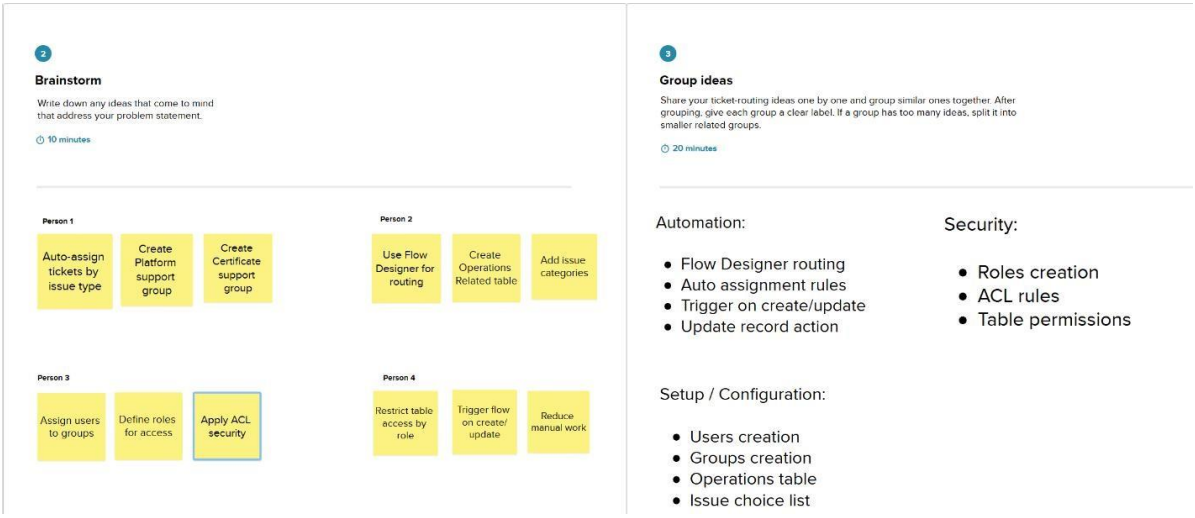


2.3 Brainstorming

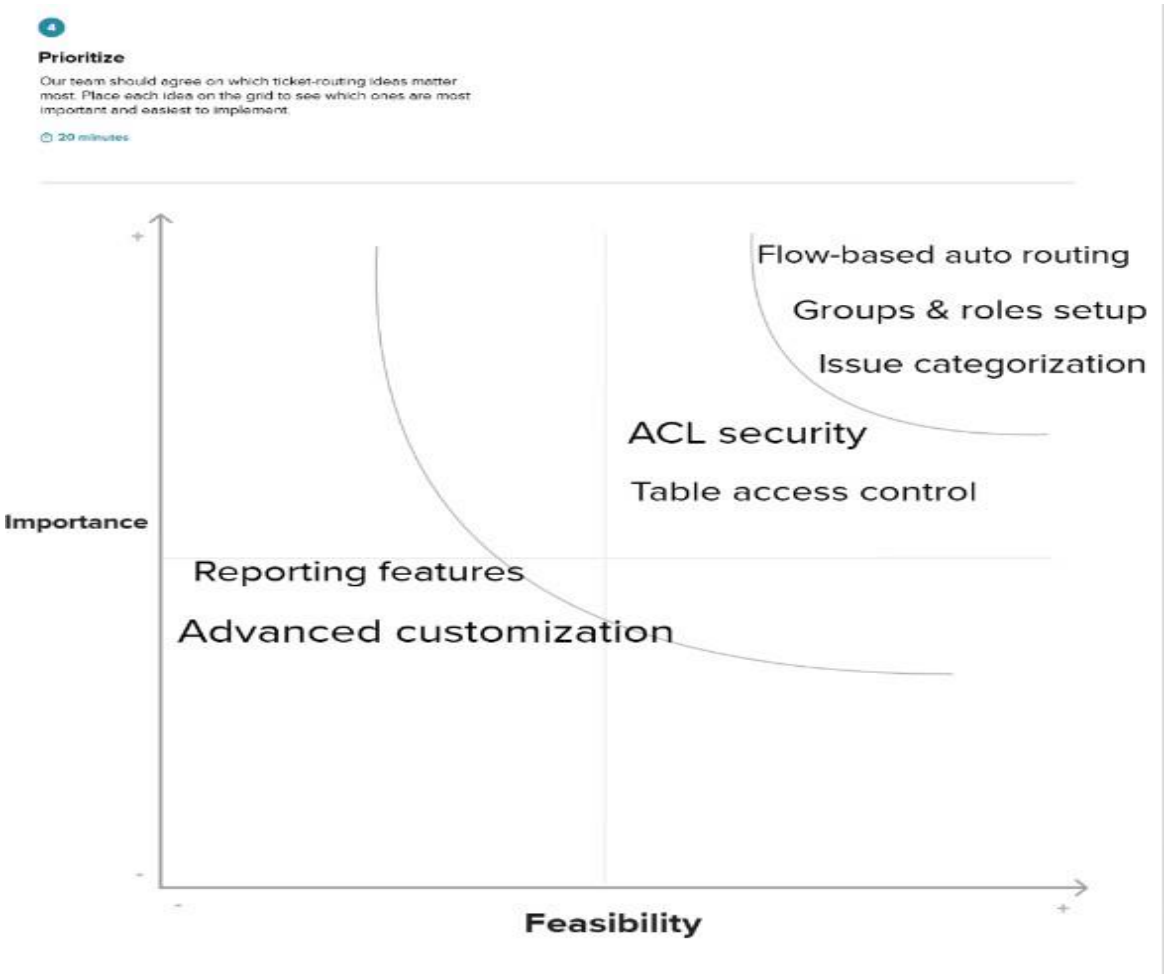
Step 1: Team Gathering, Collaboration & Problem Selection



Step 2: Brainstorm, Idea Listing & Grouping

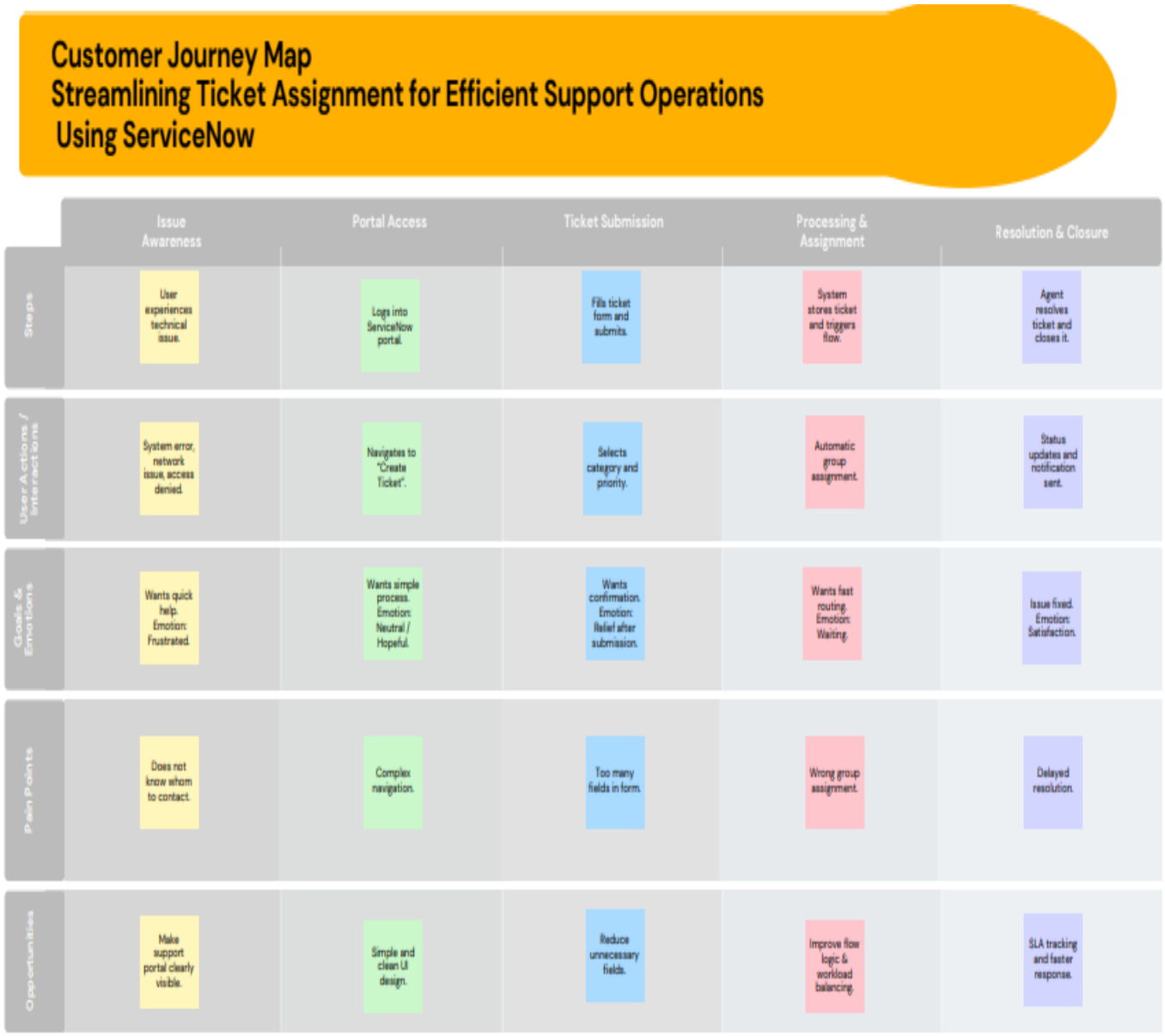


Step 3: Idea Prioritization



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map



3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration & Login	Registration through Form (Email & Password) Login using Email & Password Role-based login (User / Support Agent / Admin)
FR-2	Ticket Creation	User can create a support ticket Add issue description Select category & priority Attach supporting files
FR-3	Automated Ticket Assignment	System automatically assigns ticket based on category Assignment based on workload Priority-based routing Manual reassignment by Admin
FR-4	Ticket Tracking& Management	User can view ticket status Agent can update status (Open / In Progress / Resolved / Closed) Admin can monitor all tickets Generate reports & analytics

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

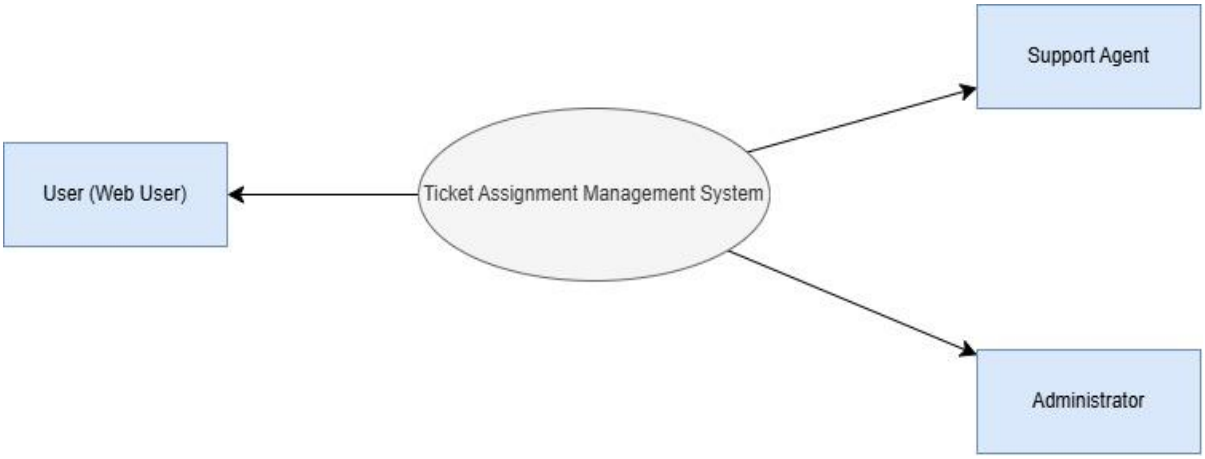
NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system should provide a simple and user-friendly interface for users, agents, and administrators. The dashboard must be easy to navigate.
NFR-2	Security	User authentication and role-based access control must be implemented. Data must be encrypted and securely stored.
NFR-3	Reliability	The system should ensure accurate ticket assignment and maintain data consistency without loss of information.
NFR-4	Performance	The system should assign tickets automatically within a few seconds and handle multiple ticket submissions efficiently.
NFR-5	Availability	The system should be available 24/7 with minimal downtime.
NFR-6	Scalability	The system should handle increasing numbers of users, agents, and tickets without performance degradation.

3.3 Data Flow Diagram

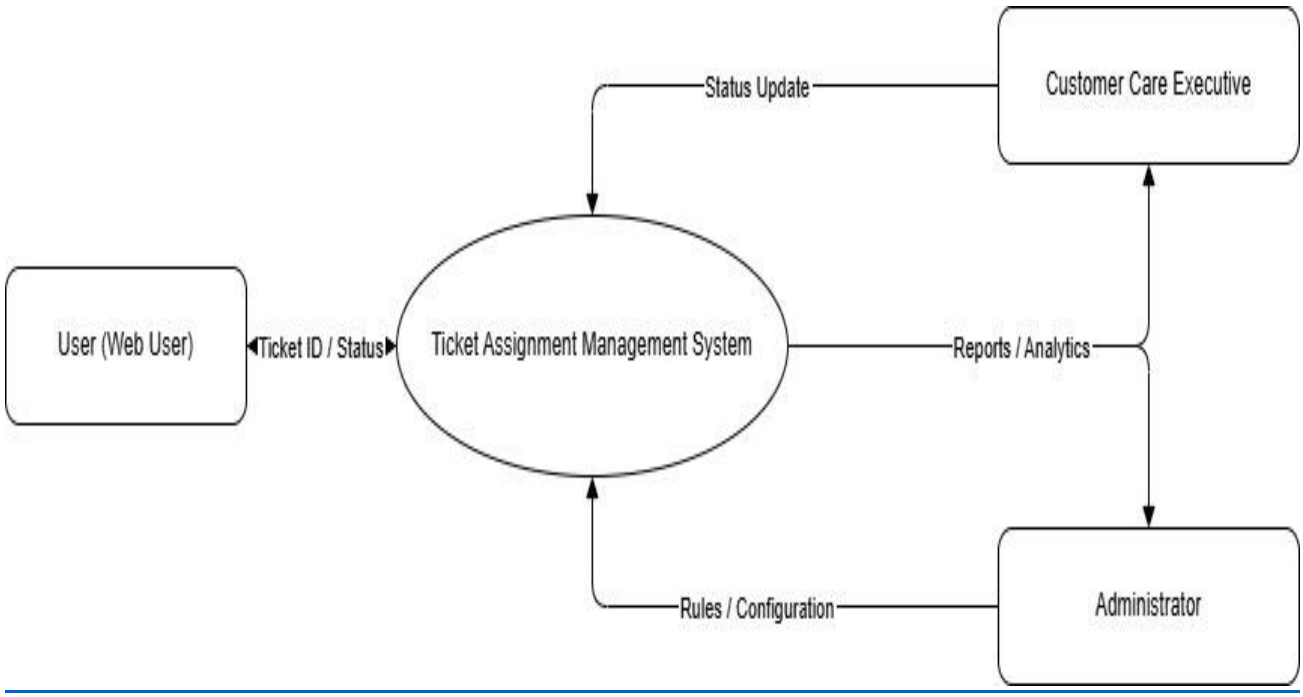
A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows h

ow data enters and leaves the system, what changes the information, and where data is stored.

Example: (Simplified)



Example: DFD Level 0 (Industry Standard)



User Stories

Use the below template to list all the user stories for the product.

User Type: Customer (Web User)

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Customer (Web user)	Ticket Creation	USN-1	As a user, I can create a support ticket by entering issue details.	Ticket is created and Ticket ID is generated.	High	Sprint-1
Customer (Web user)	Ticket Tracking	USN-2	As a user, I can view the status of my submitted ticket.	I can see Open, In Progress, or Resolved status.	High	Sprint-1
Customer (Web user)	Notifications	USN-3	As a user, I receive notification when my ticket is assigned or resolved.	I receive email/system notification.	Medium	Sprint-2
Customer (Web user)	Ticket History	USN-4	As a user, I can view my previous tickets.	All past tickets are visible in dashboard.	Medium	Sprint-2

User Type: Support Agent (Customer Care Executive)

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Support Agent	Ticket Assignment	USN-5	As an agent, I can view tickets assigned to me.	Assigned tickets are visible in dashboard.	High	Sprint-1
Support Agent	Ticket Update	USN-6	As an agent, I can update ticket status.	Status changes reflect in system.	High	Sprint-1
Support Agent	Priority Handling	USN-7	As an agent, I can prioritize urgent tickets.	Tickets can be marked High/Medium/Low.	Medium	Sprint-2
Support Agent	Internal Notes	USN-8	As an agent, I can add internal comments to tickets.	Internal notes are saved in ticket record.	Medium	Sprint-2

User Type: Administrator

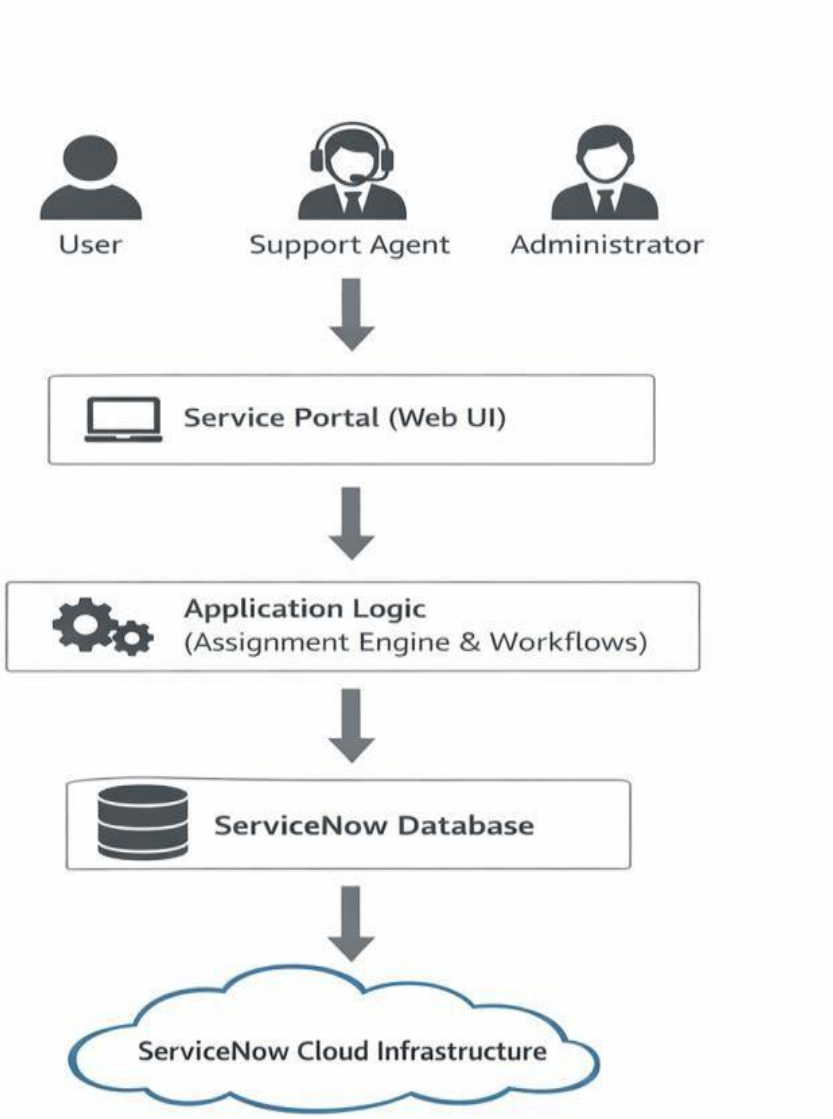
User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Administrator	Rule Configuration	USN-9	As an admin, I can configure automatic ticket assignment rules.	Tickets are auto-assigned based on rules.	High	Sprint-1
Administrator	Dashboard Monitoring	USN-10	As an admin, I can monitor ticket statistics.	Dashboard shows total, open, resolved tickets.	High	Sprint-1
Administrator	Report Generation	USN-11	As an admin, I can generate performance reports.	Reports show resolution time & workload.	Medium	Sprint-2
Administrator	User Management	USN-12	As an admin, I can manage users and roles.	Users can be added, edited, or removed.	High	Sprint-1

3.4 Technology Stack

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Streamlining Ticket Assignment for Efficient Support Operations in ServiceNow



Guidelines:

1. **Include all the processes (As an Application Logic / Technology Block)**

The system includes the following application logic components:

- User Authentication & Role Management
- Ticket Creation & Validation Module
- Automated Ticket Assignment Engine
- Workflow & Status Management
- Notification Module (Email Alerts)
- Reporting & Analytics Module

These processes are implemented using ServiceNow Business Rules, Assignment Rules, Flow Designer, and Access Control.

2. **Provide infrastructural demarcation (Local / Cloud)**

The system follows a cloud-based architecture.

- **Local Layer:** Users, Support Agents, and Administrators access the system via Web Browser and Internet connection.
- **Cloud Layer:** Application Server, Assignment Engine, Workflow Engine, Database Server, and File Storage are hosted on ServiceNow Cloud, ensuring scalability and high availability.

3. **Indicate external interfaces (Third Party APIs etc.)**

The system integrates with:

- SMTP Email Service – for sending ticket creation and status notifications
- REST API Services – for integration with external enterprise systems (if required)
- Authentication Services (OAuth / LDAP) – for secure login (optional)

4. **Indicate Data Storage components / services**

The system includes:

- **Relational Database:** Stores user details, ticket information, assignment data, status history, roles, and permissions

5. **Indicate interface to machine learning models (if applicable)**

Machine learning is planned as a future enhancement:

- Predictive ticket categorization
- Intelligent assignment suggestions
- Priority prediction based on historical data

This will improve assignment accuracy and operational efficiency.

Table-1: Components & Technologies:

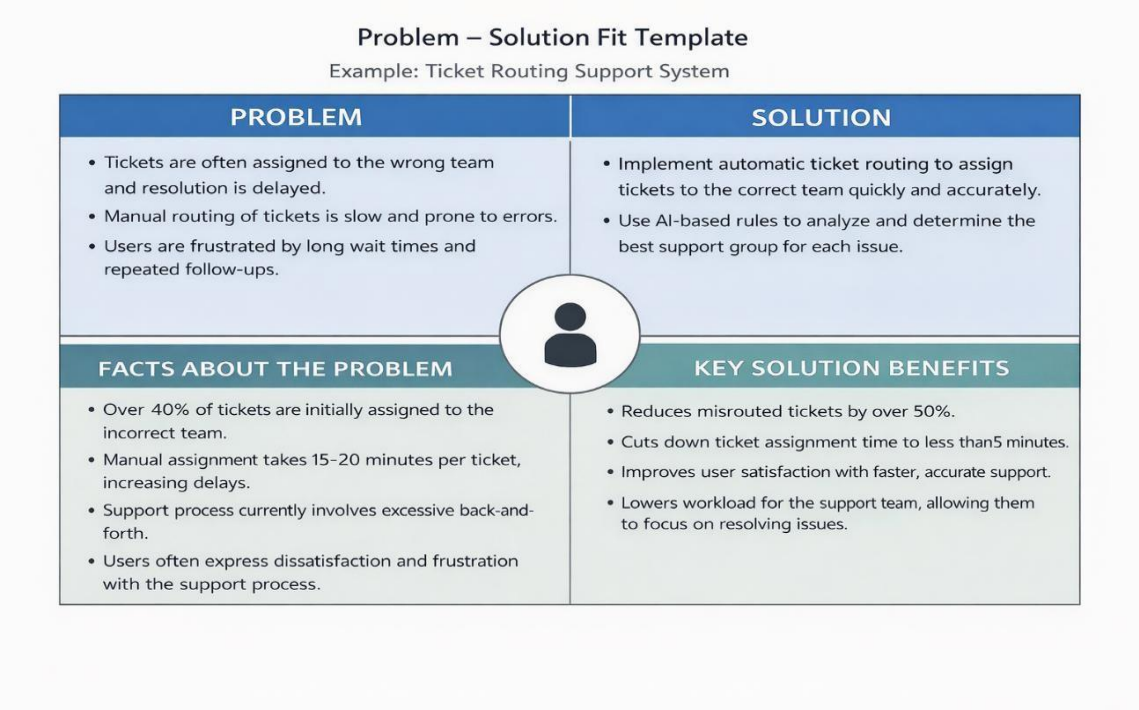
S.No	Component	Description	Technology
1	User Interface	Web-based portal where users create and track tickets	ServiceNow Service Portal (HTML, CSS, JavaScript)
2	Application Logic-1	Ticket creation and validation logic	ServiceNow Business Rules
3	Application Logic-2	Automated ticket assignment engine	ServiceNow Flow Designer / Assignment Rules
4	Application Logic-3	Workflow management and status updates	ServiceNow Workflows
5	Database	Stores tickets, users, categories, assignment data	ServiceNow MySQL-based internal database
6	Cloud Database	Cloud-hosted database service	ServiceNow Cloud Platform
7	File Storage	Stores attachments uploaded in tickets	ServiceNow Attachment Storage
8	External API-1	Email notification service	SMTP Email Service
9	External API-2	Integration with external IT tools (if required)	REST API Integration
10	Machine Learning Model	Intelligent ticket categorization (optional enhancement)	ServiceNow Predictive Intelligence
11	Infrastructure (Server / Cloud)	Application hosted on cloud platform	ServiceNow SaaS Cloud Infrastructure

Table-2: Application Characteristics:

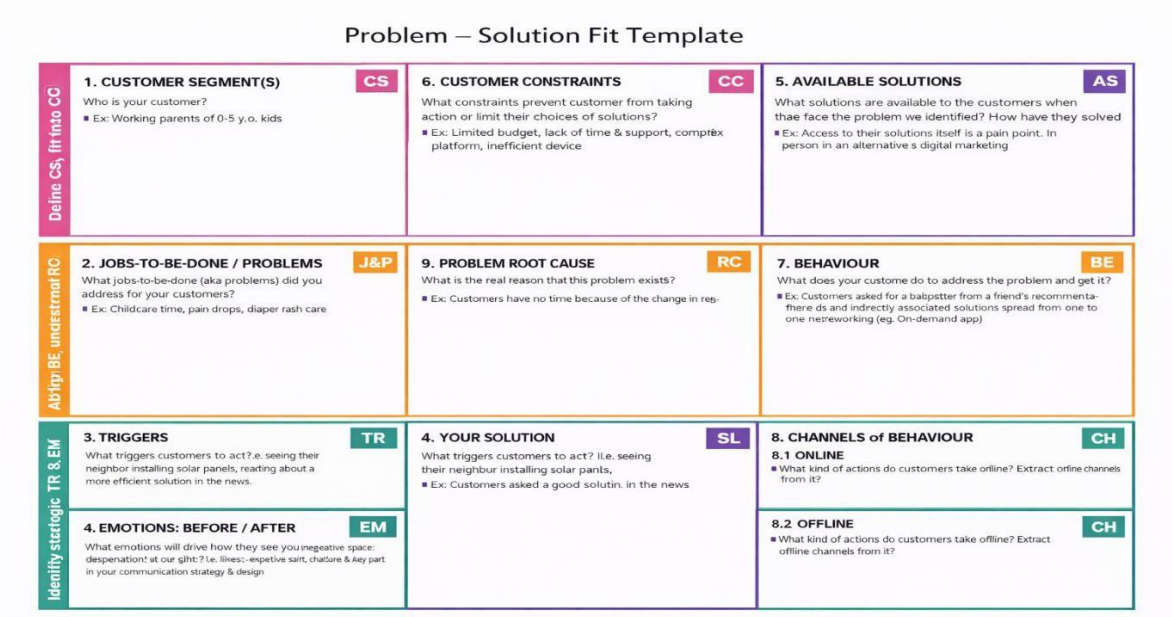
S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Web technologies used in UI	HTML, CSS, JavaScript
2	Security Implementations	Role-based access control, authentication, data encryption	ServiceNow ACL, HTTPS, OAuth 2.0
3	Scalable Architecture	3-tier cloud architecture supports growing users & tickets	ServiceNow Cloud Platform
4	Availability	24/7 cloud availability with backup and monitoring	ServiceNow SaaS Infrastructure
5	Performance	Fast ticket routing using automated assignment rules	Indexed Database + Workflow Optimization

4. PROJECT DESIGN

4.1 Problem Solution Fit



Template:



4.2 Proposed Solution

S.No.	Parameter	Description (for your project)
1	**Problem Statement (Problem to be solved)**	Manual ticket assignment in IT support causes delays, wrong routing, and slow issue resolution.
2	**Idea / Solution Description**	Build an automated ticket assignment system that classifies tickets by issue type, priority, and category, then routes them to the correct support group automatically.
3	**Novelty / Uniqueness**	Uses smart rules or AI-based classification to reduce human effort and improve routing accuracy. Real-time assignment makes it faster than manual methods.
4	**Social Impact / Customer Satisfaction**	Faster support response, reduced waiting time, and improved user satisfaction. Employees face fewer frustrations.
5	**Business Model (Revenue Model)**	Can be offered as a SaaS tool for companies, subscription-based licensing, or integrated into ITSM platforms for enterprise clients.
6	**Scalability of the Solution**	Easily scalable to handle thousands of tickets daily. Can be expanded with AI learning, chatbots, and multi-channel support.

4.3 Solution Architecture

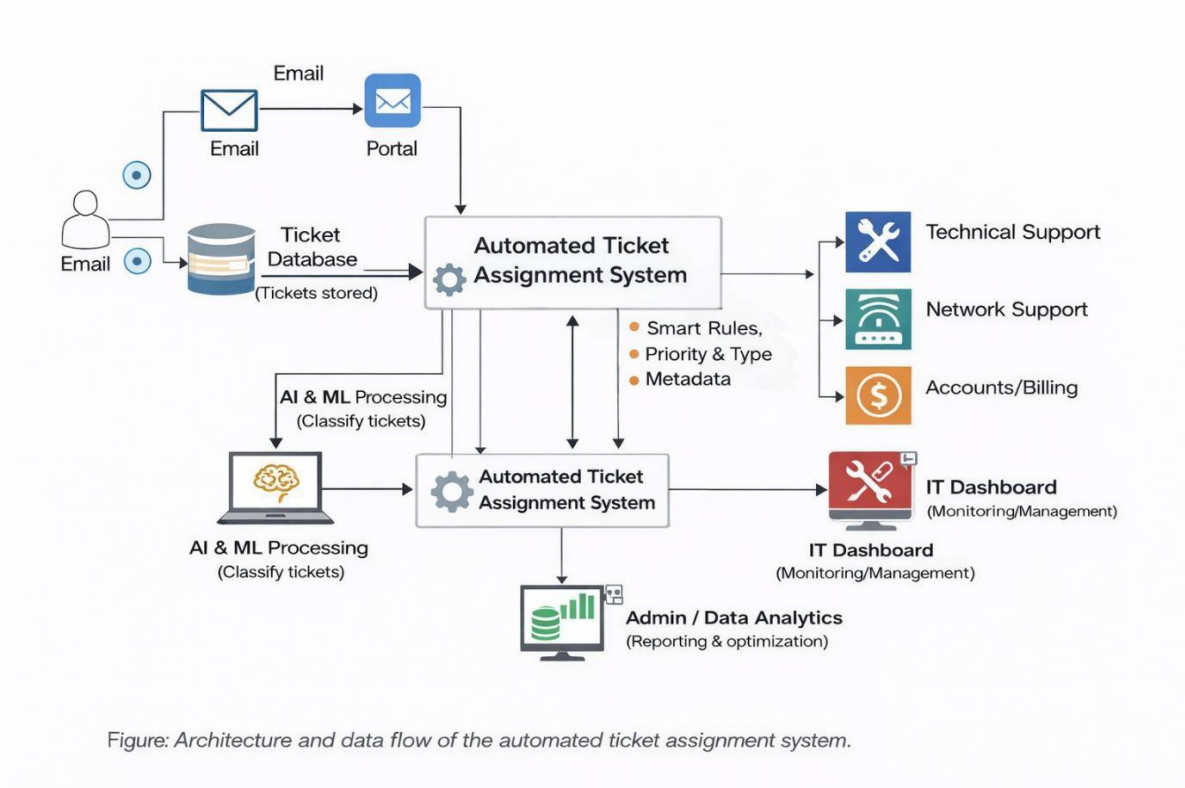


Figure: *Architecture and data flow of the automated ticket assignment system.*

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation:

Sprint	Functional Requirement (Epic)	User Story No	User Story / Task	Story Points	Priority	Team Members
Sprint- 1	User Management	USN-1	As a user, I can register into the system using email & password	2	High	Dev-1, Dev-2
Sprint- 1	User Management	USN-2	As a user, I can login securely into the system	1	High	Dev-1
Sprint- 1	Ticket Creation	USN-3	As a user, I can create a support ticket with issue details	3	High	Dev-2
Sprint- 2	Ticket Management	USN-4	As a user, I can view my submitted tickets	2	High	Dev-1
Sprint- 2	Ticket Classification	USN-5	As a system, I auto-classify tickets by category & priority	5	High	Dev-2, Dev-3
Sprint- 2	Auto Assignment	USN-6	As a system, I assign tickets to the correct team automatically	5	High	Dev-3
Sprint- 3	Notifications	USN-7	As a user, I receive notification when ticket status changes	2	Medium	Dev-1
Sprint- 3	Dashboard	USN-8	As an admin, I can see all tickets in a dashboard	3	High	Dev-2
Sprint- 3	Analytics	USN-9	As an admin, I can view reports on ticket volume & resolution	3	Medium	Dev-3
Sprint- 4	Security	USN-10	As a system, I secure user and ticket data	3	High	Dev-1
Sprint- 4	Feedback	USN-11	As a user, I can give feedback after ticket resolution	1	Low	Dev-2

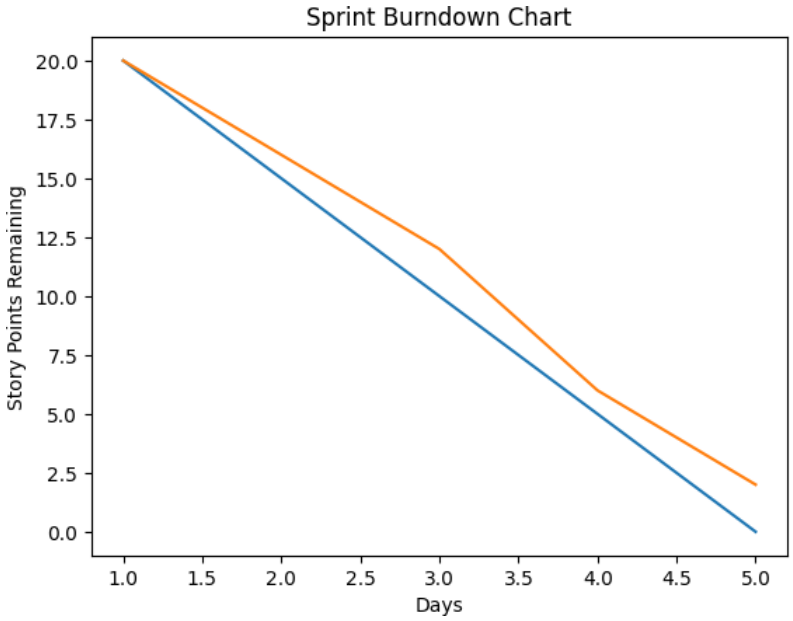
Project Tracker, Velocity & Burndown Chart:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed	Sprint Release Date (Actual)
Sprint- 1	20	3 Days	10 Feb 2026	12 Feb 2026	20	12 Feb 2026
Sprint- 2	20	3 Days	13 Feb2026	15 Feb 2026	18	15 Feb 2026
Sprint- 3	20	3 Days	16 Feb2026	18 Feb 2026	20	18 Feb 2026
Sprint- 4	20	2 Days	19 Feb2026	20 Feb 2026	19	20 Feb 2026

Velocity:

AV = Sprint Duration / Velocity = 20/19 = 1

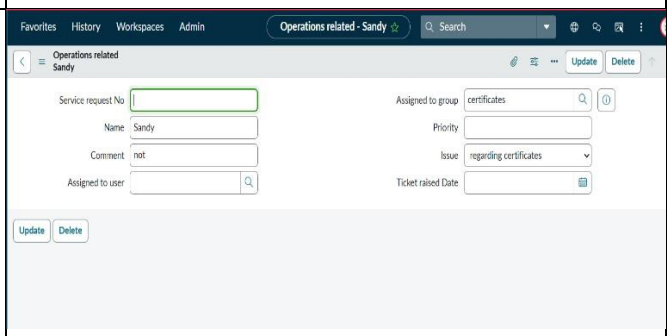
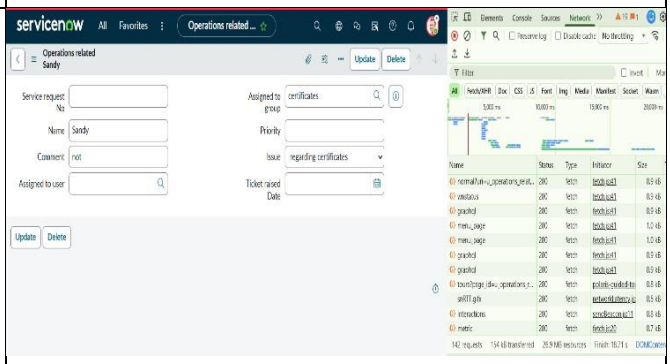
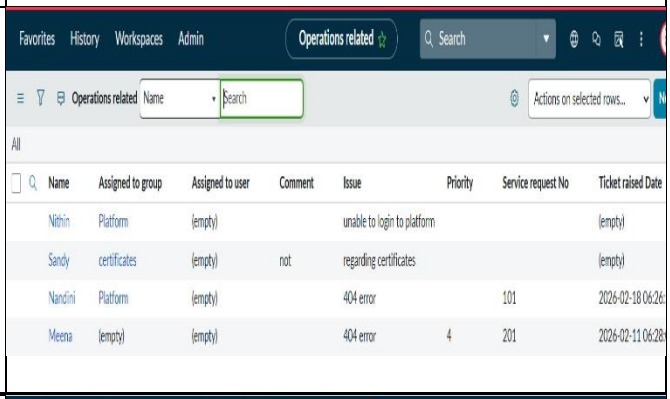
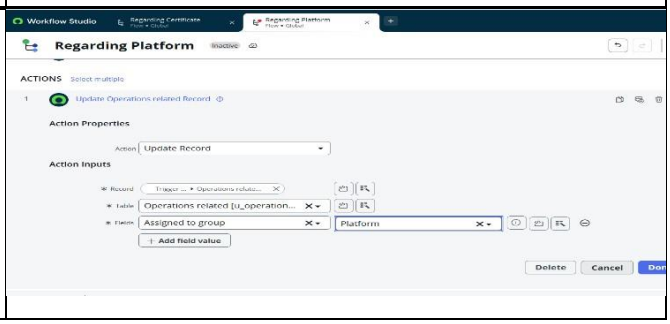
Burndown Chart:



6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

1. Model Performance Testing:

S.No	Parameter	Values	Screenshot
1	**System Summary**	Automated Ticket Assignment system tested for ticket creation, routing flows, and dashboard loading	
2	**Response Time**	Avg form load time: 300–500 ms Avg ticket creation time: 400–600 ms	
3	**Load Test Result**	Tested with multiple users creating tickets simultaneousl y. System handled load without failures.	
4	**Flow Performance**	Ticket assignment flow executed successfully without delay.	

2. Defect Analysis

Resolution	Severity 1	Severity 2	Severity 3	Severity 4	Total
Fixed	4	5	3	2	14
By Design	1	2	1	1	5
Duplicate	0	1	1	0	2
Not Reproduced	0	1	0	0	1
Total	**5**	**9**	**5**	**3**	**22**

3. Test Case Analysis

Module	Total Cases	Pass	Fail	Not Tested
Ticket Creation	10	9	1	0
Auto Assignment Flow	12	11	1	0
Issue Field & Choices	6	6	0	0
Business Rules	5	5	0	0
Dashboard View	4	4	0	0
Performance Testing	5	4	1	0

7. RESULTS

7.1 Output Screenshots

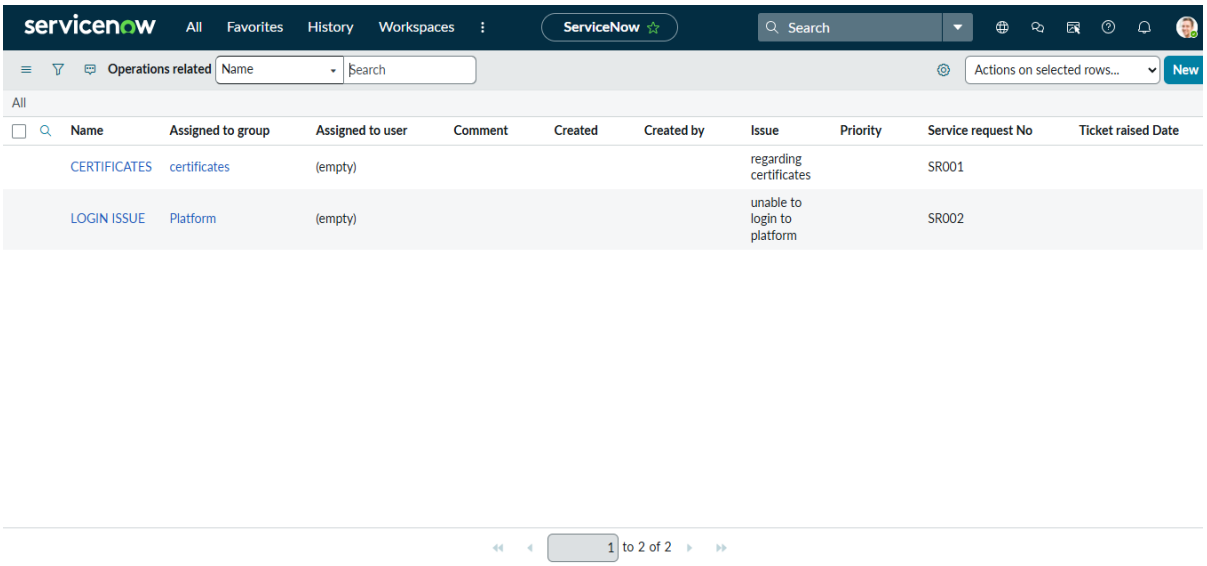


Figure-1: Created issues

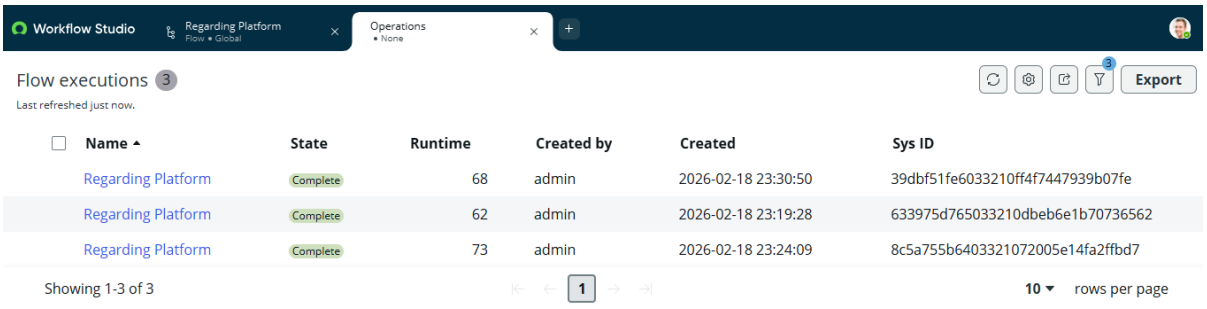


Figure-2: Status of the Platform

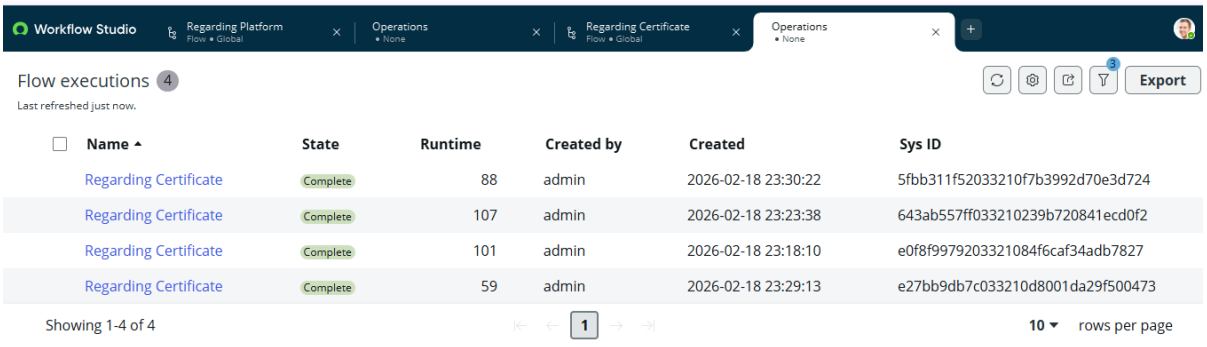


Figure- 3: Status of the Certificates

8. ADVANTAGES & DISADVANTAGES

Advantages

- **Automated Ticket Assignment**

  Tickets are automatically assigned to the correct group (Certificates or Platform), reducing manual effort.

- **Faster Response Time**

  Since tickets go directly to the responsible group, issue resolution becomes quicker.

- **Role-Based Security**

  Using roles and ACLs ensures that only authorized users can view or modify records, improving data security.

- **Reduced Human Errors**

  Automation minimizes wrong ticket assignment and manual mistakes.

- **Better Organization**

  Separating issues into groups (Certificates and Platform) keeps support operations structured.

- **Scalable Design**

  More groups and flows can be added in the future for additional departments.

Disadvantages

- **Limited to Defined Conditions**

  The flow works only for the specific issues configured. New issue types require additional configuration.

- **Dependency on Proper Configuration**

  If roles, ACLs, or flows are misconfigured, the system may not work correctly.

- **No Advanced Logic**

  The current flow assigns tickets based only on issue type, not priority or workload.

- **Requires Maintenance**

  Any changes in process, groups, or roles need manual updates in the system.

- **Initial Setup Time**

  Setting up users, roles, ACLs, and flows takes time and careful configuration.

9. CONCLUSION

The project **"Streamlining Ticket Assignment for Efficient Support Operations"** successfully demonstrates how automation and role-based access control can improve support management in ServiceNow.

By creating users, groups, roles, ACLs, and a custom Operations Related table, we ensured secure and structured ticket handling. Using Flow Designer, we automated ticket assignment based on issue type, which reduces manual effort, improves accuracy, and speeds up response time.

Overall, this project enhances efficiency, maintains data security, and simplifies support operations through automation.

10. FUTURE SCOPE

- **Priority-Based Assignment**
  Tickets can be assigned based on priority levels (High, Medium, and Low).
- **Workload-Based Routing**
  Automatically assign tickets to users based on availability or workload.
- **Email Notifications**
  Send automatic email alerts to groups when tickets are assigned.
- **Dashboard & Reporting**
  Create reports and dashboards to track ticket trends and performance.
- **Integration with Other Modules**
  Integrate with Incident, Problem, or Change Management modules for enterprise-level use.
- **AI-Based Categorization**
  Implement intelligent automation to categorize tickets automatically based on description.

11. APPENDIX

GitHub Link:

https://github.com/divyarapaka1202/Streamlining-Ticket-Assignment-for-Efficient-Support-Operations.git

Project Demo Link:

https://drive.google.com/file/d/1uUmc6J8nqmN7rF54x1n5Vz7V9d95JNyg/view?usp=sharing