

# Capstone Project Overview

Duration: 07 Days

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## INTRODUCTION

### Problem

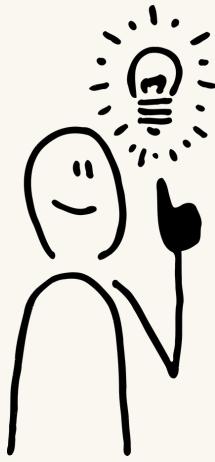
Lack of an automated, centralized ticketing platform results in inefficient issue handling, poor accountability, and limited operational insight :

- Fragmentation & Data Silos: Over-reliance on fragmented emails and spreadsheets leads to lost requests and unreliable data integrity
- Operational Chaos: Absence of automated assignment and escalation causes coordination gaps, response delays, and critical tasks "falling through the cracks".
- SLA & Performance Risks: No mechanism to track Service Level Agreements (SLAs) or team performance, leading to missed deadlines and potential compliance violations.

# Smart Ticket & Issue Management System

## INTRODUCTION

# Solution



- Centralized Ticket Registry: Replaces fragmented spreadsheets with a single, secure ASP.NET Core & Angular source of truth for all IT and service requests.
- High-Velocity Search via Lucene.NET: Empowers support agents and managers to categorize issues instantly using enterprise-grade indexing, drastically reducing ticket lookup time.
- Actionable Dashboards & Reports: Provides real-time visibility into SLA compliance, agent workload, and resolution trends through dynamic data visualizations

## INTRODUCTION

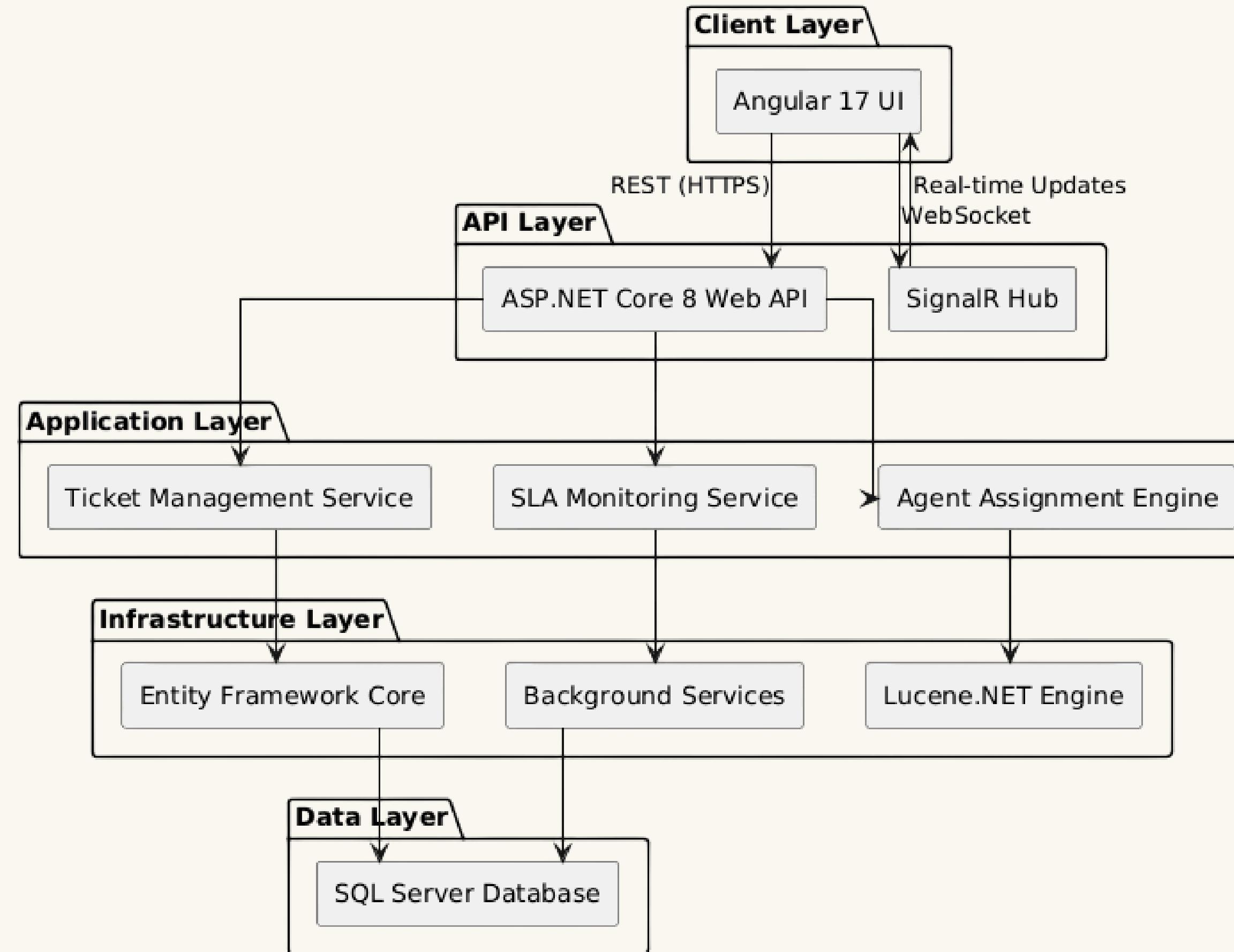
# Tech Stack

- Backend: **ASP.NET Core 8.0** Web API utilizing Clean Decouple Architecture .
- Unit Testing: **xUnit**
- Frontend: **Angular 16+** with **RxJS & Signals** for reactive, high-performance UI.
- Persistent: **EF Core & LINQ Queries**
- Database: **SSMS**
- DX & Code Integrity : Husky automated **Git hooks** to enforce Linting (ESLint) and formatting.
- Security: **JWT-based** Authentication for robust Role-Based Access Control (RBAC).
- Intelligent Search & Ranking Engine: **Lucene.NET 4.8.0-beta** for high-speed, full-text indexing by TF-IDF Rank by Lucene Index

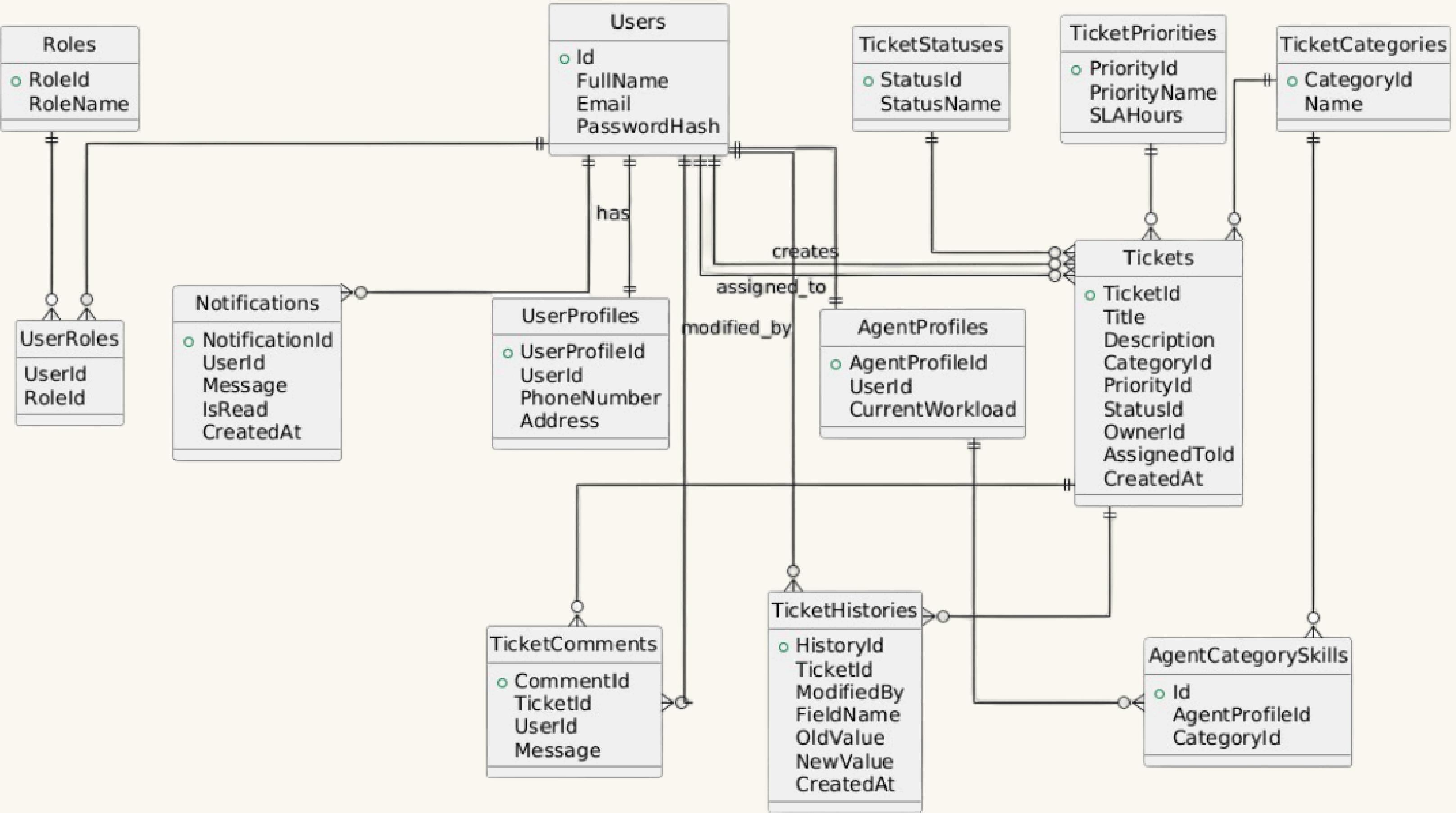
# Why It Matters?

- RBAC & Security Management: Secure JWT-based Authentication with fine-grained Role-Based Access Control (Admin, Manager, Agent, User).
- Intelligent Ticket Registration: Full-lifecycle management (Created → Assigned → InProgress → Resolved) using Reactive Forms with strict validation and enabled with Live Notification Updates.
- Advanced Search (Lucene.NET & TF-IDF): High-performance information retrieval utilizing TF-IDF ranking to prioritize critical keywords, moving beyond basic SQL filters.
- SLA & Escalation Engine: Logic-driven prioritization and escalation rules to identify and mitigate SLA breaches automatically.

# Architecture Diagram

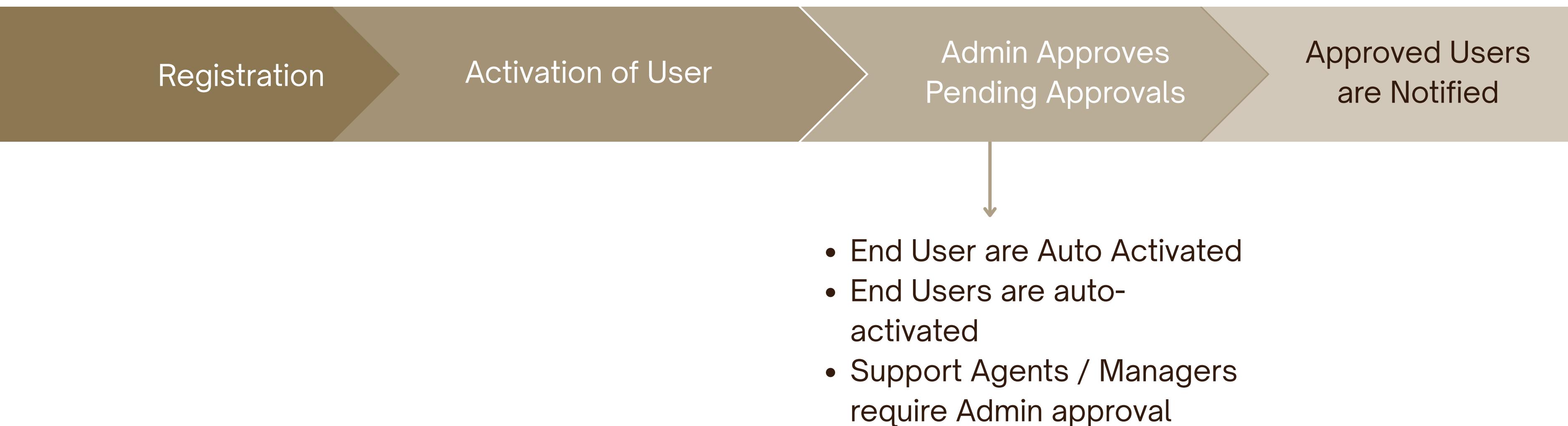


# ER Diagram: Entity Mapping<>



# Application Flow

## User Registration & Approval



# Application Flow

## Ticket Creation

Raise a Ticket

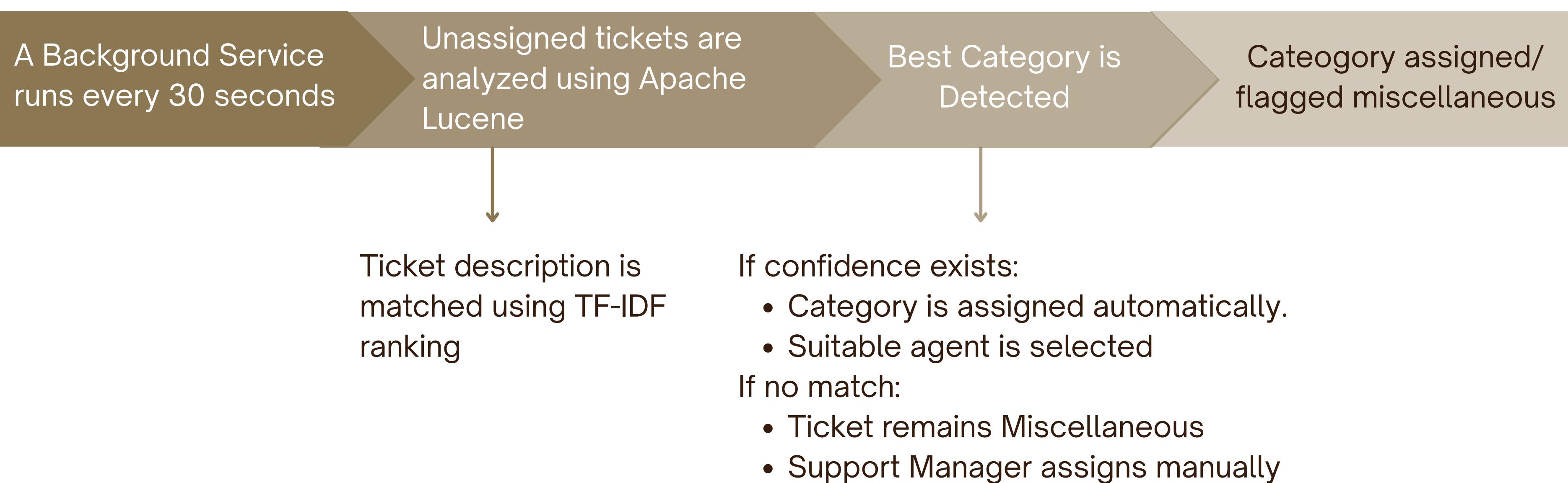
Owner is extracted  
securely from JWT

Status = Created  
Category = Categorized /  
Miscellaneous

Controlled Overy  
by Assigned Agent

# Application Flow

## Lucene Categorization



# Application Flow

## Agent Auto Assignment

Agent skills are mapped  
to ticket categories

Agent with least  
workload is selected

Ticket status changes  
to Assigned

History entry is  
created for audit



## Smart Ticket

----- ISSUE MANAGEMENT SYSTEM -----

### Create Organization Account

Join your team's support ecosystem

First Name\*  Last Name\*

Work Email Address\*

Password\*  Confirm Passw... 

---

PROFESSIONAL DETAILS

 Organizational Role\* 

 Contact Number

Already part of the system? [Sign In](#)



# Smart Ticket

----- ISSUE MANAGEMENT SYSTEM -----

## Login

Secure access to your support dashboard

 Work Email\*

 Password\* 

SIGN IN

---

Need a new organization account? [Get Started](#)

User Portal  
Smart Ticket System

+ Create Ticket

Dashboard

My Tickets

My Metrics

## User Dashboard

### My Support Board

Track your requests and monitor real-time progress

FOCUS ON: Critical High Medium Low

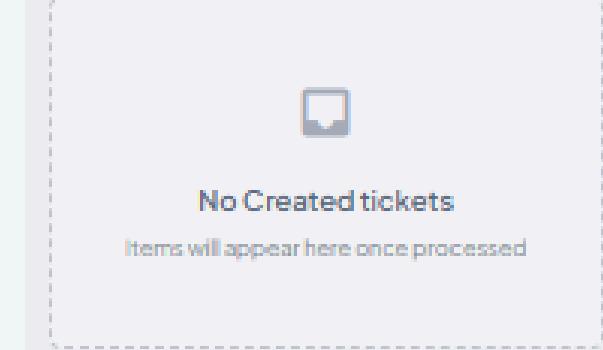
1 TOTAL VOLUME

1 ACTION REQUIRED

0 INITIAL QUEUE

CREATED

0

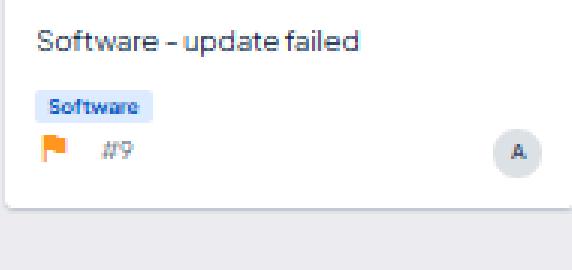


No Created tickets

Items will appear here once processed

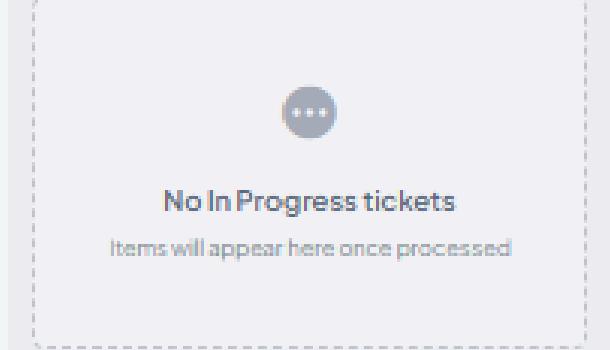
ASSIGNED

1



IN PROGRESS

0

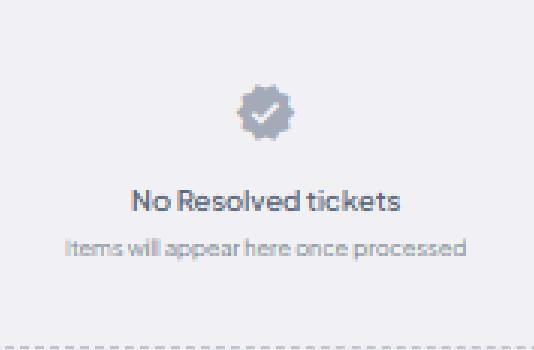


No In Progress tickets

Items will appear here once processed

RESOLVED

0

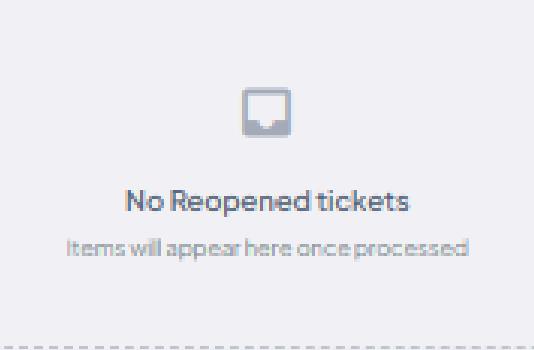


No Resolved tickets

Items will appear here once processed

REOPENED

0



No Reopened tickets

Items will appear here once processed

[+ Create Ticket](#)

## User Dashboard

### Create New Issue

Submit a request to the support team

[Cancel](#)[Create Issue](#)

Dashboard

My Tickets

My Metrics

Summary \*

Briefly describe the problem

0/200

Priority \*

Description \*

Explain the issue in detail...

Reporter

user1@test.com

User Portal  
Smart Ticket System

+ Create Ticket

Dashboard

My Tickets

My Metrics

## User Dashboard



Smart Ticket System / #9 On Track

### Software - update failed

#### Description

User reported an issue regarding update failed. Auto-generated seed #9.

#### Status

✓ Assigned

#### Priority

Medium

#### PEOPLE

##### Assignee

Agent 6  
agent6@test.com

##### Reporter

You (Me)

#### DETAILS

##### Category

Software

##### Created At

Jan 4, 2026, 12:17:51AM

##### Updated At

##### Due Date

#### Activity

Comments History

Add a comment...

Save Comment



No comments yet. Be the first to comment!

Logout

User Portal  
Smart Ticket System[+ Create Ticket](#)

Dashboard

My Tickets

My Metrics

## ≡ User Dashboard



Smart Ticket System / #51

On Track

## Wifi not working

## Description

wifi is not working

## Status

Created

## Priority

Medium

## PEOPLE

## Assignee

Unassigned

## Reporter

You (Me)

## DETAILS

## Category

Uncategorized

## Created At

Jan 7, 2026, 3:33:21AM

## Updated At

## Due Date

Jan 8, 2026, 3:33:21AM

## Activity

[Comments](#)   [History](#)

Add a comment...

[Save Comment](#)

No comments yet. Be the first to comment!

Logout

User Portal  
Smart Ticket System

+ Create Ticket

Dashboard

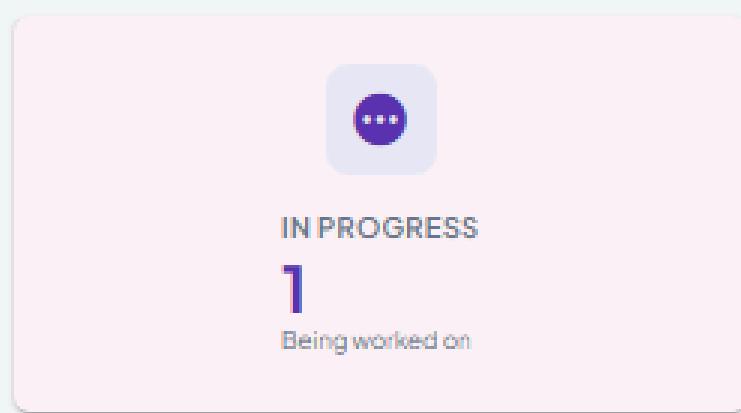
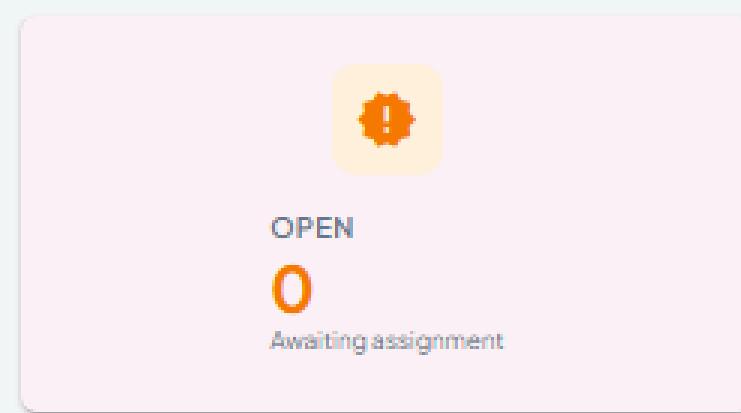
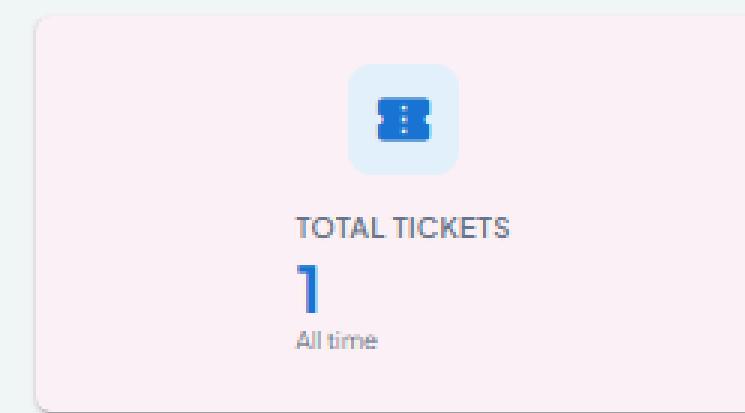
My Tickets

My Metrics

## User Dashboard

## Ticket Analytics

Monitor your ticket performance and trends



## Status Distribution



Assigned

1(100%)

## Priority Distribution



## Category Breakdown

Software  
1 tickets

## Recent Activity

#9 - Software - update failed

1/4/26, 12:17 AM

Assigned

Medium

Logout

Agent Console Support Operations

Dashboard

Assigned Tickets 2

All Tickets

Analytics

## ≡ Agent Workspace

## Agent Work Board

Focus on your workload - Drag to change priority

ACTIVE FILTERS: Critical High Medium Low

 3  
ASSIGNED TO ME 2  
ACTIVE TASK 1  
RESOLVED

CRITICAL

HIGH

MEDIUM

LOW

0

0

1

1



No Critical tickets

Items will appear here once processed



No High tickets

Items will appear here once processed

Software - update failed

Software Assigned

#17

Database - query timeout

Database Assigned

#44

Agent Console Support Operations

Dashboard

 Assigned Tickets 2

All Tickets

Analytics

## ≡ Agent Workspace



Smart Ticket System / #17 On Track

## Software - update failed

## Description

User reported an issue regarding update failed. Auto-generated seed #17.

Status

In Progress

Priority

Low

PEOPLE

Assignee

Agent1

Reporter

User18

DETAILS

Category

Software

Created At

Jan 2, 2026, 12:17:51AM

Updated At

Due Date

Update Ticket

You have unsaved changes

## Activity

Comments

History

Add a comment...



Save Comment



Logout

Agent Console Support Operations

Dashboard

2 Assigned Tickets

All Tickets

Analytics

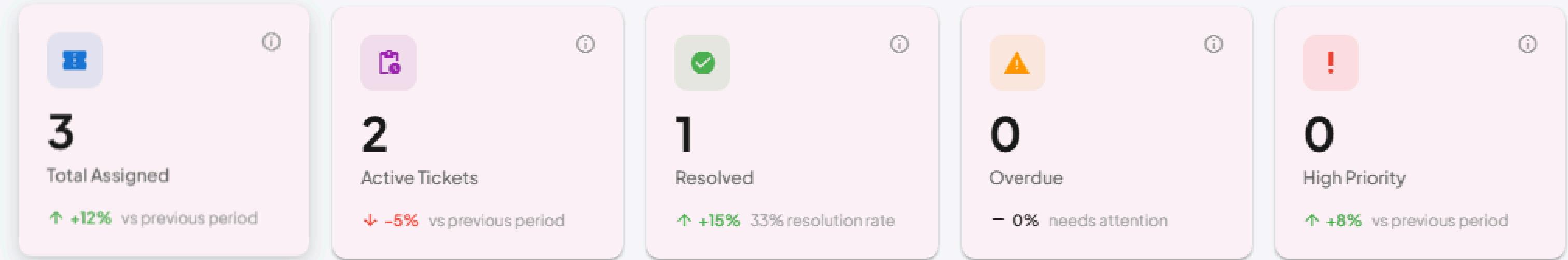
## Agent Workspace

### Performance Analytics

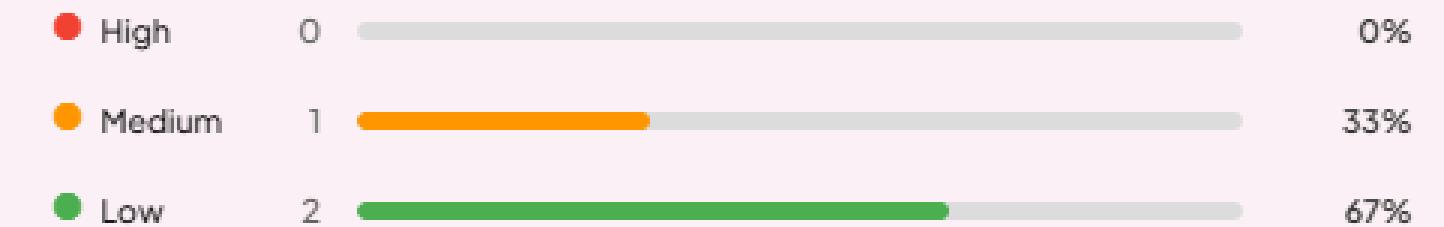
Track your ticket resolution performance and workload metrics

All Time

Refresh



#### Priority Distribution



#### Status Overview



#### Performance Indicators

Logout

Manager Portal  
Support Management

Dashboard

All Tickets

SLA Rules

Analytics

## Support Manager Dashboard

### Manager Support Board

Global oversight - Drag to update status

FILTER PRIORITY: Critical High Medium Low **50**  
TOTAL VOLUME **0**  
UNASSIGNED **42**  
ACTIVE TICKETS

CREATED

ASSIGNED

IN PROGRESS

RESOLVED

REOPENED

Access &amp; Accounts - permission denied

Access &amp; Accounts

#4

Software - update failed

Software

#9

Security - suspicious login

Security

#15

No Created tickets

Items will appear here once processed

No In Progress tickets

Items will appear here once processed

Network - vpn not connecting

Network

#13

Access &amp; Accounts - reset password

Access &amp; Accounts

#16

Network - vpn not connecting

Network

#22

Items

Logout

Manager Portal  
Support Management

Dashboard

All Tickets

SLA Rules

Analytics

## ≡ Support Manager Dashboard

### Manager Support Board

Global oversight - Drag to update status

FILTER PRIORITY:

**50**  
TOTAL VOLUME **0**  
UNASSIGNED **42**  
ACTIVE TICKETS

**CREATED** 0

No Created tickets

Items will appear here once processed

**ASSIGNED** 22

Access & Accounts - permission denied

#4 A

Software - update failed

#9 A

Security - suspicious login

#15 A

Software - update failed

**IN PROGRESS** 0

No In Progress tickets

Items will appear here once processed

**RESOLVED** 8

Network - vpn not connecting

#13 A

Access & Accounts - reset password

#16 A

Network - vpn not connecting

#22 A

Software - app crash

**REOPENED**

Items

Logout

## ≡ Support Manager Dashboard



Dashboard

All Tickets

SLA Rules

Analytics

## ← SLA Configurations

PRIORITY LEVEL	RESOLUTION TARGET	ACTION
Critical	4 hrs	Update
High	8 hrs	Update
Medium	24 hrs	Update
Low	72 hrs	Update

Agent Console Support Operations

Dashboard

Assigned Tickets

All Tickets

Analytics

## Agent Workspace



Smart Ticket System / #17 On Track

### Software - update failed

#### Description

User reported an issue regarding update failed. Auto-generated seed #17.

Update Ticket

#### Activity

[Comments](#) [History](#)

Add a comment...

Save Internal Comment



Jan 7, 2026, 3:29:54AM

hey



Status

In Progress

Priority

Medium

PEOPLE

Assignee

Agent1

agent1@test.com

Reporter

User18

user18@test.com

DETAILS

Category

Software

Created At

Jan 2, 2026, 12:17:51AM

Updated At

Jan 7, 2026, 3:30:21AM

Due Date

Logout

Agent Console Support Operations

Dashboard

Assigned Tickets

All Tickets

Analytics

## Agent Workspace



Smart Ticket System / #17

### Software - update failed

#### Description

User reported an issue regarding update failed. Auto-generated seed #17.

Update Ticket

#### Activity

[Comments](#) [History](#)

System

1/7/26, 3:30AM

Status changed from [Assigned](#) to [In Progress](#)

Status

In Progress

Priority

Medium

PEOPLE

Assignee

Agent1

agent1@test.com

Reporter

User18

user18@test.com

DETAILS

Category

Software

Created At

Jan 2, 2026, 12:17:51AM

Updated At

Jan 7, 2026, 3:30:21AM

Due Date

Logout

## User Administration

### User Administration

Orchestration & real-time activity

**20**

END USERS

**15**

AGENTS

**7**

MANAGERS



#### Recent Role Requests

User	Role	Date	Action
harshiniannapareddy44@gmail.com	Manager	1:07 AM	<input checked="" type="checkbox"/>



#### System Activity Audit



New user registered:

Harshini Annapareddy (harshiniannapareddy44@gmail.com) - Requires approval

Jan 7, 2026, 1:07:10 AM [New](#)

New user registered:

Yuva Annapareddy (harshini@gmail.com) - Requires approval

Jan 7, 2026, 12:43:41AM [New](#)

## ≡ User Administration

## All Users

43 Users

Search users

Refresh

EMAIL	FULL NAME	ROLE	STATUS	JOINED
agent10@test.com	Agent 10	SupportAgent	Active	Jan 7, 2026
agent11@test.com	Agent 11	SupportAgent	Active	Jan 7, 2026
agent12@test.com	Agent 12	SupportAgent	Active	Jan 7, 2026
agent13@test.com	Agent 13	SupportAgent	Active	Jan 7, 2026
agent14@test.com	Agent 14	SupportAgent	Active	Jan 7, 2026
agent15@test.com	Agent 15	SupportAgent	Active	Jan 7, 2026
agent1@test.com	Agent 1	SupportAgent	Active	Jan 7, 2026
agent2@test.com	Agent 2	SupportAgent	Active	Jan 7, 2026

# Demonstration