AI / Cloud + B2B SaaS Case Study

Designing an AI-Powered Support Triage Assistant

Product/BA Case Study: Internal AI Tool Strategy | Human-in-the-Loop Automation

Technology
AI/ML + LLM

Platform
Cloud-Hosted AI Service

Target Users
Support Agents

Case Study Overview

01

Context & Problem

Manual triage inefficiencies in enterprise B2B SaaS support: slow response, inconsistent data, noisy tickets

02

Objective & AI Strategy

AI-powered triage goals: classify, enrich, suggest priority, improve data quality with human oversight

03

Current vs Future State

Process mapping and workflow transformation from manual to AI-assisted triage

04

Solution Architecture

High-level technical design, functional/non-functional requirements, human-in-the-loop

05

Impact & AI Product Insights

Success metrics (30-40% triage time reduction), BA skills applied, human-in-the-loop AI learnings

01

Context & Problem Definition

Understanding manual triage inefficiencies in enterprise B2B SaaS support

Enterprise Context

B2B SaaS Support Context

Enterprise Customers

High-touch B2B SaaS platform serving enterprise customers with complex use cases and high expectations for support quality

High Support Volume

Significant ticket volume from enterprise customers requiring manual triage, leading to slow response times and operational inefficiencies

Data Quality Issues

Inconsistent ticket categorization makes it difficult for product and engineering teams to prioritize roadmap and quality initiatives

Role & Approach

This case study approaches the problem from a Product/BA for an internal AI tool perspective, focusing on human-in-the-loop automation that enhances rather than replaces human expertise.

Process Mapping
Current vs future state workflows

Requirements
Functional & non-functional specs

AI Strategy
Human-in-the-loop automation

Impact Metrics
Success measurement framework

Problem Analysis

Current Triage Challenges

Manual Process

Agents read and categorize tickets manually, leading to inconsistent classification

Impact: Variable quality, agent-dependent accuracy, slow processing

Incomplete Tickets

Tickets often lack clear reproduction steps, environment info, or business impact

Impact: Back-and-forth with customers, delayed resolution

Poor Data Quality

Inconsistent categorization makes it hard to prioritize roadmap and quality work

Impact: Product/engineering work with incomplete information

Business Impact Assessment

Slow Response Times
Manual triage delays first response

Customer Dissatisfaction
Enterprise customers expect faster service

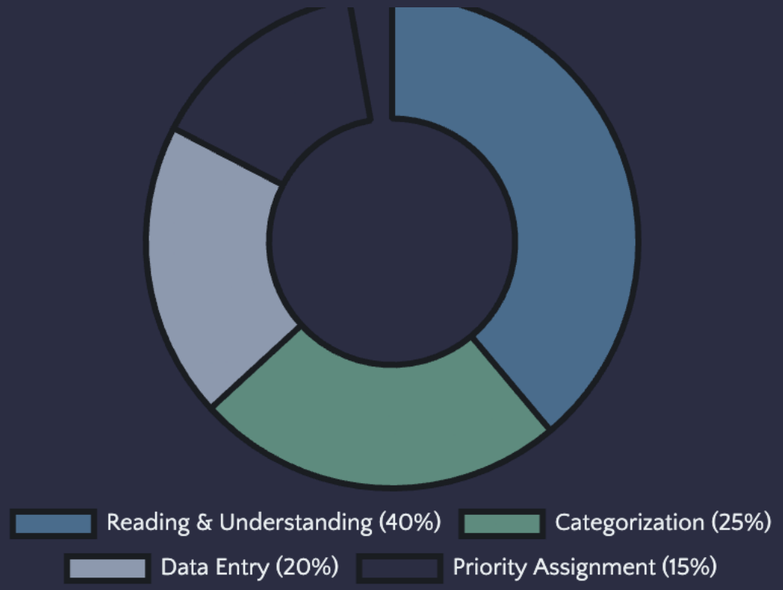
Inconsistent Prioritization
Difficult to identify critical issues

High Operational Costs
Manual processes don't scale efficiently

Impact Quantification

Business Impact Assessment

Triage Time Breakdown



Average: 5-8 minutes per ticket for manual triage, creating significant operational overhead at scale

Slow Response Times Affecting Customer Satisfaction

Manual triage creates bottlenecks during high-volume periods, leading to SLA breaches and customer escalations

Impact: High Enterprise customers have high service expectations

Poor Data Quality Hindering Product Decisions

Inconsistent categorization means product and engineering teams lack reliable data for prioritization

Impact: Medium Difficult to identify trends and prioritize fixes

Operational Inefficiencies and Scaling Challenges

Manual processes don't scale linearly with customer growth, requiring proportional headcount increases

Impact: High Linear cost scaling limits profitability

02

Objective & AI Strategy

Defining AI-powered triage goals and human-in-the-loop approach

Strategic Goals

Project Objectives

01 Automatically Classify Incoming Tickets

Use LLM-based AI service to read and classify incoming tickets by type (Bug/How-to/Feature request) and product area, reducing manual categorization effort.

Target: >80% classification accuracy

02 Extract Key Data & Enrich Tickets

Automatically extract environment details, error codes, and reproduction steps to create structured tickets with complete information.

Reduce back-and-forth by 40%

03 Suggest Severity/Priority Levels

Use configurable rules to propose severity based on impact language (e.g., "cannot log in" = High) for consistent prioritization.

Improve priority consistency by 60%

04 Reduce Manual Triage Time

Enable support agents to review and confirm AI suggestions rather than manually analyzing each ticket from scratch.

Target: 30-40% time reduction

AI Philosophy

AI Strategy & Human-in-the-Loop

AI-as-Tool Philosophy

Frame AI as an assistant that provides suggestions, not an autonomous decision-maker. Support agents retain control and responsibility.

AI Provides Suggestions
Classification, priority, and data extraction recommendations

Human Oversight
Agent reviews and confirms/edits before submission

Learning Loop
Agent corrections improve AI model over time

Gradual Automation Strategy

Start with suggestions only, then gradually increase automation as accuracy improves and trust is built.

1. Phase 1: AI suggestions, agent must approve (100% human review)
2. Phase 2: High-confidence auto-apply, low-confidence manual review
3. Phase 3: Majority automated, exceptions handled by humans

Trust & Accuracy Framework

Measurable Accuracy
Track AI vs human accuracy with clear thresholds

Easy Correction
Simple interface for agents to fix AI mistakes

Clear Fallback
If AI fails, default to manual triage process

03

Current vs Future State

Process mapping and workflow transformation

As-Is Process

Current Triage Flow

The current manual triage process involves 6 steps, each creating opportunities for delays, inconsistencies, and data quality issues.

1

Ticket Arrives via Email/Web Form

Free-text description from customer with variable quality and completeness

2

Level 1 Agent Reads Free-Text Description

Agent interprets customer language, tries to understand issue context and impact

3

Agent Chooses Category/Type Manually

Subjective classification based on agent interpretation and experience level

4

Agent Fills Fields: Product Area, Severity, Environment

Manual data entry with inconsistent detail level and potential for human error

5

Back-and-Forth with Customer if Unclear

Additional requests for information delay resolution and frustrate customers

6

Ticket Escalated to Engineering/PO

Finally routed to appropriate team with potentially incomplete or inconsistent data

To-Be Process

Future AI-Assisted Flow

The AI-assisted flow reduces the process from 6 steps to 4, with AI handling the heavy lifting and agents providing oversight and validation.

1

Ticket Arrives (Email/Web/Chat)

Multi-channel input captured in unified format for AI processing

2

AI Service Reads Text and Analyzes Content

Classifies Type
Bug / How-to / Feature

Suggests Product Area
Module identification

Extracts Environment
OS, browser, version

Proposes Severity
Impact-based priority

3

Agent Reviews and Confirms/Edits Suggestions

Agent validates AI recommendations in review UI, makes corrections if needed, approves final classification

4

Ticket Created/Updated in Jira/Zendesk with Structured Fields

High-quality structured ticket created with consistent formatting and complete information

Transformation Analysis

Process Comparison & Benefits

Current vs Future Metrics

Triage Time per Ticket	5-8 min → **2-3 min**
Classification Consistency	60-70% → **80-90%**
Data Completeness	50-60% → **85-95%**
First Response Time	2-4 hours → **30-60 min**

Key Improvements

Speed Enhancement
AI processes text in seconds vs. minutes of human reading

Consistency Improvement
Standardized classification vs. agent-dependent interpretation

Data Quality Boost
Structured extraction vs. manual entry errors

Agent Productivity
Focus on validation vs. analysis from scratch

Business Value Creation

Faster Response
Improved customer satisfaction

Better Data
Improved product decision-making

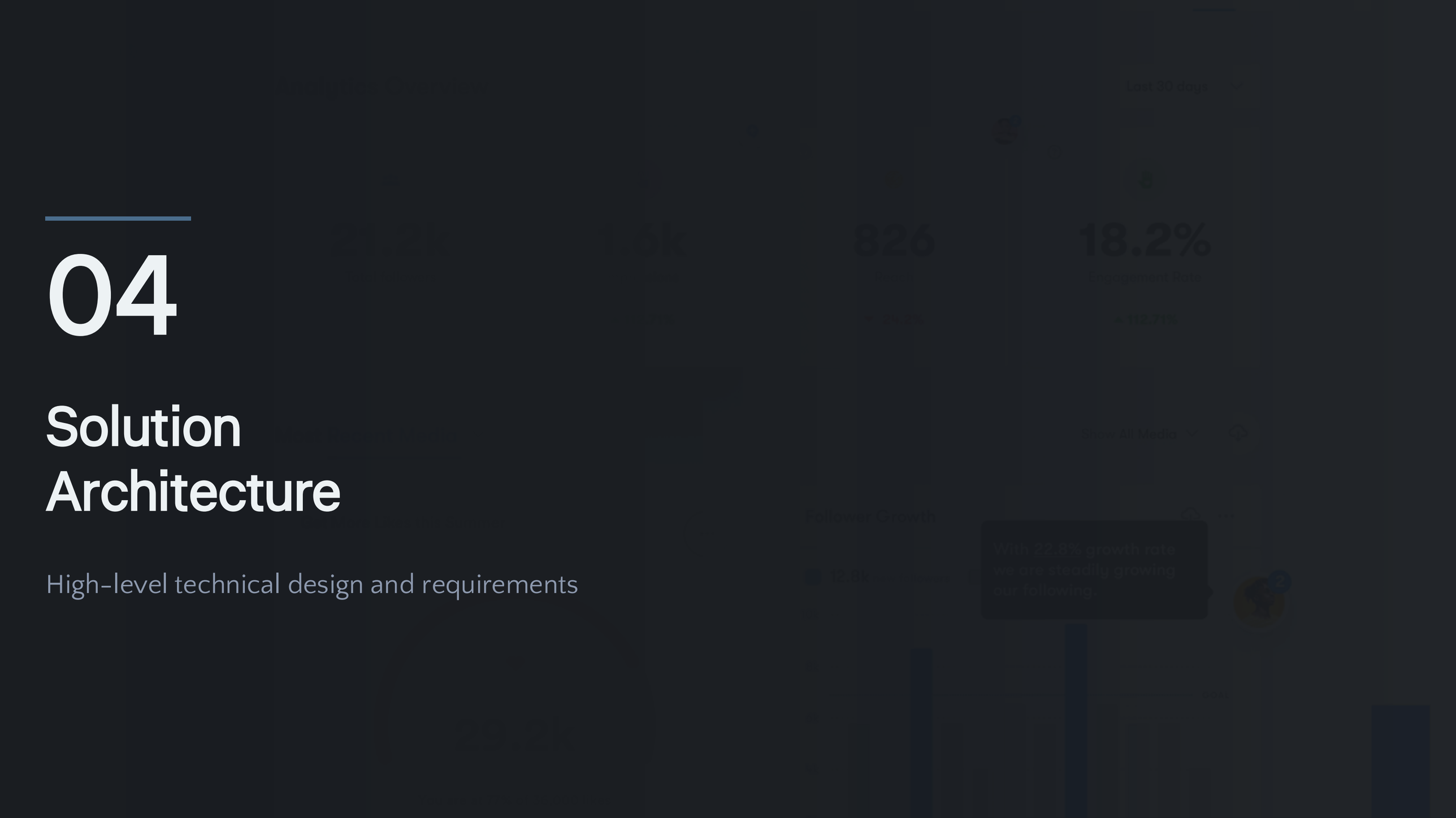
Scalable Operations
Handle volume without linear cost

Continuous Learning
AI improves with each correction

04

Solution Architecture

High-level technical design and requirements



Technical Design

High-Level Architecture

Inputs

Multi-channel ticket sources

- Email Inbox
- Web Support Form
- In-app Chat

Outputs

Structured tickets in systems

- Jira/Zendesk Integration
- Structured Fields
- Type, Category, Module

AI Triage Layer (Cloud-Hosted)

Core AI processing engine with specialized components for different aspects of ticket analysis

Text Classification Model

Powered by LLM or custom classifier to identify ticket type (Bug/How-to/Feature) and category

Entity Extraction

Extracts product area, environment details (OS, browser, version), and account information

Business Logic for Severity

Configurable rules engine to propose priority based on impact language (e.g., "cannot log in" = High)

Human-in-the-Loop

Agent validation layer

- Review UI
- Validation Controls
- Correction Interface

Requirements

Functional Requirements

Core Classification

1. Automatically classify incoming tickets by **type** and **product area**
2. Support for **Bug, How-to, Feature request, Billing** categories
3. Classification accuracy should be **>80%** compared to final agent choice

Data Extraction

4. Extract **affected module/feature** from ticket text
5. Identify **environment details** (production/test, OS, browser)
6. Extract any **error codes** mentioned in ticket text

Severity & Priority

7. Suggest severity using **configurable rules** (e.g., "cannot log in" = High)
8. Business logic considers **business impact language** and keywords
9. Priority rules can be **updated** without code changes

Agent Interface

10. Provide UI for agents to **approve/edit** AI suggestions
11. Show **confidence scores** and explanations for AI recommendations
12. Allow agents to **correct AI mistakes** and provide feedback

Quality Attributes

Non-Functional Requirements

Data Privacy & Security

PII Handling
Personally identifiable information must be protected

Data Anonymization
Customer data anonymized for AI model training if needed

Encryption
All data encrypted in transit and at rest

Accuracy

Classification Threshold
Aim for >80% correct type classification vs final human choice

Confidence Scores
AI provides confidence level for each recommendation

Continuous Learning
Model improves with agent corrections and feedback

Performance

Latency
AI response within X seconds (e.g., <5s)

Throughput
Handle peak ticket volumes without degradation

Availability
99.9% uptime during business hours

Fallback & Reliability

Graceful Degradation
If AI fails, default to manual triage process

Error Handling
Clear error messages and escalation paths

Monitoring
Real-time monitoring of AI performance and accuracy

Concrete Example

Example Input/Output

Sample Input (User Email)

"Since yesterday our sales team can't create new quotes in the EU environment. The 'Create Quote' button does nothing. This is blocking our month-end process. We've tried different browsers but same issue. No error messages. Please help urgently."

Key Information Present

- Timeline: "Since yesterday"
- Affected feature: "Create Quote" button
- Environment: "EU environment"
- Business impact: "blocking month-end process"
- Symptoms: "button does nothing", "no error messages"

AI-Structured Output (Suggested)

Type: Bug

Confidence: 95%

Product Area: Quoting Module

Confidence: 90%

Environment: EU Production

Browser: Not specified

Severity: High

Reason: "blocking business process"

Summary:

"Cannot create new quotes in EU environment; button unresponsive"

05

Impact & AI Product Insights

Measuring success and learnings from human-in-the-loop AI development

Success Measurement

Success Metrics & Targets

Primary KPIs

Average Triage Time

-30-40%

From 5-8 min to 2-3 min

Classification Accuracy

80%+

AI vs final human choice

Time to First Response

-50%

From hours to 30-60 min

Data Quality Improvements

Field Completeness

From 50-60% to 85-95% of fields populated

Classification Consistency

From 60-70% to 80-90% inter-agent agreement

Back-and-Forth Reduction

40% fewer clarification requests to customers

Product Insights Quality

Better data for roadmap prioritization and defect analysis

Customer Satisfaction

Faster response times improve enterprise customer experience

Agent Productivity

Focus on validation instead of analysis from scratch

AI Model Improvement

Human corrections create continuous learning loop

Operational Efficiency

Scale support without proportional cost increase

Professional Capabilities

Skills & Tools Applied

Domain Knowledge

Deep understanding of B2B SaaS support workflows and challenges

- Enterprise support patterns
- Triage workflows and pain points
- Product/engineering data needs

Process Mapping

Current vs future state analysis and workflow design

- As-is process documentation
- To-be workflow design
- Gap analysis and benefits quantification

AI Product Understanding

Knowledge of LLM-based AI services and human-in-the-loop design

- LLM capabilities and limitations
- Human-in-the-loop principles
- AI-as-tool vs replacement strategy

Requirements Documentation

Clear functional and non-functional requirements with acceptance criteria

- Measurable accuracy thresholds and quality attributes

Operations Thinking

Product and operations mindset for internal tool development

- Stakeholder empathy and change management

AI Product Insights

Key Learnings

01

AI as Tool in Human-in-the-Loop Process

How to frame AI as a tool in a human-in-the-loop process, not a replacement by designing systems that augment human expertise rather than substitute it.

Key Insight
Humans must retain agency and control

Application
Agent reviews AI suggestions before final submission

02

Realistic, Measurable Benefits for AI

How to define realistic, measurable benefits for AI in support workflows by focusing on specific metrics tied to operational outcomes.

Key Insight
Benefits must be quantifiable and time-bound

Application
30-40% triage time reduction target

03

Better Data for Product & Engineering

How better-structured support data helps Product Owners and engineers make decisions by providing reliable insights for prioritization and quality improvement.

Key Insight
Quality data drives better decisions

Application
Consistent categorization enables trend analysis

AI-Powered Operations

How human-in-the-loop AI creates operational efficiency and better data for product decisions

30-40% Triage Time Reduction
Through AI-assisted classification and data extraction

High-Quality Structured Data
Consistent categorization enables better product decisions

Human-in-the-Loop Design
AI augments human expertise rather than replacing it