

From Helpdesk to Bedside: Improving Clinical Support Through AI-Enabled Ticket Routing

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INTRODUCTION & OBJECTIVES

In healthcare environments, delays in resolving electronic medical record (EMR) and clinical support tickets can directly impact care delivery. A significant driver of these delays is ticket misrouting, where requests are assigned to the wrong team and must be reassigned multiple times before reaching the appropriate resolver. This creates **unnecessary handoffs, increases resolution time, and delays critical clinical workflows**, leading to frustration for both clinicians and support teams and introducing avoidable delays in patient care.

Today, routing decisions rely heavily on individual judgment. This quality improvement initiative replaces that approach with **data-driven recommendations informed by historical outcomes**.

This project focuses on improving ticket routing accuracy by leveraging historical service data and artificial intelligence. By **analyzing patterns in previously resolved tickets**, an AI-driven decision-support tool can recommend the most appropriate routing destination at the time of ticket creation, reducing the need for reassignment and accelerating time to resolution.

Objectives:

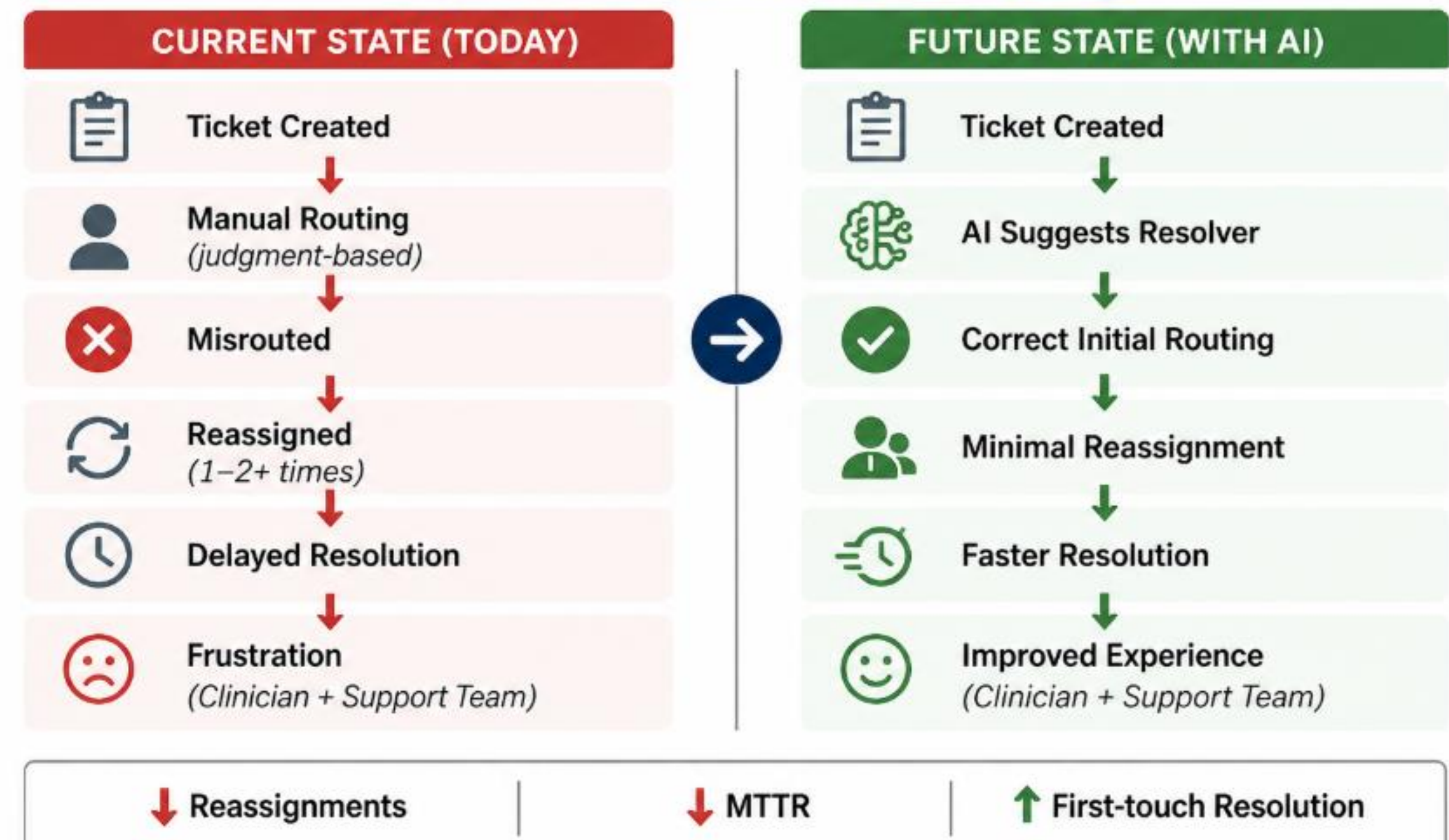
- Reduce ticket reassignment rates by improving initial routing accuracy
- Decrease mean time to resolution (MTTR) for clinical support requests
- Enable faster time-to-first-touch for high-priority tickets
- Improve clinician satisfaction by minimizing delays in IT support
- Position ticket routing as a data-driven, proactive process rather than a manual decision

CLINICAL VIGNETTE

A nurse submits a ticket because medication orders are not scanning in the EMR. The ticket is initially routed to the desktop team. After two reassignments over several hours, the issue reaches the correct team, the Pharmacy team, delaying resolution and impacting patient care. **The technical issue was minor, but the routing delay was not.**

CONCEPT

Impact of AI-Assisted Ticket Routing



METHODOLOGY



This project uses historical helpdesk ticket data to develop a decision-support model for improving ticket routing accuracy. The approach combines **retrospective analysis with a real-time recommendation workflow**.

Data Inputs:

Historical resolved tickets are analyzed to identify routing patterns and outcomes. Key data elements include comparing:

- Ticket descriptions/keywords
- Initial assignment team v. final resolver team
- Number of reassignments
- Priority level
- Mean time to resolution (MTTR)
- Location/Dept./Device

Model Approach:

An AI tool could **analyze historical ticket data** to identify patterns based on successful routing outcomes. The tool would generate a recommended resolver group for new tickets, along with a brief explanation supporting the recommendation. Successful routing would be defined by minimal reassignment and faster resolution times.

The AI recommendation would **support, not replace, human judgment**. For example: "Based on similar past incidents, Pharmacy team resolved 82% of comparable tickets".

Workflow Integration:

At the point of ticket creation, the AI-generated routing recommendation is presented to the helpdesk, who can accept, modify, or override the recommendation before assigning the ticket. This approach embeds AI into the existing workflow, supporting decision-making while maintaining human oversight and accountability.

Feedback Loop:

Final routing outcomes are continuously captured and fed back into the tool to **improve accuracy over time**. Tickets that require reassignment are used to refine future recommendations.

Evaluation Metrics:

Effectiveness of the approach is measured using:

- Reduction in reassignment rate
- Improvement in MTTR
- Increase in first-touch resolution rate
- Post-resolution user satisfaction scores

PROOF OF CONCEPT

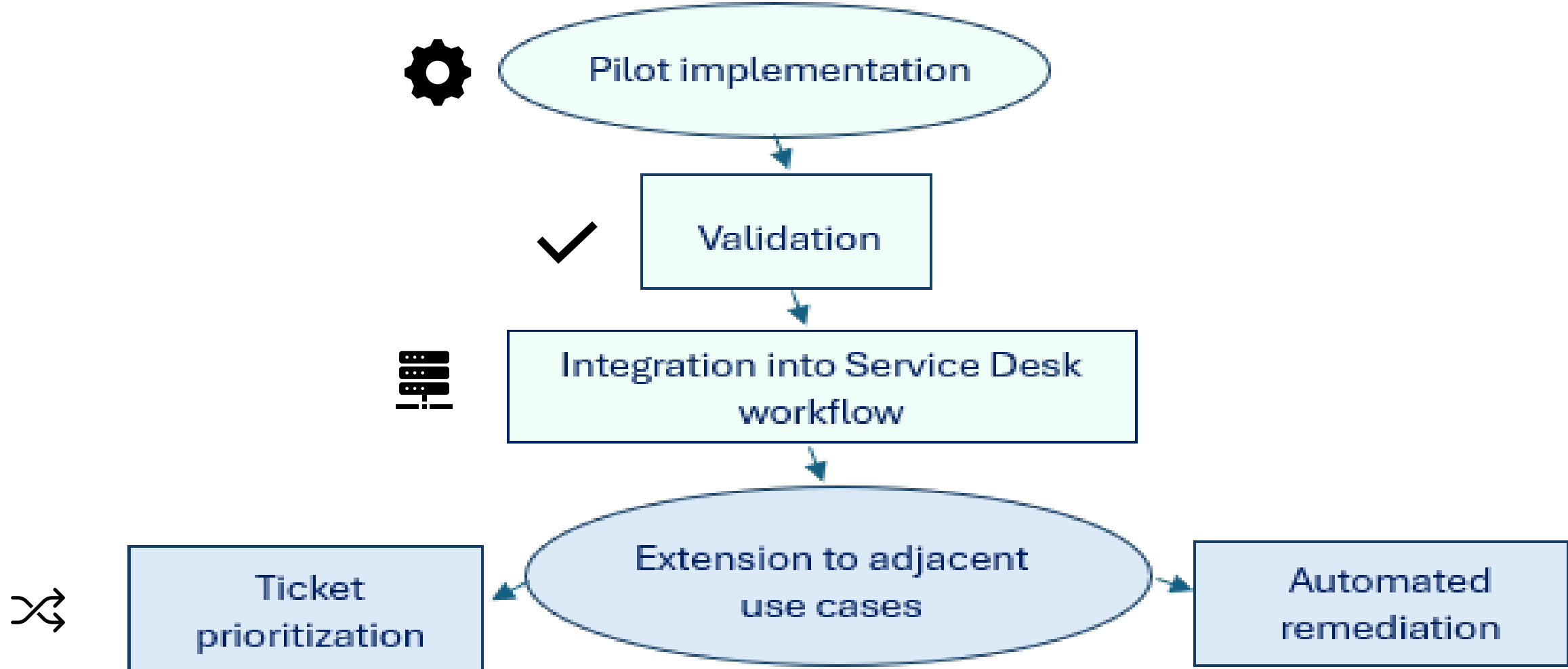
This project demonstrates that **delays in clinical support** are frequently driven by ticket misrouting rather than technical complexity. Misrouted tickets create unnecessary handoffs, extend resolution times, and introduce avoidable frustration for both clinicians and support teams.

By leveraging historical ticket data, an AI-assisted routing approach can improve initial assignment accuracy and reduce the need for reassignment. This approach enhances consistency while maintaining human oversight, making it both practical and low risk to implement.

Improving routing accuracy represents a targeted opportunity to reduce time to resolution without increasing staffing or introducing significant process change. Even incremental gains in routing efficiency can translate into faster, more reliable support.

This is well suited for a proof of concept which would allow for validation of impact and refinement of methodology before a broader rollout.

FUTURE DIRECTIONS ROADMAP



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