

Automation in Healthcare 2024



TARPON
HEALTH

Jeff Means

Agenda

Automation Basics

Introduction to LLMs

Use Case Deep Dive

Lessons Learned



Jeff Means

Jeff is co-founder and CEO of Long Tail Health Solutions. He is an entrepreneur with expertise in healthcare revenue cycle management (RCM), product development, operations management, and the application of the combined traditional and modern technology stack to harvest incremental revenue and cost performance in healthcare administration. Over the past 20 years, Jeff has led projects that delivered over \$1B in client benefits and brought 8 software solutions to market generating enterprise value over \$250M.

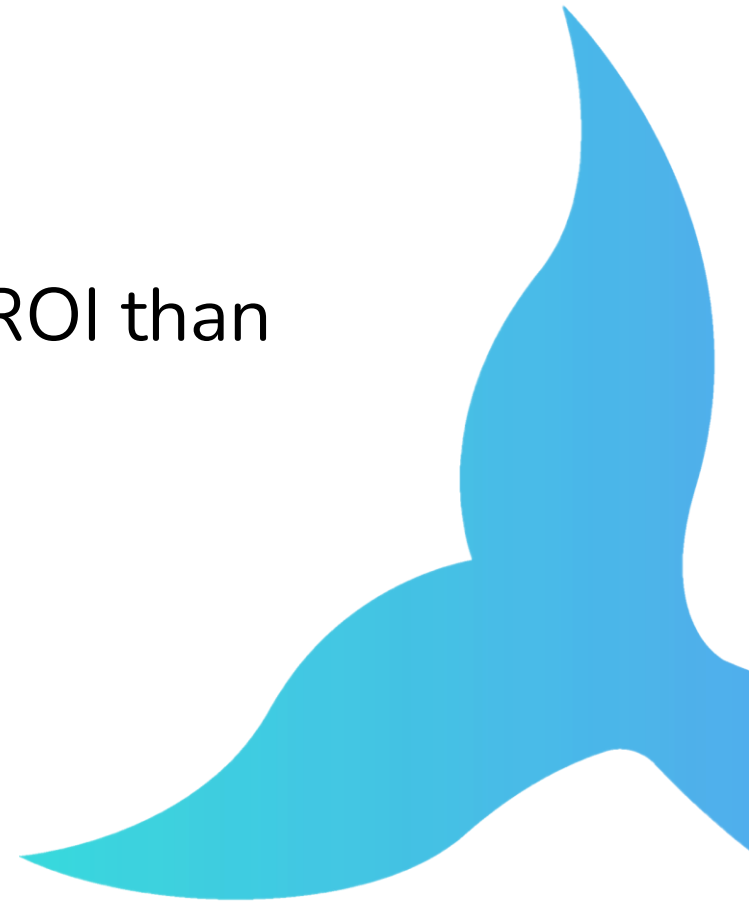
Jeff is a graduate of the United States Military Academy (West Point) with a BS in foreign languages. Jeff also has an MBA from the University of Chicago (Booth). Jeff lives in the Chicago suburbs with his wife Carissa and children Lucas (15) and Lindley (11). Jeff is a veteran, serving in the war on terror in Southwest Asia and Africa.

Problem Statement

Healthcare organizations have invested in automation for years

... however ...

most automation initiatives have delivered less ROI than expected.



Why is scaling difficult?

- Process and case variation
 - Exception handling
- Integration to adjacent processes
 - Systems integration
- Data quality and availability

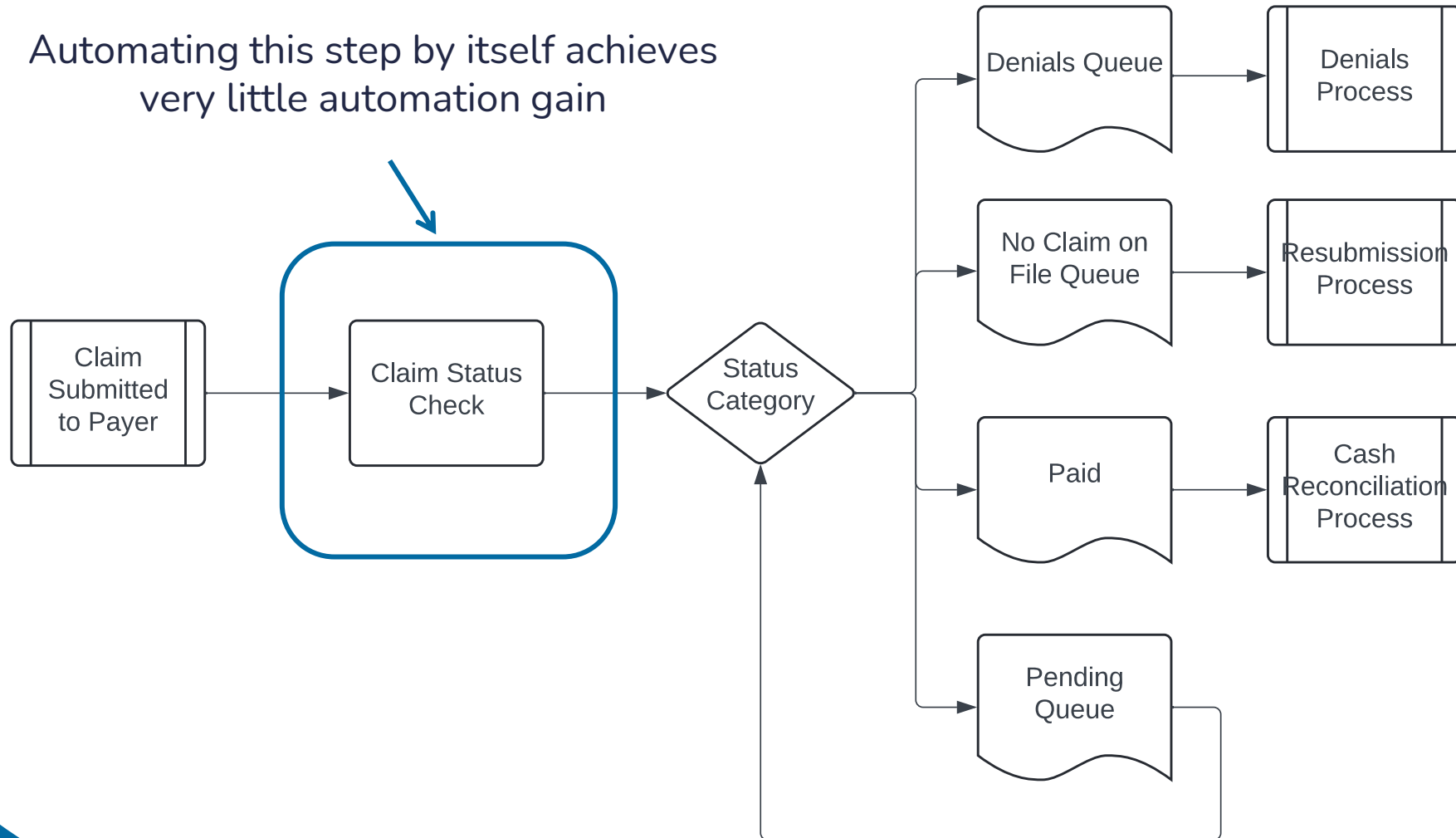


The Goal

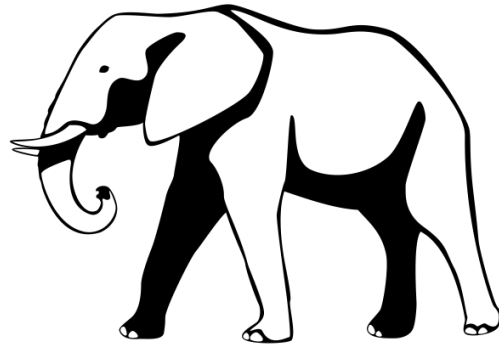
“Automation Gain” is the realized labor savings harvested from the automated activity

Use Case #1: Claim Status Checking

Automating this step by itself achieves very little automation gain



How do you ...



Modern Automation Toolkit

Predictive Analytics & Machine Learning

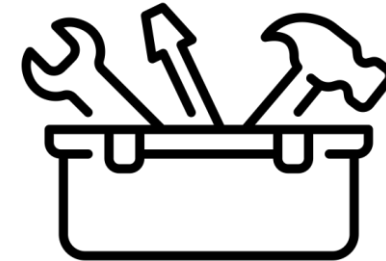
Generative AI

Robotic Process Automation

Business Rules Management

APIs

Business Intelligence



Large Language Models (LLMs)

An LLM is a neural network, trained on massive amounts of text data, that identifies the patterns and relationships between words, phrases, and sentences.

- ✓ Predicts the next word(s) or phrase(s) in sequence
- ✓ Translates between languages
- ✓ Creates summaries and responses
- × Does NOT ***understand*** the meaning of language

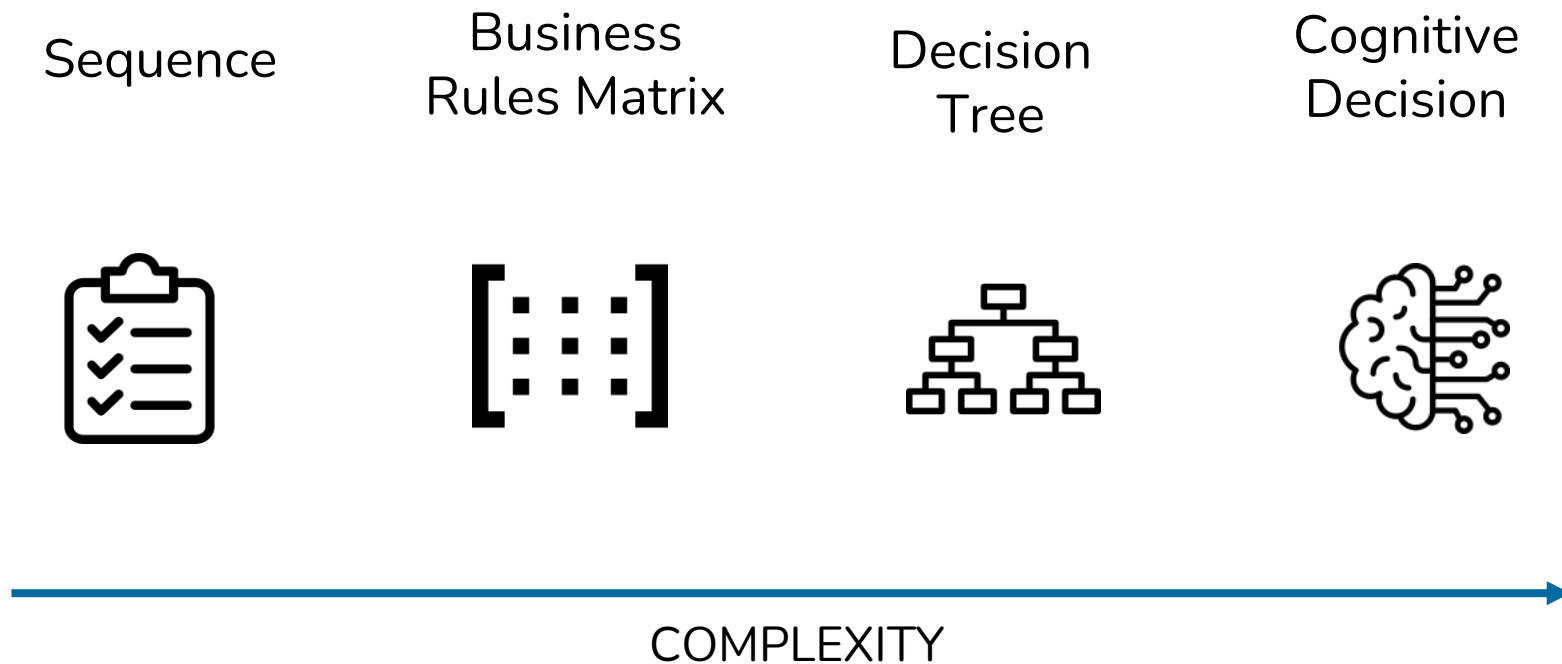
Artificial intelligence is ***simulation*** of human intelligence using computer systems

Large Language Models (LLMs)

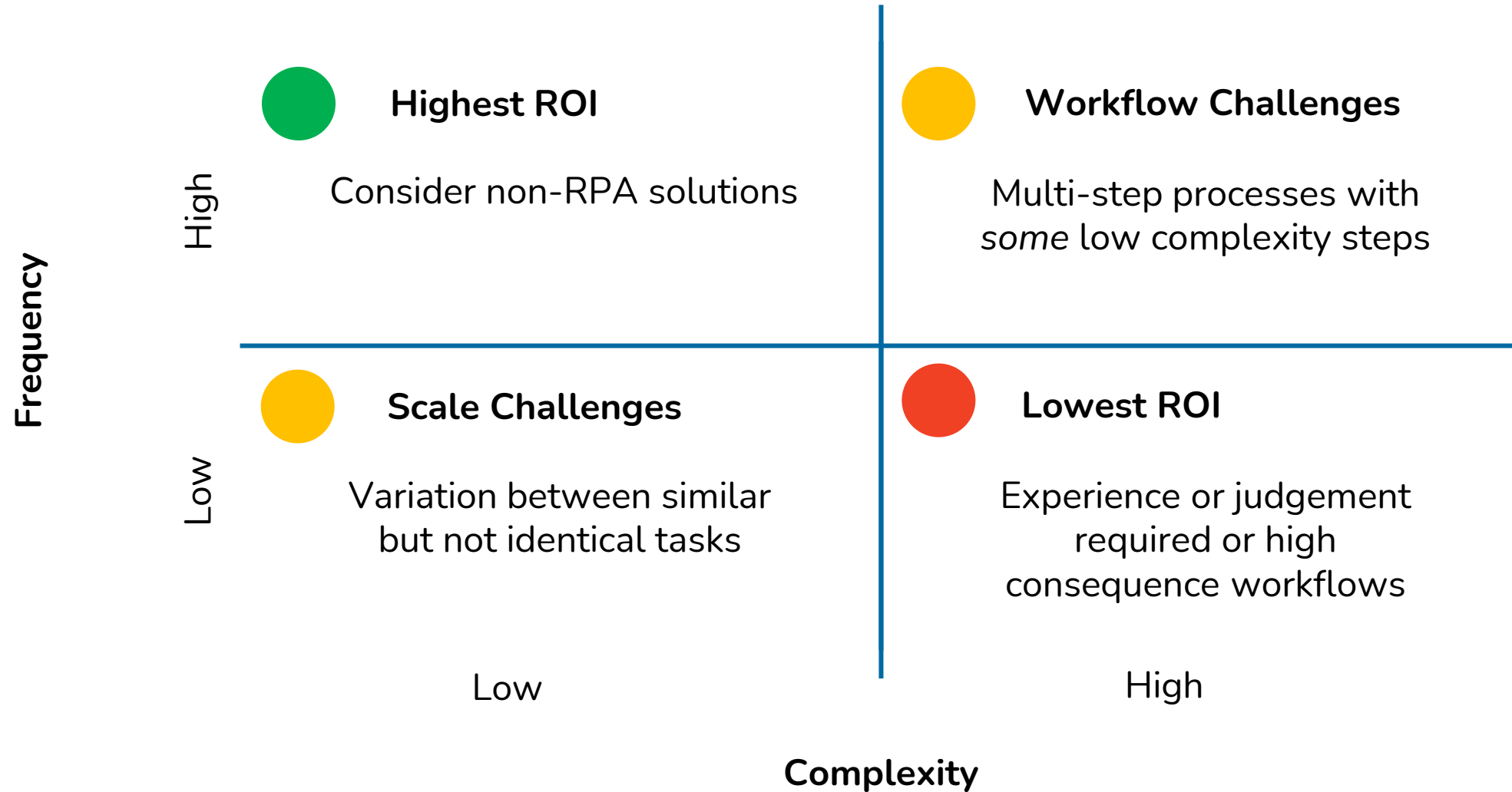
There are a variety of techniques that can be used to improve the use of LLMs in business applications.

- ✓ Give the LLM specific tasks
- ✓ Use smallest increments possible
- ✓ Retrieval-augmented generation (RAG)
- ✓ Fine tuning
- ✓ Self verification, validation checks, response filtering
- ✓ Ensemble models
- ✓ Adjust “temperature” settings
- ✓ Human in the loop

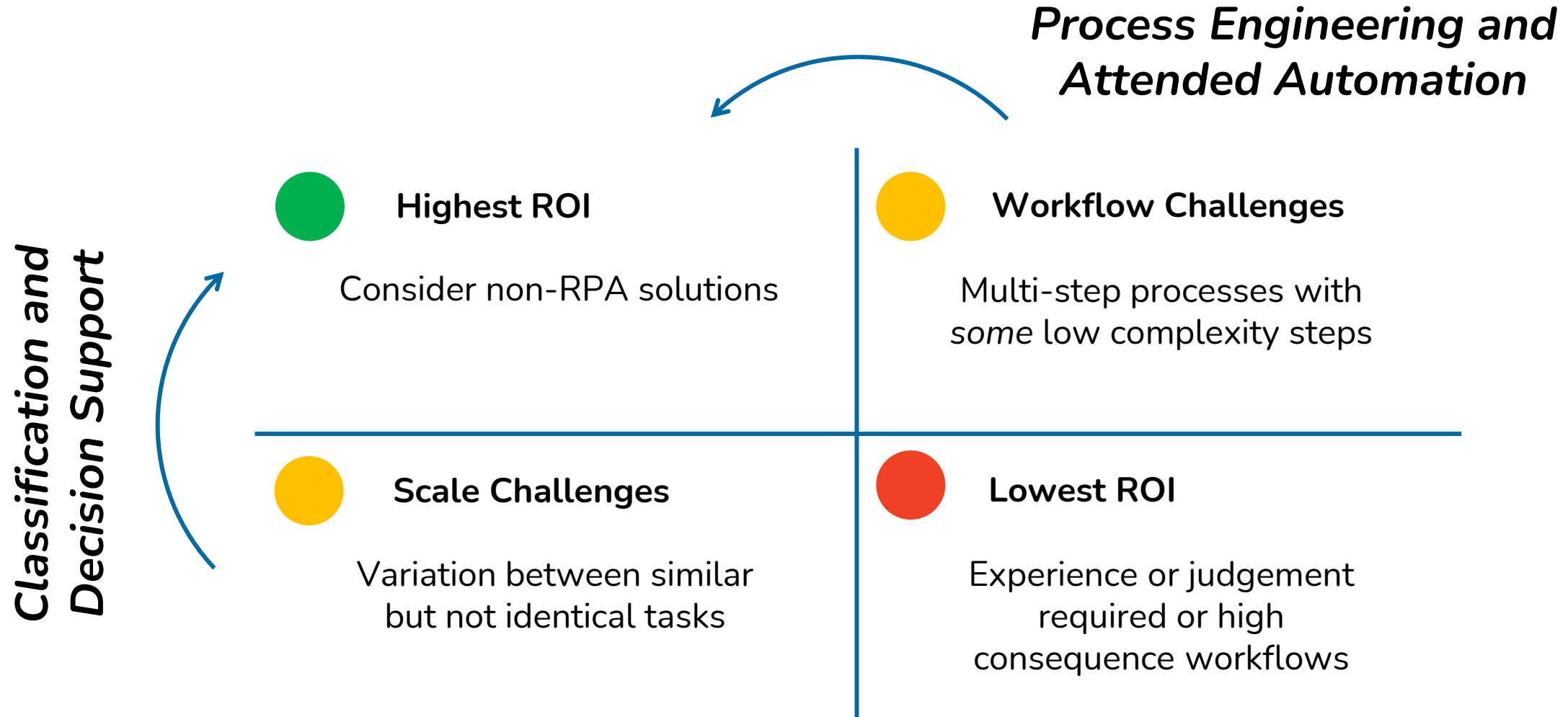
Task evaluation framework



Use Case Evaluation



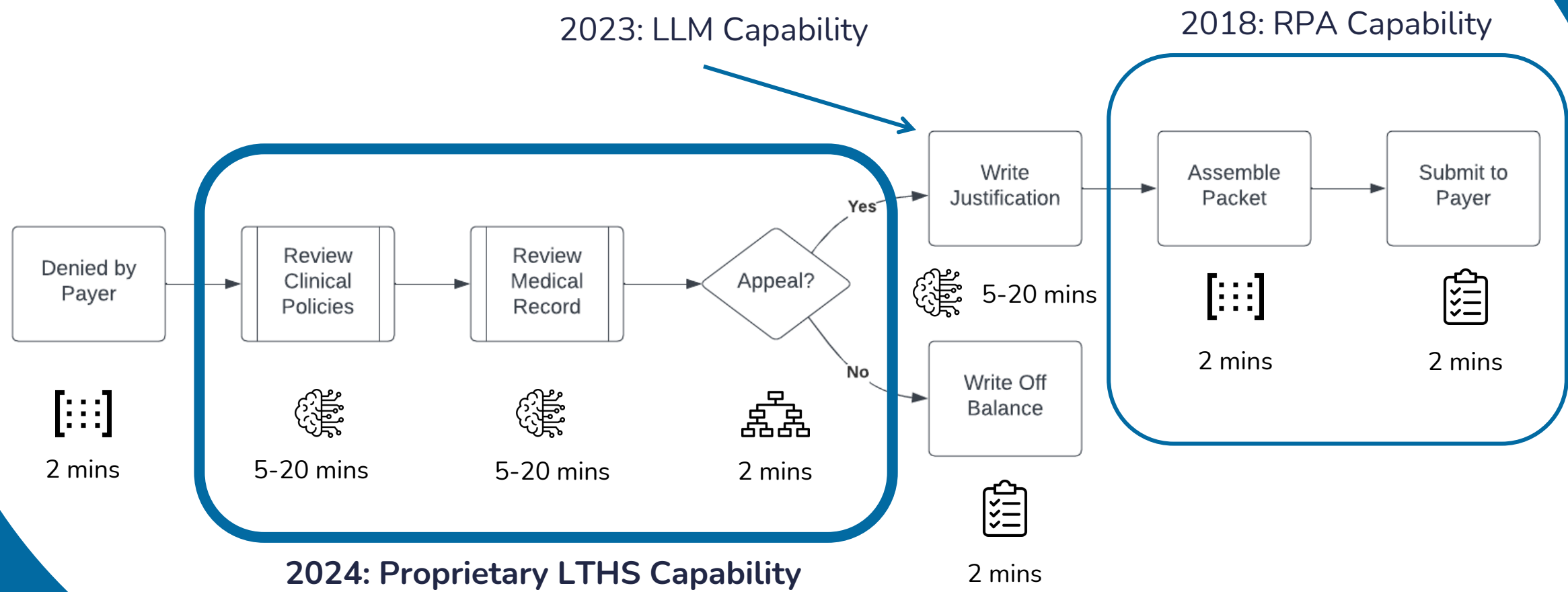
Use Case Evaluation



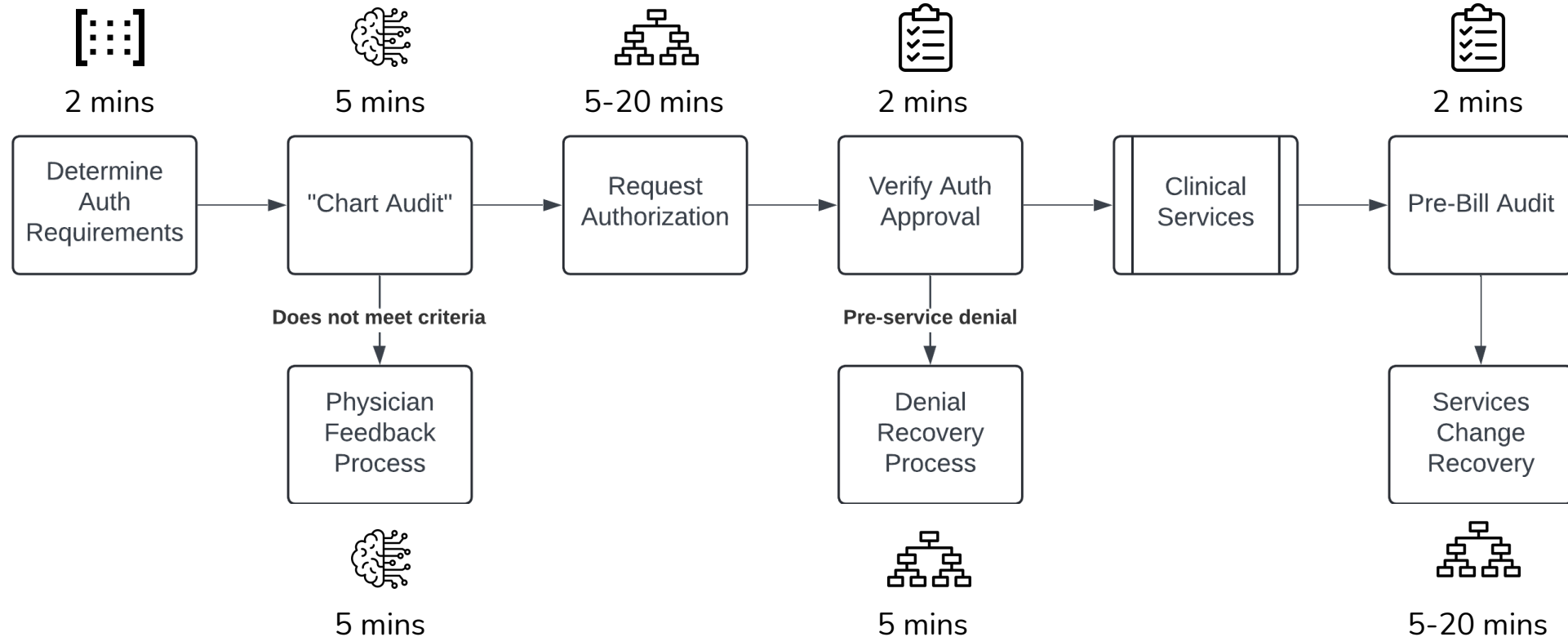
Use Case Example: Clinical Appeals

- Use case with very high ROI and relatively high volume
- Half of the steps have low complexity
- Many steps that require data hand offs
- Several steps with high complexity decision-making
- With investment, the complex steps can be commercialized
- Expected automation gain: 20 mins

Use Case #2: Clinical Appeals



Use Case #3: Prior Authorization



LLM Use Cases

- Patient Type Status Determination
- Concurrent Review / In House Denials
- Care Plan Submission
- Authorizations
- Care Gaps
- Outbound Scheduling
- Appointment Reminders/Instructions



Lessons Learned

- Break tasks into the smallest components
- Optimize the process ***first***, then automate
- Use the best tool for each task
- ***Solve*** for the limitations of your tools
- First solution is probably not the final
- Log ***everything***





Questions?