

# Own your vertical: A playbook for building a domain-native LLM application

Dr Christopher Lovejoy, MD  
*Head of Clinical AI*

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Anterior





# Anterior

We're a **New York-based, clinician-led company** that provides clinical reasoning tools and solutions to accelerate and automate healthcare administration

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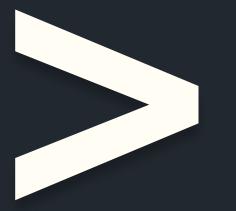
IMPERIAL

NHS

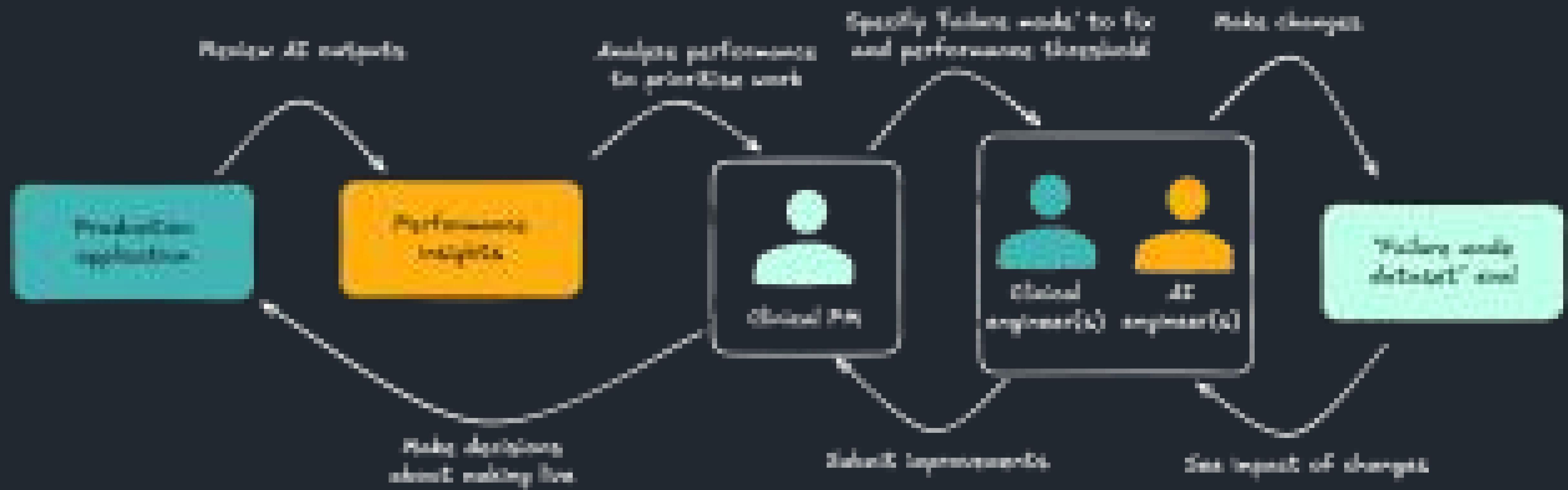


# OUR BET FOR VERTICAL AI APPLICATIONS: ↗

the  
system for  
incorporating  
domain insights



the  
sophistication  
of your models  
and pipelines



Why is it hard to successfully apply  
LLMs to specialized industries?



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The **last mile problem.**



78-year-old female

Presents with right knee pain

Doctor recommends a knee arthroscopy

**Q: Is there documentation of unsuccessful conservative therapy for at least 6 weeks?**

*how explicit does the documentation need to be?*

*how are we defining success?*

**Q: Is there documentation of unsuccessful  
conservative therapy for at least 6 weeks?**

*what constitutes conservative in this medical context?*

# OUR BET FOR VERTICAL AI APPLICATIONS:

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# We achieved a baseline performance of 95% for approving care...

## Initial Results

Performance (F1-Score)

**95.73%**

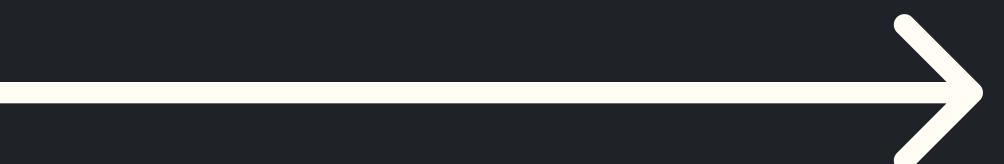


# We achieved a baseline performance of 95% for approving care... then iterated with a specific customer to >99% within 8 weeks

## Initial Results

Performance (F1-Score)

**95.73%**



*using the system  
outlined in this talk*

## 8 Weeks Later

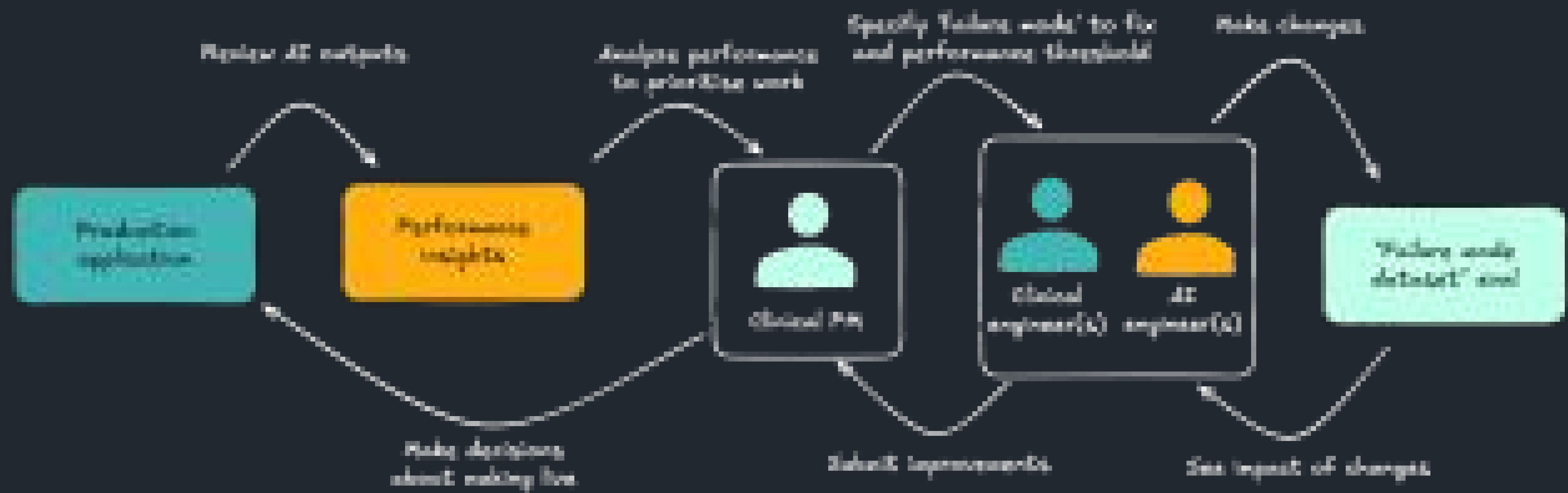
Performance (F1-Score)

**99.24%**

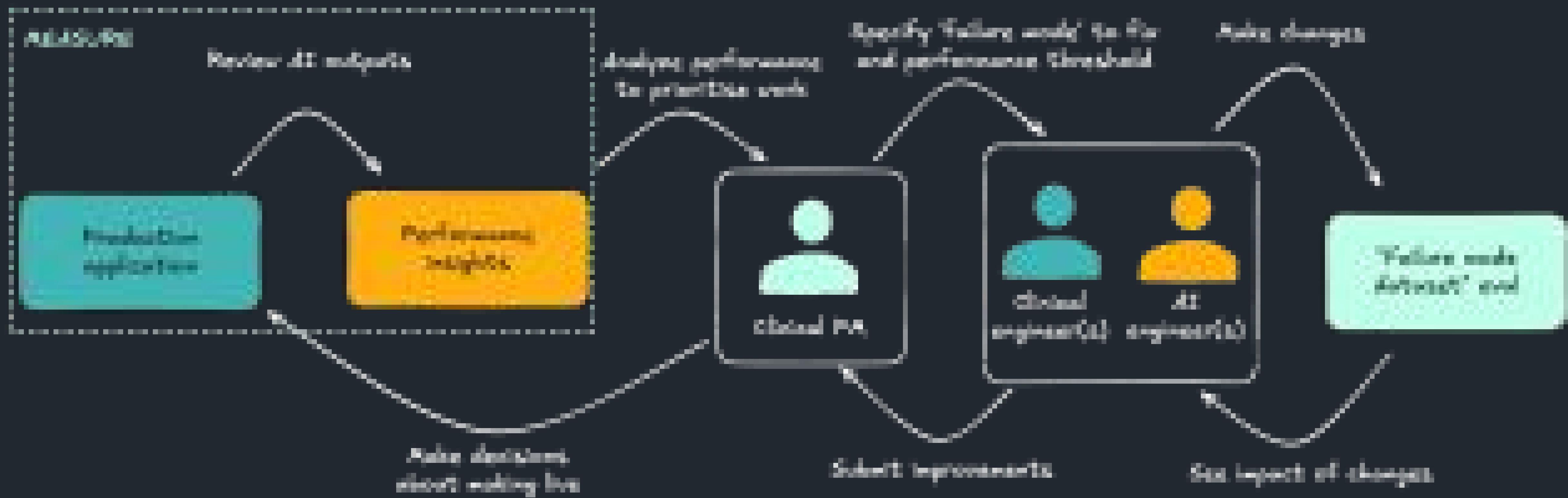




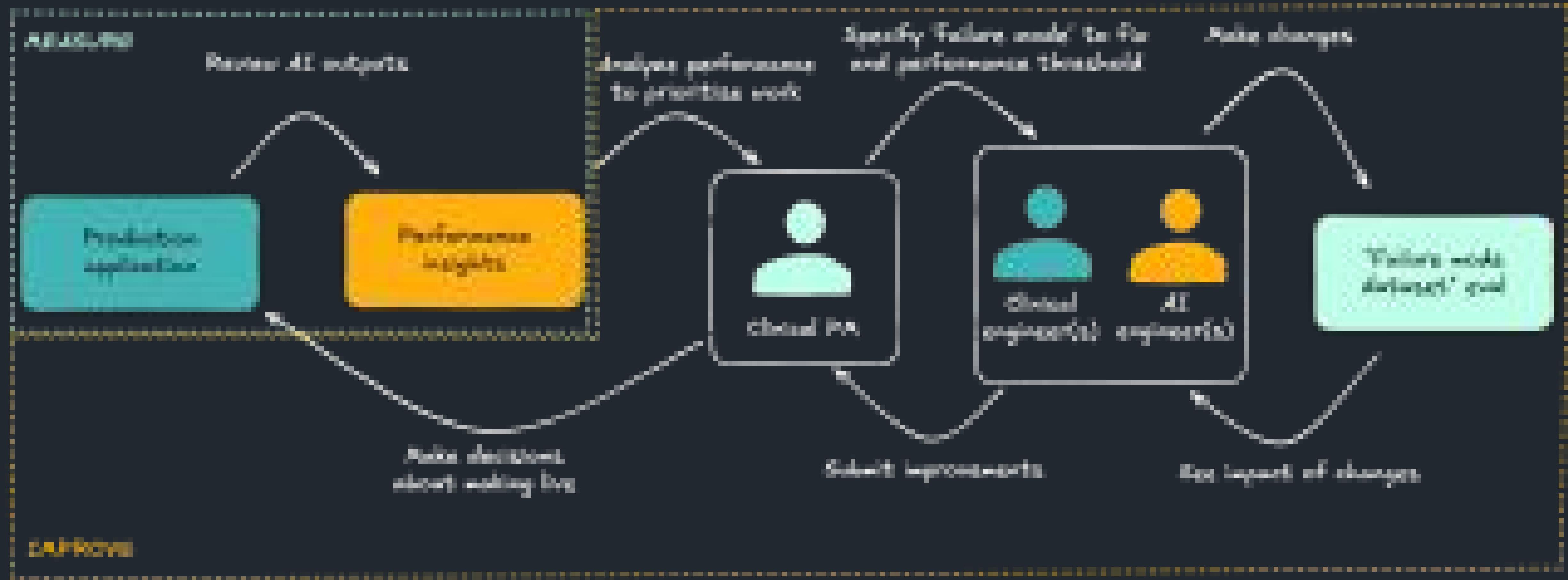
# We built an **adaptive domain intelligence engine** to translate customer-specific domain insights into performance improvements



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# Measuring domain-specific performance

# (1) Define what your users care about as metrics



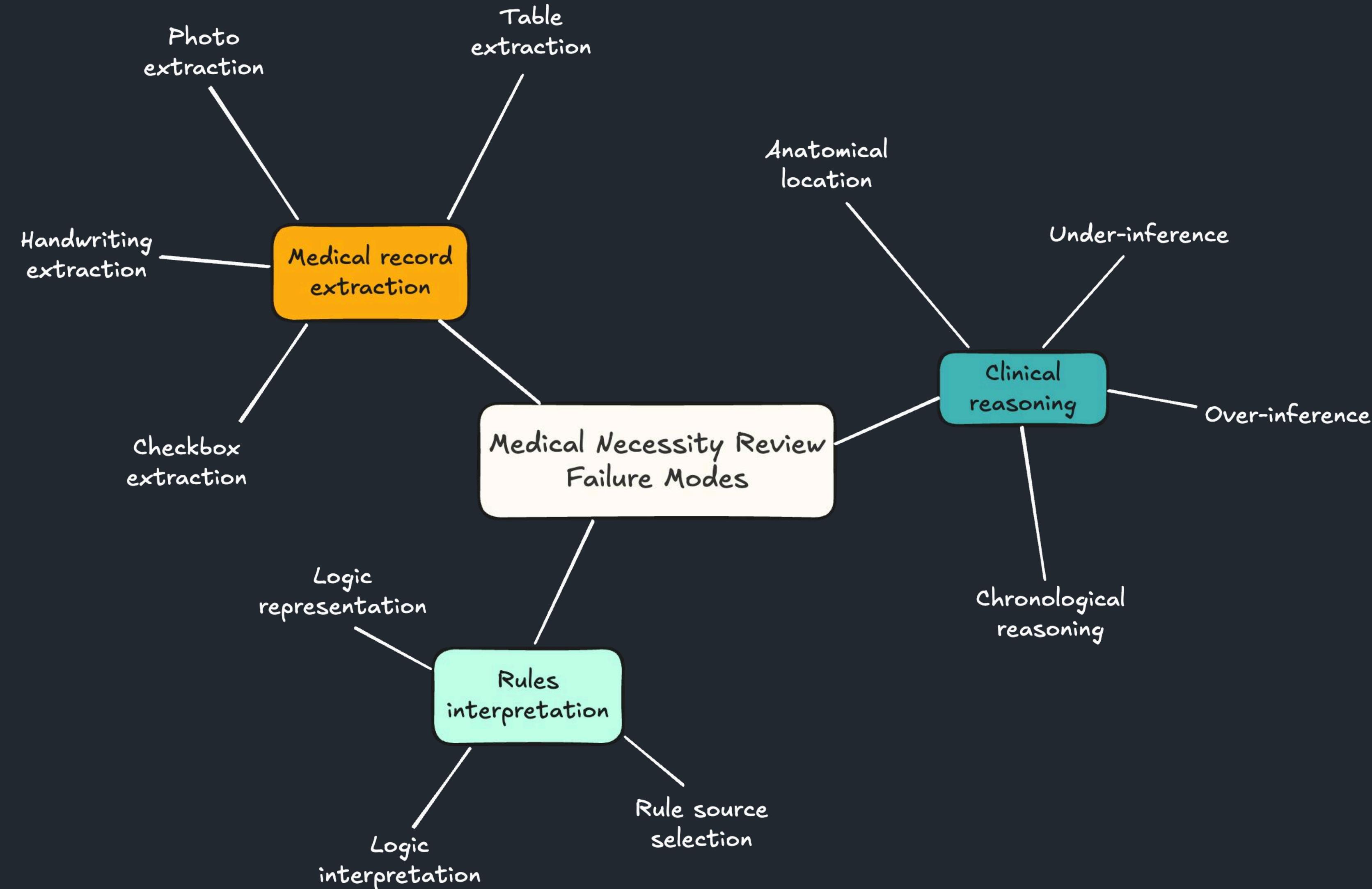
Healthcare: Medical Necessity Review >> False Approvals

Legal: Contract Analysis >> Missed Critical Terms

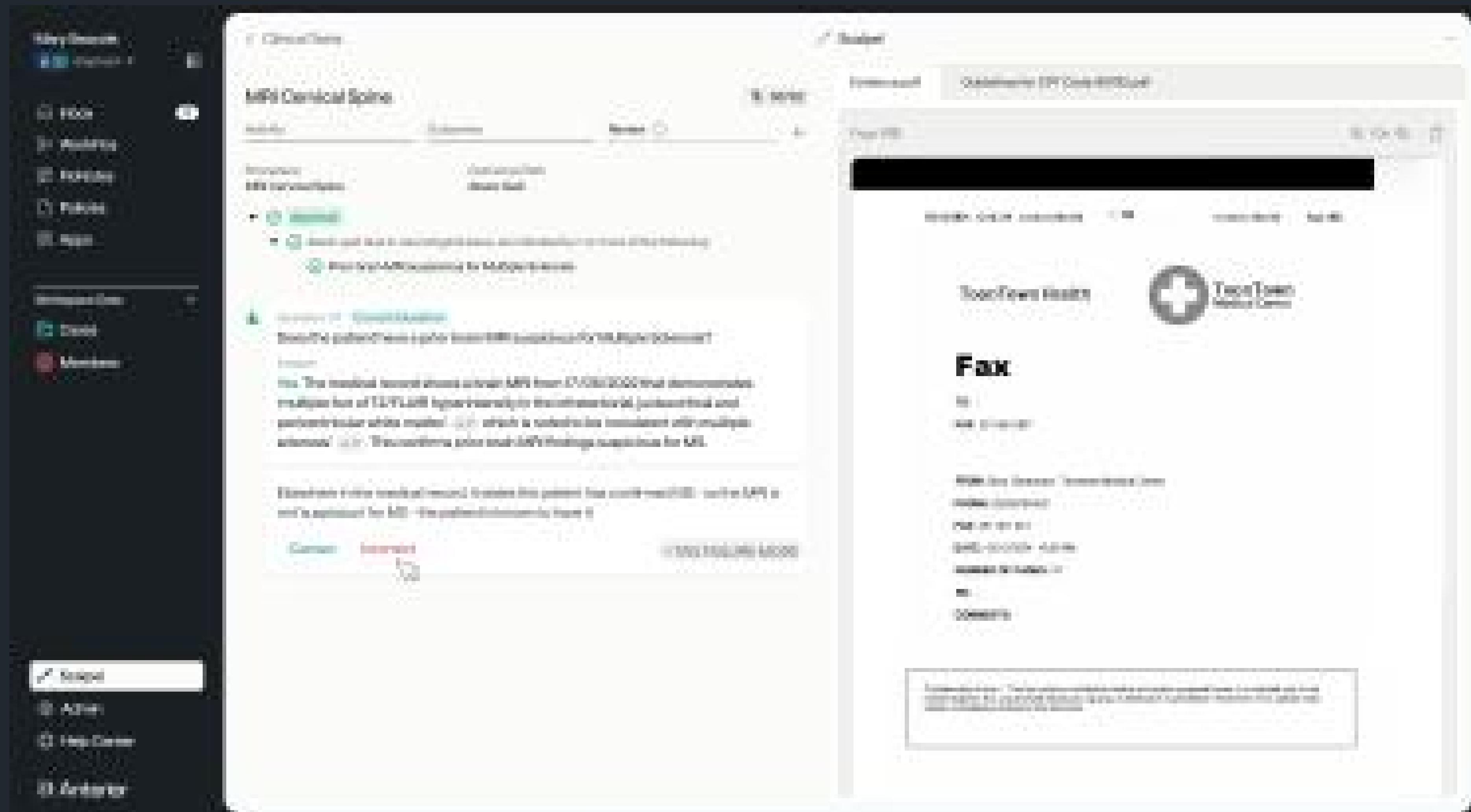
Finance: Fraud Detection >> Dollar Loss Prevention

Education: Personalised learning plan >> Test Score Improvement

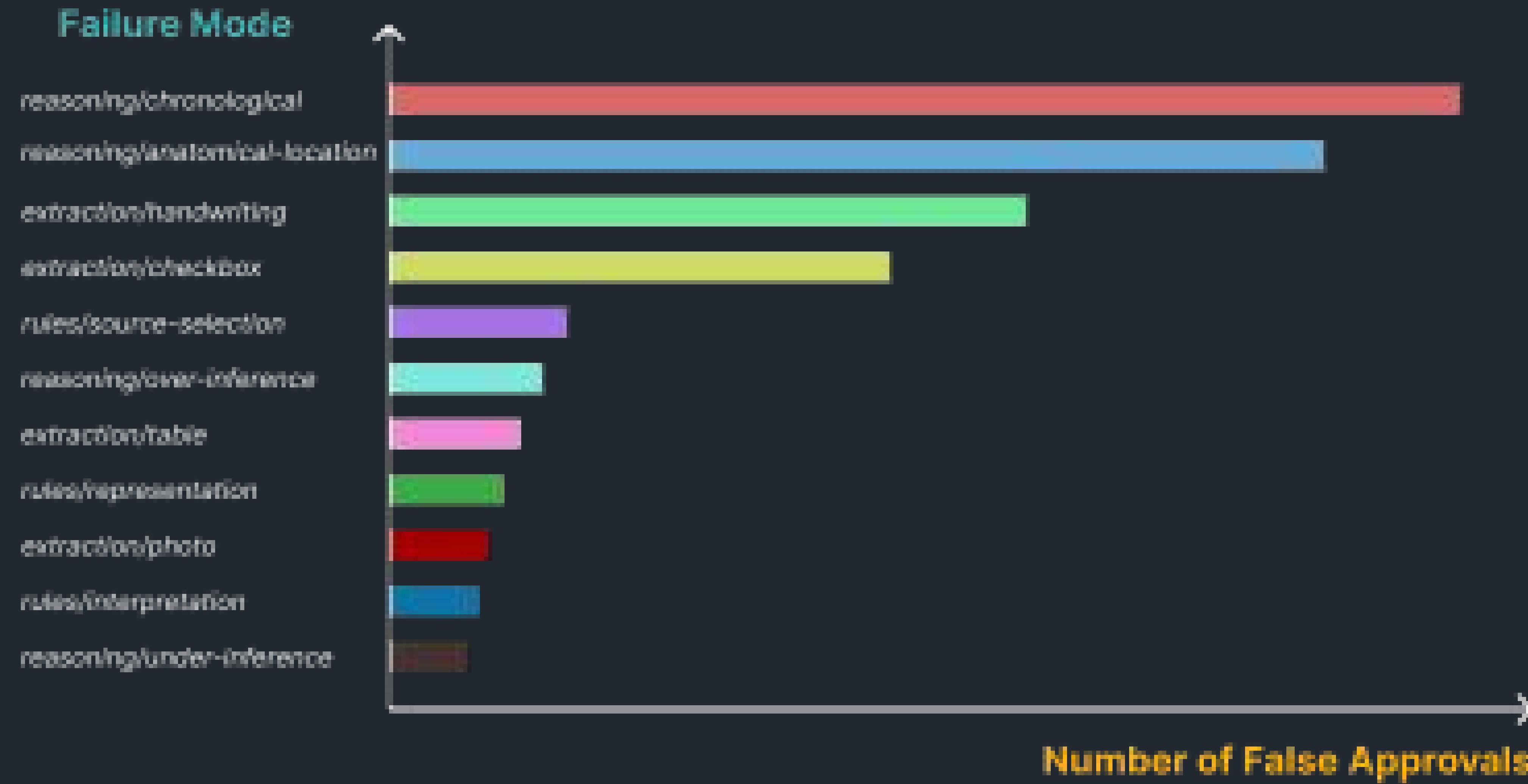
# (2) Empower domain experts to define and maintain a failure mode ontology

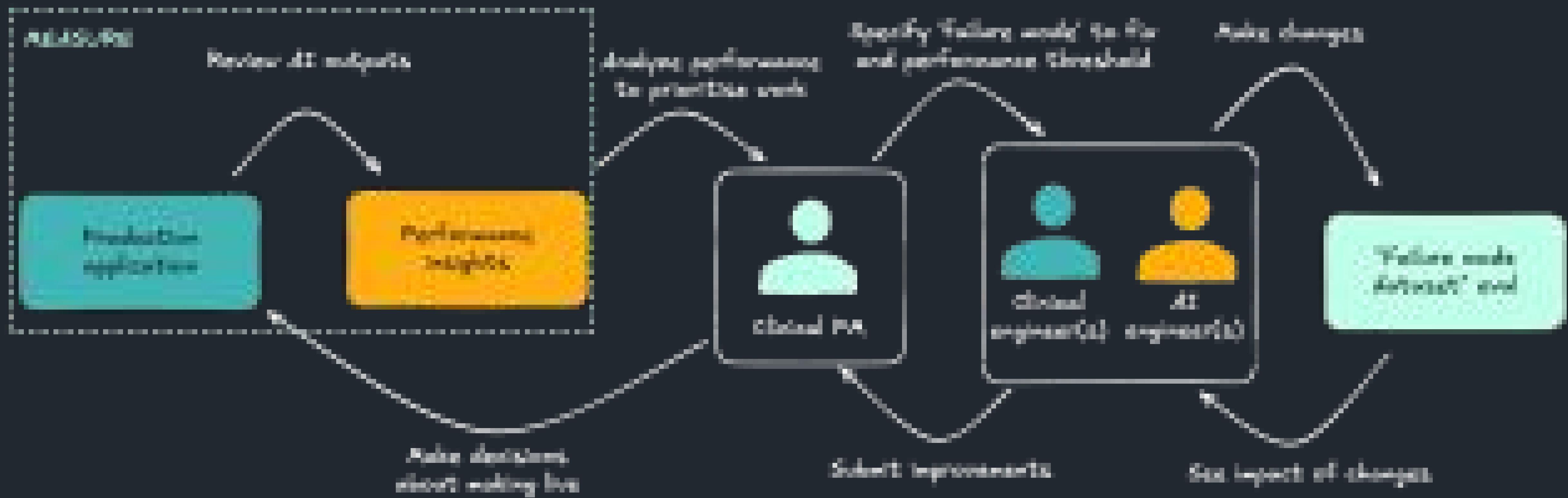


# (3) Measure metrics and failure modes together on production data to unlock targeted insights

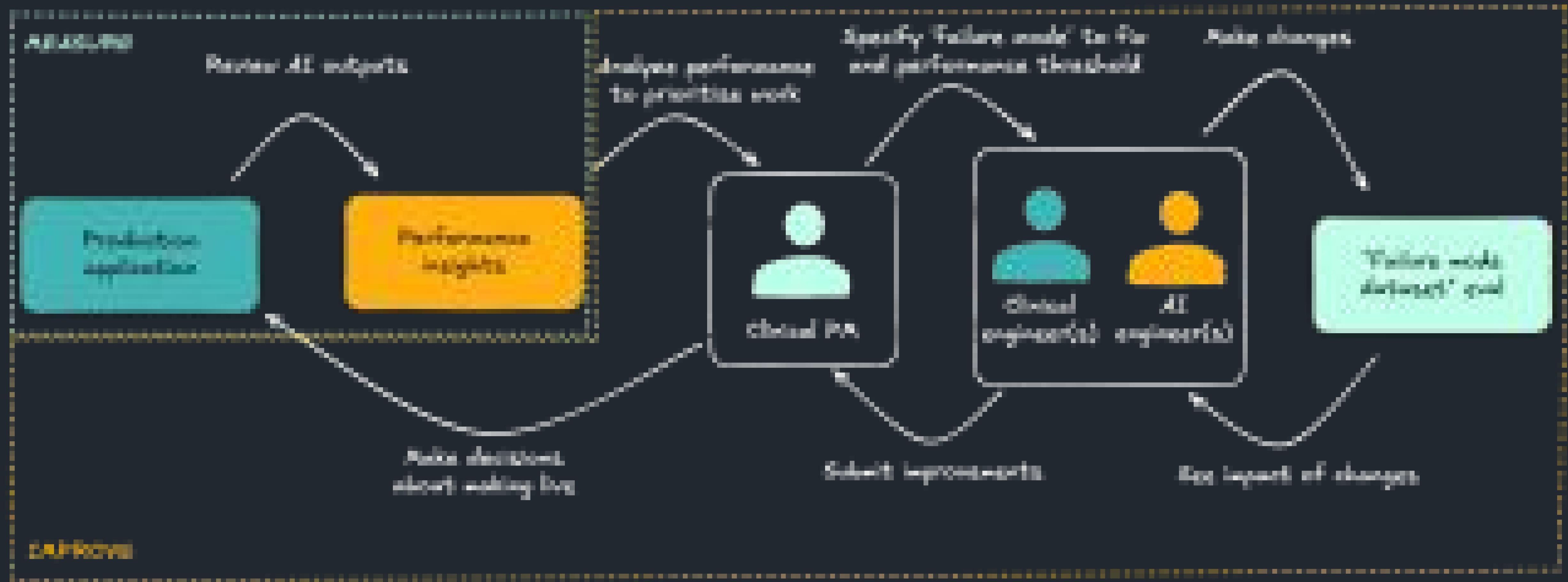


# (3) Measure metrics and failure modes together on production data to unlock targeted insights

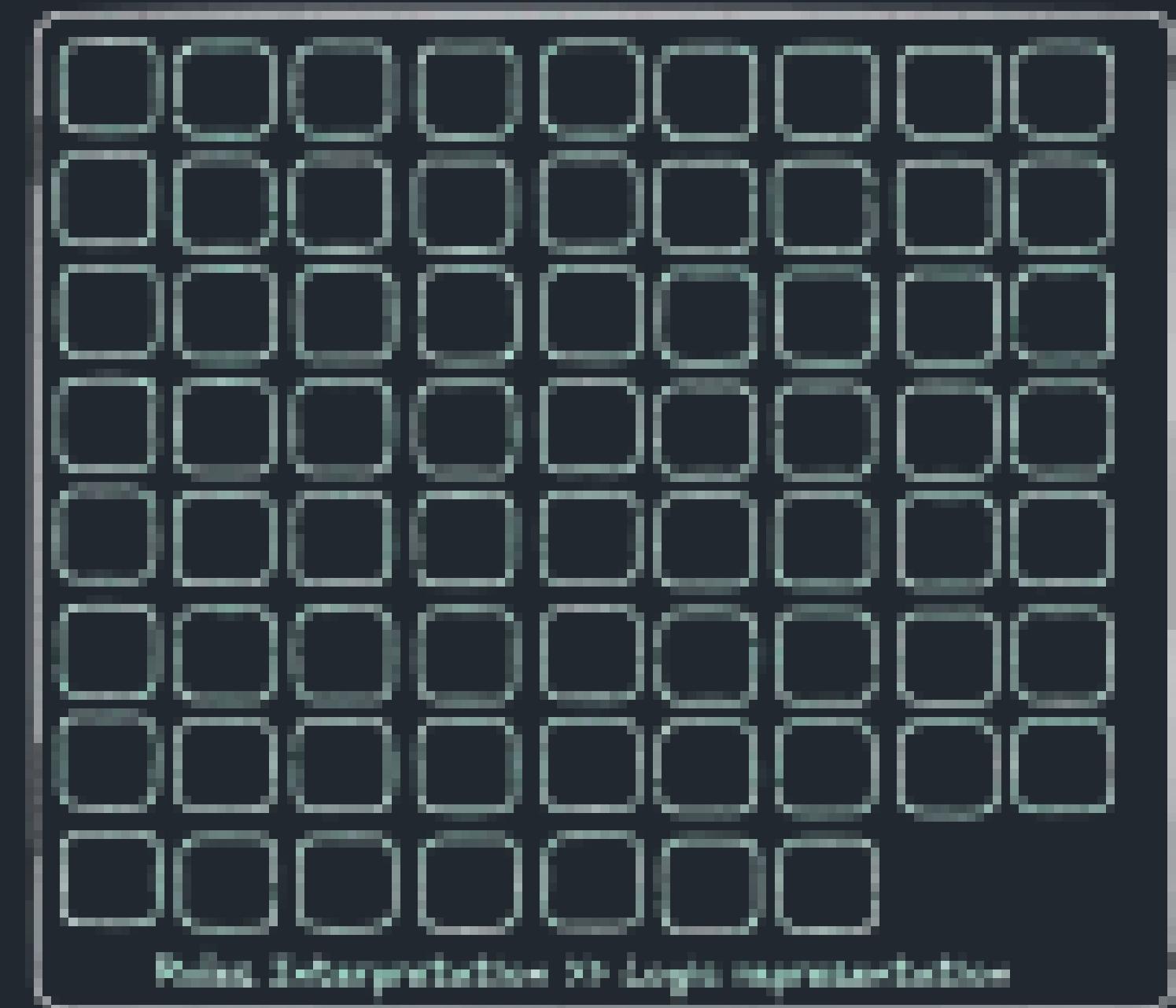
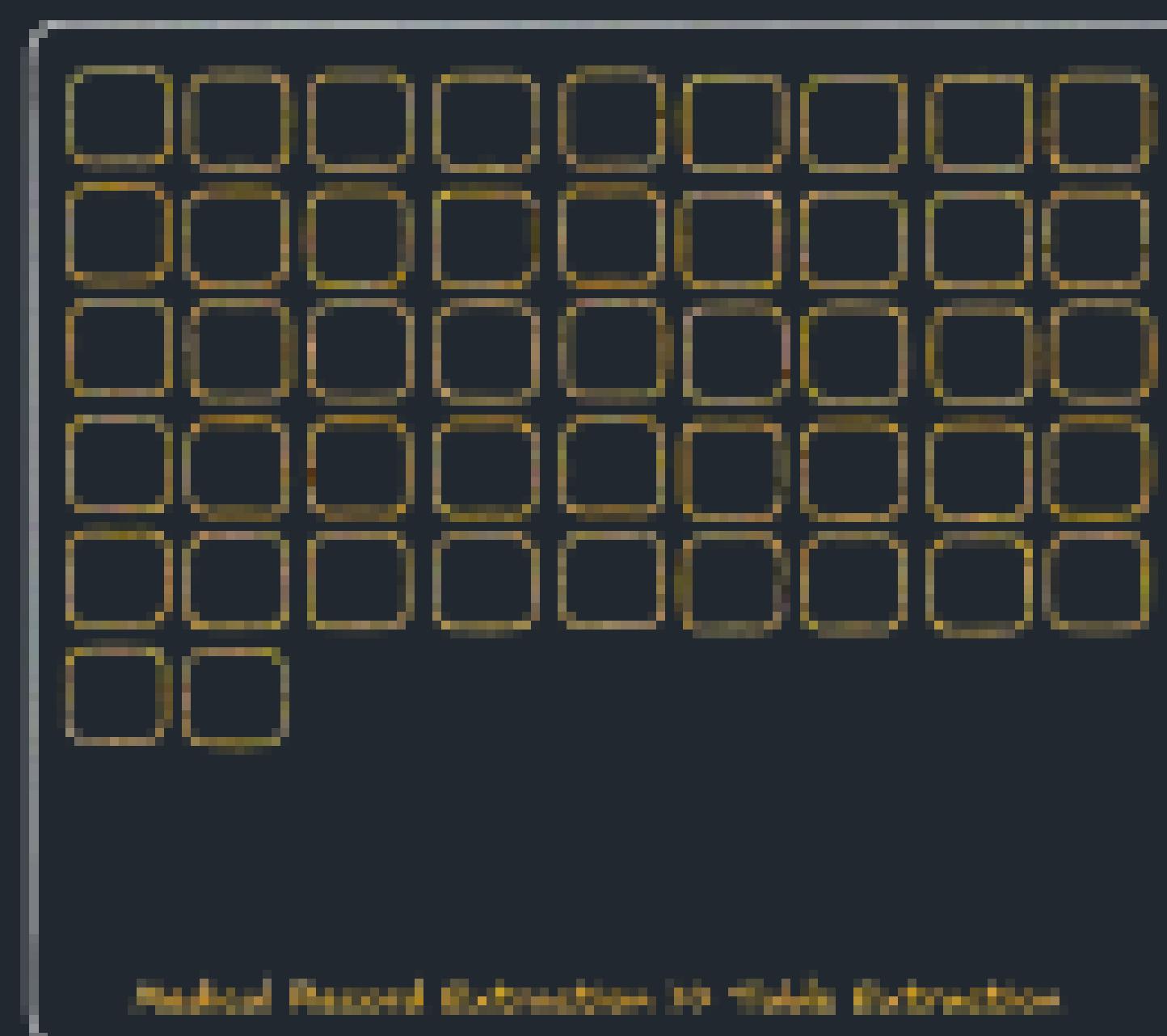
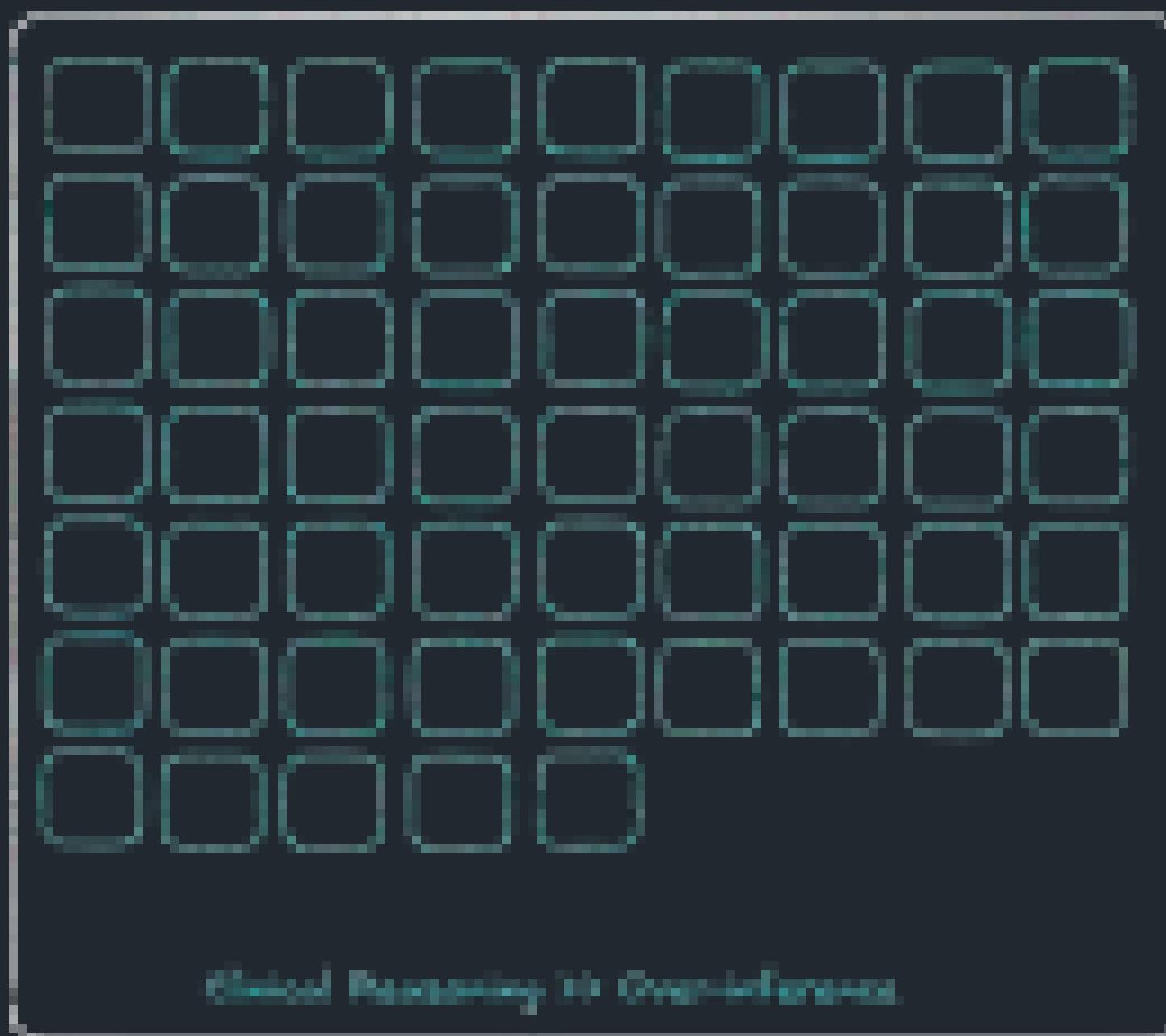




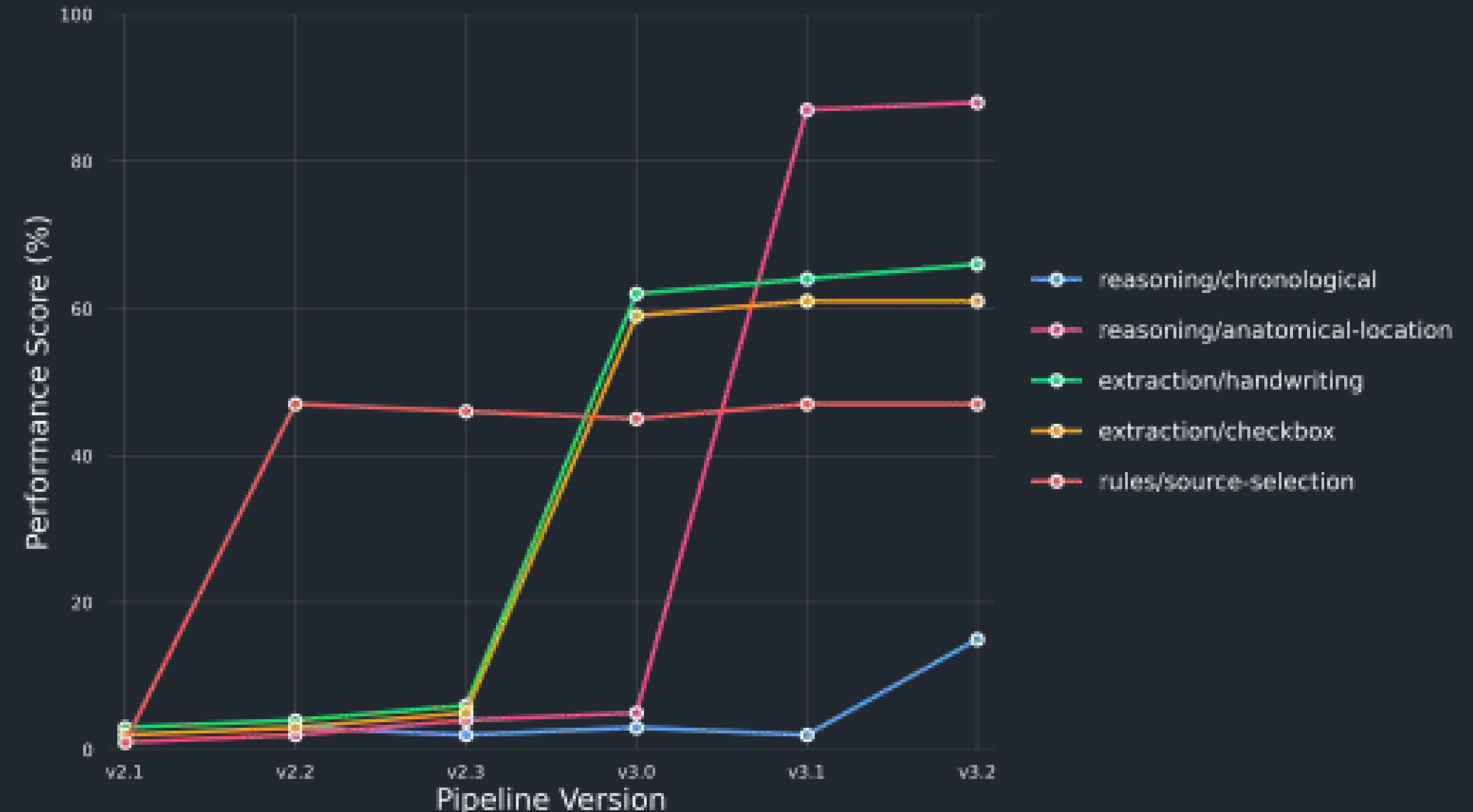
# Improving domain-specific performance



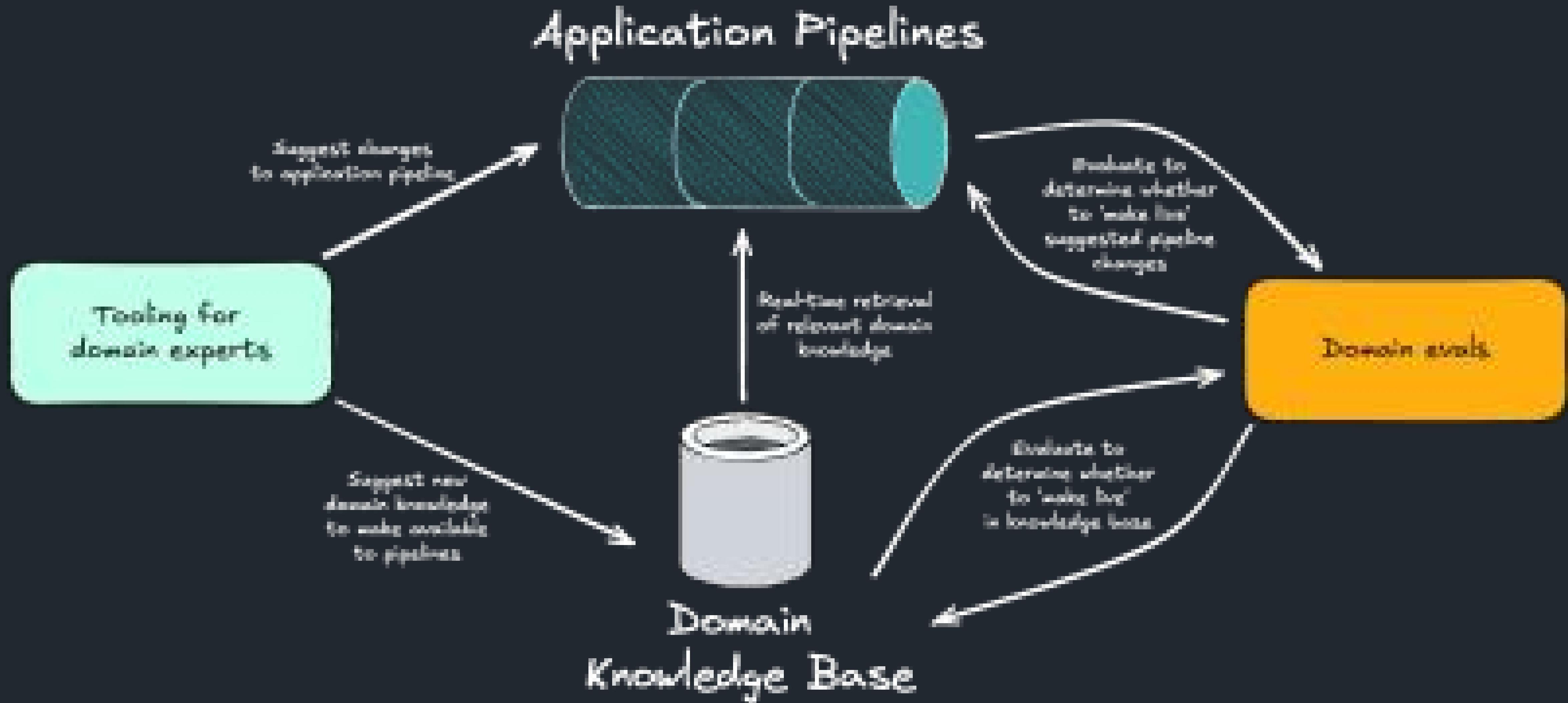
# Failure mode datasets enable targeted product iteration



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# Empower your domain experts to make improvements directly with tooling and evals



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The screenshot displays a medical software interface with two main windows.

**Left Window (Patient Record):**

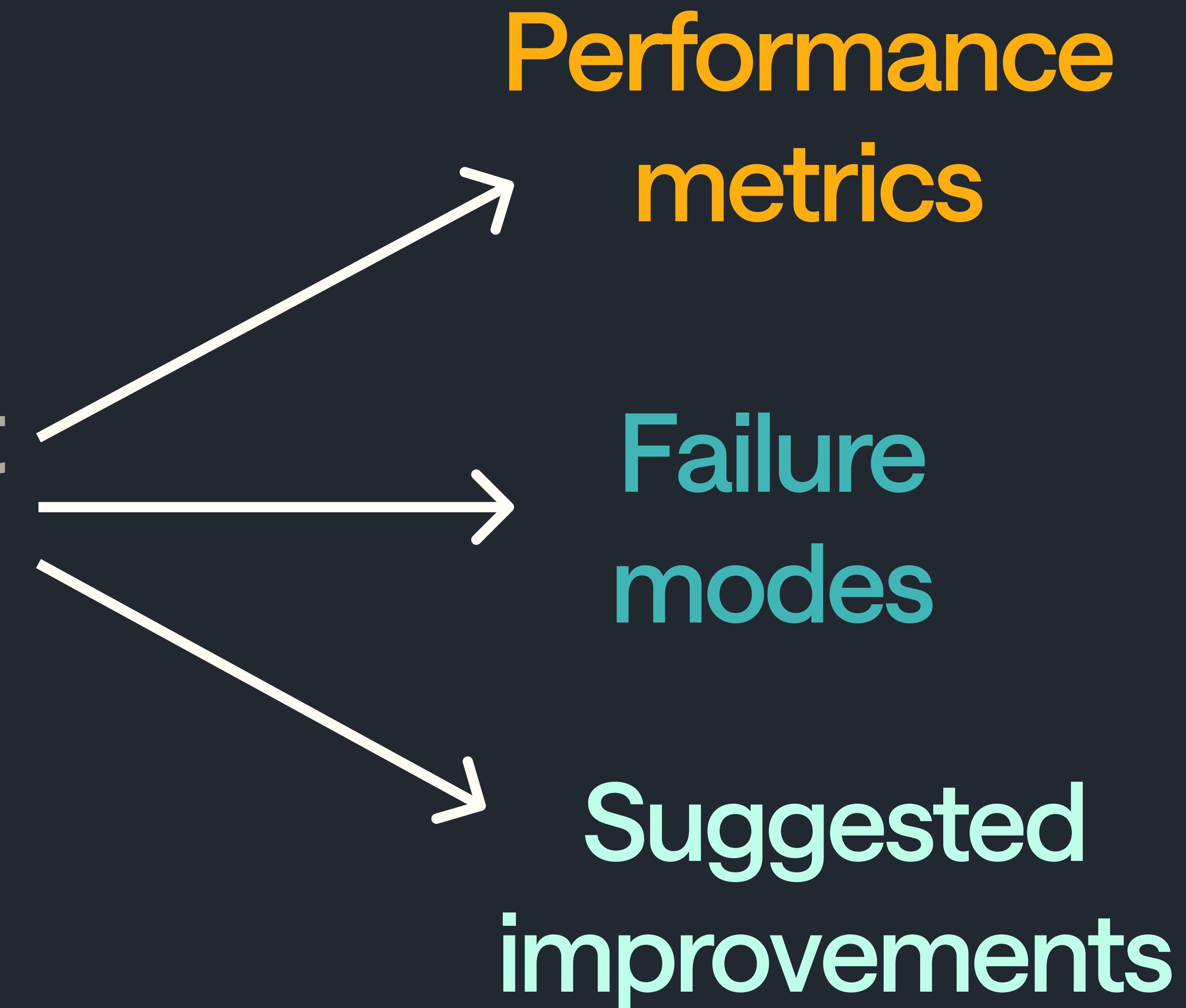
- Header:** Clinical Trials, NDC Chemical Search, Search, Filter, View PDF.
- Left Sidebar:** Navigation links including Home, Admin, Help Center, and Contact.
- Content Area:** Shows a patient record for "John Doe".
  - Demographics:** Name: John Doe, DOB: 1985-01-01, Gender: Male, Race: White, Ethnicity: Hispanic.
  - Medical History:** A section titled "Medical History" contains a note: "The medical history shows since 2010 from 2010-2020 that the patient has a history of hypertension which is controlled with metformin 1000 mg TID. The patient also has a history of type 2 diabetes." Below this is a note: "The patient has a history of hypertension and type 2 diabetes."
  - Prescription:** A button labeled "PRINT PRESCRIPTION" is highlighted with a teal oval.

**Right Window (Feedback Form):**

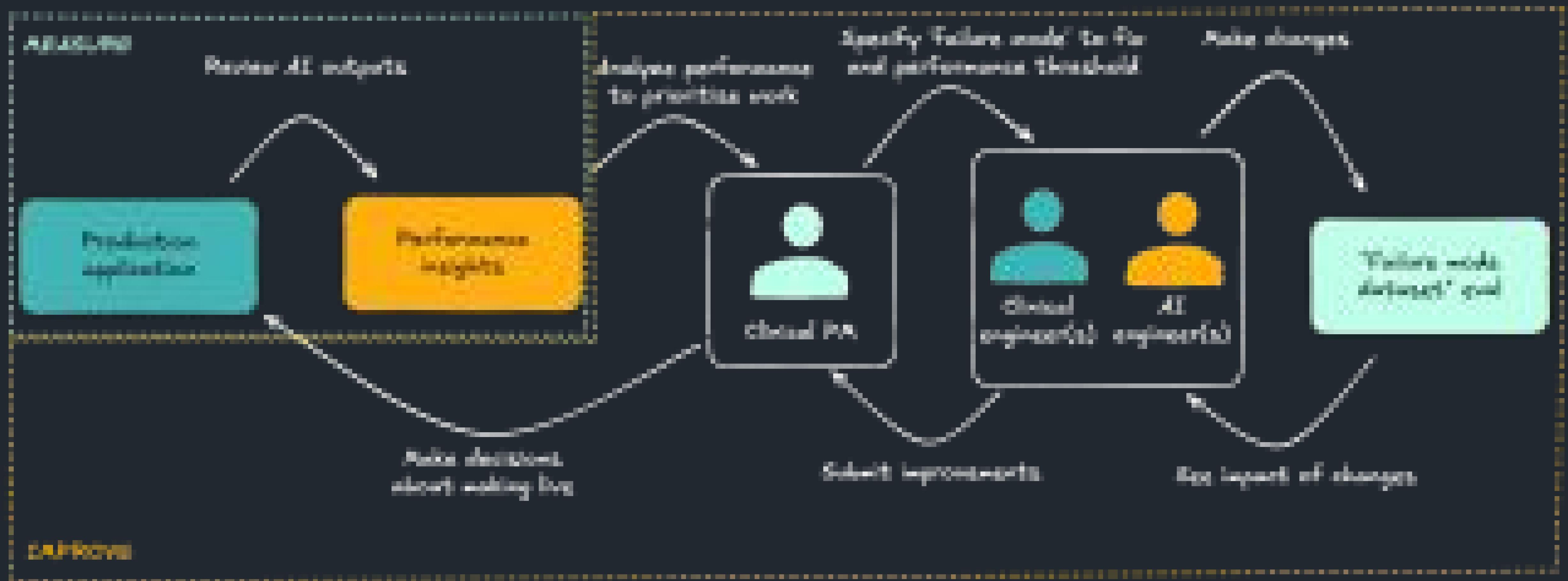
- Header:** Feedback Form, Last updated: 10/10/2023.
- Content Area:**
  - Section Headers:** Your Feedback Matters!, Test Your Knowledge!, Fax.
  - Text:** Please let us know what you think about our service. Your feedback is valuable to us.
  - Form Fields:** Name, Email, Message.
  - Buttons:** Submit, Reset.



Domain expert  
reviews



# Putting it together





# Takeaways

- To build domain-native LLM applications you need to solve the **last mile problem**.
- Using the best models isn't enough - you should build an **adaptive domain intelligence engine**.
- Domain experts power this system by reviewing AI outputs to generate **performance metrics**, **failure modes** and **suggested improvements**.
- This takes production data and uses it to give your LLM product a nuanced understanding of customer workflows.
- The result is a self-improving, data-driven process that can be managed by a domain expert PM.



Thank you

*Dr Christopher Lovejoy, MD*  
[www.chrislovejoy.me](http://www.chrislovejoy.me)

[chris@anterior.com](mailto:chris@anterior.com)  
[Anterior.com/Company](http://Anterior.com/Company)