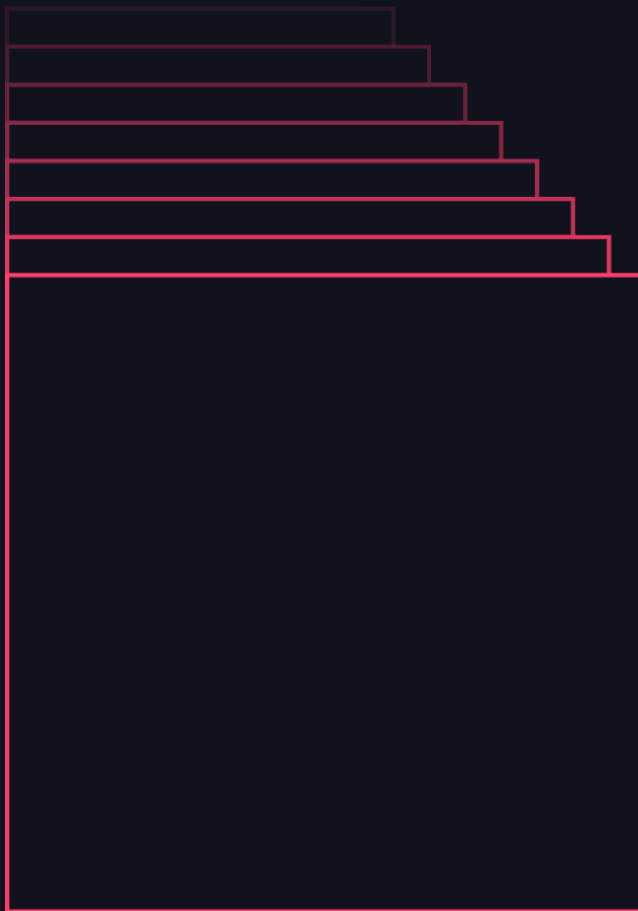


MLOps and AI Governance in Healthcare

Lindsay Mico and Vivek Tomer
June 12, 2024



Providence Overview



122K

CAREGIVERS



38K

NURSES



34K

PHYSICIANS



\$2.1B

COMMUNITY
BENEFIT



51

HOSPITALS



1000

CLINICS



29M

TOTAL PATIENT
VISITS



2.6M

COVERED
LIVES



1700+

PUBLISHED
RESEARCH
STUDIES



1

HEALTH
PLAN



18

SUPPORTING
HOUSING
FACILITIES



HIGH SCHOOL
NURSING
SCHOOLS &
UNIVERSITY



“Transformation and collaboration will be a consistent theme across health care in 2024. Though health care has been talking about disrupting itself for years, this will be a year of accelerated change and new innovations adopted at scale.”

“The explosion of generative AI will be one of the major drivers of transformation, and we’ll see health systems partner with the tech sector to responsibly usher in new innovations.”

-Rod Hochman, President and CEO of Providence

Driving Transformation with AI



Governance & Guardrails



Enterprise Platforms



Data & Engineering Services

Enterprise Partners



TRUVETA



NUANCE

DAX Copilot

Epic



Copilot

Internally Developed Innovations in Production



MedPearl™



Conversational & Navigation Platform



Automated Realtime In-basket Assistant



ProvidenceChat

1

systemwide strategy for responsible adoption of artificial intelligence

3+

Coalition for Healthcare AI (CHAI)
Trustworthy & Responsible AI Network (TRAIN)
Cybersecurity and Infrastructure Security Agency (CISA)

4

Subject Matter **Expert** domain work groups

4

Internally developed generative AI solutions in production

50+/50+

Physicians directly involved in governance, ideation and development of solutions

Data Scientists and AI experts in USA and India

~15,000

Estimated **unique internal users** of AI solutions



Advanced Analytics & Research



Large Scale Implementation



Policy & Advocacy

Assist

Augment

Automate

Accelerate

Priority Areas



Clinical: Workflow optimization and support in documentation/charting and in-basket management



Patient/Consumer: Personalization and navigation for better self-service



Back Office: Automation of processes that are not patient-facing / differentiating



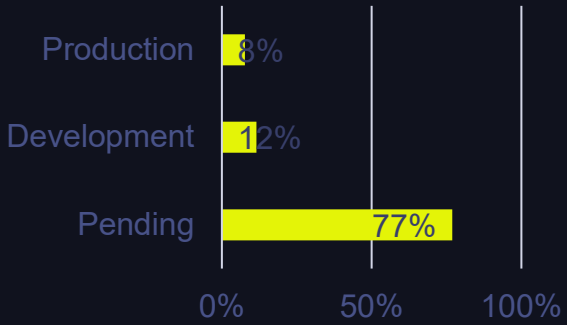
Workforce/Administrative: Augment our workforce to support productivity and reduce burden



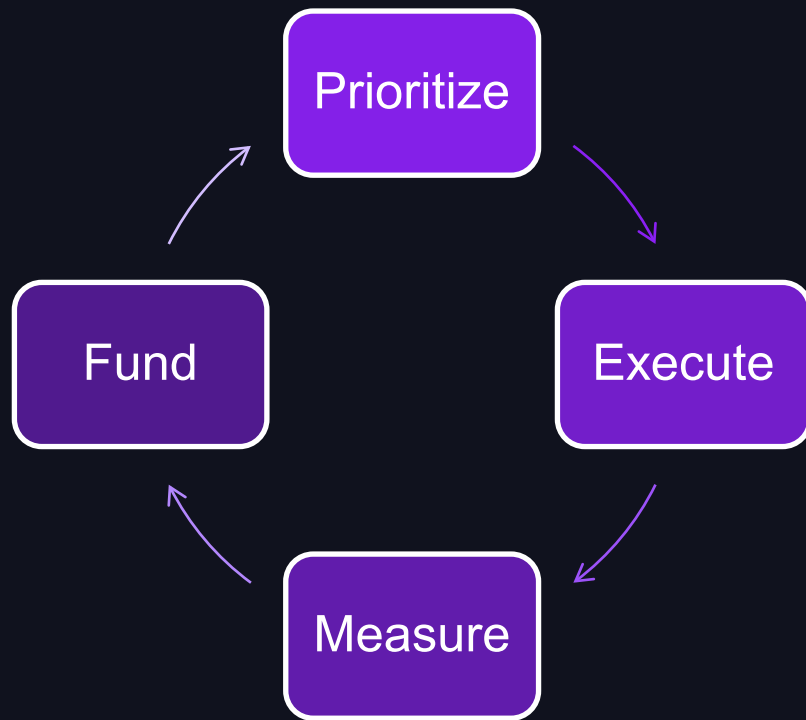
A Tsunami of Opportunity



AI Pipeline



A Flywheel of Transformation



- Should we build or buy?
- Does it align with our tech standard and platform?
- Guardrails identified by CP 1A team
- Get feedback and approval to move forward, or reject

- POC created by idea owner, if needed
- Guardrails are identified to guide development
- Guardrails include checklists that devs can use to self-certify
- Last minute change to build vs. buy can happen
- If approved, development starts

Deploy

Ongoing and periodic maintenance and validation

CP 0 Participants
IS Solution Delivery VPs, CRCA, Shared Services Leaders

CP 1A Participants
Involved Parties: IS Solution Delivery VPs, CRCA, Legal/Risk/Compliance/Privacy, Cyber
Decision Hierarchy: Product/Functionality from Strategic Partner (Microsoft, Epic, Oracle), Other External Product, Partner to Build, Internal Build, Total Cost of Ownership Discernment

CP 1B Participants
Data Science for Model Risk Management, HR, Marketing, Finance, Clinical Informatics, Service Transformation, Contracting, Ethics

CP 2 Participants
Ethics, Data Science Model Risk Management, Clinical Informatics, Comms/Brand



CP 1A Participants

Checkpoint 1A



CP 1B Participants

Checkpoint 1B

Build vs buy can change at this point if concerns arise



Idea Champion
IS Sponsor



Unfixable issues & roadblocks result in rejection

Have you consulted with the Data Science team?

Idea champion to complete a basic use case template

Got a great idea!



Idea Champion



Checkpoint 0



Idea Champion
IS Sponsor

Existing solution/capability

Checkpoint 2



CP 2 Participants

- Review using additional guardrails to check for issues and roadblocks
- Perform necessary validations
- Post-deployment validation plan

- Is it aligned with the **Business Priority Roadmap**?
- Review the use case template and learn about the project
- Decide to move forward, or reject



CP 0 Participants



Checkpoints in AI Guardrails Process

Three Components of Model Risk Management (MRM)

Checkpoint 1B

- Checkpoint 1B is initial validation of the proof of concept (POC) for the internal and vendor AI/ML models.
- The advertised AI/ML performance metrics of the POC are validated and documented for future use.

Checkpoint 2

- Checkpoint 2 fully validates the AI/ML models after model development and before model deployment.
- Checkpoint 2 has three outcomes: the model is approved, the model needs improvement, and the model is not approved for deployment.

Model Monitoring

- Continuous model monitoring is performed after the model is in production to detect drift in model performance.

Development of the MLOps Platform

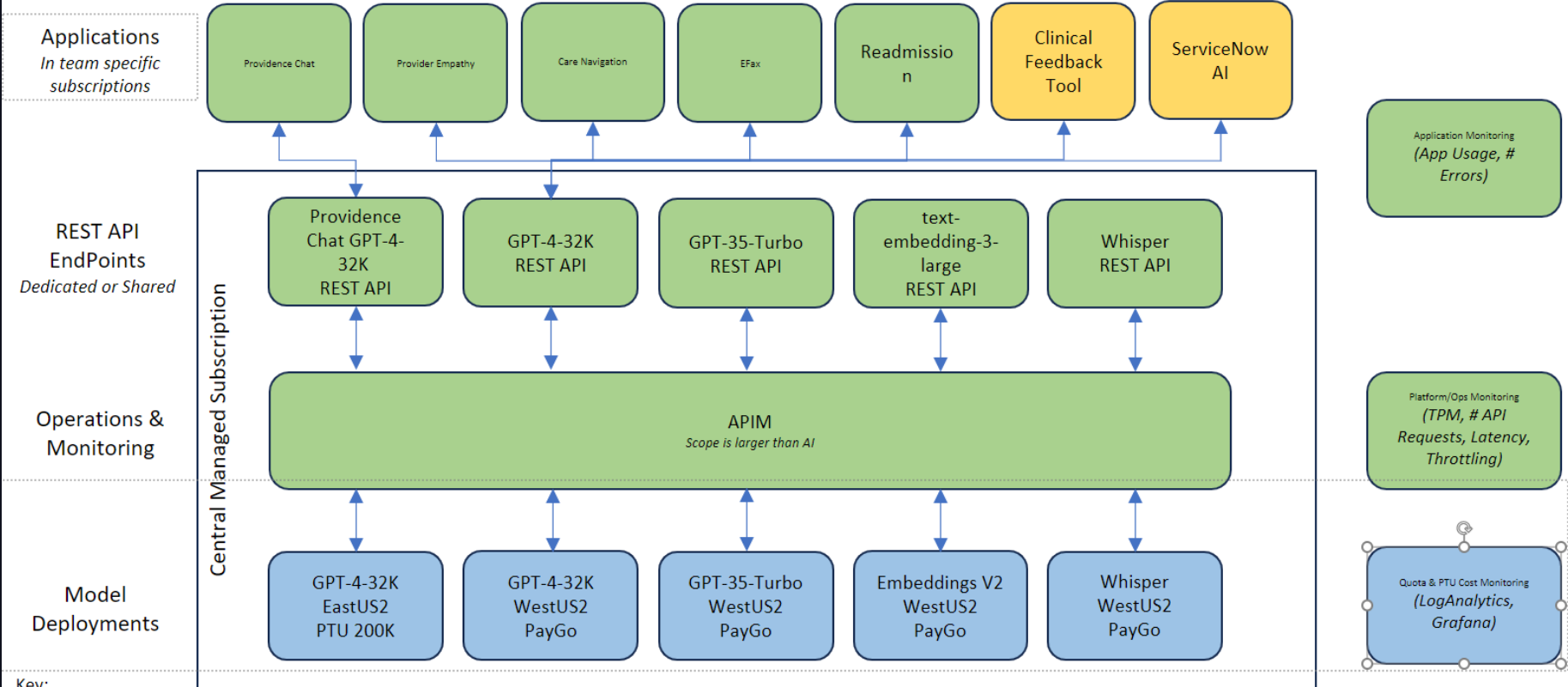
Objectives and MLOps Pillars

- Objective of MLOps Platform: Create a robust platform for developing, validating, and deploying a large inventory of AI/ML models at scale.
- Four Pillars of MLOps: Model development, model validation, model deployment, and model monitoring — with strategic partnership with Databricks for all four pillars.

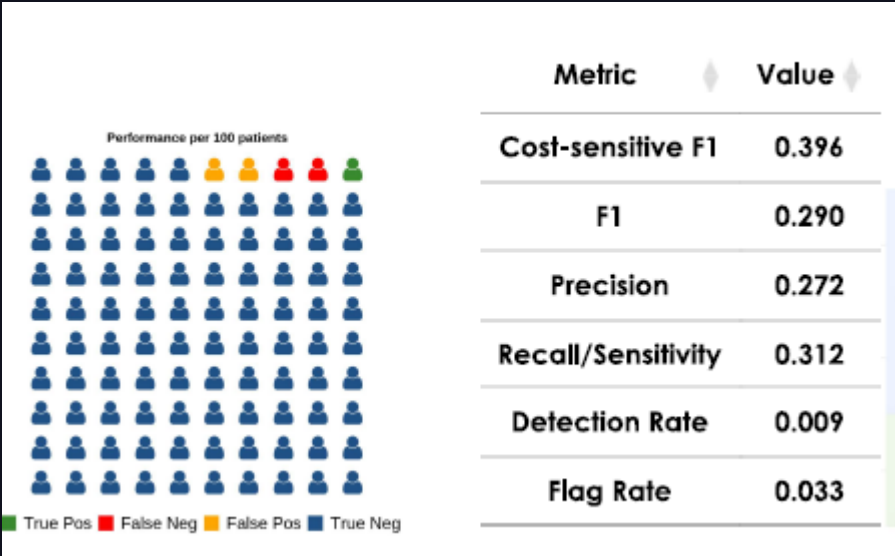
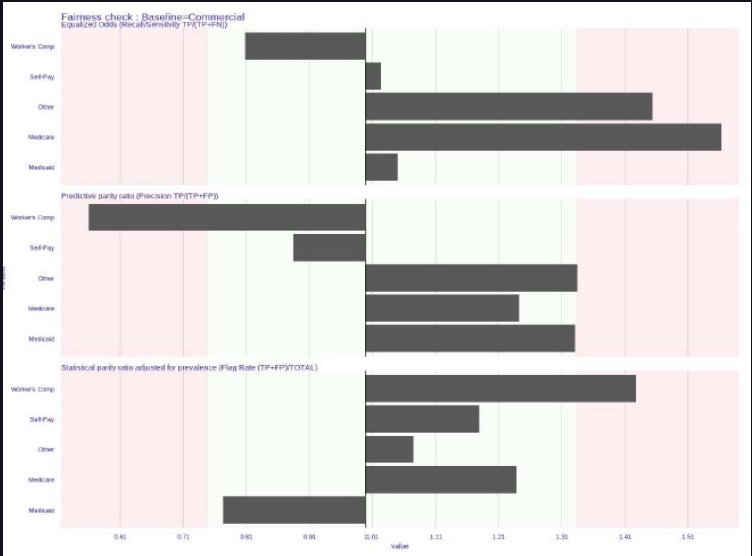
Databricks Serverless at Providence

- Databricks Serverless adds to the growing API ecosystem at Providence and extends the infrastructure needed to build AI Applications of the future.
- Databricks Serverless allows us to convert our homebrewed traditional machine learning models and fine-tuned Large Language Models (LLMs) to API and share them across the enterprise.
- Databricks Serverless enables the creation of API endpoints for open-source LLMs, thereby creating a low-cost alternative to OpenAI models.

Centralize AI Deployment



Model Fairness & Safety



Continuous Model Monitoring

