Microsoft

Empowering Federal Government to Achieve more with AI

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DALL-E image: prompt “generate a futuristic image based on US Federal Government mission that shows people working with”

AI use-cases within Federal Space

KNOWLEDGE MINING AND INSIGHTS FROM ENTERPRISE DATA

POLICY ANALYSIS AND DRAFTING

FRAUD DETECTION

PUBLIC COMMUNICATION AND HIRING

CYBERSECURITY (LOG ANALYTICS, ANOMALY DETECTION)

CODE GENERATION (LEGACY APP MODERNIZATION)

PREVENTIVE (AND PREDICTIVE) MAINTENANCE

REASONING OVER GEOSPATIAL DATA

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January 9, 2024 | News Release

PNNL Kicks Off Multi-Year Energy Storage, Scientific Discovery Collaboration with Microsoft

The imperative to move faster from research to application of energy solutions gets a boost with AI trained to dramatically accelerate scientific discovery

Microsoft Azure Quantum Blog

Unlocking a new era for scientific discovery with AI: How Microsoft's AI screened over 32 million candidates to find a better battery

January 9, 2024 • 8 min read

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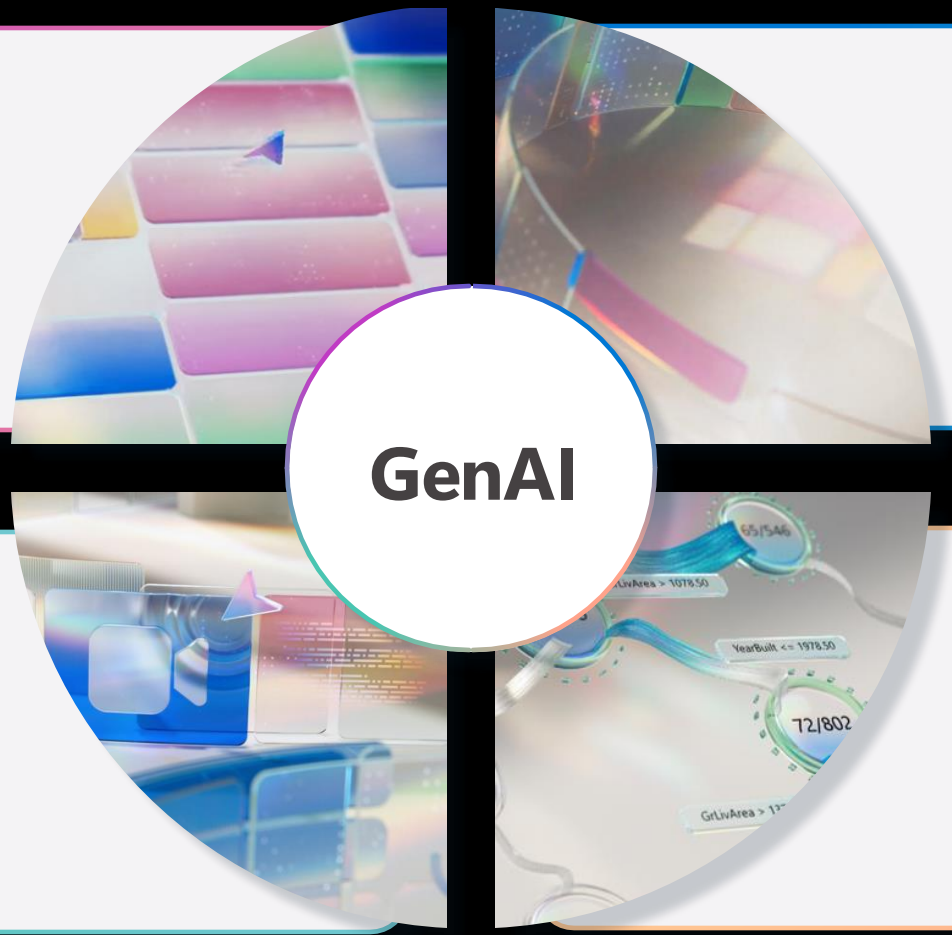
The core dimensions of implementing generative AI effectively

Model choice

Select the right models **for your use case**, benchmark and test them with your data

Total trust

Innovate confidently on top of data privacy, security, compliance, and critical **content safeguards**



Experience quality

Build high-quality LLM-based applications with **information retrieval** and prompt engineering

Streamlined lifecycles & impact

Operationalize and scale the **management** of your GenAI apps as they evolve over time

How to prioritize use cases

MISSION IMPACT

FEASIBILITY

TIME TO IMPLEMENT

ABILITY TO MEASURE

RISK

Defining AI use-cases that support mission needs

Mission need	Generative AI use cases
Advance productivity	· Streamline employee tasks · Speed up communication with AI-generated content · Accelerate service delivery
Maximize efficiency	· Anticipate future needs with predictive analytics · Accelerate operations with amplified automation · Avoid downtime with predictive maintenance and AI-powered incident management
Improve mission outcomes	· Generate new products and services · Personalize customer experiences · Enhance decision-making with intuitive business reporting

Approaching your optimal model selection

Content Generation

Empower your users with AI-generated content based on natural prompt commands

Summarization
Text generation
Image generation
Natural language to code

+

Multimodality

Increase **user engagement** with rich interactions that integrate vision, speech, and text

Chat
Image to text
Text to image
Video to text

+

Fine-tuning

Enhance model performance **using your own data** and adapt nimbly to feedback

Question answering
Text classification
Token classification
Zero-shot image classification

Build Capabilities Across Model Families


Microsoft Research Model Family


Azure OpenAI Model Family


Meta Llama 2 Model Family


Hugging Face Model Family


Mistral AI Model Family


NVIDIA Model Family


Deci AI Model Family

The core dimensions of implementing generative AI effectively

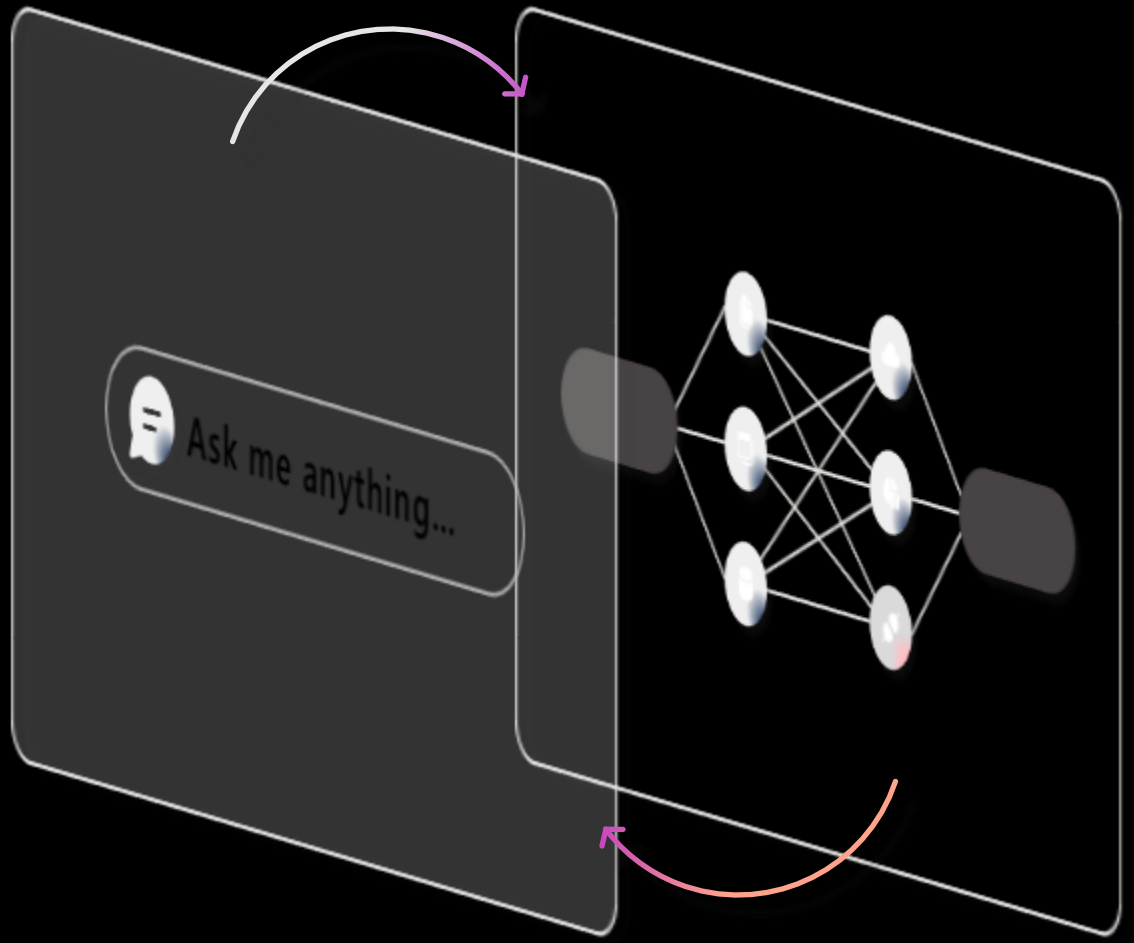
GenAI

Experience quality

Build high-quality LLM-based applications with **information retrieval** and prompt engineering

How we interact with software is changing and so are the retrieval techniques behind it all

Natural user interface



Reasoning engine

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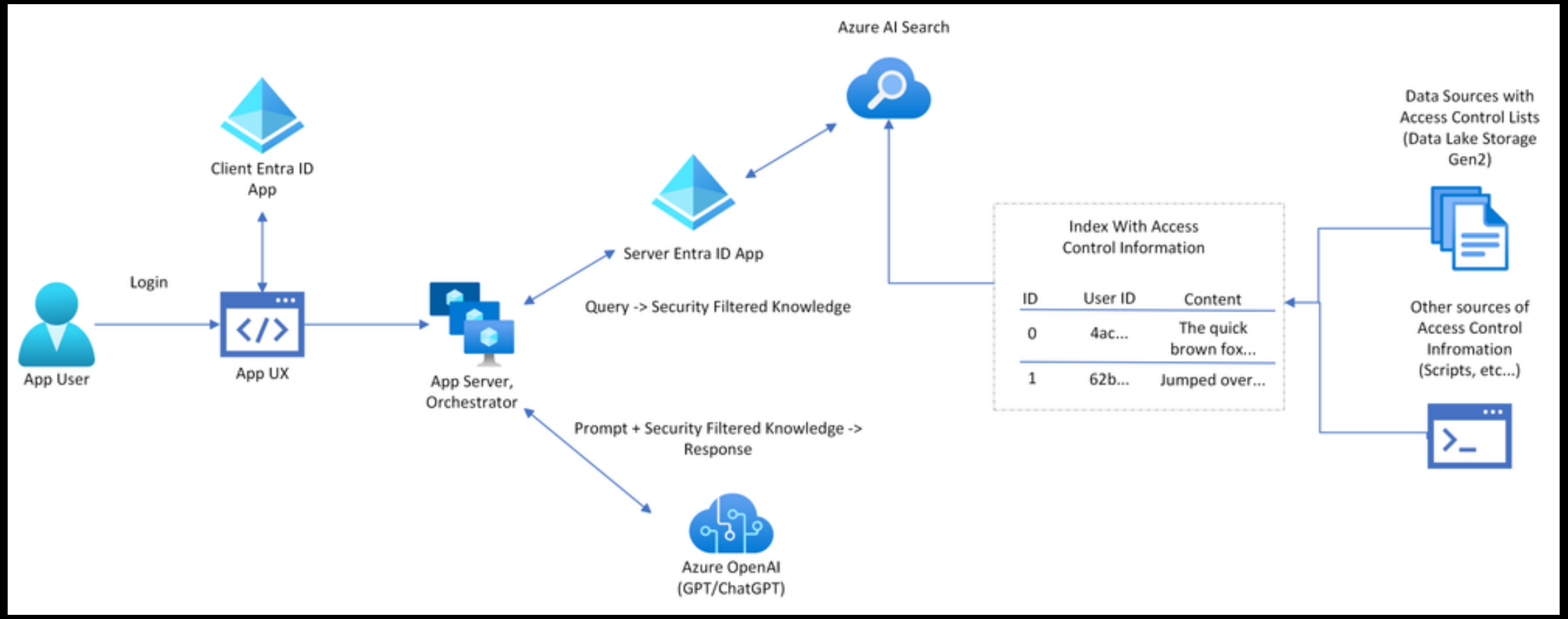
Short checklist for a secure and impactful (Generative) AI deployment

- ☑ Deployed in your Azure environment, secured by you, and tied to your datasets and applications
- ☑ Large, pretrained AI models to unlock new scenarios
- ☑ Custom AI models fine-tuned with your data and hyperparameters
- ☑ Built-in responsible AI to detect and mitigate harmful use
- ☑ Enterprise-grade security with role-based access control (RBAC) and private networks

Adding Access Control

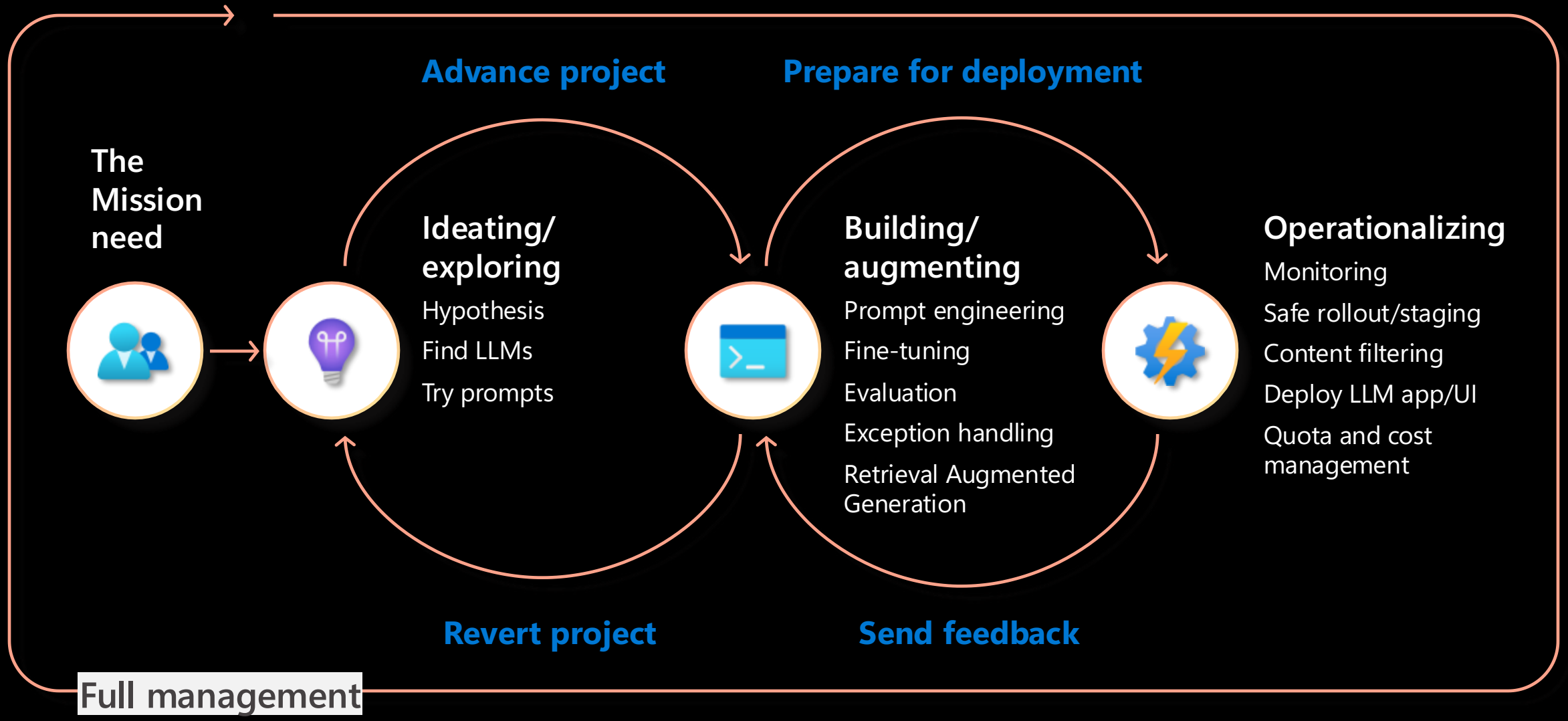


The core dimensions of implementing generative AI effectively

Streamlined lifecycles & impact

Operationalize and scale the **management** of your GenAI apps as they evolve over time

An LLM lifecycle in the real world



Measuring success of AI strategy

Mission	Customer-centric	Technical	Qualitative
Mission value: Increased revenue, brand lift, insights that lead to growth opportunities, risk reduction, cost savings, and improved productivity and efficiency.	**Customer satisfaction** (**CSAT):** Conduct surveys and gather feedback to understand how customers perceive the AI experience. Are they finding it helpful, efficient, and personalized?	**Model performance:** Track accuracy, precision, and recall of your AI models. Are they making correct predictions or recommendations?	**Feedback:** Gather feedback from employees who interact with the AI system in their daily work. How is it affecting their productivity and workflow?
Operational efficiency: Efficiency gains from automated tasks, reduced errors, and streamlined processes.	**Analytics/ telemetry:** Monitor how customers interact with the AI system. Measure metrics such as click-through rates, chat session lengths, and use of specific features.	**Data quality:** Monitor data quality, accuracy, completeness, and representativeness against your target audiences or business objectives.	**A/B testing:** Compare different versions of your AI model or user interface to see which one performs better with customers.

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Best way to learn, do it yourself!