SAPORITO & ASSOCIATES

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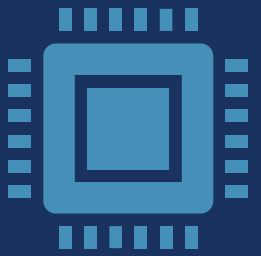
GENERATIVE AI FOR RISK MANAGEMENT

February 12, 2025



AGENDA

- AI & GENERATIVE AI OVERVIEW
- GEN AI OPPORTUNITIES & RISKS
- TRUSTWORTHY AI FRAMEWORK

PRESENTER: PAT SAPORITO, CPCU

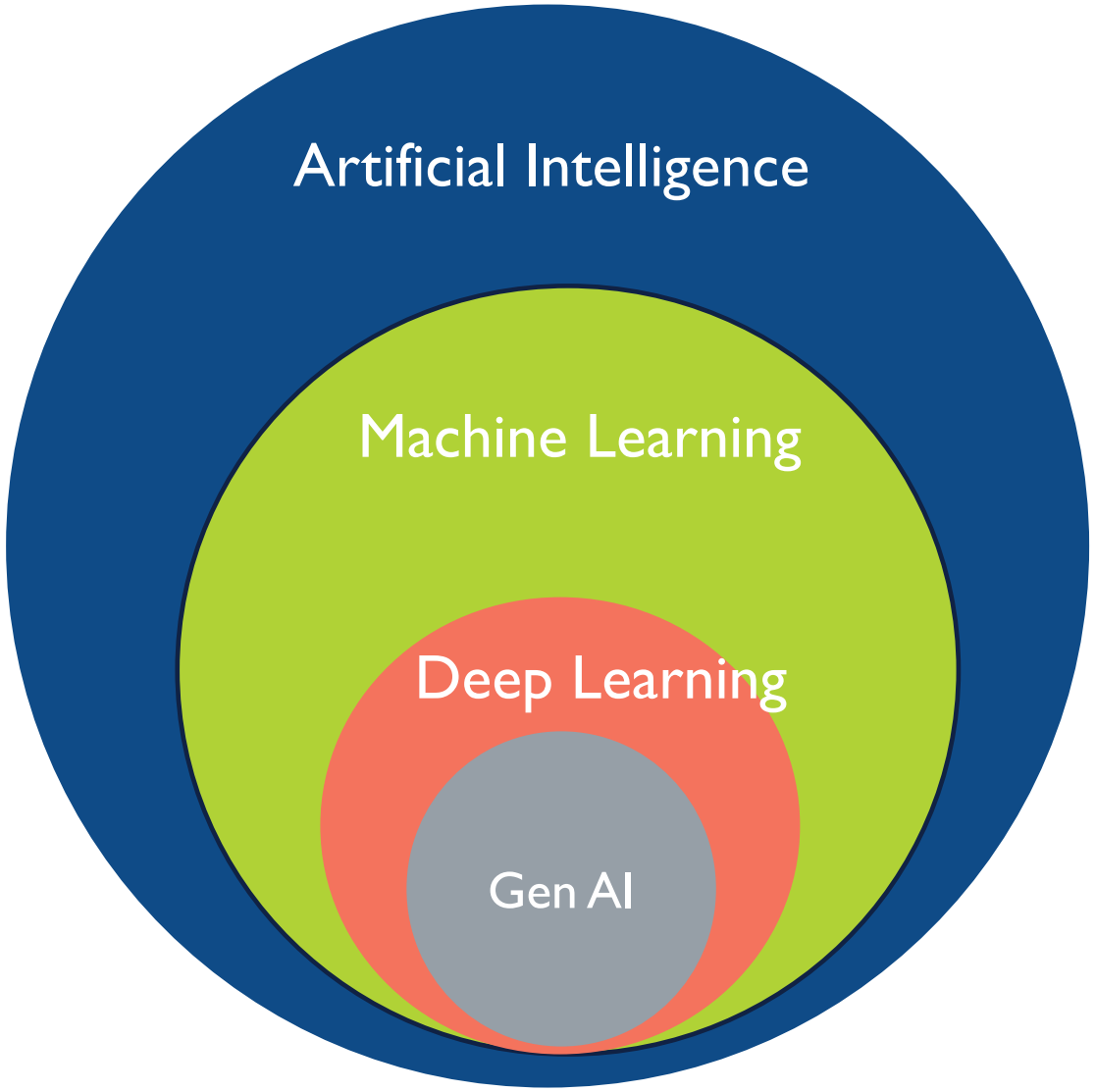
Pat is founder and principal consultant at Saporito & Associates, LLC where she helps companies innovate and grow their businesses through data and analytics. Previously, she led the global analytics strategy program at SAP. Prior to SAP, she held business development roles at Teradata and META Group (now part of Gartner). She has over 35 yrs experience in data warehousing and analytics.

She has held various roles in the insurance industry in claims, information technology, reinsurance, and research and development. She holds the Chaptered Property Casualty Underwriter (CPCU) designation.

She is a recognized data analytics thought leader and insurance industry expert. She is the author of "Applied Insurance Analytics" published by Pearson/FT Press, now in its 2nd edition.

She regularly teaches the AI for Risk Management Program for RIMS (the Risk and Insurance Management Society.) She has also developed other data analytics programs for other organizations including Moody's and Verisk.

In addition, she is an advisory board member for Stevens Institute of Technology's Data Analytics Masters Program where mentors students, and teaches various business and analytics masters courses.



1956 - Artificial Intelligence (AI): Field of computer science hat seeks to create intelligent machines that can replicate or exceed human knowledge. Algorithms are usually manually programmed.

1997 - Machine Learning (ML): an application of AI, that enables machines to learn from the data and improve algorithms that make decisions or predictions.

2017 - Deep Learning (DL): a Machine Learning technique that uses artificial neural networks to process data and make decisions with minimal human intervention.

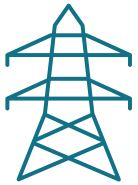
2022 - Generative AI (Gen AI): uses Natural Language Processing to generate high-quality content (text, images, and other forms) based on prompts and data it was trained on. Makes no decisions.

AI: 4TH INDUSTRY REVOLUTION
NEW BUSINESS MODELS, CUSTOMER EXPERIENCES & VALUE PARADIGMS

1700's

Steam

- Mechani-zation,
- Steam Power
- Loom



1800's

Electricity

- Mass Production
- Assembly Line
- Electrical Energy

1900's

Computing

- Automation
- Computers
- Electronics

Today

AI

- Digital
- Advanced AI
- Generative AI

Source: PWC

Amazon

Alexa

Package delivery

Netflix

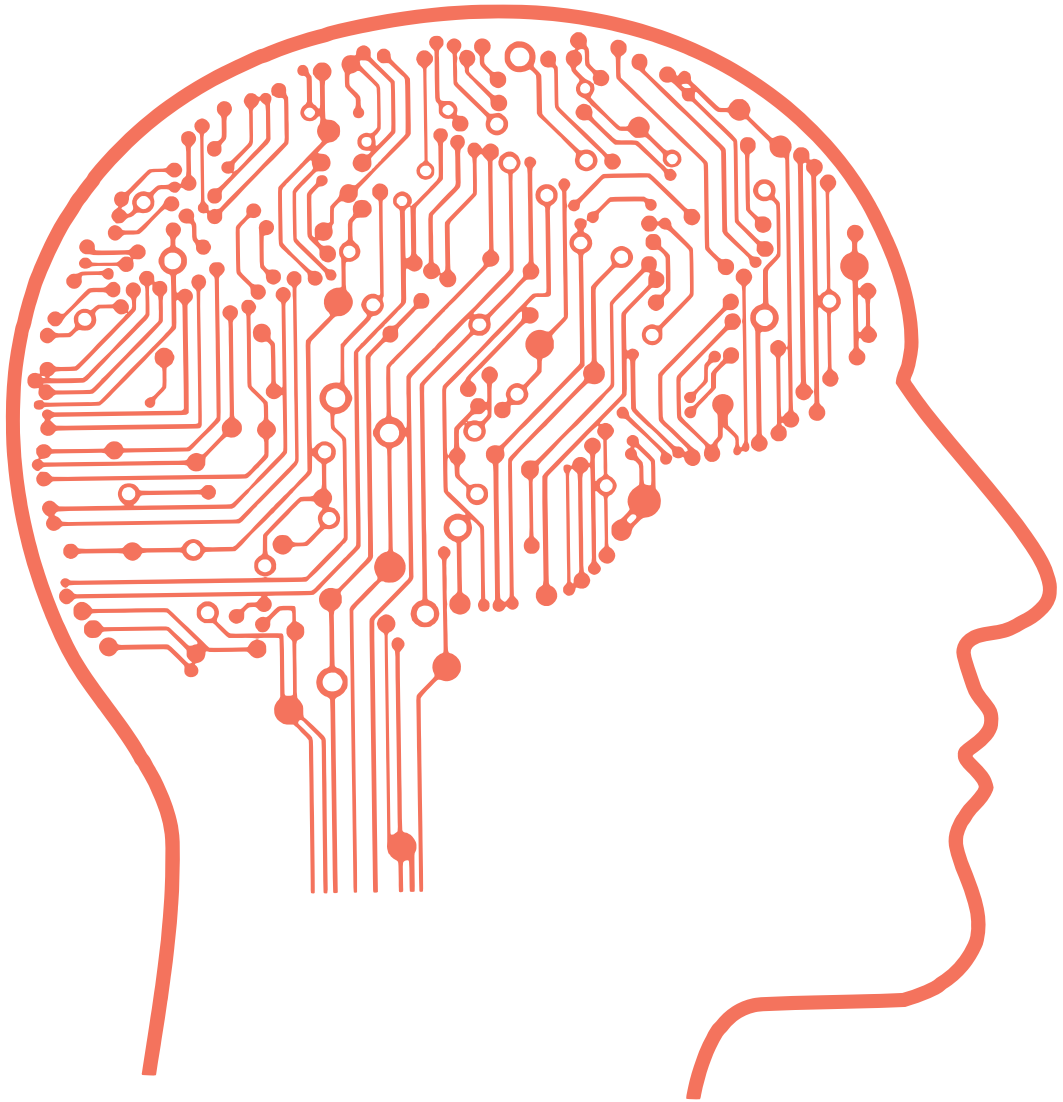
Movie recommendations

Walmart

Ecommerce

Warehousing

Data and analytics are driving change and innovation in the Digital Economy!

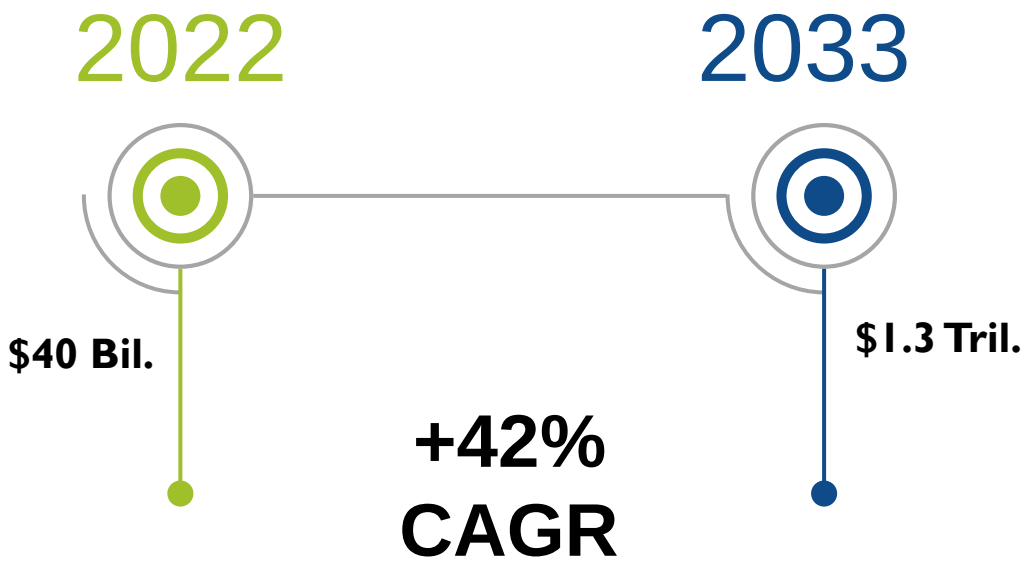


Generative Text AI uses LLMs to **generate content**.

Large Language Models (LLMs) are sophisticated probabilistic models designed to **predict the next word in a sequence** based upon the **data they were trained on**.

Results are driven by three variables

- Data
- Models
- Query Prompting


2022
2033
$40 Bil.
$1.3 Tril.
+42%
CAGR

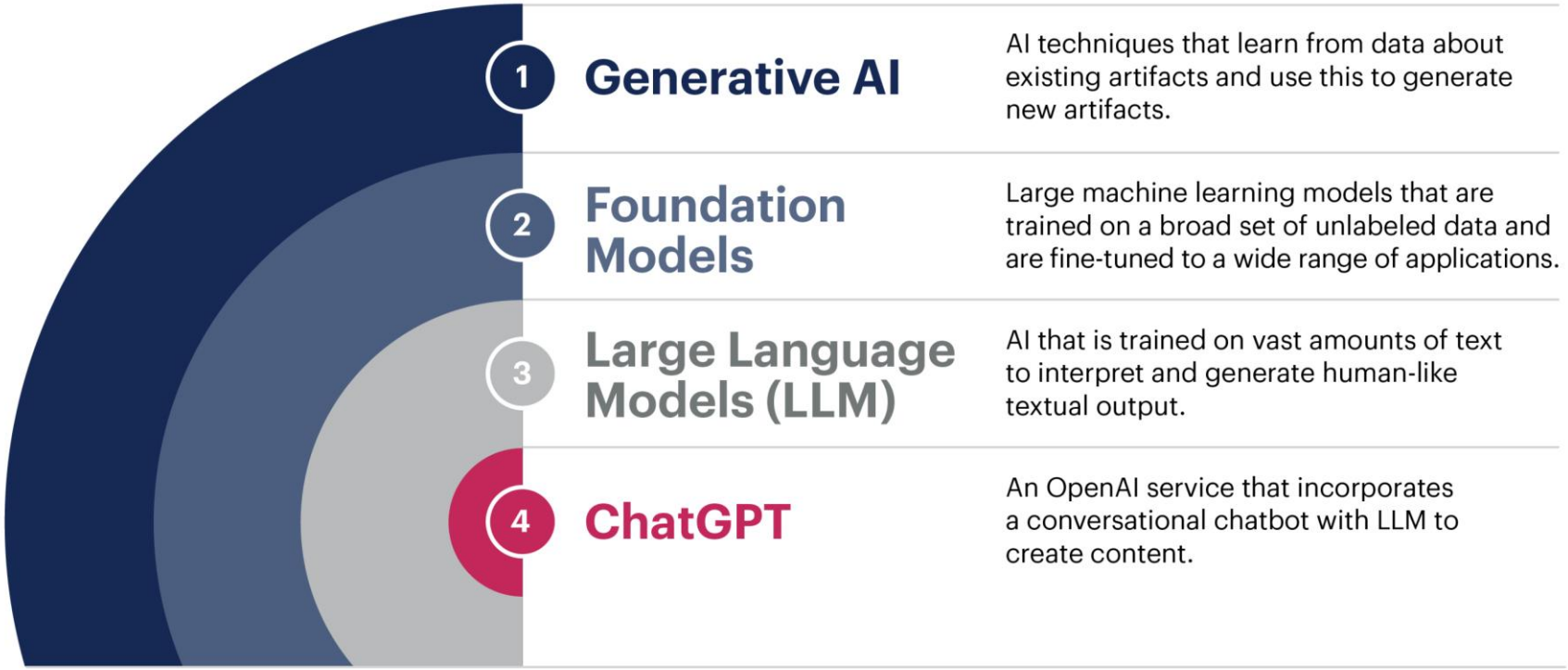
ChatGPT goes viral, getting to 1M users in 5 days and 100M in 2 months — unleashing genAI boom

Time to 1M users for select platforms/apps from launch

Source: Media mentions
*App downloads

https://www.cbinsights.com/reports/CB-Insights_Generative-AI-Bible.pdf

What Is Generative AI?



Source: Gartner

Gartner

AI vs. Generative AI

	AI	Generative AI
Definition & Scope	**Broad field of artificial intelligence**, which encompasses various techniques, algorithms, and systems designed to mimic human intelligence.	**Subset of AI focused on creating new content**, such as text, images, music, or code, by learning patterns from existing data.
Applications	**Used in a wide range of applications** such as predictive analytics, recommendation systems, autonomous vehicles, speech recognition, and customer service automation.	**Specifically applied to content creation**, such as generating human-like text, creating realistic images, composing music, designing products, and even writing code.
Data Utilization	Primarily focused on analyzing and interpreting **existing data** to make predictions, identify patterns, or automate decisions.	Leverages existing data to **create new data that did not previously exist**, often generating content that is novel and resembles the original data it was trained on. Makes no decisions!
Capabilities	Enhances decision-making, optimizes processes, improves efficiency, and **provides insights through data analysis.**	**Creates highly realistic content**, simulates creative processes, and enables new forms of expression and innovation.
Ethical Concerns	**Algorithm bias, privacy issues, and the impact on employment**.	Additional concerns for **authenticity, copyright infringement, deepfakes, and misinformation**.

https://www.ey.com/en_us/insights/insurance/how-to-revolutionize-the-insurance-value-chain-with-generative-ai

Top 5 Generative AI Vendors





Company	Key Products
Alphabet (Google)	Gemini, Vertex AI, LaMDA, PaLM 2
Anthropic	Claude 3.5, Claude API
Meta	Meta AI, Llama 2, Llama 3.1, Seamless Communication models
Microsoft	Microsoft Copilot Studio, Azure AI Studio
OpenAI	GPT-4o, ChatGPT, DALL-E 3, Sora

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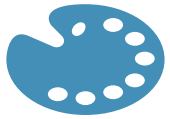
Gen AI Benefits



Enhanced Creativity

Innovation

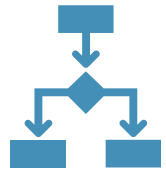
Increased Efficiency

Cost Savings

Creative Collaboration

Accessibility

Real Time Adaptation



Improved Decision Making

Gen AI Limitations

Lack of Understanding

Bias and Fairness

Data Dependence

Resource Intensive

Ethical Concerns

Lack of Originality

Context Sensitivity

Security Risks

Human Oversight Dependence

Generalizatio n Limits

General Use Cases

- Data Analysis & Predictive Modeling
- Scenario Planning
- Risk Assessment & Prioritization
- Natural Language Processing for Doc. Analysis
- Anomaly Detection
- Compliance Monitoring
- Decision Support
- Natural Language Generation for Reporting
- Predictive Maintenance
- Stress Testing
- Continuous Monitoring
- Employee Training & Education

General Use Cases

Use Case	Capability	Application
Data Analysis and Predictive Modeling:	Analyze large datasets to **identify historical patterns and trends** related to operational risks.	**Build predictive models** to anticipate potential risks and their likelihood, enabling proactive risk mitigation.
Scenario Planning:	**Generate various scenarios** based on historical data and hypothetical situations.	Use scenarios to **assess the potential impact** of different risks and devise strategies to manage them.
Risk Assessment and Prioritization:	Automate the process of risk assessment by **analyzing data and assigning risk scores to different factors**.	**Prioritize risks** based on their potential impact and likelihood.
Natural Language Processing (NLP) for Document Analysis	Extract valuable insights from **unstructured data** sources such as reports, news articles, and regulatory documents.	Identify **emerging risks and monitoring regulatory changes** that could impact your operations.
Anomaly Detection	Generative AI can be used to build **anomaly detection models t**hat continuously monitor operational data	**Automatically flag unusual patterns or outliers**, potentially indicating emerging risks or fraud.
Compliance Monitoring	Monitoring regulatory compliance by analyzing data against regulatory requirements and	**generating compliance reports.**

General Use Cases

Use Case	Capability	Application
Decision Support	Analyzing data and recommend risk mitigation strategies based on historical data and best practices.	Enhance risk mitigation strategies
Predictive Maintenance	**Predict equipment failures and maintenance needs**	Improve fleet management; prevent operational disruptions
Natural Language Generation (NLG) for Reporting	**generate automated reports and summaries**	**Generate automated risk reports and summaries**, saving time and ensuring consistent reporting.
Stress Testing	**Simulate stress tests** by generating scenarios	Assess how your organization would perform under adverse conditions
Continuous Risk Monitoring	Provide **real-time alerts for unusual activities or deviations** from established risk thresholds.	Improve risk awareness and response
Employee Training and Education	Create customized **training materials and simulations** to educate employees about operational risks and best practices.	Assess and improved occupational health and safety training and compliance. e.g. Compare workers comp claims to current loss prevention/employee safety training for gaps.
Vendor and Supply Chain Risk Assessment	Analyze data vendor and supply chain data for **network analysis.**	Improve vendor and supply chain analysis, e.g., Track and Trace

- Use AI as an Assistant

- Check the Output (aka: Be the Human in the Loop)

- Assign AI a Persona or Role

Prompt Engineering: the process of designing and crafting input prompts or queries to Generative AI models to elicit outputs or responses. Output is dependent on **3 key components**: task, instructions and context.

Component	Description	Output
Task	What you want ChatGPT to do *	• Be **clear and specific**
Instructions	How you want ChatGPT to do it *	• Specify **format** of output (e.g., table, bullet points, etc.) • Specify **tone** of output (e.g., informal, authoritative, etc.) • For complex tasks, **ask it to go step-by-step** * • Ask ChatGPT to **assume a persona /role**
Context	What you want ChatGPT to know *	• Specify **information needed** for Gen AI do the task well • Describe how the task fits in a **broader context** • Upload **background material**, (e.g., a document or cite research papers/studies for background)

Human in the Loop (HITL)

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Gen AI Risks & Challenges

Fairness (Bias, Discrimination, Outcomes)

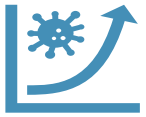
- Inadequate/poor data
- Exaggerated in Gen AI

Explainability (Lack of)

- Why & how model generates results

Data (Training & Generated)

- Privacy & Confidentiality
- IP & copyright



Model Output (Robustness & Reliability)

- Model degradation
- Hallucinations

Governance

- Accountability & transparency
- Regulatory compliance

Environmental

- Power
- Chips

Competition

- Lack of market differentiation
- Market manipulation potential

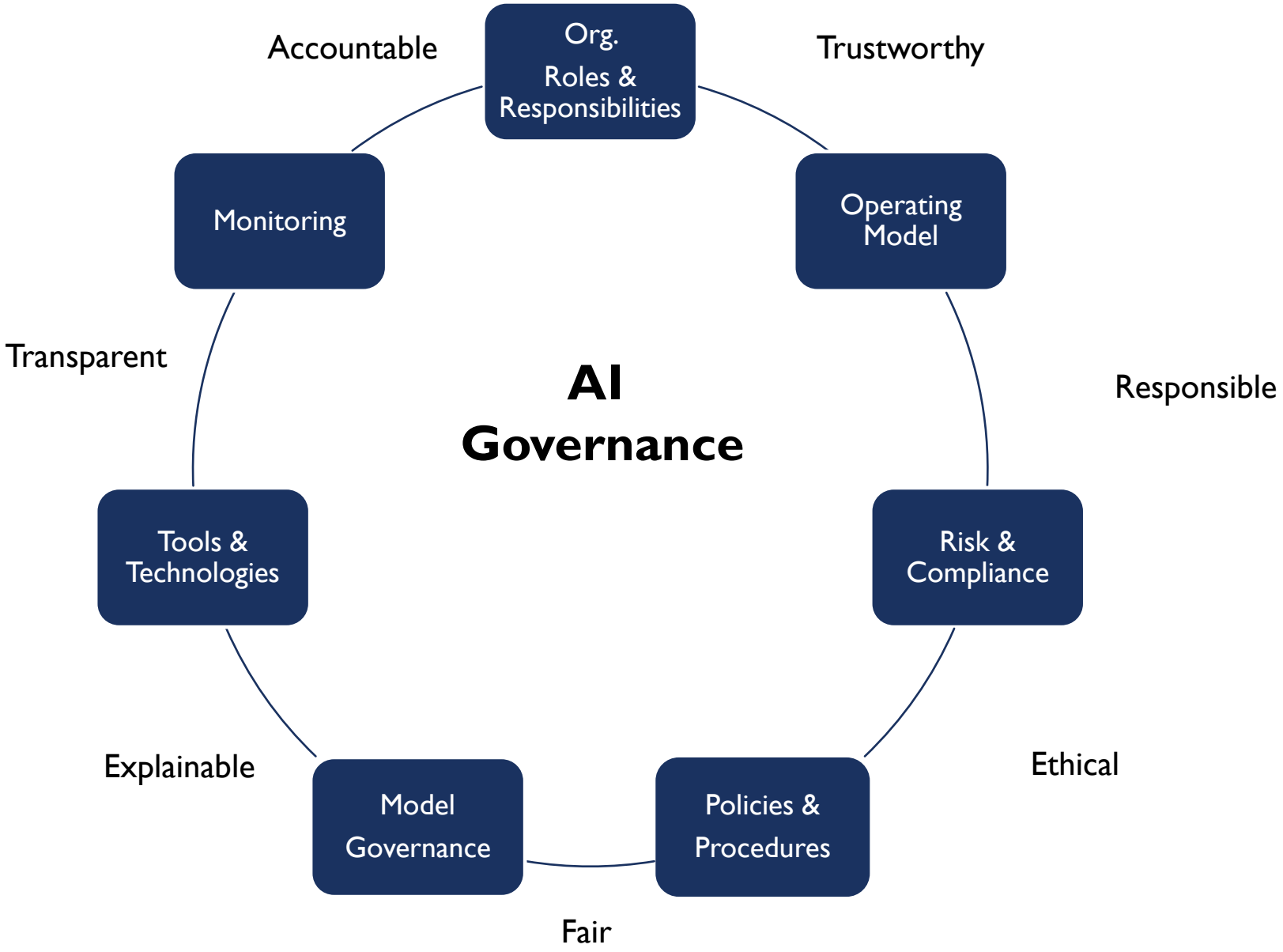
People

- Changing Skill Needs
- Employment Displacement

Gen AI Risks: 4 D's

Risk	Mitigation
Data Privacy / Data Security	Data Governance/ Data Security Policies & Procedures; Guardrails
Disinformation/ Misinformation	Human review of content generated (Human in the Loop)
Discrimination	Human review of data, algorithm, output (Human in the Loop)
Displacement	New Job roles Employee upskilling, retraining

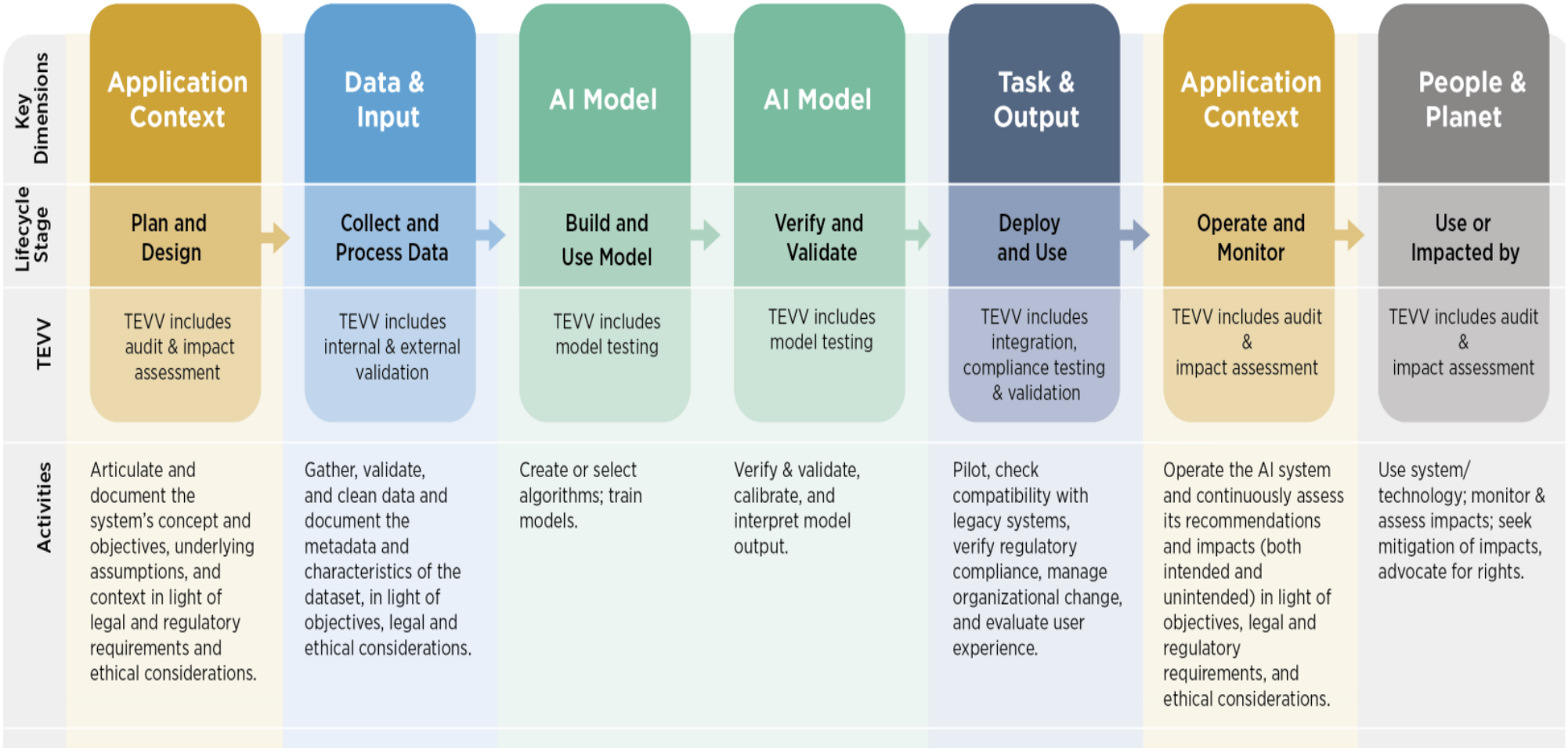
AI Governance Framework



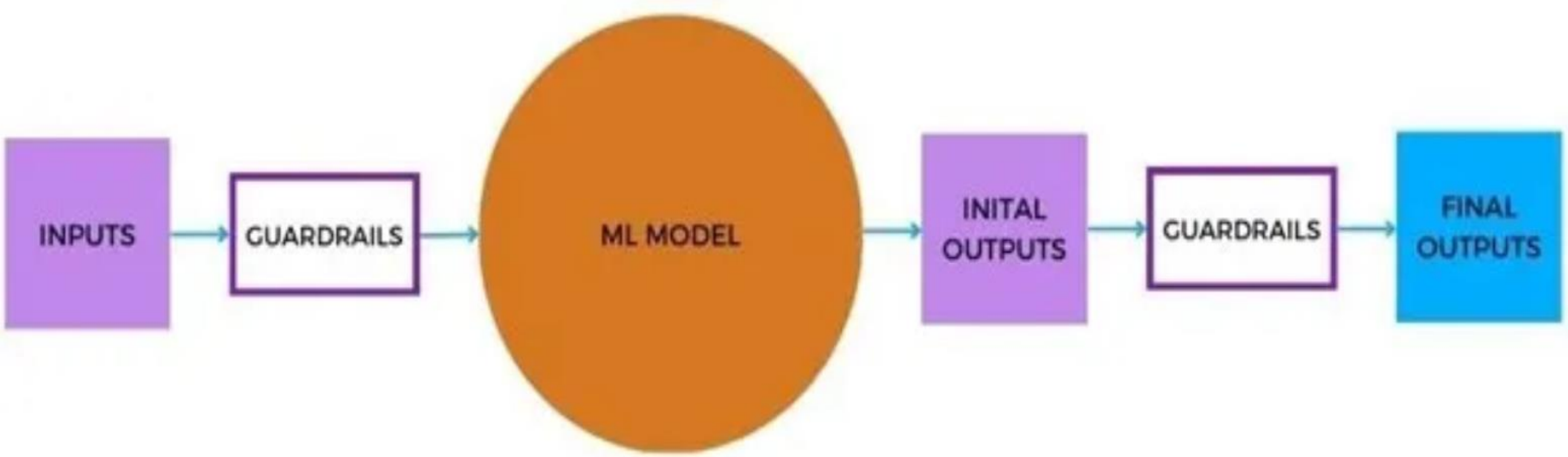
NIST AI RM Framework

National Institute of Standards and Technology
U.S. Department of Commerce

https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.100-1.pdf



Guardrails are the set of filters, rules, and tools that sit between inputs, the model, and outputs to reduce the likelihood of erroneous/toxic outputs and unexpected formats, while ensuring you're conforming to your expectations of values and correctness.



AI Charter vs. Policy

An AI Charter sets the high-level principles and values that guide AI initiatives and serves as a declaration of intent. The **AI Policy provides the operational details, procedures, and specific rules** that employees must follow when working with AI.
The two documents complement each other; the charter setting the ethical framework and the policy providing the practical guidance needed for responsible AI implementation.

AI Charter: (Framework)

- **Principles and Guidelines**
- **High-Level Commitment.**
- **Broad Scope**
- **Stakeholder Engagement**

AI Governance Charter example

AI Policy: (Guidance)

- **Detailed Guidelines**
- **Operational and Implementation Focus**
- **Data Handling and Compliance**
- **Risk Management**

AI Policy example

AI Policy/Guideline Examples

City of San Jose AI Policy
https://www.sanjoseca.gov/your-government/departments-offices/information-technology/digital-privacy/ai-reviews-algorithm-register

Canada Generative AI Guardrails
https://ised-isde.canada.ca/site/ised/en/consultation-development-canadian-code-practice-generative-artificial-intelligence-systems/canadian-guardrails-generative-ai-code-practice

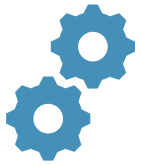
Columbia University AI Policy
https://provost.columbia.edu/content/office-senior-vice-provost/ai-policy

Review Existing AI Governance and Guidelines

Define Gen AI Governance; align with your overall existing IT and AI Governance

Build Guardrails

Define a Generative AI Use Policy



Identify & Prioritize Risk Management Use Cases

Start with data management and automating routine risk management monitoring and guidance

Build a Prompt Library

Leverage common queries for re-use

- Generative AI is Moving Fast
- More Challenges with Continue to Emerge
- Monitoring & Mitigating Risk is Critical

- Do you have AI Governance Charter or Council?
- Do you have a Gen AI Use Policy?
- How have you incorporated AI Risks into your Risk Register?
- What gaps or challenges have you encountered?
- How have you tried to address them?

Resources

- Co-Intelligence: Living and Working with AI. Ethan Mollick. 2024. Portfolio/Penguin.
- OpenAI.com: ChatGPT Introduction Link
- GripRoom: Writing Better Prompts for ChatGPT Link
- Economist: *"Large Creative AI Models Will Transform How We Work…"* AI. Special AI Issue - April 24, 2023 Link

Want to Learn More?

https://rims.org/education/online-learning/virtual-workshops

- Leveraging Data & Analytics for AI in ERM
- Managing Data for AI in ERM
- Optimizing Risk Management with AI
- Generative AI for Risk Management

QUESTIONS?

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THANK YOU!