

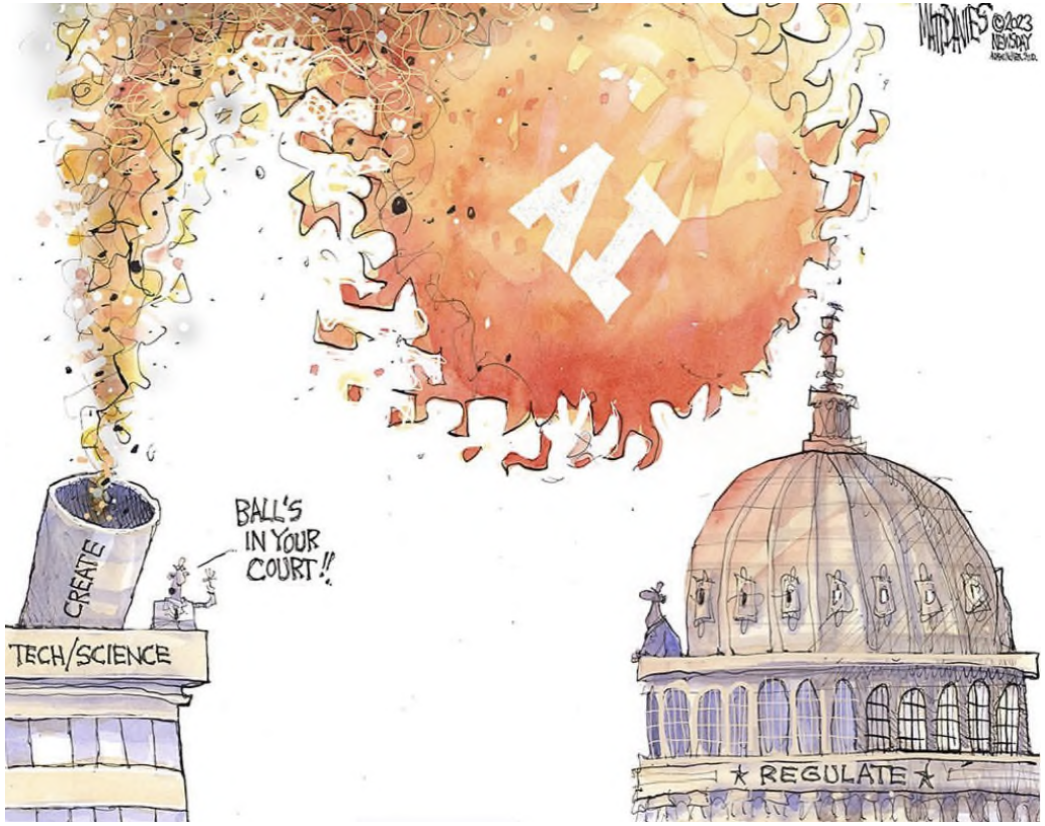
AI OVERVIEW

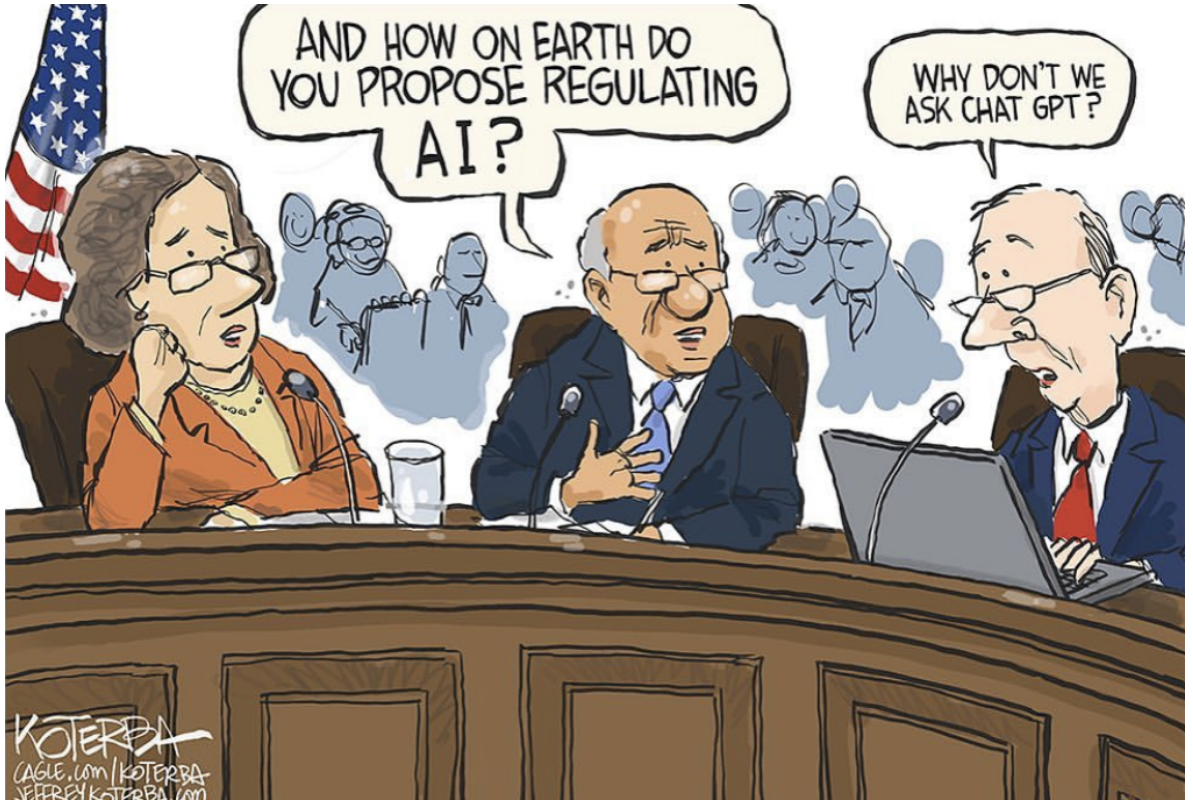
APRIL 22, 2024



AGENDA

- What is AI?
- Executive Order #14110
- AI Capabilities
- Values to Impact
- Summary





WTF

What is AI?

Industry Terminology

WHAT IS AI?

All technologies that fall under the "AI" bucket, and the subfields of Machine Learning, Deep Learning, and Generative AI are considered "AI" according to the OMB M-24-10; while other technologies like those listed in the grey box below are not considered "AI"

Source: OMB M-24-10 and What is Artificial Intelligence (AI)? | IBM

Artificial Intelligence

AI, or artificial intelligence, is a field of computer science that focuses on creating intelligent machines capable of tasks requiring human intelligence.

Machine Learning

Machine learning is a subfield of artificial intelligence and is broadly defined as the capability of a machine to imitate intelligent human learning.

Deep Learning

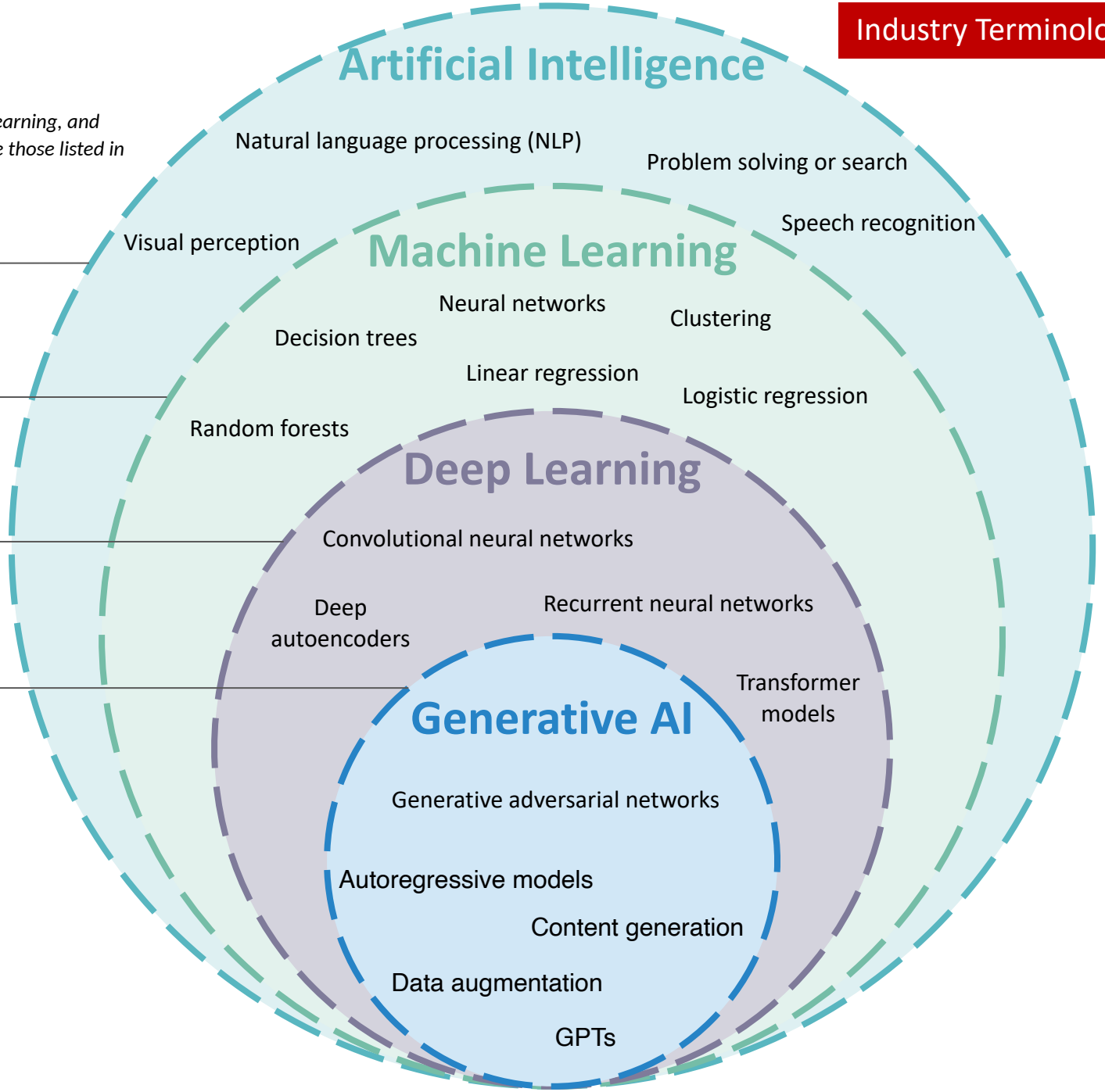
Deep learning is a subset of machine learning that uses multi-layered neural networks to imitate complex human thinking.

Generative AI

Generative AI is a subset of deep learning models that can create new content such as images, text, audio, or video based on the data it has been trained on.

Other technologies not considered "AI":

- Robotic process automation (RPA)
- Analytics, statistics and data visualization (dashboards)
- Virtual Reality (VR) and Augmented Reality (AR)
- Simple, rules-based chatbots



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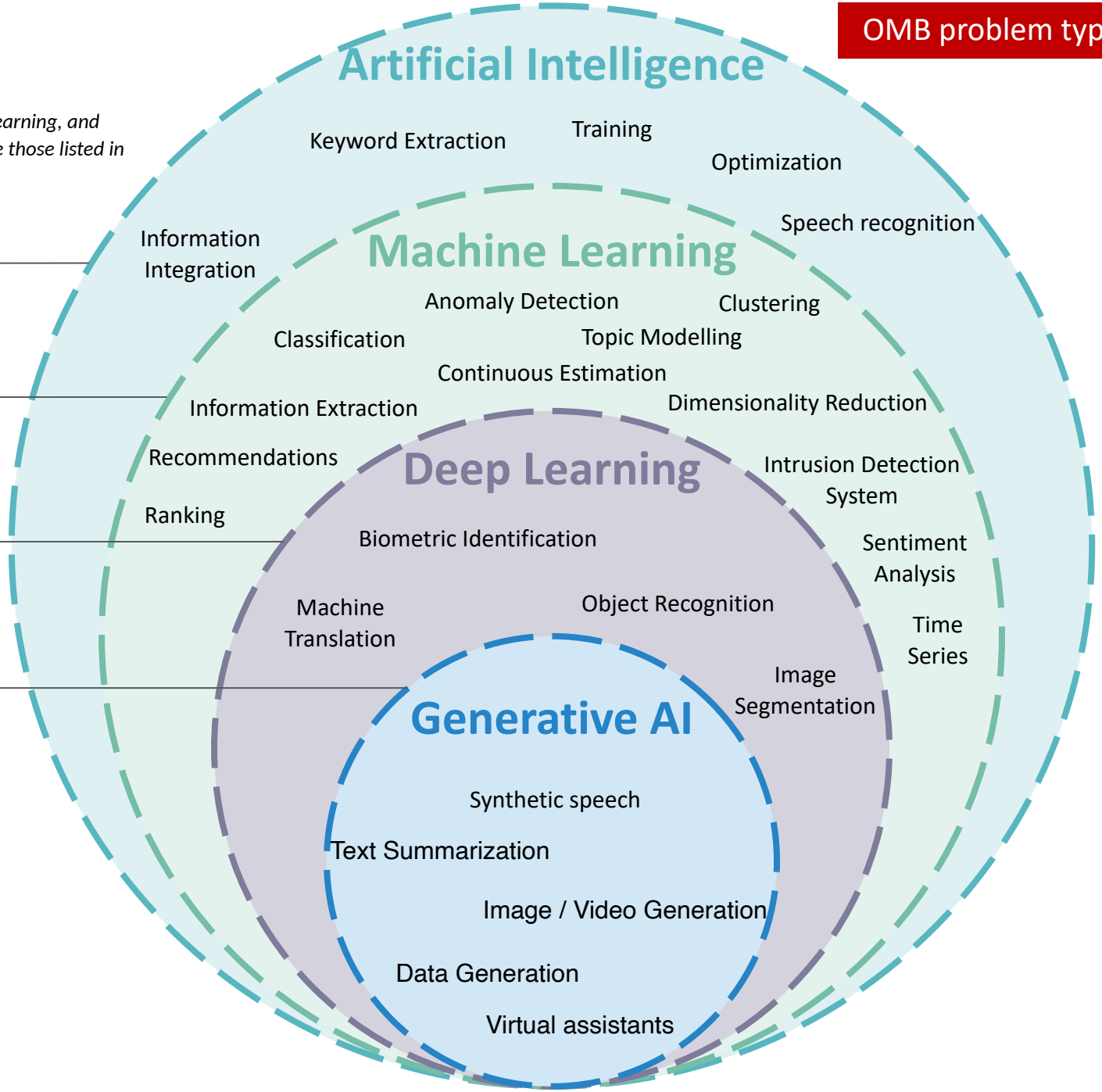
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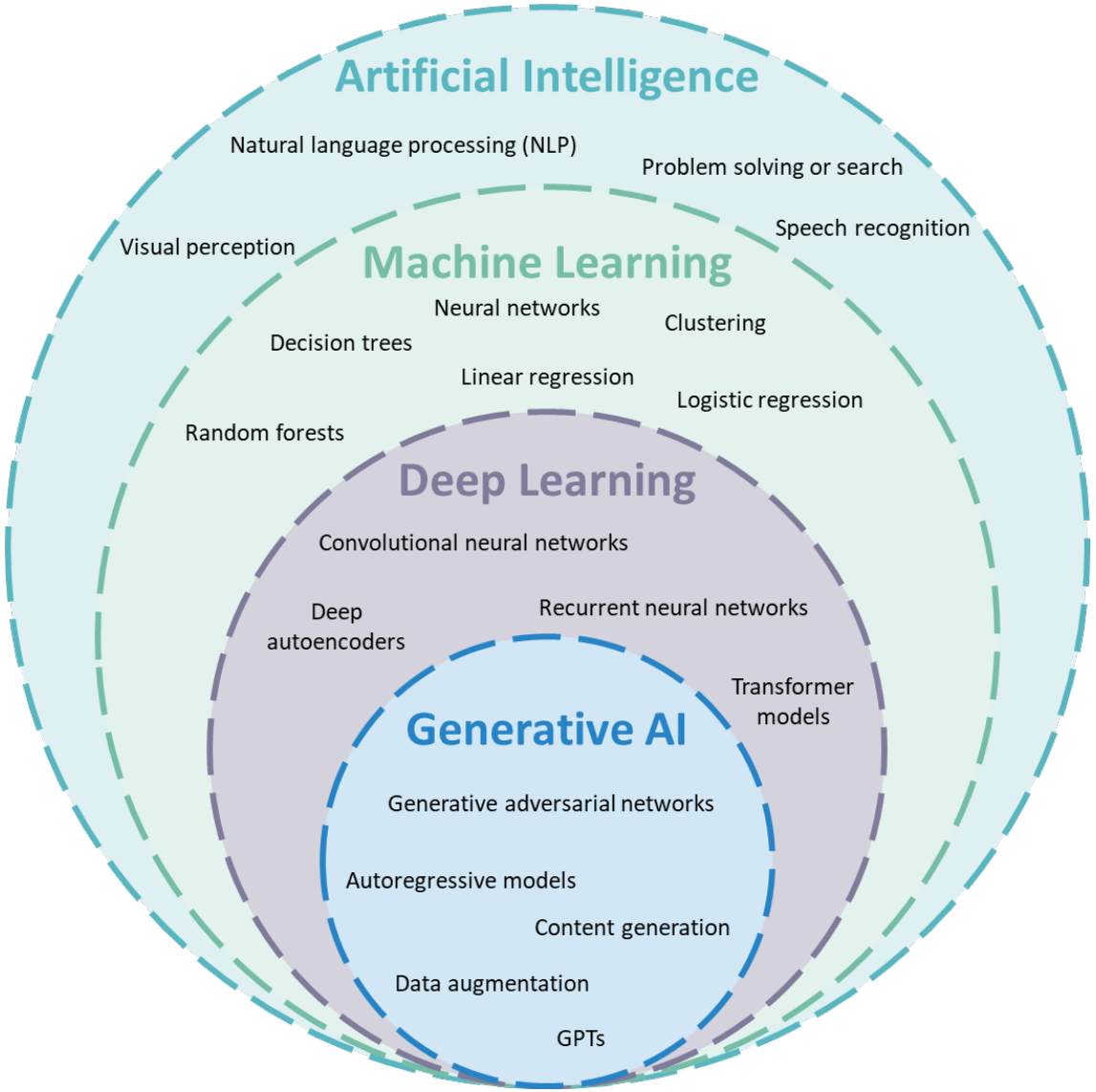
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OMB problem types



Industry Terminology



EXAMPLES OF AI PRACTICAL USE

Technique	Real-world Example
Natural Language Processing	Google Translate
Speech Recognition	Speech-to-text; subtitles on videos
Problem Solving or Search	Apple & Google Maps, Waze
Visual Perception	Self-driving cars
Decision Trees	Used by banks to consider factors in loans
Random Forests	Predictive text in iMessage or Gmail
Neural Networks	Netflix recommendations
Linear Regression	Future sales predicition
Clustering	Future purchase recommendations
Logistic Regression	Email “spam” detection
Convolutional neural networks	Auto-tagging an image on Facebook
Recurrent neural networks	“Next word” predictions
Transformer models	Alexa, Google Assistant, and Siri
Deep autoencoders	Image compression for online photo storage
Generative adversarial networks	Deepfakes
Autoregressive models	Weather forecasting
Content Generation	News articles, emails, summaries, etc.
Data Augmentation	Photo editing; Google’s Magic Eraser
GPTs	ChatGPT

WHAT HAS CHANGED IN AI?

Generative AI has been around a while, in tools like Google Translate or Siri. What has changed is the ability of generative AI to answer detailed prompts with language modeling. Here are some examples of prompts that generative AI can answer and create:

I am writing an essay about the use of mobile phones during driving. Can you give me three arguments in favor?

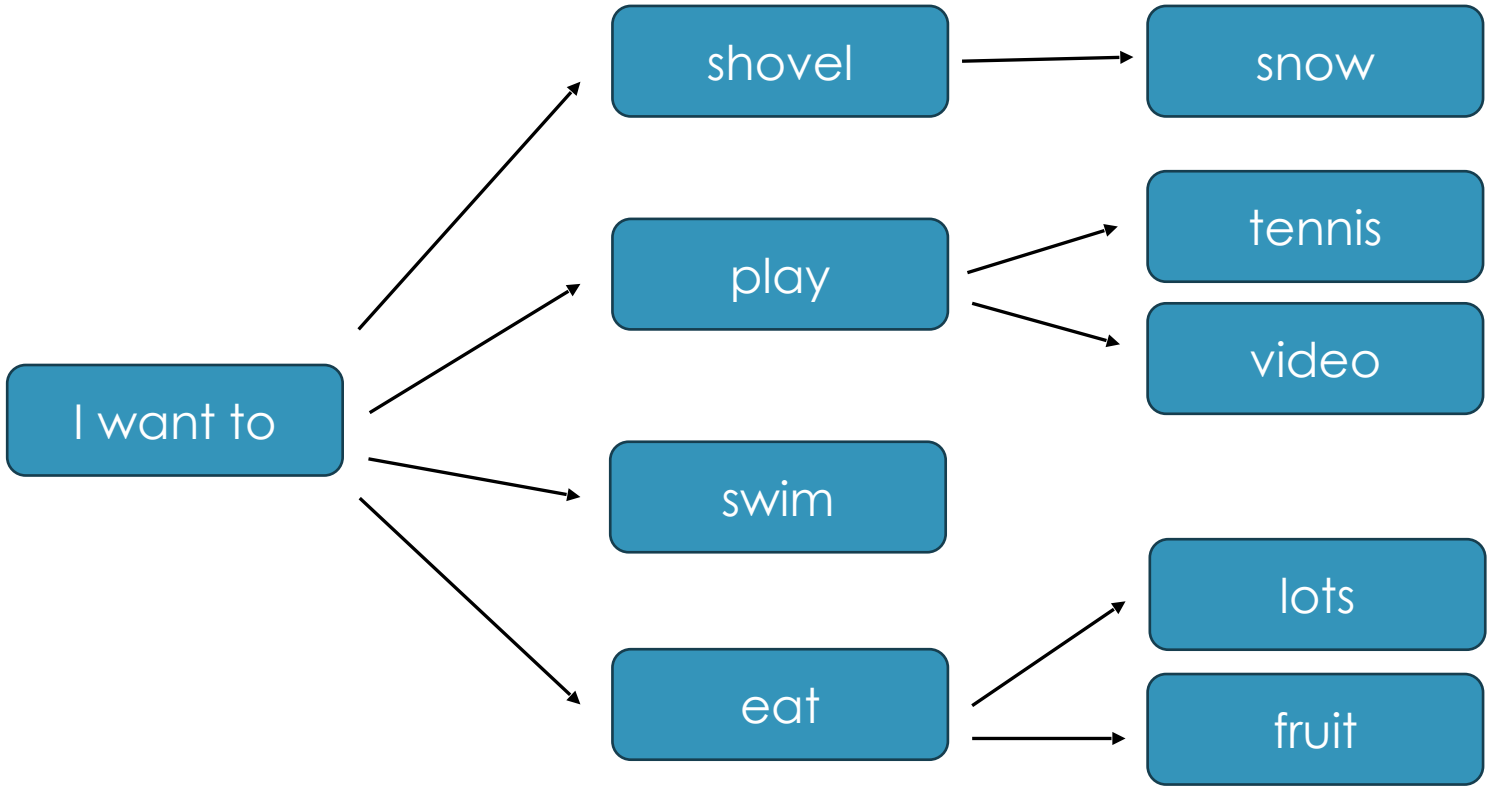
Act as a JavaScript developer. Write a program that checks the information on a form. Name and email are required, but address and age are not.

Create an "about me" page for a website. I like rock climbing and all outdoor sports and I like to program. I started my career as a quality engineer in the automotive industry but I was always curious about programming. I started with automation and microcontroller programming. I moved to Poland 7 years ago. I started web development by myself 4 years ago with HTML and JavaScript. I am working now as a Full Stack Developer.

Source: The Royal Institution, University of Edinburgh, "The Turing Lectures with Mirella Lapata," 10/12/23

WHAT IS AN AI LANGUAGE MODEL?

What do we mean by an AI language model? In this simple example, the computer predicts what word might come next from the prompt "I want to." Large language models scale this up using immense amounts of data.



Source: The Royal Institution, University of Edinburgh, "The Turing Lectures with Mirella Lapata," 10/12/23

LLM:	LLM stands for Large Language Model. LLMs are a category of AI foundation models trained on immense amounts of data making them capable of understanding and generating natural language and other types of content to perform a wide range of tasks.
GPT:	GPT stands for Generative Pre-Trained Model. GPTs are general-purpose language models that can perform a broad range of tasks from creating original content to write code, summarizing text, and extracting data from documents. [ChatGPT is Open AI's brand name for its GPT.]
Digital Twin:	A virtual representation of an object or system designed to accurately reflect a physical object. For example, manufacturing processes can be improved with models that identify bottlenecks before installing new equipment.
RAG Model:	RAG stands for Retrieval-Augmented Generation, which is the process of optimizing the output of a large language model, so it references an authoritative knowledge base outside of its training data sources before generating a response.
Hallucination:	A phenomenon wherein a large language model (LLM) perceives patterns or objects that are nonexistent or imperceptible to human observers, creating outputs that are nonsensical or altogether inaccurate.
AI Bias:	AI bias refers to AI systems that produce biased results that reflect and perpetuate human biases within a society, including historical and current social inequality. Bias can be found in the initial training data, the algorithm, or the predictions the algorithm produces.

Sources: AWS, IBM



SAFE, SECURE & TRUSTWORTHY AI

EO #14110 AND OMB GUIDANCE

SPECIFIC GUIDANCE | EO #14110 + OMB MEMO



OCTOBER 30, 2023

Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

BRIEFING ROOM › PRESIDENTIAL ACTIONS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

On October 30, 2023, Executive Order 14110, "Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence" was issued.

OMB has issued final guidance based on the EO.

Action	Deadline	Responsible Party	Status	Directed
Designate an agency Chief AI Officer and notify OMB through Integrated Data Collection Process	60 days	Senior Leadership	Completed – Vinay Singh announced as CAIO on 11/22/23	EO & OMB
Convene Agency AI Governance Boards	60 days	CAIO	Ongoing	EO & OMB
Issue guidance addressing the use of **tenant screening systems** in ways that may violate the Fair Housing Act (Public Law 90-284), the Fair Credit Reporting Act (Public Law 91-508), or other relevant Federal laws	180 days 4/27/24	PD&R and FHEO	In progress – releasing on 4/29/24	EO
Issue guidance addressing how the Fair Housing Act, the Consumer Financial Protection Act of 2010 (title X of Public Law 111-203), or the Equal Credit Opportunity Act (Public Law 93-495) apply to the **advertising of housing, credit, and other real estate-related transactions** through digital platforms	180 days 4/27/24	PD&R and FHEO	In progress – releasing on 4/29/24	EO
Provide resources and increase AI training offerings for Federal employees,	Ongoing	CAIO/OPM	In progress	EO & OMB
Directs OMB to release final Memo advising agencies on use of AI by March 2024	March 2024	OMB	Released 3/28/24	EO

Due April 27, 2024

TENANT SCREENING

Executive Order 14110 Section 7.3(c): "Within 180 days of the date of this order, to combat unlawful discrimination enabled by automated or algorithmic tools used to make decisions about access to housing and in other real estate-related transactions, the Secretary of Housing and Urban Development shall, and the Director of the Consumer Financial Protection Bureau is encouraged to, issue additional guidance:

(i) addressing the use of tenant screening systems in ways that may violate the Fair Housing Act (Public Law 90-284), the Fair Credit Reporting Act (Public Law 91-508), or other relevant Federal laws, including how the use of data, such as criminal records, eviction records, and credit information, can lead to discriminatory outcomes in violation of Federal law"

Due April 27, 2024

HOUSING, CREDIT, AND OTHER REAL ESTATE ADVERTISING

Executive Order 14110 Section 7.3(c): "Within 180 days of the date of this order, to combat unlawful discrimination enabled by automated or algorithmic tools used to make decisions about access to housing and in other real estate-related transactions, the Secretary of Housing and Urban Development shall, and the Director of the Consumer Financial Protection Bureau is encouraged to, issue additional guidance:

(ii) addressing how the Fair Housing Act, the Consumer Financial Protection Act of 2010 (title X of Public Law 111-203), or the Equal Credit Opportunity Act (Public Law 93-495) apply to the advertising of housing, credit, and other real estate-related transactions through digital platforms, including those that use algorithms to facilitate advertising delivery, as well as on best practices to avoid violations of Federal law."

OMB UPDATED GUIDANCE

Top 6 Changes from OMB Draft Memo to final | Article

+Working groups

Added compliance time:

The new policy changes the deadline for agencies to be in compliance with risk management practices from Aug. 1 to Dec. 1.

Sharing code, data:

Agencies must "release and maintain that code as open-source software on a public repository" under the memo, unless sharing it would pose certain risks or it's restricted by law, regulation, or contract.

AI Talent Lead:

The policy also states agencies should designate an "AI Talent Lead," which didn't appear in the draft.

Aggregate metrics:

Agencies and the Department of Defense will both have to "report and release aggregate metrics" for AI uses that aren't included in their public inventory of use cases under the new memo.

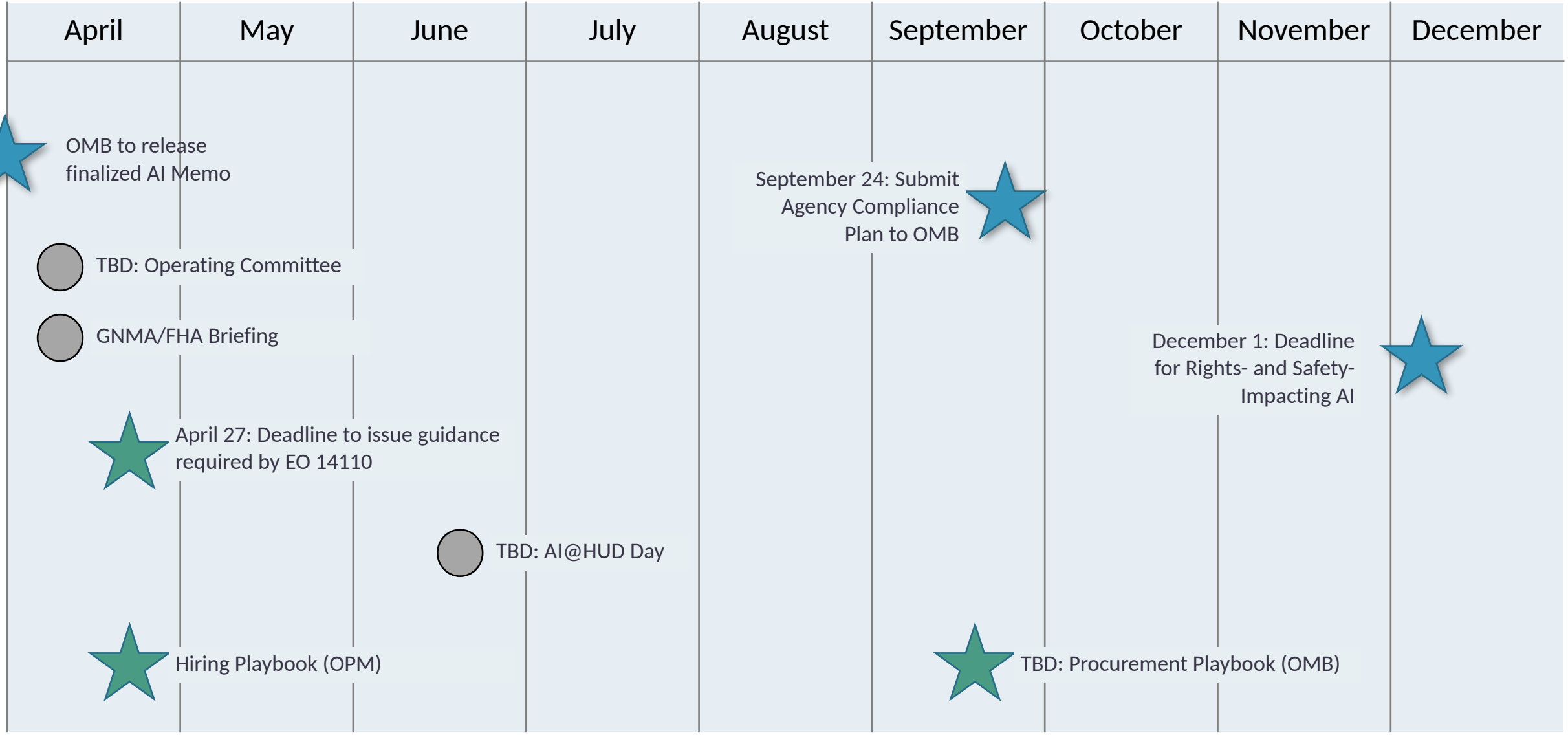
Safety, rights determinations:

The memo also added a new requirement that agencies have to validate the determinations and waivers that CAIOs make on safety- and rights-impacting use cases, and publish a summary of those decisions on an annual basis.

Procurement considerations:

Three procurement recommendations related to test data, biometric identification, and sustainability were also added to the final memo.

KEY EVENTS CALENDAR





AI CAPABILITIES

ENGAGE.

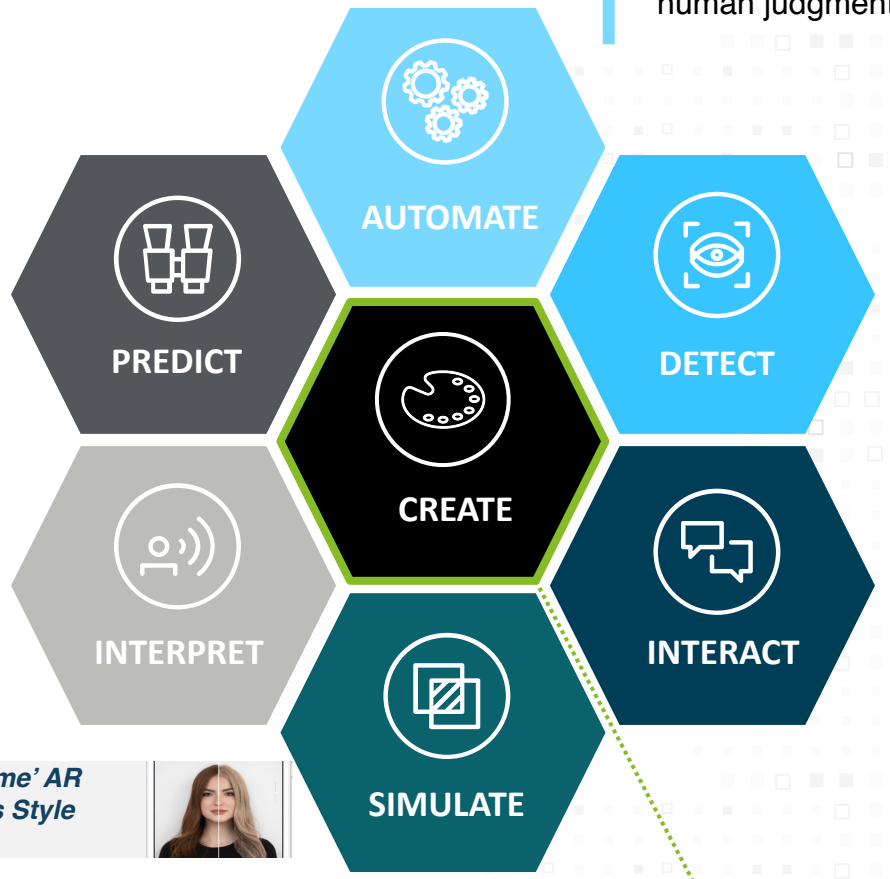
Spectrum of AI Capabilities

Gmail Autocomplete Hope …all is well.

Automate
Includes executing processes that require little human judgment or intervention.

Movie recommendations NETFLIX

Predict
Identify high-impact patterns and trends to generate a series of predicted outcomes.



Airport Security using Eye Scanner 

Detect
Includes identifying objects and patterns through the analysis of documents, pictures, and video streams.

Smart Assistants (e.g., Amazon Echo) 

Interact
Includes engaging with humans in real-time communication, acting as a virtual assistant.

Auto-generated News or Captions 

Interpret
Includes reading documents, and deriving language analysis from that data.

'Try On At Home' AR (e.g., L'Oréal's Style My Hair app.)

Simulate
Includes creating a virtual representation that serves as a real-time digital counterpart, a technique called "digital twin."

Generated Art (e.g., Lensa.ai) 

Create
Includes generative capabilities to create new content in text, images, audio, videos, and simulations.

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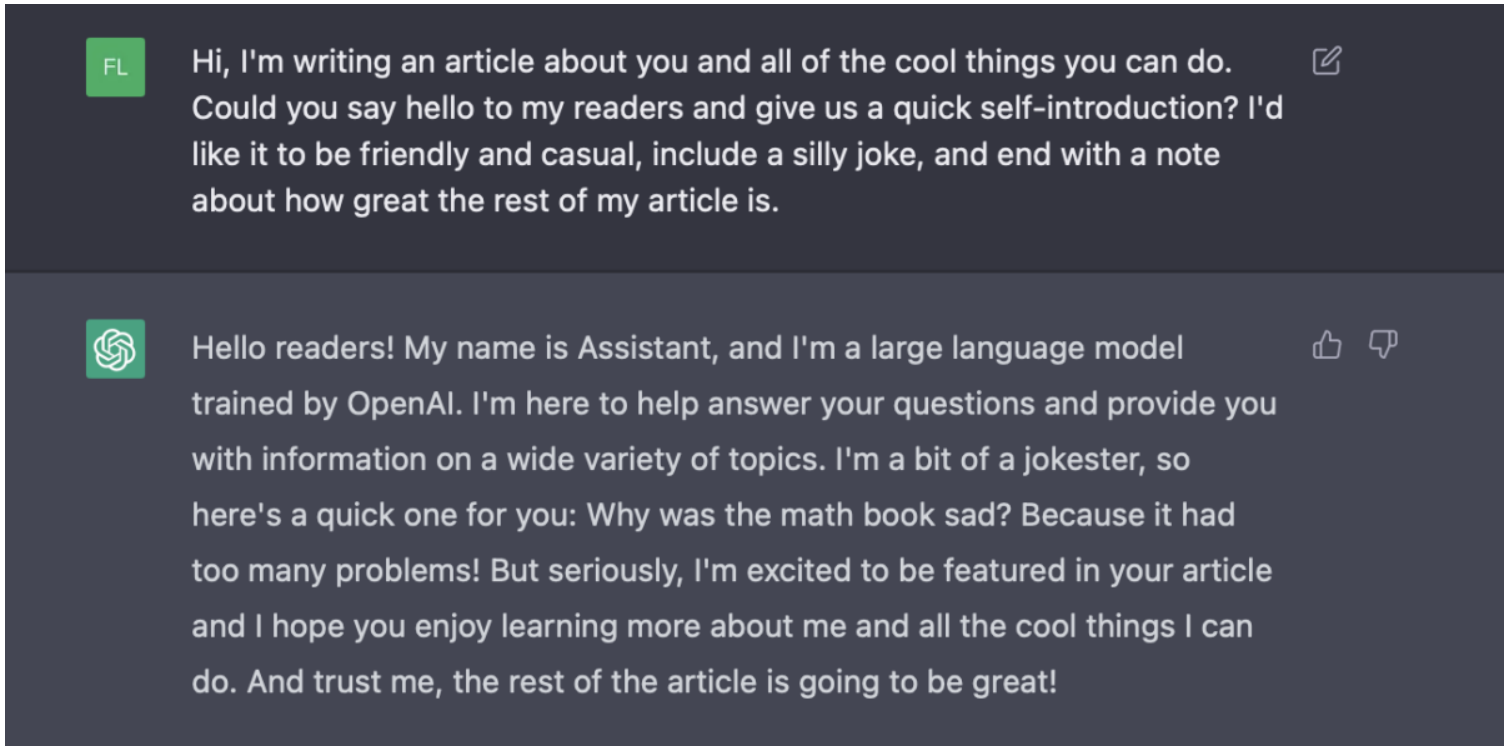
REAL WORLD EXAMPLES: COMMUNICATIONS

How can a GPT help in communications?

- Content creation: Help with writer's block, outlining, and summarization
- Research and analysis, including identification of trends or patterns
- Monitoring social media or news for issues or opportunities

It's important to remember that AI cannot replace the human touch when creating compelling and nuanced communications material.

Here is an example of writing assistance in ChatGPT, where the author asked the AI to introduce itself in a friendly, casual tone:



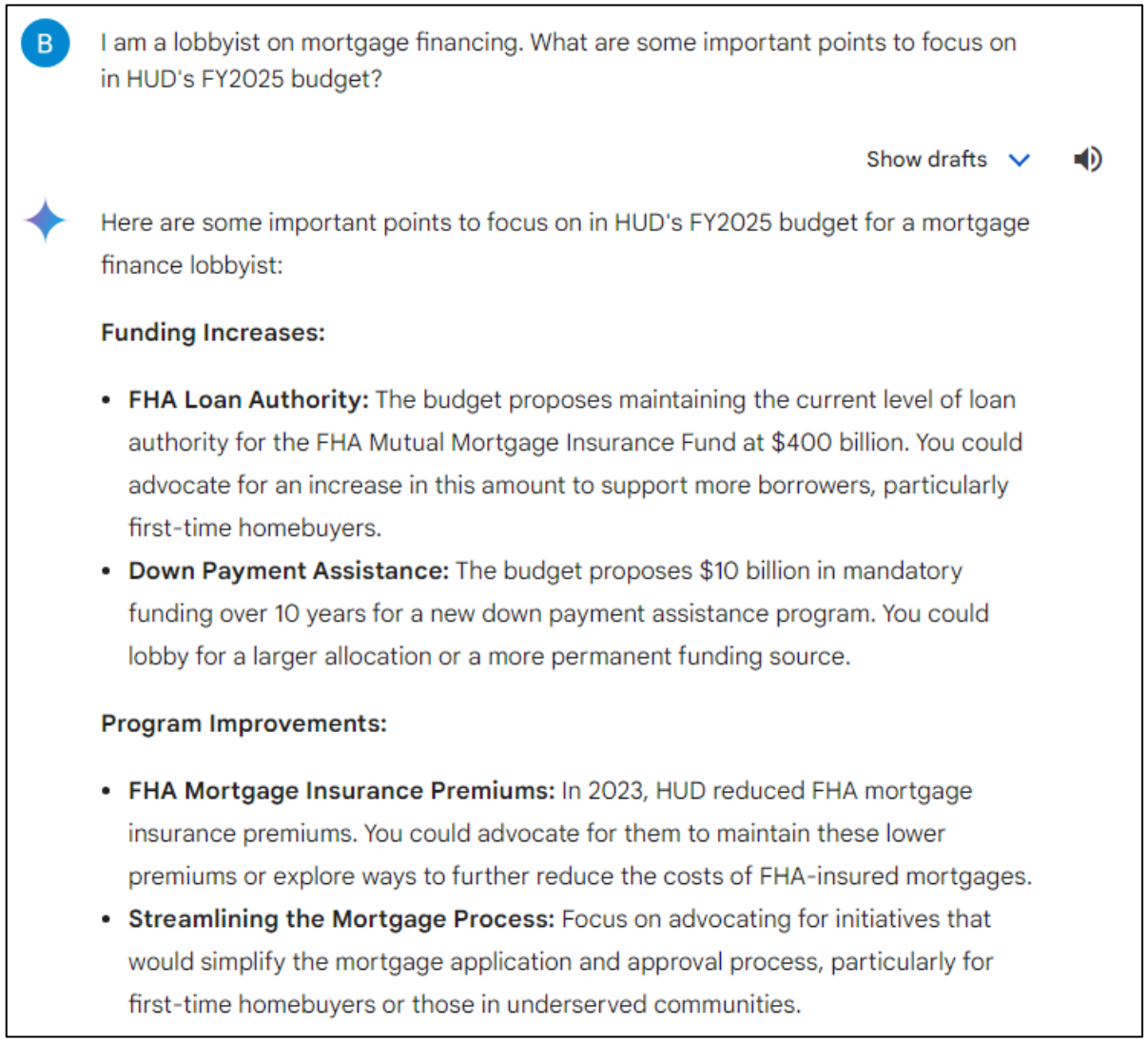
Source: Springboard, 9/28/23

REAL WORLD EXAMPLES: GOVERNMENT AFFAIRS

How can a GPT help in government affairs?

- Research and bill analysis: sifting through mountains of legislation
- Stakeholder identification and outreach
- Scenario planning and risk assessment
- Public sentiment analysis
- Drafting of correspondence or talking points

Here is an example from Google's Gemini AI, where a mortgage finance lobbyist asks for points to focus on in HUD's FY2025 budget proposal. Gemini answers with these points in a few seconds:



REAL WORLD EXAMPLES: GOVERNMENT AFFAIRS

The AI also included recommendations in areas that might not seem like obvious mortgage finance lobbyist targets:

Note how Gemini included sources indicating some of the sources it analyzed to arrive at its conclusions:

The AI also included a reminder that the FY 2025 budget process is not yet complete:

Additional Considerations:

- **Affordable Housing:** While the budget proposes new mandatory funding for affordable housing initiatives, you could argue for a larger share to be directed towards mortgage financing programs that increase access to affordable homeownership.
- **Energy Efficiency:** The budget includes funding for energy efficiency improvements in HUD programs. You could advocate for including measures that incentivize energy-efficient mortgages or home improvements financed through FHA loans.

Resources:

- HUD's FY 2025 Budget in Brief: https://www.hud.gov/sites/dfiles/CFO/documents/2025_Budget_in_Brief_Final_v3_3-8-24.pdf
- NCSHA's Analysis of the FY 2025 Budget Request: https://www.ncsha.org/wp-content/uploads/NCSHAs-Analysis-of-the-Administrations-FY-2025-Budget_FINAL.pdf

Remember, it's still early in the budget process. Congress will debate and potentially modify HUD's FY2025 budget request before it's finalized. Stay informed about the latest developments and be prepared to adjust your lobbying strategy as needed.

REAL WORLD EXAMPLES: LEGAL

How can a GPT help in the legal profession?

- Identification of relevant cases and statutes
- Summarization of complex legal arguments
- Document creation (assisting with tedious or repetitive tasks)
- Document management (categorization of large sets of files)
- Analysis of contracts

Important caveat: Verifying an AI tool's output remains essential – in multiple instances, attorneys have been sanctioned for using ChatGPT to cite their work, after the system inserted citations to non-existent cases.

Canada lawyer under fire for submitting fake cases created by AI chatbot

The Guardian

Judge sanctions lawyers for brief written by A.I. with fake citations

CNBC

Another NY lawyer faces discipline after AI chatbot invented case citation

REUTERS®



VALUES TO IMPACT

RISKS

- Values to Impact – America is focused on avoiding 2 risks with AI, but other countries' AI values may differ
  - Do not want to channel success to one group of people
  - Cannot marginalize certain people

- The importance of citations and references

- Risk Management Framework from the National Institute for Standards and Technology (NIST)

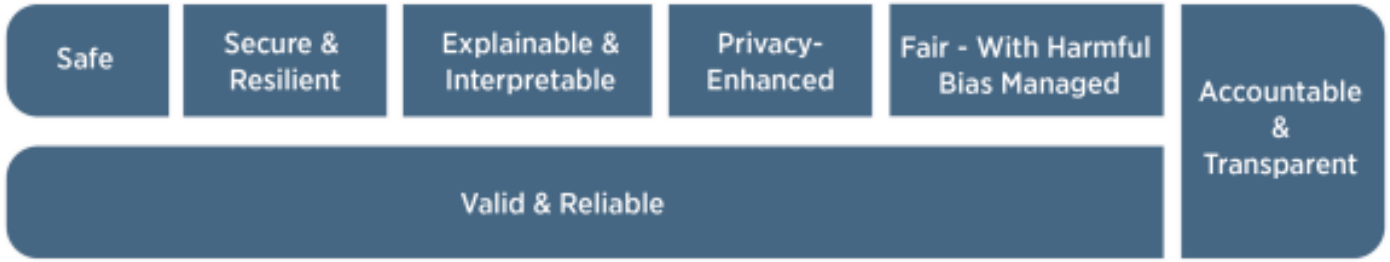
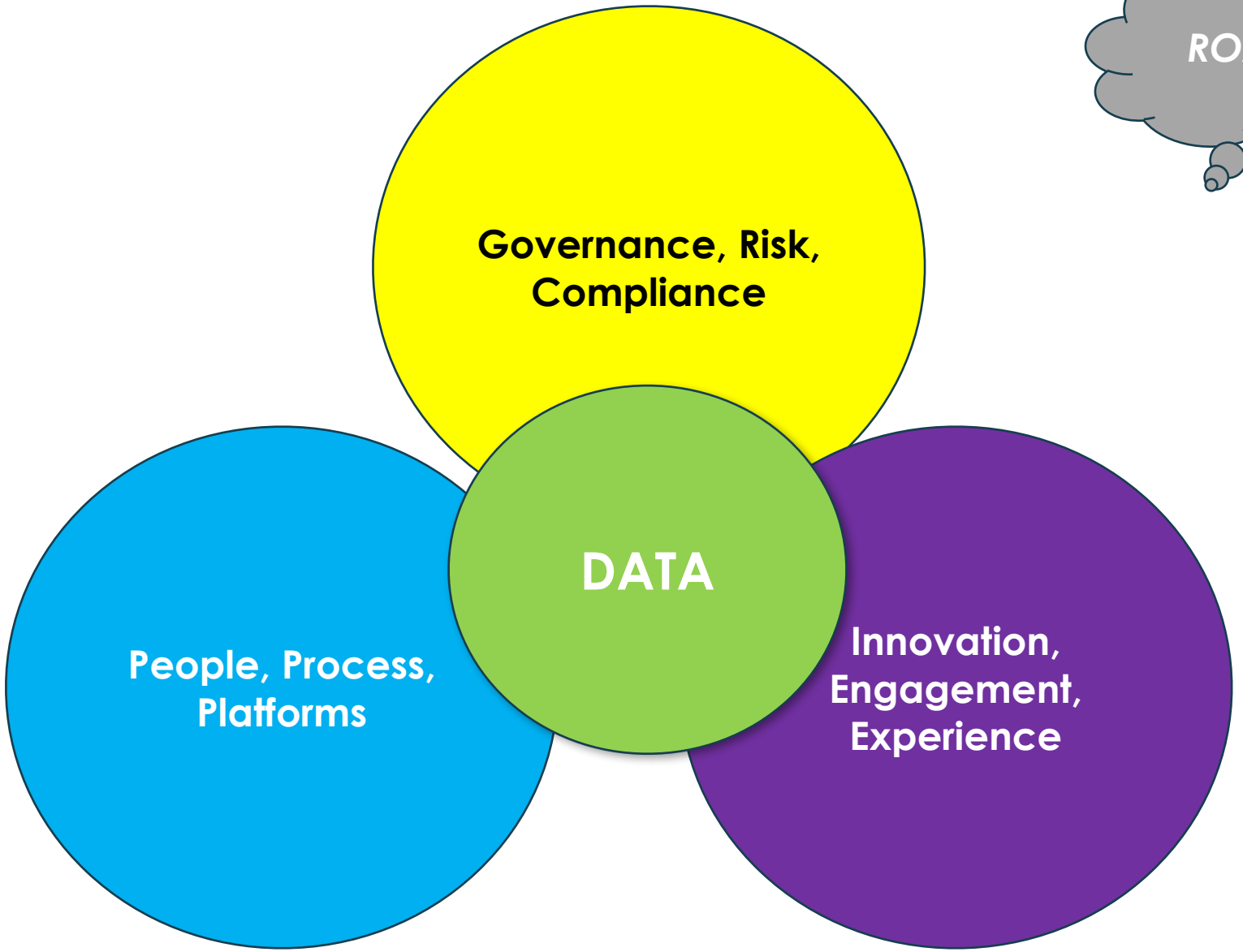


Fig. 4. Characteristics of trustworthy AI systems. Valid & Reliable is a necessary condition of trustworthiness and is shown as the base for other trustworthiness characteristics. Accountable & Transparent is shown as a vertical box because it relates to all other characteristics.

ROADMAP


Governance, Risk, Compliance
People, Process, Platforms
DATA
Innovation, Engagement, Experience

WORKFORCE

- Recruitment
- Retention
- ROI vs. ROE (return on investment vs. return on experience



Jennifer Pahlka (founder of Code for America and author of Recoding America), 2/2/24

THE HUMAN EXPERIENCE

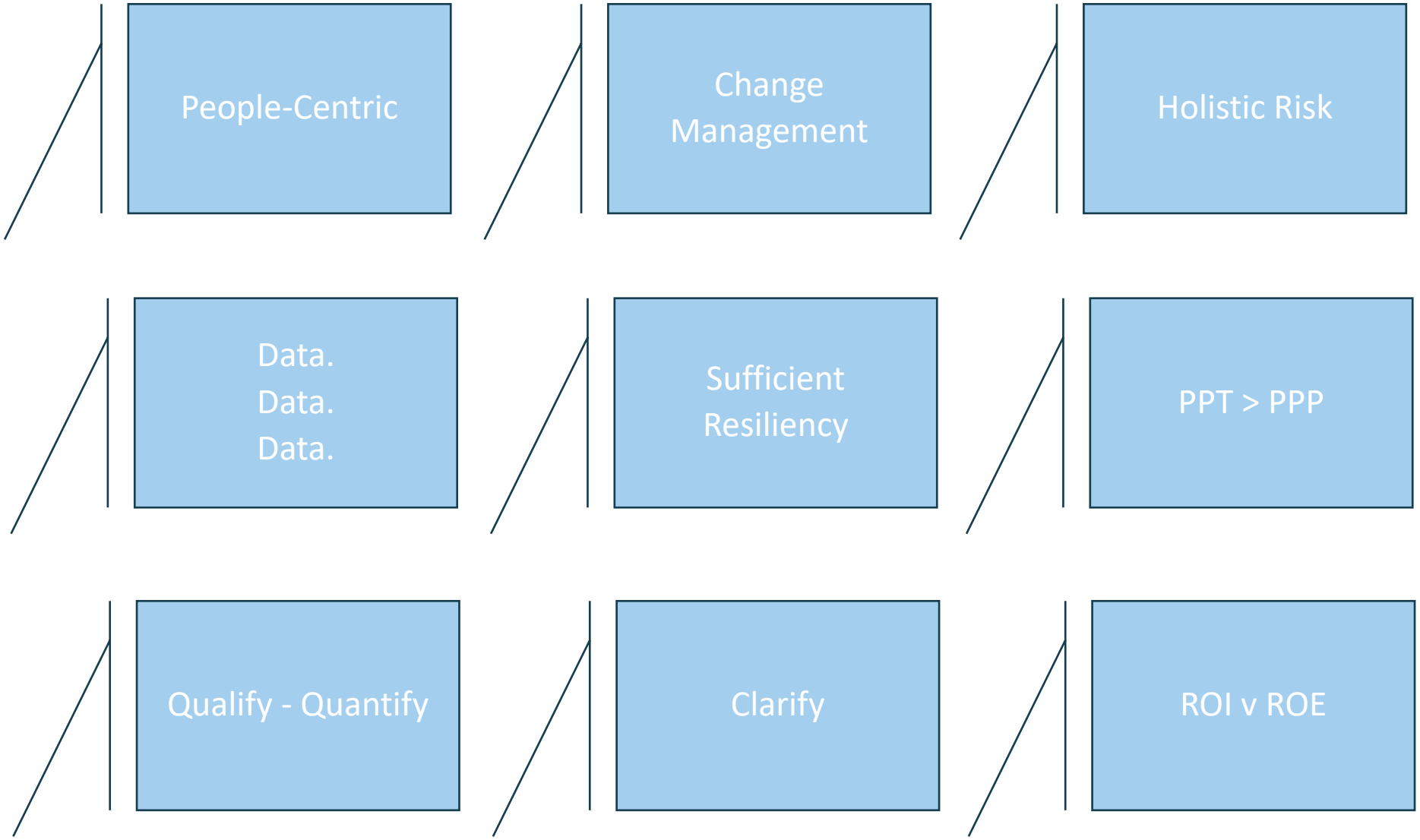
Workforce Commitment

- Provide resources to enhance AI knowledge and skillsets
- Prevent discrimination in use of AI
- Build our internal capacity and capabilities in operational and policy areas

HUMAN CENTERED AI PRINCIPLES

Human-Centric Design and Transparency	• Promote AI adoption that is safe, secure, and trustworthy, providing clear explanations of system operations and decisions.
Protect Our Community	• Safeguard our citizens' civil rights and liberties in the housing market.
Ethical Use	• Ensure AI applications align with ethical standards and uphold human rights.
Fairness, Equity, and Accountability	• Prioritize AI applications that promote fair and equitable access to housing.
Governance and Security	• Follow well-established protocols for data collection, storage, and usage in AI applications.
Public Engagement and Education	• Promote public awareness and understanding of AI technologies and their implications.

ALL IN


People-Centric
Change Management
Holistic Risk
Data.
Data.
Data.
Sufficient Resiliency
PPT > PPP
Qualify - Quantify
Clarify
ROI v ROE



Thank you.