



• Large Business & International



Will Tax Geeks Be Replaced with AI?

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TAX EXECUTIVES INSTITUTE, INC.
Silicon Valley Chapter



LUCAS COLLEGE AND
GRADUATE SCHOOL OF BUSINESS
MST Program

A Simple Definition for Artificial Intelligence

“Machines acting in ways that seem intelligent.”

Easy to Define?

Artificial = something that does not occur naturally.

Intelligence = defined in many ways.

“Intelligence is the ability to solve problems, or to create products, that are valued within one or more cultural settings.” (Howard Gardner 1983)

Narrow v. General

Narrow A.I.

A machine-based system designed to address a specific problem (playing chess).

- To date, all applications of A.I. are narrow A.I.

General A.I.

Refers to machines with the ability to solve many different types of problems on their own, like humans can.

- Think Terminator or Hal.
- A hot topic, but scientists argue it will never become a reality.

Three Types of Narrow A.I.

Machine Learning

Uses predictive computer programs that automate learning through experience using large data sets.

- Deep Learning
- Generative A.I.

Natural Language Processing

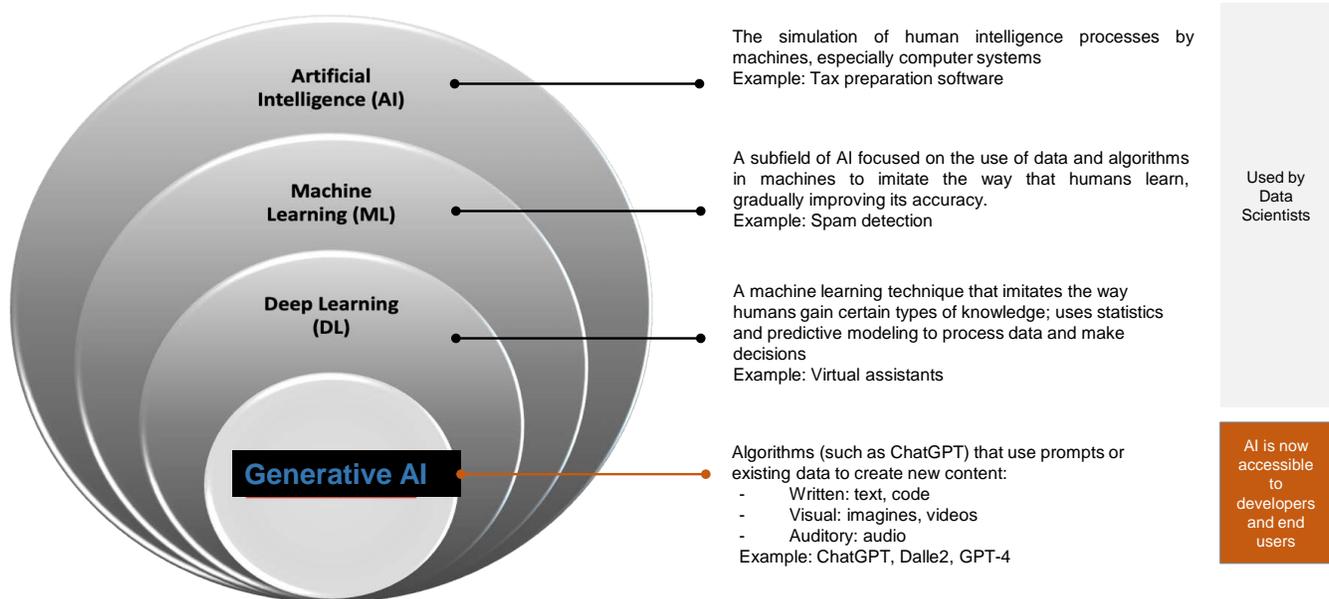
Technology that enable machines to understand and generate language in its written and spoken form.

- Microsoft Word Spellcheck, Google Translate, etc.

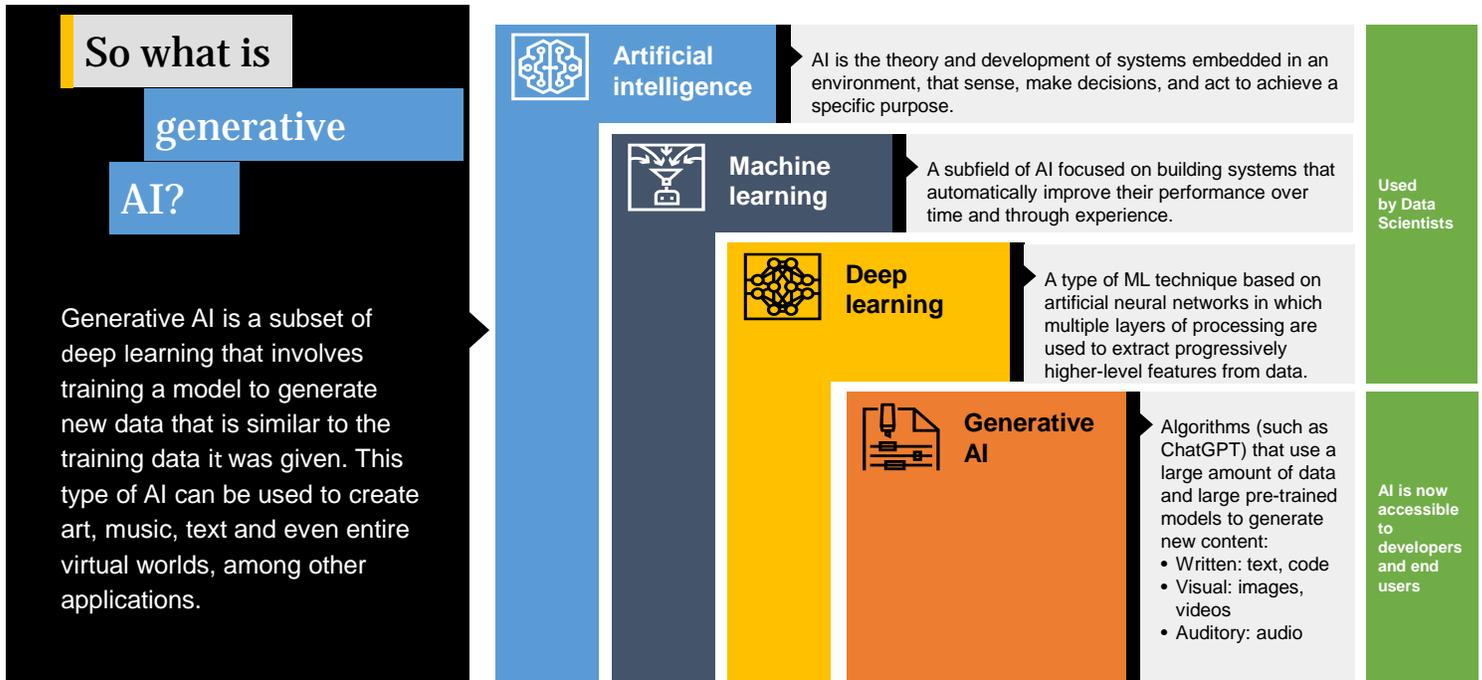
Robotics

Automated devices that perform physical tasks in the real world.

Lineage of seasoned tech



What is GenAI?



What is GenAI?

1. What GenAI is not-

- Not a research tool
- Not objective, bias to user questions, coding and leveraged data
- Not always right – does not understand what it says
- It will not replace everyone, but it will automate things many knowledge workers do

2. What it's good at-

- Creating, improving, and summarizing
- Q&A dialogue
- Generating and validating data
- Explain and document code

3. How to approach the use of GenAI-

- Negotiate proper role for ChatGPT in professional service value chain
- Division of labor/value chain
- People are better at doing things, than supervising them

“GPT-4 is more creative and collaborative than ever before. It can generate, edit, and iterate with users on creative and technical writing tasks, such as composing songs, writing screenplays, or learning a user’s writing style.”

Source: [OpenAI website](#)

The business opportunity—and disruption—created by AI’s potential is enormous... with the potential to contribute \$15.7t to the global economy by 2030

Source: [PwC’s Global Artificial Intelligence Study](#)

What are we seeing in the market?

What we are seeing in market

Generative AI is outperforming people today...

Chat GPT gets an “A”

- LSAT 163 (88%)
- Bar exam 298 (90%)
- SAT score of 1410 (>90%)
- 99% GRE score
- AP Macroeconomics 84 (100%)

MSFT has invested \$10B in OpenAI

GPT-4 production in Azure will accelerate growth in Data and AI Services

Generative AI Platforms Boost Worker Productivity by 14%*

Productivity is much higher in keys areas across a company's value chain

Apple CEO announced an additional \$3.12 billion spent this year on research and development

is being driven by investment in AI technologies, including generative AI

Google Has Released Bard for consumers and PaLM2 LLM.

PwC is one of the first companies in the world with access

AWS announced Bedrock as their LLM and to support a range of other LLMs.

PwC is a pilot partner for Bedrock

...and it is accelerating.

* Per National Bureau of Economic Research for customer service roles

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Introduction – ChatGPT

- Released to public on November 30, 2022.
- Reached 1 million users within only 5 days of release (by comparison, it took Netflix 3 ½ years, Facebook 10 months, and Instagram 2 ½ months to reach 1 million users).
- “GPT” = “generative pre-trained transformer” (refers to type of language model)
- ChatGPT draws from existing text databases (including books, Wikipedia entries(!), articles, Reddit conversations, and other forms of writing) that were provided during “training.”
- ChatGPT’s artificial “brain” includes ~300 billion words.

Source: *Is ChatGPT Harmful or Helpful to Tax Professionals?*, Jason Chen, Tax Notes (04-10-2023)

Introduction – ChatGPT

Positive Use Cases for Tax Professionals

- Produce basic business letters and memoranda
- Calculate complex math problems
- Explain the general significance of receiving an IRS tax audit letter
- Basic e-mail correspondence (e.g., “[name of the tax professional or ‘I’] is/am aware of your questions and will be in touch with you soon.”)
- Client intake (interact with clients and gather relevant tax information)
- Education/training of new tax hires

Potential Pitfalls

- Partially incorrect answer with authoritative-sounding explanation or reasoning behind it
- ChatGPT’s knowledge does not extent beyond 2021 (lacks awareness of recent events)

Introduction – ChatGPT



AI-generated image created using the prompt:

“Cinematic, off-center, two-shot, 35mm film still of a 30-year-old french man, curly brown hair and a stained beige polo sweater, reading a book to his adorable 5-year-old daughter, wearing fuzzy pink pajamas, sitting in a cozy corner nook, sunny natural lighting, sun shining through the glass of the window, warm morning glow, sharp focus, heavenly illumination, unconditional love.”

Photo: Nick St. Pierre/Midjourney V5

Introduction – ChatGPT

User: *Write a law review article about whether lawyers have a duty to learn about ChatGPT.*

ChatGPT's Response:

- “Traditionally, lawyers have been trained to understand and apply the law, but with the advent of AI, they are now also expected to have an understanding of the technology and its potential implications for the legal profession. This includes understanding how ChatGPT can assist with tasks such as legal research, document review, and drafting, as well as its limitations and ethical considerations.”
- “the use of ChatGPT . . . has the potential to enhance the efficiency and accuracy of legal work, ultimately providing better services to clients. Lawyers who are proficient in the use of ChatGPT will be better equipped to advise clients on the technology’s implications and to leverage its capabilities in their work.”
- “However, it is important to note that ChatGPT is a tool, and its use should be guided by the lawyer’s professional judgment, and the ABA’s Model Rules of Professional Conduct, which include the duties to maintain confidentiality, the duty of loyalty,” and other obligations.

Introduction – ChatGPT

User: *Can a taxpayer rely on ChatGPT for tax advice?*

ChatGPT's Response:

- “As a language model, ChatGPT is not a licensed tax professional and cannot provide specific tax advice. It is trained to provide general information on a wide range of topics, including taxes, but it cannot substitute for the advice of a qualified and licensed tax professional.”
- “... tax laws and regulations are subject to change and can vary depending on the jurisdiction. Therefore, it is always recommended to consult with a licensed tax professional who has knowledge of the specific laws and regulations in your state or country and who can provide personalized advice based on your individual circumstances.”

Introduction – ChatGPT

User: What are the major cases discussing the “presumption of correctness” for the IRS in tax cases?

ChatGPT’s Response:

- “The presumption of correctness is a legal principle that applies to the decisions made by the IRS in tax cases. Under this principle, the IRS is presumed to be correct in its determinations and the taxpayer bears the burden of proving that the determination is incorrect. The major cases discussing the presumption include:
 - *United States v. Leffall*, 282 U.S. 591 (1931)
 - *Helvering v. Taylor*, 293 U.S. 507 (1935)
 - *James v. United States*, 366 U.S. 213 (1961)
 - *United States v. Anson*, 518 F.2d 496 (9th Cir. 1975)”

* *United States v. Leffall*, 282 U.S. 591 (1931) and *United States v. Anson*, 518 F.2d 496 (9th Cir. 1975) do not exist.

Generative AI for Tax

What you need to know

Generative AI is changing the game...

Ready or not, it's here – and tax departments need to be prepared



Nearly all business leaders say their company is prioritizing at least one initiative related to AI systems in the near term.



Source: [PwC 2023 Trust Survey](#)

PwC | Tax Readiness



• AI is becoming a top C-suite priority



• Tax functions at the forefront of AI are starting to implement initial use cases



• Ability to augment all levels of tax and drive new capabilities



• Teams need to understand the broader AI strategy and the impact to them



• Implications on the tax workforce of the future

Our journey

We'll invest **\$1B** over the next three years to expand and scale our artificial intelligence (AI) offerings internally, while also helping our clients reimagine their businesses through the power of generative AI.

What we're doing...

- **Serving as 'client zero'** – an initiative that helps enables us to foresee challenges in GenAI implementation
- **Embedding a secure GenAI tool into our internal platforms** to help revolutionize the way we work
- Developing capabilities to help clients **implement and scale AI responsibly**, due to our unique industry acumen

How we're doing it...

- **Upskilling our 65,000+ people** on AI tools and capabilities
- Industry-leading alliances allowed **early access to AI technologies** to help pilot and develop solutions
- **Running an "AI Factory"** of pods of tech specialists and data scientists
- **Piloting over 400+ identified use cases**

PwC | Tax Readiness

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Gen AI - Expected progression in Client Tax Functions



Client Use Case Examples

Theme	Client 1 (tech)	Client 2 (tech)	Client 3 (tech)	Client 4 (tech)	Client 5 (AWM)
Document / Disclosure Generation		TP Documentation	ESG Disclosures Tax Transparency	TP Documentation	
Customer Support			Support Requests		Investor Queries
Data Classification	R&D Contract Analysis Customs Classification	Cost Segregation Meals & Entertainment		R&D Contract Analysis	
Data Analysis	Total Tax Contribution		Tax Benchmarking Indirect Tax FAQ	CIT Memo Extraction Financial Forecast	K-1 Reporting Obligations
Controversy		State Notice Analysis, Management, and Response			State Notice Analysis, Management, and Response



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November 6, 2023

Will Tax Geeks Be Replaced with AI?

Presented by: Marc Borella, Program Manager, IRS: WCPA



Presentation Overview

1. Describe what “AI” means to the federal government.
2. Detail the safeguards around the government’s use of AI.
3. Introduce some IRS Business Divisions utilizing AI.
4. Provide specific examples of current and upcoming IRS AI utilization.



What Does AI Mean to the Federal Government?

Section 238(g) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019, Pub. L. No. 115232, 132 Stat. 1636, 1695 (Aug. 13, 2018) (codified at 10 U.S.C. § 2358, note), defined AI to include the following:

1. Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.
2. An artificial system developed in computer software, physical hardware, or another context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.
3. An artificial system designed to think or act like a human, including cognitive architectures and neural networks.
4. A set of techniques, including machine learning, that is designed to approximate a cognitive task.
5. An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision-making, and acting.



Machine Learning

Machine Learning is an application of AI that automatically learns and improves through experience without programming it to explicitly do so by imitating the way that humans learn

With Machine learning we can create statistically based models to drive business decisions and optimize an organization

Major types of machine learning include:

- Supervised learning
- Unsupervised learning
- Reinforcement learning



Federal Government AI Safeguards

Under Executive Order (EO) 13960, “Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government”, federal agencies are required to inventory their Artificial Intelligence (AI) use cases and share their inventories with other government agencies and the public.

The 2023 National Defense Authorization Act reinforced the practice of sharing use cases and established a pilot program:

- (A) To enable agencies to operate across organizational boundaries, coordinating between existing established programs and silos to improve deliver of the agency mission;
- (B) To demonstrate the circumstances under which artificial intelligence can be used to modernize or assist in modernizing legacy agency systems; and
- (C) To leverage commercially available artificial intelligence technologies that operate in secure cloud environments that can deploy rapidly without the need to replace existing systems.



Federal Government AI Safeguards (continued)

October 30, 2023, President Biden issued the Executive Order on the Safe, Secure and Trustworthy Development of Artificial Intelligence.

Purpose: Coordinated, Federal Government-wide approach to governing the development and use of AI safely and responsibly.

Highlights:

1. Require that developers of the most powerful AI systems share their safety test results with the U.S. government.
2. Develop standards, tools and tests to help ensure that AI systems are safe, secure and trustworthy.
3. Establish an advanced cybersecurity program to develop AI tools and to find/fix vulnerabilities in critical software.



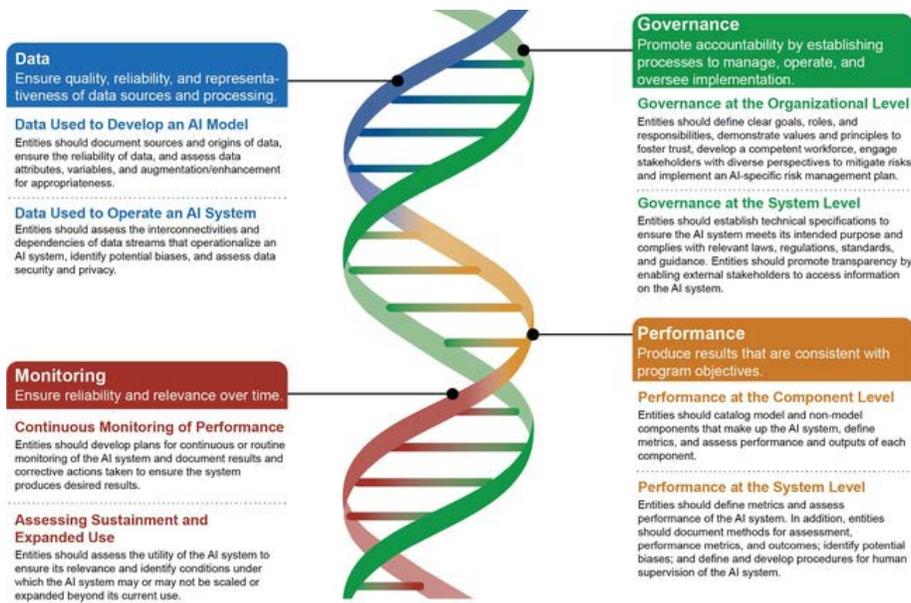
GAO AI Accountability Framework

Why GAO Developed This Framework

1. AI is a transformative technology with applications in medicine, agriculture, manufacturing, transportation, defense, and many other areas. It also holds substantial promise for improving government operations.
2. Federal guidance has focused on ensuring AI is responsible, equitable, traceable, reliable, and governable. Third-party assessments and audits are important to achieving these goals. However, AI systems pose unique challenges to such oversight because their inputs and operations are not always visible.
3. GAO's objective was to identify key practices to help ensure accountability and responsible AI use by federal agencies and other entities involved in the design, development, deployment, and continuous monitoring of AI systems.
4. To develop this framework, GAO convened a Comptroller General Forum with AI experts from across the federal government, industry, and nonprofit sectors. It also conducted an extensive literature review and obtained independent validation of key practices from program officials and subject matter experts. In addition, GAO interviewed AI subject matter experts representing industry, state audit associations, nonprofit entities, and other organizations, as well as officials from federal agencies and Offices of Inspector General.



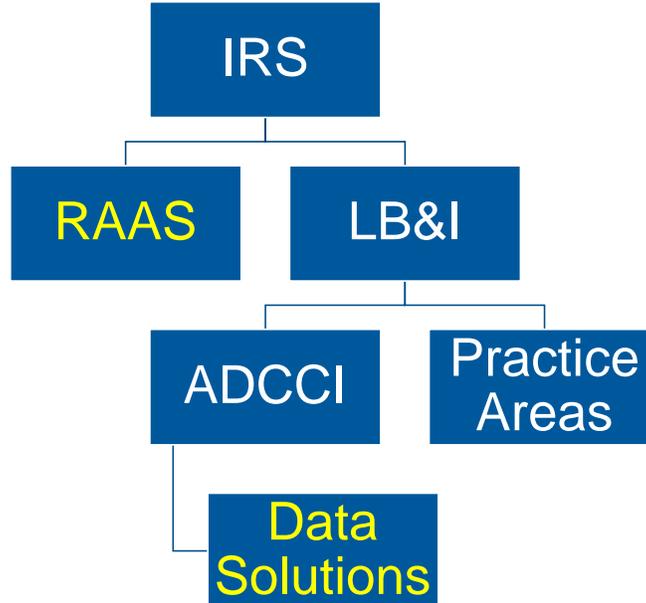
GAO AI Accountability Framework (continued)



Source: GAO. | GAO-21-519SP



Business Divisions Using AI Affecting Large Taxpayers



Research, Applied Analytics and Statistics Division (RAAS)

IRM 1.1.18.1 (11-08-2022)

Research, Applied Analytics and Statistics Division

(3) RAAS combines advanced analytics, dynamic testing, reporting, and prototyping with appropriate scientific rigor and deep IRS domain expertise to deliver valid and actionable insights using diverse sources of data. RAAS works in partnership with IRS operating units...

(4) To accomplish this mission, RAAS performs the following activities:

- a) Conducts strategic research and analysis and research not limited to a single operating unit but critical Servicewide. This includes various types of research such as econometric modeling, forecasting, compliance studies
- b) Provides functional leadership, guidance, and support to the IRS Research Community on research and analytics standards and practices to ensure consistency, comparability, and quality.



Data Solutions (DS)

IRM 1.1.24.2.1.2 (09-24-2020)

Data Solutions

(1) The director of Data Solutions (DS) reports directly to the ADCCI. DS supports LB&I's strategic goals by improving the accessibility, reliability, usability, and measurability of data to facilitate data-informed business decisions in all of the division's compliance and strategic support programs.

(2) To accomplish its mission, DS:

- a) Develops and uses technological products and tools
- b) Applies advanced analytical techniques
- c) Manages projects
- d) Promotes data security
- e) Uses other skills to support LB&I's existing and future compliance and strategic support programs



Recent Developments

IR-2023-166, Sept. 8, 2023

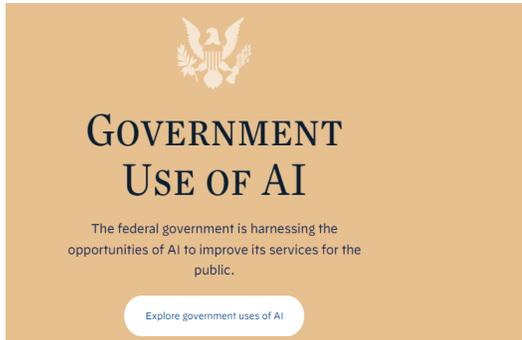
Agency focus will shift attention to wealthy from working-class taxpayers; key changes coming to reduce burden on average taxpayers while using Artificial Intelligence and improved technology to identify sophisticated schemes to avoid taxes.

Expansion of pilot focused on largest partnerships leveraging Artificial Intelligence (AI).

"With the help of AI, the selection of these returns is the result of groundbreaking collaboration among experts in data science and tax enforcement, who have been working side-by-side to apply cutting-edge machine learning technology to identify potential compliance risk in the areas of partnership tax, general income tax and accounting, and international tax in a taxpayer segment that historically has been subject to limited examination coverage."



AI.gov



NATIONAL AI ADVISORY COMMITTEE

The National AI Advisory Committee (NAIAC) advises the White House on a range of issues related to AI.

[Learn more about the NAIAC](#)

DEPARTMENT OF THE TREASURY

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IRS AI Use Cases

AI Use Case Name: Appeals Case Memorandum

Summary: The Appeals Case Memorandum (ACM) leverages natural language processing capabilities to assist with extraction, consolidation, and labeling of unstructured text from IRS ACM documents, automatic identification of key information, and processing results into a structured format. The outcome of this processes is for IRS staff to review appeals information for insights, which can be used upstream to enhance case quality, consistency, and performance. Summary of results involve detailed analysis on text relationships, issues, and citation narrative text paragraphs to provide insight on issues commonly adjusted during the appeals process.

Status: Implementation

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IRS AI Use Cases (continued)

AI Use Case Name: NRP Redesign

Summary: Deploy state-of-the-art AI machine learning methods to provide a lower opportunity cost method of estimating a compliance baseline to support tax gap estimation, improper payments reporting, development and validation of workload identification and selection models, and inform policy analysis. System inputs require existing NRP data which provide an acceptable level of precision and quality for an acceptable level of data quality output.

Status: In production, less than one year

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IRS AI Use Cases (continued)

AI Use Case Name: Collection Chat Bot

Summary: The Natural Language Understanding (NLU) model will be located inside the eGain intent engine. This NLU will take customer typed text input aka – Utterances. It will map the utterance to a specific intent and return the appropriate knowledge article.

Status: In production, less than one year

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IRS AI Use Cases (continued)

AI Use Case Name: CX Analytics

Summary: IRS' Customer Experience (CX) Analytics is a capability that uses multiple, customer service-related data sources to identify issues/anomalies/improvement opportunities across the customer service channel modes.

Status: Implementation



Conclusion

The Government is Using AI to Better Serve the Public: The United States stands to benefit significantly from harnessing the opportunities of AI to improve government services. The federal government is using AI to better serve Americans, across use cases in healthcare, transportation, the environment, and benefits delivery.