

**Executive Branch Use
Of Artificial Intelligence Technology**

**Confidential Committee Draft
October 7, 2024**

Legislative Oversight And Investigations Committee

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Research Report No. 491_U

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Abstract

This report examines the development and management of artificial intelligence (AI) systems in the executive branch of Kentucky, emphasizing the need for statutory and regulatory frameworks to govern the technology. It examines the technical characteristics of AI and traces its evolution from traditional logic-based computer systems in the 1950s to modern data-driven deep learning models like generative AI, and it highlights the necessity of defining AI to address ethical concerns such as bias, privacy, and accountability. The report finds that Kentucky state government should work toward developing uniform statutory and regulatory definitions for AI technology and policies governing AI procurement, implementation, risk assessment, and inventorying. The report recommends the establishment of a cohesive strategy for AI governance in Kentucky, aligned with federal guidelines, to ensure ethical deployment and continuous oversight of AI technologies. The report compiles a preliminary inventory of AI systems, but more comprehensive inventories of AI systems, or information technology systems in general, may be of interest to legislators and useful for the executive branch. The report contains seven recommendations and five matters for legislative consideration.

Foreword

Legislative Oversight and Investigations Committee staff appreciate all those who provided assistance with this report. In particular, staff note the cooperation of the Commonwealth Office of Technology, which greatly assisted in many aspects of this project. Officials from the Cabinet for Health and Family Services' Office of Application Technology and the Public Protection Cabinet were also very helpful. Staff also thank all Kentucky executive branch cabinets and state chief information officers who participated in surveys and provided information for the staff inventory of AI systems. Staff also thank the LRC project center staff, who assisted with gathering contact information.

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Summary

In March 2024, the Legislative Oversight and Investigations Committee (LOIC) requested that staff examine how Kentucky’s executive branch agencies are using artificial intelligence (AI) systems. Artificial intelligence is a rapidly developing technology with applications that are affecting state governments in many ways while creating new risks and opportunities. This report examines the development and management of AI systems in the Kentucky executive branch and finds a need for statutory and regulatory frameworks. Kentucky has not yet established statewide policies governing AI systems, but the federal government, other state governments, and leading AI policy development groups have begun developing public sector governance frameworks.

Kentucky’s executive branch should work toward developing uniform regulatory definitions for AI technology and policies governing AI procurement, implementation, risk assessment, and inventorying. The Commonwealth Office of Technology (COT) is responsible for general information technology (IT) oversight and would be the most appropriate executive agency to provide a policy framework. The Office of Application Technology Services (OATS), within the Cabinet for Health and Family Services (CHFS), has a comprehensive AI policy that, along with policy frameworks developed by national leaders such as the National Institute of Standards and Technology, could form a strong model for statewide policies.

Kentucky’s executive branch does not maintain an inventory of AI systems. Staff compiled a preliminary inventory to provide the committee with information on what AI systems are being used by executive branch agencies and how they are being used.

Major Objectives

This study has eight major objectives:

- Determine how state agencies define AI systems.
- Develop criteria for defining AI systems.
- Determine the extent of AI usage in Kentucky.
- Determine the policies in place to oversee AI usage.
- Compare Kentucky’s policies with those produced by other states, the federal government, and the private sector.
- Identify gaps in Kentucky’s AI policies, and recommend solutions.
- Determine the extent of Kentucky’s executive branch agencies’ risk assessment and inventorying of AI systems.
- Produce a preliminary inventory of AI systems used by Kentucky executive branch agencies and identify their use cases.

Major Conclusions

This study has 11 major conclusions:

- Rapid advances in AI technology are creating challenges and opportunities for the public sector. The federal government and state governments are addressing these challenges with statutory and regulatory frameworks that begin with understanding and defining AI.
- The Government Accountability Office (GAO) and National Institute of Standards and Technology (NIST) have produced policy frameworks for government use of AI systems.
- Kentucky does not have the necessary statutory and regulatory frameworks in place to oversee AI. Only one Kentucky executive branch cabinet, CHFS, has created a policy framework for defining and governing AI. The policy aligned with GAO and NIST standards.
- Regulatory and statutory definitions for AI systems aligned with NIST and CHFS OATS policy would create a foundation for developing a statewide governance framework for AI.
- COT is Kentucky's central authority for statewide IT asset oversight, which includes AI technology, but it does not have AI-focused statewide policies in place.
- AI procurement, implementation, training, risk assessment, and inventorying governance is needed for Kentucky's executive branch. NIST and GAO guidance, as well as initiatives from federal agencies and other states, and Kentucky's CHFS provide strong examples to follow.
- Kentucky does not maintain an inventory of AI systems or a general inventory of IT systems.
- Most Kentucky executive branch agencies reported using AI systems.
- GAO and NIST guidance indicate that AI inventories are critical to understanding the effects of AI on government programs, implementing new programs or projects, and making informed decisions regarding AI technology.
- LOIC staff compiled a preliminary inventory of AI systems but recommend a more comprehensive inventory. The LOIC staff inventory found 38 systems in use across seven executive branch cabinets, covering a wide range of use cases.
- Cabinets are capable of auditing the performance and capabilities of half of the AI systems in the inventory.

Recommendations And Matters For Legislative Consideration

AI policy framework standards emphasize the importance of well-defined shared terminology to reduce potential risks and improve implementation. Kentucky lacks statutory or regulatory definitions for AI. A survey of IT leads at Kentucky cabinets found that they used different criteria to determine whether a type of technology was AI. Having a consistent definition of *artificial intelligence* would allow policies to apply consistently across agencies. As the agency primarily responsible for IT, COT is the best candidate to guide the definitions. If the General Assembly wishes to guide usage of AI at state agencies, it may also consider defining *artificial intelligence* statutorily.

Recommendation 2.1

The Commonwealth Office of Technology should promulgate an administrative regulation that defines *artificial intelligence systems* for all executive branch agencies. The definition should be consistent with definitions from the National Institute of Standards and Technology AI Risk Assessment Framework and the National Artificial Intelligence Initiative Act (15 USC sec. 9401(3)).

Matter For Legislative Consideration 2.A

The General Assembly may wish to consider creating statutory definitions of *artificial intelligence systems* and related terminology, including these definitions in KRS 42.722, and referencing them in any statutes that are subsequently passed regarding artificial intelligence.

Although federal guidance regarding AI procurement exists, Kentucky does not have a statewide policy regarding AI procurement. In its absence, the general policies regarding IT acquisition apply. COT does consider whether systems have AI components when reviewing procurements for state agencies. The AI policy developed by CHFS does have provisions for AI procurement. For IT procurement policies to align with federal AI procurement standards, each agency will need to introduce AI-specific procurement procedures and COT will need to integrate AI system evaluations into its procurement procedures.

Recommendation 3.1

The Commonwealth Office of Technology (COT) should work with executive branch agencies and cabinets to produce a report evaluating current AI procurement procedures with respect to national standards and identifying opportunities where AI systems can improve the effectiveness of executive branch operations. By October 1, 2025, COT should post the report on its website and provide it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

In a survey of Kentucky executive branch cabinets, eight of nine cabinets reported that AI systems had some impact on their operations. Two cabinets reported difficulty implementing AI systems. The CHFS AI policy outlines new roles for technology staff with respect to AI systems. COT is the most appropriate agency to provide guidance to cabinets as they begin to implement AI technology, and the CHFS policy can serve as a model for future guidance.

Recommendation 3.2

The Commonwealth Office of Technology (COT) should promulgate administrative regulations that develop and establish statewide policies and procedures for the procurement, implementation, utilization, and ongoing assessment of technology systems that employ artificial intelligence that are in use by executive branch agencies. By October 1, 2025, COT should post these policies and procedures on its website and report

them to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Matter For Legislative Consideration 3.A

The General Assembly may wish to consider revising KRS 42.726 to statutorily require that the Commonwealth Office of Technology promulgate administrative regulations that develop and establish statewide policies and procedures for the procurement, implementation, utilization, and ongoing assessment of technology systems that employ artificial intelligence that are in use by executive branch agencies.

In interviews with COT and other executive branch agencies, officials stated that guidance on responsible workforce use of and training for AI, specifically generative AI, were among their primary concerns when considering the impact of AI. The CHFS policy contains guidelines regarding training, mandating that all personnel involved in AI projects must undergo training as part of the project onboarding process. Given consistent concern about staff training and guidance, COT should distribute guidance on training.

Recommendation 3.3

The Commonwealth Office of Technology (COT) should promulgate administrative regulations that develop policies and procedures for providing guidance to, and training of, executive branch agency staff regarding both the effective and responsible use of artificial intelligence systems. By October 1, 2025, COT should post these policies and procedures on its website and report them to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

A survey of executive branch IT leads found they had concerns about AI in regard to data security and privacy, workforce vulnerabilities, and fairness and bias. The NIST framework includes suggestions on potential areas of risk that can be addressed. Given the concerns about AI and known areas for risk, COT should begin considering areas of risk so they can be addressed.

Recommendation 3.4

The Commonwealth Office of Technology (COT) should develop a method for conducting a risk assessment for artificial intelligence systems in use by executive branch agencies. This methodology should be consistent with the National Institute for Science and Technology's Artificial Intelligence Risk Management Framework. By October 1, 2025, COT should post the methodology on its website and report it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Federal guidance indicates that an inventory of AI systems and their use cases is critical to understand and leverage AI capabilities. An inventory is also considered an important component of risk management strategies. Inventories have been mandated at the federal and state levels. Working with COT, staff produced an initial inventory of AI systems that revealed that agencies are using AI systems with a wide range of capabilities. Given the amount of useful information generated by the inventory, COT would benefit from conducting regular inventories of AI systems. If the General Assembly is interested in receiving regular updates about AI use, it may wish to mandate an annual inventory.

Recommendation 3.5

The Commonwealth Office of Technology (COT) should conduct an annual inventory of technology systems that employ artificial intelligence. This inventory should include, among other information determined to be important by COT, the name and vendor of the application, the name of the agency that uses the application, a description of how the application is used, which artificial intelligence techniques the application uses, whether COT or the agency are able to audit the application, and a risk assessment of the applications. By October 1, 2025, and annually thereafter, COT should post this inventory on its website and provide it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Matter For Legislative Consideration 3.B

The General Assembly may wish to consider revising KRS 42.726 to include, among the Commonwealth Office of Technology’s roles, duties, and permissible activities, the requirement to conduct an annual inventory of artificial intelligence systems in use by any executive branch agency.

Literature on AI inventories indicates that many of the merits extend to general IT inventories. COT has information about IT systems through the Kentucky Information Technology Standards, but it does not contain the amount of information seen in an inventory. However, creating an overall inventory of all technology would require significantly more effort from COT. The agency should consider the amount of effort needed to conduct an overall inventory and consider whether the benefits of an overall inventory would justify the effort.

Recommendation 3.6

The Commonwealth Office of Technology (COT) should conduct a review to determine the feasibility and value of conducting and maintaining an annual risk assessment and inventory of all information technology applications used by executive branch agencies. By October 1, 2025, COT should present the results of this review to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

After the General Assembly reviews COT's analysis of the value and effort of a general IT inventory, it may decide that it would benefit from receiving the general IT inventory. If so, the General Assembly may wish to mandate that COT proceed with a general IT inventory.

Matter For Legislative Consideration 3.C

Based on the results of the report by the Commonwealth Office of Technology (COT) on the feasibility and value of conducting and maintaining an annual risk assessment and inventory of all state agency technology applications, the General Assembly may wish to consider revising KRS 42.726 to include, among COT's roles, duties, and permissible activities, the requirement and authority to conduct an annual inventory of all technology systems in use by any executive branch agency.

COT's authority to oversee IT is established in statute. During COT's study into the feasibility and value of a general IT inventory, it may determine it does not have the authority to require agencies provide the information. If so, and if the General Assembly finds that the AI inventory is useful, it may wish to expand COT's authority so it can require agencies to provide information necessary for a general IT inventory.

Matter For Legislative Consideration 3.D

Based on the results of the artificial intelligence system inventory conducted by the Commonwealth Office of Technology (COT) and its report on the feasibility of an inventory of all state-deployed technology systems, the General Assembly may wish to consider revising KRS 42.726 to include, among COT's roles, duties, and permissible activities, the authority to require that all executive branch agencies annually submit an inventory of the technology systems they use.

Chapter 1

Executive Branch Use Of AI Technology

On March 6, 2024, the Legislative Oversight and Investigations Committee asked staff to study the use of artificial intelligence (AI) systems by executive branch agencies. The study includes an evaluation of Kentucky executive branch AI governance and recommendations for filling gaps in policy.

On March 6, 2024, the Legislative Oversight and Investigations Committee (LOIC) directed staff to examine the Use of Artificial Intelligence (AI) Systems by Kentucky Executive Branch Agencies. Staff reviewed systems and policies at all executive agencies, but the Commonwealth Office of Technology (COT) received additional focus because it sets the overall technology policy for the executive branch. The scope of the study encompasses classification of AI systems, evaluation of AI policies, identification of best practices in AI governance, identification of gaps in Kentucky’s AI governance, and recommendation of policy solutions. In addition, the study includes an internally conducted inventory of AI systems in use by the executive branch.

Background

AI technology is evolving rapidly. Due to its complexity, the technology is difficult to define, but a definition is an important part of designing a policy framework.

AI is a rapidly developing technology. Its common applications include large language models, machine learning, computer vision, speech recognition, language processing, and robotics. Definitions of AI vary due to the complexity of the technology, its evolution from traditional computing systems, the wide range of fields it encompasses, and the speed at which it has taken on regulatory significance. At the federal level, the Government Accountability Office (GAO) and the National Institute of Standards and Technology (NIST) have taken the lead in defining AI and designing guidance for its regulation. They use distinct criteria to define AI as machine-based intelligence that can simulate human intelligence, recognize patterns in data, automate human decision-making, learn and improve, perform tasks that typically have required human intelligence, and do all of this autonomously.

GAO and NIST, as well as private consulting organizations such as Deloitte and Gladstone, have examined the risks and opportunities that AI presents to governments. Generally, AI provides state governments with opportunities for efficiency through the automation of repetitive tasks, improved service delivery and public engagement through citizen services, policy improvements through data-driven decision making, enhanced public safety and improved data security through AI analytics, and general economic growth.

AI systems present risks, including concerns about bias and fairness, privacy, transparency, security vulnerabilities, job displacement, dependence on private vendors, ethical dilemmas, and erosion of public trust.

Risks associated with the use of AI systems include bias and fairness concerns due to bias in training data, privacy concerns due to AI models' incorporation of sensitive information, transparency and accountability risks inherent in the complex and opaque nature of AI decision-making, security vulnerabilities inherent in any technology system, job displacement due to AI reproduction of human tasks, an increased government dependency on private sector vendors that supply AI systems, ethical dilemmas, and erosion of public trust.

Kentucky has not established a statewide AI governance strategy, but the Office of Application Technology Services (OATS), within the Cabinet for Health and Family Services (CHFS), has developed a comprehensive policy framework that could serve as a model.

NIST and GAO have developed comprehensive guidance to assist governments with developing AI risk management strategies and AI governance policies. The federal government and many states are implementing these strategies and developing new ones. Kentucky has not implemented a statewide AI governance strategy, but the Office of Application Technology Services (OATS), within the Cabinet for Health and Family Services (CHFS), has created a comprehensive policy framework that could be a model for other state agencies. Kentucky does not maintain a statewide AI inventory, but staff conducted a preliminary inventory of AI systems for this report.

Major Objectives

The study has eight major objectives.

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- Determine how state agencies define AI systems.
- Develop criteria for defining AI systems.
- Determine the extent of AI usage in Kentucky.
- Determine the policies in place to oversee AI usage.
- Compare Kentucky's policies with those produced by other states, the federal government, and the private sector.
- Identify gaps in Kentucky's AI policies and recommend solutions.
- Determine the extent of Kentucky's executive branch agencies' risk assessment and inventorying of AI systems.
- Produce a preliminary inventory of AI systems used by Kentucky executive branch agencies and identify their use cases.

Major Conclusions

The study has 11 major conclusions.

This study has 11 major conclusions:

- Rapid advances in AI technology are creating challenges and opportunities for the public sector. The federal government and

state governments are addressing these challenges with statutory and regulatory frameworks that begin with understanding and defining AI.

- The Government Accountability Office (GAO) and National Institute of Standards and Technology (NIST) have produced policy frameworks for government use of AI systems.
- Kentucky does not have the necessary statutory and regulatory frameworks in place to oversee AI. Only one Kentucky executive branch cabinet, CHFS, has created a policy framework for defining and governing AI. The policy aligned with GAO and NIST standards.
- Regulatory and statutory definitions and policies for AI systems aligned with NIST and CHFS OATS policy would create a foundation for developing a statewide governance framework for AI.
- COT is Kentucky’s central authority for statewide IT asset oversight, which includes AI technology, but it does not have AI-focused statewide policies in place.
- AI procurement, implementation, training, risk assessment, and inventorying governance is needed for Kentucky’s executive branch. NIST and GAO guidance, as well as initiatives from federal agencies and other states, and Kentucky’s CHFS provide strong examples to follow.
- Kentucky does not maintain an inventory of AI systems or a general inventory of IT systems.
- Most Kentucky executive branch agencies reported using AI systems.
- GAO and NIST guidance indicate that AI inventories are critical to understanding the effects of AI on government programs, implementing new programs or projects, and making informed decisions regarding AI technology.
- LOIC staff compiled a preliminary inventory of AI systems but recommend a more comprehensive inventory. The LOIC staff inventory found 38 systems in use across seven executive branch cabinets, covering a wide range of use cases.
- Cabinets are capable of auditing the performance and capabilities of half of the AI systems in the inventory.

Methodology

Staff interviewed state and industry experts, reviewed research and audits, and surveyed information technology (IT) leads across executive branch cabinets to assess AI system usage, risks, and oversight practices.

Staff conducted interviews with leadership and personnel from various agencies including COT, OATS, the Public Protection Cabinet, the Kentucky Office of Homeland Security, and technology offices of other executive branch agencies. In addition, staff interviewed subject matter experts and technology

professionals from other states and industry organizations. Staff also reviewed a wide range of materials, including research papers, articles, and audits produced by federal and state agencies, private consultants, academic researchers, and industry leaders.

Staff also surveyed the information technology (IT) leads of executive branch cabinets to determine how they are using AI systems, the risks and opportunities they associate with their implementation, how they are regulating and overseeing the technology, and whether they track or inventory their AI systems.

To assess Kentucky AI policy governance, staff surveyed and interviewed state agency officials and technology experts, reviewed relevant policies and regulations, and examined risk management frameworks, including those from the National Institute of Standards and Technology (NIST) and the Government Accountability Office (GAO).

To assess the statewide tracking and inventorying of AI systems, staff surveyed and interviewed officials from the Commonwealth Office of Technology and individual executive branch agencies. Staff also reviewed AI-related policies, legislation, and regulations from other state governments and technology offices, as well as federal government guidance from agencies such as GAO and NIST.

Staff identified risk assessment as a best practice for AI system governance and examined AI systems risk management frameworks from both public and private sector organizations, with emphasis given to the NIST AI Risk Management Framework and GAO's related reports. Staff also surveyed executive branch cabinet IT leads regarding their concerns for the AI systems used by their agencies and developed a general risk assessment model for state government.

To better understand which AI systems and applications executive branch agencies are using, staff conducted a cabinet-level inventory of AI systems. Staff worked with COT to compile information on the types of AI systems being deployed, who developed them, how they are being used, and how much oversight agencies can provide over the systems. Staff categorized these systems based on their use cases and integration into agency operations.

Structure Of This Report

Chapter 2 details development of AI technology, its integration into various sectors, and the challenges in defining it. It includes one recommendation and one matter for legislative consideration.

Chapter 2 explores the development and evolution of AI technology, tracing key advancements and milestones. It also examines the integration of AI into government and industry, highlighting its applications and implications across various sectors. Additionally, the chapter addresses the challenge of defining AI and distinguishing it from traditional IT systems and

applications. The chapter identifies the complexity and nuances involved in defining AI, emphasizing the definition's importance to the broader task of properly governing it. The chapter contains one recommendation and one matter for legislative consideration.

Chapter 3 evaluates AI governance and usage in Kentucky's executive branch and presents a staff-compiled inventory of executive branch AI systems. It provides six recommendations and four matters for legislative consideration.

Chapter 3 presents a comprehensive review and analysis of AI governance and utilization within Kentucky executive branch agencies. It investigates the adoption of AI technologies across various departments, with a focus on procurement, implementation, training, risk assessment, and inventorying. In addition, the chapter presents the results of a staff-conducted inventory of executive branch AI systems, offering insights into use cases and implementation. This analysis includes a discussion of how AI systems are used, the potential risks and opportunities for optimization, and how much oversight agencies are providing. The analysis contributes to a clearer understanding of AI's role in enhancing government functions and services and how they are being implemented in Kentucky. The chapter contains six recommendations and four matters for legislative consideration.

Chapter 2

Understanding Artificial Intelligence Systems

Rapid advances in AI technology are creating challenges for the public sector, which has addressed the challenges with frameworks that begin with understanding and defining AI. Kentucky does not have statutory and regulatory frameworks to oversee AI.

Rapid advances in AI technology are creating challenges and opportunities for the public sector. The federal government and state governments have addressed these challenges with statutory and regulatory frameworks that begin with understanding and defining AI.¹ Kentucky does not have statewide statutory and regulatory frameworks in place to oversee AI.² The necessary frameworks can begin with uniform statutory and regulatory definitions aligned with federal and industry standards.

Only one Kentucky executive branch cabinet has created a policy framework for defining and governing AI. CHFS has created a policy aligned with the federal leader in AI policy, the National Institute for Standards and Technology. Regulatory and statutory definitions for AI systems, aligned with NIST and CHFS policy, would create a foundation for developing governance models for AI.

Why Define Artificial Intelligence?

AI has the potential to impact society in unpredictable ways, so it is important to have a shared understanding of the associated terminology. NIST emphasizes that well-defined terminology is essential for standards and governance models for AI.

AI has the potential to impact society in unpredictable ways, both positively and negatively, so it is important for the public, policymakers, and industry to have a shared understanding of associated terminology.³ This begins with defining the technology itself. In particular, NIST, a leading federal agency in the oversight of AI, emphasizes that having shared and well-defined terminology is essential for developing effective standards and governance models for AI. NIST points to AI's evolving nature, its overlap with traditional computer systems, and the broad, complex landscape of the field of AI as factors making clear definitions critical for AI policy. Additionally, NIST underscores that AI's potential risks, such as unintended biases, privacy concerns, and security vulnerabilities, require regulation with robust shared frameworks. These frameworks help ensure that AI systems are developed, deployed, and regulated responsibly.⁴

The broader advantages of good governance also apply in the case of developing statutory and regulatory guidance for artificial intelligence. These include creating legal clarity and consistency, facilitating effective administrative regulation, promoting public trust, supporting economic growth, enhancing accountability,

and aligning with federal standards. Developing regulatory and statutory definitional foundations for artificial intelligence technology is the first step toward good governance of AI.

What Is Artificial Intelligence?

The field of AI encompasses a variety of technologies, ranging from general areas like perception to specific areas like playing chess or driving cars.

Defining AI is difficult. In many ways, an AI system is simply an evolution of traditional rules-based computer systems, while in other ways it represents a radically new technology. The field of AI also encompasses a huge variety of technologies, ranging from the very general (learning and perception) to the very specific (playing chess and driving cars). AI techniques can also be applied to any field or task.⁵ Even what is meant by the term *intelligence* itself is heavily debated.⁶

In the past 5 years, the federal government has drafted six definitions for AI. Seventeen states have drafted statutory definitions.

As a result, governments, academia, and industry have struggled to settle on a single definition of AI. In the past 5 years the federal government has drafted six definitions for AI, while 17 states have drafted various statutory definitions.^{a 7} Kentucky executive branch cabinets have had difficulty arriving at a uniform definition for AI. LOIC staff surveys of executive branch cabinets found that each had slightly different criteria for defining *artificial intelligence* and used different criteria for including applications in the inventories of AI systems they reported to staff.⁸ More information on federal and state definitions for AI appears in Appendix B.

Characteristics Of AI Systems

A literature review found six defining characteristics of AI.

A literature review found that AI is principally defined in two ways: by what it is and how it is created. At the most fundamental level, AI systems are identified by six core defining characteristics. They are algorithm-based machine computing systems that can

- simulate human intelligence,
- learn from and recognize patterns in data,
- automate human decision-making and reasoning,
- self-correct and learn in ways to improve future performance,
- perform tasks that have historically required human intelligence, and
- do all of this autonomously.⁹

^a California, Colorado, Connecticut, Delaware, Indiana, Kansas, Maryland, Massachusetts, Michigan, New Hampshire, Pennsylvania, Tennessee, Texas, Utah, Vermont, Washington, and West Virginia.

Whereas rules-based computer systems follow a fixed set of instructions, AI systems can learn from data and adapt and improve in unpredictable ways.

These characteristics have led to the creation of machines that can learn from their environment and perform actions in ways typically believed to be only possible for humans. They can be creative, can learn, and can apply skills across fields all without direct intervention from humans.¹⁰ The capability of these systems to learn and adapt distinguishes them from traditional rules-based computer systems. Whereas traditional rules-based computer systems follow a fixed set of instructions written by a programmer that do not change unless explicitly reprogrammed, AI systems can learn from data and adapt and improve in unpredictable ways.¹¹

Typically, modern AI is created through iteratively training a machine-learning algorithm via a deep learning neural network on large sets of data.

AI systems are also defined by how they are developed, which has a complex and long history. Typically, modern AI is created through iteratively training a machine-learning algorithm via a deep learning neural network on large sets of data.¹² However, this has not always been the case and does not necessarily apply to all AI systems. The following section reviews the development history of AI systems and how they have evolved away from traditional rule-based computer systems into systems that can simulate human intelligence.

Early Artificial Intelligence

The original concept of AI was developed in 1956. In the same year, researchers at Carnegie Mellon University developed a program capable of simulating human problem-solving of math theorems.

The origins of AI date to the 1950s, when Alan Turing posed the question of whether machines could “think.” This early work introduced concepts like the Turing Test (the first benchmark for evaluating artificial intelligence), machine learning (AI that learns from and make decisions based on data rather than programming), and reinforcement learning (adaptable machine-learning that learns by interaction and feedback).¹³ In the summer of 1956, the term *artificial intelligence* was coined during a conference at Dartmouth College. Later that year, researchers at Carnegie Mellon University developed a program capable of simulating human problem-solving skills to solve math theorems through trial and error, marking the creation of what is widely considered to be the first true AI.¹⁴ Three years later, the first example of a machine-learning AI was demonstrated at IBM via a program designed to play checkers that could learn from its mistakes.¹⁵

Over the next decade, AI systems would be built on symbolic logic, but these methods proved too rigid to capture the complexity of the real world.

Over the next decade, researchers developed increasingly sophisticated AI systems built upon symbolic logic. These AIs would begin simulating human conversation, solve complex mathematics problems, play chess and other games, and perform rudimentary medical diagnoses. These systems demonstrated both

the potential and the limitations of the symbolic logic approach to AI.

Symbolic logic AI, like traditional rules-based computer systems, relied on preprogrammed formal rules and logic, which proved too rigid to capture the complexity of the real world. Coupled with the limited computational and data storage resources of the time, symbolic logic systems significantly constrained the capabilities of AI systems of this era. Due to high expectations and limited progress, funding and enthusiasm for AI research began to wane in the mid-1970s and led to a period of time referred to as the first of two “AI Winters.” During this time, there was little interest and funding for the technology all but disappeared.¹⁶

Intermediate Artificial Intelligence

The AI field was rejuvenated in the late 1980s and early 1990s by a shift toward data-driven techniques such as machine-learning, neural networks, and deep learning.

The AI field became rejuvenated in the late 1980s and early 1990s due to a shift away from preprogrammed logic and toward data-driven techniques such as machine-learning, neural networks, and deep learning. Neural networks are advanced methods of machine learning inspired by the structure and function of the human brain. They consist of interconnected nodes that are organized in layers that work in parallel to process data, recognize patterns, and make predictions much faster than traditional computer systems. Neural networks form the foundation of deep learning, which uses neural networks with many layers to model complex patterns in large and detailed data that can begin to approximate the real world.¹⁷ These techniques would eventually drive significant progress in AI, but were at this point still nascent technologies.

These techniques led to expert systems that could replicate human decision-making in specific domains. However, they faced scalability and technological issues.

These early steps resulted in the creation of what researchers referred to as “expert systems.” These systems were designed to replicate human decision-making in very specific domains such as medical diagnosis, physics, chemistry, or playing high-level chess. Despite initial successes, these systems faced scalability and technological issues. Limitations in computing power and data availability meant that these new approaches to developing AI systems could not cope with complex real-world data or dynamic situations. These limitations led to a second “AI Winter” of reduced interest and funding.¹⁸

In the late 1990s, increased computing power and access to the internet gave AI systems access to large amounts of data and the ability to process it.

AI research would again be rejuvenated in the late 1990s due to technological advances outside the field of AI. Increased computing power and the rise of the internet gave AI systems

access to tremendous amounts of digital data and the ability to process it. Now data-driven deep learning neural networks became the primary focus of AI research. The following era would see major progress in AI development. It would lead to the creation of machines that would defeat the best chess players in the world, autonomously drive cars, change how the public accessed information through the internet, and change how society interacted through social media. Overall, the AI industry expanded from a few million dollars in the early 1990s to a billion-dollar industry by the end of the decade.¹⁹

Modern Artificial Intelligence

Increased data on the internet and powerful but affordable computer hardware led to AI breakthroughs in the early to mid-2000s.

Many of the greatest breakthroughs in AI have occurred since the 2000s. These breakthroughs have been empowered by rapid advances in computing power, the internet, and new approaches to building AI models, specifically deep learning neural networks. In the early to mid-2000s, expanded access to the internet, smartphones, and social media generated vast amounts of data. At the same time, affordable and powerful computer hardware enabled new AI models to take advantage of this new supply of data.²⁰

AI of this era became effective at image recognition, language processing, and speech recognition, and eventually led to generative AI.

This capability led to major AI advances for companies such as Google, Microsoft, and Facebook that were already collecting vast amounts of user data that could be repurposed to train AI models. New deep learning neural network AI models, for the first time, had the ability to autonomously learn from raw data such as pixels in an image or words on web pages and produce outputs such as entirely new images or answers to questions. AI of this era became effective at image recognition, natural language processing, and speech recognition, and it created the first modern deep-learning generative AI systems like Open AI's original GPT model.²¹

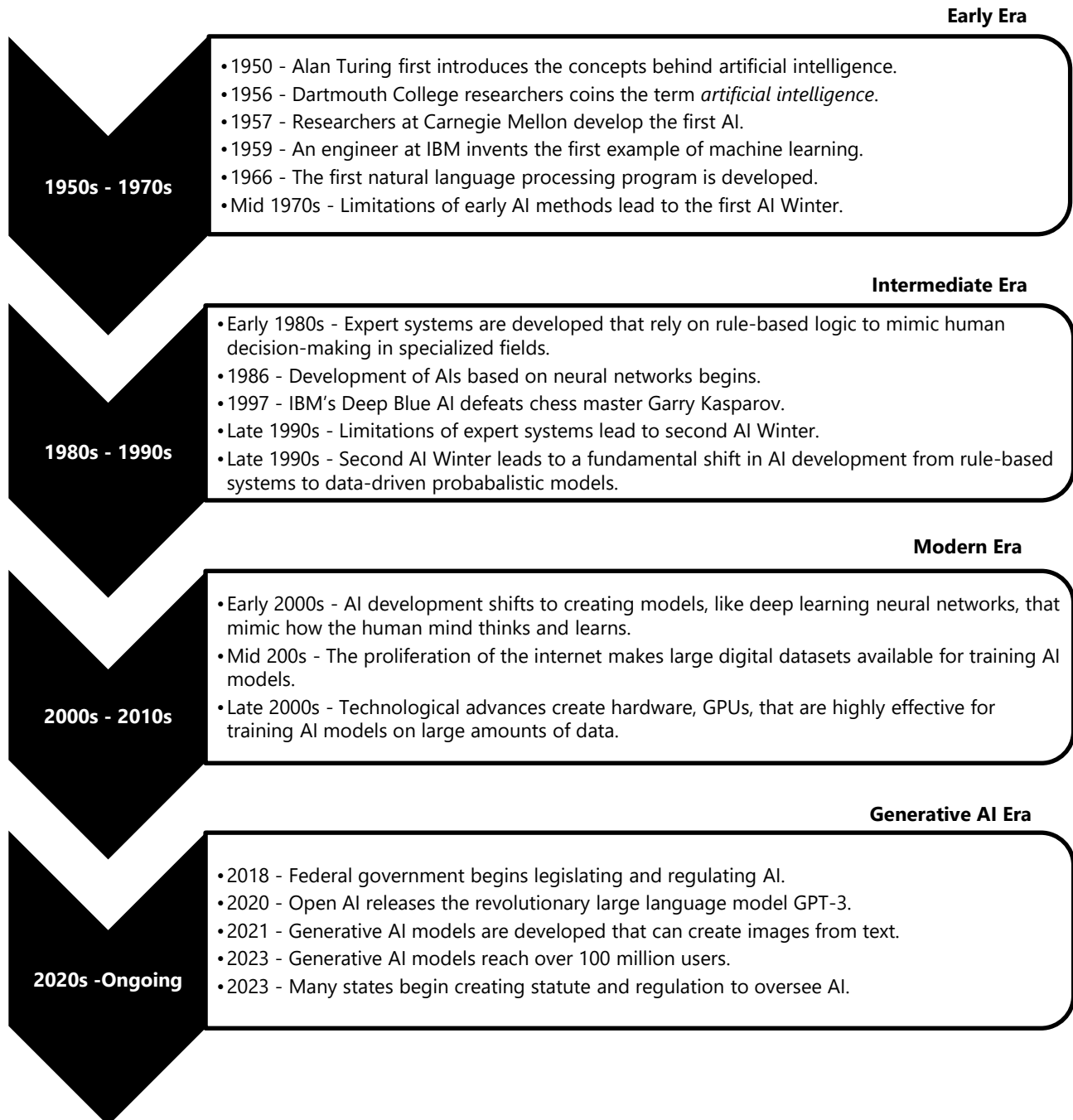
These advances have changed how AI systems are developed. Modern AI development has focused on data and demonstrated that AI predictions improve more as a result of data availability than improvements in creating better models. For example, a rudimentary algorithm with 100 million words of random training data outperforms the best-known algorithms with 1 million meticulously chosen words. Now trillions of words and billions of images are available to AI models, with more becoming available each year.²²

The pace of recent progress in AI has surprised many of the most optimistic researchers in the field.²³ Until recently, even the most

advanced AI systems could perform only specific tasks. A system could be trained to classify images or win a game of chess but could not do both. New AI systems are built on “foundation” or “frontier” models that can be trained on almost any type of data and used for a wide range of tasks.^{b 24} The most prominent of these models are generative AI models such as OpenAI’s GPT series and Google’s Gemini. These systems are typically used for a specific task like conversational AI, but the underlying model is capable of being trained on a wide variety of data and producing a wide variety of outputs.²⁵ Figure 2.A provides a time line of important developments in the history of AI, and Appendix C provides more information on the terminology used in this section.

^b Foundation models are large-scale AI models trained on broad, diverse datasets at a massive scale, designed to be adaptable for a wide range of tasks. These models are pretrained using vast amounts of data and can be customized or specialized for specific applications, making them versatile and highly valuable as a base for developing other AI applications. Frontier models refer to the most advanced AI models at the leading edge of research and development in AI. Frontier models are typically at the forefront of AI innovation and are continuously evolving as new techniques and technologies emerge.

Figure 2.A
Artificial Intelligence Development
1950 To Present

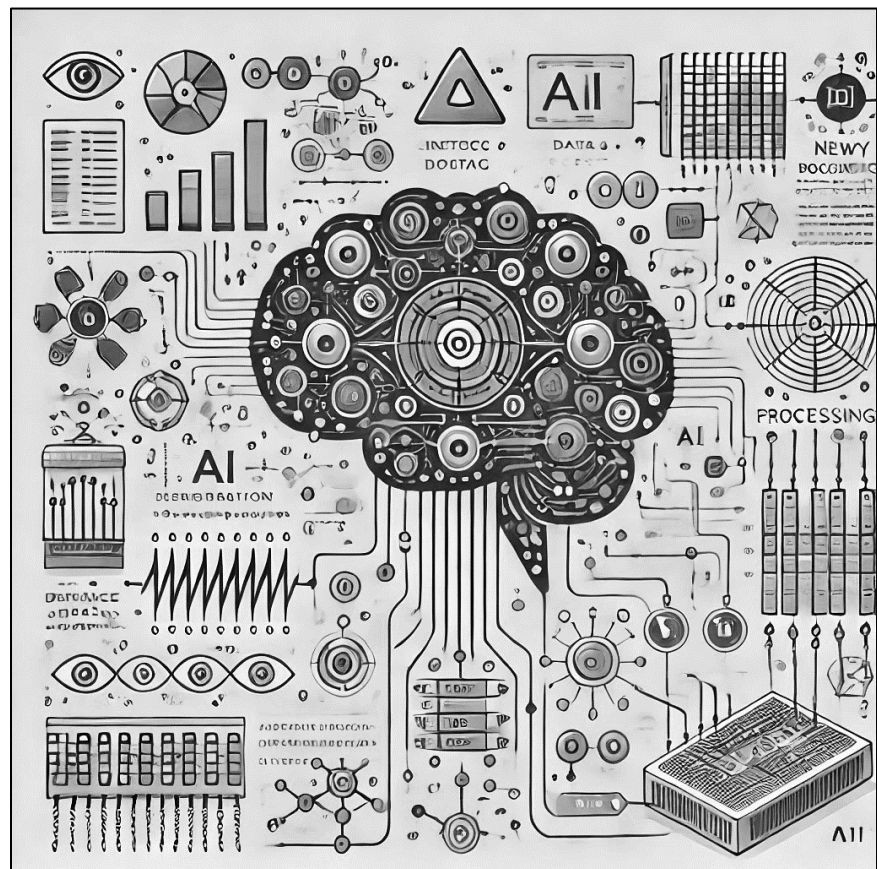


Sources: Stuart Russell and Peter Norvig. *Artificial Intelligence: A Modern Approach*, third edition. Prentice Hall, 2010; US. Government Accountability Office. *Artificial Intelligence: Agencies Have Begun Implementation But Need To Complete Key Requirements*. 2023; US. Government Accountability Office. *Artificial Intelligence: Generative AI Technologies And Their Commercial Applications*. June 20, 2024; Gladstone AI. *Survey Of AI Technologies And AI R&D Trajectories*. 2023; Future of Life Institute. *Pause Giant AI Experiments: An Open Letter*. 2023; Cole Stryker and Eda Kavlakoglu. "What Is Artificial Intelligence?" IBM.com. 2024; Piyush Madan and Samaya Madhavan. "An Introduction To Deep Learning." IBM.com. 2020.

Generative AI

Generative AI represents a transformative development in AI. Over 100 million users interacted with generative AI systems in 2023, and global investing in the technology reached \$25.9 billion in 2023 and another \$26.8 billion through September 2024.²⁶ The technology is distinct from other forms of AI in its ability to be creative and create new content, such as text, images, audio, or video. Modern generative AI, like OpenAI's GPT series and Google's Gemini, allows users to produce this creative content by issuing simple queries, referred to as prompts, and the most powerful generative AI systems can do so in natural language. Figure 2.B demonstrates generative AI's creative ability. The figure depicts an AI created image in response to the user prompt "How are AI models trained?" Rather than producing a diagram, the AI produced an artistic interpretation of an AI model.

Figure 2.B
Example Of Creative Generative AI Text-To-Image Content
Depicting How AI Models Are Trained



Source: Generated by AI (DALL-E) based on prompt of "How are AI models trained?"

Generative AI models require more data and computational resources than other forms of AI but are more flexible in the tasks they can perform. However, their operations can be difficult to understand, even for developers.

Generative AI models generally require more data and computational resources than other forms of AI but are more flexible in terms of the tasks they can perform. Another key difference is that generative models often operate as “black boxes,” making it difficult to understand why they produce certain outputs. This opacity is particularly pronounced in large neural networks used in generative AI, where the internal processes are complex and not easily interpretable. These models tend to offer lower reproducibility and accountability, which can hinder the ability of users—and sometimes developers—to evaluate and understand how the model arrives at its decisions. Abilities of and decisions made by generative AI can be emergent, unpredictable, and not fully apparent until the model is fully developed.²⁷ Table 2.1 lists prominent modern generative AI models and their capabilities, illustrating the wide range and expanding nature of their capabilities. This includes taking input in one format, such as text, and providing output in another, such as code or imagery.

**Table 2.1
 Selected Modern Generative AI Models And Their Capabilities**

Developer	Model	Capabilities					
		Converts Text To:			Converts Image To:		
		Text	Code	Image/Video	Text	Code	Image/Video
Amazon	Titan	X	X	—	—	—	—
Amazon	Titan Image	—	—	X	—	—	—
Google	Gemini	X	—	X	X	—	X
Google	PaLM 2	X	X	—	—	—	—
Google	Imagen 2	—	—	X	—	—	—
Google	Lumiere	—	—	X	—	—	X
Meta	Llama 3	X	X	—	—	—	—
Meta	Emu	—	—	X	X	—	X
Microsoft	Phi 3	X	X	—	—	—	—
Microsoft	Florence	—	—	X	X	—	—
Open AI	GPT-4	X	X	—	X	—	—
Open AI	DALL-E 3	—	—	X	—	—	X

Source: US. Government Accountability Office. *Artificial Intelligence: Generative AI Technologies And Their Commercial Applications*. June 20, 2024.

In the public sector, generative AI has created excitement and debate about its potential to revolutionize areas such as content creation, customer service, education, health care, software engineering, and policy creation, as well as its potential to significantly increase the productivity of workforces. It also presents unique potential ethical and regulatory challenges to state governments with issues such as worker displacement, copyright infringement, the spread of disinformation, data insecurity, and the need for new governance frameworks to ensure responsible use.²⁸

In 2023, the National Association of State Chief Information Officers (NASCIO) surveyed each state's chief information officer to ask which technologies would be the most impactful to state government in the near future. More than half reported generative AI as their primary concern.

In 2023, the National Association of State Chief Information Officers (NASCIO) surveyed each state's CIO, asking which emerging technologies they believed would be the most impactful to state government in the near future. Fifty-three percent reported generative AI was their primary concern.²⁹ NASCIO also reported on the primary ways state governments were using generative AI in 2023, which included virtual meetings, cybersecurity, document generation, software code generation, customer service chatbots, fraud detection, data analytics, and transportation.³⁰

Staff surveys of 13 state CIOs found that all believed AI had impacted their government operations, and 5 indicated the impact was significant. Surveys of Kentucky IT leads found that only one cabinet reported that generative AI had no impact on its office.

LOIC staff surveys of state CIOs echoed the NASCIO survey findings, with all 13 of the responding states reporting that generative AI impacted their state government operations, and 5 indicating that the impact was significant.³¹ Similarly, LOIC staff surveys of executive branch cabinet IT leads revealed that only one cabinet reported that generative AI was having no impact on its office; no cabinet, however, reported the impact as significant.³² COT officials reported that generative AI was poised to have a significant impact on executive branch agencies and would be addressed in upcoming policy guidance.³³

AI System Use By State Governments

Governments use AI to perform public sector tasks in public safety, law enforcement, health care, transportation, public administration, education, economic development, agriculture, and cyber security.

Some common arenas in which AI is being used include simulated human conversations with customers, access to and analysis of information; virtual assistants, facial and speech recognition, computer vision, e-commerce, autonomous vehicles, robotics, and cyber security. State and federal governments are also leveraging AI to perform a wide variety of public sector tasks in public safety, law enforcement, health care, transportation, public administration, education, economic development, agriculture, and cyber security.

NASCIO testified that 74 percent of state CIOs said their states were in the proof-of-concept, evaluation, or piloting phase of implementing AI.

NASCIO reported to the Legislative Research Commission Artificial Intelligence Task Force that most states are in the early stages of implementing AI, with 74 percent of state CIOs reporting that their states are in the proof-of-concept, evaluation, or piloting phase of implementing AI. NASCIO surveys found that, even in the early stages of AI implementation, states were using AI for tasks like virtual meeting assistants, cybersecurity, document generation, software coding, digital services for citizens, and data analytics.³⁴

A staff survey found that 13 states used AI for customer service, automation of document and application processing, translation, policy generation, code generation, data analytics, security robots, and fraud detection.

A staff survey of Kentucky IT leads found that agency uses included customer service chatbots, optical character recognition, and generative AI.

LOIC staff conducted a survey of state CIOs and received responses from 13 states.^c These state CIOs listed many current uses of AI including customer service chatbots, robotic process automation for document and application processing, translation, policy generation, code generation, computer vision, data analytics, autonomous robotics for security, internal generative AI models for specific domains, and fraud detection.³⁵

Similarly, LOIC staff surveyed the IT leads for each of Kentucky's executive branch cabinets.^d Among other information, the IT leads were asked to provide use cases for the AI systems they currently used. Agencies reported using customer service chatbots, optical character recognition, computer vision, large language model generative AI, AI search tools, data extraction, AI coding, data security, sentiment analysis, and recommendation algorithms. Overall, Kentucky executive branch cabinets listed 16 ways of using AI systems.³⁶ LOIC staff also conducted an inventory of AI systems in use by Kentucky executive branch agencies, in which cabinets were asked to provide information on how each system was used. Chapter 4 provides more information on the executive branch cabinet AI inventory and how Kentucky agencies are using AI.

Defining AI Systems For The Public Sector

Federal guidance stresses the importance of creating well-defined statutory and regulatory definitions of AI as the first step toward governance, but rapid development of AI has made settling on a definition difficult.

NIST, GAO, several executive orders and laws passed by the federal government, and several state statutes emphasize the importance of providing policy oversight and inventory management of AI systems. They stress the importance of creating well-defined statutory and regulatory definitions of AI systems as first step toward governance and management.³⁷

However, AI capabilities are evolving so quickly that the scientific community, industry, and governments have found it difficult to settle on a consensus definition of the technology. A 2024 GAO report notes that the federal government has created six regulatory or statutory definitions for artificial intelligence since 2018; over this time, many of the statutory definitions that states have established have also differed.³⁸ Some statutes refer to “artificial

^c Arizona, Maine, Michigan, Minnesota, Mississippi, New Hampshire, New Jersey, North Carolina, South Carolina, Texas, Vermont, Virginia, and Washington.

^d Cabinet for Health and Family Services; Education and Labor Cabinet; Energy and Environment Cabinet; Finance and Administration Cabinet; Justice Cabinet; Personnel Cabinet; Public Protection Cabinet; Tourism, Arts, and Heritage Cabinet; and Transportation Cabinet.

intelligence,” while others reference “automated decision systems.” Some definitions emphasize simulating human intelligence, and others focus on the ability to operate autonomously from human intervention.

LOIC staff reviewed federal, international, and state-level statutory definitions of *artificial intelligence*; interviewed and surveyed state CIOs and Kentucky cabinet IT leads; and reviewed current literature to compile a list of prominent federal, international, and state-level definitions of *artificial intelligence* as it pertains to the governance of AI systems. Table 2.2 lists prominent federal, international, and industry definitions for AI. A full list of these definitions, including 18 state statutory definitions, appears in Appendix B.

Table 2.2
Federal Definitions Of Artificial Intelligence

Source	Definition
National Artificial Intelligence Initiative Act (NAIIA) (2020)	A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine and human-based inputs to perceive real and virtual environments, abstract such perceptions into models through analysis in an automated manner, and use model inference to formulate options for information or action.
National Institute of Standards and Technology	[Expands upon the 2020 NAIIA definition with] An autonomous AI system that maintains a set of intelligence-based capabilities to respond to situations that were not pre-programmed or anticipated (i.e., decision-based responses) prior to system deployment. Autonomous systems have a degree of self-government and self-directed behavior.
White House Blueprint for an AI Bill of Rights	An automated system that uses computation as whole or part of a system to determine outcomes, make or aid decisions, inform policy implementation, collect data or observations, or otherwise interact with individuals and/or communities. Automated systems include, but are not limited to, systems derived from machine learning, statistics, or other data processing or artificial intelligence techniques, and exclude passive computing infrastructure.
John S. McCain National Defense Authorization Act (2019)	Any artificial system (1) 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) developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action; (3) designed to think or act like a human, including cognitive architectures and neural networks; or (4) 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. A set of techniques, including machine learning, that is designed to approximate a cognitive task.
2018 Department of Defense AI Strategy	The ability of machines to perform tasks that normally require human intelligence—for example, recognizing patterns, learning from experiences, drawing conclusions, making predictions, or taking action—whether digitally or as the smart software behind autonomous physical systems.
Environmental Protection Agency	A branch of computer science devoted to developing data processing systems that perform functions normally associated with human intelligence, such as reasoning, learning, and self-improvement.
General Services Administration	Computerized systems that work and react in ways commonly thought to require intelligence, such as the ability to learn, solve problems, and achieve goals under uncertain and varying conditions. The field encompasses a range of methodologies and application areas, including machine learning, natural language processing, and robotics.

Source: US. House of Representatives, House Committee on Science, Space, and Technology. National Artificial Intelligence Initiative Act of 2020. 2020. 116th Congress; US. House of Representatives, House Armed Services Committee. *John S. McCain National Defense Authorization Act For Fiscal Year 2019*. 2019. 115th Congress; US. Government Accountability Office. *Artificial Intelligence: Agencies Have Begun Implementation But Need To Complete Key Requirements*. 2023; US. Department of Commerce. National Institute of Standards and Technology. *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. Jan. 2023. Web.

A review of federal definitions found seven distinguishing features of AI that should be in a comprehensive definition.

There is variation across these definitions, but the following list compiles their core essential components. A comprehensive definition of an AI system should include the distinguishing features that the system

- is machine-based and fundamentally built upon algorithms,

- can operate under varying circumstances autonomously from human intervention,
- is built on technology designed to and endeavors to simulate human intelligence,
- operates by making observations about real or virtual environments or data,
- uses these observations to make predictions and decisions that affect real or virtual environments,
- can complete tasks typically requiring a human intelligence, and
- can learn and improve its ability to solve problems.

The framework that most covers these features is the NIST AI Risk Management Framework.

These core components are most fully covered by the National Artificial Intelligence Initiative Act (NAIIA) definition of *artificial intelligence* as expanded on by the NIST AI Risk Management Framework (RMF). Both sources define AI as “[a] machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments ... [by using] machine and human-based inputs to perceive real and virtual environments [and] abstract such perceptions into models through analysis in an automated manner and use model inference to formulate options for information or action.”³⁹ The NIST AI RMF expands on this definition to emphasize the potential autonomous qualities of modern AI systems, noting that “modern AI systems maintain a set of intelligence-based capabilities to respond to situations that were not pre-programmed or anticipated prior to system deployment ... [and] have significant capacity for self-governed and self-directed behavior.”⁴⁰

Kentucky Does Not Have A Statutory Or Regulatory Definition Of *Artificial Intelligence*

Among Kentucky's nine executive branch cabinets, eight do not have a definition of *artificial intelligence*.

As part of the LOIC survey of executive branch agencies, executive branch cabinet IT leads were asked if their cabinet or agency had created a regulatory definition for AI systems. The Cabinet for Health and Family Services, due to work conducted by its Office for Administrative and Technology Services, is the only cabinet that has a formal policy (AI/generative AI policy 080.101) for defining *artificial intelligence* at the time of this report. According to OATS, the cabinet's policy is based on NAIIA and NIST definitions of AI systems.⁴¹ A review of the policy indicates that it includes each of the seven core components identified as fundamental for defining *artificial intelligence*.⁴² Table 2.3 lists Kentucky executive branch cabinets and whether they have a regulatory definition of *artificial intelligence*.

The eight cabinets without a regulatory definition use differing criteria to determine whether a system should be considered AI.

According to staff surveys of executive branch IT leads, in the eight executive branch cabinets that do not have a regulatory framework, differing criteria determine whether a system should be considered AI; the cabinets are in the early stages of thinking about the issue. The criteria ranged from informal assessment by the Commonwealth Office of Technology, to lists of AI techniques, to definitions that use some but not all components of the formal definitions discussed above. Some cabinets noted that they did not need a definition, due to limited use of AI systems.⁴³ COT reported that it is currently drafting policy guidance regarding the use of AI systems that will include AI definitions and will be applicable and available to all executive branch agencies. COT noted that the guidance is designed to focus specifically on generative AI rather than AI more generally. At the time of this report, the policy remains unpublished. Table 2.3 lists the criteria that cabinet IT leads use to define AI in the absence of a regulatory or statutory definition as reported to LOIC staff.

Table 2.3
Results From Survey Of Kentucky Executive Branch Cabinets IT Leads Regarding
Criteria For Artificial Intelligence

Cabinet	Criteria For Determining Artificial Intelligence
Education and Labor	Ability to learn from data, improve over time, make decisions, perform tasks requiring human intelligence, understand natural language, recognize patterns, adapt to new information, and analyze large amounts of data
Energy and Environment	No criteria; not currently using AI or generative AI
Finance and Administration	Preliminary stages of examining AI; coordinating with Commonwealth Office of Technology
Health and Family Services	Formally described in policy 080.101
Justice	Systems that can adjust responses based on new information, have predictive capabilities, can improve over time
Personnel	Systems that can simulate human intelligence; a field of computer science focusing on creating machines that can simulate human intelligence; machine learning; large language models; reinforcement learning; natural language processing; computer vision; deep learning; narrow AI capable of accomplishing specific tasks; generative AI capable of creativity; reactive machines; limited memory machines
Public Protection	Can deal with unknown environments or circumstances to achieve objectives or goals, can render knowledge in a manner that allows new information to be easily added, can adapt to new information
Tourism, Arts, and Heritage	System that can ingest data and provide human-like analysis, learning and output
Transportation	Machine learning, artificial intelligence, generative AI

Sources: LOIC survey of Kentucky executive branch cabinet IT leads, sent June 6, 2024; Kentucky. Cabinet for Health and Family Services. Office of Application Technology Services. AI/generative AI policy 080.101. 2024.

Of the eight cabinets that did not have a regulatory definition, five reported that they did not have a process to provide oversight for AI systems.

Executive branch cabinets that did not have a regulatory framework for defining AI were asked how they provided oversight in its absence. Five of eight IT leads reported that their cabinet did not have a process to provide oversight for the use of AI systems, with some describing such oversight as not applicable. Three cabinet IT leads reported providing some oversight internally.

The Personnel Cabinet reported implementing an internal AI guidance policy (030.104) that provides some level of AI oversight, but staff were unable to verify its existence. Additionally, the cabinet reported having established a cross-agency workgroup responsible for identifying and evaluating AI projects and purchases. The Transportation Cabinet reported that it currently does not have AI-specific oversight procedures in place, but an internal committee is drafting policy guidance regarding AI use.

Similarly, the Tourism, Arts, and Heritage Cabinet reported the absence of AI-specific oversight procedures. It indicated that oversight is managed through COT's general technology procurement review process, as well as COT's Kentucky Information Technology Standards (KITS) policy, which governs

technology standards. Table 2.4 lists the reported cabinet oversight procedures in the absence of regulatory or statutory guidance.

Table 2.4
Results From Survey Of Kentucky Executive Branch Cabinets IT Leads Regarding AI Oversight In The Absence Of Regulatory Guidance

Cabinet	Oversight In Absence Of Regulation
Education and Labor	No cabinet-level AI-specific oversight, or deemed not applicable to cabinet
Energy and Environment	No cabinet-level AI-specific oversight, or deemed not applicable to cabinet
Finance and Administration	No cabinet-level AI-specific oversight, or deemed not applicable to cabinet
Health and Family Services	Regulation in place (policy 080.101)
Justice	No cabinet-level AI-specific oversight, or deemed not applicable to cabinet
Personnel	Internal AI use guidance policy (030.104) and internal workgroup provides oversight
Public Protection	No cabinet-level AI-specific oversight, or deemed not applicable to cabinet
Tourism, Arts, and Heritage	No cabinet-level AI-specific oversight, but COT general technology procurement review process provides oversight
Transportation	No cabinet-level AI-specific oversight, but a cabinet level committee is drafting guidelines

Sources: LOIC survey of Kentucky executive branch cabinet IT leads, sent June 6, 2024; Kentucky. Cabinet for Health and Family Services. Office of Application Technology Services. AI/generative AI policy 080.101. 2024.

Given that definitions of artificial intelligence are important foundations for policies governing AI use, the Commonwealth Office of Technology should promulgate administrative regulations defining AI systems.

In the absence of statutory and regulatory definition, agencies have developed different criteria for defining *artificial intelligence*, and most have no governing framework in place to oversee AI systems. Given that statutory and regulatory definitions of artificial intelligence systems are important foundations on which to develop regulatory and statutory policies governing its use by government agencies, COT should promulgate administrative regulations defining AI systems, and the General Assembly should consider formally doing so in statute.

Recommendation 2.1

Recommendation 2.1

The Commonwealth Office of Technology should promulgate an administrative regulation that defines *artificial intelligence systems* for all executive branch agencies. The definition should be consistent with definitions from the National Institute of Standards and Technology AI Risk Assessment Framework and the National Artificial Intelligence Initiative Act (15 USC sec. 9401(3)).

Matter For Legislative Consideration 2.A

Legislative Consideration 2.A

The General Assembly may wish to consider creating statutory definitions of *artificial intelligence systems* and related terminology, including these definitions in KRS 42.722, and referencing them in any statutes that are subsequently passed regarding artificial intelligence.

Chapter 3

Governing AI Systems

Kentucky's executive branch lacks statewide policies for AI procurement, implementation, training, risk assessment, and inventorying. Federal policy frameworks from GAO and NIST and Kentucky's CHFS could provide a model for COT to develop a statewide policy framework.

Policies and oversight for AI procurement, implementation, training, risk assessment, and inventorying are needed for Kentucky's executive branch but are not currently in place statewide. AI policy leaders, the Government Accountability Office and the National Institute of Standards and Technology have produced policy frameworks for government use of AI systems, and federal and state governments are working to implement these frameworks into regulatory and statutory policy guidance. In Kentucky, the legislature and the Commonwealth Office of Technology have not yet established statewide statutory or regulatory policies for AI governance. The Cabinet for Health and Family Services has, however, produced a comprehensive AI policy that could be a model for other agencies or COT. Using these federal and state frameworks as a model, COT should develop additional governance policies for AI technology, methods for assessing the risk of AI systems, and a process for tracking and inventorying AI applications.

AI Governance

Since 2019, 17 states have passed 29 bills to increase oversight of AI systems, following federal efforts. Reports from GAO, NIST, and the Council of State Governments highlight key governance areas such as procurement, implementation, training, risk assessment, and management of AI technology.

A review of literature including government, industry, and academic reports, along with state and federal legislation demonstrates that state governments are following the trajectory of the federal government and seeking to provide additional oversight for AI procurement, implementation, use, and management. Since 2019, 17 states have passed 29 bills designed to oversee the use of AI systems.^{e 44} GAO, NIST, and the Council of State Governments have produced reports outlining key areas where statutory and regulatory governance can help identify opportunities and reduce risks associated with the use of AI technology. These typically fall into the categories of procurement, implementation and usage, employee guidance and training, risk assessment, and ongoing management and inventorying.⁴⁵

^e California, Colorado, Connecticut, Delaware, Illinois, Indiana, Iowa, Louisiana, Maryland, Montana, New York, Oregon, Tennessee, Texas, Vermont, Virginia, and Washington.

Federal Guidance

NIST, under the National Artificial Intelligence Initiative Act of 2020 (NAIIA), developed the AI Risk Management Framework (AI RMF) to guide government agencies on responsible AI use. It emphasizes rigorous procurement, continuous risk assessment, staff training, and ongoing tracking of AI systems.

NIST, a federal agency within the Department of Commerce focused on technology policy, was assigned responsibility for developing standards and frameworks for government use of AI through the National Artificial Intelligence Initiative Act of 2020, which was signed into law as part of the National Defense Authorization Act of 2021. In response, NIST developed the AI Risk Management Framework, which provides comprehensive guidance for government agencies on the responsible and secure use of AI technologies. The agency calls for rigorous procurement processes, continuous risk assessment, AI-specific staff training to ensure government employees are well-prepared to handle AI technologies responsibly, and ongoing tracking and inventorying of AI systems.⁴⁶

Kentucky Guidance

Although Kentucky has no statewide policies for AI governance, CHFS has developed an AI policy that aligns with federal standards. The policy is comprehensive and could serve as a model for other agencies developing AI standards.

Although Kentucky's executive branch has produced only one regulatory policy for AI governance, it draws inspiration from the NIST AI RMF and is aligned with federal standards. CHFS's AI policy 080.101 oversees the procurement, usage, risk assessment, training on, and ongoing management of AI systems used by the cabinet. The policy is designed to ensure that cabinet investment in AI systems complies with federal standards such as those of NIST and the NAIIA.

The policy provides guidance on many aspects of AI governance including

- the requirement for human oversight of AI systems,
- the creation of an AI governance committee to monitor AI procurement and implementation,
- the necessity for regular testing procedures for AI systems,
- the roles and responsibilities of cabinet officials with respect to AI systems,
- the disclosure of AI use,
- compliance with federal standards,
- prohibition of unapproved employee use of AI systems with respect to CHFS data,
- requirements for regular audits and risk assessments, and
- mandatory AI training for all personnel who use AI systems.

Given the comprehensiveness of CHFS AI policy 080.101 and its alignment with federal standards, it can serve as a useful model for COT and other agencies as they work to develop AI standards. CHFS reported that it worked closely with COT on the

development of the CHFS policy, and COT reported that the policy framework it is developing should align with CHFS AI policy 080.101.⁴⁷ Table 3.1 lists some the guidance produced by the NIST AI RMF and some of the policies that CHFS has put into place to align with them.

Table 3.1
Comparison Of National Institute Of Standards And Technology AI Risk Management Framework 1.0 And Cabinet For Health And Family Services Generative AI Policy 080.101

Guidance Area	NIST AI RMF 1.0 / GAO Guidance	CHFS OATS Generative AI Policy
Procurement	<ul style="list-style-type: none"> • Vendor transparency regarding AI system development and capabilities • Capability to audit AI systems. • Procurement aligned with ethical AI principles • Risk assessment integrated into procurement procedures 	<ul style="list-style-type: none"> • Internal governance committee to monitor AI procurement • Require vendors to provide transparency on AI models and algorithms used • Evaluate vendors based on ethical AI practices and compliance with state regulations
Implementation and use	<ul style="list-style-type: none"> • Human oversight in decision-making, especially in sensitive areas • Ongoing review and testing • Disclosure of AI use • Defined roles and responsibilities • Compliance with federal standards 	<ul style="list-style-type: none"> • CHFS Governance Committee must approve all AI integration and use • Governance committee may revoke authorization of any technology that adds AI capabilities • All generative AI implementations must include validation phase by qualified subject matter expert • “Human-in-the-loop” oversight • AI tools tested for bias and fairness before deployment • Ongoing review and testing of applications • Disclosure of AI use when applicable • Defined roles and responsibilities for staff and officials with respect to AI implementation and oversight
Training and guidance	<ul style="list-style-type: none"> • Ongoing training in AI ethics, risk management, and technical aspects • Role-specific training • Training to identify, mitigate, and report biases • Literacy and accountability training • Continuous education 	<ul style="list-style-type: none"> • Mandatory training for staff on the ethical use of AI technologies • Prohibition of unapproved AI use by workforce • Continuing education for workforce to stay updated on AI best practices • Guidance for AI use on workforce personal devices
Risk assessment	<ul style="list-style-type: none"> • Assess for bias and fairness • Ensure transparency • Protect data security and privacy • Evaluate safety, reliability, and accuracy • Accountability and responsibility • Address workforce vulnerabilities 	<ul style="list-style-type: none"> • Regular audits and risk assessments to identify potential biases and ethical issues in AI systems • Implement measures to mitigate identified risks • Periodic review of standards and policies • Regular review and update risk management strategies.

Guidance Area	NIST AI RMF 1.0 / GAO Guidance	CHFS OATS Generative AI Policy
Ongoing management and inventorying	<ul style="list-style-type: none"> Regular review of AI systems and practices Inventory management of AI assets Ongoing updates to reflect changes and improvements 	<ul style="list-style-type: none"> Governance Committee to maintain an AI project inventory Governance Committee to track performance and impact of AI systems over time

Note: NIST = National Institute of Standards and Technology; AI RMF = AI Risk Management Framework; GAO = Government Accountability Office; CHFS = Cabinet for Health and Family Services; OATS = Office of Application Technology Services.

Sources: National Institute of Standards and Technology. *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. 2023; Kentucky. Cabinet for Health and Family Services. Office of Application Technology Services. AI/Generative AI policy 080.101. 2024.

In 2024, the Kentucky General Assembly created an AI Task Force to assess AI's impact on government operations. The task force is to submit its findings to the Legislative Research Commission by December 1, 2024.

In 2024, the Kentucky General Assembly passed legislation directing the Legislative Research Commission to create the Artificial Intelligence Task Force to assess the impact of AI on government operations including procurement, training, risk management, training, and implementation. The task force is currently gathering information on how AI can improve government processes with a specific focus on procurement policies, consumer protection, and data protection. The task force is scheduled to meet at least three times before submitting its findings and recommendations to the Legislative Research Commission by December 1, 2024.⁴⁸

Information Technology Governance

Kentucky lacks statewide AI governance policies but has statutory frameworks for managing IT. COT oversees procurement, implementation, security, and the setting of statewide technology policies.

Kentucky does not have statewide statutory or regulatory policies in place specifically for AI governance, but statutory and regulatory frameworks are in place to govern the procurement, use, and management of information technology. State agency IT is managed centrally by COT and by each agency. COT manages the procurement, implementation, security, and support for IT systems. It also sets statewide technology policies, standards, and best practices. Agencies collaborate with COT on the IT systems they wish to implement and mostly oversee their own usage of these systems once procured.⁴⁹

The General Assembly codified the management of state IT resources in statute, and determined that a single point of contact and spokesperson for all matters related to information technology and resources, including policies, standard setting, deployment, strategic and tactical planning, acquisition, management, and operations is necessary and in keeping with the industry trends of the private and public sectors[.]⁵⁰

As the executive branch's lead IT entity, COT provides technical support, ensures system compatibility, develops IT strategies, and oversees large projects.

As the lead entity for IT services within the executive branch, COT is responsible for the delivery of application development and IT services, acting as the single IT authority for the state, as mandated by statute.⁵¹ COT's roles include the following:

- Providing IT technical support to all executive branch agencies
- Ensuring compatibility and connectivity across Kentucky's information systems
- Developing strategies to enhance the application of IT for cost savings, increased productivity, and improved public services
- Providing access to consulting and technical assistance, including education and training, on the application and use of IT assets by state and local agencies
- Reviewing and overseeing large or complex IT projects and systems to ensure compliance with statewide strategies, policies, and standards
- Coordinating multiagency information technology projects
- Requiring agencies to provide assistance, resources, information, records, and advice necessary for COT to carry out its functions
- Overseeing the state's IT infrastructure and support services⁵²

COT also provides consulting, technical assistance, and training on IT applications to state and local agencies, and it participates in pilot studies and evaluations of IT hardware and software.⁵³

Kentucky IT Management Is Centralized With Exceptions

Despite Kentucky's mostly centralized IT management, COT does not oversee certain agencies, such as those led by statewide elected officials and public postsecondary institutions.

Although the IT management structure in Kentucky is mostly centralized, there are a few exceptions. COT does not oversee IT infrastructure and support services for certain agencies, including those led by statewide elected officials and the state's public postsecondary institutions. More generally, once a system is approved for procurement and implemented at an agency, the agency is responsible for its day-to-day operation. Some agencies, such as CHFS, also maintain their own local IT technical staff. Agencies also mostly determine their IT needs, such as specific software, tools, or services and initiate IT procurements.⁵⁴

AI Procurement

State government AI procurement is more complex than traditional IT procurement due to the fast-evolving nature of AI. Generative AI poses particular challenges due to its complexity and opacity.

Acquisition of AI solutions by state governments is more complex than traditional IT procurement. The rapid evolution of AI technology often outpaces the ability of government agencies to identify precise needs, leading to vague or overly broad

procurement documents. This ambiguity can result in the selection of suboptimal solutions or systems that fail to meet intended objectives. In particular, generative AI systems, which have had the most recent impact on state governments, are new technologies, and governments have only recently begun evaluating how to regulate them. They pose new procurement regulation difficulties due to their complexity and opacity.⁵⁵

AI procurement and implementation requires substantial financial investment. State governments often operate under strict budgetary constraints, making it difficult to justify the high costs associated with AI technologies when demonstrating a clear and immediate return on AI investment can be challenging. The sensitive nature of government data also necessitates stringent privacy and security measures. Integrating AI solutions while safeguarding sensitive information introduces complexities that can prolong procurement processes and increase costs.⁵⁶

GAO and NIST have created AI procurement guidance. They emphasize requiring vendor transparency, agency audit capability, ethical procurement processes, and specialized procedures for AI systems.

GAO and NIST provide guidance regarding AI procurement. The organizations emphasize requiring vendor transparency regarding AI system development and capabilities, agency capability to audit procured AI systems, agency procurement processes aligned with ethical AI principles, specialized procurement procedures designed specifically for AI systems, and agency risk assessments aligned with NIST AI RMF standards for all AI procurements.⁵⁷

Kentucky Executive Branch AI Procurement

COT does not have procurement policies specific to AI systems, but it does report that it considers whether systems have AI components when it reviews procurements for state agencies, likely placing such systems under additional scrutiny. It is unclear whether AI procurement policies will be included in COT's upcoming AI policy framework, but the agency assisted with CHFS's AI policy that included AI procurement procedures. The policy includes additional procurement procedures for AI systems including additional vendor transparency requirements, risk assessment processes, staff responsibilities, and the creation of an internal committee, the AI Governance Committee, which is responsible for monitoring all AI procurements.⁵⁸

AI policy 080.101 requires that all AI systems used by the cabinet be approved by the internal AI Governance Committee, and it applies this requirement both to internally developed systems and to third-party products. It also applies to dedicated AI systems and any applications that leverage AI. Any systems that incorporate AI

must comply with federal, state, and CHFS security policies for data protection, privacy regulations, and security protocols and must undergo risk assessment based on industry standards such as the NIST AI RMF prior to procurement.⁵⁹

Kentucky Executive Branch IT Procurement

In the absence of specific AI policies, procurement follows general IT procurement rules, requiring COT preapproval. Once approved, the Finance and Administration Cabinet manages the procurement.

In the absence of procurement policies specific to AI systems, COT's general IT procurement policies apply. By statute, COT must approve any procurement of IT software, hardware, or service before procurement can be initiated.⁶⁰ Once COT approves a request, the Finance and Administration Cabinet handles the procurement process, following the Model Procurement Code.

COT's Kentucky Information Technology Standards (KITS) guide IT decisions and resource use. KITS includes an AI category, but no AI products are currently approved.

Kentucky Information Technology Standards. COT has an information technology standards policy (CIO-051) to guide its approach to developing and maintaining the Kentucky Information Technology Standards. Its primary purpose is to facilitate informed decision-making processes, optimize resource utilization, mitigate risks, and maximize returns on investment.

Policy dictates that only products listed in KITS or those granted exceptions can be utilized or purchased by COT consolidated agencies. KITS includes a category for AI systems but, as of the time of this report, no approved products are listed, and applications listed under other section now have AI components.^f Requests for changes or exceptions to KITS undergo review by the COT KITS Review Team.⁶¹

All IT agency IT purchase requests must be submitted to COT for approval.

IT Purchase Requests. Requests for new IT services or enhancements must be submitted by an authorized agency IT services contact to COT via the Commonwealth Service Desk. COT reviews these requests and may ask for additional information or suggest alternatives. If COT offers a rated service that meets the agency's needs, it is preferred. If additional IT assets are required, the procurement process must be followed.

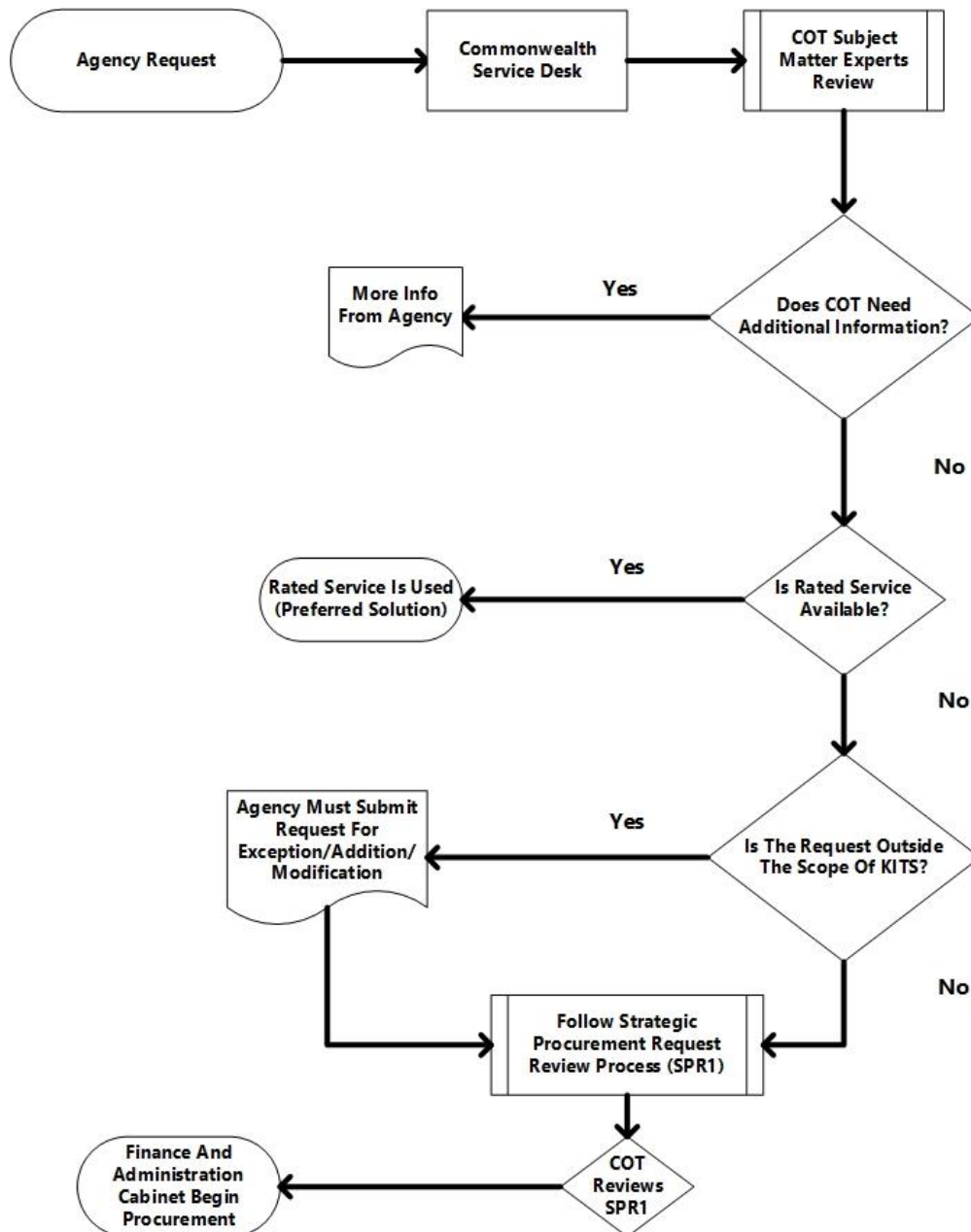
Purchases for agency-specific functions or services that are not COT-rated must follow the procurement process. Requests for IT hardware costing \$1,000 or more, all software assets regardless of cost, and IT-related services regardless of cost must go through the Strategic Procurement Request (SPR1) review process.

The policy applies to all executive and non-executive branch agencies using COT-managed infrastructure or services, including

^f The standard in KITS related specifically to AI is A02.028.KY007.

employees, contractors, consultants, temporary workers, and volunteers. Agencies can modify the policy to meet their needs but must obtain approval through an exception request.⁶² Figure 3.A illustrates the approval process that agencies must follow before procurement of IT assets can be initiated.

Figure 3.A
Information Technology Asset Request Process, Commonwealth Office Of Technology



Source: Staff analysis of COT information technology standards policy CIO-050.

Two options exist for aligning COT IT procurement processes with federal AI standards: Each agency must adopt AI-specific procurement procedures, or COT must fully integrate AI evaluation procedures into its statewide procurement process.

In order for COT’s current IT procurement process to fully align with federal AI procurement standards, either each executive branch cabinet or agency will individually need to introduce AI-specific procurement procedures similar to CHFS 080.101, or COT will need to integrate AI system evaluation procedures into its statewide procurement process. Given that COT is best positioned to evaluate how best to incorporate AI procurement standards into its current IT procurement model, LOIC staff recommends that COT work with agencies and cabinets to produce a report on how best to implement AI procurement procedures across the executive branch.

LOIC staff also recommends that the report include an evaluation of opportunities where AI systems can improve the effectiveness of executive branch operations. Staff surveys of the IT leads of nine executive branch cabinets found that AI was currently only having either a minor impact on cabinets or no impact at all. Table 3.2 lists the current impact of AI on executive branch cabinet operations as reported cabinet IT leads. Given that new opportunities for executive branch agencies to use AI will present themselves in the near future, it would be beneficial for COT and the legislature to better understand how AI can make more of a positive impact on agency operations.

**Table 3.2
 Results Of Survey Of Executive Branch Cabinet Information
 Technology Leads Regarding Current Impact Of AI On
 Operations**

Cabinet	AI Impact On Cabinet
Education and Labor	Minor
Energy and Environment	Minor
Finance and Administration	Minor
Health and Family Services	Minor
Justice	None
Personnel	Minor
Public Protection	Minor
Transportation	Minor
Tourism, Arts, and Heritage	Minor

Source: Staff survey of Kentucky executive branch cabinet IT leads, sent June 6, 2024.

LOIC staff surveys asked executive branch IT leads how they envisioned AI improving their cabinets in the near future. Generally, cabinets reported seeing opportunities for AI to improve agency productivity and efficiency, customer service delivery, data analytics, and worker training; while reducing human error and increasing automation. Individual cabinets reported specific

agency related opportunities like improved highway traffic safety for the Transportation Cabinet and improved marketing capabilities for the Tourism, Arts, and Heritage Cabinet. Table 3.3 lists all of the identified opportunity areas where cabinets reported AI could improve their operations.

Table 3.3
Survey Of Executive Branch Cabinet IT Leads:
Major Types Of Reported Opportunities Related To AI

Cabinet	Type Of AI Opportunity Reported						
	Agency Productivity & Efficiency	Automation of Tasks & Human Error Reduction	Data Analysis & Code Development	Customer Service Delivery	Worker Training & Guidance	Marketing & Social Media	Highway Safety
Education and Labor	X	X	-	-	-	-	-
Energy and Environment	X	X	-	-	-	-	-
Finance and Administration	-	-	-	-	-	-	-
Health and Family Services	X	-	X	X	X	-	-
Justice	X	X	-	-	-	-	-
Personnel	X	-	-	X	X	-	-
Public Protection	X	X	-	X	-	-	-
Tourism, Arts, and Heritage	-	X	X	X	-	X	-
Transportation	X	X	-	-	-	-	X
Total	7	6	2	4	2	1	1

Note: The Finance and Administration Cabinet respondent did not answer this question.

Source: Staff survey of Kentucky executive branch cabinet IT leads, sent June 6, 2024.

Recommendation 3.1

Recommendation 3.1

The Commonwealth Office of Technology (COT) should work with executive branch agencies and cabinets to produce a report evaluating current AI procurement procedures with respect to national standards and identifying opportunities where AI systems can improve the effectiveness of executive branch operations. By October 1, 2025, COT should post the report on its website and provide it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Implementation And Usage

GAO reports that AI can significantly enhance government operations by improving responsiveness, efficiency, and data-driven decision-making.

The implementation and usage of AI resources has the ability to greatly enhance government operations by making them more responsive, efficient, and data-driven. GAO reports that AI has the potential to enhance state government operations by streamlining processes, improving decision-making, and delivering more personalized services to citizens. By automating routine tasks, GAO predicts that AI can also increase efficiency and reduce operational costs.⁶³

Gladstone AI reviewed the potential impact of AI for federal government operations and reported that advanced data analytics and machine learning algorithms are enabling government agencies to analyze vast amounts of data quickly, leading to more informed and timely policy decisions.⁶⁴

Eight of nine executive branch cabinets reported that AI systems were affecting their operations.

In Kentucky, eight of the nine executive branch cabinets surveyed by staff reported that AI systems were affecting their operations. Two of those agencies reported that they were having difficulty implementing AI systems.⁶⁵ A similar survey was sent to CIOs in other states. All state CIOs reported that their executive branch operations were experiencing moderate to significant impacts from the introduction of AI technologies.

Although Kentucky does not have statewide statutory or regulatory AI governance policies, CHFS, through AI policy 080.101, has initiated comprehensive AI implementation and usage guidelines. These include

- the creation of a CHFS OATS Governance Committee to approve all AI implementation, integration, and usage;
- granting that committee the authority to revoke the authorization of any technology that adds AI capabilities;
- the provision that all generative AI implementations must include validation phase by a qualified subject matter expert;
- the mandate that all AI systems must include “Human-in-the-Loop” oversight;
- the testing of all AI tools for bias and fairness before deployment;
- ongoing reviews and testing of AI applications;
- the commitment to disclosing the use of AI when applicable; and
- the creation of defined roles and responsibilities for staff and officials with respect to AI implementation and oversight.

Table 3.4 lists how CHFS OATS defines new roles for all of its technology staff with respect to AI systems. Staff responsible for security, compliance, and data privacy were each given new responsibilities with respect to AI technology, and the newly created AI Governance Committee has taken on several new responsibilities and authorities.

Table 3.4
Staff Responsibilities For AI Systems,
Cabinet For Health And Family Services, Office Of Application Technology Services

Role	Responsibility
Security and compliance team	<ul style="list-style-type: none"> • Develop and manage generative AI security policy • Support IT security incident response resulting from use of generative AI • Conduct security risk assessments for generative AI applications and use cases
Data privacy team	<ul style="list-style-type: none"> • Conduct privacy risk assessment for generative AI applications and use cases
CHFS AI Governance Committee	<ul style="list-style-type: none"> • Conduct review of specific uses of generative AI • Review and approve/reject generative AI applications • Review all generative AI output for bias, accuracy, and appropriateness • Review and approve/reject software and tools • Review and approve/reject models based on use case • Review and approve/reject deployment approach • Annually review policies and procedures (mandatory training)

Source: Cabinet for Health And Family Services AI/generative AI policy 080.101.

Kentucky lacks statewide AI governance policies, but CHFS has implemented comprehensive AI guidelines through policy 080.101, which includes creating an AI Governance Committee, requiring “Human-in-the-Loop” oversight, validating generative AI with experts, testing for bias, and disclosing AI use.

The CHFS AI Governance Committee is also responsible for reviewing and updating CHFS’s AI policies quarterly so that they stay on top of evolving AI technologies. The committee is also required to review and update AI policy 080.101 at least once a year.

The CHFS policy is comprehensive with respect to the implementation and usage of AI systems. It could be a strong model for other agencies and a useful framework for legislative action.

Recommendation 3.2

Recommendation 3.2

The Commonwealth Office of Technology (COT) should promulgate administrative regulations that develop and establish statewide policies and procedures for the procurement, implementation, utilization, and ongoing assessment of technology systems that employ artificial intelligence that are in use by executive branch agencies. By October 1, 2025, COT should post these policies and procedures on its website and report them to the Legislative Oversight and Investigations Committee; the Legislative

Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Matter For Legislative Consideration 3.A

**Matter For Legislative
Consideration 3.A**

The General Assembly may wish to consider revising KRS 42.726 to statutorily require that the Commonwealth Office of Technology promulgate administrative regulations that develop and establish statewide policies and procedures for the procurement, implementation, utilization, and ongoing assessment of technology systems that employ artificial intelligence that are in use by executive branch agencies.

Training And Guidance

Federal policies emphasize AI training for government workforces through the NAIIA and the John S. McCain National Defense Authorization Act, which direct NIST to create policy frameworks for AI training and the Office of Management and Budget (OMB) to develop AI training procedures.

At the federal level, statutory and regulatory policies have emphasized the importance of training government workforces on the responsible use of AI. The NAIIA and the John S. McCain National Defense Authorization Act for Fiscal Year 2019 called on NIST to develop a policy framework for training staff on the safe and ethical use of AI and instructed the Office of Management and Budget (OMB) to develop AI training procedures for federal personnel involved in the acquisition and use of AI technology. The guidelines include requiring agencies to provide training to staff on the fundamentals of AI technology, the implementation of AI systems, and the ethical concerns surrounding AI use. OMB guidance also recommends continuing education to keep pace with evolving technologies.⁶⁶

GAO has also been assigned responsibility for guidance on workforce training for the use of AI systems. Among other reports on government use of AI, the agency produced the AI Accountability Framework, which emphasizes the need for AI literacy and accountability training for government workforces. Like the OMB guidance, the report stresses the need for continuous education to keep up with advances in technology.⁶⁷ A 2023 GAO report found that the federal agencies that were tasked in 2020 with developing and implementing AI training policies had made only limited progress.⁶⁸

Kentucky Executive Branch Training And Guidance For AI

State officials, including those from COT and CHFS, have expressed concerns about responsible AI use and workforce AI training.

In interviews with COT and other executive branch agencies, officials stated that guidance on responsible workforce use of and training for AI, specifically generative AI, were among their primary concerns when considering the impact of AI. Currently, CHFS AI policy 080.101 is the state’s only regulatory or statutory guidance addressing responsible AI use and effective workforce training. However, COT has indicated that it is drafting a new policy that will include training and guidance.⁶⁹

CHFS AI policy 080.101 provides specific guidelines regarding guidance and training. It mandates that all personnel involved in AI projects, whether directly or indirectly, must undergo training as part of the project onboarding process. This training, which focuses on the policy’s principles and responsible AI practices, must be repeated annually. Additionally, the policy integrates training into the project software development life cycle, ensuring that staff are continuously informed about the latest updates in AI practices. The policy also outlines the role of the CHFS AI governance team in reviewing and approving AI applications, models, and tools to ensure compliance with ethical and operational standards. The team is responsible for providing oversight and guiding staff through the responsible use of AI technologies.

CHFS, through AI policy 080.101 restricts the use of unapproved generative AI applications and trains staff to disclose AI use in communications and work products.

CHFS reported that it is providing guidance on the use of open-source generative AI, such as OpenAI’s ChatGPT, Google’s Gemini, and Microsoft’s Copilot. The agency officially prohibits employees from using unapproved generative AI applications when “using CHFS systems of networks, conducting business on behalf of CHFS, or when accessing CHFS data.” The agency also trains staff to disclose the use of AI when used for communications or work product.⁷⁰

Given executive branch concerns about staff training and guidance for responsible and effective AI use, this report recommends that the Commonwealth Office of Technology promulgate administrative regulations to develop and maintain training and guidance policies and procedures. LOIC staff find that a statewide policy would be beneficial to all agencies and that CHFS AI policy 080.101 would be a good reference.

Recommendation 3.3

Recommendation 3.3

The Commonwealth Office of Technology (COT) should promulgate administrative regulations that develop policies and procedures for providing guidance to, and training of, executive branch agency staff regarding both the effective and responsible use of artificial intelligence systems. By October 1, 2025, COT should post these policies and procedures on its website and report them to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Risk Assessment

AI systems introduce new or enhanced risks compared to traditional computer systems, such as model unpredictability; data drift causing AI hallucinations; and concerns around decision-making, privacy, and content generation. An AI risk assessment policy is essential for managing these risks effectively.

The risks associated with AI are new or enhanced compared to risks related to traditional computer systems. For example, data used to train AI systems over time may drift from the original deployment context or purpose causing the model to “hallucinate,” or fabricate content not based on its training or data.^g ⁷¹ Further, the models used to train AI systems can be unpredictable and opaque to even their developers.⁷² AI systems also present new concerns such as responsibility for decisions made by autonomous systems, privacy issues related to AI’s ability to analyze personal data, and the creative content they can create, such as deepfakes and plagiarized material.^h

Assessing the risk of an AI system begins with understanding the risks and unintended consequences that an AI system may introduce and designing strategies to effectively manage or mitigate those risks. An AI risk assessment policy in state government is crucial for ensuring responsible and ethical use of artificial intelligence in public services. As AI technologies become integrated into decision-making processes, public safety, and resource management, a defined AI risk assessment policy can help governments address potential risks.

^g In the context of AI, *hallucinate* refers to instances where a model, such as a language model, generates information or responses that are not based on its training data or real-world facts. Essentially, the AI “makes up” content that may sound plausible but is incorrect, irrelevant, or completely fabricated. Hallucinations occur because generative models are designed to predict the next word or phrase in a sequence based on patterns in the data they were trained on, rather than on an understanding of the data itself.

^h *Deepfakes* refer to images or recordings that have been convincingly altered and manipulated to misrepresent someone as doing or saying something that was not actually done or said.

The NIST AI Risk Management Framework is a key initiative guiding federal and state efforts to manage the risks associated with AI systems. The RMF identifies several major risk categories that are particularly relevant, and in some cases unique, to governmental use of AI. These categories include bias and fairness, security and privacy, safety and reliability, transparency and explainability, accountability and responsibility, and workforce vulnerability.⁷³

Fairness and Bias

AI systems can amplify existing biases in data, leading to discriminatory outcomes in areas such as law enforcement, social services, and education.

AI systems can perpetuate or amplify biases in data, leading to unfair outcomes. If not properly assessed, AI models can unintentionally perpetuate discrimination, leading to unequal treatment in areas such as law enforcement, social services, and education. A clear AI risk assessment can help identify and potentially avoid these issues, promoting fairness and impartiality in government programs.⁷⁴

Data Security and Privacy

Like traditional systems, AI systems are susceptible to cyber threats. An AI risk assessment policy helps protect AI systems from misuse and breaches, which is crucial given the rise in cyberattacks on state government IT infrastructure.

Government agencies often manage sensitive data containing personal information. AI systems are vulnerable to cyber threats just as traditional computer systems are, and an AI risk assessment policy helps safeguard this information from misuse or data breaches. This is particularly important given increasing cyberattacks on state IT infrastructure. Government agencies must implement strict security protocols to prevent unauthorized access, data theft, or malicious manipulation of AI models. Policies can incorporate measures such as data encryption, secure storage, and limitations on data sharing to minimize potential risks.⁷⁵

Safety, Reliability, And Accuracy

AI systems must be reliable and predictable, producing accurate results and minimizing unintended consequences. A reliable AI system should include mechanisms to detect failures and alert a “human-in-the-loop” to prevent harm.

AI systems must be reliable, function predictably, produce accurate information, and minimize the risk of unintended consequences. This includes ensuring that AI systems behave as expected and fail in a controlled manner, without causing harm to individuals or organization. For example, in an unemployment benefits system, an AI might be used to automatically review and approve claims. If the system malfunctions or experiences an error, it could wrongly deny thousands of legitimate claims, leaving individuals without necessary financial support. A reliable AI system would detect

such failures and alert a “human-in-the-loop” before any issues affect users.^{i 76}

Transparency

AI systems’ lack of transparency, especially in complex models like deep learning generative AI, can lead to trust and accountability issues due to their “black box” nature. NIST emphasizes the need for transparency by documenting AI model functions, tracking decision-making processes, and clearly explaining AI outputs.

One of the biggest challenges with AI is the lack of transparency in how decisions are made, especially with complex models like deep learning. These systems, often referred to as “black boxes,” may provide accurate results but do so in ways that are difficult for users, or even developers, to explain or understand.^j This opacity can lead to a lack of trust and accountability. NIST emphasizes the importance of transparency in these systems, which involves documenting how AI models function, tracking decision-making processes, and providing clear explanations of AI outputs. Transparency is particularly important for governments, for which consequences of AI-driven decisions can be significant. Since state governments will often be using AI systems developed by the private sector, significant transparency will often be required from vendors.⁷⁷

Accountability And Responsibility

Ethical AI use requires clear accountability mechanisms throughout its development and deployment. The NIST RMF advocates for human oversight at all stages to align AI with ethical standards and societal values, including assigning responsibility, ensuring legal compliance, and addressing issues.

To ensure the ethical use of AI, there must be clear accountability mechanisms governing its development, deployment, and use. NIST RMF advocates for human oversight at every stage of AI implementation to ensure that the technology aligns with ethical standards and societal values. This practice includes assigning responsibility for AI outcomes, ensuring compliance with legal and regulatory frameworks, and maintaining mechanisms for addressing issues that arise. Organizations need to establish governance frameworks that outline who is responsible for AI system performance and the steps to take when something goes wrong.⁷⁸ The European Union’s AI Act, for instance, mandates that high-risk AI systems meet stringent transparency and human oversight requirements, emphasizing the need for public sector accountability.⁷⁹

ⁱ “Human in the loop,” in the context of AI, refers to a system design approach where human intervention is involved at critical points in the AI’s decision-making or learning process.

^j Generative AI models are often referred to as “black boxes” because their internal workings are difficult to interpret or understand, even for their developers. This opacity stems from the complexity of the underlying neural networks, which have millions or billions of parameters, and the fact that these models learn patterns from vast datasets rather than following explicit rules. The decision-making process within the model is not easily traceable or explainable, and the models can exhibit emergent behavior—unexpected outputs or capabilities not anticipated during training.

Workforce Vulnerabilities

A significant risk in AI implementation in government services is workforce vulnerability due to inadequate training.

A significant risk associated with the implementation of AI systems in government services stems from workforce vulnerabilities, particularly when staff are not properly trained to use AI systems effectively and responsibly. Without adequate training, employees may fail to understand how to interact with AI tools, may misinterpret AI outputs, or may overly rely on AI decisions without applying necessary human oversight. These gaps in knowledge and skills can lead to a range of problems, from inefficiency to serious ethical and legal issues.⁸⁰

AI Risk And Kentucky's Executive Branch

Kentucky's executive branch agencies are concerned about AI risks related to data security, workforce vulnerabilities, and fairness and bias.

Kentucky's executive branch agencies reported concerns regarding many of these AI risks. Staff surveyed executive branch cabinet IT leads regarding the risks that they were most concerned about with respect to the use of AI. The most common concerns were data security and privacy, workforce vulnerabilities, and fairness and bias. Of the nine cabinets surveyed, eight identified data security and privacy as a major risk, five highlighted the need for more workforce training and guidance, and four reported that fairness and bias were significant concerns. Agencies also identified accountability and reliability of AI systems, lack of state regulation, difficulties associated with implementing AI systems, and the cost of AI systems as major risks or concerns. Table 3.5 lists all of the concerns reported by each cabinet's IT lead across seven categories of risk.

Table 3.5
Survey Of Executive Branch Cabinet IT Leads:
Major Types Of Reported Concerns Related To AI Risk

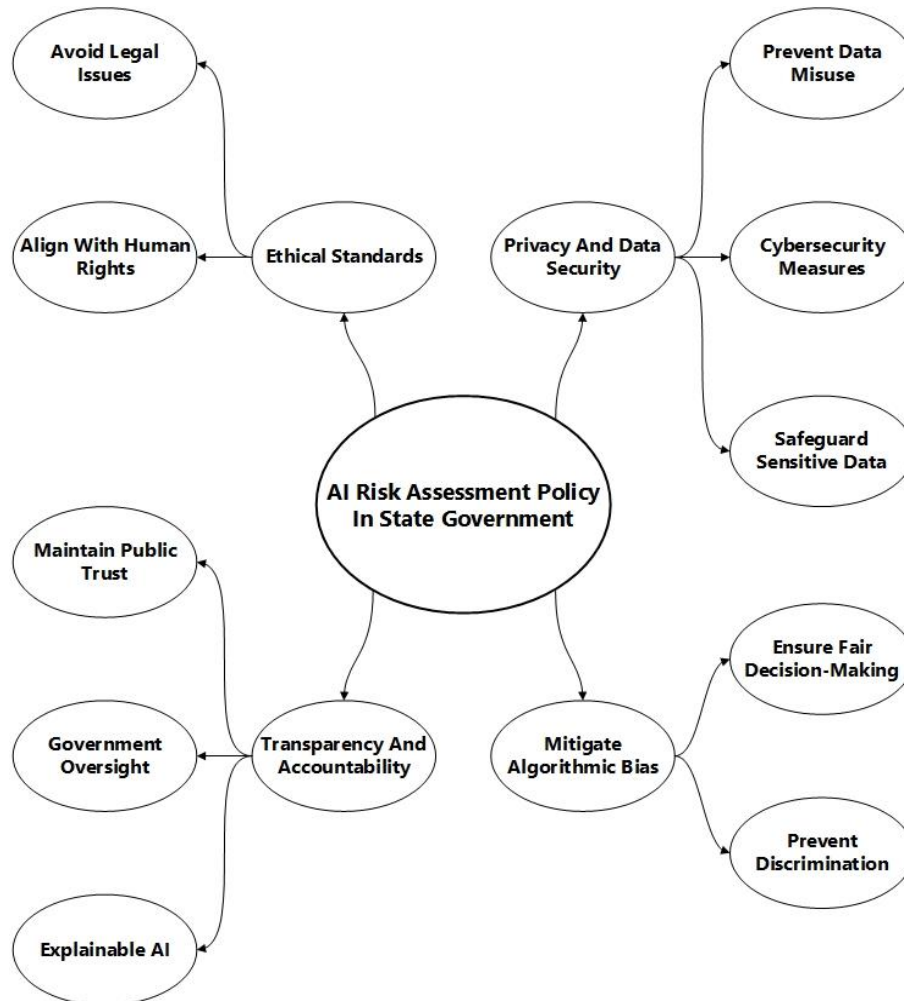
Cabinet	Type Of AI Risk Reported						
	Data Security And Privacy	Difficulty Implementing	Fairness, Bias, And Transparency	Lack Of State Regulation	Reliability, Accountability, And Accuracy	Cost	Training And Guidance For Workforce
Education and Labor	X	—	—	—	X	—	—
Energy and Environment	X	—	—	—	—	—	X
Finance and Administration	X	—	—	—	—	X	X
Health and Family Services	X	X	X	—	X	—	X
Justice	X	—	—	X	—	—	—
Personnel	X	—	X	X	—	—	X
Public Protection	X	—	X	—	—	—	X
Tourism, Arts, and Heritage	—	—	—	—	X	—	—
Transportation	X	—	X	—	—	—	—
# of Concerns	8	1	4	2	3	1	5

Source: Staff survey of Kentucky executive branch cabinet IT leads, sent June 6, 2024.

COT Does Not Have An AI Risk Assessment Policy

COT does not currently have a risk assessment policy for AI tools and systems, but it is in the early stages of developing and integrating AI tools and systems into its existing architecture. An AI risk assessment strategy and subsequent policy should be a priority for COT. Figure 3.B illustrates some of the main concepts associated with an AI risk assessment policy in state government and underscores the complexity of assessing the risk of AI systems.

Figure 3.B
Risk Assessment Model For State Government



Source: Staff analysis of US. Government Accountability Office. *Artificial Intelligence: An Accountability Framework For Federal Agencies And Other Entities*. 2023; US. Department of Commerce. *National Institute of Standards and Technology. Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. Jan. 2023. Web; European Union. *EU Artificial Intelligence Act*. Feb. 27, 2024, ch. III, sec. 2, art. 14; US. Government Accountability Office. *Artificial Intelligence: Agencies Have Begun Implementation But Need To Complete Key Requirements*. 2023.

Given that AI systems create unique risks for state governments and that the executive branch has no statewide risk assessment methodology or process designed specifically for AI systems, this report recommends that COT develop a method for conducting ongoing risk assessments of AI systems. Staff recommend that the risk assessment methodology be aligned with the NIST AI RMF and be presented for review to the legislature no later than October 2025.

Recommendation 3.4

Recommendation 3.4

The Commonwealth Office of Technology (COT) should develop a method for conducting a risk assessment for artificial intelligence systems in use by executive branch agencies. This methodology should be consistent with the National Institute for Science and Technology’s Artificial Intelligence Risk Management Framework. By October 1, 2025, COT should post the methodology on its website and report it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Inventorizing AI

NIST and GAO emphasize the importance of maintaining an inventory of AI systems and their use cases for effective risk management.

NIST and GAO guidance state that an inventory of AI systems and their use cases is critical for governments to understand and leverage their AI capabilities.⁸¹ An inventory of AI systems is also considered an important component of risk management strategies.⁸² AI system inventories typically focus on how AI is implemented and the specific technologies used to achieve different use case outcomes, whereas AI use case inventories typically focus on existing and potential applications of AI. Inventories being mandated at the federal and state level typically require both system and use case information.

Federal and state governments are heeding the advice of these agencies. At the federal level, the Advancing American AI Act, Executive Order 14110: Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence, and OMB Memorandum M-24-10: Advancing Governance, Innovation, and Risk Management for Agency Use of Artificial Intelligence each require federal agencies to report on their use of AI systems. Agencies are required to conduct annual inventories of AI use cases and provide a wide range of information about each system. The inventory is to be submitted to the OMB by December 2024.

Other States Require Inventories Of AI Assets

Several states have recently enacted legislation requiring executive branch agencies to inventory AI systems.

Several states have also recently passed legislation mandating that executive branch agencies inventory their AI systems:

- Connecticut and Vermont began mandating annual inventories of AI systems in 2023.
- California and Texas legislatures have required executive branch agencies to provide annual inventories of all AI systems to legislative committees by the end of 2024.
- Delaware established an AI commission in 2024 to oversee AI use and inventory AI systems.
- Indiana and Maryland’s legislatures have called for an inventory of all AI technologies by the end of 2025 and ongoing assessments thereafter.
- West Virginia formed a 2025 AI Task Force to evaluate AI’s impact on workforce, which includes a full inventory of executive branch AI systems.

These inventories call for similar data to be compiled on the AI systems used by executive branch agencies. These data typically include, among other information, which agency uses the application, the name of the application, its use case, how the application uses AI, whether the agency can audit the performance and capabilities of the AI model, a risk assessment of the system, algorithm and model information, and information on the system vendor. Table 3.6 lists selected recent state legislation mandating executive branch inventorying of AI systems.

Table 3.6
Statutorily Mandated Inventories Of AI Systems In Other States

State	Description Of AI Inventory Or Policy
California	Cal. Govt. Code sec. 11546.45.5, effective January 1, 2024, mandates an inventory of high-risk automated decision systems used by state agencies, defined as systems that use AI or machine learning to make impactful decisions on human outcomes. This inventory, due by September 1, 2024, must include details such as system capabilities, data usage, and risk mitigation measures. A report is to be submitted to legislative committees by January 1, 2025, and annually thereafter.
Connecticut	C.G.S.A. sec. 4a-2e requires the Department of Administrative Services to begin conducting annual inventories of AI systems by December 31, 2023. The inventory includes system details such as vendor and capabilities, with an assessment of potential discrimination risks. The Judicial Department must maintain a similar AI inventory and establish policies to prevent unlawful impacts by February 2024.
Delaware	29-90C-9041C Del. Admin. Code, effective July 2024, established the AI Commission to oversee AI use in state agencies. The commission is responsible for inventorying generative AI systems and identifying high-risk areas.
Indiana	Ind. Code 4-13.1-5-3 requires state agencies to compile an inventory of AI technologies by November 1, 2025, including details on system functions, data security, and the potential impact on residents. The statute also allows for independent testing and bias assessments.
Maryland	Md. Code Ann., State Fin. & Proc. sec. 3.5-803, effective July 1, 2024, requires an inventory of high-risk AI systems by December 1, 2025, with ongoing assessments for systems procured after February 2026. The Governor’s AI Subcabinet plays a key role in overseeing policies and assessing AI impact.
Texas	Tex. Govt. Code sec. 2054.623 mandates that by July 1, 2024, state agencies submit inventories of automated decision systems, distinguishing between systems that make final decisions and those that assist decision-makers. Agencies must report system capabilities, data handling, and biases.
Vermont	Vt. Stat. Ann. tit. 3, sec. 3305 requires an inventory of automated decision systems by state agencies, detailing system uses, biases, and impacts on residents. The Division of Artificial Intelligence oversees these systems and reports annually to the legislature on AI’s effects on privacy and discrimination.
West Virginia	West Virginia’s HB 5690 of the 2024 session established an AI Task Force to develop policies, define AI, and assess its impact on the workforce. The Task Force is to submit a report by July 2025.

Source: LOIC staff review of state laws, codes, and policies.

Kentucky Does Not Have A Statewide Inventory Of AI Systems

In the absence of a formal statewide AI system inventory, LOIC staff collaborated with COT and various executive branch cabinets to create a preliminary inventory.

Kentucky does not have a statewide inventory of AI systems in use by executive branch agencies. CHFS has included some AI inventory guidance in AI policy 080.101, but the policy applies only to the cabinet itself. The policy assigns its newly created AI Governance Committee the responsibility for maintaining an “AI project inventory to track and assess ongoing and proposed AI initiatives.”⁸³ Interviews with CHFS OATS officials indicate that there is, however, no current inventory of specific AI systems, and it is unclear whether the policy guidance will track AI at the system level.⁸⁴

In the absence of a preexisting statewide inventory, LOIC staff worked with COT and executive branch cabinets to create an

inventory of executive branch AI systems and their use cases. The inventory requested information on the name of the AI application, the application's developer, which agencies are using the application, how the application is being used, how the application uses AI to accomplish its tasks, and whether the agency or cabinet is able to monitor or audit the performance and capabilities of the application.

Important caveats for the LOIC staff inventory of executive branch use of AI systems include that the inventory was produced ad hoc through the surveying of cabinets and agencies, did not carry the force of statute or regulation to compel compliance, and was designed to be possible for cabinets and agencies to compile within the short timeframe of this report. Also, given that there is currently no official inventory of AI systems, or technology systems more generally, it is impossible to cross-reference this inventory for validity. The inventory, therefore, may not represent all AI applications in use by the executive branch, all applications that include some AI functionality, or all of the information that would be useful to know about executive branch AI systems. The full inventory of executive branch AI systems and their use cases is provided in Appendix D.

Inventorying AI Systems And Their Use Cases

Kentucky's executive branch agencies reported using 38 AI systems, ranging from vendor-developed to self-developed applications.

In total Kentucky executive branch cabinets reported that they are currently using 38 AI systems ranging from vendor-developed applications to applications developed by the agencies themselves. These systems cover a wide range of capabilities, utilize a wide range of AI techniques, and have been implemented into a wide range of agency operations. They include applications that have been procured and licensed through COT and only those applications whose primary function involves AI technology.⁸⁵

There is significant variation in the number of AI applications reported by each cabinet. The Public Protection Cabinet reported 14 AI systems; the Finance and Administration Cabinet and the Justice Cabinet reported none. Without a legally mandated AI systems inventory, it is impossible to know whether these cabinets truly lack AI systems or simply did not participate in the inventory project. Similarly, the reported number of AI systems in use by all agencies should be seen as illustrative rather than definitive, as no agencies were legally required to participate in the inventory process. Table 3.7 shows the name of the application or system, its general use case, the agency or agencies that use it, a brief description of functionality, and whether the cabinet or agency

can monitor or audit the capabilities and performance of the application or system.

Table 3.7
Inventory Of Executive Branch Agency AI Systems Applications And Use Cases

Application	Use Case	Agency	Description	Can Agency Audit?
ABBY Vantage	Image recognition	CHFS DMS Vendor (MedImpact)	Performs optical character recognition on forms and faxes received from external entities (state, pharmacy, provider, etc.) to transform scanned image files into text-based data with other form-related information.	Yes
AWS Connect	Customer support	KYTC, ELC	Cloud-based contact center service, used for customer support and automation of customer service interactions.	Yes
Big Query	Data analytics	KYTC	Google product used for large-scale data analytics, ideal for querying massive datasets efficiently.	Yes
Bluebeam	Operations	PPC	Provides solutions for architects, engineers, and construction professionals to manage construction documents and workflows.	Yes
BoardEffect	Operations	PPC	Tool used for AI governance and management within organizations.	Yes
Canva	Content creation	KYTC, EEC, WIB	Widely used for graphic design and content creation.	No
ChatMeter	Customer support	KYTC	Provides reputation and review management, helping businesses track customer feedback.	No
CVIEW	Data analytics	KYTC	Allows for exchange of data related to commercial vehicles.	No
DJIMimo	Content creation	KYTC	Video editing app from DJI, primarily used for editing footage from DJI drones and cameras.	No
Dragon Professional	Speech recognition	PPC	Well-known for speech-to-text capabilities, commonly used for transcription and voice commands.	No
Galvanize ACL	Data analytics	PPC	Provides data analysis and audit software for governance, risk, and compliance.	No
Grammarly	Natural language processing	KYTC, EEC, PPC, ELC	Uses natural language processing to provide writing suggestions and grammar correction.	No
IEES Salesforce Einstein Bot	Customer support	CHFS OATS, IEES** users	AI-powered chatbot used as Kynect chatbot to automate customer service interactions, provide instant responses, and assist with tasks such as answering FAQs, handling transactions, and routing customer requests to agents.	Yes
JAWS Screen Reader	Assistive technology	PPC	Screen reader designed to assist visually impaired individuals by reading screen content aloud.	Yes
Kynect Resources	Customer support	CHFS OATS and Kynect* users	Provides users with recommendations for additional resources using AI model and metadata.	Yes

Application	Use Case	Agency	Description	Can Agency Audit?
Meltwater	Data analytics	KYTC	Provides media monitoring and data analytics services to track online conversations and media mentions.	No
MyPURPOSE	Customer support	Personnel Cabinet	Staff training platform that reviews courses completed by users and recommends additional courses that may be of interest to users.	No
Azure AI Document Intelligence	Document management	CHFS OATS, IEES users	Used to automate data extraction from forms, receipts, invoices, and other documents for automation, data extraction, and image recognition in business workflows.	Yes
Otter.ai	Speech recognition	PPC	Widely used application for converting spoken language into written text.	Yes
Perceptics OCR	Image recognition	KYTC	Optical character recognition technology, often used for document digitization and recognition of license plates.	Yes
Qdox	Document management	ELC	Used for document management and digitization services.	No
Qualtrics Discover.AI	Data analytics	CHFS OATS, IEES** users	Used for text analysis, sentiment analysis, and extracting insights from open-ended responses in surveys; helps organizations understand customer feedback, identify trends, and make data-driven decisions.	Yes
Quest Analytics	Data analytics	PPC	Primarily used for analyzing health care provider networks to ensure compliance with health care regulations and optimize network performance.	Yes
Simpleview Digital Asset Management	Document management	Tourism, Arts, and Heritage Cabinet	Helps businesses organize and manage digital assets such as images and documents.	No
Sony CI	Content creation	KYTC	Used for media creation and management, typically in the entertainment industry.	No
Soundstripe	Content creation	KYTC	Offers royalty-free music and sound effects for video production and media content creation.	No

Note: CHFS = Cabinet for Health and Family Services; DMS = Department for Medicaid Services; KYTC = Kentucky Transportation Cabinet; ELC = Education and Labor Cabinet; PPC = Public Protection Cabinet; WIB = Kentucky Workforce Innovation Board; EEC = Energy and Environment Cabinet; OATS = Office of Application Technology Services; IEES = Integrated Eligibility and Enrollment Solution.

*Cabinet for Health and Family Services, Office of Application Technology Services, Kynect health insurance enrollment.

Source: Staff inventory of Kentucky executive branch cabinet artificial intelligence systems.

Executive branch agencies reported using AI systems for a wide range of purposes, from customer support to content creation.

Table 3.7 illustrates that agencies are utilizing AI for a wide range of purposes, from customer support to content creation. LOIC staff categorized the AI systems by use case area and found data analytics to be the most common use case for executive branch AI systems, followed by customer support, document management, and content creation.

Looking at an example from the inventory illustrates the type of information it can provide. ABBYY Vantage is a generative AI system being used by CHFS OATS, which was developed by the agency itself. The application uses the AI technique optical character recognition to autonomously “read” documents and transfer them into data that can be entered into agency databases and forms. Because the application was developed by the agency itself, the agency can audit the system’s performance. Agencies reported, however, that they can currently audit the performance of only half of the systems reported on the inventory.

Kentucky Executive Branch Cabinet Implementation Of AI Systems

The LOIC staff AI inventory classifies agency use cases into six categories: document management and automation, customer service delivery, data analysis, marketing and media creation, digital asset management, workforce training and management, and risk management.

The AI inventory was used to review how agencies implemented AI systems into their operations. Agency use cases were categorized into six “use area” categories:

- **Document management and automation** refers to agency use of AI to extract, process, and enter data from documents.
- **Customer service delivery** represents the use of AI chatbots and natural language processing to interact with the public.
- **Data analysis** describes agency use of AI to analyze large datasets to generate insights or suggests actions.
- **Marketing and media creation** is the use of AI to create or edit text, image, or audio assets for use in areas such as social media or internal documents.
- **Digital asset management** represents AI assistance with organizing and categorizing digital media such as images or videos.
- **Workforce training and management** refers to the use of AI in online training platforms.
- **Governance and risk** refers to using AI to create strategies for standards compliance or agency policy.

These AI use areas represent broad work categories where multiple types of AI systems are enhancing different types of executive branch agency operations. For example, the Education and Labor Cabinet is using AI content creation, data analytics, image recognition, and natural language processing to review, scan, extract data from, answer staff questions about, draft, and index internal documents, social media posts, and other materials.

Multiple cabinets are using AI for document management and automation, customer service delivery, marketing and media creation, and data analysis. These categories represent 28 of the total 38 AI systems reported by executive branch IT leads. Slightly

less common is the use of AI systems in the areas of governance and risk management, digital asset management, and workforce training and management. These use categories represent the remaining 10 AI systems reported in the AI inventory that may fill a specific cabinet need. Table 3.8 lists each cabinet's AI use cases and the areas in which they are applying the technology to their operations; it also lists the number of AI systems that each cabinet is using. Table 3.9 shows the distribution of how AI systems are being used across executive branch agencies.

Table 3.8
Staff Inventory Of Executive Branch AI Systems:
AI System Use Cases And Use Areas Per Cabinet

Cabinet	AI Use Cases	AI Use Areas	# Of Systems
Education and Labor	<ul style="list-style-type: none"> • Content creation • Customer support • Data analytics • Document management • Natural language processing 	<ul style="list-style-type: none"> • Data analysis • Governance and risk management 	4
Energy and Environment	<ul style="list-style-type: none"> • Content creation • Document management • Natural language processing 	<ul style="list-style-type: none"> • Customer service delivery • Digital asset management 	2
Finance and Administration	No AI systems reported	No AI systems reported	0
Health and Family Services	<ul style="list-style-type: none"> • Customer support • Content creation • Document management • Data analytics • Image recognition • Natural language processing 	<ul style="list-style-type: none"> • Customer service delivery • Data analysis • Document management and automation 	5
Justice	No AI systems reported	No AI systems reported	0
Personnel	<ul style="list-style-type: none"> • Customer support • Data analytics 	<ul style="list-style-type: none"> • Workforce training and management 	1
Public Protection	<ul style="list-style-type: none"> • Assistive/accessibility • Data analytics • Document management • Image recognition • Natural language processing • Speech recognition 	<ul style="list-style-type: none"> • Customer service delivery • Data analysis • Document management and automation • Governance and risk management • Marketing and media creation 	14
Tourism, Arts, and Heritage	<ul style="list-style-type: none"> • Content creation • Document management 	<ul style="list-style-type: none"> • Marketing and media creation 	1
Transportation	<ul style="list-style-type: none"> • Content creation • Customer support • Data analytics • Image recognition • Natural language processing • Speech recognition 	<ul style="list-style-type: none"> • Digital asset management • Document management and automation • Governance and risk management 	11
Total			38

Source: Staff inventory of Kentucky executive branch cabinet artificial intelligence systems.

Source: Staff inventory of Kentucky executive branch cabinet artificial intelligence systems.

Table 3.9
Kentucky Executive Branch Cabinet Use Areas For AI Systems

Areas In Which Agencies Are Using AI	Number Of Uses	% Of Uses
Document management and automation	9	23.7%
Customer service delivery	8	21.1
Marketing and media creation	6	15.8
Data analysis	5	13.2
Digital asset management	4	10.5
Governance and risk management	4	10.5
Workforce training and management	2	5.3
All areas	38	100.0%

Note: Figures sum to greater than 100 percent due to rounding.

Source: Staff inventory of Kentucky executive branch cabinet artificial intelligence systems.

LOIC surveys and inventories found that executive branch agencies are using some open-source generative AI applications in addition to licensed applications included in the LOIC AI inventory,

In addition to these licensed, primary use-function AI applications, LOIC surveys and inventories indicate that executive branch agencies are using a variety of open-source generative AI applications such as ChatGPT, Gemini, and Copilot. Agencies also reported using a number of applications that are primarily traditional computing systems but have been augmented with AI functionality, such as Adobe Photoshop, Adobe Acrobat, Salesforce Tableau, and Zoom. These applications present various degrees of AI risk, which should likely be managed through inventory management or workforce training.⁸⁶

Given that leading AI research organizations stress the importance of inventorying AI systems, and that the federal government and many states have begun mandating the process while Kentucky does not, this report recommends that COT conduct an annual inventory of AI systems used by executive branch agencies. The need for such an inventory is underscored by the fact that half of the AI systems in the current inventory are nonauditable and that there are limitations to the preliminary LOIC inventory presented in this report: potential nonresponse from cabinets, coverage limited to licensed AI applications, and the absence of AI system risk assessments.

Staff recommend that the COT AI inventory include key information such as the application’s name and vendor, the agency using it, a description of its use, the AI techniques involved, the system’s auditability, and a risk assessment of the applications. The results should be reported to legislative committees by October 1, 2025. LOIC staff also recommend that the legislature consider amending KRS 42.726 to include among COT’s roles,

duties and responsibilities the responsibility to conduct this annual inventory of AI systems used by executive branch agencies.

Recommendation 3.5

Recommendation 3.5

The Commonwealth Office of Technology (COT) should conduct an annual inventory of technology systems that employ artificial intelligence. This inventory should include, among other information determined to be important by COT, the name and vendor of the application, the name of the agency that uses the application, a description of how the application is used, which artificial intelligence techniques the application uses, whether COT or the agency are able to audit the application, and a risk assessment of the applications. By October 1, 2025, and annually thereafter, COT should post this inventory on its website and provide it to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

Matter For Legislative Consideration 3.B

Matter For Legislative Consideration 3.B

The General Assembly may wish to consider revising KRS 42.726 to include, among the Commonwealth Office of Technology’s roles, duties, and permissible activities, the requirement to conduct an annual inventory of artificial intelligence systems in use by any executive branch agency.

Kentucky Could Benefit From An Inventory Of Traditional IT Assets

Although COT is responsible for IT asset management, it lacks an inventory of IT systems used by state agencies. Maintaining such inventories can enhance strategic decision-making, risk management, budgeting, and operational efficiency.

Although COT is the central authority for information technology assets in the state, in addition to not inventorying AI systems, it also does not maintain an inventory of general IT applications or systems used by agencies. The same advantages of maintaining an inventory, and the related information it contains, of AI systems should apply to IT systems generally. These typically include improved strategic decision-making and risk management, more efficient budgeting, and increased operational efficiency. Further, conducting an inventory of all IT assets would, by definition, include AI systems, thereby accomplishing the goals of the previous recommendations.

COT has reported that, while it must approve any agency IT procurement and it actively monitors agency applications for

security and lifecycle purposes, it is not directly involved in evaluating how agencies use software or applications to conduct their business. So, while COT manages an inventory of its own internal applications, it does not maintain an inventory of agency applications and does not know the precise use cases for agency IT systems. COT has noted that collecting and managing such information may not be within the agency's authorities and responsibilities.⁸⁷

LOIC staff find that the literature supports a need for AI inventories and that the merits inherent to AI inventories extend to IT inventories. Although COT does not currently maintain an IT inventory, staff also find that creating such an inventory would be a considerably larger task than creating an inventory focusing only on AI applications. Staff also note that findings related to general IT governance are somewhat outside the scope of this study. Consequently, this report recommends that COT conduct its own review of the feasibility and value of conducting an inventory of all of the commonwealth's executive branch IT systems and report its findings to legislative committees by October 2025.

Recommendation 3.6

Recommendation 3.6

The Commonwealth Office of Technology (COT) should conduct a review to determine the feasibility and value of conducting and maintaining an annual risk assessment and inventory of all information technology applications used by executive branch agencies. By October 1, 2025, COT should present the results of this review to the Legislative Oversight and Investigations Committee; the Legislative Research Commission; and the Interim Joint Committee on Tourism, Small Business, and Information Technology.

LOIC staff also suggest that the legislature review the COT IT inventory feasibility study and determine whether to statutorily require COT to maintain an inventory of executive branch IT systems by revising KRS 42.726 to include the project among the agency's duties.

Matter For Legislative Consideration 3.C

Matter For Legislative Consideration 3.C

Based on the results of the report by the Commonwealth Office of Technology (COT) on the feasibility and value of conducting and maintaining an annual risk assessment and inventory of all state agency technology applications, the General Assembly may wish to consider revising KRS 42.726 to include, among

COT's roles, duties, and permissible activities, the requirement and authority to conduct an annual inventory of all technology systems in use by any executive branch agency.

If the results of COT's IT feasibility study indicate that COT does not have the statutory authority to require agencies to report to it the nature of the IT systems that they are currently using, the legislature may wish to consider revising KRS 42.726 to grant COT the authority it would require.

Matter For Legislative Consideration 3.D

**Matter For Legislative
Consideration 3.D**

Based on the results of the artificial intelligence system inventory conducted by the Commonwealth Office of Technology (COT) and its report on the feasibility of an inventory of all state-deployed technology systems, the General Assembly may wish to consider revising KRS 42.726 to include, among COT's roles, duties, and permissible activities, the authority to require that all executive branch agencies annually submit an inventory of the technology systems they use.

Appendix A

Response From Commonwealth Office Of Technology

This appendix serves as a placeholder for a response from the Commonwealth Office of Technology. When the report is published, the response will be included here.

Appendix B

Definitions Of *Artificial Intelligence*

While Chapter 2 of the report briefly discusses definitions of *artificial intelligence*, Table B.1 provides full definitions established by the federal government, states, and the European Union.

Table B.1
Federal, State, And European Union Definitions Of *Artificial Intelligence*

Source	Definition
Federal	
National Artificial Intelligence Initiative Act (NAIIA) (2020)	A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine and human-based inputs to perceive real and virtual environments, abstract such perceptions into models through analysis in an automated manner, and use model inference to formulate options for information or action.
National Institute of Standards and Technology	[Expands upon the 2020 NAIIA definition with] An autonomous AI system that maintains a set of intelligence-based capabilities to respond to situations that were not pre-programmed or anticipated (i.e., decision-based responses) prior to system deployment. Autonomous systems have a degree of self-government and self-directed behavior.
White House Blueprint for an AI Bill of Rights	An automated system that uses computation as whole or part of a system to determine outcomes, make or aid decisions, inform policy implementation, collect data or observations, or otherwise interact with individuals and/or communities. Automated systems include, but are not limited to, systems derived from machine learning, statistics, or other data processing or artificial intelligence techniques, and exclude passive computing infrastructure.
John S. McCain National Defense Authorization Act for Fiscal Year 2019 (2019)	Any artificial system (1) 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) developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action; (3) designed to think or act like a human, including cognitive architectures and neural networks; or (4) 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. A set of techniques, including machine learning, that is designed to approximate a cognitive task.
2018 Department of Defense AI Strategy	The ability of machines to perform tasks that normally require human intelligence—for example, recognizing patterns, learning from experiences, drawing conclusions, making predictions, or taking action—whether digitally or as the smart software behind autonomous physical systems.
Kentucky	
Cabinet for Health and Family Services, Office of Application Technology Services	Systems that simulate human intelligence processes, including learning, reasoning, and self-correction. AI is the field of computer science and technology that focuses on creating machines capable of performing tasks that typically require human intelligence, which includes, but is not limited to, machine learning, large language models, reinforcement learning, natural language processing, computer vision and deep learning.

Source	Definition	Other States
California (AB 2885, 2023-2024 Regular Session)	An engineered or machine-based system that varies in its level of autonomy and that can, for explicit or implicit objectives, infer from the input it receives how to generate outputs that can influence physical or virtual environments.	
California (Cal. Gov. Code sec. 11546.45.5)	[Uses the term “automated decision system” in lieu of “artificial intelligence.”] “Automated decision system” means a computational process derived from machine learning, statistical modeling, data analytics, or artificial intelligence that issues simplified output, including a score, classification, or recommendation, that is used to assist or replace human discretionary decision-making and materially impacts natural persons. “Automated decision system” does not include a spam email filter, firewall, antivirus software, identity and access management tools, calculator, database, dataset, or other compilation of data. “High-risk automated decision system” means an automated decision system that is used to assist or replace human discretionary decisions that have a legal or similarly significant effect, including decisions that materially impact access to, or approval for, housing or accommodations, education, employment, credit, health care, and criminal justice.	
Colorado (Colo. Rev. Stat. secs. 2-3-1701, 6-1-1701)	Systems that can perceive an environment through data acquisition, process and interpret the derived information, and take actions or imitate intelligent behavior to achieve a specified goal; and learn from past behavior and results and adapt their behavior accordingly.	“Artificial intelligence system” means any machine-based system that, for any explicit or implicit objective, infers from the inputs the system receives how to generate outputs, including content, decisions, predictions, or recommendations, that can influence physical or virtual environments.
Connecticut (Conn. Gen. Stat. sec. 4a-2e)	“Artificial intelligence” means (A) an artificial system that (i) performs tasks under varying and unpredictable circumstances without significant human oversight or can learn from experience and improve such performance when exposed to data sets, (ii) is developed in any context, including, but not limited to, software or physical hardware, and solves tasks requiring human-like perception, cognition, planning, learning, communication or physical action, or (iii) is designed to (I) think or act like a human, including, but not limited to, a cognitive architecture or neural network, or (II) act rationally, including, but not limited to, an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communication, decision-making or action, or (B) a set of techniques, including, but not limited to, machine learning, that is designed to approximate a cognitive task. [Connecticut statute also refers to the definition laid out in the McCain National Defense Authorization Act.]	
Delaware (Del. Code. Ann. tit. 29, sec. 9042C)	“Artificial Intelligence” or “AI” means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments.	“Generative AI” means the class of AI models that emulate the structure and characteristics of input data in order to generate derived synthetic content. This can include images, videos, audio, text, and other digital content.
Indiana (Ind. Code sec. 4-13.1-5-1)	“Artificial intelligence” means computing technology that is capable of simulating human learning, reasoning, and deduction through processes such as: (1) acquiring and analyzing information for the purpose of improving operational accuracy through improved contextual knowledge; (2) identifying patterns in data; and (3) improving operational outcomes by analyzing the results of a previous operation and using the analysis to modify the operation to achieve an improved result.	

Source	Definition
Kansas (Executive Order No. P8200.00 (2023))	Generative artificial intelligence (AI) uses advanced technologies such as predictive algorithms, machine learning, and large language models to process natural language and produce content in the form of text, images, or other types of media. Generated content is typically remarkably similar to what a human creator might produce, such as text consisting of entire narratives of naturally reading sentences.
Maryland (Md. Code Regs. 01.01.2024.02)	The term “artificial intelligence” or “AI” has the meaning set forth in 15 U.S.C. § 9401(3): a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine- and human-based inputs to perceive real and virtual environments; abstract such perceptions into models through analysis in an automated manner; and use model inference to formulate options for information or action. The term “generative AI” or “GenAI” refers to AI algorithms and models that can create new content, including audio, code, images, text, and video, based on the data they are trained on.
Massachusetts (Executive Order No. 629 (2024))	“Artificial Intelligence,” as used in this Order, is a machine-based system that can, for a given set of human objectives, make predictions, recommendations, or decisions. “Generative Artificial Intelligence” (“GenAI”) as used in this Order, is a type of artificial intelligence technology that can generate many forms of content including but not limited to text, images, and multimedia.
Michigan (Mich. Comp. Laws sec. 169.202)	“Artificial intelligence” means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments, and that uses machine and human-based inputs to do all of the following: (a) Perceive real and virtual environments. (b) Abstract such perceptions into models through analysis in an automated manner. (c) Use model inference to formulate options for information or action.
New Hampshire (N.H. Rev. Stat. Ann. Sec. 5-D:1)	“Artificial intelligence” or “AI” is the ability of a machine to display human-like capabilities for cognitive tasks such as reasoning, learning, planning, and creativity. AI systems may adapt their behavior to a certain degree by analyzing the effects of previous actions and operating under varying and unpredictable circumstances without significant human oversight. “Generative AI” is AI that can generate text, images, or other media in response to prompts.
Pennsylvania (4 Pa. Code sec. 7.991)	Generative AI--Generative Artificial Intelligence--Technology or tools that use predictive algorithms to create new content including audio, code, images, text, simulations and videos.
Tennessee (Tenn. Code Ann. sec. 49-13-148)	“Artificial intelligence” means a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments and that is capable of using machine and human-based inputs to perceive real and virtual environments, abstract such perceptions into models through analysis in an automated manner, and use model inference to formulate options for information or action.

Source	Definition
Texas (Tex. Government Code Ann. sec. 2054.621)	<p>“Artificial intelligence systems” means systems capable of:</p> <p>(A) perceiving an environment through data acquisition and processing and interpreting the derived information to take an action or actions or to imitate intelligent behavior given a specific goal; and</p> <p>(B) learning and adapting behavior by analyzing how the environment is affected by prior actions.</p> <p>“Automated decision system” means an algorithm, including an algorithm incorporating machine learning or other artificial intelligence techniques, that uses data-based analytics to make or support governmental decisions, judgments, or conclusions.</p> <p>“Automated final decision system” means an automated decision system that makes final decisions, judgments, or conclusions without human intervention.</p> <p>“Automated support decision system” means an automated decision system that provides information to inform the final decision, judgment, or conclusion of a human decision maker.</p>
Utah (Utah Code Ann. sec. 13-72-101)	<p>“Generative artificial intelligence” means an artificial system that: (i) is trained on data; (ii) interacts with a person using text, audio, or visual communication; and (iii) generates non-scripted outputs similar to outputs created by a human, with limited or no human oversight.</p> <p>“Artificial intelligence” means a machine-based system that makes predictions, recommendations, or decisions influencing real or virtual environments.</p> <p>“Artificial intelligence technology” means a computer system, application, or other product that uses or incorporates one or more forms of artificial intelligence.</p>
Virginia (Virginia Enterprise Architecture Standard (EA_225))	<p>AI is defined as the ability of a machine to perform cognitive actions, such as perceiving, reasoning, learning, interacting with the environment and problem solving.</p>
Vermont (Vt. Stat. Ann. tit. 3, secs. 5021 and 3305)	<p>[Uses the term “automated decision system in lieu of “artificial intelligence”] An automated decision system is any algorithm, including one incorporating machine learning or other artificial intelligence techniques, that uses data-based analytics to make or support government decisions, judgments, or conclusions. An automated final decision system is an automated decision system that makes final decisions, judgments, or conclusions without human intervention. An automated support decision system means an automated decision system that provides information to inform the final decision, judgment, or conclusion of a human decision maker.</p>
Washington (ESSB 5838, 2024 Regular Session)	<p>“Artificial intelligence” means the use of machine learning and related technologies that use data to train statistical models for the purpose of enabling computer systems to perform tasks normally associated with human intelligence or perception, such as computer vision, speech or natural language processing, and content generation.</p> <p>“Generative artificial intelligence” means an artificial intelligence system that generates novel data or content based on a foundation model.</p> <p>“Machine learning” means the process by which artificial intelligence is developed using data and algorithms to draw inferences therefrom to automatically adapt or improve its accuracy without explicit programming.</p> <p>“Training data” means labeled data that is used to teach artificial intelligence models or machine learning algorithms to make proper decisions. Training data may include, but is not limited to, annotated text, images, video, or audio.</p>

Source	Definition
West Virginia (W. Va. Code Ann. sec. 11-13Q-10a)	"Artificial intelligence" means computers and computer systems that, by design and function, perform tasks that would typically require human intelligence, including decision-making, visual perception, speech recognition, or translation of one human language into another human language.
International	
European Union AI Act (2022)	General Purpose AI model means an AI model, including when trained with a large amount of data using self-supervision at scale, that displays significant generality and is capable to competently perform a wide range of distinct tasks regardless of the way the model is placed on the market and that can be integrated into a variety of downstream systems or applications.

Sources: Staff compilation of recent federal, state, and international legislation and regulation defining artificial intelligence; US. House of Representatives, House Committee on Science, Space, and Technology. National Artificial Intelligence Initiative Act of 2020. 2020. 116th Congress; US. House of Representatives, House Armed Services Committee. John McCain National Defense Authorization Act for Fiscal Year 2019. 2019. 115th Congress; US. Government Accountability Office. *Artificial Intelligence: Agencies Have Begun Implementation But Need To Complete Key Requirements*. 2023; US. Department of Commerce. National Institute of Standards and Technology. *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. Jan. 2023. Web;.

Appendix C

Glossary

The following tables contain more detailed definitions of terms mentioned throughout the report. Although the terms are described when they initially appear, the glossary provides more details that are not necessarily needed to understand the major conclusions of the report.

Table C.1
Definitions Of Select Artificial Intelligence Terminology

AI Concept	Description
Algorithm	Software-based coding program that defines a process or set of rules to be followed by a computer. Drives nearly all software applications. The foundation of all AI systems.
Artificial intelligence (AI)	A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine and human-based inputs to perceive real and virtual environments, abstract such perceptions into models through analysis in an automated manner, and use model inference to formulate options for information or action.
AI bias	Harmful AI bias describes systematic and repeatable errors in AI systems that create unfair outcomes, such as placing privileged groups at systematic advantage and unprivileged groups at systematic disadvantage. Different types of bias can emerge and interact due to many factors, including, but not limited to, human or system decisions and processes across the AI lifecycle. Bias can be present in AI systems resulting from preexisting cultural, social, or institutional expectations; because of technical limitations of their design; by being used in unanticipated contexts; or by nonrepresentative design specifications.
AI model	A function that takes features as input and predicts labels as output. Typical phases of an AI model's work flow are: data collection and preparation, model development, model training, model accuracy evaluation, hyperparameters' tuning, model usage, model maintenance, model versioning.
AI model training	Process to establish or to improve the parameters of a machine learning algorithm, based on a machine learning algorithm, by using training data.
Autonomous AI system	Systems that maintain a set of intelligence-based capabilities to respond to situations that were not preprogrammed or anticipated (i.e., decision-based responses) prior to system deployment. Autonomous systems have a degree of self-government and self-directed behavior.
Automated decision system	Systems that maintain a set of intelligence-based capabilities to respond to situations that were not preprogrammed or anticipated (i.e., decision-based responses) prior to system deployment. Autonomous systems have a degree of self-government and self-directed behavior (with the human's proxy for decisions).
Chatbot	A computer program designed to simulate conversation with a human user, usually over the internet; especially one used to provide information or assistance to the user as part of an automated service.
Computer vision	Computer vision enables machines to interpret and make decisions based on visual data, such as images or videos. It's widely used in applications like facial recognition, autonomous vehicles, and medical imaging.
Deep learning	Deep learning is a subset of machine learning that uses neural networks with multiple layers to model complex patterns in data. Deep learning is a type of machine learning that is trained on massive amounts of data and uses multiple computational units working in tandem to perform predictions. Deep learning is integral to fields like image recognition, natural language processing, and speech recognition.

AI Concept	Description
Generative AI	Artificial intelligence systems that can create new content—such as text, images, music, or code—based on patterns learned from existing data. Generative AI is capable of creative and original content and operates on some of the most advanced AI models.
Human-in-the-loop	Refers to the process where humans are actively involved in the development, operation, and oversight of AI systems, especially in tasks like decision-making, training, and correction.
Large language model	A class of language models that use deep-learning algorithms and are trained on extremely large textual datasets. They are generative in nature and generally output text, such as the answer to a question or even writing an essay on a specific topic. They are typically unsupervised or semi-supervised learning models that predict what the response is for a given task. Examples include ChatGPT and Gemini.
Machine learning	A branch of AI that involves teaching computers to learn from, and make decisions based on, patterns in data instead of being explicitly programmed with a set of rules or logic.
Natural language processing	Process that enables machines to understand, interpret, and generate human language. It is crucial for applications like chatbots, language translation, and predictive text. It uses large data sets combined with machine learning techniques to break down language into small units, like words or phrases, and understand relationships between them.
Neural networks	Computational models inspired by the human brain, consisting of layers of interconnected computational units. Each computational unit processes input data and passes it through an activation function, contributing to the final output.
Reinforcement learning	A type of machine learning in which the algorithm learns by acting toward an abstract goal and through trial and error.
Symbolic logic	The use of formal systems of logic to represent knowledge, reason about facts, and perform automated reasoning tasks. It's one of the earliest approaches to AI and is rooted in the preprogramming used to code and direct traditional computer systems. Developers would attempt to represent everything an AI system would need to understand about the real world in symbolic logic.
Traditional rules-based computer system	Conventional computing architectures and systems that primarily follow explicit instructions or deterministic algorithms to perform tasks. These systems operate based on a set of predefined rules and logic and do not have the ability to learn or adapt based on new data, as AI systems do.
Transfer learning	A technique in machine learning in which an algorithm learns to perform one task, such as recognizing cars, and builds on that knowledge when learning a different but related task, such as recognizing cats.
Trustworthy AI	Has three components: (1) it should be lawful, ensuring compliance with all applicable laws and regulations; (2) it should be ethical, demonstrating respect for, and ensuring adherence to, ethical principles and values; and (3) it should be robust, both from a technical and social perspective, since, even with good intentions, AI systems can cause unintentional harm.

Source: National Institute for Standards and Technology. *AI Risk Management Framework 1.0: EU-U.S. Terminology And Taxonomy For Artificial Intelligence*. 2024.

Appendix D

Inventory Of Executive Branch AI Systems

Executive branch cabinets were asked to provide an inventory of AI systems that they currently use. The inventory requested information on the name of the AI application, the application’s developer, which agencies are using the application, how the application is being used, how the application uses AI to accomplish its tasks, and whether the agency or cabinet is able to monitor or audit the performance and capabilities of the application. The following list is organized by AI system name and includes the following information:

- **AI Classification:** Whether the system is based on a generative AI or machine learning model.
- **Auditable:** Whether the cabinet or agency has the ability to audit the capabilities, data, or performance of the system.
- **Agency:** Which agency uses the application.
- **Office:** Which office within the agency or cabinet uses the system.
- **Developer:** The name of the developer of the system.
- **Agency Use:** How the agency or cabinet uses the system.
- **AI Application:** How the application uses AI.

	<i>ABBYY Vantage</i>
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Cabinet for Health and Family Services, Department for Medicaid Services</i>
<i>Office</i>	<i>—</i>
<i>Developer</i>	<i>Cabinet for Health and Family Services, Office of Application Technology Services in coordination with ABBYY Corporation</i>
<i>Agency Use</i>	<i>Performs Optical Character Recognition (OCR) on forms and faxes received from external entities (State, Pharmacy, Provider, etc.) to transform the scanned image files into text-based data with other form related information.</i>
<i>AI Application</i>	<i>Combines optical character recognition with AI, natural language processing and machine language to create intelligent document processing; leverages AI to extract actionable data and insights from documents and optimize business-critical workflows with process analysis, monitoring, and simulation.</i>
	<i>Acrobat</i>
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>—</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>All departments</i>
<i>Developer</i>	<i>Adobe</i>

<i>Agency Use</i>	<i>The application is used to review, draft, edit, etc. pdf documents.</i>
<i>AI Application</i>	<i>Uses GenAI to summarize content, analyze documents, provide suggestions for edits, etc.</i>
<hr/> Amazon Web Services (AWS) Connect <hr/>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Education and Labor Cabinet</i>
<i>Office</i>	<i>Office of Unemployment Insurance</i>
<i>Developer</i>	<i>Amazon</i>
<i>Agency Use</i>	<i>Receives claimants phone calls.</i>
<i>AI Application</i>	<i>Uses machine learning to analyze customer interactions with unemployment insurance agents; provides phone call transcripts.</i>
<hr/> AWS Connect <hr/>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Department of Vehicle Regulations</i>
<i>Developer</i>	<i>Amazon</i>
<i>Agency Use</i>	<i>Accepts phone calls and chat messages from citizens. The chat bot provides curated answers to customers questions.</i>
<i>AI Application</i>	<i>Listens to customer responses and route customer to the correct representative; responds to customer questions in chat; provides answer recommendations to representative on the phone with customer; summarizes call transcript.</i>
<hr/> Big Query <hr/>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Information Technology</i>
<i>Developer</i>	<i>Google</i>
<i>Agency Use</i>	<i>Used on multiple projects to assist in data analysis.</i>
<i>AI Application</i>	<i>Assists users with coding, recommendations, etc.</i>
<hr/> Bluebeam <hr/>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Department of Housing, Buildings and Construction</i>
<i>Developer</i>	<i>Nemetschek Company</i>

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Agency Use	<i>Helps architecture, engineering and construction teams connect office and field with a reliable, easily accessible single source of truth.</i>
AI Application	<i>Allows automatic overlay and comparison of documents.</i>
BoardEffect	
AI Classification	<i>Machine learning</i>
Auditable	<i>Yes</i>
Agency	<i>Public Protection Cabinet</i>
Office	<i>Kentucky Real Estate Authority</i>
Developer	<i>Diligent</i>
Agency Use	<i>Creates a board book; annotates board meeting materials on mobile device.</i>
AI Application	<i>Delivers an agile board management solution optimized for governance leaders of nonprofits, higher education institutions, community healthcare organizations and credit unions with the right tools, analytics, and insights to drive more efficient, transparent, and secure governance.</i>
Canva	
AI Classification	<i>Generative AI</i>
Auditable	<i>No</i>
Agency	<i>Energy and Environment Cabinet</i>
Office	<i>Office of Communications</i>
Developer	<i>Canva Pty. Ltd.</i>
Agency Use	<i>Generates templates and assets; edits images and audio.</i>
AI Application	
Canva	
AI Classification	<i>Generative AI</i>
Auditable	<i>No</i>
Agency	<i>Workforce Innovation Board</i>
Office	<i>—</i>
Developer	<i>Canva Pty. Ltd.</i>
Agency Use	<i>Generates some newsletter templates and flyers.</i>
AI Application	
Canva	
AI Classification	<i>Generative AI</i>
Auditable	<i>No</i>
Agency	<i>Transportation Cabinet</i>
Office	<i>Office of Public Affairs</i>
Developer	<i>Canva Pty. Ltd.</i>
Agency Use	<i>Generates templates and assets; edits images and audio.</i>
AI Application	

ChatGPT	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	—
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>All departments</i>
<i>Developer</i>	<i>OpenAI</i>
<i>Agency Use</i>	<i>Assists in answering prompts.</i>
ChatMeter	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Public Affairs</i>
<i>Developer</i>	<i>Chatmeter</i>
<i>Agency Use</i>	<i>Uses listeners and AI to crawl the web for reviews and content based on key words.</i>
Copilot	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	—
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Office of Information Technology</i>
<i>Developer</i>	<i>Microsoft</i>
<i>Agency Use</i>	<i>Assists in answering prompts.</i>
CVIEW	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Department of Vehicle Regulations</i>
<i>Developer</i>	<i>Seikosoftware</i>
<i>Agency Use</i>	<i>Converts voice to text and vice versa.</i>
DJIMimo	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Public Affairs</i>
<i>Developer</i>	<i>DJIMimo</i>
<i>Agency Use</i>	<i>Has AI integration into editing tools.</i>
Dragon Professional	
<i>AI Classification</i>	<i>Machine learning</i>

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<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Kentucky Real Estate Authority</i>
<i>Developer</i>	<i>Nuance</i>
<i>Agency Use</i>	<i>Converts spoken language into written text; takes notes; records audio; generates summaries.</i>
<hr/>	
<i>Galvanize ACL</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Department of Insurance</i>
<i>Developer</i>	<i>Diligent</i>
<i>Agency Use</i>	<i>Uses built-in compliance and data integrity guardrails; breaks down data silos and builds comprehensive picture of risk; provides vital insights consolidated onto Diligent One Platform.</i>
<hr/>	
<i>Gemini</i>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>—</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Office of Information Technology</i>
<i>Developer</i>	<i>Google</i>
<i>Agency Use</i>	<i>Assists in answering prompts.</i>
<hr/>	
<i>Grammarly</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Energy and Environment Cabinet</i>
<i>Office</i>	<i>Various divisions</i>
<i>Developer</i>	<i>Grammarly Inc.</i>
<i>Agency Use</i>	<i>Uses natural language processing to provide correct grammar based on data the model is trained on.</i>
<hr/>	
<i>Grammarly</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Education and Labor Cabinet</i>
<i>Office</i>	<i>Department of Workers Claims</i>
<i>Developer</i>	<i>Grammarly Inc.</i>
<i>Agency Use</i>	<i>Uses natural language processing to provide correct grammar based on data the model is trained on.</i>

	Grammarly
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Public Affairs</i>
<i>Developer</i>	<i>Grammarly Inc.</i>
<i>Agency Use</i>	<i>Uses natural language processing to provide correct grammar based on data the model is trained on.</i>
	Grammarly
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>All departments</i>
<i>Developer</i>	<i>Grammarly Inc.</i>
<i>Agency Use</i>	<i>Uses natural language processing to provide correct grammar based on data the model is trained on.</i>
	IEES Salesforce Einstein Bot (Kynect Chatbot)
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Cabinet for Health and Family Services, Office of Application Technology Services, Integrated Eligibility and Enrollment Solution users</i>
<i>Office</i>	<i>—</i>
<i>Developer</i>	<i>Cabinet for Health and Family Services, Office of Application Technology Services</i>
<i>Agency Use</i>	<i>Simulates human conversation through natural language processing in conversational user interfaces; assists citizens in finding answers to common issues and frequently asked questions.</i>
	JAWS Screen Reader
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Department of Insurance</i>
<i>Developer</i>	<i>Freedom Scientific</i>
<i>Agency Use</i>	<i>Analyzes and articulates images, including those found on web pages, in emails, or within screenshots; addresses challenges that visually impaired users face when encountering graphical content, transforming the way they access and interact with digital information.</i>
	Kynect Resources
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>

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Agency	<i>Cabinet for Health and Family Services, Office of Application Technology Services and Kinect users</i>
Office	—
Developer	<i>Cabinet for Health and Family Services, Office of Application Technology Services</i>
Agency Use	<i>Provides users with recommendations for additional resources, either similar or complementary; tailors recommendations to each user by looking at related users; suggests appropriate additional resources, based on related users, as determined by a model, together with user activities and user's metadata.</i>
Meltwater	
AI Classification	<i>Machine learning</i>
Auditable	<i>No</i>
Agency	<i>Transportation Cabinet</i>
Office	<i>Office of Public Affairs</i>
Developer	<i>Meltwater</i>
Agency Use	<i>Analyzes data; identifies keywords.</i>
MyPURPOSE	
AI Classification	<i>Machine learning</i>
Auditable	<i>No</i>
Agency	<i>Personnel for all three branches of government</i>
Office	—
Developer	<i>Cornerstone</i>
Agency Use	<i>Reviews courses completed by users; recommends additional courses related to the past courses completed.</i>
Optical Character Recognition (Azure AI Document Intelligence)	
AI Classification	<i>Machine learning</i>
Auditable	<i>Yes</i>
Agency	<i>Cabinet for Health and Family Services, Office of Application Technology Services, Integrated Eligibility and Enrollment Solution users</i>
Office	—
Developer	<i>Cabinet for Health and Family Services, Office of Application Technology Services</i>
Agency Use	<i>Reads typed, handwritten, or printed text into machine-encoded text, from scanned documents or photos of documents.</i>
Otter.ai	
AI Classification	<i>Machine learning</i>
Auditable	<i>Yes</i>
Agency	<i>Public Protection Cabinet</i>
Office	<i>Kentucky Real Estate Authority</i>
Developer	<i>Otter.ai, Inc.</i>

<i>Agency Use</i>	<i>Converts spoken language into written text; takes notes; records audio; generates summaries.</i>
<i>Perceptics OCR</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Department of Vehicle Regulations</i>
<i>Developer</i>	<i>Perceptics</i>
<i>Agency Use</i>	<i>Trains software to correctly decode DOT and plate correctly.</i>
<i>Photoshop</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>—</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Office of Information Technology</i>
<i>Developer</i>	<i>Adobe</i>
<i>Agency Use</i>	<i>Assists in asset generation and editing.</i>
<i>Qdox</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Education and Labor Cabinet</i>
<i>Office</i>	<i>Office of Unemployment Insurance</i>
<i>Developer</i>	<i>Quantiphi</i>
<i>Agency Use</i>	<i>Indexes document types.</i>
<i>Qualtrics Discovr.AI</i>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Cabinet for Health and Family Services. Office of Application Technology Services, Integrated Eligibility and Enrollment Solution users</i>
<i>Office</i>	<i>—</i>
<i>Developer</i>	<i>Cabinet for Health and Family Services, Office of Application Technology Services</i>
<i>Agency Use</i>	<i>Facilitates response automations (routing based on survey response) and insights synthesis; uses Qualtrics assist and Response assist; uses AI-generated reports /for internal users.</i>
<i>Quest Analytics</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	<i>Yes</i>
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Department of Insurance</i>
<i>Developer</i>	<i>Quest Enterprise Services</i>

Legislative Oversight And Investigations

<i>Agency Use</i>	<i>Provides automatic data generation, collection, environment simulations and annotation for image-based AI/machine learning projects.</i>
<i>Simpleview Digital Asset Management</i>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>Monitoring provided through vendor</i>
<i>Agency</i>	<i>Department of Tourism, Department of Parks, Department of Fish and Wildlife Resources</i>
<i>Office</i>	—
<i>Developer</i>	<i>Simpleview</i>
<i>Agency Use</i>	<i>Identifies objects in photos (for example, AI engine could recognize horses and provide photos in a search result without adding manual tags).</i>
<i>Sony CI</i>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Public Affairs</i>
<i>Developer</i>	<i>Sony</i>
<i>Agency Use</i>	<i>Tags and categorizes media content in image and video recognition.</i>
<i>Soundstripe</i>	
<i>AI Classification</i>	<i>Generative AI</i>
<i>Auditable</i>	<i>No</i>
<i>Agency</i>	<i>Transportation Cabinet</i>
<i>Office</i>	<i>Office of Public Affairs</i>
<i>Developer</i>	<i>Soundstripe</i>
<i>Agency Use</i>	<i>Searches audio based on keywords.</i>
<i>Tableau</i>	
<i>AI Classification</i>	<i>Machine learning</i>
<i>Auditable</i>	—
<i>Agency</i>	<i>Public Protection Cabinet</i>
<i>Office</i>	<i>Office of Information Technology</i>
<i>Developer</i>	<i>Data Visualization Company</i>
<i>Agency Use</i>	<i>Democratizes data analysis; simplifies insights consumption at scale.</i>

Appendix E

Responses To Survey On Artificial Intelligence

Participating Agencies And Departments

Agency	Position/Title
Cabinet for Health and Family Services, Office of Application Technology Services	Executive director
Education and Labor Cabinet	Executive director of IT; deputy executive director of IT
Energy and Environment Cabinet, Division of Information Services, Office of Administrative Services	Division director
Finance and Administration Cabinet, Department of Revenue	Director, Division of Information Management
Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)	Assistant director
Personnel Cabinet, Office of Administrative Services, Division of Technology Services	IT/division director, Division of Technology Services
Public Protection Cabinet	Executive director, Office of Information Technology
Tourism, Arts, and Heritage Cabinet	Director, Information Technology
Transportation Cabinet, Office of Information Technology	Program manager

1. Describe any criteria that your agency uses to determine if a system is considered artificial intelligence. (Open-Ended Response)

Cabinet for Health and Family Services, Office of Application Technology Services

CHFS is viewing AI/Gen AI as a tool to enhance existing solutions. Within the CHFS AI/Gen AI Policy (080.101), CHFS defines AI and Gen AI based on industry standards. In the near-term, CHFS will be establishing a comprehensive AI governance structure that will oversee AI policy updates, standards, and tool selection along with framework and guidelines. Once our governance structure is implemented, definitions and criteria will be further defined.

Criteria to be considered in determining if AI tools are utilized today may include:

- Content Generation: Allows generation of new, original content, such as text or code, rather than simply analyzing or processing existing data.
- Creative and Contextual Output: Allows the system to produce creative outputs that are contextually relevant and coherent. This includes generating stories or dialogues that make sense within a given context.
- Use of Advanced Machine Learning Models: Allows the system to leverage advanced machine learning models.
- Training on Large Datasets: Supports training on extensive datasets to learn the patterns and structures needed to generate new content.
- Interactivity and Responsiveness: Supports interaction with users in a way that allows for dynamic and responsive content generation.
- Evaluation Metrics: Allows outputs to be evaluated using specific metrics that assess the quality, coherence, originality, and relevance of the generated content. These metrics help determine the effectiveness of the generative process.

Education and Labor Cabinet

Our agency uses several criteria to determine if a system is considered artificial intelligence. We look for the system's ability to learn from data, improve its performance over time, and make decisions based on past experiences or data patterns. The system must be capable of performing tasks that typically require human intelligence, such as recognizing patterns, understanding natural language, or making decisions. Adaptability is also key, meaning the system can adjust to new information or changes in its environment without explicit reprogramming. The system should handle and analyze large volumes of complex data to generate insights or perform tasks.

Energy and Environment Cabinet

EEC is not utilizing full-scale LLM [large language model] or Generative AI systems. We may eventually utilize AI as a tool within other systems.

Finance and Administration Cabinet, Department of Revenue

We are in the preliminary stages of researching AI opportunities and coordinating with COT [Commonwealth Office of Technology] to determine issues such as this.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

Any system that can adjust their responses based on additional information or experiences, have predictive capabilities based on trends and historical data, or have the ability to improve over time as it is exposed to additional data.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

The Personnel Cabinet defines AI in Personnel Cabinet – Division of Technology Services Information Technology Policy #030.104 for Artificial Intelligence.

- Definitions: Artificial Intelligence (AI): Systems that simulate human intelligence processes, including learning, reasoning, and self-correction. AI is the field of computer science and technology that focuses on creating machines capable of performing tasks that typically require human intelligence, which includes machine learning, large language models, reinforcement learning, natural language processing, computer vision, and deep learning.
- AI Capability: Normal/Narrow AI: Goal-oriented AI developed to perform a specific task. It operates within a limited and pre-defined set of parameters, constraints, and contexts.
- Generative/General AI: AI technology that can create content, including text, images, audio, or video, when prompted by a user. Generative AI systems learn patterns and relationships from massive amounts of data, which enables them to generate new content that may be similar, but not identical, to the underlying training data.
- AI Functionality
 - Reactive machines: AI types that do not store past experiences or memories for future actions. Such systems zero in on current scenarios and react to them based on the best possible action.
 - Limited memory machines: Machines that can store and use past experiences or data for a short period.
 - Theory of mind: Refers to the type of AI that may understand human emotions and beliefs and socially interact like humans.

Public Protection Cabinet

A system can be considered AI if it can deal with unknown environments/circumstances to achieve its objective/goal and render knowledge in a manner that provides for new learning/information to be added easily. For example, autopilot technology in cars and planes is a form of AI because it has to use a form of knowledge representation to deal with unknown environments and circumstances. These systems also collect data so that the knowledge representation can be updated to deal with the new inputs that they have found.

Tourism, Arts, and Heritage Cabinet

TAH considers any application or platform as artificial intelligence if that system can ingest data and provides human-like analysis, learning, and output. While the cabinet does not have published criteria, all applications and systems are reviewed in their entirety and vetted for AI components.

Legislative Oversight And Investigations

Transportation Cabinet, Office of Information Technology

KYTC breaks it down into Machine Learning (ML), Artificial Intelligence (AI), and Generative AI (GenAI).

- Machine learning is when we are training an algorithm to perform a task.
- Artificial Intelligence is when we use one or more machine learning algorithms to perform complex tasks.
- Generative AI is when we store data in a large language model, and use natural language processing to respond to prompts.

2. Does your agency have a regulatory definition for AI systems?**All Agency Responses**

No.

3. How does your agency provide oversight for the use of AI systems? Please cite the regulation if possible.**All Agency Responses**

[None.]

4. In the absence of statutory or regulatory language, how does your agency provide oversight for the use of AI systems? (Open-Ended Response)**Cabinet for Health and Family Services, Office of Application Technology Services**

CHFS is closely aligned with and engaging the Commonwealth Office of Technology (COT) on Gen AI-related items. CHFS has developed an AI/Gen AI Policy (080.101) in January 2024. As we developed this policy, we consulted several state AI policies (noted on the last couple of pages of our policy) as well as the White House Executive Order issued on 10/30/23. We will continue to monitor state and federal regulations and adjust our policy as appropriate. In the near-term, CHFS will be establishing a comprehensive AI governance structure that will oversee AI policy updates, standards, and tool selection along with framework and guidelines. This governance group will also be responsible for reviewing and approving tool implementations and proof of concepts (POCs) ensuring appropriate adherence to the policy.

Education and Labor Cabinet

N/A

Energy and Environment Cabinet

Not applicable. We have no regulatory language to provide oversight.

Finance and Administration Cabinet, Department of Revenue

N/A

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

N/A

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

The Personnel Cabinet has implemented IT policy #030.104 Artificial Intelligence and established the Executive HR AI Workgroup. This cross-agency workgroup will evaluate the appropriate use and potential implementation of AI within the scope of human resources. The workgroup and/or any tactical AI sub-workgroups will brainstorm, identify, and/or vet AI use cases, projects, applications, and/or systems adhering to the standards in this policy. Any recommendations from the Executive HR AI Workgroup will submit a systems change request and follow the guidelines in Personnel's IT policy #030.101, Information Technology Change Control, to design, test, and implement new functionality, applications, and/or systems. The policy includes functional and development standards. These standards apply to all AI use cases, including, but not limited to, use cases, requirements, developing software code, functional/technical documentation, research, testing, training, and business decisions.

Public Protection Cabinet

N/A

Tourism, Arts, and Heritage

TAH partners with the Commonwealth Office of Technology (COT) to review each application developed or purchased. The applications are reviewed by the TAH IT Director and the COT Kentucky Information Technology Standards (KITS) team. Included in the review is the determination if the application uses AI systems. The teams evaluate the data sets used in the AI process and the expected system output. Any output produced by AI systems is vetted by the users for accuracy and bias.

Transportation Cabinet, Office of Information Technology

We do not have oversight currently. However, we do have an AI committee that discusses current and future AI efforts at the Cabinet. We also have draft AI guidelines under review.

5. Which of these responses best describes the impact artificial intelligence is having on your agency currently? (Select One)**Justice and Public Safety Cabinet**

No Impact.

All other agencies

Minor.

6. Describe some examples of AI systems use cases for your agency. (Open-Ended Response)**Cabinet for Health and Family Services, Office of Application Technology Services**

Existing examples of where AI/GenAI tools have been implemented within CHFS include but are not limited to:

- CHFS has implemented standard chatbots and optical character recognition (OCR) tools into some of its solutions.
- CHFS has implemented a GenAI tool that sits behind the Integrated Eligibility and Enrollment Solution (IEES) self-service portal to track usage. The goal of this tool is to identify where users are spending the majority of their time or seem to struggle within the application. This will inform future enhancements to the solution.
- CHFS has completed a Proof of Concept for a "Policy Bot" within the IEES. The "Policy Bot" GenAI tool is intended to assist workers with access to policies and the ability to receive those policies in a natural language vs. the standard policy document.

Education and Labor Cabinet

The Education and Labor Cabinet (ELC) currently uses a non-generative AI system for document scanning and machine learning capabilities to recognize document types for pre-processing and data extraction for the Unemployment Insurance system. ELC also uses non-generative AI in Amazon Connect to determine the "sentiment" of calls to flag and escalate to supervisors for the Unemployment Insurance Call Center.

Energy and Environment Cabinet

EEC may utilize AI to search internal repositories for guidance. We may utilize AI to convert sets of files with attachments (MS Access, Excel, Word, Outlook) into single PDF documents. We are working to use AI to perform secondary checks for PII [personally identifiable information]. Once the technology is more common, we may utilize AI for chatbots for public guidance.

Finance and Administration Cabinet, Department of Revenue

DOR recently launched a Proof of Concept of QABot, which is a Workforce multiplier to provide better, more timely customer service to commonly asked questions.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

Currently, the Justice and Public Safety Cabinet is not using any AI systems or platforms.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

The only current use of AI is included in the MyPURPOSE, talent management system for training. This functionality reviews courses completed by users and recommends additional courses that may be of interest to users. Potential use cases include internal and external chat assistance for applicants applying to state jobs and internal job assistance for HR professionals, review of applicant information for recommendations on state job opportunities, and the transition of manual processes to assisted technology.

Public Protection Cabinet

The Department of Insurance (DOI) uses AI tools to check for redlining and check insurance rates and form filings.

Tourism, Arts, and Heritage

The Kentucky Department of Tourism and the Kentucky Department of Parks purchased a digital asset management platform (DAM) from Simpleview. The Simpleview DAM stores several years of videos and photos for use on websites and marketing campaigns. The vendor utilizes a search engine built with AI to assist users in quickly finding relevant media. For example, the AI search tool can recognize common items such as horses in photos without requiring the user to enter "horse" as a manual search tag on the file.

Transportation Cabinet, Office of Information Technology

Artificial Intelligence (AI)/Machine Learning (ML) use cases at KYTC include, but are not limited to the following:

- Pavement condition analysis (ML)
- Optical character recognition on images (ML)
- Roadway weather analysis (ML)
- Chatbot for customers to get information on residential and commercial services (ML/GenAI).

7. Please describe any risks associated with the use of AI systems that your agency is most concerned about. (Open-Ended Response)

Cabinet for Health and Family Services, Office of Application Technology Services

Risks around AI include security and privacy, fairness and bias, transparency, reliability, and accountability. By identifying and understanding these risks upfront, CHFS is able to ensure they are mitigated through effective governance, Proof of Concepts (POCs), and careful implementation.

Education and Labor Cabinet

The Education and Labor Cabinet is most concerned with the risk and release of personal data as it relates to control mechanisms currently available in generative AI systems. Additionally, the Cabinet is concerned with accountability for generated information and responsibility for the results.

Energy and Environment Cabinet

EEC is most worried about employees utilizing AI that has neither been created nor approved by the Cabinet for official use. For instance, we do not want staff utilizing ChatGPT or Copilot to try to perform their work. This could lead to errors and exposure of private or internal data.

Finance and Administration Cabinet, Department of Revenue

- The cost of AI and leakage of any agency information.
- Learning curve of IT staff.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

The Cabinet has concerns regarding privacy and lack of broader regulation.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

Limited AI knowledge, data privacy, biased programming, new/changing legal federal and state statutes, and regulations and policies (such as compliance with the U.S. Equal Employment Opportunity guidance on the use of AI or algorithms in employee selection procedures). HR is highly regulated, and employers must apply a wide variety of laws affecting hiring, equal employment opportunity, payroll, time off, benefits, termination, and other subject matters. In-depth knowledge of AI is needed, including algorithm formulation, to protect against discrimination in hiring and ensure compliance with laws. There are also concerns about compliance with Kentucky's Open Records Act and retention requirements as they apply to AI-generated records/documents.

Public Protection Cabinet

The cabinet is concerned overall about the risks of bias, data misuse, and data insecurity.

Tourism, Arts, and Heritage

The concern in our cabinet with AI is the accuracy of output. Currently, we are only using AI to assist with media searches. However, we would like to expand the use of AI to assist engagement with state visitors. The Kentucky Department of Tourism is researching industry tools with this capability.

Transportation Cabinet, Office of Information Technology

There are several risks associated with AI systems, but the two we are most concerned about are data security and AI bias.

8. Please describe any opportunities associated with the use of AI systems that your agency is most excited about. (Open-Ended Response)

Cabinet for Health and Family Services, Office of Application Technology Services

CHFS sees opportunities across the workforce and overall service delivery, specifically: enhancing IT solutions, worker productivity, predictive modeling and analytics, code analysis/development, communication, documentation, training, and resource allocation.

Education and Labor Cabinet

Our agency is most excited about several key opportunities associated with the use of AI systems. AI can automate repetitive work, freeing up staff to focus on more strategic and creative activities, increasing efficiency, and reducing human error. By handling routine tasks, AI allows staff to engage in diversified work, leading to higher job satisfaction and better retention rates. Additionally, AI can process data and perform tasks at a much faster rate than humans, significantly increasing project completion speed and service delivery to the Commonwealth.

Energy and Environment Cabinet

The Energy and Environment Cabinet is excited about utilizing AI to perform tasks that may be tedious, difficult, or repetitive for humans. EEC is currently developing the ability to perform quality checks to ensure Confidential and Personally Identifiable Information (PII) is redacted on public records. Humans will perform one check, and AI will perform another to ensure Social Security Numbers, bank accounts, and other PII are properly identified.

Finance and Administration Cabinet, Department of Revenue

N/A

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

AI can provide a reduction in human error and is constantly available for use, unlike a human employee.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

The Personnel Cabinet is excited to have an Executive HR AI Workgroup established and has implemented an AI policy. The workgroup meets regularly to brainstorm use cases and actively learns more about AI. There is excitement about how AI might assist in day-to-day jobs, provide additional customer service to job seekers, and offer internal training and job assistance to hundreds of HR professionals.

Public Protection Cabinet

DOI is excited about using AI in claims management. An automated claims processing workflow can optimize human-in-the-loop processes, speed processing times, mitigate fraud, and enhance the customer experience.

Tourism, Arts, and Heritage

The ability of AI tools to quickly sort through large amounts of data presents opportunities for TAH to find new and innovative ways to engage visitors to the Commonwealth. The Kentucky Department of Tourism and the Kentucky Department of Parks expressed interest in using AI tools to analyze visitor data for customer feedback, social media trends, pricing models, geographic information, and other areas involving customer interaction.

Transportation Cabinet, Office of Information Technology

The opportunities we are most excited about are related to increasing safety on Kentucky highways and enhancing productivity.

9. Describe any guidance your agency provides on the use of AI systems. (Open-Ended Response)**Cabinet for Health and Family Services, Office of Application Technology Services**

In addition to the CHFS policy, the CHFS AI governance group will be responsible for providing guidance around GenAI implementations. We will continue to work closely with COT on statewide guidance. It is CHFS' intent to implement GenAI starting with our workforce before rolling out to citizen-facing opportunities. This approach will allow us to further understand and gain comfort prior to public consumption associated with the Cabinet's services.

Education and Labor Cabinet

The Education and Labor Cabinet does not currently have policy guidance for AI systems. The Cabinet's policy will be based on the forthcoming COT policy.

Energy and Environment Cabinet

EEC is still developing a guidance policy and oversight team. We have created draft documents, but there are several steps that need to occur before they are finalized.

Finance and Administration Cabinet, Department of Revenue

None yet, though we are in the process of creating guidance.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

N/A

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

The Personnel Cabinet's Division of Technology Services (DTS) has assigned AI research and coordination to an employee's position description. The responsibilities include research on AI, training for future excellence, and leading a small DTS AI Team. The cabinet has also established the Executive HR AI Workgroup that includes agency HR staff for oversight and to progress through learning the full potential of AI for HR.

Public Protection Cabinet

The Department of Insurance issued a Bulletin 2024-02 regarding the use of Artificial Intelligence (AI) systems in the business of insurance. The Department recognizes the Principles of Artificial Intelligence adopted by the National Association of Insurance Commissioners (NAIC) in 2020 as an appropriate source of guidance for insurers as they develop and use AI systems. These principles emphasize fairness, ethical use of AI, accountability, compliance with state laws, transparency, and the development of safe, secure, and robust systems.

Tourism, Arts, and Heritage

TAH works closely with COT to provide guidance for all new applications, including those with AI systems. As more AI tools are utilized, we recognize that more guidance and policies will be required to govern the use of these tools.

Transportation Cabinet, Office of Information Technology

KYTC has promoted the responsible adoption of AI systems. We recently drafted a responsible use policy for Generative AI and are working on a broader policy to encompass all AI systems.

10. Does your agency maintain an inventory of general technology systems currently in use?

Cabinet for Health and Family Services, Office of Application Technology Services

Yes.

Education and Labor Cabinet

Yes.

Energy and Environment Cabinet

Yes.

Finance and Administration Cabinet, Department of Revenue

No.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

Yes.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

Yes.

Public Protection Cabinet

Yes.

Tourism, Arts, and Heritage

Yes.

Transportation Cabinet, Office of Information Technology

No.

11. Does your agency maintain an inventory of AI systems currently in use?

Cabinet for Health and Family Services, Office of Application Technology Services

No.

Education and Labor Cabinet

No.

Energy and Environment Cabinet

No.

Finance and Administration Cabinet, Department of Revenue

No.

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

No.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

Yes.

Public Protection Cabinet

No.

Tourism, Arts, and Heritage

No.

Transportation Cabinet, Office of Information Technology

No.

12. Describe how your agency conducts an inventory of AI systems. (Open-Ended Response)**Cabinet for Health and Family Services, Office of Application Technology Services**

[No response provided.]

Education and Labor Cabinet

[No response provided.]

Energy and Environment Cabinet

[No response provided.]

Finance and Administration Cabinet, Department of Revenue

[No response provided.]

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

[No response provided.]

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

Currently implementing. Systems change request form and process denote if the new feature, functionality, application, or system is AI or AI-related. All functional and technical documentation must mark if AI or AI-related. IT Policy #030.104 (Artificial Intelligence) requires all vendor contracts for software to disclose the use of AI or integrations with AI platforms.

Public Protection Cabinet

[No response provided.]

Tourism, Arts, and Heritage

[No response provided.]

Transportation Cabinet, Office of Information Technology

[No response provided.]

13. How difficult would it be for your agency to provide an inventory of the AI systems it uses?**Cabinet for Health and Family Services, Office of Application Technology Services**

Manageable.

Education and Labor Cabinet

Manageable.

Energy and Environment Cabinet

Easy.

Finance and Administration Cabinet, Department of Revenue

[No response provided.]

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

Easy.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

[No response provided.]

Public Protection Cabinet

Easy.

Tourism, Arts, and Heritage

Easy.

Transportation Cabinet, Office of Information Technology

Manageable.

14. Please provide any additional closing thoughts you have about the use of AI systems in state government. (Open-Ended Response)

Cabinet for Health and Family Services, Office of Application Technology Services

In #7, we selected "minor" as our current impact due to the limited GenAI tools currently utilized in our production systems. However, we see where GenAI tools can provide a significant impact to CHFS both from workforce and service perspectives. CHFS will prioritize the implementation of AI and Generative AI tools within systems our workforce interacts with first. This will allow us to thoroughly understand the functionality and impact before deploying AI in public-facing applications. CHFS intends to implement a "human in the loop" (HITL) approach, where human intervention is integrated into the AI system's workflow, ensuring that AI-generated outputs are monitored and improved by human expertise, resulting in more robust and reliable outcomes.

Education and Labor Cabinet

The use of AI systems in state government presents significant opportunities and challenges. It is crucial to have a robust Enterprise Policy to ensure the ethical and effective deployment of AI technologies. Effective risk management practices are essential to mitigate potential risks and ensure the reliability and security of AI systems. Additionally, safeguarding Personally Identifiable Information (PII) is paramount, necessitating stringent data protection measures to maintain public trust and comply with legal standards.

Energy and Environment Cabinet

[No response provided.]

Finance and Administration Cabinet, Department of Revenue

[No response provided.]

Justice and Public Safety Cabinet (Department of Corrections, Department of Criminal Justice Training, Department of Juvenile Justice, Department of Public Advocacy, Kentucky State Police)

AI offers advantages like streamlining, saving time, and automating repetitive tasks. However, it will be costly to implement and has the potential for human job loss.

Personnel Cabinet, Office of Administrative Services, Division of Technology Services

[No response provided.]

Public Protection Cabinet

Gen AI is already here, and it will shape the future of work. The technology allows state governments to enhance services, streamline operations, and make data-informed decisions.

Tourism, Arts, and Heritage

TAH is in the early stages of evaluating and utilizing AI systems. The key driver for our cabinet is how to use AI tools to improve customer engagement and decision-making processes. TAH recognizes the risks that come with AI systems, such as data accuracy, bias, privacy, and security. We will work closely with COT to develop evaluation criteria, objectives, and policies as we move forward with these new industry tools.

Transportation Cabinet, Office of Information Technology

We believe AI has great potential but must be handled responsibly. We are looking forward to growing its use and working with COT and other Cabinets to innovate using AI to better serve the citizens of the Commonwealth.

Endnotes

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- ¹¹ Stuart Russell and Peter Norvig. *Artificial Intelligence: A Modern Approach, Third Edition*. Prentice Hall 2010; US. Government Accountability Office. *Artificial Intelligence: Generative AI Technologies And Their Commercial Applications*. June 20, 2024; US. Department of Commerce. National Institute of Standards and Technology. *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. Jan. 2023. Web.
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