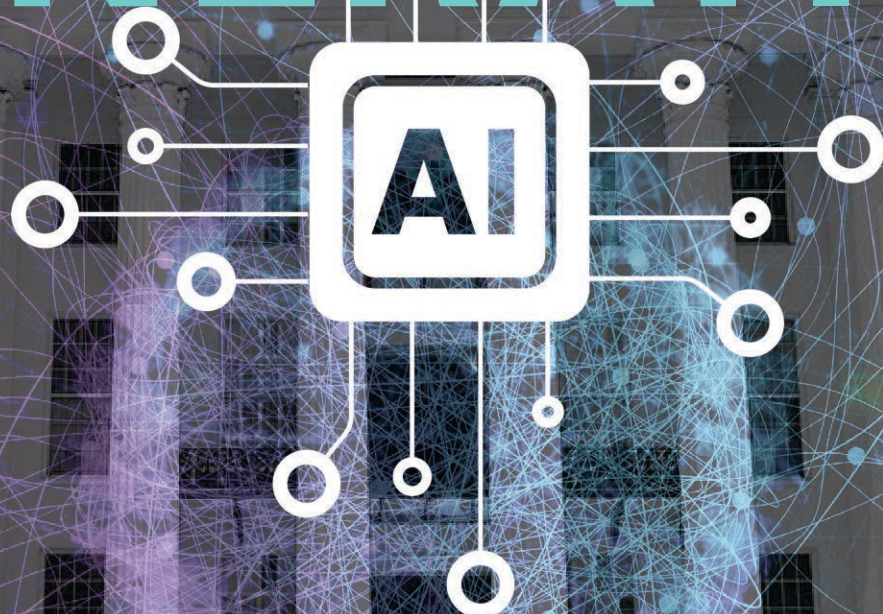November 30, 2024

GENERATIVE

AI

Governor's Task Force on Generative Artificial Intelligence

Providing for the Responsible and Productive Use of Generative Artificial Intelligence in State Government

Executive Summary

In recent years, Generative Artificial Intelligence (GenAI) has rapidly evolved and emerged as a technology with the potential to revolutionize industries and transform the way businesses and society as a whole operate. Understanding how critically important it is to ensure GenAI is implemented and utilized safely, responsibly, and effectively in Alabama state government, on February 8, 2024, Governor Kay Ivey issued Executive Order (EO) 738 - Providing for the Responsible and Productive Use of GenAI in State Government.

A key component of EO 738 was the formation of the GenAI Task Force. Chaired by the Secretary of Information Technology, Alabama's Chief Information Officer, this Task Force is comprised of members of both chambers of the Alabama Legislature, members of the Governor's Cabinet, and representatives of state institutions of higher education. The GenAI Task Force was charged with understanding the current uses of GenAI in state executive-branch agencies, encouraging the responsible and effective use of GenAI in executive-branch agencies, and recommending policies and procedures related to the use of GenAI in state executive-branch agencies going forward.
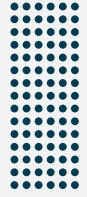
Several key focus areas identified in EO 738 led to the development of the following Working Groups:

- Responsible and Ethical Use of GenAI
- Data Management and Ownership
- Workforce Education and Training
- Policies and Governance

The GenAI Task Force held four meetings between April and October 2024. Also, during that time, approximately twenty separate Working Group meetings took place along with continuous offline discussion and collaboration between members concerning the Working Groups' individual objectives, focus areas, and deliverables.

The collective efforts of the GenAI Task Force and its Working Groups led to the development of ten overarching recommendations for GenAI utilization across the State of Alabama's executive-branch agencies. These recommendations touch on several key areas of consideration for GenAI usage, including but not limited to policies and procedures; procurement; education and training; and data literacy, classification, and readiness.

The Task Force's mission in this report is to help demystify GenAI for state entities, thoughtfully considering ways its power can be harnessed to enhance State functions and services to Alabama citizens and providing actionable recommendations for its potential applications and use by executive-branch agencies.

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Message From the Chair

Dear Governor Ivey,

As Chair of the GenAI Task Force, it is my privilege to share with you this Final Report on the Task Force's work related to the responsible usage of GenAI among Alabama's executive-branch agencies. This report and its recommendations have been designed in a way that will help to ensure our state remains in step with technological innovation while mitigating risks and safeguarding public trust.

It has been an honor to oversee this vital effort, and I am immensely pleased with the work produced by this outstanding group of Task Force and Working Group members, as well as our corporate partners. Their commitment and expertise has been instrumental in shaping a comprehensive report that highlights the current landscape of GenAI in state government and provides actionable recommendations for its future implementation.

On behalf of the GenAI Task Force, thank you for this important opportunity to present this report aimed at helping to educate, facilitate, and provide strategic recommendations for the effectual and ethical implementation of GenAI for the State of Alabama.

Sincerely,

Daniel Urquhart

Daniel Urquhart
Chair, GenAI Task Force
Secretary, Alabama Office of Information Technology

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SECTION I
What is Artificial Intelligence?

Artificial Intelligence, or AI, is a branch of computer science in which systems use hardware, algorithms, and data to imitate intelligent human behavior to automate tasks involving decision-making, pattern discovery, or the performance of a specific action. It involves programming computers to perform tasks like learning, reasoning, and problem-solving. AI systems can analyze data, recognize patterns, and make decisions based on the information it processes. While there are a number of different ways an AI system can be designed, the two most common are rule-based systems (wherein the rules used are provided by a human) and machine learning algorithms. Essentially, AI helps machines perform tasks that make individuals' business and personal lives easier and more efficient.
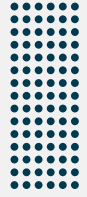
SECTION I
What Makes GenAI Different?

Generative AI (GenAI) and traditional AI differ significantly in application and capability. Traditional AI is primarily focused on recognizing patterns, making decisions, and automating tasks based on predefined rules and data analysis. It excels in applications such as fraud detection, recommendation systems, and predictive analytics. Conversely, GenAI is designed to create new content and generate original outputs. It can produce text, images, music, and more, based on the data it has been trained on.

This makes GenAI particularly useful in creative fields, such as content creation, design, and entertainment. For example, GenAI can write articles, generate realistic images, compose music, and even create entire virtual worlds. GenAI can also enhance customer interactions by providing more human-like responses in chatbots and virtual assistants. It can also assist with tasks that require a high degree of creativity and innovation, such as developing marketing campaigns or designing new products.

In summary, while traditional AI focuses on analyzing data and making decisions, GenAI is unique in its ability to generate new and creative content, opening up a wide range of applications in various industries, including government.
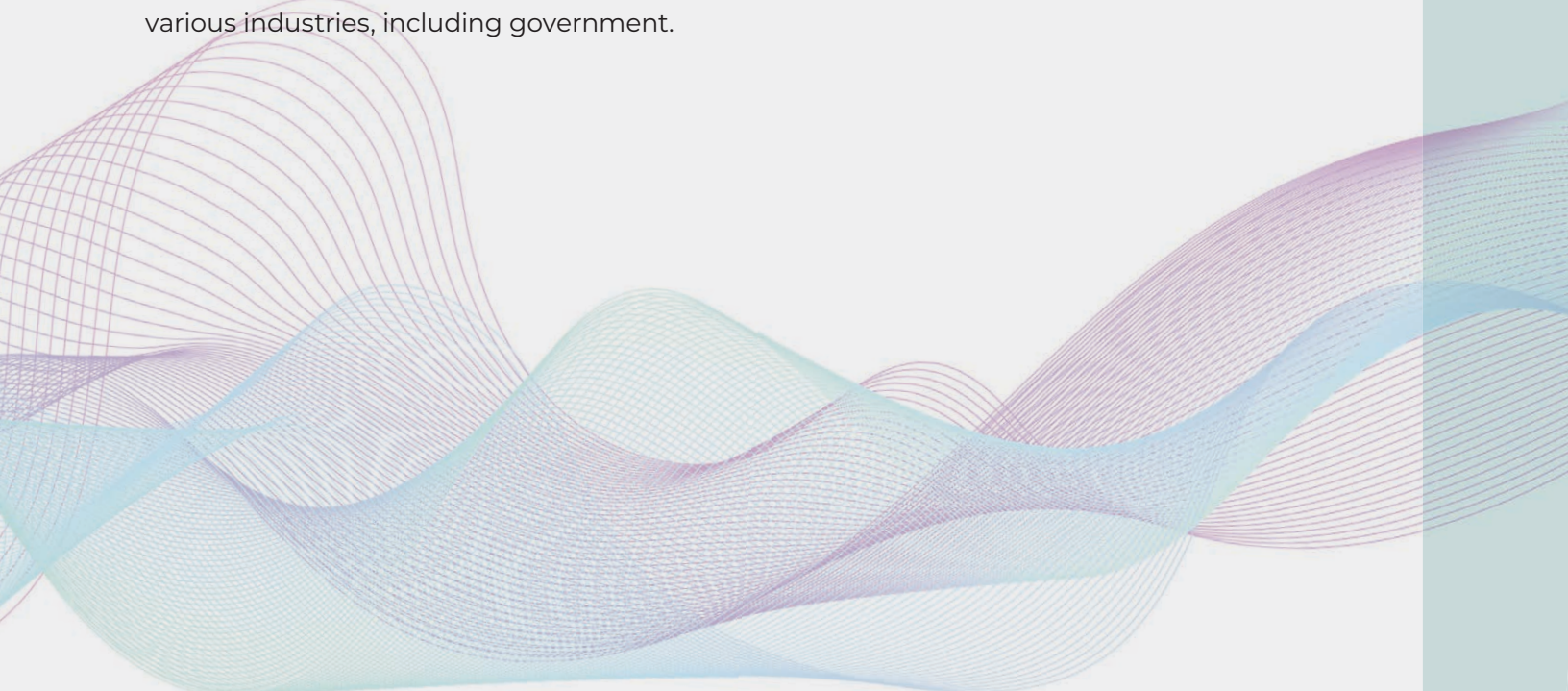
SECTION I
Executive-Branch GenAI Inventory Report

Photo: Governor's Office | Hal Yeager

As outlined in Governor Ivey's Executive Order 738, one of the primary responsibilities of the Task Force is to better understand current uses of GenAI in state executive-branch agencies.

EO 738 directed that a GenAI inventory should be conducted to accurately capture all instances of GenAI being developed, employed, or procured by Alabama state executive-branch agencies.

For each instance of GenAI utilization, agencies were instructed to provide the following descriptive information for inclusion in a comprehensive GenAI inventory report:

- The name and vendor of the GenAI system, if any
- The GenAI's general capabilities
- The purpose and proposed use of the GenAI
- Steps taken to ensure any use of GenAI occurs safely and responsibly

EO 738 set a deadline of May 1, 2024, for state executive-branch agencies to submit this information to the Task Force and required that a senior level management personnel be appointed by each agency to collect and report the results of the agency's inventory to the Task Force. To aid in the collection of this data, the Task Force implemented a reporting tool on the official website of the GenAI Task Force (aitaskforce.alabama.gov) which allowed agencies to digitally submit their GenAI inventory report in a streamlined and efficient manner.

Among numerous data points collected, the inventory report revealed that out of 139 responding executive-branch agencies, most (104) reported using no GenAI products or services; however, the remaining agencies reported using 108 different products with 72 unique vendors. Hosting platforms for the GenAI products and services already in use by state agencies ranged from on-premises solutions to various cloud providers.

SECTION I
Executive-Branch GenAI Inventory Report

Agencies also highlighted the specific safety considerations that were followed when procuring and implementing their individual GenAI tools. The most commonly cited safety steps were related to education and awareness, ensuring appropriate security measures were in place, and continuous monitoring of the GenAI outputs and data feeds. In terms of the specific capabilities or functionalities of the GenAI products or services in use, the inventory report showed that agencies are using these tools for purposes such as text generation, problem solving, code generation, language translation, and much more.

Although the results of the GenAI inventory report are enlightening, it is almost certainly not a complete picture of how this revolutionary technology is being used among Alabama's executive-branch agencies. The reason for this is because vendors and providers have begun to integrate GenAI into their existing products and services in ways that a typical user might not immediately notice. Training and education will continue to be vitally important as GenAI becomes more commonplace and widely used.
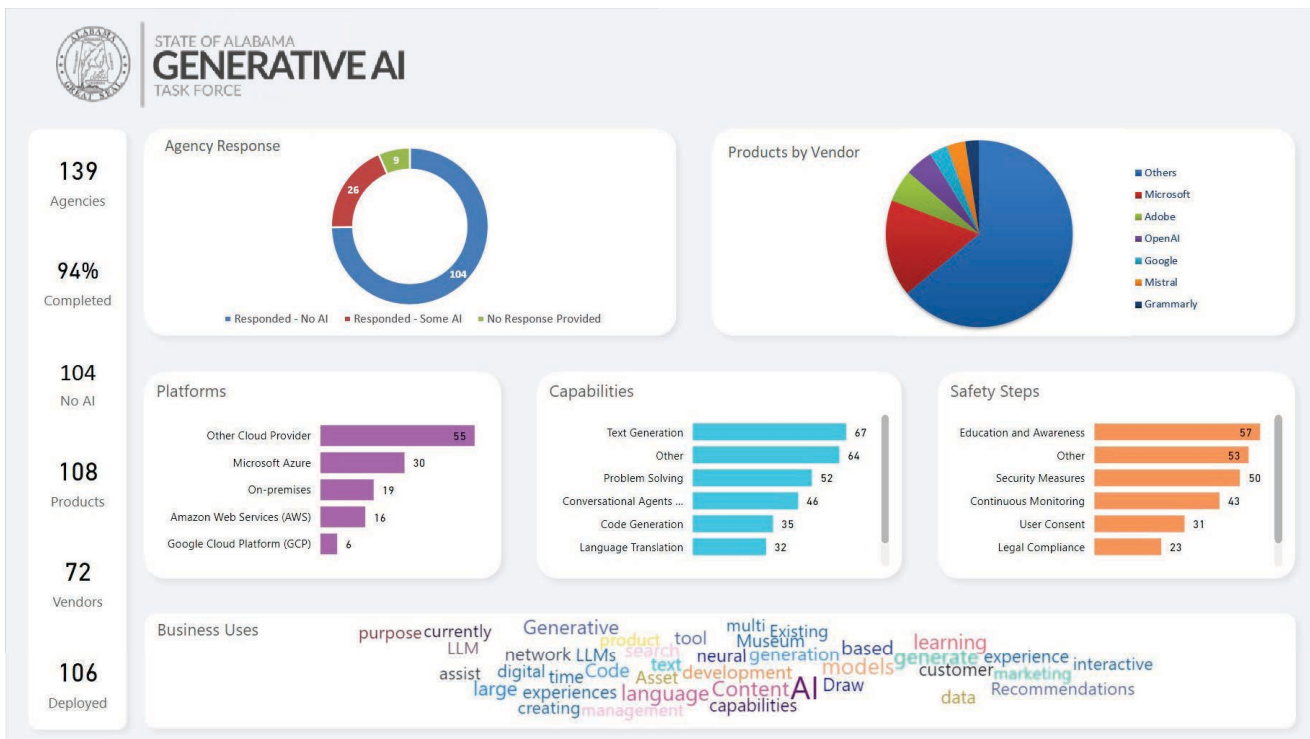
SECTION II
Responsible and Ethical Use of GenAI

Individual and Shared Risks of GenAI

GenAI brings both individual and shared risks that need to be addressed responsibly and ethically.

Individual Risks:

- **Privacy Concerns:** GenAI can generate content based on personal data, which may lead to privacy issues if not handled properly.
- **Misinformation:** GenAI can create realistic but false information, which can mislead individuals.
- **Intellectual Property or Copyright Issues:** GenAI can create and generate content based on copyrighted or protected content which could lead to legal challenges.

Shared Risks:

- **Security Threats:** GenAI can be used to create sophisticated phishing attacks or deepfakes, posing significant security risks to organizations and society.
- **Economic Displacement:** The automation of creative tasks by GenAI can lead to job displacement in certain industries, affecting the livelihood of many people.
- **Ethical Dilemmas:** The use of GenAI in sensitive areas such as healthcare or law enforcement raises ethical questions about accountability and decision-making.
- **Bias and Discrimination:** GenAI models can inadvertently perpetuate biases present in the training data, leading to unfair treatment of individuals.

To mitigate these risks, it is crucial to implement robust privacy and security measures, conduct regular bias assessments, and ensure transparency and accountability in GenAI applications. Responsible GenAI practices can help guide the ethical use of GenAI.

SECTION II
Responsible and Ethical Use of GenAI

Ensuring Fairness, Transparency, and Accountability in GenAI Usage

Ensuring fairness, transparency, and accountability in the usage of GenAI is crucial to mitigating risks and promoting ethical practices. Here are some key principles and practices to achieve this:

- **Fairness:** To ensure fairness, it is essential to address biases in GenAI models. This involves conducting regular bias assessments and using diverse and representative datasets for training. Doing so can minimize the risk of perpetuating existing biases and ensure that GenAI systems create more precise outcomes.

- **Transparency:** Transparency involves ensuring that the inner workings of GenAI systems are understandable to users and stakeholders. This can be achieved by providing clear documentation on how GenAI models are developed, trained, and deployed. Additionally, it is important to disclose the limitations and potential risks associated with the GenAI systems.

- **Accountability:** Accountability means establishing mechanisms to hold GenAI developers and users responsible for the outputs of GenAI systems. This includes implementing robust governance frameworks, setting up oversight committees, and ensuring compliance with ethical guidelines and regulations. It is also important to have processes in place for reporting and addressing any issues or concerns related to GenAI systems.

- **Responsible AI Practices:** Adopting responsible AI practices is essential for ensuring ethical AI usage. This includes following principles such as privacy and security, reliability and safety, inclusiveness, and accountability. By adhering to these principles, organizations can develop and deploy GenAI systems responsibly.

- **Education and Training:** Educating the workforce and stakeholders about the capabilities, limitations, and ethical implications of GenAI is crucial. This involves organizing workshops, creating educational materials, and engaging with policymakers to promote AI literacy and responsible usage.

SECTION II
Responsible and Ethical Use of GenAI

State Government GenAI Use Cases

GenAI has a wide range of potential applications in government, offering numerous opportunities to enhance efficiency, improve services, and support decision-making. Below are some possible use cases for GenAI in state government:

- **Policy and Governance:** GenAI can assist in drafting policies, regulations, and legislative documents. It can analyze vast amounts of data to provide insights and recommendations, helping policymakers make informed decisions.

- **Law Enforcement and Public Safety:** GenAI can support law enforcement agencies by analyzing crime data, predicting crime hotspots, and assisting in investigations. It can also help in managing emergency responses and disaster recovery efforts.

- **Citizen Services:** GenAI can improve citizen engagement by providing personalized and efficient services. For example, it can be used to develop chatbots that assist citizens with inquiries, applications, and accessing government services.

- **Healthcare:** In the healthcare sector, GenAI can be used to analyze patient data, predict disease outbreaks, and support medical research. It can also assist in managing healthcare resources and improving patient care.
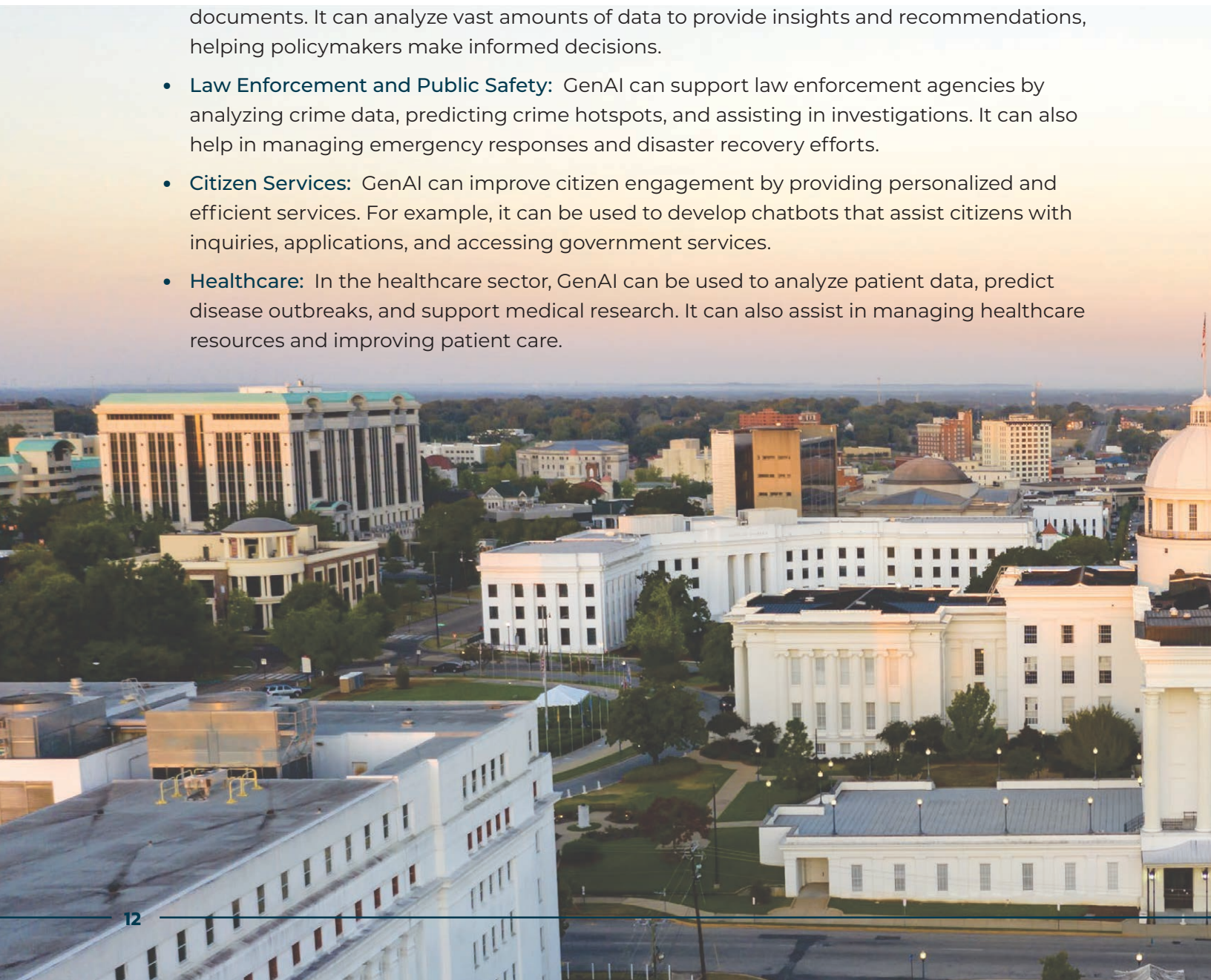
SECTION II
Responsible and Ethical Use of GenAI

State Government GenAI Use Cases

- **Education and Training:** GenAI can enhance educational programs by developing personalized learning experiences, creating educational content, and supporting teacher training. It can also be used to analyze educational data in order to improve student outcomes.

- **Infrastructure and Transportation:** GenAI can optimize infrastructure planning and management by analyzing data on traffic patterns, public transportation usage, and infrastructure conditions. It can also support the development of smart cities and improve urban planning.

- **Environmental Monitoring:** GenAI can assist in monitoring and managing environmental resources by analyzing data on air quality, water resources, and climate change. It can also support conservation efforts and disaster management.

These use case examples demonstrate the potential of GenAI to transform various government operations and services, ultimately benefiting citizens and improving the efficiency of public administration.

SECTION III
Data Management and Ownership

Defining Data Ownership, Classification, and Readiness

When it comes to GenAI, defining data ownership, classification, and readiness is crucial for ensuring that data is managed effectively and ethically. Here are some key points to consider:

- **Data Ownership:** Data ownership refers to the rights and responsibilities associated with the data. It involves identifying who owns the data, who has the right to access it, and who is responsible for its maintenance and security. Ownership should be clearly defined to ensure accountability and compliance with legal and regulatory requirements.

- **Data Classification:** Data classification involves categorizing data based on its sensitivity and importance. This helps in applying appropriate security measures and handling protocols. Common classifications include "public," "internal," "confidential," and "restricted." Each classification level should have specific guidelines for access, storage, and sharing.

- **Data Readiness:** Data readiness involves preparing data to be used effectively by AI and GenAI systems. This includes ensuring that the data is of high quality, well-governed, secure, free of bias, enriched, accurate, and accessible. Key metrics for determining data readiness include metadata management, data and metadata quality management, data lineage, and data governance.

SECTION III
Data Management and Ownership

Identifying Secure Data Storage Solutions and Data Retention Requirements

To ensure data integrity, privacy, and compliance when utilizing GenAI, it is essential to identify secure data solutions and data retention requirements. Key considerations include:

- **Identifying Secure Data Solutions:** To ensure secure storage of data, adopt solutions that protect data at rest while maintaining accessibility and compliance. A comprehensive storage strategy should address data encryption, access controls, risk assessment, and storage infrastructure resilience.

    ◊ **Data Encryption:** Use advanced encryption protocols to secure data at rest, ensuring that unauthorized access does not compromise sensitive information

    ◊ **Access Controls:** Implement role-based access control (RBAC) to limit storage access to authorized users only

    ◊ **Risk Assessment:** Leverage tools to identify and mitigate potential vulnerabilities within storage systems

    ◊ **Resilient Storage Infrastructure:** Consider using storage solutions that offer redundancy, scalability, and protection against data loss due to hardware failures or cyberattacks

- **Data Retention Requirements:** Data retention requirements involve setting rules for how long data should be kept and ensuring compliance with legal and regulatory standards set by the applicable Records Disposition Authority (in this case, the Alabama State Records Commission). Key practices include:

    ◊ Deploying dashboards and logging for compliance monitoring

    ◊ Providing evidence of compliance audits, such as HITRUST evidence submissions

    ◊ Ensuring data deletion soon after the expiration date, with an SLA for specific use cases

    ◊ Implementing automated processes for data deletion by managed identities

    ◊ Using time-to-live (TTL) deletion solutions for short-term storage

SECTION III
Data Management and Ownership

> *GenAI has the potential to catalyze innovation and the rapid development of a wide range of benefits for Alabamians, but must be deployed carefully to mitigate and guard against a new generation of risks.*

Governor Kay Ivey | 2024 State of the State Address | Photo: Billy Pope

SECTION III
Data Management and Ownership

Guidance for Responsible Use of Data When Utilizing GenAI Systems

Ensuring the responsible use of data in GenAI systems is not only about securing data but also about ethical GenAI deployment and maintaining public trust. While secure data storage and retention is as essential here as in any other technology context, additional considerations come into play with GenAI models and systems.

These include balancing innovation with privacy, minimizing biases, and ensuring transparency in how GenAI systems utilize data. Below are key principles to follow:

- **Ethical Data Usage and Bias Mitigation:** GenAI systems should be designed and deployed in a way that respects user privacy and prevents biased outcomes. Agencies should ensure that GenAI models are transparent in their decision-making processes and that all data used is sourced and processed ethically. Regular checks should be in place to detect and mitigate any unintended biases in the data or model outputs. When open-source GenAI models are used, it is crucial to maintain rigorous standards for data handling and bias detection to ensure the integrity and fairness of the GenAI system.

- **Public Trust and Citizen Engagement:** Educating citizens and government employees about the responsible use of GenAI and its impact on data privacy is crucial. It should be clear to citizens and users of state-based GenAI systems how personal data is used and how state agencies are safeguarding this data. This transparency fosters public trust and confidence in state use of GenAI.

- **AI System Accountability and Monitoring:** Establish clear accountability for GenAI system outputs. Ensure continuous monitoring of GenAI systems to detect inaccuracies, unexpected results, or misuse of data. This also includes maintaining detailed logs and records of GenAI decisions to provide transparency and support audits or investigations. Automated tools for performance tracking and error detection can help maintain system integrity.

By incorporating these responsible use guidelines, the State can help to ensure that the adoption of GenAI systems benefit the public while safeguarding citizen data and maintaining ethical standards.
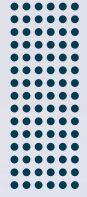
SECTION IV
Workforce Education and Training

The Capabilities and Limitations of GenAI

From a state government workforce and economic perspective, GenAI has several capabilities that can be leveraged to improve operations and service delivery. However, there are also limitations with GenAI that must be safeguarded against.

- **Capabilities:**

  ♦ **Automation and Efficiency:** GenAI systems such as power chatbots and virtual assistants can automate routine tasks, streamlining workflows to free up human resources. This can lead to increased productivity and efficiency across various industries.

  ♦ **Content Creation and Innovation:** GenAI can assist in generating text, images, videos, and audio as new ideas, designs, and solutions for public awareness campaigns, data visualization, and educational materials. This can enhance search relevance, improve customized user data and preferences, and strengthen public access to government information.

  ♦ **Data Analysis and Insights:** GenAI can analyze complex datasets to uncover valuable insights and predictions for applications such as fraud detection, cybersecurity, and infrastructure assessment. This can help inform governmental data analysis and policymaking.

  ♦ **Citizen Engagement and Services:** GenAI can enrich public engagement and access to government services by generating natural language explanations that provide interactive tutoring for governmental programs and services. This can drive innovation and economic growth by attracting tech companies, fostering research and development, and promoting accessibility for all Alabama citizens.

SECTION IV
Workforce Education and Training

The Capabilities and Limitations of GenAI

- **Limitations:**

  ◊ **Hallucinations, Bias, and Discrimination:** GenAI models can produce outputs that are factually incorrect or misleading or perpetuate societal biases from their training data, leading to erosion of public trust, hindered communication, discriminatory outcomes, and unequal access services.

  ◊ **Security and Privacy:** GenAI models are susceptible to security and privacy attacks such as data poisoning and prompt injection, compromising the security of government systems and sensitive information.

  ◊ **Job Displacement:** GenAI models can lead to job displacement in certain sectors, necessitating employee upskilling and retraining programs.

  ◊ **Transparency and Accountability:** GenAI models can make their decision-making processes unclear, hindering accountability and trust in GenAI-driven decisions.

SECTION IV
Workforce Education and Training

Implementing GenAI Responsibly

Implementing GenAI responsibly from a workforce perspective involves several key steps to ensure ethical use, data security, and positive impact on employees.

Below are some guidelines:

- **Ensure Transparency and Accountability:** GenAI systems should be transparent and explainable, allowing users to understand decision-making processes, roles, operational parameters, responsible authorities, possible negative impacts or unintended consequences, and maintenance accountability for GenAI outcomes.

- **Protect Privacy and Data Governance:** GenAI systems should be designed with privacy in mind, ensuring transparent data collection and respecting individual consent; managing data governance frameworks and protecting sensitive information; establishing clear responsibilities, risk mitigation strategies, and incident response protocols; and involving diverse stakeholders in the development and governance of GenAI to ensure consideration of diverse perspectives.

- **Promote Fairness and Non-Discrimination:** The development and use of GenAI systems should align with fundamental human rights, dignity, and values, free from unfair bias and discriminatory outcomes based on race, gender, age, or other protected characteristics by continuous monitoring and improvement of GenAI-generated outputs and transparent methodologies and documentation for GenAI tools.

- **Ensure Safety and Security:** GenAI systems should be designed and tested to be safe and secure, minimizing the risk of harm or unintended consequences by implementing robust cybersecurity measures to protect from vulnerabilities and attacks, providing opt-out options for GenAI-driven decisions, establishing contingency plans for third-party failures or incidents, and maintaining documentation on GenAI output/knowledge limits and oversight.

- **Invest in Training and Awareness:** The State and trusted vendors should provide comprehensive training to personnel involved in the development, deployment, and use of GenAI systems, ensuring users are aware of the potential risks and ethical considerations associated with GenAI.

SECTION IV
Workforce Education and Training

Educating State Government Employees on How to Safely and Productively Use GenAI

To educate state government employees on how to use GenAI responsibly and productively, a comprehensive approach is essential.

Some key steps to consider include:

- **Developing a Structured Training Program:** This program should cover the basics of GenAI, its applications, and ethical considerations. It should include modules on data privacy, security, bias mitigation, and the responsible use of GenAI. The training should be mandatory for all employees and updated regularly to reflect the latest advancements and guidelines.

- **Engaging Experts and Stakeholders:** Collaborating with AI experts, institutions of higher education, industry leaders, and stakeholders to develop and deliver the training content ensures that the information is accurate, relevant, and aligned with industry best practices.

- **Promoting a Learning Culture Within the Organization:** Encouraging continuous learning and improvement by providing employees with access to resources such as online courses, webinars, and workshops fosters an environment where employees feel comfortable asking questions and sharing their experiences with GenAI.

- **Implementing Governance and Oversight:** Establishing an Advisory Committee to oversee the use of GenAI within state government ensures that GenAI is used responsibly, transparently, and in compliance with local regulations. The Committee can also provide guidance on ethical considerations and best practices.

- **Monitoring and Evaluating the Effectiveness of the Training Program:** Regularly assessing the program and making necessary adjustments based on feedback from employees helps ensure that the training meets their needs. Using metrics such as completion rates, knowledge retention, and practical application to measure success is also important.

By following these steps, state government employees can be educated on the responsible and productive use of GenAI, ensuring that it benefits the public while maintaining ethical standards and data security.

SECTION IV
Workforce Education and Training

While all measures must be taken to ensure that GenAI is implemented wisely and appropriately, there is no question that this revolutionary technology has the potential to dramatically enhance the efficiency and productivity of the State's workforce.

Daniel Urquhart | Chair | GenAI Task Force

SECTION IV
Workforce Education and Training

Showcasing Alabama GenAI Talent for the Creation and Sustainment of GenAI Systems

Showcasing Alabama's GenAI talent is essential for creating and sustaining robust and ethical GenAI systems within the state.

By highlighting local expertise, Alabama can foster a thriving GenAI ecosystem, attracting investment and encouraging the development of innovative solutions tailored to the state's specific needs. This ensures access to cutting-edge technology, promotes economic growth, and establishes Alabama as a leader in responsible GenAI development. Doing so will attract investment and tech companies, driving innovation within the state. This focus on homegrown talent will create high-paying jobs and boost the local economy. Furthermore, cultivating Alabama talent creates a sustainable workforce capable of maintaining and evolving these systems, ensuring long-term benefits for the State of Alabama and its citizens, and developing GenAI solutions tailored to the State's unique needs and challenges, addressing local priorities, and improving public services.

SECTION V
Policies and Governance

> *The State of Alabama is a pioneer in the development and use of advanced technologies, from manufacturing nanotechnology to empowering mankind to walk on the moon. In that innovative spirit, GenAI represents a monumental step forward in the potential for our state government to serve the public. However, its capabilities must first be studied carefully to ensure it is implemented in the most responsible and efficient manner possible.*

Governor Kay Ivey | Office of the Governor | Executive Order 738

SECTION V
Policies and Governance

GenAI Policies and Governance

A legal framework for understanding roles, responsibilities, and parameters for the use of GenAI in State systems is essential to the successful deployment of GenAI to serve the citizens of Alabama.

Deployment of a governance model that consists primarily of adopting policies at the agency level, rather than enshrining the requirements for using GenAI in statute or administrative rules, will allow for greater flexibility that is needed in responding to new challenges or situations that will almost certainly arise as GenAI continues to develop. This is particularly true since GenAI is still in its infancy (although artificial intelligence and machine learning are not new).

In April 2024, the State of Alabama aligned statewide IT policy to National Institute of Standards and Technology (NIST) IT Security Frameworks and best practices. Additionally, the Office of Information Technology (OIT) has drafted policies concerning the use of GenAI by government agencies, and those policies are under review by internal stakeholders ahead of circulation to other stakeholder executive-branch agencies. These policies encompass a range of proposed controls for GenAI usage.

SECTION V
Policies and Governance

GenAI Procurement and Development Guidelines

Procuring GenAI technologies may necessitate the need for the State to review its existing procurement processes to ensure the best value is realized through innovation and advanced technology, but also to protect against potential risk.

When procuring GenAI-based solutions, legal considerations span the following areas:

- Intellectual Property (copyright laws, trained models)

- Confidentiality and Data Security (location and use of data)

- Personal Data Privacy (application of personal data)

- Content Regulation (content regulation and misuse guidelines, exceptions)

- State Procurement laws and Vendor Terms and Conditions for GenAI

SECTION V
Policies and Governance

GenAI Procurement and Development Guidelines

As part of the solution development process, the State should consider implementing a number of key strategies to help evaluate the potential impact of GenAI systems:

1   **Ensure** GenAI systems undergo rigorous testing before deployment. This includes testing for accuracy, reliability, and safety to prevent unexpected performance failures and ensure systems do not evolve in ways that are inconsistent with original expectations.

2   **Perform** data protection and security assessments to ensure the use of personal data in GenAI systems complies with relevant data protection laws and policies. This helps to identify and mitigate any potential privacy risks associated with GenAI systems.

3   **Evaluate** potential ethical challenges regarding the use of GenAI, including the potential impact of GenAI systems, and ensure GenAI technologies are used in a fair, lawful, and non-discriminatory manner. This involves ongoing human supervision to manage GenAI projects.

4   **Factor** GenAI usage into broader risk management frameworks as part of the planning and preparation for GenAI implementations, identifying high-risk cases, and responding accordingly.

5   **Continue** to collaborate with industry technology providers who adhere to responsible GenAI principles and can offer transparency about how GenAI solutions make decisions and generate outputs. Regular, meaningful discussions between industry providers and the State can help ensure long-term partnerships that drive wider participation by vendors and result in better end products, ultimately benefiting Alabama citizens.
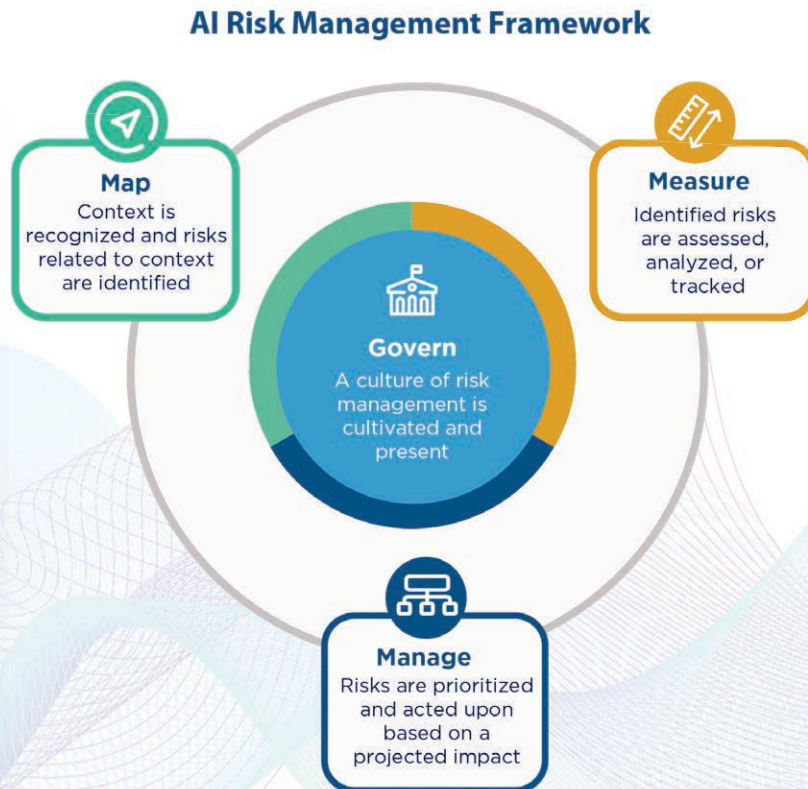
SECTION V
Policies and Governance

Risk Management Framework for GenAI Systems

A risk management framework outlines an approach to managing risks associated with GenAI applications.

Applying a risk management framework (RMF) to GenAI systems and projects enables organizations (in this case, the State) to address and manage the risks associated with these new systems responsibly. Without an RMF, use of GenAI can introduce a number of new and unknown risks into existing systems and infrastructure, depending on how it is used. The Task Force therefore strongly recommends adopting and enforcing an RMF to govern the use of GenAI in state government.

Based on NIST's AI Risk Management Framework, aligned with industry standards, the proposed framework follows an iterative cycle of four key steps: govern, map, measure, and manage:

AI Risk Management Framework

Map
Context is recognized and risks related to context are identified

Measure
Identified risks are assessed, analyzed, or tracked

Govern
A culture of risk management is cultivated and present

Manage
Risks are prioritized and acted upon based on a projected impact

Credit: NIST AI RMF Playbook | AI RMF Core

SECTION V
Policies and Governance

Risk Management Framework for GenAI Systems

Governance involves aligning roles and responsibilities and establishing requirements for safe, secure, and trustworthy GenAI deployment.

Mapping identifies and prioritizes risks.

Measurement systematically assesses identified risks and the effectiveness of mitigations.

Management involves mitigating risks at both the GenAI platform and application levels, incorporating ongoing performance monitoring, feedback channels, and incident response processes.

This perpetual approach ensures that GenAI risks are continuously managed throughout the development and deployment cycle.

SECTION V
Policies and Governance

Guidelines for Sandbox Environments

A Sandbox Environment provides a controlled and isolated environment where GenAI applications can be tested without affecting live systems or compromising sensitive data.

By providing a controlled environment for testing GenAI applications, a sandbox enables stakeholders to assess risks, refine regulatory frameworks, and foster collaboration between State agencies, regulators, and industry providers. These sandboxes also offer the flexibility to experiment with different GenAI models, algorithms, and datasets without the risk of affecting live systems.

Sandbox environments are important for ensuring that any changes or new features introduced by or within a GenAI system do not disrupt existing operations. Creating a sandbox allows for the allocation of specific resources, licensing, and environments tailored for testing purposes. This ensures that the testing environment is optimized for GenAI functionalities and can be migrated to production once approved. Additionally, the sandbox environment helps in adhering to compliance and governance standards by providing a secure space to test and validate GenAI applications before they are deployed in a production environment.

OIT, in partnership with Microsoft, has developed a framework to support the building process for sandbox environments for GenAI-based applications in Microsoft Azure (Microsoft's Cloud environment).

SECTION V
# Policies and Governance

Guidelines for Sandbox Environments

Guidelines for sandbox environments being created in Azure are as follows:

- Data Security:
    - ◊ Sandboxes may use test data only.
    - ◊ Sandboxes shall not be connected to or integrated with any datasets or identities currently in production by any agency.
    - ◊ Use of confidential, restricted, or compliance-related data is not permitted in sandbox environments.

- Access and Licensing:
    - ◊ Sandboxes access should be limited; only three test accounts are provided per agency subscription to minimize risk.
    - ◊ Licensing for Microsoft 365-related testing must be procured for each identity being used in the sandbox environment.

- Sandbox Setup:
    - ◊ Each sandbox is configured and built using an automated script, ensuring a uniform baseline across all agencies.
    - ◊ All participants using a sandbox environment will begin with the same GenAI platforms, resources, and solutions.

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Conclusion
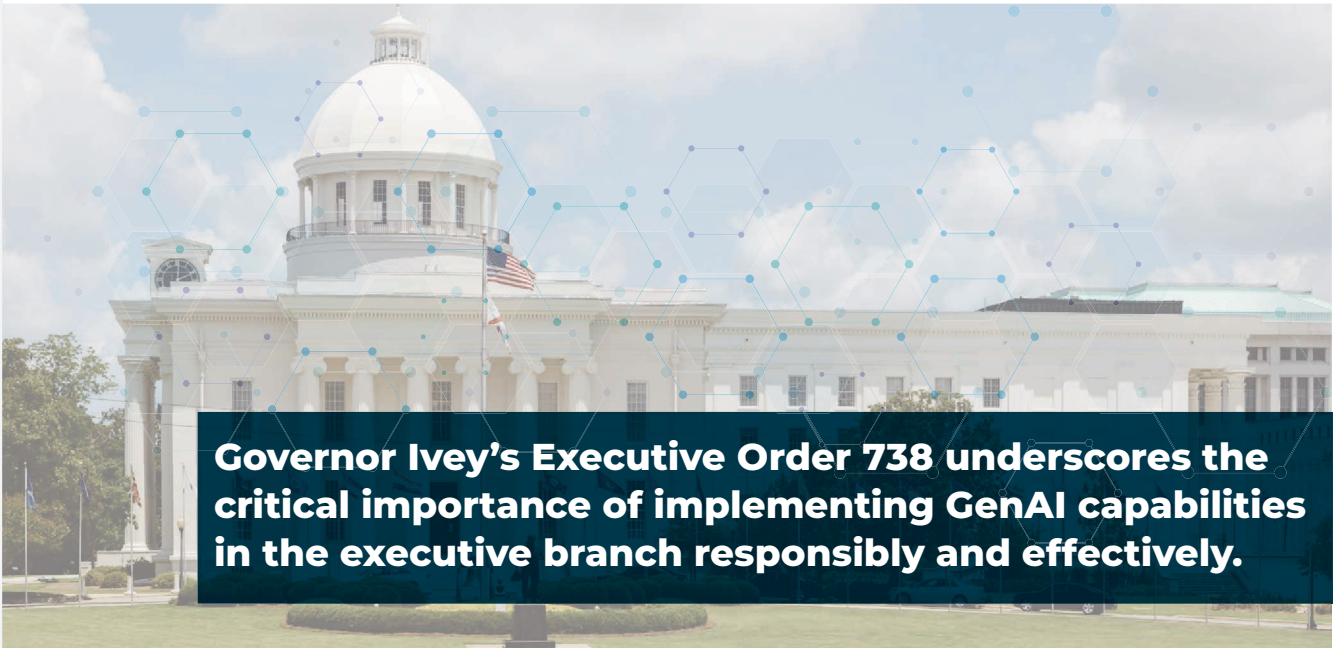
Governor Ivey's Executive Order 738 underscores the critical importance of implementing GenAI capabilities in the executive branch responsibly and effectively.

Since its establishment on February 8, 2024, the GenAI Task Force has dedicated its efforts to diving deep into current GenAI uses, considering ways to foster the responsible procurement and development of GenAI applications, and highlighting the essential need for actionable policies to help guide the productive and efficient deployment of this groundbreaking technology within state government. The recommendations presented in this report are the result of an extraordinary amount of meaningful discussion, collaboration, and research.

Through Task Force and Working Group meetings, the Task Force has gathered crucial findings to aid the State of Alabama in its current and future use of GenAI. Some of the more noteworthy discoveries shared in this report are the critical necessity for educating the State workforce and citizens on the use and implications of GenAI, the importance of addressing the lack of familiarity among State agencies with current GenAI systems, and the insight that GenAI governance may be more effectively grounded in policy than in statute.

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Conclusion

Additional findings by the GenAI Task Force include but are not limited to:

- The value of having a single, clear set of GenAI terms and definitions to avoid confusion in implementing policies across executive branch agencies

- The benefit of establishing a Technology Quality Assurance Board and implementing a process to help provide oversight to the development, deployment, and monitoring of GenAI systems within State of Alabama agencies

- The essential need for a unified approach to education on GenAI for State employees with mandatory beginner level training

The GenAI Task Force extends its profound gratitude to Governor Kay Ivey for her visionary leadership and steadfast commitment to upholding Alabama's legacy as a pioneer in technological innovation. It is the sincere hope of the Task Force that this Final Report will help to empower Alabama state government to achieve even greater technical advancements in the years ahead.

The Task Force also wishes to acknowledge the invaluable contributions of the Working Group members and other stakeholders involved its endeavors. The efforts of the GenAI Task Force signify a notable leap forward in the State government's ability to effectively serve the public.

Governor Kay Ivey at the GenAI Task Force Meeting | Photo: Governor's Office | Hal Yeager

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Recommendations

1. Adopt and implement National Institute of Standards and Technology (NIST) AI Risk Management Framework (RMF) 1.0, or subsequent versions, for GenAI systems in production or being developed for use within the State. This is consistent with the Alabama Office of Information Technology's (OIT) adoption of the NIST RMF 2.0 as the basis for State IT Policies in April 2024.

2. Avoid drafting specific state laws or statutes for GenAI usage within the state government. Instead, use the following governance strategies to use GenAI effectively:

    a. Adopt policies at the state and agency levels to guide and govern GenAI usage within an agency or department prior to implementing the technology into agency operations.

    b. Define key terms in the GenAI policymaking realm to avoid confusion in implementing policies across executive-branch agencies.

    c. Conduct regular audits of control policies to ensure only authorized personnel have access, with clear documentation of roles and access levels to maintain security and accountability.

    d. Establish clear procedures for human-in-the-loop oversight of GenAI systems.

3. Create a Technology Quality Assurance Board to oversee the development, deployment, and monitoring of GenAI systems within executive-branch agencies.

    a. Focus on ethical standards, promoting transparency, enhancing security and privacy, and monitoring compliance.

    b. Vet and compile a list of "pre-approved" GenAI tools available for use by executive-branch agencies.

    c. Ensure agencies are utilizing secure platforms, implementing regular backups, and maintaining logs of system-generated data as required by regulatory bodies.

    d. Use sandbox environments, where appropriate, to adequately test data security and manage risks to ensure reliable outputs using the GenAI model being trained and/or deployed.

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4. Establish procurement guidelines for GenAI products (that is, products developed specifically as GenAI) as well as incidental GenAI (i.e., GenAI elements embedded in systems or products the State has already procured).

    a. Adopt and use a questionnaire requiring vendors to disclose specifications of GenAI systems, specifically focusing on training and security of the GenAI model.

    b. Create attestation form requiring vendors, prior to contract signing, to meet the security requirements outlined in the NIST AI RMF (AI RMF v. 1.0), as well as other supplemental requirements. Attestations and information provided by vendors should be submitted for review to the Technology Quality Assurance Board referenced in this list of recommendations.

5. Establish a GenAI training program for Alabama state employees that has separate modules for GenAI basics, technology usage, ethical and responsible use considerations, data classification, security guidelines, purchasing recommendations, and bias mitigation.

    a. Invest in state workforce development by providing upskilling and retraining programs for employees to ensure our workforce is proficient with the technology.

    b. Update all training programs regularly to ensure the coursework includes any advancements of the technology.

6. Institute a data readiness checklist to ensure data quality, security, and governance before it is used in GenAI models. This includes regular validation, bias detection, and security checks to avoid data poisoning or tampering. Agencies should also implement periodic reviews to keep the data relevant, complete, and accurate.

7. Create a data literacy program to educate stakeholders on how the data they input into a GenAI system may be used. This program will help educate and guide our workforce and decision-makers on the following:

    a. Sensitive state or citizen data should not be used to train GenAI models unless it is fully controlled by state agencies, has State approval, and complies with state and federal

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      laws.

   b.   Provide appropriate notice to citizens and, where allowable, give options for users to opt out of having their personal data collected and/or processed by GenAI models.

   c.   State agencies should clearly define who is responsible for the data at every stage of its lifecycle, from collection to GenAI processing. This includes identifying data stewards, ensuring data privacy, and compliance with regulatory frameworks like HIPAA, IRS PUB 1075, FBI-CJIS, and SSA.

8.   Develop and implement a statewide data classification matrix that can be utilized by executive-branch agencies. Proper classification will help mitigate risks of hallucinations in GenAI systems and safeguard sensitive information.

   a.   This framework should categorize data based on sensitivity, security risks, and potential for bias in GenAI applications.

   b.   High-risk data should have strict access and usage protocols.

   c.   Public-facing data can be more flexible for GenAI development.

9.   Develop a GenAI accountability framework for state use to provide oversight and ensure responsible GenAI deployment.

10. Continuously update the GenAI Task Force website content.

   a.   Compile a list of Alabama-based GenAI companies (using an associated onboarding form), IT conferences, and virtual meetings within the State of Alabama.

   b.   Maintain a list of GenAI training resources.

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Special Thanks

Special thanks to our industry partners on State contract who participated in GenAI Task Force meetings and contributed subject matter expertise to the development of this report.

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GenAI Glossary of Terms

Term	Definition
Applied AI	+ Applied AI is the branch of artificial intelligence that brings AI out of the lab and into the real world, enabling computers and computer-controlled robots to execute real tasks. Applied AI enhances software applications and puts advanced machine learning to use, providing high levels of accuracy and adaptation over time. Applied AI is contextualizing business models and industry processes, as well as improving the way we interact with everything around us.
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
Black boxes	Lack of understanding of how a machine learning algorithm or system is using features of the data when making its decisions

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**Bots	A software application programmed to perform automated tasks, from simple, repetitive activities to more complex functions involving decision-making and interactions with human users
Chat-based generative pre-trained transformer (ChatGPT) models	A system built with a neural network transformer type of AI model that works well in natural language processing tasks
**Chat bot	A software application designed to simulate conversation with human users, especially over the Internet, using natural language processing (NLP) and Machine Learning (ML) to understand and respond to user queries
Data	Units of information about people or objects that can be used by AI technologies
Embedded AI	AI embedded within another system
Explainable machine learning (XML) or Explainable AI (XAI)	A set of processes and methods that allows humans to better understand the results and outputs of machine learning algorithms
Foundational models	A neural network model that represents (was trained on) a large amount of data that can be used as a foundation for GenAI systems and for developing other models
Generative AI (GenAI)	A type of machine learning that generates new content such as text, images, music, video, and 3D models from 2D input
**Hallucinations	Incorrect or misleading results that AI models generate
Human-in-the-loop	Humans actively engaged with AI to achieve desired outcomes
Interpretable machine learning (IML); AKA: Interpretable AI	The creation of models that are inherently interpretable in that the provide their own explanations their decisions

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GenAI Glossary of Terms

Large language models (LLMs)	Artificial neural networks that form the foundation for GenAI systems by detecting statistical relationships between how likely a word is to appear following the previous word in their training
Machine learning (ML)	A field of study with a range of approaches to developing algorithms that can be used in AI systems
Natural language processing (NLP)	A field of linguistics and computer science that also overlaps with AI to use an understanding of the structure, grammar, and meaning in words to help computers "understand and comprehend" language
**Prompt	Input given to an AI model to initiate or guide its generation process and acts as a directive or a set of instructions that the AI uses to produce its output
*Sensitive data	Data that pertain to an individual in a sensitive domain; are generated by technologies used in a sensitive domain; can be used to infer data from a sensitive domain or sensitive data about an individual (i.e., biometric or geolocation data); or have reasonable potential to be used in ways that are likely to expose individuals to meaningful harm (e.g., identity theft)
Small language models (SLMs)	++ A small, lightweight generative AI model. The label "small" in this context refers to the size of the model's neural network, the number of parameters the model uses to make a decision, and the volume of data the model is trained on.
**Training	The process by which a machine learning model, such as a neural network, learns to perform a specific task by exposing the model to a large set of data, known as the training dataset, and allowing it to iteratively adjust its internal parameters to minimize errors in its output
Training data	Data used to train the algorithm or machine learning models, generated by humans in their work or other contexts in their past

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GenAI Glossary of Terms

All definitions (unless otherwise noted) were taken from the Center for Integrative Research in Computing and Learning Sciences' "Glossary of Artificial Intelligence Terms for Educators."
https://circls.org/educatorcircls/ai-glossary

*Taken from the White House Office of Science and Technology Policy's "The Blueprint for an AI Bill of Rights: Making Automated Systems Work for the American People"
www.whitehouse.gov/ostp/ai-bill-of-rights/

**Taken from the University of British Columbia's "Glossary of GenAI Terms"
https://ai.ctlt.ubc.ca/resources/glossary-of-genai-terms/

+ Applied AI: www.cognizant.com/us/en/glossary/applied-ai

++ Small Language Models: www.techopedia.com/definition/small-language-model-slm

Additional artifacts from the GenAI Task Force will periodically be added to the GenAI website AITASKFORCE.ALABAMA.GOV.
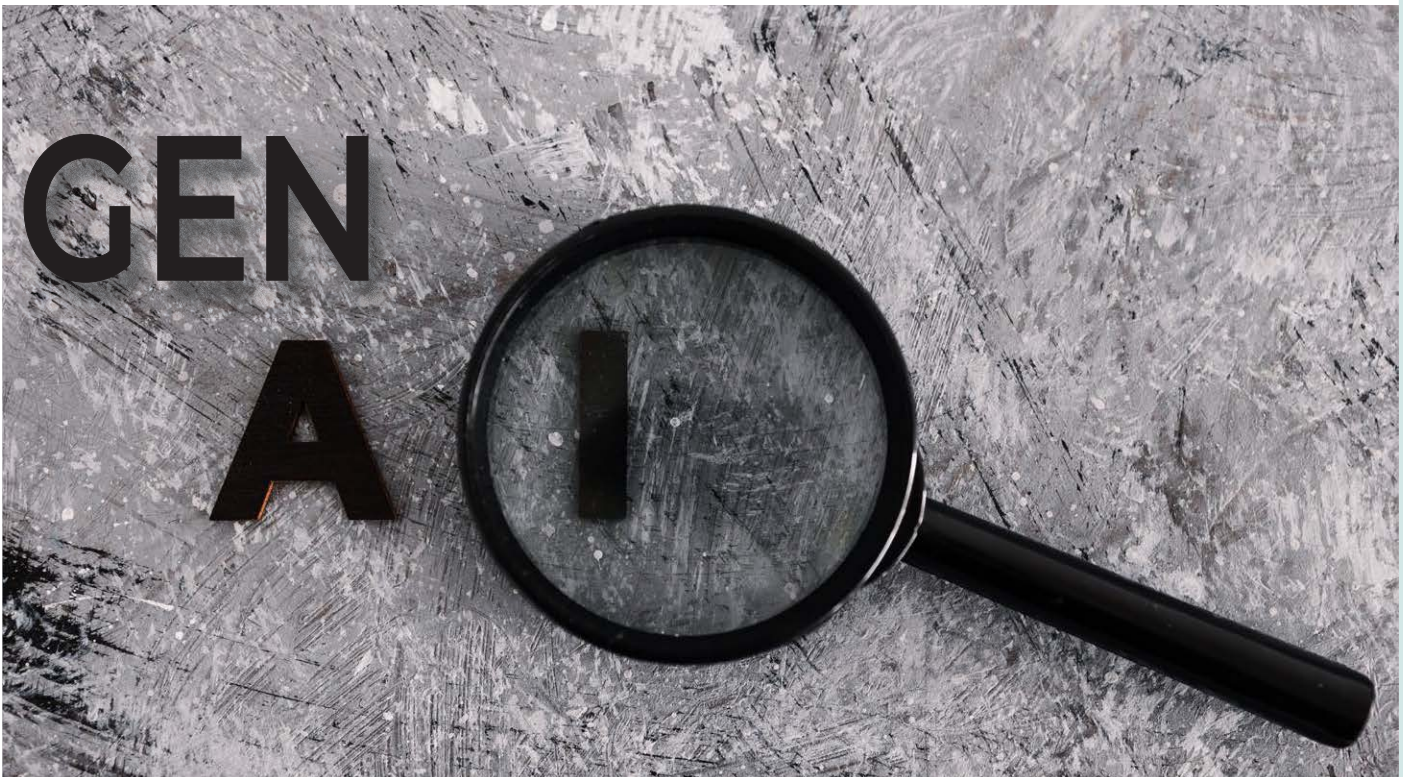
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