Advancing Government Services With Responsible Generative AI

Every generation, technologies emerge that transform humanity — from the creation of the wheel and the advent of the automobile to the invention of the modern computer and the internet.

We're at the brink of another metamorphic shift with the rise of artificial intelligence (AI). AI allows organizations to mimic human intelligence — understand, reason, learn and interact. In its simplest form, AI combines computer science algorithms and robust datasets to enable problem-solving, pattern recognition and predictions.

First developed in the 1950s,[1] AI is undergoing its own transformation. For years, traditional AI made predictions and prescribed action. But generative AI can understand existing content and create new content from text, audio, video and other inputs.

"We're in a phase where we can ask generative AI to be our assistant and help brainstorm ideas, create an image or video from a natural language prompt, summarize a large article and even help us code. All these capabilities are a giant leap forward from what AI could previously do for us," says Shobhit Varshney, Vice President and Senior Partner who leads the AI, Gen AI, IoT business for IBM Consulting across Americas.

State and local governments can use the technology to advance equity and access, combat fraud, democratize information, support workforce automation, boost operational efficiency, and increase transparency and accountability. But it also poses new challenges and risks for governments and the public at large.

What is Generative AI?

There are generally **two types of generative AI:**

1. Uncurated models:
Trained with massive amounts of data from publicly available sources. These models are self- or semi-supervised and don't involve much human intervention, potentially leading to bias and misinformation.
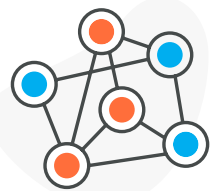
2. Curated models:
Proprietary models that a public or private organization owns. These models use only an organization's curated data and are monitored in accordance with the U.S. AI Bill of Rights[2] or other governance policies to maintain proper compliance and prevent bias.

"These models are so massive — often operating with billions of parameters — that unplanned and undesirable behaviors can emerge in them, such as biases, hallucinations or the need to invent answers that turn out to be incorrect," says Jan Gravesen, IBM Technology Leader for the state of California and an IBM Distinguished Engineer.

"For that reason, generative AI models must be transparent, controllable, explainable, fair and equitable," Gravesen adds. "Since they mimic human forms of intelligence and can interact with large swaths of the public, they have to be trustworthy, and ownership and responsibility for their results must be well-defined."

While AI presents risks, its potential benefits are monumental. AI can reimagine government services in five critical areas:
1. **Health and human services (HHS)**
2. **Sustainability**
3. **Cybersecurity**
4. **Higher education**
5. **Employment/unemployment insurance (UI) access**

AI in HHS: Driving Whole-Person Care

Where we are now:
The HHS ecosystem is fragmented, with huge volumes of disconnected data and disparate systems that rarely talk to each other. This prevents interoperability and impedes care coordination, holistic visibility into an individual's interactions across the HHS continuum, and the delivery of quality, whole person-centered care.

An AI-driven future:
AI can upend the status quo by automating data collection and analysis and supporting predictive analytics that drive more informed, forward-looking decision-making. For example, generative AI could allow a state Medicaid agency to use data about its policies as the foundation for a self-service application where health care providers can ask questions in a constituent's native language.

In California, two initiatives — California Advancing and Innovating Medi-Cal (CalAIM) and the Digital Exchange Framework (DxF) — are enabling the state to better understand massive amounts of data on individuals who receive HHS services. With AI, the state could possibly build domain-specific foundation models based on large, curated data sets, such as public health data or social determinants of health data. It could use these models to assess care quality and tailor interventions through its Medicaid and Medicare programs. It could also help individuals more quickly qualify and receive services by using automation to replicate white-glove service in a self-service environment.

"Data is a powerful tool in government, but agencies often have challenges accessing, sharing and deploying it," says Todd Bacon, IBM Managing Director for the state of California. "Generative AI could allow HHS agencies to realize the full potential of their data and accelerate the shift toward whole-person care delivery, while significantly raising the quality of care."

AI & Sustainability: Protecting Our Planet

Where we are now:
With weather events intensifying every year, rising sea levels that threaten coastal communities, and threats to food security caused by changing temperatures and precipitation patterns, sustainability must be a priority.

An AI-driven future:
AI's unrivaled data processing, automation capabilities and ability to digitize any physical asset will allow agencies to better manage intelligent grid systems, support renewable energy infrastructure, monitor water and air pollution, and more.

"AI can automate data collection as well as the decision-making process of sustainability, which in the past has been a human-owned task," says Calvin Lawrence, Chief Technology Officer (CTO) for Responsible AI for the Americas at IBM, CTO for IBM's business in Georgia, and an IBM Distinguished Engineer.

For example, IBM is collaborating with NASA to build a new immense foundation model for climate science that will allow NASA and other climate scientists to build tactical AI models much faster.

AI & Cybersecurity: Safeguarding the Public Sector

Where we are now:
State and local governments are attractive targets for cybercriminals because of the sensitive data they collect and legacy systems that often increase vulnerabilities.

An AI-driven future:
AI can reduce the likelihood of cyber incidents by automating threat prevention, detection, response and recovery. The technology safeguards digital and physical infrastructure; supports continuous, dynamic authentication and verification; and streamlines incident

recovery in the event of a breach. Many ports — which serve as the main thoroughfare by which goods enter and leave the U.S. — are using AI-enabled cybersecurity platforms to automatically detect threats and deploy a course of action to the right stakeholders.

AI can also help under-resourced security operations analysts stay ahead of threats. Curating threat intelligence from millions of research papers, blogs and news stories, AI can identify new threats and provide rapid insights to cut through the noise of daily alerts, drastically reducing response times.

61%
of organizations say they need AI to detect cyber threats.[3]

AI & Higher Education: Delivering a Personalized Student Experience

Where we are now:
Higher education institutions face an array of new demands, from improving student safety and well-being to strengthening their digital infrastructure to support administration and hybrid learning. They also face workforce challenges.

"A lack of sufficient and qualified teachers and staff threatens students' ability to learn and reduces teacher's overall effectiveness," says Lawrence. "Most school systems are challenged with the inability to target and recruit enough qualified college graduates in the profession."
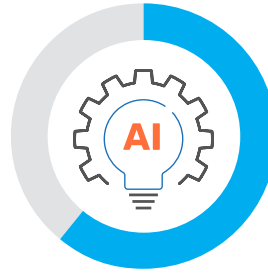
An AI-driven future:
AI can use data to build foundational models that support course selection for students, improve access to health and well-being benefits offered on campus, ensure access to housing and food, and help schools deliver customized digital learning journeys at both the student and university level.

"School systems can use AI to create better educator pipeline, advancement and retention strategies," says Lawrence. "They can leverage generative AI to develop teacher profiles that will assist in not just the student digital journey, but the teachers' as well."

Generative AI will also dramatically change how students learn. It allows universities and colleges to predict outcomes for students and develop a plan to improve student success. Large language models can explain the thought process of how to arrive at an answer, rather than just giving this information to the student, which can strengthen cognitive thinking skills.

AI can also act as the foundation for speech-to-text-systems that allow teachers to better serve multilingual and multicultural student populations. The technology can support development of synthetic voice tools that speak either slower or louder for neurodiverse learners and streamline the creation of customized videos that incorporate different learning styles.

AI & Employment/UI Access: Preparing Tomorrow's Workforce

Where we are now:
Over the last three years, government agencies have stretched systems to meet new service delivery demands and maintain compliance. Unfortunately, many agencies struggled to successfully navigate this balancing act when demand for unemployment surged.

An AI-driven future:
State and local governments need to strengthen the resilience of their systems, particularly those that serve as a lifeline to vulnerable populations.

AI can support intelligent knowledge navigator tools and self-service applications that guide individuals through the unemployment insurance, worker's compensation or disability insurance application process, providing a seamless experience on the front end.

AI also uses data analysis and pattern recognition to help agencies analyze potential fraud at the point of transaction. AI inferencing, the process of applying a trained AI model to make predictions or decisions based on new data, can support the development of preventive controls for stronger, real-time fraud detection and monitoring. AI is a powerful tool for managing activities across the fraud lifecycle, including payment tracking and fraud investigations.

AI is just as valuable for workforce development and reskilling. It can support job and skills matching, analyzing a nearly incalculable amount of data to align a job seeker's skills with current openings — in a fraction of the time a human recruiter could do the same.

47% of respondents in a Pew Research survey said they thought AI would do better than a human at similarly evaluating job applicants.[4]

"We can use AI foundation models to predict how specific individuals could find use for their skills in a much wider variety of settings," Gravesen says.

Next Steps with Next-Generation AI

AI — and generative AI in particular — can transform government service delivery and the constituent experience.

To realize this vision, state and local governments must use AI responsibly and collaborate with technology partners who also prioritize trustworthy AI. Varshney says organizations that rely on models developed from curated data, and data that fully represents the diverse range of constituents they serve, will be able to use AI more responsibly.

"Agencies — federal, state and local — need to be able to stand behind the data that was used in initial training of AI, demonstrate how feedback is continuously incorporated,

and audit and explain how AI came up with an answer. AI needs to be grounded in unbiased content. Only by embedding ethical principles into AI applications and processes can we build systems based on trust," he says.

Shaw-chin Chiu, Managing Partner for the state of California at IBM Consulting, adds, "Generative AI, like any other disruptive technology, requires coordinated effort from ethics-centric governance to execution, across public and private sector industries, to realize its benefits, which include humanizing and further streamlining automated interactions."

AI is rapidly changing. As governments and other organizations forge ahead, they must keep data quality, security and proper governance top of mind. By doing so, they can mitigate the risks associated with AI, maximize its full potential, and reimagine government and how it serves the public.

This piece was written and produced by the Center for Digital Government Content Studio, with information and input from IBM.

Endnotes:

1. https://sitn.hms.harvard.edu/flash/2017/history-artificial-intelligence/#:~:text=It's%20considered%20by%20many%20to,and%20Marvin%20Minsky%20in%201956
2. https://www.whitehouse.gov/ostp/ai-bill-of-rights/
3. https://www.capgemini.com/news/press-releases/ai-in-cybersecurity/
4. https://www.pewresearch.org/internet/2023/04/20/ai-in-hiring-and-evaluating-workers-what-americans-think/

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