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Scaling mission-driven AI

The path for US health agencies and nonprofits

What can AI achieve for US health organizations?

Imagine the elation when public health researchers break the code to slow heart disease, reverse diabetes, or treat substance abuse disorders. Imagine the gratification epidemiologists feel when they can stop a measles outbreak by providing the at-risk population with information that prompted them to take the right preventive steps.

Now, visualize the data scientists at the agency that put the right tools in their hands to make this happen.

Artificial intelligence (AI) and now Generative AI are powerful tools that can help federal health agencies and nonprofits achieve breakthrough research and advancements in public health and health care delivery. However, leading a mission-driven AI agency goes far beyond implementing a few successful pilots. It's a mindset.

Take the lead and scale AI across the organization

AI is poised to reshape what's achievable not only within these organizations but also for the communities they serve.

Embracing AI and Generative AI can fuel federal health agencies' mission by improving efficiency, effectiveness, and equity in health care. In many cases, the path to achieving such benefits relies on incorporating advances in computer science with all other scientific and operational disciplines of an agency. And these new technological tools are going to play a role in the work of almost every employee in some capacity.

Using mission-driven AI means that an agency's AI strategy cannot be a product purely of IT or technical teams but should be driven by senior business leaders.[1] A recent Deloitte survey found that organizations where senior leaders communicate a clear vision for AI are 50% more likely to achieve their desired outcomes with AI.[2,3] The White House is taking steps to clearly communicate sweeping action to harness the benefits of AI, while mitigating its risks in President Biden's landmark AI Executive Order.[4] Federal agencies have already reported completing all of the 150-day actions tasked by it.[5]

It's certainly a start, but for transformative change to occur, AI has to scale across the enterprise and into the hands of employees. Leaders should visibly commit to an AI strategy and champion the benefits.[6]

Balancing benefits with responsible use

Federal health agencies face multiple challenges. These include growing data volumes, the increasing complexity of administering medical benefits and claims, upholding an array of regulatory and grant obligations, protecting patient data and privacy, and approving drugs and devices for safe and efficacious treatment. To address these challenges, the search for more efficient, effective, and equitable solutions is ongoing.[7] AI can help organizations tackle these challenges and meet their missions, especially when used responsibly.

Increasing efficiency and cost effectiveness

AI can alleviate the burden of repetitive yet essential tasks, enabling officials to focus on higher priority activities. It can reduce costs and improve capacity. For example, it can craft optimized supply chain strategies or accelerate drug discovery processes, thereby helping transform federal health agencies into more efficient and effective organizations.

Facilitating insights for better decisions

Generative AI can augment skills and knowledge of employees. For example, it can prompt systems to analyze policies or datasets for answers across many types of documents and images, including handwritten notes.[8] Generative AI can help make recommendations, generate ideas, and improve decision making with intelligent semantic search.[9]

Supporting better citizen health outcomes

Generative AI can help provide hyper-personalized experiences at scale for patients, employees, and the public, putting complicated regulatory information, health recommendations, and claims requirements into simpler language. It can even help unlock cures to disease faster by facilitating improved information sharing across research groups, running simulations and selecting candidates for clinical trials, and learning from vast amounts of data that can lead to more effective targeted treatments.[10] Yet, it must be done responsibly.

For federal health agencies, transparent processes and guidelines can help ensure responsible use of AI and build public trust in the technology.

Maintaining public trust

As with most innovations, AI and Generative AI pose risks. The technology is new and requires governance to make sure data is secure and used appropriately. While consumers appear to be comfortable with their doctors using Generative AI in some capacities, 4 in 5 consumers think it is important or extremely important that their health care provider disclose when they are using it for their health needs.[11] Federal health agencies must balance AI's expected benefits with ways to ensure trustworthiness.[12]

Toward that end, in 2023 President Biden issued an executive order that instructed federal agencies to establish guidelines for safe, secure, and trustworthy development and use of AI.[12] Among other things, this comprehensive order addressed Americans' privacy, called for consumer protections, and advocated for implementing in ways that advance equity and civil rights. It also supported innovation and competition as well as responsible and effective government use of AI.

Human tasks/machine tasks

Where to apply AI becomes clear when specific tasks are examined

Leaders should be quick to address concerns and involve employees in identifying what tasks could be completed faster, easier, or better by a machine, and what tasks will be better done by humans. Leaders should also begin to consider "futureproofing" their workforce as employees will need new skills in a Generative-AI era.[13] AI is truly effective when it is integrated into the everyday work of employees.

For example, when a Congressional inquiry comes into a US health agency, AI can help draft the written report that must be generated in response. AI can assist in reviewing grant submissions, which is time consuming when done manually, and consolidating the information for a human-written or edited report. For a health nonprofit, AI can translate disease information into language that is more understandable for lay readers. In these cases, the technology augments the tasks of an employee. Instead of spending time on these lengthy processes, employees can focus on reviewing and improving their outputs and adding their insights where appropriate.

Identifying where AI can be most advantageous gets easier when specific tasks are analyzed.

Real-world applications

As AI advances, humans will continue to oversee and manage outputs for authenticity. AI can create mission-led value that is efficient, effective, and equitable for federal health agencies and nonprofits. And it's already happening. This period of innovation is best facilitated by a multi-skilled team of business and technology leaders who put forth solutions that are co-created, human-centric, and mission-effective.[14] Take a look at these advancements.

MISSION-LED VALUE
Equitable: Greater fairness

Health equity in action

Health and clinical research has long underrepresented specific populations, citing lack of participation in clinical trials, the inability to travel to participating sites from rural areas, and other social and economic issues.[15] This challenge has limited the applicability of findings to a subset of the population, creating an incomplete picture of how to improve health outcomes for all. Today, health agencies can employ AI to generate insights to better understand and improve health outcomes among these groups. Here's how:

Chronic conditions prevention and management

AI has helped discover which populations are most vulnerable to certain chronic conditions like diabetes and hypertension. Even more encouraging for prevention and management is AI's role in analyzing social determinants of health (SDoH), which has been challenging to do in the past. AI can mine electronic health records and doctors' notes, integrating SDoH factors like age, housing, lifestyle, and income level into more comprehensive treatment plans, recognizing that health is influenced by a multitude of factors beyond the physical.[16] AI can also help define which SDoH are the greatest predictors for developing chronic conditions. These insights have helped determine what actions can be implemented to reduce the prevalence of chronic conditions within a population.

Maternal-child health

AI has been used to help predict risk in pregnant mothers and design interventions tailored to who they are and where they live. Highlighting and finding risks, especially in low-resource settings, helps to target this research and provides access to care for expectant mothers who need it. Real-time electronic health recording and predictive modeling helps clinicians monitor pregnancy, especially in mothers who have gestational diabetes.[17] AI has also been used to improve prenatal diagnosis of birth defects and prenatal genetic testing.[18]

Food insecurity

The US Department of Agriculture reports that 39 million people, including 18 million children, are food insecure in America alone.[19] AI has helped uncover which populations face the greatest level of food insecurity by locating food deserts. It can also help predict hunger crises. When it comes to food aid, timing is vital.[20] Insights have led to interventions like mobile farmers markets and transportation access to help address food insecurity within a specific population.

MISSION-LED VALUE
Efficient: Time-saving

New frontiers in biomedical research

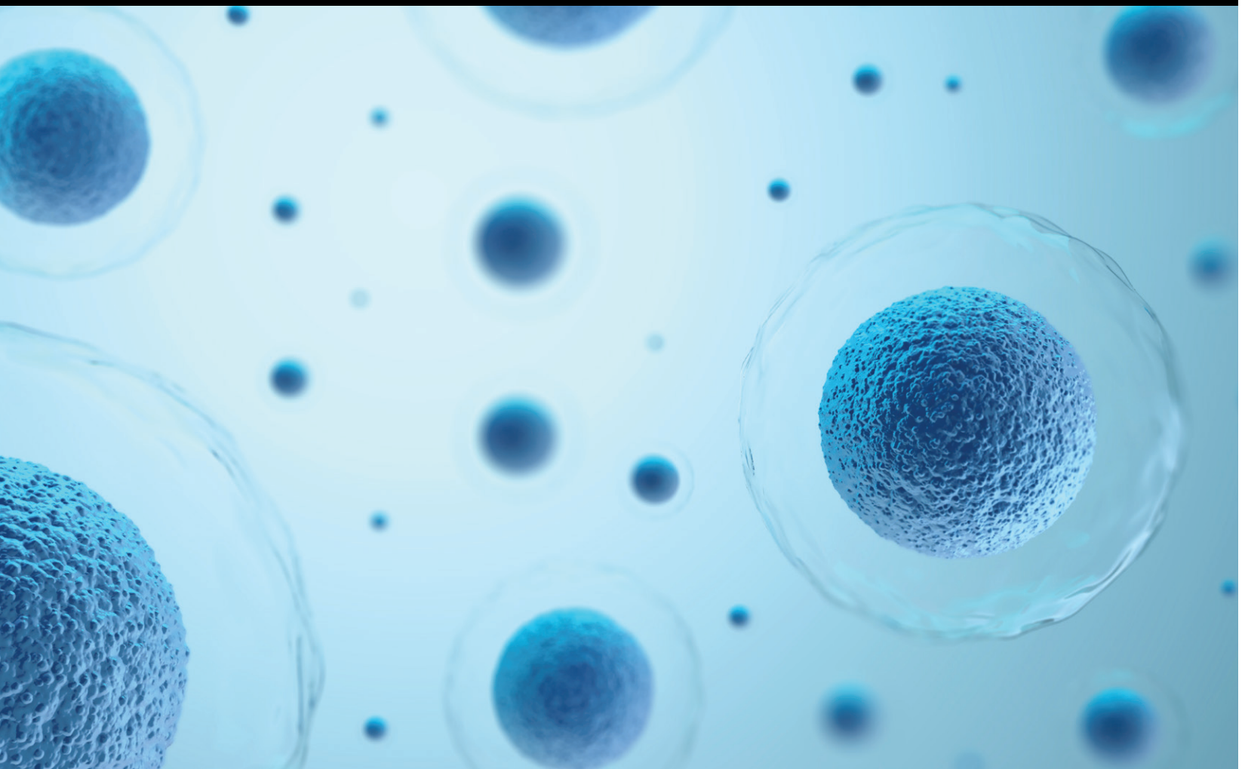
Researchers increasingly rely on vast amounts of data to validate their hypotheses. However, most data is still in disparate formats, located in silos, and very hard to find and reuse. AI is helping to consolidate this multimodal data–including publications, images, and multi-omics data–into a common format. Multimodal data analysis has the potential to uncover new insights. With access to more data, researchers can use AI to accelerate the discovery of better treatments and cures for diseases.[21] It can help identify trends, improve understanding, and foster better collaboration.

In addition, AI is helping researchers and physicians communicate with patients more effectively by mapping clinical notes into a format for an electronic health record that patients can access and understand, which can also be computable downstream for a researcher. This improved management of complex information can provide patients and care teams with more insights, positively affecting health outcomes.

MISSION-LED VALUE
Effective: Informed decisions

Drug discovery and availability

Research and development in biopharmaceuticals can be risky and expensive endeavors. Only a fraction of new drug candidates survives clinical trials, demonstrates success, and ultimately receives approval. It's important that resources along the supply chain are made available to researchers developing new drugs and running the clinical trials to help them accelerate their mission-critical work. In addition, once the drug is approved, companies need to keep up with demand.



Accelerating the process

Some organizations are turning to AI and Generative AI to transform many aspects of the drug discovery process. Generative AI can rapidly create 3D biomolecular structures and predict drug-to-protein binding. AI can increase the speed and efficiency of drug discovery, facilitating the creation of a digital twin for clinical drug trials that can lead to better patient screening. Generative AI can help predict a clinical trial's probability of success, so researchers have added confidence in the projected outcomes of real-world trials.[22]

Supply chain insights

Generative AI is also helping researchers organize unstructured data about key suppliers of starting materials to illuminate critical aspects of the drug supply chain. Organizations can receive millions of document submissions that have valuable supply chain data. This information is often reported inconsistently and in a variety of formats, making it difficult to interpret and detect potential pharmaceutical supply chain disruptions. The use of Generative AI can help bolster surveillance efforts and enable researchers to better understand the impacts of supply chain issues that stem from starting materials.

MISSION-LED VALUE
Effective: Enhanced compliance

Effective grant decision making

In the world of grants management, getting necessary information that federal funding agencies can analyze quickly to monitor and support grant recipients can be difficult and time consuming. Agencies often have multiple, separate systems to collect this information, making it difficult to analyze the data and respond to incoming requests and inquiries.

An organization can be called upon to generate recipient-specific profiles and summaries of the funding each recipient receives, its work, alignment with priorities, accomplishments, challenges, and the technical assistance requested and received from the funding organization. These summaries support site visits and policy or data requests from Congress, NGO partners, and other stakeholders.

What if program leaders had access to a Generative AI tool that allows them to quickly generate a summary profile for one recipient, a set of recipients, or all recipients? It could populate a pre-defined profile template, pulling information from a variety of data sources such as budgets, work plans, progress reports, performance measures, and technical assistance data.

The summaries would allow program leaders to focus more time on high-value activities to monitor and support grant recipients in working to achieve their goals. Generative AI's capabilities can even help agencies inform their future funding decisions, which will lead to better and more profound public health impacts in the future.

MISSION-LED VALUE
Efficient: Cost optimization

Better biosurveillance capabilities

Biosurveillance focuses on developing effective capabilities for detecting, monitoring, countering, and preventing national health threats in humans, animals, food, water, agriculture, and the environment.[23] Such threats can include supply chain disruptions like those that occurred during the COVID-19 pandemic.

AI technologies are assisting public health agencies in creating more resilient health care networks, helping to ensure that much-needed materials are in place ahead of the next public health emergency. AI can also help agencies understand public health vulnerabilities and emerging risks as well as assist in disease tracking.

Generative AI is helping with data gathering from a multitude of sources, not merely text documents, but photos, audio, and video that can be used to improve surveillance. It has the power to detect epidemic signals much earlier than traditional surveillance, triggering investigation and responses at the regional level.[24]

The more efficient agencies and nonprofits can be in biosurveillance efforts will not only help in cost optimization now, but it will also result in cost savings as future crises are averted.

MISSION-LED VALUE
Equitable: Better communication

Increasing donor and community engagement

Many health nonprofits depend on donations and gifts. AI can be used to help health nonprofits identify and segment potential donors and then encourage donor actions to support their missions. AI can also be used to help nonprofits predict outcomes, such as analyzing a large donor dataset to identify who might be able to financially contribute to their work to protect and enhance public health.[25]

Furthermore, AI can help nonprofits target and personalize communications to potential donors, which can contribute to improving the effectiveness of fundraising efforts. AI chatbots can streamline interactions and answer donor questions.

Like donor engagement, AI is being used at some federal health agencies to improve communications with its intended audiences. There, AI is helping to combine various websites and rewrite the content to be understandable and digestible for the public. Generative AI can help build content, reach new audiences, and answer questions. Making resources easier to find and digest can increase transparency in government initiatives, building trust while engaging communities and improving the health of Americans.

Accelerate the AI journey

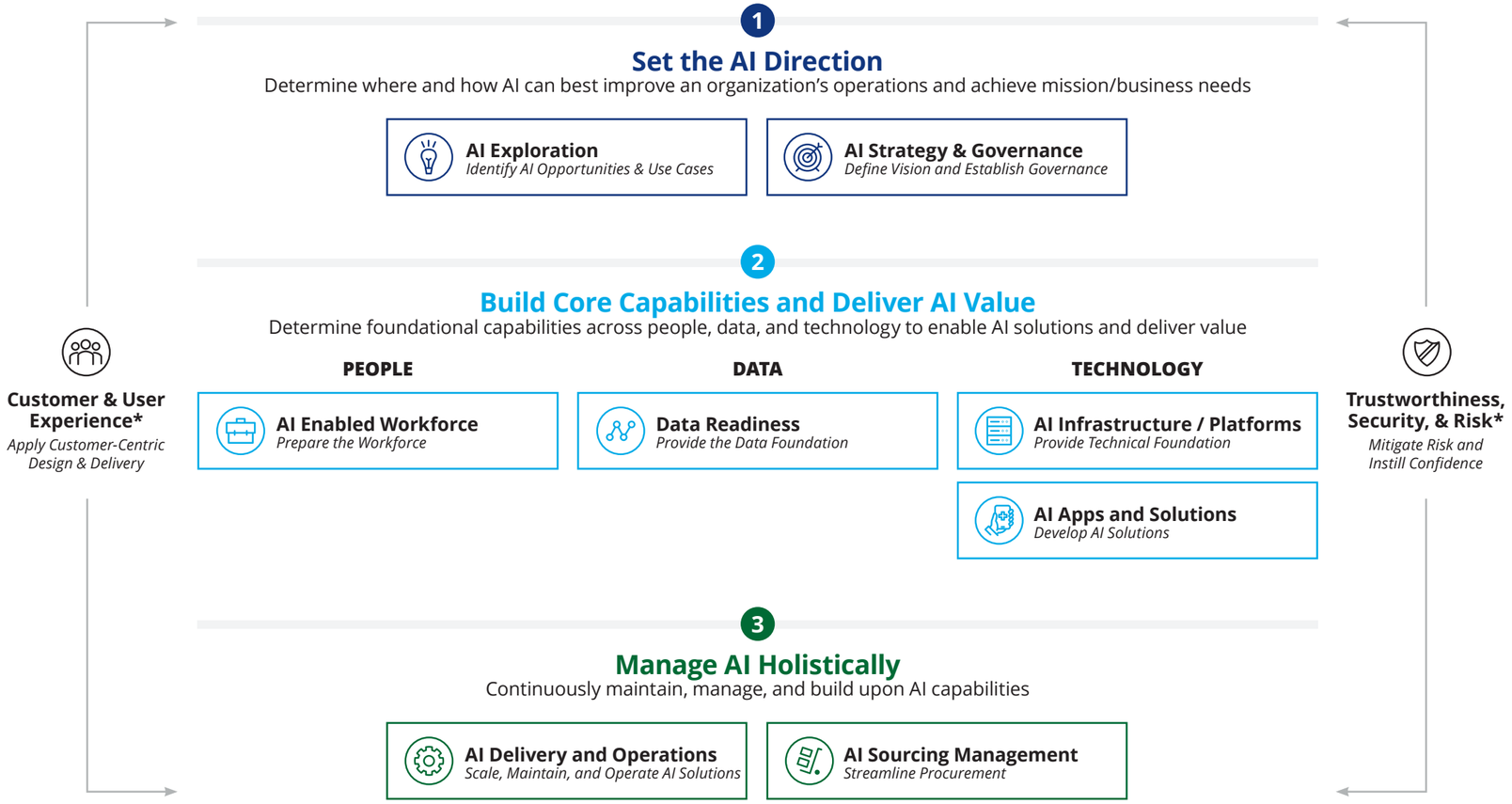
Fast-forward deployment and use

While AI is in action at many health agencies and nonprofits, leaders are asking a lot of questions about scaling AI efforts to maximize benefit. It's not just implementing a pilot case here or there; it's making it a part of the entire organization. In order to do so consider these questions:

- What are the key AI use cases to drive mission impact?
- What's the best way to deploy, use, and embrace AI?
- What key data and infrastructure decisions need to be made at the outset?
- How will AI be monitored and managed?
- What investments are the right ones?

Consider taking a three-step integrated approach to AI that considers strategies, technologies, and components. AI readiness and management requires a holistic view to fast-forward widespread deployment and use. Various elements like data, algorithms, models, governance, ethics, and human expertise should be brought together to create a comprehensive AI program. Maximizing the benefits of AI while minimizing the risks is the goal.

Scaling AI: An integrated three-tier approach



** Trustworthiness, Security, & Risk and Customer & User Experience are core to all AI capability areas and should be considered throughout the AI Journey*

1 Set the agency's AI direction

Determine where and how AI can best improve an organization's operations and achieve the mission

AI Exploration

The first step on the journey is to educate relevant stakeholders and end users about the capabilities and benefits of AI. Investing in AI fluency efforts and workshops will help these stakeholders understand AI's potential to address their agency's needs and challenges.

As these discussions progress, potential opportunities—or use cases—for AI can be identified. These use cases address specific needs and challenges within the agency where AI can bring value and help solve problems more efficiently and effectively. This step helps agencies better understand what business apps they can develop to realize the value of AI in producing better outcomes or efficiency gains.

AI Strategy and Governance

Then a vision should be developed that includes defining goals, success criteria, and time frame with focus on prioritizing use cases that will have the greatest impact and value. Factors to consider include time saved, mission impact, and cost reduction. Now is also the time for agencies to establish clear guidelines on governance. Guardrails should be developed to help minimize risk, improve data accuracy, address potential bias in the data, and provide for transparency and accountability.

2 Build scalable, enterprise-wide core capabilities that deliver AI value

Develop foundational capabilities across people, data, and technology to enable AI solutions and deliver value

People: Prepare the workforce
Every technology innovation should start with the people it's meant to support. As agencies build AI capabilities and business applications, they should also build an AI-enabled workforce. Workers should be included at the start of the AI journey, so they understand the potential benefits and risks of the technology. Adoption is sure to take hold as they help co-create the solution they are meant to use. Developing AI fluency among workers is important as is upskilling those whose jobs could be directly affected by the AI applications. Organizations who achieve AI at scale do not shortchange this aspect of the program.

Data: Create a solid foundation of readiness
Sound data practices make all the difference when it comes to AI. If the data are inaccurate or simply unavailable, the quality of the output suffers. Organizations need to develop adequate infrastructure and capacity to sufficiently curate agency datasets for use in training, testing, and operating AI. A strong data foundation enables the implementation of enterprise-level AI solutions, all while ensuring the use of secure, precise, and trustworthy data. Sound data governance practices, particularly data curation, labeling, and standardization, can help maximize appropriate outcomes.

Most importantly, data access must be democratized, making it free flowing and accessible. Data stuck in silos isn't working for the organization or its mission. Collaborating with professionals who have experience in building data and AI capabilities can provide much-needed guidance.

Technology: Provide a platform to build solutions
Once the data is free-flowing, trusted, and secure, organizations need a platform—an innovation sandbox—in order to create AI solutions. It should be an easy-to-use platform with capabilities to quickly build, deploy, and monitor AI solutions for desired outcomes. The platform should leverage appropriate architectural principles (e.g., Data Commons) and implement governance, security, and trustworthiness principles. This will help ensure secure use of the emerging AI/GenAI technology.

It's important to clearly define the objectives and goals of any AI pilot project along with the metrics that will be used to measure success. It's also critical to understand how citizens or employees will engage and interact with the solution and to ensure solutions are easy to use and compliant with regulations and policies. Pilots should begin in a controlled environment and use synthetic data for testing on a development platform. The performance of the AI model should be evaluated against defined quality metrics, and improvements should be made until adequate outcomes are reached.

Establishing an AI Center of Excellence can help optimize costs of development by creating repeatable business applications that can be tweaked for a variety of purposes. Think of a chatbot that supports multiple workflows or a tool that summarizes contents to inform users. The same chatbot or tool could be used by multiple departments in the same organization for different purposes. A Center of Excellence can help achieve AI at scale and help instill trust in the solution.

3 Manage AI holistically

Continuously maintain, manage, and build upon AI capabilities

AI Delivery and Operations

AI models can change and evolve over time as they continuously learn and adapt. Health agencies must regularly monitor and evaluate their performance. AI models can be tested with new data to evaluate performance and help ensure they are providing accurate, reliable results.

Incorporating feedback from users and stakeholders helps identify areas for improvement. An interactive AIOps process is needed to help ensure continued accuracy and performance of AI solutions.

AI Sourcing Management

AI technology is constantly evolving and it's important to stay abreast of the latest advancements and leading practices. A sourcing strategy that enables the effective procurement, oversight, and management of vendor-provided AI solutions, tools, and services can advance mission, operations, and technology objectives. It takes a village. Make sure to evaluate performance continuously.

All in all, think like a researcher to find more effective ways to achieve the mission. Make it easy to implement AI solutions from an infrastructure standpoint. Ensure the mechanics are there for a safe, secure, ethical experience that includes humans in the loop for monitoring.

Trustworthiness, security, and risk

Understanding the vulnerability and threat

What are the risks of AI? There are two ways to classify AI risk: AI vulnerabilities from using the technology in an agency program (risks to using AI) and AI threats typically from bad actors using AI to their benefit to hurt an organization (risks coming from AI). AI systems can be complex and opaque and by nature are susceptible to a wide range of issues that can limit their ability to perform consistently and accurately, making them less reliable in dynamic, real-world scenarios. AI system vulnerabilities can include data privacy breaches, bias and ethical concerns, and a lack of explainable or erroneous results.

AI threats can include malware generation, system breaches, fictitious personas, misinformation, and social engineering. Rapid advancements in AI and the availability of open-source AI tools have also lowered the entry barrier for attackers, who can automate and scale more damaging attacks. These risks can affect an agency's reputation, mission, finances, and data. One recent cyberattack threatened the security of patient information and has disrupted patient care and access to medications.[26]

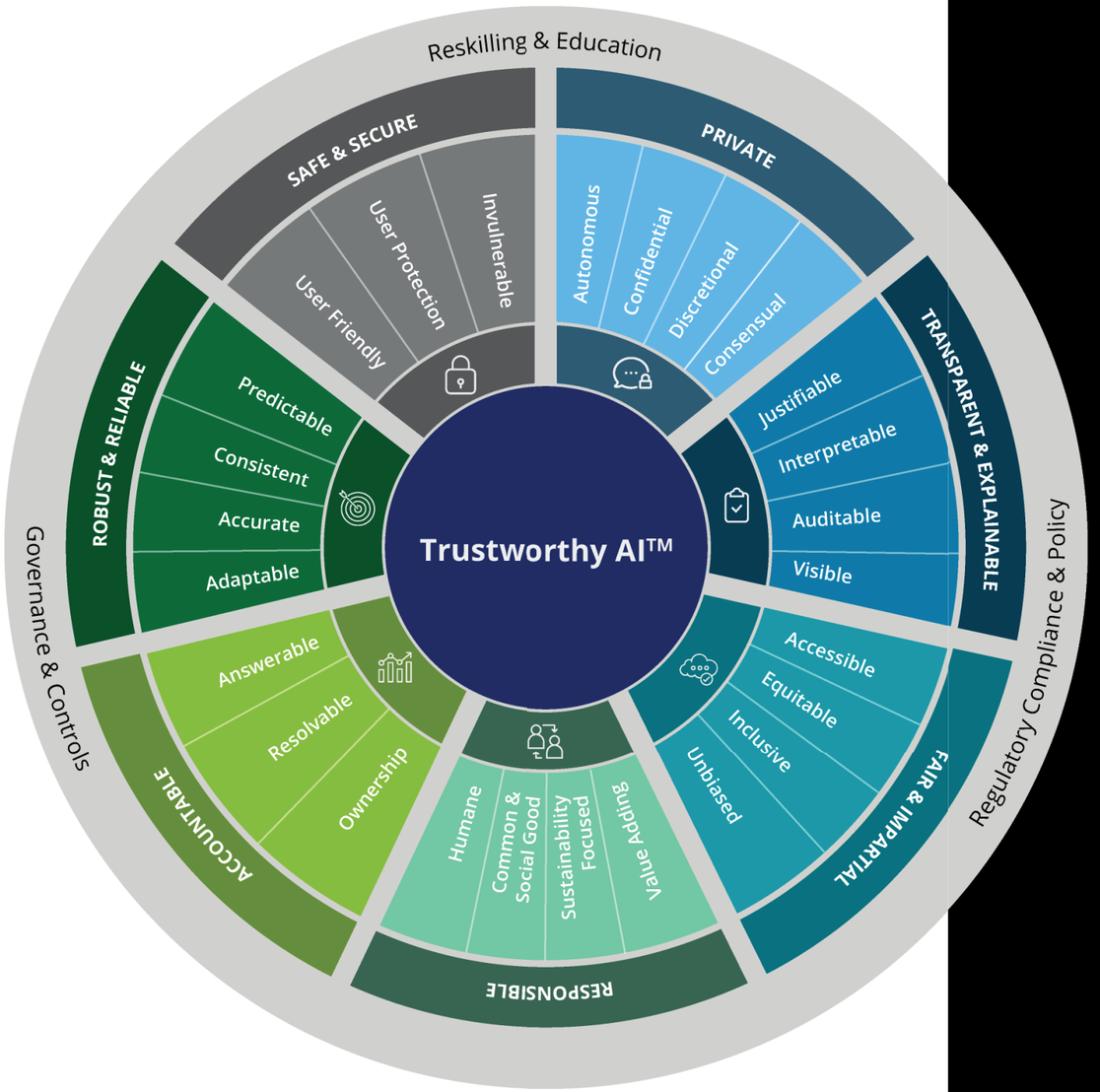
Regulations are gearing up

Guidance and regulations are emerging to address the risks associated with AI's complex interplay of technical and societal factors. Federal, state, and local agencies are considering or enacting AI guidance and regulations to account for and govern the use of the technology across government.

In addition to compliance with the 2023 executive order from the White House,[27] the Office of Management and Budget (OMB) has issued the first government-wide policy to mitigate AI risks and harness its benefits. The OMB's policy addresses risk from AI use, expands the requirement for transparency in public agencies' use of AI, removes barriers to responsible AI innovation, calls for agencies to grow their AI workforce, and requires federal agencies to strengthen AI governance.[28]

Federal agencies may also be required to designate an AI official, conduct maturity and compliance assessments, and develop their own AI strategy.

The US Department of Commerce's National Institute of Standards and Technology (NIST) has released an AI Risk Management Framework[29] to help manage risks to individuals, organizations, and society associated with AI. It is intended for voluntary use and the goal is to improve the ability to incorporate trustworthiness considerations into the design, development, use, and evaluation of AI products, services, and systems. There's no doubt that specific frameworks and methods for identifying, managing, and monitoring AI risks are needed.



Deloitte's Trustworthy AI™ can help mitigate risk and ensure compliance

Establishing AI governance can help identify, mitigate, and manage risk within an evolving technological landscape and regulatory environment. Deloitte's Trustworthy AI™ is anchored on seven dimensions. AI must be transparent and explainable, fair, and impartial, robust and reliable, respectful of privacy, safe and secure, and responsible and accountable.

At its foundation, AI governance encompasses all the above stages, and is embedded across technology, processes, and people. Together, governance and compliance are how an organization and its stakeholders ensure AI deployments are ethical and can be trusted.

Creating AI mission-led value

There are many potential short- and long-term benefits of AI in public health. Federal health agencies all strive to be efficient in how they work, effective at achieving the goals of their underlying mission, and fair and equitable in how they serve all citizens. Here's what agency leaders can do by providing employees with a supercharged tool that is efficient, effective, and equitable.

Efficient

Time saving

AI can assist employees by augmenting human work and reducing manual tasks. AI and Generative AI specifically can quickly analyze and summarize large amounts of unstructured data, such as lengthy applications and progress reports, to extract salient points and provide quick insights.

Automating manual tasks and processes not only saves time for workers but can enable them to focus on more high-value activities.

Cost optimization

AI can help agencies predict which regions, applicants, or recipients carry more risk or need monitoring assistance, allowing employees to strategically allocate limited resources for better outcomes. Task automation can reduce costs associated with manual review processes.

Effective

Informed decision-making

AI can provide quick insights and answers to questions, thereby reducing the time spent on manual data analysis and allowing health agency employees to make more data-informed decisions in a timely manner.

Enhanced compliance

AI can assist in monitoring compliance with grant policies and requirements, which in turn can help granting agencies be better financial stewards of funding.

Improved accuracy

AI can deliver more accurate and consistent results by following predefined criteria and rubrics. It can also improve the quality of questionnaires by flagging errors or missing information, providing feedback, and reducing the number of manual reviews.

Equitable

Greater fairness

AI solutions can be designed to mitigate bias in data sets and models, leading to more fairness and equity in decision making and more targeted outreach.

Better communication

AI is helping to turn complicated or sophisticated language into easy-to-read text that the average person can understand.

In total, these benefits can result in better health outcomes for citizens.

The path to transformative AI

AI adoption is rapidly growing across all industries and federal health agencies and nonprofits should move to realize the benefits of the technology. Scaling mission-driven AI for health agencies and nonprofits has a few common elements:

Set the vision. Agency leaders need to clearly articulate the AI vision to staff and champion efforts. It's recommended that organizations start with one or a few priority use cases that can then be scaled.

Prepare the workforce. When it comes to AI adoption, it's important to create mechanisms to promote employee participation and training. In time, an agency's entire workforce will likely feel the impact of AI, and acceptance will be greater if they have more knowledge and fluency about the technology.

Build enterprise-wide capabilities. Organizations should make efforts to democratize data–and instill controls to keep data safe. Democratizing data can help break down silos among institutions and make diverse datasets accessible and usable for a wide range of researchers. In addition, democratized data can help promote equity by enhancing communications among researchers, clinicians, and their patients. Understandable AI-generated explanations of diagnoses and treatment options can help bridge the health care knowledge gap.

Agencies and nonprofits should provide a platform that makes implementing new AI tools easy and safe, creating a sandbox of innovation.

Govern and monitor AI. AI must be run in trustworthy, safe, and secure environment. Don't underestimate the vulnerabilities and threats.

The impact of AI is poised to be transformative in its potential to improve efficiency, effectiveness, and equity in public health. Now is the time to begin the journey.

Want to learn more?

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