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A report from the
Deloitte AI Institute for Government and
the Deloitte Center for Government Insights

Scaling AI in government

How to reach the heights of enterprisewide adoption of AI

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Contents

The power of AI at scale

ONE OF THE few bright spots to emerge from the difficult period of the COVID-19 pandemic has been the rapid development of an entirely new class of drug: the messenger RNA–based vaccine. While research into mRNA vaccines was not new, the pace with which multiple companies were able to use that approach to tackle a new pathogen opens new doors into treating everything from other viruses to cancer. These vaccines were not just the product of human genius and resources; artificial intelligence (AI) also played a key role.

AI helped to identify potential molecular "targets" on the virus where vaccines might act.[1] As researchers homed in on mRNA as a tool, AI helped to optimize the mRNA sequences for efficacy and ease of manufacture.[2] Once vaccines were developed, AI continued to help by predicting the spread of the virus to help with testing.[3] The story of mRNA vaccines is a success story of collaboration between government and industry that shows the world-transforming power of AI when used at scale.

Given the important mission and large data stores in government organizations at every level, AI is primed to play an important role in the future of government. To reap the transformative benefits of AI, the technology needs to be scaled and our global survey of 500 government leaders shows three key findings for organizations looking to adopt AI at scale:

- Government organizations have made a strong start in exploring a wide variety of AI proofs of concept.
- The transformational benefits of AI require adoption of AI at scales much larger than proofs of concept.
- To move from pilots to at-scale AI, organizations need to not just adopt the technology, but to adapt their organizations across six key dimensions.

Those organizational changes will help to drive AI from the fringes of an organization into the heart of the mission. There AI can bring its transformational power to bear to improve the lives of citizens.

Government organizations are making a strong start on AI

THE TRANSFORMATIONAL POTENTIAL of AI is not lost on organizations at every level of government. For example, in our recent survey of government leaders, respondents at the national, state, and local level all saw AI as important to future mission outcomes (figure 1).

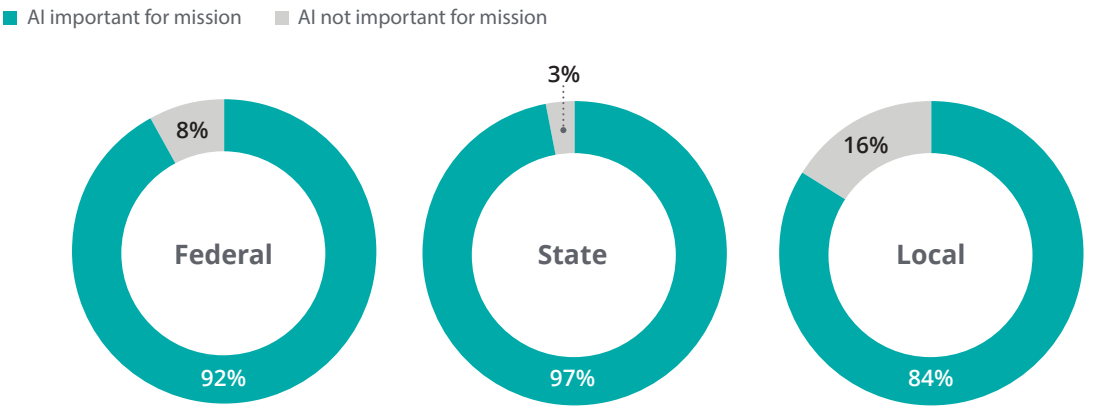
The fact that governments are serious about AI adoption is also reflected in the increasing share of AI investments—84% of agencies believe their AI investments will increase by 6% or more in the next fiscal year.[4] With budget analysis showing that US Federal funding for AI research and development alone is expected to have already grown by nearly 50% to more than US$6 billion in FY 2021, government leaders are clearly bullish on AI.[5] As a result, they are making significant investments and exploring new AI projects.

With enthusiasm and a growing pool of resources, many government organizations have launched pilots to explore how AI can help their organizations. Government organizations are exploring a range of AI use cases from speech recognition to predictive maintenance.

Government sectors such as defense and health that have a long history of AI experimentation are among the leaders in fields such as responsible AI and data-sharing. For example, more than 35 countries have released AI strategies that include a focus on responsible AI—a finding backed by our respondents. Eighty-five percent of surveyed government executives indicated their organization had an enterprisewide AI strategy.[6]

FIGURE 1

AI is important for mission outcomes across all levels of government over the next five years



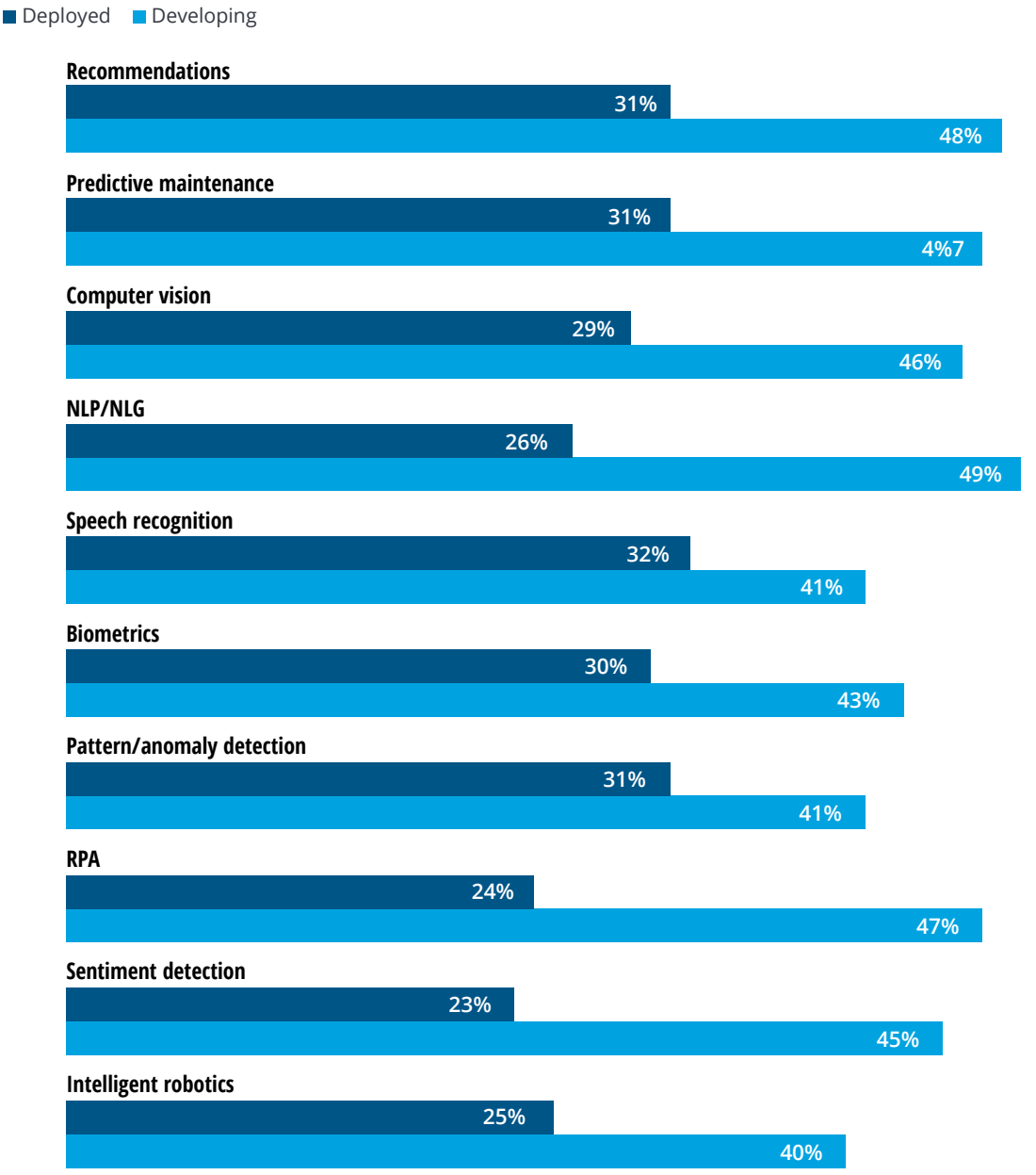
Source: Deloitte's State of AI survey.

However, there is also a weakness in this pattern of pursuing AI. While government respondents are exploring a wide range of AI use cases, they are fully deploying only a small fraction of them (figure 2). This means that despite the significant effort and attention that government organizations are paying to AI, most projects remain at the pilot scale.

FIGURE 2

Government organizations are pursuing a wide range of AI techniques, but most of those efforts are developing rather than fully deployed

Percentage of respondents who are developing/have deployed each use case



Source: Deloitte's State of AI survey.

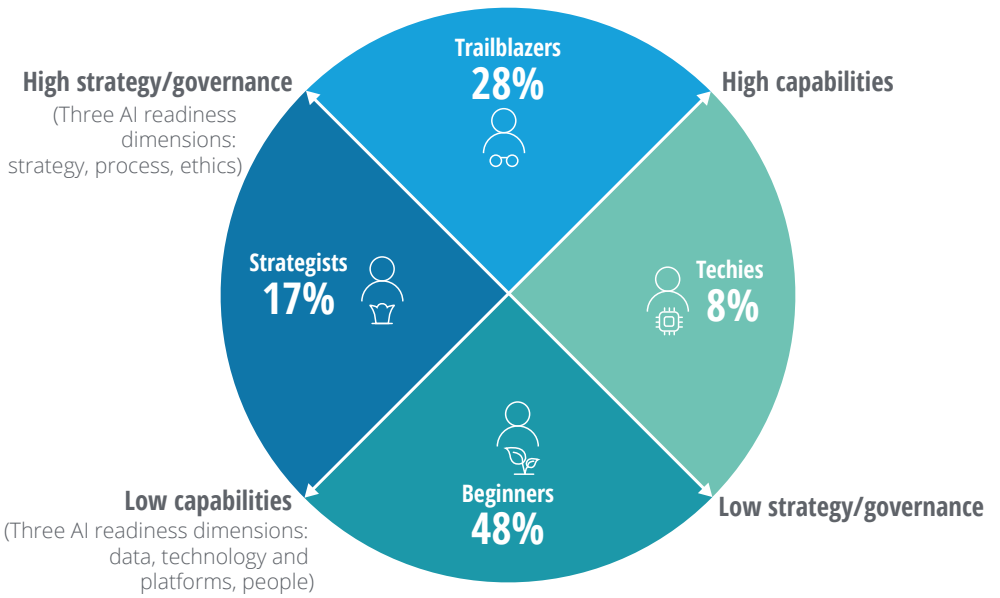
Progress can be stalled by an overreliance on pilots

WHILE PILOTS PLAY a critical role in developing successful AI, an overreliance on them can be detrimental. To try to understand how, we analyzed the reported capabilities and actions of respondent organizations to evaluate how prepared they were for AI at scale. The analysis showed that while there are a significant number of mature government organizations blazing a trail in AI (28%), a near majority are still beginners (48%, see figure 3). Being a beginner in AI is not necessarily a problem. Even most trailblazing organizations were beginners at one point. The problem many governments face is that their pattern of developing AI mostly through pilots and exploration may be holding back further development.

If organizations only pursue pilots, it can create a sense of overconfidence. As small-scale pilot projects succeed, organizations may mistakenly think that they have all the capabilities they need to tackle AI at scale. We observed signs of this overconfidence in our survey results. Seventy-three percent of government respondents believe that they are ahead of the private sector in AI capabilities. And as if to reinforce the optimism

FIGURE 3

Despite experience with pilots, most government organizations are still beginners in the journey to AI at scale



Source: Deloitte's State of AI survey.

bias, 80% believed they are also ahead of their public sector peers.

Pilot purgatory

The problem is that AI at scale requires different organizational capabilities than pilots or proofs of concept. Pilots are typically smaller and narrower in focus than full-scale AI efforts. As a result, pilots can often make use of different technologies and data sources than would be required for full-scale use. They may not need to meet as rigorous security and privacy requirements. Further, the smaller scope of pilots means that they touch fewer parts of an organization so that change management is less of a factor in their success.

For these reasons, development of AI at scale just looks different than pilots. For example, a former CDO of a large US city describes initially being surprised at the slow pace of AI development among peers in the private sector. Only later did the CDO begin to realize that the slower pace may be needed to tackle larger AI projects. The limited scope of pilots may make them easier to pursue more quickly, but for larger-scale projects it takes time to make sure that the right data is gathered, the appropriate use case is chosen, and costly mistakes are not made while developing technological architecture. For those just starting out in their AI journey, it can seem counterintuitive that slowing down the process may be a way to achieving AI at scale quickly. Slow is smooth; smooth is fast.[7]

In short, organizations that have only experimented with pilot-scale AI cannot make it to the heights of at-scale AI simply by doing more of what they are doing. Without intentional action to acquire the organizational capabilities needed for at-scale AI, organizations can easily become stuck in "pilot purgatory" continually cycling through promising AI pilots but never realizing the transformational benefit that AI promises for their core mission.

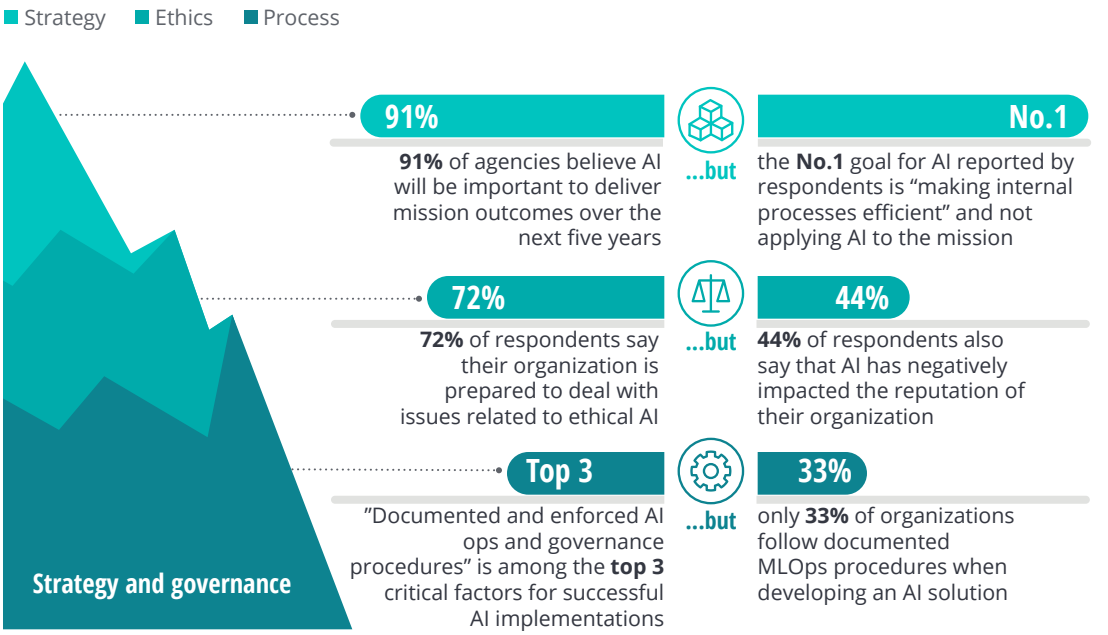
Adapt, don't just adopt

The good news is that government leaders appear to be increasingly aware of the gap between pilots and at-scale AI. The respondents of our survey again and again highlighted the gap between their goals for AI and where they currently assessed their AI capabilities (figure 4).

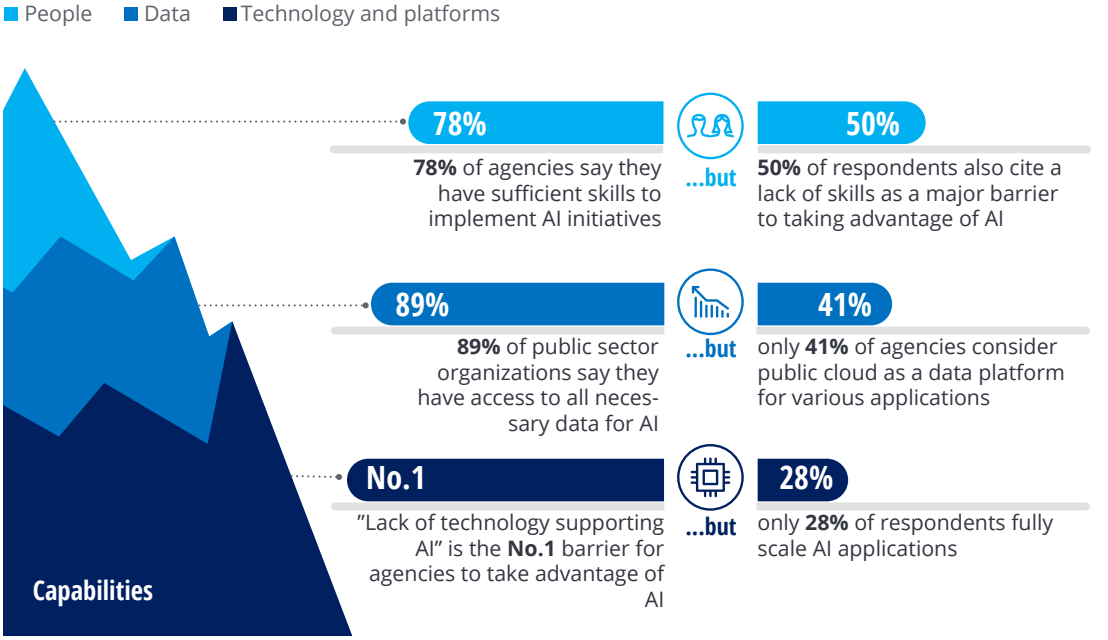
The US Department of Defense (DoD) is just one example of the path leading government organizations are taking to scale AI. In its 2018 AI strategy, DoD outlined that, *"The DoD will identify and implement new organizational approaches, establish key AI building blocks and standards, develop and attract AI talent, and introduce new operational models that will enable DoD to take*

FIGURE 4

Government leaders are aware of the gap between current and desired state of AI capabilities



State of AI in government



Source: Deloitte's State of AI survey.

advantage of AI systematically at enterprise scale." [8] Since then, DoD has established the Joint Artificial Intelligence Center (JAIC) to better govern AI use cases, set up the Joint Common Foundation (JCF) to provide ready-to-use tools to experiment and scale AI use cases, and started offering new AI career paths to attract and retain talent.[9]

While organizations like the US DoD are at the forefront of AI in government, other organizations may find it hard to replicate organizational change of that nature. It is comparatively easy to adopt a technology and graft it onto existing organizational structure and business processes. But it is much harder to adapt the organization to allow it to take full advantage of a new technology. To build the organizational capabilities needed for AI at scale, organizations need to adapt their:

- **Strategy.** Because AI is a transformative technology, alignment on direction and level of ambition is crucial.
- **People.** Agencies may face challenges around accessing and recruiting necessary technical skills, as well as helping existing employees develop and deploy AI skills.
- **Process.** AI can be a powerful new tool, but simply embedding it within existing business processes designed for older tools will limit its benefits.
- **Data.** AI is only as good as the data upon which it is built, and its appetite for data is voracious.
- **Ethics.** While any technology's deployment should be ethical, AI brings issues such as transparency, privacy, and bias into particular focus.
- **Technology and platforms.** A variety of models for pursuing AI exist that vary in terms of platforms and ownership of technology (e.g., internal or in partnership), but, in all cases, AI requires a coherent approach that considers future requirements as AI scales within the organization and its usage evolves.

Following the path of the trailblazers

TRAILBLAZING GOVERNMENT ORGANIZATIONS such as many in the defense and health sectors have already charted the way toward developing these six organizational capabilities. Following their lead can help other organizations to iteratively build capabilities across those six dimensions and realize the transformational benefits of AI at scale.

Strategy

Senior leaders should ensure AI strategy supports the mission: The focus of an organization's AI strategy should not be merely to deploy AI for its own sake but rather should focus on how AI can be an enabler to deliver the organization's mission outcomes. This means that an organization's AI strategy cannot be a product purely of IT or technical teams but must be driven by senior leaders. Our survey found that organizations where senior leaders communicate a clear vision for AI are 50% more likely to achieve their desired outcomes with AI.[10] In the early 2010s, Jeff Bezos mandated that every leader across Amazon develop a plan for how to use AI in their division. That mandate was instrumental in Amazon's rise to become an AI leader today.[11]

Organizations where senior leaders communicate a clear vision for AI are 50% more likely to achieve their desired outcomes with AI.

Drive AI into the heart of the mission: AI should be about doing more and doing better. However, our analysis found that organizations that are just beginning their AI journey are more likely to use AI merely to improve internal efficiency. As organizations gain experience and become more mature, they are more likely to use AI for mission-focused goals such as improving collaboration or creating new programs. In one large-scale example, Singapore created a US$73 million AI-enabled digital twin of the city, not to make government more efficient, but to model decision-making, experiment with service provision, and address some of the most pressing challenges facing the country.[12]

As organizations gain experience and become more mature, they are more likely to use AI for mission-focused goals.

People

Balance outside hiring with reskilling: Our survey found that 69% of respondents would prefer to bring in new hires with required skill sets. Given the widespread shortage of AI talent,[13] agencies should balance outside hiring with reskilling their existing workforce. For example, both Denver and San Francisco city governments have established data academies to help train city workers and others in the basic skills needed to harness AI.[14] The National Security Commission on Artificial Intelligence (NCSAI) goes a step further, calling for establishing a digital service academy, modeled after US service academies, to produce a trained workforce that caters to all federal agencies.[15]

Building technical skills is a clear benefit to technical staff but can also help the wider organization. Government will always need AI specialists, but to adopt AI at scale, it should also improve data literacy for the workers who must buy AI tools and services or use AI to deliver services to citizens. For example, Abu Dhabi has created AI training workshops to help government employees understand AI's benefits and make better decisions around its utility.[16]

Process

Reimagine processes and career paths: For government to truly revolutionize the lives of citizens using AI, it will have to revolutionize the way AI is deployed in its business processes and workflows. After all, you cannot deliver new results with old processes. Organizations that have significantly changed workflows are 36% more likely to achieve desired outcomes from their AI projects.[17] Introducing new processes can also help organizations create new career paths for workers who work with this technology, which can be a critical enabler to success.[18] We found that agencies that added new AI roles are 60% more likely to achieve desired outcomes.[19] While adding new roles can help organizations, those benefits may be temporary unless organizations can provide new career pathways for talent to grow and develop. This is exactly what the Australian Public Service and the country's Digital Transformation Agency collaborated on, defining over 150 new digital roles, and creating the APS Career Pathfinder tool to help people in those roles explore digital career options in government.[20]

Organizations that have significantly changed workflows and added new AI roles are 36% and 60%, respectively, more likely to achieve desired outcomes from their AI projects.

Data

Identify relevant data and determine its accessibility: Agencies that have access to the necessary data are twice as likely to exceed expectations in their AI initiatives.[21] To make the best use of AI, agencies need to identify relevant datasets and develop platforms to access that data. For instance, the US Air Force has adopted the VAULT data platform which gives airmen access to the cloud-based data and tools they need to use AI to improve readiness and mission success.[22]

Agencies that have access to the necessary data are twice as likely to exceed expectations in their AI initiatives.

Ethics

Document and enforce MLOps: Developing and deploying AI is not without ethical risks. That is why having clear documentation and enforceable processes is important to having trustworthy and transparent AI. This is where MLOps—the set of automated pipelines, processes, and tools that streamline all steps of AI model construction—can help. After all, it is difficult to address ethical issues with a model unless you know how that model was built and operated. In fact, our survey found that documenting and enforcing MLOps makes organizations twice as likely to achieve goals and three times more likely to be prepared for AI risks.[23] Organizations like the Internal Revenue Service (IRS) have discovered that scaling AI beyond the pilot stage across the agency requires adopting different and rigorous processes for creating and managing AI models.[24]

Documenting and enforcing MLOps makes organizations twice as likely to achieve goals and three times more likely to be prepared for AI risks.

Prioritize change management. If AI is to be successful, it will, by definition, be disruptive for government organizations. AI can change not only how processes are done, but even what services government delivers to its citizens. Our analysis indicates organizations that invest in change management are 48% more likely to report that AI initiatives exceed expectations.[25] However, the more significant the change brought by AI, the more difficult it can be. Governments should use the principles of behavioral economics to understand the human impact of transformations and how to provide appropriate support to encourage change.[26]

Organizations that invest in change management are 48% more likely to report that AI initiatives exceed expectations.

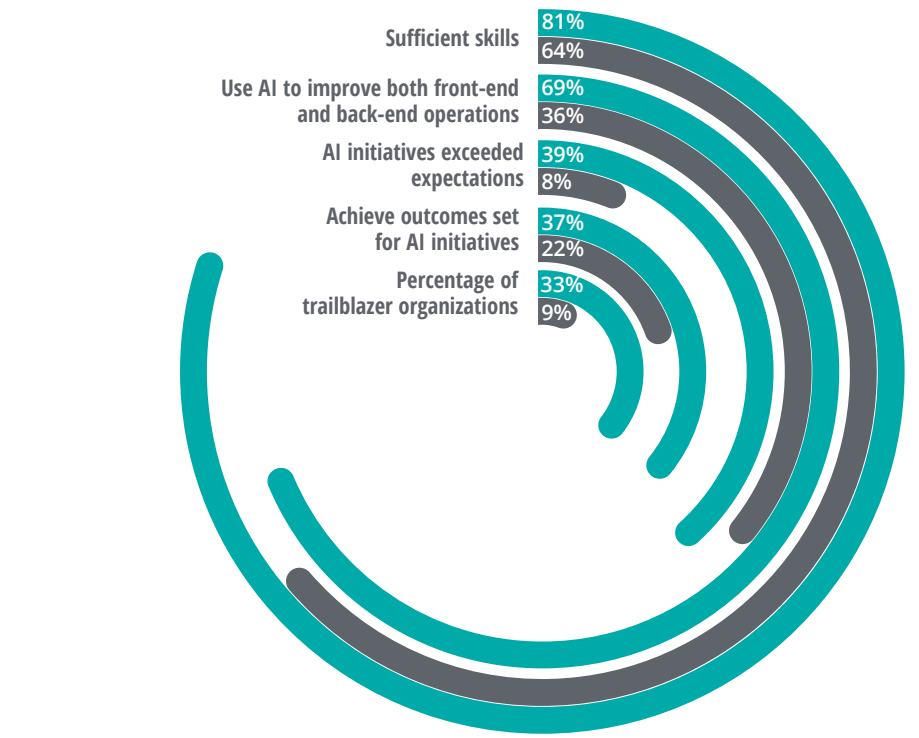
Technology and platforms

Build a diverse ecosystem: Every government agency does not need to solve every problem itself. From chatbots to speech-to-text, many solutions to technical problems already exist. Tapping into other entities that have existing technical solutions or solved organizational challenges can accelerate progress toward AI at scale. In fact, our survey found that continually cultivating a wide range of relationships with industry, academia, and other agencies dramatically improves the likelihood that

an organization has what it needs to scale AI (figure 5). As Eileen Vidrine, chief data officer at the US Air Force says: "It's really about working together, building collaborative, trusted partnerships. It needs to be part of the conversation at the beginning and through the whole life cycle about trying to optimize interoperability and avoiding what I would call 'vendor lock' as much as possible."

FIGURE 5

Agencies with diverse ecosystems are more likely to have what they need to achieve their goals for AI



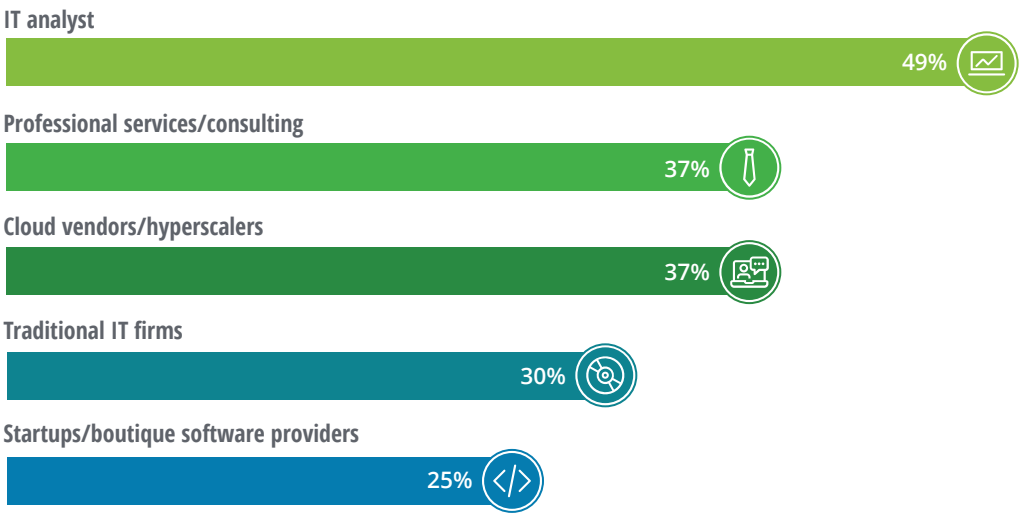
Source: Deloitte's State of AI survey.

Find partners that complement your need: Find partners that provide the capabilities your particular agency lacks. These partners should be a wide variety of different organizations depending on where government needs help (figure 6). Partners don't always need to be organizations at all. The City of LA's Data Angels program brought volunteer data scientists into government on a part-time basis to help with a variety of tasks.[27] The program tapped into private sector data specialists who wanted to help the community while still retaining their jobs, bringing some of the top data talent into public service with little cost to the government.

AI is the future. Government leaders clearly understand this. But getting to that future can be more difficult and more rewarding than it may

FIGURE 6

Governments are partnering with a variety of players depending on their unique needs



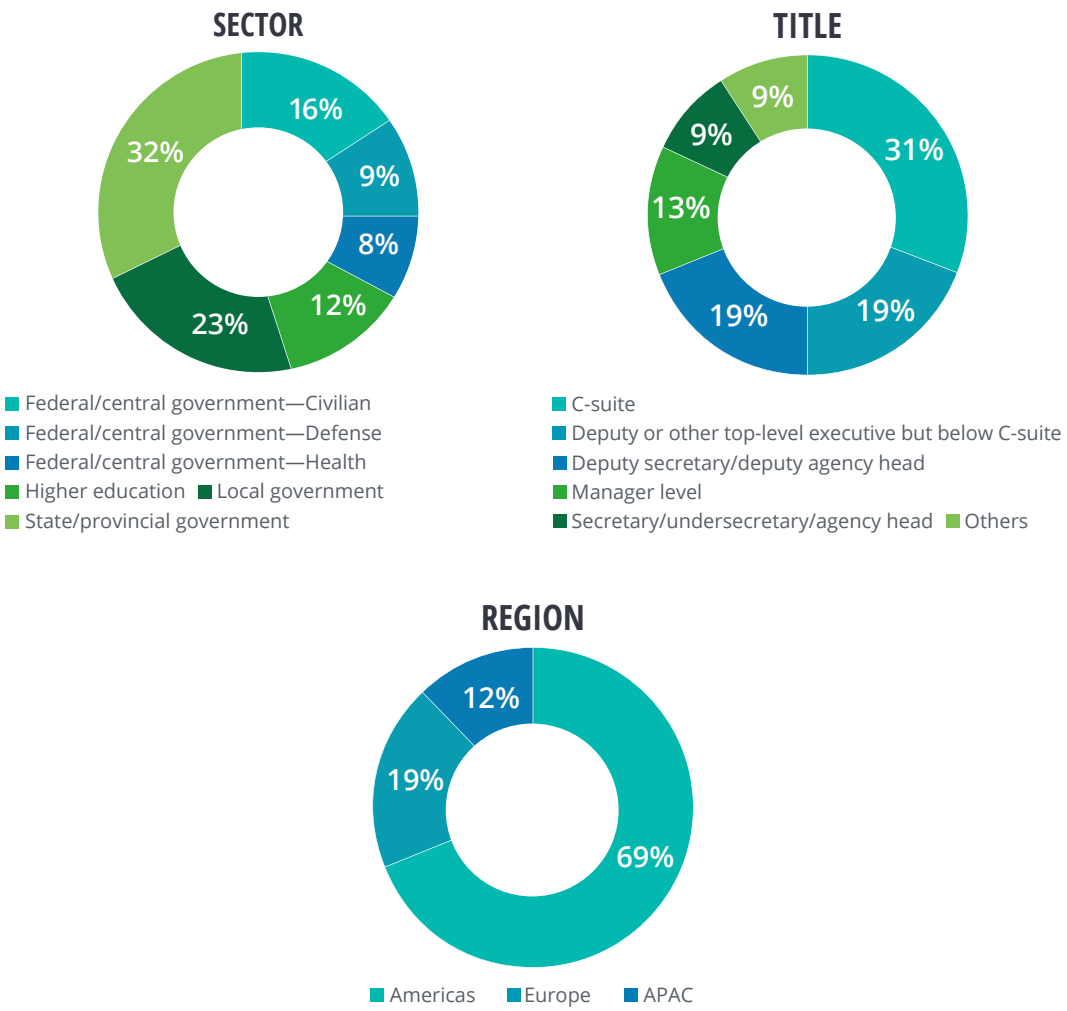
Source: Deloitte's State of AI survey.

seem at the start. Taking a realistic view of the challenges inherent in developing AI at scale can help government develop the right capabilities, the right strategies, and the right governance to make sure that the AI of the future serves the citizens of the future.

Appendix—Respondent profile

FIGURE 7

Appendix: Respondent profile



Note: N = 517 respondents.

Source: Deloitte's State of AI survey.

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