Delivering on Digital Government:
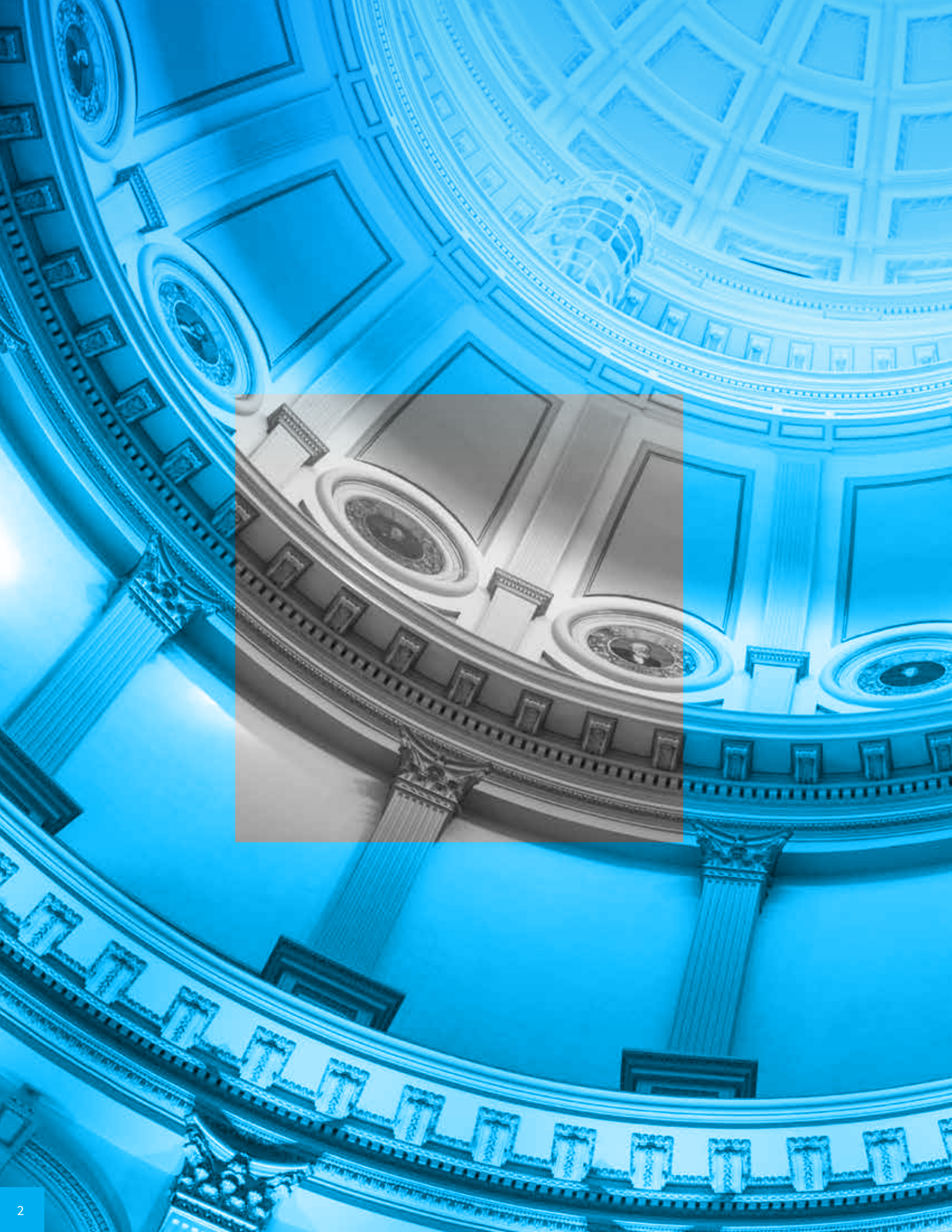
Achieving the Promise of Artificial Intelligence

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Acknowledgements

Foreword

n an era of rapid technological change and nearly limitless possibilities, artificial intelligence (AI) and machine learning stand out for their potential to transform our society. Private sector adoption across retail, finance, e-commerce companies and more paint a picture of increased efficiency and productivity gains, enhanced customer service, and greater protection from fraud and cyber risks. In health care, the ability to glean previously unattainable insights from massive amounts of data has the potential to save lives as researchers and practitioners can better predict diseases and outcomes.

As government leaders look to the future, it's impossible to ignore what they may be able to achieve with AI implementations. Early adoptions of chatbots and natural language processing are allowing call centers to more efficiently serve citizens, and IT departments are protecting systems and data against cyberattacks with software that increasingly includes elements of AI. But greater adoption across transportation and infrastructure, health and human services, and law enforcement are in the not too distant future. The ability to predict and potentially prevent traffic accidents, pinpoint failing infrastructure assets, identify individuals who are at risk for opioid use disorder and rapidly analyze video surveillance to detect criminal activity are all just a few powerful motivators for adoption.

Still, budgets, skills gaps and legacy infrastructure present challenges, while questions around privacy and ethics are emerging.

In August 2019, the Center for Digital Government and NASCIO, with support from IBM, set out to understand state CIOs' motivations, plans and deterrents around AI adoption. The survey, "Delivering on Digital Government: Achieving the Promise of Artificial Intelligence," yielded responses from 45 states. The results reflect state leaders' eagerness to gain efficiencies and free up their workforces for higher-value work, tempered by caution due to concerns around lack of data maturity and privacy policies, as well as a dearth of employees with the necessary skills for AI adoption.

Today, AI adoption is nascent in the public sector. While the timing of more significant and wide-ranging implementations remains to be seen, we believe AI will have a profound impact – enabling governments to become intelligent enterprises and provide higher-quality services faster and more efficiently. We encourage you to take a look at the best practices and recommendations at the end of this report, which address some of the key challenges noted by survey respondents.

Finally, on behalf of the Center for Digital Government, NASCIO and IBM, we want to sincerely thank our survey respondents and the CIOs who graciously gave their time to be interviewed for additional insights. We sincerely appreciate your willingness to share your thoughts and experiences to guide others on their journey toward digital transformation.

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Introduction

Artificial intelligence (AI) is everywhere — or so it seems. From navigation apps that automatically reroute us when our usual highway is clogged with traffic to banking websites that pre-approve mortgages seconds after we submit a short application, AI is expanding into our personal and professional lives more every day. Eyeing this trend, state CIOs understand AI is also likely to play an important role in modernizing the delivery of citizen services and furthering government modernization efforts. The question is, how do they separate the potential from the hype for one of today's hottest technologies?

Some answers to this question surfaced in a new survey, "Delivering on Digital Government: Achieving the Promise of Artificial Intelligence." This research from the National Association of State Chief Information Officers (NASCIO), IBM and the Center for Digital Government shows that state CIOs are taking an eyes-wide-open approach toward AI and all the organizational, cultural, ethical and technological considerations that go along with it.

"AI is an integral part of our vision going forward."

— Utah CIO Mike Hussey

CIOs see significant near-term opportunities for AI, as well as longer-term benefits from it and its digital cousin, machine learning. In the short term, AI promises relief for government personnel bogged down by outdated workflow processes. Nearly half (48 percent) of survey respondents consider AI a resource to free workers from routine tasks and enable them to focus on high-value activities. For example, AI chatbots are supporting IT help desks in answering calls about resetting passwords or other common technology problems.

"Like most states, we're understaffed in many areas, so having additional resources like chatbots lets us free up people," says Eric Boyette, CIO for the North Carolina Department of Information Technology. "We can then allow them to focus on higher-level activities."

Survey respondents are also targeting specific areas where they expect the biggest impact, including in the IT department, health and human services, and cybersecurity defenses.

Longer term, CIOs see AI as a critical ingredient in ongoing IT transformation strategies.

"AI is an integral part of our vision going forward," says Utah CIO Mike Hussey. "For now, we're just getting our feet wet as we try to increase our understanding of this new technology. But as AI continues to mature, the technology will become pervasive throughout everything we do."

While officials are optimistic about AI's impact in some specific government operations, they're not overplaying their hands. The reason: State officials understand that many challenges must be addressed before AI achieves its full potential to transform citizen-facing and internal operations. Topping the list of challenges is the need to overcome the shortfalls of legacy IT infrastructures. In addition, officials cited a lack of necessary staff skills, cultural concerns and gaps in data governance policies as issues to overcome.

This report will offer more details about these technology, talent, policy and organizational challenges, and what states are doing to overcome them to reap the rewards of AI.

About the Survey

The "Delivering on Digital Government: Achieving the Promise of Artificial Intelligence" survey is based on responses from 45 states. Primary respondents were CIOs and their deputies, chief technology officers and selected agency heads. The survey was fielded by the Center for Digital Government and NASCIO, with support from IBM, in August 2019 to identify current AI trends and attitudes among IT executives about potential benefits and challenges related to the technology.

Insights from in-depth interviews with multiple state CIOs were also incorporated into this report.

The State of AI

For the purposes of this report, AI is defined as digital technology that draws insights from large volumes of data and may apply domain expertise, such as case management policies and IT troubleshooting knowledge, to improve decision-making and predict future outcomes. Machine learning, a related technology, uses algorithms and real-time updates to data to continuously improve the accuracy of analyses and predictions and, in some cases, automatically apply actions determined by preset guidelines. Robotic process automation (RPA) refers to software tools that partially or fully automate human activities that are manual, rule-based and repetitive.

These capabilities offer the potential for fundamental change in government. Although the survey shows that states are still nascent in their implementations of AI and machine learning, 55 percent are actively pursuing AI by staging proofs of concept or evaluating requirements and issuing requests for information. Another 32 percent of states have progressed to running AI in some production operations or staging pilot projects.

State executives are drawn to AI and related technologies in part because they promise help in addressing rapidly evolving operational requirements and citizen expectations. Seventy-nine percent of survey respondents say they lack the resources to keep up with the demands of modern government, with 32 percent of that group "strongly" agreeing with that statement.

AI can offer assistance for resource shortages in many ways. Nearly half of survey respondents (49 percent) see the technology as a powerful tool to analyze the large volumes of new and existing information collected across state departments and agencies. The potential AI offers includes better insights on constituent needs and desires so finite resources can be directed more effectively to high-priority areas.

In addition, almost a quarter of the survey sample (22 percent) say AI can help gather and deliver information. An early example of AI-powered information gathering is the sensor and video data being collected on highways and city streets to help officials implement smart city approaches in traffic management and maintenance schedules.

AI's ability to deliver information today is happening primarily via digital assistants or chatbots. Each a form of RPA, these solutions appear to be where most states are starting their AI

journeys. One out of every four respondents have deployed these types of solutions, which can answer many questions for citizens that used to require a human service representative. In time, digital assistants may take on additional roles, including helping people pay bills or renew licenses. Specialized digital assistants embedded with AI can also aggregate and analyze data from multiple systems to help social services agents quickly and accurately determine an individual's eligibility or compliance with assistance programs.

State CIOs clearly see chatbots and digital assistants as "low-hanging fruit" that can deliver quick benefits for help desks and other areas. One IT official cites a technology researcher's forecast that 85 percent of all help desks calls will be handled by chatbots rather than humans by 2020.

"This will have a significant impact on how we staff our call centers in the future," says David Fletcher, chief technology officer for the state of Utah.

But help desk support isn't the only application of interest to the state. Digital assistants aid citizens in preparing for driver's license and notary exams, and help them register to vote and locate polling places. They also provide voters with candidate information.

"It can be easier for visually impaired citizens to interface with a chatbot and learn about candidates that are running for office," says CIO Hussey.

Chatbots are useful initial applications because they combine old and new resources — information already managed by states along with emerging AI technology. The combination makes these digital aids relatively easy to implement.

"The assistants are using the same data we've already been offering citizens," Hussey says. "But the AI engine acts as a front end that fundamentally changes the experience for citizens."

The state of Delaware is also in the initial stages of applying AI through chatbots. Early versions can pull information from various data sources to enhance the services that IT help desks provide or assist new drivers as they practice for an upcoming exam — allowing

How would you describe your state's adoption of artificial intelligence?

31%
Proofs of concepts/demonstrations

24%
Evaluating/gathering requirements (RFI)

19%
Piloting

13%
Currently using but not in core lines of business

12%
No use or planned use

1%
Widely used across the state

them to receive immediate feedback on their grasp of content. But CIO James Collins considers these just the first steps in a longer-range journey toward more sophisticated AI applications.

"Ultimately, what we'll do is respond to how citizens are accustomed to accessing services throughout their digital lives," he says.

Modeling digital transformation happening in retail shopping, transportation and lodging, and health care is "driving us to change our environment, including by creating service options that are available 24 hours a day," he adds.

In Ohio, a purpose-built assistant, the Disability Onset Alert Bot, helps eliminate backlogs that can clog the Ohio Benefits web page, which determines eligibility for public assistance. In one five-week period, the bot cleared 3,000 cases that had built up and were waiting for processing. Now, the state is taking an even more ambitious step, rolling out Baby Bot as part of a larger effort to address the state's higher-than-average infant mortality

49% of survey respondents see AI as a powerful tool to analyze the large volumes of new and existing information collected across state departments and agencies.

rate within African American communities. In a pilot that ran in one county, the bot successfully enrolled nearly 400 infants into a managed care program on the same day the necessary registration information was received by the county. This ensured the newborns immediately received medical coverage to help them remain healthy and avoid life-threatening diseases.

"Baby Bot is also allowing us to maintain, or in some cases reduce, the amount of staff needed to respond from a frontline perspective," says Ervan Rodgers, Ohio's CIO. "That ensures we can offer high-touch services for citizens versus answering basic questions that we can program into a chatbot."

In Texas, the Department of Information Resources (DIR) launched a digital assistant application in September designed to improve citizen experiences and access to services. The new assistant backends the Texas.gov portal, which currently

connects citizens with 1,100 online services and processes about two million transactions a month. Services include driver's and professional license renewals, vehicle registrations, address changes and other activities. The assistant helps citizens create secure, personalized accounts, such as those available through online retailers, that store user profiles, credit card numbers and other information that will streamline subsequent interactions with the site. DIR executives hope that over time about half of Texas's 28 million citizens will choose to create an account. The state will use AI to mine its large volume of collected data to spot trends among user characteristics that will improve service delivery.
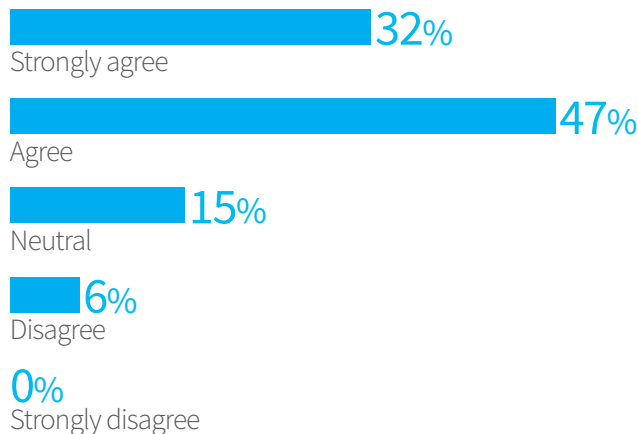
"The intent is to compare what services each individual is using the most and then, based on their profiles, alert people to all the available services that may be of value to them," says Todd Kimbriel, deputy executive director of the DIR and state CIO.

Longer term, Kimbriel hopes the AI-powered assistants can provide a model for ongoing government modernization.

"States are beyond implementing e-government," he explains. "They're working toward digital government by digitizing backend data systems and automating the legacy, manual processes that are in place today. The digital assistant is a key way to demonstrate the benefits that come with digital government once we fully automate a resource."

Besides targeting specific use cases for AI, states are identifying the best departments within their overall operations to initially deploy the technology. Three areas within government are seeing the most AI activity. Topping the list is technology operations. Nineteen percent of the survey sample currently deploy AI in their IT departments, while 15 percent report AI is bolstering cybersecurity efforts.

We don't have enough staff to keep up.

32%
Strongly agree

47%
Agree

15%
Neutral

6%
Disagree

0%
Strongly disagree

From a task perspective, where would or could AI create the most value for state government?

49%
Analyzing data/information

22%
Getting and providing information

17%
Evaluating information to determine eligibility/compliance

15%
Managing personnel

15%
Translating foreign languages

10%
Documenting/recording information

7%
Monitoring processes/materials

3%
Routing requests
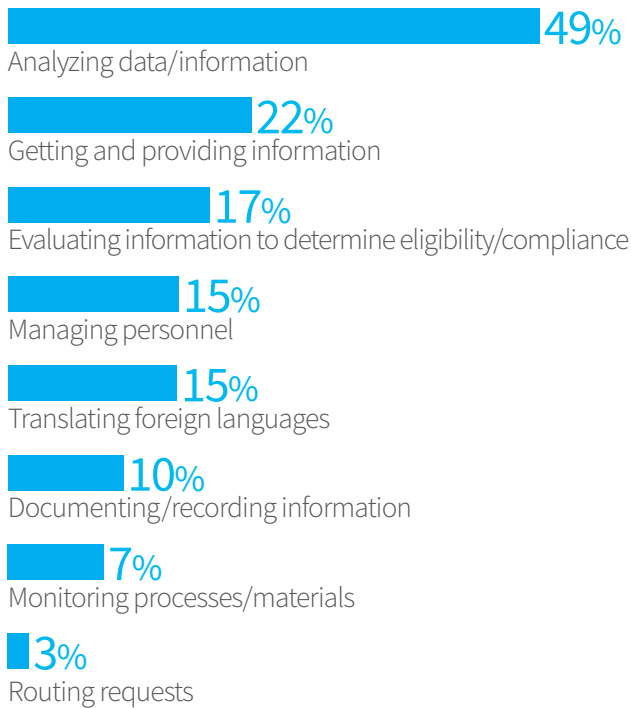
(Multiple responses accepted)

States struggle to keep pace with growing and evolving cyber threats. Many state leaders point to chronic underfunding for cybersecurity initiatives or the fact that they lack cybersecurity talent. Looking forward, more states may turn to AI and machine learning to detect and mitigate cybersecurity threats. A growing number of government organizations are already using the technologies to detect anomalies in network traffic and prioritize alerts from log data to assign security resources effectively. Clearly, survey respondents are optimistic that AI can continue to help address skills shortages, as cybersecurity is viewed as the greatest opportunity within state government for AI adoption.

AI already is helping North Carolina's security staff quickly analyze the thousands of possible security threats that arise throughout its agencies each day to identify the fraction that require immediate action.

"With AI, we can narrow the tickets down to a manageable number," Boyette says.

Steve Nichols, chief technology officer for the state of Georgia, echoes these remarks, but balances them with a note of caution.

"Cybersecurity has just been a huge challenge for as long as I can remember, and it feels like every year we in the public sector spend more and more resources to defend ourselves," he says. "We add staff, we buy more tools, and every year the bad guys get more sophisticated."

AI can help organizations like his keep pace, he adds. But Nichols is also concerned AI may heighten security challenges by helping hackers develop more sophisticated exploits. Chuck Grindle, CIO for the Commonwealth of Kentucky, is also assessing how the threat landscape shifts with the addition of AI tools.

"There is a whole new set of threat concerns," he says. "Employees essentially work from 8 to 5. But AI applications could be running 24 hours a day, seven days a week. The question is, do we have the proper monitoring tools in place to understand if an AI application has been compromised? That's a question that makes security folks a little queasy."

Other focus areas for AI today include transportation and infrastructure departments. Fourteen percent of survey respondents report using the technology there. As noted earlier, smart city and traffic optimization strategies have been attractive testbeds for new ways to capitalize on large volumes of data and advanced analytics. Coming in a close third is health and human services (HHS) agencies, 11 percent of which rely to some extent on AI capabilities. Presently, we are still in the early days for security, transportation and HHS implementations, but state IT authorities have plans for these areas in the future, as discussed in the following section.

Where are you using AI?

19%
Information technology

15%
Cybersecurity

14%
Transportation/infrastructure

11%
Health and human services

7%
Citizen experience
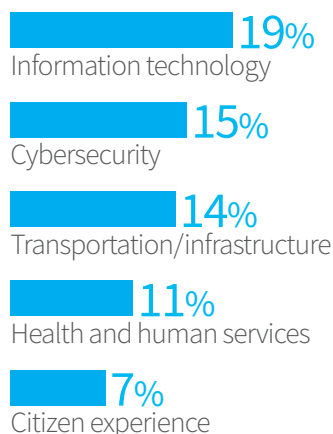
(Top five response shown)

Future Use Cases

While low-hanging fruit applications like digital assistants and chatbots may be the current focus, pilot projects in various government departments show AI's potential for more sophisticated, next-generation applications.

Building on the initial interest in AI for cybersecurity, many IT officials say ongoing enhancements in that area will deliver the greatest improvements. In addition, they're eyeing some new high-value targets for AI investments, including opportunities to reduce fraud and waste and enhance citizen outreach and engagement.

For areas like these, some forward-looking survey respondents are turning to machine learning and natural language processing. Twenty-three percent and 16 percent, respectively, have already deployed these technologies.

Chatbots and RPA applications are generating incremental improvements, but more advanced uses of AI, along with machine learning, have the potential for even bigger improvements for government. For example, Collins envisions a two-pronged opportunity in health care where states can use AI to not only identify fraud but to simultaneously improve patient outcomes.

"I saw the potential of this when Delaware recently launched its claims database," he says. "For now, it's being used to respond to specific requests from agency customers. But when we combine such a large database with AI, I see the chance to better manage or even eliminate certain illnesses by analyzing therapies, treatments and outcomes. That's how powerful AI could be when used appropriately."

Utah CIO Hussey agrees. "Today, it may be easiest to roll out chatbots, but I think we'll see a bigger bang for the buck with machine learning, which will let us ingest and learn from all the data we own."

An early example of this potential is a pilot project where an AI vendor is working with Utah's transportation department to apply machine learning to video feeds from cameras mounted along freeways.

"The goal is to use machine learning to detect accidents and then automatically dispatch responders to the locations as soon as the accidents occur," CTO Fletcher says.

Ohio's Rodgers sees great future potential in using AI with smart cars and smart city initiatives. One project is bringing together the Department of Transportation and other state agencies to establish a central information

> ## "When we combine such a large database with AI, I see the chance to better manage or even eliminate certain illnesses by analyzing therapies, treatments and outcomes. That's how powerful AI could be when used appropriately."
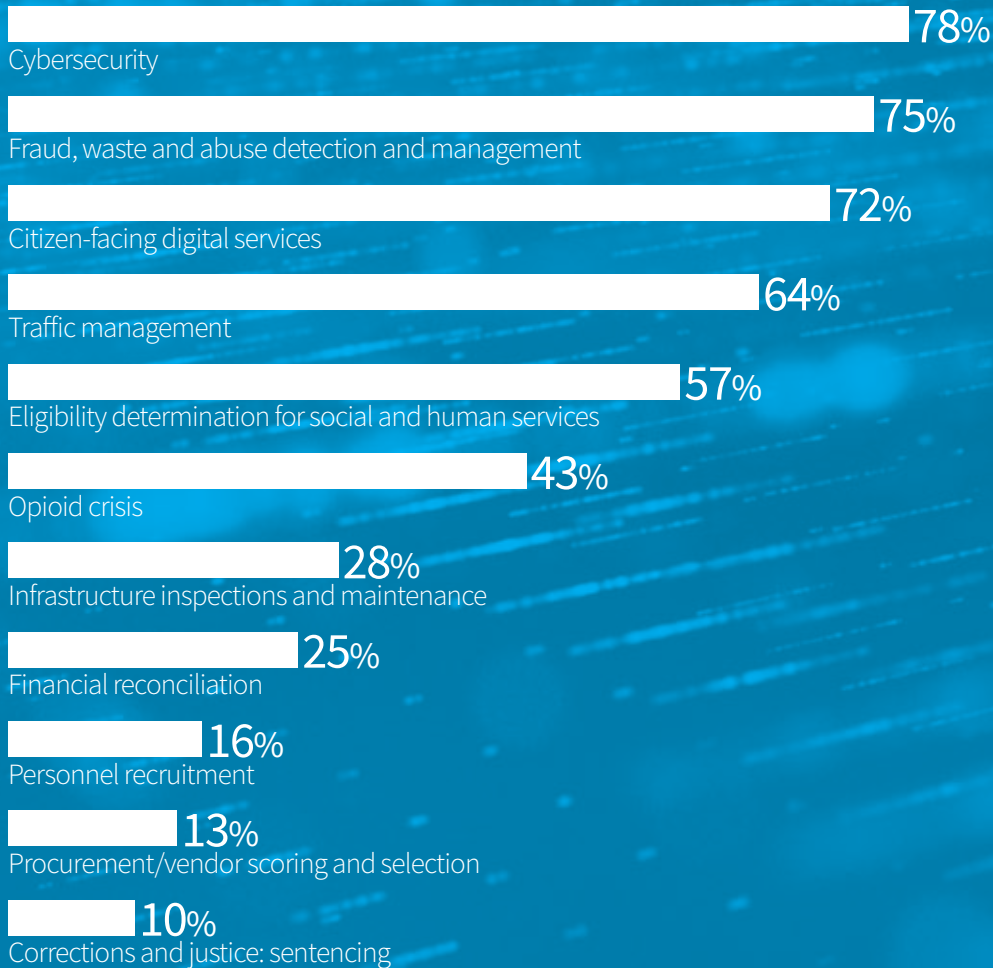>
> *— Delaware CIO James Collins*

Where will AI make the most measurable improvement and impact in your state?

Cybersecurity — 78%

Fraud, waste and abuse detection and management — 75%

Citizen-facing digital services — 72%

Traffic management — 64%

Eligibility determination for social and human services — 57%

Opioid crisis — 43%

Infrastructure inspections and maintenance — 28%

Financial reconciliation — 25%

Personnel recruitment — 16%

Procurement/vendor scoring and selection — 13%

Corrections and justice: sentencing — 10%

(Multiple responses accepted)

exchange using data from sources throughout the state to help predict changing traffic patterns and other transportation trends.

"We believe that being able to harvest and centralize data from across the entire state will make Ohio an attractive place for businesses, such as car manufacturers, to locate their companies," Rodgers says.

AI combined with other emerging technologies is also on CIOs' IT roadmaps. Although privacy concerns must still be ironed out, facial recognition and AI have the potential to help government run more efficiently and reduce fraud. Utah is exploring the use of this combination to compare newly

issued driver's licenses with previous versions to confirm the faces match.

"Instead of needing a person to detect an anomaly, facial recognition AI might be able to identify a case of potential fraud," Hussey says. "That's a way that facial recognition could protect citizens."

He adds that the technology also could help law enforcement officials respond to reported child abductions

"We might apply facial recognition with license plate readers on highway overpasses when an Amber Alert goes out," he says.

Hurdles to AI Adoption

Although AI and machine learning offer much to be excited about, state CIOs also understand they must address some significant roadblocks to reach the full potential of these technologies. The biggest hurdle is overcoming the constraints of current IT infrastructures. Most legacy environments weren't designed to handle the large volumes of data and processing that advanced analytics or AI applications demand. That leaves organizations scrambling to upgrade their on-premises data centers, or more likely, to develop hybrid cloud strategies that can provide the necessary capabilities. Legacy architectures also present some more nuanced challenges.

"We run a lot of the older technologies, including COBOL applications, off of our mainframe," Kentucky's Grindle says. "There isn't anything wrong with that — they're among the most stable platforms we have. But there is the matter of finding people with appropriate skills who can write for this old environment to integrate it with emerging technologies like AI."

But technology shortfalls aren't the only hold up to broadening the use of AI. State IT officials see a host of cultural and organizational issues getting in the way. For example, although AI and machine learning can relieve overworked staff by automating routine and time-consuming tasks, automation can also raise fears of personnel reductions. People naturally wonder if machines will automate them out of a job. CIOs say it's important to address these fears by reminding people that many organizations are understaffed and that government is being challenged to find workers to replace the large numbers of Baby Boomers set to retire in the near future. For example, a study by the National Association of State Chief Administrators found that between 2013 and 2017, while the number of postings for state government jobs increased by 11 percent, the number of job applicants decreased by 24 percent.[1]

"We'll see staffs shifted to other duties, but nobody's lost their job because of AI," Hussey says.

The flipside is that AI may help government replace retirees with younger, more digitally savvy professionals who want to work with emerging technologies in modern workplaces.

"State government often has the stigma of an area that uses old technology," Boyette says. "It's hard for us to recruit people if they think they'd be coming in to sit in a cubicle and do the same thing on a green screen all day."

Successful recruitment will be essential for AI success since AI expertise is in short supply. More than a quarter of survey respondents (27 percent) cite the lack of skills as the greatest barrier to AI adoption. Whether it's AI-savvy data scientists, people versed in creating algorithms and data models to slice and dice data, or business personnel trained in using AI

effectively, states struggle to compete with private industry in attracting people from a relatively small pool of talent that is knowledgeable about this maturing technology.

Given the competition for AI talent, some states are turning to vendors for help.

"We don't have a lot of AI experts in government, so the private sector is where we're looking to capitalize on those skill sets," Collins says. "Cybersecurity is a prime example."

One of the state's contractors leverages AI in its endpoint protection application. The program uses AI to assess and, if appropriate, act to stop an impending threat.
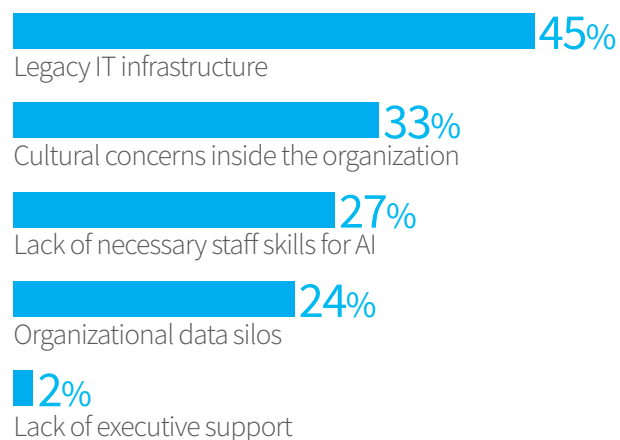
"This provides a much more intelligent approach to security than traditional, signature-based malware protection," Collins says.

In addition, Delaware is evaluating vendors who could apply AI to quickly filter through the two terabytes worth of security-related data that crosses its networks each day.

"That's too much data for a human to sort through and respond to threats in a reasonable amount of time," Collins says. "We're looking for a partner with AI expertise who can analyze those security logs and alert us to what high priority actions we may need to take."

Understanding and reducing potential risks associated with AI implementations is another area of concern among survey respondents. Many state officials are not confident in their ability to manage AI risks today. Nearly three quarters of

What are the most significant challenges or barriers to AI adoption?

45%
Legacy IT infrastructure

33%
Cultural concerns inside the organization

27%
Lack of necessary staff skills for AI

24%
Organizational data silos

2%
Lack of executive support

(Five greatest barriers shown)

> "People may not immediately recognize the opportunities for using AI. With the center of excellence, we are able to develop common definitions and share ideas, and that sharing of information is helping people understand AI's potential."
>
> — *Utah CIO David Fletcher*

respondents (73 percent) indicate they are only somewhat confident about their proficiency in this area.

Drilling more deeply into the survey data, it's clear why many executives are concerned. More than half (59%) don't yet have a framework to evaluate the risk of AI implementations.

Adding to the challenge is that some AI implementations are happening outside of the IT department's control. Thirty-two percent of survey respondents say departments or agencies are deploying AI without central IT's involvement. In addition, 27 percent say they don't know if shadow IT exists, which also shows a need for greater visibility into AI implementations.

Formulating ethical-use policies is another detriment to the wider adoption of AI. Few states have written policies with AI in mind. For example, there are many concerns related to AI, including bias and responsible use, but only nine percent of respondents have a clear policy to ensure the responsible use of AI regarding values, ethics and laws. It's encouraging, however, that 20 percent say these policies are under development.

The roles and responsibilities for policy development are still being ironed out but the sentiment is clear from the survey results — 71 percent of respondents say states should lead this effort with involvement from the federal government. Survey respondents are also open to input on policy development from academia, private industry, nonprofits and other stakeholders, such as associations and citizens. Organizing these diverse stakeholders to form a consensus about AI policies will be challenging, but some state CIOs are ready to take an advisory role.

"We wouldn't look for IT to necessarily lead the effort; we'd let business owners who are trying to solve real problems be the ones to initiate these projects," says Georgia's Nichols. "Departments should set local policies for themselves because every agency is different."

While individual agencies determine whether or how best to use AI, Nichols' agency, the Georgia Technology Authority, holds statutory responsibility for related technology policies and standards. The authority's focus now is to enhance and update existing standards around privacy, security and data governance, which, while not AI specific, will be important for managing implementations that use the technology.

Data quality and governance remain concerns, too. "Garbage in, garbage out" has been a cliché within IT departments for decades. Like all clichés, this one offers an underlying truth and AI makes it more relevant than ever.

Unfortunately, many states are struggling to ensure they have high-quality data for their AI analyses. Forty-three percent report they don't have data organized in a way that will make

What is your level of confidence to engage on AI-related projects and manage risk?

9%
Completely confident

74%
Somewhat confident

18%
Not confident at all

Does your state or agency have a policy regarding the responsible use of AI to ensure that it is governed by clear values, ethics and laws?

9%
Yes

72%
No

19%
In development

AI successful. In addition, only 17 percent have assessed whether data is usable and accurate enough to successfully leverage AI. Twenty-nine percent are planning to do so, while 50 percent haven't started this effort.

States face a variety of issues trying to ensure their data is timely and accurate. One challenge is that state officials don't have complete control over how data is collected, formatted and updated. For example, some business processes are run by county employees, while other information is self-reported by citizens who may fail to fill in a required field or for some reason choose to enter fictitious data.

Kentucky is addressing data quality issues with the help of additional staff.

"We're data rich and information poor," Kentucky CIO Grindle says, referring to the challenge of managing data and gleaning insights from it.

For help, the Commonwealth created a new position that focuses on privacy and compliance issues. It also added a chief data officer who's responsible for developing the "card catalog" to establish the master record for each critical data element.

Making sure underlying data is trustworthy is foundational to using AI effectively. Department heads and end users also must be encouraged to share it with government peers to ensure analyses are based on complete information. However, a third of survey respondents name the lack of information-sharing agreements as the reason they're not considering AI. In addition, 24 percent say data silos are the greatest barrier to AI adoption.

Some agency heads are reluctant to share their department's records with peers. In some cases, regulations, such as the IRS 1075 computer security requirements or the FBI CJIS security policy, require close control of the information. But outdated attitudes can unnecessarily lock data into departmental silos. Democratizing data when it's appropriate requires support from senior executives. Ohio's governor issued an executive

order designed to promote innovation throughout the state in part by making data sharing a priority. The result was InnovateOhio, an effort being led by Lt. Gov. Jon Husted.

"The approach is very different than in the past when data was being shared very slowly," CIO Rodgers says.

The executive order directs officials to be ready to share all their information with peers and backtrack only in cases where laws or other stipulations prevent that.

"It's really been a game changer to have that kind of support from the top of the house," he adds.

Some local governments are also working to better share data. One example in California is the Sonoma County Department of Health Services, which brings together data from siloed source systems to form a master person index and create a single, integrated, golden record for each client.[2]

Has your state or agency conducted an assessment to understand if your data is usable, accessible and cleansed enough to effectively leverage AI?

16%
Yes

51%
No

28%
Planning

4%
Do not know
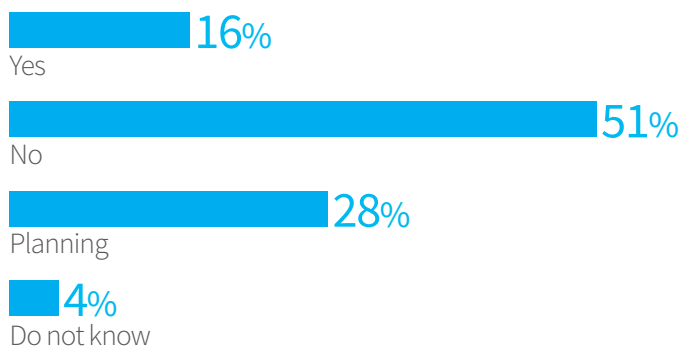
(Percentages total more than 100% due to statistical rounding)

Emerging Best Practices and Recommendations

A s state CIOs assess the opportunities associated with AI, they're devising strategies to address the biggest challenges identified in the survey. These best practices include five key steps.

1 Consider creating a framework for AI adoption. Nearly 60 percent of survey respondents say they don't have a framework to evaluate the risk of AI implementations. Developing a framework to not only evaluate risk, but to establish data governance and address ethical concerns can help build a successful foundation for AI adoption.

2 Create multidisciplinary teams to address change management. One-third of survey respondents noted that "cultural concerns inside the organization" was a significant challenge or barrier to AI adoption. To address concerns like these, Utah created a center of excellence, which acts as a clearinghouse for AI projects.

"People may not immediately recognize the opportunities for using AI," CTO Fletcher says. "With the center of excellence, we are able to develop common definitions and share ideas, and that sharing of information is helping people understand AI's potential."

The center is compiling a catalog of use cases and pilot projects across the state to show what peers are doing and share the lessons they're learning.

Other states are also reaching out to vendors for AI expertise.

"We're not AI experts so we're looking to vendors to help us understand what's best for our agencies statewide," says Boyette. "We work hard to have a good partnership with our industry peers."

3 Assess data availability and capitalize on automation to make the data underlying AI more trustworthy. It's important to first assess whether your agency's data is usable, accessible and clean to effectively leverage AI.

Once the availability of the data is confirmed, modern data management platforms can help improve data quality and provide a central location for applying data governance policies.

4 Modernize legacy infrastructures with targeted technology investments. Legacy IT infrastructures are often a bottleneck for agencies as they attempt to leverage AI and machine learning. Critical data locked in siloed systems is particularly problematic.

To solve this issue, agencies can invest in modern technologies like the cloud or open platforms to better access both structured and unstructured data.

For example, data lakes are supporting Ohio's Baby Bot initiative and the state's larger efforts to reduce infant mortality rates. Data lakes combine and store large volumes of information that can then be accessed by business intelligence applications and AI algorithms for analyses.

"We want to use the data to direct our training and attention to address this issue," says Rodgers.

A similar effort based on the aggregation of all relevant data is helping state agencies and local communities address the state's opioid epidemic, he adds.

5 Choose AI projects where success can be clearly measured. Relatively quick, demonstrable wins help justify initial investments and future spending.

"Focus on areas where you can clearly quantify the ROI on the dollars earmarked for AI," Nichols advises. "We're just too risk averse to put money up against some unknown outcome that may eventually have an ROI."

"We're not AI experts so we're looking to vendors to help us understand what's best for our agencies statewide. We work hard to have a good partnership with our industry peers."

— North Carolina CIO Eric Boyette

Prudence Makes Perfect

AI and machine learning are among today's hottest technologies. They're being embedded in a growing variety of consumer products and making inroads into government offices. Chatbots are delivering early benefits by providing quick answers to citizens about IT resources, license exams and voting requirements. AI is also helping state government better secure sensitive information, optimize transportation systems and investigate public health issues.

But as with any emerging technology, CIOs are still assessing the long-term potential of AI, including how it may fundamentally change the delivery of government services and support large transformation efforts. Also top of mind are a host of challenges, ranging from gaps in traditional IT infrastructures and data governance shortfalls to cultural issues that create distrust about how AI will impact public sector employees.

However, as the findings of the survey and follow-up interviews with state CIOs show, forward-looking organizations can reap early wins from AI and position themselves for ongoing returns as the technology matures. The ultimate goal: deliver on the promise of digital government and the citizen benefits it represents.

"We are ensuring that our first experiences with AI will be positive ones rather than overextending ourselves," Boyette says. "That way, we can see successes and build upon them as we move forward."
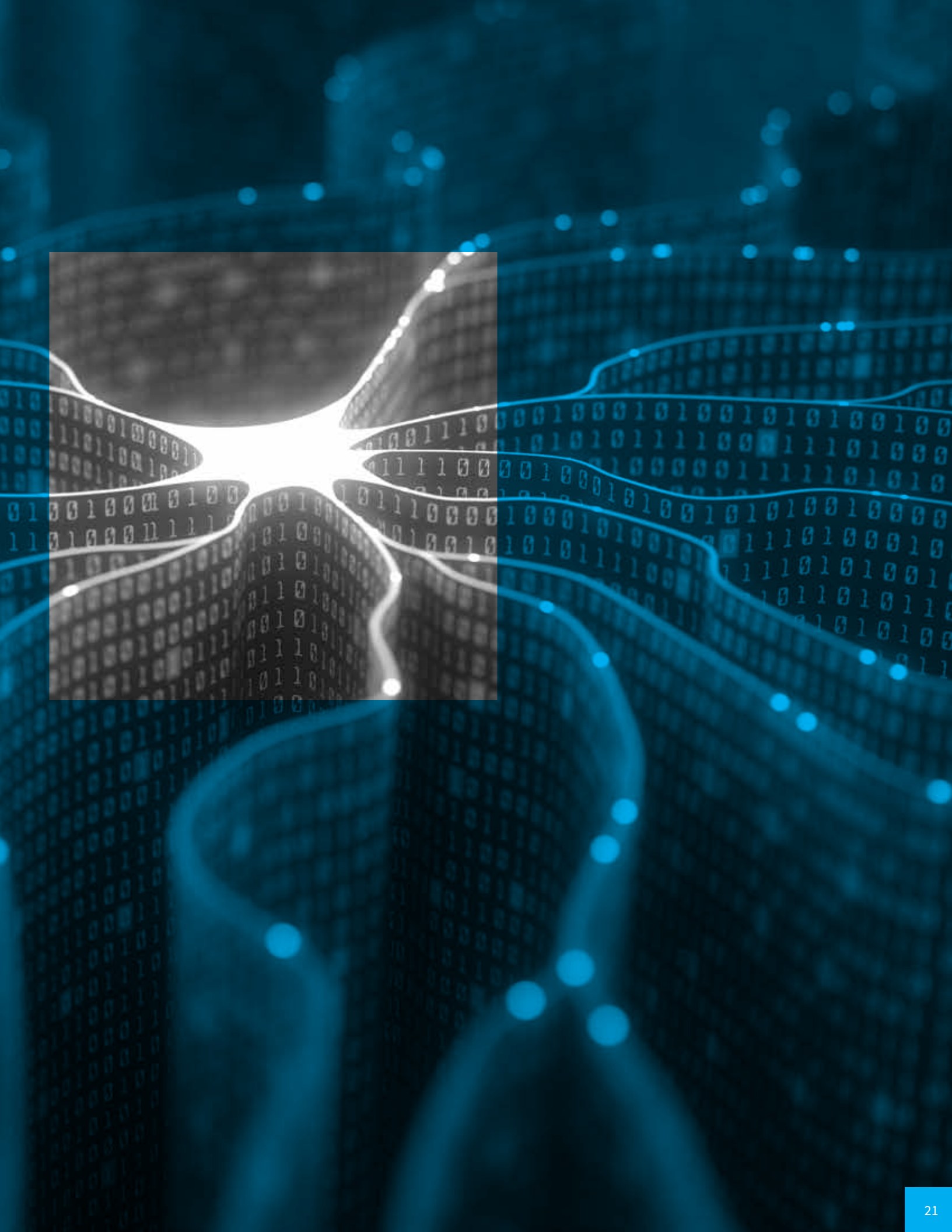
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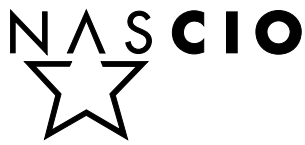
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