

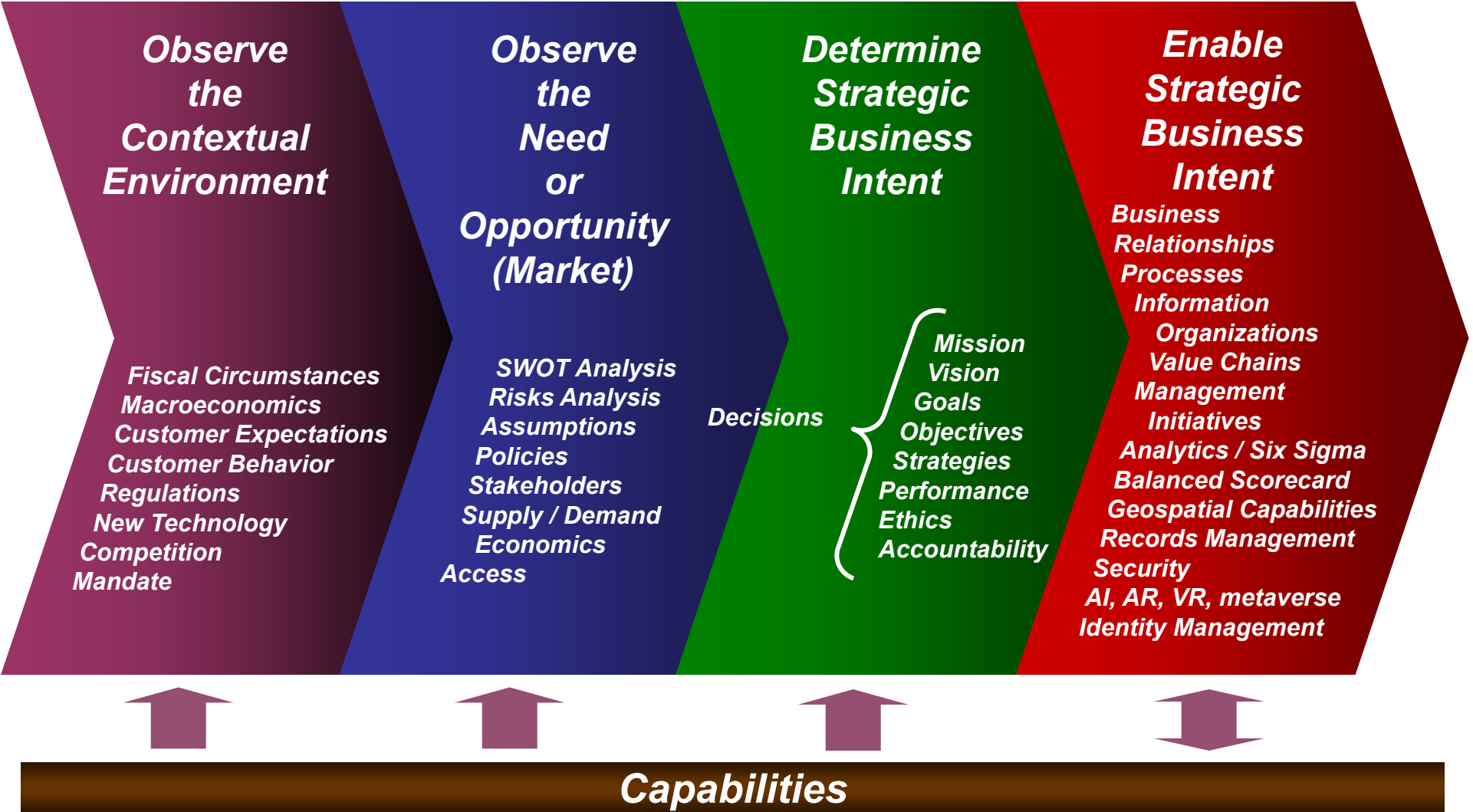
State IM/IT Priorities for Digital Transformation

4th Annual Digital Transformation
in Government Conference
June 14-17, 2023

Eric Sweden, Program Director
Enterprise Architecture & Governance
@NASCIO













Enterprise Architecture Value Chain



STATE CIO TOP 10 PRIORITIES

Priority Strategies, Management Processes and Solutions for 2023

- 01  **Cybersecurity and Risk Management**
- 02  **Digital Government / Digital Services**
- 03  **Workforce**
- 04  **Legacy Modernization**
- 05  **Identity and Access Management**
- 06  **Cloud Services**
- 07  **Consolidation/ Optimization**
- 08  **Data and Information Management**
- 09  **Broadband/ Wireless Connectivity**
- 10  **Customer Relationship Management**

State CIO TOP 10 PRIORITIES

Priority Technologies, Applications and Tools for 2023

- 01** Identity and Access Management
- 02** Legacy Application Modernization/Renovation
- 03** Cloud Solutions
- 04** "X" as a Service
- 05** Security Enhancement Tools
- 06** Artificial Intelligence
Robotic Process Automation
- 07** Data Analytics
- 08** Low Code / No Code
Software Development
- 09** Enterprise Resource Planning (ERP)
- 10** Business Process Integration Tools





Fiscal impact of pandemic: increased state revenues and spending - increased IT spending? Impact of ARPA and IIJA funding for state IT? **\$1B State and Local Cybersecurity Improvement Grant** funds - \$200M in FY2022



State IT organization transition continues: CIO as broker business model, evolution from owner-operator to more managed services, outsourcing and multi-supplier initiatives



Elevated cyber threats during pandemic, nation state and criminal attacks, more focus on enterprise cybersecurity models, whole-of-state collaboration, ransomware mitigation, zero trust framework

5R challenges of state IT workforce: **recruitment, retention, reskilling, retirements, resignations** - a crisis with cybersecurity positions



Focus on digital government services: improved citizen experience, citizen-centric design, security, automation, citizen identity management



How would you describe the current role of the state CIO organization?

80%

Has a voice in state agency strategy and strategic initiatives

71%

Develop, acquire and deliver infrastructure services to state agencies

69%

Ensure IT systems comply with security and regulatory requirements

55%

Drive innovation or modernization programs

How is the CIO organization moving to deliver services to agencies within the next two years?

56%

Consolidation of infrastructure

54%

Centralization of IT project management and oversight under the CIO organization

48%

Consolidation of services (e.g., help desk, training etc.)

38%

Consolidation of applications

31%

Responsibility for technology procurement within the CIO organization

Rank the top five business processes, practices or investment changes that you believe will continue post COVID-19 pandemic?



#1

Increased attention on digital government services / citizen experience

#1 in 2021
#3 in 2020



#2

Increased priority and investment in legacy modernization

#5 in 2021
#5 in 2020



#3

Investments in broadband expansion / adoption

#3 in 2021
#4 in 2020



#4

Expanded work from home / remote work options

#2 in 2021
#1 in 2020



#5

Expanded use of collaboration platforms / remote meetings

#4 in 2021
#2 in 2020

“Workforce is the single largest challenge any leader faces and getting the workforce component right is the make / break success of the CIO.”

-State CIO



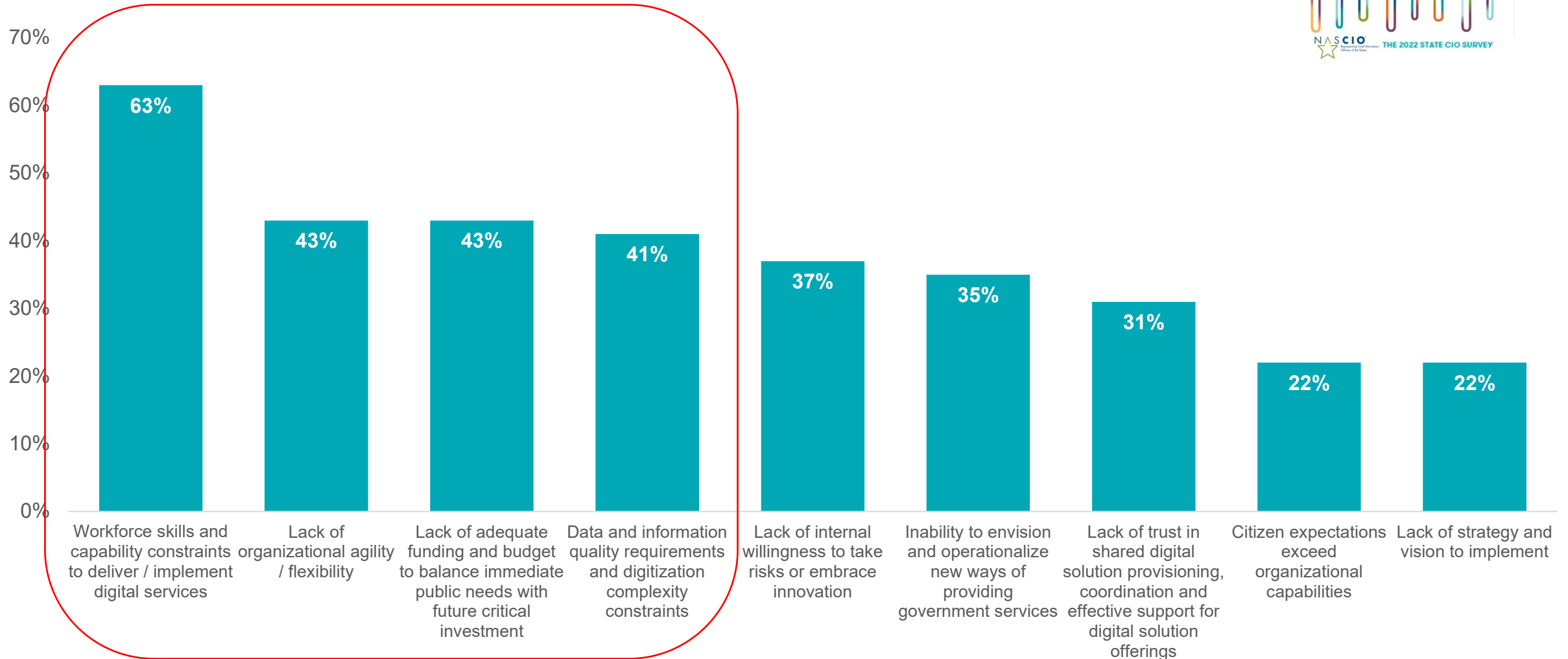
Besides increased compensation, what single action should be implemented that would be the most impactful in recruiting and retaining the future IT workforce in your state?

	2022	2019	2017
Reskilling current employees to meet modern IT demands	35%	25%	N / A
Aligning IT job titles, classifications and descriptions more closely to the private sector	31%	33%	31%
Increasing remote work options	18%	N / A	N / A
Expanding flexible work schedules	8%	N / A	N / A
Streamlining the hiring process and reducing time to hire	6%	14%	10%
Other	2%	N / A	N / A

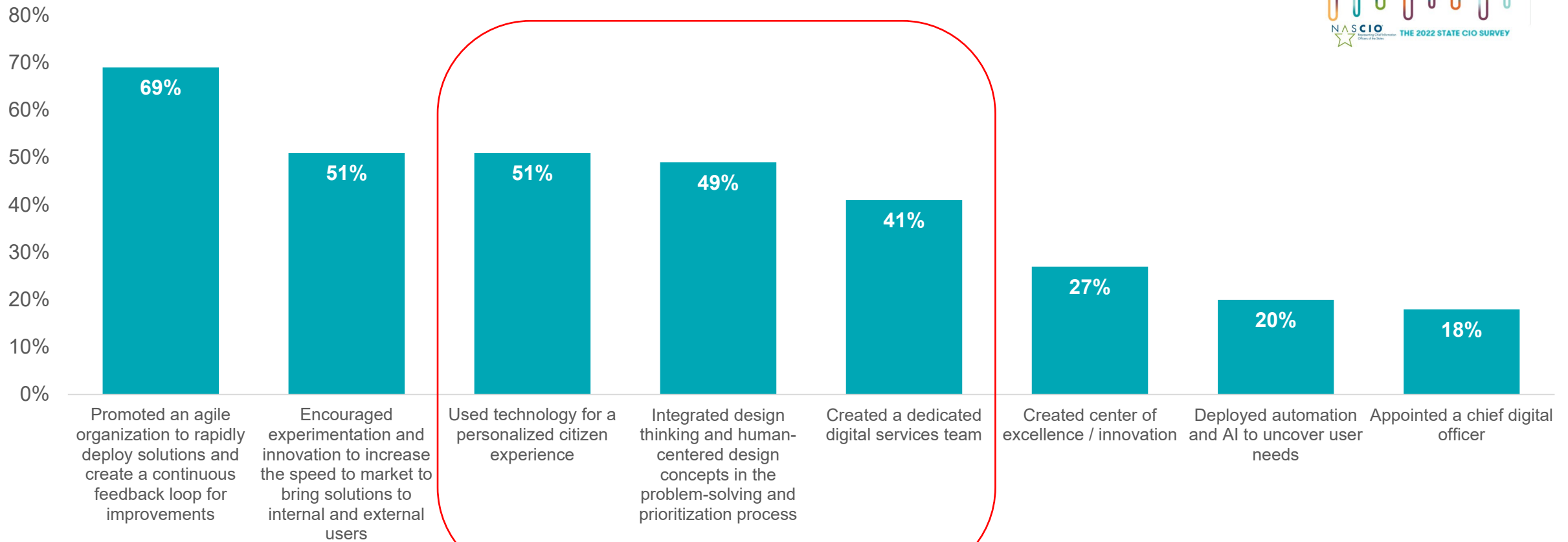
What strategies and tactics has your state used in attracting and retaining a highly qualified IT workforce?

	2022	2019	2017
Promoting non-salary benefits like greater stability and diversity of experience	76%	73%	71%
Expanding flexible / remote work	73%	N / A	N / A
Building talent pipelines (e.g., partnering with local colleges / universities / technical schools)	71%	44%	29%
Call to public service	65%	67%	71%
Modifying job pre-requisites (e.g. education requirements)	57%	N / A	N / A

What major challenges do you face in meeting demand for digital services?



Which digital services approaches and solutions has the CIO organization adopted and incorporated into enterprise-wide practice?

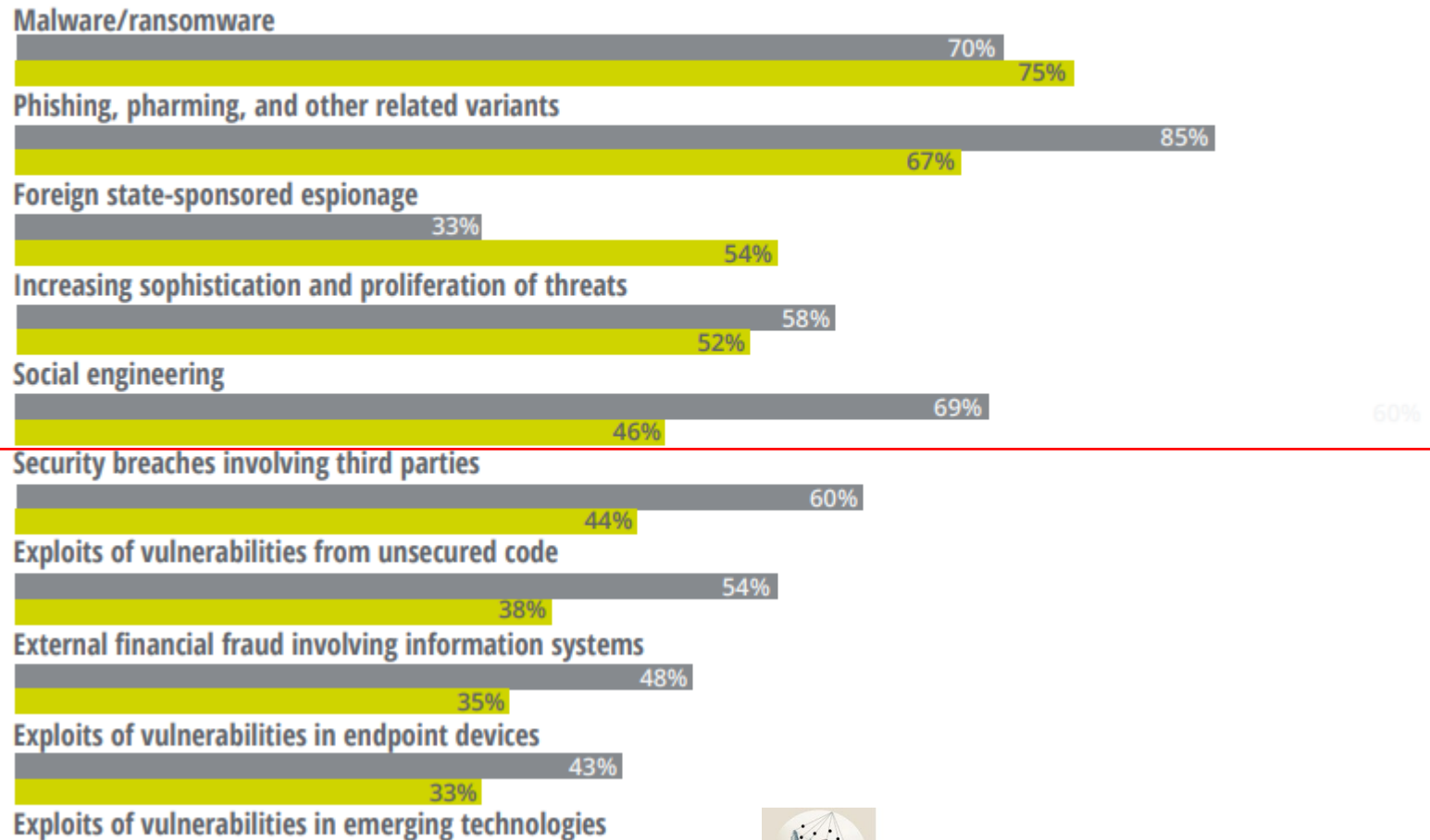


Insights on Cybersecurity Threats

- CISOs continue to be **fairly confident** that states are protected against various threats, including those that may arise from remote work arrangements
- Malware and phishing rank as the top threats, foreign state-sponsored espionage has risen significantly, and third parties and social engineering have declined in threat levels
- In the past 12 months, the three leading causes of cyber incidents involve web applications, malicious code and **financial fraud**
- On the rise are incidents involving foreign state-sponsored espionage, zero-day attacks, electronic/hacker attacks, and cloud platforms and solutions

How much of a threat do each of the following cyberthreats pose to your state? (Very high and somewhat higher threat combined)

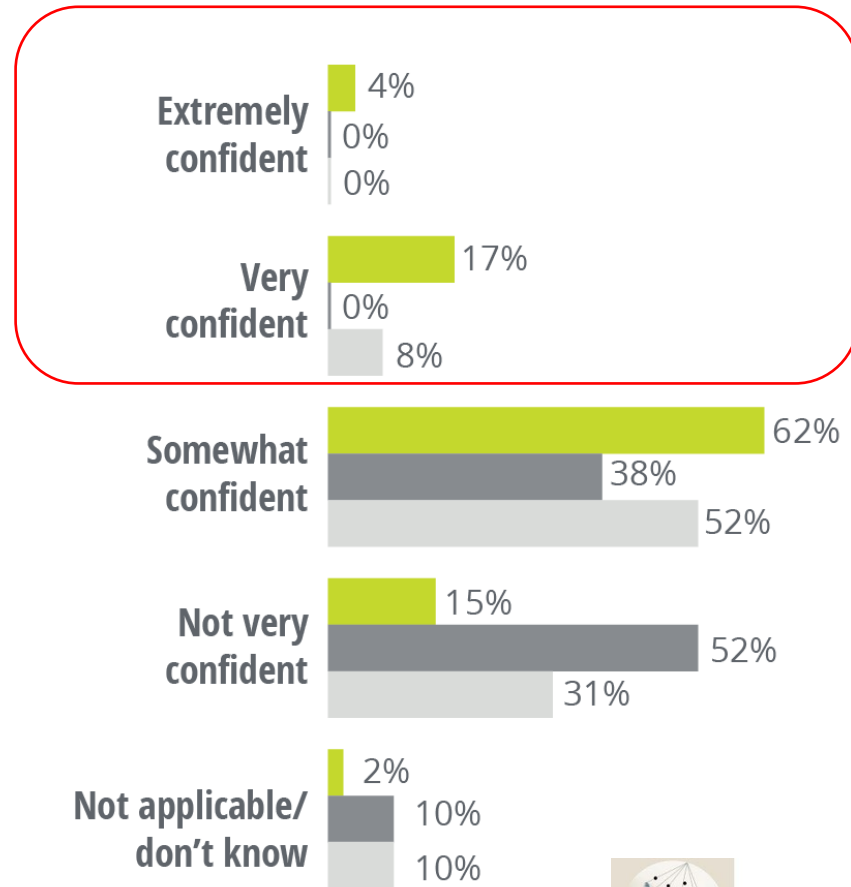
2020 2022



Third-Party Risk

CISOs have more confidence in the cybersecurity practices of contractors than other third parties

- Third parties—contractors, service providers, and business partners
- Local government entities
- Public higher education entities



Cyber talent a top barrier for state CISOs

Inadequate availability of cybersecurity professionals is among the top five barriers that CISOs cite

2020	2022
01 Lack of sufficient cybersecurity budget (46%)	01 Legacy infrastructure and solutions to support emerging threats (52%)
02 Inadequate cybersecurity staffing (42%)	02 Inadequate availability of cybersecurity professionals (50%)
03 Legacy infrastructure and solutions to support emerging threats (34%)	03 Inadequate cybersecurity staffing (46%)
04 Inadequate availability of cybersecurity professionals (28%)	04 Decentralized IT and security infrastructure and operations (38%)
05 Lack of dedicated cybersecurity budget (28%)	05 Increasing sophistication of threats (29%)

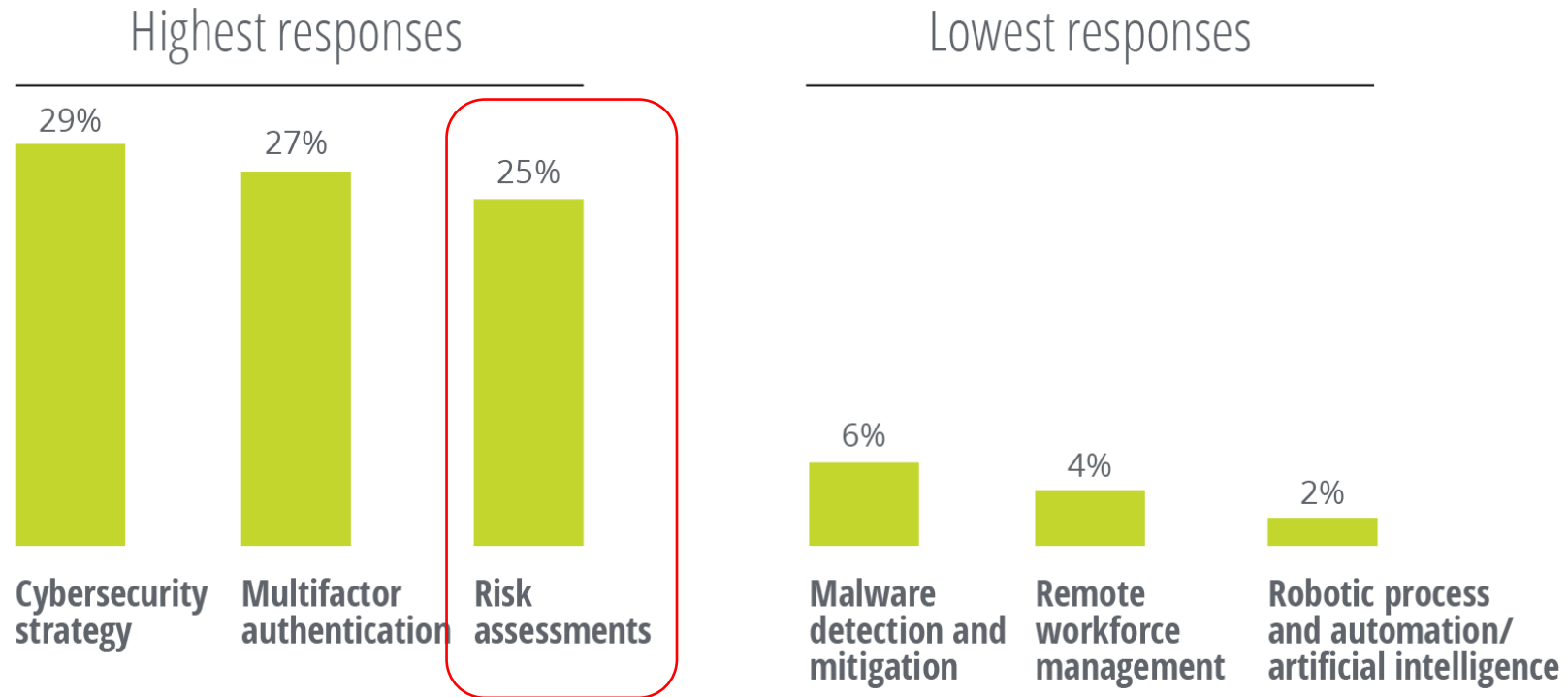
Insights on Cybersecurity Workforce

- Despite CISOs' growing responsibilities and the increasing sophistication of technology and threats, headcounts for state cybersecurity professionals remain about the same as 2020
- Over 60 percent of state CISOs report gaps in competencies among their staff
- Outsourcing is on the rise, especially within the security operations center (SOC)



Majority of states focused on foundational cyber initiatives

Majority of states focused on cyber strategy, multifactor authentication, and risk assessments as upcoming initiatives



State Cyber Trends to Watch

Talent crisis: recruitment, retention, compensation

More centralized operating model for cybersecurity

Adopting whole-of-state cybersecurity resilience

Expanding attack surface – services, remote work

Software supply chain risks

Support and partnerships with local governments

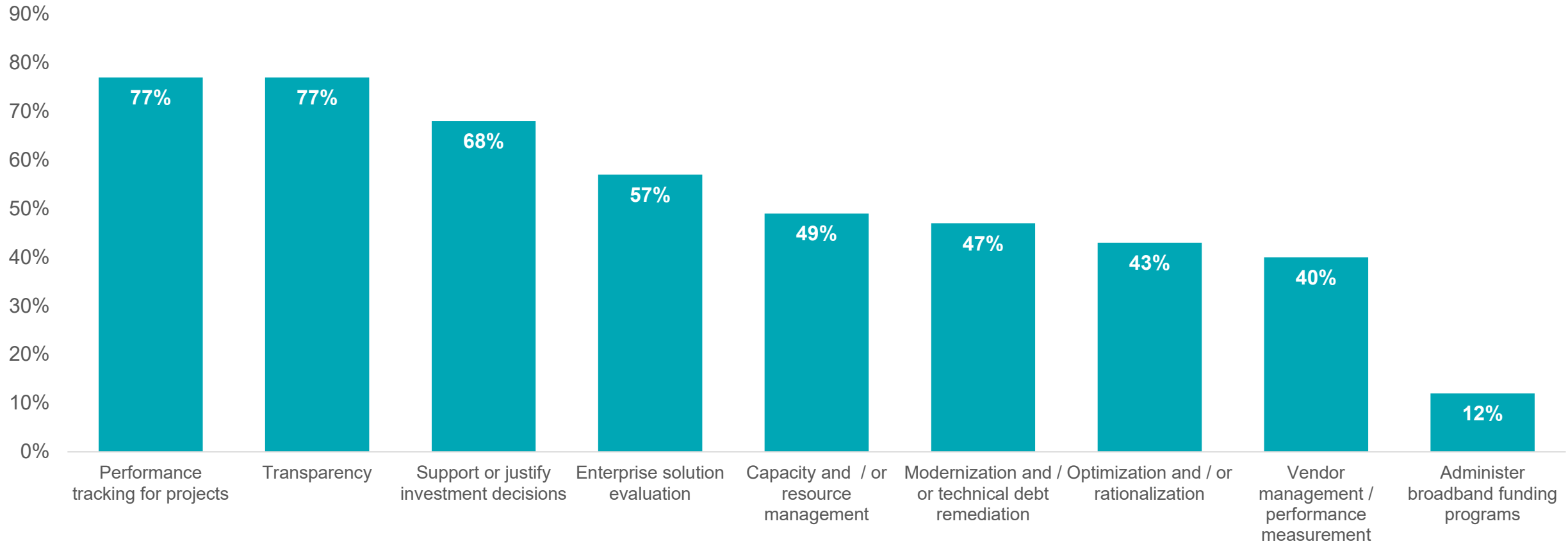


In your state, where is the use of project and portfolio management (PPM) optional vs. where is it mandated?

	Optional	Mandated
Within central IT organization	28%	68%
Across all IT organizations in the executive branch	37%	51%
Across all state level IT organizations	48%	12%

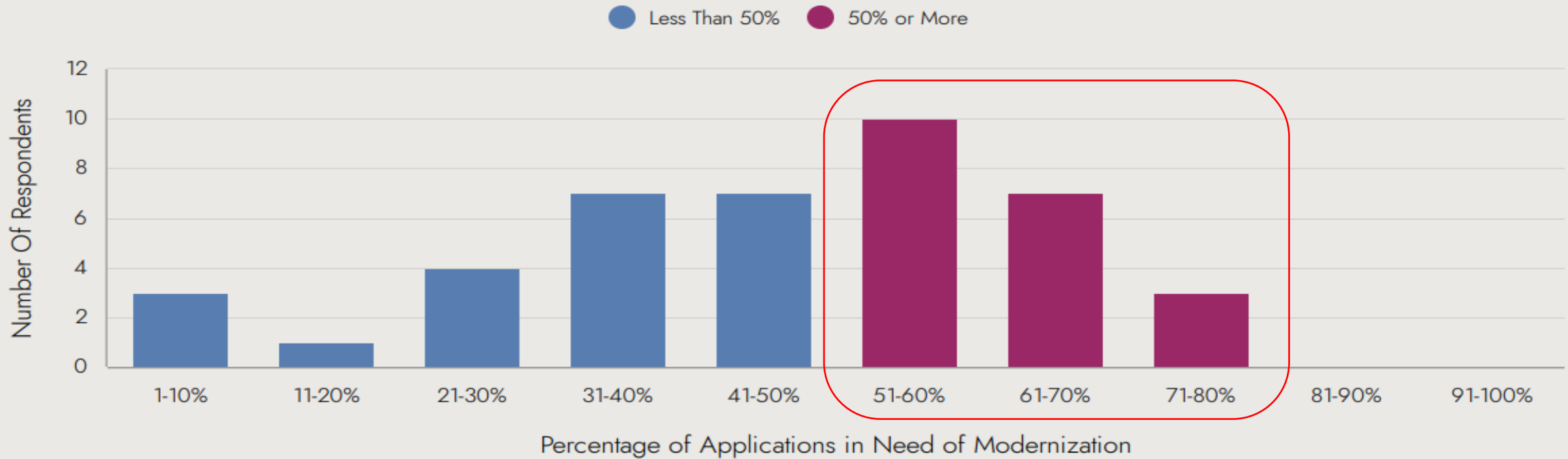


How are you using PPM in the state CIO organization?



APPLICATION PORTFOLIOS IN NEED OF MODERNIZATION

48% of the State Respondents Indicated a Majority of Their Applications Need Modernization.

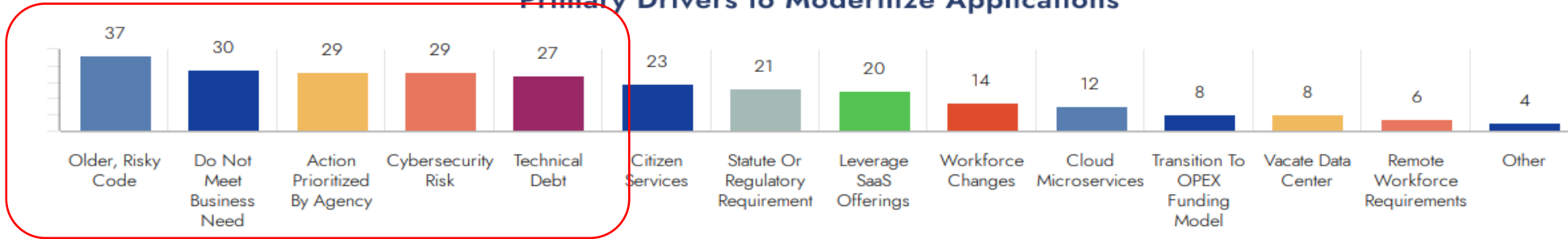


Respondents selected a percentage (in segments of 10%) in regards to applications needing modernization

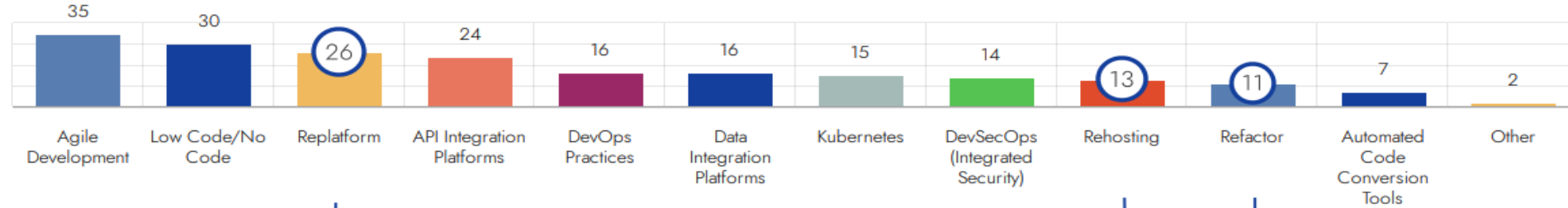
THE APPLICATION MODERNIZATION JOURNEY

State Respondents Selected All Options That Applied

Primary Drivers to Modernize Applications



Approach to Application Modernization Effort



24% of responses indicated a replatform, rehost and/or refactor approach

Reminder >

- **Rehost - Lift and shift**—moving applications to the cloud as-is. This is also sometimes referred to as rehosting.
- **Refactor**—modifying applications to better support the cloud environment.
- **Replatform**—moving applications to the cloud without major changes, but taking advantage of benefits of the cloud environment.
- **Rebuild**—rewrite the application from scratch.
- **Replace**—retire the application and replace it with a new cloud-native application.



TOP CHALLENGES FOR APPLICATION MODERNIZATION INITIATIVES

Experienced by 10 or More of Survey Respondents



1. **Funding**



2. **Dedicating Staff Time**



3. **Large Legacy Systems**



4. Significant Business Process Redesign



5. Agency Resistance to Change



6. Lack of Enterprise Insight



7. Procurement



8. Technical Know How



9. Shadow IT



10. Maintaining Current Enterprise Architecture



11. Cybersecurity



Is identity, credential and access management (ICAM) part of a statewide digital strategy?



80%

Yes



18%

Being Considered



2%

No

Please characterize the status of your enterprise-wide IAM solution (covering all agencies under governor's jurisdiction 2022 vs 2021).

	2022	2021
Partially implemented	58%	60%
Planned	22%	21%
Fully implemented	14%	13%
No plans to implement	6%	6%

Please characterize the status of your citizen digital identity initiative (2022 vs 2021).

	2022	2021
Partially implemented	40%	49%
Planned	36%	27%
No plans to implement	20%	18%
Fully implemented	4%	6%

What is the status of digital / mobile driver's licenses in your state (2022 vs 2021)?

	2022	2021
Planned	31%	27%
No plans to implement	25%	46%
Under development	20%	6%
Fully implemented and available to citizens	12%	10%
Pilot underway	12%	10%

What is the status of digital / mobile driver's licenses in your state (2022 vs 2021)?

	2022	2021
Planned	31%	27%
No plans to implement	25%	46%
Under development	20%	6%
Fully implemented and available to citizens	12%	10%
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Identity, Access, Credentialing Management – *considerations*

05



Identity and Access Management



On the white board . . .

- *Principles*
- *Governance*
- *Trust*
- *Risk Management*
- *Ethics*
- *MFA*
- *Defense in Depth*
- *Passwordless Authentication*
- *Multi-cloud Access*
- *Mobile DL*
- *Citizen Experience / Personas*
- *Self-sovereign Identity Management*

• *What else should be on the white board?*

• *What happens over time?*



Identity, Access, Credentialing Management



Emerging AI, VR, AR, metaverse, what is next?

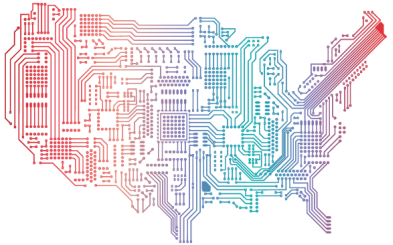
Metaverse has many components . . .

- virtual reality is only one aspect of it
- AR
- internet of things (IoT)
- blockchain
- cryptocurrency
- connectivity technologies.

Users of the metaverse can interact across-platforms, unlike with virtual reality technology.

March 2023

**Navigating
the Metaverse:**
Potential Applications and Implications
for State Government

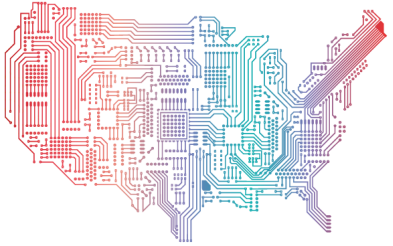


Emerging interest in metaverse

Metaverse has many components . . .

March 2023

**Navigating
the Metaverse:**
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- virtual reality is only one aspect of it
- AR
- internet of things (IoT)
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- connectivity technologies

Also see . . .



<https://www2.deloitte.com/xs/en/pages/technology/articles/metaverse-a-whole-new-world.html>

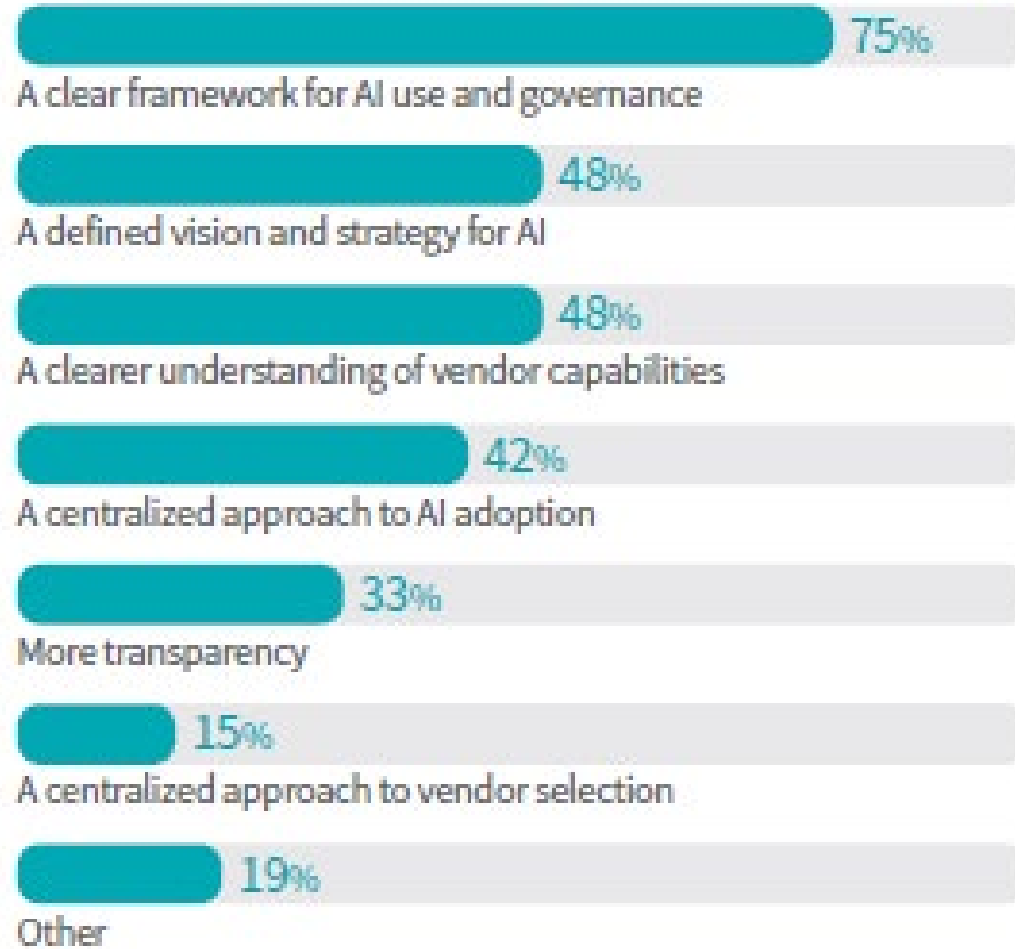
Users of the metaverse can interact across-platforms, unlike with virtual reality technology.



Leveraging AI, VR, AR



What is needed to support AI long term in your organization? (Select all that apply)



Looking to the Future



Execution of the State and Local Cybersecurity Improvement Grant: State shared cyber services to locals? Application process?

Future of the IT workforce: sustaining the remote work environment? Recruitment/retention/resignation, skills transformation, adaptation

Huge investments in broadband; more granular mapping data for better decisions; addressing affordability issues; identity management

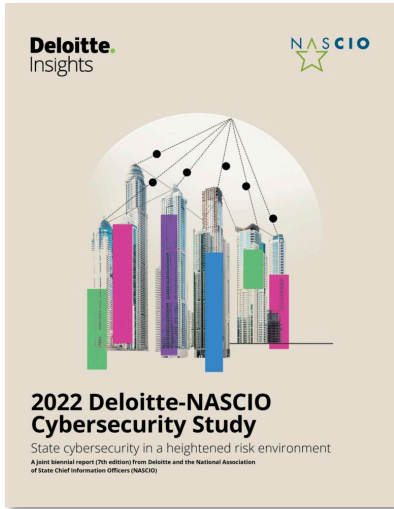
Pressure to improve program integrity: identity verification, anti-fraud solutions, data sharing

State chief privacy officer role is growing and evolving

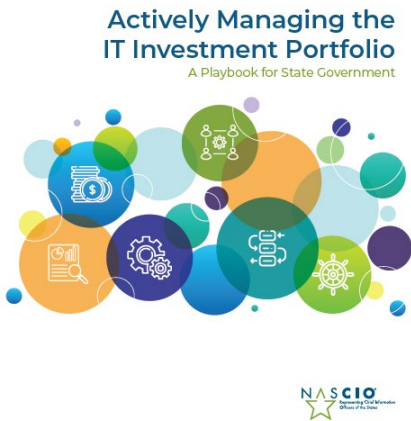
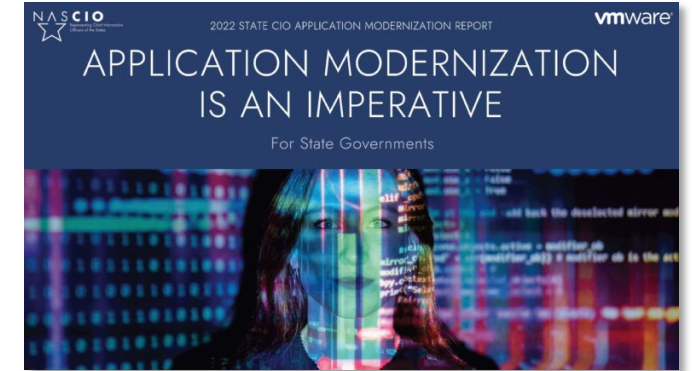
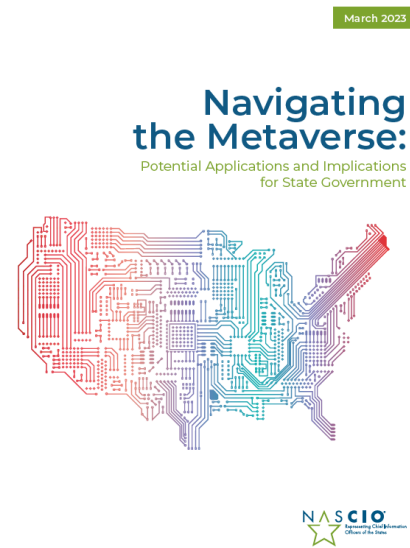
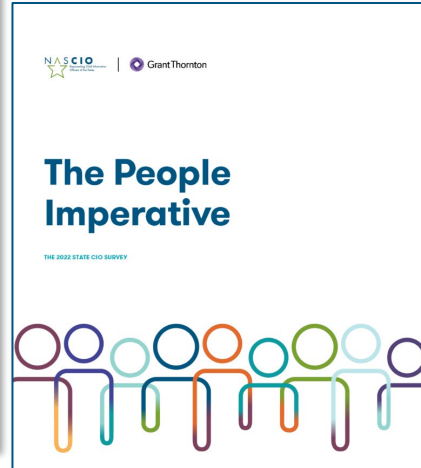
AI, VR, AR . . . metaverse . . . *What else is already here or emerging?*



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April 2023



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