

Seamless Data Collaboration — Intelligent Public Sector

How data collaboration will empower the next-generation
of public services and policies



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Executive Summary

Making government services more people-centric is not a new aspiration. However, given rapid advances in technology and increasing societal expectations, senior public-sector leaders are re-imagining the next generation of government services and operations to meet this goal.

Government leaders are increasingly recognizing that the overzealous process compliance and reactive operations associated with siloed data can feel highly bureaucratic, hindering civil servants' productivity and empowerment, citizen satisfaction, and public trust in government.

- The next-generation of citizen services will require governments to build a 360° view of people, businesses, and communities to avoid intruding on citizens' lives to ask for the same data again and again. A holistic view of constituents' needs will empower governments to harness the potential of the **AI economy** to proactively deliver services and foster the country's potential through evidence-based policymaking that improves allocation of economic resources and results in fewer delays and mistakes. Governments that turn data into intelligent insights will also be able to deliver **environmentally sustainable operations and policies** that set the example for cities, communities and the whole economy.
- However, governments globally are **data rich but insights poor**. They are plagued by fragmented organizations reflected in siloed data that negatively impacts data quality, makes governance and regulatory compliance overly complicated, and hinders collaboration across departments and levels of government. Government senior

leaders that do not address these challenges will not be able to harness the vast opportunities of AI and generative AI (GenAI) for improved citizen service, operational efficiency, and intelligent policymaking.

- The ability to use data intelligently is built on **data collaboration**, across the public sector and with private partners. The value of data collaboration can only be achieved by embracing federated architectures and distributed governance. Data does not need to be consolidated into a single technical system. Systems of record will be controlled by separate entities with trusted data sharing orchestrated through platforms that foster interoperability and re-usability across use cases and cost-effective scalability. This will incentivize data controllers and processors to cooperate, while being accountable for the security and quality of their data.

Public sector senior leaders that fail to embrace next-generation data platforms will be exposed to technical obsolescence, costly maintenance and upgrades, and ad hoc data transfer — all of which increase security, regulatory compliance, and ethical risks. They will also fail to harness the opportunity to power people-centric policies, services, and operations with AI.

Data at the Heart of Intelligent Public Sector



Across the globe, senior public sector leaders are envisioning secure and seamless access to data as the cornerstone of the future society.

“ The use of data is transforming the economy, government, and society. If the federal government does not maintain its role as a preeminent supplier and sophisticated and ethical user of data, it will no longer be able to fulfill its civic duty to the public.

Source: US Federal Data Strategy, part of the U.S. President’s Management Agenda



“ Access to data and the ability to use it are essential for innovation and growth. Data-driven innovation can bring major and concrete benefits, such as personalized medicine, improved mobility, better policymaking, upgrading public services.

Source: European Strategy for Data, European Commission



“ The true value of data lies in the ability to share it. It is when public sector entities can securely share data that the foundations for Smart Cities are laid down, and government service delivery improves exponentially.

Source: Government of Dubai Data Sharing Toolkit, Digital Dubai



“ ...position KSA as the global hub where the best of data & AI is made reality.

Source: KSA National Strategy for Data & AI, Saudi Data & AI Authority (SDAIA)



DATA AND DIGITAL GOVERNMENT STRATEGY

“ A humancentric society creates new values through a system where cyberspace and real space are highly integrated (digital twin).

Source: Japan National Data Strategy, Japan Government Digital Agency



“ Singpass provides a catalog of APIs — built around the National Digital Identity (NDI) citizen data infrastructure — that serves a common and universal framework which the public and private sectors can leverage to build value-added trusted digital services.

Source: GovTech Singapore



“ Better use of government-held data will generate benefits through developing evidence-based policy, designing and administering policies and programs, and performing more effective research and evaluation to assess the effectiveness of the government’s programs and policies.

Source: Australia Government Data and Digital Strategy, Australian Government Digital Transformation Agency

Intelligent use of data will empower public sector leaders to drive positive outcomes across missions and programs.

Inclusive welfare

“Working with better data allows both government and organizations to gain new insights into how to meet the needs of vulnerable people in our communities.

Source: Data Exchange Policy, Australian Department of Social Services (DSS)



Proactive public Health

“Core data sources are essential to identify diseases and conditions, detect emerging public health threats, and understand disease burden and severity across different populations.

Source: Public Health Data Strategy, US Center for Disease Control’s Office of Public Health Data, Surveillance, and Technology



Smart Cities

“Hyper-connected cognitive cities will use that data to seamlessly interact with community members, interpreting and mapping future needs and adding unprecedented value to humanity.

Source: Tonomous, NEOM’s cognitive technology subsidiary



Fair taxation

“Automate data insights to improve tax yield and provide simple means to interact with HMRC digitally, delivering a total experience approach for customers, agents and businesses.

Source: HMRC IT strategy: 2022 to 2025, HM Revenue and Customs (HMRC) Chief Digital and Information Officer (CDIO)



Multimodal mobility as a service

“Progressively more intelligent transportation systems aggregate data from various sources ... and can coordinate multiple actors — supply and demand — to achieve sustainable mobility goals, generate economic value, and improve transportation experiences.

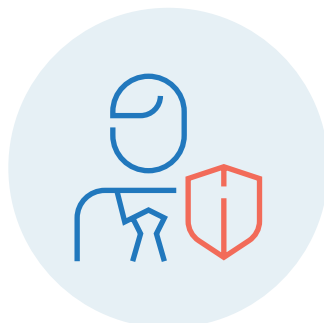
Source: Policy Making for Data Sharing, Sustainable Mobility for All (SuM4All) Partnership, a World Bank’s multistakeholder global coalition



Resilient public security and safety

“Data is at the heart of international policing. When the right data is in the right hands, it can give law enforcement a comprehensive global picture of crime trends to help them tackle emerging crimes more effectively.

Source: Project Insight, INTERPOL’s secure, intelligent platform for enhanced criminal analysis



Sustainable government operations

“Federal agencies will set ambitious, data-driven 2030 goals and annual targets for energy and water reductions, based on leading performance benchmarks for building type categories and the composition of the agency’s building portfolio.

Source: US Federal Sustainability, The White House



Smart agriculture

“The Ministry of Agriculture and Farmers Welfare employed AI to ... assist farmers with queries; ... detect climate related crop issues and enable timely intervention for healthier crops; ... assess and monitor crop health using satellite, weather & soil moisture datasets.

Source: India Ministry of Agriculture and Farmers Welfare



Data improves outcomes throughout government delivery, from policy design to citizen experience.



Addressing the Data Fragmentation Challenge



The public sector is data rich...

Transactional

- Invoices
- Payslips
- Tax bills
- Permitting and licensing fees
- Fines
- Welfare disbursements
- Grants disbursements

Attitudinal

- Community engagement in open data and other participatory programs
- Citizen satisfaction and trust ratings with public services

Descriptive

- City office opening hours
- City building code
- School and hospital location and opening hours
- Public transit schedules
- Public events calendar

Performance

- Public budget deficit/surplus
- Resolution time to citizen requests
- Civil servant productivity

Behavioral

- Fraud patterns
- Transportation patterns
- Crowd movement
- Crime patterns
- Energy and water consumption
- Waste recycling
- Civil servant remote work patterns

Location

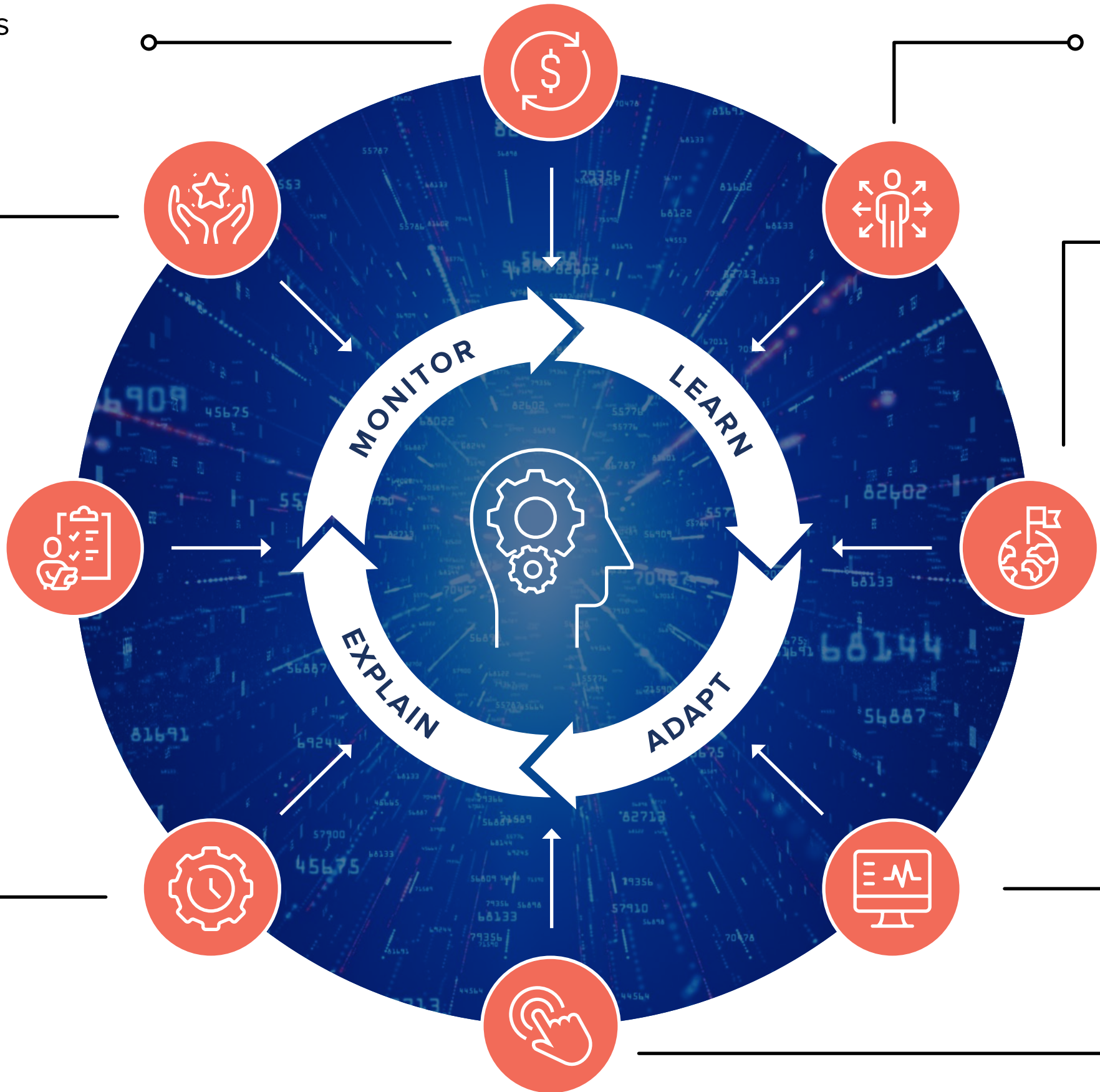
- Cadastral
- GIS
- Edge device (IoT, mobile phones, trucks, cars, buses) geolocation (GPS, GIS, Wi-Fi, Bluetooth)

Diagnostic

- GDP
- Life expectancy and other public health indicators
- Literacy and graduation rates
- Employment rate and income inequality
- Broadband penetration
- Green area per population
- Climate and weather condition
- Infrastructure condition
- Air and water quality

Interactional

- Emergency and non-emergency call logs
- Uptake of digital services by citizens and businesses



...but insights poor!

Governments are not able to harness the value of data richness to deliver timely insights.

The three most challenging issues impacting decision-making:



Source: IDC WW Future Enterprise Resiliency & Spending Survey Wave 1, January 2023 (N = 58, government orgs, 500+ employees)

Instead, richness often becomes complexity and hinders innovation.



Technology or data complexity (e.g., too many systems to integrate, too much data to analyze) is the **main** barrier to exploring next-generation technology-enabled innovation for **EMEA** government executives.

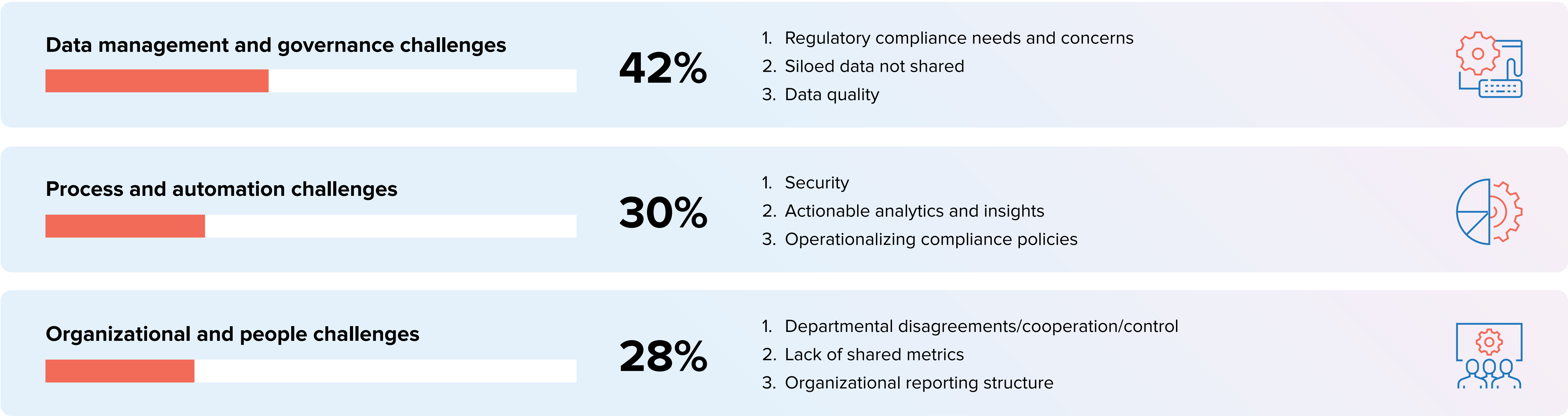
Source: IDC EMEA, Cross-Industry Acceleration Survey, December 2023 (non-weighted; N = 87)

Increasing data access across government siloes requires solving governance, process, and organizational challenges.

Organizational and technical siloes result in fragmented data architectures that make it difficult to:

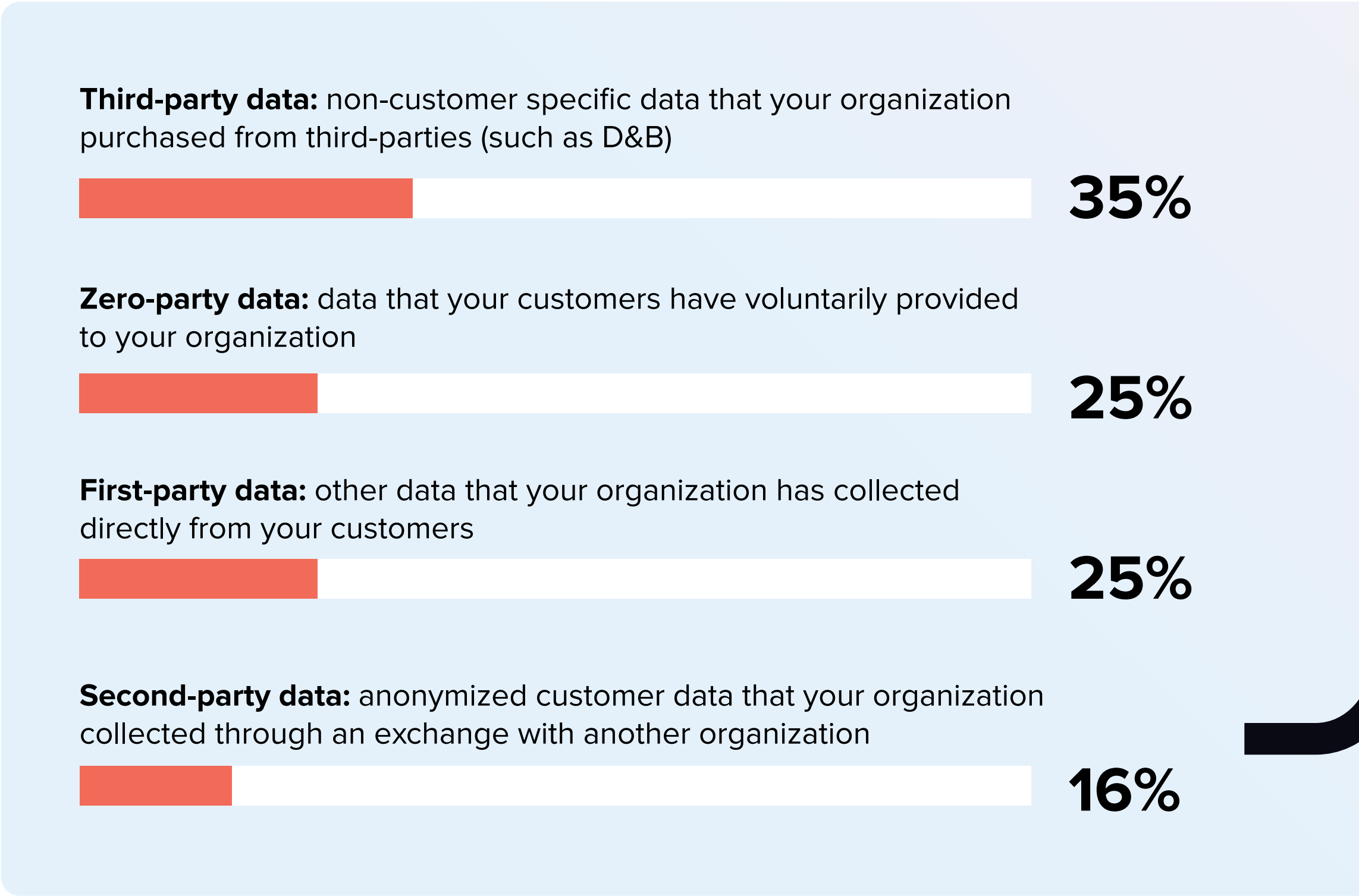
- Assure high quality data
- Comply with regulations
- Share data across departments and agencies
- Discover patterns to extract valuable insights
- Deliver insights consistently at the fingertips of decision makers in policymaking, service management, and operations

Most difficult type of challenge in sharing customer data across government agencies:

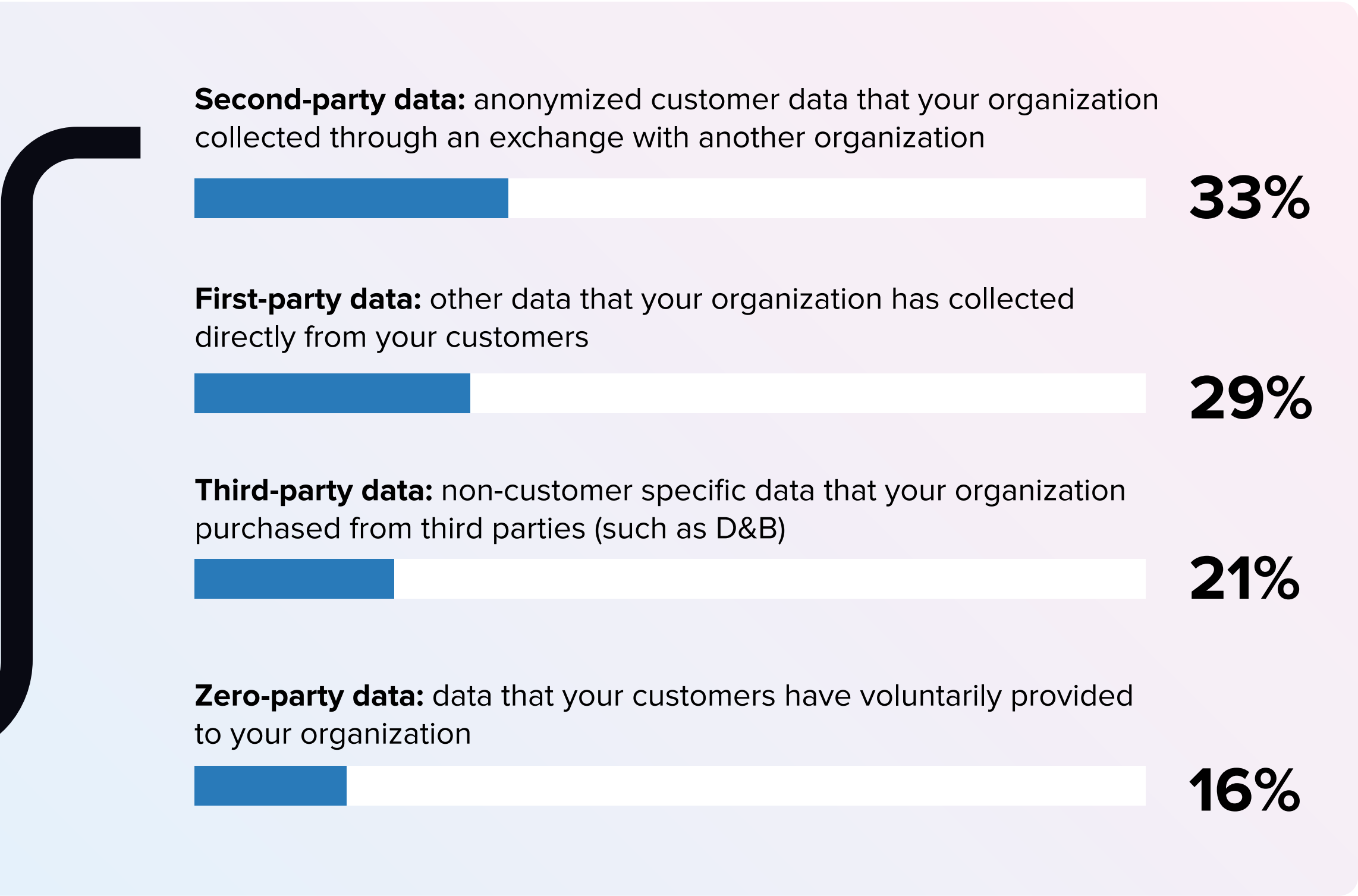


Data fragmentation risks becoming a bigger problem, as governments intend to leverage a wider variety of data and increasingly share data across organizational boundaries.

Type of customer data of most value to governments today:



Type of customer data expected to be of most value to governments in next 18 months:



The strategic investments that governments are making in AI and GenAI will make data management and data collaboration even more critical.



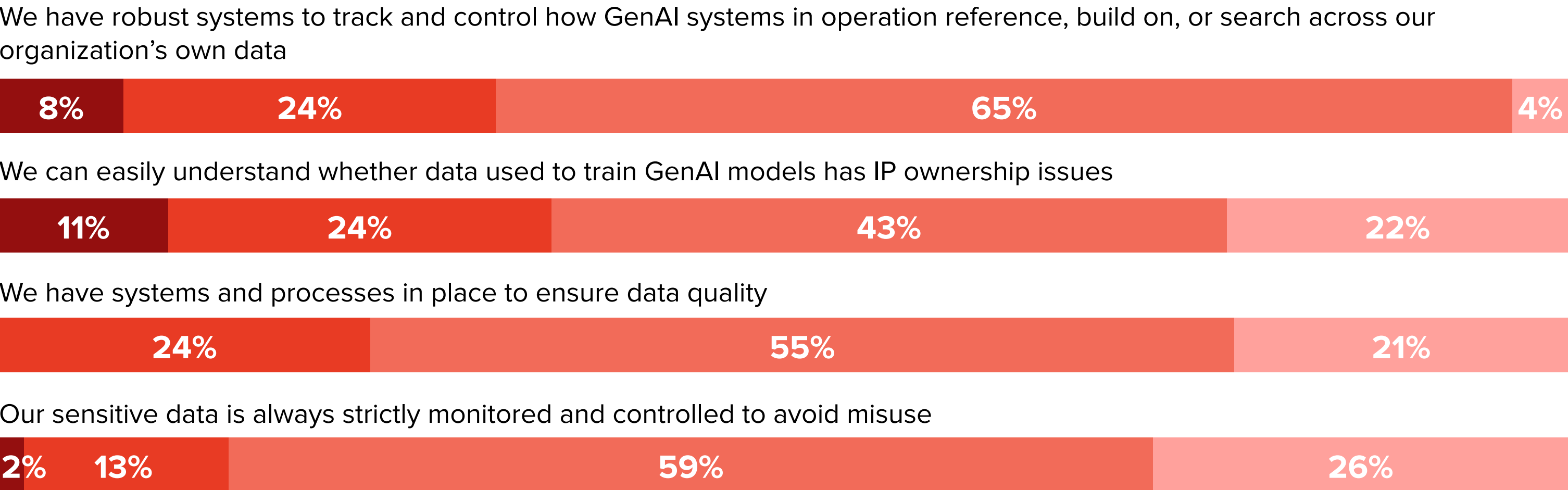
of government executives worldwide state that **GenAI** has already disrupted their organizations or is expected to make a significant impact in the next 18 months.

“**AI is set to become the most transformative technology in human history, reshaping the global economy and our daily lives. As a young nation and the fourth-largest economy, India must be ready to tackle the challenges posed by AI and use it to address social issues and achieve greater economic success.**”

Source: indiaai.gov.in

Governments want to leverage the power of GenAI, including its multimodal capabilities, to deliver more comprehensive insights with natural language interfaces. But **less than 30%** of government executives worldwide feel “**completely**” prepared for GenAI from a data management and governance perspective.

How much do you agree with the following statements in terms of your preparedness for data management and governance in GenAI implementation?

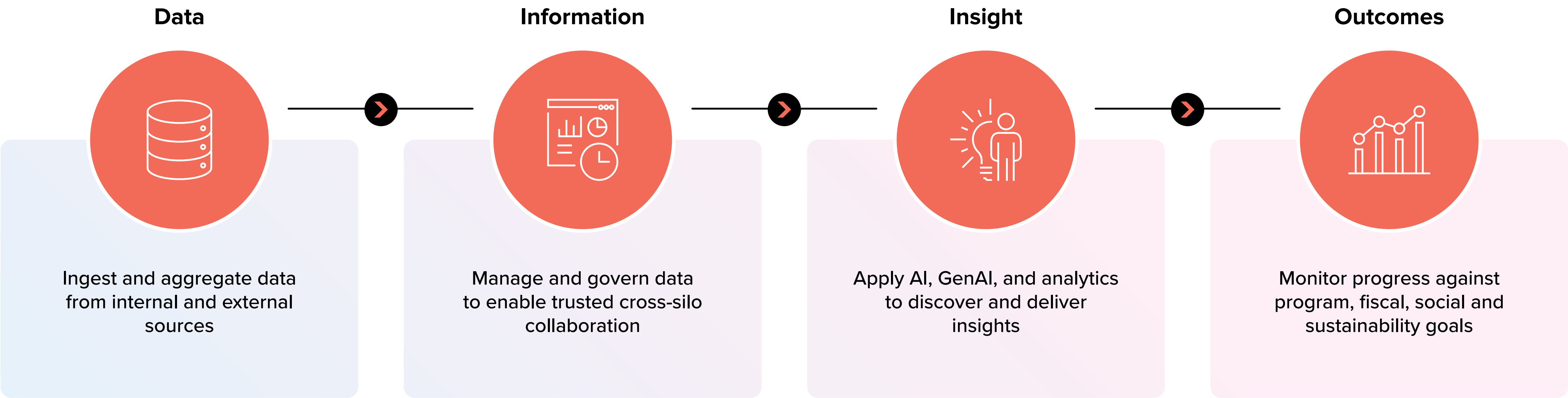


● Completely disagree ● Slightly disagree ● Slightly agree ● Completely agree

Turning Data into Insights Through Seamless Data Collaboration



Governments need data collaboration to turn data into impactful insights.



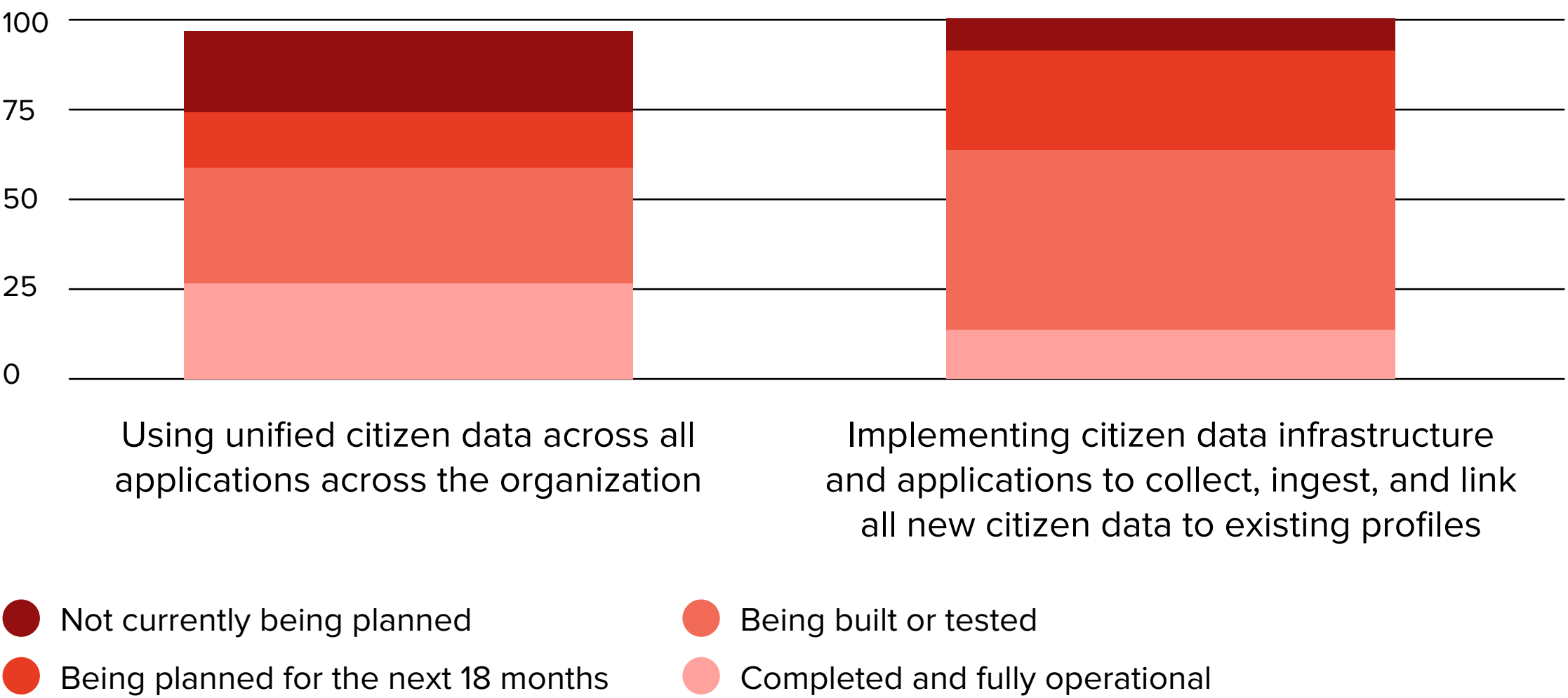
“The government will invest in and integrate the data it holds to improve decision making, service delivery, and performance assessment in a manner inclusive of all Australians. It will collaborate with state and territory governments to break down the legislative, cultural, and technical barriers to cross-jurisdictional data sharing. It will partner domestically and globally to strengthen and promote standards for better problem solving and outcomes.”

Source: Australia Government Data and Digital Strategy, Australian Government Digital Transformation Agency

Governments that want to enable seamless access and intelligent use of data are moving away from trying to put all data in one place to linking everything across distributed environments.

The quality, relevance, and timeliness of intelligent insights will depend primarily on the ability to develop a 360° view built on data accessibility across government programs, processes, and the underlying records systems. This data collaboration goal will be achieved by investing in distributed operating models and systems.

Government investments in unified customer/citizen data across applications



The in-house ICT company of a European regional government, leveraged its large information heritage by implementing a data marketplace that integrates a vast amount of heterogeneous data and delivers the integrated data through a single platform to the BI applications and the data consumers. The platform allows users ***“not to have to be concerned about the technical nitty-gritty and instead devote more time to data analysis, finding meaning in the data, and generating insights, while being aware of the different kinds of data sets that are available to them.”***

— European regional government

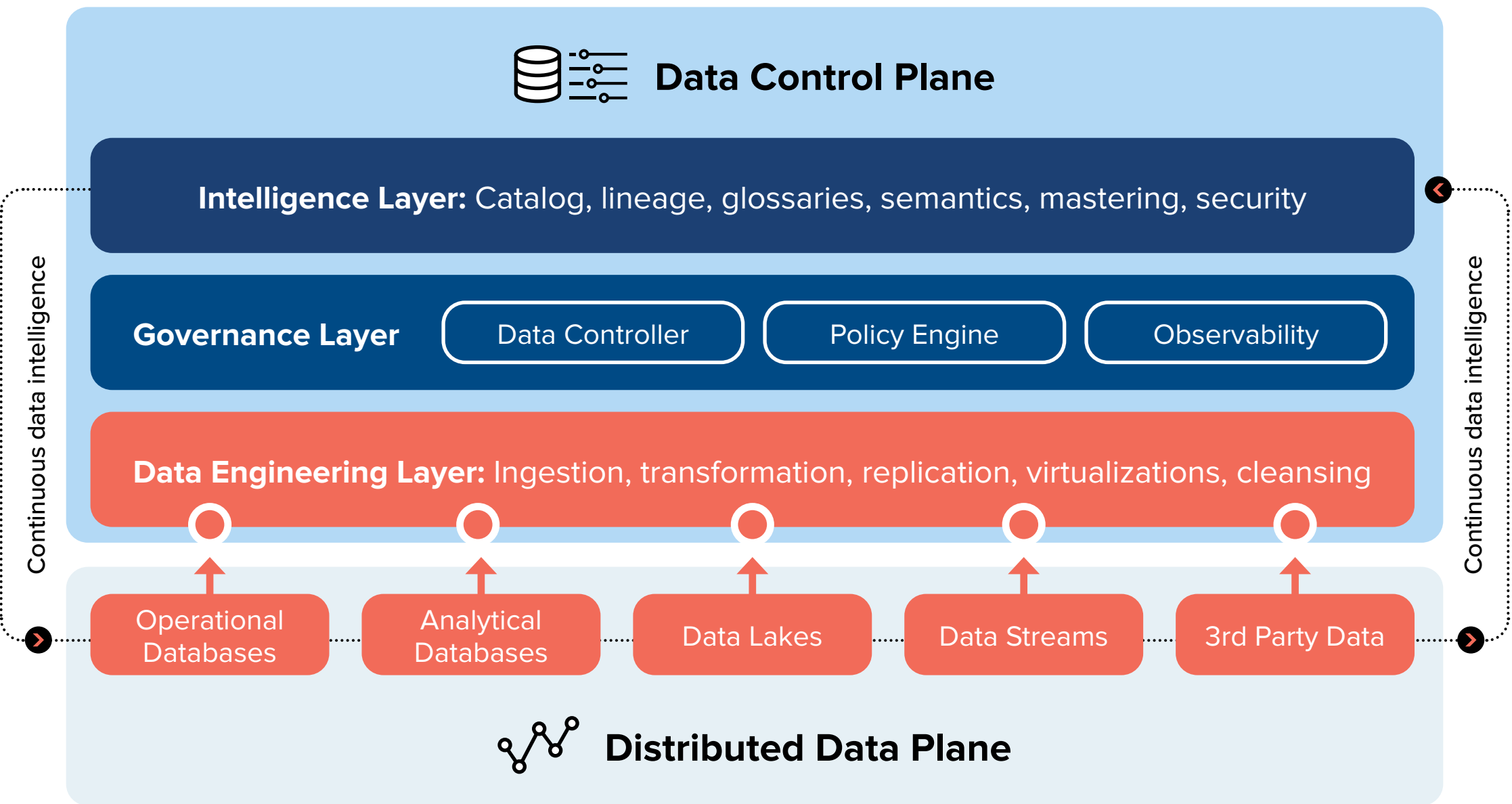
A production integrator for a nuclear security agency and a provider of solutions for other government departments, built an Integrated Digital Environment (IDE) to provide unified access to weapon lifecycle data across different facilities and enable the timely, secure sharing of data, including with several other national laboratories. ***“With a long-term mission of safely and securely maintaining the nation’s nuclear weapons stockpile and dismantling weapons retired by the military, our data virtualization strategy plays an important role in expediting projects by enabling fast and secure data movement through different facilities.”***

— North American Federal government agency

Democratizing access to data is the key to unlock the future.

Next-generation data architectures need to **democratize access to data**. From senior policy leaders to all levels of civil service, decision makers must be empowered to **independently access, analyze, and use intelligent insights from data** to respond to rising citizen expectations, economic and geopolitical volatility, and regulatory changes, while using taxpayer money responsibly.

Government **chief information officers and chief data officers** need to lead a strategic shift towards logical data platforms, such as data control planes, that separate data intelligence, governance and control from storage to enable **flexible, agile data sharing and collaboration**, while ensuring that knowledgeable mission and functional leaders remain responsible for their data sources.



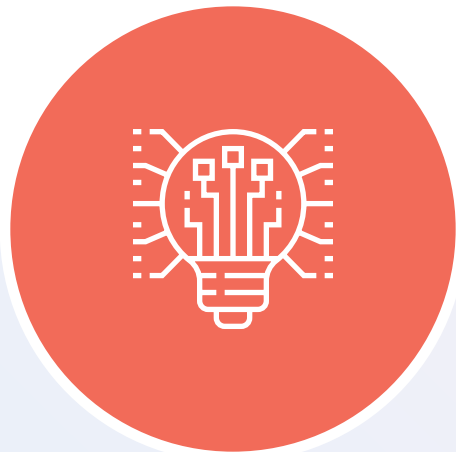
Five critical steps for government data democratization

-  **Centralize views of data** through a logical access layer that allows role-based access to distributed data while ensuring governance, compliance, security, and quality control in a cost-effective manner.
-  **Empower self-service insights** through analytics and dashboards designed for civil servants that expect a user-friendly, non-technical way to track performance of policies, programs, services, and cases.
-  **Free up technical experts** to foster program and service innovation through AI capabilities that analyze vast amounts of data, identify patterns, predict outcomes, and automate decisions.
-  **Foster a culture of data literacy** by encouraging civil servants to use data regularly, value data-driven decision-making, collaborate across silos, and understand the implications of using and sharing data responsibly.
-  **Establish governance** structures, policies, procedures and oversight mechanisms that protect data against breaches, or misuse and ensure transparent, ethical use of data and algorithms to maintain citizen trust.

Conclusions and Recommendations

Government leaders are increasingly recognizing that the overzealous process compliance and reactive operations associated with siloed data can feel highly bureaucratic, hindering civil servants’ productivity and empowerment, citizen satisfaction, and public trust in government. The ability to use data intelligently requires data collaboration by embracing federated architectures and distributed governance, rather than trying to consolidate everything into one place that increases technical, regulatory, and security risks and is not agile enough to respond to operational needs for leveraging advanced analytics and AI.

Design for intelligent outcomes



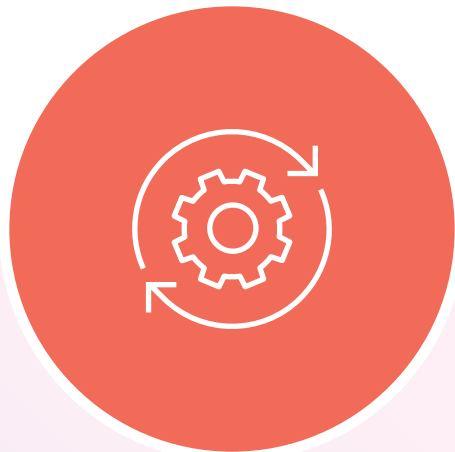
Public sector organizations should invest in data platforms that enable them to deliver intelligent insights to positively impact the whole lifecycle of government service — from policymaking to citizen experience.

Fragmentation is the enemy



Organizations’ initiatives are hampered by high levels of data fragmentation, caused by legacy systems, trust and control issues, and siloed operating models.

More of the same will not work



Organizations must adopt data platforms that enable democratized, secure, data access, integration, sharing and collaboration; simply adding more layers of technology in an attempt to consolidate everything in one place will create more complexity and risks.

Modernize to simplify



Work with technology partners that can deliver modern data management platforms that enable data delivery and data governance to be logically separated from data storage, so that distributed data sources can be left “in situ,” while access and collaboration can be unified and simplified.

Message from the Sponsor



Harnessing the power of data is essential for driving effective governance. To meet the evolving needs of your constituents, you require timely, accurate, and comprehensive data insights.

At Denodo, we understand the unique challenges facing public sector and government agencies.

The Denodo Platform with a logical data management (LDM) approach allows you to seamlessly integrate disparate data sources from across your organization, breaking down silos and fostering collaboration. Whether it's citizen services, public safety, healthcare, transportation or any other sector, our solution provides real-time access to unified views of your data.

- 1. Improve Decision-Making:** Make informed decisions based on a holistic view of your data, leading to better outcomes for your constituents and stakeholders.
- 2. Enhance Operational Efficiency:** Streamline processes and workflows by eliminating data redundancies and inconsistencies, saving time and resources.
- 3. Ensure Data Security and Compliance:** Safeguard sensitive information and maintain regulatory compliance with robust security features and governance controls.
- 4. Foster Innovation:** Fuel innovation and digital transformation initiatives by empowering your teams with the insights they need to innovate and adapt.

Let's build smarter, more resilient communities and drive positive change with data.

Explore how Denodo can support your mission-critical initiatives on our [dedicated public sector page](#).

About the IDC Analysts



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Massimiliano (Max) Claps is the research director in IDC Europe’s Government Insights Team. His research empowers technology suppliers and public sector professionals to utilize disruptive technologies such as artificial intelligence, edge computing, and cloud, to realize the benefits of strategic initiatives such as Smart Cities and citizen-centric government services. He is also IDC Europe’s lead analyst for passenger transportation, advising stakeholders across the transportation ecosystem on topics like mobility as a service and intelligent traffic management.

[More about Massimiliano Claps](#)



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Neil Ward-Dutton is vice president, lead analyst automation, analytics, and AI at IDC Europe. In this role, Neil guides IDC’s research agendas and helps enterprise and technology vendor clients alike make sense of the opportunities and challenges across these very fast-moving and complicated technology markets. In a 28-year career as a technology industry analyst, Neil Ward-Dutton has researched a wide range of enterprise software technologies, authored hundreds of reports, and regularly appeared on TV and in print media.

[More about Neil Ward-Dutton](#)



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Adelaide O’Brien is research vice president for IDC Government Insights responsible for government digital transformation strategies. Ms. O’Brien assists clients in understanding the full scope of efforts needed for digital transformation, and focuses on technology innovations such as big data, AI, cognitive, and cloud in the context of government use cases such as customer experience, data-driven benefits and services, and public health protection.

[More about Adelaide O’Brien](#)

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