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A report from the Deloitte Center for Government Insights

Government Trends 2021

Global transformative trends in the public sector

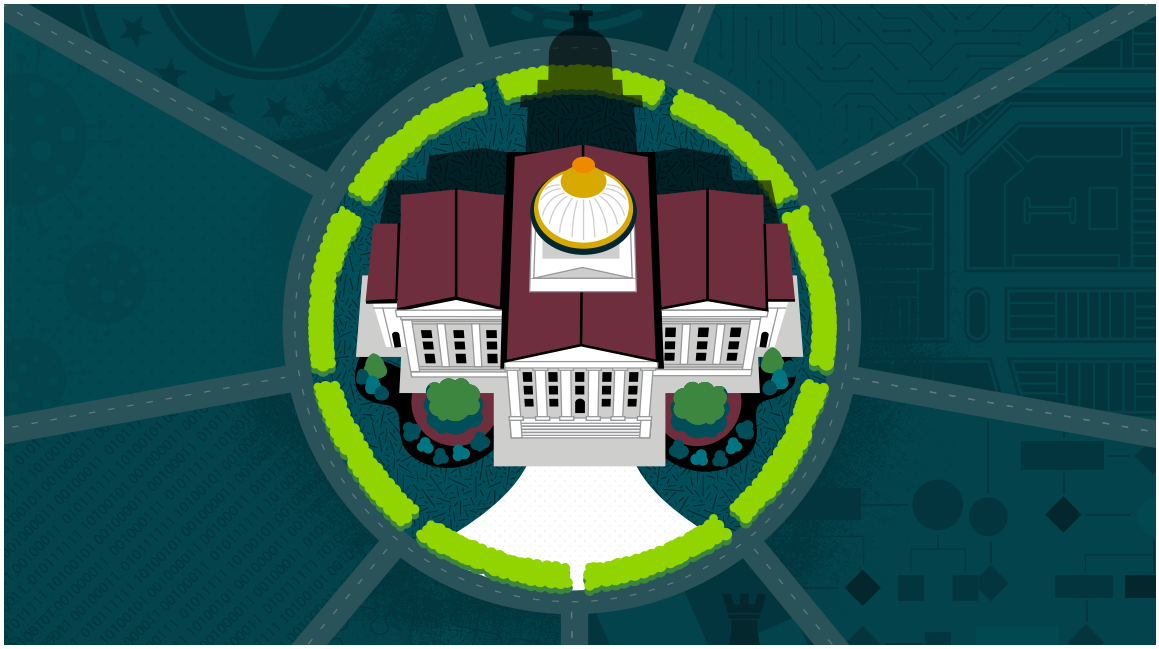
About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting-edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.

Contents

Overview and introduction

Unprecedented 2020 ushered in new government trends



EACH YEAR, THE top online searches provide a window into what was on people's minds. Not surprisingly, in 2020, "coronavirus" and "election results" were the top two searches and news phrases globally.[1] As the world went into lockdown, "what day is it" searches hit an all-time high in April. In June, the query "what is systemic racism" peaked. Despite difficult economic times, people searched "how to donate" twice as much as "how to save money."[2]

The year 2020 was tumultuous, and government stood front and center in not only confronting the biggest public health challenge in a century, but also dealing with major economic and social disruptions. New programs were rolled out seemingly overnight, and at a massive scale. Government is usually associated with incremental change, but 2020 was a year of discontinuity. The shifts we saw in government operations reflect the dramatic changes happening in the world at large.

The Deloitte Center for Government Insights' *Government Trends 2021* captures nine of the most transformative trends in government today. The report distills years of research on government operations, coupled with on-the-ground coverage of what is happening in the trenches right now.

The COVID-19 pandemic accelerated—in some cases, by years—trends such as the digitization of government. As the pandemic swept the globe, citizens looked to their governments to provide economic relief, contain the virus' spread, and

provide a steady flow of information. As citizens "rallied around the flag,"[3] government became the most trusted institution globally for the first time in two decades.[4] Governments with the most success in addressing the pandemic saw this reflected in high trust ratings.

In our 2020 *Government Trends* report, we highlighted trends that centered on using technology to better serve citizens. These trends included AI-augmented government, digital identities, behavioral nudges, anticipatory government, cloud, and putting the customer experience at center stage. When the pandemic hit, governments that were ahead of these trends proved far more able to effectively respond to the needs of the citizens.

The nine trends we highlight in this report have three things in common: First, they focus on government operations instead of policy issues such as immigration or health care.

Digital identity programs, for example, were immensely beneficial in delivering services during COVID-19, solving the "last mile" problem and rapidly providing benefits to those who needed them most. India's Jan Dhan-Aadhaar-Mobile initiative, which links bank accounts to citizens' mobile numbers and digital identity credentials, was used to seamlessly disburse COVID-19 cash relief.[5]

Meanwhile, cloud proved critical for not just meeting surges in demand but doing so remotely. In general, governments with strong digital infrastructure were able to rapidly adapt to the new virtual world, while those still relying on manual processes struggled mightily.

This year also saw a significant rise in the global movement for inclusion. Across industries, including government, policies are being revisited to ensure diversity, equity, and inclusion are reflected in public policy and public practice.

The nine government transformation trends

Since launching five years ago, the Deloitte Center for Government Insights has focused on the ongoing transformation of government. This trends report is informed by research, surveys, and Deloitte's work in the trenches with governments worldwide, which give the center a unique horizon scanning capability.

The nine trends we highlight in this report have three things in common: First, they focus on government operations instead of policy issues such as immigration or health care. Second, each trend has moved beyond pilots and experiments and has begun to penetrate the heart of government. Third, they are all global in scope, happening in both developing and more economically advanced nations to varying degrees.

Accelerated digital government: COVID-19 brings the next generation of digitization to government. The pandemic changed digital from "nice-to-have" to "must-have" for governments. To meet the surge in service demand while operating virtually, governments have accelerated their digital journey along three major dimensions: scaling digital infrastructure, creating a more digitally savvy workforce, and investing in citizen connectivity.

Across industries, including government, policies are being revisited to ensure diversity, equity, and inclusion are reflected in public policy and public practice.

Seamless service delivery: Personalized, frictionless, and anticipatory. Government agencies are increasingly providing personalized, frictionless, and proactive services to citizens. There are several avenues that governments are taking to achieve this vision of seamless service delivery: committing to fully digital services, designing proactive services around life events, and building infrastructure to support such seamless services. The goal: have government services approach the ease of the best online experiences.

Location liberation: Adaptive workplaces in government. COVID-19 caused organizations to fundamentally change how they accomplished their respective missions. From remote work to telemedicine and online schools, the pandemic brought the future of government work into the present. This trend follows the emergence of adaptive workplaces, including approaches for managing a distributed workforce and delivering high-quality citizen services virtually.

Fluid data dynamics: Generating greater public value from data. Data is assuming an elevated level of importance within and outside government. Public agencies are developing novel approaches to maximize the value of the data they hold, including appropriately sharing that data. Across the globe, the trend toward fluid, dynamic data is changing how data is being used and shared by government and its partners in academia, nonprofits, and the private sector.

Government as a cognitive system: Using hindsight, real-time data, and foresight to drive policy and decision-making. The best governments are constantly learning, evolving, and making decisions—just like people do. When government understands itself as a "cognitive system," it can take steps to increase how quickly it learns. This entails using data in new ways to gain insights from the past and present, and to make reliable projections about the future. This augmented learning and decision-making capability can create immense public value. Governments can design programs with an intelligence architecture in mind. The hindsight of past performance, coupled with real-time data in the present, can lead to optimal decisions for the future.

Agile government: Building greater flexibility and adaptability in the public sector. The pandemic has highlighted the need for a fast, flexible, and mission-centric government, and many governments around the world have embraced the opportunity and shown they are up for the challenge. Governments had to make timely decisions—they needed to move fast. This agile imperative can be seen in many areas, including policymaking, regulation, procurement, and the workforce.

Government's broader role in cyber: How governments are adjusting to help secure cyber ecosystems. A cyber hack that would once damage a single organization can now spread to threaten an organization's partners, clients, or even an entire industry or a sector. Governments want to tap into a growing information ecosystem, but what about the risks? Reliable cybersecurity requires breaking down internal silos, recrafting external relationships, and making sure the public workforce comprises the best cyber talent.

Inclusive and equity-centered government: Embedding greater inclusion, diversity, and

equity into the public sector. As inclusion and equity issues come to the forefront, governments are focusing more on the underlying causes of systemic imbalances and questioning the fundamentals of how policies are developed, implemented, and assessed. Some of the global approaches being embraced include inclusive and equity-centered design, equitable access to public goods, data sovereignty and equity, and cocreation and citizen engagement.

Sustaining public trust in government: Strengthening trust in government institutions, systems, and processes. In many parts of the world, trust in government skyrocketed in 2020. In some countries, however, trust in government was close to an all-time low. Such trust—and increasingly social trust or social capital—is crucial to managing challenging economic and public health issues.[6] Governments are working toward making trust a core component, tackling information manipulation, weaving in greater transparency, and building trust in government's digital systems, services, and data initiatives.

Understanding these trends is the first step in navigating the journey ahead.

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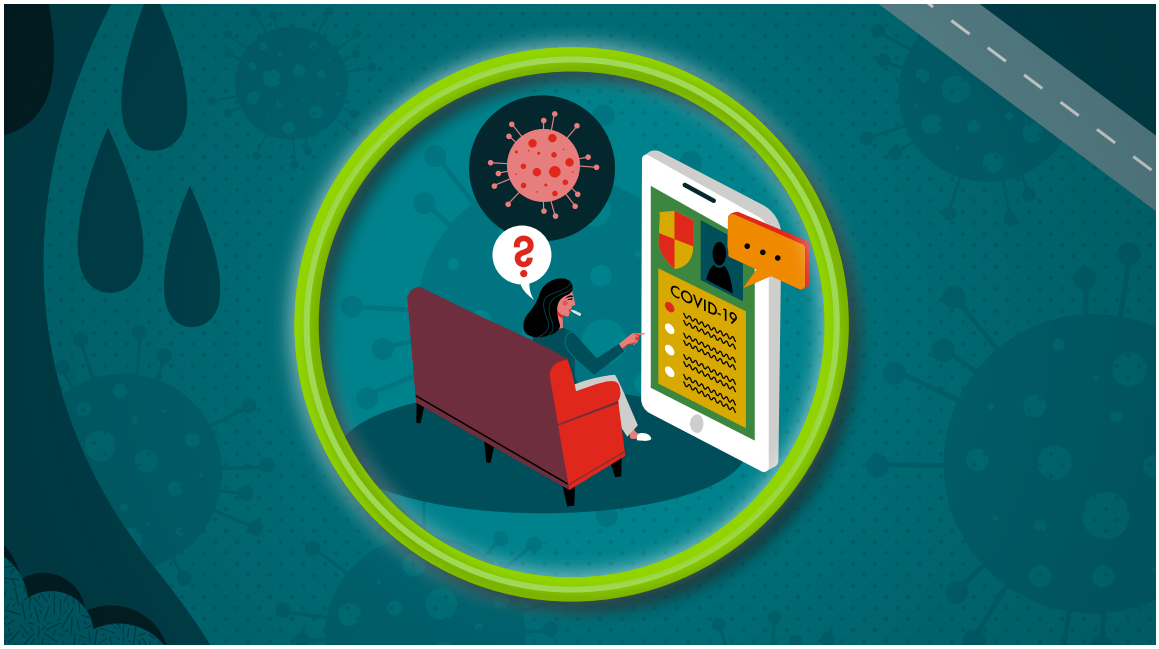
Accelerated digital government

COVID-19 brings the next generation of digitization to government



THE COVID-19 PANDEMIC has accelerated—in some cases, by years—the advent of truly digital government.

Prior to the pandemic, governments around the world had been making digital advances, although at an uneven pace. While some had made significant progress, others were still in the early stages of digital transformation. The risk of being "less than perfect" was slowing the transition to digital in many jurisdictions.

When the global pandemic hit, everything changed. Digital was no longer a "nice to have" for government, but an imperative. Consider digital government's most compelling features: its ability to serve efficiently, scale cheaply, and adapt quickly. The disruption of the pandemic made these features more vital than ever.

Globally, the public sector's response to the pandemic resulted in rapid change of the sort generally not seen in government. From telehealth to telework, and virtual courts to virtual education, many large-scale digital innovations were rolled out at unprecedented speed. The digital infrastructure, digital workforce, and citizen-facing connectivity that enabled these successes are not just useful during the pandemic; they will lay the foundation for digital government for years to come.

How digitization has accelerated

To meet the needs of the pandemic, governments accelerated their digital journey along three major dimensions:

1. SCALING DIGITAL INFRASTRUCTURE

The pandemic brought about a trifecta of challenges for the governments. As public health officials around the world ordered citizens to stay at home and businesses to operate remotely, government agencies grappled with an explosion in demand for digital services, the need to provide such services in a completely remote environment (at least at the time), and handle requests for new services that never existed before.

As a result, governments around the world have dramatically scaled their digital capabilities. To meet the trifecta of challenges, governments have turned to three complementary digital approaches to tackle each challenge:

i) Ramping up artificial intelligence and automation

As demand soared during the pandemic, governments increasingly turned to automation to keep pace. From automating manual tasks to deploying virtual assistants powered by artificial intelligence (AI), governments used automation tools to provide faster service and reduce human workload. For example, the Romanian Ministry of Labor used robotic process automation (RPA) to distribute direct payments to self-employed workers impacted by COVID-19. Of the 285,000 claims processed, 96% were automated, with each claim taking 36 seconds as opposed to 20 minutes when processed manually.[1]

In the United States, the Department of Housing and Urban Development, National Institutes of Health, and Internal Revenue Service used RPA to help their employees move from low-value to high-value work and to effectively tackle the spike in demand for critical services.[2]

With 79% of government officials indicating that automation is making a significant positive impact on their business, adoption of automation is likely to continue.

Similarly, AI-powered virtual assistants, chatbots, and "virtual doctors" helped governments provide a quicker COVID-19 response by answering citizen queries, tracing contacts, and overcoming language barriers. For instance, France's AlloCovid service used an AI-based voice assistant to direct citizens with coronavirus symptoms to appropriate health care professionals.[3] Meanwhile, Brazil used AI-enabled robots to assist with contact tracing.[4]

These adoptions are not likely to recede after the pandemic. With 79% of government officials indicating that automation is making a significant positive impact on their business, adoption of automation is likely to continue.[5]

ii) Harnessing cloud solutions

The pandemic forced governments not only to meet a sudden surge in service demand but to do so remotely. The result was that many governments had to quickly pivot their workforces to remote work and create new channels for virtual service delivery—all at scale, in a matter of weeks. For many, the answer to this challenge lay in harnessing the cloud.

COVID-19–led digital investments

The **Ontario Government in Canada** is channeling CAD 500 million over four years toward modernization projects such as making government services digitally accessible, reducing red tape, and improving government purchasing.

The **United Kingdom's Spending Review 2020** has set aside £600 million to upgrade government IT in order to improve security, efficiency, and administration.

The government of **France has earmarked US$8.4 billion** for investments in digital transformation, infrastructure, and startup investment.

As part of **South Korea's Digital New Deal**, the government plans to dedicate KRW 58.2 trillion to upgrading public infrastructure while expediting adoption of data and AI throughout the economy.

The **Digital Egypt Project** of the Ministry of Communication and Information Technology has allocated a sum worth US$375 million to supply fiber-optic cable connections to all government entities.

The government of **Singapore's estimated spend** on information communications and technology for FY2020 increased 30% over the previous year.

The **Digital Spain Plan** 2025, introduced by the government in July 2020, envisages €140 billion worth of public and private investment during 2020–2025.

Multiple states have channeled CARES Act money toward expanding broadband infrastructure. For instance, Vermont has allocated US$17.4 million, while Tennessee spent US$61 million to improve digital connectivity.

Malaysia's Federal 2021 Budget set aside a sum of US$242.5 million for areas including cybersecurity, Internet of Things and connectivity, digital workforce, and digital transformation of small and medium enterprises.

Saudi Arabia's Ministry of Communications and Information Technology has launched the Universal Service Fund with SAR 9 billion from the government and SAR 6 billion from leading telecom companies to improve digital infrastructure and outreach to remote areas.

Australia's Digital Business Plan has dedicated an amount close to AUD 800 million that, among other things, will support the development of whole-of-government capabilities such as digital identity, e-invoicing, and the creation of a single, source of business data.

The **New Zealand government announced** an investment of up to NZD 15 million in April 2020 to upgrade rural broadband capacity.

While there are many solutions for remote work, from remote desktops to virtual private networks, many governments that depended on these solutions found them insufficient for coping with the sudden scale of remote work during the pandemic. Cloud, on the other hand, by its very nature, was more quickly scalable, allowing for a seamless transition to telework. In California, for instance, 90% of around 200,000 state employees were able to smoothly switch to telework owing to the state government's early efforts to pursue cloud.[6]

The shift to cloud not only allowed employees to work remotely but also helped governments reach citizens.

The shift to cloud not only allowed employees to work remotely but also helped governments reach citizens. In Singapore, for example, public agencies tapped into "postman.gov.sg," an omnichannel cloud-based communication tool, to send bulk messages with critical updates to citizens. As of November 2020, the tool had been used to share over 1.3 million messages.[7]

iii) Building a "whole of government" digital architecture

The pandemic also created demand for completely new services. Most government agencies hadn't planned to draft social distancing regulations or coordinate vaccine logistics at sub-zero temperatures. While these and other challenges may have been new to many parts of government, they were not necessarily new to government as a whole. Therefore, the key to success was creating a "whole of government" digital architecture that could make relevant solutions created in one area of government available to another.

Although this concept is not new, it has taken on new importance as the pandemic highlighted the need for speedy service delivery and continuity across the public sector.[8] By building these efficiencies, governments could increase their public notification capacities, improve security, and collaborate across agencies. This is what platforms such as GOV.UK seek to achieve.[9] With the help of tools such as GOV.UK Design System, GOV.UK Notify, and GOV.UK Pay, both central and local governments have been able to ensure speedy service delivery during the pandemic. For instance, by adding GOV.UK Pay's payment link functionality, the UK Home Office was able to create an online payment portal within weeks to support payments that previously required the staff to be present onsite.[10]

In another example, the International Telecommunication Union, the United Nations' specialized agency for information and communication technologies, has collaborated with the governments of Estonia and Germany, as well as with the Digital Impact Alliance, to catalyze digital transformation in low-resource countries. The collaboration plans to build a digital government platform based on secure, reusable, and interoperable building blocks that can help low-resource nations deploy and scale their digital services without needing to invest massive resources in building their backend systems.[11] Smart Africa, an alliance of 30 African countries that aims to establish Africa as a knowledge economy, is the first implementing partner of the initiative.[12]

2. CREATING A MORE DIGITAL PUBLIC WORKFORCE

Building digital infrastructure is necessary to accelerate the digital drive of the government, but it can't sustain that momentum by itself. Building a digitally fluent workforce is equally essential. The

pandemic highlighted the growing need for a tech-savvy, digitally literate public workforce. As a result, governments are driving efforts to raise the digital literacy of their staff.

For instance, as part of the UK National Data Strategy released in September 2020, the government announced plans to train 500 public sector analysts in data science by 2021.[13] Similarly, the US Office of Management and Budget put its data science reskilling pilot to practical use, deploying trainees to analyze data sets from their respective agencies.[14] In another instance, Abu Dhabi School of Government and Abu Dhabi Digital Authority collaborated to launch a specialized platform, in December 2020, to improve technology skill levels of the Emirate's public sector workforce.[15]

Having skilled public sector workers is such an advantage that it is attracting interest from a wide array of partners. Consider Africa's Digital Skills for Public Service Employees initiative, developed in collaboration with the World Economic Forum. The initiative helps participating African governments train their workforces in skills critical to recovery efforts, with the added benefit that up to 250 employees get trained free of cost.[16] Similarly India's Mission Karmayogi is a skill development program that aims to educate civil servants in digital technology, through a subscription-based, public-private model.[17] Although driven by the digital demands of the pandemic, the skilled workforces developed in these and other programs will help serve the public for years to come.

3. INVESTING IN CITIZEN CONNECTIVITY

Finally, the benefits of ramping up digital solutions and promoting virtualization of services can be fully realized only when citizens can access such services. Therefore, building public infrastructure that allows better access to digital

With more citizens using smartphones to access services, improving mobile connectivity is also critical.

solutions—especially for the most marginalized populations—becomes necessary.

Several nations have announced initiatives to significantly increase their digital infrastructure spending over the next few years. Investments will go toward improvements such as modernizing technology infrastructure, installing fiber networks to increase internet access, and closing the "digital divide" between the best- and least-connected communities.

For instance, Spain's government plans to invest €20 billion in digital infrastructure over the next three years, with an additional €50 billion in private investment as part of its Digital Spain 2025 initiative.[18] Meanwhile, the French government intends to spend €7 billion on digital investments, including upgrading public information systems and ramping up digital inclusion efforts for elderly citizens.[19]

With more citizens using smartphones to access services, improving mobile connectivity is also critical. Take the case of Thailand, where 5G networks are a pivotal component of the government's Thailand 4.0 digital recovery plan, and have helped to drive collaboration between the public and private sectors.[20] Similarly, the Scottish Government announced £4 million of funding to build a series of hubs that would deploy 5G services across the country under the Scotland 5G Connect Programme.[21] In Australia, the government allocated approximately US$21.2 million to accelerate 5G deployment, including investing in 5G commercial trials and testbeds across key industry sectors.[22]

Data signals

1. According to Gartner forecasts, worldwide government IT investments are shifting from devices and data centers to software and IT services, which together are projected to account for nearly half of the **US$452 billion of government IT investments in 2021**.[23]

2. In the United States, the Biden administration has proposed adding US$9 billion to the Technology Modernization Fund for setting up shared IT and cybersecurity services across government.[24]

3. **South Korea,** recognized as a leader in COVID-19 response, was also ranked the highest in the Organization for Economic Cooperation and Development's 2019 Digital Government Index.[25]

Moving forward

The pandemic has been an inflection point in the digital maturity of governments. While the initial efforts to accelerate digital transformation have reaped dividends, governments will need to continue the momentum. This means agencies should adopt a cohesive approach to modernizing their digital capabilities. Some of the essential components include the following:

- **Embracing operational adaptability.** Expand the business models that can help the agency adapt and thrive in changing conditions. Rethink the end-to-end organization structuring and break the silos that affect optimization.
- **Building a flexible and scalable infrastructure.** Leverage cloud computing for scalability and agility in administrative processes.
- **Creating intelligent workflows.** Continue to leverage AI and automation to increase

efficiency and migrate human resources to higher-value tasks.

- **Enhancing infrastructure resilience.** Provide cyber response and resilience to secure infrastructure (network and IT), apps, devices, and data at the center and the edge. Adopt federated security to manage situational awareness and access points as contexts change.
- **Developing digitally savvy, open talent networks.** Support human-machine collaboration to augment the workforce and provide better service delivery. Additionally, inculcate a digital mindset by training and upskilling the workforce.
- **Accelerating with control.** Identify areas of digital transformation that need the most acceleration. Alternate between improving citizen experience and operational excellence.
- **Continuing the momentum.** Use the experience of agility during the pandemic to create the case for continuing the pace of digital transformation.

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Contact us

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

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About the Deloitte Center for Government Insights

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Seamless service delivery

Personalized, frictionless, and anticipatory

COMPARED WITH THE private sector, government is behind the curve when it comes to delivering a seamless digital experience. In 2019, 80% of federal agencies scored "poor" or "very poor" on Forrester's US Federal Customer Experience Index, compared with only 14% of brands in the private sector.[1] There is a sizable gap between the seamless digital experience customers have come to expect and the experience traditionally provided by the public sector.

What makes for seamless service delivery? Several things:

Personalized: The service is tailored to the individual's needs, interests, and circumstances. The opposite of the "one-size-fits-all" mentality, the service provider makes an effort to really understand its customers and create a customized experience.

Frictionless: Accessing the service requires little to no effort on the part of the consumer—there are no hoops to jump through, no demands for information, no frustrating barriers. Think of "one-click" shopping or other apps that make it easy to get what you want fast.

Anticipatory: The provider anticipates what you want next and offers it proactively. Just as Netflix anticipates its viewers' wants, queueing a new video as the credits roll, governments will need to deliver more seamless, personalized digital

platforms that proactively serve citizen and business needs.[2]

The good news? Governments have been making huge strides in this area.

Governments move closer to a seamless digital experience

Recent years have seen significant progress in creating a seamless digital experience in government. Personalized services have spread across a number of government activities. South Carolina's Department of Education has created an office dedicated to personalized learning.[3] Educators in the state can now tailor their lessons based on individual student profiles.[4] Some states also send automated, personalized reminders about benefit applications, upcoming renewals, or missing verification documents through the applicant's preferred method of communication.[5]

Governments have been experimenting with frictionless services for at least two decades—Belgium ran a prefilled tax return pilot in 1995.[6] But what was once niche is now becoming more common, as public agencies around the world seek to improve the customer experience. In 2019, the city of Stockholm, Sweden, introduced its Mobility-as-a-Service pilot project, UbiGo. Commuters can now connect to public transit, bike rental, car share, and taxi services through a single smartphone app.[7] Thanks to this integrated app, citizens seamlessly access multiple transportation options and pay a single bill.

In terms of anticipatory government, in 2000, Estonia established a genomic database of health records and biological specimens for its population. An accompanying DNA analysis service informs citizens of which diseases they are susceptible to so they can take appropriate precautions.[8] Indeed, many hospitals and other health care providers the world over are using precision medicine to help in the prevention of breast cancer and cardiovascular diseases.[9]

Without question, governments have been making great strides in leveraging technology to deliver a more seamless digital experience. Governments have the opportunity to go much farther, however. The real power of digital blossoms when you put all three aspects together: creating an experience that is personalized, frictionless, and proactive.

The real power of digital blossoms when you put all three aspects together: creating an experience that is personalized, frictionless, and proactive.

There are three main strategies that governments are taking to achieve this vision of seamless service delivery: committing to fully digital and touchless services, designing proactive services around life events, and building the infrastructure to support such seamless services.

Committing to fully digital and touchless public services

A total commitment to digital—in service design, back-end processes, and service delivery—can require rethinking virtually every aspect of public operations, challenging implicit orthodoxies.

We now have personal assistants that aren't people, retail shopping without stores, and newspapers without paper. Fundamental questions are being asked: Does a workplace need to be a place? Do identification documents need to be documents?

Seamless service delivery strategies and initiatives

In addition to the birth of a child, **Estonia is building four other life-event services**, including relatives' death, marriage, retirement, and joining the military.

Sweden proactively pays child allowance to parents as early as the first month after childbirth.

Denmark disburses family allowances proactively to parents of a newborn child without needing an application.

The **Singapore government has launched the Ministry Family Digitalization Plan** to guide agencies in their delivery of anticipatory and personalized services.

The **21st-century Integrated Digital Experiences Act**, passed law in December 2018, provides direction to government agencies to improve digital experiences for citizens.

Malaysia residents can access the MyGovernment portal to gain information and services based on the life-event approach.

Argentina's Digital Government Strategy aims to build a personalized government experience for citizens, part of which is the creation of Mi Argentina, a digital public service delivery platform.

Services Australia has committed to delivering a "Netflix-type" model for myGov systems, recommending to users what they need to do next based on their previous interactions with government agencies.

The **New Zealand government** has introduced an end-of-life and birth-life-event approach to government services.

For example, some US states are using "no-touch" Medicaid eligibility determination for new applications and renewals. The system taps existing data about beneficiaries held by government, and caseworkers reach out to applicants only if any data is missing or documents need to be validated.[10]

Government appears on the verge of this shift. Indeed, the COVID-19 pandemic has accelerated the need for touchless services, as in-person interactions have become increasingly risky. From telework to telehealth to virtual courtrooms to the online approval of licenses and permits, governments are entering a new phase of a contact-free digital citizen experience.

Committing to a digital mindset can eliminate the need for countless forms and reduce government interactions.

Inspection: When COVID-19 forced lockdowns, Ontario's Alcohol and Gaming Commission pivoted from in-person inspections to virtual inspections of cannabis stores. The agency has conducted hundreds of these virtual inspections since the onset of the pandemic.[11] In the United States, Boulder, Colorado, has launched its own virtual building safety inspection service.[12]

Justice: Estonia has moved its court system online, allowing citizens to authenticate themselves and file cases via the country's e-Justice platform. Courts can use the same platform to securely send signed, time-stamped, and encrypted documents to all parties involved in a case.[13] In New South Wales, Australia, courts plan to continue to use virtual technology for direction hearings, appeals, and bail applications.[14]

Health: Many health care services have also shifted online. Some states in the United States developed a mobile application where the client can access, view, and use their Medicaid without the need for a physical card, and some others allowed the printing of Medicaid card by logging in online or through a mobile app.[15] As coronavirus clusters emerged at health clinics and hospitals, Japan loosened its telehealth restrictions temporarily, allowing doctors to see first-time patients online.[16] In the future, smart health monitoring could become increasingly important in a post–COVID-19 world. Hospitals, airports, and workplaces could passively collect and analyze body temperature measurements via 5G, for example.[17]

Committing to a digital mindset can eliminate the need for countless forms and reduce government interactions. Ironically, sometimes a "no-touch" approach can be the best way to connect with consumers of services.

Of course, the ultimate in "no-touch" service occurs when a service is delivered automatically—which is what the next approach is all about.

Designing proactive services based on life events

Governments have begun to further improve services by moving away from traditional department-based service delivery and toward a life-event approach. A life-event trigger does two critical things: First, it starts service delivery without the citizen necessarily needing to be involved. Second, it starts multiple types of services arising from a single life event.

Childbirth is a classic example of a life event that could trigger multiple government services, from health care to eligibility for family leave or other benefits—but it usually doesn't. Today, the birth of a child can mean a slew of confusing paperwork for already-stressed-out new parents.

But this is changing. In Austria, for example, since 2014, the birth of a child triggers enrollment in the country's family allowance program with no need for citizens to file a claim.[18] The review process is automated via data transfers between hospitals, local tax offices, and other institutions, freeing up government staff to perform other tasks.[19]

Similarly, in 2019, Estonia developed an automated IT system that automatically fetches childbirth data from the government's population registry each night. Parents deemed eligible for family benefits are sent an enrollment prompt. Confirmation takes less than a minute, and funds are automatically transferred to the family's bank account.[20]

The automatic-trigger model can be applied to numerous life events, including job loss, retirement, injury or illness, home purchase, birth, death, or college enrollment.

Employment: Finland's Aurora AI program uses AI to help residents undergoing job changes by consolidating government services and identifying which are most useful. For example, Aurora might recommend the most popular classes to a worker in need of retraining due to the pandemic.[21]

Starting a business: The New South Wales government offers a one-stop-shop portal for entrepreneurs looking to start a new business. The site outlines the costs, documents, legal requirements, taxes, and trademarks required to start a business.[22] It also offers concierge services to help businesses identify license and permit needs, interact with other agencies, and assist businesses impacted by bushfires and COVID-19.[23]

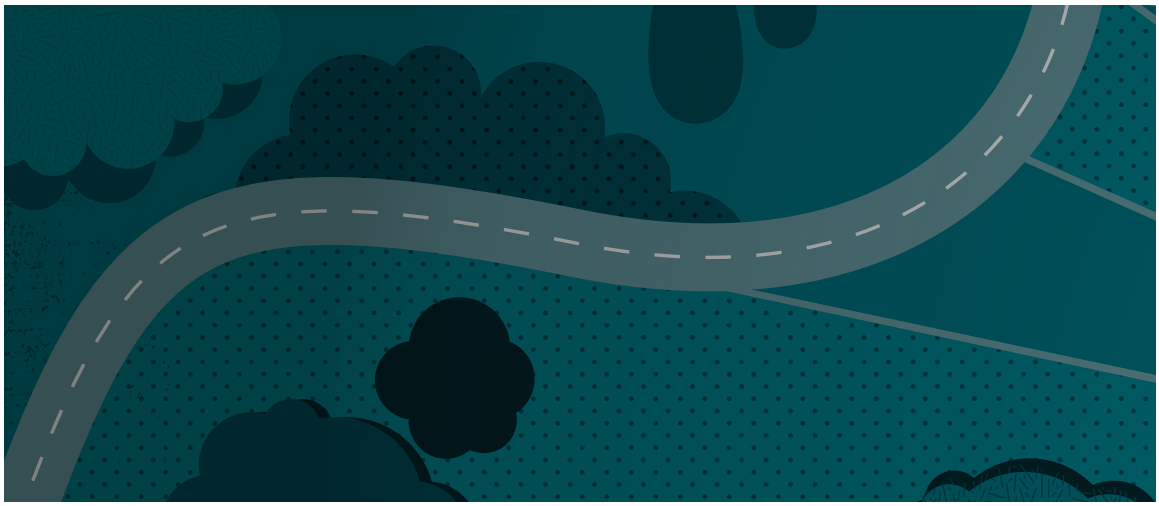
Starting college: In the United States, college-bound students can apply online for financial aid in a 10-minute digital interaction. Tax information is pulled directly from the Internal Revenue Service, and students' information is saved for next year's application.[24]

Birth: In 2018, New Zealand launched its SmartStart tool, which allows new parents to access a broad range of services across government agencies via a single online portal. Parents can additionally request a digital identity to be used throughout the child's life.[25]

Life triggers are the ultimate in proactive services, especially when the trigger integrates the back end, storing and analyzing data to predict when various services might be needed.[26] Citizens often no longer need to apply for benefits, saving countless hours and improving government efficiency. But to achieve that type of seamless digital service requires a mature digital infrastructure—something that most governments are still working toward.

Building the infrastructure for seamless service delivery

As we've seen, personalized and frictionless services require strong data-sharing mechanisms. Moreover, data needs to be in a form that is



compatible with sophisticated AI technologies to be able to anticipate service needs. Truly seamless services are often built on a digital platform and unique digital identities that enable a 360-degree view of citizen-consumers. Here are some key elements of the kind of deep digital infrastructure critical to delivering seamless digital services.

Digital experience: From the customer's point of view, seamless means the service is accessible anywhere, anytime, and from any device. Seamless also means connected, creating an end-to-end digital experience. For example, in a majority of US states, residents can now use their Supplemental Nutrition Assistance Program benefits (formerly known as "food stamps") to buy groceries online.[27]

Digital identity: A unique, uniform digital ID that grants agencies access to the appropriate data about a citizen or business is key to providing frictionless services. In India, Aadhaar, a unique digital ID, has been used to disburse COVID-19 cash relief. The Aadhaar-enabled payment system disbursed 280 billion rupees (US$3.8 billion) to more than 300 million beneficiaries during the lockdown.[28]

Data-sharing: Estonia's X-tee platform allows for real-time data-sharing between public sector organizations, allowing for more effective, frictionless, and streamlined public services.[29] The platform is also used by private sector organizations to exchange data. As many as 166 public institutions use X-tee to provide a range of services from filing taxes to verifying identity for social benefits.[30]

Intelligent technologies: Smart technologies such as AI can help government personalize service delivery. Estonia has relied on AI and machine learning technology to profile job candidates and recommend jobs for which they may be best suited. The job-matching program boasts a 72% success rate, compared with a 58% success rate for human employment advisers.[31]

Data signals

- More than 90% of Australians surveyed think governments "definitely" or "probably should" use the data within government to target resources to those who need it most.[32]
- During the COVID-19 pandemic, Finland has seen a 30% surge in public sector e-service usage.[33]
- Eighty percent of US public sector executives believe providing a unified customer experience has had a significant positive impact on their organization, and 67% of respondents report that digitized service delivery is a high priority

for their organization in response to COVID-19.[34]

- Every Australian is expected to save eight hours by moving their transactions to digital government platforms.[35]

Moving forward

Shift from a government-centric to a citizen-centric lens. Tailor government standards and processes around citizen needs, not government silos.

Drive the adoption of digital identity with the intention to provide personalized service delivery.

Focus on using data to **identify citizen needs** and tailor government processes to deliver a consistent experience. Coordinate within and among agencies to share citizen data and provide seamless services.

Invest in digital experience platforms to support personalized citizen and business experiences.

Adopt integrated **data management systems** to promote the "once-only" principle that aims to ensure citizens and businesses need to provide information just once to government to avail multiple services.

Redesign service delivery process and workflows to integrate emerging technologies such as AI.

Bring a cultural shift to provide frictionless and personalized service delivery by embedding a customer-first mindset in the public sector. Part of this means rethinking the skill set of the public workforce.

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Location liberation

Adaptive workplaces in government

COVID-19 PRESENTED MOST of the world with a test: Could work as we know it continue in a virtual environment? This grand experiment has changed the way many, including the public sector, think about remote work. The forced shift toward a distributed and highly virtualized model demonstrates that most people can accomplish work efficiently, effectively, and comfortably even while working remotely.

As employees in the public and private sectors continue to work from home during the COVID-19 pandemic, organizations may be undergoing a transition that they cannot easily reverse. Workflows will likely have to adapt, and workforces may settle into a different kind of life balance. When it's safe to return to the office, employees may not be returning to the same work. Some may find that the nature of their jobs, and expectations about their roles, have changed.

More than just a short-term inconvenience, remote work may be the first step in a long-term transformation, which COVID-19 has just accelerated. Location liberation and the ability to work from anywhere are here now, and they're altering most aspects of how we work, where we work, and what we need to work effectively and collaboratively.

The benefits of making telework a permanent feature of the business model

Those benefits fall into four categories:

Effectiveness: Without the distractions found in a traditional office setting, and without the need to spend time commuting, remote work can make employees more productive. Canada's Treasury Board president Jean-Yves Duclos reported that employee productivity increased for many federal workers working from home.[1]

Efficiency/cost savings: Virtual work can help to reduce operating costs, as organizations spend less on office supplies, office space, furniture, equipment, beverages and food, and janitorial services. Data suggests that if all US federal employees who were eligible for telework had telecommuted just half the time, the federal government would need 25% less office space.[2]

Empowerment: The flexibility (to work from anywhere and asynchronously) remote work offers to government employees can make them feel more engaged and empowered. Research shows that government employees who telecommute are 16% more engaged, 19% more satisfied, and 11% less likely to leave their agencies than nontelecommuters.[3]

Employer attractiveness: With the ability to work remotely from any geographical location, government agencies now have access to a wider talent pool—especially for hard-to-fill roles or areas with skill shortages ("hot skills"). The flexibility offered can help government become an employer of choice for younger talent and stay competitive with the private sector.

Emergence of adaptive workplaces

As the COVID-19 outbreak drove almost-daily fluctuations in market conditions and customer requirements, the need to respond swiftly pushed organizations to transform the way they work. The same is true for government agencies, which had to modernize their telework policies and upgrade the IT infrastructure overnight.

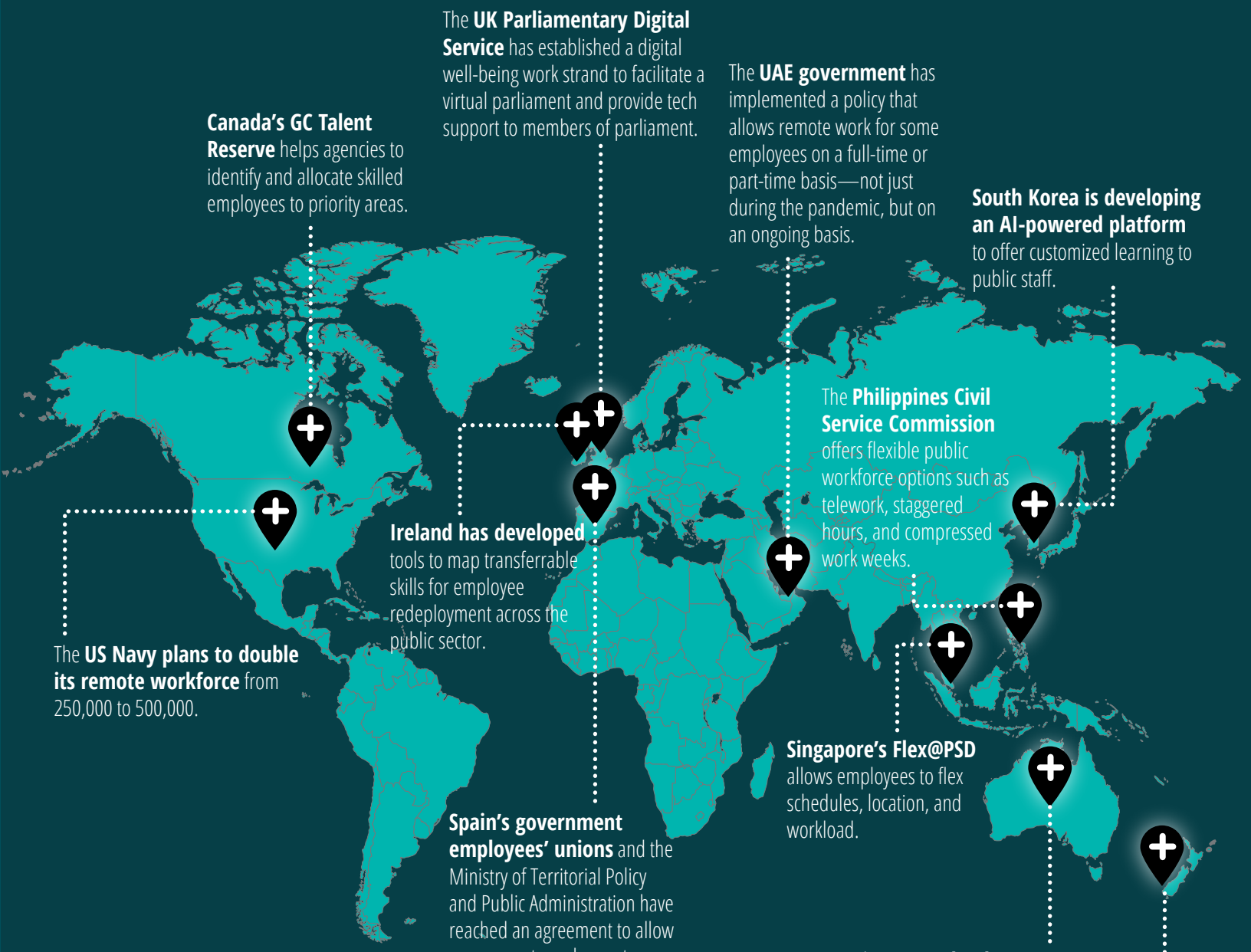
The pandemic has forced organizations to go beyond the simple choice between working on site or teleworking. Many have begun to embrace the concept of **adaptive workplaces**, based on the notion that people and teams should work where *they are most productive*, *inspired*, and *engaged*, depending on the task. This concept includes adaptable time, allowing employees to vary their work hours or days; adaptable leave policies; adaptable work locations; and adaptable work itself (rearchitecting work via the use of chatbots/self-service channels). It even includes adaptable roles, using models such as phased retirement and seasonal work to let employees shape their careers.

In April 2020, the United Arab Emirates (UAE) government decided to implement a policy that allows remote work for some employees on a full-time or part-time basis—not just during the pandemic, but on an ongoing basis.[4]

The pandemic has forced organizations to go beyond the simple choice between working on site or teleworking.

New Zealand introduced a "flexible-work-by-default" policy across its public sector in 2018. This model, to be fully in place by the end of 2020,

Adaptive workplaces in the public sector



Canada's GC Talent Reserve helps agencies to identify and allocate skilled employees to priority areas.

The **UK Parliamentary Digital Service** has established a digital well-being work strand to facilitate a virtual parliament and provide tech support to members of parliament.

The **UAE government** has implemented a policy that allows remote work for some employees on a full-time or part-time basis—not just during the pandemic, but on an ongoing basis.

South Korea is developing an AI-powered platform to offer customized learning to public staff.

The **Philippines Civil Service Commission** offers flexible public workforce options such as telework, staggered hours, and compressed work weeks.

Ireland has developed tools to map transferrable skills for employee redeployment across the public sector.

The **US Navy plans to double its remote workforce** from 250,000 to 500,000.

Singapore's Flex@PSD allows employees to flex schedules, location, and workload.

Spain's government employees' unions and the Ministry of Territorial Policy and Public Administration have reached an agreement to allow government employees to telework four days a week.

The **Queensland government's Public Service Commission** has adopted an "all roles flex" approach in which all roles, including senior executives, have access to flexible work arrangements.

New Zealand has introduced a "flexible work-by-default" policy across its public sector.

assumes that any role is suitable for flexible work, unless there is a good business reason to decide otherwise. Rather than allow all kinds of flexibility in all situations, government employers determine which approaches are feasible for different roles. For example, a front-line worker might not be able to work from home but could possibly vary his or her start and finish times. As of November 2019, 15 of the national government's 32 public service departments were offering flexible working terms on a trial basis.[5]

AI and access to cloud technologies have helped government agencies rearchitect the mechanics of work. According to a 2020 NASCIO report, nearly three-quarters of US states deployed chatbots to assist with questions pertaining to COVID-19, unemployment insurance, and other agency services that received unusually high traffic due to the pandemic. For example, Texas Workforce Commission's "Larry the Chat Bot" was set up in four days and answered queries from around 1.2 million people.[6]

The use of collaboration in cloud and virtual whiteboarding tools has enabled employees to work together to solve common problems even in a virtual set up.

Breaking silos through remote work

The COVID-19 pandemic has shown just how agile people and businesses can be. In the United States, the Department of Homeland Security, the National Labor Relations Board, and the Equal Opportunity Employment Commission were among the agencies that swiftly flexed their rules around recruitment and modes of working.[7] The normalization of working remotely supports the trend toward breaking down silos in government, and is having a positive impact on more multidisciplinary working. The use of collaboration in cloud and virtual whiteboarding tools has enabled employees to work together to solve common problems even in a virtual set up. Virtual work has also facilitated employee redeployment, which was an acute need in the initial days of the pandemic. In Ireland, for example, more than 1,000 public sector workers were redeployed from health agencies and universities to support contact tracing.[8]

In the wake of the pandemic, the tech services team of the UK Department for Work and Pensions (DWP) rapidly assembled an IT kit that enabled more staff to work from home. To ease the pressure on the DWP staff, the department also overhauled ways of working and temporarily redeployed 10,000 staff to help with processing Universal Credit claims. This exercise helped the department meet urgent needs, plug capacity gaps, and support new ways of working.[9]

Building trust and promoting well-being

The pandemic exposed the fragility of our work lives. Exhausted and stressed by the struggle to balance personal and professional demands, many employers and employees are assigning greater value to well-being, both physical and mental. Government agencies are also trying to help employees cope.

Their efforts include online tools and resources to help manage well-being needs virtually, wellness programs that address the need of the hour, and organizational policies that put health and safety at the center of a positive employee experience.

San Mateo County in California, for example, gives government departments grants to help improve wellness among the staff. The resulting programs have reduced absenteeism and improved factors such as cholesterol scores, blood pressure, and weight. A program focused on back health produced a 250% return on investment.[10]

The UAE government offers a program of psychological and moral support and mental health consultations to help federal employees cope with circumstances created by COVID-19.[11]

Even before COVID-19, the UK National Health Service (NHS) made health, well-being, and mental health a priority for its employees. In light of COVID-19, the NHS has partnered with three organizations to offer free mental health mobile apps to its health care staff.[12]

Technology for remote scenarios

A lot of work today simply can't be done well without high-touch collaboration—a challenge when many people work from home. COVID-19 has shown that humans and technology can perform more powerfully together than on their own. In the response to the COVID-19 crisis, the first logical step for many agencies was to automate and adopt new technologies. As technology becomes a higher priority, this shift may help prepare agencies for greater human-machine collaboration in the future and the opportunity to reinvigorate the workforce through upskilling and reskilling. Technology doesn't replace collaboration but enables it. Tools such as organizational network analysis studies the structure of social relationships in a group to uncover informal connections between people. This reveals pathways of collaboration and throws light on how work gets done and who is driving value, where collaboration is faltering, where talent and expertise could be better leveraged, and so on. This can help leaders identify challenges and lead to actions that ensure the continued well-being and productive engagement of the workforce.

In the response to the COVID-19 crisis, the first logical step for many agencies was to automate and adopt new technologies

To help state agencies address work backlogs and relieve overworked staff, Louisiana's Office of Technology Services has added robotic process automation (RPA) to its portfolio of services. For example, it has given one agency three RPA solutions to help process forms received from the public. A bot processes the majority of forms, and when it finds one it can't complete, it passes it along to a human employee for troubleshooting.

This approach has reduced the time needed to complete some tasks by as much as 70%.[13]

The US Veterans Benefits Administration is using systems enabled with artificial intelligence (AI) to sort claims that arrive via mail, fax, and digital sources, rather than leaving that task to human employees. This has cut the time it takes to sort claims from 10 days to half a day.[14]

Rethinking organizational processes for virtual environments

For the health and safety of employees during the pandemic, many processes that organizations used to perform entirely offline have moved online to support employees who work remotely.

Hiring. While continuing its use of third-party job boards to recruit employees, the US Department of Homeland Security has developed a series of recruitment webinars to help it reach more candidates at colleges and universities, and to replace in-person events for recruiting and hiring.[15]

Training/learning. The Food Safety and Inspection Service at the US Department of Agriculture (USDA) is using virtual reality (VR) to deliver classes in veterinary public health. The courses feature experiences such as a tour of an inspector's work setting in a 360-degree, interactive VR environment. USDA also lets potential hires experience slaughterhouse inspection through a VR simulation, helping them better understand what the job entails.[16]

Performance management. At the US Environmental Protection Agency, managers in the Office of Continuous Improvement address performance management in the virtual workplace by conducting weekly "huddles" with staff and teams. These 15-minute flash meetings give teams

a chance to take their eyes off their long to-do lists and focus on the big picture.[17]

Using data to optimize work

To understand which tasks the workforce is performing better, worse, or the same as it was before virtualization, across jobs, teams, and functions, an organization requires data. This data needs to come from leaders, managers, and teams.

What challenges are employees facing? What's better and worse about working virtually? Which tasks are truly mission-critical? How can the work be deconstructed to gain a granular understanding of those truly mission-critical activities? We are now living in unexplored territory. To negotiate that terrain, we first need to collect accurate, experience-based insights from employees on the ground.

That's what California's Department of General Services is doing as it tracks the impact of telework since many of its employees started working from home in March 2020. A public dashboard displays key telework metrics, including the number of employees working remotely, changes in commute for those employees, and estimated savings due to those changes. The dashboard is part of a larger program to promote successful teleworking for state agencies and their employees.[18]

Norway is collecting data through a series of "pulse" surveys of employees. It also operates a portal for public employers, providing human resources information and advice for managers, with daily updates.[19]

Maximizing the distributed workforce strategy

COVID-19 has produced a digitally distributed workforce overnight. This dispersed workforce presents managers and leaders with a new challenge: Instead of managing projects, they now need to manage project teams. Many government leaders have adopted new strategies to stay connected with employees and make sure team members have the necessary facilities available where they are. This includes providing hardware such as mobile devices or tech stipends to support remote work or collaboration tools. Cost savings from real estate can be redeployed toward remote work infrastructure for employees.

For the Australian Public Service, GovTEAMS lets public employees and external partners collaborate across organizations and geographies. It provides remote conferencing and events, messaging, document management, and quick web publication, supporting flexible and remote work. More than 30,000 public sector users and 6,200 industry partners have registered to use GovTEAMS.[20]

In Dubai, employees in 58 government organizations use a mobile app called Smart Employee to remotely access a variety of HR and procurement services and stay connected with the office at any time, from any location.[21]

The US Department of Defense expanded its remote work capabilities through its Commercial Virtual Remote collaboration environment, which facilitates the exchange of low-risk, unclassified data among users. As for classified data, the department is currently conducting pilots and prototyping a classified remote Windows capability to support sensitive telework.[22]

At least 136 countries acted swiftly to draw up telecommuting guidelines for public officials as part of their COVID-19 response

Data signals

- The US Department of Defense plans to keep many of its enhanced telework capabilities for the long term. The US Army has seen a 400% increase in remote network capabilities. The US Navy plans to double its remote workforce from 250,000 to 500,000, while the US Air Force has taken steps to increase its network bandwidth by 130%.[23]
- As many as 75% of government workers in Denmark, Norway, and the Netherlands can opt to telework.[24]
- At least 136 countries acted swiftly to draw up telecommuting guidelines for public officials as part of their COVID-19 response.[25]

Moving forward

- **Be flexible:** Understand that goals, timelines, and skills may need to change to accommodate the challenges of remote collaboration, or to accommodate needs for physical access to data or systems.
- **Embrace authenticity:** Make time for virtual "hallway conversations" or "coffee chats" to build relationships and support the workforce. Consider innovative ways to connect team members and foster trust.
- **Collect data to understand what works:** Establish mechanisms to capture and aggregate data on what work is being performed the same, better, or worse than it was before the transition to virtualization—across jobs, teams, and functions.
- **Provide infrastructure support:** Remote employees should be equipped with enough bandwidth and access to other tools to conduct normal business activities.
- **Strategize for the future:** Do some rapid scenario planning and build a post–COVID-19 workplace strategy that considers the new "workplace."
- **Invest in training and education:** Invest in training programs that help employees adapt to new work processes and methods and drive cultural change.

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Fluid data dynamics

Generating greater public value from data

THE POWER OF data-sharing is well documented. Sharing data can save time, money, and lives. Data is becoming increasingly critical to problem-solving and decision-making. As governments are turning into more insights-driven organizations, they are becoming more fluid in their ability to get data in ways they can do the most good.

The COVID-19 pandemic is a prime example of these more fluid data dynamics. During the pandemic, government shared data widely. From the European Union setting up a regionwide interoperability gateway to enable a secure information exchange between different national contact-tracing apps, to the US National Institutes of Health establishing a centralized repository of COVID-19 health records for facilitating research and discovery, the rapid sharing of data proved instrumental to the public sector pandemic response.[1]

The pandemic merely accelerated the trend of sharing data that was already underway. Increasingly, government has been leveraging data to respond to public challenges, with three trends in particular growing:

- **Building exchanges to accelerate data sharing**—Public agencies are establishing specialized data portals to share data with other government agencies, community groups, and industries.

- **Facilitating FAIR and standardized data**—Governments are adopting FAIR principles (findable, accessible, interoperable, and reusable) to ensure public data can be accessed efficiently. They're also creating frameworks that standardize data to allow for greater interoperability.
- **Redesigning data governance**—The demand for more data-sharing is prompting governments to revisit data governance, redefine the parameters of data ownership and data quality standards, and strengthen data protection.

Building exchanges to accelerate data-sharing

Getting the greatest value from their data is becoming a top priority for governments across the globe. The data strategies of countries such as Australia, Ireland, Canada, the United Kingdom, and the United States include data-sharing and reuse as a vital component.[2] There are three key conduits accelerating data-sharing:

1. **Specialized data-sharing platforms**
2. **Intragovernmental data corridors**
3. **Cross-industry data corridors**

SPECIALIZED DATA-SHARING PLATFORMS

Public agencies are setting up specialized data exchange portals that allow for data-sharing between different entities for a wide range of purposes. From improving administrative processes to advancing research to simply boosting transparency, these data-sharing platforms can greatly enhance public services.

For instance, health information exchanges are gaining ground in the public sector, especially in the wake of the COVID-19 pandemic. These exchanges can greatly facilitate the sharing of patient data, which is crucial to delivering appropriate care. In the United States, the Department of Veterans Affairs built the Veterans Health Information Exchange, which gives health care providers seamless and secure access to veterans' personal health information. The exchange eliminates the need for veterans to collect and share paper medical records, typically by mail or in person.[3] Similarly, in the Netherlands, the Ministry of Health, Welfare, and Sport is part of a collaborative effort that has developed a portal that enables Dutch hospitals to exchange COVID-19 patient information.[4]

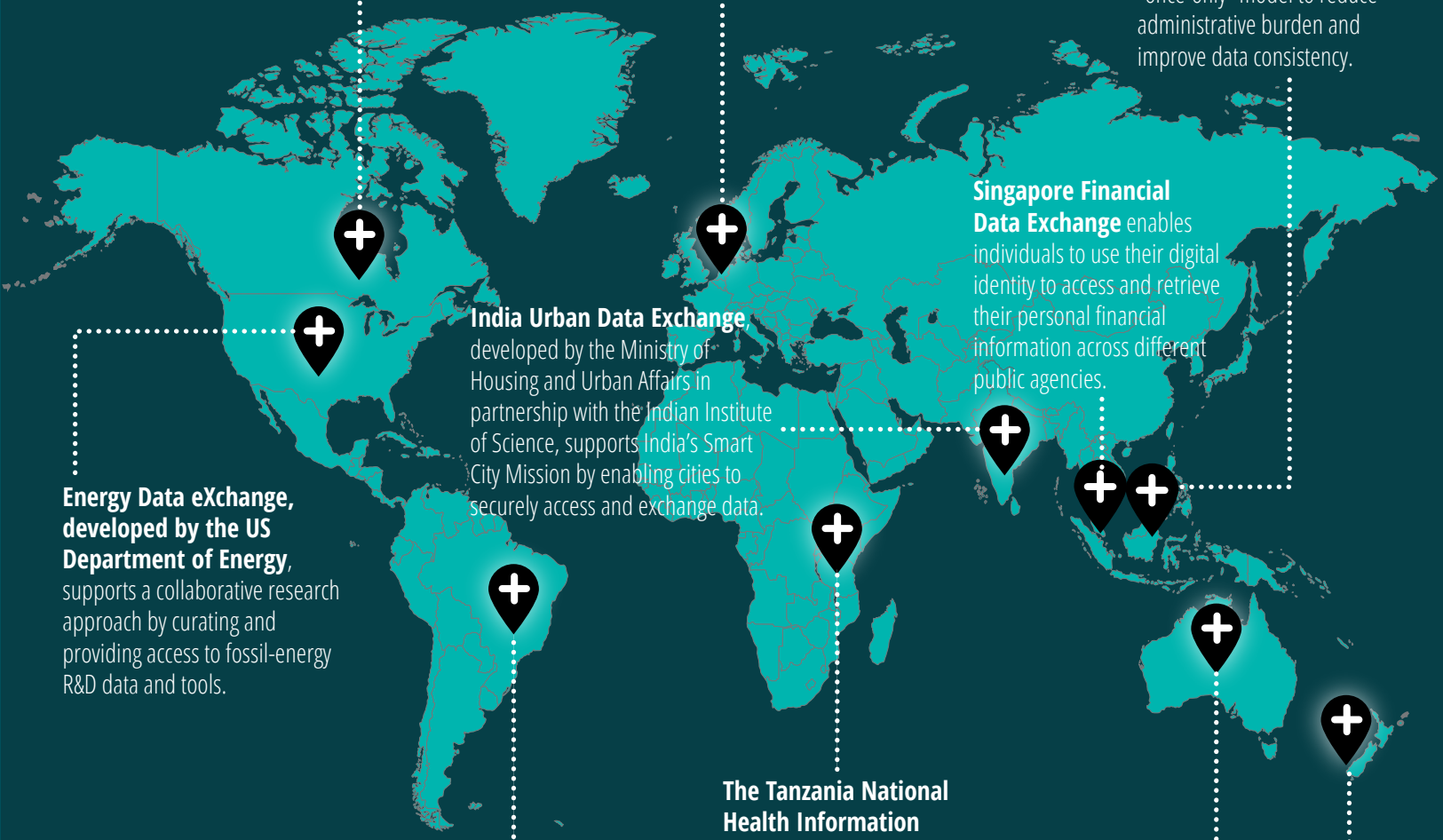
Recently, a number of countries have launched exclusive platforms to share COVID-19 data with researchers. For instance, the European Union's COVID-19 Data Portal and the United States' National COVID Cohort Collaborative (N3C) allow scientists and researchers to store, share, and access clinical COVID-19–related data sets.[5]

Public agencies are setting up specialized data exchange portals that allow for data-sharing between different entities for a wide range of purposes.

INTRAGOVERNMENTAL DATA CORRIDORS

Data held by government has often been kept in silos. Moreover, a lack of common standards has sometimes limited agencies' ability to exchange information. But this is beginning to change. For instance, Estonia's government has built a robust data exchange layer to successfully enable the "once-only" principle—allowing citizens to share

Specialized data-sharing platforms (publicly owned/PPPs)



Canada's Digital Exchange Platform aims to enable data authentication between government departments, make digital services more user-friendly, and reduce redundancy by implementing a "tell us once" policy for citizen data.

In the **Netherlands, Phillips has collaborated with the Erasmus Medical Center, Jeroen Bosch Hospital, and the Ministry of Health, Welfare, and Sport** to develop a portal for Dutch hospitals to exchange COVID-19 patient information with each other.

Cambodia's Data eXchange is a decentralized platform that permits confidential sharing of data between authorized institutions and employs a "once-only" model to reduce administrative burden and improve data consistency.

Singapore Financial Data Exchange enables individuals to use their digital identity to access and retrieve their personal financial information across different public agencies.

India Urban Data Exchange, developed by the Ministry of Housing and Urban Affairs in partnership with the Indian Institute of Science, supports India's Smart City Mission by enabling cities to securely access and exchange data.

Energy Data eXchange, developed by the US Department of Energy, supports a collaborative research approach by curating and providing access to fossil-energy R&D data and tools.

Brazil's Platform for Regulatory Entities' Data Integration, developed by the Central Bank of Brazil, uses blockchain technology to enable key regulatory agencies to share data in real time.

The Tanzania National Health Information Exchange facilitates information and data exchange required for policy development and health care delivery.

The **Australian Department of Social Services Data Exchange** streamlines two-way data- and information-sharing between funding agencies and service providers.

New Zealand's Social Wellbeing Agency has a dedicated cloud-based platform for real-time, bilateral data exchange between the agency and social sector organizations.

information just once with government.[6] Other governments are beginning to take a similar approach, setting up specialized data corridors to enable information-sharing between agencies.

For instance, Singapore's self-service, centralized data-sharing platform, APEX, facilitates data reuse between agencies and approved businesses. Data collected and stored by one agency can be used by those who have a legitimate use for it. Citizens can fill out just one form for a variety of secure online transactions, from opening a bank account to applying for a home.[7] Similarly, the Malaysian government's Central Data Exchange has been developed to increase coordination within the public sector, ensure information is accurate and up to date, and improve government service delivery through speedier data access.[8]

In another example, Cambodia's Data eXchange is a decentralized platform that permits confidential data-sharing between authorized institutions; it, too, employs a "once-only" model to reduce administrative burden and improve data consistency.[9]

CROSS-INDUSTRY DATA CORRIDORS

Governments can also play a convening role, bringing together different entities to enable data exchange between government, industry groups, and academics, providing a platform to ensure robust, secure, and controlled data transactions. In many cases, accessing pre-existing data is more cost-effective and less burdensome than collecting new data through government surveys. As a result, governments are increasingly partnering with other stakeholders and forming data ecosystems to facilitate cross-industry data exchange.[10]

UNICEF has cited school-mapping, household poverty, epidemic response, and natural disaster mitigation as some of the platform's potential applications.

Consider the case of the Amsterdam Data Exchange (Amdex), a data marketplace in the Netherlands. Initiated in 2018 and supported by the City of Amsterdam, the collective includes the Amsterdam Economic Board, Amsterdam Science Park, and Amsterdam Data Science. Amdex aims to truly democratize data by breaking data siloes and providing researchers, businesses, governments, and citizens with trusted and secure data transactions.[11]

In another example, the United Kingdom's Cyber Security Information Sharing Partnership, a collaborative between the industry and the government, is a national-level platform that facilitates secure and controlled cyber information exchange across organizations. By allowing its members to share cyberthreat information in real time, the platform was designed to help provide early warning signs and build better preparedness.[12]

Also, multilateral organizations such as UNICEF have invested in the data-sharing platform Magic

Box, through which private sector partners can share real-time data to enable better humanitarian response. UNICEF has cited school-mapping, household poverty, epidemic response, and natural disaster mitigation as some of the platform's potential applications.[13]

Facilitating FAIR and standardized data

Building exchanges is only one way that government is becoming more dynamic in its use of data. While data-sharing is critical, it is also important to improve the quality of the data being shared. In many cases, this means putting it in formats that are FAIR. The FAIR principles put specific emphasis on the ability of machines (rather than humans) to automatically find and use data—in other words, making data "machine-actionable." Ultimately, this makes the data more useful for researchers and supports innovation.[14]

Governments are increasingly encouraging the exchange of FAIR data—in standardized, interoperable formats through web-based tools and the cloud.[15] Virtual biomedical data commons, where scientists can store, access, and share biomedical data and tools, are based on FAIR principles, for instance. Here, researchers can collectively work on "digital objects of biomedical research" and apply cognitive computing capabilities in a single cloud-based environment.[16] In a similar vein, the National Cancer Institute's Genomic Data Commons in the United States is a platform that supports precision medicine. It provides tools that allow users to share, access, and analyze both genomic and health data as inputs for cancer genomic studies.[17]

In another example, the European Open Science Cloud (EOSC), a digital platform that promotes data-driven science, is also guided by FAIR principles.[18] The EOSC portal provides the scientific community with open access to data in a variety of disciplines (medicine, arts, and agriculture, to name just a few) while supporting interoperability of data sets from multiple providers.[19]

Because data standardization is critical to achieving interoperability of data, public agencies are establishing data standards either at a national level or backing similar initiatives at a global level. The Global Alliance for Genomics and Health, for example, is an international organization, funded by both public and private entities from different regions, that develops frameworks to address barriers to health-related data-sharing at an international level.[20]

Greater data fluidity can benefit governments in many ways. Austria's central bank, the Oesterreichische Nationalbank, has an innovative approach to regulatory reporting based on better data exchange.

Greater data fluidity can benefit governments in many ways. Austria's central bank, the Oesterreichische Nationalbank, has an innovative approach to regulatory reporting based on better data exchange. Thanks to a common platform that standardizes data into small units known as "basic cubes," Austrian banks can deliver microdata in the form of individual contracts, loans, or deposits. This approach facilitates the reusability of this data and has reduced the cost of regulatory reporting in Austria by more than 30%.[21]

On a related note, governments are also using application programming interfaces (APIs) to improve access to data and discourage multiple

copies of a single data set. These APIs are proving to be crucial in enabling secure data exchange across government agencies.[22] A number of nations including Ireland, Portugal, and the Netherlands use APIs to enable data-sharing and reuse at various levels of government.[23]

API strategies and standards are also being designed and developed at a national level to ensure a standardized interface design between multiple systems.[24] The UK Government Digital Service developed a set of common API standards to be implemented across the government.[25] Likewise, the Canadian government's API Store is a catalog of government APIs that assist with findability by enabling users to browse and explore data and services.[26]

By creating standards that make data more standardized and easily shared, governments are making data a more powerful tool. But what about ensuring privacy or securing data? Government's move toward fluid data dynamics demands new forms of governance.

Redesigning data governance

The growing revolution in data is challenging how we think about the use of data in service of a greater good. The COVID-19 pandemic forever changed the risk/reward equation, tilting it in favor of sharing over hoarding. The pandemic also raised important questions about data governance. As the dynamic flows of data increase, there will be greater pressure for robust data governance frameworks that define data ownership, protect privacy, and, at the same time, promote transparency.

Our 2020 Government Trends report provided a detailed account of how governments are tackling the ethical complexities of the age of big data, including ethical algorithms for decisions guided

by artificial intelligence.[27] Beyond such data ethics, however, data governance will be key to promoting privacy by design and ensuring that ownership of data is defined appropriately.

DEFINING DATA OWNERSHIP AND CONTROL

Data ownership is a complex concept. If I have data about you in my database, who owns that data? Does it depend on what kind of data it is? For example, if I know you just bought a new boat, can I sell that information? What if I know you were just diagnosed with cancer?

According to a 2018 survey, 90% of respondents believe it is unethical to share data about them without their consent, highlighting growing concerns surrounding data control and ownership.[28] Bearing this in mind, and recognizing the importance of building citizen trust, some governments have begun to establish frameworks to give citizens greater control over their data.[29] For instance, in January 2020, Indonesia's government submitted a bill to parliament that would require explicit consent to distribute

personal data such as name, nationality, religion, sexual orientation, or medical records. Violators could face up to seven years in jail for sharing citizen data without consent.[30]

Another governance approach is shown by the UK National Health Service (NHS). In the COVID-19 app of the UK NHS, the Department of Health and Social Care, NHS England, and NHS Improvement are the designated data controllers. Those agencies can determine the purpose of data collection, decide whether data should be further shared, set the duration for which an app can retain the data, and more.[31]

Estonia's X-tee platform—formerly known as X-Road—gives citizens significant control over how data about them is used. To ensure privacy, the platform uses blockchain technology to exchange data, which can only be accessed by authorized users.[32]

PROMOTING PRIVACY BY DESIGN

As data-sharing grows, so do privacy concerns. To protect against potential security breaches, governments are increasingly embracing a concept knows as "privacy by design," which incorporates security features during the initial design stages of products and processes.

Privacy by design is gaining global acceptance. Canada has been a pioneer since the 1990s, and Canadian experts have helped develop international standards for privacy by design.[33] The European Union's General Data Protection Regulation mandates all organizations adopt privacy by design.[34]

In Australia, the Office of the National Data Commissioner endorsed a privacy by design approach when developing legislation. The office emphasized the importance of considering privacy during every stage of legislative development and is working with experts to develop a framework for safe data-sharing.[35]

India's Aadhaar ID system was designed with front- and back-end tokenization to safeguard user data. Different agencies receive different tokens for the same person, preventing information linking across databases.[36] The system additionally allows users to create a temporary virtual ID, which they can provide instead of their Aadhaar number.[37]

Data signals

- **The European Commission's** projections suggest **a 530% increase in global data volume** during 2018–2025.[38]
- According to Organization for Economic Cooperation and Development (OECD) estimates, the social and economic benefits of public sector data access and sharing can range between 0.1% and 1.5% of GDP.[39]

- **Estonia's X-Road** helps government and citizens **save** approximately **844 years of working time** annually.[40]

Moving forward

- **Build an insights-driven organization.** Data and analytics can drive decision-making and keep data at the core of digital transformation.
- **Reset default to share.** Government leaders should start with the expectation that data has value in the public interest and will be shared.
- **Develop an appropriate talent mix.** Stand up a multidisciplinary team with technical skills such as statistical analysis, data science, and data management and with soft skills such as communication, critical thinking, and business acumen.
- **Reward-sharing and resharing.** Incentives in the form of funding and career advancements should be focused on celebrating data-sharing and recognizing it as a differentiator of superior performance.
- **Prioritize ethical dimensions critical to trust.** This means a continuous focus on ensuring privacy, patient consent, ethical use, and transparency.
- **Build transparency into data governance.** Transparency raises trust and increases the likelihood of compliance with rules and guidelines. A "purpose-built" system should show users what data is being collected and how it is being used—as well as show the citizen how to control both.
- **Recognize gaps in data.** The pandemic highlighted significant drawbacks in data currently available to governments, such as biases, reporting inconsistency, and lack of completeness. Analysts and decision-makers should identify and improve these data issues as they make critical decisions that impact people's lives.

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About the Deloitte Center for Government Insights

The Deloitte Center for Government Insights shares inspiring stories of government innovation, looking at what's behind the adoption of new technologies and management practices. We produce cutting-edge research that guides public officials without burying them in jargon and minutiae, crystalizing essential insights in an easy-to-absorb format. Through research, forums, and immersive workshops, our goal is to provide public officials, policy professionals, and members of the media with fresh insights that advance an understanding of what is possible in government transformation.

Government as a cognitive system

Using hindsight, real-time data, and foresight to drive policy and decision-making

DATA AND INFORMATION have been established as the fuel for the global economy. Now governments are developing new capabilities to exploit the power of data for social good. Governments are learning and evolving—just as cognitive systems do.

Information, whether about the past and present and future scenarios are augmenting decision-making and creating immense value by providing actionable insights. We are witnessing the emergence of government as a system of cognition that:

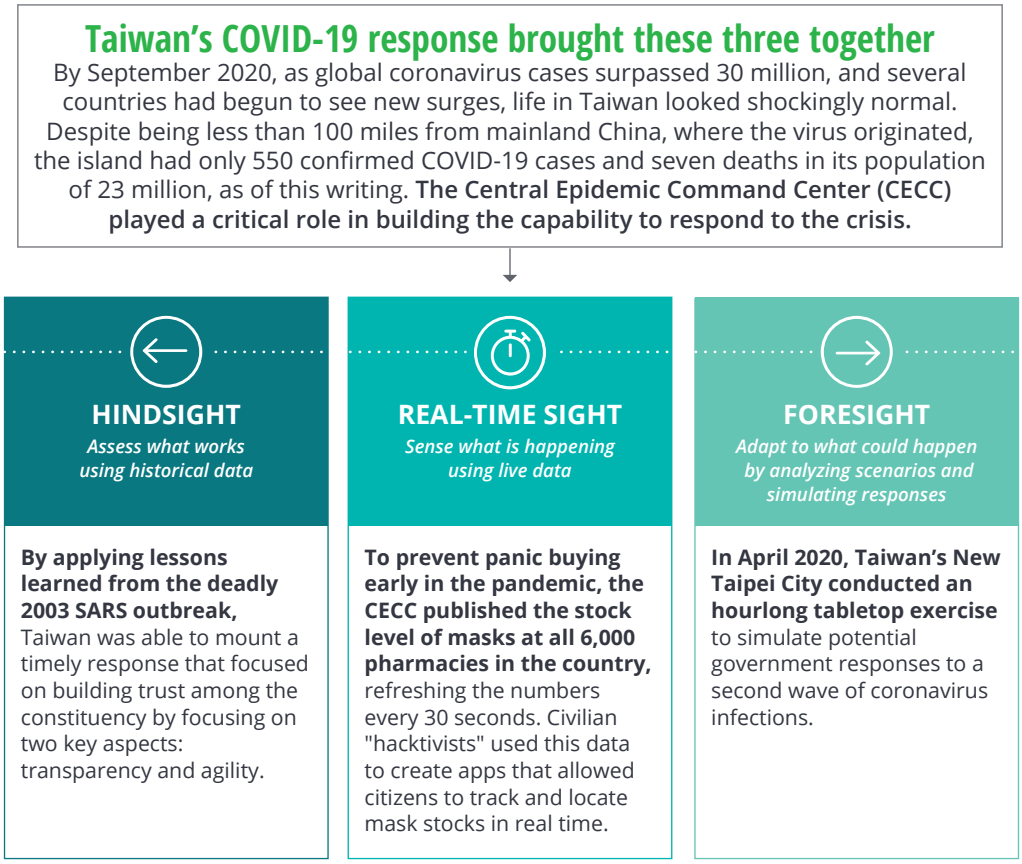
- **Uses hindsight,** in that it leverages advanced analytics and machine learning capabilities to access evidence from the past on what has worked and what hasn't.
- **Monitors real-time information** on what is actually happening to inform tactical decisions.
- **Builds foresight** by applying predictive analytics and conducting simulation exercises to anticipate events before they occur and implementing preventive measures.

The cognitive systems approach represents a fundamental advancement in the traditional form of the "predict-prevent-evaluate" cycle. Now governments can design programs with an intelligence architecture in mind: shaping or even changing future outcomes by introducing scalable, real-time information to adapt predictive models that are founded on the hindsight of past performance.

COVID-19 and its aftermath have shown how important it is to be armed with the right information to guide decisions at the right time. For instance, Taiwan's successful handling of COVID-19 showcases how a government can couple evidence from the past with information about the present and futures thinking to build an effective response to the pandemic (figure 1). When a whistleblower report warning of a new SARS-like virus in Wuhan began circulating on internet message boards in December 2019, Taiwan's medical officers took note and snapped into action. Their swift response was due to previous experience with the SARS virus (hindsight). Informed by years of post-SARS scenario planning (foresight), Taiwan rapidly implemented travel restrictions and health screenings for people traveling from Wuhan.[1] Then, to prevent panic-buying early in the pandemic, Taiwan published real-time stock levels of masks at all 6,000 pharmacies in the country.

FIGURE 1

The time value of information in Taiwan's COVID-19 response



Government foresight units/strategies across the globe

Policy Horizons Canada uses foresight to help the government develop policies and programs that are resilient to uncertainties.

The **UK Government Office for Science** uses techniques to help policymakers anticipate future outcomes and inform their decisions. It promotes a culture of strategic long-term thinking in government.

With a focus on long-term, complex issues, **Sweden's Secretariat for Strategic Development** enables the government to develop future-oriented ideas and policies.

Finland's Government Foresight Group supports national foresight work and activities with the objective of using foresight-based information in decision-making.

The **Dubai Future Foundation's** research unit delves into possible future scenarios to help decision-makers understand and use emerging technologies to effectively navigate those scenarios.

BMBF Foresight, a unit of **Germany's Federal Ministry of Education and Research**, identifies relevant early technological developments, investigates future societal needs, and develops findings to support research policy.

The US Government Accountability Office's Center for Strategic Foresight identifies emerging issues and undertakes forward-looking analysis to prepare policymakers for future uncertainties.

The **EU Policy Lab's** work focuses on four dimensions: foresight, behavioral insights, policy design, and citizen engagement. The lab uses foresight and horizon scanning to assess the longer-term impact of policies.

The **UAE Ministry of Cabinet Affairs' Future Foresight Strategy** builds future models across multiple sectors to inform government policies and strategic planning.

Japan's National Institute of Science and Technology Policy forecasts and analyzes future policy issues to guide the government's science and technology policy planning process.

Foresight South Africa is a UN initiative that helps government and stakeholders conduct long-term planning and supports innovation in decision-making.

Singapore's Centre for Strategic Futures undertakes long-term forward-looking research and builds strategic anticipation capacities to address emerging strategic concerns.

Using hindsight to assess what works

Countries such as the United States, Australia, Peru, and India have institutionalized evidence-based decision-making, both governmentwide and within specific departments,[2] buttressed by the proliferation of data and the advent of emerging technologies. Public workers are increasingly assessing their policy decisions and approaches to evaluate what works and what doesn't.[3] For instance, the United Kingdom's What Works initiative is a network of research centers and affiliates focused on finding "the best available evidence" to inform government decision-making.[4] In the United States, the What Works Cities program encourages local government to use data to tackle pressing challenges faced by residents.[5]

Also, instead of relying solely on randomized controlled trials and other traditional evaluation methods, policymakers can now deploy artificial intelligence (AI) and machine learning to analyze vast and complex data sets. As technology expands the possibilities for data analysis, government agencies worldwide are launching specialized units in-house or partnering with industry, universities, and nonprofits to bolster evidence-based decision-making.

From guiding budgetary decisions to assessing regulatory burden to improving education outcomes, governments **are beginning to gather evidence from the past to course correct in the present and to inform future decisions.** For example, the What Works State Standard of Excellence helps US states use an evidence-based approach to efficiently manage taxpayer dollars.[6] States such as Colorado, Minnesota, New Mexico, and Rhode Island require agencies to identify and highlight evidence while formulating budget proposals, changing existing programs, or starting new ones. In Minnesota, such evidence-focused funding decisions led to a US$87 million investment in new and expanded evidence-based programs in the FY2020–2021 budget.[7]

At the other end of the globe, the Office of Best Practice Regulation evaluates Australia's most complex policy problems using an evidence-based approach. The agency's Regulatory Impact Analysis system provides a framework for creating clear, evidence-based policy that reduces regulatory burden.[8]

The Danish Agency for Labor Market and Recruitment, a unit of Denmark's Ministry of Employment, evaluates and communicates the impact of active labor market policies by collecting existing evidence about what works and building new evidence through randomized controlled trials.[9] Also, the European Commission has established a special unit called the Joint Research Centre to provide scientific support for European policies. The center hosts its own research facilities and specialist laboratories, and boasts of thousands of scientists, who provide evidence throughout the entire policy cycle.[10]

Leveraging real-time data to sense what is happening now

The biggest enabler of the cognitive government systems approach is the ability to make sense of the explosion of real-time data. While historical data can help with impact evaluation, real-time information can provide the missing link in the traditional evidence-outcome value chain. Government agencies are cognitively navigating vast troves of messy (incomplete, inconsistently defined and collected) and fast-moving real-time data to derive quick insights and develop a time-critical response. Operational applications of emerging technologies such as AI, which can generate insights and identify patterns within minutes, have made such data more useful than ever before.[11]

From managing defense and national security, to addressing environmental concerns, to meeting crucial public health demands, real-time information is helping public agencies stay on top of their game. For instance, Palanterra, an operational capability of the Australian Geospatial-Intelligence Organization, facilitates situational awareness by providing access to a strategic common operating view. It permits multiple Australian Commonwealth and jurisdictional organizations to view and share near-real-time data, which helps in supporting special security events as well as in managing disasters such as the Queensland floods and the Japanese tsunami.[12]

In another example, the US Geological Survey (USGS) partnered with NASA to use the latter's observation satellites to capture real-time images of the Earth's surface. The resulting data can help governments and policymakers make informed choices about natural resources and the environment.[13]

Governments are using real-time information as an anchor to quickly pivot their response should the situation demand, especially in the wake of the pandemic. They have followed data-intensive approaches to track and model the spread of the virus, develop therapeutics and vaccines, and manage health care capacity.[14] The United Kingdom created a National Health Service COVID-19 Data Store to collect real-time information and drive the virus response at the national and regional levels. Such data can be used to track hospital bed capacity or ventilator supplies in a particular area, for example.[15]

In the United States, the Department of Veterans Affairs launched its National Surveillance Tool (NST) in June 2020 to keep track of ground-level COVID-19 developments and manage resources accordingly. The NST is also capable of performing predictive analytics to help the department anticipate future coronavirus hotspots and take pre-emptive action.[16] Similarly, the Indian Council of Medical Research launched the National COVID-19 Registry in September 2020 to capture real-time data on COVID-19 patients. The information is used to support evidence-based clinical decisions, research, and policymaking.[17]

Governments are using real-time information as an anchor to quickly pivot their response should the situation demand, especially in the wake of the pandemic.

The education sector is relying on real-time data to improve student outcomes. In the United States, for instance, the University of South Florida uses a predictive analytics platform that feeds on real-time data that includes grades and class participation to highlight which students are facing challenges and develop appropriate interventions to support them.[18] This has become all the more important given the sudden pivot to remote learning post the pandemic.

Building foresight to anticipate what could happen

To prepare for future uncertainty, governments are establishing or expanding their sensing capabilities to better understand how long-term trends might play out. By analyzing multiple scenarios and running simulations, governments can assess the implications for current and potential decisions to

form a long-term view. Moreover, COVID-19 has forced multiple government agencies to build better preparedness and take decisive action by anticipating what the future holds.

COVID-19 has also shown the power of informed foresight ("flattening the curve") while also underscoring the importance of taking sound and timely decisions based on such insights. For instance, the applicability of foresight requires a clear understanding of the assumptions underlying the analysis–and dangerous extrapolations of results or misinterpretation are both real threats to effective use of foresight. So, new tools are placing requirements on decision-makers to raise their game if they want to effectively take advantage of a cognitive system.

Scenario planning is gaining ground in multiple public entities. For example, the Queensland government, together with Australia's Q-Foresight program, examines long-term trends and risks pertinent to the state, including in transport, health, science, innovation, and environmental policy.[19] Also, to help guide decisions in the postpandemic world, the US Department of Health and Human Services developed five pandemic planning scenarios. Public health officials used the resulting data to explore the potential effects of strategies such as social distancing, while hospital administrators were able to assess and plan for resource needs.[20] Meanwhile, the Canadian government assessed three scenarios around various levels of COVID-19 control to guide their pandemic response. The country evaluated potential futures for "no control," "weaker controls," and "stronger epidemic control," to estimate the duration and infection rate of the pandemic.[21]

Governments are also simulating different future possibilities to check their preparedness in crucial areas, including resilience to cyberattacks, disasters, and pandemics.

Governments are also simulating different future possibilities to check their preparedness in crucial areas, including resilience to cyberattacks, disasters, and pandemics. For instance, European Union (EU) defense ministers participated in an exercise held in Estonia in 2017 to assess their ability to respond to potential cyberattacks against EU maritime forces and military headquarters. Also, the EU and NATO collectively conduct tabletop exercises to stay coordinated on hybrid warfare scenarios.[22]

In a similar vein, the Security Bureau in Hong Kong conducted an interdepartmental simulation of a super typhoon scenario in 2019. The tabletop exercise helped check for the contingency-handling capabilities and interoperability of the participating bureaus and departments.[23] In April 2020, Taiwan's New Taipei City conducted an hour-long tabletop exercise to simulate potential government responses to a second wave of coronavirus infections. Officials rehearsed interdepartmental coordination and practiced implementing measures such as travel restrictions, business closures, and supply rationing.[24]

Mathematical and statistical models are other tools that public agencies are leaning on for decision-making. While **mathematical modeling** has been prominent in research and academia, COVID-19 has brought it to the center of policymaking. Agencies are developing and using models to forecast the number of COVID-19 infections and even deaths. For instance, the Centers for Disease Control and Prevention (CDC) along with its partners leverages statistical or mathematical models to predict deaths and cases per week for the next four weeks. This helps the CDC make better decisions on resource allocation and implementation of social distancing measures.[25]

The Public Health Agency of Canada set up a Canadian COVID-19 modelling network comprising of experts from federal, provincial and territorial governments and universities. The predictions help guide public health measures while evaluating the impact of the existing ones.[26]

Data signals

- As of June 2020, there were **169 examples** of data-driven practices and evidence-based policies in place in **35 states** across the United States.[27]
- The UK What Works Network encompasses policy areas that constitute more than **250 billion pounds** of public spending.[28]

We are witnessing the introduction of augmented intelligence into the public policy landscape.

- A national poll conducted by Results for America, in collaboration with the University of Chicago, suggests that close to **92% of Americans** believe policymakers should support their decisions with the best available evidence and data.[29]

Moving forward

We are witnessing the introduction of augmented intelligence into the public policy landscape. Leading governments are building on the lessons and successes of digital government to pursue a cognitive systems approach that embraces the next generation of information, data, and insight management.

MANAGEMENT AND CULTURE

- **Be led by the science.** Shift from instinct-based decision-making and rewire the mindset and cultural DNA of organizations to be data- or science-driven.[30]
- **Operationalize cognitive decision-making.** The value of an insight is a function of how actionable it is and what impact the actions have on the ground. So, apart from ingesting the information, it's critical to react in a timely fashion. In the absence of a timely reaction or course correction, cognitive abilities to assess, sense, and adapt will fail to provide real value.
- **Be proactive.** Anticipate events before they occur, but also develop a timely, decisive response and not spend too much time deliberating on the probable outcomes.
- **Become an agile organization.** Shorten feedback loops (through sensing and monitoring) to enable more frequent, incremental improvements.
- **Create a culture of continuous learning.** Provide training and build capacities for conducting tabletop and simulation exercises.
- **Encourage citizen participation and cocreation to build evidence.** Institute frameworks, tools, and approaches that expand the traditional methods of forming an evidence base.

TECHNOLOGY

- **Be a tech-instinctive organization.** Establish a robust data collection mechanism. Ensure that the data collected is standardized and can be used by multiple agencies.
- **Reduce barriers to data-sharing** and revisit data interoperability norms.
- **Adopt transparency tools.** Utilize dashboards, open data, social media, and other tools to reveal how systems are working.
- **Harness the power of AI** to analyze all kinds of data, both structured and unstructured.

HUMAN CAPITAL

- **Develop the skills to use these new tools.** Real-time data can be messy. Decision-makers need the skills to understand the messy data and carefully interpret the implications of potential future outcomes.
- **Ensure diversity.** Formalize approaches to ensure diversity, equity, and inclusiveness in policy design, service delivery, and program evaluation.

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Contact us

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, we should talk.

Practice leadership

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Agile government

Building greater flexibility and adaptability in the public sector

THE CORONAVIRUS PANDEMIC underscored the need for fast, flexible, inclusive, and mission-centric government. Governments around the world have shown they are up to the challenge, using agile problem-solving to collaboratively tackle pandemic-related challenges ranging from public health to economic recovery. Once-lengthy and inflexible regulatory processes became more agile and adaptive, as did procurement processes, disproving the old orthodoxy that procurement must be rigid and time-intensive. Many government agencies have also sped up their hiring practices to respond to unprecedented demand for services.

Agile policymaking

Though governments are sometimes criticized for being slow to innovate, many have made significant headway in making policies more adaptive, anticipatory, inclusive, and sustainable to navigate the pace of change. Agile policymaking deploys key elements of agile methodology such as user-centered design, prototyping, rapid iteration, and continuous feedback loops. Approaches to agile policymaking include:

Policy labs provide a testing ground for government innovation. The UK government's

Policy Lab, for instance, uses human-centered design, data, and digital tools to explore transformative solutions to some of the country's most complex problems, from homelessness and policing to health and child care.[1]

Such labs have also been set up at the state and provincial level. New South Wales' policy lab works to develop user-focused policies. The lab has developed digital government policies, rules-as-a-code project, and an Internet of Things policy framework.[2] The rules-as-a-code project aims to convert rules into machine-readable codes that can be interpreted by computers. Coding rules can make compliance easier for businesses, automate administrative decision-making, and allow policymakers to test policies in various scenarios to model potential outcomes.[3]

Digital-ready policies are designed to be future-proof, interoperable, and less burdensome for public administrators, citizens, and businesses.

Traditional policymaking can lack iteration, a prototyping mindset, and laser-focus on users. **Policy prototyping**, on the other hand, allows governments to model and explore potential policy solutions. Harvard University's Digital Kennedy School Initiative, Stanford University's Cyber Initiative, and IDEO's Ecolab have collaborated to develop eight policy prototypes for the future of work using human-centered design tools. One of the prototypes, iterated during a make-a-thon, aims to design better machine interfaces and protect the rights of workers who engage with intelligent machines.[4] Policy prototyping, with its iterative short sprints, diverse teams, and design thinking tools such as user personas and journey maps, can yield diverse and innovative policy solutions.[5]

Policy simulations provide government leaders an opportunity to explore the potential effects of different policies before real-world implementation. Ireland's Innovation Policy Simulation for the Smart Economy models the Irish economy, giving decision-makers a chance to simulate policy effects before implementing policies.[6] In the health sector, the US Department of Health and Human Services and Centers for Disease Control and Prevention developed the Prevention Impacts Simulation Model to inform chronic disease policymaking.[7]

Digital-ready policies are designed to be future-proof, interoperable, and less burdensome for public administrators, citizens, and businesses. These policies are developed in an agile manner keeping in mind the ever-evolving landscape of digital technologies.[8] Denmark has made it mandatory to assess whether new legislation is digital-ready based on seven principles developed by the Danish Agency for Digitization,[9] supplemented with five principles for agile regulation.[10]

User-centered policymaking brings the voice of users to bear before new legislation is enacted. The European Commission, for example, conducted user research to redesign how internal documents can be shared with citizens, academia, the press, and nonprofits. It organized a five-day design sprint that used customer journeys to understand user needs, develop prototypes based on those needs, and pressure-test those with end users.[11] The Commission has undertaken similar user research to design its future digital visa application policy. Through design sprints, the Commission aims to understand the needs of both consular officers and border police and to get their feedback on a digital visa application process. The input provided by both user groups will inform the European Union's new policy on short-stay digital Schengen visa.

Agile initiatives across government functions

Shared Services **Canada has established a Centre of Expertise** in Agile and Innovative Procurement to explore and test innovative agile procurement practices.

The **United Kingdom's Financial Conduct Authority** has set up a digital regulatory sandbox to tackle COVID-19–related challenges.

The **Reserve Bank of India has launched a regulatory sandbox** to allow fintech companies to test innovative products and services.

Japan's Financial Services Agency has granted the Japan Virtual and Crypto Asset Exchange Association the power to self-regulate and police domestic exchanges.

Based in Belgium, the EU Policy Lab has a physical space dedicated to fostering creativity and innovation in policymaking.

The **Agile Government Center at the National Academy of Public Administration** brings together governments, foundations, academic institutions, and the private sector to promote agile government .

The **Central Bank of Malaysia** has set up the Financial Technology Enabler Group to support innovations in the fintech market; one of its efforts include launching a regulatory sandbox.

As part of its agile governance practices, **Denmark has made it mandatory** to assess whether new legislation is digital-ready.

LabGobAR advises the Argentinian government on public policy by deploying practices such as user-centered design, agile development, and collaborative policymaking.

The **Victoria government has established the Agile Delivery Office** to embed an agile way of working across the state government.

New Zealand is experimenting with the concept of Legislation as a Code, which aims to convert rules into machine-readable codes.

For its part, the UK Ministry of Justice established a User-Centered Policy Design unit to involve users at every point in the policymaking process. The unit has worked on policies aimed at modernizing court systems, creating rehabilitative prisons, and reducing the recidivism rate of young offenders.

Agile regulation

Throughout the pandemic, governments have increased their capacity for responsive, agile, and flexible regulation by shortening inspection periods and adopting "soft laws" to guide their pandemic response and allow for private sector innovation.[12] This has been particularly important in terms of coordination as adjacent regulatory bodies need to innovate concurrently and accelerate the feedback processes.

Regulatory sandboxes make space for innovations in a controlled environment that allows for government oversight. In April 2020, the UK Civil Aviation Authority admitted a drone operator to its sandbox to test beyond-visual-line-of-sight operations in a shared airspace.[13] India's Insurance Regulatory and Development Authority launched a regulatory sandbox for insurance providers, allowing one company to test a new need-based insurance product tailored to COVID-19.[14] Malaysia's National Technology and Innovation Sandbox aims to promote the use of advanced technologies in key sectors such as health care, travel and tourism, manufacturing, agriculture, and education as part of the country's COVID-19 economic recovery plan.[15]

Soft laws, while not legally binding, allow governments to quickly adapt to issues as they arise, providing necessary guidance to the public sector and private sector without stymying innovation.[16] Such regulation can include guidelines, standards, or ethical frameworks, which generally take less time to implement than formal legislation. The European Commission, for instance, developed the better regulation toolbox, which sets out guidelines and tools for commission services to consider throughout the policy and legislative process—from policy proposals to existing legislation evaluations.[17]

During the pandemic many governments adopted soft laws to respond to rapidly changing conditions. In India, the Ministry of Health and Family Welfare notified guidelines to expand telemedicine in response to COVID-19.[18] Western Australia's Department of Health issued guidelines for community-based care organizations on the use of personal protective equipment kits and testing, transport, and accommodation of suspected and confirmed COVID-19 patients.[19]

During the pandemic many governments adopted soft laws to respond to rapidly changing conditions.

Government agencies have also adopted soft laws to keep pace with rapidly changing technologies. In 2016, the US National Highway Traffic Safety Administration issued guidelines for autonomous vehicles. The guidelines have subsequently been revised four times to keep pace with the evolving technology landscape.[20] In 2020, New Zealand published its government algorithm charter, a set of principles to guide the use of algorithms and data by government agencies. Over two dozen government agencies have committed to the charter.[21]

Risk-based regulation gives governments the flexibility to assess products and services on a case-by-case basis, allowing for more leeway when it comes to low-risk innovations and more stringent rules for those considered high-risk. The European Aviation Safety Agency has divided drone regulations into three risk-based categories: open

(low risk); specific (medium risk); and certified (high risk). For drones that stay within the line of sight, no formal authorization is required. Those that fly beyond the line of sight are subject to the same rules as manned aircraft.[22] Combined with analytics, risk-based regulation is a very cost-efficient way to achieve regulatory objectives.

Agile procurement

Governments have been moving toward more agile sourcing processes in recent years, a process accelerated by COVID-19.[23] Through agile procurement, governments can quickly and efficiently acquire supplies and technology as needs arise. For instance, India reduced its procurement time for COVID-19–related supplies from two weeks to five days by introducing a dedicated e-portal for such purchases.[24]

The inherent flexibilities of agile procurement processes also enable agencies to tap into innovative solutions. For instance, the US Department of Defense has accelerated its procurement processes through "other transaction authority" agreements, under which, innovations in certain categories that are valued below US$10 million are exempt from many federal acquisition rules.[25]

The US Department of Homeland Security launched the Procurement Innovation Lab (PIL), a framework that allows the department to experiment with new acquisition techniques. PIL promotes innovation and risk-taking by offering continuous feedback and sharing best practices across departments.[26] PIL has been able to shorten the contracting cycle by 20–50% in each of the procurements in which it has been involved.[27] Given PIL's effectiveness, the US federal government is looking to replicate the PIL model in at least four agencies in 2021.[28]

Agile procurement is often used to rapidly assess the outcome of initial solutions rather than rely on documented product specifications. For instance, the US Internal Revenue Service (IRS) created Pilot IRS to accelerate the procurement process for new technologies. The process helps the IRS determine whether a solution, technology, or service is a good fit for the agency before it receives additional funding.[29]

The inherent flexibilities of agile procurement processes also enable agencies to tap into innovative solutions.

Further, the agile approach also offers flexibilities to add additional contractors, if required. Singapore debuted dynamic contracting in 2019 for multiyear bulk tenders.[30] The process includes a way for new suppliers to come on board throughout the contract period, rather than restricting access to a single entry point.[31] European institutions are procuring cloud infrastructure and related professional services using an online dynamic purchasing system (DPS) that allows vendors to join the platform and offer

services throughout the procurement life cycle. This allows institutions the option to change vendors, if necessary. The procurement lead time has fallen 80% with the use of DPS.[32]

Agile development

Agile development is an iterative and collaborative approach to software development in which software is developed in an incremental manner rather than delivered all at once. Government agencies around the world have been moving toward agile development for more than a decade. By 2017, 80% of US federal IT projects were characterized as agile or iterative, as compared with 10% in 2002.[33]

The UK government built its government website using agile development. Within three years, the site had replaced the websites of 1,882 government organizations.[34] More than eight years since its launch in 2012, Gov.uk continues to evolve based on user feedback.[35]

Agencies are also adopting DevOps, a complementary approach to agile software development. DevOps brings software developers and operations teams together to work on IT projects, rather than operating under siloed structures. By fostering collaboration between these two branches of IT, DevOps allows for more integrated software and a shorter development life cycle. The UK Government Digital Services and the US Digital Service organize their teams using DevOps.[36]

DevSecOps takes the DevOps model a step further, by integrating security along with development and operations. The goal is to build security upfront, increase automation, and enhance agility and speed. The US Food and Drug Administration launched an ambitious DevSecOps initiative within its Center for Biologics Evaluation and Research.[37]

The National Background Investigative System, a key to security clearance reforms in the United States, was also developed using an agile software delivery process and a DevSecOps approach.[38]

Agile workforce

An agile workforce is key to nimble government, and COVID-19 catalyzed numerous flexible workforce initiatives. But to sustain that flexibility over the long term, government agencies should adopt new approaches to bring structural and

cultural changes to how work gets done in the public sector. The US Office of Personnel Management authorized agencies to bypass the typically lengthy hiring process for workers hired to respond to the pandemic. Under the authorization, federal agencies can also recruit former federal employees or rehire retired workers without adhering to the standard competitive hiring process.[39]

Even before the pandemic, governments were experimenting with different approaches to increase flexibility and agility in the way they acquire and deploy key talent. Australia introduced a digital marketplace to make it easier for government agencies to find and hire digital specialists, seek project-specific quotes, or receive digital training.[40]

In Canada, Talent Cloud aims to shift toward a skill- and project-based talent model by developing a marketplace of cross-sector talent that agencies can tap into for specific project needs.[41] A spinoff project, Free Agents, allows a select group of public servants to move from one department to another based on their interests and skills.[42]

In Australia, more than 200 New South Wales inspectors from the NSW SafeWork and NSW Fair Trading agencies were given food, health, and safety regulatory powers in an effort to bolster the number of inspectors available to monitor businesses such as gyms and pubs to ensure compliance with COVID-19 guidelines.[43]

Finally, the shift to remote work precipitated by the pandemic has reinforced the notion that work can be done outside the office environment. As a result, government agencies are testing new hybrid models with employees working from home two to three days a week. When implemented, these changes will open the door to greater flexibility and catalyze greater digitization.

Data signals

- As of June 2020, **384** documents related to COVID-19 were published on Eur-Lex, an official website of European Union laws and public documents. Of those, **62%** are soft laws.[44]
- Seventy-eight percent of US government executives surveyed believe the use of agile and DevOps methodologies is having a significant positive impact on their organization.[45]

Moving forward

- **Conduct experiments.** Agile government calls for test-driving various methods and tools in a variety of realms—be it procurement, governance, or workforce—using sandboxes, policy labs, and other innovative techniques.
- **Build a broader ecosystem.** The necessary technical know-how often resides outside of government. Public sector organizations should build broader alliances and partnerships to bring these innovations to government. Agencies can also tap on-demand or gig workers to bring agility to hiring.
- **Build flexibility into processes.** Soft laws such as guidelines, codes of conduct, and standards can help regulators more nimbly respond to disruptive changes. Similarly, increased flexibility in hiring practices can reduce the average time to hire in government.
- **Inculcate a culture of agility.** Agencies should foster an agile mindset in their employees and install faster feedback loops. Doing so will prioritize better outcomes for citizens and businesses over process manuals or rules.

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Government's broader role in cyber

How governments are adjusting to help secure cyber ecosystems

TALK OF COLLABORATION and ecosystems in cybersecurity is nothing new. However, the events of the past year—supply chain attacks, the rapid shift to cloud, the adoption of remote work, and more—have made it clear that while governments is already operating in those ecosystems, their approach to security has yet to catch up.

The move toward participating in cybersecurity ecosystems has been accelerating, driven largely by access to better tools or a greater variety of skills. For example, in 2020, 60% of states outsourced cyberthreat assessments, compared with just 43% two years earlier.[1] However, recent events such as the wide-ranging hack of the US government and commercial vendors show the difficulties of living in a networked ecosystem.[2] In the connected world, vulnerabilities of one organization can threaten its partners, clients, and even an entire industry. Attacks can scale dramatically, moving quickly between public and private networks. For example, the WannaCry ransomware attack of 2017 compromised more than 300,000 machines across 150 countries, including those of the United Kingdom's National Health Service.[3]

So, what can government do to keep all the advantages of participating in ecosystems while mitigating the risks? A shift in government's role in cybersecurity is the answer. No longer are governments content just to protect their own

networks; many are beginning to take larger roles in coordinating security across public-private ecosystems.

The shifting role of government in cybersecurity

The government cannot function in isolation. As such, there is a growing realization within governments that in order to mount a proper national cyber defense, their role should expand from just securing public networks to helping to secure both public and private networks. Many governments across the world are already moving in this direction. Launched in 2016, the United Kingdom's National Cyber Security Centre was created to provide a unified national response to cyberthreats and attacks.[4] The center provides cybersecurity support to the public sector, the private sector, including small and medium enterprises, and the general public.[5] The center supported 723 incidents in the last year and also launched a suspicious-email reporting service for the general public, which flagged 2.3 million suspicious emails and removed 22,000 malicious websites in just four months.[6]

The same realization of shared vulnerabilities in a cyber ecosystem drove the US Department of Defense (DoD) to release the Cybersecurity Maturity Model Certification (CMMC), which acts as a unified standard for implementing cybersecurity across the 300,000 companies of the Defense Industrial Base.[7] CMMC is a cyber control and compliance framework that requires third-party analysis of the cyber controls for DoD contractors and subcontractors'.[8]

But the shifting role of government in cybersecurity is not without friction. To become effective in these new roles, governments must shift how they manage relationships, talent, and even internal operations.

Shifting relationships: From *need to know* to shared info and norms

Ecosystems are by definition composed of relationships. So, securing an ecosystem requires using those relationships to share information and set norms of behavior. This can be a significant shift for government agencies used to restricting sensitive data to only those with a "need to know." But the shift toward greater sharing and collaborative decision-making is underway at every level.

Some ecosystems are formed at the international level, while others are limited to a specific country or a region. One example of international collaboration is CSIRTAmericas, a community of computer security incident response teams in the Americas region. Through sharing information and knowledge, often in real time, this group has put up a united response to emergencies such as the COVID-19 pandemic and the Wannacry ransomware attack.[9]

Launched in 2016, the United Kingdom's National Cyber Security Centre was created to provide a unified national response to cyberthreats and attacks.

At the national level, organizations in the Netherlands drawn from government, business, the knowledge sector, and higher education have come together to form the Hague Security Delta, a cooperative body working for innovation in security.[10] In the United States, the Multi-State Information Sharing and Analysis Center (MS-ISAC) enrolled its 10,000th government organization in November 2020, a rise of about

Cybersecurity ecosystem initiatives

9,000 organizations in the last seven years. MS-ISAC, a network of state, local, and territorial governments, is set up to exchange knowledge on the latest cyberthreats, share cyber hygiene practices, and get cyber risk assessment.[11]

At the local level, partners such as City National Bank, IBM, AT&T, Cedars-Sinai, and the City of Santa Monica have formed the Los Angeles Cyber Lab's Threat Intelligence Sharing Platform, which collects information on cyberthreats from participants. Members can share this data anonymously for analysis and comparison. The lab uses the information to provide threat intelligence and trend analysis to all members, including smaller businesses that lack the capacity to track threats on their own.[12]

Cybersecurity training initiatives in the United States have focused on higher education.

Shifting human capital: From *my* talent to *our* talent

Greater collaboration in an ecosystem results in more and varied types of systems, data, and tools being used within an organization. That requires technology talent with broader skills than most single organizations can provide. Fortunately, ecosystems can also help governments gain access to the right talent with the right skills. An ecosystem comprising academia and industry can help governments plug their cybersecurity talent gaps by creating a thriving, common cyber talent market rather than looking only for their own needs.

EDUCATION INSTITUTIONS

Israel offers cybersecurity training at all levels of its educational system, starting in middle school and continuing through graduate school, where students can earn PhDs in cybersecurity.[13]

Cybersecurity training initiatives in the United States have focused on higher education. For example, the National Institute of Standards and Technology awarded a grant to Florida International University, supporting programs designed to train cybersecurity talent to work in state and local positions, national businesses, and the US government.[14] The University of Buffalo received a US$2.39 million grant from the National Science Foundation to train future cybersecurity experts.[15] The US Department of Homeland Security offers grants and partnership opportunities focused on cybersecurity for both K-12 schools and institutes of higher education, through the agency's Science and Technology division.[16]

PUBLIC-PRIVATE PARTNERSHIPS

US-based Cybersecurity Talent Initiative—a partnership between federal agencies, academia, and the private sector—chooses students drawn from relevant fields for two-year placements with federal agencies that have cybersecurity needs. Toward the end of that service, students can apply for full-time jobs with private sector companies that participate in the program.[17] To partner with the private sector, the United Kingdom has embraced the technology accelerator model,

creating the Defense and Security Accelerator to identify and fund cybersecurity innovation both within and outside the government.[18]

COMPETITIONS AND PRIZES

Governments also use competitions to take advantage of cybersecurity capabilities outside their own workforces. One popular model is the bug bounty program, in which governments challenge pre-vetted hackers to find vulnerabilities in their networks, and reward them for each bug they find. The United States' first major bug bounty initiative, Hack the Pentagon, drew more than 1,400 competitors. Once the competition started, it took just 13 minutes to identify the first bug.[19]

Singapore's Ministry of Defense ran a bug bounty program in early 2018 that identified 35 bugs; its top prize to an individual was S$2,000. During a separate competition that the Singapore government ran in December of that year, competitors helped to fix 26 bugs and received a total of just under S$12,000 in awards.[20]

Shifting operations: From *keep at bay* to *always verify*

As government organizations start working within large ecosystems, they should also shift their operations to keep pace. The sheer number of interconnections in an ecosystem means that old models of security built on keeping threats at bay outside of networks simply do not work. Rather, security is beginning to shift toward models such as zero trust that assume breaches exist and look to verify that activity is authentic.

The impact of COVID-19 and the subsequent rapid shift to remote work accelerated the adoption of zero-trust models. One Deloitte survey of nearly 600 IT professionals found that 37% saw an acceleration in the adoption of zero trust due to COVID-19.[21]

And that initial interest is spreading. In the United States, 44 federal agencies have created dedicated teams with line-item funding to either do research in zero-trust or start implementing it.[22] In the

United Kingdom, the National Cyber Security Centre has released a beta version of its zero-trust principles on GitHub,[23] which external organizations can use as a guide while developing their own information systems and networks.[24]

In this light, the adoption of zero-trust networks is not just another tool in the cybersecurity toolbox; rather, it is an important signal of government adjusting to its new role in cyber ecosystems.

Data signals

- Australia's federal government plans to invest A$1.35 billion in cybersecurity over the next decade.[25]
- The US federal government's demand for vendor-based information security products and services is expected to increase from US$11.9 billion in FY2019 to US$15.4 billion in FY2024, growing at a compound annual growth rate of 5.3%.[26]
- Seventy-six percent of US state chief information security officers believe that a centralized model can most effectively improve the cybersecurity function.[27]

Moving forward

Increase access to cutting-edge tools and technologies. Connecting with a wide array of partners—service providers, government agencies, academia, private industry—can help keep the government at the cutting edge of cyber tools, technologies, and best practices.

Scale the sharing of threat information. Coordinating with ecosystems across levels of government and with other countries can ensure government access to the newest threat indicators, and that leading practices are in place.

Grow your pool of leading talent. Tapping into a wider cyber talent ecosystem can expand access to the right skills.

Inculcate a zero-trust mindset. Cybersecurity needs a seat at the table, whether that be in executive decisions on new investments or operations in the form of DevSecOps.

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Inclusive, equity-centered government

Embedding greater inclusion, diversity, and equity into the public sector

GOVERNMENTS SHOULD REFLECT societal values. As inclusion, diversity, and equity issues come to the forefront, governments are beginning to recognize the importance of addressing the underlying causes of systemic imbalances and question the fundamentals of how policies are made, implemented, and assessed.

Inclusion generally means ensuring that all people feel valued, respected, and welcomed within a team, workplace, organization, or society.[1] *Equity* generally refers to taking steps to ensure fair access to resources and other policies that encourage the advancement of all people, especially those facing disadvantages.[2]

Inclusive, equity-centered government seeks to address historical imbalances in resources and structural barriers to opportunity, and operates at the intersection of disadvantages that may be based on race, gender, sexual orientation and identity, disability, and socioeconomic status. Also, it acknowledges the role of policymaking and program development in perpetuating these disadvantages further.

Finally, the aim is to address systemic racism and systemic inequity in multiple areas, including policing, criminal justice, education, health care, housing, business support, and even government talent management. This demands a systemic change in government functioning.

In the following sections, we discuss some of the most prominent inclusion and equity-centric approaches being embraced by governments around the world.

Inclusive and equity-centered design

The concept of inclusive design, also known as universal design, is not new. Governments have been employing this approach for decades, primarily in the form of infrastructure improvements that accommodate physical disabilities—think audible walk signals and wheelchair ramps.

What is new is the expansion of this concept beyond physical infrastructure and accessibility needs. As governments seek to make their services accessible to every citizen, they are rethinking program structures, communication platforms, and digital algorithms. They are looking to accommodate those with physical limitations, learning and language differences, and mental health disorders.

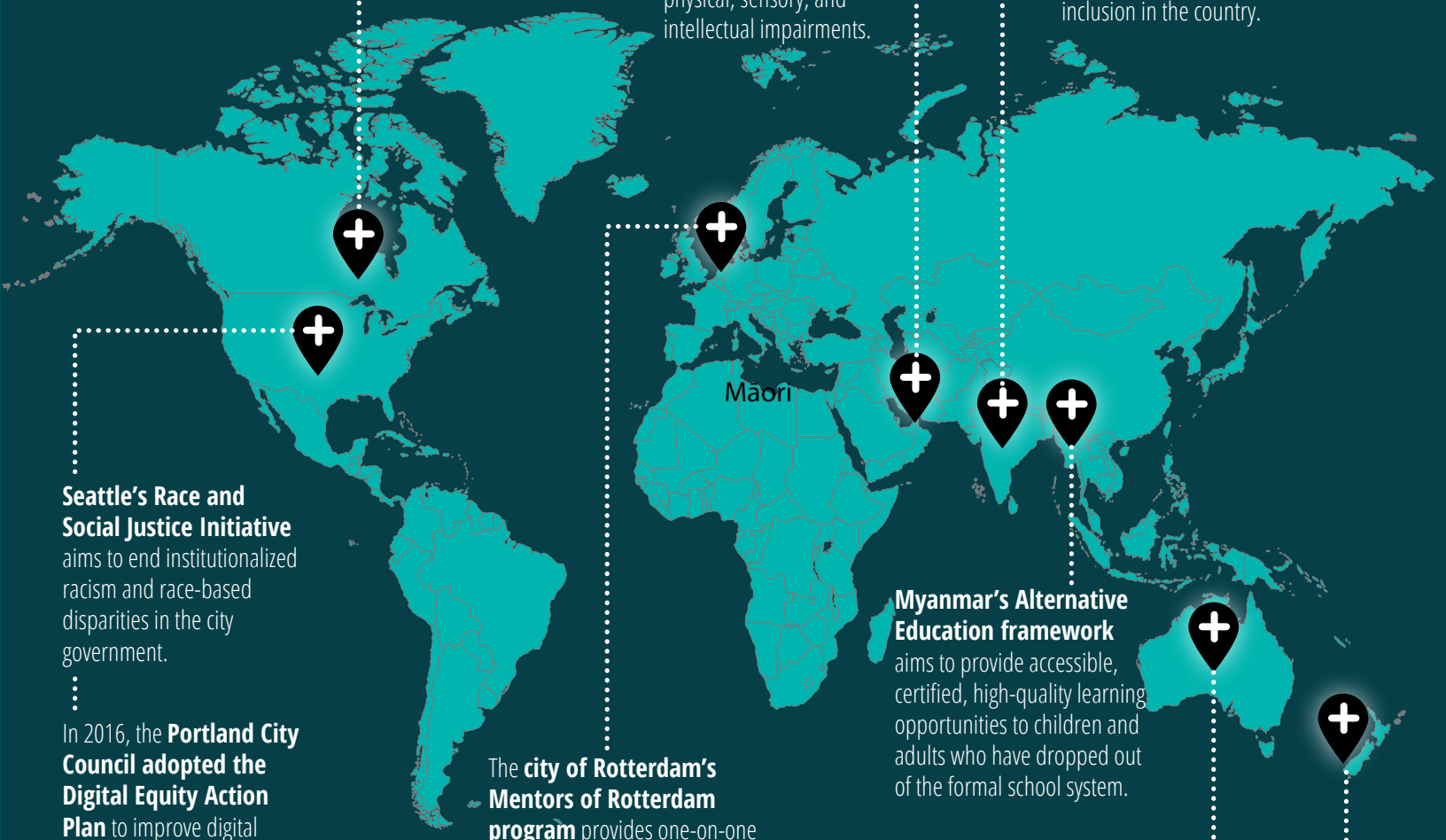
For instance, Kenya partnered with UNICEF to design an accessible education system for children with hearing and visual impairment and intellectual disabilities, distributing easy-to-use digital devices with multimedia overlays that combine features such as audio narration, sign language videos, interactivity, and audio-description of images.[3] In India, when the government launched its mobile app to provide information about COVID-19, it took into account that the majority of its citizens didn't have access to smartphones, and thus created an interactive voice response system with an easy-to-remember phone number.[4]

Governments are also focusing on institutionalizing the design thinking process to solve complex problems. For instance, Norway's StimuLab helps state and municipal entities apply design principles and processes to stimulate innovation in public sector operations and service delivery.[5] StimuLab taps into the private sector expertise to solve complex societal problems using a broader toolkit beyond design thinking including, foresight, impact assessment, data analysis, and behavioral psychology. Since its inception in 2016, StimuLab has been driving a wide variety of projects, including preventing people from falling into financial instability, tackling societal exclusion, developing a roadmap for national digital archival systems, and cross-sectorial and public-private innovation.[6] Across its projects, StimuLab uses a design thinking methodology called the "triple diamond": The first diamond is the diagnostic phase—focusing on understanding the root causes of a complex public issue, establishing a shared understanding between stakeholders, and building commitment within the group. The second and the third phase focus on exploring ideas, testing concepts, and, finally, prototyping solutions and scaling.[7]

Across its projects, StimuLab uses a design thinking methodology called the "triple diamond."

In addition, governments are also making a deliberate effort to move from inclusive to equity-centered design. For example, the Lab @ DC, a unit within the Washington, DC, city government, is redesigning government forms to improve access to city services.[8] In 2017, the lab launched Form-a-Palooza, using human-centered design principles and plain language to reduce design bias for 30 of the most commonly used forms.[9] For instance, the previous application for reserved residential parking for mobility-impaired residents required them to get a doctor's certificate, then go to the local department of motor vehicles to pick up a parking placard and get the application notarized, and finally go to the Department of Transportation

Government-driven inclusion and equity initiatives



Canada has launched the Dimensions pilot program to address systemic barriers experienced by disadvantaged groups in the research ecosystem.

Dubai's Universal Design Code defines how infrastructure and transportation systems should be designed to be accessible to people with physical, sensory, and intellectual impairments.

India Stack, a set of government-managed online standards for online payments and digital identity, has boosted financial inclusion in the country.

Seattle's Race and Social Justice Initiative aims to end institutionalized racism and race-based disparities in the city government.

In 2016, the **Portland City Council adopted the Digital Equity Action Plan** to improve digital equity in its communities.

The **city of Rotterdam's Mentors of Rotterdam program** provides one-on-one mentoring to improve educational outcomes of children from disadvantaged communities.

Myanmar's Alternative Education framework aims to provide accessible, certified, high-quality learning opportunities to children and adults who have dropped out of the formal school system.

The **Australian Women in STEM and Entrepreneurship** grants program, a gender equity initiative, encourages women in STEM education and careers.

The **Bay of Plenty District Health Board's Māori health initiative, Toi Ora**, aims to improve health equity in the Maori community.

to submit the form physically. All four steps required residents to physically visit each office to complete the process. The redesign eliminated the last two steps by removing the notary requirement and allowing residents to email the application form.[10]

Moving a step further, equity-centered processes and policies can help reduce systemic barriers faced by historically marginalized, oppressed, and excluded groups. For example, government policies regarding criminal conviction can remove access to myriad opportunities for previously incarcerated individuals. While some restrictions based on prior criminality may be appropriate, many policies needlessly handicap those convicted of minor offenses from finding work. In 2018, for instance, the White House announced a program to help Americans who are reentering society from prison find jobs. In 2015, the state of New York launched Project Reset, a diversion program that provides an alternative to individuals who have committed low-level crimes from having these infractions appear in a criminal record report.[11]

The application of design thinking and human-centered design in the above examples is just the tip of the iceberg.

The application of design thinking and human-centered design in the above examples is just the tip of the iceberg. Design principles can be applied to mitigate, and even eliminate, systemic and historic discrimination in a plethora of areas such as housing discrimination, algorithmic bias in financial lending, and unconscious bias in criminal legislation.

Equitable access to public goods

Citizen access to public goods can highly impact economic success. Children from a low-income neighborhood with underfunded schools, high crime rates, and limited access to internet—most prevalent in rural communities—face myriad additional challenges on the already difficult road to adulthood.

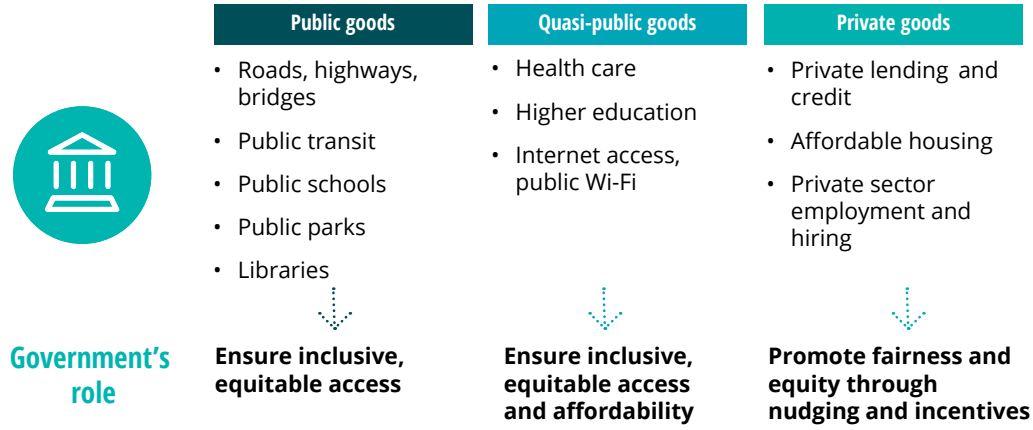
Governments are increasingly seeking to ensure more equitable distribution of public goods. That said, there are a number of critical success factors that aren't related purely to public goods but are influenced by public policy. Low-income communities are often the last to receive new communication technologies, such as 5G,[12] and often have limited access to facilities such as health care and recreation. Policy can also influence private sector lending, housing, and employment practices to address inequalities and discriminatory practices.

Governments have a central role to play in providing equitable access to public goods and using policy tools to influence equitable access to quasi-public and private goods and services (figure 1).

New Zealand's Digital Inclusion Blueprint focuses on four key elements: access, skills, trust, and motivation. Beyond access to internet, devices, and content, the blueprint focuses on improving digital skills required to use them, ability to trust what one sees and does online, and making the digital experience more meaningful for each community.[13]

FIGURE 1

Government's role in ensuring equitable access to different types of goods and services



Source: Deloitte analysis.

The goal is to ensure everyone can "participate in, contribute to, and benefit from the digital world."[14] In the United States, President Joe Biden has called for a US$20 billion investment in rural broadband infrastructure to bolster employment opportunities for those living outside of urban areas.[15]

In the health equity area, Public Health England has identified reducing health inequality as a key priority for both its 2020–2025 Infectious Diseases Strategy and its NHS Long Term Plan. The agency cited evidence that doing so can improve life expectancy and reduce disability across the whole population.[16]

Another way of addressing health inequity is to focus on social determinants of health (SDOH): conditions in which people are born, grow, live, and work, along with surrounding social structures and economic systems that shape these conditions.[17] Governments, acknowledging the strong linkages between SDOH and health outcomes, have sharpened their focus in this area. For instance, the state of Arizona now requires Medicaid managed care organizations to coordinate community resources such as housing and utility assistance along with health care.[18]

Transportation, especially public transit, can directly impact economic justice by providing better access to workforce opportunities, healthy food, and education.[19] The Housing + Transportation Index puts forth an analysis that relooks at the definition of "housing affordability." The analysis asserts that nearly 55% of US neighborhoods can be termed as affordable, but when transportation costs are factored in, that number falls to 26%. It stresses the importance of government agencies planning public transit and mobility options more holistically.[20] For instance, the Department of Transportation of Washington, DC, requires dockless vehicle rental services to offer non-smartphone-based access options and pricing plans for low-income neighborhoods.[21]

Many governments have used an equity lens in their COVID-19 responses, too. For example, the New York City Department of Health used data to identify neighborhoods with low testing numbers and high positive cases—many of which were poor areas with overcrowded housing—and

concentrated its testing resources there. The agency offered rapid testing and wrap-around services such as counseling or connection to health care providers to ensure equal access to services in these areas.[22]

Data sovereignty and data equity

Governments' increased reliance on new artificial intelligence systems and algorithms has given rise to new concerns of data equity and data sovereignty. Data equity seeks to ensure that the data collected and analyzed for decision-making appropriately represents the underlying population and prevents bias against marginalized communities. Data sovereignty refers to the inherent rights individuals and communities have on the collection, ownership, and use of their own data.[23]

Data-driven decisions are only as reliable as the data they are based on. Therefore, if the underlying data undercounts or misses individuals belonging to different population subgroups such as race, age, ethnicity, gender, and living and social conditions, it can lead to inequality and bias. For instance, a report by the US National Institute of Standards and Technology found that in most facial recognition algorithms, the accuracy of algorithms worsens for specific demographic groups. The report found that facial recognition systems had the highest error rates (false positives) for people of color, women, and the elderly.[24]

In order to facilitate better decision-making, many governments are seeking ways to make data more representative of the population. The UK Office for National Statistics has adapted existing surveys and created new surveys to better understand the impact of the COVID-19 pandemic on certain population subgroups. The agency has additionally turned to existing census data to help understand how different groups are being affected by the virus.[25] New York launched an Automated Decision Systems (ADS) Task Force in May 2019 to evaluate tools the city was using to help make decisions about service and resource allocation. The taskforce recommended ways to build equitable, effective, and responsible approaches to the city's ADS.[26]

Data sovereignty focuses on the issue of data ownership—who should own individual and community data. Legislation such as the General Data Protection Regulation tends to focus on an individual's right over data and its privacy.

Data sovereignty refers to the inherent rights individuals and communities have on the collection, ownership, and use of their own data.

However, there is very little focus on the right of a community, such as indigenous communities, over its data. The International Work Group for Indigenous Affairs launched the Indigenous Data Sovereignty (ID-SOV) initiative that focuses on the right of indigenous people to own, control, access, and possess data that belongs to their members, knowledge systems, customs, and territories.[27] The concept is derived from indigenous tribes' inherent right to govern their peoples, lands, and resources.[28]

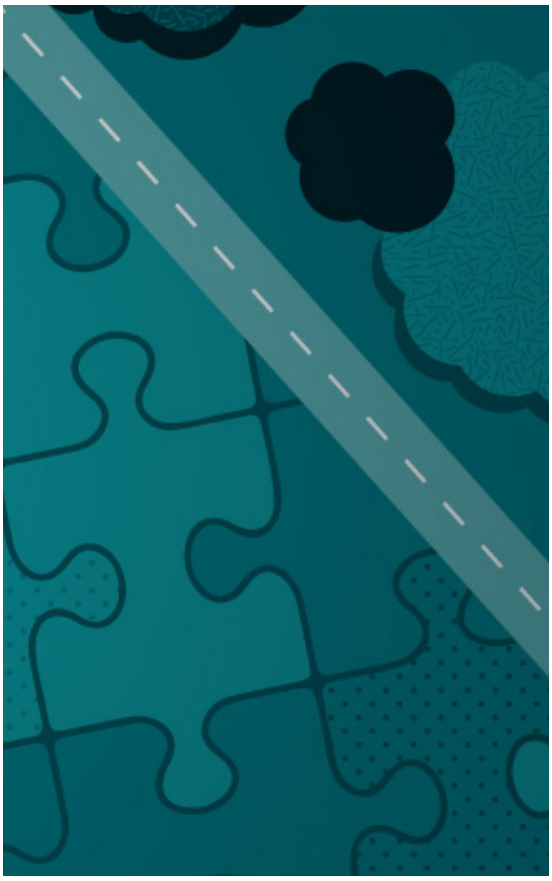
New Zealand's Māori community is putting the concept of ID-SOV in action through the Tikanga in Technology project, which received US$6 million government funding for four years. One of the key objectives of the project is to explore tools, processes, and mechanisms to support IT workers in enabling ethical use of data and generate more equitable outcomes for the Maori.[29]

Cocreation and citizen engagement

Governments around the world are providing greater opportunities for individual citizens and communities to have a voice in creating policies and solutions that impact them. This "cocreation" model engages citizens and communities, fosters inclusive governance, and can lead to more equitable outcomes. Also, governments are focused on making citizen participation more meaningful and moving citizens up the "ladder of participation." This means moving their involvement from simple activities such as information sharing and voting, to consultation and community involvement, to large-scale participation in decision-making.[30]

For instance, in Taiwan, the government used vTaiwan, an open source collaboration platform, to bring together citizens, academicians, and software developers to brainstorm ways to effectively respond to the COVID-19 pandemic. The platform served as an online town hall, involving citizens in policymaking and increasing civic trust.[31] Because it was cocreated with the community, the diverse perspectives of community members were reflected in the policy ideas generated.

The Belgian city of Leuven frequently solicits citizen input on government decisions, from addressing climate change and COVID-19 to seeking ideas on how to make the city a better place. In September 2020, Leuven received an award from the European Commission for this innovative collaboration model.[32] In another example, Portugal launched its nationwide Participatory Budget initiative in 2017. The process allows citizens to pitch and vote on public investments, giving them an active role in deciding which projects are funded and implemented. Program officials visit both major cities and small villages to ensure they are receiving input from a broad range of constituents.[33]



Data signals

- In order to bring greater diversity in leadership roles, the Australian government has set a target of increasing the representation of Aboriginal and Torres Strait Islanders to **3%** in the Senior Executive Services.[34]
- More than **30 US cities** have created City Equity Offices since 2014. The offices evaluate government processes and service delivery with the goal of eliminating institutional inequities and discrimination.[35]
- In 2018, **258.4 million** children, adolescents, and youth were out of school, constituting nearly a sixth of the total population in that age group.[36]

Moving forward

- **Elevate the human experience** by taking a holistic, people-first approach to the design and delivery of government programs. Adopt universal design principles for all government programs.
- **Update outdated regulations and requirements** to overcome systemic barriers to inclusion.
- **Encourage citizen participation and cocreation** to tackle complex challenges where stakeholders share responsibility for a problem and together develop a process for solving it.
- Collect and use **data that represents all population groups** and can be broken down to show realities within marginalized or disadvantaged subpopulation groups.
- **Democratize data,** making it available to individuals and communities and enabling them to design programs and services that suit their needs.
- For automated decisions, **leverage tools and techniques** that can automatically detect potential algorithmic bias to avoid decisions that are unfair to certain populations.

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Sustaining public trust in government

Strengthening trust in government institutions, systems, and processes

IN MANY PARTS of the world, trust in governments saw a massive surge in 2020, brought on by COVID-19.[1] For the first time in decades, globally, citizens considered their governments to be the most trusted institution, as they looked for guidance during the pandemic. Such trust—and, increasingly, social trust or social capital—is crucial to managing challenging economic and public health issues.[2]

People's trust in government tends to grow during times of crisis, as they rely on public institutions to address complex challenges, a phenomenon known as "rallying around the flag."[3] But, while vital, such trust is also fragile, and research suggests that large gains in trust are often quickly lost.[4] By January 2021, the trust in government had fallen by 8 points globally, showcasing the challenges in sustaining high trust for longer period of time.[5]

Ultimately, trust in government is founded on citizens' perceptions of its competence and intent.[6]

Competence refers to the ability to execute, to follow through on what you say you will do. Traditionally, perceptions of competence were driven by government actions and interactions with constituents such as delivering services or enforcing regulations.[7] However, as those government actions have become increasingly digital, governments have struggled to convey the same sense of competence that often comes through in an in-person interaction.

Intent refers to the meaning behind someone's actions: taking action from a place of genuine empathy and true care for the wants and needs of stakeholders and constituents. Perceptions of government intent have suffered in the transition to the digital age due to a rise in misinformation and disinformation.[8] Also, Edelman research suggests that, over the years, rising inequality and economic disillusionment have had an outsized impact on public trust levels.[9]

As trust rises, so does confidence in government information generally, enabling a unified response and increased citizen cooperation.

As governments accelerate their digital transformation journey post–COVID-19, trust in government systems, data collection, and digital services will be critical. However, in many countries, years of political polarization, rising inequality, and a lack of credible information have fractured the credibility of public institutions. If governments fail to make "trust" a core component of the economic revival process, the current uptick in public trust in many countries could be short-lived.

Higher trust in government led to effective COVID-19 response

Trust has played an important role in effectively managing the COVID-19 pandemic, as countries with higher levels of social and government trust have typically seen slower virus spread and a lower mortality rate.[10] As trust rises, so does confidence in government information generally, enabling a unified response and increased citizen cooperation.[11]

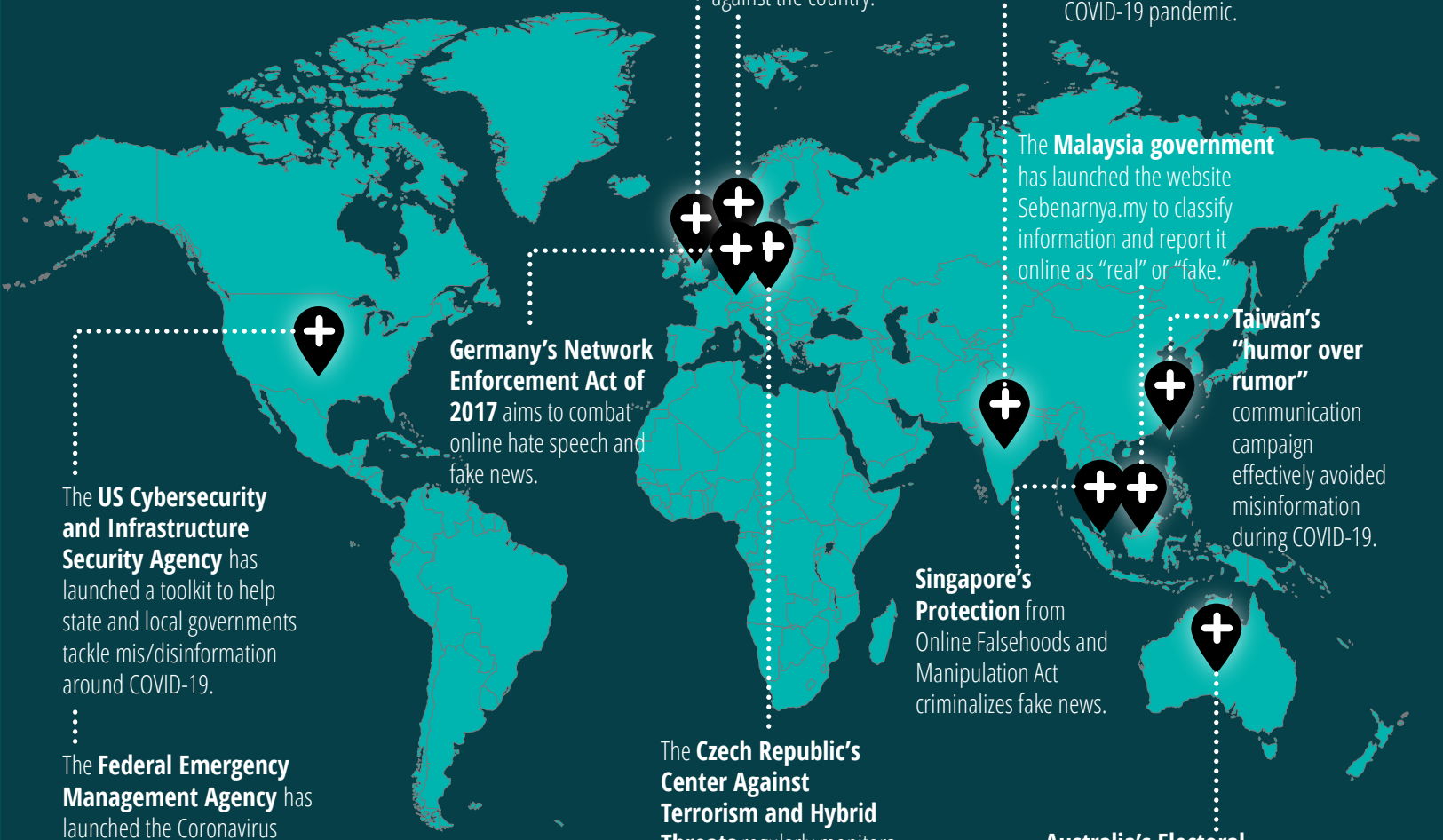
Since the start of the pandemic, **Singapore** has focused on clear and consistent information sharing. The government had an effective communication plan: The members of the COVID task force held daily press conferences, during which they explained the evolving COVID-19 situation and resulting government decisions. The government also leveraged nontraditional communication channels such as WhatsApp and Telegram to debunk misinformation and explain the rationale behind public health policies.[12]

In **Taiwan**, the country's Central Epidemic Command Center held daily live-streamed press briefings, published and updated mask stock levels in real time, and created a government hotline to report discrepancies. Citizen "hacktivists" then built apps that allowed the public to interact with this information in a meaningful way. Through this participatory and transparent process, the government dramatically increased citizen trust in the government's COVID-19 response.[13]

Less than a week after **New Zealand** recorded its first COVID-19 case, government officials had shut down the country in an attempt to eliminate the virus. The country closed its borders and instituted a "level four" lockdown, prohibiting people from interacting with anyone outside of their home except for essential services. This early and decisive action was possible only with high levels of citizen trust. By April 2020, 88% of Kiwis said they trusted their government's handling of the pandemic.[14]

South Korea was one of the few countries that contained the pandemic without implementing a widescale economic shutdown. It accomplished this through an aggressive early response, which included ramped-up testing, an innovative contact-tracing approach, and robust isolation policies.[15] Key to the country's ability to avoid a shutdown was its unusually high level of social and governmental trust.[16]

Government initiatives and actions to address fake news and mis/disinformation



The United Kingdom's National Security Communications Unit was established in 2018 to combat disinformation from state actors and others.

The government has launched the **RESIST Counter Disinformation toolkit** to help government officials prevent the spread of disinformation.

Denmark has established an interministerial task force to better handle major misinformation campaigns against the country.

The **Indian Ministry of Health** has launched a WhatsApp-based chatbot to raise awareness and answer questions about the COVID-19 pandemic.

The **Malaysia government** has launched the website Sebenarnya.my to classify information and report it online as "real" or "fake."

Taiwan's "humor over rumor" communication campaign effectively avoided misinformation during COVID-19.

Germany's Network Enforcement Act of 2017 aims to combat online hate speech and fake news.

The **US Cybersecurity and Infrastructure Security Agency** has launched a toolkit to help state and local governments tackle mis/disinformation around COVID-19.

The **Federal Emergency Management Agency** has launched the Coronavirus Rumor Control webpage to help people distinguish between rumors and facts regarding the COVID-19 response.

Singapore's Protection from Online Falsehoods and Manipulation Act criminalizes fake news.

The **Czech Republic's Center Against Terrorism and Hybrid Threats** regularly monitors for disinformation campaigns related to internal security.

Australia's Electoral Integrity Assurance Task Force helps tackle disinformation spread through social media.

Trust in government digital systems, services, and data initiatives

Commercial digital services such as online shopping, food delivery, and ride-sharing can now be accessed at the push of a button, thus creating expectations among citizens that government services should operate the same way.

This can create a catch-22 for governments. To retain citizens' trust, they need to digitize services. But effectively digitizing services likely requires public trust. Moving government services to the digital domain requires not only that citizens enjoy the experience—they must also believe their sensitive data is being properly used and safeguarded. During the COVID-19 pandemic, for example, many countries struggled to implement digital contact-tracing solutions due to citizen pushback.[17]

As with issues of mis/disinformation, governments are finding innovative ways to address this problem to build confidence in government—and its digital systems.

Data trusts and data-sharing infrastructure, such as Estonia's X-tee platform, build public trust by facilitating the secure and authenticated exchange of data. Estonian public sector organizations are required to use the heavily regulated X-tee tool to access or share data. This platform improves cohesion across government agencies and bolsters citizen confidence.[18] The UK Department for Culture, Media, and Sport recently invested £700,000 in data trusts—legal structures that ensure proper stewardship of data. Through this structure, a data-collecting organization designates an independent trustee who is responsible for how the data is shared and used. The trustee has both the freedom to use the data to its full potential and the liability of protecting it from misuse.[19]

The trustee has both the freedom to use the data to its full potential and the liability of protecting it from misuse.

Other countries have increased trust by **allowing citizens to control and revoke personal data access**. Aadhaar, India's biometric-based digital identification system requires fingerprints and iris images in addition to more routine data such as name, birthdate, sex, and address. But the system has added another layer of privacy, allowing citizens to use a randomly generated 16-digit number (virtual ID), which is mapped to the Aadhaar number, as a stand-in for the ID. Users can change their virtual ID number as easily as a computer password, and it cannot be tracked across databases.[20] In Estonia, citizens and residents can monitor how the government has used their personal data. Data usage is recorded in time-stamped, tamper-proof digital logs, which users can monitor for suspicious activity.[21]

While higher trust in government played an important role in government response to the pandemic, governments globally have been struggling with a different kind of pandemic for the past few years—the rapidly rising problem of mis/disinformation. The growth in manipulated information and fake news has fractured social capital in some countries and increased distrust in government institutions, processes, and systems.[22]

Tackling information manipulation

Manipulation of the information environment is nebulous and difficult to pin down. It can be hard to see who is manipulating information and why. Propaganda can look very similar to the content shared by a poorly informed friend, and scammers and spies often use the same tactics. As such, misinformation is a problem that is difficult to define, let alone solve.

But this is the reality in which societies operate today. The "laundering" of misinformation into mainstream discussions via influencers, online forums, or other means can magnify the impact of mis- and disinformation by making them even harder to distinguish from the truth. As was seen in the US Capitol attack in January, the impact of such an environment on public trust can be immense and can manifest in varied ways, including disregarding scientific advice,[23] believing conspiracy theories,[24] and resorting to vandalism and violence.[25] The Edelman Trust Barometer 2021 report calls it an "infodemic" and reports that trust in all information sources, including traditional media, social media, and search engines, is at an all-time low.[26]

Governments are addressing misinformation, disinformation, and fake news through various initiatives, including developing public awareness, improving transparency, collaborating with social media platforms, and improving sense-and-respond strategies.

In one example of a **public awareness** campaign, in the United States, the Federal Emergency Management Agency's coronavirus page debunks rumors and confirms accurate information surrounding the federal government's COVID-19 response.[27] Meanwhile Taiwan's "humor over rumor" initiative fights fire with fire, using memes to combat coronavirus misinformation. Key to the initiative is a speedy response: By responding within two hours in most cases, the government is able to ensure more people see the truth than the conspiracy. A delayed response, they have found, would likely do little good.[28] Australia similarly launched its "stop and consider" advertising campaign to combat election misinformation on social media during its 2019 election cycle. The campaign encouraged voters to carefully check the source of any election information they saw or heard.[29]

Key to the initiative is a speedy response: By responding within two hours in most cases, the government is able to ensure more people see the truth than the conspiracy.

Collaboration between government, communities, and social media platforms has also played a role in reducing misinformation. In the United States, California expanded the reach of credible government information by enlisting celebrities to record short public service announcements encouraging citizens to "Stay Home. Save Lives," and worked closely with social media platforms to distribute these messages.[30]

Indonesia's Information Ministry partnered with tech giant Google and Mafindo, a citizen-led initiative focused on combating misinformation, to launch a comprehensive media literacy program that trains the public to spot internet hoaxes and disinformation.[31] Meanwhile, a coalition of governments, including the United Kingdom and

Canada, have partnered with social media platforms to fight conspiracy theories surrounding COVID-19 vaccinations. The group aims to set common standards and accountability measures for combating misinformation across social media platforms.[32]

Some government agencies have focused on **education and toolkits** as a reliable—and repeatable—way to stem the flow of misinformation. The US Department of Homeland Security's Cybersecurity and Infrastructure Security Agency, for example, released a toolkit to help state and local governments navigate and respond to disinformation.[33] Meanwhile, the United Kingdom updated its public school curriculum to include lessons on how to spot misinformation online.[34] Finland and Australia have undertaken similar efforts, including digital literacy programs in their national curricula.[35]

Other governments have turned to **transparency and agility**, stopping misinformation in its tracks through short, regular, and accurate messaging, delivered directly to the people. In Canada, France, and New Zealand, leaders delivered daily or near-daily coronavirus updates to the public, leveraging a variety of platforms, including social media. Meanwhile, Finland has worked with social media influencers to provide clear and reliable information to younger audiences.[36]

Some countries, such as Canada and the United Kingdom, have deployed **task forces and special units** to address disinformation. Canada's Critical Election Incident Public Protocol created a five-member council to identify disinformation attempts and quickly notify the public. The task force is led by nonpolitical officials to prevent the perception of campaign interference.[37]

Governments are also increasingly using **artificial intelligence (AI) and other technology to fight mis/disinformation**. In the United States, the Air Force and US Special Operations Command are developing an AI-powered platform that aims to combat disinformation as quickly as bots can disseminate it.[38] The US Census Bureau used a software algorithm to comb billions of social media posts for misinformation. Using an AI-enabled "smart alerts" feature, the Bureau gets notified when a disinformation post has gained too much traction, thus allowing it to respond swiftly.[39]

In the United Kingdom, the government partnered with the University of Cambridge to create a new game called "Go Viral. " The game simulates the spread of false information, challenging players to spread as much false information as possible. The five- to seven-minute game acts as a primer on the most common online manipulation techniques and gives players "the tools they need to discern fact from fiction."[40]

Data signals

- Globally, trust in **government surged by 11 points to 65%** since the pandemic hit in January 2020, making it the most trusted institution for the first time. Six in 11 markets surveyed saw double-digit increases in government trust, and it was the only institution trusted by a majority of the population, 62%.[41]
- More than **290 factchecking projects in 83 countries** were active as of June 2020 amid coronavirus and election-related falsehoods—up from 188 projects in about 60 countries a year prior.[42]
- According to the Deloitte trust survey in the United States, the federal government was the least-trusted entity, in comparison with state and local government and commercial counterparts.[43]

Moving forward

- **What government does matters.** Governments should focus on four trust signals—humanity, transparency, capability, and reliability—to build trust.
- **Expand civic participation.** Digital tools and platforms can be used to enable citizens to climb the "ladder of participation."
- **Active communication** can play an important role in disseminating information quickly. Also, explore more nontraditional channels of communication, allowing information to reach people where they are, rather than expecting citizens to have to search for information.
- **Consider the use of emerging technologies** to sense and respond to mis/disinformation.
- **Establish robust data governance processes** on the collection, storage, and use of citizen's data to increase their trust.

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