

**Data can drive  
shared prosperity  
for governments,  
businesses, and  
citizens.**

Unlocking it  
requires trusted  
data exchange.

Jonathan Dolan, Sarthak Satapathy and Bernard Sabiti

Today, data is a core resource that can – and does – shape our everyday lives. It sits behind the systems that deliver essential public services, powers how we find and receive information, and can be used to tackle pressing global crises like climate change. In a world where the promise of data is maximized, everyone benefits in meaningful ways.

But effectively unlocking data is no easy feat. It requires a well-designed, implemented and governed digital ecosystem that creates the enabling environment, and essential safeguards, to access – and share – data.

As the amount of data generated rapidly expands, and so does its potential uses, the need to get this right is more critical than ever. Integrated national data exchange systems could provide a linchpin to this effort.

## Executive Summary



Today, governments serve as guardians of administrative data such as educational records, tax filings, and records of birth and death. This puts them in the drivers' seat for decision making around how such data is responsibly captured, managed, and shared. Integrated national data exchange systems can bring a range of benefits for governments, the private sector, and citizens, from improving the efficiency of public services to driving socio-economic development. At the same time, there are huge challenges to effectively implementing national data exchange systems, such as fragmentation of funding and resources, lack of internal coordination, and security and privacy concerns for citizens.

The factors that make up good data exchange are relatively well established<sup>1</sup>, and include effective laws and regulations, trusted technology, accountability and oversight mechanisms, and civil society engagement. Far less research has been conducted on how these factors function in the real world as governments build, implement, and ultimately, ensure buy-in and usage of their national data exchange efforts.

We know that no one-size-fits-all approach to data exchange exists. Each country's progression and timeline are unique, and the process is seldom linear. And, each trajectory is greatly influenced by the motivating drivers for establishing data exchange

infrastructure and the methods by which they go about doing so. It was these unique drivers and considerations that we examined to inform a greater understanding of how national data exchange systems are developed, and the ensuing implications for governments, citizens, and the private sector.

This paper explores how these factors have played out through the lens of specific country experiences, namely Bangladesh, Rwanda, Uganda, and Ghana. Many of these countries' national data exchange efforts were initially motivated by the governments' aspirations to make service delivery more efficient and reduce costs. However, today, a wide range of benefits for citizens are apparent. Improved access to, and ease of use of, essential public and private services has saved countless hours for people in Bangladesh. While in Rwanda, agent networks who provide last mile access points for public services have driven entrepreneurial and economic opportunities for people.

The country experiences and resulting insights outlined in this paper illuminate critical shared experiences for policymakers and government technology leaders as they navigate the complexities of implementing effective national data exchange systems. At the same time, they can act as a guide for donors and investors as they consider where and how to make strategic investments.

## Key Insights:

**Insight 1:** Building citizen buy-in and trust that can be measured is key to long-term success. Even in cases where the initial incentives for building national data exchange systems are internal, governments will get the most out of their platforms by prioritizing data protections and citizen satisfaction with them.

**Insight 2:** Many national data exchange efforts are motivated by a single use case that presents a problem to be solved. When governments can utilize that opportunity to go beyond the original problem and think more systemically, they can galvanize government-wide interest and expand value.

**Insight 3:** Participatory policymaking is essential to building buy-in, trust, and ultimately, adoption of national data exchange systems. However, effectively implementing participatory processes requires a major investment of time and resources.

**Insight 4:** Building and sustaining good national data exchange systems requires long-term investment and strategy. More models and funding are needed to allow governments to determine what works best for their contexts and data ecosystems.

# Integrated National Data Exchange Systems



With access to an array of administrative data on citizens, as well as information on resources and services, the key question for government decision makers is how data can flow – or be exchanged – in a way that expands value while also preserving privacy and rights. The question of who benefits is inherent to these considerations. The value of data can accrue to government departments and ministries themselves, to the private sector and academia, and/or to citizens. Ideally, all three groups derive value.

To this end, integrated national data exchange systems have been gaining traction. Since the COVID-19 pandemic, the need to implement national data exchange systems has skyrocketed due to a growing imperative for governments to digitize essential services. Responsibly sharing data across government agencies and with the private sector presents myriad opportunities for countries worldwide. These benefits include:

- **Improving the operational efficiency of governments, allowing them to operate with less bureaucracy and lower costs.** In Estonia, 99% of its public services are online, while filing taxes through the e-Tax system takes around three to five minutes and is used by over 95% of the population.<sup>2</sup>
- **Driving economic growth and revenue collection.** In Singapore, to improve supply chain issues hindering international trade flows, the country set up the Singapore Trade Data Exchange (SGTraDex).<sup>3</sup> Today, the SGTraDex provides a common data infrastructure and easy-to-use digital tools that can be used by shippers, traders, logistics operators, financial institutions, and associated organizations.

- **Maximizing the benefit of the AI revolution by ensuring data is not held up in silos.** In India, the Supreme Court developed the Supreme Court Vidhik Anuvaad Software (SUVAS), an AI-powered translation tool to enable access to judicial documents in regional languages by bringing together judgments from across High Courts located across the country.<sup>4</sup>
- **Tracking progress against developmental goals, such as the UN-led Sustainable Development Goals (SDGs).** In Uruguay, they identified data sharing as an essential tool for tracking progress towards its national development goals – codifying its importance in key guiding documents, such as the Digital Government Plan and the 5-year Digital Agenda of Uruguay.<sup>5</sup>

Beyond governments and the private sector, citizens are also key stakeholders of national data exchange systems. Giving transparency and control over data to citizens can:

- **Strengthening the social contract between citizens and their governments.** In Estonia, efforts to establish a post-Soviet approach to government has built trust through prioritizing transparency and citizen agency that is radically different than previous models.
- **Enabling individuals to carry their credentials and data histories (like medical records) for improved lending terms, medical care, and much more.** In India, citizens are empowered to be stewards of their own data compiled by the government. They have access to that data and can share it further with doctors, banks, or other institutions as they choose.
- **Improving the effectiveness and experience of citizens in accessing public services.** In Bangladesh, over 76% of citizens report satisfaction with government services since the government established thousands of Digital Centers across the country.

In 2020, the World Bank laid out a framework<sup>6</sup> to guide government decision makers on ensuring the use of data is equitable, while also bolstering data protection and individual rights. Such a framework is helpful in acknowledging the complexity of a strong digital ecosystem that drives the value of data for all groups within a national context. It includes five broad pillars:

- **Laws and regulations** that clearly define the rights and obligations over data, including the rights of people to determine when and how personal data is collected, shared, and used.
- **Robust and resourced institutions** capable of enforcing the rules while also offering citizens responsive and effective redress.
- **Trusted technical architecture** to standardize data sharing within government and regulated institutions while giving individuals more control and transparency into data flows that use their data.
- **Capabilities inside and alongside government** to analyze and make use of data.
- **Active and participatory civil society** and an informed populace who can keep governments and companies accountable.

Within this framework, each pillar – when well designed and implemented – plays a critical role in creating the environment for good data exchange. At the same time, they are collectively interdependent and mutually-reinforcing. For example, implementing effective technical architecture can – and does – make ensuring oversight mechanisms easier and infinitely more auditable. And, more broadly, this interdependence serves as a good reminder that progress need not be linear.



# Country Snapshots

While the framework for good data exchange is clear, the real-life practices toward progress are still not well documented. This paper attempts to look at specific tactics and approaches that four countries have undertaken to meaningfully advance each pillar.

Estonia, India, and Singapore are commonly cited for their efforts in creating integrated national data exchange architecture and governance. This paper intentionally went beyond these well documented cases to explore the initial motivations and implementation choices of Uganda, Bangladesh, Ghana, and Rwanda – all countries in the middle of implementing different approaches to their national data exchange systems.

## Bangladesh



### ***Motivation:***

In 2007, in advance of a critical election for the country, the Government of Bangladesh discovered 10 million “ghost voters” registered in their system. In considering how to solve this challenge, government leaders had to grapple with a broader problem: the country had no reliable system for civil registration, which included, but was not limited to, voter registration. In fact, prior to 2004, only 8% of citizen births in Bangladesh were registered. This meant that over 90% of the population had no legal identity, or proof of existence.

After scrubbing the voter rolls of fake identities and duplicates the government used the situation as an opportunity to think more broadly about data exchange and service delivery. They realized that fixing the civil registration systems and sharing data across different ministries was a start to solving this problem. Implementing a registration system that was integrated across the government and supported by over 4,000 registration locations around the country helped increase civil registration to over 90% in just 15 years. This served as a foundational step towards development progress in Bangladesh.



The registration process coordinated the roles of multiple ministries and offered a simple process for citizens to register births and deaths. This successful model then provided a springboard for the Government of Bangladesh to establish 9,000 Digital Centers, which today, provide physical access points to access a range of digital services. The Digital Centers are managed through a public-private partnership that allows local entrepreneurs to manage and ensure the sustainability of these Digital Centers.

This effort also prompted government leaders to rethink the way public services were designed and the attitudes by which they were being delivered. This led to the development of empathy training for civil servants,<sup>7</sup> which was intended to foster a culture of innovation that keeps citizens at the center.

### ***Benefits and challenges:***

Today, millions more Bangladeshi citizens have registered identities at birth, providing dignity and recognition that was previously overlooked by the government. Bangladesh's data exchange efforts have now linked these same citizens with greater access to services.

Government services are markedly more efficient, benefiting both government and citizens. The e-government services provided through 9,000 Digital Centers – now present in over 50 districts – have reduced in-person visits by 17%, costs to the citizen by 16%, and time required by 78%. Citizen satisfaction was reported to be 76% in 2022, rising from 50% in 2018.

The business model for government services extends to the set of private sector entrepreneurs who manage the local digital centers. As of this year, they offer over 300 government services, while their average incomes have increased from US\$7 to \$283 per month – a massive leap.

And, more broadly, Bangladesh launched its Open Government Data strategy<sup>8</sup> in 2016, and subsequently its Open Data Portal.<sup>9</sup> The combination of open government data strategy and consistent institutional reorientations for data collection and management spurred several digital initiatives linked to the Sustainable Development Goals. While these data exchange-based initiatives were originally intended to report developmental progress, they have since been used to facilitate further public service delivery.



Factors that contribute to good data exchange	Progress
Laws and Regulations	<ul style="list-style-type: none"> <li>- National Data Protection Act in place.</li> <li>- National Data Protection Authority exists - however, with unclear execution and vaguely defined role.</li> </ul>
Technology Architecture	<ul style="list-style-type: none"> <li>- Citizen-facing portal has over 1 million monthly users.</li> <li>- Citizen portal and centers offer over 300 services from across 58 ministries and 4,500+ local government units.</li> </ul>
Robust and Resourced Institutions	<ul style="list-style-type: none"> <li>- Inter-governmental coordination driven by agency based out of Prime Minister's Office.</li> <li>- Each Digital Center is managed and financed by entrepreneurs, with some initial training and grants from the government.</li> </ul>
Participatory Processes	<ul style="list-style-type: none"> <li>- Strong investment in civil servants employing participatory processes for stakeholder engagement.</li> <li>- 9,000 Digital Centers also register citizen grievances.</li> </ul>
Capacity Building and Societal Engagement	<ul style="list-style-type: none"> <li>- Digital centers are run by 16,000 local entrepreneurs.</li> <li>- 90% of citizens now registered, a dramatic increase over the past 20 years.</li> </ul>

# Rwanda



## **Motivation:**

Rwanda's widely used citizen portal, IremboGov,<sup>10</sup> was motivated by the government's desire to increase efficiency of government services. It was also inspired by the country's National ID system, one of the first in Africa, which was set up in the late 2000s and spearheaded by the National ID Agency, NIDA. But while the country quickly became a pioneer in National ID, its citizens still had to visit multiple government departments and provide a myriad of documents to receive marriage, birth, and land certificates. At the same time, government departments had issues in tracking progress of paperwork, losing critical data in the process.

IremboGov was envisioned as a one-stop platform for all government services. NIDA's relationship with other government ministries, departments, and agencies across Rwanda has ensured that the NIDA database is linked to government agency systems, which the platform is plugged into. Over 50 ministries, departments, and agencies have completed their API integration with the National ID database, making compliance easier. In addition, coverage of phone and identification is nearly universal in Rwanda – almost every Rwandan has a National Identification card and number.

Strong government oversight of compliance by Rwanda's ministries, departments, and agencies has served as a factor in the portal's success. Rwanda made it mandatory to conduct public business online. While compliance is obligatory, many also have strong interest in having their services on the IremboGov, as it improves their efficiency and makes their jobs easier. This interest serves as a strong driver of inter-governmental trust in the system.

## **Benefits and Challenges:**

IremboGov cites impressive efficiency data, for both citizens and government users.

For Rwandan citizens, the platform has saved over 100 million working hours (as of February 2024) and reduced service access time from 5 days to 24 hours. Over 7,000 agents across the country provide last mile access to the platform, ensuring citizens with no internet or limited digital skills can access public services through a trusted intermediary. To bolster and increase inclusion and access to services for citizens, Irembo organizes workshops for government agencies and awareness campaigns for citizens.

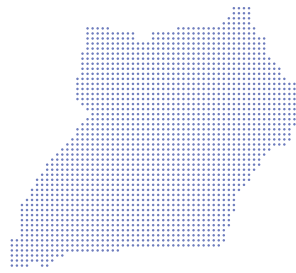
For the government, there are clear benefits in revenue generation, with over 350 billion

Rwandan Francs collected through the platform. At the same time, 45% of IremboGov's users pay for services online – an important step towards the goal of a cashless economy.

The business model of IremboGov was built and operated under a Public-Private Partnership arrangement, with Irembo as the private partner and CrimsonLogic, based in Singapore, as the technology subcontractor. Due to many contracting challenges with having an offshore technology partner, Irembo eventually took on all functions in-house. They now play an increasingly active role in creating an ecosystem of technology professionals in Rwanda.

<b>Factors that contribute to good data exchange</b>	<b>Progress</b>
<b>Laws and Regulations</b>	<ul style="list-style-type: none"> <li>- Strong digital policy environment for national and platform-specific data protection and privacy.</li> <li>- Top-down approach to governance.</li> </ul>
<b>Technology Architecture</b>	<ul style="list-style-type: none"> <li>- IremboGov serves as citizen-facing platform that aggregates over 100 government services.</li> <li>- IremboPay serves as the payment solution for government services.</li> </ul>
<b>Robust and Resourced Institutions</b>	<ul style="list-style-type: none"> <li>- The government has a 25-year agreement with Irembo to digitize public services in a revenue sharing model.</li> <li>- Irembo charges a commission on every successful paid application – the cost of which is borne by citizens.</li> </ul>
<b>Participatory Processes</b>	<ul style="list-style-type: none"> <li>- Multiple government agencies work with Irembo to digitalize public services.</li> </ul>
<b>Capacity Building and Societal Engagement</b>	<ul style="list-style-type: none"> <li>- Major points of access are through a network of over 7,000 agents.</li> <li>- Irembo conducts multiple public awareness campaigns and training workshops to increase service access.</li> </ul>

# Uganda



## **Motivation:**

Launched in 2016, Uganda's national data exchange platform, UGhub,<sup>11</sup> was motivated by government interest in automating the bi-lateral data sharing agreements within government ministries, departments, and agencies. Simply put: the primary driving factor was to make intra-government functions more seamless.

To take a step back, in 2012, the government launched a major intra-governmental technology effort. At that time, a tangle of duplicative and bureaucratic systems had created major inefficiencies across the government and alienated ministries, departments, and agencies from one another. They were using 130 different databases and data access platforms. 63% did not provide web-based e-services, and 78% did not provide mobile based e-services.

To tackle this fragmentation, Uganda launched UGhub – its national data exchange platform. The National Information Technology Authority (NITA-U) was tasked with the oversight and management of the platform, as well as familiarizing the various government ministries, departments, and agencies on the opportunities that UGhub presented. Since then, NITA-U has worked to align incentives among stakeholders, to varying results. They have sought to develop new policies, shaped using participatory methods, as well as to improve data security and trust in the platform's practices.

## **Benefits and Challenges:**

UGhub has facilitated over 100 million transactions (as of March 2024). However, most of these were only by a few government ministries, departments, agencies, and private sector organizations.

Uptake among government partners has not been as rapid as envisioned. While over 60 government ministries, departments, and agencies have now joined UGhub, and 73 private sector partners are on board, many more have not joined. Mistrust around safety and custodianship of data is one of the major factors slowing adoption. To address this challenge, NITA-U has focused on creating participatory processes and identifies building trust as central to its mandate, and essential to accelerate growth of the platform. They conduct many change management sessions with various government ministries, departments, and agencies to explain the implications of joining the platform and address concerns.

UGhub's sustainability model also presents a challenge, with a need to diversify funding sources to support it over the medium to long-term. In turn, this could support improved adoption and usage.

Factors that contribute to good data exchange	Progress
Laws and Regulations	<ul style="list-style-type: none"> <li>- Comparable environment to European GDPR in many respects. Enumerated rights are limited.</li> <li>- Clear digital policy direction.</li> </ul>
Technology Architecture	<ul style="list-style-type: none"> <li>- UGhub, based largely on Estonia's X-Road, has 67 and 73 private sector entities onboarded.</li> <li>- No citizen facing portal yet.</li> </ul>
Robust and Resourced Institutions	<ul style="list-style-type: none"> <li>- Assertive Data Protection Office with criminal levers for enforcement.</li> <li>- Built on an IDA-World Bank loan but doesn't have a clear plan for sustainability going ahead.</li> </ul>
Participatory Processes	<ul style="list-style-type: none"> <li>- NITA-U recognizes the importance of building trust through participatory processes and conducts change management sessions to explain implications and address concerns.</li> </ul>
Capacity Building and Societal Engagement	<ul style="list-style-type: none"> <li>- NITA-U hosts workshops and seminars with government agencies to create awareness of the benefits, while attempting to understand roadblocks.</li> </ul>

# Ghana



## **Motivation:**

In Ghana, there are around 254 government ministries, departments, and agencies who operate today. At the same time, there are over 120 public organizations running over 2,000 physical points of service – mostly with manual processes. As a result, revenue collection was a big challenge for Ghana, with losses amounting to over \$160 million. This prompted the creation of Ghana.gov<sup>12</sup> – a single window for revenue collection for government services.

At the same time, Ghana aspired to create greater cohesion across the government and further maximize the value of data's use and reuse. Their aim was to provide a platform for all data collectors to plug in, and to provide a uniform and standardized way of sharing data in real time.

## **Benefits and Challenges:**

Today, more than 170 government ministries, departments, and agencies are using the platform to some extent. However, awareness and practical adoption of Ghana.gov – and what it offers – has been slow. Government actors have been hesitant to transition from paper processes and change long-standing behaviors. Citizens have also demonstrated a hesitancy to embrace Ghana.gov and long queues continue at government offices to pay for services, even though online options exist. At a subnational level, infrastructure to support and facilitate greater access to digital services remains limited.

While there is a thriving fintech ecosystem and strong regulatory environment, there remains a lack of consistent engagement across the government in Ghana.gov. Today, many of the service agreements are negotiated between Ghana.gov and the relevant ministry, department, or agency. There is no central inter-governmental coordination effort, which has hindered the ability for the platform to effectively scale.

Overall, the government's efforts to drive an integrated national data system for Ghana have stalled due to financial constraints and unclear implementation mandates. This has paved the way for more sectoral-based national data exchange efforts, driven by particular use cases and stakeholder needs.

Factors that contribute to good data exchange	Progress
Laws and Regulations	<ul style="list-style-type: none"> <li>- Payment Systems and Services Act of 2019 was passed to regulate the sector and protect consumers as digital payments scaled.</li> <li>- Policy implementation is highly fragmented and dependent on ministries, departments, and agencies.</li> </ul>
Technology Architecture	<ul style="list-style-type: none"> <li>- Use case-driven and fragmented technology efforts lacking a whole-of-government approach and buy-in.</li> <li>- Ghana Interbank Payment and Settlement Systems Limited (GhIPSS) formed the foundational infrastructure for all financial data exchange and was driven by a thriving fintech sector.</li> </ul>
Robust and Resourced Institutions	<ul style="list-style-type: none"> <li>- Efforts for a centralized Ghana data exchange platform failed - lacked financial resources and clear mandate.</li> <li>- Payments for all government services on Ghana.gov go to the Consolidated Fund in the central Bank, and ministries, departments, and agencies receive only 16% of their revenue.</li> </ul>
Participatory Processes	<ul style="list-style-type: none"> <li>- Many data sharing agreements are still negotiated bilaterally.</li> <li>- Ghana Fintech and Payments Association was created as a non-profit organization to liaise between private and public institutions for creating an enabling environment for financial inclusion.</li> </ul>
Capacity Building and Societal Engagement	<ul style="list-style-type: none"> <li>- Ghana's digital development journey has been driven largely by the private sector. Public awareness and engagement are low.</li> </ul>



# Insights and Recommendations



**Insight 1:** *Building citizen buy-in and trust that can be measured is key to long-term success. Even in cases where the initial incentives for building national data exchange systems are internal, governments will get the most out of their platforms by prioritizing data protections and citizen satisfaction with them.*

Government motivations for investing in data exchange platforms can vary – often focused on more efficient intragovernmental systems and improved public service delivery or driving a more dynamic innovation economy. The goal of empowering people with new rights and capabilities over their data is rarely a starting point to investing in a data exchange system. However, this goal is central to creating trust and maximizing the value of the data exchange system.

Regardless of the primary motivations, the exchange of personal data has implications for people. Establishing ways of measuring those implications, and establishing safeguards to protect citizens, can pay dividends for countries. Our research surfaced several potential pathways for countries to use and generate measurements that can cultivate trust.

First, we found that generating a body of evidence around the impact of data exchange can be an important organizing force. Consultations highlighted the importance of entering a policy debate with concrete proposals supported by evidence and specific use cases, rather than debating in the abstract or developing a position based upon perception. Given the complexities and cross-sectoral nature of data governance, the discussions around tradeoffs too often are politicized or driven disproportionately by a limited few. Evidence is essential in overcoming these challenges and can anchor more substantive debate.

Second, Data Protection Authorities (DPAs) have the potential to serve as important coordinating bodies within government. Specifically, they can help harmonize approaches to data protection and data sharing, as well as reconciling instances where there are competing policy priorities with respect to personal data across

agencies. Given the cross-sectoral nature of DPAs, they are well positioned to have unique enforcement authority around data misuse and abuse. To avoid creating “paper tigers” – an institution that lacks the power of enforcement – DPAs need to be held to accountability metrics and authorized to enforce penalties that create real deterrents.

Third, governments should consider safeguards against data breaches and data misuse. A centralized population database anchors most data exchange platforms. However, centralization of data by a government inevitably raises concerns about data security and prospects of misuse. Unified population registries can be more transparent than a centralized system because they seek to minimize the information held in any one database and ensure relevance to the work of a particular government agency. From an operational perspective, data exchange platforms like X-Road typically have built-in tools for transparency. Citizen portals or dashboards can make significant contributions to cultivating trust and transparency in a system.<sup>13</sup>

For example, in Uganda, the motivations started with intragovernmental efficiencies but have expanded to financial sector goals. There is an opportunity to further strengthen how UGhub can create value across society by more actively investing in the rights and capabilities of people with respect to their personal data. Some of these efforts – like the e-Citizen Portal – are planned and can be prioritized in the next phase of growth. Others, like provisions around legal rights to data portability and rights to object to data use, can be revisited. Likewise, given the persistent digital divide, planning for offline capabilities to meet the needs of rural government offices and populations will be important in ensuring the efficacy of UGhub and maximizing the value of data exchange and reuse.

## Recommendations:

**For Donors/Funders:** Align key stakeholders on a common set of indicators to measure the progress and effectiveness of national data exchange efforts. These metrics could provide a clearer understanding of value and benefits delivered to different groups, for example, the level of trust in systems, the experience of citizens, and/or the degree of competition in the marketplace. At the same time, they could guide financing, political resources, and practical implementations toward issues that need the most attention.

**For Policymakers:** Support independent, well-resourced institutions, including ways in which to strengthen metrics that measure the meaningful enactment of data protections.

**Insight 2:** *Many national data exchange efforts are motivated by a single use case that presents a problem to be solved. When governments can utilize that opportunity to go beyond the original problem and think more systemically, they can galvanize government-wide interest and expand value.*

Like other cross-sectoral development efforts, data exchange benefits from specific use cases to mobilize diverse stakeholder groups to engage. Yet, few positive use cases exist that resonate in emerging markets. In the absence of a clearly defined value proposition, efforts by diverse groups to engage in shaping policy can be incongruous or factional.

Our research reinforced the importance of such galvanizing use cases – to drive collective action and ensure sustained engagement.

For example, in Rwanda, the public service delivery and e-payments use cases have been a more galvanizing force for a shared approach to data sharing than centralized efforts to implement a national data exchange platform top down. Likewise, the efforts to strengthen the civil registry drove collective action around data sharing in Bangladesh.

## Recommendations:

**For Donors/Funders:** Establish a library of high impact use cases for national data exchange systems that could highlight and help identify good policies and practices. These use cases would ideally demonstrate effective investment, collective action, and positive outcomes.

**For Policymakers:** Consider a single use case as an opportunity to expand value beyond the original need, in turn, stimulating interest, engagement, and buy-in across government.

**Insight 3:** *Participatory policymaking is essential to building buy-in, trust, and ultimately, adoption of national data exchange systems. But effectively implementing participatory processes requires a major investment of time and resources.*

National data exchange regimes are by nature cross-cutting, extending far beyond centralized digital authorities, ICT ministries, and telecommunications regulators. They involve every sector of a country's economy and, as a result, have relevance for stakeholders across government agencies, departments, and ministries, as well as across public, private, and non-governmental actors. This inevitably leads to competing incentives and, at times, conflicting views and potential mistrust.

Participatory policy processes can help build ownership among different segments of the population that better articulate the risks, drive adoption and sustainability of digital services, and ensure long-term accountability. Past research has consistently found that an intentional focus on cross-sectoral investment and coordination can lead to more successful digital transformation outcomes.<sup>14</sup> Our research surfaced three key challenges countries have faced in implementing participatory approaches.

First, inclusive policymaking is resource intensive. Participants acknowledged gaps in human resources, time, and financial resources. The reality is that governments rarely have the incentives or resources necessary to sustain participatory processes over the time horizons they require.

Second, participatory processes require sustained alignment of incentives. Inclusive policymaking does not happen organically and requires a convergence of factors – from political influence and donor priorities to public pressure – to compel stakeholders to reimagine how to work together and ultimately disrupt traditionally siloed approaches.

Third, defining the universe of stakeholder groups for participatory processes presents conundrums. There is an inherent tension in defining the universe of relevant stakeholders to participate in an “inclusive” process. On the one hand, the goal of inclusivity suggests casting a broad net to maximize representation. On the other hand, the ability to create a multistakeholder group that is focused enough to identify shared goals and drive meaningful action towards those goals suggests a more strategic approach to stakeholder engagement.

The experiences of Uganda, Ghana, and Bangladesh offer some pragmatic approaches to addressing this challenge:

- In Uganda, NITA-U has focused on creating participatory processes around building trust in the functions, implications, and sustainability of country's data exchange platform, UGhub. NITA-U identifies building such trust as central to its mandate and essential to accelerate growth of the platform. To that end, the Agency conducts change management sessions with other government ministries to explain the implications of joining the platform and specifically addresses concerns they might have about security, control, and reliability. NITA-U also signs memorandums of understanding (MoUs) with each onboarded agency.
- In Ghana, efforts to catalyze a more robust data exchange ecosystem have benefited from a long tradition of democratic processes and open and transparent use of data. However, rapid digitization in the country has also resulted in significant fragmentation of roles and responsibilities across government, which has complicated efforts to foster a cohesive national approach to data exchange. Yet, the ability to generate collective action around e-payments services has helped provide a potential roadmap for expanded data exchange.
- In Bangladesh, to respond to the problem of “ghost voters” in its system, the government had to adopt a digital registration method to deduplicate and share registry data. In response, the government took a highly localized, inter-ministerial approach to civil registration, resulting in the ability to identify its citizens and provide the right public services at the right time. This is now recognized as a key milestone in the digital journey of Bangladesh and essential in the government's ability to provide rights and recognition to citizens who were previously invisible in the system.

## Recommendations:

**For Donors/Funders:** Consider funding and resources that enable effective participatory processes, including support for institutions and accountability mechanisms, human capacity, and technology design and implementation.

**For Policymakers:** Start with modest goals around size and diversity of stakeholder groups when designing participatory processes. This can help build momentum, demonstrate success, and create the mechanisms through which other stakeholders can become involved. In this way, inclusivity can be expanded over time.

**Insight 4:** *Building and sustaining good national data exchange systems requires long-term investment and strategy. More models and funding are needed to allow governments to determine what works best for their context and data ecosystems.*

Our research highlights a growing concern about the sustainability and long-term financial viability of data exchange systems. This concern speaks not only to practical implementation questions but more fundamentally to trust in digital transformation. Data exchange systems serve as foundational platforms upon which many other digital services are built. Persistent questions about their funding can and will erode trust, thereby constraining adoption and usage.

This concern is not unique to data exchange platforms but is perhaps somewhat more complex than other layers of DPI, particularly payments platforms where business models and the ability to commodify services is clearer and more well-established. In the case of data exchange platforms, the cost of setting up and maintaining a data exchange platform is often borne by one implementing entity, but the value accrues across government and, in many instances, across sectors.

The use of digital public goods (DPGs) and open-source code – particularly from X-Road, which remains the most widely deployed data exchange software solution – enables low-cost replication and helps to contain upfront costs. However, previous research shows that reliance on DPGs as inputs into foundational digital infrastructure creates other financial sustainability questions common across DPI.<sup>15</sup>

Public-private partnerships offer both opportunities and risks for national data exchange efforts. While the public-private partnerships model helps to establish a clearer business model and pathway to financial sustainability, it also comes with the potential of the traditional concerns around vendor lock-in and creates the additional need to ensure alignment of incentives, vision, and safeguards for governments and their people. This approach must also be considered carefully against increasing concerns about another wave of ‘data colonialism’ through international firms that collect and ‘own’ or ‘appropriate’ citizen data.

For example, in Uganda, there are risks to the current financial sustainability of UGhub, with dependencies on sustained international financial institutions and well-documented questions about open-source sustainability models.

The experiences of Rwanda and Ghana offer some pragmatic approaches to addressing these challenges:

- In Rwanda, Irembo, has taken a public-private partnership approach. This is unusual for e-government initiatives in Africa but has demonstrated important results related to sustainability that may offer options for pathways to sustainability. Irembo is run as a corporation – a public-private partnership – with its day-to-day operations separate from the government. Though, it is aligned with the public sector's long-term digital transformation vision, and the Government of Rwanda holds a significant stake in the company. In terms of the business model, many of the government services offered on Irembo are paid services, and Irembo provides a payment engine and charges a commission on every successful paid application, enabling it to operate and remain sustainable.
- In Ghana, efforts to create a more integrated national business registry were initially funded by the World Bank and set-up and managed through a public-private partnership with a Singapore-based company. The registry connects via an API with the databases at the Revenue Authority (GRA), National ID Authority databases, and Ghana Post to create a more seamless business registration process. Management of the integration has since moved to a local vendor but remains a public-private partnership.

## Recommendations:

**For Donors/Funders:** Provide resources to support further work into understanding different funding models and their implications. This includes financial support to develop innovative models, research ways to address long-term sustainability challenges, and document emerging models, such as those with shared funding structures.

**For Policymakers:** Consider taking an innovative approach to finding the right funding model for your unique needs and challenges. Peer learning and engagement can provide actionable insights into other countries' approaches, and into their pitfalls and successes in seeking long-term sustainability.



# Conclusion

While there is no one-size-fits-all approach, these countries' successes and pitfalls provide essential learnings for policymakers and government technology leaders as they navigate the complexities of implementing integrated national data exchange systems.

The motivations and processes for establishing national data exchange systems can – and do – vary from country to country. However, most governments are driven by a goal to increase efficiency and productivity, while all aspire to better serve citizens through their data exchange efforts. And, as this paper demonstrates, there has been clear headway made towards effectively unlocking the power of administrative data for shared value.

In Bangladesh and Rwanda, operationalizing digital services on a large scale has not only brought efficiency to the government, but also dramatically transformed the ability of citizens to access services. In Ghana, government efforts have helped to spark a thriving fintech sector. And, in Uganda, financial services firms have been early adopters of the government's online data-sharing efforts. Much of this progress has been spurred by generative use cases, a focus on participatory processes, and creative funding models.

At the same time, very real challenges exist with implementation. Fragmentation and lack of incentives within the government have hindered efforts, while citizens and government agencies alike need assurances that the proper regulatory environments and agencies are in place to protect data. Sustainable also funding remains a real challenge, even in countries that are implementing innovative models. Overall, measurements for citizen trust and buy-in are scarce.

The experiences of Uganda, Bangladesh, Rwanda, and Ghana – and other countries – can provide a critical compass for governments around the world implementing national data exchange systems. When decision makers work in concert to give thoughtful attention to each group and the benefits each can enjoy, governments can ensure their data exchange efforts drive shared prosperity for everyone.

# Endnotes

<sup>1</sup> Documented and acknowledged by the [World Bank](#) as well as other key actors.

<sup>2</sup> [Estonia X-Road, Open Digital Ecosystem Case Study](#)

<sup>3</sup> [Singapore Trade Data Exchange \(SGTraDex\)](#)

<sup>4</sup> [Dhristi Judiciary](#)

<sup>5</sup> [Unraveling Data's Gordian Knot: Enablers and Safeguards for Trusted Data Sharing in the New Economy](#)

<sup>6</sup> [Unraveling Data's Gordian Knot: Enablers and Safeguards for Trusted Data Sharing in the New Economy](#) – The World Bank, 2020

<sup>7</sup> [Bangladesh Empathy Training](#)

<sup>8</sup> [Open Government Data Strategy](#)

<sup>9</sup> [Open Data Portal](#)

<sup>10</sup> [IremboGov](#)

<sup>11</sup> [About UGhub from NITA-U](#)

<sup>12</sup> [Ghana.gov](#)

<sup>13</sup> [Africa's journey towards effective digital transformation hinges on building trust and transparency.](#) - DIAL, 2024

<sup>14</sup> [Accelerating National Digital Transformation: Leadership Series Brief #1 – The Digital Impact Alliance](#), 2024

<sup>15</sup> [Good digital public infrastructure is more than just technology. Here's what it takes to fund it.](#) – The Digital Impact Alliance, 2023

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