

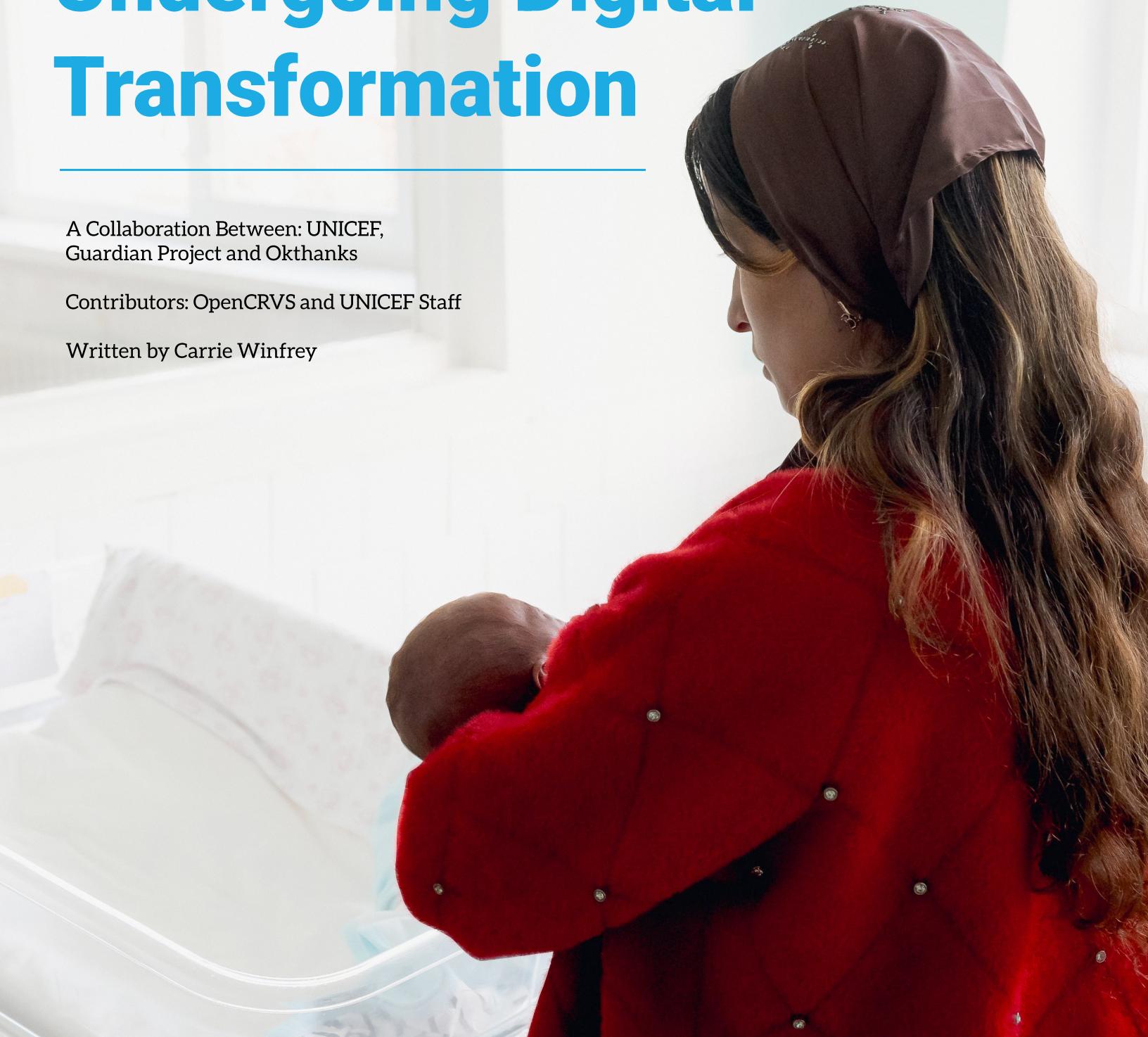
# Stakeholder Experiences Undergoing Digital Transformation

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A Collaboration Between: UNICEF,  
Guardian Project and Okthanks

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# Terms

## Digital Transformation

A strategic process in which nations adopt and integrate digital technologies to existing operations and services.

## Stakeholders

Individuals and entities invested in the decisions, activities and outcomes of a Digital Transformation initiative.

## Civil Registration and Vital Statistics (CRVS)

The recording of vital events to include live births, deaths, fetal deaths, marriages and divorces.

## Digital Public Goods (DPGs)

Software, AI models, data sets, content and standards designed to service public interest. DPGs are often characterized by their accessibility and affordability.

# Introduction

In recent years, the Digital Transformation of Civil Registration and Vital Statistics (CRVS) has emerged as a critical agenda item for UNICEF and its partners worldwide. Where manual systems can be inaccurate and difficult to access, digital systems present the opportunity to streamline the process and improve data integrity and security. With Digital Transformation as a priority, UNICEF has the opportunity to accelerate its mission to protect the wellbeing and rights of children worldwide.

*"Around the world, over 1 billion people are invisible, living without a legal identity."<sup>12</sup>*

In order to undergo Digital Transformation in any sector, partnerships with governments, civil society groups, academia, non-governmental organizations, private sector entities, and communities remain central to UNICEF's approach. They create a network to address the complex challenges of Digital Transformation: both social and technical.

This network of stakeholders play a vital role in the success of Digital Transformation. This report looks through the lens of CRVS (Civil Registration and Vital Statistics) projects to reflect how the interactions between stakeholders affects success. It explores:

- Who is involved
- Experiences with government; and
- Threats to success

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<sup>1</sup> "OpenCRVS in Bangladesh." Vimeo, uploaded by OpenCRVS, 8 June 2022, <https://vimeo.com/718427121>

<sup>2</sup> "1.1 Billion 'Invisible' People without ID Are Priority for New High Level Advisory Council on Identification for Development." 12 Oct. 2017, <https://www.worldbank.org/en/news/press-release/2017/10/12/11-billion-invisible-people-without-id-are-priority-for-new-high-level-advisory-council-on-identification-for-development>.

## **Key Findings**

- In considering holistic security, we must broaden our scope beyond system vulnerabilities and cybersecurity threats. We must also acknowledge and address the threats introduced by the people and processes involved.
- Regardless of the experience with a government to undergo Digital Transformation, challenges persist. Namely: missing expertise specifically in early stages and project leadership, knowledge gaps among implementing teams, and turnover in government employees and contractors.

## **Research Background**

This study included five conversations with a variety of stakeholders who have been involved in engagements to implement digital systems or to advise on their expansion. It represents the perspectives of UNICEF staff in regional and country offices who are coordinating and advising governments on digital components of programs. It involved in-depth conversations with a tech solution coordinator who closely works on implementations of CRVS solutions with several governments both with and without UNICEF's involvement. Last, but certainly not least, it brings a critical perspective on what it means to localize technology within a country or group of people; and specifically women.

# 1

## Setting the Stage: Technology Approaches for Digital Transformation

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Governments have a range of technology approaches at their disposal to drive Digital Transformation. They may opt for third-party proprietary software solutions or choose to develop systems internally with their own IT teams. However, in UNICEF's approach, digital public goods (DPGs) play a transformative role.

*"In June 2020, the release of the UN Secretary General's Roadmap for Digital Cooperation called for the adoption of digital public goods (DPGs) including open-source software, open data, open AI models, open standards and open content. These digital public goods should adhere to privacy and other applicable laws and best practices, do no harm, and help attain the SDGs." – From UNICEF Annual Report 2021<sup>3</sup>*

DPGs refer to platforms and digital products that are designed to serve public interest. They are often characterized by their accessibility and affordability. While UNICEF favors them, programme specialists advise governments at varying stages of Digital Transformation, and leaders who may be driven by different values.

During this research, participants were asked why certain systems or approaches were selected by governments. The reasons vary from one nation to another.

- Several that have been custom built are a reflection of the country's move toward Digital Transformation in an era that predated the digital public goods (DPG) movement.
- Some simply have existing relationships with a technology partner or vendor. This familiarity and relationship influences their choice.
- Some nations select solutions that are promoted or endorsed by partners and advisors.
- Some choose a system that is already in place for health. For example, DHIS2 is already deployed across many nations in Africa for health. Extending its capability for CRVS is a palpable choice for some nations.
- In some cases, government officials have been motivated to adopt a system for personal incentives.
- Some governments prefer to avoid the requirement for biometrics, and their decision is swayed by that preference.
- Some governments resist solutions created outside of the country. They want a "local solution for a local problem", or they simply don't want to expose national data to any foreign entities or partners. They want everything built and housed within their Ministry of Home Affairs. And while DGPs can be fully implemented in-country, there's an unfavorable

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<sup>3</sup> UNICEF East Asia and Pacific Regional Office. "Digital Transformation Annual Report 2021." UNICEF, 2021, [https://www.unicef.org/eap/media/13006/file/DX%20Annual%20Report\\_2021.pdf](https://www.unicef.org/eap/media/13006/file/DX%20Annual%20Report_2021.pdf)

perception attached to an approach that involves people outside of the country in these cases.

*“The government wants all details of citizens private and confidential.” —Research Participant*

The choice a government makes about which technology solution or approach to take influences who is involved, specifically for technology implementation. Though, it can also affect who is involved in the early stages of conceptualizing the system. In the next section, we'll explore the range of stakeholders involved in a Digital Transformation process.

# 2

## Who is Involved

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In the context of digital transformation, stakeholders encompass a spectrum of actors, including government, advisors and sponsors, technology implementers, field and office workers, and citizens.

### Government

Typically the government takes the lead and is the primary decision maker. They are supported by sponsors, advisors, and technical experts who offer guidance, financial support, and essential services.

Different ministries and offices within a government are involved in Digital Transformation projects. In the context of CRVS, the name of the ministry involved is unique to the country and depends on their government structure. CRVS projects typically fall within the Ministry of Interior Affairs or Security, Ministry of Health or Ministry of Justice. Other important government layers that are typically involved include:

- National Statistics Offices
- Ministry of Health (if not the main ministry involved)
- Digital Transformation Units
- State Directors
- Municipalities
- Civil Registrations Offices
- Newborn Programmes

### Advisors and Sponsors

In countries where UNICEF operates, CRVS projects are closely linked to the Child Protection programmes. Child Protection and Social Policy are the two

main project custodians within UNICEF. They are at the forefront of the process in interactions with the government.

*“I was there to interface between the government and also the vendor. Then sometimes we will bring our regional colleagues, and we have a discussion about all of the system requirements.” – Country Programme Participant*

UNICEF stakeholders include:

- UNICEF Country Programme Officers
- UNICEF Regional Programme Officer
- UNICEF Social Policy
- UNICEF Regional Technology for Development (T4D) Manager  
(Generally involved later in the process after the Terms of Reference (TOR) is established.)
- UNICEF Information and Communication Technology Division (ICTD)

Outside of UNICEF, other civil organizations and sponsors provide guidance and funding. They include, but are not limited to:

- World Bank
- Plan International
- Vital Strategies
- UNICEF's Office of Innovation (OoI)
- UN ESCAP (Economic and Social Commission for Asia and the Pacific)

## Technology Implementers

The composition of stakeholders involved in the technology implementation will vary depending on the government's approach (ie. building in-house or using outside products and services) and subsequently, their selection of platforms and vendors. For example, if a government is building a system from scratch, they may hire a 3rd party software development team to build it, then move the project to their in-house development team to maintain. Other governments may choose to use a digital public good, like OpenCRVS or DHIS2. If this is their starting point, their process and partners will look very different.

Technology stakeholders that may be involved include:

- Internal development teams
- 3rd party software companies
- Implementation coordinator for the technology platform
- Technology platform's community of developers
- System integrator

- Entry-level developers

## Field and Office Workers

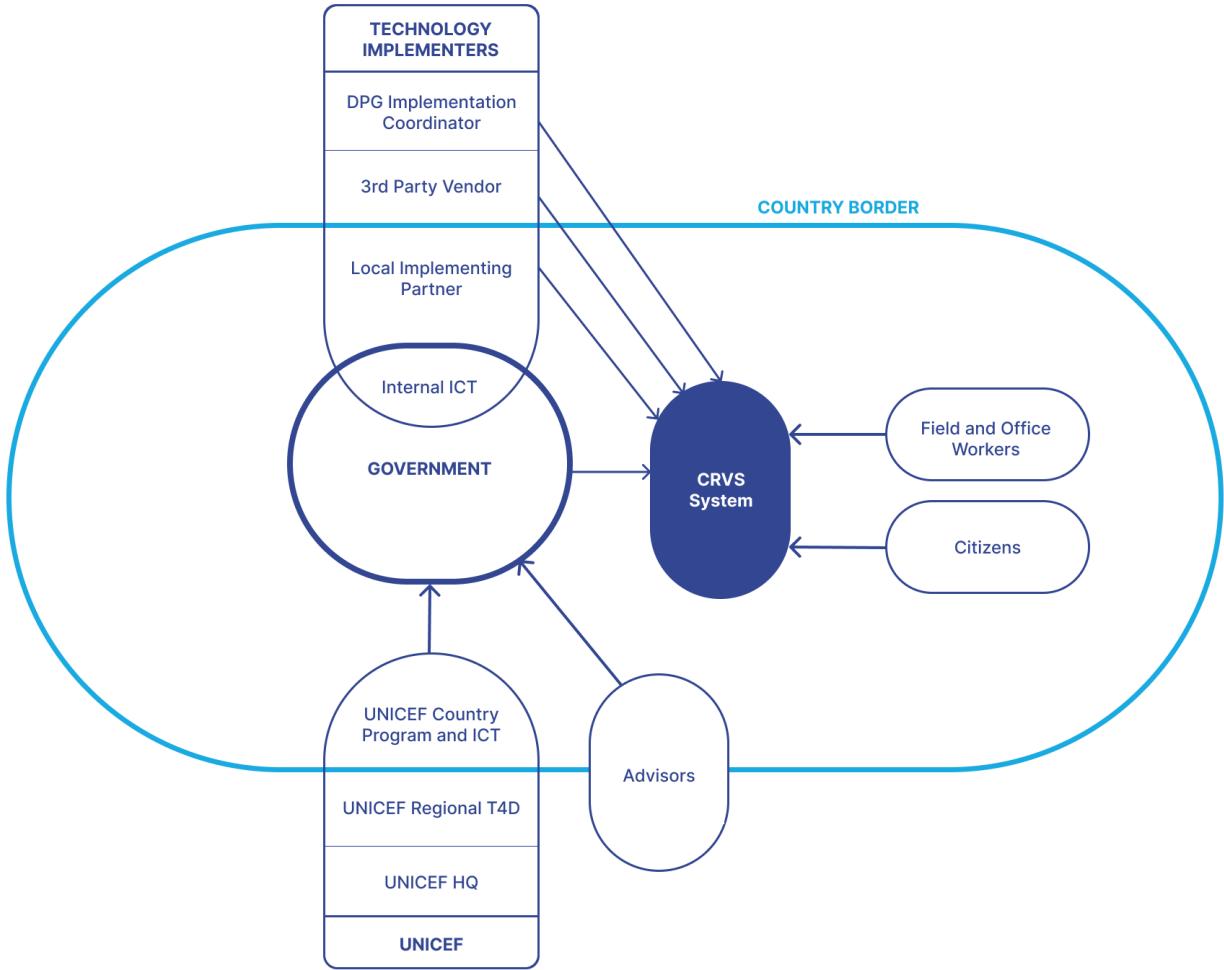
The individuals responsible for recording the registrations and vital statistics are key stakeholders. These people are unique in each country, but can include nurses, community health workers and tribal chiefs. In their [user documentation](#), OpenCRVS maps out system roles. They include:

- Field agent
- Registration agent
- Registrar
- National registrar
- Local system admin
- National system admin
- Performance manager

## Citizens

Citizens are a key stakeholder, as the success of a programme is dependent on their involvement. Among those responsible for registration are parents of newborns, immigrants, urban dwellers, as well as families and individuals residing in remote villages or mountainous regions.

Furthermore, it's important to acknowledge that the Digital Transformation process encompasses both individuals without existing registration records and those already documented in traditional paper systems.



The diagram above illustrates how stakeholders are connected, revealing who has influence on other stakeholders and the system. The country border demonstrates who is often advising and implementing outside of the country versus inside the country.

*Disclaimer: The stakeholders listed in this section and the connections illustrated in the diagram represent what was shared in the research. It does not intend to be an exhaustive list, as the scope of the research was limited.*

# Engagement Types

As observed in the research, each Digital Transformation project to implement or enhance a CRVS system will be different. UNICEF and technology partners will work with governments who are at different stages in their own Digital Transformation process. The samples below show how an engagement varies by looking at two different countries: Nepal and Niue.

## Nepal

The system in Nepal reflects a slow movement toward Digital Transformation by the government over many years. Built from scratch, a trusted vendor developed the system during a time that predated the digital public goods movement. This evolving development of digital systems is true for many countries in South Asia. UNICEF's Child Programme in Nepal began to provide support several years after the system was developed. They were brought in to help expand coverage. They have helped the country make decisions on interoperability. They have assisted with: developing data standards, integrating CRVS registration with the health system, and solving problems that come up as coverage expands to make registration quicker and easier, especially for citizens living in the mountains.

## Niue

The establishment of a system in Niue illustrates a situation where the leaders of the country engaged in the process of implementing a digital public good. Prior to 2020, the founders of OpenCRVS were engaged in conversations with the individuals that would later pioneer the implementation of the open-source software, and the CRVS infrastructure in the country. OpenCRVS had done an early proof of concept in the country several years before the full implementation.

OpenCRVS worked directly with the government through all phases of implementation. OpenCRVS defines their phases in their documentation: [Implementation Phases](#). They led with an agile process, adapting to new needs and defining requirements as they saw how the system performed among the people. Local implementers integrated the open source code into a fashion that built an in-country, secure, confidential system for collecting, storing and accessing citizen information.

# 3

## Experiences With Government

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Collaborating with governments can be very comfortable. However, in certain instances, the experience of working with governments is fraught with tension.

Research participants reported that working with governments can be quite comfortable. Here are some of the factors that contribute to this feeling and ease:

- When there's buy-in and coordination from all government stakeholders
- When the civil registration department is directly involved
- When there's good, trusted relationships
- When expectations on the process and timelines are aligned
- When there's a framework for influencers and advisors to be involved in strategy and future planning. A task force provides such a framework for collaboration across different entities to tackle the complex problems involved in Digital Transformation.

In some cases, working with the governments is not comfortable, or easy. Generally this is due to poor coordination, beyond the control of advisors. Processes and systems suffer from uninformed decisions, decisions driven by personal motives or different values, decisions made under the pressure to get numbers on a short timeline, or decisions made without the perspective of critical infrastructure expertise or that lack the foresight and vision that research and conceptualization provide.

When collaborating with governments on Digital Transformation, certain realities emerge: pressure on pace, absence of agile thinking and software

development practices, and the lack of adherence to data privacy and e-governance policies.

### **Pressure on Pace**

Often there's pressure to get the project done, so that it can yield numbers. It's typical to have small implementation teams operating within tight deadlines.

*"There's always pressure on pace." —Research Participant*

### **Absence of Agile Thinking and Software Development Practices**

Shifting from traditional development practices to an approach that allows for flexibility and adaptation throughout the process represents a new paradigm. Many governments are familiar with traditional processes that define a comprehensive specification at the project's outset. Embracing an agile process requires a fundamental shift in mindset regarding technology development.

*"We will always encourage agile development; but government procurement will not allow for it."*  
—Implementing Partner

### **Lack of Adherence to Data Privacy and e-Governance Policies**

Some governments do not have policies concerning data privacy and digital infrastructure, while others do have them in place. Even though policies are in place, adherence to them is often missing.

*"Oftentimes policies exist, but they are not adhered to."*  
—Research Participant

These realities can lead to turbulence and complexity when engaging in Digital Transformation work with governments. Though, the research identified three key challenges that persist across most engagements. The next section will shed light on: missing expertise, knowledge gaps and turnover.

# Challenges Persist

## Missing Expertise

Particularly in the early stages and in project leadership, key expertise on critical digital infrastructure and business analysis is often missing.

In the context of UNICEF projects, Child Protection and Social Policy are typically the custodians of the project. Programme specialists from these teams work directly with the government to advise. At the end of the day, however, the government makes the calls about how they are building the tech and who they will hire. This sets the tone for how implementations roll out, and determines who is involved in the technology implementation.

Subsequently, the people involved in these early stages of defining the system and those hired to implement it may lack a critical infrastructure or business analysis point of view. This leads to systems built with a narrow view, thinking simply of the registration itself.

*“Companies come in and do a pilot. Then it’s scaled. But it’s not considered as critical government infrastructure. And thus, not treated as such.” —Research Participant*

*“The in-house team doesn’t have a business analyst. They don’t speak business, and can’t ask the right questions. For example, they will connect two systems without asking what the future of this is. A lot of them have not worked in the subject matter.” —Research Participant*

*“The people with expertise in critical infrastructure are not doing this work.” —Research Participant*

What's needed are experts that understand CRVS as a key building block for the digital infrastructure of the country, and have the experience to manage such a project. In 2017, World Bank said:

*“Robust CRVS systems linked to identity management systems and tailored to local contexts form the foundation of all sectors and pillars of the economy and contribute to the sustainable development goals to end poverty, and ensure prosperity for all.” –World Bank<sup>4</sup>*

## **Knowledge Gaps**

Project leadership needs an accompanying team with the complementary skills that are key to being successful. The type of skills required for this team is outlined in the OpenCRVS documentation: [Establish a project and team](#). In some cases, the implementers are simply not the right team. They lack the experience or required skills.

*“Implementers are not always the right team.” –Research Participant*

Efforts aimed at enhancing local capacity play a crucial role in driving Digital Transformation and serve as a key strategy for tackling knowledge gaps. Capacity building refers to the process of enhancing the skills, knowledge, and resources within a team or organization to effectively plan, develop, deploy, and maintain software solutions.

However, participants mentioned that working with entry-level developers requires a lot of time, and emphasized the importance of having realistic budgets and aligned expectations on time for the whole project when capacity building is a core component.

*“It takes a lot of time to build capacity; and therefore the budget for it.” –Research Participant*

## **Turnover**

Turnover in government and on local development teams is common. You could have one person in government that knows everything, then leaves. As soon as they get the skills, they will move on to a better job. It was also mentioned that it can be difficult for the government to hire good technology people.

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<sup>4</sup> World Bank. "Economic and Sector Work: Enhancing Maldives' Preparedness for Financial Sector Development." World Bank Group, 2021, <https://documents1.worldbank.org/curated/en/306621510673094647/pdf/AUS16865-revised-public.pdf>.

*“As soon as people get skills, people leave and get a better job to get paid more.” —Research Participant*

# 4

## Beyond Technology

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When collaborating with governments on Digital Transformation, the process extends beyond mere technology implementation. It spans various crucial elements that stakeholders have highlighted in research.

*"The technical system itself is pretty straightforward. It's everything surrounding it [that makes it complex]."*  
—Research Participant

### An Enabling Environment

Technology serves an enabler, yet its effectiveness hinges on the presence of an enabling environment. Such an environment thrives on effective communication and stakeholder buy-in, complemented by comprehensive training and effective change management.

### Designing For The Lived Experience

Stakeholders must grasp the intricacies of citizens and the workforce, along with the environments in which they operate. When designing service delivery models, training and change management, stakeholders need to understand health workers, community leaders and others that could be working in the field as registrars. Below is a sample of realities to understand:

- If you're going to use health workers, how are you going to use them knowing that they are super busy?
- Have you been to the hospital? Do you know if there's a charger? Is there wifi?
- If you need to use data, who's paying for it?

- Which devices will be used? If using personal phones, how will you manage access?

## Gender Consideration

Every Digital Transformation project should consider the experience of female users. In several parts of the world, women have unique digital realities and often face greater limitations. The advice to always ask these questions was provided by a research participant:

- What have you found out about female users?
- What did you do differently because of this?

## Interoperability and Data Integration

Interoperability and integration of CRVS systems with other administrative data sources improves the efficiency of the system, data sharing, and analysis. Interoperability between CRVS and health systems was mentioned several times during the research. In some cases it's been the reason why a technology platform is selected. In other cases, it's been an important capability to add in order to make registering and updating vital statistics easier.

An enabling environment, designing for the lived experience, gender consideration, interoperability and data integration—these elements are crucial to success. The next section takes a closer look at how certain details within these elements become threats to the overall success of a project when missing. It also covers how the challenges and gaps discovered in the research become problematic when not attended to.

# 5

## Threats to Success

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In order to foster holistic security, we must broaden our scope beyond system vulnerabilities and cybersecurity threats to technology. We must also acknowledge and address the threats introduced by the people and processes involved.

### **Insufficient Buy-In**

The absence of support from government stakeholders poses a significant risk of derailing the entire project. Given the involvement of multiple stakeholders, securing support and buy-in across various levels is imperative. This commitment entails understanding the importance and benefits of the Digital Transformation, being willing to invest resources (financial, time, personnel), actively participating in the process, and championing the changes within their respective roles.

### **Vendor Lock-In**

Locking into a vendor offering proprietary software can limit access to the system. In some cases, this has led to the loss of generations because the data could no longer be accessed. In other cases, it can lead to very high costs to maintain and improve the software.

### **Missing Expertise**

Business analysts and individuals with experience managing government IT projects play critical roles in conceptualizing and planning for a system that is a critical foundation for Digital Transformation. Without their involvement and

leadership, decisions could be made that make it difficult or expensive to extend and improve the system.

## **Lack of Persistent Knowledge**

Digital transformation projects need a technology partner and/or people within the implementing team that have knowledge of the system and are involved over time. Governments often experience a lot of turnover with employees working in ICT and software development. When the knowledge leaves with an employee or contractor, it can create friction and cost time.

## **Premature Scaling**

Premature scaling occurs when a software company that's implementing a system scales it without going through a pilot stage where they prove that the system is ready to scale. During a pilot, a system is tested in a range of settings and improved. This process is complemented with a scalable, integrated rollout plan.

## **Poorly Conceived Service Delivery Models**

Poor planning for deployment, service delivery models and hardware can cause a system not to be used. It's key for stakeholders to understand how registrations will be made and by whom, the literacy of field workers, and the constraints of the physical environment in regards to geography and connectivity of a registration site.

## **Lack of Change Management**

Change management refers to the structured approach used to prepare, support, and manage individuals and organizations through the various changes associated with adopting and integrating new technologies. People generally reject change. Without change management, people will simply not use a system. The added complexity in the environments undergoing Digital Transformation is the lack of digital literacy, lack of trust in government, and lack of trust in a digital system.

## **Limited Long-term Assistance and Financial Resources**

Insufficient consideration of ongoing costs and support frameworks can result in scenarios where essential needs remain unfulfilled despite their existence. This encompasses both the financial requirements for sustaining a system and the support mechanisms necessary to ensure its continuous updates and security. It's imperative that the government has access to skilled personnel and the financial means to retain them,

ensuring that the system remains accessible and functional in meeting its intended purposes.

## **Evolving Technology and Threats**

Technology is always changing, and it's crucial for the security of a system, and the practices and policies surrounding it, to remain current. Without strong protections, a country will be ill-equipped to fend off emerging threats from criminal hackers or internal breaches to exploit sensitive information. Citizens and their data can be compromised.

# Conclusion

The intention of this research was to shed light on the people and processes involved in Digital Transformation. Programme staff and technology advisors shared about their experiences through their unique lens of involvement. Through conversations the interplay between stakeholders came into view, as we aimed to see beyond the technology and get a glimpse into the full scope of complexity Digital Transformation evokes.

It's clear that several variables move projects forward, sideways, and sometimes backwards. In conducting this research, its purpose was to guide holistic security recommendations commissioned by Guardian Project in partnership with UNICEF. The security of CRVS is paramount, given that they contain highly sensitive information about citizens and play a pivotal role in establishing a nation's digital infrastructure. Though, in order to foster holistic security, it's imperative to recognize and address the potential threats to success posed by individuals and processes. Further, UNICEF and their partners must remain vigilant in addressing the ongoing challenges encountered as stakeholders and nations navigate their Digital Transformation journey.

## Additional Resources

This research is part of a collective effort to provide UNICEF staff working on Digital Transformation with guidance on conducting holistic security audits. Informed by the insights furnished by research participants, tips for generating resources have been developed. Refer to [Recommendations for Providing Guidance](#) for more information.