Rapid Deployments Using Shared Infrastructure in SIDS

A pathway to building digital solutions at a national scale in 100 days

CO
CO-DEVELOP

Digital services across social benefit programmes, civil registration, health information systems and more can be rolled out in as quickly as 100 days

Mozambique went live with Salama, an integrated digital health campaign management platform, in 90 days

Philippines piloted the digital transformation of its emergency cash assistance program within 10 weeks

Shared infrastructure thinking, also known as the Digital Public Infrastructure (DPI) approach to digital transformation, has solved complex systemic issues and delivered transformative results.

While it may seem like a big undertaking restricted to only technologically mature ecosystems, it doesn't have to be. With strategic planning and political drive, solutions that take a shared infrastructure approach can be deployed in 100 days. The 100-day claim is not just an aspiration – it has been made a reality by multiple actors.

What is it about shared infrastructure that allows deployments to happen in 100 days?

Instead of constructing individual roads for getting to work, school, hospitals, and other ends, we collectively commute on shared highways for all our diverse needs. Similarly, shared infrastructure in digital transformation serves as a foundation that can be reused for multiple use cases, allowing for faster and more effective deployments.

Brazil's Central Bank built Pix, an instant, interoperable, and inclusive payments system that allows all customers to use the same "highway", i.e. pay and receive money using the same protocol across any bank, wallet, or app, leading to swift and massive financial inclusion

CO
CO-DEVELOP

Pre-requisites for success

1

Use Case: Identify a single, specific use case

A specific use case provides clarity of purpose and streamlines efforts towards a swift initial deployment

Countries need to identify a singular and narrow use case that can have a measurable impact on improving efficiency, service delivery, and other beneficial outcomes for their populations. The specificity of the identified need and the use case is key to avoid complexities or risk of failure in subsequent phases. Taking a shared infrastructure approach from the beginning allows countries to integrate the use case into a larger solution, facilitating long-term expansion without having to rebuild entire systems.

The **Faroe Islands** needed a unified platform to exchange data between different government departments, private sector entities, and the general population. With this need in sight, they were able to start seeking solutions that took a shared infrastructure approach allowing various government departments, private sector entities, and the general public to exchange business and personal data securely and efficiently.

Similarly, in the **Philippines**, the Assistance to Individuals in Crisis Situations (AICS) programme's processes were entirely manual. With this need in mind, the Department of Social Welfare and Development (DSWD) took a shared infrastructure approach to digitalise the programme, helping improve its service delivery.

2

Governance: Assess the state of safeguards that may be relevant for your use case

Not all rapid deployments will require formal legislative processes or lengthy governance frameworks, but every rapid deployment will need a robust plan to ensure that safety and inclusion elements are embedded within its operations.

Countries should examine the type and nature of data required for the initial use case and the need for special protections, if any. This initial assessment helps determine if the project meets the basic requirements to proceed, with additional governance measures to be developed as the project expands. This is especially important when dealing with sensitive data, as accidental exclusions can have significant consequences. Therefore, establishing safety and privacy protocols/frameworks is essential for earning public trust and ensuring the effectiveness of the solution. These protocols are not complex legislations, but considerations to guide implementation with an inclusion lens.

In **Niue**, a digital civil registration system was rolled out to enable birth and death registration. Because civil registry records contain highly personal information, Niue ensured that their existing laws on data protection, civil registration, and technology usage were either sufficient or could be updated in time for their planned digitalisation.

In **Lao PDR**, while developing the Digital Farmer Registry, the country implemented data minimisation by limiting data collection to pre-approved information gathered through official agents within existing programmes. This approach aligns with the Principles for Digital Development, ensuring adherence to the 2017 and 2018 Law on Electronic Data Protection. By safeguarding beneficiaries' data rights and restricting data usage to programme objectives, the pilot promotes trust, encourages participation, and prevents exclusions.

CO
CO-DEVELOP

3

Champion: *Nominate a clear champion who is authorised to drive action*

Clear champions ensure streamlined decision-making, effective implementation, and sustained momentum for digital transformation initiatives.

Individuals within the government who have the passion, expertise, and leadership qualities are needed to champion the rapid deployment project.

The key for any internal champion, or the champion team, to be effective lies in three things:

1. having the authority to drive meaningful change within bureaucratic structures,
2. possessing a baseline understanding of digital technologies and their applications, and
3. being attuned to the needs and perspectives of potential end-users.

The champion will later assemble a decision-making team that will lead the day-to-day implementation processes.

In **Mozambique**, the Ministry of Health (MISAU) appointed the Director of the Mozambique National Malaria Control Programme as the champion for deploying an anti-malaria bednet distribution platform. Being at the bureaucratic helm of the country's malaria control efforts, the director played a key role in guiding the deployment plan and ensuring its effective implementation. His deep knowledge of health also lent credibility to the initiative, earning trust and support from stakeholders at all levels. He leveraged his influence to bring in a dedicated team of supervisors, system admins, a programme manager, and frontline workers, securing the necessary buy-ins for the initiative's success.

4

Resources: *Dedicate and arrange financial resources to sustain momentum*

Dedicated and easily accessible funding is key to the speed of deployment by avoiding long delays in approval processes at every step.

Countries must allocate adequate financial resources earmarked for the specific use case. This can also be explored through co-financing with multilateral banks and philanthropic organisations. As the project develops through the planning phase, some financing needs may change, but starting with dedicated allocations from the beginning is key to avoiding extraordinary administrative delays.

In **Lao PDR**, the Department of Irrigation developed and piloted a Digital Farmer Registry to streamline service delivery of support programmes for farmers via improved agricultural data management. The starter resources for this initiative came from the Partnerships for Irrigation and Commercialisation of Smallholder Agriculture (PICSA) project, which demonstrated the government's commitment towards the initiative and allowed the team to actively pursue the solution without interruptions.

Similarly, in **Mozambique**, the government earmarked funds and received support from the Bill and Melinda Gates Foundation and The Global Fund to distribute bed nets during the deployment of Salama, an integrated health campaign management platform.

CO
CO-DEVELOP

What are Digital Public Goods? (DPGs)

According to the UN Secretary General's Roadmap for Digital Cooperation, digital public goods are open-source software, open data, open AI systems, and open content collections that adhere to privacy and other applicable laws and best practices, do no harm, and help attain the Sustainable Development Goals (SDGs). The DPG Standard is a set of nine indicators that are used to determine qualification as a DPG.

DPGs highlighted throughout this document are eGov, OpenCRVS, OpenG2P, OpenSPP, and X-Road; the full list of DPGs can be found in the Digital Public Goods Alliance's DPG Registry.
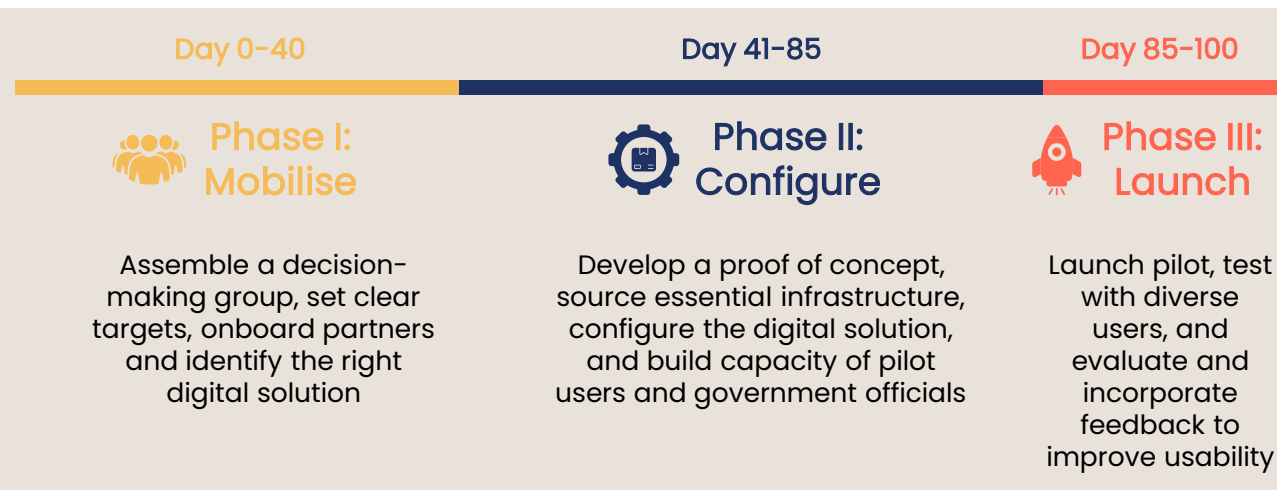
Baseline internet access and digital readiness are enough to begin deployment

A common misconception is that countries must possess advanced digital capabilities to deploy shared infrastructure based digital solutions. However, for countries with low digital or internet penetration, it is possible to incorporate offline syncs into the deployment process. Offline syncs refer to the capability of digital solutions to synchronise data between devices or systems even when they are not connected to the internet. They not only facilitate the adoption of digital solutions but also drive up digital literacy and usage over time. This approach can support inclusivity and accessibility, paving the way for broader participation in the digital ecosystem, while addressing the unique challenges posed by varying levels of digital readiness.

In Mozambique, the mobile phone penetration at the time of the DIGIT Health Campaign Management system deployment was only around 60%. The team built various offline syncs into the design of the system to ensure reach and inclusivity in service delivery.

The rapid deployment of the solution can be structured in three phases

The development and deployment of the solution have multiple moving parts but can be structured in three phases over 100 days. A key lever to maintain pace and avoid distractions is to create milestone events such as promising a demonstration to other government bodies/ministries or announcing a public launch.

Day 0-40	Day 41-85	Day 85-100
Phase I: Mobilise	**Phase II: Configure**	**Phase III: Launch**
Assemble a decision-making group, set clear targets, onboard partners and identify the right digital solution	Develop a proof of concept, source essential infrastructure, configure the digital solution, and build capacity of pilot users and government officials	Launch pilot, test with diverse users, and evaluate and incorporate feedback to improve usability

Phase I: Mobilise

Day 0-40

Day 0-15
Assemble a team and set targets

In the **Philippines**, DSWD's campaign on Digitisation of Assistance to Individuals in Crisis Situations (AICS) began with establishing an internal decision-making team. The team was championed by the Assistant Secretary for Digital Infrastructure & E-Governance CIO, who brought together other senior DSWD staff members. The team set a 10-week target to pilot and test the solution with 150+ beneficiaries seeking assistance under the program.

To initiate rapid deployment, the first step is to **assemble a high-level decision-making group within the government.** This body will serve as the central hub for overseeing and guiding the action plan, ensuring that all activities remain aligned with overarching goals. **This exercise should be led by the project champion, who, along with the team, should ideally belong to the Ministry or department** under which the identified use case is being delivered. This team can include officials from other Ministries as well, such as the Ministry of Information Technology or the Department of Social Welfare or equivalent. Ensuring representation from various departments within this team can help with quick approvals and process coordination.

Further, this decision-making group must **establish clear and actionable objectives that align with the scale of deployment and milestones to achieve**. The first use case will likely be regional or sector-specific, keeping the scale limited. Holding stakeholder consultations with the private sector and civil society groups can ensure that these metrics are relevant to the country's current socio-economic landscape, maximally beneficial to the populations being reached, and are realistic and achievable within the set time frame and scale.

In **Lao PDR**, the Department of Irrigation onboarded a programme management team as external consultants to assist with the initial scoping and management of the pilot. Simultaneously, the OpenSPP team approached the department to develop a Digital Farmer's Registry. Demonstrating a strong alignment with Lao PDR's needs, OpenSPP was selected as their digital solutions partner to configure and deploy the registry.

Similarly, the **Philippines** onboarded a consultant from the World Bank to assist with the initial scoping and programme management of the pilot to digitise the Assistance to Individuals in Crisis Situations (AICS) program.

A country will need four main partners working closely together: **programme management partners, digital solutions partners, local technical partners, and safety and inclusion experts.**

They must begin with onboarding a **programme management (PM) team/unit** that has experience with programme implementation at a regional or national scale. This team should consist of a programme manager and a set of analysts who can create a realistic action plan/strategy and identify the right shared infrastructure-based digital solutions or Digital Public Goods for the selected use case. Evaluating these solutions should involve an assessment of whether the solutions are interoperable, follow open protocols, have reusable modules/components, **and most importantly solve the identified needs of the citizens.**

Once the right digital solution has been identified, countries need to onboard **partners who can configure and/or customise the solutions** for the specific needs and preferences of the country. These should include:
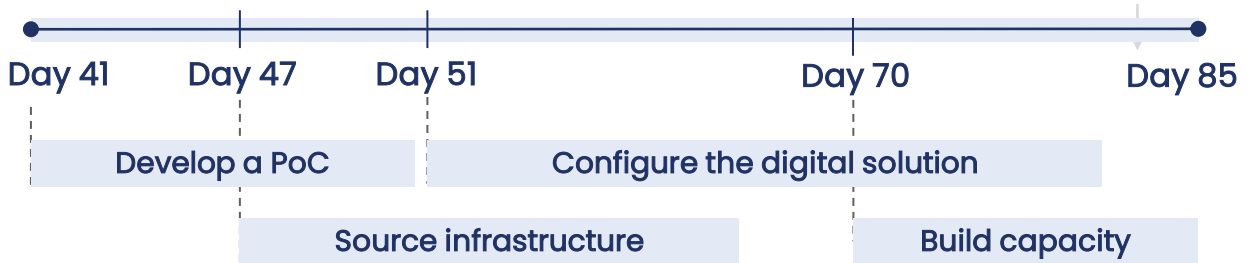
- **Digital solutions partners who have already developed and deployed the core solutions needed** in other countries.

- **Local technical partners** to help with the unique customisations and configurations needed to deploy in the context of the country. These roles can sometimes be fulfilled by the digital solutions partners as well.

To ensure maximal safety and inclusion, good governance, human-centred design, and service delivery, it's crucial to establish a framework that provides guardrails and enables continuous improvement. This can include capabilities such as implementing the new digital system alongside existing approaches, application of an intentional gender lens, developing a robust monitoring mechanism to identify instances of exclusion and establishing clear procedures for addressing grievances. Safety and inclusion are integral components of the workplan that need to be prioritised from the outset to build trust in the process. Trust in the efficacy of a system is critical for adoption from users i.e. the more the people trust it, the more likely they are to use it.

As the shared infrastructure matures, it may require integration with other systems. Thus, while onboarding partners for configuring the digital solution, countries can consider **engaging with Systems Integrators (SIs)** early in the process to build an understanding of integration requirements. However, this is not a necessary step at this stage.

Phase II: Configure

This phase involves several overlapping efforts

| Day 41 | Day 47 | Day 51 | Day 70 | Day 85 |

Develop a PoC

Configure the digital solution

Source infrastructure

Build capacity

Day 41-50
Develop a proof of concept (PoC)

In **Madagascar,** the national Digital Governance Unit was working on deploying X-Road® data exchange solution for their public sector organisations. With the help of the World Bank, X-Road proof of concept was established for safe and secure data sharing between two to three ministries in Madagascar. The primary aim was to demonstrate the ease of onboarding all stakeholders to the project, not to showcase a final solution.

Guiding the core technical partners to **develop an initial proof of concept** will demonstrate how the digital solution can be deployed within the context of the country. This involves analysing whether the solution is the right fit to meet the use case needs, identifying reusable components of the digital solution and outlining areas requiring customisation to meet specific country requirements.

It is important to **keep the PoC simple.** While developing a PoC, multiple pathways may emerge to solve the need at hand, but selecting a simple demonstration is important to ensure that deployment efforts are swift and targeted. This means pushing non-essential opportunities, even when lucrative, to the next phase.

At this stage, countries also need to start developing **governance frameworks and safeguard measures** specifically tailored to shared infrastructure implementation. These frameworks can include outlining technical specifications, data handling procedures and ethical considerations. Note that governance includes a wide spectrum of activities, not all requiring legislation. Essential workflow safeguards may vary depending on the type of data being handled. However, some common safeguards include informed consent, data privacy impact assessments, transparency on the operation of the systems and data usage, data accessibility and grievance redressal mechanisms.

Day 47-60
Begin sourcing essential infrastructure to support the pilot

In **Liberia**, the Ministry of Health deployed e-Gov's DIGIT Health Campaign Management system to manage the distribution of anti-malaria bed nets. To deploy the solution, the Ministry sourced existing cloud and other essential infrastructure, which helped them deploy swiftly and manage costs.

Similarly, in the **Philippines**, the Department of Social Welfare and Development used Amazon Web Services, an on-demand cloud computing platform, to deploy the AICS programme solution, with assistance from OpenG2P.

Simultaneously, countries need to **start setting up the baseline infrastructure for the pilot programme.** Countries should source firewalls, data storage options, monitoring and logging tools, integration interfaces such as APIs and initial hardware requirements. For faster deployment, utilising existing infrastructure is more suitable. For instance, sourcing existing cloud services can help with swift deployment within a short timeline, as countries can save the time and cost required for developing this in-house. As the solution scales, dedicated on-premises server infrastructure can be developed, if desired.

Day 51-80
Configure the digital solution and complete sourcing

In **Nigeria**, the National Population Commission used OpenCRVS to test digital service delivery models that would increase the birth registration completeness rate in the country. OpenCRVS was configured to meet the country's specific requirements for digital registration processes. A digital first approach was taken, providing a digital B1 form, supporting the digitisation of supporting documents and digital signatures. Birth declarations were recorded and an advanced deduplication algorithm was implemented to prevent the registration of duplicate births, among other enhancements.

The country can start developing the solution as soon as the proof of concept is approved by a high-level government decision-making team. This will involve **configuring the solution based on the customisation identified in the PoC** to ensure it aligns with user needs. In parallel, it will be important to complete the sourcing processes for the cloud or on-premises services, firewalls, and other requirements to host and run the programme. Once a usable product is ready, **running field tests with a small set of users** from the concerned government departments and conducting simulation exercises under real-world scenarios can help eliminate bugs, reveal areas for improved inclusion, safety, and trust, and incorporate early feedback that can be used to iterate the solution.

DPI-as-a-Packaged-Solution (DaaS), a rapid deployment that eases friction across the implementation cycle

DaaS, spearheaded by the Centre for DPI, is a new and alternative way to rapidly deploy using the shared infrastructure approach. While some rapid deployments may rely on heavy customisations, DaaS maximally pre-packages software, programme, and policy requirements, and provides pre-approved funding for trained service provider support, making shared infrastructure-based solutions easier and more efficient to adopt.

By dramatically cutting down on the long phases of a typical digital transformation process, DaaS helps countries achieve rapid deployments that can be deployed on a choice of public cloud, private cloud, or on-premises to serve an initial use case that, if necessary, can be portable to other hosting options in follow-on or scaled rollouts

Day 70-85
Build capacity of pilot users and government officials managing the solution

CASE-IN-POINT

In **Liberia**, the Ministry of Health deployed eGov's DIGIT Health Campaign Management system for distributing anti-malaria bed nets. e-Gov and the government departments jointly conducted a Master Training of Trainers (ToT) over five days to prepare campaign workers for rollout. The first two days of training focused on the programme aspects of the campaign, and the remaining three days provided training on the digital

Similarly, in the **Philippines**, before the pilot, the Department of Social Welfare and Development and the OpenG2P team conducted a week-long operations training for the staff. They also provided technical training to two experts who subsequently educated the entire team.

Capacity building of test users, pilot users, and government functionaries who will be involved in using and managing the digital solution is essential. This can be done by developing and disseminating **training exercises and materials on two key themes: programmatic and technical.**

Programmatic capacity building involves training on how the new solution will impact existing operations for both the affected population and the government users. It also covers monitoring the programme for gaps or weaknesses, effective utilisation of resources, adherence to established protocols and considerations to ensure inclusion of all social groups relevant to the use case. Technical capacity building will include training on how to operate the new digital system and its functionalities including monitoring the system for bugs, gathering feedback for improvements, ensuring efficient troubleshooting, and streamlining maintenance procedures.

Making early public announcements about the launch can help popularise the solution within the government and increase user participation in the pilot.

Phase III: Launch

Day 85-100
Launch pilot, test with diverse users, and evaluate progress

CASE-IN-POINT

In the **Philippines**, the DSWD along with OpenG2P conducted a five-day pilot for Digitisation of the Assistance to Individuals in Crisis Situations (AICS) programme. Before the pilot, the outcomes were defined and all staff were trained. Seven government departments were invited to participate, turning the pilot into a major event that garnered the interest of all users and ensured its timely launch. Throughout the pilot, user consent was obtained, a monitoring team was appointed, and post analysis was conducted every day of the pilot period. This pilot was conducted in parallel with the physical system already in place, serving as a fallback option that ensured the continuity of operations in case of any pilot failures.

Similarly, in **Mozambique**, eGov conducted a reference implementation in the province of Gaza to pressure test their health campaign management platform, DIGIT. The scale of this exercise was regional and was later scaled to other regions like Tete.

Finally, **countries must launch a controlled pilot** where the digital solution is made available for use to a selected set of end-users. This user group must be diverse to ensure representation of all potential social groups that could benefit from the platform. Multiple teams would be involved in the pilot. The programme management team should oversee the overall implementation of the pilot, synthesising learnings and areas of improvement at the end of each day. The technical team should monitor the performance of the digital solution. An independent monitoring and evaluation team should identify areas where optimisation for safety and inclusion is needed. Having a regular cadence of check-ins that allow these teams to discuss the progress each day, iterate on the go and fix ongoing technical and operational issues can improve the quality and detail of feedback received.

At the end of the pilot, countries should **compile an evaluation report** that highlights key findings and areas for improvement. After evaluating the pilot's outcomes, integrating the feedback into the system can help formulate a scale-up strategy for broader implementation.

The deployment of the solution marks just the beginning of a broader digital transformation journey for small island nations!

Even though this primary solution will be focused on a single use case, its reliance on a shared infrastructure makes it a critical building block to enable other solutions. Many other similar building blocks can come together to solve seemingly intractable problems across various sectors such as health, education, financial inclusion, and more. Adopting a shared infrastructure is not just an investment in one solution, but also a step towards integrated and efficient systems that address the most critical needs of the nation.

In Mozambique, the digital transformation of health campaigns began with deploying eGov's DIGIT platform to manage the distribution of anti-malaria bed nets. As the platform scales, it will also be utilised for the digitalisation of seasonal malaria chemoprevention (SMC) campaigns to support the delivery of SMC across 23 districts in Mozambique. Furthermore, discussions on using the platform to digitise Mozambique's Indoor Residual Spraying (IRS) campaign are also underway.

CO
CO-DEVELOP

On **April 30th,** Co-Develop will host a workshop on Rapid Deployments, co-facilitated by technology advisors and DPGs mentioned in this report. Country representatives are encouraged to attend and map out potential use cases for rapid deployment.

Co-Develop is also committing $1M to fund four (4) countries following the workshop to put these plans into action.

Methodology:

The primary objective of the report was to provide evidence that rapid deployment of shared infrastructure within 100 days is achievable across diverse country contexts.

Our efforts began by identifying five organisations that have successfully developed and piloted DPI within the stipulated 100-day timeframe - OpenG2P, X-Road, OpenSPP, OpenCRVS, and eGov. Comprehensive interviews were conducted with each organisation to gain insights into their experiences, specifically focusing on two key areas: prerequisites for rapid deployment and, the precise steps involved in the deployment process in small countries. The information collected from interviews was distilled into insights covering the common deployment patterns, success factors, and challenges faced across various deployments. Based on the insights gathered from interviews and analysis, a checklist of pre-requisites for shared infrastructure deployment was compiled. Additionally, a representative timeline for deployment was mapped out, detailing each step of the deployment process for a country.

This document is meant to serve as a practical guide for countries embarking on similar initiatives, providing a roadmap for successful implementation within the designated timeframe. We thank the eGov Foundation, OpenCRVS, OpenG2P, OpenSPP, X-Road, and the Centre for Digital Public Infrastructure, whose insights and contributions played a pivotal role in shaping this report.

Disclaimer: While open source solutions, including DPGs, provide unique value in enhanced transparency, ease of switching vendors, and greater technical agency, it is not obligatory for shared infrastructure implementations to be based on open source solutions alone.