

DIGITAL ECOSYSTEMS COMPONENTS EVERY COUNTRY NEEDS



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ABSTRACT

National digital transformations are complex, multifaceted and often overwhelming to the people and institutions undertaking them. Experiences from pioneering countries such as Estonia, India, Korea and Singapore can inform local and global digital transitions. Approaching the challenge by considering its interlocking component parts can also help development actors to support effective and inclusive processes. Successful transformations depend on the “5 Ps”: political will to enable and sustain change; the right policies to help build trust in digital systems; pricing and procurement measures to help ensure countries have access to the best-suited digital technology; the right products to build effective systems; and people with the right skills are essential not only in countries undergoing digital transitions, but in development organisations supporting them.

Key messages

- Digital transformation revolves around five factors that have proved central to successful processes: political will, policy, pricing and procurement, product, and people.
- Given the complexity and costs of digital transformation, and the need for sustained support to see it through, political will at national and global levels is crucial to drive change.
- Governments need new financing and procurement mechanisms to ensure better overall pricing for digital technology building blocks.
- Development partners must step-up co-ordination, especially on financing (given the scale required), products (to avoid duplication and waste), policy support (to minimise risks and enable opportunities) and the types of capacity built (to help ensure a level playing field).

Undertaking digital transformation is a complex exercise that requires aligning demand with supply in a holistic, well-co-ordinated way. To better understand the choices to be made, national leaders are increasingly looking to countries such as Estonia, India and Singapore that are far along in this journey. Global financiers study these same models to determine which investments in digital transformation should be prioritised and how to invest in an efficient, responsible and cost-effective way (DIAL, 2020^[1]). But applying and executing these models and “recipes” for success elsewhere remains very challenging, particularly in developing countries.

To support these transitions, development actors must develop a better understanding of the factors that these models have in common as well as the needs specific to any country’s unique context. Considering each of these factors individually and in relation to each other can help development actors to break down the challenge of digital transformation into its component parts, which in turn will allow for better development co-operation overall in support of individual countries’ needs and priorities.

Designing a national digital transformation that aligns its component parts

Digital transformations are multifaceted. To help countries, development actors and other stakeholders should meet needs and

priorities that are right for each specific context. Patterns across some of the countries that have led the way in digital transformation, and measurements of national digital transformations¹ themselves, suggest that at least five factors are critical, though not all may be initially present. The Digital Impact Alliance (DIAL) has developed a simple 5 Ps framework (Box 25.1). Considering these interrelated areas – each important to building the right digital system – can help actors identify and co-ordinate around manageable problem sets.

First is political will from national leadership to achieve a digital economy and (when relevant) an international development community to support such a digital transformation. The second factor is citizen-responsive policies that ensure that the system being built is designed with citizen protection in mind. The third and fourth – supply and demand – factors are commercially attractive pricing and procurement models and the availability of scalable products that can seamlessly connect. Finally, a fifth factor is the depth of digital literacy and capacity among all people, including in development agencies, to implement the policies, manage both the procurements and products, and ultimately build sustainable solutions that can be improved over time. Figure 25.1 elaborates the relationships among these factors, illustrating the critical role played by political will in driving change across the entire process.

BOX 25.1. THE 5 PS: A FRAMEWORK TO DESIGN, IMPLEMENT AND ASSESS DIGITAL TRANSFORMATION

In analysis by the Digital Impact Alliance and others of digital transformations undertaken by countries that have led the way in this multifaceted process, five main success factors emerge and are consistently included in available measurements of digital transformation globally (DIAL, 2018^[2]; DIAL, 2021^[3]). The 5 Ps framework can help development agencies, national governments, the private sector and other civil society actors better understand the challenge in each context and where they might fit in, and in this way find more easily manageable and co-ordinated ways forward.

Political will: Politics can influence a country's ability to undertake and sustain digital transformation, and the extent to which political actors prioritise the process will shape the conception, design, use and purpose of a system.

Policy: Political will is closely related to policy at national and global levels. The right policy helps build trust in digital systems by regulating the use of technology, protecting citizen data, minimising risks and enabling opportunities.

Pricing and procurement: Innovative financing and procurement approaches can derisk markets to incentivise new entrants to supply digital technology products and accelerate digital transformation.

Product: The right products that are scalable, available and able to seamlessly connect are the technology building blocks of successful systems.

People: Both countries and the development partners supporting their digital transformations need people with the right skills in areas that enable digital services.

Political will that prioritises and enables holistic strategies is essential

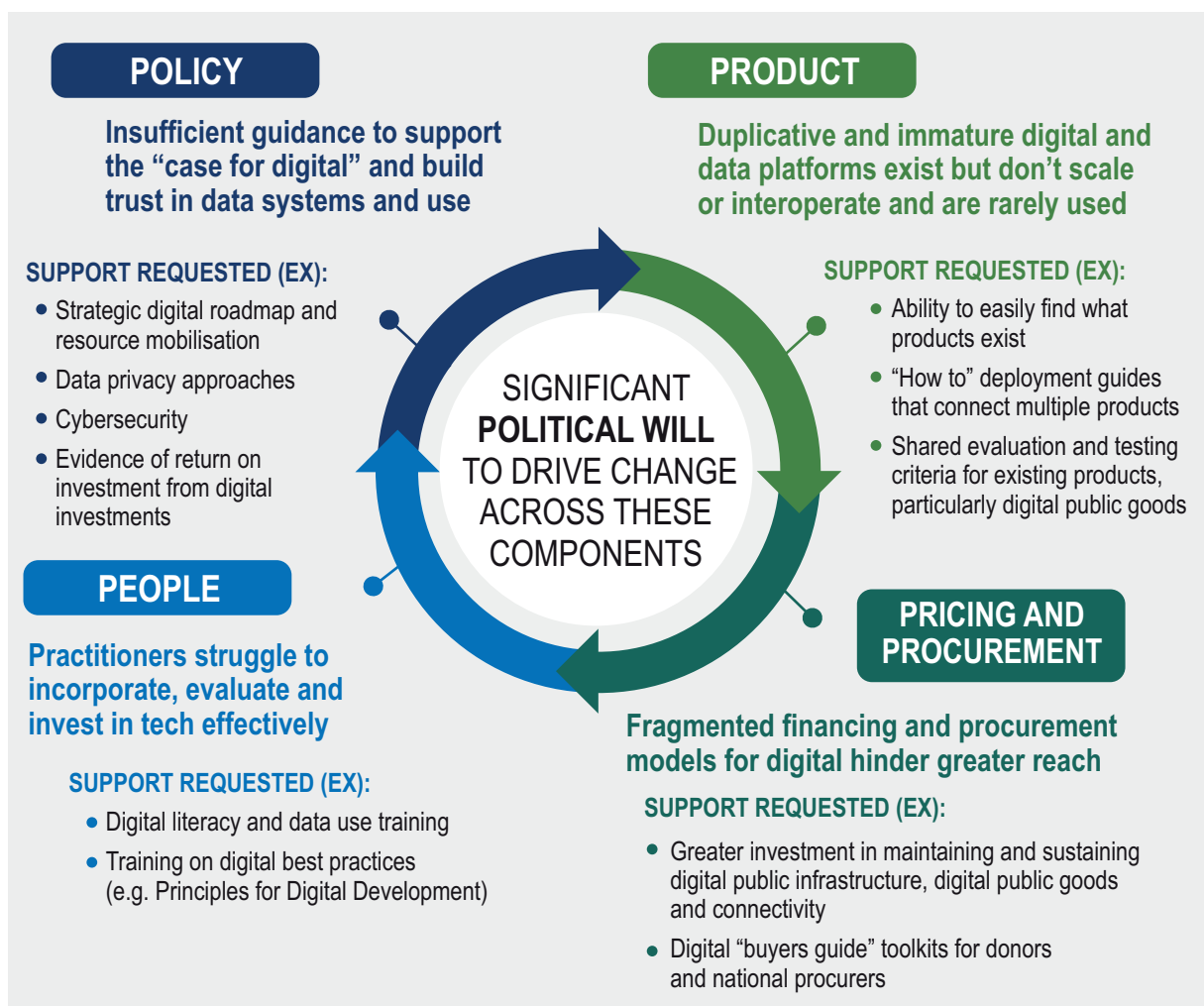
For more than a decade, national governments and development actors have been investing in projects across the developing world² that use digital technology (e.g. software, big data) to achieve improved societal outcomes. OECD countries and private sector foundations also have invested in digital policy and capacity programmes and in building scalable digital products, most notably for delivering health services and promoting financial inclusion. Yet, as political, development and civil society actors acknowledge, digital technology has not fulfilled its potential to enhance the effectiveness of development programmes.³

At the national level, however, there is growing political will to undertake digital transformations. In the few countries where digital tools have been comprehensively incorporated (e.g. Estonia, India, Korea), there was marked and consistent political

will across the government to embed the use of digital technology and data into their approach. In the last two years, and particularly due to the COVID-19 pandemic, politicians have seen that digitally enabled governments are able to administer social services remotely, deliver benefits and allowances digitally, and maintain key financial and other transactions – even in the depth of a national crisis – and do so faster and at a lower cost than governments lacking the digital capacity. Low- and middle-income country leaders are now embracing digitalisation (African Union, 2019^[4]) and requesting increased support from development actors.⁴

Given the many factors that make up digital transformation, political will for inclusive, people-centred approaches at national and global levels is crucial. Without it, solutions risk harming rather than helping well-being, though, for instance, personal data leaks, lack of interoperability, redundant systems and abuse of personal data in government

Figure 25.1. Challenges and factors facing digital transformation



Source: Author’s illustration.

hands. As the world addresses the multiple challenges of climate change, conflict and fragility, and the impact of COVID-19, digital and data systems can be leveraged to maximise scarce resources and bolster preparedness for future crises, but only if the harmful pitfalls can be avoided. This is the role of policy.

Policy should be transparent, inspire trust and minimise potential harms of technology

Responsible, inclusive and effective national digital transformation requires a whole-of-society approach to developing the enabling policy environment (DIAL, 2020_[11]).

Such approaches incorporate the values of inclusion, obliging governments to create meaningful mechanisms for societal actors to participate and engage in priority setting, stakeholder selection, implementation strategy and holding their governments accountable. Building civic ownership of digital transformation, in turn, builds citizens’ trust in their government’s use of digital tools and data.

An example of this approach is Estonia (see Chapter 12), which has established mutual transparency as a hallmark of its digital system, with citizen input and consent as key design principles.⁵ National digital policy frameworks cover issues including data protection and privacy, cybercrime and

cybersecurity, intellectual property rights, payments and trade regulations, digital social protection, and emerging tech and innovation regulations. These policies acknowledge and help guard against more insidious economic and social impacts of digital service provision such as the use of artificial intelligence to target or limit financial assistance or healthcare offerings to citizens. Estonia's inclusive approach offers a useful model for other countries to consider when designing national digital transformations.

Innovative pricing and procurement can overcome barriers to acquiring technology

Low- and middle-income countries often lack access to the full range of digital products such as software, core mobile services and data. Frequently, these countries cannot afford the high licensing fees charged by large-scale systems providers, while lack of financing and opaque regulatory frameworks hamper the ability of domestic tech firms to develop large-scale digital technology, including proprietary software. At the same time, the small market size, dearth of local implementers to deploy the technology, and relatively smaller national technology budgets often deter international firms from supplying these countries. This uncertain demand structure and lack of consistent financing create a pricing and financing challenge for many technology products. To provide more affordable and appropriate products for low- and middle-income countries, international development actors have stepped in to finance many of the better known and needed digital public infrastructure (DPI) products in digital identity (ID) and payments – among them Mojaloop and the Modular Open Source Identity Platform (MOSIP) – as well as digital public goods (DPGs) products designed for sectors such as health (e.g. District Health Information Software 2, or DHIS2), humanitarian interventions (e.g. Primero) and agriculture (e.g. FarmOS).

“[eTrade] provides avenues for countries to take concrete measures to address constraints so as to bring their enterprises closer to the rapidly expanding global e-commerce market”.

Ratnakar Adhikari, Executive Director of the Enhanced Integrated Framework Executive Secretariat at the World Trade Organization.

Box 25.2 provides preliminary estimates of the cost of setting up digital public infrastructure in low- and middle-income countries.

Designing holistic pricing and financing options

While the market structure is different, some of the innovative financing mechanisms used to address market failures for vaccines may help solve similar challenges in accessing affordable digital products in low- and middle-income countries. For instance, research by DIAL, Tableau Foundation and PATH found that a pooled procurement mechanism, leveraged across several markets, provided an assured market at a guaranteed price to vaccine manufacturers (DIAL, 2018_[2]). It also drove consolidation and standardisation around a fewer number of products, making it easier for governments to validate the products through testing and observing their usefulness, thus leading to increased trust in the vaccine supply.

A similar pricing and procurement dynamic exists in low- and middle-income countries for digital tools that can be provided digital public goods and digital public infrastructure. As shown in Figure 25.2, today's fragmented, sector-based approach by development co-

BOX 25.2. INTERNATIONAL FINANCING IS NEEDED TO HELP CLOSE THE FUNDING GAP FOR DIGITAL PUBLIC INFRASTRUCTURE

BY SEEK DEVELOPMENT

Preliminary estimates show that total funding needed to implement DPI platforms for services to citizens across low- and middle-income countries is in the range of at least USD 30 billion. Of this, an estimated USD 20 billion is required to implement and operate digital health programmes; USD 6 billion to achieve universal ID coverage; and USD 2 billion to implement real-time, interoperable retail payment systems. Most of this financing is associated with country implementation of DPIs and will thus likely need to be funded domestically. However, international financing will play a role in closing the gap.

To support countries in implementing DPIs, development co-operation providers active in the digital space could provide catalytic funding to low- and middle-income countries in three main areas:

- **Strengthen the global digital public goods ecosystem.** Provide long-term funding for the development and evolution of a portfolio of mature, interoperable, open-source digital public goods (DPGs) that can meet the needs of DPI implementation. Estimated cost: USD 20-40 million
- **Scale up in-country support.** Provide technical assistance (TA) and capacity building to support the development of national digital infrastructure strategies and the design and deployment of individual DPIs. Estimated cost: USD 55-110 million
- **Increase access to implementation financing.** Increase financing to offset the costs of DPI and related workforce development in a few countries, and help build a case globally for the importance of DPI systems. Estimated cost: USD 75-120 million.

Note: Estimates presented in this box were calculated by authors as follows. USD 20 billion required to implement and operate digital health programmes was estimated based on Digital Square's "How much does sustainability cost?" model. USD 6 billion to achieve universal ID coverage is calculated by subtracting the USD 3 billion that has already been committed by multilateral development banks from the USD 9 billion that the World Bank's ID4D and International Development Association estimate is required to achieve universal ID coverage; USD 2 billion to implement real-time, interoperable retail payment systems calculated based on input from Mojaloop Foundation and Bill and Melinda Gates Foundation Financial Services for the Poor team.

operation providers increases transaction costs and spreads too little money over too many digital efforts. Compounding these issues is the current lack of shared evaluation criteria across development actors to certify which products work and could be used with few changes in another country. This dynamic results in an uneven supply of products that do not have sufficient capital to scale and increases the already high risks that digital public infrastructure and DPG implementers face.

Development actors have launched initiatives that consider both the pricing and financing challenge such as Digital Square and Giga (see Chapter 24) and the sustainable product challenge. But these address the

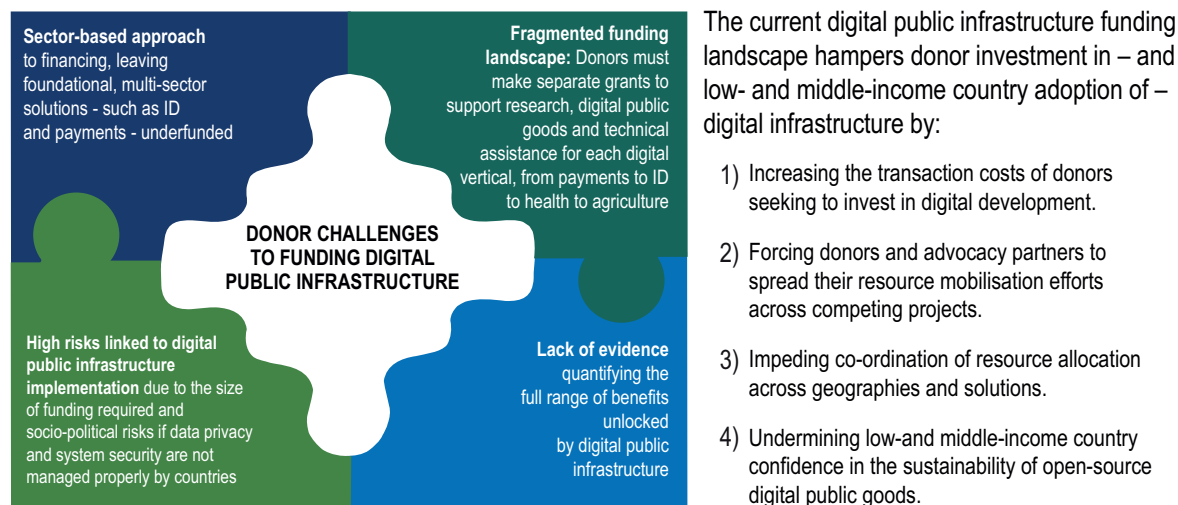
issue only at the sectoral (e.g. education, health) and functional (e.g. connectivity, application) level. To date, there is no consensus that a holistic, cross-sectoral pooled financing mechanism that combines private and public sector financing is viable.

Supporting effective procurement of digital tools

Pricing and financing of digital public infrastructure and DPGs are often debated internationally. Equally important, in the view of partner country governments, is effective procurement of new digital tools, in part due to the cross-cutting nature of digital technologies and data and the challenges of aligning investments across ministries and development co-operation

Figure 25.2. International financing for digital public infrastructure is lagging

International financing has not addressed low- and middle-income countries' financing needs due to several systemic challenges



Sources: Stakeholder interviews by SEEK team. DIAL series on financing digital technologies, Dhillon and Kastner (2019_[3]), “Financing digital technologies”, <https://digitalimpactalliance.org/financing-digital-technologies/>. Digital Square donor analytics research.

partners.⁶ An additional procurement issue is that neither the development life cycle of digital solutions, nor agile development approaches, nor ongoing maintenance and support costs mesh well with traditional government financing cycles. Procurement processes and standards may not be suited to the acquisition of digital technology or harmonised across government agencies. In short, national procurement expertise and current processes may be misaligned with national digital transformation ambitions.

However, public procurement can be used to foster digital transformation objectives such as promoting small and medium-sized enterprises and greater tech adoption. In nearly every country, the government is the single biggest buyer and the equivalent of trillions of dollars are exchanged in public contracts each year (The Economist Intelligence Unit, 2020_[6]), including USD 11 trillion in 2018 alone (Bosio and Djankov, 2020_[7]). Countries can leverage this large spend volume to drive the market towards digital transformation objectives. Public procurement should be considered a policy tool for national digital transformation

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and included as part of national digital transformation strategy setting (DIAL, 2021_[3]).

In sum, new financing and procurement mechanisms are needed to ensure better overall pricing for digital technology building blocks. Tactics include pooling procurement needs from low- and middle-income countries around reusable technology building blocks; creating a pooled financing fund for digital products; and investing in evidence that illustrates how these market-shaping mechanisms can drive down pricing and increase the supply of proven digital solutions. The right policies and right procurement and financing mechanisms to drive better pricing are the demand side of digital transformations. On the supply

side are the technology building blocks, or products that make up digital systems.

The right products are key to building inclusive, safe digital infrastructure

Digital platform economics⁷ suggest that while each country's requirements may be unique, there are common technology building blocks or products that every country needs to realise a full national digital stack; that is, all the technology layers that together create the system that allows a service to be delivered digitally.

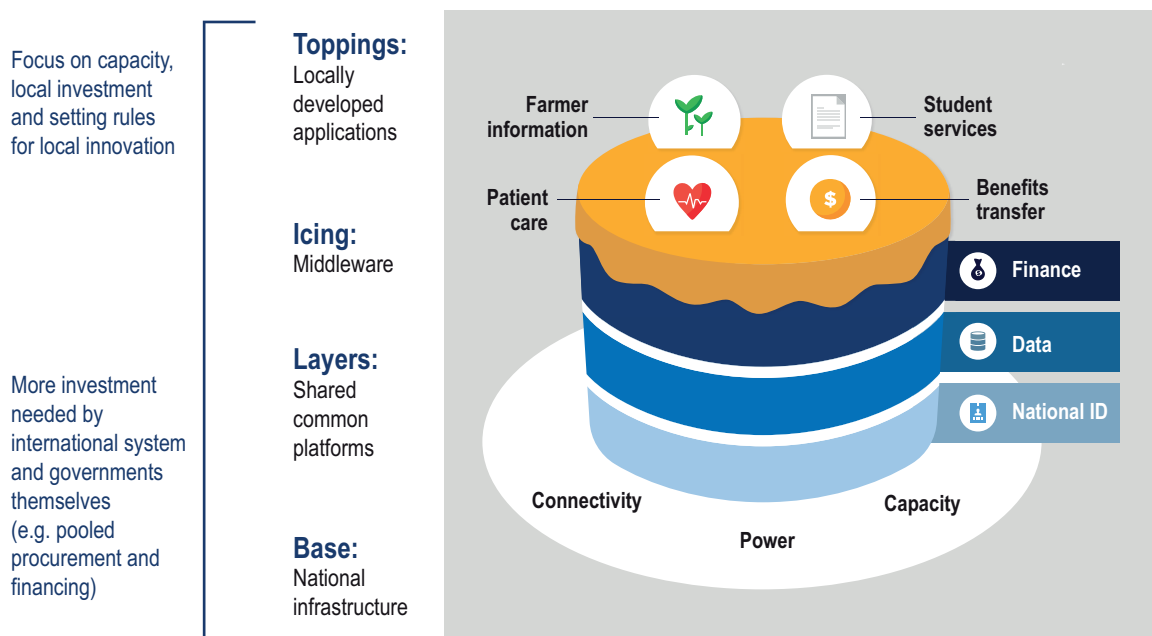
In general, these building blocks include at minimum a national digital identifier layer, a digital payments layer and a data protection layer. When these elements are interoperable and built to be extensible with an application programming interface (API) layer to connect to new apps and services, a country can save time and money, and stimulate local innovators to build locally designed citizen

services. While this may appear to be a one-solution approach, it is helpful to imagine a digital stack as a layer cake, with the technology building blocks as the component ingredients (Figure 25.2). Just as most cakes share some common ingredients, such as eggs, flour, a rising agent and cooking oil, to name a few, recipes, flavours and myriad other details vary, and chefs build on what others have tried. Similarly, digital architects of national digital transformations consider the "recipes" that other countries have tried and the ingredients – the products – used.

For many countries, the foundational infrastructure layer starts with connectivity, electricity and engineering skills. Many countries, among them Estonia and India, added national digital ID, payments and data layers that are connected by common standards and middleware. On top of these, countries have then built an API⁸ infrastructure that enables other applications (e.g. for digital

Figure 25.3. A view of the national stack: What is the recipe?

When the public and private sectors and civil society work together to develop inclusive and safe infrastructure platforms with key building blocks, new applications and services can be built by local solutions providers to meet each country's unique needs and serve its citizens.



Source: Wilson (2021_[8]), *Is there a digital recipe for country resilience?*, <https://digitalimpactalliance.org/is-there-a-digital-recipe-for-country-resilience>.

passport renewal, school registration) to extend the national core infrastructure that innovators in that country can design and develop. This ecosystem promotes a digital economy and allows new service applications tailored to local needs (e.g. for virtual learning and utility payments) to be created more quickly. These applications are the most visible – and to society, the most rewarding – part of the stack. But they could not exist without the base and foundational layers.

Ensuring equal access to digital solutions for all countries

The United Nations Secretary-General's Roadmap for Digital Cooperation underscores the importance of DPGs for achieving the Sustainable Development Goals, defining them as “open-source software, open data, open artificial intelligence models, open standards and open content that adhere to privacy and other applicable international and domestic laws, standards and best practices and do no harm” (UN, 2021^[9]). Countries embarking on digital transformations must decide the right first step to develop DPGs and their digital and data public infrastructure. Several recent international initiatives offer guidance, among them the SDG Digital Investment Framework developed by the International Telecommunication Union and DIAL,⁹ the Digital Public Goods Alliance open standard,¹⁰ and tools such as the DIAL Catalog of Digital Solutions.¹¹ For digital public goods to be a realistic choice for governments, though, available products must have long-term, sustainable revenue sources, as well as rigorous certification processes and sustained investment over decades by development co-operation providers.

Some investment is going to digital building blocks such as financial payments (Mojaloo), digital identity (MOSIP) and health information management systems (DHIS2). Yet sustainable investments in essential digital public goods remain rare, particularly for core engineering support, community governance and standards

adoption. It should be stressed that despite the current focus on DPGs, the private sector has an important role to play. An ecosystem of local system implementers and integrators is needed to help support and maintain the national digital stacks employed by governments to deliver services. Commercial off-the-shelf software as a service, known as SaaS, and bespoke private sector offerings are becoming commonplace digital government solutions in high-income countries. Low- and middle-income countries are entitled to the same choices. If finance was more assured for both open source and proprietary technology, the public and private sectors would be more likely to come together to create a thriving digital ecosystem of interoperable digital global goods and services.

A whole-of-government approach to policies has led Estonia, India, Korea and other countries to invest in interoperable building block digital products and services that became digital global goods supported by a community of users. This approach can even inform regional co-operation around technology stacks, standards and regulatory frameworks in areas such as digital ID and payments.¹² The GovStack partnership,¹³ for instance, invites both product suppliers and country governments to participate in a community committed to designing specifications based on best practices of generic, reusable digital components, creating models of digital government services platforms and providing support on procurement and implementation in low-resource contexts.

All these efforts illustrate that development actors, bilaterally and in partnerships, are already working to unite investments (e.g. the Principles of Donor Investment in Digital Health)¹⁴ in cross-cutting technical building blocks and to build frameworks based on the design of reusable and interoperable digital components. What is missing is the ability to unite these efforts at national, regional and global levels under a common digital transformation framework that has sufficient financing to fund needed products.

Addressing skills gaps in people involved in digital systems should be a priority

Designing, maintaining, investing in and regulating digital platforms and data use at national level requires deepening digital competencies broadly, within government agencies and the private sector and across civil society. Conversations in the development sphere about building digital capacity often focus primarily on enhancing citizens' ability to access digital services, source information on line, and navigate new digital spaces and media. Yet, digital literacy of development actors is especially important if they are to effectively support countries to build new policies, finance and procure new products, and deploy and sustain digital products. To fund scalable information systems, development actors also should carefully research which skills gaps matter most, which are needed and which should be prioritised. The results may be surprising.

For example, DIAL research in 2019 found that, for software development in Africa, softer skills such as programme management were a greater challenge than engineering skills for leaders (DIAL, 2019_[10]). Other studies highlight technical skills gaps in procurement for digital solutions.¹⁵ Communications and general legal expertise as well as specific expertise in artificial intelligence, data analytics and cybersecurity are also required, according to the United States' National Security Commission on Artificial Intelligence (2021_[11]), which notes that the United States also faces such a talent gap.

Fortunately, development actors are aligning efforts to fill the world's collective digital capacity gaps. One example is the new Digital Capacity initiative,¹⁶ a project of the United Nations Development Programme and the International Telecommunication Union, which aims to build a database of existing digital skills trainings to help match up those seeking digital and data trainings with providers and to convene a multistakeholder network promoting more holistic and inclusive approaches to digital capacity development. More than

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270 digital development organisations also have endorsed the Principles for Digital Development,¹⁷ a set of guidelines established in 2014 to support better processes and thereby better results. Courses around the world have used DIAL adaptable training materials to build digital awareness among OECD development co-operation providers.¹⁸

It would be worthwhile to extend such trainings to the global scale to make a meaningful impact on the seemingly intractable digital capacity gap, yet challenges remain. As the UN Secretary-General's Roadmap notes, these initiatives primarily benefit speakers of a few minority-world languages, and funding and appetite for a large-scale push to grow capacity globally have not materialised (UN, 2021_[9]). Development co-operation actors must keep in mind that ultimately, making progress on the people component of national digital transformation will require longer term shifts in the global mindset in terms of what training is needed and greater investments in making existing training more accessible.

Priority actions for development co-operation

The 5 Ps framework is intended to help policy makers and development co-operation

partners deconstruct the complex undertaking of digital transformation in low- and middle-income countries into manageable problem sets and then identify ways forward. Three overarching recommendations apply to all five factors and are critical to success.

1. **Openly share learning.** Every digital transformation journey is different. But learning from each country's story can help development actors understand and resolve common challenges. Actors should invest the time and resources to publicly share learning. Knowledge-sharing initiatives and peer-learning networks can help ensure that development actors learn from the many digital transformation efforts occurring worldwide and understand how best to maximise development gains from digital investments and minimise negative impacts. The 5 Ps framework is one way of organising and understanding the common pitfalls all countries and development actors face.
2. **Co-ordinate approaches, financing and support.** Global digital transformation requires a step change in how development co-operation actors and country counterparts define, fund and support solutions. More co-ordination is essential given the scale of financing required to identify, build, evaluate and support whole-of-society, cross-sectoral

digital public goods that can be of value to as many nations as possible for their own digital transformation efforts. In addition to co-ordinating this product financing work, there is a need to align and finance the myriad aspects of policy, capacity building, and pricing and procurement work so that the products, or technology building blocks, will be of use. The political will for this is clearly starting to grow, and now is the time to seize that momentum.

3. **Leave no one behind in digital transformations.** In all this work, all actors should consciously employ the principles and practices of the leave no one behind pledge and balance the potential benefits of digital transformation against the potential harms, particularly for the most vulnerable and marginalised groups.¹⁹ This means investing in building digital capacity around responsible design practices such as the Principles for Digital Development, ensuring an inclusive and consultative approach to digital governance, and supporting ongoing scrutiny of the impacts of digital transformation on vulnerable groups. These are all critical if development actors are to ensure that everyone can benefit from digital transformation.

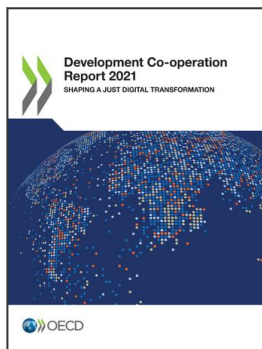
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NOTES

1. Common variables and indicators were analysed to measure national digital transformation. For more information, see: <https://digitalimpactalliance.org/collaborating-to-measure-digital-transformation-sharing-dials-draft-digital-transformation-indicator-library-for-consultation-and-comment>.
2. The World Bank Group, for example, invested USD 12.6 billion in information and communications technologies over the period 2006-16. See: <https://www.worldbank.org/en/publication/wdr2016>.
3. See: <https://digitalimpactalliance.org/research/digital-impact-alliance-2018-baseline-ecosystem-study>.
4. Political will at the global level also is building, as evidenced by the digital co-operation and digital transformation agendas that have emerged as priorities for the OECD, the World Bank and the United Nations, through the United Nations Conference on Trade and Development and the International Telecommunication Union. Germany, the United Kingdom and the United States are among the bilateral donors prioritising digital transformation.

5. See: <https://e-estonia.com/cornerstone-governance-trust>.
6. As noted in a 2020 report published by DIAL, “Some countries also struggle with improving connectivity and digital literacy because of issues of affordability, and challenges in procurement often create negative downstream effects for ICT access, challenging the continued improvement of digital government services.” See: <https://digitalimpactalliance.org/research/unlocking-the-digital-economy-in-africa-benchmarking-the-digital-transformation-journey>. For an additional discussion, see: https://digitalimpactalliance.org/wp-content/uploads/2021/09/DIAL_LeadershipBrief3-Procurement.pdf.
7. See: <https://www.institutefordigitaltransformation.org/how-the-platform-economy-contributes-to-sustainable-development>.
8. APIs simplify software development and innovation by enabling applications to exchange data and functionality easily and securely. See: <https://www.ibm.com/cloud/learn/api#:~:text=Application%20programming%20interfaces%2C%20or%20APIs,and%20functionality%20easily%20and%20securely>.
9. See: <https://digitalimpactalliance.org/research/sdg-digital-investment-framework>.
10. See: <https://digitalpublicgoods.net/standard/#:~:text=The%20DPG%20Standard%20itself%20is,our%20growing%20list%20of%20endorsers>.
11. See: <https://solutions.dial.community>.
12. For examples of regional efforts, see: <https://www.astroawani.com/berita-dunia/adgmin1-successfully-concludes-charting-5year-vision-asean-digital-development-plan-279282>; <https://www.csis.org/analysis/digital-africa-leveling-through-governance-and-trade>; and <https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf>.
13. See: <https://www.govstack.global>.
14. See: <https://digitalinvestmentprinciples.org>.
15. See, for example, “takeaway” 4 at: <https://digitalimpactalliance.org/research/public-procurement-of-digital-technology-leadership-series-brief-3> and <https://www.nao.org.uk/wp-content/uploads/2011/02/1011757.pdf>, particularly pp. 17-18.
16. The Digital Capacity initiative is a follow-up to the UN Secretary-General’s Roadmap for Digital. See: <https://digital-capacity.org>.
17. See: www.digitalprinciples.org.
18. Agencies participating in the training include Deutsche Gesellschaft für Internationale Zusammenarbeit; the Swedish International Development Cooperation Agency; the Norwegian Agency for Development Cooperation; Lux Dev; the UK Foreign, Commonwealth & Development Office; and United States Agency for International Development.
19. DIAL’s proposed principles and practices to inform inclusive digital transformations are available at: <https://digitalimpactalliance.org/research/leave-no-one-behind-leadership-series-brief-2>. DIAL plans to release practical case studies on whole-of-society, inclusive policy-making approaches in early 2022.



From:
Development Co-operation Report 2021
Shaping a Just Digital Transformation

Access the complete publication at:
<https://doi.org/10.1787/ce08832f-en>

Please cite this chapter as:

Wilson, Kate (2021), "Digital ecosystems components every country needs", in OECD, *Development Co-operation Report 2021: Shaping a Just Digital Transformation*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/ee3cfd9-en>

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