Policy Brief

Inclusive by Design: Accelerating Digital Transformation for the Global Goals

10 practices to boost digital transformation at the country level

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Introduction

Digital technology is a fundamental force for change in this century. It is reshaping all parts of society, including economies, government and civil society – thereby impacting almost every aspect of people's life. The exponential pace of the digital revolution and its profound consequences demand better understanding of the new context, as well as an intentional and inclusive design of digital transformation efforts to ensure that no one is left behind.

UNDP defines **digital** as:

An ever-evolving range of technologies (like mobile technologies, artificial intelligence, machine learning, blockchain, Internet of Things, and robotics to name a few) that impact nearly all aspects of our world.

A mindset, which translates into a new way of working that enables people and institutions to innovate with technology.

Source: UNDP Digital Strategy 2022-2025

Digital is not just a nice-to-have. It is fundamentally changing how countries respond to crises and how they accelerate progress towards the Sustainable Development Goals (SDGs). Therefore, many countries have a growing sense of urgency to accelerate their use of digital: Togo was able to target and send cash transfers to informal workers swiftly and accurately through its fully digital social assistance programme during the COVID-19 pandemic[1]. Bangladesh's mobile money cash assistance programme benefitted 5 million families within days[2]. Ukraine used its digital infrastructure and solutions to maintain governmental operations, deliver public services, and organize crisis response and humanitarian assistance in challenging times of war[3,4]. In just one year, UNDP has assisted 82 countries to adopt more than 580 digital solutions in response to the COVID-19 pandemic[5].

As the 2020 UN E-Government Survey pointed out, there is a tendency to "chase the digital wave"[6] in the face of rapid technological change. However, digital is not only about tools, platforms and service delivery; it is also about access, mindset and ways of working. One-off technological solutions rarely lead to long-term change. With this recognition, digital transformation has been moving up on the agenda for so many governments and development organizations. When purposefully planned and implemented at a national level, digital transformation enables countries to adapt and to use digital effectively, systematically, sustainably, and in a way that promotes social cohesion instead of fomenting divides. Without intentional efforts to uphold rights, digital transformation can reinforce existing inequities in access, power and patterns of exclusion.

Digital transformation

– the integration of digital technologies into all areas of business, fundamentally changing how economic and social activities are enacted. It is also a social change process that is purposeful, rather than unregulated, and should be intentionally planned and executed.

Source: UNDP Digital Strategy 2022-2025

UNDP believes digital transformation is an important driving force, but digital transformation by itself will not automatically ensure attainment of the SDGs – especially when there are still 2.9 billion people offline, and an estimated 96 percent of those are living in developing countries[7]. To build a more open, transparent and sustainable society, digital transformation must be intentionally inclusive, thoughtfully designed and implemented with people and human rights at the centre of all aspects. Digital transformation is not an end in itself; it is an enabler for more significant social change at scale.

UNDP believes that inclusive digital transformation:

Addresses the needs of the poorest as well as the most vulnerable and marginalized groups, including women and people with disabilities

Empowers underrepresented groups to take part in meaningful ways, and promotes gender equality

Ensures that digital transformation does not exacerbate existing inequalities, with a vision to leave no one behind

Protects people from the adverse effects of digital technologies

Encourages the use and development of digital technology that is open, responsible, and rights-based.

This policy brief delves into what **inclusive digital transformation** involves in practice, why it is paramount, and how to avoid furthering exclusion. The final section of this brief provides some inspiration for countries on how to accelerate inclusive digital transformation, through case studies and ten emerging good practices.

Taking a whole-of-society approach

Governments typically act as the stewards of digital transformation efforts at the national level. However, to be truly inclusive, digital transformation demands a whole-of-society approach[8]. This means actively and consistently engaging actors from government, the private sector, civil society, academia and individual residents to develop and strengthen local digital ecosystems built on inclusivity, sustainability, accountability and rights. The broader spectrum of stakeholders includes but is not limited to:

- government at central and local level, including regulators and parliaments;

- businesses, including tech start-ups and micro, small and medium enterprises (MSMEs) as well as large established firms and infrastructure providers;

- civil society organizations, including human rights defenders and institutions;

- media organizations, universities and think tanks; and

- individuals, including but not limited to women, youth, children, elderly, persons with disabilities, migrants, refugees, etc.

Highlighted in the UNDP Digital Strategy 2022 – 2025[9], UNDP's Inclusive Whole-of-Society Digital Transformation Framework (see Figure 1) sets out the most important domains and topics that actors from across society must collaborate on. Many of these topics (such as connectivity, cybersecurity, technology adoption, and digital literacy skills) demand action by broad coalitions and partnerships that cut across the public, private and nonprofit sectors.

Figure 1: UNDP's Inclusive Whole-of Society Digital Transformation Framework (BETA version)

A whole-of-society approach is easier to adopt and sustain if there is a vibrant digital ecosystem. A digital ecosystem is a complex and dynamic interconnected network of actors, interests and systems, all of which function together to create an enabling (albeit sometimes obstructive) environment for digital to advance economic and societal efforts, amongst others. Without deliberately nurturing and engaging a vibrant digital ecosystem, a whole-of-society approach may be more likely to manifest as a set of one-off 'validation' workshops, rather than deep, meaningful partnerships and carefully designed processes that persist over time.

Between 2020 and mid-2022, UNDP has supported more than 25 governments on different aspects of inclusive digital transformation. This has included society-wide engagement on digital policy in territories including Botswana, Dominica, Mauritania and Moldova. By seeking a diverse range of contributions, and building cross-sector coalitions, countries are better able to understand and respond to a broad set of needs, including those of women and girls, children and older persons, people with disabilities, migrants and refugees, indigenous people, those living in rural areas, and ethnic and religious minorities. It is essential to understand which groups are most at risk of being left behind, and gain insights about their experiences.

The impacts of exclusion
Examples from the COVID-19 pandemic

Recent studies have revealed that the adoption of digital technologies and automation can contribute to inequalities[10] in income, productivity, and welfare, both within and between countries[11,12], especially in the short-term leading to issues such as job displacement and skills polarisation[13]. This is reminiscent of other societal shifts and shocks, such as the industrial revolution in the 19th Century, the aftermath of the Second World War in the 20th Century and the climate crisis today. These phenomena have amplified inequalities without deliberate, coordinated action.

One way to understand the importance of inclusive digital transformation is to look at it through the lens of exclusion: what does digital transformation look like when it excludes people? The COVID-19 pandemic is widely thought to have accelerated the adoption and use of digital technologies in most countries. Billions of people were suddenly compelled to learn, work, trade and access essential information and services using digital devices -- or risk not being able to do those things at all during the pandemic[14].

But not everyone was able to access information online or use digital services. Many were left behind, or were at risk of harm:

While

1.6 billion

children[15] were affected by school closures in 2020,

31 percent of children globally and 49 percent of children in Sub-Saharan Africa[16] were not reachable by digital and broadcast-related remote learning. In Moldova, a recent PricewaterhouseCoopers (PwC) survey showed that an overwhelming 85 percent of parents in poor households found it difficult to manage remote learning, with 65 percent of the cases citing technical issues with connecting to platforms as a key hurdle[17].

These impacts could be long-lasting: one study from the United States pointed out that vulnerable students were more likely to drop out of school, limiting their ability to realize their full potential. With respect to drop-outs and lost learning, there is an estimated risk of

reducing U.S. Gross Domestic Product (GDP) by

US$173-271

billion per year by 2040[18].

In Latin America,

20%

of the population

was excluded and left completely unable to carry out a digital transaction during the pandemic.

In Mexico,

26%

of survey respondents[19]

said they could not perform a transaction with the government due to their inability to access a digital service combined with the closure of government offices.

The COVID-19 crisis cost women around the world at least

US$800 billion

in lost income[20] in 2020.

At the same time, the gender digital divide makes it more difficult for many women[21] to access stimulus programmes and opportunities online compared with men. There are long-term impacts here too: researchers fear that women's future economic participation has already been grossly affected by COVID-19[22].

In India, more than

16,000

new coronavirus-related web domains were registered

and the number is growing rapidly. Of these domains, 0.8 percent were found to be malicious and another 19 percent were found to be suspicious [23].

Failing to take an inclusive approach to digital transformation can lead to harms beyond exclusion – particularly around rights and protections. Digital transformation can enable surveillance, the closing down of civic space and threats to rights and individuals. In Uganda for example, digital ID systems led to the exclusion of

up to one third

of the population,

with women and older persons excluded from healthcare and social protection because they were unable to meet mandatory ID requirements[24]. As the UN Special Rapporteur on extreme poverty and human rights notes, there is an urgent need for efforts round digital transformation to focus on inclusion and rights in order "to avoid stumbling zombie-like into a digital welfare dystopia"[25].

Why **inclusive digital transformation** matters: illustrative benefits

As discussed in the previous section, societies must urgently take an inclusive approach to digital transformation. UNDP believes that companies, governments, nonprofits and people can all benefit from an intentionally inclusive approach. Evidence is emerging from around the world to support this proposition. Below are some examples. We have called these benefits 'illustrative' because they will not automatically be realized in every context. More research is needed to understand what conditions are needed, and how to achieve them.

More inclusive approaches can...	Examples

Benefit governments and the vulnerable population

...improve public service delivery, lower the cost of access, and reduce corruption	The Government of Bangladesh's focus on inclusive digital services has saved **two billion days** of people's time[26]. People can now either access services digitally or through service points much closer to home. According to recent research from the Government of Mongolia[27], the Government is expected to save a total of **3,581 hours per year** for its population as a result of putting 181 services online through e-Mongolia[28]. In India, the Karnataka district government has established an electronic land record system[29] estimated to have saved 7 million farmers **1.32 million working days** in waiting time and prevented **Rs.806 million** (approximately US$10.8 million) **in bribes** to local officials in its first several years[30]. The Chief Justice of the Supreme Court of Uganda issued a directive in 2020 enabling judgments and rulings to be issued to the parties via email or WhatsApp[31]. On 29 April 2020, the Chief Justice's directive was followed by the issuing of a set of guidelines pertaining to the judiciary's use of online hearings.
...accelerate and improve social protection programmes, through better targeting and faster, safer disbursal of payments	In Togo, the digital social safety net programme 'Novissi' provided financial support to informal workers affected by the COVID-19 crisis by transferring cash into their mobile money accounts[32] — including those in remote areas. The Government of Bangladesh, in collaboration with the four largest national Mobile Money Operators, implemented a cash assistance programme that benefitted **5 million families** impacted by the COVID-19 pandemic in April 2020.

...mitigate conflict and violence through predicting, tracking and preventing all forms of violence and addressing its impacts	In Guinea Bissau, UNDP supported the creation of the country's first fact-checking platform 'Nobaschecker'[33] to address COVID-19 disinformation and unmask false news around the pandemic by providing scientifically verified facts and news. Several interventions to tackle violence against women during the pandemic relied on digital technologies. The most common digital channel is mobile phones, which have been used in nearly 70 percent of digital responses to gender-based violence[34] during the pandemic, globally.

Benefit business and society

...create growth opportunities for businesses	UNICEF, Arm and Dalberg research identified six major growth opportunities for tech players in emerging markets. Together, these "urban tech bets" have a potential market size of **up to US$2.2 trillion**[35]. They include providing digital services for recruiting informal workers, water metering and emergency response. Each could generate sizeable financial returns while creating value for underserved families in urban areas.
...improve productivity and profitability for businesses, including for small and medium-sized enterprises (SMEs)	SMEs in developing countries with internet access experience an **average 11 percent productivity gain**. Connected farmers and fishermen can **increase their profits by 8 percent** by tracking weather conditions and comparing wholesale prices[36]. The World Bank found that African firms using the internet have on average **3.7 times higher labour productivity** than nonusers and 35 percent higher total factor productivity[37].
...lead to better products and services that benefit users and generate revenue	The Microsoft Teams 'blur' feature[38] was originally proposed and designed by a deaf software engineer, to make lipreading easier. But the feature has done much more: it has benefitted millions of users by helping them protect their privacy.

Benefit individuals and the economy

...create new jobs for people, and support economic growth	Broadband can help expand access to task-based work through outsourcing platforms. The World Bank estimated that increasing internet access to 75 percent of the population in all low-income countries could **create more than 140 million jobs** around the world[39], as well as adding **US$2 trillion** to global GDP.
...help reduce poverty, by creating new or improved opportunities to earn income	Mobile money service M-PESA has **lifted 2 percent of the Kenyan population out of poverty**. The benefits for female-headed households are even greater than those of male-headed households[40]. The UK Centre for the Economics of Education estimates that individuals who have learned basic digital skills could expect a lifetime increase in their average hourly earnings of 2.8 percent[41].

How can countries accelerate
inclusive digital transformation?

Successful inclusive digital transformation is a multi-stakeholder effort and requires recognizing competing interests that drive decision-making. The changes introduced through the process of digital transformation present new opportunities – but also costs for others, particularly those who resist and influence these changes based on their own interest.

UNDP has a strong history of iterative, context-driven approaches to development interventions[42]. Importantly, digital transformation is a process of change that is already well underway – including in contexts where stakeholders may privilege personal or elite interests over the SDGs and public good. This therefore requires interventions aimed at shoring up individual rights and mitigating the misuse and harms of the potential offered by digital technologies.

Below are **ten good practices** based on UNDP's experience and observations. These are purposefully not called the *best* practices. There is no one recipe for success at a national level. The right approach will depend on the digital readiness of each country, the enabling conditions, as well as their development objectives and resources.

These approaches aim to serve as useful inspiration for countries wanting to accelerate inclusive digital transformation and mitigate its potential harms.

These good practices are divided into four categories: setting up for success; investing in infrastructure; investing in people; and delivering human-centred services.

Setting up for success:
1. **Introduce participatory policymaking and governance for inclusive digital transformation**
2. **Strengthen institutions to lead digital transformation**
3. **Strengthen national digital safeguards, laws and standards**

Investing in infrastructure:
4. **Invest in responsible data collection and usage**
5. **Invest in meaningful universal connectivity**
6. **Advocate for appropriate use of digital public goods**

Investing in people:
7. **Build national digital literacy and capacity**
8. **Build diverse, interdisciplinary teams**

Delivering human-centred services:
9. **Support inclusive business models**
10. **Promote inclusive service design**

Setting up for success

1. Introduce participatory policymaking and governance for inclusive digital transformation

Evidence-based participatory policymaking can help with designing a more inclusive digital transformation strategy. Governance that has diverse representation can ensure inclusivity throughout implementation.

Examples of inclusive policymaking practices include: cross-sectoral consultations and dialogues, people's assemblies, third-party organizations that act as bridge-builders, and informal networks of advocates and experts. Chile uses 'Virtual Congress', a web platform that enables people to provide feedback on draft legislations – it has more than 130,000 users[43]. Other countries have accompanied consultation with webinars and training events to help encourage the participation of diverse groups[44].

Steering and advisory boards that give greater weight to marginalized groups can also play an important role. They can ensure that inclusivity remains a priority all throughout and help anticipate unintended consequences on vulnerable users and stakeholders[45]. Their role might include monitoring and assessing the implementation of a digital strategy – at a national level or within a company, nonprofit or city government. These groups can also help keep up engagement and momentum with diverse communities after the initial strategy has been developed. It is good practice for these groups to work in a transparent way, making minutes available and reporting on progress publicly.

Strengthening existing oversight mechanisms can play a crucial role in ensuring that policy and governance of digital transformation efforts are focused on inclusion and achieving the SDGs. In parliaments, several governments have been called to account – for example, parliaments in Pakistan, the United Arab Emirates, the Netherlands and Sierra Leone have called on their respective government to explain their implementation efforts towards the SDGs[46]. Parliaments are also embracing digital transformation. The Inter-Parliamentary Union (IPU) has established a Centre for Innovation in Parliament[47], which provides support to parliaments to make better use of digital tools in their work with a view to achieving enhanced outreach, transparency, accountability and efficiency. In Brazil, there is a project that aims to pull together open data from multiple parliaments into a portal to create new ways for researchers and parliaments to analyse and improve the law[48].

Case Study: Dominica
Making policymaking more inclusive through design thinking

UNDP supported the Government of Dominica to develop its National Digital Strategy through a design thinking process to ensure digital inclusion was centrally embedded. Ensuring that the process was participatory from the outset was key, particularly by involving key stakeholders from the private sector, civil society and the general public.

Based on the results of UNDP Digital Readiness Assessment, the team set up thematic working tables where participants discussed key concerns and priorities. UNDP worked closely with all the stakeholders to help articulate their needs and ensure they were reflected in the Strategy. Ultimately, this assisted the Government in better understanding the needs and priorities of the various groups. The result was a co-developed Inclusive Digital Strategy.

It was particularly important for the Government that the process of creating a national digital strategy and related policies was participatory. Robert Tonge, Dominica's Coordinator for Digital Economy said, "The Government is reaching out to stakeholders and the public to ensure their priorities and concerns are reflected in this vision for the digital future of Dominica."[49]

For more information, visit: https://www.undp.org/barbados/press-releases/dominicans-shape-their-digital-future-support-undp

2. Strengthen institutions to lead digital transformation

Institutional governance mechanisms are necessary for successful inclusive digital transformation, particularly to ensure that rights are upheld. As countries look towards the future, now is the right time for stocktaking: Are current institutions and governance mechanisms fit for purpose? Are roles and responsibilities clear? Where are the gaps? What new capacities or even institutions might be needed? And how can new institutions bring the old ones along with them?

The National Payments Corporation of India, a non-profit created in 2007 from a partnership by central bank and companies, is an example. It was designed to create and manage the country's digital payments infrastructure, including the unified payments interface (UPI). UPI handled more than 4 billion transactions in the month of October 2021 alone[50], and has made a significant contribution to the country's flagship financial inclusion programme.

The Australian National Human Rights Commission carried out a 3-year public review of issues around human rights and technology[51]. The final report sets out a roadmap for responsible innovation — taking advantage of the promise of new technology, whilst upholding human rights. The report's recommendations are intended to ensure that new technologies are developed and used in ways that are inclusive, accountable and with robust human rights safeguards.

Governments have also created new teams, units, agencies and even ministries linked to digital transformation. The overarching objective of these new structures are generally twofold: to accelerate inclusive digital transformation across government and to attract digital technology practitioners to the public sector. Institutions that are well informed and have the necessary capacity can help ensure proper oversight of digital transformation and promote effective collaboration across all sectors. An example is Bangladesh's Access to Information (a2i) unit[52], which is part of the Prime Minister's Office, and has been supported by UNDP for several years. In addition, Mauritania has established a National Digital Agency[53], with support from UNDP; Ukraine established a Ministry for Digital Transformation in 2019[54]; and Moldova installed a new Deputy Prime Minister on Digital Transformation, and a Digital Cabinet[55].

Photo: Government of Bangladesh

Case Study: Bangladesh
How an effective institutional setup helped with service delivery and pandemic response

Bangladesh launched its national strategy 'Digital Bangladesh' in 2008 primarily focusing on bringing every home under the digital network[56]. Since the launch of Digital Bangladesh, the number of people online has increased from 3 percent to 70 percent (116 million people)[57] as of March 2021.

The flagship governmental programme under Digital Bangladesh - Access to Information (A2I) - was supported by UNDP. A2I has improved access to public services through a network of more than 5,800 digital centres. This distribution model means that people do not need to travel more than 4km to access over 150 basic services.

During the pandemic, the country repurposed the national informational hotline into the COVID-19 National Call Centre. With more than 13 million calls received and 4,300 doctors enrolled[58] in the doctor pool, the call centre provided essential information to people and connected doctors with patients. The system also allowed the tracking and identification of COVID-19 hotspots in near real-time. A2I investments also paid off as the government set up virtual courtrooms, an e-mobile court, and a judicial portal providing access to justice during the pandemic.

For more information, visit: https://a2i.gov.bd/

3. Strengthen national digital safeguards, laws and standards

Countries are rightly concerned about protecting the right to privacy and clarifying rules around the ownership and use of data. Many of them are also increasingly concerned about avoiding vendor lock-in[59] and monopoly control[60] of digital infrastructure. Recognizing the risks can also mean recognizing opportunities – for example to explore how digital can be harnessed to make and enforce laws in new ways.

Digital transformation involves regulatory and legal changes and needs to follow a rights-based approach if it is to be inclusive and protect people (especially the most vulnerable) from the adverse effects of digital technologies. High-level principles can guide policy decisions, such as the European Commission's 'declaration on digital rights and principles' that is explicitly intended to provide a human rights foundation to "guide the digital transformation in the EU"[61]. Concrete regulatory efforts can translate rights-based principles into legally enforceable frameworks. In this respect, examples include the European Union's General Data Protection Regulation (GDPR)[62], and the Recommendation on the Ethics of Artificial Intelligence[63], driven by UNESCO. A rights-based approach can help countries not only to maintain existing protections, but also to use digital transformation to proactively advance human rights.

Digital identity is one domain where the need for new safeguards is particularly urgent, as digital identity systems sometimes present new risks, especially when sensitive biometric data is captured. UNDP has been convening stakeholders from different sectors to tackle these risks, as part of the United Nations Legal Identity Agenda Task Force, co-chaired by UNDP, UNDESA and UNICEF[64].

Finally, the Principles for Digital Development[65] can help public sector agencies, civil society organizations and companies to design programmes and products that address privacy and security. Digital service standards are also a way for governments to embed inclusivity into everyday practice – such as those in the UK[66] and Canada[67]. UNDP has established its own set of digital standards[68] that are built on the Principles for Digital Development.

Investing in infrastructure

4. Invest in responsible data collection and usage

To design inclusive digital transformation policies and programmes, countries need to improve their capacities for rights-based data collection and use. Empowering communities to work with data is important, in particular to ensure that there is a positive feedback loop; to mitigate biases in decision-making; and to safeguard privacy.

Regularly collecting and publishing digital inclusion data, disaggregated by priority groups, is not an easy undertaking for many governments. This effort may be led by ICT ministries, independent national statistics agencies[69], or research institutes. However, sometimes forming a coalition can help pool the necessary resources and expertise. In the Philippines in 2019, the Department of ICT, together with the national statistics authority, a statistical training institute and ITU, designed and conducted the country's first ICT household survey[70]. The survey gathered valuable data about how the use of digital technologies differed between regions[71]. Like this example, innovative approaches to data collection can also help support more dynamic policymaking.

Digital inclusion indicators typically relate to internet coverage and use, mobile subscriptions and access, and digital literacy[72]. Another challenge is that in most countries, disaggregated digital inclusion data is not collected systematically over time. For instance, less than half of countries worldwide publish gender disaggregated data on internet use[73]. Many digital divides and how they shift over time – especially between different education and income levels, and between ethnic and religious groups – are not thoroughly understood in many territories.

Priority groups (by which data is disaggregated) should be determined nationally and sub-nationally, since digital divides differ between the two. For instance, the gender gap in internet access is negligible in Indonesia but the gap is 43 percent in Uganda[74]. On the other hand, the rural-urban gap in Indonesia is 42 percent. As this example illustrates, prioritization is helpful for focusing attention and making the most of limited resources.

Lastly, countries should also look critically at what metrics to use. For instance, the Alliance for Affordable Internet has argued persuasively for a composite measure for 'meaningful connectivity' – to include regular internet access, an appropriate device, sufficient data, as well as a fast enough connection[75]. In the future, countries might also consider collecting and publishing disaggregated data about other components of inclusive digital transformation, such as the number of digital entrepreneurs, the number of digital specialists by discipline, and the incidence of digital harms including online abuse and fraud.

Case study: Latin America and the Caribbean
Data-driven policy design to inform COVID-19 responses

UNDP helped governments use mobility data to design and adapt containment policies at the beginning of the COVID-19 pandemic.

Governments across the world were encouraging people to stay at home to limit the spread of the virus. However, in Latin America and the Caribbean more than half of the workforce is employed in the informal sector and cannot afford to stay at home. In order to design policies and programmes adapted to these challenges, governments needed to understand mobility flows.

UNDP partnered with Grandata to visualise and analyse the activity of anonymized mobile users outside of their homes, compared to reference dates. Variations of mobile activity helped governments assess how their people responded to containment policies.

For more information, visit: https://www.undp.org/latin-america/press-releases/undp-and-grandata-join-forces-tool-addressing-public-policy-decision-supported-data

5. Invest in meaningful universal connectivity

Globally, 2.9 billion people still have no internet access[76], let alone meaningful access. Meaningful connectivity is broadband that is "available, accessible, relevant and affordable, but also that is safe, trusted, user-empowering and leads to positive impact"[77].

Prioritizing foundational connectivity such as mobile broadband can help reduce digital divides rather than exacerbate them. Countries can benefit from ambitious, large-scale programmes to create a step-change in connectivity. This should be accompanied by digital literacy training (see practice 7), and human-centred services and content (see practice 10) to help ensure new internet users can meaningfully use the internet.

For example, UNDP is supporting the Government of India's commitment to connect 250,000 villages through fiber optic cables. As UNDP Administrator Achim Steiner said, "It is precisely, in this crisis, that we need generational projects of that magnitude…. They are by their very nature focused on inclusion of the poor, because it is by connecting the villages that we enable people to leapfrog a generational access to information and services."[78]

Innovative technologies and business models will also be needed to extend coverage, especially to more rural communities[79]. Two members of the UNDP Business Call to Action initiative[80] that operate in Sub-Saharan Africa and South Asia provide good examples. Vanu helps mobile network operators provide cellular coverage in hard-to-reach areas. Its innovative Radio Access Network (RAN) solutions reduce costs and improve resilience[81]. BLUETOWN also uses solar-powered infrastructure, and its unusual business model includes content distribution as well as internet service provision.[82]

6. Advocate for appropriate use of digital public goods

Much of the internet as we know it is built on top of free and open-source software (FOSS). Open-source software is often developed collaboratively and gives people the right to use, modify and share the software and its source code to anyone for any purpose.

Digital public goods (DPGs), as defined by the Digital Public Goods Alliance, follow the same collaborative spirit and ethos of openness. In addition, they include a strengthened set of open standards to ensure alignment with sound technical practices and necessary safeguards. DPGs must also be relevant to advance the Sustainable Development Goals.

Well-maintained and community-driven DPGs can help provide digital commons that are technically sound, and in most cases have been tried and tested by other countries. Because DPGs are open, adopting countries can study, copy and adapt the source-code and get started more quickly as opposed to going about it from scratch. The most mature DPGs come with guides, technical documents, in addition to a community of software developers, system users, and development practitioners. The combination of open code, guides and community has the potential to increase implementation speed, lower cost and reduce risk. The use of DPGs increases digital sovereignty and prevents vendor lock-in, as countries own the software and data.

Notwithstanding, digital public goods may not always be the right solution. It requires the right local conditions, including the availability of DPGs, the supporting digital ecosystem, and the capacity for maintenance. For some use cases, there are still too few or no DPGs to select, and in other cases the solutions implemented in one country may be too different to be successfully adopted in a new setting.

Examples of DPGs that are used widely are DHIS2, a health information management system, used in the pandemic response by more than 43 countries, for instance with recording cases and for contact-tracing[83]. Another example is OpenELIS, a laboratory information system UNDP has supported in Mauritius[84]. Both systems can work together. When DPGs are interoperable, they can be combined like building blocks.

DPGs can also be used to build foundational digital systems that support use cases across sectors, such as digital identity, digital payments and data exchange. These systems, commonly referred to as Digital Public Infrastructure (DPI), have also become critical to enabling meaningful delivery of both public and private services.

Investing in people

7. Build national digital literacy and capacity

Many countries can benefit from improving their national digital capacity. This includes both the capacity of the public and private sectors to deliver digital services, as well as the capacity of the general public to access, use and contribute to these services.

Investing in foundational digital literacy training is important -- but not enough. It is also critical to expand training and employment opportunities in technology, product, user research, design, and agile delivery. Through the Joint Facility for Global Digital Capacity[85], UNDP is working with ITU and other partners to make it easier for countries to find and access appropriate digital capacity-building opportunities. UNDP has also been making sure digital literacy programmes include education about understanding the risks, such as data breach, information pollution, divisive narratives, hate speech, amongst others. For instance, an initiative with the Digital Transformation Ministry in Ukraine helped teach people how to keep their personal data safe online[86]. Another example is in Lebanon where the UNDP Country Office launched the Count till Ten nation-wide campaign to promote critical thinking as it relates to consuming online content and to combat fake news, disinformation and their negative impact on social cohesion[87].

Improving digital literacy and understanding is also important within the public sector. Digital academies are emerging within governments including Canada[88], Singapore[89], Sierra Leone[90] and the UK[91]. These aim to equip the leaders of today and tomorrow with the knowledge and the confidence to steer government inclusive digital transformation efforts and deliver human-centred public services.

For capacity-building efforts to improve inclusivity, underrepresented groups must be empowered to access and make the most of training and employment opportunities. These opportunities should also be designed with their needs in mind. Coding bootcamps and design schools are useful, but they are rarely enough. People must also be supported to put their skills into action, for example through digital entrepreneurship or employment opportunities. Vibrant innovation ecosystems that offer access to resources, investors and markets can help countries retain tech talent over the longer term, and guard against a 'brain drain'. Taking a portfolio approach to building national digital capacity – as UNDP is doing in the Republic of Moldova[92] – may help.

Photo: UNDP Rwanda

Case study: Rwanda
Building national digital capacity through strong partnerships between government, tech firms, and universities

Rwanda's experience shows that cross-sectoral partnerships can support and accelerate digital capacity-building efforts. Ten years ago, Carnegie Mellon University established a campus in Kigali, in partnership with the Government of Rwanda. It offers master's degrees in software engineering, data science, cybersecurity, and artificial intelligence[93]. The Government has also partnered with Andela to train 500 software engineers over 4 years[94].

More recently, Nigeria-based Co-Creation Hub's expansion into Rwanda aims to support the development of product design capabilities, as well as engineering and science to solve public problems[95].

8. Build diverse, interdisciplinary teams

Lone 'genius coders' are often celebrated in popular culture[96,97]. However by themselves, they will unlikely enable countries to realize inclusive digital transformation. Experience shows that empowered teams are the real unit of delivery[98]. And if teams are the unit of delivery, then the members who make up a team, the skills they possess and how they can work together are important aspects. That is because diverse, interdisciplinary teams make more inclusive digital programmes and products[99]. And, this is true across all sectors of society.

Teams need access to a range of digital skills – such as products, user research, delivery management and design, as well as software engineering. These different skill sets equip teams to better understand evolving needs and constraints, and to test their assumptions regularly. Varied specialties also enable teams to work across organizational silos, essentially enabling them to function and network better.

Diversity has long been regarded as an asset for any team tasked with innovating, typically leading to higher performance[100]. For teams tasked with creating digital policy, programmes or services, varied identities and lived experiences enable them to better understand the needs of underserved groups; to work more closely with diverse communities; and to anticipate unintended consequences. For example, a 2019 study of an algorithm used to allocate healthcare to patients in U.S. hospitals was found to be systematically discriminating against people who self-identify themselves as black. Researchers believe that a lack of diversity among the algorithm creators contributed to the flawed design[101].

Delivering human-centred services

9. Support inclusive business models

Countries can also promote, nurture and scale inclusive business models.

For companies, that might mean creating affordable digital products[102], services or marketplaces that meet the needs of priority groups. Better serving these groups can create new markets and revenue streams for businesses, as well as improving inclusion.

Public sector organizations can also benefit from inclusive business models. For instance, Irembo – which runs Rwanda's digital public services – incentivises agents to provide extra support to people with limited digital literacy.

Case study: Uganda
Transforming informal enterprises through inclusive e-commerce

UNDP is collaborating with an e-commerce firm called Jumia in Uganda to improve income-earning opportunities for market vendors. Many market vendors struggled through pandemic-induced lockdowns. Although markets remained open, foot traffic plummeted, and many traders began to struggle. The partnership has focused on enabling thousands of informal traders to sell online using Jumia's e-commerce infrastructure. By introducing market agents – intermediaries to help relay and fulfil orders – consumers have been able to buy goods online and get them delivered. Most vendors have seen their daily sales double. They have also received foundational digital literacy training.

Critically, women have greatly benefited from this approach. Although Uganda has a digital gender gap of 43 percent[103], more than half the vendors who have benefitted from this new model have been women. Being intentional about including underserved groups by designing and testing new models can have a significant impact.

For more information, visit: https://www.undp.org/uganda/blog/undp-and-jumia-transform-informal-enterprises-uganda-through-inclusive-e-commerce-early-lessons-learned

Photo: UNDP Uganda

10. Promote inclusive service design

A good service must address a clear need or problem. A good service must also "be usable by everyone who needs to use it, regardless of their circumstances or abilities."[104] Someone might be less able to benefit from a digital service because of what they can do, who they are, and what they have. With this in mind, it is not always helpful to think about specific marginalized groups when it comes to inclusive design. Someone's ability to use a service often depends less on their identity, and more on their resources, time, and health that can change day-to-day.

Inclusive design holds that "making your service inclusive doesn't just make it usable for diverse users, but for everyone"[105]. If more providers of digital products and services – whether banks, retailers, governments, schools, or employers – made their services and their content[106] more inclusive, more people could benefit[107] from digital transformation.

Practically, conducting user research and testing with a diverse group of users can help. Seeking out a wide variety of pain points[108] or edge cases[109] can help provide a holistic understanding. There is also value in regularly collecting and monitoring performance data. For instance, bounce rates[110] or completion rates can help identify how many people are struggling with using a service and at what specific points.

Case study: Ukraine
Striving for more inclusive digital public services

Since the COVID-19 pandemic, UNDP has been supporting the Government of Ukraine to rethink people-government interactions.

In 2019, the Government of Ukraine created a Ministry of Digital Transformation with a bold mandate to lead digital transformation across ministries. Within five months, the Ministry launched a mobile application called Diia offering more than a dozen eServices to the public.

However, the Ministry of Digital Transformation realized half of the Ukrainian population had not used eServices by the autumn of 2020. UNDP helped overcome this challenge by commissioning a study which

showed that eServices did not fully comply with international accessibility standards, such as the Web Content Accessibility Guidelines, thus limiting accessibility. By taking a rights-based approach to user design – through documenting the user journey of people with a disability, it demonstrated the value of rethinking the eService design.

As a result, the Ministry has decided to review the eService websites. As part of the process, UNDP organized a training event on how to make websites and other digital resources inclusive, which was attended by more than 200 civil servants and government officials from across Ukraine. The Ukrainian deputy Minister of Digital Transformation said: "*The vision of the Ministry of Digital Transformation is to make the provision of government services convenient, hassle-free and friendly. But this is only possible if you have barrier-free access. Because if government services are convenient and hassle-free, but are inaccessible to every Ukrainian, that's not right*".

As of April 2022, the number of unique users of the Diia app exceeds 17 million[111] Ukrainians, almost one third of the country's population. Since the war broke out in Ukraine in February 2022, the Government has been leveraging the existing platforms and processes for implementing new and more relevant digital public services, for instance registering damaged property and assets[112] for damage assessment and future reimbursements; receiving the status of internally displaced persons (IDPs)[113;114;]; getting proof of unemployment status[115]; requesting financial reimbursements for those affected by the war - including IDPs, small business owners and entrepreneurs, and others. The inclusive design of the service platform and the intentional attempt to increase accessibility helped its people during times of crisis.

For more information, visit: https://www.undp.org/library/dfs-how-design-human-centered-digital-transformation-initiative-emerging-case-study-ukraine

Photo: UNDP Ukraine/Andrii Krepkykh

Conclusion

Digital transformation must be made more inclusive if it is to contribute to realizing the SDGs. Deeper, fairer and inclusive digital transformation means that countries will enjoy important economic and social benefits, thus unlocking new opportunities, supporting economic growth, reducing poverty, improving public service delivery, and accelerating social protection programmes.

This policy brief has offered inspiration from around the world. But ultimately, each country must take its own path. And while governments can act as stewards of digital transformation, all parts of society must collaborate for the greatest chance of success.

Accelerating inclusive digital transformation demands a portfolio of interventions, and a holistic, whole-of-society approach to delivering them. This brief has outlined ten good practices that, when leveraged effectively, can set digital transformation efforts up for success. These practices should be selected carefully based on each country's context - it is just as important for countries to decide what they will **not** focus on, because if everything is a priority then nothing is. UNDP can help countries evaluate approaches, assess priorities, and start delivering better services towards more inclusive outcomes.

Many of the practices described here are emergent. UNDP will continue shaping, testing, iterating and researching to understand the conditions for success needed in different contexts, together with our partners. We will refine these practices as more evidence becomes available, and we invite you to join us.

Let us work together to accelerate inclusive digital transformation to ensure no one is left behind.

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