

STATE OF THE DIGITAL PUBLIC GOODS ECOSYSTEM 2022 **ALIGNED FOR IMPACT**

4

INTRODUCTION

5

DPGA MISSION
AND MEMBERS

6

EXECUTIVE
SUMMARY

9

LETTER FROM
THE DPGA
CO-LEADS

12

DIGITAL PUBLIC
GOODS IN 2022

14

THE DPGA SECRETARIAT

16

CORE DPGA
ACTIVITIES

25

THE DPG ECOSYSTEM

27

THE DPGA
GOVERNING
BOARD

42

COUNTRY
MEMBERSHIP

49

ORGANISATIONAL
MEMBERSHIP

67

CONCLUSIONS

68

LESSONS
LEARNED

72

LOOKING
AHEAD

74

APPENDIX

75

ACRONYMS

76

INDEX

ACRONYMS

API

APPLICATION
PROGRAMMING
INTERFACES

B2B

BUSINESS TO
BUSINESS

BMZ

GERMAN FEDERAL
MINISTRY FOR
ECONOMIC
COOPERATION AND
DEVELOPMENT

CoPs

COMMUNITIES OF
PRACTICE

DIAL

DIGITAL IMPACT
ALLIANCE

DIVOC

DIGITAL
INFRASTRUCTURE FOR
VACCINATION OPEN
CREDENTIALING

DPGA

DIGITAL PUBLIC
GOODS ALLIANCE

DPG Charter

DIGITAL PUBLIC
GOODS CHARTER
/ CHARTER FOR
DIGITAL PUBLIC
GOODS

DPGs

DIGITAL PUBLIC
GOODS

DPGs4DPI

DIGITAL PUBLIC
GOODS FOR
DIGITAL PUBLIC
INFRASTRUCTURE

DPI

DIGITAL PUBLIC
INFRASTRUCTURE

DSTI

SIERRA LEONE'S
DIRECTORATE OF
SCIENCE, TECHNOLOGY
AND INNOVATION

FAO

FOOD AND
AGRICULTURE
ORGANIZATION OF
THE UNITED NATIONS

G2P

GOVERNMENT
TO PERSON

G2Px

GOVERNMENT
TO PERSON
PAYMENTS

GIZ

DEUTSCHE
GESELLSCHAFT FÜR
INTERNATIONALE
ZUSAMMENARBEIT
/ GERMAN AGENCY
FOR INTERNATIONAL
COOPERATION

ID4D

IDENTIFICATION
FOR DEVELOPMENT

iSPIRT

INDIAN SOFTWARE
PRODUCT INDUSTRY
ROUNDTABLE

ITU

INTERNATIONAL
TELECOMMUNICATIONS
UNION

LMICs

LOW- AND MIDDLE-
INCOME COUNTRIES

MOSIP

MODULAR OPEN-
SOURCE IDENTITY
PLATFORM

MSMEs

MICRO, SMALL,
AND MEDIUM-SIZED
ENTERPRISES

Norad

NORWEGIAN
AGENCY FOR
DEVELOPMENT
COOPERATION

OICT

UN OFFICE OF
INFORMATION AND
COMMUNICATIONS
TECHNOLOGY

OSET

UN OFFICE OF
THE SECRETARY-
GENERAL'S ENVOY
ON TECHNOLOGY

OSPO

OPEN SOURCE
PROGRAMME OFFICE

SDGs

SUSTAINABLE
DEVELOPMENT
GOALS

UNDP

UNITED NATIONS
DEVELOPMENT
PROGRAMME

UNICEF

UNITED NATIONS
CHILDREN'S FUND

INTRODUCTION

5

DPGA MISSION
AND MEMBERS

6

EXECUTIVE
SUMMARY

9

LETTER FROM
THE DPGA
CO-LEADS

12

DIGITAL PUBLIC
GOODS IN 2022

DPGA MISSION AND MEMBERS

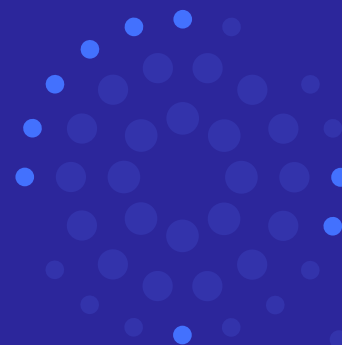
The DPGA is a multi-stakeholder initiative with a mission to accelerate the attainment of the SDGs in low- and middle-income countries by facilitating the discovery, development, use of, and investment in digital public goods



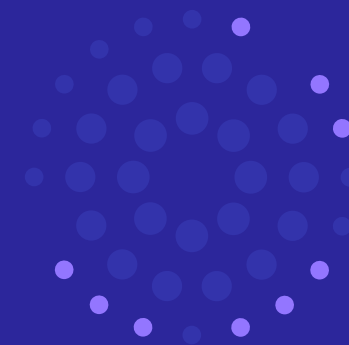
THE DPGA
SECRETARIAT



THE DPGA
GOVERNING BOARD



COUNTRY
MEMBERSHIP



ORGANISATIONAL
MEMBERSHIP



EXECUTIVE SUMMARY

Looking back at 2022, the DPGA Secretariat is proud to not only share progress against DPGA goals, but also the increased attention and understanding of DPGs across multiple sectors.



Bill Gates, Co-chair of the Bill & Melinda Gates Foundation, at the UN General Assembly event “The Future of Digital Cooperation”

SOURCE / UNICEF / DAVID DEGNER

The DPGA's 2021 annual report focused considerably on the COVID-19 pandemic, and how it shone a spotlight on the need for reliable digital infrastructure. It also showed the stark contrast between countries with robust digital infrastructure and those without.

In 2022, as countries increasingly recognised and implemented digital public goods as part of their digital transformations, the DPGA has seen an increase in the frequency, nuance, and sophistication with which DPGs are spoken about. DPGs were on the agenda at the 77th UN General Assembly, they are increasingly valuable for discussions with the G20, and they appear as critical solutions in building resiliency for countries facing war, the effects of climate change, and continued pandemics.

The DPGA's 2021–2026 strategy includes the following objectives

- 1 Digital public goods with high-potential for addressing critical development needs in LMICs are discoverable, sustainably managed, and accessible for government institutions and other relevant implementing organisations
- 2 UN institutions, multilateral development banks, and other public and private institutions that are of high relevance for implementation of digital technologies in LMICs have the knowledge, capacity, and incentives to effectively promote and support adoption of DPGs that address critical development needs
- 3 Government institutions in LMICs have the information, motivation, and capacity to effectively implement DPGs that address critical development needs, including to plan, deploy, maintain, and evolve their digital public infrastructures
- 4 LMICs have vibrant commercial ecosystems in place to create, maintain, implement, and incubate DPGs locally



DPGA members having a “fireside chat” at the annual meeting in Oslo, Norway SOURCE / HUYEN TITTI BREKKEN

Progress against these objectives guides not only the DPGA Secretariat’s core functions, but also lays the groundwork for coordinated and aligned collaboration. In June of this year, members of the DPGA gathered in Oslo for the inaugural DPGA members meeting where we announced five new members to the alliance, shared learnings from the field on DPG implementations, aligned priority areas for funding, research, and implementation, and forged new collaborations.

While the members meeting allowed a mid-year touchpoint, this report will further highlight the multifaceted efforts and accomplishments of those across the DPG ecosystem this year. You’ll hear from the DPGA Governing Board, DPGA members, digital public goods, and more.

We aspire for this report to help facilitate collaboration and understanding. We hope it serves as a tool for those interested in advancing the use of digital public goods to learn what actions governments and organisations are taking, discover opportunities for alignment and cooperation, and to learn how digital public goods can be a force for change.

It is with gratitude and partnership that the DPGA Secretariat thanks each and every one of those who contributed to this report, to the DPGA’s work, and to the entire DPG ecosystem throughout 2022. ■

LETTER FROM THE DPGA CO-LEADS

Like many organisations, we take the opportunity at the end of each year to reflect—on what we accomplished, what excited or delighted us, what surprised us and what we learned. This year, DPGA Co-Leads reflect on 2022 and look ahead to 2023.

LIV MARTE NORDHAUG **What has excited me the most as DPGA Co-Lead in 2022 is the sense of being part of a rapidly growing, truly global community that is having real impact.**

2022 allowed us to bring the DPG community together in-person for the first time, and confirmed what we already hoped: this group of people is absolutely awesome and willing to do both saunas and karaoke in addition to hard work!

2022 has shown me how, as an alliance, we are so diverse, and yet so united in the belief that digitalisation can and should be collaborative, and that it should advance inclusion, equity, and agency. The DPGA model brings stakeholders together based on coordinating and aligning, creating, adopting, and sharing. DPGA membership is evolving rapidly, with the most impact (by far!) happening through the aligned activities of individual members and other stakeholders that are part of the broader DPG community.

From the secretariat's end, we are doing our best to tie these activities together and complement them. In 2022 we have done this through our core activities, such as maintaining the DPG Standard and DPG Registry, and through our coordinated activities, such as co-managing multiple CoP and resource mobilisation processes and events. My end of year promise is that we, the DPGA Secretariat, will continue to focus on how we can add the most value to the totality of the DPG ecosystem through 2023. Please join us on this journey as part of the DPGA! ■

LUCY HARRIS **If the best analogy for 2021 was pushing the DPG boulder up a hill, working slowly to socialise the still unknown DPG Standard and definition, then the theme of 2022 was running alongside the DPG boulder as it rolled down the other side, gaining momentum and power from a variety of forces—with the occasional directional nudge from the DPGA Secretariat.**

Luckily for us, the goal of the DPGA is not to control the growing force of the DPG movement, but to influence and support its growth in the most effective and aligned direction for the DPG ecosystem and the SDGs. This year the momentum generated by 2021's foundational (uphill) work, led the DPGA to grow dramatically—adding two organisations to our board and thirteen new members who all made the decision to formalise their commitment to advancing DPGs and join a community of like minded organisations who want to work collaboratively to support digital public goods.

We also really doubled-down on our focus on the role of digital public goods in improving government services and digital public infrastructure, realising that DPGs4DPI was a critical area in which we can and must be having an impact. This use case defined many of our activities in 2022, including our co-leadership of the DPG Charter, and a member-led

event at the 77th UN General Assembly where high-level representatives, including Bill Gates, committed to sharing digital public goods, knowledge and learnings, and providing an initial US\$295 million in funding to support the development and adoption of inclusive digital public infrastructure.

Through all of this high-visibility excitement I want to highlight the quiet but critical behind-the-scenes work that our incredible team in the secretariat were simultaneously doing; creating and maintaining foundational components vital to the DPG ecosystem by building consensus around definitions, refining the DPG Standard, and increasing the efficiency of our nomination process. These are the things that are harder to put in a press release but are the critical infrastructure work powering the whole alliance.

As an alliance we are the collective strength of our members, the DPGs, and all of the experts, educators, and funders who show up to our convenings to share their knowledge and experience of digital public goods. I am so excited by how we showed up this year and can't wait for another year of seeing what this powerful community can accomplish by working together. ■

Sincerely,

Handwritten signatures of Liv Marte Nordhaug and Lucy Harris in dark ink.

LIV MARTE NORDHAUG & LUCY HARRIS

CO-LEADS OF THE DIGITAL PUBLIC GOODS ALLIANCE

DIGITAL PUBLIC GOODS IN 2022

Throughout 2022, DPGs were increasingly present, adopted by governments around the world, written about in prominent publications, and recognised as a critical part of the digital transformation agenda.

A critical theme this year was the role of digital public goods in enabling countries to build safe, trusted, and inclusive digital public infrastructure. This was the focus of the 17 Rooms podcast, at the inaugural DPGA members meeting in Oslo, in the DPG Charter, and then at the 77th UN General Assembly. DPGs4DPI played a key role in bolstering digital sovereignty—a concept in which countries maintain control over the decision making and implementation of services. DPGs can allow countries to adopt, adapt, and scale technology in ways that maintain their flexibility. At the Organisation of Economic Co-operation and Development (OECD) event “Shaping a Just Digital Transformation” in April, the DPGA built upon this concept highlighting that as uptake of digital public goods—and desire for increased digital sovereignty—spreads, it is reshaping the patterns of development co-operation and innovation. Rounding out the year at the Tallinn Digital Summit, the DPGA alongside the OECD, USAID, and the Bill & Melinda Gates Foundation highlighted the GovStack Initiative, which, together with our GovStack CoP, aims to build more effective and cost-efficient digital government services.



Achim Steiner, Administrator of UNDP, and Cina Lawson, Minister of Digital Economy and Digital Transformation of Togo

SOURCE / UNICEF / UN0708694 / MCILWAINE

Looking ahead, the DPGA will continue to call for the adoption of DPGs and implementations of open source technologies in countries DPI as a means of promoting digital sovereignty and a just digital transformation, spurring innovation and country ownership, and ultimately accelerating attainment of the SDGs. We will do this by inviting the DPG ecosystem to continue to fund, advocate for, support, and otherwise lift up DPGs and those developing and implementing them. We also encourage and recognise that adopting existing DPGs—combined with sharing implementations and best practices—is equally important to building new DPGs.

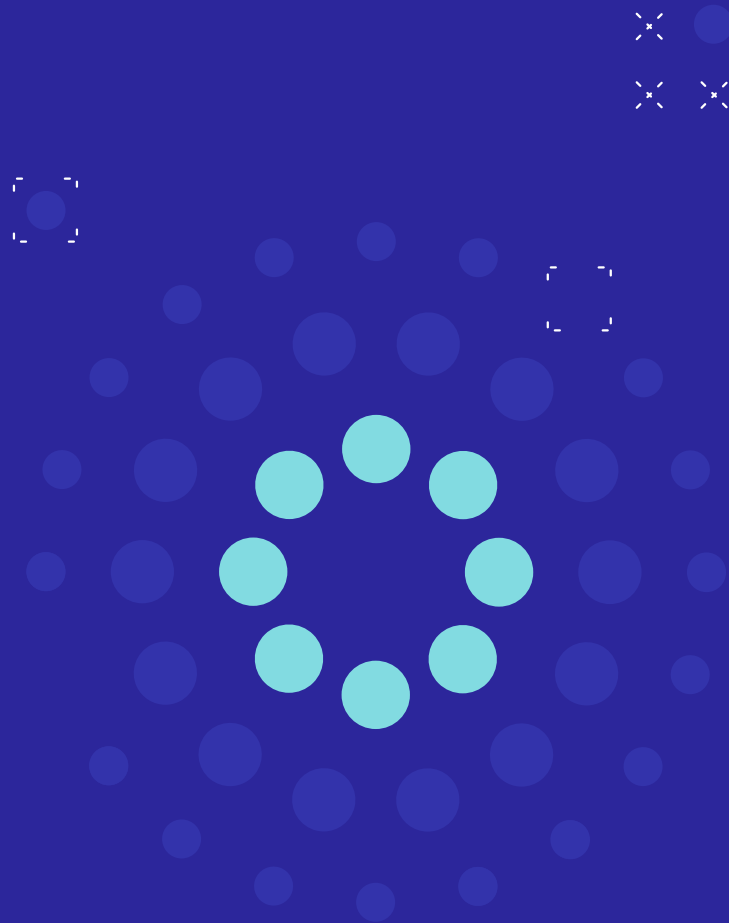
The DPGA segments our work into three categories: core activities which are driven wholly by the DPGA Secretariat; coordinated activities driven by stakeholders in partnership or close coordination with the DPGA Secretariat; and aligned activities driven by

stakeholders in alignment with DPGA strategic objectives, but independent of the DPGA Secretariat. The DPGA acts as a catalyst for DPGA members, with the DPGA Secretariat creating connections and performing core functions that enable members' activities to have maximum impact. Below we highlight the DPGA Secretariat's specific role in stewarding the digital public goods definition, DPG Standard, and DPG Registry, our service to the ecosystem, and the work of DPGA members in achieving the shared mission and vision outlined in the DPGA strategy. ■

THE DPGA SECRETARIAT

16

CORE DPGA
ACTIVITIES



The DPGA Secretariat supports, coordinates, and facilitates alignment among a community of like-minded organisations. The DPGA Secretariat is independent, neutral, and overseen by a Governance Board.

The secretariat leads the creation and maintenance of foundational components vital to the DPG ecosystem. This includes the DPG Standard and DPG Registry, Communities of Practice, and other relevant convenings. It also leads advocacy efforts that include highlighting DPGs, creating new financing mechanisms to fill gaps in the DPG ecosystem, and mobilising and aligning funding for existing efforts.

Core DPGA Activities

DPG Registry, DPG Standard, and Community

Maintaining and stewarding the DPG Standard and DPG Registry, are cornerstones of the DPGA Secretariat's work. The secretariat's technical team ensures they are continuously updated: the DPG Standard via a participatory governance model; and the DPG Registry based on accepted nominations

The DPG Standard is a set of specifications and guidelines designed to maximise consensus about whether a digital solution conforms to the definition of a digital public good, establishing the baseline requirements that must be met in order to become a digital public good. The DPG Standard is itself an open project, open for contribution on GitHub, and developed in collaboration with organisations and experts. In 2022, the DPG Standard was recognised by the Global Standards Symposium, cited by academic papers, and made a formal requirement for funding by Digital Square.

The DPG Registry is where all recognised digital public goods can be found. In 2022, the registry grew substantially, both in the numbers of digital public goods, and in the quality and reach of DPGs as well. The secretariat's technical team has also made changes to the registry to increase the transparency and efficiency of the process. This has included launching a new nominations portal that improves the experience for product owners nominating solutions to become DPGs, using

a public ID entry where they can see all log details from each application, and removing partial nominations. On the back end, our team has moved the DPG Registry to a centralised database and is using a new API to reflect changes in the structure of the nominations portal and database schema.

These efforts translate into new and improved ways people can interact with, and nominate solutions to, the DPG Registry. This resulted in a 50% reduction in the time required to assess documentation and reduced the resources required from DPG nominees to collate, structure, and submit their answers. The linkage between the application form and the resources centre has also significantly improved the quality of documentation DPG nominees provide, thereby making the DPG Registry database more robust.

This has also meant increasingly targeted opportunities for DPG product owners to engage with content, connect across the ecosystem, and find value in their status as a DPG. In 2022, the secretariat launched a newsletter specifically

68

**DPGs added to
the DPG Registry
in 2022**

geared towards product owners which highlights DPGA community activities like events and speaking opportunities, fundraising and grants for DPGs, and volunteer opportunities. DPG community calls have also kicked off which, beginning bi-monthly, feature DPGs and the relevant work they are doing, and have a specific topic, industry, or region for each call. Throughout the year, the secretariat highlighted

opportunities that were exclusive to DPGs including amplifying [Hacktoberfest 2022](#) volunteer opportunities related to DPGs with GitHub Social Impact, Tech for Social Good, and the DigitalOcean Social Impact teams. Looking ahead to 2023, the DPGA Secretariat will be increasing these opportunities at a FOSDEM 2023 dev room co-hosted with Foundation for Public Code and more.

Communities of Practice

CoPs are groups of experts convened by the DPGA Secretariat to support the discovery, assessment, and advancement of digital public goods with high potential for addressing critical development needs and responding to urgent challenges within a specific sector

CoPs are a means of bringing together experienced practitioners across multiple organisations and regions that are engaged in work related to a given topic, leveraging years of experience while simultaneously facilitating dialogue and alignment across these institutions and their networks.

All CoPs are led by the DPGA Secretariat in collaboration with a co-chairing organisation that has extensive sector-relevant knowledge. Highlights from this year's CoPs include:

CLIMATE CHANGE ADAPTATION JOINT RECOMMENDATIONS MADE TO IMPROVE DPG ADOPTION FOR CLIMATE CHANGE ADAPTATION

In January 2022 the climate change adaptation CoP, co-chaired by Norad, released a report co-authored by the DPGA, ITU, and the World Meteorological Organization (WMO) which [called for weather, climate, and hydrological information datasets to be made open and freely available as](#)

6

**CoPs co-hosted
by the DPGA
Secretariat
in 2022**

Climate Change Adaptation

CO-CHAIRIED BY
NORAD

Food Security

CO-CHAIRIED BY
FAO & NORAD

Open Data

CO-CHAIRIED BY
UN GLOBAL PULSE

Information Pollution

CO-CHAIRIED BY UNDP
& OMIDYAR NETWORK

Health

CO-CHAIRIED BY
UNICEF

GovStack

CO-CHAIRIED BY GIZ

digital public goods. This call recognises that there is limited availability and dissemination of high-quality weather and climate data and that this lack of access hinders informed decision-making, stifles innovation, and limits the development of digital solutions with the potential to address critical climate change adaptation needs. This report served both to highlight existing DPGs that provide open datasets or use open datasets to help climate change adaptation efforts relevant to weather and climate services, and to articulate and advocate for more datasets to be made openly and freely available.

GOVSTACK DRIVING ALIGNMENT TO SUPPORT DPGs4DPI

Building on the GovStack CoP which was launched in 2021 with GIZ, in 2022 this CoP continued to identify and support the advancement of digital public goods with relevance to a “whole of government digital transformation approach”, or GovStack. This included driving consensus around definitions of key terms, specifically digital public infrastructure, and its relationship to DPGs and building blocks. This work is in direct support of the GovStack Initiate, which focuses on enabling countries to kick-start their digital transformation journey by adopting, deploying, and scaling digital government services.

INFORMATION POLLUTION CHAMPIONING OPEN SOURCE SOLUTIONS FOR INFORMATION INTEGRITY

In February, with DPGA members Omidyar Network and UNDP, the secretariat kicked off a CoP to address online information pollution, an urgent global challenge that



The Climate Change Adaptation CoP explored how to better access data needed for climate action SOURCE / UNSPLASH / NOAA

disproportionately harms communities that are already vulnerable. Throughout the year, this CoP convened individuals and organisations with diverse expertise and perspectives to identify how DPGs can be deployed and scaled to mitigate and respond to information pollution challenges. This work will also strive to support existing and emerging DPGs that can serve as value-driven alternatives to traditional digital technologies and platforms. These normative alternatives will be vital for helping to reimagine a technology landscape that operates with the public interest at its core.

DPG IN THE SPOTLIGHT

Coral^{DPG} creates safe and productive spaces for audience engagement

Coral, an initiative of Vox Media, is used across the globe in more than 20 countries, by publishers large and small. Coral brings journalists and the communities they serve closer together through open-source tools and strategies with the goals of: increasing public trust in journalism; improving the diversity of voices and experiences in reporting; making journalism stronger by making it more relevant to people's lives; and creating safer, more productive online dialogue.

FROM THE CORAL TEAM

Thanks to the support of our international community, Coral is now available in 22 languages. We also rewrote our technical architecture to be more compatible with modern browser requirements, and we're grateful as always to our open source community for supporting us in our work.

As social media platforms struggle with issues of scale and ownership, we're heartened to see a renewed interest in people owning and managing their own community platforms. Our free guides remain popular and an essential resource for anyone interested in setting up their own communities. They're Creative Commons Licenced, which means that anyone can adapt and translate them.

LICENCE

APACHE-2.0

SDG RELEVANCE

SDG 5 GENDER EQUITY

SDG 9 INDUSTRY, INNOVATION

& INFRASTRUCTURE

SDG 10 REDUCED INEQUALITIES

SDG 16 PEACE, JUSTICE &

STRONG INSTITUTIONS

WEBSITE

CORAL.VOXMEDIA.COM



OPEN DATA EXPLORING DATA GOVERNANCE AND MANAGEMENT TO REALISE THE POTENTIAL OF DATA FOR PUBLIC GOOD

Co-chaired by UN Global Pulse, Jain Family Institute, and Global Data Access Initiative, this CoP has been working on a UN-system-wide contribution to the international data governance agenda led by the UN High Level Committee on Programmes working group on new global public goods and will provide the foundation for a submission to the [Global Digital Compact](#).

FOOD SECURITY EQUIPPING FARMERS WITH THE TOOLS AND RESOURCES NEEDED

Acknowledging the compounding complexity that climate change and conflict has had on already fragile global food systems, this CoP (co-chaired by Norad and FAO) is focusing on how digital public goods can address the critical need for farmers to have access to reliable, data-driven advisory services. In December, this CoP launched an [open call](#) for submissions to identify open source software, data, and content collections that provide real-time, actionable advice for farmers to support them in their agricultural activities. Specifically this call seeks the following solutions so they can be highlighted in an upcoming report to help foster better adoption, and support for building those tools up.

- Open source platforms that provide advisory messages to farmers (eg. **VIPS** ^{DPG}, a digital pest prediction platform).
- Data sets and models that if made openly available, could help deliver information that becomes effective advisory



FAO has been championing DPGs for agricultural services to create sustainable and strong food systems SOURCE / UNICEF / UN0684412

messages to farmers (eg. **FAO Crop Calendar** ^{DPG} and **WaPOR** ^{DPG}).

- Open content that translates data into advice for farmers. (eg. The Open Content Agriculture Platform [Sprout](#) and the Advisory Key Messages API of the [FAO Digital Services Portfolio](#) ^{DPG}).

CoPs in the areas of open data, GovStack, information pollution, and food security are ongoing with updates expected in early 2023.

DPG IN THE SPOTLIGHT

Ushahidi^{DPG} fosters good governance during Kenyan general elections

LICENCE
AGPL-3.0

SDG RELEVANCE

SDG 5 GENDER EQUITY

SDG 6 CLEAN WATER &
SANITATION

SDG 13 CLIMATE ACTION

SDG 16 PEACE, JUSTICE
& STRONG INSTITUTIONS

WEBSITE

WWW.USHAHIDI.COM

FROM THE USHAHIDI TEAM

Uchaguzi 2022 was a project leveraging the Ushahidi Platform to raise citizen voices during the 2022 Kenya general elections. Being our fifth successive implementation in Kenya, Ushahidi reconvened Uchaguzi in August 2022 with a customised version of the Ushahidi platform that offered 19 civil society partners a technology tool to coordinate election situation room activities. This allowed ordinary Kenyan citizens to use familiar channels like WhatsApp, SMS, USSD, and social media to report on election events and share their sentiments.

The democratic space and freedom of expression in Kenya has sometimes been misused by irresponsible people, more so during the election season, to push different political narratives and agendas. This was also the case during the Kenya 2022 general election, where actors, particularly on social media, intentionally spread misinformation on incorrect events and sent threats or intimidating messages, exploiting common doubts among voters on the efficacy of political processes with regards to the election outcomes.

Through Uchaguzi, we observed more misinformation in the 2022 general election as compared to 2017. Through our partnership with Baraza Media Lab, which

has been running a nationwide campaign dubbed Fumbua Kenya, we flagged about 681 reports with social media as the largest source of misinformation. Currently, Ushahidi is exploring how to leverage its robust social listening and collective intelligence crowd sourcing capabilities to assess countermeasures that social media platforms employ, specifically AI, against misinformation during the election cycle.

One of the more popular African adages says, "If you want to go fast, go alone. If you want to go far, go together". During the 2022 Kenya general elections, Ushahidi worked with a network of 19 civil society organisations to convene a citizen-led election observation platform. Our joint efforts enabled over 100,000 citizens to voice their real-time sentiments and concerns during the election process, and our digital response teams flagged and escalated misinformation reports. Aided by digital public goods like Ushahidi that leverage technology to ensure a transparent outcome, the resolve of the Kenyan citizens stood firm, and the entire world witnessed one of Kenya's more peaceful elections.

This is a testament to the utility of digital public goods in fostering good governance.



Resource Mobilisation

Throughout 2022, the DPGA Secretariat, DPGA members, and others in the DPG ecosystem have been calling for and organising increased resources for digital public goods via events, including at the 77th UN General Assembly, and campaigns, including the DPG Charter

In June, a range of stakeholders expressed their commitments to long-term funding and support for digital public goods and digital public infrastructure. Estonia committed to continue its support of **X-Road^{DPG}**, while also pledging to develop open-source AI solutions by the end of 2023 in which Estonia is investing €20 million. Germany and Norway committed to continued support for the digital development agenda, both politically and with funding for key initiatives such as the DPGA and GovStack as a priority. As a co-host for the event, the Government of Sierra Leone committed to the implementation of additional DPGs, such as **MOSIP^{DPG}**. Bill Gates, co-chair of the Bill & Melinda Gates Foundation, and Nandan Nilekani, Co-Founder and Chairman of Infosys Technologies Limited, spoke in support of the DPG Charter and confirmed their strong commitment to help advance investments in DPGs4DPI, for financial inclusion, social protection, and inclusive development.

At the 77th UN General Assembly in September funders committed US\$295 million to advance inclusive DPI, while at the same time countries from around the world committed to DPGs and best practices. The DPGA co-hosted the event, “The Future of Digital Cooperation: Building resilience through safe, trusted, and inclusive digital public infrastructure”, which marked the first significant gathering of countries to advance the development and use of DPI, and especially through DPGs. The event featured high-level representatives from governments, civil society, the private sector, philanthropy, and international organisations agreeing to scale up efforts to build safe, trusted, and inclusive DPI for a more sustainable, equitable world.

As the effects of the Ukraine war and the COVID-19 pandemic are putting development budgets increasingly under pressure, these kinds of commitments are more critical than ever.

IMPACT SPOTLIGHT

Co-Develop: Helps launch G2P Connect to allow governments to rapidly scale up government to person payments

Co-Develop is a global not-for-profit fund to achieve the catalytic possibilities of digital public infrastructure.

Launch G2P Connect

Co-Develop helped launch G2P Connect, a collective effort of open source partners whose mission is to offer both a reusable technology stack—including an end to end integrated open source solution blueprint for any kind of G2P payment—and an accompanying operational deployment kit that allows governments to rapidly launch and scale up G2P payments across multiple departments in their country digitally and efficiently.

G2P Connect includes DPGs like Mifos^{DPG}, Mojaloop^{DPG}, MOSIP^{DPG}, OpenCRVS^{DPG}, OpenG2P^{DPG}, OpenSPP^{DPG}, and Sunbird^{DPG}, as well as ecosystem partners like Digital Convergence, GovStack, UNDP, World Bank G2Px, and the DPGA. All modules are designed to be configurable and ‘plug and play’, i.e. they can be used with other G2P Connect modules or with any existing systems (open source or proprietary) to enable an end to end, tailored country solution. The integrated solution blueprint is people-first to enable inclusion of diverse groups, emphasises trust with built in data protection and privacy in every integration, and is crafted to be scalable and replicable

across many programs and enable high volumes of direct digital payments.

Support for the DPI ecosystem: sustainability, safeguards, and governance

Earlier in the year, Co-Develop convened key partners and stakeholders, including the DPGA, in a two-day meeting in London to discuss Co-Develop’s mission, draft strategy, and investment priorities within the greater DPI ecosystem. Three key questions regarding sustainability, safeguards, and public / private governance emerged from the meeting as points to address, which has provided the impetus for three working groups on each of the topics that will produce memos laying out potential solutions to these challenges. The aim of the memos is to provide Co-Develop and partners with a resource to begin tackling these important challenges. In parallel, Co-Develop has been working with Dalberg to validate its strategy, the results of which will be shared in early 2023.

Upskilling government and strengthening go-to-market success

Finally, Co-Develop partnered with think tank Artha Global and consultant Venkatesh Hariharan to explore answers to the questions of upskilling government

engineering capacity and of strengthening DPGs’ go-to-market success, respectively. Co-Develop and the Digital Impact Alliance will be co-hosting an event in January to share Venkatesh’s work. Co-Develop’s focus in 2023 will include taking these learnings to inform their first tranche of investments.

CAMPAIGN SPOTLIGHT

DPG Charter: a growing movement to improve government services and spur innovation using DPGs

“The DPG Charter is a great example of an initiative to bring diverse stakeholders together to address challenges and ensure that governments can both adopt and self-manage digital public goods.”

MR. GAUTHAM RAVICHANDER
Head of Strategy,
eGov Foundation, India

The DPG Charter is a multi-stakeholder campaign to align and mobilise diverse stakeholders and initiatives around a compelling shared vision for digital public goods and their role in driving safe, trusted, and inclusive digital public infrastructure at scale by 2030.

Co-led by DIAL and the DPGA, these efforts are in line with the UN Secretary-General's Roadmap for Digital Cooperation, and the activities of the Global Digital Compact and the 2024 Summit of the Future.

Throughout 2022, the DPG Charter vision and commitment framework was finalised,

informed by consultations with 100+ individuals working in 20+ countries and new endorsements were made by Bangladesh, Uganda, Rwanda, Sierra Leone, and the eGov Foundation—all DPGA members—helping to broaden geographic diversity and address geopolitical concerns. These consultations informed the scope and substance of the DPG Charter and identified a number of focus areas and potential gaps that can be addressed through collective action, improving the current and future state of digital public infrastructure. These findings have been consolidated into five key outcomes related

to: products; capacity; implementation; safeguards and inclusion; and the ecosystem.

In 2023, the DPG Charter will mobilise endorsements from those governments and organisations that are committed to the vision, and will celebrate these endorsements through events and publications.

WEBSITE
WWW.DPGCHARTER.ORG



THE DPG ECOSYSTEM

27

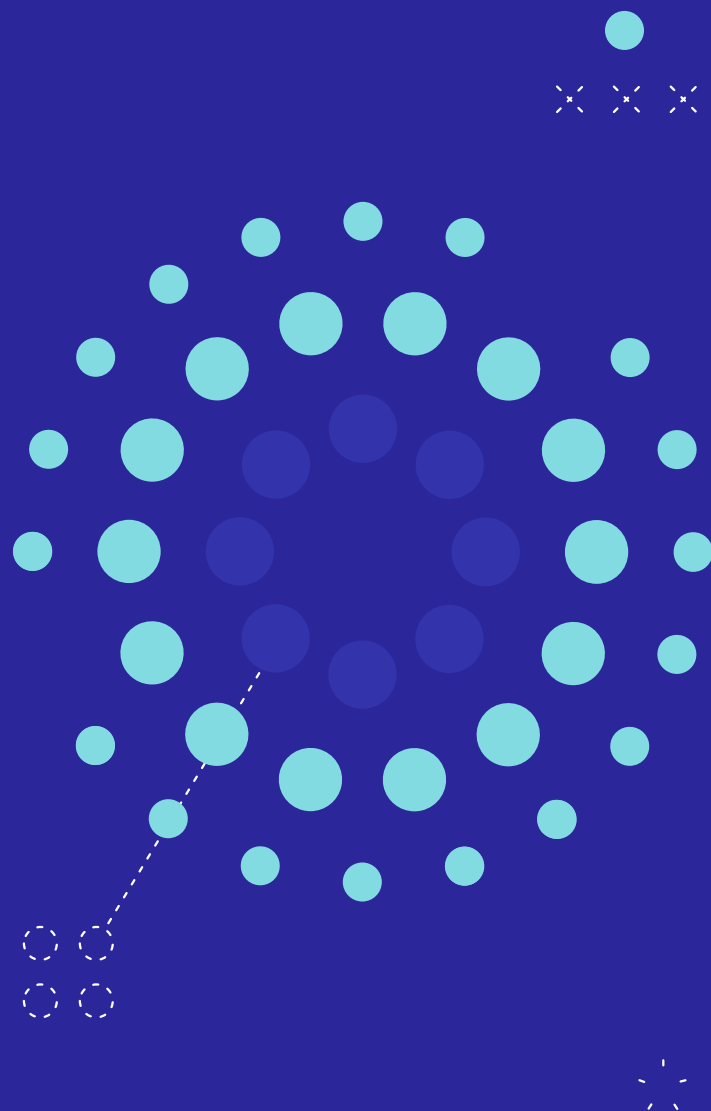
THE DPGA
GOVERNING
BOARD

42

COUNTRY
MEMBERSHIP

49

ORGANISATIONAL
MEMBERSHIP



The DPGA is home to many member organisations. Membership represents an organisation's commitment to advancing a shared vision for DPGs, transparently monitoring and sharing activities within the DPG ecosystem, and working collaboratively as part of the DPGA.

Below are updates from across the DPG ecosystem, highlighting the organisations and governments who are leaders in this space, implementing, funding, developing, deploying, adapting, and adopting digital public goods. Sharing the work they've done this year demonstrates the breadth of work coordinated by and aligned with the DPGA.



THE DPGA GOVERNING BOARD

In January 2022, the DPGA welcomed a Governing Board, consisting of member organisations who demonstrate a strong commitment to digital public goods and who support the DPGA's mission and mandate. The board functions as a strategic decision-making and oversight body for the DPGA Secretariat, and plays a critical role in promoting digital public goods.

The culmination of expertise and diversity of experience across the organisations and individuals on the board has been beneficial throughout 2022 and will continue to benefit the direction and growth of the DPGA and the DPG ecosystem looking ahead.



GERMAN FEDERAL
MINISTRY FOR ECONOMIC
COOPERATION AND
DEVELOPMENT

In 2022, BMZ joined the DPGA Governing Board. Germany's initiatives which contribute to the DPG ecosystem are far reaching, including co-leading the GovStack Initiative, promoting the use of DPGs in AI, leading ecosystem mapping, and contributing as a partner to TruBudget^{DPG}

GOVSTACK PUBLISHES FOUNDATIONAL BUILDING BLOCK SPECIFICATIONS

GIZ is a co-lead of the GovStack Initiative which developed the GovStack building block specifications, implements the GovStack approach in partner countries, and advocates for DPGs globally. In 2022, the GovStack initiative published their work on the specifications for six foundational building blocks, which can be used to freely build and complement national stacks. GovStack is now being implemented in Rwanda, Kenya, Egypt, Djibouti, Somalia, and Ukraine.

FAIR FORWARD PROMOTES DPGs IN AI

Their FAIR Forward initiative has continued to promote the provision and use of DPGs in AI for local innovation and attainment of the SDGs, focusing on language technology and earth observation. Among their many milestones for 2022, the initiative has launched seven comprehensive AI speech datasets in local African languages which have been published on Common Voice^{DPG}, and created two AI-powered chatbots that leverage existing open language datasets, the first reaching up to 14 million people in Rwanda who asked COVID-19-related

questions, and the second in Kenya which answers frequently asked questions on how to register a new business.

GIZ SUPPORTS AND PROMOTES DPGs

GIZ is a contributing partner to the Social Protection management software openMIS^{DPG}. The new release features a full open-source technology stack without any dependencies on proprietary components, and includes a module that can exchange payment notifications with external infrastructures through standard APIs. The module is operational in Tanzania and was successfully tested against payment DPGs such as Mifos^{DPG} and Mojaloop^{DPG}.

In 2023, Digital Innovation in Pandemic Control will release ecosystem mapping done in five African countries on digital epidemiology. Based on the mapping, GIZ implemented accelerators in collaboration with the World Food Program that will close some of the identified gaps. DIPC further funded the global development of DPGs in the field of digital health. In regards to specific DPGs, KfW's blockchain-based digital promotional product TruBudget^{DPG} became a DPG this year, and GIZ is in the process of certifying the open educational

content hosted on their digital learning platform, Atingi, as a DPG. A high level concept for a platform-based DPI financing management tool was also developed in 2022 by a group of actors and is planned to be designed as a DPG.

BMZ also helped put DPGs on the global agenda at various events such as “The Future of Digital Cooperation” at the 77th UN General Assembly, the GovStack’s Digital Leaders Forum at WSIS, and the Internet Governance Forum (IGF).

iSPIRT

INDIAN SOFTWARE
PRODUCT INDUSTRY
ROUNDTABLE

As one of the DPGA’s founding members, iSPIRT brings leadership to the DPG ecosystem particularly in the area of public service delivery in India

iSPIRT INCORPORATES LESSONS FROM THE INDIA STACK

The India Stack is the unseen digital public infrastructure that streamlines the flow of people, money, and personal information in Indian society. This hidden infrastructure has allowed reform to government services like DBT and mass vaccination in a way the world has not seen before. It has also created the foundation for open networks in MSME credit, universal health coverage, and e-commerce.

In 2022, Account Aggregator, based on Data Empowerment and Protection Architecture (DEPA) has gained traction. Account Aggregator allows the controlled sharing of private financial data by citizens with various financial institutions to get the best deals. This is a global first. Sahamati also moved out of iSPIRT incubation and became independent. It is designed to be a Self-Regulatory Organization in this Account Aggregator ecosystem.

Additionally, PM-WANI, the Prime Minister’s WiFi Access Network Interface, makes it possible for millions of WiFi hot-spots to emerge across the country. PM-WANI 2.0 is coming soon. The Digital Sky rollout is going well, with iSPIRT contributing to the development of the NavIC Grand Challenge. The Grand Challenge seeks to mainstream the use of NavIC and establish it as a domestic mapping solution.

In 2023, the Bharat Distributed Ledger for accelerating trusted commerce in India will launch, as will Confidential Clean Room, a new privacy construct in DEPA.

iSPIRT’s work on Open Networks has revealed three counter-intuitive insights: open networks are not an emergency phenomenon of open protocols—one does not necessarily lead to the other; if techno-legal regulation is not there, open protocols lead to centralisation; and in the early days of an open network, small sellers do not favour the open network approach.

Norad

NORWEGIAN AGENCY
FOR DEVELOPMENT
COOPERATION

Norad is a founding member of the DPGA and has a rich background supporting DPGs and the DPG ecosystem including promoting DPI, supporting DPGs, and collaborating with academia. In 2022, they supported and promoted DPI and DPGs like MOSIP^{DPG}, OpenCRVS^{DPG}, DHIS2^{DPG}, and the Global Digital Library^{DPG}

SUPPORTING AND PROMOTING DPI

Despite the high cross-sectoral relevance of digital public infrastructure, funding for initiatives and implementations of DPI has been limited. Norway therefore took a role in promoting DPI in 2022, co-hosting the high-level event “Creating an Inclusive Digital Future: Advancing the DPG Charter”, and “The Future of Digital Cooperation”. Norway has also worked closely with other funders mobilising support for DPI.

SUPPORT FOR MOSIP, PHASE 2 COUNTRY IMPLEMENTATIONS

Norway continued their partnership with MOSIP^{DPG}, housed at the International Institute for Information Technology, Bangalore. Identity is at the core of DPI and is of fundamental importance for effective, efficient, and high quality public service delivery. Today 1 billion people lack proof of identity, and many more lack a form of identity that can be digitised. Norway is therefore supporting MOSIP^{DPG} as a cornerstone of their engagement in DPI. In 2022, MOSIP^{DPG} saw rapidly growing demand from countries looking to implement new or improve existing digital ID systems.

SUPPORT FOR OPENCRRVS AS DPI

In 2022, Norad entered a new partnership with OpenCRVS^{DPG} as part of Norway’s support for DPGs4DPI. OpenCRVS^{DPG} is an open-source software solution for Civil Registration and Vital Statistics. It has been specifically designed for LMICs to increase civil registration coverage and support inclusive service delivery. In particular, their focus is on supporting reference implementations and capacity building across governments, system integrators, and development partners.

COLLABORATION WITH THE UNIVERSITY OF OSLO DHIS2 / HISP TEAM ON CAPACITY BUILDING FOR DPI

In 2022, Norad entered a new partnership with the DHIS2^{DPG} / HISP Centre at the University of Oslo. Norad has been supporting DHIS2^{DPG} / HISP for more than 20 years in the development of the health information management system which has now been implemented in more than 70 countries. Norad is also supporting a pilot of the solution for education information management in six countries.

DPG IN THE SPOTLIGHT

OpenCRVS^{DPG} helps achieve universal civil registration and evidence-based decision making in all country contexts

LICENCE
MPL-2.0

SDG RELEVANCE
SDG 16 PEACE, JUSTICE
& STRONG INSTITUTIONS
SDG 17 PARTNERSHIPS
FOR THE GOALS

WEBSITE
WWW.OPENCRRVS.ORG

FROM THE OPENCRRVS TEAM

In order to be sustained in the long term, OpenCRVS needs to be the gold-standard in digital civil registration systems. To that end, we worked on enhancing the features and functionalities of the platform to ensure it meets the needs of low-resource settings and so that we continuously improve its configurability, interoperability, and security. OpenCRVSV1.0 was launched in June 2022, making it publicly available as a digital public good for widespread implementation.

In addition we have focused on reference implementations to prove the value of OpenCRVS in country contexts and to grow broader interest and sustainability. Exciting progress is being achieved in a number of countries, both in Africa and in Asia.

OpenCRVS has been successfully integrated with **MOSIP^{DPG}**, proving the potential of civil registration and National ID working in unison and issuing a unique identification number from birth. OpenCRVS was also one of the initial DPGs to be included in the G2P Connect initiative, an open-source collective effort to offer an integrated government payments solution blueprint using an interoperable stack of digital public goods to enable cash or near-cash social assistance payments.

Release management as a DPG

Following the release of OpenCRVSV1.0, we realised that we would now have to balance community feature requests, incidents requiring hotfixes, training and support alongside our internal product roadmap. Our technical team conducted research to compare how other DPGs manage releases, write migration documentation and which tools they use, to ensure we have a release management process that meets country needs.

Based on this research, we developed OpenCRVS release v1.1.0 and introduced a new microservice to the OpenCRVS stack. Our “migration” service contains all our scripts and automatically detects which migrations have been run previously. It updates OpenCRVS data on its own with no supporting software or intervention required, simplifying the migration process for users.



In 2022, Norad and the HISP Centre entered a new partnership focused on digital public goods and digital public infrastructure cultivation. Through this partnership, a new PhD program focused on DPGs4DPI will be established. The new PhD program will build on the HISP model to develop a community of practice to support countries to govern their initiatives by aligning DPGs with national DPI.

GLOBAL DIGITAL LIBRARY REACHES 3.5 MILLION USERS IN 100+ LANGUAGES

The **Global Digital Library**^{DPG} is Norway's flagship DPG initiative in the education sector, and is a central part of the **Global Book Alliance**. The goal of the initiative is to give children worldwide access to quality assured books and other learning resources in a language they understand. In 2022, the **Global Digital Library**^{DPG} reached 3.5 million users with 8500

learning resources available in more than 100 languages. The estimated value of the resources is US\$23 million.

In 2022, Norad and UNICEF collaborated on the use of the **Global Digital Library**^{DPG} in Vietnam, which resulted in the translation of 1000 resources into eight different languages, including Vietnamese sign language. Norad also collaborated with UNESCO, UNICEF, the World Bank, and a number of additional partners on a translation campaign of the **Global Digital Library**^{DPG} resources into Ukrainian, targeted at out of school children and children who have had to flee Ukraine. Within just a few weeks, the campaign resulted in 170 books and other learning resources such as literacy games being translated into Ukrainian and made available across a number of platforms. 2022 also marked the start of a new phase for the **Global Digital Library**^{DPG} which includes an expansion into mathematics.

DSTI

SIERRA LEONE'S
DIRECTORATE OF SCIENCE,
TECHNOLOGY AND
INNOVATION

DSTI plays a leading role in the region when it comes to creating and adopting DPGs. This includes implementing **Primero**^{DPG} and **OpenG2P**^{DPG}, working with UNICEF's Project Giga, and building local solutions like the Digital Learning Hubs Project

PRIMERO ROLLS OUT NATIONWIDE

In collaboration with UNICEF Sierra Leone, DSTI provides technical support and system management for the rollout of version 2 of **Primero**^{DPG} nationwide. This will provide confidential

case management and incident monitoring in social welfare, child protection, and gender-based violence by the Ministry of Social Welfare, Ministry of Gender and Children's Affairs, and other stakeholders in the child protection sector.

OPENG2P ACCELERATES PAYMENT PROCESSES

DSTI collaborates with MBSSE to leverage the **OpenG2P^{DPG}** Framework to digitise and accelerate the payment process for a performance-based school financing programme. This will help provide additional resource support packages to schools based on results achieved in a timely manner, building capacity by embedding digital literacy at the foundational level.

PROJECT GIGA ACCELERATE PILOT CONNECTS 70 SCHOOLS BY THE END OF 2022

Alongside the Ministry of Basic and Senior Secondary Education, UNICEF, and the ITU, DSTI partnered with Project Giga in 2019 to support the Government of Sierra Leone as part of its Medium Term National Development Plan (2019–2023), to not only address traditional challenges in the education sector but equip young learners with the skills and tools needed to be productive in the fourth industrial revolution. This November, the Giga Accelerate Pilot kicked off to connect 1000 schools following positive outcomes from the initial pilot schools. About 70 schools will be connected before the end of the year.

DIGITAL LEARNING HUBS HELP BUILD LOCAL CAPACITY

The Digital Learning Hub project is a key aspect of the Reimagine Education program. In July 2020, the government launched the first African Coursera Workforce Recovery Initiative offering every Sierra Leonean the opportunity to learn and earn a certification in over 4000 courses

across 400 specialisations in in-demand and industry-ready skills. However, despite having 31,262 participants registered, the completion rate was only 22%. Post engagement with the participants indicated that lack of access to computers and the internet was a major factor affecting participation. Digital Learning Hubs will have a central role in enabling the digital future for learning and skills development in Sierra Leone and will take advantage of the availability of connectivity, learning platforms, and devices to enable students, teachers, youth, and other learners access to digital content to improve their learning opportunities and outcomes. The pilot phase of the DLH is currently ongoing with one hub open at IPAM University in Freetown. Three other DLHs were established and launched in November 2022.

ESTABLISHING DPG SIERRA LEONE

In addition to this work, they plan to establish DPG Sierra Leone, a national coordination unit to strengthen public and private sector partnerships for advancing and promoting DPGs to create and / or adopt more products in line with the DPG Standard while also strengthening local capacity and talent. This work is in partnership with UNICEF Sierra Leone. They will continue to work on creating DPG products that can be beneficial for other communities like Sierra Leone. For instance, an ongoing pilot for PresTrack, the Pregnancy Registration and Service Tracking application, a digital data collecting and reporting tool that uses both online and offline solutions to collect pregnancy and neonate data with the aim of reducing maternal and neonatal mortality.

“Digital public goods provide an opportunity for Sierra Leone and our peers to move from being buyers to creators.”

MS. BINETA DIOP
Directorate of Science, Technology and
Innovation, Sierra Leone



UNITED NATIONS
DEVELOPMENT PROGRAMME

UNDP's long-term vision is to create a world in which digital is an empowering force for people and planet. Over the course of 2022, efforts were focused on advancing DPGs4DPI to help countries shift from fragmented and solution-based approaches to holistic, whole-of-society ecosystems

UNDP engaged with 37 countries and territories, including regional bodies to advocate for inclusive DPI—a combination of technology, as well as non-tech layers of governance, and community engagement working together to influence how the underlying network of digital systems enables society-wide benefits.

Intent on scaling the implementation of inclusive DPI, UNDP's programmatic work has centred on:

- Developing DPI for critical sectors, by creating the right conditions for collective action to build and support end-to-end 'global digital commons' to accelerate the SDGs;
- Strengthening governance and capacity, by building digital capacity and skills in the public sector and advising on a whole-of-society (digital) governance approach; and
- Fostering a global community of sharing to scale learnings and impact, by engaging in regional and global processes to advocate for inclusive DPI, including shared global responsibility among stakeholders in financing and shared standards / principles.

SIGNIFICANT DPI MOMENTUM ACROSS CRITICAL SECTORS

To help achieve the SDGs by 2030, UNDP is stewarding the deployment of DPGs4DPI across critical sectors in which it works, such as climate, justice, and social protection that impact millions of vulnerable population segments including women.

■ **Digital Climate Carbon Trading** Countries are facing a need for systems that can track their national determined contributions under the Paris Agreement to reduce carbon emissions, register projects, and trade carbon credits efficiently. To this end, UNDP is providing tools for governments to track national carbon emissions and partake in an end-to-end, open, interoperable, digital carbon trading workflow. The workflow is supported by other open-source applications that have been developed in a 'digital for climate' working group, which UNDP helped to establish with UNFCCC, EBRD and the World Bank. This DPG approach in building a climate data exchange stack can help countries (including the 120 that are part of UNDP's Climate Promise)

to effectively reuse solutions and create increased transparency across global climate commitments.

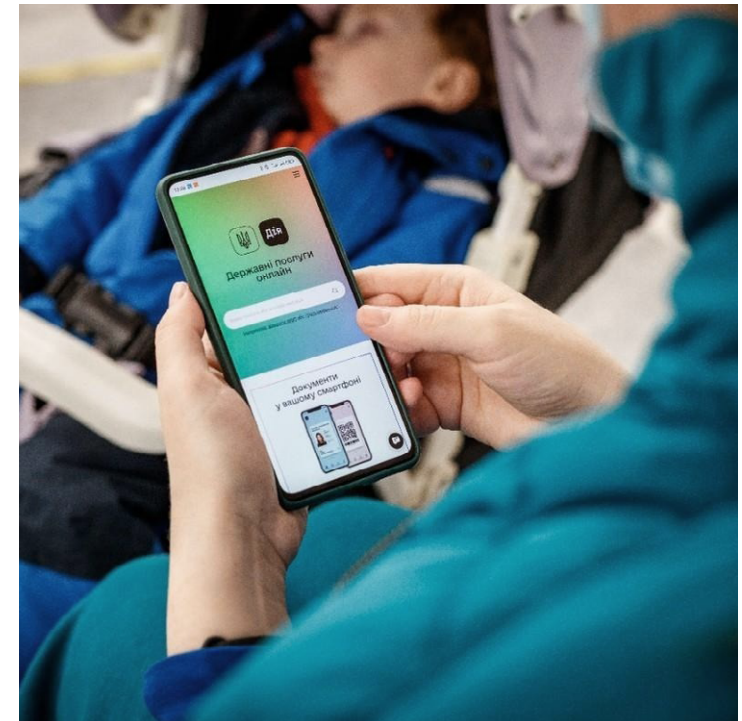
■ **Social Protection** Working with partners, UNDP contributed to the establishment of G2P Connect: an ecosystem of open applications geared at promoting efficient delivery of G2P social assistance payments using shared public goods. This is particularly useful in times of crisis, where quick and effective deployment of welfare systems is often needed to assist those most in need. Through the development of a reusable technology stack and an operational deployment kit, governments can rapidly launch and scale this approach to G2P payments across multiple departments in a safe and efficient way.

18 COUNTRIES SUPPORTED WITH CATALYTIC TECHNICAL ASSISTANCE FOR DPGs4DPI

UNDP's catalytic technical assistance supports 18 countries in areas of governance, capacities and collaboration that are required for driving DPGs4DPI. Recognising that countries are at different places in their digital transformation journey, the technical assistance offered is phased according to the needs of each country. From the problem assessment, solution design to implementation phase, UNDP serves as an effective facilitator to strengthen countries' ability to drive their digital agenda whilst providing specialised knowledge to catalyse implementation of DPGs with potential for population-scale impact.

“We know that countries with strong and interoperable digital infrastructure are better equipped to meet people’s needs and accelerate action towards the SDGs.”

ACHIM STEINER
Administrator, United Nations
Development Programme, UNDP



UNDP is helping to enable access to digital tools that provide vital services SOURCE / UNDP / UKRAINE

DIIA PROJECT CONNECTS 15 MILLION USERS IN UKRAINE

In Ukraine, the Diia Project facilitates the provision of public services in a digitally-enhanced form through the use of a mobile app. With more than 15 million users, the app allows people to access digital documents for identification and sharing purposes, such as ID card, driver's licence, birth certificates, amongst others. UNDP has been supporting Ukraine to implement an interoperable and inclusive cash transfer system within the Diia ecosystem, which integrates Diia with

OpenG2P to enable reliable disbursement of beneficiary payments, strengthen benefits management, and to promote an appropriate payment mechanism for improved identification, authentication, and access to services.

PLACING 1 MILLION NIGERIAN GRADUATES IN PUBLIC SECTOR ROLES

UNDP is working with 17 Nigerian states to catalyse a pool of expert digital advisors in the public sector. Through their engagement and practical know-how, it is envisaged that these advisors will help strengthen the Government's capacities to drive its inclusive digital transformation. UNDP and the Government of Nigeria are also working on the 'Spaces Initiative' that is focused on partnering with six national universities to place 1 million Nigerian graduates in public sector roles. With UNDP providing training and exposure for these graduates, the underlying objective is to fundamentally change how learning is consumed by students, and eventually transform learning into experiences. This initiative will be potentially supported by a digital platform in a digital public good format.

As a global convener with local presence across more than 170 countries, UNDP brings together key actors for action. This included convening stakeholders at the 77th UN General Assembly to discuss the future of digital cooperation and building resilience through safe, trusted and inclusive DPGs4DPI.

UNDP continues to be a part of DPGA as a co-host and governing board member to provide stewardship to reimagine a technology landscape that operates with



The Spaces Initiative will provide training and exposure for 1 million Nigerian graduates SOURCE / UNSPLASH / LINKEDIN SALES SOLUTIONS

the public interest at its core. Four UNDP digital solutions became accredited as DPGs—**iVerify**^{DPG}, **OpenG2P**^{DPG}, **UN Biodiversity Lab**^{DPG}, and **DiCRA**^{DPG}—with 20 more in the pipeline; and **iVerify**^{DPG} and **OpenG2P**^{DPG} have already scaled beyond a single country implementation. **iVerify**^{DPG} became the first digital public good that tackles the complex challenge of information pollution particularly during elections, and was most recently deployed by the Kenya Media Council during the 2022 elections.



UNITED NATIONS
INTERNATIONAL
CHILDRENS FUND

In 2022, UNICEF continued to build, improve, and scale DPGs to achieve results for children. UNICEF is implementing and contributing to cross-sectoral and sectoral DPGs in multiple sectors, including health, WASH, child protection, education, social and behaviour change, and gender equality. UNICEF plays a key role for DPGs through both advocacy and implementation

CO-HOST TO UN GENERAL ASSEMBLY SIDE EVENT

At the 77th UN General Assembly UNICEF hosted the event “The Future of Digital Cooperation” where high-level representatives from countries around the world, including Estonia, India, Norway, Peru, Sierra Leone, Singapore, Timor-Leste, Togo, and Ukraine committed to sharing government technologies as digital public goods, alongside best practices and implementation learnings.

IMPLEMENTING DPGs THROUGH COUNTRY OFFICES

More than ever, DPGs have played a critical role in the delivery of high demand solutions in low resource settings, at scale. UNICEF has been critical to piloting, scaling, implementing, and sustaining a wide range of DPGs. In 2022, this included leveraging **Open Data Kit^{DPG}**, an open source DPG for field data collection to collect, monitor, and analyse COVID-19 data.

UNICEF contributed to the strengthening of health systems and immunisations through DPGs by supporting the

deployment and usage of **DHIS2^{DPG}** in over 60 countries. Under the Digital Health Centre of Excellence (DICE), UNICEF and partners jointly released a primer highlighting recommended DPGs for COVID-19 immunisation, and released a Quick Deployment Guide for the Digital Investment Implementation Guide supported by DICE, UNICEF, World Health Organization (WHO), and PATH, which includes planning, costing, and supporting the deployment of health DPGs. Finally, Gavi and UNICEF launched Planning and Implementing Real-time Monitoring Approaches to Strengthen Vaccination Campaigns: Guidance for country partners to support country sensitisation and uptake of the use of digital approaches to support immunisation campaign effectiveness.

TRAILBLAZING GIRL-CENTERED TECH: SCALING OKY

OkY^{DPG} is the world’s first digital menstruation app co-created with and for girls. The app provides evidence-based information about periods, puberty, and reproductive health in

COUNTRY CASE SPOTLIGHT

Ghana using Open Data Kit^{DPG} to support real-time data analysis of COVID-19 vaccination supervision

The Ghana Health Service required a digital platform to monitor the quality, effectiveness, and timeliness of the planning and implementation of the COVID-19 vaccination programme.

Health workers throughout the country were familiar with Open Data Kit (ODK), the open-source mobile data collection platform which enables users to fill out forms offline and submit them to a server once a connection is found. ODK was used to monitor and supervise routine immunisation and mass campaigns, at the national, regional, and district level, as well as for COVID-19 immunisation.

Before utilising ODK, supervisors were reliant on paper-based systems meaning reports could not be aggregated with regional data until the end of a campaign due to time and resource constraints. The Ghana Health Service reported benefits of using ODK as the primary digital tool for supervising vaccine sites, in parallel with the consistent use of WhatsApp for quick and easy communication. The interoperability of ODK was crucial, ensuring that data could be transferred to **DHIS2**^{DPG} and WHO's own systems if needed, aligning with the national health information infrastructure.



69

digital solutions
funded by
UNICEF Venture
Fund, of which

10 ARE DPGs
24 ARE NOMINATED

fun, creative, and positive ways. **Okya**^{DPG} is tailored to girls' lives, language, and digital realities and is currently live in Mongolia, Indonesia, Mexico, and India, with 12 more markets coming soon. In 2022, **Okya**^{DPG} not only added more markets and users, but also developed its new social franchise scaling model.

SCALING PRIMERO TO PROTECT EVERY CHILD

Primer^{DPG}, a digital public good used for protection-related case management, incident monitoring, and family tracing and reunification, operationalised a multi-year Sustainability Plan, including implementing a subscription-based payment mechanism. Now being offered as UNICEF's first ever programme-facing SaaS, **Primer**^{DPG} is used by 63 programmes in 45 countries and territories, an increase of 13 instances since Q4 / 2021. **Primer**^{DPG} continues to be used for humanitarian responses (in 2022, Ukraine / Romania, Brazil, Sudan, Somalia, and Bangladesh) but demand for **Primer**^{DPG} in development contexts, including in middle- and high-income countries is also growing (Eswatini, Ghana, Thailand, Trinidad and Tobago).

ENGAGING YOUNG ENTREPRENEURS IN DPG DEVELOPMENT THROUGH THE UNICEF STARTUP LAB

In Ghana, UNICEF supports tech-enabled, social-impact startup ecosystems through the UNICEF StartUp Lab acceleration programme. To promote the DPG concept among participants and assess their interest in registering as a DPG, in 2022 UNICEF added sessions to the programme's curriculum which addressed topics such as open-source

licensing, business modelling, and DPG registration. Of the 22 cohort participants 11 (50%) expressed interest in applying to become a DPG. Of those, two have become DPGs and three more are on track to be DPGs by the end of Q1 2023. Building on this significant engagement, UNICEF StartUp Lab will add a DPG registration track as a standard offering to its 2023 programme, including open-source software development funding for interested candidates.

STRENGTHENING A LOCAL PIPELINE OF NEW DPGs

In 2022, UNICEF launched the DPG Accelerator Guide to equip startup accelerators and other organisations in supporting the creation of DPGs. This guide is meant to be directive, with a collection of many relevant cases, templates and resources to help accelerate setting up a pipeline of locally developed DPGs that are addressing national priorities and are regionally scalable. This work will help identify relevant and high-impact global, regional, and local accelerators to enable them independently to support the growth and development of DPGs.

UNICEF will accelerate this effort by funding / co-funding specific accelerators to enable them to take on active, regional responsibilities in building a pipeline of locally developed DPGs and an ecosystem of companies to develop, localise, maintain, and sustain DPG deployments. For example:

- In Ghana, the Country Office partnered with MEST to accelerate open-source solutions resulting in two DPGs;

DPG IN THE SPOTLIGHT

Primero^{DPG} a platform for humanitarian protection and social welfare workers

LICENCE
AGPL-3.0

SDG RELEVANCE
SDG 5 GENDER EQUITY
SDG 8 DECENT WORK
& ECONOMIC GROWTH
SDG 16 PEACE, JUSTICE
& STRONG INSTITUTIONS

WEBSITE
WWW.PRIMERO.ORG

FROM THE PRIMERO TEAM

Primero is an open source software platform that helps social services, humanitarian, and development workers manage protection-related data with tools that facilitate case management, incident monitoring, and family tracing and reunification. In 2022, we launched a partnership with **OpenFn^{DPG}**, an integration platform. We are working with **OpenFn^{DPG}** to connect Primero with child protection systems in multiple sites. In Cambodia, Primero integrates with ONA and OsCAR to have the reporting and child services coverage needed by the government and partners. In Thailand, Primero is integrated with the MoPH to reach more children identified as vulnerable and connect them with social services.

Primero is also doing ground breaking work integrating with UNHCR's global refugee registration platform "ProGres v4" with an ongoing pilot in Ethiopia. This has the potential to reach hundreds of thousands of refugee children with inclusive services and bring national government duty bearers the means to better serve these populations.

We exceeded targets for rollouts, users, and cases managed this year. We are now serving 63 programmes in 44 countries / territories, with almost 10k users managing +380k cases worldwide. We launched a

hybrid SaaS deployment that allows government partners to locally host production in order to comply with data residency regulations. We successfully implemented the first year of our subscription-based business model, a key component in our multi-year sustainability plan.

The future is integrated. We need to double-down on digital public infrastructure and offer governments coupled / bundled services to have more impact at scale. Good development operations and security are critical for a DPG, which need to be properly resourced and transparently managed.

10k
USERS

63
PROGRAMMES

44
COUNTRIES

+380k
CASES



- In the Philippines, a fintech accelerator program helped 5 startups take the first step in developing open-source solutions;
- In Kazakhstan, the local government innovation hub, Astana Hub, has been supporting startups to develop DPGs, in which **Accessible Kazakhstan**^{DPG} was identified and is now on the DPG Registry; and
- Jordan has currently partnered with a local startup accelerator called Jordan Start, in which the DPG Accelerator Guide will be leveraged to support the implementation of a DPG Accelerator Program.

BUILDING A PIPELINE OF VETTED OPEN SOURCE SOLUTIONS THROUGH UNICEF'S VENTURE FUND

UNICEF has built a pipeline of vetted open source solutions that are more scalable, adaptable, and accessible. From the Fund's portfolio, 10 solutions are now DPGs and another 24 have been nominated.

IDENTIFYING AND CREATING DPG SOLUTIONS TO IMPLEMENT WITHIN UNICEF COUNTRY OFFICES

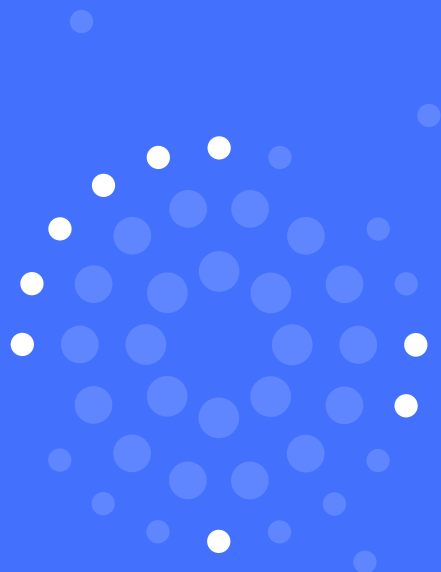
- UNICEF Vietnam identified a startup solution—**VRapeutic**^{DPG} (Therapeutic Virtual Reality)—and is implementing the **Global Digital Library**^{DPG}, giving access to 160 free, open-source, high-quality digital early grade reading books.
- UNICEF Philippines worked on the enhancement of **Project AEDES**^{DPG}, an Advanced Early Dengue Prediction and Exploration Service, which aims to improve public health response against dengue in the Philippines by predicting



Crowdsourced maps generated by Accessible Kazakhstan^{DPG} make public spaces, buildings and businesses accessible for people with disabilities in Kazakhstan SOURCE / UNICEF / UN0251366

dengue cases from climate and digital data and pinpointing possible hotspots from satellite data.

- Leveraging Reimagine Education as the flagship initiative, the Ministry of Education and UNICEF Kyrgyzstan aim to digitise education to implement the **Global Digital Library**^{DPG} and support locally-developed content for teacher training.



COUNTRY MEMBERSHIP

DPGA country members and representative government agencies share a vision for digital cooperation and are committed to working collaboratively to advance digital public goods.

These memberships currently fall into two categories: either countries are members mainly in their capacity as international development donors, or they are creators and implementers of digital public goods. Some member countries are both.

The following countries are represented within the DPGA:

- BANGLADESH
- ESTONIA
- GERMANY
- INDIA*
- NORWAY
- RWANDA
- SIERRA LEONE
- UGANDA
- USA

*India's roadmap activities are currently being mapped and will be shared in 2023

Bangladesh

ICT DIVISION,
GOVERNMENT
OF BANGLADESH

“Digital public goods cut down on the time and cost of transitioning government services from analogue to digital, playing a critical role in helping the Government of Bangladesh respond quickly to COVID, as well as several recent natural disasters.”

MR. ANIR CHOWDHURY, POLICY
Advisor, Aspire to Innovate (a2i)
Programme, Cabinet Division, ICT
Division, Government of Bangladesh
and UNDP Bangladesh

Bangladesh joined the DPGA in 2022 as a new member. Through their membership they will build and maintain new software DPGs, advocate for DPGs, and facilitate collaborations

BUILD AND MAINTAIN NEW SOFTWARE DPGs

As part of their membership, Bangladesh plans to introduce DPGs into their country’s digital public infrastructure. Two initiatives from the a2i Programme, Government of Bangladesh, and UNDP Bangladesh—ekShop and NISE—have been nominated as DPGs. ekShop, Bangladesh’s largest integrated assisted rural e-commerce platform, and national e-commerce infrastructure backbone; and the National Intelligence for Skills, Education, Employment and Entrepreneurship (NISE), a skills and job matchmaking platform. NISE is a one-stop data platform initiative that acts as a connecting bridge to bring stakeholders together to fulfil the needs of one another and subsequently make data driven decisions to stimulate industrial growth. This ensures effective data driven policy planning when it comes to the future of work. Launched in 2021, and supported by UNDP CDO, NISE has been replicated in Somalia in collaboration with the Ministry of Communication and Technology and UNDP Somalia and in Jordan in collaboration with Ministry of Digital Economy and Entrepreneurship and UNDP Jordan with support from UNDP Crisis Bureau. ekShop has been replicated in Turkey to enable opportunities for refugees,

and in Yemen and South Sudan to accelerate e-commerce growth and inclusion.

ADVOCATE FOR DPGs AND FACILITATE COLLABORATION

The South-South Network for Public Service Innovation (SSN4PSI) was proposed by the Honourable Prime Minister of the Government of Bangladesh, and UNDP Administrator in 2016. SSN4PSI is a collaborative platform where governments, private sector organisations, experts, and academics exchange knowledge, experiences, and expertise on public service innovation.

The South-South model mirrors the unique value of digital public goods—that they are locally adaptable and therefore better suited to address country-specific and regional needs than out of the box proprietary technologies. The SSN4PSI currently has 45 members and has held 21 matchmaking workshops which aim to surface best practices. Bangladesh will use their platform via SSN4PSI to advocate for DPGs. a2i Programme has been providing technical support to the SSN4PSI and has been working to convert best practices related to e-governance into digital solutions.

Estonia

REPUBLIC OF ESTONIA'S
MINISTRY OF FOREIGN
AFFAIRS

Developing and using
digital public goods
and infrastructure has
been and continues
to be Estonia's modus
operandi

A pioneer in the DPG ecosystem, Estonia became a member of the DPGA in 2022. Their membership includes a commitment to sharing learnings from their DPG implementations, something they've been driving through their government directly and via the Nordic Institute for Interoperability Solutions. Prior to that, the open-source data exchange solution **X-Road**^{DPG} was nominated and added to the DPG Registry

X-ROAD, AN EXEMPLARY CASE

Estonia itself uses the X-Tee, which is based on the **X-Road**^{DPG} open source software. In 2022, the number of **X-Road**^{DPG} users, and the community as a whole, has continued to increase. Currently, 115 countries are part of the **X-Road**^{DPG} community and 20 ecosystems have been deployed by governments or other organisations.

Estonia continues to develop and maintain **X-Road**^{DPG} with its community including contributing financially around €900,000 every year to the work of the Nordic Institute for Interoperability Solutions together with other partners including Finland and Iceland.

IMPLEMENTING AI FOR PUBLIC SERVICES

Using artificial intelligence for public services is one of Estonia's priorities for the upcoming years. Its Bürokratt project develops open-source AI applications and creates an interoperable network of public and private AI solutions. Developed solutions include: a translation engine,

text analytics tool, speech synthesis and recognition tools, and a chatbot prototype. Source codes of existing components are publicly available. In addition, Estonia is looking to provide its citizens with more efficient e-services, moving from a solution-based approach to function-based solutions. Moreover, the code repository Koodivaramu where all source codes of public open software are available, is also being improved. Developing and using DPGs and DPI has been and continues to be Estonia's modus operandi.

PUBLISHING BUILDING BLOCK SPECIFICATIONS

As a founding member of the GovStack initiative, Estonia together with partners DIAL, BMZ / GIZ, and ITU amplified the importance of, and opportunities for, digital public goods and digital public infrastructure. Six building block specifications have been published including digital registries, information mediator, payments, identification and authentication, registration and security, and new ones are

SOURCE / UNSPLASH / LIAM MARTENS, ROBIN SPIELMANN

DPG IN THE SPOTLIGHT

X-Road^{DPG} provides unified and secure data exchange between organisations

LICENCE
MIT

SDG RELEVANCE

SDG 1 END POVERTY IN ALL ITS FORMS EVERYWHERE

SDG 3 GOOD HEALTH & WELL-BEING

SDG 7 AFFORDABLE & CLEAN ENERGY

SDG 8 DECENT WORK & ECONOMIC GROWTH

SDG 11 SUSTAINABLE CITIES & COMMUNITIES

SDG 13 CLIMATE ACTION

WEBSITE

X-ROAD.GLOBAL

X-Road is open-source software and an ecosystem solution that provides unified and secure data exchange between organisations. The core development of X-Road is done by the Nordic Institute for Interoperability Solutions (NIIS), however X-Road is deployed independently by the countries with the X-Road Community and technology partners. NIIS is involved by helping new countries to get started with X-Road by providing a set of online resources that are all available free of charge.

Currently, X-Road has been implemented in approximately 20 countries worldwide, including Estonia, Finland, Iceland, Colombia, Argentina, Cambodia, Japan and Vietnam. With all implementations accounted, X-Road has over 240 million end users. The X-Road community has 2300 members from 115 countries.

In 2022, X-Road has been working with X-Road Message Rooms for proactive life events. Public authorities need a secure and unified way to notify other authorities about events happening in a citizen's life. Based on the notifications, various processes are then triggered to provide the citizen with services related to the event. The X-Road Message Room feature provides a secure and unified way to deliver the notifications

between public authorities and therefore, is a key enabler for implementing proactive life-event based public services.

Currently, the Message Room feature is in a proof-of-concept phase. In 2022 and the first quarter of 2023, the proof of concept which aims to validate the technical implementation of the Message Room concept in practice will be completed in Finland and Estonia.

Additionally, in 2021 and 2022 X-Road has been working on open source licence compliance automation. Other DPGs may benefit from the case study that resulted from this work.

240m

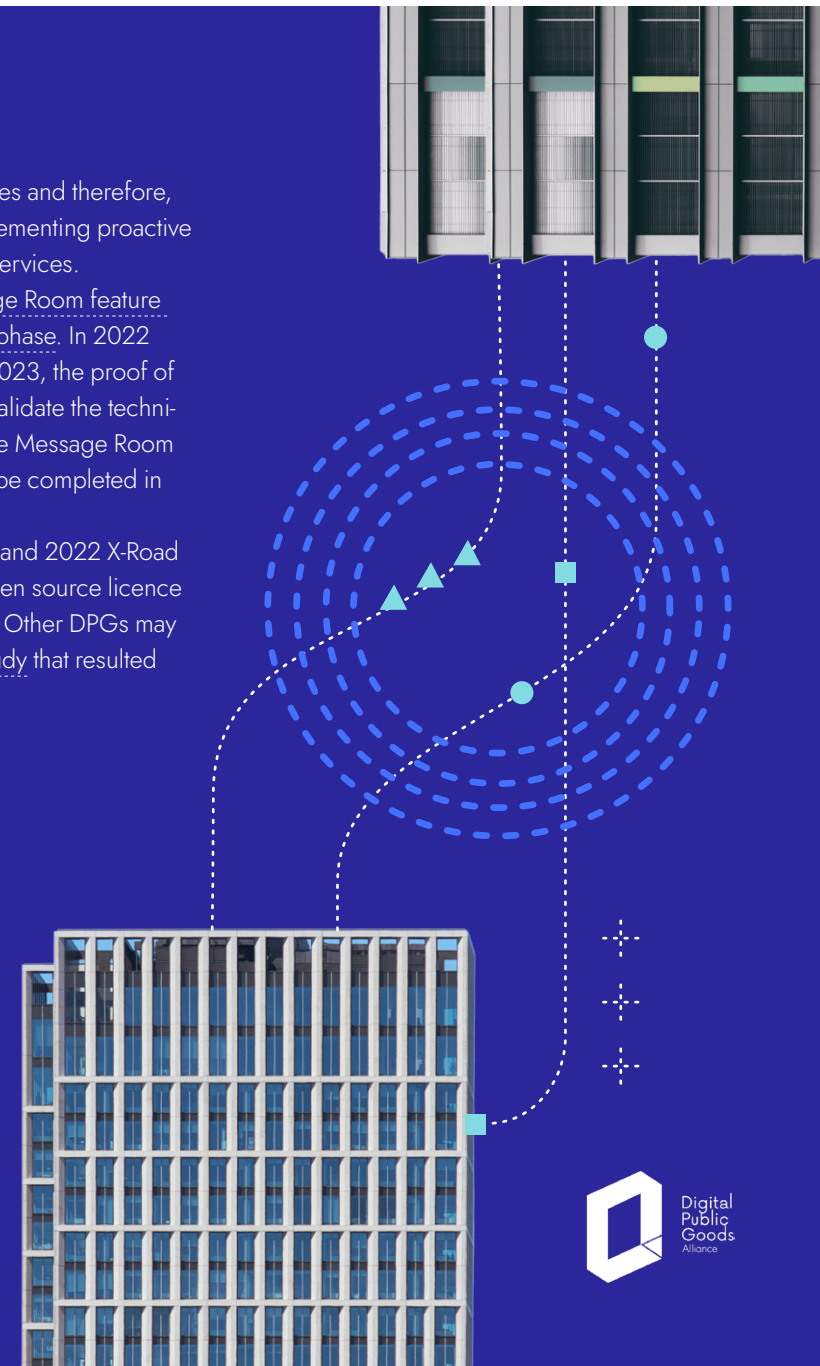
END USERS

2300

COMMUNITY
MEMBERS

115

COUNTRIES



on the way. Many countries are enhancing public sector service delivery through reusable, interoperable, open source building blocks using the GovStack approach. This

includes Somalia, Kenya, and Djibouti within the Horn of Africa project, and Egypt and Ukraine as recent partners.

Rwanda

RWANDA'S MINISTRY OF
ICT AND INNOVATION

Rwanda's Ministry of ICT joined the DPGA in 2022 and is partnering with other DPGA members to strengthen digital cooperation and accelerate their digital transformation

This year, Rwanda's Ministry of ICT sought to accelerate Rwanda's participation in the competitive and innovative global digital economy including through a new Broadband Policy, a bilateral peer exchange between the ICT Ministry of India, and policy interventions that are suitable to Rwanda for cashless adoption.

IMPLEMENTING DIGITAL PAYMENTS SYSTEM

In 2022, Rwanda's Ministry of ICT partnered with UNDP to strengthen digital collaboration on digital payments, share learnings, experiences, and best practices. This collaboration will specifically support:

- Improving public sector service delivery in Rwanda, focused on digital payments;
- Supporting the development of the Rwanda digital payment ecosystem; and
- Supporting the building of open data platforms in Rwanda.

Poor quality of service in digital voice and data heavily affects the adoption of digital financial services in the country. Therefore it is important and critical to leverage the ITU's KPIs on digital financial services to monitor its performance and accelerate cashless adoption. The Broadband Policy will also aid in this work by monitoring the quality of service for voice and data as well as Digital Financial Services to accelerate its adoption in Rwanda.

EVENT LEADERSHIP

The Rwanda Minister of ICT also spoke at the 77th UN General Assembly side-event, "The Future of Digital Cooperation", and co-authored an op-ed for the World Economic Forum with the Chief Digital Office (CDO) at UNDP and six other ministers.

Looking ahead to 2023 and beyond, UNDP and Rwanda will engage the DPG **OpenG2P**^{DPG} to digitise large scale cash transfers.

Uganda

UGANDA MINISTRY OF
ICT AND NATIONAL
GUIDANCE

“Digital public goods are key pillars of the Digital Uganda Vision 2024. They allow us to create local content and use local innovators to improve existing systems and adapt them to our unique needs”

DR. AMINAH ZAWEDDE
Permanent Secretary, Ministry of ICT
& National Guidance, Uganda

In 2022, Uganda announced their membership in the DPGA and partnered on a Digital Transformation Roadmap, furthering their commitment to streamlining service delivery to Ugandan citizens

EASING E-TRADE AND ENHANCING CONSUMER PROTECTION

In partnership with UNDP, the Government of Uganda is working on the development of a Digital Transformation Roadmap, and Complementary Strategies on Big Data Utilization, as well as a national E-Commerce Strategy and Policy for e-trade and consumer protection.

UNDP Uganda is building an online market intelligence platform to facilitate export trade, B2B exchanges, and connections between Uganda MSMEs and counterparts in other countries. They are also building an e-learning platform for self-paced literacy programs by the MSMEs to enhance digital literacy and access with a focus on trade and tourism SMEs and mapping out the startup ecosystem with a focus on bringing in youth innovators.

90+ ENTITIES ONBOARDED TO UGHUB

The data exchange platform UGHub was officially launched at the end of 2022. UGHub is an open-source application and data integration platform serving to integrate government services, break down silos, and ease the administrative burden on Ugandan citizens. Currently, 93 entities have

been onboarded and are utilising the system including 40 from the public sector and 53 from the private sector. Since January 2022, the total number of transactions through the data exchange platform from both public and private sector is approximately 26 million. In concert with UGHub's roll out, training and capacity-building sessions have been conducted to drive uptake of the service with over 200 participants from MDAs, SMEs, and innovators.

UGHub is now providing e-government services including citizen identification and validation; employee validation; tax payment services; SMS gateway notification services; procurement invoice generation services; company registration verification; and trading licence verification. By providing these services, UGHub is increasingly easing the administrative burden for Ugandan citizens and the government.

In the process of development, UGHub has faced challenges related to funding to facilitate the development of APIs to enable standalone systems to integrate with UGHub; shifting mindsets to appreciate the concept of utilising the data exchange platform; and addressing limited in-house technology skill sets to develop APIs. In 2023, UGHub will enter the process to become a DPG.

In 2023 UNDP will facilitate bilateral country exchanges to support inclusive growth by, for example, connecting the Uganda startup ecosystem with other technical assistance

countries' ecosystems. This could include connecting Uganda with Nigeria's more mature startup ecosystem, among others.



U.S. AGENCY FOR
INTERNATIONAL
DEVELOPMENT

USAID supports the creation of the DPG Charter, an important initiative to drive political support and alignment in the DPG space. In 2022, USAID announced new funding for Digital Square which will support the critical work they are doing to elevate DPGs in the health sector

FUNDING DPGS FOR HEALTH THROUGH DIGITAL SQUARE

USAID funds Digital Square, a PATH-led initiative, which promotes the development, adoption, and reuse of digital health global goods, and helps increase their availability, adaptability, and maturity.

SUPPORTING THE DPG CHARTER

USAID is a founder, funder, and Exploratory Group member for the DPG Charter, a multi-stakeholder campaign to align and mobilise diverse stakeholders and initiatives around a compelling shared vision for DPGs and their role in driving safe, trusted and inclusive digital public infrastructure at scale by 2030.

SUPPORT COUNTRY CAPACITY TO USE HEALTH INFORMATION SYSTEMS

The Country Health Information Systems and Data Use project serves as one of the USAID Bureau for Global Health, Office of Health Systems' flagship data and information system projects. The project will strengthen host country capacity and leadership to manage and use high quality health information systems to improve evidence-based decision-making.

Their work has shown that coordination is incredibly important. The conversations and opportunities for collaboration these last few years have highlighted the value of DPGs in a country's digital transformation journey.



ORGANISATIONAL MEMBERSHIP

The DPGA organisational members are aligned around a shared vision for digital cooperation and a commitment to working collaboratively to advance digital public goods. DPGA members work to significantly advance the four DPGA strategic objectives in the 5 year strategy.

- BILL & MELINDA GATES FOUNDATION ● DATA.ORG ● DIGITAL SQUARE AT PATH
- eGOV FOUNDATION ● FAO ● FOUNDATION FOR PUBLIC CODE
- GITHUB ● iSPIRT ● OICT ● OSET ● OMIDYAR NETWORK
- THE ROCKEFELLER FOUNDATION ● THOUGHTWORKS ● UN GLOBAL PULSE
- UNDP ● UNICEF

Bill & Melinda Gates Foundation

If countries can reference world-class digital public goods, they'll be better equipped to select the technology that meets their country's needs

The Bill & Melinda Gates Foundation believes that governments should not have to rely exclusively on proprietary software as they seek to build digital infrastructure such as national payment, health, and identity systems. If countries can reference world-class DPGs, they'll be better equipped to select the technology that meets their country's needs

COMMITTING US\$200 MILLION TO GLOBAL DPI

At the 77th UN General Assembly the Foundation committed US\$200 million to expand global DPI. This funding will help expand DPI that LMICs can use to become more resilient to crises such as food shortages, public health threats, and climate change, as well as to aid in pandemic and economic recovery. Moreover, the investments can help drive progress toward financial inclusion and spark technical innovation, accelerating access and use of public and private services that benefit the poor.

Towards this end, the Foundation has invested in several DPGs, including **DIVOC**^{DPG}, **DHIS2**^{DPG}, **CommCare**^{DPG}, and **Mojaloop**^{DPG}, in addition to **MOSIP**^{DPG}. The Foundation also supports several technical assistance facilities which support countries as they seek to implement DPGs and DPI more broadly. These include the World Bank's ID4D and G2Px initiatives, AfricaNenda, and the Data Use Partnership. The Foundation also supports DIAL, which works across digital

verticals, including GovStack, to support digital development more broadly.

Some of the Foundation's other work in the DPG ecosystem includes:

- Providing flexible funding for implementing core features and strengthening interoperability in **DHIS2**^{DPG} and **CommCare**^{DPG};
- Supporting **MOSIP**^{DPG} to help launch national deployments in the Philippines and Morocco, as well as pilots in Sri Lanka, Ethiopia, Guinea, Sierra Leone, Burkina Faso, and Madagascar. **MOSIP**^{DPG} is now being explored in nine countries with a combined population of over 350 million people. 70+ million people have already been onboarded to a **MOSIP**^{DPG}-based ID system in the Philippines;
- Launching the UPANZI network initiative at Carnegie Mellon University Africa to focus on DPGs, capacity building, cyber-security, and innovation in Africa;

- Supporting the implementation of a **Mojaloop**^{DPG}-based digital payment system in Tanzania, Rwanda, and Myanmar, with other countries in the pre-project planning phase;
- Supporting AfricaNenda as they facilitate pre-project technical assistance, knowledge sharing, and provide tools and training in digital payment systems for instant and inclusive payment projects. In 2022, AfricaNenda supported several national and regional IIPS projects utilising open source or

DPGs to build or upgrade their digital payment and fraud management systems; and

- Supporting the World Bank G2Px program's efforts to accelerate global digitisation of cash transfers that promote financial inclusion and women's economic empowerment. In its first phase, G2Px provided customised technical assistance in 34 countries, primarily for expansion and adjustment of programs responding to COVID-19 and its economic consequences.

data.org

Building on existing open-source software is important for efficiency, getting buy-in from the existing development community, and decreasing time-to-deployment

This year, data.org and its partners have continued to develop interoperable health data analysis tools for pandemic preparedness which, along with Epiverse TRACE tools, which launched in November 2022

DEVELOPMENT OF EPIVERSE TRACE BLUEPRINT

In collaboration with 25 independent experts in R language programming, epidemiology, and open-source community health, Epiverse developed a software development blueprint called Epiverse TRACE Blueprint. This blueprint aims to lay out best practices for outbreak analytics. Data.org has also developed, tested, and launched the first Epiverse TRACE package, **Linelist**^{DPG}, which is now available on Github and the DPG Registry for public use.

Epiverse CONNECT also launched a website which is now live. The website is a prototype map showing interoperability between planned TRACE packages and key external

systems for managing background data such as Health Information Systems.

COLLABORATIONS AS KEY COMPONENT OF EPIVERSE TRACE

Diversity in partnerships is key to making Epiverse TRACE tools more comprehensive and inclusive. Global partners power Epiverse's innovative epidemiological software, enhance regional relevancy and strengthen the technology. In Phase II of Epiverse, data.org will seek to identify other collaborators who will implement and test the tools currently being developed. Building on existing open-source software is important

for efficiency, getting buy-in from the existing development community, and decreasing time-to-deployment.

Technical collaborations across academia, research software engineers, field experts, and practitioners are critical for expanding the testing, evidence generation, and adoption of

TRACE tools. A human-centred design approach is needed to ensure tools have maximum compatibility with field needs and priorities. Furthermore, early testing with multiple audiences and country health ministries ensures that software design and implementation takes into account user needs.

Digital Square at PATH

Digital Square at PATH joined the DPGA as a new member in May 2022 and are collaborating with the DPGA in aligning the digital public goods and global goods approval processes, including through Notice G and the DPG Registry processes. This has included aligning with other partners including DIAL and brings cohesion and efficiencies across the ecosystem, specifically for global goods for health

Digital Square has continued to promote the DPGA via their website and through Notice G donor coordination meetings. Of PATH's 35 global goods, 16 are DPGs and an additional 7 have been nominated as DPGs. Additional global goods will be approved by Digital Square in early 2023.

TOTAL COST OF OWNERSHIP TOOL AIDS SUSTAINABILITY

Digital Square has been developing a Total Cost of Ownership tool to aid government leaders, implementing partners, and investors in understanding what costs to include in budgeting for the sustainable implementation of DPGs, including operating expenses, common cost variances, and hidden costs.

This is part of the DPGA Roadmap and Digital Square will be launching the tool at the Global Digital Health Forum in December 2022.

COUNTRY DEMAND FOR INTEROPERABILITY STANDARDS

Based on work with global goods and interoperability standards in LMICs, we can share several key learnings:

- There is a high demand in countries for DPGs for health that are interoperable, and have multi health sector functionalities or are adaptable for multi health sector indicator data capture;
- There is a strong interest from countries to learn more about FHIR standards; and

35

global goods
created by
PATH, of which

16 ARE DPGs
7 ARE NOMINATED

- Countries have a desire to better understand the marketplace and the best processes for selecting digital tools that fit their current and future needs.

As a result of these learnings, Digital Square at PATH is advocating for an “ecosystem of choice,” whereby countries

are empowered to direct investments into digital health appropriately by supplying decision makers with the information needed to make informed choices about products, tools, capabilities, and services.

eGOV Foundation

eGov Foundation takes a leadership role with DPGs in the areas of municipal service delivery, public health credentials, public finance management, and more

MUNICIPAL SERVICE DELIVERY ACROSS 4700+ CITIES

Digital Infrastructure for Governance, Impact and Transformation (**DIGIT**^{DPG}) Urban is being rolled out as a part of the Ministry of Housing and Urban Affairs National Urban Digital Mission (NUDM) in India. This will result in the digitisation of municipal service delivery to citizens across all 4700+ cities in India by 2026. As of October 2022, 21 states and Union Territories have signed an MoU to implement NUDM; and 3–4 states are expected to launch their digital services by the end of Q4 2022. eGov is working with the Government of India to build an active market ecosystem around NUDM and has hosted capacity building workshops to facilitate knowledge sharing for states and their implementation partners.

The **DIGIT**^{DPG} National Urban Dashboard delivered as part of UPYOG offers a consolidated decision support system

tool with rich and interactive dashboards that provide complete visualisations of key metrics and gives administrators a real time comparative performance view amongst states on different KPIs.

PUBLIC HEALTH CREDENTIALS USING DIVOC

DIVOC^{DPG} received compliance certification from the WHO, making it a universally recognised COVID-19 vaccine certification format, accepted in 120+ countries. Within a span of 18 months, **DIVOC**^{DPG} issued 2 billion certificates across 5 countries. The underlying architecture and principles a) empower individuals by providing options to download their health record on completion of health events, and b) create a uniform experience for verifiers across the world, bringing in operational efficiencies during the pandemic.

DIGIT^{DPG} Fecal Sludge Management (FSM) is designed to solve the problem of untreated waste in fecal sludge management. eGov and **DIGIT^{DPG}** FSM partners are enhancing the platform, adding features that will improve sanitation worker safety and implementing emergency response sanitation unit guidelines from the Ministry of Housing and Urban Affairs. In Phase 1 the project has rolled out across 34 cities and towns. This will be extended to all 114 urban local bodies within the next 3–4 months.

PUBLIC FINANCE MANAGEMENT USING DIGIT IMPROVES EXPERIENCE FOR CITIZENS, GOVERNMENT AND ADMINISTRATORS

The public finance management mission aims to provide a secure and highly scalable platform that facilitates the exchange of financial information across all levels of the government. The mission is working to identify and solve problems of public financial management—such as delays in flow of funds, substantial float of unutilised funds, low data fidelity, and administrative burden of implementation. The Integrated Fiscal Information Exchange Platform (iFIX) is being successfully implemented in the state of Punjab and, at the field level, rural bodies use the mobile application mSewa to collect revenue and record expenditure related to water supply projects. eGov Foundation will extend technical support.

eGov Foundation has codified design standards and principles into the **DIGIT^{DPG}** Design System to improve the experience of citizens, government employees, administrators and other users interacting with products and solutions



DIGIT^{DPG} FSM solves the problem of untreated waste in fecal sludge management SOURCE / UNSPLASH / IVAN BANDURA

built on **DIGIT^{DPG}**, and created a citizen portal to help governments provide citizens with all the relevant information in a single window. **DIGIT^{DPG}** has built the capability to ensure that all PII data is masked by default.



FOOD AND AGRICULTURE
ORGANIZATION OF THE
UNITED NATIONS

Digital public goods must be at the centre of a new vision for digital agriculture worldwide. In May 2022, the **FAO** became a member of the **DPGA**. The membership underscores **FAO's** commitment to the development and championing of digital public goods to help achieve sustainable agrifood systems and contribute to the **SDGs**

FAO ensures inclusivity and narrowing the digital divide between different countries and regions through affordable access to digital technologies, digital literacy, and digital public goods.

FOUR FAO PRODUCTS NOW DPGs

FAO has made great strides to positively influence the food and agriculture ecosystem towards creating and using digital public goods, identifying existing and potential DPGs within the **FAO Digital Services Portfolio**^{DPG}, and creating a FAO Digital Public Goods Framework. Four FAO products have been certified as digital public goods including: the **Hand in Hand Geospatial Platform** (**HIH GP**^{DPG}); **WaPOR**^{DPG} which monitors water productivity through open access of remotely sensed derived data; **OpenForis**^{DPG}, a set of free and open-source software tools that facilitates flexible and efficient data producing, collection, analysis, reporting, and dissemination in order to implement multi-purpose forest inventories and support environmental monitoring; and the **FAO Digital Services Portfolio**^{DPG}, a cloud-based platform designed to disseminate information in the food and agriculture and

related sectors and scale up agricultural services for smallholders and family farmers, fostering digital inclusion.

AWARD-WINNING DPG WORK

In 2022, FAO received an award of excellence at the Geospatial World Forum for its open-access **HIH GP**^{DPG}, recognised as the best collaborative platform towards data-driven agriculture. The platform combines geographic information and statistical data on more than ten domains including food security, crops, soil, water, climate, fisheries, livestock, and forests, helping to identify gaps to work on and opportunities to exploit. The **HIH GP**^{DPG} is federating data from FAO and other major public data providers from the United Nations, non-governmental organisations, academia, the private sector, and space agencies. All the data from the FAOSTAT statistics platform on food and agriculture for FAO's 194 member countries plus 51 territories, from 1961 to the most recent year, is also incorporated. FAO has been working to continuously improve the platform to better serve users with new features and datasets, for example a new remote sensing tab for highlighting new available datasets.

In agriculture and climate change work, digital public goods have democratised information and are empowering young farmers, women, students, and entrepreneurs, who may previously have been excluded by technical, financial, and social barriers. This is what the world needs to stand a chance of understanding and responding to climate change

EXPANDING WaPOR DATABASE TO GLOBAL COVERAGE

In September 2022, recognising the value of the FAO **WaPOR^{DPG}** database for monitoring water productivity and water consumption in agriculture, the Government of The Netherlands announced further financial support to expand the **WaPOR^{DPG}** database to a global coverage. The data currently covers Africa and the Near East and it is expected that global coverage will start becoming available by mid-2023.

MAKING USEFUL DATA AVAILABLE ON MOBILE

The **FAO Digital Services Portfolio^{DPG}**, aims at making useful data, information, and statistics available and accessible as digital services to rural communities. Designed as part of a wider organisational effort aiming at promoting the shift toward digitalisation and modernisation in agriculture, it makes data and content available in a structured way, grouped into themes, with each theme addressing one distinct subject matter to the mobile devices of interested parties via a smart phone web app or SMS.

A LEADER IN COMMUNITIES OF PRACTICE

FAO was engaged in two CoPs run by the DPGA Secretariat on the topics of Climate Services and Digital Financial Inclusion and collaborated to ensure FAO's digital products became digital public goods. And, in November 2022 FAO co-led the formation of a new CoP focused on food security, which will produce a knowledge product to guide countries and digital practitioners on digital advisory services for farmers. FAO's engagement in the DPGA is an important contribution to the UN Secretary-General's Roadmap for Digital Cooperation.



WaPOR^{DPG} helps monitor and reports on agriculture water productivity over Africa and the Near East SOURCE / UNSPLASH / STEVE HARVEY

In agriculture and climate change work, DPGs have democratised information and are empowering young farmers, women, students, and entrepreneurs, who may previously have been excluded by technical, financial, and social barriers. This is what the world needs to stand a chance of understanding and responding to climate change.

FAO DPGs IN COUNTRY CONTEXTS

In 2022, FAO also enabled, facilitated, or participated in significant country updates with regards to their DPGs:

- In October, a new project was scaled up in Kazakhstan and Kyrgyzstan to deliver messages to livestock farmers for meat production and dairy production.
- In Senegal, 955 technical advice messages have been distributed in six local languages plus French and English. In total more than 1 million farmers benefited, directly or indirectly from FAO's work.
- The Digital Services Portfolio in Jordan, available in both English and Arabic, has implemented five services: animal husbandry, crop calendar (currently including 47 crops), harvest and post-harvest, AgriMarketplace, and an Expert to

Farmer Forum. Overall, 708 people were trained throughout Jordan on the use of the mobile application.

- In the One UN Rwanda Joint Project, FAO is playing a catalytic role in peace-building by supporting the economic empowerment of women and youth in cross-border communities. Rwandan women farmers selling food commodities in the Democratic Republic of Congo were given pre-installed DSP smart phones and six-month internet bundles to facilitate their cross-border trade by adopting e-commerce practices and accessing information and knowledge available in the DSP for better production and market information.

Foundation for Public Code

In 2022, Foundation for Public Code released version 0.4.0 of the Standard for Public Code, which includes a new criterion developed collaboratively with their community

As the Standard for Public Code is increasingly used and valued by public administrations, multiple parties have translated it into other languages. A community maintained translations repository was set up which contains a full Spanish translation, Danish and Swedish translations are in process.

IMPLEMENTATION GUIDE LAUNCH

Responding to requests, Foundation for Public Code launched the Standard for Public Code implementation guide, which collects proven approaches to meeting the standard.

Implementers can share the solutions they have chosen and find inspiration from their peers. Finally, discussions have begun to bring the Standard for Public Code into compliance with the GovStack maturity model.

UNIVERSALITY OF PUBLIC CODE POTENTIAL

Almost all DPGs are scaling DPI, and therefore have strong public code potential. The Foundation for Public Code has been honoured by the intention of quite a few to meet the Standard for Public Code.

GitHub

GitHub Tech for Social Good leverages GitHub's platform, products, community, and people to strengthen the social sector's efforts to achieve the SDGs, including via DPGs

HACKTOBERFEST 2022 SURFACES 60+ ISSUES

In October 2022, GitHub partnered with Digital Ocean to reach out to DPG maintainers and surface volunteer opportunities for Hacktoberfest 2022 participants. 11 DPG maintainers submitted more than 60 issues. In response, GitHub wrote and promoted [this blog post](#) and created a [DPG maintainer's guidance page](#). Hacktoberfest engagement demonstrated that there are several DPG maintainers who would like external contributors.

GITHUB RELEASES OPEN SOURCE RESEARCH REPORT

DPGs were also highlighted throughout [GitHub's open source research report](#) on India, Kenya, Egypt, and Mexico. The report is available for free in English, Spanish, and Arabic.

GITHUB'S SKILLS-BASED VOLUNTEERING PROGRAM BUILDS DIGITAL DEVELOPMENT COMPASS

GitHub and UNDP hosted a [side event](#) at the 77th UN General Assembly on an innovative new UNDP tool called the Digital Development Compass that GitHub's Skills-Based Volunteering Program built. The tool aggregates publicly available data on countries' digital development in one platform to

support digital transformation. There are plans to submit the data pipeline used to build the visualisations as a DPG.



Hacktoberfest supported multiple DPGs, including Govdirectory^{DPG}, a platform which empowers citizens to engage with government

SOURCE / PEXELS / EDMOND DANTES

WHO ANNOUNCES OSPO

With GitHub's support, in March, the World Health Organization announced the launch of its OSPO. The new

OSPO will support and strengthen DPGs related to global public health.

OICT

UN OFFICE OF INFORMATION
AND COMMUNICATIONS
TECHNOLOGY

OICT enables a better, safer, more sustainable future through innovative technology. It is committed to ensuring UN colleagues all over the world have every tool necessary to succeed in their respective mandates

The Office focuses on strategic long-term improvements through new technologies and innovation (i.e., business intelligence, analytics, machine learning, AI), strengthening information security, and ICT governance and policies.

OSS4SDG LAUNCHES

In May 2022, OICT launched the Open Source Software for Sustainable Development Goals (OSS4SDG), a joint initiative with the Directorate-General for Informatics of the European Commission that fosters open source software collaborations to tackle SDG challenges through crowd sourcing events.

To date, two OSS4SDG competitions have taken place. The first focused on SDG 4, Quality Education, in cooperation with Moodle ^{DPG}. The second competition focused on SDG 11, Sustainable Cities and Communities, in cooperation with the OpenStreetMap Foundation. Both four-week competitions received over 80 open source software solutions, succeeding

in bringing the open source community together to contribute to solving pressing technological issues with the help of open source software.

REACHING 30,000+ ENGAGED GLOBAL CITIZENS

The OSS4SDG events are hosted by Unite Ideas, the UN platform that facilitates collaboration between the Organization, academia, and civil society to advance the SDGs, Human Rights, Peace and Security, and the Rule of Law. The platform draws upon the skills and creativity of over 30,000 engaged global citizens and organisations to solve the most pressing problems using DPGs. United Ideas has been adopted by the UN High-Level Committee on Management as a standard crowd sourcing platform available to all UN Agencies, Funds, and Programmes to host open source innovation challenges, competitions, virtual hackathons, and other events open to the public.

WORKSHOP SERIES LAUNCHES

Lastly, during 2023, OICT will continue with the OSS4SDG initiative and launch a series of workshops called “Open Source

Software: Opportunities and Barriers” to enhance the adoption of open source by UN personnel.

OSET

UN OFFICE OF THE
SECRETARY-GENERAL'S
ENVOY ON TECHNOLOGY

OSET was established in 2021, following the Secretary-General's appointment of his envoy on technology, and plays a foundational role in implementing the UN Secretary-General's Roadmap for Digital Cooperation

OSET has been collaborating with the DPGA on the promotion of DPGs in facilitating discussion, and multi-stakeholder dialogue with member states and relevant stakeholders, as DPGs are one of the key work streams highlighted in the Roadmap.

DPGs ON THE AGENDA AT THE 77TH UN GENERAL ASSEMBLY'S HIGH-LEVEL WEEK

Together with the DPGA, OSET was a speaker at two significant events during the 77th UN General Assembly's High-Level Week, the first was, “The Future of Digital Cooperation”. The second event, “Open-Source Programme Offices in the UN System—A Spotlight on WHO”, discussed how an OSPO in the UN System could contribute to promoting DPGs within the UN and for external stakeholders.

DPGs AND DPI DEPLOYED WITHIN THE UN

In 2023, OSET will continue working to ensure DPGs and DPI are effectively deployed and utilised within the UN, as well as supporting the promotion of DPGs, DPI, and open-source technologies. In particular, OSET has identified that greater awareness and internal capacity building within the United Nations is essential and will continue to work to build this, as well as to support the role of DPGs and DPI to support the United Nations mandate.

Omidyar Network

In 2022, Omidyar Network contributed significantly to the digital public goods ecosystem as a funder. They seeded the Co-Develop Secretariat as a founding funder and are extending a grant to the United Nations Economic Commission for Africa to enable technical capacity, knowledge, and leadership to enable countries to adopt and implement digital public goods

INFORMATION POLLUTION

COMMUNITY OF PRACTICE CO-CHAIR

Omidyar Network is co-chairing a DPGA CoP on Information Pollution alongside Norad to surface digital public goods to combat information pollution. And, at the 77th UN General Assembly, Omidyar Network's Michele Jawando moderated the event "The Future of Digital Cooperation".

ADVOCATING FOR SAFEGUARDS IN POPULATION-SCALE TECHNOLOGIES

Over the course of 2022, Omidyar Network has called for different pillars of intervention, including financing, convening, building evidence, and technology for DPGs to be widely adopted. This involves collaborating with different stakeholders and building trust among them. They've also advocated for safeguards such as privacy, security, and accountability as countries build large population-scale technologies; and governance and institution building as critical in an increasingly digital-first world.

The proliferation of DPGs requires intentional building and nurturing of communities and ecosystems



Omidyar Network's Senior Vice President, Michele Jawando, greets world leaders to DPGs4DPI event at the UN General Assembly

SOURCE / UNDP / DAVID DEGNER

The Rockefeller Foundation

We see DPGs as an opportunity to advance our goals in health, clean energy, food, and economic equity, and a key tool for more equitable, innovative, and flexible collaboration to achieve the SDGs

The Rockefeller Foundation aims to promote the well-being of humanity throughout the world by making opportunity universal and sustainable, seeing DPGs as an opportunity to advance health, clean energy, food, and economic equity, and a key tool for more equitable, innovative, and flexible collaboration to achieve the SDGs

SETTING UP THE CO-DEVELOP FUND

In 2022, with the Bill & Melinda Gates Foundation, Omidyar Network, and Nilekani Philanthropies, The Rockefeller Foundation committed seed funding and advisory support to the Co-Develop Fund, a global not-for-profit collaborative fund to support the development of inclusive, principles-based DPI systems in LMICs. DPGs are the cornerstone of Co-Develop's vision of promoting good DPI systems.

In addition to providing startup funding for Co-Develop, The Rockefeller Foundation also committed funding in 2022 to Co-Develop's development of G2P Connect, a reusable technology stack for G2P payments and an accompanying operational deployment kit that allows governments to rapidly launch and scale G2P payments across multiple departments in their countries.

ADVOCATING AND MOBILISING FOR DPGs

The Rockefeller Foundation continued to support specific DPG projects in 2022, most notably as a member of the **Mojaloop**^{DPG} Foundation and a supporter of The Open Mobility Foundation, a coalition of cities developing a

standard for mobility and transport data used in over 90 global cities.

DPGs are a collective, human endeavour as well as a technical one. The Rockefeller Foundation continues to support the growth of a global community around DPGs. In 2022, this included collaboration with the DPGA on a high-level event in June 2022 to mobilise pledges and a tracking tool to support the DPG Charter, and supported convenings such as a four-day gathering of the leaders of government digital services agencies of the US, UK, Bangladesh, India, Taiwan, Indonesia, Estonia, Ukraine, and others. That meeting has sparked an ongoing series of seminars hosted by Public Digital where government teams can showcase reusable code to potential peer collaborators.

CLARIFYING DPGs, DPI AND OPEN SOURCE

In the past year the broad global community committed to DPGs has made progress in clarifying The Rockefeller Foundation's mutual understanding of the concepts surrounding DPGs while also improving The Rockefeller Foundation's ability to tell accessible stories about why DPGs are important.

For example, clarifying the distinction between DPGs as open-source tools and DPI as implemented systems has been helpful for enabling collaboration. So too, has been telling relatively jargon-free stories of successful public health and humanitarian response enabled by DPGs. However, more progress is needed and there are terrific opportunities in the coming year.

CRISES AHEAD: SUSTAINABILITY AND THE CLIMATE CRISIS

Looking ahead, sustainability of DPGs and their communities of users and contributors remains a concern. It's important to

think creatively about this while recognising both that DPGs are true public goods and that the economics of DPGs can look very different once they reach widespread adoption. The Rockefeller Foundation is eager to see funding allocation models that are driven primarily by demand from users and contributors. Additionally, the climate crisis (both adaptation and mitigation) will be an overwhelming priority for their organisation going forward, as for many others. While DPGs have already proven their worth in many climate-relevant use cases, The Rockefeller Foundation think this will be an important connection to explore intentionally and creatively.

Thoughtworks

Throughout 2022, Thoughtworks has reported quarterly on their social change initiatives, making it part of the key takeaways for investors and demonstrating how important this work is to their culture and purpose. The DPGA, and digital public goods Bahmni^{DPG}, Cloud Carbon Footprint^{DPG}, and Epirust have all featured in these updates this year

LIGHTWEIGHT VERSION OF BAHMNI

Bahmni^{DPG} is an easy-to-use EMR and Hospital Information System designed specifically for low-resource settings. It combines and enhances existing open source products into a single solution. Throughout 2022, the Bahmni^{DPG} coalition has been working on a lightweight version for outpatient

clinics and small hospitals. This version, Bahmni^{DPG} Lite, will also be fully cloud-native and enable Bahmni^{DPG} to be offered as a service. The service is expected to launch later this year in India.

This year Bahmni^{DPG} also added a payments module to enable invoicing and billing, and a lightweight lab data entry

module; created a clinical configuration package for India; and made key functional upgrades including an OpenMRS version, better integration with India's ABDM network, performance benchmarking, and security hardening. Finally, **Bahmni**^{DPG} has been added to the UNDP's Digital X Solution Catalogue.

CLOUD CARBON FOOTPRINT ADDS FEATURES FOR FLEXIBILITY AND SCALE

Cloud Carbon Footprint^{DPG} provides visibility and tooling to help organisations measure, monitor, and reduce their cloud carbon emissions and the associated costs. It provides actionable recommendations to reduce cost and carbon emissions, and projected savings and real world impact in trees planted. Since the initial listing as a DPG, **Cloud Carbon Footprint**^{DPG} has gained new features that will allow it to be more flexible with large installations and scale. This includes the enhancement of the cache system and the ability to filter according to several factors (cloud providers, accounts, services, etc.). Among these new features, improvements and ongoing developments have been made to the on-premise methodology as well as the lookup table feature and Backstage plugin support.

COMMUNITY BUILDING TO INCREASE ADOPTION OF DPGs

Their work confirms that the proliferation of DPGs requires intentional building and nurturing of communities and ecosystems. Governments (and non-profits) often don't consider DPGs for implementation due to lack of vendor accountability associated with licenced software. Therefore, strong



Inefficiencies in the outpatient process in small hospitals create the need of solutions like **Bahmni**^{DPG} SOURCE / UNICEF / UN0588881 / JARIWALA

communities and ecosystems can drive continuity of support, thereby increasing adoption.

Open specification and protocols that form building blocks of larger ecosystems have generated a lot of interest in the tech community. Thoughtworks was involved in many such initiatives in 2022. Prominent among those are projects with India's open network for digital commerce and fintech authority NPCI.

UN Global Pulse

UN Global Pulse has been working to identify the bottlenecks and catalytic support required to make products scale-ready or well positioned on the road to scale

RESEARCHING INNOVATIONS IN MATERNAL, NEWBORN, AND CHILD HEALTH

In 2022, UN Global Pulse led a research project focused on innovations in maternal, newborn, and child health, a focal area of the SDGs. However, it soon emerged that many of the findings were not only applicable across health, but beyond into other sectors. UN Global Pulse held interviews with innovators and other stakeholders who identified a number of challenges faced throughout the innovation process, but particularly when moving from pilot to scale. Further research revealed a need for tailored mentoring support to develop a sustainable business model and access to sources of funding. Knowledge sharing among innovators is limited, with potential benefits arising from collaboration through CoPs and via resources such as guidelines or case studies.

SUPPORTING DIGITAL PROJECTS TO REACH SCALE

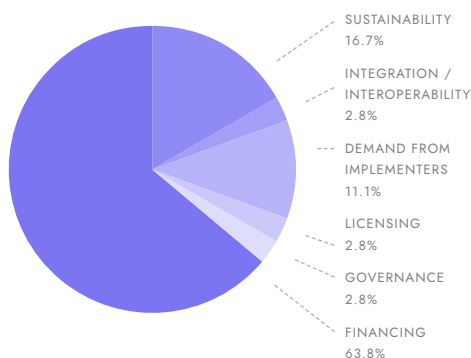
In June, UN Global Pulse translated those research findings into an event in Helsinki on 'Supporting Digital Public Goods to Achieve Scale', which promoted rich debate on what digital projects need to achieve scale and have a greater impact in the public realm. The webinar included a team of experts from the Ministry for Foreign Affairs of Finland, the DPGA, and UN

Global Pulse who discussed the results of the research project and shared experiences and potential solutions.

CO-CHAIR OF THE DATA COMMUNITY OF PRACTICE

UN Global Pulse has also been a leader in discussions of data as a digital public good, helping to formulate and define that space, including co-chairing the CoP on data. This included submitting a "Data as DPG" paper (to be released in early 2023) to the Digital Compact which was a joint effort with UNICEF, the Jain Family Institute, and the DPGA Secretariat, with the goal of proposing how to approach data governance and manage data as a resource to realise the potential of data for the public good. This work will also be used as an input by the Global Data Access Initiative (GDAI), a collaboration across the public and private sector to develop guidelines, processes, and reference infrastructure to facilitate responsible access to data as DPGs. Championed by UN Global Pulse, GDAI will accelerate the development of machine learning and artificial intelligence solutions, which require large and granular data, for addressing critical development needs. This will also address the key challenges that come with providing access to privately-held data, such as the protection of privacy and legitimate corporate interest.

Financing is both the greatest challenge and top priority for DPG owners



SOURCE / UN GLOBAL PULSE BLOG

IMPACT SPOTLIGHT

World Bank: ID4D and G2Px support countries in improving services and economic opportunities

“For the digital transformation to be successful, we need trusted, quality, and inclusive public infrastructure, accessible and affordable Internet, and the development of digital skills”

DAVID MALPASS
President, World Bank Group

ID4D and Digitizing G2Px are sister initiatives of the World Bank Group supporting countries to realise the transformational potential of ID, digital G2P payments, and data exchange systems as DPI to improve access to services and economic opportunities for all people. ID4D and G2Px harness global knowledge, cross-sectoral expertise, financial and technical assistance, and partnerships across three pillars of country and regional action, thought leadership and analytics, and global convening and platforms. The World Bank's Digital Development Global Practice has also launched business lines, such as on Digital Data Infrastructure, as part of the scaling up for countries to harness digital technologies to respond to today's multiple crises and for future resilience.

ID4D has supported more than 50 countries to make progress towards inclusive and trusted ID and civil registration systems. This includes shaping over US\$2 billion in World Bank and co-financing for implementation and producing global public goods, original research, and data to contribute to global understanding of the topic. Similarly, G2Px has supported more than 40 countries, influencing US\$2 billion in annual World Bank financing for cash transfer programs, and producing knowledge to shift the G2P payment digitisation paradigm beyond

program-specific efficiency gains to one that simultaneously accelerates critical development outcomes such as financial inclusion, women's economic empowerment, and government fiscal savings.

The advancement of DPGs is a priority for both ID4D and G2Px, as well as for other parts of the World Bank Group. At the country-level an emphasis is on ensuring that the right 'analogue' enabling environment is in place, including sound legal and policy frameworks and comprehensive stakeholder engagement for inclusion and trust, as well as adequate technical and human capacity. Both initiatives raise awareness about open standards and work with countries as they assess the feasibility and relevance of open-source software for the local context. ID4D is supporting five of the most advanced implementers of **MOSIP**^{DPG}. For instance, during 2022, ID4D supported Ethiopia to develop a draft bill for its new foundational ID system, carry out consultations, and implement and evaluate a pilot using **MOSIP**^{DPG}. Another example is the Philippines, where ID4D has been working with the government since 2018 to design and scale up the Philippine Identification System (PhilSys), which is based on **MOSIP**^{DPG}. 75 million Filipinos have enrolled to date, and G2Px is now supporting the country to leverage the PhilSys to improve

access to and delivery of social protection for vulnerable Filipinos.

During 2022, ID4D published the latest Global ID4D Dataset and ID4D-Findex Survey results, which are seminal resources on the coverage and characteristics of ID systems around the world. ID4D also published tools for civil society engagement and responsible use of biometrics, and a case study on Singapore's national digital identity and government data sharing platform. G2Px played a leading role in the conceptualisation and materialisation of G2P Connect, an initiative to bring together different DPGs across the social protection delivery chain. G2P Connect includes Core MIS, an open-source software developed by the World Bank's Social Protection and Jobs Global Practice. G2Px also published several important knowledge products, such as Next Generation G2P Payments: Building Blocks of a Modern G2P Architecture, and The Role of Digital in the COVID-19 Response, which found that countries that were able to securely cross-check databases were able to reach 51% of their populations with social assistance support, compared to other countries that could only reach 16% of their population.



CONCLUSIONS

68

LESSONS
LEARNED

72

LOOKING
AHEAD

LESSONS LEARNED

In our outreach for this report, the DPGA Secretariat asked all contributors what lessons they learned from their work on digital public goods this year. What surfaced was a rich variety of perspectives that cross sectors, geographies, and technologies and underscore a need for alignment, collaboration, and transparency when advancing digital public goods. Here, we outline five key insights.

1 Early alignment helps to eliminate silos and fragmentation

In relation to their work in the digital health space, BMZ shared that, while that sector has been substantially developed, limited coordination and joint action of funding institutions, developers, and ministries of health leads to a fragmented ecosystem and siloed implementation of solutions. The integration of digital solutions should be included to strengthen national digital health systems as a whole, and funds should also be assigned for the maintenance, scaling, and customisation of mature digital public goods that already exist and have been proven effective in other national contexts.

2 Ecosystem leaders should facilitate collaboration across public and private sector actors, and include a diversity of voices

Sierra Leone's DSTI shared that it is essential for ecosystem leaders to facilitate collaboration across public and private sectors in order to prevent digital silos. To create a conducive environment for DPGs to thrive, dialogue must be promoted from diverse perspectives to share experiences and viewpoints. In their experience, a diverse group of expert stakeholders from across government, intergovernmental organisations in the development sector, and the private sector are needed to leverage years of experience and align efforts across these institutions. Doing so will encourage coordination, facilitate large-scale savings, and reduce duplication. This will in turn strengthen the collective ability to serve vulnerable populations, and improve interoperability of disparate or siloed systems.

Similarly, data.org encouraged the use of human-centred design approaches to ensure tools have maximum compatibility with field needs and priorities. Their experience shows that early testing with multiple audiences and country health ministries ensures that software design and implementation takes into account user needs.

3 Sustainable funding and innovative procurement models are needed to help DPGs and DPI succeed and be implemented

Norad highlighted that digital public infrastructure is notoriously difficult to finance, develop, and implement, as it is cross-sectoral and therefore ownership and responsibility does not rest in any one sector. However, by bringing

together stakeholders and agreeing on the opportunities inherent to digital public infrastructure, they have already seen impressive mobilisation and expect this to continue in 2023.

Digital public goods are not necessarily no or low margin projects, but non-profits (and governments) are willing to invest in creating and maintaining digital public goods that can be implemented by countries as national scale digital public infrastructure. One challenge is that DPG procurement can at times rest within both services and products. To that end, Thoughtworks underscored that procurement processes are being revised to accommodate customised implementations on top of approved open source apps. Examples include **Bahmni**^{DPG} in the Indian state of Bihar.

4 Country implementations unlock lessons for future DPG adopters

This year, UNICEF hosted insight sessions where countries shared their experiences on various approaches to identifying and supporting DPGs within their country. This included challenges they experienced, innovative approaches to identify and support DPGs, and insight to how UNICEF and the DPGA can further support DPGs. Ideas discussed were: leveraging open-source and DPGs by finding local partners, seeking early government buy-in, showing the cost efficiency of DPGs, and providing additional training and licensing support; using integration and interoperability to significantly enhance the use cases of key DPGs; investigating in DPG maturity models; and providing additional roadmapping and community engagement opportunities.

5 Identify and support change champions within governments to create buy-in for DPGs

eGOV Foundation supported the findings above, adding that it is important to identify, work with, and support the capacity building of change champions from within the government ecosystem to instil transparency in operations, break data silos, and build greater trust. To that end, alignment of implementation with national and subnational digitalisation strategies and agendas to ensure adoption at scale is crucial. That includes:

- From day one focusing on building institutional and individual capacities by establishing required OSPOs and staffing them using train-the-trainer, and other scalable models, to ensure sustained adoption of proposed strategies and solutions;
- Fostering an ecosystem approach that catalyses collaboration and co-creation across society, government, and market to ensure inclusivity, innovation, and institutionalisation;
- Building a community of contributors around the DPG solution to improve sustainability and relevance of the code and design architecture;
- Nurturing academic partnerships to build a body of evidence around the impact of DPGs / DPI;
- Clearly articulating the long-term impact of using DPGs.

Operationally, Digital Square at PATH is also advocating for an “ecosystem of choice,” for government decision-makers which supplies them with the information needed to make informed choices about products, tools, capabilities, and services. This would empower countries to direct investments into digital health more appropriately. ■

LOOKING AHEAD

Throughout 2022, digital public goods provided opportunities for innovation, collaboration, and investment in our collective future. This report has exemplified how DPGs are increasingly recognised for their potential for enabling countries to build safe, trusted, and inclusive digital public infrastructure and work towards attainment of the SDGs.

The need is greater than ever. In order for the world to overcome COVID-19 and be more resilient to future pandemics, address food insecurity, and fight and adapt to climate change, an inclusive digital future is a must.

The past year has shown how digital public goods, through enabling cooperation, co-creation, trust and ownership through agency, can serve as tools for a more equitable future. A future that protects and enhances digital sovereignty. A future that can equip all countries with the tools to advance their digital transformation journeys. A future that leaves no one behind.

This report has highlighted digital public goods that empower ordinary citizens to use their smart phones to report election events; facilitate confidential case management and incident monitoring in social welfare, child protection, and gender-based violence; enable the digitisation of birth records; and more. It has also demonstrated the inextricable links

between organisations, countries, and technologies. The contributors to this report have written examples—of funders, implementers, developers, technical assistance providers, and governments collaborating around DPGs.

As we look ahead to 2023, DPGs will likely continue to play an even more important role as the collaboration model becomes more widely known and adopted. At the DPGA Secretariat, we remain fully committed to supporting DPGA members and the broader DPG ecosystem to continue to align for impact! ■

APPENDIX

75

ACRONYMS

76

INDEX

ACRONYMS

API

APPLICATION
PROGRAMMING
INTERFACES

B2B

BUSINESS TO
BUSINESS

BMZ

GERMAN FEDERAL
MINISTRY FOR
ECONOMIC
COOPERATION AND
DEVELOPMENT

CoPs

COMMUNITIES OF
PRACTICE

DIAL

DIGITAL IMPACT
ALLIANCE

DIVOC

DIGITAL
INFRASTRUCTURE FOR
VACCINATION OPEN
CREDENTIALING

DPGA

DIGITAL PUBLIC
GOODS ALLIANCE

DPG Charter

DIGITAL PUBLIC
GOODS CHARTER
/ CHARTER FOR
DIGITAL PUBLIC
GOODS

DPGs

DIGITAL PUBLIC
GOODS

DPGs4DPI

DIGITAL PUBLIC
GOODS FOR
DIGITAL PUBLIC
INFRASTRUCTURE

DPI

DIGITAL PUBLIC
INFRASTRUCTURE

DSTI

SIERRA LEONE'S
DIRECTORATE OF
SCIENCE, TECHNOLOGY
AND INNOVATION

FAO

FOOD AND
AGRICULTURE
ORGANIZATION OF
THE UNITED NATIONS

G2P

GOVERNMENT
TO PERSON

G2Px

GOVERNMENT
TO PERSON
PAYMENTS

GIZ

DEUTSCHE
GESELLSCHAFT FÜR
INTERNATIONALE
ZUSAMMENARBEIT
/ GERMAN AGENCY
FOR INTERNATIONAL
COOPERATION

ID4D

IDENTIFICATION
FOR DEVELOPMENT

iSPIRT

INDIAN SOFTWARE
PRODUCT INDUSTRY
ROUNDTABLE

ITU

INTERNATIONAL
TELECOMMUNICATIONS
UNION

LMICs

LOW- AND MIDDLE-
INCOME COUNTRIES

MOSIP

MODULAR OPEN-
SOURCE IDENTITY
PLATFORM

MSMEs

MICRO, SMALL,
AND MEDIUM-SIZED
ENTERPRISES

Norad

NORWEGIAN
AGENCY FOR
DEVELOPMENT
COOPERATION

OICT

UN OFFICE OF
INFORMATION AND
COMMUNICATIONS
TECHNOLOGY

OSET

UN OFFICE OF
THE SECRETARY-
GENERAL'S ENVOY
ON TECHNOLOGY

OSPO

OPEN SOURCE
PROGRAMME OFFICE

SDGs

SUSTAINABLE
DEVELOPMENT
GOALS

UNDP

UNITED NATIONS
DEVELOPMENT
PROGRAMME

UNICEF

UNITED NATIONS
CHILDREN'S FUND

INDEX

**Accessible
Kazakhstan**
41

Bahmni
63, 64, 70

**Bill & Melinda Gates
Foundation**
6, 12, 22, 49, 50, 62

BMZ
3, 27, 28, 29, 44,
68, 75

climate change
17, 18

Cloud Carbon Footprint
63, 64

CommCare
50

Common Voice
28

Coral
19

data.org
49, 51, 69

DHIS2
30, 37, 38, 50

DiCRA
36

DIGIT
53, 54

digital cooperation
6, 22, 24, 29, 30, 36,
37, 42, 46, 49, 56,
60, 61

Digital Square
16, 48, 49, 52, 53, 71

digital transformation
6, 12, 13, 18, 35, 46,
47, 48, 58, 66, 72

DIVOC
3, 50, 53, 75

DPGA Secretariat
2, 6, 8, 10, 13, 14,
15, 16, 17, 18, 22, 27,
56, 65, 68, 73

DPG Charter
3, 10, 12, 22, 24, 30,
48, 62, 75

DPG Registry
10, 13, 15, 16, 41, 44,
51, 52

DPGs4DPI
3, 10, 12, 18, 22, 30,
32, 34, 35, 36, 61, 75

DPG Standard
10, 11, 13, 15, 16, 33

DPI
3, 13, 22, 23, 29, 30,
32, 34, 44, 50, 57,
60, 62, 63, 66, 69,
71, 75

DSTI
3, 27, 32, 33, 69, 75

eGov Foundation
24, 49, 53, 54

FAO
3, 18, 20, 49, 55, 56,
57, 75

**FAO Crop
Calendar**
20

**FAO Digital
Services Portfolio**
20, 55, 56

food security
18, 20, 55, 56

**Foundation for
Public Code**
17, 49, 57

GitHub
16, 17, 49, 58, 59

Global Digital Library
30, 32, 41

Govdirectory
58

GovStack
12, 18, 20, 22, 23,
28, 29, 44, 46, 50,
57

health
18, 28, 29, 30, 37, 38,
41, 45, 48, 50, 51,
52, 53, 59, 62, 63,
65, 68, 69, 71

**Hand in Hand
Geospatial Platform,
HIH GP**
55

information pollution
18, 20, 36, 61

iSPIRT
3, 27, 29, 49, 75

iVerify
36

Linelist
51

Mifos
23, 28

misinformation
21

Mojaloop

23, 28, 50, 51, 62

Moodle

59

MOSIP3, 22, 23, 30, 31, 50,
66, 75**Norad**3, 17, 18, 20, 27, 30,
32, 61, 69, 75**OECD**

12

OICT

3, 49, 59, 60, 75

Oky

37, 39

Omidyar Network

18, 49, 61, 62

OpenCRVS

23, 30, 31

Open Data Kit

37, 38

OpenFn

40

OpenForis

55

OpenG2P

23, 32, 33, 36, 46

OpenIMIS

28

OpenSPP

23

OSET

3, 49, 60, 75

Primerio

40

Project AEDES

41

resilience, resiliency

6, 22, 36, 66

SDG3, 5, 10, 13, 19, 21,
28, 31, 34, 35, 40,
45, 55, 58, 59, 60,
62, 65, 72, 75**Sunbird**

23

**The Rockefeller
Foundation**

49, 62, 63

Thoughtworks

49, 63, 64, 70

TruBudget

28

UN Biodiversity Lab

36

UNDP3, 13, 18, 23, 27, 34,
35, 36, 43, 46, 47,
48, 49, 58, 64, 75**UN General Assembly,
77th UN General
Assembly**6, 11, 12, 22, 29, 36,
37, 46, 50, 58, 60, 61**UN Global Pulse**

18, 20, 49, 65

UNICEF3, 18, 20, 27, 32, 33,
37, 39, 41, 49, 64,
65, 70, 75**USAID**

12, 48

Ushahidi

21

VIPS

20

VRapeutic

41

WaPOR

20, 55, 56

WMO

17

X-Road

22, 44, 45

