Digital Public Goods – Key messages document

These digital public goods (DPGs) materials were created based on interviews with organizations working across the DPG ecosystem and on a comprehensive review of publicly available materials on DPGs. The data was collected between October 2023 and July 2024 and the DPGA will be updating these materials on an annual basis. These materials are free for anyone to use and can be accessed on the DPGA website: digitalpublicgoods.net/dpgs-decoded.

Summary

The document includes:

- **Top-line messages**, organized in 8 sections:
  - Explaining DPGs
  - Current landscape and use cases of DPGs
  - DPGs and digital public infrastructure
  - The benefits of using DPGs
  - DPGs and security/transparency
  - Implementation and maintenance of DPGs
  - How DPGs accelerate development and economic growth
  - The future of DPGs

- **Comprehensive messaging** with proof points.

How to use these messages

Please use these messages as much as possible for any communications related to DPGs, including media briefings, meetings with internal and external stakeholders, social media, and events.

TOP-LINE MESSAGES

EXPLAINING DPGs

Digital public goods are open technology solutions that countries can freely adopt to accelerate digital transformation, improve residents' lives, and drive economic growth.

- DPGs take the form of open-source software, open standards, open datasets, open AI systems, and open content collections.
- They adhere to the DPG Standard, which includes privacy and other applicable laws and best practices.
- They are freely accessible, safe by design, and help attain the SDGs.

CURRENT DPGs LANDSCAPE AND USE CASES

There are currently over 160 DPGs in use around the world that can be used to solve a wide range of issues.

- DPGs enable countries to adopt and adapt solutions to address pressing issues, from improving healthcare to enhancing financial inclusion and food security.

DPGs AND DIGITAL PUBLIC INFRASTRUCTURE

DPGs enable countries to build and enhance safe, inclusive, and interoperable digital public infrastructure (DPI) in an efficient way.

- While DPI constitutes the underlying digital systems essential for modern governance and economic activity, DPGs provide crucial components to construct and optimize these systems.
- For example, DPGs can be used to build and enhance a key element of DPI: instant, inclusive, and interoperable payment systems that drive financial inclusion.

THE BENEFITS OF USING DPGs

DPGs give countries greater control and choice over how they build their digital public infrastructure.

- By adopting DPGs, governments can reap the benefits of using existing, proven technologies while retaining full ownership of the solutions that deliver essential public services.
- By adopting DPGs, countries can avoid vendor lock-in and the high costs associated with proprietary software licenses and updates.

- In the Philippines, the use of DPG MOSIP to build the country's national ID system, PhilSys, offered a high level of flexibility and interoperability with existing technology systems compared to proprietary software, reducing project costs significantly over the long-term.

DPGs AND SECURITY/TRANSPARENCY

The open-source nature of DPGs means that they can be independently reviewed, increasing transparency and trust in digital solutions.

- The inherent transparency in DPGs enhances trust and accountability in digital solutions and a country's DPI, leading to safer products and more informed and engaged citizens.
- The success of Estonia's digital governance, e-Estonia, which uses DPGs, showcases the transformative impact of transparency. Estonian citizens enjoy access to a transparent digital ecosystem, where they can track how their data is used, fostering trust and participation in digital governance.

IMPLEMENTATION AND MAINTENANCE OF DPGs

DPGs can help catalyze local tech ecosystems, leading to multi-stakeholder collaboration that supports the implementation and maintenance of DPGs.

- The DPG X-Road has an X-Road Community that plays a significant role in its development and improvement. Community members contribute by suggesting enhancements, reporting bugs or issues, and sharing code ideas.

To be sustainable, DPGs must be embedded in a country's policy and regulatory framework.

- This can ensure that investments in DPGs and their ecosystems are not disrupted by changes in government and that a country's digital public infrastructure continues to grow.

HOW DPGs ACCELERATE DEVELOPMENT AND ECONOMIC GROWTH

DPGs can enable countries to leapfrog conventional development paths and drive economic growth.

- DPGs can help address specific development challenges, from driving financial inclusion to improving public services and healthcare, enhancing food security, and improving crisis response.
- The adoption of DPGs in digital education has the potential to transform learning in low- and middle-income countries. By providing accessible and adaptable educational resources, these platforms can bridge educational gaps and expedite the digital empowerment of the next generation. The freely accessible e-learning platform NotesMaster provides access to quality lessons in 31 countries, authored by local teachers and based around the local curriculum.

THE FUTURE OF DPGs

Looking ahead, DPGs have an important role to play in driving progress on the Sustainable Development Goals in areas including health, climate change, food security, and crisis response.

- DPGs enable countries to freely implement solutions that advance the SDGs. This is one of the reasons behind the growth of DPGs implemented around the world – from 87 in February 2022 to more than 160 in May 2024.

COMPREHENSIVE MESSAGING

This comprehensive messaging builds on the top line messaging with more detail and proof points.

EXPLAINING DPGs

Digital public goods are open technology solutions that countries can freely adopt to accelerate digital transformation, improve residents' lives, and drive economic growth.

- DPGs take the form of open-source software, open standards, open datasets, open AI systems, and open content collections.
- They adhere to the DPG Standard, which includes privacy and other applicable laws and best practices.
- They are freely accessible, safe by design, and help attain the SDGs.

CURRENT DPGs LANDSCAPE AND USE CASES

There are currently over 160 DPGs in use around the world that can be used to solve a wide range of issues.

- **DPGs enable countries to adopt and adapt solutions to address pressing issues, from improving healthcare to enhancing financial inclusion and food security.**
- **DPGs are gaining momentum and increasing in number, helping countries to accelerate their digital transformation.**
  - The number of DPGs on the DPGA DPG registry has grown from 87 in February 2022 to over 160 in May 2024.
  - DPGs are constantly improving – the more countries that use them and contribute back, the better they get.
- **DPGs have many use cases and can help address specific development challenges.**
  - *Payments systems that drive financial inclusion* – DPGs can be used to build digital payments systems, which help create more inclusive economies. An example is Mojaloop, an open source software that can be used as a blueprint for governments when creating payments systems that connect all digital financial providers and customers, especially the financially excluded.
  - *Improving public services* – X-Road, an open-source software and ecosystem solution, provides unified and secure data exchange between private and public sector organizations. It was initially an Estonian solution, acting as a core component of Estonia's e-government process, and has now spread all over the world. X-Road reduces data access costs, improves data accuracy, and reduces the need for duplicate data entry, creating more efficient and better public services.
  - *Improving healthcare* – DHIS2 is an information management system that is fully customizable and is used in over 100 countries across a range of sectors including health, education, and logistics. DHIS2 is in use by ministries of health in 80 low- and middle-income countries and 3.2 billion people, or 40% of the world's population, live in countries where DHIS2 is used.
  - *Enhancing food security* – Data in Climate Resilient Agriculture (DiCRA) is a DPG that enables Indian farmers to mitigate the effects of climate change on their crops and livestock, boosting their livelihoods and wider food security. Powered by artificial intelligence, DiCRA uses remote sensing and pattern detection algorithms to identify farms that are highly vulnerable to climate change, as well as those that are more resilient.
  - *Crisis response* - During the COVID-19 pandemic, countries utilizing DPGs for public health data were able to respond more effectively. The DPGs enabled countries' public health systems to adapt quickly and track infection rates and vaccine distribution. For example, Jamaica used the DPG CommCare to successfully power its COVID-19 vaccination system.

DPGs AND DIGITAL PUBLIC INFRASTRUCTURE

DPGs enable countries to build and enhance safe, inclusive, and interoperable digital public infrastructure (DPI) efficiently.

- **Like roads and railways, DPI – composed of core components, such as digital ID, payments systems, and data exchange– enables countries to deliver essential services and create economic opportunity across many sectors.**
- **While DPI constitutes the underlying digital systems essential for modern governance and economic activity, DPGs provide crucial components to construct and optimize these systems.**
    - For example, DPGs can be used to build and enhance a key element of DPI: instant, inclusive, and interoperable payment systems that drive financial inclusion.
    - Mojaloop, as a DPG, provides a platform for countries developing digital payment systems within their DPI. Using Mojaloop means countries don't have to build their own payment system from scratch. This significantly reduces the time, cost, and complexity involved in creating these payments systems.
- **Using DPGs in the development of DPI enhances efficiency and affordability, while reducing reliance on external technology providers.**
    - By adopting DPGs like MOSIP, an open-source digital ID system, countries can rapidly deploy a critical component of their DPI. This approach not only saves resources but also reduces the risks associated with vendor lock-in, granting countries greater control over their digital futures.
- **DPGs can facilitate a modular approach to DPI, allowing countries to assemble their digital infrastructure piece by piece using proven components.**
    - This modular strategy is evident in how countries are using DPGs to construct digital health systems, like DHIS2, built to interoperate with their DPI frameworks. By leveraging open-source health information systems, nations can create robust, interoperable platforms that connect seamlessly with other components, such as ID and payment systems, to address societal and sector needs.
- **Investing in DPGs as enablers for DPI aligns with broader developmental goals, contributing to sustainable growth, enhanced public service delivery, and greater societal well-being.**
    - As countries utilize DPGs to build components of their DPI, such as digital identity systems and foundational registries, payment systems, and secure data exchange, they lay a foundation for sustainable development that touches every aspect of society, from governance to individual empowerment.

THE BENEFITS OF USING DPGs

DPGs give countries greater control and choice over how they build their digital public infrastructure.

- **By adopting DPGs, governments can reap the benefits of reusing existing, proven technologies while retaining full ownership of the solutions that deliver essential public services.**
- **DPGs allow governments to customize digital solutions to meet specific local needs and contexts. This enables them to create more inclusive solutions and achieve greater flexibility over long-term digital transformation.**
    - The use of DPGs in educational technology exemplifies this customization. Open-source educational platforms can be adapted to suit the local curriculum, language, and cultural context, making digital education more accessible, inclusive, and effective.
    - A great example of the flexibility of DPGs is the information management system DHIS2. It is fully customizable and used in over 100 countries across a range of sectors including health, education, and logistics.
        - DHIS2 is used by ministries of health in 80 low- and middle-income countries and 3.2 billion people, or 40 percent of the world's population, live in countries where DHIS2 is used.

- Over the last 20 years, X-Road, a DPG which provides a secure and unified way to exchange data between organizations, has grown from an Estonian solution to a truly international open-source solution and open-source community.
    - For example, in Colombia, X-Road has helped to launch citizen-oriented digital services, ensuring secure and seamless data exchange between different public entities for validating citizen information.

- **By using DPGs, countries can enhance their technical capacity, helping to increase digital sovereignty.**
    - Investing in DPGs provides an opportunity for countries to build thriving digital ecosystems and increase digital skills.
    - Given DPGs are enablers of digital products and services, they can drive entrepreneurship and local innovation, particularly among young people.
    - In 2023, the Mojaloop Foundation created an Accelerator Program, which pairs experienced system integrators with local talent. The program aims to build the capacity of the local IT ecosystem to support the national payment system in Rwanda, Zambia and Guinea.

Costs

- **By adopting DPGs, countries can avoid vendor lock-in and the high costs associated with proprietary software licenses and updates.**
    - In the Philippines, the use of DPG MOSIP to build the country's national ID system, PhilSys, offered a high level of flexibility and interoperability with existing technology systems compared to proprietary software, reducing project costs significantly over the long-term.
- **DPGs significantly reduce the financial barriers to digital innovation, making cutting-edge technology accessible to countries at all economic levels.**
    - By using DPGs, countries can adopt proven solutions that have been successful elsewhere, helping to mitigate risk.
- **DPGs catalyze local tech ecosystems, leading to economic growth and job creation within the tech sector, offsetting initial implementation costs.**
    - The development of local tech solutions around DPGs not only offsets the initial costs but also contributes to a country's broader economic growth.
    - Uganda's investment in the DPG UGHub, a data exchange platform, has spurred local tech entrepreneurship and job creation. To support this, UNDP has facilitated bilateral country exchanges connecting Ugandan public and private actors with Nigeria's more mature startup ecosystem.
- **The collaborative development model of DPGs means that countries have an opportunity to work together on implementation efforts and lower the financial burden of tech innovation.**
    - The West African Economic Monetary Union (WAEMU) Payments System project aims to drive financial inclusion and digital financial services for its eight member countries with a regional instant and inclusive payment system.
    - This collective approach could reduce individual country costs while fostering regional interoperability and digital connectivity. Since 2014, WAEMU countries have seen increased financial account ownership, with mobile money accounts driving adoption and usage. On average, 41% of adults in the WAEMU have an account with a bank or similar institution or with a mobile money service. The project is looking at how to adopt open-source software as part of the implementation of an instant payment system across countries.

DPGs AND SECURITY/TRANSPARENCY

The open-source nature of DPGs means that they can be independently reviewed, increasing transparency and trust in digital solutions.

- **The inherent transparency in DPGs enhances trust and accountability in digital services, leading to safer products and more informed and engaged citizens.**
    - The success of Estonia's X-Road, an open-source software and ecosystem solution, showcases the transformative impact of transparency. Through e-Estonia, Estonian citizens enjoy access to a transparent digital ecosystem, where they can track how their data is used, fostering trust and participation in digital governance.

- **Technical communities enhance the security of DPGs through collaboration and open development.**
    - Given DPGs are open-source projects, technical communities can help to identify and address any challenges with them at an early stage. This can help to create a culture of continuous improvement around DPGs.
    - The development of the open-source payment platform Mojaloop exemplifies collaborative security enhancement. By engaging a global community of developers, Mojaloop ensures continuous security improvements, illustrating how open-source DPGs can achieve high security standards, crucial for sensitive sectors like finance.
    - X-Road is developed and managed by the Nordic Institute for Interoperability Solutions (NIIS), a non-profit established in 2017 by the governments of Estonia, Finland, and Iceland. The NIIS development model has enhanced the credibility of X-Road and made it more attractive to other countries considering their own e-Government infrastructure components.

IMPLEMENTATION AND MAINTENANCE OF DPGS

DPGs can help catalyze local tech ecosystems, leading to multi-stakeholder collaboration on DPG implementation and maintenance.

- **The DPG X-Road has an X-Road Community that plays a significant role in its development and improvement. Community members contribute by suggesting enhancements, reporting bugs or issues, and sharing code ideas.**
    - There are many companies from different countries that offer X-Road-related services. This means that X-Road's users are not dependent on only one company.
    - MOSIP similarly nurtures an inclusive community of contributors and service providers from around the globe, ensuring that implementers have access to a variety of support options and are not reliant on a single vendor for their digital identity needs.

To be sustainable, DPGs must be embedded in a country's policy and regulatory framework.

- **This can ensure that investments in DPGs and their ecosystems are not disrupted by changes in government and that a country's digital public infrastructure continues to grow.**
- **There is an opportunity for governments to review and update their procurement processes to support the adoption of DPGs.**
    - Some governments still rely on conventional procurement processes, which are not inclusive of open-source technologies, to drive digital transformation. This means that DPGs can be excluded from assessments of technology solutions.
    - Reframing RFPs and tenders to include open-source technologies will make a big difference to supporting DPG uptake. RFP templates can date back decades and feature unrealistic requirements, such as requiring a technology to be in place in the country for at least 10 years. This disqualifies all recent technologies.
- **There are different types of long-term financing models for DPGs.**
    - X-Road is a core component of digital public infrastructure in Estonia, Finland and Iceland, and is funded by the public sector. It does not rely on international development assistance funding.
    - International funds, such as Co-Develop, offer collaborative funding mechanisms where multiple stakeholders contribute to a shared fund dedicated to the strategic development and scaling of DPGs globally.
    - Some DPGs benefit from the backing of venture philanthropy, where philanthropic investors and funds provide capital with a long-term view, focusing on both social impact and sustainability of the DPGs.
    - Donors who support low- and middle-income countries and invest in DPGs get value for money, given a single DPG can be adapted to fit different contexts and use cases.

- **DPGs are being adapted and replicated across countries, providing useful learnings for governments.**
    - DHIS2, an information management system used in over 100 countries, dates back to the 1990s in South Africa.
    - NotesMaster is a DPG that provides access to quality lessons authored by local teachers and based around the local curriculum. It is currently actively deployed in 19 countries including Dominica, Trinidad and Tobago, Antigua and Zambia.
    - Mojaloop is currently being adopted by Mexico, Myanmar, the Philippines, Rwanda, and Tanzania. New proofs of concept are being launched in five nations, including South Sudan, Kenya, and Burundi.
    - 20 countries are in various stages of either piloting or deploying the digital ID DPG MOSIP.

HOW DPGS ACCELERATE DEVELOPMENT AND ECONOMIC GROWTH

DPGs can enable countries to leapfrog conventional development paths and drive economic growth.

- **DPGs can help address specific development challenges, from driving financial inclusion to improving public services and healthcare, enhancing food security, and improving crisis response.**
- **The adoption of open-source DPGs in digital education has the potential to transform learning in low- and middle-income countries.**
    - By providing accessible and adaptable educational platforms and resources, these solutions can bridge educational gaps and expedite the digital empowerment of the next generation. The freely accessible e-learning platform NotesMaster provides access to quality lessons in 31 countries, authored by local teachers and based around the local curriculum.
- **DPGs help to reduce economic barriers and foster financial inclusion, especially for marginalized communities.**
    - DPGs help create a more open, participatory, trustworthy, and inclusive socio-economic ecosystem. They are an essential component of a financial inclusion agenda because they enable large-scale inclusive payments systems and lower the cost of participation.
    - The implementation of open-source digital ID systems, like MOSIP, has shown significant potential in improving financial inclusion. By providing a secure and accessible means of identification, such systems enable underserved populations to access banking and governmental services, paving the way for more inclusive economic participation. For example, Morocco, an early adopter of DPG MOSIP, has used it to build a National Population Registry. This has supported the roll out of social programs and enabled more people to benefit from health insurance and cash transfers.
- **Countries can use DPGs to build their own instant, interoperable payment systems that help drive economic growth, rooted in the Level 1 Project Principles.**
    - DPGs help countries achieve these principles, which support development of real-time retail payments systems designed to meet the needs of low-income consumers.
- **Many countries in Africa are exploring DPGs to create inclusive, interoperable payment systems that will bring millions of citizens into the financial system and foster economic prosperity.**
    - Mojaloop enables countries to develop inclusive instant payment systems that meet the digital financial services needs of emerging markets and the financially excluded. Countries currently adopting Mojaloop include Mexico, Myanmar, the Philippines, Rwanda, and Tanzania. New proofs of concept are being launched in five nations, including South Sudan, Kenya, and Burundi.
    - During the COVID-19 pandemic, the Government of Togo launched Novissi, a digital cash transfer program, in just ten days. It enabled the government to deliver contactless, emergency funds to the most vulnerable residents via their mobile phones, distributing $34m to 25% of all the country's adults. Novissi was created using Cider, a DPG and set of software tools that helps predict user-level poverty through mobile data.

- **DPGs are integral to achieving financial inclusion and economic growth in Africa, and the ambition for every country on the continent to deploy an instant, inclusive payment system by 2030.**
    - A partnership between AfricaNenda and the African Union Commission aims to unlock access to the formal financial system for over 400 million adults in Africa who are primarily financially excluded from the formal economy.
    - By seizing the opportunity offered by DPGs, the continent can create its own solutions to challenges and become a global leader in inclusive payments systems and digital transformation.
- **Rwanda is an example of an African country that is using DPGs effectively to advance digital financial inclusion and quality of life for all citizens.**
    - The country is developing its own secure, real-time, interoperable payment system using the Mojaloop DPG. The project has been successful to date and completed the proof-of-concept stage.
    - The Rwandan government took the decision to use Mojaloop rather than a commercial solution after an intensive, six-month assessment process. It is now looking to scale the project further with the help of partners such as AfricaNenda.
    - The project is owned by the Rwandan government's Ministry of ICT and Innovation, with the actual payment system operated by RSwitch, a semi-private entity owned by the government and industry.
        - This government ownership structure has been used in other African countries, notably in Nigeria with NIBSS, and Ethiopia with EthSwitch.
    - RSwitch uses systems integrators to build its payment system using the Mojaloop DPG. By using private sector actors for DPG implementation, Rwanda is strengthening its national digital capabilities that will support the DPG ecosystem to flourish in the long-term, as well as its young population.
- **As Africa moves closer towards becoming a single market, DPGs can help to build a frictionless, pan-African payment system that boosts cross-border trade for all.**
    - The African Continental Free Trade Area (ACFTA) promises to transform Africa's economic future. However, the economic benefits will only be fully realized with a trusted, interoperable, and inclusive payment system that works for small and medium enterprises, women, and youth-led businesses. DPGs are well placed to help build this type of payment system.

THE FUTURE OF DPGs

DPGs have an important role to play in driving progress on the Sustainable Development Goals in areas including health, climate change, food security, and crisis response. DPGs enable countries to freely implement solutions that advance the SDGs. This is one of the reasons behind the growth of DPGs implemented around the world – from 87 in February 2022 to over 160 in May 2024.

- ***Health*** – DHIS2 is in use by ministries of health in 80 low- and middle-income countries and 3.2 billion people, or 40 percent of the world's population, live in countries where DHIS2 is used.
- ***Supporting vulnerable groups*** – The World Bank's ID4D program promotes digital public goods including open standards and open-source software to ensure that the most vulnerable in society, including women and children, have proof of legal identity.
- ***Enhancing food security*** – Data in Climate Resilient Agriculture (DiCRA) is a DPG that enables Indian farmers to mitigate the effects of climate change on their crops and livestock, boosting their livelihoods and wider food security. Powered by artificial intelligence, DiCRA uses remote sensing and pattern detection algorithms to identify farms that are highly vulnerable to climate change as well as those that are more resilient.
- ***Critical societal benefits*** – OpenG2P facilitates large-scale digital government to person cash transfers, enabling governments and humanitarian organizations to deliver critical social benefits directly to those who need them. OpenG2P was initially developed by the government of Sierra Leone, emerging from the Sierra Leone Payments Program.

DPGs can help low- and middle-income countries mitigate and adapt to the impact of climate change.

- DPGs have a role to play in bringing together important datasets that countries need to assess their vulnerability to climate risks and associated impacts on food security and health.
- This was underscored by a report by the Digital Public Goods Alliance, International Telecommunication Union and World Meteorological Organization. The report called for weather, climate and hydrological information datasets to become DPGs and highlighted relevant DPGs already helping countries to mitigate the impact of climate change.
- For example, PRISM (Platform for Real-time Impact and Situation Monitoring) is a DPG that assesses the potential risk and impact of extreme weather events on the most vulnerable communities, helping them to design risk reduction activities and target disaster responses.