G2P CONNECT

EXECUTIVE BRIEF

Mifos

OpenG2P

Sunbird

OpenCRVS

OpenSPP

MOSIP

mojaloop foundation

CORE

in collaboration with

GovStack

Digital Convergence USP2030

Digital Public Goods Alliance

UNDP

THE WORLD BANK IBRD • IDA

G2Px PAYMENTS THAT EMPOWER

CO CO-DEVELOP

A **collective effort** of **open source solutions** to help governments solve **end to end** for **any kind of government-to-person payment** digitally

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

Table of Contents

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

Executive Summary

Governments worldwide provide **cash assistance** to those in need across numerous contexts: agriculture, disaster relief, food, fuel, healthcare, child support, support to businesses, unemployment, disability support, pensions, scholarships, and others. However, in many cases, countries do not have the technology to deliver these payments digitally, or even when they do, each department within a country reinvents the wheel to some extent when developing a scheme or program. This duplication of efforts could be happening along multiple stages of the delivery chain: identifying and enrolling eligible beneficiaries, setting up payments and settlement systems, and monitoring over time.

G2P Connect is a **collective effort of open source solutions** across 4 continents that have come together to enable governments to quickly set up and efficiently operate a variety of digital G2P programs in their country using shared infrastructure. It is a well architected, **pre-integrated**, and **robust** blueprint that has learnt from module **deployments** in over **10 countries**. The growing list of partners includes *(in alphabetical order)*: CoDevelop, CoreMIS, Digital Convergence, Digital Impact Alliance, GovStack, Mifos, Mojaloop, the Modular Open Source ID Project, OpenCRVS, OpenG2P, OpenSPP, Sunbird, UNDP, UN Digital Public Goods Alliance, & World Bank G2Px.

Governments can **choose** to deploy only the open source modules necessary for their country. All G2P Connect 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 (existing or proprietary)** to enable an **end to end**, **tailored country solution**. The integrated solution blueprint is **people-first** to enable inclusion of diverse groups (eg. those that require assisted physical assistance or feature phone/mobile money payments); 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.

G2P Connect represents a new paradigm for global cooperation on shared digital infrastructure that is designed for scale across nations at low cost and high quality. The effort has a bias for action: The technology architecture comes with a set of **reusable operational deployment documentation**, such as standard MoUs for use of open source, a reference maintenance contract checklist to enable ongoing maintenance for the deployment by a technology vendor, etc.

Make benefit payments simple today. For more information and demonstrations of its capabilities, visit www.g2pconnect.global and https://github.com/G2P Connect
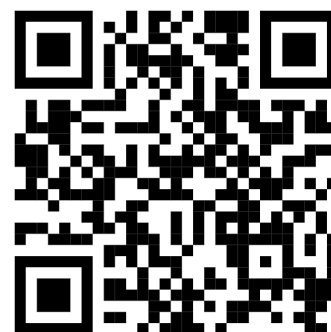
G2P Connect Website	Explainer Video	Demos

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

Introduction: Why G2P Connect?

All over the world, governments seek to provide cash assistance to those in need. These programs are designed to deliver benefits across a broad variety of use cases that touch nearly every sector: Agriculture; Disaster relief; Food; Fuel subsidies; Healthcare; Child support; Support to businesses and enterprises; Unemployment; Disability support; Pensions; Scholarships; and many more.

Delivering these benefits **digitally** can be efficient, empowering, and drive financial inclusion. However, agencies and departments setting up these programs often face **challenges** - first in setting up the benefits delivery program, and subsequently with operational difficulties and fraud.

1. **Setting up a new benefits program often requires coordination across numerous institutions, databases, and systems** - national, state, and local government departments; financial institutions, payment switches, and payment services providers, mobile network operators, identity and social providers, local agents, etc.
2. **Once in place, G2P programs face operational difficulties** with many types of inefficiencies, delays, last mile delivery challenges, fraud, and leakages (including ghost beneficiaries and double dipping among others).

These **challenges are often replicated for each new department** wishing to set up a similar program, both within and across countries.

Various technology solutions (both proprietary and open source) have attempted to solve some of these challenges to enable a fully digital benefit delivery system. However, because G2P cuts across a number of different functions (including beneficiary identification, eligibility, payments, and scheme monitoring among others) each technology solution tends to be capable of solving one part of the broader challenge, without guaranteeing interoperability or an integrated end-to-end solution for every function of a G2P program.

In each country, introducing **shared building blocks** could alleviate this challenge.

Defining G2P: For the scope of this project, the definition of G2P payments will be limited to cash or near-cash social assistance payments. This effort does not address other types of benefits such as health insurance, delivering physical goods, food, etc. However, its components and design can be adapted to also serve other G2P payment use cases such as public wages, subsidy payments, etc.

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

G2P Connect Mission

The mission of this collective effort 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 **accompanying reference operational documents** - that allow governments to rapidly deploy shared infrastructure to launch and scale up G2P payments across multiple departments in their country digitally and efficiently.

Technology

G2P Connect is an **Open source, collaborative effort** offering an **integrated, end-to-end G2P solution blueprint**

It offers a **plug and play architecture** via a **choice of modular components,** and a set of integration specifications to **ensure Interoperability,** and an **integration sandbox** for various open source providers to join the effort. It also ensures **privacy & security by design.**

Operational Deployment Kit

A minimalist set of reusable & editable documents to begin operational implementation, including a **reference editable MoU** for open source deployment; a suggested maintenance contract scope to onboard System Integrator vendors; etc.

A Collective Effort

G2P Connect is **not a standalone entity or organisation**; rather, it is a collective effort of open source technology providers who have worked closely together to ensure their solutions are fully harmonised and interoperable to solve end to end for various G2P use cases. G2P Connect is a mechanism for a set of digital partners to work together to **craft the right specifications** which enable a plug and play technology design that would work with any of the partners, or with any existing proprietary solutions countries may already have.

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

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G2P Connect makes available an **integrated solution blueprint**:

1. **Integrated**: Indicates that within countries, G2P Connect creates an integrated approach towards G2P across various departments;
2. **Solution**: Indicates G2P Connect aims to target the problem of G2P payments end to end that solves the challenge; and
3. **Blueprint:** Indicates G2P Connect shows a 'map' of options for an end to end solution (rather than a single one-size-fits-all solution), from which countries or departments can select and design based on their current partners and systems and future requirements.

The free to use open-source technology modules can help governments supplement their existing infrastructure to implement every required step of a cash transfer program: identify beneficiaries, register them for programs, and manage programs (including payment instructions and reconciliation). A number of open source initiatives have come together (shown below) to become fully interoperable and enable an efficient solution from a government department's perspective.

G2P Connect: Participating Organisations

in collaboration with

G2P Connect is representative of a **new paradigm for global cooperation** for country-specific execution based on open and shared digital infrastructure.
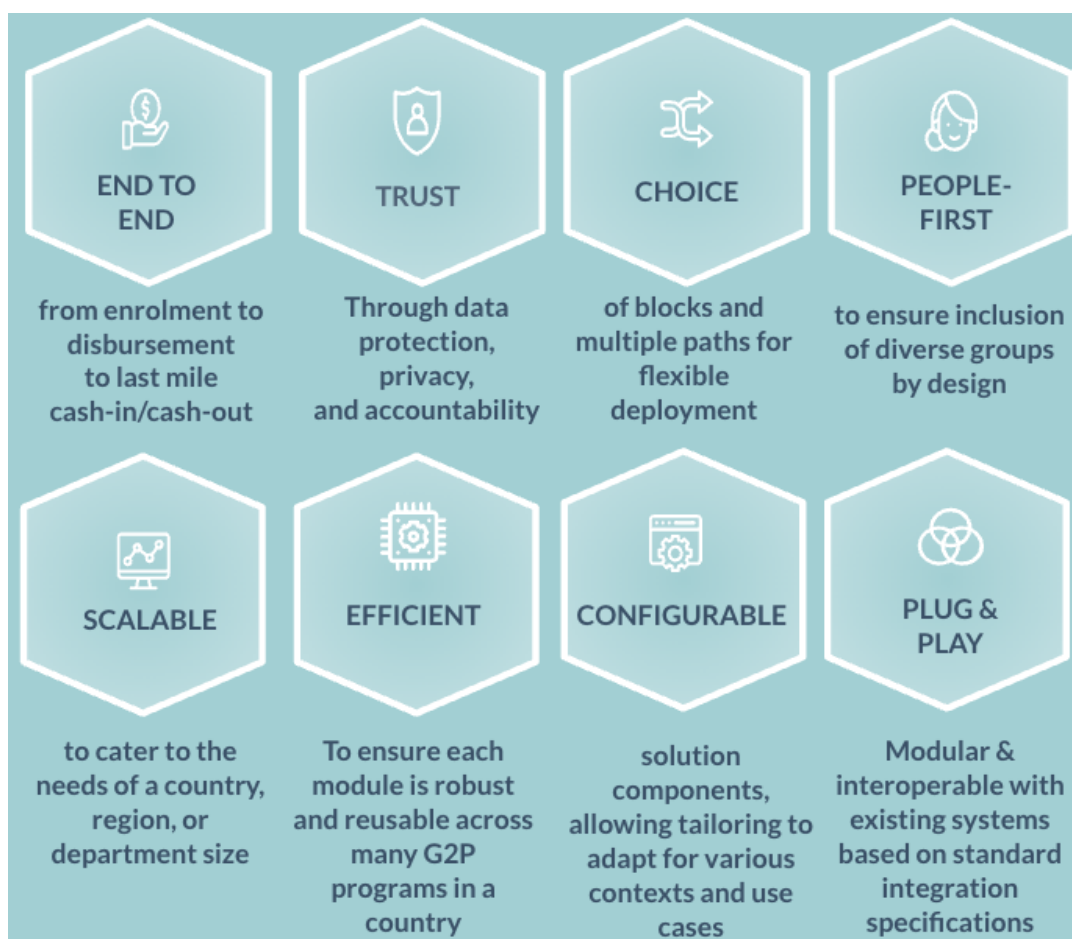

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

Technology Design Principles

The guiding design principles of G2P Connect, shown below, have been carefully selected to ensure all open source partners participating in the G2P Connect effort are united in their commitment to a common philosophy. Each integration between open source components of the overall technology architecture is expected to adhere to these principles.

Design Principles

END TO END — from enrolment to disbursement to last mile cash-in/cash-out

TRUST — Through data protection, privacy, and accountability

CHOICE — of blocks and multiple paths for flexible deployment

PEOPLE-FIRST — to ensure inclusion of diverse groups by design

SCALABLE — to cater to the needs of a country, region, or department size

EFFICIENT — To ensure each module is robust and reusable across many G2P programs in a country

CONFIGURABLE — solution components, allowing tailoring to adapt for various contexts and use cases

PLUG & PLAY — Modular & interoperable with existing systems based on standard integration specifications

## Technology Overview: An Integrated and Modular Solution Blueprint

G2P Connect strives to solve **end to end** for every stage of the benefit delivery process, and a set of existing open source modules available across a number of DPGs have been linked to to meet all the key requirements of a new cash transfer program.

G2P Connect modules are all designed to be **reusable** by every new scheme in a country, to create a foundational shared infrastructure that prevents duplication of efforts within a country. For instance, a shared module for an 'ID to Bank Account mapper' allows each program, department, or agency to use a single registry mapping bank accounts to ID numbers, removing the need for each agency to recollect this information from the individual. Information on modules is also available on the website (https://g2pconnect.global) and the shared GitHub page (https://github.com/G2P Connect)

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

The integrated & modular solution blueprint for G2P Connect is summarised in the diagram below.
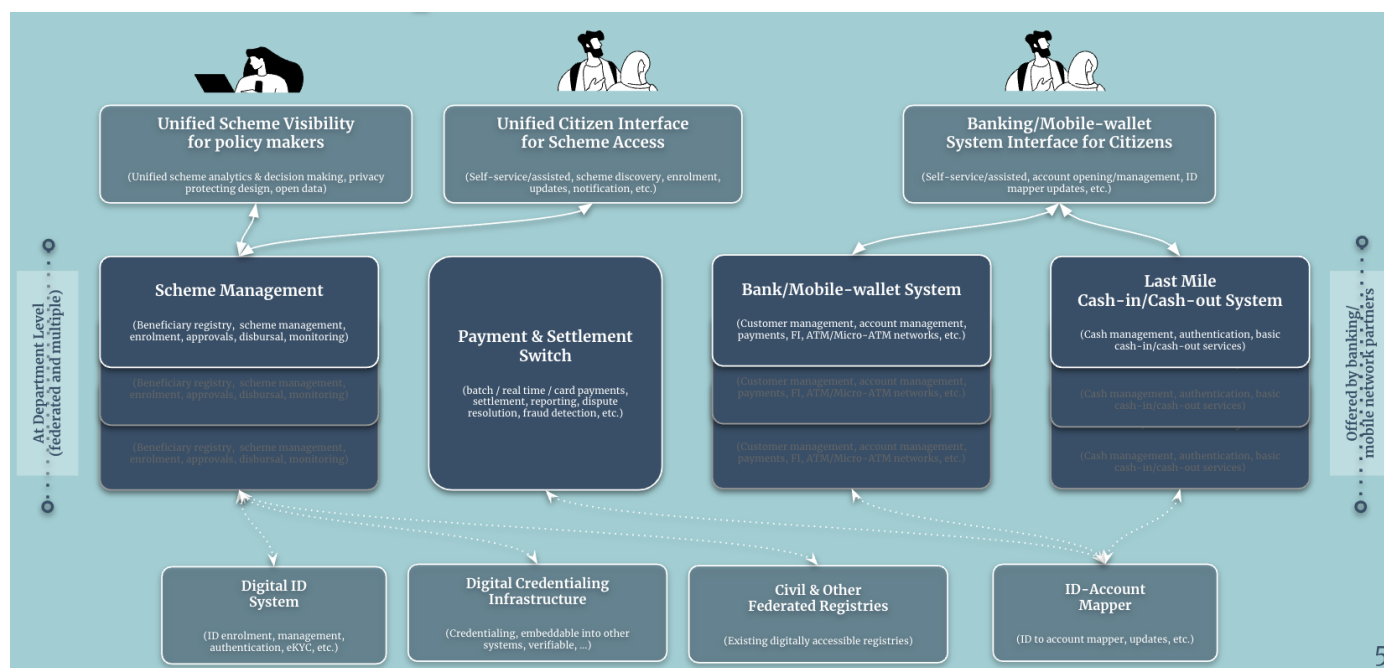
The top layer comprises various **user interfaces** or **summary views** that will be available to citizens and to policymakers - made possible by adoption of the bottom layers by various departments and financial institutions. These summary views (such as a unified view of all schemes for both policymakers and for individuals) simplify decision making and create transparency.

The bottom two layers are open source building blocks or foundational infrastructure that are used by multiple different government departments or financial institutions in a country to deliver G2P benefits. These include:

Type of Building Block	Description of the Building Block	Example Solutions that can be used for a G2P Program	Scope of Adoption
Scheme management	Allow departments to enroll beneficiaries, manage the list of beneficiaries in a registry, approve or authorise disbursals, and monitor overall scheme progress.	**Existing Scheme Management Solutions** **Open G2P** https://openg2p.org/ **OpenSPP** https://openspp.org/ **CoreMIS** https://thedocs.worldbank.org/en/doc/6e4674a6d5b1b2454d23aae047832816-0350012021/original/GovTech-Open-Source-CORE-MIS.pdf	One for each department/ Program in a country

G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

Digital ID System	ID enrollment, deduplication for uniqueness, authentication, KYC, and management.	**Existing National or Functional ID Systems** **Modular Open Source ID System** https://mosip.io/	One per country <u>or</u> one for each type of ID within a country
Digital Credentialing Infrastructure	Creation of certificates in trusted digital format (machine readable) which can be verified (digitally signed by issuer).	**Existing Credentials/ Certificate software** **Sunbird RC:** https://sunbird.org/projects/sunbirdrc **OpenSPP** https://openspp.org/	One for each department/ Program in a country
Civil and Other Federal Registries	Lists of individuals who fulfill certain criteria, eg. for individuals below a poverty line, eligible for certain benefits, or who fulfill certain criteria (eg farmers).	**Existing registries/ databases in countries** **OpenCRVS** https://www.opencrvs.org/ **OpenSPP** https://openspp.org/ **Sunbird RC** https://sunbird.org/explore/articles/17-sunbird-opensaber-build-secure-electronic-registries	One for each type of registry (eg social benefits registry; sector-specific registry, etc)
Payment & Settlement Switch	Open source software to design a payments settlement switch (eg. Mojaloop) <u>and</u> software to allow banks to participate in digital payments (eg. Mifos).	**Existing national payments/settlement switches** **Mojaloop** https://mojaloop.io/ **Existing core banking software systems** **Mifos** https://mifos.org/	One per country (settlement switch); One per participating bank (bank integration with payment method)
ID-Account Mapper	A shared registry mapping ID numbers to bank account details to facilitate ease of transfer for any department's G2P payment	**Existing registry mapping IDs to bank account details** **Mojaloop** https://mojaloop.io/	One per country

Deployment of lower layer of blocks (particularly a shared ID system with electronic KYC; an ID-Bank Account Number mapper registry; and civil and other registries) as **foundational**

infrastructure that many G2P scheme-owner departments can utilise allows G2P programs to scale up quickly and efficiently within a country.

While this collective effort indicates a number of open source modules as options to solve for each block, in line with the design principles of **choice** and a **plug & play** architecture, the functionality of any of the building blocks above can be met with existing or new proprietary systems. All open source modules above can function seamlessly with such existing systems. Countries can **mix and match** modules based on their requirements, and all modules will work with existing systems.

Technology Blueprint: Mapping Open Source Modules of G2P Connect
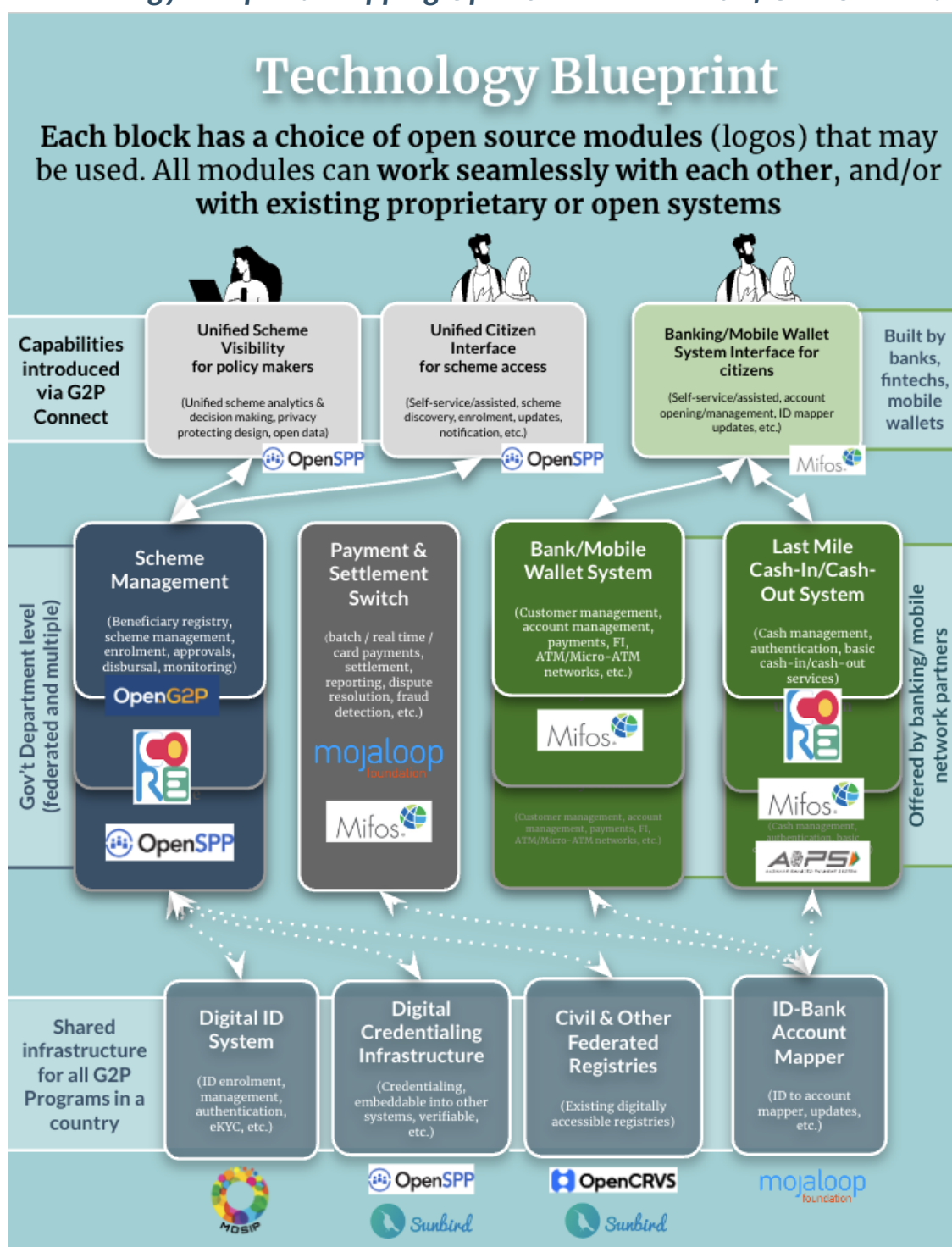
G2P Connect: Executive Brief

Solving Government-to-Person(G2P) Payments digitally end-to-end with an integrated set of open source solutions

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Note on method of integration: Interoperability between open source modules is ensured by specifying a generic interface between any two modules, for instance a standard file format or common specification for the interaction between the scheme management and payment provider modules. G2P Connect modules can integrate with existing proprietary systems if these systems also adopt the (minimalist) common specifications.

Use Cases across G2P for Inclusive Access to Benefits

Partners of G2P Connect could enable a variety of use cases to come to life within a country, across a diverse range of modes to enable inclusion:

Use Cases Enabled by a Shared G2P Infrastructure

Multiple program modes enabled ➤

- Bank account, mobile money, or assisted cash payment
- Individual or bulk payments
- Pre-registered or new registration
- Beneficiary or gov't initiated
- One time or recurring

Data Security and Privacy

Each open source partner resonates strongly with the shared technology design principles outlined in the section above, including the principle around ensuring Trust via data security and privacy. All open source partners who have joined G2P Connect are committed to ensure end to end encrypted integrations with each other and/or with proprietary systems to protect individual data. Moreover,

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individual open source providers are designed without the capability to view or track any country data gathered from a specific department's deployment.

Countries may voluntarily choose to share aggregate usage metadata (without any personal identifying information of any beneficiary) that could improve the quality and robustness of the module over time.

Complementary Operational Deployment Kit

G2P Connect builds on the important policy guidance and support provided by Technical Assistance providers to governments around the world, such as the World Bank, UNDP, etc. Once a policy decision has been taken to move forward, an operational deployment kit with reference or starter documents will also be provided via G2P Connect to countries interested in adoption. This deployment kit is designed to enable ease and speed of implementation. It may evolve over time, but to begin with includes:

1. **Reference (editable) MoUs for open source partners for** module deployment
2. **A reference maintenance contract checklist** onboarding system integrators who manage the ongoing open source deployment
3. Reference lists of various system integrators who have worked on deployments of G2P Connect partner modules in other countries

These and other complementary materials are available from the partners of the collective effort.

Use Cases Beyond G2P

The G2P Connect components of beneficiary identification, enrollment and registration, and various bank integrations to the payments switch are both reusable across many G2P programs, as well as have applications beyond benefits delivery. For instance, if a MOSIP-based ID system is introduced, the same beneficiaries can access eKYC to open a bank account or SIM card. If a Mojaloop enabled payments switch is designed, the core technology can enable not just G2P payments but also B2B payments, peer to peer payments, P2M payments, and even loan disbursements using the same underlying infrastructure.

Deployment of multiple G2P connect blocks as open, shared technology capabilities in the country will thus have combinatorial and exponential effects beyond improving access to government transfers and financial inclusion.

Next Steps for Country Adoption

Countries interested in adopting some or all modules of G2P Connect should explore the website https://g2pconnect.global for further information, demo videos of the applications of the open source modules in different contexts, and links to websites of each open source module with details on technical capabilities and previous deployments. Countries can also indicate an interest in adoption via the website or via an email to info@g2pconnect.global.

Conclusion

G2P Connect is designed as a mechanism for harmonisation among its partner open source solutions to ensure an end to end and flexible solution for governments delivering payments. It presents a new framework for global cooperation on shared digital infrastructure that can be seamlessly reused for country-specific execution of any kind of G2P program. It is the hope of all collaborating partners that G2P Connect simplifies the process of establishing a new G2P program for many countries, allowing individuals to be empowered with access to funds in times of need.