Towards an interoperable open-source stack for social protection

A workshop with OSS providers contributing to social protection

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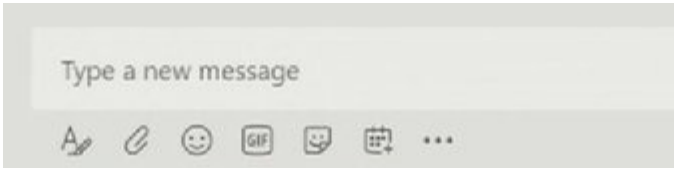
Housekeeping rules

- Camera on when speaking (preferably)
- Mute yourself when not speaking
- Raise your hand for questions or type in chat
- Session will be recorded



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The Digital Convergence Initiative (DCI)

A joint effort by USP2030 members and non-members, governments, development partners and private sector towards creating a harmonized and interoperable digital ecosystem for social protection

Building consensus-based standards for interoperability to

- **foster an ecosystem for innovation** by ICT solution providers to build products that are interoperable, easy to use, integrate, maintain and scale
- **reduce time and costs** of developing solutions at the country/program level
- enable programs and countries to **mix and match different components** from different suppliers
- **ensure that systems are future-proof by design**, regardless of current levels of policy and information systems maturity

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Setting the context

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Diversity of social protection programs

Social Care

Social Assistance

Social Insurance

Labor market programs

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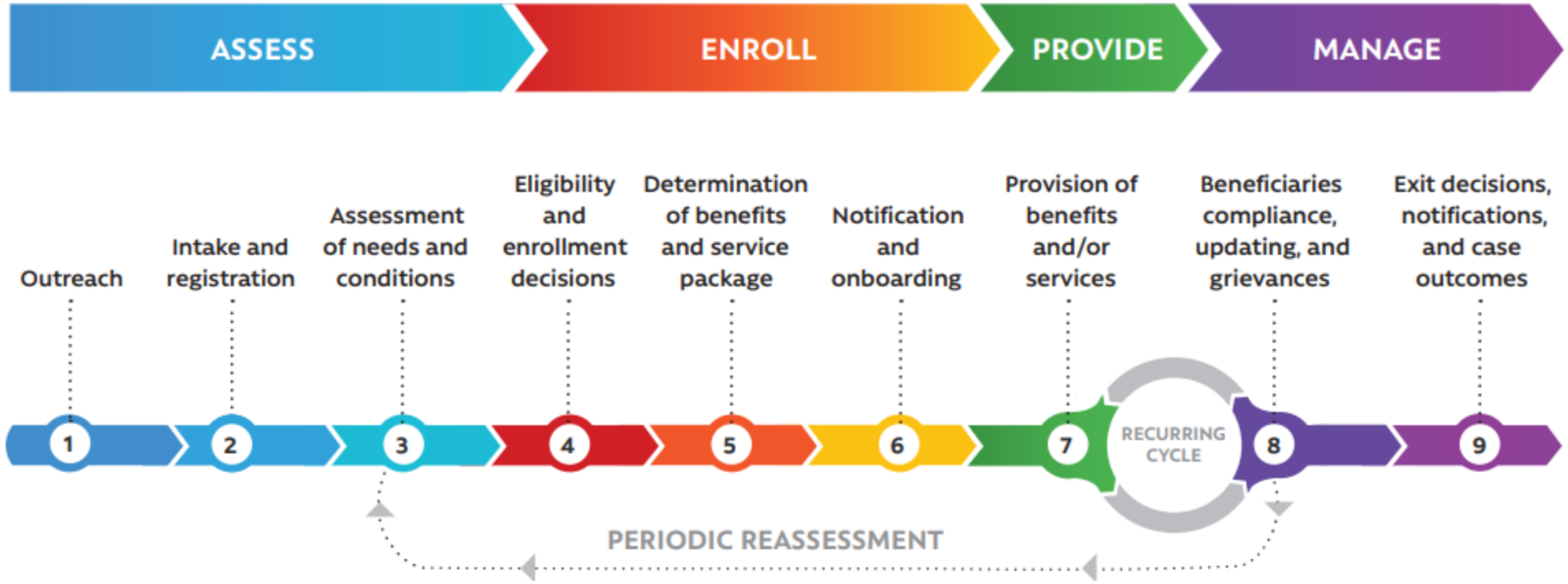
Yet, commonality in processes : Delivery Chain for SP programs



Source :World Bank source book

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Information Systems for SP program delivery

Information systems are indispensable for delivery of Social Protection

Social protection delivery systems are complex with multiple interconnected components

Integrated and interoperable social protection systems enable efficient, responsive service delivery

USP 2030 Vision : A world where anyone who needs social protection can

Social Registry, ID system, G2P system, integrated beneficiary registry, CRVS, Tax, Pension, program specific information system

Helps in Targeting, eligibility and duplication check, administration, enhance user experience, adaptive social protection

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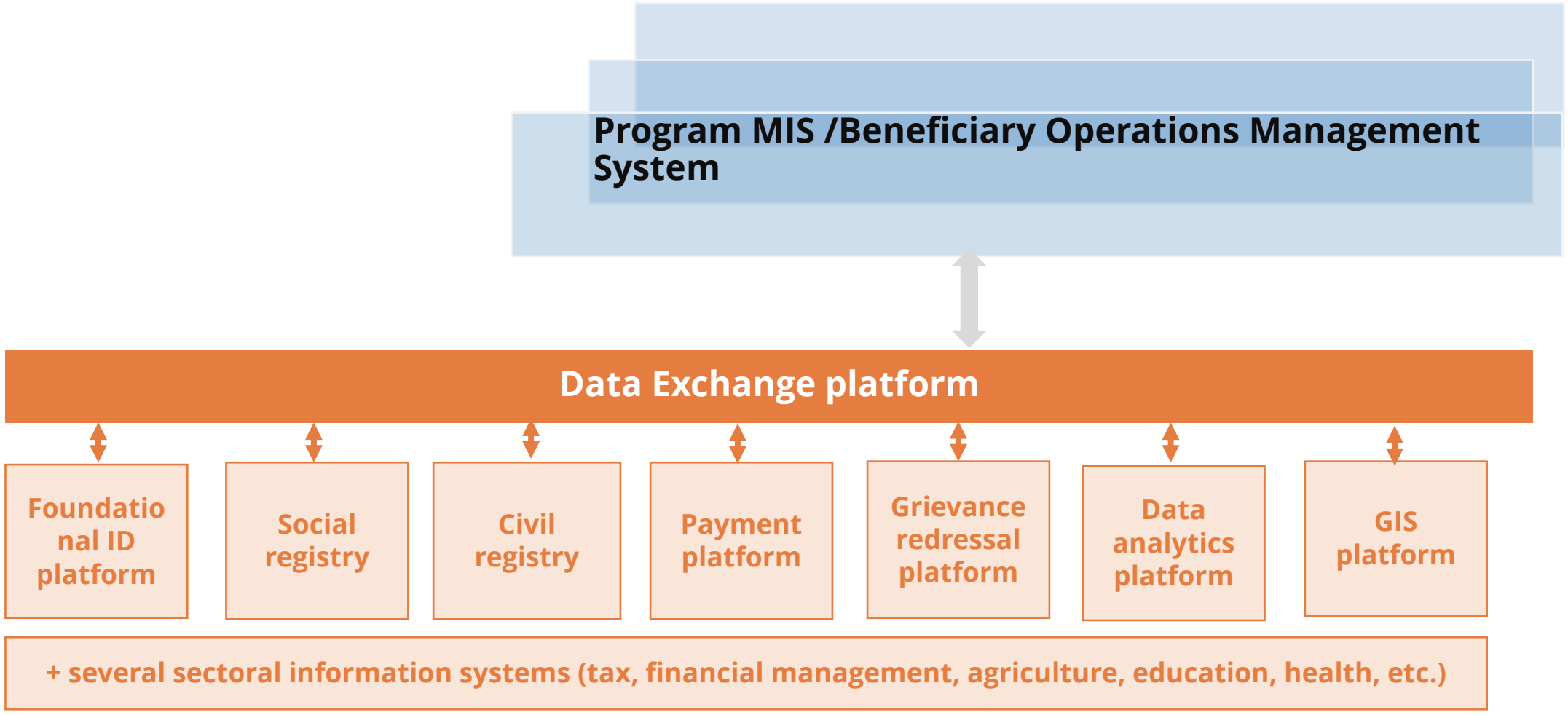
Systems at play for SP program delivery



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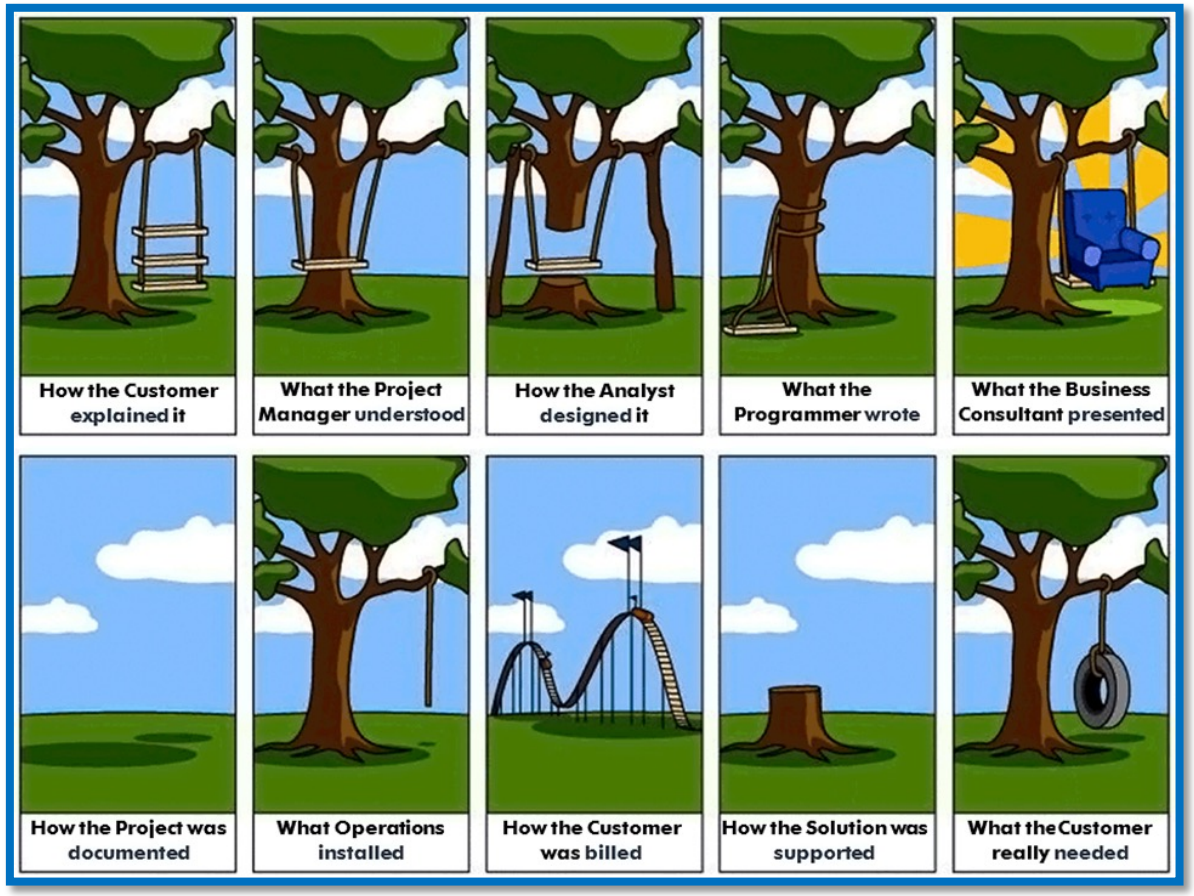
Unrealised potential of information systems

Reinventing the wheel

Lack of interoperability



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Addressing Reinventing the wheel

Potential solution: Digital Public Goods(DPGs) ?

- Beneficiary management systems/Program MIS
- ID system
- CRVS system
- Payment system
- Analytics
- GRM
- GIS

Addressing Lack of interoperability

- Interoperability of DPGs to pave way for interoperability with other vendor systems
- Consensus driven Global Open Standards and guidelines for interoperability - Creating DPG ?
- Interoperability of systems by design for SP program delivery

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Why we are here today?

To address interoperability

- Provide a forum to conceptualize a vision for a potential interoperable OSS stack for social protection delivery.
- Collaboratively identify opportunities to define technical standards (e.g. process standards, data standards, APIs) for interoperability across the OSS ecosystem while learning about existing interoperability capabilities.
- Explore synergies for OSS providers and participants to pursue these opportunities in collaboration with the DCI.

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How is the workshop structured?

12:20–13:00	**Lightening intros by OSS providers**
13:00–13:10	**Context setting for integration use cases**
13:10–13:50	**Potential integration use cases**
13:50–14:05	**Audience Q&A**
14:05–14:30	**Way forward and closing**

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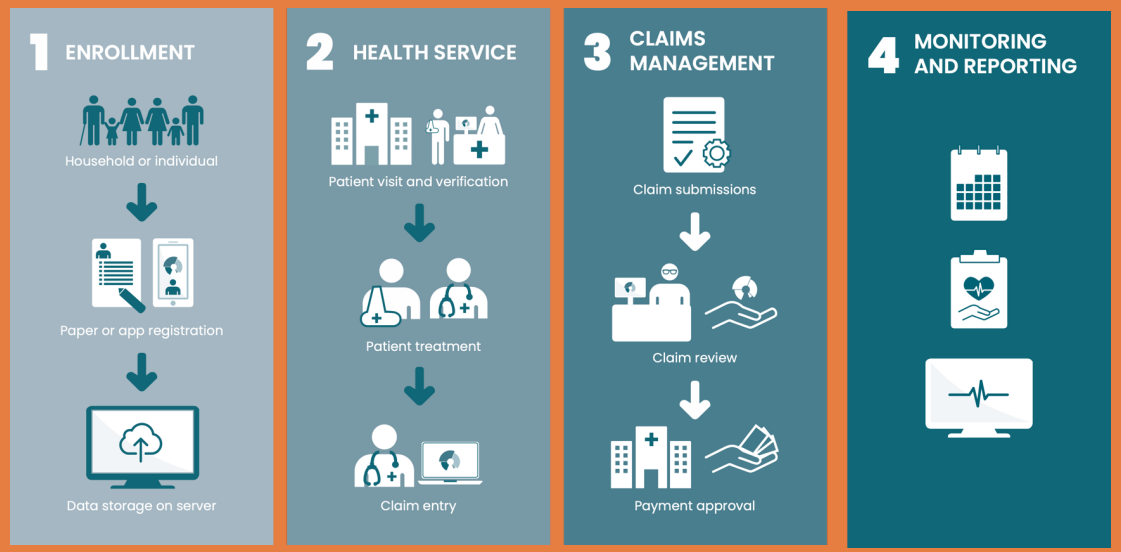
Lightening introductions

openIMIS: Open-Source Tool to Manage Social Protection Schemes

- Fully open-source, free software to manage various types of health financing and other social protection schemes
- Currently managing details of 8+ Mio beneficiaries
- Based on international standards for data and interoperability: HL7 FHIR, OpenHIE
- Open-source license: AGPL v3 (code), Creative Commons (documentation)

Supported Business Processes



Types of Social Protection Schemes Supported

- formal & informal sector schemes
- national health insurance
- community based health insurance
- voucher scheme
- employment injury insurance
- unconditional cash transfer

Technology Stack

Migrating from MS .NET stack to:

- Frontend: React.js
- Backend: Python, Django
- Database: PostgreSQL
- Packaging: Docker

Interoperable with

- DHIS2
- Bahmni, OpenMRS, Odoo
- OpenHIM
- wip: Mojaloop, MOSIP, GovStack

Current Implementations

- Asia: Nepal
- Africa: Tanzania, Cameroon, Chad, DRC, Mauritania, Niger, The Gambia

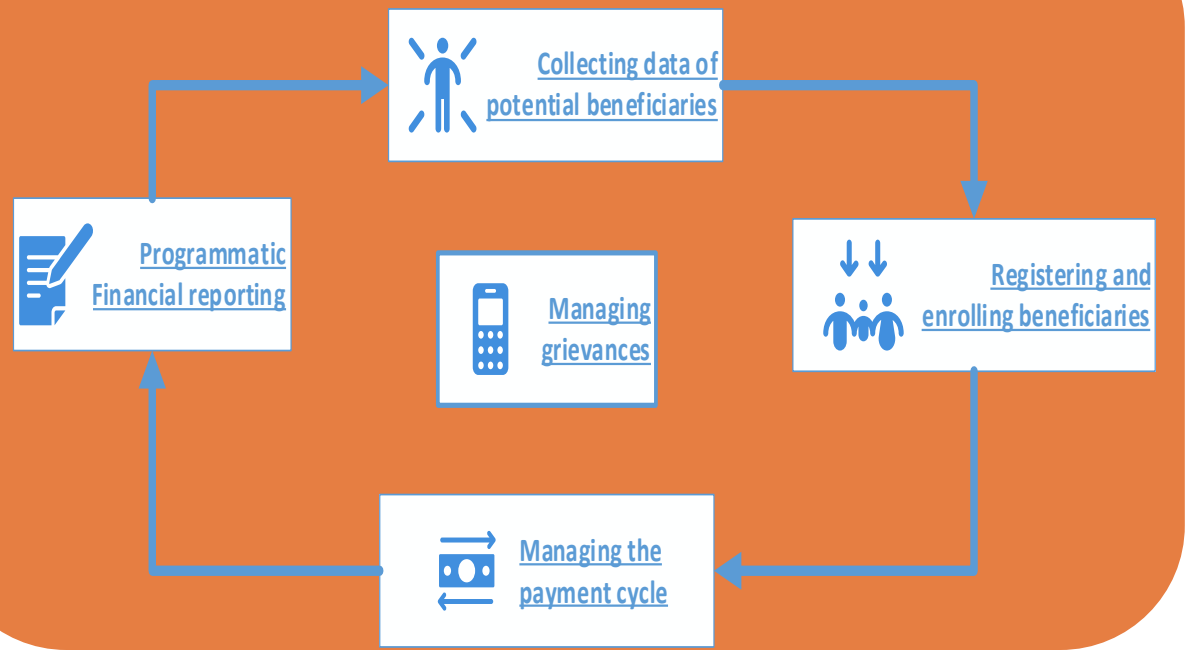
Contact

- contact@openimis.org
- www.openimis.org
- Twitter: @openIMIS
- github.com/openimis

HOPE: an integrated tool to rapidly bring humanitarian cash assistance to the most vulnerable

- The Humanitarian cash Operations and Programme Ecosystem (HOPE) is UNICEF's MIS for managing humanitarian cash transfer programmes
- HOPE aims to be a Digital Public Good, but does not yet have OSI license

BUSINESS PROCESSES SUPPORTED



Type of Social Protection Schemes supported

- Cash transfers

[also payments to service providers – teachers, health workers, etc. in humanitarian and fragile contexts]

Technology Stack

- Python, Django framework
- PostgreSQL
- React.JS.

Interoperable with

- Kobo
- CashAssist (UNHCR)
- RapidPro
- SAP

Current Implementations

Afghanistan, Bangladesh, CAR, DRC, Sudan, South Sudan, Antigua & Barbuda, Myanmar, Philippines, Ukraine, Yemen

Contact

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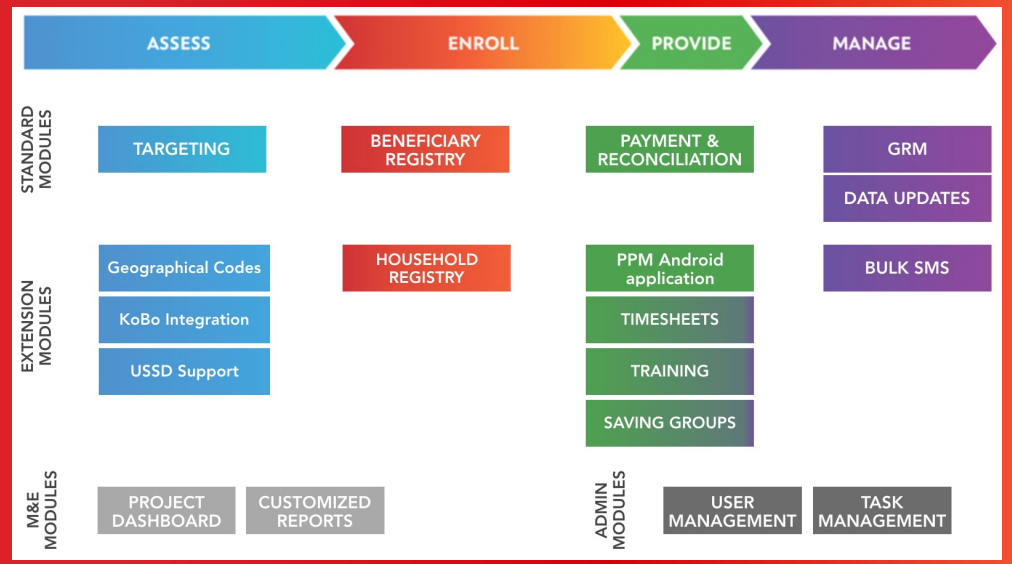
- Hope.unicef.org

CORE-MIS: Building blocks for robust delivery systems

- Web-based application system designed to support cash transfer and economic inclusion programs
- Developed using open-source tools
- Customizable workflows
- Advanced security features
- Open-source license: Source code: WB license / AGPL v3, Documentation: Creative Commons

BUSINESS PROCESSES SUPPORTED



Type of Social Protection Schemes supported

- Cash Transfers (conditional and unconditional)
- Public work programs
- Training programs
- Saving groups
- Communication campaigns
- Grievance redress mechanism
- Targeting

Technology Stack

- HTML5, CSS3, Jquery
- Java 8, Spring Boot, Jasper Reports
- MongoDB, Elasticsearch

Interoperable with

- KoBo Toolkit
- Multi Service Provider Gateway (MSPG)

Support ad-hoc integration with USSD and SMS APIs

Current Implementations

- Africa: Zambia, Sierra Leone, Guinea, Togo, Mozambique

* in some countries deployment is in progress

Contact

- core-mis@worldbank.org
- core-mis.dev

OpenG2P: DPG framework for digitizing social protection programs

- Open source framework, reference architecture and deployable building blocks for end to end digitization of social protection programs - enrollment, beneficiary management & recourse, payment & bulk delivery
- Solutions framework that re-uses and augments existing systems including the integration of multiple DPGs
- Cloud-native architecture supporting multiple programmatic workflows and payment schemes.
- License(s): Apache 2.0 (ODK/Fineract) | MPL 2.0 (Mifos/PH-EE | GPL 3.0 (Odoo)

BUSINESS PROCESSES SUPPORTED

Enrollment

- Registration >> Deduplication >> Verification >> Assessment >> Enrollment

Beneficiary Management

- Information Sharing & Data Intermediation
- Managing Lists & Eligibility
- Lifecycle Management & Workflows
- GRM - Complaint Handling & Notifications

Payments

- Generate disbursement lists
- Manage stores of value - accounts, wallet, vouchers
- Bulk Pre-Processing & Delivery
- Payment Integration & Orchestration
- Interoperability
- Monitoring & Reconciliation
- Receipt Generation

Type of Social Protection Schemes supported

- Cash transfers
- Vouchers
- In-kind transfers
- Pensions & Deposits
- Loans & Credit - Individual, SME, Group
- Subsidies
- ILO Social Security Instruments
- Subsidies

Technology Stack

- Enrollment: Kotlin ODK/Enketo/OpenRosa
- Beneficiary Mgmt: Odoo – Python
- Payments/Accounts: Mifos/Fineract/PH-EE Java, Spring, PostGreSQL, Zeebe, Angular, Kafka, Elastic

Interoperable with

- Open Data Kit
- Odoo | GovPay
- Mifos/Fineract | Mojaloop | OpenIMIS
- In Progress: MOSIP, CoreMIS, X-Road

Current Implementations

- Africa: Sierra Leone
- Philippines: soon underway

Contact

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- @openg2p
- github.com/openg2p

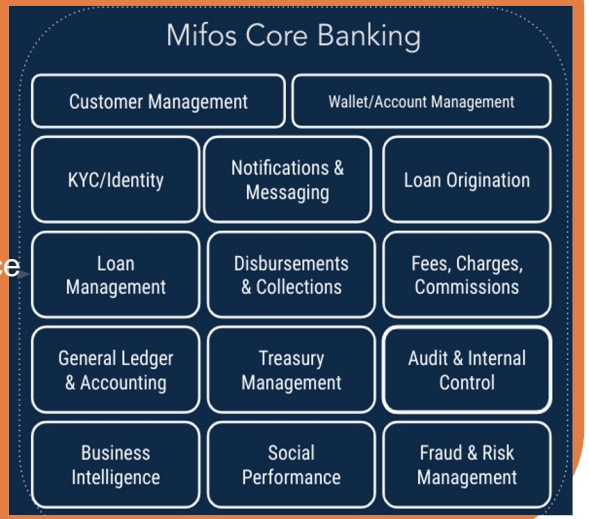
Mifos & Fineract: Open Source Building Blocks for Core Banking & Payment Orchestration

- Modern, cost-effective highly connected banking infrastructure to reach underbanked
  - Enable governments to rapidly open up bank accounts in the cloud
  - Seamless integration & orchestration to instant inclusive interoperable payment systems like Mojaloop
  - Shared infrastructure to enable digitization and digital transformation of DFSPs at scale
- Delivered as open APIs & reference web & mobile apps for staff/customers enabling innovation at infrastructure, account & application layer.
- License: Fineract: Apache 2.0 | Mifos/PH-EE: MPL 2.0

BUSINESS PROCESSES SUPPORTED

Core Banking
- Creating customer & manage KYC
- Store of Value - wallet, account, voucher
- Savings, loan, share portfolio mgmt
- Financial ledger
- Business intelligence & social performance

Payment Orchestration
- Seamless integration into RTP & Momo
- Scalable & Configurable Orchestration
- Bulk & Interoperable Payments
- Monitoring & Operational Performance



Type of Social Protection Schemes supported

Social Transfers
- Cash Transfers
- In-kind Transfers
- Vouchers

Deposit Schemes
- Short & Long-Term

Lending Programs:
- Individual
- SME
- Group

Accounts
- Wallets, Vouchers, Benefits

Technology Stack

- Fineract: Spring, Java,PostgreSQL
- Mifos web/mobile apps:
- Angular, Kotlin, Android
- Payment Hub-EE: Spring, Zeebe, Kafka, Elastic

Interoperable with

- Payments: Mojaloop, ISO20022, M-Pesa, GSMA
- OpenIMIS, GovPay
- In Progress: MOSIP

Current Implementations

- 500+ private sector institutions serving 20M+ individuals across 56 countries including MFIs, SACCOs, banks, fintechs, telcos
- Public Sector: Mexico, India, Sierra Leone

Contact

- info@mifos.org
- https://mifos.org
- @mifos
- github.com/openmf
- github.com/apache/fineract

mojaloop

An open source solution to comprehensive financial inclusion

- Fully open-source, free software to interconnect customers of MFIs, SACCOs, mobile wallets and banks (FSPs) into one low-cost, interoperable ecosystem
  - Brings the underserved into the formal financial sector
  - Affordable for even marginalised customers
- Focus on customers, not financial institutions
- Provides connected financial institutions with comprehensive dashboards and reporting

BUSINESS PROCESSES SUPPORTED

- Participant onboarding
  - Range of tools to support FSPs in joining a scheme and managing that connection
- Beneficiary (alias) registration
  - Support for routing payments to a customer‘s preferred ‘alias‘
- Support for settlement
  - Separation of interbank relationships from customer relationships
- Management Portals
  - Scheme operator supported by a comprehensive range of portals for the operation and configuration of the service

Payment Types supported

- Payment routing using aliases
- P2P
- MFI loans (repayment and disbursal)
- G2P
- Salaries
- Merchant Payments (USSD, QR, others)
- Fintech integration
- etc

Technology Stack

- Docker, Kafka, Helm, Kubernetes
- NodeJS
- TypeScript

Interoperable with

- OpenG2P
  - Beneficiary management
- MOSIP
  - Identity Management

Current Implementations

- Myanmar: WynePay
- Tanzania: TIPS
- Rwanda: RNDPS

Contact

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- mojaloop.io
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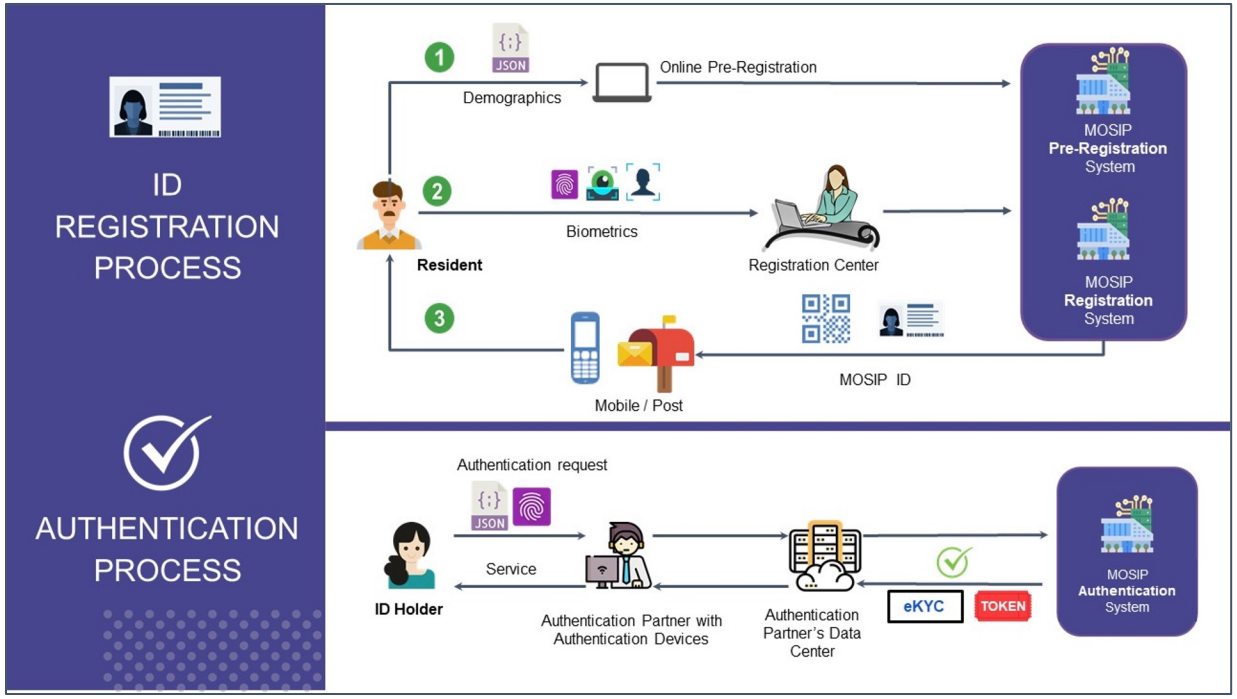
- github.com/mojaloop

MOSIP: Foundational digital identity platform for ID Issuance and Verification

- Provide the basic framework to create a fully functional foundational identity system
- Provide flexibility for a country to choose and customize the features from the basic framework according to their requirements
- Maintain privacy, security and confidentiality of an individual's data



Type of Social Protection Schemes supported

- Identity verification and KYC during onboarding
- Identity verification at time of availing service
- Can integrate with any functional ID

Technology Stack

- Microservices
- Java, Angular
- Postgres, ElasticSearch

Interoperable with

- OpenCRVS, DIVOC
- eManas
- GovStack*, OpenG2P*

Current Implementations

- Asia: Philippines, Sri Lanka
- Africa: Morocco, Togo, Ethiopia, Guinea

Contact

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- info@mosip.com
- https://www.linkedin.com/company/mosip-project/

OpenCRVS: the global solution for CRVS

- Digital CRVS system built for low-resource settings
- Enables new models of civil registration that:
  - Active registration in the community
  - Automated civil registration processing
  - Real-time operational and oversight analytics
- Based on international standards for data and interoperability: HL7 FHIR, OpenHIE
- Open-source license: Mozilla Public License, v. 2.0

BUSINESS PROCESSES SUPPORTED

- Notification of birth and death from external systems e.g. DHIS2 and completed within OpenCRVS
- Birth and death registration certification
- Performance management and reporting
- Audit of users and records
- Correct a record
- Export vital statistics data

Type of Social Protection Schemes OpenCRVS could support

- Notification of vital event occurrence to SP scheme for enrollment/ discontinuation
- Identification of eligibility of individuals for specific benefits
- Use of CR data for enrollment

Technology Stack

- OpenHIE Architecture
- FHIR
- MongoDB, ElasticSearch
- OpenHIM
- NodeJS & React JS

Interoperable with

- DHIS2
- MOSIP
- Any system that supports FHIR
- Webhooks available

Implementations

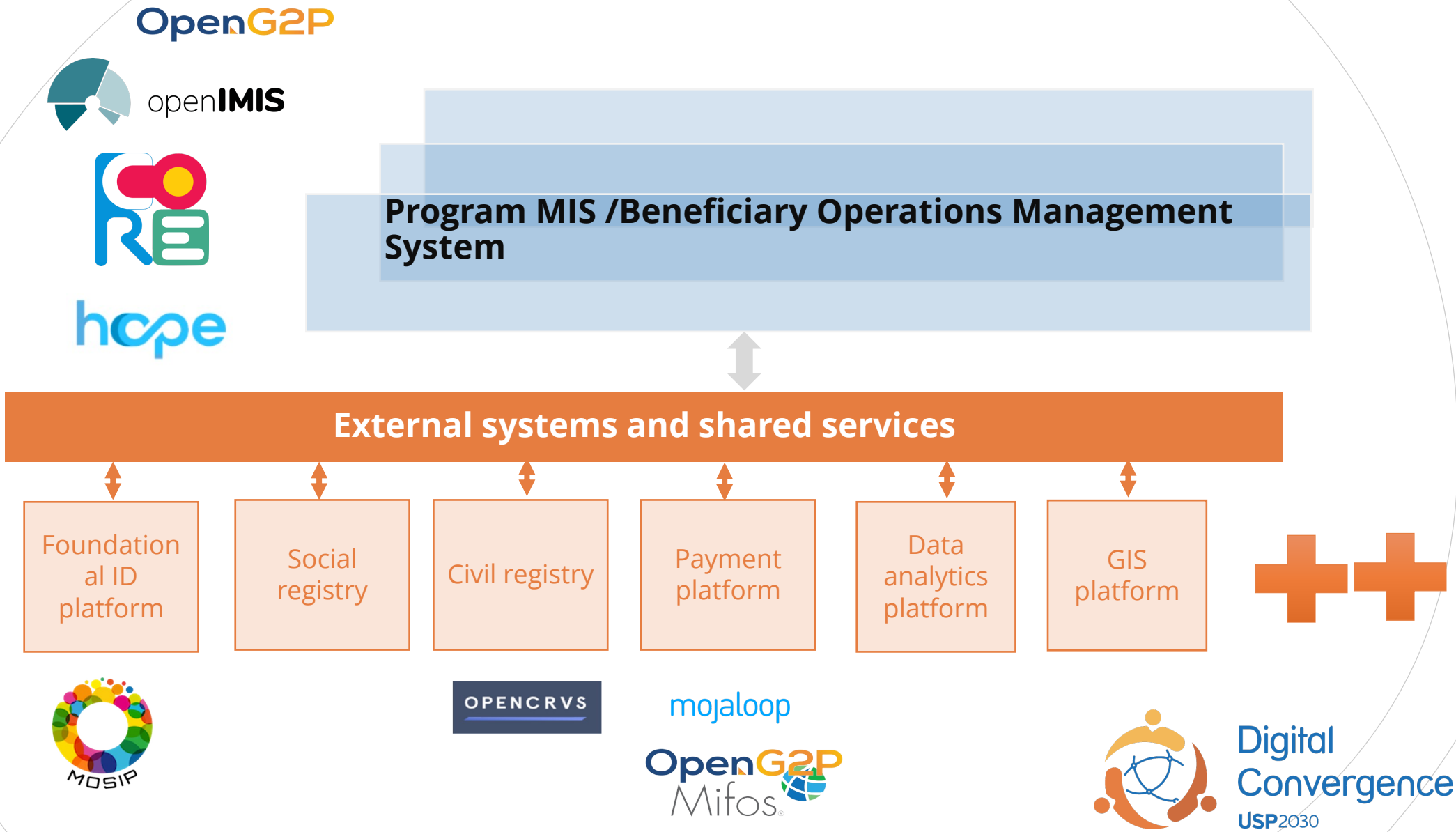
- Pilot: Bangladesh (2020)
- PoC: Zambia (2020)
- PoC: Niue (2021)
- Phase 1: Nigeria (2022)

Contact

- annina@opencrvs.org
- https://www.opencrvs.org/
- Social media
- GitHub - OpenCRVS

Integration use cases

OSS for SP program delivery




OPEN
CRVS

OpenCRVS Interoperability Approach

WebSub
Standardised Auth pattern

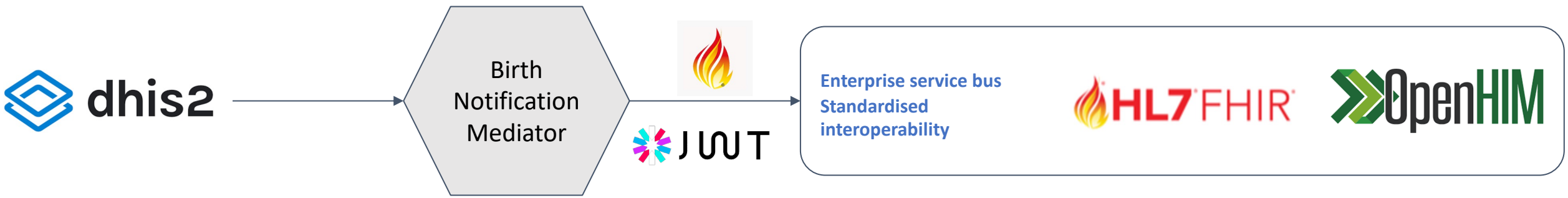
Birth Registration
Death Registration

Details of event dispatched in FHIR to trusted source.

OpenCRVS out:

OpenCRVS in:

OpenHIM Mediators
Authentication
Transform to / from FHIR



Interoperability Use Case Opportunities

OpenCRVS out:

1. Notification of an eligible participant for enrolment i.e. newborn grant, child allowance, single parent allowance, pension, widow grant, single parent

2. Notification of event to discontinue services i.e. to stopping a pension payment when an individual dies or a single parent allowance when an individual marries.

3. Share performance management data to monitor and track coverage of a social security / protection schemes

4. Share CR data to inform the calculation of social security entitlements available to an individual or household

OpenCRVS in:

5. Notification of birth from SPS: a residential care home enrolls in the social protection system to receive a SSA for a child in their care → SPS verifies the age of the child within OpenCRVS and if unregistered triggers the birth registration process

Potential Next Steps

1. **Convergence** to confirm high value use cases between OpenCRVS and social protection systems
2. **Convergence** to connect OpenCRVS with social protection partners to flesh out and describe end-to-end use cases that should be tested incl. data requirements
3. **OpenCRVS and SP Partner** to develop technical proof of concept and document
4. **Convergence** to convene community to review proof of concept demonstration
5. **Convergence** to document and socialise findings from proof of concept
6. **Convergence** to identify implementation opportunities

All of the above steps are dependent on funding


MOSIP

Why MOSIP as a Foundational Identity

Strongly ties to the individual

Identity is strictly bound to the individual.

Unique

Ensures unique identity per person, with revocable identities & privacy preservation.

Inclusive

Allows everyone to get an identity. No functional attachments. Legally backed.

Common & Friction free integration

Common infrastructure & OpenAPI based implementation.

eKYC and Verifiable Credentials

| Online, Offline

| Real time, Asynchronous

| Push, Pull

| Centralized, Federated

Flexible Identity Verification

Authentication API

Multi-factor authentication with associated level of assurance.
Biometrics based presence assurance.

eKYC support

Policy driven selective sharing of digitally signed data to authorized relying parties.

Clear segregation of issuer and verifier

Centralized as well as decentralized authentication options with a clear issuer and verifier segregation.

Variety of credentials

QR based, JSON based signed verifiable credentials, verifiable through the Authentication API.

WebSub based Push Pull

User or relying party initiated credentials based flow for KYC. Credentials can be pushed to relying parties via webhooks.

Integration

| Morocco Social benefit
| Morocco Civil registry
| Morocco Identity
| OpenCRVS
| eManas health care
| eMudra digital signatures
| OpenG2P

Identity Verification for Digital Transformation

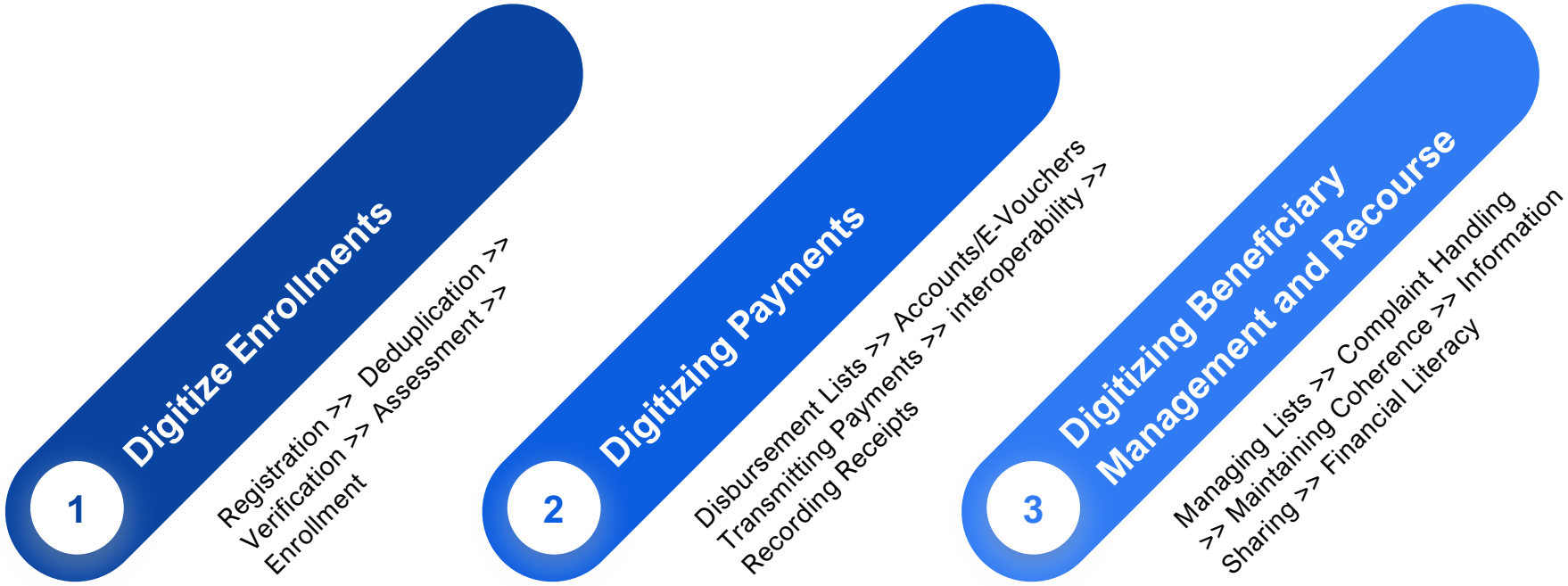
- Identity verification API to provide digital social benefits. e.g., MOSIP system with SP program management system in Morocco
- OpenG2P is in the integration process to enable better support for government to person social benefit transfers digitally.
- Integrate identification system with CR to provide identity to newborn. e.g., MOSIP with CR system in Morocco
- OpenCRVS integration with MOSIP to provide identity during birth.
- Identification system for eKYC for enrolling beneficiaries and for consent
    - e.g. Manas health care application uses MOSIP to enroll patients, guardians and provide consent.
    - eMudra a digital signature service operating across 20 odd countries integrates with MOSIP to perform EKYC and provide eSign facilities.


OpenG2P

Open G2P

Digital public good digitizing large scale cash transfers with open source building blocks

- **COVID-19 Opportunity**: Accelerating cash transfer is the single most important response to getting assistance in the hands of people who need it most in a timely and transparent manner.
- **Origin:** Originated from iDT Labs and Government of Sierra Leone when they saved more than $10M digitizing payments to 30,000 health workers during Ebola crisis
- Addresses **common challenges** in effectively digitizing government to persons & large-scale social protection transfers.



X-ROAD®

Apache Fineract

Mifos®

mojaloop

Identity

Foundation & Functional ID

+

Data Exchange

Programmatic Sharing of Beneficiary Data

Accounts

Store of Value, Accounts, Wallets & Financial Ledger

+

Orchestration

Bulk Pre-Processing, Payment Integration, Workflow Orchestration

+

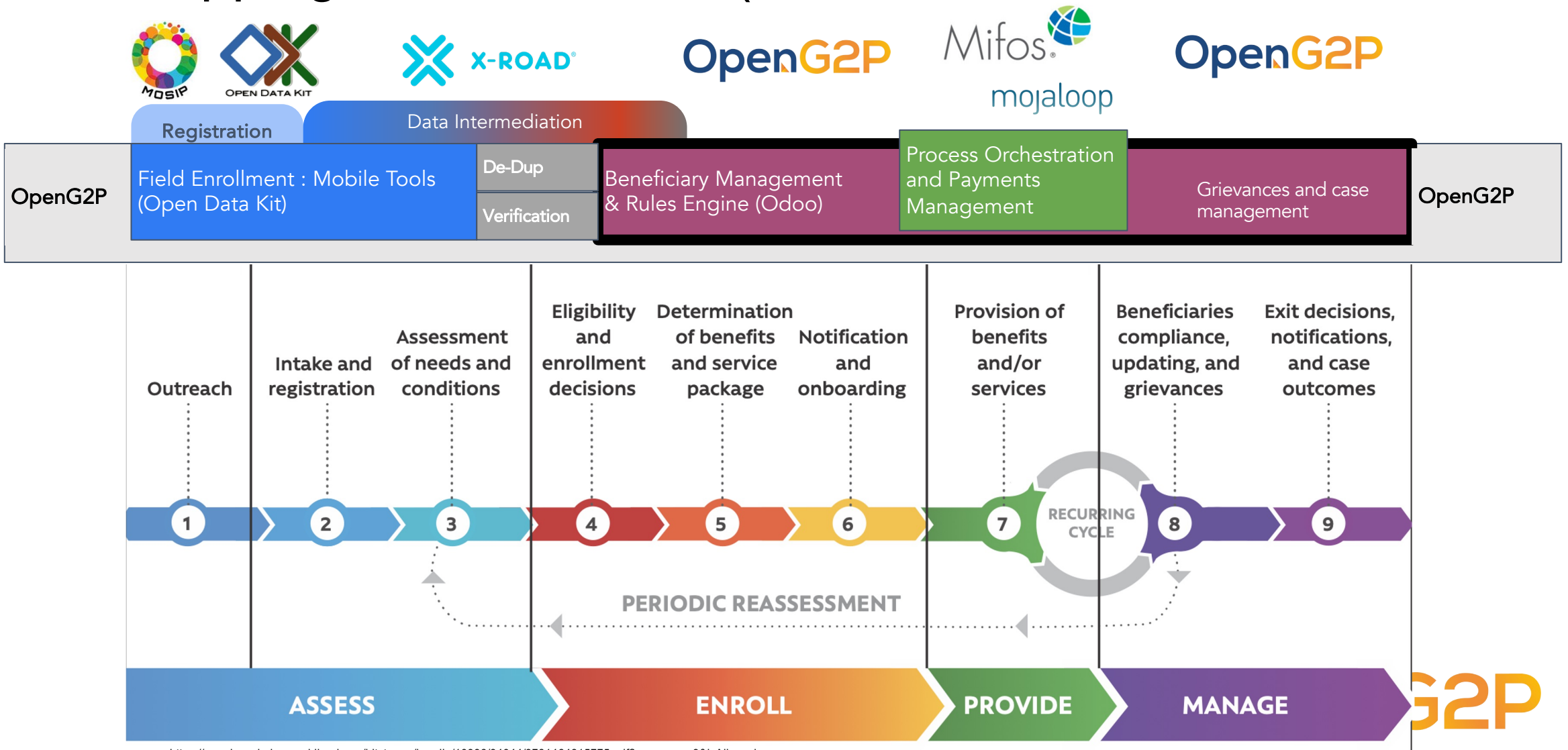
Payments

Interoperable Payments, IIPS, Last Mile Delivery

OpenG2P

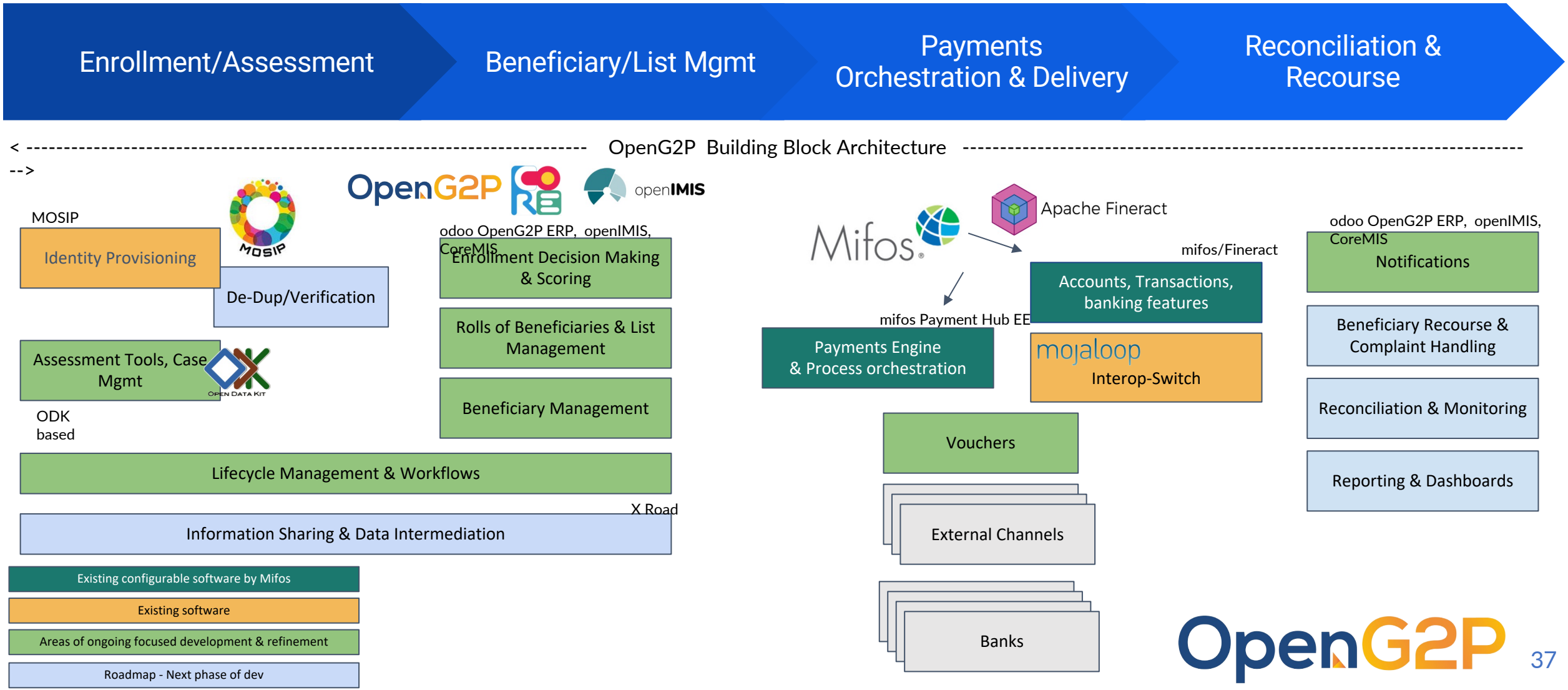
Transfer System
Built on Financial Inclusion Community of Practice DPGs

Mapping to SourceBook (World Bank)

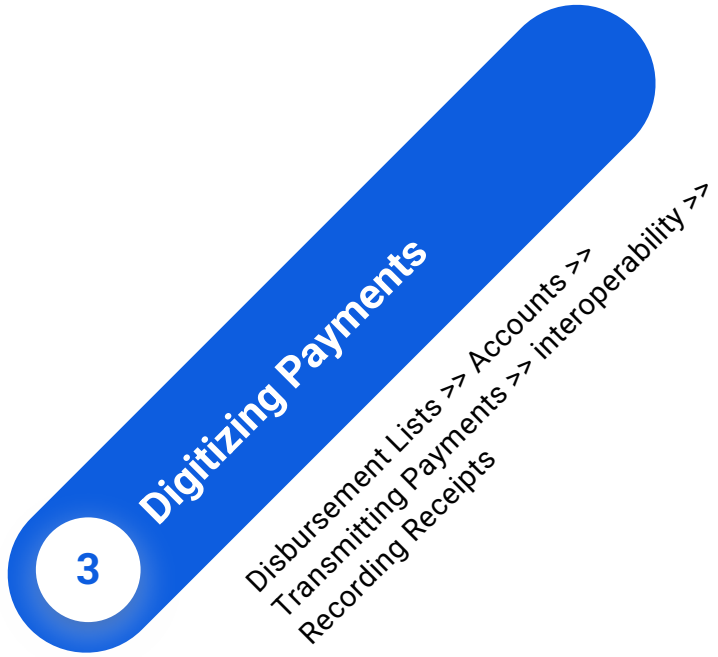


https://openknowledge.worldbank.org/bitstream/handle/10986/34044/9781464815775.pdf?sequence=9&isAllowed=y

Mapping Systems to Functional Blocks



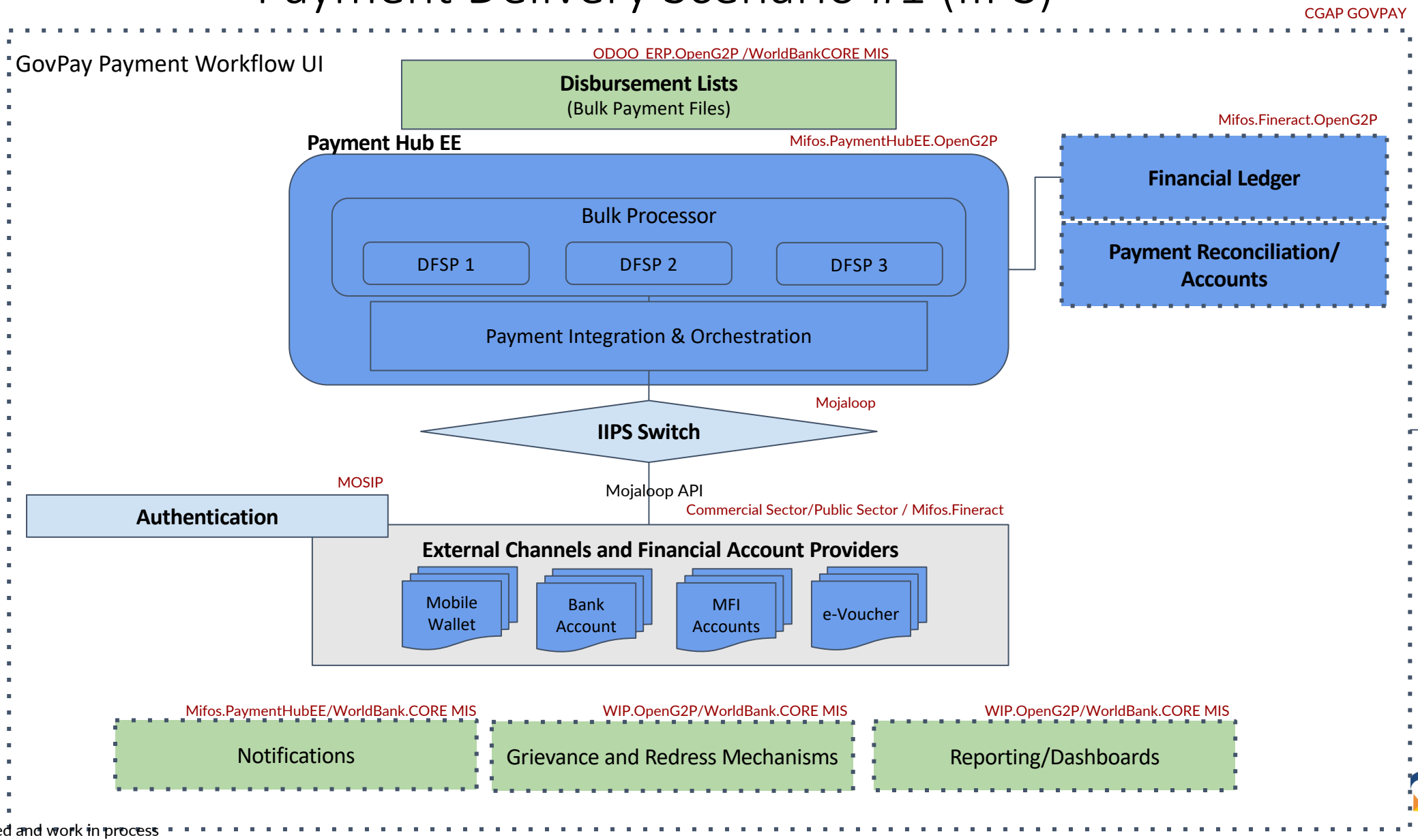
Payments Building Blocks



- Disbursement Lists - Odoo
- Accounts - Mifos/Fineract
- Bulk Processing - Payment Hub EE
- Transmitting Payments - Integration & Orchestration
  Payment Hub EE
- Interoperability - Mojaloop
- Recording Receipts - Mifos/Fineract/Odoo

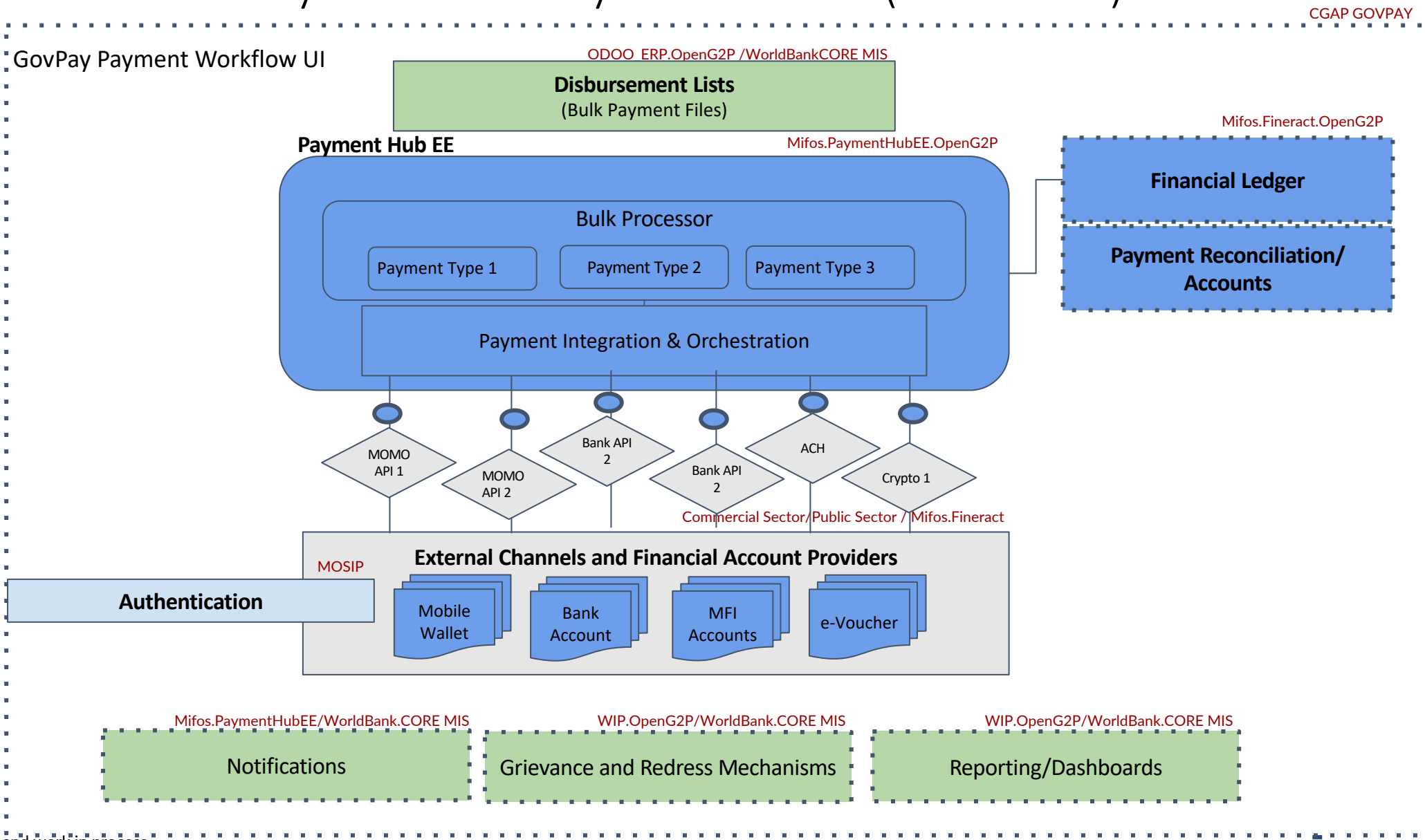
OpenG2P

Payment Delivery Scenario #1 (IIPS)



*Planned and work in process

Payment Delivery Scenario #2 (No Switch)



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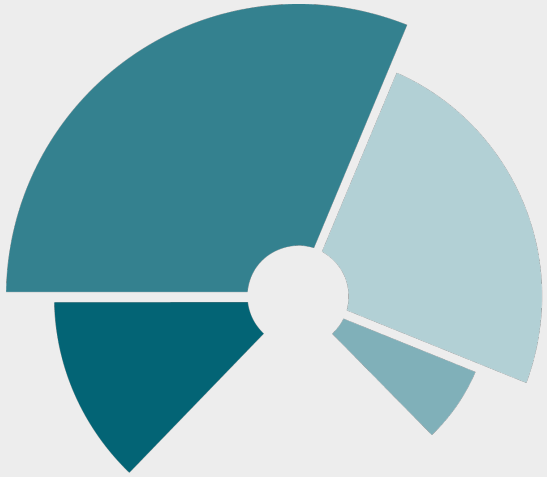
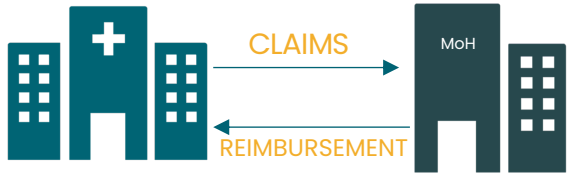


openIMIS

Social Protection Use Case

1. Marie wants to enrol into the MoH's maternal health insurance scheme.
2. Marie gets her ID verified, pays the premium contribution online, and receives her insurance ID card.
3. Marie goes to the clinic. The clinic verifies her identity, and provides required services and medication based on eligibility check.
4. The clinic claims reimbursement for the services provided to Marie from the MoH
5. After Marie delivers a healthy baby at the hospital a notification of birth of the child is sent to the relevant authorities.
6. A one-time digital payment of $20 is made to Marie's account on verification of number of children.



Contributory Maternal Health Insurance Scheme

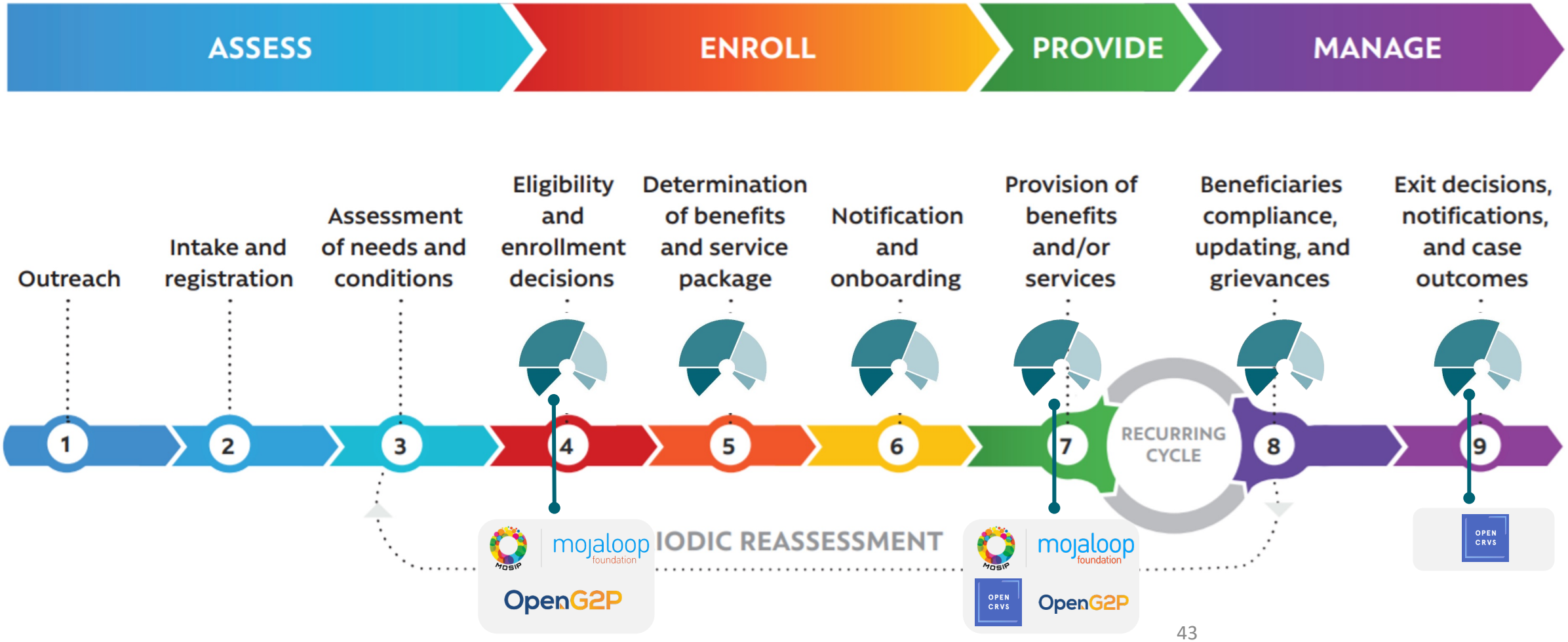
- Free Regular ANC check-ups, Free Delivery Services

Child Benefit Program

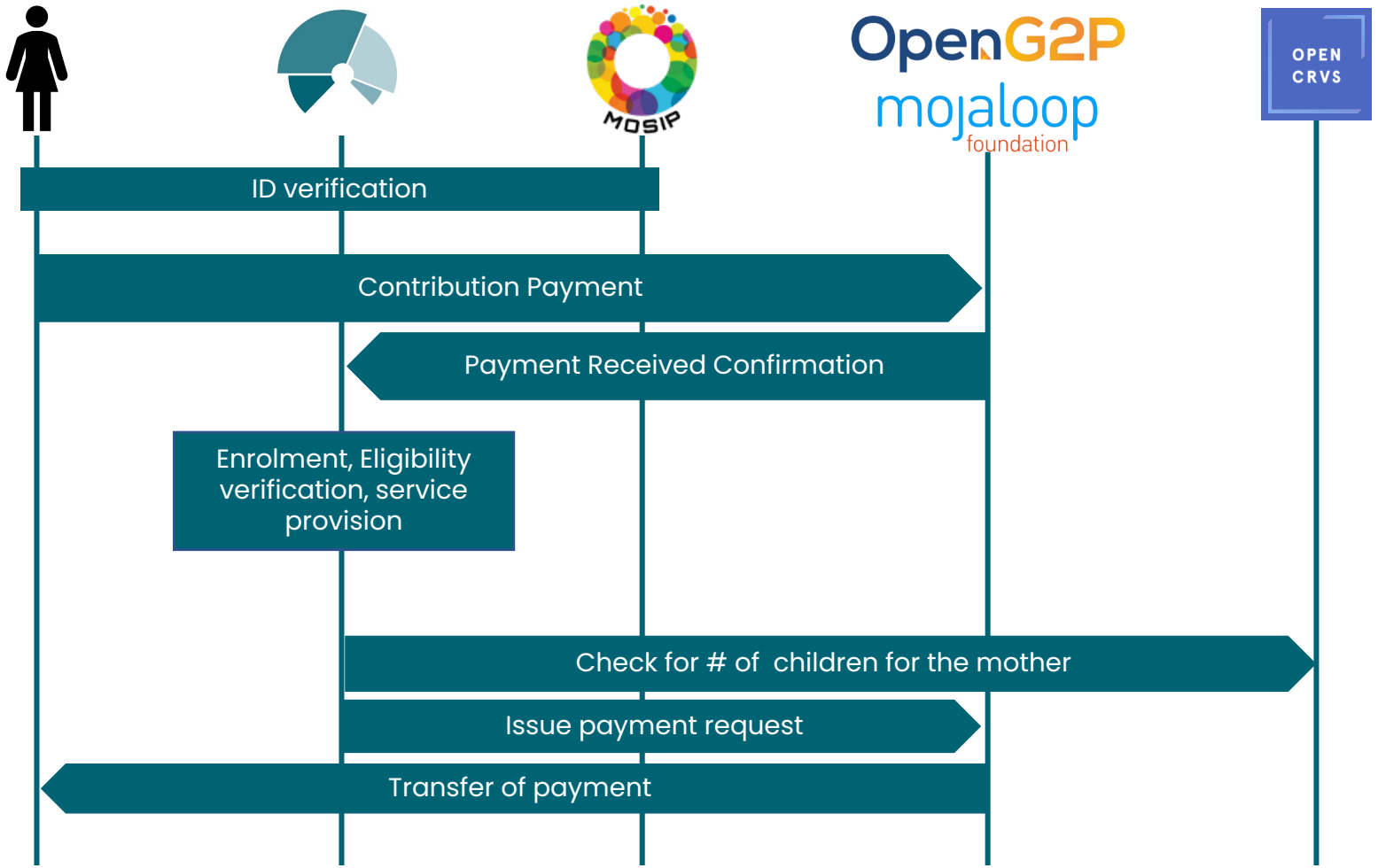
Post delivery cash assistance (up-to 2 children)

openIMIS

Mapping openIMIS to the SP Delivery Chain of the World Bank

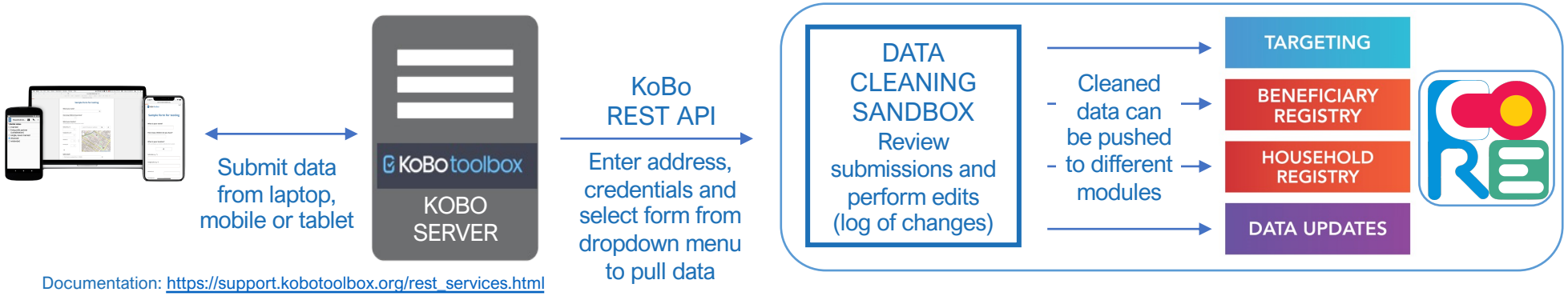


Fitting it in the Interoperability Puzzle



CORE-MIS: Integrations Currently Supported

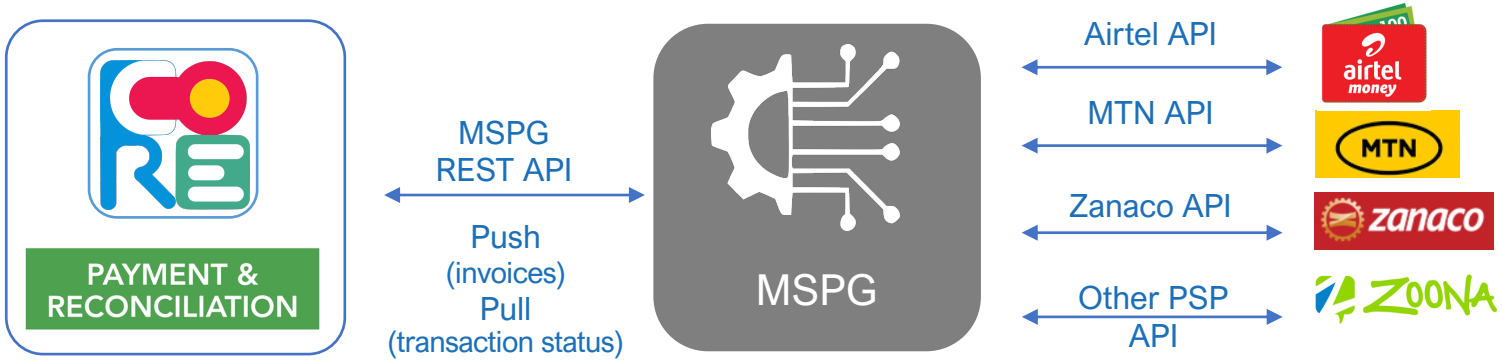
CORE-MIS supports integration with KoBo Toolbox to allow pulling of data collected through KoBo/ODK app



Documentation: https://support.kobotoolbox.org/rest_services.html

CORE-MIS supports integration with the **CORE-Social Registry** (a tool currently under development)

CORE-MIS supports integration with Zambia's MSPG facilitating digital payments through 9 PSPs

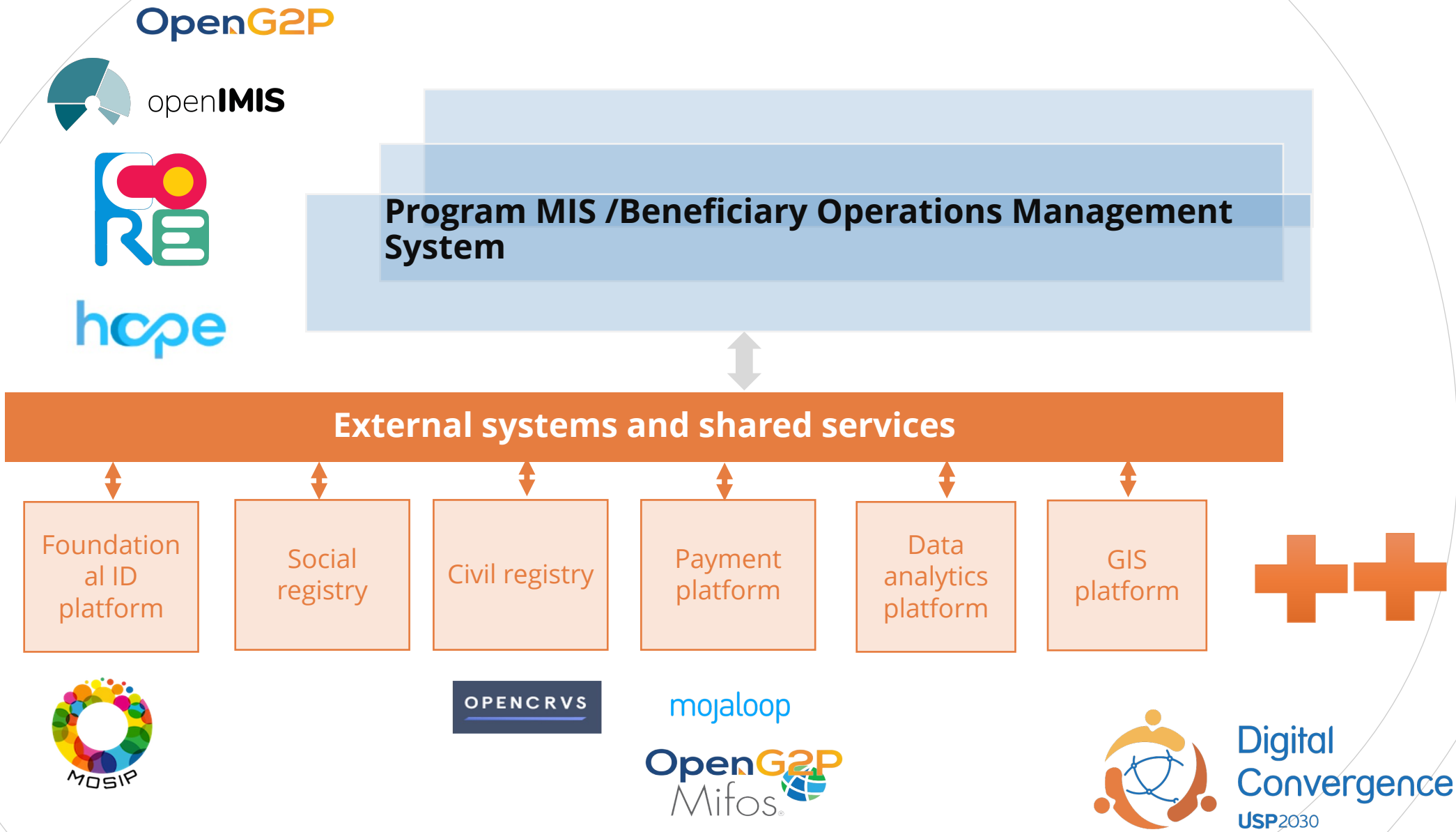


CORE-MIS also supports ad-hoc integrations with specific providers using SMS and USSD APIs

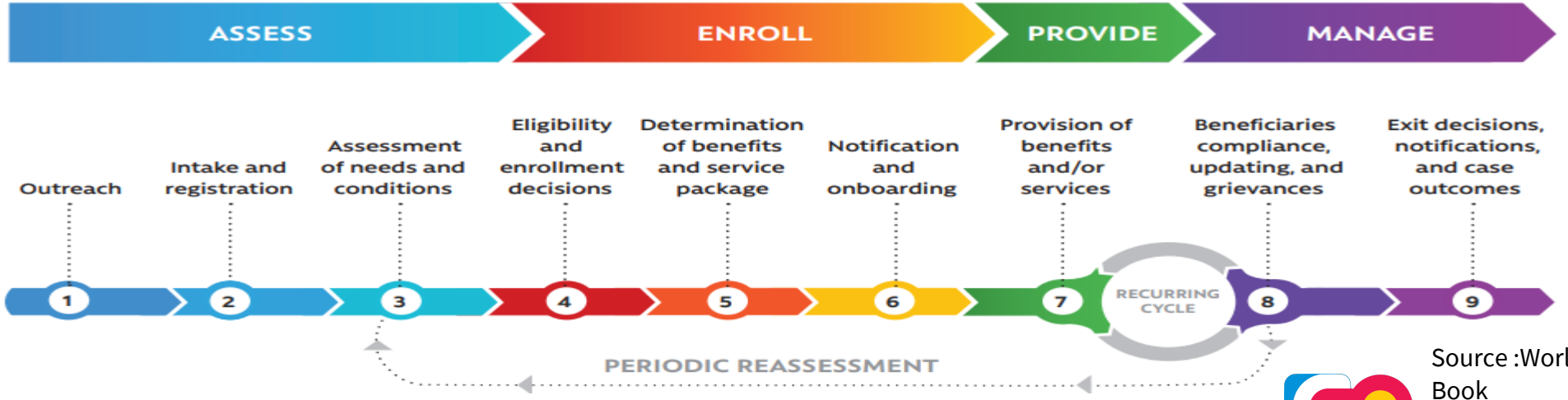
Discussion

Next steps

OSS for SP program delivery



Integrations along delivery chain with ID, CR and Payment systems

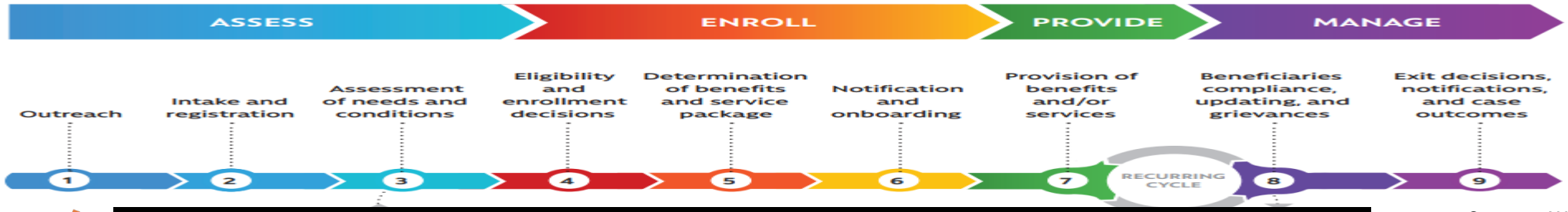


Source :World Bank Source Book

OpenG2P openIMIS hcpe

OPENCRVS	→ Notifies event to trigger eligibility ← Notifies of an unregistered birth for registration	→ Sends data for validity and eligibility checks		→ Send data for calculation of benefits	→ Notifies an event to discontinue benefits (e.g. death)
MOSIP mojaloop OpenG2P Mifos	→ identification/KYC → Verifies identity → Consent	→ De-duplicates to ensure non-duplication of benefits	→identification (KYC)	→ Verifies identity	
				→ Send payment list ← Receive reconciliation report	Digital Convergence USP2030

Integrations of beneficiary management system with Civil Register



Source :World Bank source book

Civil Registration and Vital Statistics systems

Beneficiary operations management systems

OpenG2P | openIMIS | hope

OPENCRVS

→Notifies event to trigger eligibility

← Receives Notification of an unregistered birth for registration

→ Sends data for validity and eligibility checks

→ Send data for calculation of benefits

→Notifies an event to discontinue benefits (e.g. death)

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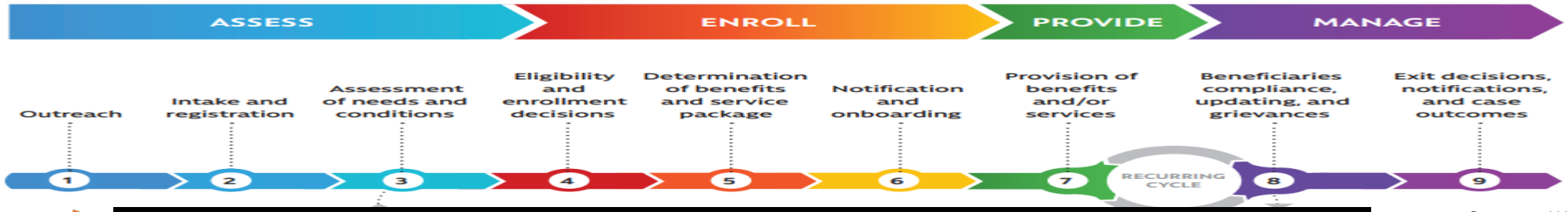
Integrations of beneficiary management system with ID system



Source :World Bank Source book

Beneficiary operations management systems

Identification system

OpenG2P openIMIS hope

MOSIP

→ identification/KYC
→Verifies identity
→Consent

→ Unique identity used for duplicate check

→identification (KYC)

→ Verifies identity

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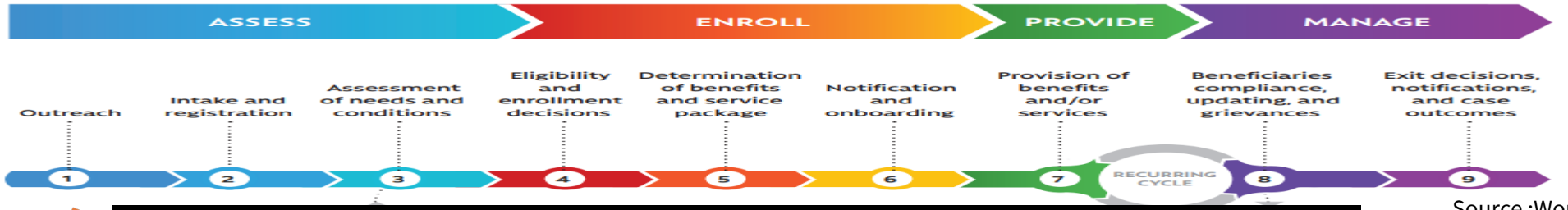
Integrations of beneficiary management system with Payment system



Source :World Bank Source book

Beneficiary operations management systems

Payment System

OpenG2P openIMIS hope

mojaloop

Mifos OpenG2P

→Send payment list
← Receive reconciliation report

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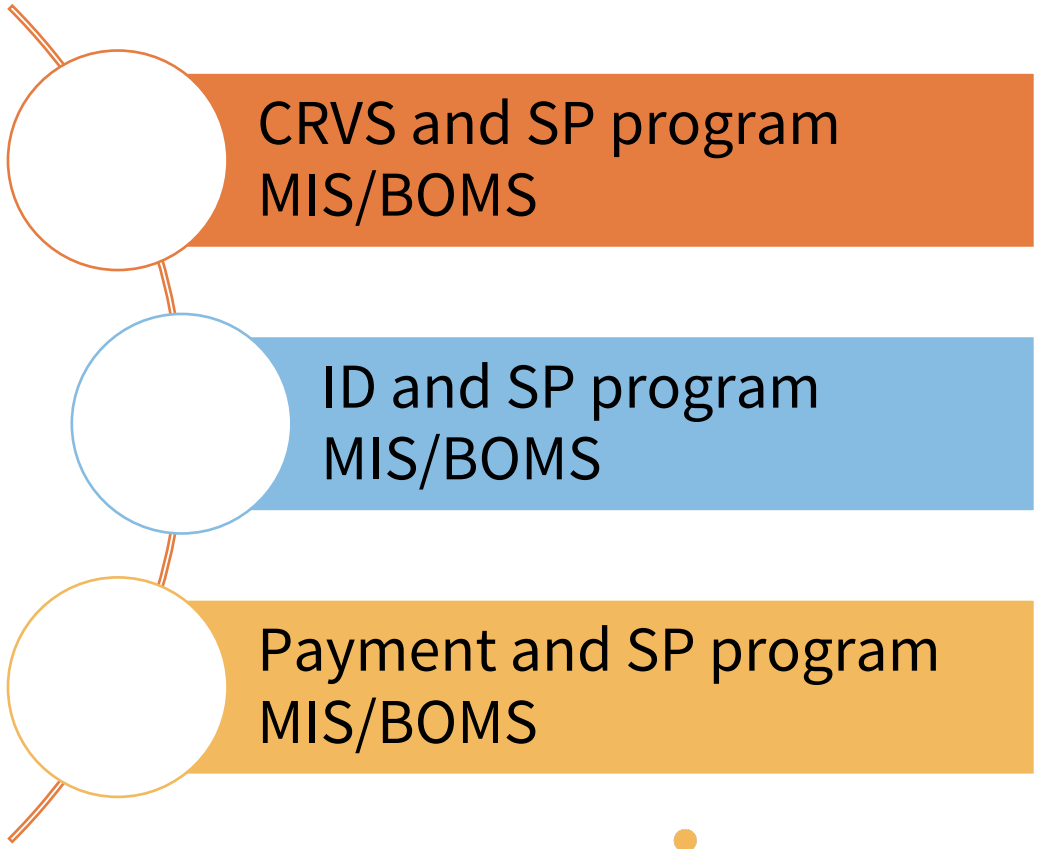
Three working groups proposed for interoperability and integration

- Share country use cases
- Participate in preparing integration process workflows
- Development of Technical (API) and data standards
- Support reference implementations in sandbox
- Adopt standards in country use case implementations



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Closing remarks

Events & records

Next events in April

- webinar on digital principles
- dialogue series session 2 – Belgium

more information soon on
www.sp-convergence.org

and registration
mail@sp-convergence.org

Records & presentation

- www.sp-convergence.org
- participation in the working groups -> link for the jam board or mail@sp-convergence.org

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Website and social media

www.sp-convergence.org

www.linkedin.com/company/social-protection-convergence-initiative

www.socialprotection-convergence.discourse.group

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