Digital Convergence USP2030

LEARNING BRIEF

Standards-Driven Interoperability: Unlocking the Power of Integrated Digital Ecosystems

This brief summarises key learnings from the dialogue on Standards-Driven Interoperability: Unlocking the Power of Integrated Digital Ecosystems held on May 21, 2026. The brief was prepared by Amirhosein Rahbari based on the presentations by Romina Fernandez, Senior Public Consultant – EU DIGITS; Edward Duffus, Co-Founder and CEO – OpenCRVS; Rachik Raj Sharma, Technical Expert – MOSIP; Venkatachalam Ganapathy, Principal Architect – OpenG2P; Sunil Parajuli, Solution Architect – openIMIS; and Jeremi Joslin, Executive Director – OpenSPP, with contributions from Jorge Diaz, Digital Transformation Expert; Lamine Fall, Technical Project Coordinator – Expertise France; and Dominique Leska-See, Adaptive Social Protection (ASP) Advisor – GIZ Pakistan. The session was opened by Anita Mittal, Technical Lead – DCI and moderated by Mohamed Almenfi, Social Protection Specialist – World Bank.

Please **click here** to access the recording and presentation slides.

Overview

This learning brief first introduces the Common Assessment Method for Standards and Specifications (CAMSSS), a framework developed by the European Commission to assess and promote interoperable digital standards. It then uses four practical use cases to demonstrate how common standards enable Digital Public Goods (DPGs)—including OpenCRVS, MOSIP, OpenG2P, openIMIS, OpenSPP, and Inji Wallet—to communicate and exchange data, despite being built with different technologies and hosted and managed by different institutions. In doing so, the brief illustrates how interoperability through common standards supports the delivery of integrated social protection services.

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The DCI receives funding from the European Commission and the German Federal Ministry for Economic Cooperation and Development (BMZ). The secretariat of the DCI is jointly housed at Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Expertise France, Foundation for the Internationalization of Public Administrations (FIAP), the International Labour Organization (ILO), and the World Bank. DCI works with a large network of partners who contribute to the definition of standards, the creation of knowledge products or advisory activities.

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I. EU CAMSS

The Common Assessment Method for Standards and Specifications (CAMSS), developed by the European Commission, is a guide for assessing, selecting, and justifying standards and specifications in eGovernment projects. It provides a structured methodology for assessing whether standards and specifications meet the criteria necessary to support interoperability in digital public services. It supports the selection and evaluation of standards against internationally recognised interoperability criteria.

The CAMSS approach addresses needs beyond Europe through three explicit solution pillars: Assessment Tools to evaluate standards for interoperability and procurement; **Core** Vocabularies to provide common definitions and data models to reduce technical and semantic barriers**;** and **Principles & Standards Libraries** to archive completed assessments for public consultation and stakeholder reuse.

Building on these assets, the CAMSS team initiated a collaboration with DCI in December 2025 to evaluate critical social protection specifications. The partnership includes **European Interoperability Framework** compliance assessment for the **Civil Registration and Vital Statistics (CRVS)** specification, **Integrated Beneficiary Registries (IBRs)**, **Disability Registries**, and **Social Registries** to improve data consolidation and service accessibility. Looking ahead to June 2026, the collaboration will expand to include the **Farmers Registry** specification, aiming to optimise service coordination and strengthen social protection within the agricultural sector.

This collaboration is significant because CAMSS evaluations confirm that DCI standards meet internationally recognised interoperability requirements, providing assurance that they can be adopted and implemented across different countries and institutional contexts.

II. DPGs demonstrations

Digital public goods in social protection

Digital Public Goods (DPGs) are open-source software, open standards, open data, open AI systems, and open content collections that adhere to privacy and other applicable laws and best practices, do no harm, and help attain the Sustainable Development Goals (SDGs). This section, through four use cases, demonstrates the interoperability between different DPGs: OpenCRVS, MOSIP, OpenG2P, Inji Wallet, OpenIMIS, and OpenSPP (Table 1).

Table 1: Key open-source DPGs in social protection.

OpenCRVS	OpenCRVS is designed for civil registration, tracking foundational life events such as births, deaths, marriages, and divorces, with a specific focus on the operational needs of low- and middle-income countries. OpenCRVS serves as the legal civil registration system that initiates the user journey at the local level. During a live registration, the platform captures all critical data required for a vital event, such as a child's birth details, delivery type, and informant records. It manages data validation and integrates directly with identity providers. Once external validation is complete, OpenCRVS receives and displays the generated unique national identification number. Finally, the platform handles the issuance of a digital birth certificate in the form of a verifiable credential.
MOSIP	Modular Open Source Identity Platform (MOSIP) functions as the national identity ecosystem that securely processes identity data and issues foundational credentials behind the scenes. By exposing its Packet Manager module via an API, MOSIP directly ingests the life-event data collected by the civil registry (e.g., OpenCRVS), effectively serving as an online registration centre and eliminating the need for citizens to visit a physical ID centre. For identity verification during registration, MOSIP utilises its ***eSignet*** **module** to perform authentication via simulated one-time passwords (OTPs) or biometrics. Once the request passes through internal processing stages, MOSIP generates a Unique Identification Number (UIN) and securely shares it back to civil registry (e.g., OpenCRVS).
Inji Wallet	Inji Wallet acts as the citizen-facing digital wallet on mobile or phone that empowers individuals to retain ownership of their personal data assets. It is an open-source digital wallet designed to securely store, manage, and share verifiable credentials, such as national IDs, driving licenses, and digital certificates. By scanning a QR code generated by the OpenCRVS, the wallet then securely downloads and stores the verifiable data (birth, death, etc) credential locally. When seeking social assistance, the citizen uses the wallet to present the credential to other public entities (e.g., social protection office) by scanning a registry-generated QR code. This enables a secure data exchange without physical paperwork, leading to automated form-filling and streamlined enrolment into the social registry.
OpenG2P	OpenG2P digitises and automates the delivery of social benefits and cash transfers. It provides modular building blocks that streamline the entire distribution process: • **National Social Registry (OpenG2P-SR):** This component ingests data from trusted external systems using DCI standards. It verifies the digital signatures of the originating platform, pre-populates intake forms, and automatically links individuals to their corresponding household rosters. It dynamically updates household attributes, such as tracking the number of children under five. • **Program Beneficiary Management System (OpenG2P-PBMS):** This component manages all social protection programmes by setting specific eligibility criteria and determining financial entitlements. It runs asynchronous background

	queries against the social registry to automatically screen, verify, and approve beneficiary lists. Once approved, it calculates the transfer (e.g., $100 per child under five) and prepares disbursement files to route digital cash through banking channels. • **SPAR (Social Payments Account Registry)**: This module manages the mapping between a beneficiary's unique ID and their Financial Address (FA), such as a bank account, mobile wallet number, etc. **G2P Bridge:** It is a standalone Digital Public Infrastructure (DPI) component that connects government social protection systems with downstream Disbursement Service Providers (DSPs).
openIMIS	openIMIS is a versatile open-source software which supports the administration of health financing and social protection programmes. It is specially designed to manage the complex, high-volume data flows which are required to operate such schemes by seamlessly integrating beneficiary, provider and payer data in a single platform.
OpenSPP	OpenSPP is an open-source, modular and highly interoperable platform for social protection offering a comprehensive management information system and dynamic registries, which can be easily adapted to a country's needs, goals and existing systems. OpenSPP building blocks include Identification & Registration, Needs Assessment, Eligibility & Enrollment, Entitlement Calculation, Entitlement Delivery, and Exit & Graduation. Key products include SP-MIS, Social Registry, Farmer Registry, Disability Registry, and Disaster Response Inventory Management System.

Source: the webinar on Standards-driven interoperability: Unlocking the power of integrated digital ecosystems

The following four use cases demonstrate the value of adopting DCI common standards instead of custom point-to-point system integrations. By providing common data models and standardised interfaces, DCI standards reduce integration time and long-term maintenance costs, accelerate the deployment of new digital services, improve the reliability and scalability of cross-sectoral data exchange, and preserve vendor neutrality by avoiding dependence on proprietary interfaces.

Use case 1: Providing child support with birth registration through interoperability between OpenCRVS, MOSIP, and OpenG2P

This use case, as illustrated in Figure 1 (located at the end of the brief), demonstrates how DCI standards enable OpenCRVS, MOSIP, and OpenG2P to interoperate through common data models and standardised interfaces. The standards enable trusted information to be exchanged and interpreted consistently across systems, supporting an integrated, end-to-end digital public service centred on the needs of the end user.

The workflow transitions through seven steps across a multi-layered structure:

1. **Declare Birth**: The parent declares the birth of their child directly within a local health facility shortly after childbirth. Using ID standards, the birth is recorded in OpenCRVS, while parent identities are authenticated via MOSIP (using eSignet) to guarantee data quality and cross-system integrity.

2. **Birth Registered & Identity Created**: OpenCRVS executes a formal review and registration process to record the birth details and initiate a digital identity. Through back-end interoperability, MOSIP generates a unique national ID number and returns it to OpenCRVS, establishing legal rights for the child from the youngest age.

3. **Receives Digital Certificate**: Rather than relying solely on paper, OpenCRVS issues a digital birth record in the form of a verifiable credential. This credential is saved directly within the parent's digital wallet (Inji Wallet), providing secure, permanent, and always-available proof of birth.

4. **Parent Applies to Register in Child Support Programme**: To enrol in social assistance, the parent applies using their ID and shares the digital birth record directly from their digital wallet. This online or in-person data capture is managed via OpenG2P-SR and requires no manual paperwork.

5. **Eligibility Check**: The household attributes are ingested and updated within the OpenG2P-SR, which automatically cross-checks and validates the digital birth credential against the trusted data structure received from the OpenCRVS registry. Following this data ingestion, the OpenG2P-PBMS automatically runs asynchronous background checks to evaluate the household's eligibility against predefined program rules (such as verifying the number of children under the age of five). This automated verification eliminates the need for manual paperwork or repeated administrative visits, significantly accelerating processing times.

6. **Support Approval**: Upon the successful completion of the asynchronous eligibility check, the platform resolves the system queue and automatically approves the qualifying family. The household is then officially added to the designated beneficiary list within OpenG2P-PBMS for the corresponding programme. This automated approval prepares the system to calculate the exact entitlement amounts based on the updated household attribute.

7. **Benefit Delivery**: The workflow culminates in the streamlined delivery of cash transfers to the mother.

Use case 2: Death registration and benefit updates through OpenCRVS, MOSIP, and OpenG2P

The death registration use case (Figure 2, located at the end of the brief) is another example of how DCI standards support multiple DPGs to exchange authoritative death registration data through common data models and standardised interfaces, automating benefit updates following the registration of a death in a household:

1. **Death registration in OpenCRVS**: The spouse reports the death at the civil registration office, where the death record is registered in OpenCRVS as the authoritative source of vital events data.

2. **Identity status update through MOSIP:** OpenCRVS interoperates with MOSIP to flag the deceased person's national ID as "deceased", ensuring that identity records remain accurate and up to date across government systems.

3. **Verification and household status update in OpenG2P:** The death record is shared with OpenG2P's social registry, which verifies the individual's status, updates household composition, and records the change in family circumstances.

4. **Automatic benefit recalculation and notification:** Based on predefined eligibility rules, OpenG2P reassesses programme eligibility and recalculates benefit entitlements (e.g., widow support benefits).

5. **Family informed of update**: The household is then notified of the updated benefit amount or programme enrolment, enabling timely and seamless service delivery.

Use case 3: Farmer enrolment in a conditional health programme through OpenIMIS, MOSIP, and OpenG2P

Use case 3 (Figure 3, located at the end of the brief) illustrates how farmers are enrolled in a conditional health programme through the combined use of OpenIMIS, MOSIP, and OpenG2P, enabled by DCI standards that provide common data models and standardised interfaces for the secure exchange of trusted identity and registry data:

1. **Application submission in OpenIMIS:** A farmer applies for enrolment in a conditional health or social benefit programme through OpenIMIS.

2. **Identity authentication through MOSIP:** The applicant's identity is verified using MOSIP eSignet and a one-time password (OTP), enabling the secure retrieval of trusted identity data and reducing duplicate records.

3. **Farmer status verification through OpenG2P:** OpenIMIS queries the OpenG2P Farmer Registry to confirm that the applicant is a registered farmer and meets the programme's occupational eligibility criteria.

4. **Poverty status verification through OpenG2P:** OpenIMIS accesses the OpenG2P Social Registry to verify the applicant's poverty or socioeconomic status and determine whether the household meets programme eligibility requirements.

5. **Programme enrolment in OpenIMIS:** Once eligibility is confirmed through an identity document, using farmer and social registries, the applicant is enrolled in the conditional health programme and assigned the corresponding benefit package.

6. **Notification and benefit activation:** The enrolled farmer receives confirmation of successful enrolment and becomes eligible to access programme benefits and services.

Use case 4: Enrolment in social assistance for widows with disabilities through OpenSPP, MOSIP, and OpenG2P

Use case 4 (Figure 4, located at the end of the brief) shows how DCI standards enable the interoperable exchange of identity, disability, and social registry data across DPGs to work together to facilitate the enrolment of widows with disabilities in social assistance programmes:

1. **Application:** An agent visits the widow to register her details offline using the ID PASS mobile application.

2. **ID Authentication:** The widow's identity is securely authenticated offline using a printed QR code via the MOSIP standard.

3. **Disability Status Verification:** Once the system goes back online, data is synchronised. OpenSPP dynamically queries the Disability Registry to verify and sync her physical impairment status without requiring repeated proof.

4. **Poverty Status Verification:** The system checks the widow's poverty and income level by querying OpenG2P (acting as the Social Registry) to ensure support is targeted accurately.

5. **Widow Enrolment in Programme:** Upon meeting the eligibility criteria, the widow is quickly and transparently enrolled into the Social Assistance for Widows with Disabilities managed within **OpenSPP** (SP System).

6. **Preparing the Cash Transfer:** The widow's cash transfer entitlement is calculated and prepared for delivery within OpenSPP.

7. **Confirmation:** The widow receives final confirmation of her programme enrolment and details, ensuring financial security and dignity.

Key enablers of interoperable and inclusive digital ecosystems[1]

Traditional point-to-point integrations often create complex and difficult-to-maintain digital architectures, where changes in one system can disrupt data exchanges with others, resulting in

[1] Based on insights shared during the Q&A session and panel discussions

operational bottlenecks and increased maintenance efforts. **Adapting DCI standards breaks system silos by functioning as a universal translator.** Rather than replacing functional, sector-specific registries or abandoning historical IT investments, DCI provides a common interoperability layer that aligns disparate platforms. This architectural shift establishes secure, real-time data exchanges while eliminating data loss and reducing long-term maintenance costs.

Cross-agency data harmonisation often stalls due to differing data definitions, institutional terminology, and proprietary standards**. DCI standards help overcome these challenges by providing a common, internationally developed data model that enables institutions to interpret and exchange information consistently.** This shared framework also supports data minimisation by allowing institutions to verify only the specific information required for a given purpose, rather than duplicating and storing large volumes of data across multiple systems.

To ensure universal inclusion, a foundational national identity system—while ideal—is not a strict prerequisite for cross-sectoral service delivery. In countries lacking a unified national ID registry, ecosystems can flexibly ingest and map localised "functional IDs" generated by trusted entities, such as birth registration numbers from civil registries. To prevent the exclusion of vulnerable populations in low-connectivity areas, the featured systems leverage robust offline enrolment capabilities and digitally signed QR codes, enabling local field agents to securely verify identities before asynchronously synchronising data with central servers.

Reflecting on the complex digital landscapes of federalised systems like Pakistan, technical integration represents only 10% of the implementation battle, while the remaining 90% is a governance question. Interoperability frameworks must manage distributed mandates between federal and provincial authorities without blurring legal boundaries or institutional accountability. DCI-inspired frameworks act as the institutional "rules of engagement," establishing clear data ownership and use cases. This strong governance foundation allows provincial social protection management information systems to securely query national registries in real time.

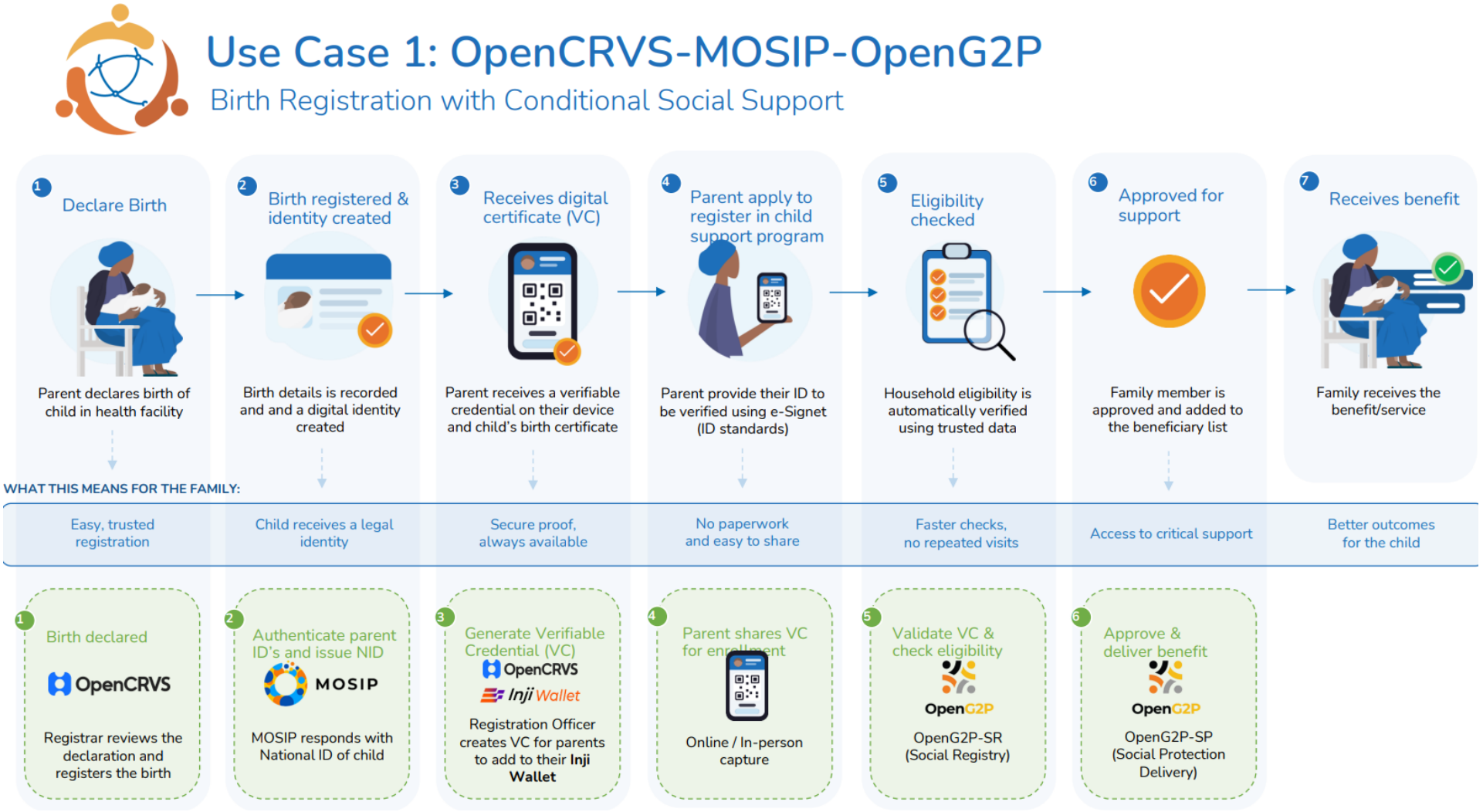

Figure 1: Use case 1, with the administrative process steps at the top, the impact on the family in the middle, and the interoperable DPGs involved at the bottom. Source: the webinar on Standards-driven interoperability: Unlocking the power of integrated digital ecosystems

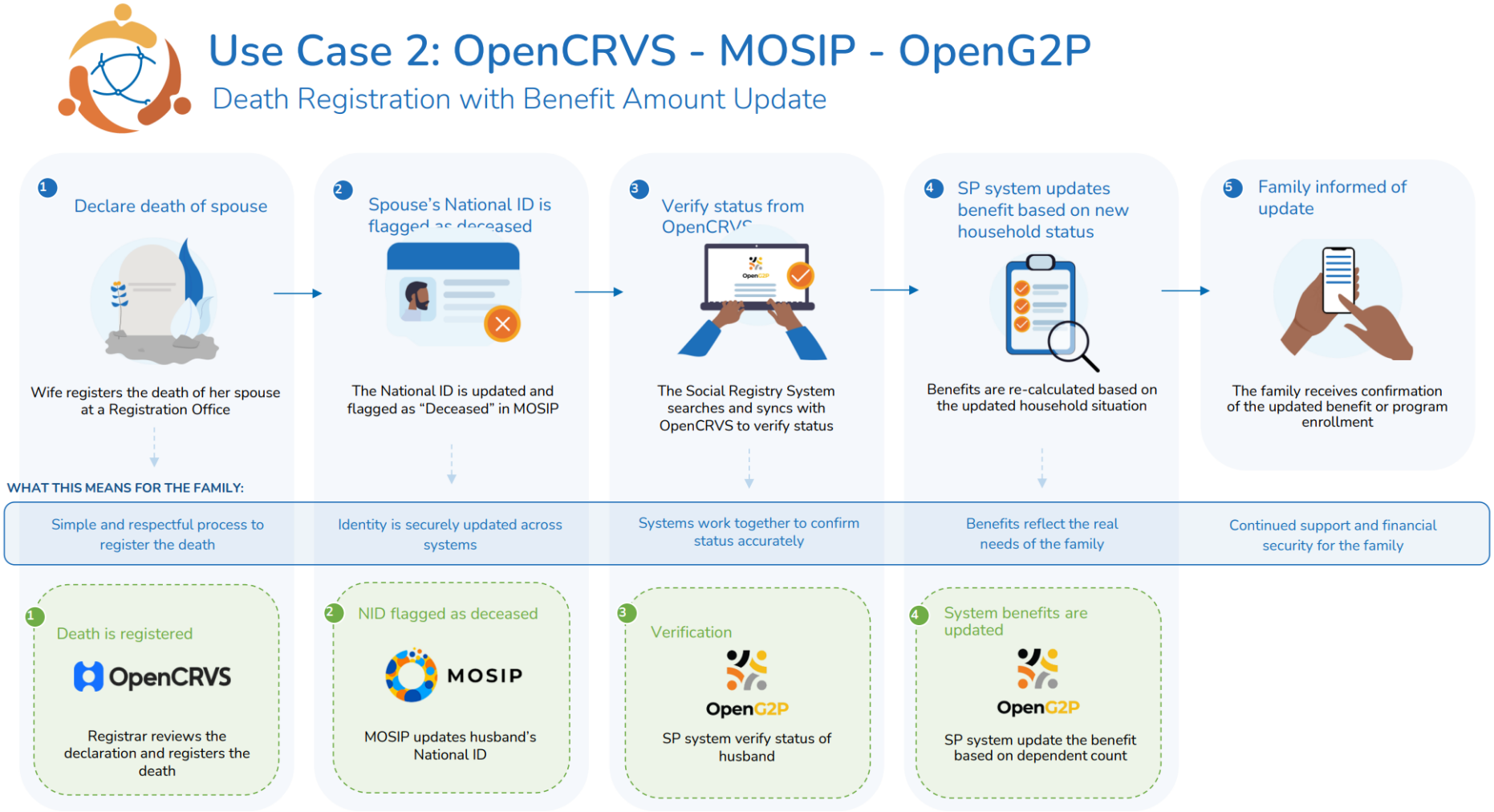

Figure 2: Use case 2, with the administrative process steps at the top, the impact on the family in the middle, and the interoperable DPGs involved at the bottom. Source: the webinar on Standards-driven interoperability: Unlocking the power of integrated digital ecosystems

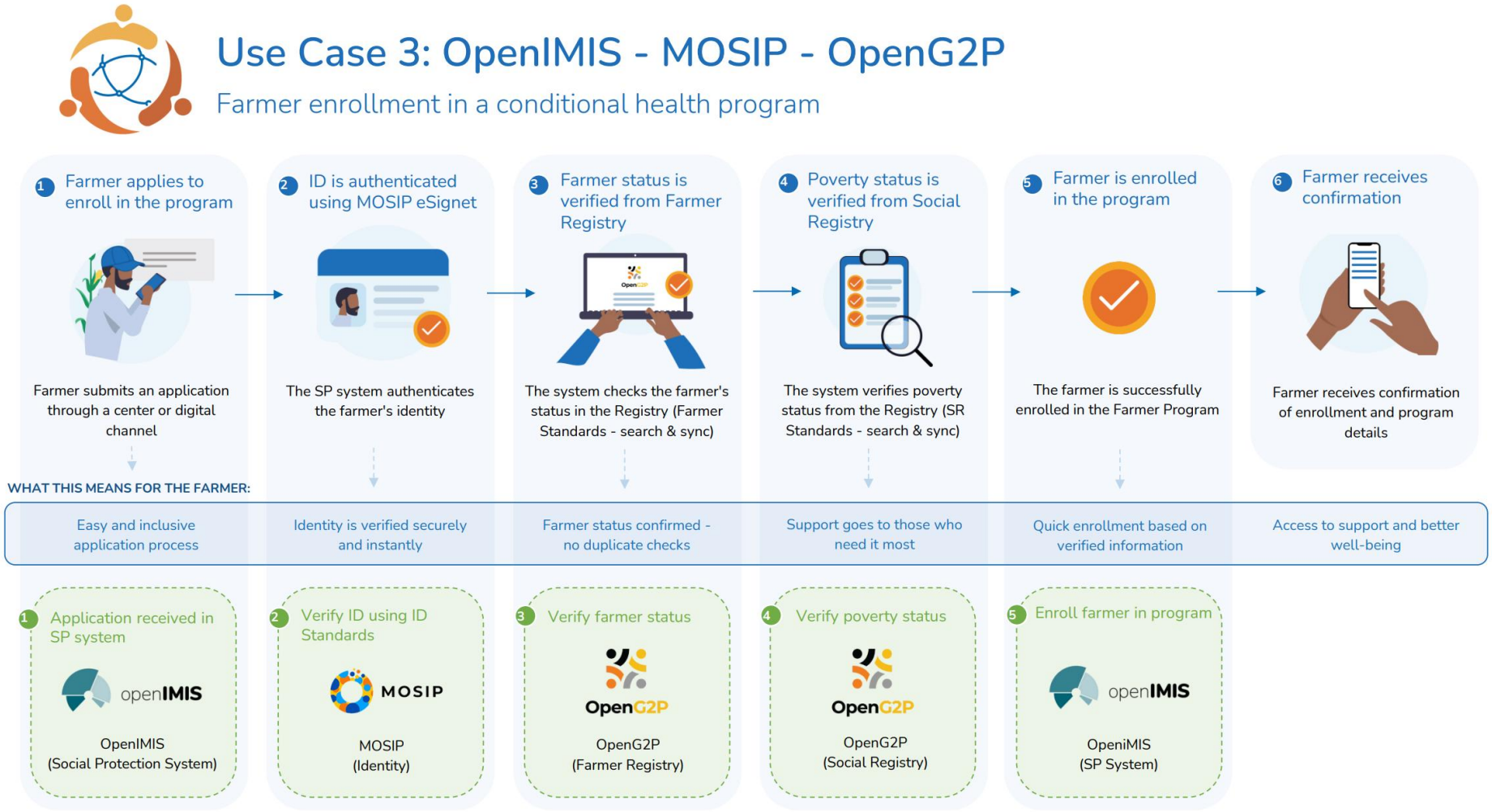

Figure 3: Use case 3, with the administrative process steps at the top, the impact on the family in the middle, and the interoperable DPGs involved at the bottom. Source: the webinar on Standards-driven interoperability: Unlocking the power of integrated digital ecosystems

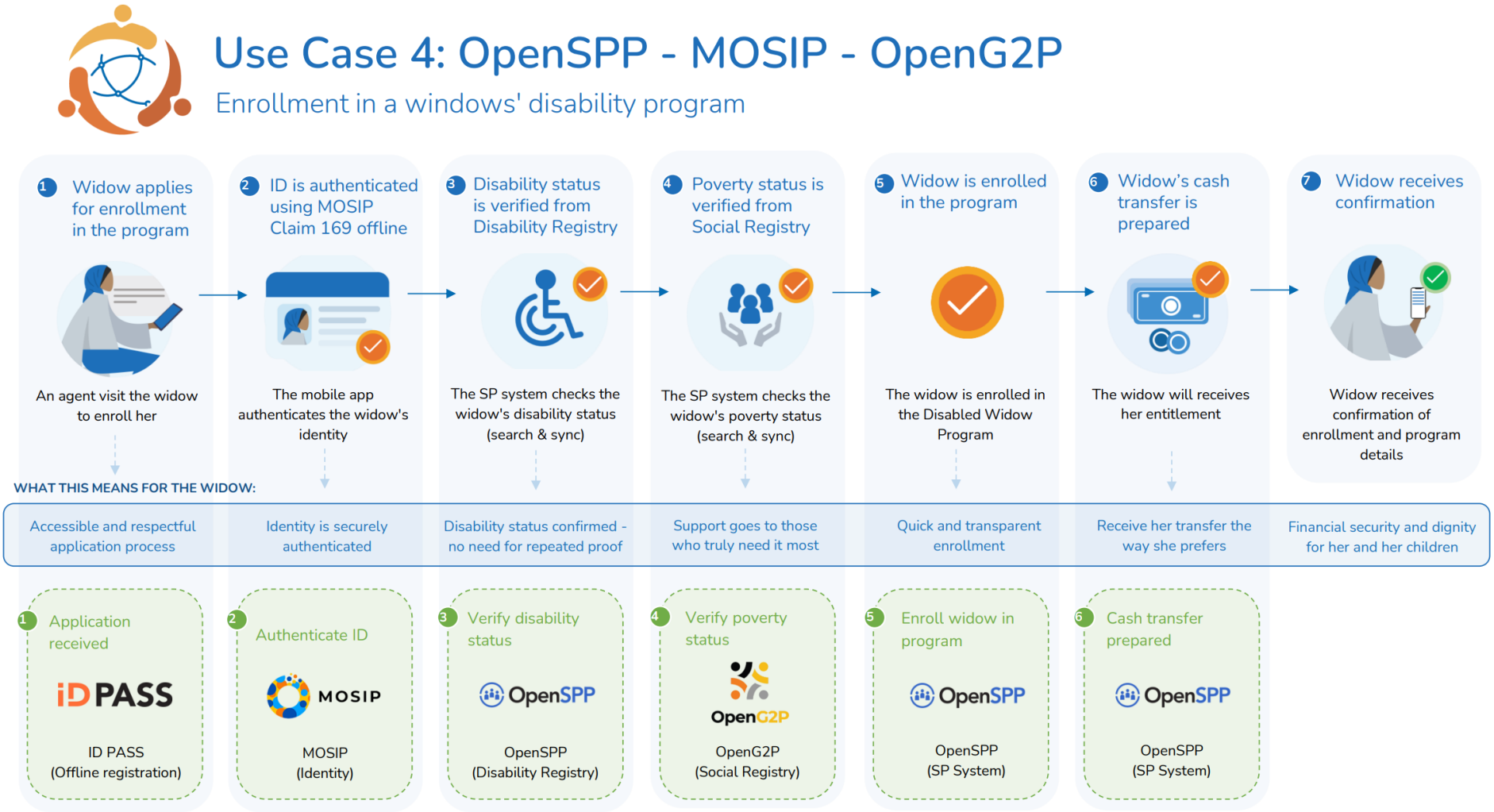

Figure 4: Use case 4, with the administrative process steps at the top, the impact on the family in the middle, and the interoperable DPGs involved at the bottom. Source: the webinar on Standards-driven interoperability: Unlocking the power of integrated digital ecosystems