Building an integrated and digital social protection information system

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Department for International Development

Acknowledgement

This paper is derived from a longer technical paper on the same topic, published by GIZ and authored by Richard Chirchir and Valentina Barca. The valuable comments of Philippe Leite (World Bank), Emily Henderson (DFID), Roopa Hinton (DFID), Alicia Spengler (GIZ), Kelvin Hui (GIZ), Dominique Leska (GIZ), Ralf Radermacher (GIZ), and participants of the conference 'Tying the digital knots' are gratefully acknowledged.

Imprint

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Bonn, October 2019

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Why a digital and integrated system?

Developing a digital and integrated information system is a crucial step in building a national social protection system. It enables the flow and management of information within the social protection sector and between social protection and other sectors such as education, health, agriculture, humanitarian and disaster risk management (DRM). Why? Because the ability of a country to care for its people and respond to their lifecycle needs depends on its ability to identify those who are in need, enrol them, provide tailored benefits and services, and follow up to cater to evolving circumstances. Governments also need to be able to monitor programme impacts and track and adequately plan expenditure. All of these actions require dynamic and real-time data and information exchange if the goal of universal coverage is to be achieved.

Why digital? Managing social protection programmes involves the collection, processing, storing, and use of data for decision-making and the support of operational delivery. As in other sectors, ensuring these processes are digitised can help to reduce error and simplify and speed up processes, while better transforming data into information – among other things.

Why integrated? While there are benefits to each social protection programme operating its own digital information system, the integration of selected functions along the social protection delivery chain – as well as interoperability with other government systems – can help to reap economies of scope and scale. It can also help to focus on 'systemic' outcomes: better understanding of the *demand* for social protection (e.g. differential needs across population groups and lifecycle stages) and better coordination and monitoring of the *supply* of programmes to address those needs across sectors.

Outcomes

So, what **benefits** could a digital and integrated social protection information system help to achieve, when designed to address the common risks that digitisation and integration entail? A digital and integrated social protection information system is expected to better serve the needs of the people, by focusing on the following outcomes:

Inclusion

Responsiveness and dynamic inclusion: Increasing the responsiveness and inclusiveness of interventions to serve people in need, dynamically responding to individual lifecycle shocks and stressors (e.g. job loss, disability, childbearing or old age) or large crises (e.g. natural disaster, conflict), as well as enabling beneficiaries to transition between schemes as their circumstances change

Coordination and linkages: Supporting the planning and implementation of comprehensive social protection systems including supporting coordination across social assistance programmes and between social assistance and social insurance programmes, as well as links to wider social and economic policies (e.g. for humanitarian aid and DRM) – via enhanced data sharing and comprehensive understanding of needs

Equity: Supporting investment – based on objective, comprehensive and comparable information – to address the uneven and unequal provision of social protection across social groups and administrative jurisdictions

Efficiency and effectiveness

Reduced burden on people: Improving the user experience for applicants by lowering documentation requirements and enabling people to apply for several programmes at once, as well as to access selected services/their own information online and via digital platforms, etc.

Reduced burden on staff and government systems: Reducing overall paperwork, manual reporting and other manual and time-consuming activities (e.g. preparation of payment lists and payment reconciliation)

Evidence-informed decision-making and management: Increasing access to relevant data at all levels of implementation (including external stakeholders where relevant and secure), to support planning, budgeting and overall decision-making and management

Lower gaps and duplications in processes and benefits: Reducing gaps and duplication across programmes and along the delivery chain, establishing common systems across schemes (e.g. for registration, payments, grievances) and reducing both private (on people) and public (on administration) costs

Accuracy and integrity

Management of error and fraud: Supporting improved processes for identification, verification, validation, processing and analysis to better manage and prevent error and fraud, while improving governance, overall data accuracy and system integrity

Accountability and citizen empowerment

Transparency: Ensuring that the rationale for policy decisions is clearly understood and that all programmes demonstrate accountability to their beneficiaries, civil society, the government and funders (e.g. information shared and compared)

Oversight, reporting and planning: Facilitating oversight of multiple schemes and reporting, including ongoing monitoring and evaluation

Feedback, grievances and appeals: Harnessing digital tools – where relevant and appropriate – to enhance citizen direct engagement and integrating feedback in the form of iterative changes to policies and programmes.

Knowledge: Improving understanding of poverty and vulnerability (including via guaranteeing access to third parties such as universities) to inform long-term policy debates

Digital innovations: Enabling broader digital innovations (not just government led) that build on the digital platform to better inform beneficiaries and deliver better services to boost outcomes around a set of common standards, rules and principles

These objectives present an ambitious vision in terms of the ultimate goals countries may want to achieve when building an integrated (digital) social protection information system. Depending on each country's evolving context, history and policy priorities, very different trajectories and investment choices are possible and countries must choose the path that makes the most sense – which means that not all the 'benefits' listed above can, or should, be reaped at once, or at all.

This paper, therefore, builds on recent experiences in countries that have been developing integrated social protection information systems to briefly set out the key building blocks required, while also acknowledging the main challenges and risks that need to be mitigated and addressed along the way.

Key challenges

Complexity and costs

The complexity of designing and iteratively implementing a digital and integrated information system that fully responds to the changing needs of users at all levels of administration, while also placing people at the centre, is often under-estimated. The time and cost, not only for set-up, but also for take-up, maintenance and continuous adaptation, needs to be addressed. Ultimately, the cost for people to access and use the system needs to be minimal, and the benefits tangible to all: this is not easy to guarantee in contexts with little prior experience with digital systems. If the benefits are not visible, the risk is failure (the new system is not used, or worse, creates significant setbacks).

Coordination and data politics

Information is power, and a digital and integrated information system working across the social protection sector and beyond concentrates that power, leading to coordination challenges and data politics (e.g. unwillingness to share data and cooperate to achieve common objectives). An 'infrastructural' whole-of-government approach is required to remove these silos.

Lack of critical capacity and risks to sustainability

In contexts where the required capacity is not housed in existing units, agencies or ministries, at all levels of administration, systematic capacity building efforts are critical. Of course, development and maintenance tasks can be contracted out to the private sector or supported by development partners. Yet this can pose serious threats in terms of system ownership and long-term sustainability, especially in contexts where social protection business processes are nascent and evolving.

Starting 'too big'

Delivery systems and social policies evolve over time, evolution is not linear and the starting point matters. Investments and efforts to develop simple, but well-designed, systems – based on a clear assessment of the status quo and future needs – are essential before adding other features (e.g. new modules and functionalities). The risk of starting too big is, again, failure.

Lack of broader infrastructure

Telecommunication links are often unreliable in rural areas in low and middle income countries, a factor that hampers the capacity to fully operate an online information system. The lack of other critical infrastructure may also pose significant risks to digitisation efforts.

Key risks

Data privacy and security

The right to privacy is a fundamental human right, yet the digitisation of information and integration across multiple sources can expose data subjects to multiple risks (hacking, data loss, misuse, etc.).

Systematic exclusion and automated profiling

Digitising approaches to data collection, processing and citizen interfaces (e.g. a digital payment system) can introduce new and different risks of exclusion compared to 'traditional' approaches. When linked to systems for the automated profiling of individuals and households, based on information that may be incomplete or unverified, these risks can be exacerbated – unless explicitly addressed. This is especially the case in contexts where registration and the assessment of needs and conditions are integrated across programmes and diverse regions, creating the risk of multiple and systematic exclusion across all social sector schemes. This stresses the need for a strong focus on data quality, inclusive registration systems (e.g. on demand) as well as easily accessible and accountable grievance mechanisms.

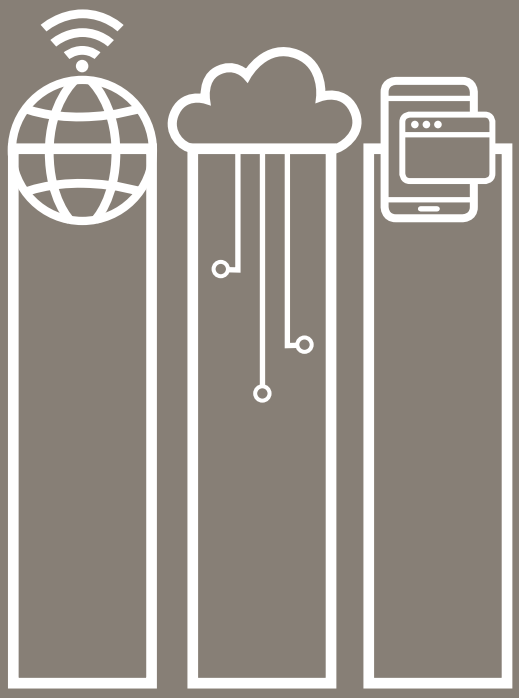
Digital austerity

Another risk is that the information system will be used to effect "reductions in the overall welfare budget, a narrowing of the beneficiary pool, the elimination of some services, the introduction of demanding and intrusive forms of conditionality, the pursuit of behavioural modification goals, the imposition of stronger sanctions regimes" (Alston, 2019).

Loss of human interaction

There is a risk of "eliminating human interaction and compassion [which] are likely to be indispensable components in providing at least some welfare recipients with the care and assistance they need" (Alston, 2019).

2



What are the building blocks?

2.1 Key components

From a practical point of view, digital information systems for social protection are the product of a set of 'components' that work together as a system. Broadly, these are the same at the programme and integrated levels (more on this in the next sub-section), but with the increased integration of social protection systems (and their underlying programmes and delivery systems) information systems can require higher level of complexity (and underpinning capacity and resources).

Information and communications technology (ICT) infrastructure

This refers to the resources and services required for the existence, operation and management of the IT environment. The ICT infrastructure includes the chosen hardware and telecommunications systems, which will vary depending on the functions performed and country context (e.g. broadband and mobile phone penetration, potential for cloud-based solutions, etc.).

Registry/database

These are broadly interchangeable terms indicating a data repository and a system to organise, store and retrieve large amounts of data easily. In the social protection sector, the term 'registry' is primarily used in the context of integration and as shorthand for 'database + software applications that transform data into information' (see below).

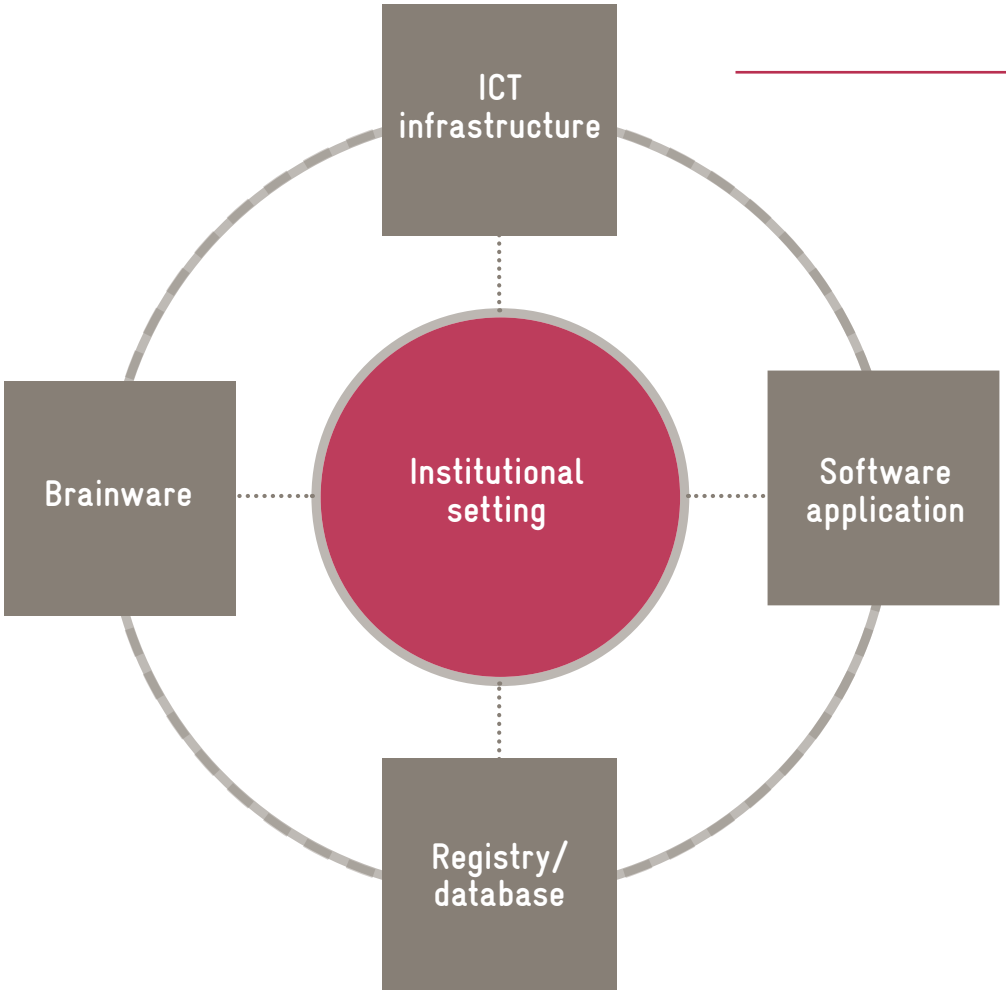


Figure 1: Components of digital information systems for social protection

Software

Software is the tailored applications that help manage, link (e.g. via application programme interfaces or APIs) and process the data, transforming data into information and analysing/using the information for different purposes (depending on the functions it has been designed to perform). For example, front-office software applications may provide a visual interface for citizens and frontline workers, while back-office software supports the management of business processes and data analysis.

'Brainware'

This refers to human resources. A sufficient number of competent and adequately trained human resources is needed at all levels of administration and with a broad range of skills (e.g. bridging IT and sectoral knowledge). As well as a strong understanding of social protection policy objectives, key skills include:

IT skills: Database administrators, network administrators, system developers and administrators, security specialists, data entry clerks, etc.

Programme management and business process engineering skills: Professionals who understand the delivery systems of existing social protection programmes and the needs of end-users, including how these can be better addressed via digitisation and integration

Analysis skills: Experts in economics, statistics and quantitative data analysis

Promotion and capacity building skills: Supporting coordination and data sharing across multiple stakeholders, as well as understanding/'buy-in' to the system and its functions (via training, newsletters, workshops, website, etc.)

Institutional setting

Weaving through all the other components is the institutional setting that underpins the information system. This includes:

Policy and legal backing for:
- The social protection sector (e.g. including a vision for policy and operational integration)
- The social protection information system and its underlying registries (e.g. clearly defined functions, roles and responsibilities)
- Broader e-governance (e.g. creating an enabling environment and addressing key risks such as data privacy)

A clear institutional/governance framework: Clear ownership at the highest levels of government and institutionalised coordination mechanisms (e.g. steering committees, MoUs, etc.) describing roles and responsibilities of each institution to truly drive vertical and horizontal collaboration

An allocated multi-year budget: Encompassing the wide range of costs for:

- System development and uptake: Hardware, software, operational expenses (e.g. infrastructure, electricity, testing and feedback, technology/user training, auditing, insurance, etc.)
- Data collection (if not computed separately)
- System maintenance and use: Hardware replacement, software upgrades and scalability, ongoing training and feedback, etc.
- Business process development and maintenance: Investment in outreach, communications, recertification, audits, spot checks, etc.

Procedures, standards and principles: Governing the collection and use of data building on broadly-endorsed experiences such as international data protection standards and the Principles for Digital Development, crystallised within operational manuals and guidelines

2.2 Three 'pillars'

A social protection information system can be viewed as an 'ecosystem' involving three main pillars:

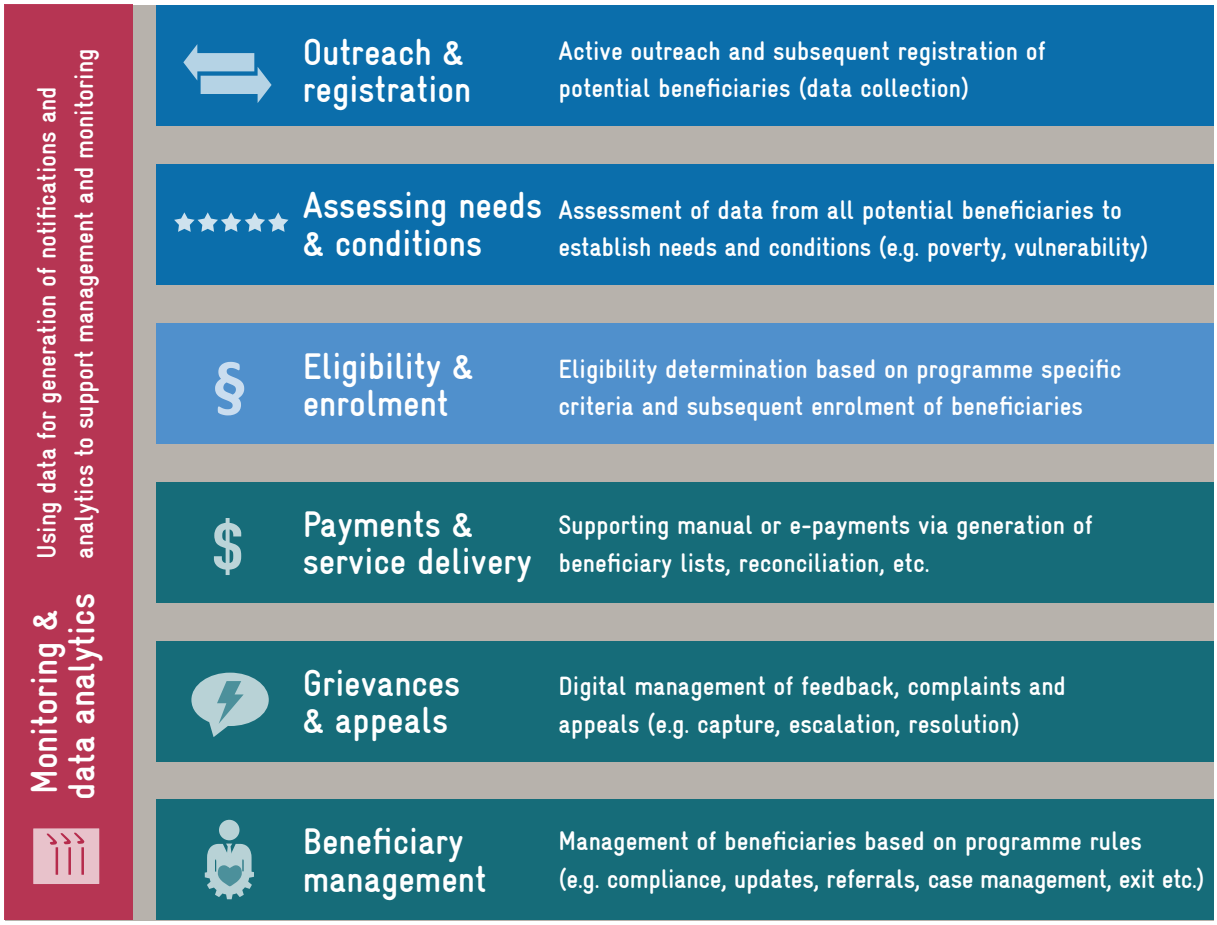
Pillar 1: Supporting programme-specific operations and functions

Pillar 2: Supporting integrated operations and functions across the social protection sector

Pillar 3: Encompassing the broader set of registries and information systems, which can play an important role in enhancing sectoral outcomes (in some countries these may be managed by social protection stakeholders, in others they are managed externally)

Depending on each country's (evolving) trajectory, context, history, needs and policy priorities, this ecosystem of registries and information flows between them may look very different. We analyse each in turn and provide a summary in Figure 3.

Figure 2: Implementation phases along the social protection delivery chain



Pillar 1:
Programme operations and functions

Each social protection programme in a country entails broadly similar implementation phases along the delivery chain. The programme management information system (MIS)[1] – and its associated database – can support the delivery of each of these phases (depending on whether the tailored software application has been designed to do so, e.g. via a tailored module[2]). Countries offering a variety of programmes, catering to different needs and population groups, may have developed tailored MISs supporting similar functions for each separate programme.

1 The World Bank is moving towards calling these 'Beneficiary Operations Management Systems' (BOMS).

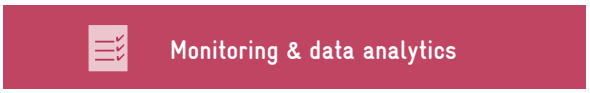
2 For example, in some programmes specific stages of the delivery chain may not be relevant/adopted (e.g. no grievance mechanism) or may not be supported via the MIS (e.g. entirely paper-based).

Pillar 2:
Integrated operations and functions

Some of the core functions along the social protection delivery chain discussed above can be integrated across programmes running on integrated (digital) platforms that serve multiple (or even all) social protection interventions in the country, as well as programmes from other sectors. This helps to address fragmentation and inefficiencies, while better serving citizens, as discussed in section 1. We will discuss these in turn, noting these perform complementary functions.

Social registries:[3] These registries integrate the functions of outreach, registration and overarching assessment of needs and conditions across several programmes. They collect and compile individual and household level data on the socio-economic conditions of potential beneficiaries. They can serve as powerful tools for assessing the demand for social programmes by profiling the specific needs and conditions of various population groups.

3 The term 'registry' here and below is used almost as a synecdoche to indicate the broader information system and all its component parts – not just the 'database' (Section 2.1).



Integrated beneficiary registry: This registry integrates the data analytics function across several programmes. It provides a consolidated overview of 'who receives what' benefits to support coordination, planning and integrated monitoring. As an example, it can help to assess overlaps, gaps and duplications across multiple programmes, while also supporting the consolidation of other functions along the delivery chain.

Payments 'gateway' or 'platform': This integrates the approach to payments across several programmes, while also potentially supporting payments across several channels (e.g. more than one bank, as well as other financial service providers). In some cases, these may build on broader platforms for government to person (G2P) payments adopted by other sectors.

Grievance and appeals platform: This platform provides a digital interface to capture, process and resolve feedback, complaints and appeals. It is open to all members of the public and across several programmes. In some cases, it may build on broader, whole-of-government, grievance systems.

Beneficiary management platform: This platform provides a series of functions that cut across programmes and sectors. Depending on a country's needs and priorities, it may be designed to

encompass the recurring cycle of updating and verifying beneficiary information and progress, verification and tracking of compliance with conditionalities for conditional cash transfers (CCTs) and activation requirements in labour programmes, as well as handling referrals across programmes, case management of complex needs, and supporting exit based on pre-established criteria such as death – and more.

Pillar 3:
Broader registries and information systems

Within this ecosystem, the linkage to a broader set of registries and their related information systems – via a two-way flow of information – can play an important role in achieving intended outcomes (such as inclusion, efficiency etc.). These may sometimes be run by the social protection sector directly, but are most often managed by other sectors and stakeholders externally, increasing coordination challenges and the potential for data politics.

Foundational national ID system: This system can support the identification and authentication of individuals, with potential benefits in terms of interoperability between registries (via a truly unique identifier), as well as the reduction of errors and fraud.

Civil registry: A civil registry can pre-populate, verifie/validate/authenticate and update information on life events (e.g. births, deaths, marriages, etc.).

Disability registry: This registry can help to coordinate disability issues – many countries have established dedicated institutions responsible for the registration and assessment of persons with disabilities (PWDs). Data from the disability registry can be usefully linked to social protection programming, and vice versa, to mainstream support to PWDs.

Income/tax & land cadastre registries: Especially where programmes are means tested, data from tax registries, land cadastres, car registration agencies etc. can be linked to social protection data to aid the assessment and verification of self-reported information for assessing needs and conditions of potential beneficiaries – supporting the prevention of error and fraud.

Education, health, social services systems: Serving the multi-dimensional needs of individuals and households is not something that can be achieved solely via the social protection sector. Data exchange with other social sector information systems can enhance overall coordination and planning, while also enabling practical benefits such as monitoring the compliance of co-responsibilities, pre-populating selected information (e.g. education status) and supporting the assessment of needs and conditions, as well as linkage with other sectors' schemes (e.g. scholarships, social health insurance).

GIS system: This is an information system that manages geospatial data on infrastructure, households, service providers, assets and so forth. When overlaid with data from the social protection sector, it can support monitoring, coordination, planning and operations that are tailored to the needs of specific areas (e.g. identification/targeting of households in a disaster prone or affected area, tailored planning of public works, etc.).

Humanitarian and DRM data/systems (e.g. early warning systems): The humanitarian and DRM sectors often collect and manage information that can be usefully linked to the social protection sector. Important examples include data from early warning systems (EWSs), which can be used to trigger responses to shocks via the social protection sector, and data from past humanitarian responses (e.g. vulnerability assessments, beneficiary databases), which can be used to feed data into existing social protection registries – and vice versa (humanitarians piggybacking on social protection data).

A note on information flows

It is important to stress that as important as each individual 'piece of the puzzle' discussed above is are the information flows between these (represented as arrows in Figure 3).

These flows can be achieved with full interoperability: the ability of a system to share information with other independent systems using common standards and unique identifiers. However, this is not only a technical challenge, but one that requires ex-ante alignment of legislature, organisational business processes and semantics (joint definitions and interpretations) – a journey that several countries around the world are embarking on in the context of a broader vision for e-government.

There are also ad-hoc options for data exchange that are widely adopted (the most simple being the periodic exchange of files via email, CD, or other means and the algorithmic matching of individuals), each presenting significant challenges.

Whatever the approach to data exchange, it is worth keeping the following in mind:

Focusing on the information needs of each user, via joint planning and prioritisation: This should be done while also ensuring that the amount collected and shared is the minimum amount necessary to meet clearly-defined and articulated purposes – alongside broader protections to ensure data privacy.

Focusing on information flows in all directions: This means horizontally within the sector and beyond, as well as vertically across all levels of administration. As an example, information flows from social protection registries to other sectors can support planning and programming that better caters to the needs of the population. On the other hand, information flows from other sectors can support the pre-population of data, triggering of events, and the validation of data collected, etc.

Building a common 'infrastructure' and language: This can be built upon over time and will include developing clear (and ideally open) data standards and common requirements, as is increasingly being achieved within the health sector (e.g. see here).

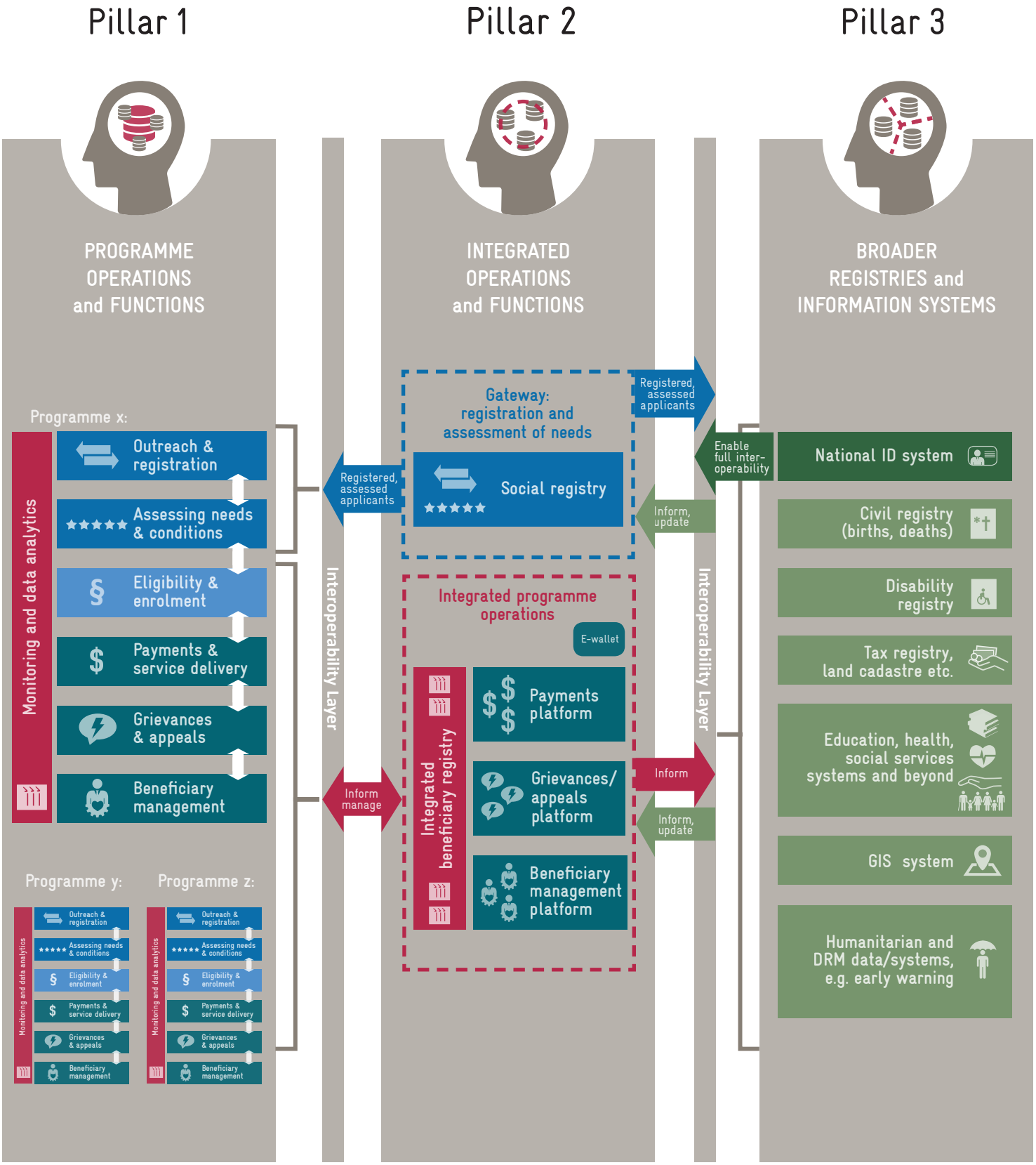


Figure 3:
The three pillars of social protection information systems

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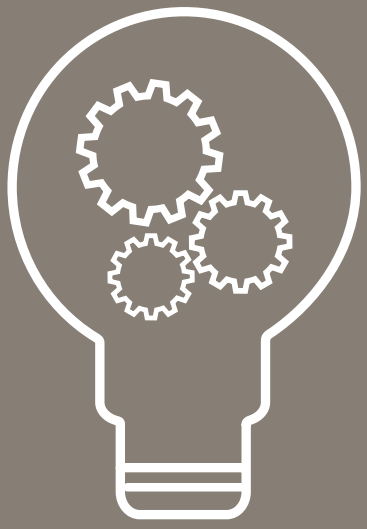

Critical design and implementation choices

The aspects discussed in chapters 1 and 2 above do not illustrate the full scale of the variability of design and implementation choices across countries, which ultimately affect the performance of the social protection information system as a whole. These choices vary over time, depending on a country's starting point, and evolving constraints and opportunities. This chapter briefly touches on some of the most critical questions that can be used to assess the potential performance of any system against its desired objectives.

What functions and data flows are prioritised and how do these design choices ultimately respond to the needs of users?

For example

- Is digitisation only at the programme level, via programme MISs, focused on programme-specific delivery functions?
- Is there a focus on the integration of the 'gateway' functions of registration and assessment of needs and conditions via a social registry?
- Is there a focus on the integration of data across programmes to enhance oversight and accountability, while enabling common delivery systems across programmes (via integrated beneficiary registries)?
- Is there a focus on integration beyond the social protection sector, to enhance whole-of-government efforts and a people-centred approach?

What outreach and intake strategy is used and how is data kept up to date?

The use of census survey approaches or 'on demand' approaches, or a strategic combination of these, can lead to very different outcomes and have implications for the updating of information in the future. 'Touchpoints' for the updating of data via digital interfaces (e.g. a website or app) and data exchange can also play an important role.

What % of the population is covered?

The percentage of the population covered within the information system can vary from less than 5% to almost 100% of the population (depending on the policies and programme design choices), with obvious implications – especially if the data is used to support the selection of beneficiaries.

Whose data is collected and stored and how is the potential for exclusion explicitly addressed?

Depending on the approach to data collection, validation and updating – as well as programme specific qualifying conditions (e.g. citizenship requirements) and eligibility criteria – certain categories of individuals and households may be systematically excluded if strategies are not in place to address this. Again, this has important implications if the data is used to support the selection of beneficiaries.

How is data verified, validated and stored?

Data quality and overall trust in the information generated can vary significantly and are core to the system's success.

What data is collected and stored?

Depending on the user programmes and broader use-cases, very different variables might be collected and stored.

How is data used for monitoring and evaluation, management, accountability, knowledge generation and evidence-based policy making?

Digitised data is not useful per se, but only if systematically transformed into information and used to improve programme design and implementation – yet many countries lack the data analytics capacity to reap potential benefits.

Interoperability and data sharing – where is data flowing to and from and how is that operationalised?

This depends on the nature of the unique identifier used, data sharing architecture selected and approaches to data standardisation adopted, among other (political and institutional) aspects.

How is data privacy and security guaranteed?

This depends on the legislation and implementation of privacy by design principles. Beyond national legislation, which is often inadequate in low and middle income countries, the right to information privacy is embedded in the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights (ICCPR) and ILO's Social Protection Floors Recommendation 2012 (No. 202), which explicitly calls on states to "establish a legal framework to secure and protect private individual information in their social security data systems" (paragraph 23).

These design choices illustrate, that the development of an integrated social protection information system is at least as much a political process as it is a technical process. While choices on the aspects listed above vary by country, visionary government leadership, that is also consultative across stakeholders, emerges as good practice when developing an integrated and digital social protection system.

Bibliography

Alston, P., *Report of the special rapporteur on extreme poverty and human rights*, Digital Welfare States and Human Rights, 2019.

Azuara, F., Otón, S., Ruggia, R., Hilera, J. and Gutiérrez-Martinez, J.M., *Proposal of an interoperability model for social security information systems*, 2013.

Barca, V., *Integrated data and information management for social protection: Social registries and integrated beneficiary registries*, Department of Foreign Affairs and Trade (DFAT), Canberra, Australia, 2017.

Barca, V. and Chirchir, R., *Single registries and integrated MISs: De-mystifying data and information management concepts*, Department of Foreign Affairs and Trade (DFAT), Canberra, Australia, 2014.

Birdsall, K. and Von Roenne, A., *Tying the digital knots. A conference on digital technologies and the road to universal social protection*, Healthy Developments, Federal Ministry for Economic Cooperation and Development (BMZ), Germany, 2018.

Chirchir, R. and Barca, V., *Building an integrated and digital social protection information management system: Technical paper*, (GIZ) 2019.

Leite, P. G., George, P., George, T. Sun, C., Jones, T. and Lindert, K. A., *Social registries for social assistance and beyond: A guidance note & assessment tool*, Social Protection and Labor Discussion Paper 1704, World Bank, Washington, DC, 2017.

Lindert, K., George Karippacheril, T., Rodriguez Caillava, I. and Nishikawa Chavez, K., *Sourcebook on the foundations of social protection delivery*, (forthcoming).

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