Integration of civil registration and vital statistics systems with national ID systems: the need for process mapping

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Introduction

Legal identity is the gateway credential to enable citizens' rights and government services. The ability to authenticate oneself when interacting with the government enables access to government services (e.g. health care, education or social protection schemes) and empowers citizens to exercise their rights (e.g. electoral rights, inheritance, land tenure). On the government side, having a functional identity system has been shown to increase efficiency and transparency in government administrative processes, improve targeting of social programmes, or improve population safety (e.g. cross-border refugees) (1-4). The private sector also benefits from being able to authenticate individuals (e.g. opening a bank account or transferring properties).

DEFINITIONS

Civil Registration and Vital Statistics (CRVS) system: Universal, continuous, permanent and compulsory recording of vital events provided through decree or regulation in accordance with the legal requirements of each country (9)

Population register: Mechanism for the continuous recording of selected information pertaining to each member of the resident population of a country or area, making it possible to determine up-to-date information about the size and characteristics of the population at selected points in time (9)

Legal identity: Legal civil status obtained through civil registration at birth and civil identification of unique attributes such as a personal identification number and biometrics that recognizes the individual as a subject of law and protection of the state (23)

Identification: Process of pinpointing or singling out an identity (23)

Authentication: Process of establishing beyond doubt that an actual person taking part in an interaction is really the person who has a certain identity (19)

Process: The set of activities and tasks that logically group together to accomplish a goal or produce something of value for the benefit of the organization, stakeholder, or customer (20)

Process map: Graphical representation of an end to end description of a process where the different actors involved, the activities they perform, and their relationships are displayed (20)

The benefits of a robust and reliable CRVS system are also well documented (5, 6). In addition to providing the best feeder document to establish unique identity at birth (birth certificate) (7), CRVS systems are the best source of vital statistics in a country (8, 9). CRVS systems provide a reliable, continuous and universal flow of information about vital events that can be disaggregated to produce estimates at the local level. Indeed, 67 of the 270 indicators to monitor Sustainable Development Goals (SDG) can be effectively measured with a functioning CRVS system (10). Information such as the number of people that live in a country, their leading causes of death, fertility rates or life expectancy, enhances public administration and provides decision makers with the information they need to respond to the needs of citizens through more effective, efficient and directed policies at national and local levels (11).

However, millions of people worldwide do not leave a trace in the administrative records in their entire life. Their birth is not registered, important vital events such as marriage are not recorded, they are never in an electoral roll and thus never voted, and when they die, neither the death is counted nor the cause of death known and reported. According to the World Bank more than 1.1 billion people do not have a legal proof of identity 78% of whom are in Sub-Saharan Africa and South Asia (12).

CRVS systems and National ID (NID) systems share the common goal of providing individuals with legal documents that establish the civil status of a person (in the case of the CRVS system) and to allow the authentication of an individual (in the case of the NID system). The CRVS system is (or should be) at the core of the NID information ecosystem. To exploit effectively the potential synergies between CRVS and NID systems to increase coverage and improve efficiency, both must be seamlessly integrated and there must be a smooth and coordinated flow of information and actions between the two systems. Creating separate identification systems to satisfy different sector-specific demands (e.g. CRVS, NID, health system, education system…) is not efficient and could lead to multiple registers of the population (which sadly is common many countries).

This keynote describes some elements to consider for an effective integration of CRVS and NID systems (the need for a systems approach, the importance of a unique ID and the role of a population register), and it presents process mapping as a powerful tool for countries to facilitate this integration.

1. CRVS and NID systems integration

1.1 Systems approach for integration

CRVS and NID information ecosystems are complex adaptive systems. They perform hundreds of activities every day to continuously register vital events, to produce statistics for a country and to provide ID to individuals. They have their foundation in laws and regulations which sometimes are conflicting and involve stakeholders across multiple ministries (13) which are organized (or not) around several different governance mechanisms.

Integrating two systems is not a matter of finding the right tools or technical solutions to connect two information systems. There is a variety of systems issues that must be consider for an effective integration (14). One example of this approach can be seen in Botswana where civil registration is a key foundation of the national ID management system. The national ID is the gateway to most government services and administrative processes in the country such as being included in electoral rolls, access to health and education services or getting a driving license. When the person dies, the death registration also updates the status of the person in the NID from live to deceased meaning the end of the identity.

Some of the key elements in the development of such integrated system were (15):

- a robust and adequate legal framework that defined roles and responsibilities, and enable the integration;
- wider coverage of registration offices;
- hosting civil registration and NID under the same institution headed by a single registrar;

- automation of some processes with a robust ICT infrastructure increasing efficiency and timeliness; and
- establishment of partnerships with internal government stakeholders, development partners, and non-state actors for resource mobilization and technical advice.

1.2 Importance of a unique ID

One of the essential elements in an integrated system is the ability of the system to identify one individual across different registers and databases. There are different ways to identify individuals but one of the most efficient methods is to develop a universal unique ID number that is shared across systems and that is uniquely linked to information about one individual (e.g. name, date of birth, place of residence…). Having multiple numbering systems is not efficient and could lead to overlapping but still incomplete ID systems difficult to integrate (1).

Difference between identification and authentication

In this system, the unique ID number is considered as a public good and it is not confidential (it is almost an alternative to the name). The Nordic system differentiates between identifying individuals and authenticating a person. If we use the way we access our email as an example, the way email providers identify users is with an email account (in my case Daniel.cobos@swisstph.ch). This "code" is linked to some information such as name of the user or usage history. However, for a user to access a specific email account, email providers request a password to authenticate this individual. In the same way, the Nordic ID system does not use the national unique ID number to authenticate if a person is really the person they are saying they are. The system only uses the unique ID to share information across different registers or databases.

The Nordic countries of Europe have a long standing integrated government system with a unique ID number as the backbone of all transactions within government institutions and most interactions with citizens. This ID number is given when the birth is registered and it follows the entire administrative life of the individual. It is stored in a central population register where it is tied to basic information recorded during birth registration and updated with the different vital events of the individual (16). Citizens use this unique ID number as only mean of identification in all dealings with public and private institutions (17).

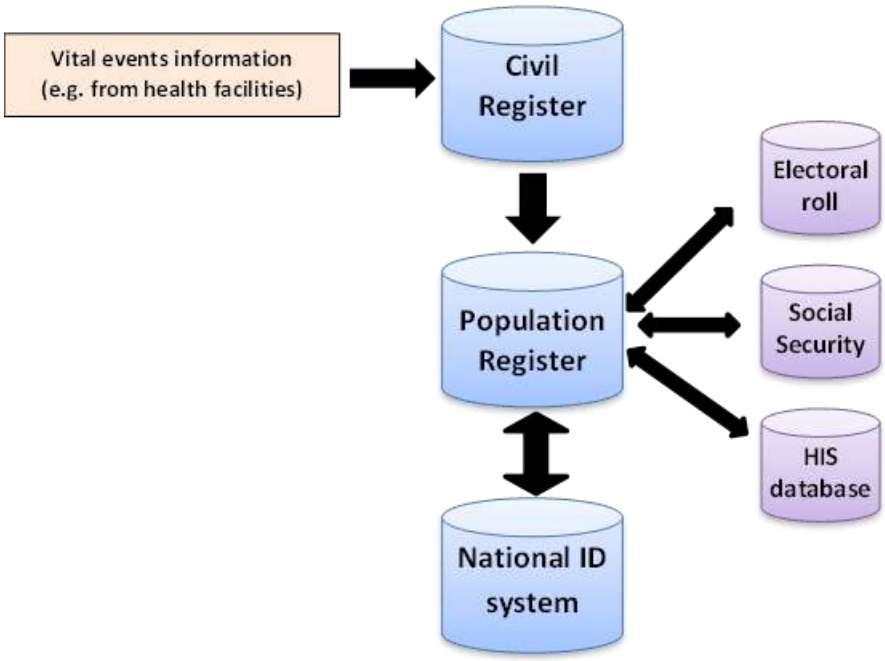
1.3 Role of a population register

Several countries are considering population registers as a way to integrate the information of CRVS and NID systems. A population register is a mechanism for the continuous recording of selected information pertaining to each member **of the resident population of a country or area**, making it possible to determine up-to-date information about the size and characteristics of the population at selected points in time (9). This is different from civil registration, which provides legal certificates of vital events (e.g. births or deaths), or the NID database used by the government to issue ID cards or to authenticate individuals using biometrics. Figure 1 shows a potential architecture for these three different registers or databases.

Estonia has moved to an integrated NID and population register through 3 key changes: a legal reform that allowed collaboration between the two systems, the development of ICT solutions to facilitate their interconnection and defining a clear vision moving away from a fragmented ID-CRVS ecosystem (18). Many LMIC countries, moved by urgency or misguided by short term funding

opportunities or cost saving policies, are creating a fragmented ID ecosystem with multiple identification systems such as national ID, electoral rolls or social insurance registers. This raises substantial inefficiencies with overlapping and incomplete registers. Estonia managed to develop only two interconnected and complementary systems that would respond to all identification needs of users and the government. The population register is the foundation for the national ID system which uses a unique identifier for each individual across all government bodies. The population register is also the source of the vital statistics in the country.

Figure 1. Potential architecture of a CRVS-NID integrated system with a population register



**** Figure adapted from "Secure Identity Alliance (2015). Civil Registry Consolidation Through Digital Identity Management" [19]***

2. Process mapping as a tool to facilitate systems integration

CRVS and NID systems are complex adaptive systems. Despite the fact that all CRVS systems have the same output objectives (e.g. production of timely and reliable vital statistics or providing legal documents) each country's system has moved along different paths with differing approaches to governance and policies, and differing accountability to multiple ministries such as justice, security, local government or health.

Understanding this process complexity is essential to finding solutions to facilitate the integration of both systems, and to face some of the structural problems that undermine their progress in terms of coverage or efficiency. Process mapping is a tool and a discipline that gives us the opportunity to look at any system as a whole. It provides a graphical representation of the end-to-end processes in a system, including all activities across different stakeholders in the system (20).

Systems achieve their goals through the implementation of processes. For instance, when someone dies in a hospital, the attending doctor issues a medical certificate of cause of death and it is usually given to the family. They then take this document to the civil registration office where the registrar

validates the information provided in the certificate accessing the national ID database using the unique ID number provided in the certificate. Once the information is validated, the registrar enters the information in the register and issues a death certificate to the family. The process described above, even though very simplified and not ideal, involves four different stakeholders (family, doctor, civil registrar, NID office) probably in three different ministries (ministry of health, ministry of justice or local government and ministry of interior or home affairs).

Process mapping has been extensively used to map CRVS processes as part of the Bloomberg Data for Health Initiative (21). One of the findings of its application was that CRVS stakeholders struggle to capture the complexity of such systems partly because they only know the activities where they are directly involved. For instance, people working in civil registration offices are not usually aware of the implications of their activity on the production of vital statistics. Similarly, the doctor issuing a medical certificate of cause of death (MCCD) is likely to ignore all activities required to complete the registration of this death in the civil registration office. Indeed, it is difficult to find someone in the system with an understanding of the entire CRVS system and its operations.

This situation is even worse when we look across different systems such as the CRVS and the NID system. In some countries they are run in parallel under different agencies or ministries of the government with different funding support and they barely coordinate with each other. This set up has its implication in the way CRVS and NID systems operate. An analysis of the CRVS processes for birth and death registration and the production of vital statistics in 16 countries[1] (22), shows that in only a few countries the CRVS system is properly integrated with the ID system. In most countries, both systems operate in parallel capturing the same or similar information about individuals (e.g. name, age, sex, place of residence…), creating multiple identifiers and posing a high burden on the users to exercise their right e.g. to register a vital event or to get an ID card. Process mapping forces the different actors to look at the system as a whole, considering not only the activities in which they are involved, but also those implemented by other stakeholders and the relationships among them. It is not limited by the existing administrative boundaries within institutions or ministries.

Effective CRVS systems usually require 3 integrated sub-systems: civil registration, health system and national statistics. However, the application of process mapping to CRVS systems showed that in many setting these 3 sub-systems were not coordinated and operating in parallel (22). Process maps were able to capture complexity and meaningfully display the multiple interactions (or lack of them) among different stakeholders in the system. It provided a visually accessible end-to-end description of all activities in a process across departments within an organization, and across different organizations, offering the opportunity to share these different views in a graphical way and compile them into a single diagram (process maps). Once the process maps are agreed among all stakeholders, they provide an aligned understanding of the system in its current operations upon which to identify ways to improve process performance. They simplify complex interactions and present them in a graphical format that helps policy makers and implementers better understand their system as a whole, and set the ground for innovative solutions.

Process mapping could (and will) improve the design of the ID ecosystem. However, the application of this methodology jointly to CRVS and NID systems could be transformative to both. If countries

[1] Countries included in the analysis: Bangladesh, Brazil, Ecuador, Ghana, Indonesia, Kenya, Malawi, Myanmar, Peru, Philippines, Papua New Guinea, Rwanda, Solomon, Sri Lanka, Tanzania and Zambia

really value the benefits of an integrated CRVS-NID system, process mapping would be extremely useful to identify the right steps in the transition to an integrated ecosystem. The application of process mapping provides a simple visualization the exposes the processes where the two systems should communicate. It would also provide enough information to decide where a unique ID number that will be linked to one individual should be generated and transmitted. Finally, the process map containing CRVS and NID operations would serve as the basis to define the technology required in the system (and not the other way around where the technology defines the operations). Figure 2 shows an example of a process where CRVS and NID systems are integrated.

Under the Bloomberg D4H Initiative, a number of training and learning materials has been developed and more than 150 participants have been trained in process mapping methodologies applied to CRVS. There is now human capacity in countries to apply process mapping methodologies to accelerate the transition towards an integrated CRVS-NID system.

3. Conclusion

There are tremendous potential synergies between CRVS and NID systems. Having a robust national ID system with CRVS at its core could improve government administrative transactions, reduce cost of activities such as national or regional elections, and promote social inclusion through the provision of legal documents for citizens to exercise their rights. However, if countries really want to move towards an integrated CRVS - NID system, there must be a smooth and coordinated flow of information and actions between the two systems.

Process mapping provides a graphical representation of the end-to-end processes in a system, including all activities across different stakeholders in both systems. Understanding the complexity of their operations is essential to finding ways in which CRVS and NID systems can be integrated. Process maps provide an aligned view of the system in its current operations upon which to identify ways to link both systems. They simplify complex interactions and present them in a graphical format that helps policy makers and implementers better understand their system as a whole, and set the ground for innovative solutions.

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Figure 2. Example of a process map showing the potential integration between CRVS and NID systems