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Compendium of **Good Practices** in Linking **Civil Registration and Vital Statistics (CRVS)** and **Identity Management Systems**

SYNTHESIS OF CASE STUDIES

Photo: UNICEF / Tadesse



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**Global
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Contents

| | |
|--|----|
| Acknowledgements | iv |
| Introduction | 1 |
| Definitions | 5 |
| Holistic approach to civil registration, vital statistics, and identity management | 7 |
| Case studies offer good practices in the context of global trends | 9 |
| Key strategies for strengthening the holistic approach to CRVS and identity management | 10 |
| Technological interoperability and the use of unique identification numbers | 10 |
| Diverse implementation modalities and institutional arrangements | 11 |
| Certification of identity data | 12 |
| Other applications: e-notification | 13 |
| Lessons from the transition from paper-based to digital identity systems | 14 |
| Vital statistics | 14 |
| Sharing identity information with other functional registers leads to significant benefits | 15 |
| Financial benefits | 16 |
| Creating an enabling environment for a holistic approach | 17 |
| Conclusion: A holistic approach is good practice and enables the development of other good practices | 18 |



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SYNTHESIS OF CASE STUDIES

UN Photo/Tim McKulka

Introduction

As the world strives to implement the Sustainable Development Goals (SDGs), meeting target 16.9 – “provide legal identity for all, including birth registration”¹ – is essential to fulfill the aspiration to leave no one behind. As enshrined in the Universal Declaration of Human Rights, everyone has the right to be recognized as a person before the law, and states have an obligation to create legislative and administrative frameworks that enable individuals to be recognized by the state. The SDG Agenda recognizes that civil registration and vital statistics systems are critical for monitoring the implementation of the SDG Agenda. Current birth registration coverage is not adequate to meet this target, even among countries with functioning civil registration systems. According to the UN’s 2019 Sustainable Development Goals Report, the average birth registration rate globally is just 73 percent, and less than half of all children under 5 in sub-Saharan Africa (46 percent) have had their births registered.² Furthermore, only 25 percent of the world population lives in countries where more than 90 percent of the births and deaths are registered, and most of these countries are

high-income countries. The latest data from the World Bank estimates that 1 billion people cannot legally prove who they are for lack of recognized identity documentation. These figures show how far behind we are in providing people with the fundamental pathway to accessing basic rights and opportunities.

Civil status includes a set of elements that individualize a natural person as a holder of rights and obligations, and help to establish the legal standing of a natural person in a family and in a society. Through the civil status elements, one is able to establish whether a person is married, single, or divorced, whether he or she was born in or out of wedlock, or whether he or she was adopted, as well as whether upon dying, his or her capacity as a holder of rights and obligations has ceased. Civil status rests upon relations resulting from parenthood, relationship, and/or marriage. The essential element of civil status is the legal standing of a natural person in relation to his or her family.

1 <https://unstats.un.org/sdgs/metadata/?Text-&Goal=16&Target=16.9>.

2 <https://unstats.un.org/sdgs/report/2019/The-Sustainable-Development-Goals-Report-2019.pdf>

At present, approximately 50 percent of the world's deaths are not registered. Of the deaths that are registered, cause of death is often not recorded or properly codified. Registration of other vital events, such as marriage or divorce, is equally unsatisfactory, affecting the ability of individuals to exercise a range of human rights – with particularly negative consequences for women and their rights emerging from registered marital status.

A number of international conventions related to fundamental human rights call for regulation of the registration of civil status acts and facts for all natural persons, regardless of their nationality or statelessness. Thus, the Universal Declaration of Human Rights provides the fundamental right of persons to marriage, the right to health, the right to education, the right to work, and the right of ownership. These are rights that cannot be safeguarded if a person is denied the right to register civil status acts and facts.

The International Covenant on Civil and Political Rights (1966) provides the right of any child, without any discrimination as to, among others, race, colour, sex, national or social origin, to be registered immediately after birth and to have a name (Article 24). The Covenant also safeguards the right of any person "of marriageable age,

without any discrimination, to marry and to found a family" (Article 23). This right presupposes the conclusion of the legal act of marriage before a civil registration official under the law, the drawing up of the marriage record in the civil registration book, and the issuance of a marriage certificate.

The Convention on the Rights of the Child, adopted by the General Assembly of the United Nations on 20 November 1989, provides the fundamental right of any child, "without discrimination of any kind, irrespective of the child's or his/her parent's or legal guardian's race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, disability, or other status," to be registered immediately after birth, to have a name, the right to acquire a nationality, and to the extent possible, to know his or her parents and to be brought up by them (Article 7, paragraph 1 corroborated with Article 2, paragraph 1). The States Parties to this Convention assumed the obligation to implement these rights, giving particular attention to cases where children may be, in the absence of such rights, in a situation of statelessness (Article 7, paragraph 2), hence the fundamental right of every child to be registered immediately after birth, without discrimination. The birth certificate represents a vital prerequisite for the child to be able to enjoy the rights set forth in the Convention. This is why the registration of births, in particular, and of the other civil status acts and facts in general, need to be recognized and safeguarded by the law regardless of nationality, ethnic origin, race, sex, or other criteria. To this end, the special importance of registering the birth of children, including children of foreign nationals, of refugees, or of asylum seekers has also been emphasized by the Committee on the Rights of the Child as the monitoring body of the Convention.

Also, the Convention Relating to the Status of Stateless Persons (1954) provides the right of stateless persons to enjoy fundamental rights and freedoms, including the right to identity. The Convention and Protocol Relating to the Status of



UN Photo/Kibae Park

Refugees (1951) sets forth the right of such persons to the recognition of their personal status and of the rights that emerge from their personal status, such as those resulting from marriage, hence the observance of the right to register the birth of children or to have their death registered.

The expansion of digital identity, e-governance, and biometrics technology has rapidly increased interest and investment in identity systems by governments, development partners, and private sector actors. This rising interest offers opportunities to address the problem of lack of legal identity among people who do not possess any state-recognized identity credentials that help them prove who they are. However, the rollout of new identification systems, or reforms to existing identification systems, has sometimes taken place at the expense of strengthening civil registration. Instead, the civil registration system should stand as a foundation for a broader identity ecosystem upon which information other identification credentials are issued. This can perpetuate the exclusion of certain population groups and produce incomplete and unreliable population registers, as these are not continuously updated based on vital events, including birth, marriage, and death. Moreover, a weak civil registration system limits governments' ability to use the data for planning and service delivery, and results in wasting public resources on investments in systems that are not well-used beyond a single event, such as an election cycle. This exclusion particularly affects the population that is below the eligible age for getting a national ID card. A weak civil registration system places this category of the population at the highest risk of lacking state recognized identity.

The lack of civil registration records for large proportions of the population creates additional challenges for governments that have yet to decide how to reform and strengthen their CRVS and identity management systems. There is also a lack of understanding and guidance on how civil

registration and identity management systems should be linked. In many countries, this is a consequence of weak civil registration systems lacking both in terms of supply of registration services and demand for registration from the population. In addition, traditional paper-based processes are moving into the digital realm, forcing authorities to rethink and redesign registration business processes linked with the registration of identity information and the issuance of identification credentials.

A holistic approach to civil registration and vital statistics (CRVS) and identity management either integrates or strengthens cooperation between these elements through a conducive legal framework and effective institutional arrangements, ensuring the universal registration of identity from birth until death. Technical interoperability has provided a range of benefits in ensuring that all categories of population from birth to death reflect their identity information in the system. It has also proven to be successful in ensuring a sustainable and reliable identity ecosystem. Such a system can effectively verify people's identity in a foolproof manner or with ironclad certainty, maintain an up-to-date repository of identity information, and produce timely and accurate population data.

This compendium documents the experiences of six countries – Armenia, Ecuador, Kyrgyzstan, Namibia, the Netherlands, and Peru – that have pursued a holistic approach. The mix of countries reflects diverse experiences in building identity ecosystems in different parts of the world with different constitutional and legal systems, administrative traditions, and institutional arrangements. It draws out the good practices employed by the different countries and highlights how their very different starting points were not an obstacle to building their identity system around a holistic approach. It also highlights that there are many ways to adopt a holistic approach, all of which can achieve positive outcomes for people in terms of rights and benefits.



Photo: Arne Hoel / World Bank

The overall aim of the compendium is twofold: to offer good practices and lessons that other countries can learn from as they build a robust, trustworthy, and inclusive identity system, and to contribute to the global discourse on advancing legal identity through a holistic and integrated approach.

More specifically, the compendium seeks to:

- Provide evidence of the benefits of a holistic approach to CRVS and identity management, where civil registration and identity management systems mutually support each other and work hand-in-hand to ensure the credibility and integrity of both systems.
 - Raise awareness among identity management authorities and custodians of functional registers of the critical importance of civil registration as a provider of legally valid evidence of identity (where this is the case) and changes in identity data between birth and death.
 - Raise awareness among civil registration authorities of the opportunities for advancing civil registration systems and increasing registration coverage that come as a result of tighter cooperation or integration with identity management systems and other identity ecosystem actors.
- Raise awareness among national stakeholders, including development partners and governments, of the importance of investing in the identity ecosystem in a holistic manner.

Across the six case studies, there were five recurring messages:

1. **A strong civil registration and vital statistics (CRVS) system that registers all vital events from birth until death for the whole population is an essential precondition for the implementation of a holistic identity system.** It is also essential to ensuring the benefits that come with it. A strong CRVS system is uniquely positioned to continuously provide cost-effective and up-to-date identity information for the population.
2. **Other components of an identity ecosystem, including the issuance of identification credentials and functional government systems, rely on civil registration records as the only source of up-to-date identity data.** This ensures that identity information is registered once, and then used across other government systems as long as that processing is regulated by law.
3. **The digitization of CRVS and identity management systems, together with other government functional systems, enables more efficient ways for processing identity information.** In other words, it allows for the creation of digitized civil registers or population registers, as well as the higher technical integration of CRVS and identity management systems, either as a single system or as several interoperable systems.
4. **The benefits of a holistic approach span several aspects of governance, including ensuring people's rights, improving service delivery, reducing corruption, and leaving no one behind.** A holistic approach can also help drive better decisions and track progress against the SDGs by strengthening vital statistics and ensuring more accurate population data.

5. **There are four key elements essential to a conducive enabling environment for pursuing a holistic identity system.** First and foremost is the political commitment from key government stakeholders to ensuring that all vital events from birth until death for the entire population are registered in a timely manner. Once this essential precondition is achieved, the efficient sharing of up-to date identity data requires a legal framework that enables data sharing. It also requires other changes to support the holistic approach: a data privacy and protection framework, as well as technology ownership from the outset to mitigate possible vendor lock-in and ultimately create a system that citizens can trust.

This synthesis brings together good practices from across the six case studies, along with the common messages and learnings gained from exploring the different country experiences. It begins with basic definitions and a discussion of what is meant by the holistic approach to civil registration, vital statistics, and identity management. It includes a discussion about why it is important and the role of digitization in advancing a holistic approach. The synthesis highlights different strategies employed by countries to drive integration across civil registration and identity systems, including how the transition from paper to a digital system has varied across countries.

Next, it describes the benefits of a holistic approach to vital statistics and how sharing identity information with other functional registers leads to benefits in terms of governance and cost savings. It provides examples from the six countries. Finally, it describes the key elements of a conducive, enabling environment for integrating civil registration and identity systems.

Definitions

Civil registration "is defined as the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population, as provided through a decree or regulation in accordance with the legal requirements in each country. Civil registration is carried out primarily for the purpose of establishing the documents provided by the law."³

Vital statistics "constitute the collection of statistics on vital events in the lifetime of a person as well as relevant characteristics of the events themselves and of the person and persons concerned. Vital statistics provide crucial information on the population in a country."⁴

While there is no internationally agreed definition of **identity management**, the term refers to the issuance of proof of legal identity to each individual by a government authorized entity and the maintenance of systems for managing information and documents associated with such identity.

A **population register** is an individualized data system – a mechanism of continuous recording, and/or of coordinated linkage, of selected information pertaining to each member of the resident population of a country in such a way to provide the possibility of determining up-to-date information concerning the size and characteristics of that population at selected time intervals. The method and sources of updating should cover all changes so that the characteristics of individuals in the register remain current.⁵

3 United Nations. 2014. Principles and Recommendations for a Vital Statistics System. New York. Paragraph 279.

4 United Nations. 2014. Principles and Recommendations for a Vital Statistics System. New York. Paragraph 1.

5 United Nations. 2014. Principles and Recommendations for a Vital Statistics System. New York. Paragraph 454.

The term **identity (eco)system** used in this document comprises verification, registration, management, and conservation of personal data of citizens as well as non-citizens on the state territory with the goal of establishing a unique legal identity within the jurisdiction. Identity ecosystem includes all the data from the civil registration of a particular

person, as well as other attributes, such as a unique number and/or biometric data, including identification credentials issued by an identity management agency. These serve as the basis for the verification of identity (for example, passport or national ID cards).

Civil Registration, Vital Statistics and Identity Management System

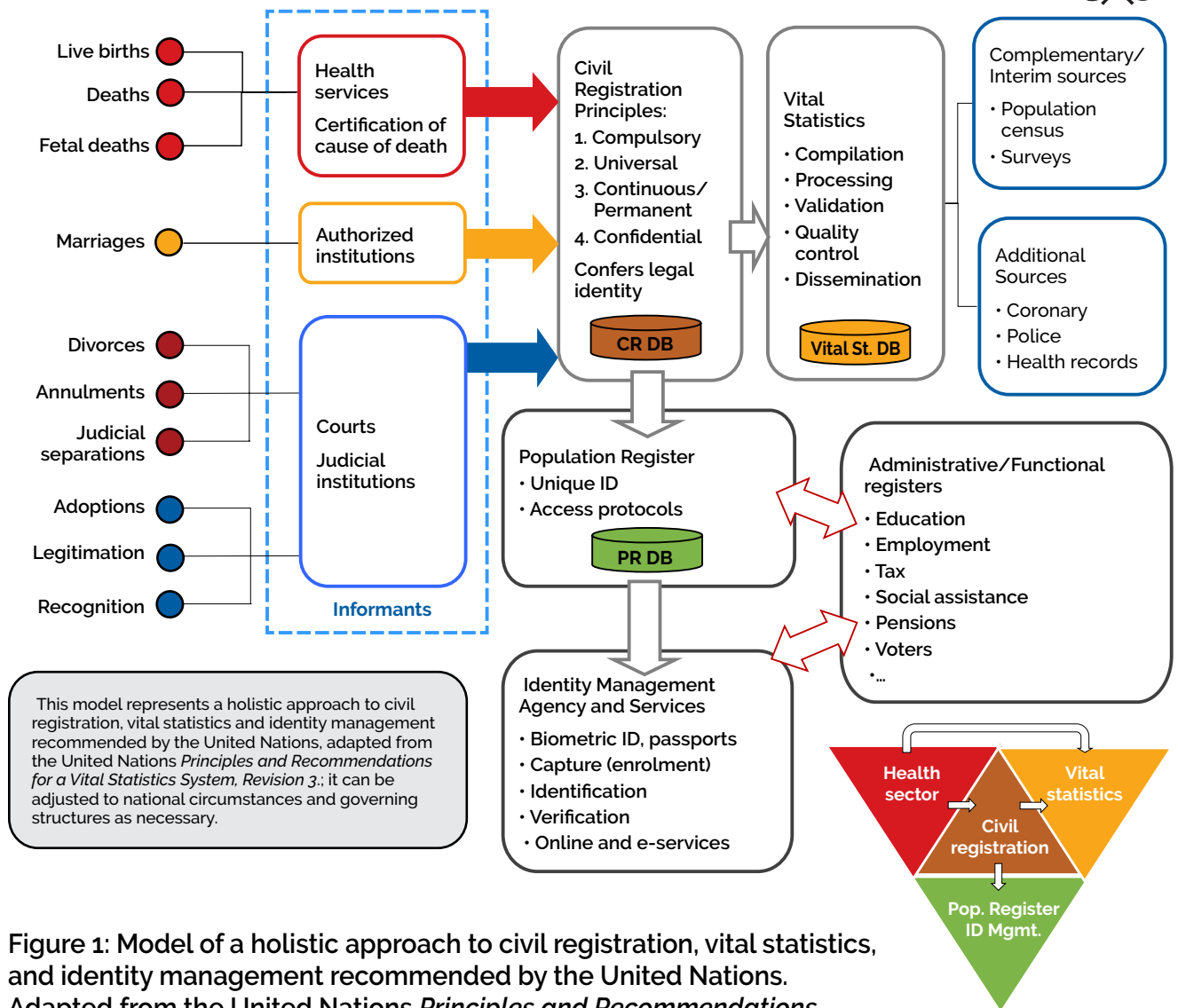


Figure 1: Model of a holistic approach to civil registration, vital statistics, and identity management recommended by the United Nations. Adapted from the United Nations *Principles and Recommendations for a Vital Statistics System, Revision 3*.

Holistic approach to civil registration, vital statistics, and identity management

In most countries, the administrative framework for the registration, management, and authentication of identity information is a complex system. These systems are operated by government or regional authorities (in cases of decentralized state organizations). These identity systems comprise three main components. The first is a CRVS system, which caters for the registration of vital life events for the population on state territory, based on notifications from other authorities, such as the ministry of health, police, magistrates, and courts (including parents or family members, if the birth or death occurs at home). The second is the identity management system that caters for the issuance of government recognized identification credentials (national ID, travel document, etc.). Other than providing the important function of conferring legal identity to individuals, countries' identity systems have acquired the important function of sharing identity data with government users, as provided by law, who store this information in functional registers, to enable them to fulfill the basic rights of people through the efficient delivery of government services. These functional registers operated by government represent the third important element of an identity ecosystem. Some examples of such functional registers are voters' lists, social benefits registers, tax registers, driver's license registers, cadastral systems, and property registers.

Before a single source of up-to-date identity information was introduced, governments experienced a range of problems resulting from proprietary ICT systems of different governance components which were operating in isolation from one another, often entirely dependent on support from external vendors, and unable to share and make use of data from other systems. This resulted in a duplication of efforts across government



Photo: Simone D. McCourtie / World Bank

systems, especially in the context of enrollment and updating of identity data across various systems. Overcoming these problems was the main motivation behind significant investments in the implementation of a holistic approach to CRVS and identity management. The goal was to build a coherent system that stands as a single source of up-to-date identity data for all other government functional systems.

As each case study demonstrates, a civil registration and vital statistics system with near universal coverage that operates as a compulsory and permanent process is a precondition for the implementation of a holistic identity ecosystem. This fundamental premise of a holistic approach reflects the understanding that identity is not static and that it is updated with new layers of information as vital life events occur. A CRVS system is designed as an administrative framework that, when implemented properly, reflects all new identity information in a timely manner as vital events occur. For instance, registration of birth is captured as the earliest moment in a person's life when her/his identity information is recorded by the state. From that point onwards, the state recognizes the person before the law. Later in life, a person can change their name, surname, or sex, and marry and divorce several times. This affects the identity data of that person and equally affects the position of the person in terms of legal protection of specific rights linked to property, family law, etc. Finally, death registration will



UN Photo/Ky Chung

end the person's civil status and retire their legal identity, ending their capacity as a holder of rights and obligations upon death. Death registration will also influence a range of services and benefits that the person was enrolled in while still alive. Issuance of identification credentials represents a snapshot of a person's identity information at the point of requesting the credential, such as national ID. These documents are issued periodically, and while government can enroll users in specific services using information from identification credentials, it is understood that the information on these documents might not always be up to date. (For details, see the Netherlands case study – Figure 5.6).

As reflected in all six case studies, the contemporary approach to civil registration and civil identification is converging towards introducing interoperability between CRVS and identity management systems. This is paving the way for the implementation of a holistic approach to civil registration and vital statistics and identity management systems. The contemporary understanding of identity management systems underlines the importance of interdependence of civil registration and identity management for ensuring the integrity of the whole system.

The strengthening of identity management systems and country-wide enrolment in national ID card programs are often recognized as critical for ensuring the implementation of SDG Target 16.9 – legal identity for all. However, in practice, many countries, including all six countries in the case studies, demonstrate that country-wide enrollment in national ID card programs can only become credible and sustainable over a long period of time if they are founded on reliable, permanent, continuous, and universal civil registration systems.

The practices of all six countries also demonstrate that civil registration and identity management systems mutually reinforce one another, and, that legal, administrative, and technological interoperability between fully developed CRVS and identity management systems are crucial for ensuring the accuracy of identity records in all systems.

In all six countries, CRVS systems represent the foundational administrative framework for registration of identity information, and for collecting and generating vital statistics. The value of a CRVS system derives from the fact that it is designed as a compulsory, universal, and permanent process of recording the vital life events of every individual. Their systems are designed to ensure the registration of identity information right after birth, the timely registration of other layers of identity information, the registration of other vital events later in life, and finally, to end legal identity in government systems upon registration of death. Only then is the civil registration system in a position to provide up-to-date identity information to a country's identity management system in order to support the issuance of identification credentials based on state recognized identity information.

The mutually reinforcing role of identity management and civil registration systems is further demonstrated at the point when a person approaches a civil registration authority to register

vital events. All case studies demonstrate that the registration of a vital event is conditional on the presentation of an identification document, which is further verified for authenticity in the database of issued identification credentials.

Case studies offer good practices in the context of global trends

As much as it is the case in the six countries in this compendium, in many countries around the world, identity systems have traditionally reflected the idea of a holistic approach to CRVS and identity management. This approach has been part of an administrative tradition to issue national identity cards in most European countries, post-Soviet states, Latin America, and some parts of South Asia. When these systems were originally developed, they functioned as paper-based processes built around detailed procedures for the registration of vital events and the keeping of paper-based registration records. These procedures also extended to cover the paper-based communication of registered vital events to generate vital statistics, and provide paper-based certificates as proof of identity later in life when applying for identification credentials. These identification credentials were then used to enroll in other government operated functional registers.

Over the last two decades, the digitization of CRVS and identity management has created new opportunities and an enabling environment to collect registered identity data in a digital format

and in a coherent database architecture. These new opportunities came with the possibility of dramatically increasing data sharing efficiency. The digitization of identity systems that followed took advantage of these new opportunities, and has resulted in significant changes in which the registration business processes can be designed, including how registered vital events can be defined, configured, created, stored, shared, and processed. Nevertheless, digitization also resulted in new types of risks to personal privacy, among others, underscoring the importance of a strong framework for the protection of personal data, and ensuring that data collection, storage, and sharing take place in a regulated environment.

As a general rule, even under legacy paper-based systems operated by countries that applied a holistic approach, identity information of legal value could only be registered through the registration of vital events. Certified information from civil registration records was recognized as proof of identity upon which other identification documents were issued, or used for enrolling identity information in other registers linked with specific services. The introduction of technology has helped increase the efficiency of data sharing and processing. Digital processing of identity data further enabled the creation of systems that increase the efficiency of data processing and sharing between different components of the systems. These newly introduced systems are commonly referred to as digital national population registers. Digitization, as well as new tools, such as digital national population registers, offered much better means to integrate different systems into a seamless system that reinforces a holistic approach to civil registration, vital statistics, and identity management. Individual experiences of countries, as elaborated in the case studies, show that when it comes to the process of digitization of these services, each country has developed an approach that best fits their national circumstances.

Photo: Li Wenyong / World Bank



Key strategies for strengthening the holistic approach to CRVS and identity management

A key element of the systems examined in all six countries is that the civil registration system operates as a continuous, compulsory, universal, and permanent process, and that it has achieved coverage completeness above 90 percent, and often close to 100 percent. All other parts of the identity system are built on this core assumption and operate with the understanding that at any point when identity data is required, up-to-date identity data can be obtained from the civil registration system.

Technological interoperability and the use of unique identification numbers

What is common to all case study countries is that the introduction of digitized systems entails that the identity data in civil registration systems is stored and processed in a digitized format. Equally, all processes linked with the issuance of identification credentials (national ID cards, travel documents), and the production of vital statistics, are digitized and the information on issued identification credentials is also processed and kept in digital format.

Under the legacy of paper-based systems, identity information was communicated between

authorities by means of paper certificates. These were communicated by concerned individuals who, under relevant procedures, had to visit the location where the information was registered, usually the civil registration office where the vital event was registered, to obtain the certificate and deliver it to identity management officials at the point of requesting a national ID.⁶ Digital interoperability⁷ between digitized civil registration and identity management systems automate these processes, removing the need for citizens to invest their time and money in order to communicate information between concerned authorities. As the case studies underline, the resulting efficiency in data sharing not only contributes costs savings for citizens, but also contributes to considerable improvement of overall governance processes.

To enable interoperability, both systems need to be built in a way that enables the efficient identification and retrieval of information belonging to the same person. All six countries have introduced the use of unique identification numbers (UINs), which are assigned to each citizen as a mandatory requirement under the relevant law. This identifier⁸ is used by the identity and registration databases to efficiently look up all records pertaining to a specific person. Citizens can also use this number in interactions with the authorities to facilitate retrieval of their personal data in government-operated databases.

The use of a UIN has become the norm in many countries, and the case studies provide more detail

6 Including to be enrolled in a functional register to gain access to government provided services.

7 Interoperability is the ability to access and process data from multiple sources without losing meaning and then integrate that data for mapping, visualization, and other forms of representation and analysis. Interoperability enables people to find, explore, and understand the structure and content of data sets. In essence, it is the ability to 'join-up' data from different sources to help create more holistic and contextual information for simpler and sometimes automated analysis, better decision-making, and accountability purposes. See <http://www.data4sdgs.org/initiatives/interoperability-data-collaborative>.

8 Digital databases do not necessarily operate directly with UINs but rather with an administrative identification number that is a number derived from the original UIN.

on the implementation of the UIN in each country.⁹ The UIN is at least 10 digits, and is designed as a logical construct (indicating date of birth or birth geographical location code), or a random number. Random numbers are increasingly seen as the preferred option for ensuring privacy protection, for late registrations where data for the birth is not known, and for pre-generating numbers for use in remote locations not connected to the Internet.

Instituting a UIN from birth has widespread benefits, not only for establishing and maintaining a holistic identity system, but for many other administrative data systems. Establishing interoperability between data sources, with the necessary regulation and privacy protection, can help government planners and policymakers develop and observe how various policies and programs interact, and how this impacts the intended beneficiaries. This can feed into the design of more targeted services and benefits.

However, it should be noted that UINs carry risks, as they can facilitate the linking of personal information across all databases that use them, allowing comprehensive profiling of the persons concerned. Hence, strong legal, institutional, and technical safeguards are required to protect UINs from unauthorized access, limit their use to the extent necessary for the delivery of public services, and prevent their overly intrusive use. Function creep, for instance, by allowing the private sector to use UINs, should be avoided. Measures to prevent its use to match individuals across multiple organizations where there is no legal basis to do so should be taken. Alternatives to the use of a single personal UIN across all identity system ICT platforms, such as derived encrypted sectoral UINs or tokenization of UINs, should be given priority.

Diverse implementation modalities and institutional arrangements

The implementation experiences of the six countries diverge on institutional arrangements, reflecting the very different circumstances of each country. Among the simpler approaches, civil registration records are aggregated in one central civil register and implemented as an electronic database that is interoperable with the identity management database. In Ecuador, Kyrgyzstan, Namibia, and the Netherlands, these are integrated into one system operating as a digital national population register that stores or links to personal biometrics.

Recognizing the benefits of aggregating different types of personal information, population registers in some countries have expanded to include other types of personal data required by the government for service delivery, such as citizenship, residence, right to vote, and other information. These systems can be implemented as one coherent database architecture, or as a system of interconnected and interoperable databases, often at different locations and operated by different authorities.



Photo: UNICEF / Nahom Tesfaye

⁹ Some European countries with identity systems that benefit from the use of UINs to link identity data across different government ICT platforms include: Albania, Andorra, Armenia, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Croatia, Cyprus, Denmark, Estonia, Finland, North Macedonia, Georgia, Hungary, Ireland, Italy, Kazakhstan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Turkey, and Ukraine.

The different modalities for implementing a digitized identity system show that adopting a holistic approach does not necessarily mean that all aspects of the identity system need to be the responsibility of a single agency. The systems can be technically integrated while the different parts of the system are operated by different authorities.

For example, in Armenia, the digitized civil register is under the authority of the Ministry of Justice, while the population register is under the authority of the police, who are also responsible for identity management. Each time a new vital event is registered in the civil register, the information is communicated digitally to the police, where it is used to update the personal record in the population register.

In the Netherlands, municipalities are responsible for civil registration and for maintaining the municipal population register, including identity management. Registered vital events are digitized and entered into the municipal population register where the person resides. When a person moves to another municipality, the digital personal file is sent electronically to the destination municipality. The government runs an elaborate ICT system that supports the operation of 335 municipal population registers.

In Ecuador, Kyrgyzstan, Namibia, and Peru, civil registration and identity management are under the responsibility of a single authority. In Kyrgyzstan and Namibia, these agencies operate elaborate ICT systems that are built around traditional paper-based civil registration and identity management systems that are integrated into a single system, referred to as the population register. These population registers have civil registration and identity management sub-systems as well as a residents' register, citizenship register, or other types of personal data defined under the law as being part of the population register.

In Peru, where both civil registration and identity management are the responsibility of a single

authority, the digital platform is built around two databases: a digitized civil register and a digitized identity management system. The digitized civil registration system is designed as a database of scanned vital events records. Each digitized record also contains a person's UIN, which allows system operators to look up all registered vital events linked to that person. The identity management system can also look up this information in the civil register database anytime a person applies for an identity card. Each time a new vital event is registered and digitized, it is communicated to the identity management system, and the operators will be notified of this change each time the person reapplies for an identity document.

This variety of implementation modalities in each country underlines the overarching commitment of the government of each country to build a framework where civil registration and identity management systems work hand-in-hand, but also respects the different circumstances and interests of each country.

Certification of identity data

Digitized records and the establishment of interoperable systems has completely transformed the process of certifying and sharing identity information. In the past, identity information could only be communicated in the form of an official paper certificate, but today authorities can verify this information at the source database because digitized vital event records have been given a legal value. This has enabled numerous uses and contributes significantly to the efficiency of the public governance system.

In Ecuador, for example, the Ministry of Economic and Social Inclusion (MIES) has partnered with the National Civil Registration and Identification Agency (DIGERCIC) to have real-time access to information from the DIGERCIC designed online platform where live births are certified. This allows MIES to perform a rapid vulnerability assessment and automatically enroll beneficiaries into its nutrition programs.

In Kyrgyzstan, identity information from the national ID register and address information from the residents' register has enabled the State Registration System to develop an application that can extract and print voter lists directly from a unified population register in line with the predetermined geographical boundaries of polling stations. The application also crosschecks voter identity information against information in the civil register.

Even if paper-based certificates are being presented, authorities often prefer to rely on online platforms to verify the authenticity of identity documents (as elaborated at greater detail in the Armenia and Ecuador case studies).

The process works for civil registration, as well. Persons who turn up to register vital events will generally be identified by inspecting their identification credentials. Even though identification credentials are often produced using a more secure medium containing cutting-edge security features, authorities will also verify the authenticity and validity of the presented document directly in the database operated by the identity management authority. Even if the document presented is valid, in most cases, the system design will not allow manual copying of the data from the identification document. Instead, the most up-to-date identity data will be copied directly from the civil or population register.

In the Netherlands, for instance, following the registration of information from the vital events act in the population register, this digital record is enough proof of registered vital events that can be accessed online by all public administration authorities and service providers. As the information is already available online, paper birth certificates are not provided upon completing birth registration and can only be issued if specifically requested.

In the case of birth registration in Armenia, registration officials can access all of the data



Photo: UNICEF / Zerihun Sewunet

needed for birth registration — such as data on the mother of the child, child's sex, time of birth, and number of children born — through the electronic system of medical certificates. The main information required by registration officials is a 12-digit code on the medical certificate, which allows them to access all the information in the electronic system. After being digitized, paper records will only be consulted in instances where information in the digitized system is being disputed, or if a person moves to live abroad.

Other applications: e-notification

Digitized systems for civil registration do not have to be built to cater solely to the registration of vital events. In many countries, these systems have been expanded to cover notifications of births and deaths at medical facilities. To that end, in Armenia, Ecuador, and Namibia, a dedicated software that is an extension of the main digital civil registration platform has been introduced at medical facilities to ensure essential data about the child's identity, such as the date of birth and place of birth, is captured immediately after birth, as well as medical information relevant for the compilation of vital statistics. In Namibia, the mother's identity is also authenticated by populating her particulars directly from the national population register. This process facilitates the registration of most of the information required for the registration of vital events, as it will already have been entered into the system before the request for registration is formally completed, increasing data accuracy and integrity.

Lessons from the transition from paper-based to digital identity systems

Strengthening the holistic approach to CRVS and identity management by transitioning the system from a paper-based to a digital system requires time. In many countries where digitization has been initiated, it is still an ongoing process. Except in the Netherlands, all other case studies reveal that countries have only been able to digitize a portion of their civil registration archives to date. Nevertheless, they all operate digital registrations on an ongoing basis and demonstrate that the lack of all past vital events records in digital format has not been an obstacle to developing a holistic identity ecosystem. These circumstances have implications for countries that are yet to build their identity ecosystems with a holistic approach. In the absence of vital life events records, identity data can be legalized in due process; for instance, as part of the issuance of identification credentials. But that also means that all other layers of identity data would be reflected as a result of the registration of vital events.

All six countries had very high rates of civil registration coverage before embarking on the digitization process. Accordingly, any country that is thinking of strengthening its identity system should actively work towards improving civil registration rates and sustaining them at a high level through innovative ways. In Ecuador, for example, DIGERCIC managed to close the last gaps by having 15 mobile units, which are set in one location temporarily, provide services twice each week. It also organizes special brigades that bring civil registration and identification services to remote areas and vulnerable populations. These strategies ensure that services reach remote areas and vulnerable citizens including rural populations, Indigenous communities, and African Ecuadorians.

In Peru, the National Registry of Identification and Civil Status (RENIEC)'s Identity Restitution and Social Support Department organizes monthly deployments to rural, remote, and Indigenous communities to bring civil registration and identification services closer to the population. These services, aimed at vulnerable populations, are provided free of cost. Namibia has similar programs.

As the case studies show, the key to the digitization process is the establishment of the initial database storing digitized identity records. This database can be created as a result of the nationwide issuance of identification cards or, as in the case of Kyrgyzstan, through the mass enrollment of biometric data in a dedicated identity database. This database can then become the backbone of the population register. In parallel, countries also began digitizing their historic identity data and integrating these records in a population register. As the experience of many countries shows, this process can be very expensive and take years to complete, and countries have come up with different strategies in deciding which records should be prioritized for digitization.

Vital statistics

Civil registration, a component of a broader civil registration and vital statistics system, is designed with the view to collect the following in the process of the registration of vital events:

- Facts about the event and information that is legally required for registration and defines the identity of the person; and
- Characteristics of events that are mainly required for statistical purposes.

Some of the legal information that forms part of a person's identity is also required for statistical purposes (for example, the sex of the child whose birth is registered). While this information carries legal value in terms of the child's identity,

at the same time, it is important for statistical purposes to produce vital statistics by sex. Many other data that is critical for establishing the legal identity of the child is not required for statistical purposes (for example, first name, last name, parent's information). Similarly, in the case of death registration, some information registered in the process (for example, cause of death) is used for statistics purposes.

While the process of civil registration and vital statistics operates as one indivisible system, specific types of information collected as part of a single vital event registration business process are used to complete the registration of the vital event. These consist of collected information that describes the characteristics of a person's identity and the event. Wider sets of data that are relevant to the vital event, such as medical information surrounding birth or death, are collected specifically for generating vital statistics. While the medical information is not included in the registration record, the information set used for generating vital statistics is derived from identity information.

Vital statistics information registered as part of the registration of vital events is generally transmitted directly from civil registration authorities to national statistics authorities. This also means that this data is transmitted to the local or national population register. The population register requires only the data set that is needed to update its database and provide legal identity.

The quality of vital statistics increases dramatically when implementing a holistic approach to CRVS and identity management. All the case studies reveal that vital statistics benefit from near universal civil registration rates, which improves the reliability and quality of vital statistics. The ready availability of registration records facilitates the timely processing of vital statistics. As the cases of Armenia, Ecuador, and Namibia demonstrate, electronic civil registration platforms have been

extended to incorporate modules that are operated in hospitals. This enables health authorities to incorporate an extended range of medical data that facilitates the processing of vital statistics. Aggregating all registration data in a single database, whether a civil register or a population register, facilitates the production of vital statistics.

Sharing identity information with other functional registers leads to significant benefits

Governments operate identity systems to fulfil the need of their citizens to be recognized by the state. A holistic approach to CRVS and identity management ensures that this process takes place in a legally defined environment, leaving little room for the arbitrary determination of a person's identity. A digital platform that shares up-to-date identity data supports a wide range of other government functions. Very often the digitization and strengthening of a country's identity system are driven by the need to improve other government services.

In Kyrgyzstan, for example, there was a widespread lack of trust in the voter registration process and the accuracy of voters' lists. This drove the government to invest in strengthening the identity system so it could reflect up-to-date identity data and be used as a source of reliable identity data for the compilation of voters' lists.



UN Photo/Marco Dormino

Equally, in the Netherlands, the entire system of social benefits and the tax system rely on the data from municipal population registers. The system in the Netherlands, which has been perfected over many decades, has reached the point where under the law, it is the duty of the government to retrieve identity data rather than request that citizens provide this data when interacting with authorities. Usually presenting a citizen service number, the Dutch version of a UIN, is sufficient for government authorities to retrieve all data required for enrollment in specific government services. The duty of citizens remains to register all vital events in a timely manner and to report to municipal authorities when they move their place of residence.

In the case of Peru, RENIEC has signed a total of 2,201 agreements with public and private institutions to give access to the identification register. This comes at a fee, particularly for private institutions, and becomes a source of revenue for RENIEC. Beyond this financial benefit, sharing information across registers has led to the better provision of nutrition subsidies for newborns and the development of a nominal register of children (a database of children aged 0 to 6 that collects information on 30 socioeconomic variables). It has also enabled the rollout of a pension scheme for people over the age of 65 who are living below the poverty line. Moreover, RENIEC is currently the institution that Peruvians trust the most according to recent surveys.

Civil registration and identity management systems have become the main provider of identity data for governance processes. They are used not only for enrollment in specific services, but also to assess how access to services needs to change as identity characteristics change. Marriage and divorce are events that typically effect a range of rights. But the most common trigger for changes in the delivery of services is the registration of death. Each case study highlights the range of government services that depends on the timely communication of

updates in identity data. The Government of Namibia, for example, has incentivized death registration as a requirement for citizens to access social safety net program benefits relating to their deceased relatives.

By sharing data with other functional registers, civil registration and identity management systems generate substantial savings by reducing the need for other registers to build their own identity management systems. Furthermore, when built CRVS systems are inexpensive to maintain, this offsets what appears to be initially high investments in building a holistic identity ecosystem.

Financial benefits

All six case studies underline that identity system reforms are an integral part of achieving more cost-effective and efficient governance. While assessing the financial impact of identity system reforms was beyond the scope of this research, evidence collected in each of the countries suggests that countries have witnessed – or expect to see – that the financial benefits outweigh the initial high investments in system reform.

Ecuador's DIGERCIC estimates that overall investments in modernizing identity ecosystems will reach US\$277.6 million. The financial benefits are expected to far outweigh that figure. For the period from 2010–2021, DIGERCIC's total revenues resulting from updated digital identity records, combined with social and economic savings, is expected to reach US\$893.6 million.

In Armenia, some estimates suggest that the implementation of the e-government system, for which the electronic civil register and population register are fundamental building blocks, would reduce the cost of government services by 50 percent, dramatically reduce corruption, increase competitiveness, and add 3 percent to Armenia's GDP growth rate.

Authorities in the Netherlands do not have precise financial estimates, but the identity ecosystem is seen as a basic building block of the governance system. Digitized municipal population registers have since been seen as one of the key contributors to efficient governance in the Netherlands.

Creating an enabling environment for a holistic approach

The six case studies examined for this compendium highlight several critical elements that will create a conducive enabling environment for reforming the civil registration and identity management systems towards a holistic approach. Each of the six countries exhibited these elements to varying degrees:

- Strong political commitment from key government stakeholders, including those responsible for CRVS and identity management, as well as other government stakeholders that would be in a position to use identity data through interoperable platforms. This commitment should be the result of an institutionalized consultative process mandated to define institutional responsibilities and technical implementation models. High-level commitment should be extended in terms of providing adequate funding for the system reforms and for its functioning in the future.
- Overhauling the legislative framework to reflect the changes in business processes and institutional arrangements that will support a reformed identity system. The legislative framework should reflect any revisions to the business processes for registration, and any data sharing responsibilities of the identity system towards other government stakeholders.
- Prior to digitization, a well-defined data and privacy protection framework should be developed to define the rules for sharing identity data between government bodies. Electronic processing of personal data carries a wide range of risks in terms of unauthorized access and use of data for purposes not defined under the law or for which the data subjects did not provide explicit consent. Mitigating such risks is generally linked to the development and adoption of privacy and data protection legislation that defines the duties and responsibilities of organizations that process personal data. In the context of legal identity systems, attention should be given to measures that meaningfully limit access to personal data by government and other entities, and that prevent excessive linking of personal data across entities and databases. Sensitive information, such as biometric data, should be especially protected, limiting storage and use to an absolute minimum. The legislation further defines authorities in charge of the oversight and monitoring of organizations that process personal information, as well as the rights of data subjects who interact with organizations that process their personal data. Legislation and regulation should also be adopted with strong technical protection measures.
- Technical implementation and digitization of CRVS and identity management processes carries the risks of vendor lock-in. This can be addressed by building technical ownership from the onset, relying on technology neutrality and open standards.

In addition, each of the case studies further underlines key assumptions for developing a holistic approach to CRVS and identity management in those countries looking to strengthen underdeveloped civil registration systems:

- Although each of the six case studies underlines the critical importance of universal coverage and registration of all vital life events, the problem of creating demand for registration and achieving near universal coverage has been solved in the past. In these countries, strong demand for civil registration is largely taken for granted and is based on the high level of awareness among the general population that the registration of vital events and the registration of their legal identity are central to their interaction with the state and to entering into legal transactions. Authorities are aware that the lack of demand and the inability to reflect all vital life events will result in inaccuracies across the rest of the identity system, threatening the integrity of the whole system. That does not necessarily mean that building an identity system with a holistic approach in mind should be put on hold until the universal coverage of vital life events is achieved.
- The evidence suggests that, despite sustained investments in the strengthening of the civil registration system, and of the identification system across the globe, coverage of vital events tends to remain alarmingly low. The births of 95 million children in sub-Saharan Africa were never recorded, and 120 million children under the age of 5 in the region lack documentary evidence that a birth registration was made. Furthermore, death registration is extremely low to nonexistent in many countries, particularly in Africa. Marriage registration remains a problem in many countries, yet millions of women and children across the world report having been married before the age of 18 (110 million in sub-Saharan Africa alone). Countries that consider linking these two systems and increasing the

registration of vital events might like to consider social and behavioural change interventions for sustainable change, as beliefs and social norms surrounding vital events at the community level might have an enormous impact on the uptake of services by the population. The strategies and programs that promote social and behavioural change are relevant to CRVS and ID programs as they seek to achieve the SDGs. Supporting policies and legislation, resources, and service delivery are critical. However, unless there is public engagement and empowerment, it will be difficult to achieve universal coverage for vital events.

- Even as countries work towards providing an appropriate supply of registration services and generating demand, it is important that reform strategy goals, objectives, strategies, business processes, and technology choices be guided by international good practices emerging from the implementation of a holistic approach to CRVS and identity management. As the reforms progress in terms of creating demand that is sufficient to ensure universal coverage and in terms of reforming the identity ecosystem to reflect good practices, these efforts will complement one another. Over time, they will converge towards a satisfactory level of efficiency and completeness.

Conclusion: A holistic approach is good practice and enables the development of other good practices

As these case studies demonstrate, there is a wide range of benefits for individuals, as well as for overall governance, when the system for registering and managing identity information is designed with a holistic approach in mind. Among others, it will fulfil the role of protecting and facilitating access to basic services and entitlements. The six case studies featured in

this compendium demonstrate that a holistic approach to CRVS and identity management systems has resulted in sustainable and reliable identity ecosystems in these countries. It has also helped to produce the necessary population and demographic statistics on a continuous basis for all geographical levels. However, to be in a position to take advantage of such a system, ensuring complete civil registration is the most important enabler.

While each of the country contexts vary, as did their approaches and institutional arrangements, each experienced positive social, economic, and financial results. Their systems, built with a holistic approach in mind, further benefited from the digitization of CRVS and identity systems. The establishment of interoperable systems transformed the process of certifying identity information, making it faster, more accurate, and less tedious. It has also resulted in more accurate population and vital statistics. Governments are better prepared to serve their populations because the information they use for developing policies and programs is more accurate and timely, and can be shared across government agencies.

However, the current coverage of vital events in many countries is not adequate to meet the SDG target of providing legal identity for all by 2030, particularly in the context of providing legal identity from birth. As this compendium demonstrates, the benefits resulting from the development of a strong identity system built on a holistic approach to CRVS and identity management underlines the importance of further investment, research, and development of policies aimed at strengthening the CRVS systems of countries with low registration coverage rates. Further to the development of adequate registration business processes, the importance of developing policies that would result in continued demand for registration should not be underestimated. To that end, good international practices are not sufficient, and they should largely



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reflect and rely on social conditions and traditional values in the countries. Universal registration will unlock all other benefits and opportunities elaborated in this compendium, both for the population and the government. When all vital life events of an entire population are registered in a timely manner and sustained into the future, digital technologies and increased data sharing opportunities that leverage legal, administrative, and technological interoperability will create the basis for a range of services, many of which are elaborated in each of the case studies at greater detail. ●

This publication is a synthesis of a larger body of work. The Compendium of Good Practices in Linking Civil Registration and Vital Statistics (CRVS) and Identity Management Systems was developed by the Centre of Excellence for Civil Registration and Vital Statistics Systems in collaboration with the Global Partnership for Sustainable Development Data (GPSDD). The full compendium is available starting October 2019 at crvssystemsc.ca/IDcompendium.



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