Civil Registry Consolidation Through Digital Identity Management

December 2015

Executive Summary

The world's population is expected to grow to 11.2 billion by 2100. The unfair distribution of growth highlights calls for accurate development measures and efficient redistribution programs. Indeed, social protection can play a fundamental role in supporting the more vulnerable to step above the poverty threshold. However, most low-income and middle-income countries do not have a comprehensive civil registration system that covers the entire population. As a consequence, today 2.4 billion people in the developing world do not have any official ID and are potentially excluded from basic public rights such as voting or receiving social benefits.

A number of developing countries have decided to implement electronic identity programs to uniquely establish their citizen's identity, and to achieve solid development outputs, through the efficient delivery of both private and public services. eIDs bring security and convenience, and contribute to the acceleration of economic and social development in developing countries. However, in order to allow the population to fully benefit from these initiatives an integrated approach - that includes civil registration - has to be taken into consideration.

The civil register is the foundational registry at the center of an ID ecosystem. It cannot be replaced by identity programs but it can be deeply strengthened by them. A holistic approach, with a circular and dynamic link between civil registration and eID systems, is the only way to reach universal coverage while providing robust credentials.

Many organizations, among which the United Nations and the World Bank for example, provide recommendations and funding to countries that need them. It is crucial that such advice and initiatives for the sustainable implementation of an eCivil registration include the right balance between legislative guidance, technical requirements and organizational support.

The establishment of a legal and administrative framework needs to empower a competent and independent agency to drive the modernization for the civil registry. When jurisdictional culture and national laws allow for it, a centralized organization can facilitate communication between information systems and enable nationwide harmonization of registration and data standards. Moreover, safeguards and integrity of collected data must be included in this legislation from the very beginning.

The switch to the digitalization of civil registration records is crucial to implementing a secured national identity platform. Indeed, computerization allows interoperability with mobile and card technologies. It provides an efficient tool to extend the coverage of registration and identification, and streamlines processes and securely stores data. It is also a strong enabler for the production of continuous and complete vital statistics. The adequate training of civil officers is also a key step in the modernization of the civil registration.

The use of the Personal Identification Number (PIN) given at birth or during ad-hoc census, and shared across different government databases, can provide a common and neutral entry to retrieve other identification elements in databases to ensure convenience, security and accuracy. As soon as the capture of biometric data is feasible, their association with this number will strengthen the reliability of the identity assertion.

The use of a tamperproof digital device for the storage of both the PIN and the biometric data

will facilitate the assertion and verification of the citizen's identity in a secure and convenient way, and reinforce the reliability of the services' delivery across sectors.

Interconnection between different systems requires strong coordination and interoperability. This must be taken into consideration at a very early stage: even at a pilot phase. The cross-sector nature of civil registration and eIDs requires strong leadership and appropriate coordination across government agencies. The health sector in particular has a key role to play in the production of reliable data for registration of vital events. The overall financial savings resulting from an integrated system have to be highlighted.

Last but not least, strong public communication of the advantages of a robust and integrated e-civil registry will enable the populations' support of modernization efforts. Incentivization for registration will encourage citizens to follow the procedures implemented, and will help build a reliable e-civil registry for a more inclusive society.

Diagram 1: The circular link between the civil register and the eID database
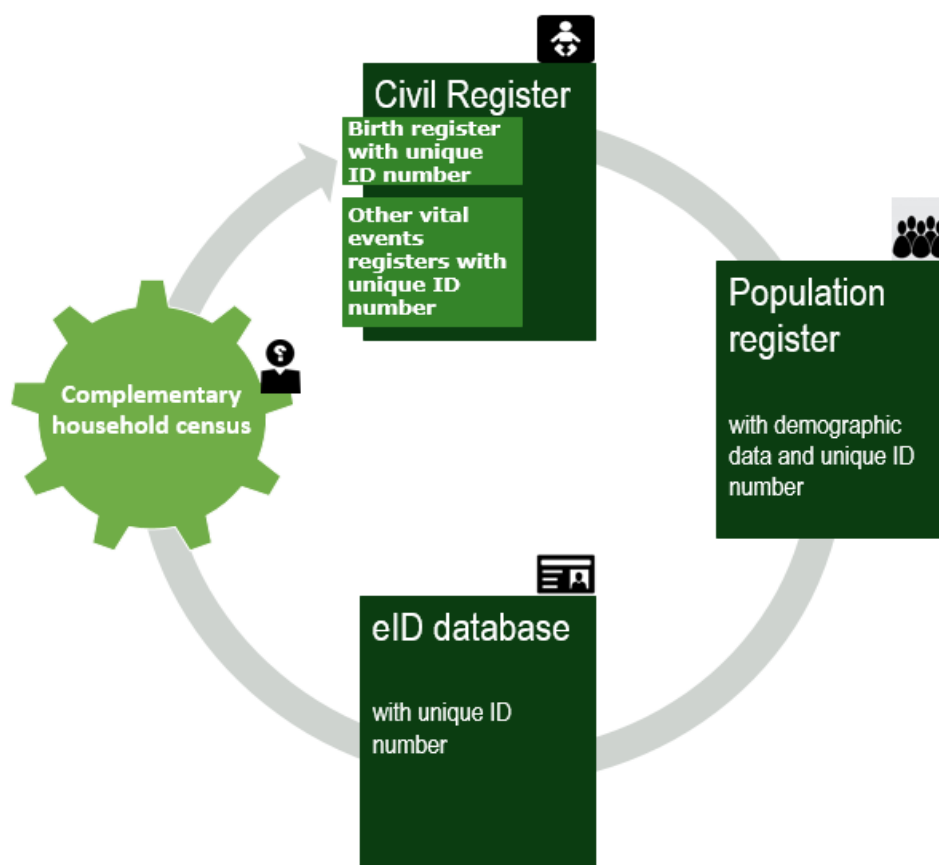
This report should be of particular interest to international organizations and government agencies that are involved in the establishment or reorganization of civil registration and identity systems.

Introduction

The expected world's population growth, coupled with the current intensification of refugee migration, has re-opened the debate on the repartition of wealth. Nearly 1% of the world's population now holds 50% of the wealth produced (OXFAM), and this inequality is hindering poverty eradication efforts. The continued disparity of wealth distribution is expected to cause many conflicts and further population displacements in the near future, should nothing be done to stop this apparently self-perpetuating phenomenon. The unfair distribution of growth highlights calls for accurate development measures and efficient redistribution programs. Indeed, **social protection can play a fundamental role in supporting the more vulnerable to step above the poverty threshold**. However, millions of people in low- and middle-income countries are being denied access to basic services and protection due to a lack of recognition of their existence. Given the prospect of rapid population growth, this lack of identity registration is expected to leave millions of citizens unable to achieve positive development outcomes and shared prosperity.
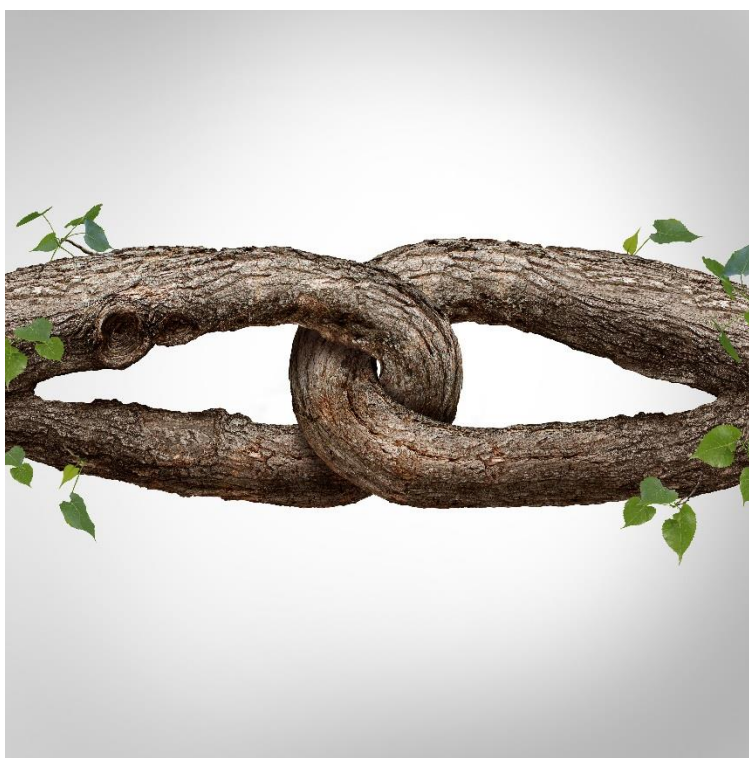
Identity is at the core of each citizen's everyday actions; every time they interact with private or public institutions the need for a solid proof of identity is crucial. Civil registration – that records vital events such as birth and death - is the usual first step in recognition of existence in a person's life. Its main function is to provide the certified documents necessary for an individual to prove his or her legal identity.

In 2014, among the 1.2 billion extreme poor in the developing world, only 345 million were covered by social safety nets programs (World Bank). With no accurate system with reliable identity information to select and reach beneficiaries, this gap cannot be closed. It is the reason why a number of developing countries have decided to implement electronic identity (eID or digital ID) programs - mostly biometric - to achieve solid development outputs for service delivery.

However, those systems have to be well designed and implemented in a strong political context in order to function seamlessly.

Effective design and implementation is crucial because the extended ID ecosystem is comprised of several subsystems, managed by various public - and sometimes private -

institutions and ministries. And since these systems are often poorly linked, this can result in incomplete databases or duplicates. **This kind of fragmentation has an impact on governance and public service delivery, and is typically caused by a lack of integration between eID programs and civil registration structures**.

It has been proven that superimposing eID programs onto an incomplete civil registration system will not allow the creation of a comprehensive and integrated eCivil Registration. The result is an ID ecosystem that is not fully inclusive socially.

Identity programs can deeply strengthen civil registration but not replace it. eIDs bring security and convenience, and are essential for organizations that provide services giving access to their information systems electronically (public organization or banks, for example). In other words, eIDs can provide a cross-sector platform to accelerate economic and social development in a developing country.

Nevertheless, it is impossible to fully benefit from eIDs without an integrated approach that includes civil registration being in place. While some scenarios, such as elections, require a pragmatic approach that involves a quick enrolment of the population - even if the civil register is not complete – any enrolment carried out using a holistic approach can be seen as a first step toward universal identification.

This report focuses on how to reconcile those two systems into an integrated eCivil registration ecosystem and how one can be used to build or reinforce the other.

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1. Need for one legal identity, but not more than one

The United Nations (UN) defines **civil registration** as **"the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population as provided through decree or regulation in accordance with the legal requirements of a country."** Registration is a public program carried out in order to establish a set of official documents that is necessary for citizens to prove their identity and rights. The civil status register is a database in which all the legal events (see Annex) are registered.

Registering civil events in a person's life not only acknowledges his/her existence but also confirms his/her citizenship and rights. Civil registration and associated identity documents secure access to public and private services and stand as a recognition from a state towards its citizens. **Civil registration provides registered individuals with one legal identity that remains unique throughout their life.**

Civil registration is even **more powerful, in that it is connected to vital statistics through a common information system**[1]. Indeed, a nationwide network of local registration offices **provides the raw data for vital statistics.** To meet statistical needs, the registration officer is responsible for completing a **statistical report** and transmitting this to the institute in charge of the aggregation of vital statistics. The overall information system that links civil registration to vital statistics is called the Civil Registration and Vital Statistics (CRVS) system.

Civil registration is also responsible for the certification function. The certification of events is the action of providing physical proof of the occurrence of an event, such as a birth or a marriage certificate. It is the function that enables each individual to be given a certification of the registration of an event affecting their civil status.

For example, a registered child who receives a birth certificate is able to show evidence of a state's legal recognition of his or her existence as a member of society. The UNICEF identified **a wide gap between registered children and, among them, children who possess a birth certificate**. This becomes a major difficulty when it comes to ask for official identity documents.

In many countries, civil registration, and especially birth registration, is an absolute prerequisite to the acquisition of a national ID document. Essentially, the birth certificate serves as the "breeder document" necessary to claim for any other ID document. In a centralized system, as shown in Diagram 2 below, civil registration is at the core of the ID ecosystem. It is intrinsically connected to the national ID card database through the population register that is the basic platform allocating identity information to the various functional registers.

Diagram 2: Relationships in an ID ecosystem
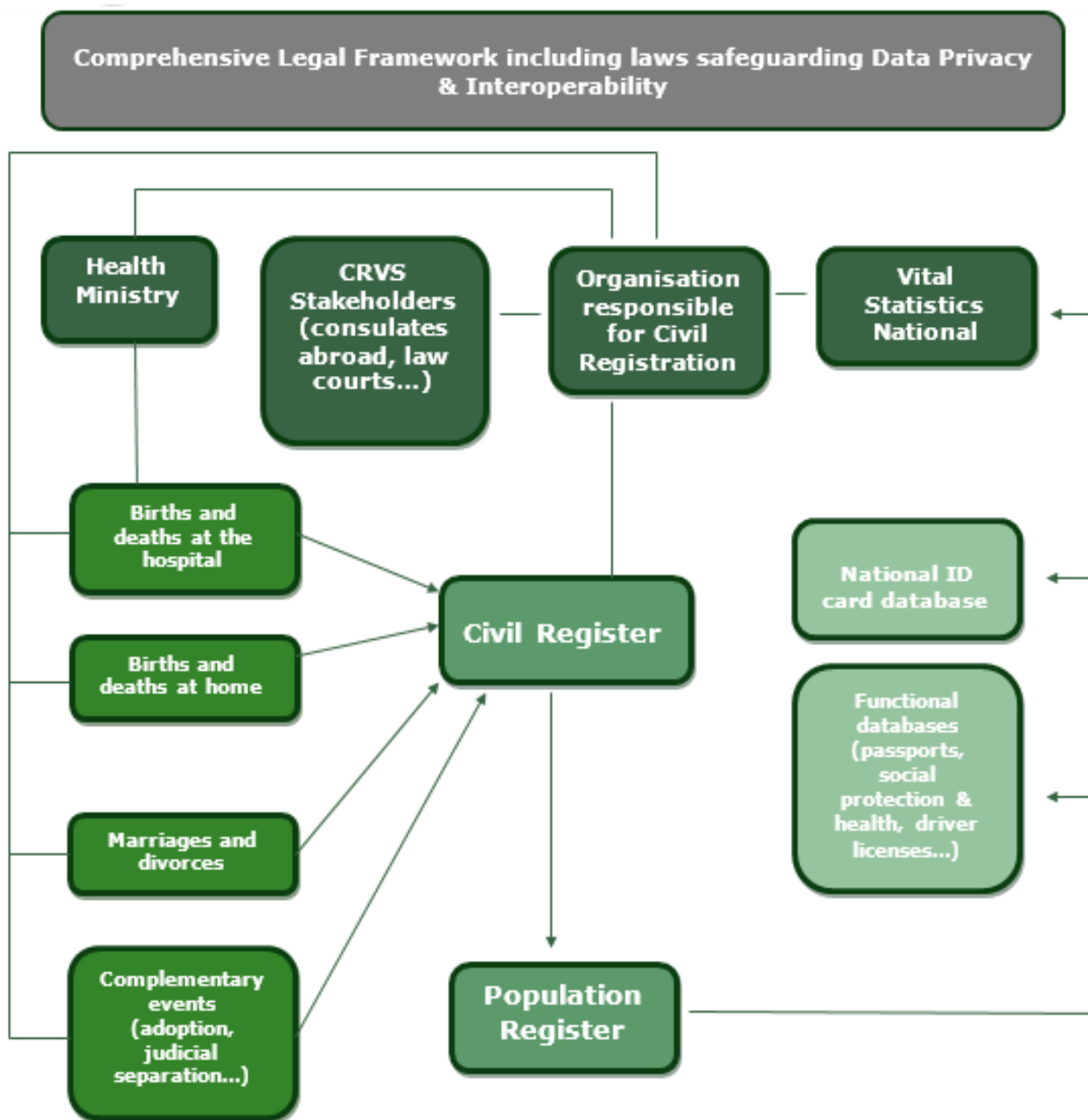
As Diagram 2 shows, a country's civil register is the foundational registry containing information on civil events (marriages, deaths and births, for example). In a comprehensive and robust ID ecosystem, it also contains each individual's unique ID in order to link his or her identity information to all the other registries (social protection, health or driver licenses, for example). **Civil registration is at the center of an ID ecosystem in which many stakeholders are involved**. But the high number of stakeholders involved increases the risk of multiplication of identities – an issue that impacts civil registration and identification in middle and low-income countries today.

Poor system integration and a lack of interoperability can lead to a **total absence of communication between databases and the multiplication of individuals possessing several identities**. In many countries this fragmentation arises from the lack of an overall approach when designing and implementing ID initiatives and the reluctance of various stakeholders such as Ministries or other organizations to work together. As a result individuals may possess several ID credentials that have been generated by sector-oriented ID programs (different identification for voter and social protection beneficiaries, for example).

To prevent this fragmentation, national ID initiatives can be launched, but these need to be properly designed in order to cover the whole population. **Often implemented as digital ID programs, both foundational and functional ID initiatives are pointless if these are not integrated with the civil register or one another**.

As there is a lack of trust or completeness in the civil register, there are recurring enrolment campaigns to increase the coverage of ID programs which are extremely costly and do not allow to reach a universal coverage. The lack of linkage between systems can prove both ineffective and costly, resulting in the provision of multiple ID credentials to part of the population, while others receive no ID credential at all. It is this fragmentation that has a negative impact on service delivery.

The launch of a variety of small scale, non-coordinated initiatives over time can contribute to and encourage this fragmentation, and makes the issue complicated to solve. Pilot projects to modernize civil registration or national ID systems, for example, may well have been insufficient or lacked holistic vision. In 2006

for example, Nigeria had 12 ongoing ID card projects (eight of which included biometrics)[2]. **The financial losses generated by this wasteful multiplication of programs highlights the importance of establishing a unique legal identity for all - and not more than one.**

This unique legal identity could be defined by "the 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"[3].

A unique identity delivers trust to public and private sectors, providing a robust platform to integrate various economic and social programs and authentication means. As a consequence, the many identity records contained in different registries must be merged, starting with the civil registry - because this provides the first recognition of a person's existence. **Solutions to reconcile civil registration and identification management systems can be implemented as long as this all important integrating vision is embraced**. The first step, however, depends on an acknowledgement of the link between civil registration that certifies the legal identity, and national digital ID programs that bring uniqueness.

2. Digital identities as the keys to secure national identification systems

Most countries with low GDPs do not have a national ID ecosystem in place, and when they do, often suffer from **low rates of civil registration.** This under-registration is usually caused by **a lack of relevant technology, the absence of central governance,** obsolete **paper-based systems** and an overall **lack of awareness** of registration benefits.

For millions of people around the world the apparently simple task of providing documentation that proves who they are is a major challenge**. Supporting civil registration with secured documents could be a solution to this issue**.

At the end of the identification process, any individual who has provided their personal information and is entitled to a right or service must be able to securely prove their identity. **Civil registration, along with identity management policies and systems, are intrinsically intertwined and complementary. For this reason, the implementation of an eCivil registration system is an option that needs to be pushed in order to build a strong ID ecosystem**.

An integrated eCivil registration system is the basic platform that links the civil registry to a national eID database (the database gathering information on national eID cards holders). It provides an organizational and technical framework that makes it possible for individual participating agencies to share data in a standardized way. **Digital identities bring security to the legal status that is granted by civil registration.**

To ensure that the overall registration systems is well functioning, it is essential to back it up with a secured ID card. **Linking**

civil registration to eID systems is the only way to reach universal coverage while providing robust credentials to the population. The use of a biometric data matching for example, and the generation of a unique ID number can increase the level of trust in the overall ID ecosystem. The civil registry is only able to display the status of an individual but **does not offer any authentication function**. However, the integration of civil registration and digital identities into an **eCivil Registration system** brings authentication features, portability and security to the identity management environment.

So, in order to take a step forward, a strong push for digital technology is needed.

Typically, digital identity is driven by different rationales, depending on a country's situation. High-income countries have a need to upgrade their identification system to a level that enables the provision of e-commerce and e-services. On the other hand, developing countries implement identity systems in a bid to leapfrog a more traditional paper-based system[4].

According to the World Bank, "**eID provides technology-based solutions for identification in order to uniquely establish a person's identity and to credential it**, so that the identity can be securely and unambiguously asserted and verified through electronic means for delivery of services across sectors, including healthcare, safety nets, financial services and transport"[5].
As a consequence, the developing world has a strong need for digital identities that can be considered as a platform able to accelerate national development through a

more efficient delivery of both private and public services.

The shift to a digital economy - for which non-electronic documents are insufficient – calls for a new type of smart credential.

Non-electronic ID cards are subject to alteration, duplication and counterfeiting whereas digital identities do not necessarily require a physical credential. **Electronic identities (based on smartcards for example) provide the security features necessary to make identity management systems reliable**. A government that wants to secure its national ID ecosystem has the choice of various technological solutions. eIDs offer a range of levels of assurance to cover the risk carried by the interactions between the parties. Protection against data breaches is necessary to bring trust. Today's technology enables organizations to implement **secure backups alongside strong encryption to encode user data and restrict access**.

Moreover, electronic identities can be supported by various technological solutions, of which smartcard-based eIDs are the most common. The main advantage of smartcards is the security features that they bring, biometrics especially ensures the uniqueness of an ID. eIDs offer the dual advantage of **securely storing personal ID data** and **being readable** by various devices, such as a smartphone. Here smartcards allow access to ID information even where there is no connectivity. Plus, by supporting user information on the device, interaction with a central database is not always required.

These mobile identities can also be accessed via standard interface like the Near Field Communication (NFC) technology[6]. The key is to include an electronic means that ensures a secured authentication. By utilizing a unique eID

that can be verified, the excluded population has some means to prove who they are. This card technology, which can be defined as a tamper-resistant hardware, personal, portable device to execute a transaction, is commonly the bearer of most eID programs.

A person's unique identity can be established by the combination of a unique ID number with his or her previously enrolled biometric and biographic data. Citizens are then 'in the system' and able to vote and fully benefit from social protection schemes, insurance and financial inclusion. A biometric enrolment is not always feasible for financial, political or legal reasons, but it is the best way to achieve uniqueness. Indeed, biometrics allow for the de-duplication of identities in national databases and ensure the establishment of an accurate link between the document holder and the data contained in the document.

Diagram 3: The unique link

For example, a biometric identity card linked to an identification database stands as the best guarantee of uniqueness to properly identify an individual. India has implemented such a system and some of the country's programs, such as its National Rural Employment Guarantee Scheme (NRGES), use the combination of a unique number and a biometric data to

authenticate beneficiaries. Even though the biometric solution may be costly from an infrastructure point of view, it is often chosen in order to achieve unique identification and a non-ambiguous link.

Finally, **the digitalization of government services also requires a switch to digital identity and a coordination at the state level** on how to deliver services. The modern technology to replace paper-based systems is now affordable enough to enable the creation of an online digital system, even in low-income countries.

In addition, digital identities can help **target beneficiaries of benefit programs, eliminate wastage and**

prevent fraud. According to Gelb and Clark (2013), in Nigeria, for instance, biometric audits have resulted in a 40% reduction in the number of federal pensioners and the government also removed about 62,000 "ghost workers" from its employee files, saving $1 billion each year.

As shown in the Diagram 4, digital identities can be leveraged in many public and private sectors. Oman is a good example of a nation that chose to fully digitalize its ID ecosystem in order to make private and public services more accessible to many citizens.

Diagram 4: Digital identity sectors and use cases

Digital identity sectors			Exemplary use cases for digital identity system
Public sector	1	Public services/health	Self-service, automation, personalized medicine, tax collection, digital signature
Manufacturing industries	2	Traditional production	Personalized products, consumer insight, subscription-based services
Services industries	3	Retail	Loyalty programs, marketing, service enhancements
	4	Financial services	Automization, personalized products, risk management, secure transaction
	5	Telco and media	Personalized services, monetization of consumer insight, marketing, automation
Internet industry	6	Web 2.0 communities	Service enhancements, monetization of user-generated content, marketing
	7	eCommerce	Secure transaction, monetizing consumer insight, marketing, fraud prevention
	8	Info/entertainment	Personalized products, monetization of consumer insight, marketing

Source: *SIA; Liberty Global and BCG "The Value of Our Digital Identity" (2012)*

The civil register as the foundation for the national eID scheme and inclusive eGovernment services

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Oman is now more than a decade into what is one of the most comprehensive eGovernment programs on the planet. As a result, the oldest independent state in the Arab world has become a template for the digital nation of the future.

Oman – which currently has a population of about 3.8 million people – has set clear objectives at every stage. Behind this implementation of a modern IT infrastructure was a desire to give citizens more convenient, comprehensive and efficient access to a host of vital public services.

Furthermore, eGovernment systems could enhance security and participation in public life, and establish a platform for wider objectives, such as economic diversification and the creation of employment opportunities for the resident population.

Oman's eGovernment project began in 2002, when the country introduced a **National Registry System:** a single, centralized database that maintains records for all citizens which has provided the basis for all the country's subsequent eGovernment initiatives. On this strong civil database, Oman launched a national eID scheme. Utilizing **secure, smartcard technology**, it provided millions of Omanis – for the first time – with a single, convenient identity credential, also incorporating driver's license and border control functions.

Oman was quick to build on these initial achievements and, in 2009, a **prepaid ePurse function was added to the eID card**. This gave citizens the opportunity to pay quickly and easily for numerous official procedures, even if they did not have access to conventional banking.

In 2011, **electronic voter authentication and identification** was added. In the coming months, the eID card will give citizens access to numerous government services online. Oman's government has also introduced the **option of Mobile ID in 2013.** This embeds an electronic equivalent of a physical eID card on the user's mobile phone, allowing citizens to sign legally binding documents and access services wherever they are.

In June 2009, the Royal Oman Police's Civil Status System for national registrations received a **major award from the UN in recognition of excellence in public service**. A year later, the same body ranked Oman as the world's most progressive country in its Human Development Report. In 2012, Oman was ranked 16th in **the UN's biannual eParticipation Index**. The National Registry System and Electronic ID Card Voting System have both been recognized with Sultan Qaboos Awards for Excellence in eGovernment – the most prestigious award for IT in Oman.

3. The circular link between eID and civil registration: the establishment of an eCivil Registration.

Both civil registration and identification have to be strengthened at some point and it is actually easier to consider the civil registry first - as it is a basis for the overall national identity management system. Acknowledging that the link between civil registration systems and national identity systems is a two-way process is the first step to embracing the necessary integrated vision required to build a **unified eCivil registration system**.

It is important not to confuse civil registration, which provides recognition of all vital events (births, deaths, marriages), and the National ID database, which is the basic platform for national ID card issuance and thus government-to-citizen services and some private services.

The former is composed of the civil register, while the latter is based on one database that gathers ID cards information. **The robust integration of those two databases enables establishment of eCivil registration that provides an overall platform for registration, identity management and eservices.**

As a consequence, a modern well-functioning administration calls for interoperability between those two systems, which must therefore be designed to take into account the exchange of information that will be needed. To that goal, two different approaches can be taken.

- **Using the civil registration as the foundation for the national eID system**

Civil registration and identity management should be both leveraged to overcome

poverty and strengthen access to services. The building of identification programs on the basis of the civil registry can be seen as the traditional pathway that was taken by OECD countries.

Whenever possible, the initialization of an integrated system should start with the improvement of civil registration rather than the launching of a functional ID program. This architecture - allowing both civil registration and the integration of various ID driven applications easily - can be illustrated by the Slovenian example that follows.

SLOVENIA

Slovenia, an example of a centralized ID infrastructure based on civil registration

Slovenia has been independent from the Socialist Federal Republic of Yugoslavia since 1991 and has a population of 2 million inhabitants. The identity system is organized around a Central Register of Population that has been based on a Personal Identification Number (PIN) since 1980. The Slovenian National eID program is a good example of a comprehensive identification system that a state can implement.

The Ministry of Public Administration, which is in charge of the development of eGovernment projects, decided to **use ICT as a mean to support administrative simplification**. A national telecommunication network was put in place in order to connect the central administration register to every public department. This horizontal integration aims at facilitating the transmission of information and enhancing coordination. The system provides a service for which the government must obtain data on identity – when needed for the service – directly from the database. Thus, all eGovernment services departments are supposed to access any information that was ever requested by another service. This integrated platform supports many electronic application developments and simple government services provision through the eGovernment state portal.

In the past, data on vital events were collected on paper completed by employees of the administrative departments. Since May 2005, entries and records have been filed in with IT support in the central register of civil status where facts on civil status are electronically transferred in the Central Register of Population. Each Slovenian resident has to be registered in the electronic Central Register of Population (eCRP). The eCRP is a central database which is used for issuance of ID cards, passports, elections, information on address for example. The data of the civil status (name, surname, date and place of birth…) is updated and directly transmitted from the civil status register. When a citizen is registered in the CRP (usually at birth in Slovenia or abroad for Slovenian citizens, or in the case of naturalization), he or she is assigned with a PIN that he or she will keep.

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This number is a prerequisite to exercise rights or have access to services in Slovenia. It is also granted to the foreigners that are entitled to reside in Slovenia. The PIN is a thirteen-digit number based on personal characteristics such as the date of birth and sex. This number is used by various institutions to exchange, analyse and collect data related to citizens and foreigners who reside in Slovenia. The Ministry of the Interior Affairs manages the central register of civil status as well as the CRP and is responsible for its integrity; indeed, the population register contains specific and personal information in addition to the PIN and the citizen's name, such as place of birth, citizenship, address of residence, and familial information.

In 2013 the Ministry of the Interior received the **UNPSA 2013 award** when it became a Category 4 winner (Promoting Whole-of-the-Government Approaches in the Information Age) in the region of Europe and North America, for the project "Reusable IT building blocks for electronic data exchange - implementation for e-Social Security".

To summarize the process, **effective civil registration measures allow the creation of a legal existence for citizens, whose identities will be guaranteed as unique and secured by an eID system based on biometrics or other technologies**. Significant connections exist between civil registration systems and national identity management systems; most of the time, registration serves as the basis for the creation of the population register, and thus, for individual identification. Digital ID schemes rely on a connected system built around a population register, as shown in Diagram 5.

Diagram 5: Data transmission from foundational registers to functional databases.
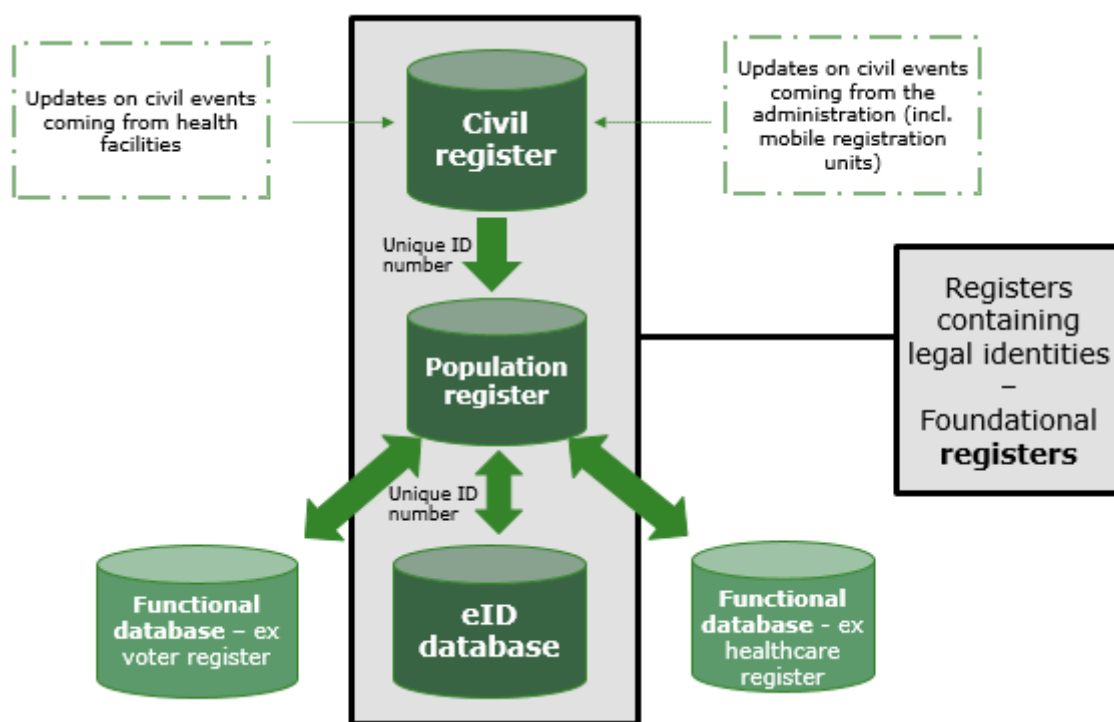
Diagram 5 shows how the civil registry fuels the population register; the data transmission usually implies the use of a personal ID number so that databases can communicate properly. Every change of personal data in the civil register is shown in the population register. The type of information contained in the population register can vary on a country basis and is extracted from the civil registry. Indeed, when registered in the civil registry, marriages, divorces, births and deaths should update the population register. A personal unique identification number is usually used to facilitate the exchange of data. **The distinction between the two databases is important.**

THE POPULATION REGISTER

The UN defines the population register as "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".

The population register shows a comprehensive list of the inhabitants of an area. Most of the time, the population register shows most of the data gathered by the civil register but contains more demographic data, such as addresses or citizenship status.

The population register's main function is to maintain reliable data for functional registers and government services such as taxation, budgeting, voting, social insurance and welfare, and personal identification. The population register contains information on place and date of birth, sex, marital status, citizenship and address.

The United Nations - *Principles and Recommendations for Vital Statistics Systems, Revision 2, (2001)*

The main difference between the two databases arises from the fact that the data in the civil registry is well defined, strictly ring-fenced and only accessible by the registration staff. It especially carries data on registration itself (when and where the event was registered for example) that is not relevant to the population register. The demographic data extracted from the civil registries will feed the public and private sectors through the population register that will, in return, be powered by them (information about education, health, employment, social transfers, banks and so forth).

Despite these differences, it is usually preferred that the same organization rolls out civil registration and maintains the population register for coordination purposes since these contain common data elements; when a unique personal number is used, the exchange of information can be done automatically and securely through a computerized matching process.

The population register may be used for many purposes such as selecting beneficiaries for social programs, or creating a voters list. Specifically, it provides the basis for the national identity database that serves for the issuance of identity cards. Indeed, **the population register is the intermediary platform between the civil register and the national ID** database that provides legal documents to the citizens. This organizational structure is seen as a classic ID architecture as shown in Diagram 6.

Diagram 6: From the civil register to the eID database: the traditional pathway
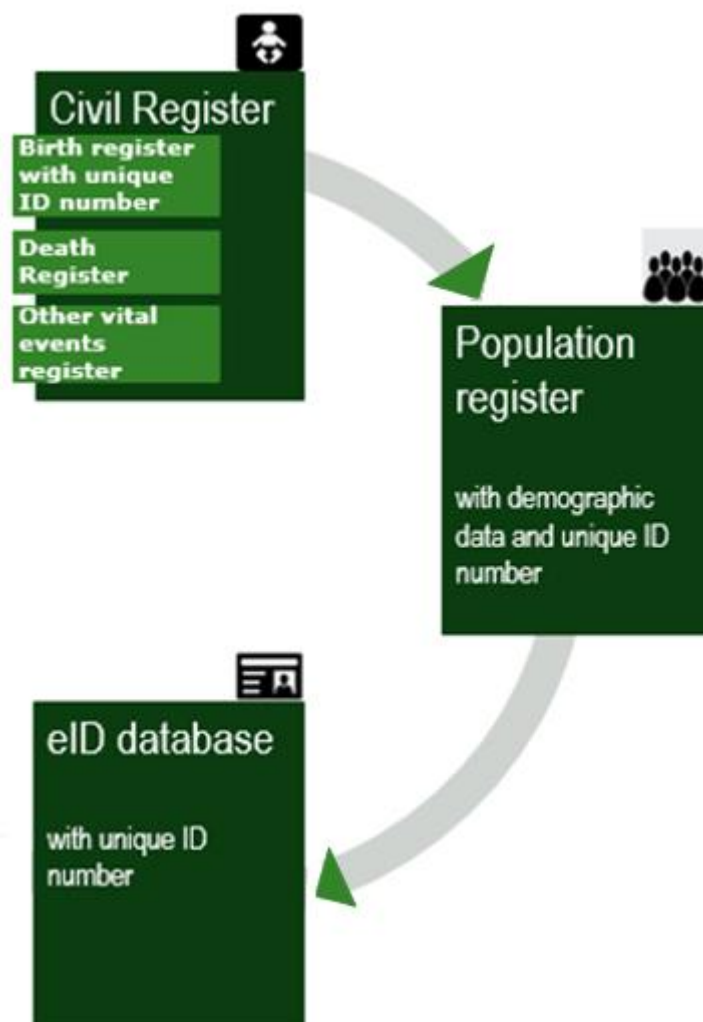
The link between the three computerized systems (civil registry-population register-eID database) is supported by the personal identification number which is crucial to facilitate communication. Such interoperability is feasible even for low and middle-income countries; for example, it has been utilized in Peru.

Peru's ID system gives children access to an identity

Peru stands as a good example of a middle-income country that has **based its national identification system on a robust civil registration with a wide coverage**. Its birth registration rate is above 90% (according to UN Health Statistics figures) thanks to the RENIEC agency's registration campaign. RENIEC (Registro Nacional de Identificación y Estado Civil) was created in 1995 to roll out the identification of Peruvians, provide documents and register vital events.

The organization acquired an autonomous constitutional status which makes it independent from any Ministry. The country has a classic ID architecture, with a civil registry as the basic platform to transmit information to the population register. The successful implementation of a civil registry created the opportunity to link several social protection initiatives such as JUNTOS - a program supporting populations in extreme poverty. It also allowed RENIEC to issue ID cards that are currently switched to electronic format.

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RENIEC managed to achieve a high registration coverage rate by creating a network of specialized offices, implementing an itinerant registration system and several cooperation organizations took part to the project (the EU, the UNICEF, and the IDB among others).

Peru also won the United Nation Public Service Award in 2013 for giving children the right to an identity. For example, in 2002, **only 0.1% of children had a card but by 2012 it was estimated that 94.5% of children had one** - an increase of almost 10 million children. RENIEC managed to reach such a high rate by overcoming several barriers related to the country's geography which means there are many remote areas with no electricity or phone connection.

- **Strengthen civil registration with the eID database.**

As explained previously in the report, multiple actions have been taken by governments or international organizations in order to build "functional" identities (such as electoral rolls or safety net programs); but also systems for national identity cards**. Those alternative functional identity architectures cannot always benefit from solid connections with civil registries.**
A functional electronic identity system is a platform that does not aim at identifying the whole population but only eligible beneficiaries to a certain service or right. In some countries electronic documents are issued for specific purpose, like healthcare, when the national ID document does not provide the same level of security.

Algeria, for example, has issued 9 million biometric functional cards to fight against healthcare insurance fraud in advance of the new upcoming digital national ID card. This kind of identification program has been

widely chosen over "foundational" ID – that are designed to be multiuse - many times.

It should be noted that this distinction is not always clearly defined as many countries chose to broaden their functional system to a foundational one.

Some countries, such as India and Pakistan, chose to identify every adult citizen, thanks to a digital ID program in an attempt to build a "foundational" program. Such programs, however, are not always supported by a solid registration infrastructure.

For example, according to the Civil Registration Centre for Development, 30 developing countries announced the launch or the improvement of their national identification system between February 2012 and February 2013. However, those countries, where civil registration is usually neglected, had an average birth registration rate of 44.8 %. **This preference for eID cards is due to the fact that these are both difficult to counterfeit and user-friendly.** Moreover, they allow more trusted enrolments and verification processes.

Indeed, despite the push for traditional national identification systems based on a robust civil registration, it has been noted that many countries **have circumvented this comprehensive but slower solution in order to implement a system based on new technology, even though it is often more expensive.** This expansion has taken place during a time in which there has been little improvement in birth registration, thus by contrast leaving much of the childhood population without identity documentation[7].

The most common process to register a population is based on civil registration. However, pushed by urgency, many developing countries have preferred to adopt a digital identity solution (usually biometric), to identify their population from

scratch, hoping to improve their social targeting method while lowering their administrative costs. It is estimated that over 1 billion people in developing countries had their biometric data registered (Gelb and Clark, 2013).

Because those identification programs are booming in many countries, it has led to very disparate ecosystems that are unable to communicate with each other. Even though the advantages of those programs are clear, **it is impossible to fully benefit from them if they do not rely on a robust civil registration system**.

For those countries that have implemented a digital/biometric identity, but whose civil registry is incomplete, **the existence of an eID database represents a chance to rebuild a comprehensive registration process**. As a consequence, when a government wants to launch the initialization or the improvement of the civil register, **the first thing to consider is whether existing data is available**.

With an already existing ID registry storing data in digital form, the establishment of an eCivil registry system can be facilitated. To this goal, a **punctual household census** that will establish the flow of unregistered past events and give a snapshot of filiations would support coverage expansion.

At the same time, the eID database can intervene in identity verifications and provide information about those who have an eID document. This kind of survey is necessary, especially when an electronic enrolment of beneficiaries was rolled out and smartcards were possibly issued for cash transfer programs.

Indeed, social protection systems are often designed on the basis of household registration which requires the registration of the head of household only. The government of Malawi, for example, gathered the fingerprints of 11,000 female

citizens considered as the head of their households for the Doha Emergency Cash Transfer Program (Gelb and Decker, 2011).

Starting from this kind of database, a global household census would enable the biographical data of the other members of the family to be recorded in order to build and complete the civil registry with information about people that are not in the eID database - mostly babies, children and citizens out of the social life. This method allows the recognition of minors' identities that are usually ignored by functional eID systems. Especially when those systems aim at issuing voter ID cards and leave aside a significant part of population.

Bangladesh, for example, is currently issuing 90 million smartcards allowing biometric authentication to replace the paper-based voter card; however, Bangladesh's population is estimated to 156 million people, consequently, this project covers less than 60% of Bangladeshi citizens.

Those individuals excluded from ID programs amount to a significant part of the population, which calls for a catch-up program. In the world in 2014, it was estimated that 750 million people below the age of 16 have not been registered at birth[8]. At the end of the process, the census completed with the eID database is able to give an exact view of vital events relating to living people and the digitalization of exploitable death registration paper records provides information on missing people.

Diagram 7: The eID database as a starting point to complete the civil register
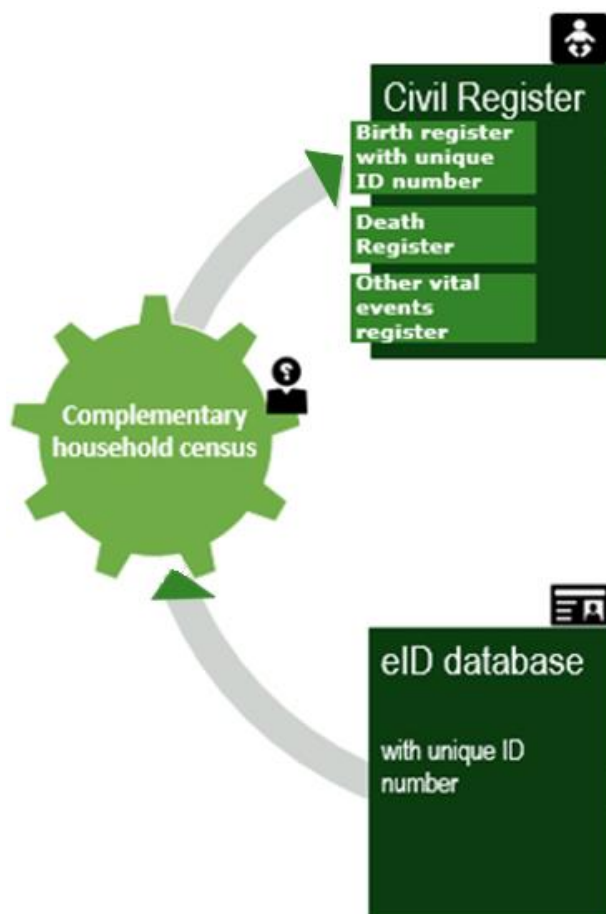
In any case, the household census acts as a support for the implementation of the new computerized system with all actors involved (central and local registration offices, national statistics services, court registries, hospitals and other health institutions involved in births and deaths, notarial offices and consulate). Such censuses enable the build of a new central civil registration database for vital events, based on all the parentage relationships that have been recorded.

To conclude, **any digital ID programs that have been implemented before a robust civil registration system was put in place could be used as a starting point.**
Initialization of the civil register using the digital ID data makes it possible to quickly get **an accurate snapshot of the situation among registered people.** In some cases, important events such as elections (like in the example of Mali below) may be used as a first step towards a systematic enrolment of citizens that is also

the foundation for a centralized modern civil register.

The completion of the civil register can benefit from the resources deployed for other programs. When those programs included biometrics, the associated Public Key Infrastructure (PKI), the Automated Biometric Identification System (ABIS), the enrolment kits and the trained personnel can also benefit the civil register modernization and completion. Such synergies were found in the Pakistan example that follows.

In other words, when a country starts to build its ID architecture by the establishment of an eID system, **it must make sure that the platform will be scalable and incorporable to the future civil registry.**

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MALI

Integrated system for population census and fair elections

From 2008 to 2010, **the Republic of** Mali conducted a national census to establish the country's first-ever computerized civil registry, called **RAVEC** (Recensement Administratif à Vocation d'Etat Civil). During this period, more **than 13.5 Million Malians** were registered using a combination of alphanumeric and biometric (fingerprints and photo) data, and were assigned a unique National Identification Number called NINA (Numéro d'Identification National). The registration process included the acquisition of six fingers, one portrait and a full set of personal data.

RAVEC was the answer of the Malian government to many issues that the country was facing at this time:
- The **lack of legal documentation** for some citizens to prove who they are and become eligible for rights and benefits;
- The issuance and usage of **fraudulent certificates or documentation**;
- The very **low participation rate** in the elections

A few years later in March of 2012, a military coup put an abrupt end to 20 years of multiparty democracy. The political crisis that followed caused the country to descend into civil war. To end the conflict the government of Mali asked for foreign military help. To ensure the credibility, security and inclusivity of the electoral process the government, with the support of the

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majority of political parties in Mali, decided to use a **system of voter identification based on the production of National Identification Number (NINA) cards** using the unique biometric details of Malians held within RAVEC's civil registry database.

In March 2013, the Malian government issued a tender for the production, personalization and supply of 8 million NINA cards. This included using **its computing and biometric record matching capacity** to process and verify the records of voters contained within the RAVEC database. A few days prior to the election date of 28 July, more than 85% of the population had collected their NINA card.

The NINA card is an important step in the development process that is underway in Mali as it is the first-ever biometrically secure identification document the country has had. Capabilities that are contained within the 2D barcode mean that the NINA card can be used for **many other future applications** by the country's administration. These include opening up greater access to finance, banking and health services for Malians, providing a universally accepted form of ID for travelling within the country and helping establish security.

In Mali previous elections held under conditions of peace and stability in the country had average voter participation of 25-30%. **During the 2013 elections, more than 55% of the population turned out to cast their vote**, making this one of the most successful elections in the country's history. Both the European Union and United Nations observation missions sent to oversee the conducting of the elections declared the electoral process to be free and fair throughout the country.

PAKISTAN

NADRA's support in completing civil registration

Some countries are in the process of using the national eID infrastructure to strengthen birth and civil registration. **Pakistan**, whose government undertook this operation, is a good example of empowerment through identity. After independence, the State of Pakistan undertook a national identity consolidation process. Its goal was to collect a vast amount of existing information through its myriad agencies, but these databases remained fragmented across departments with a lack of accurate and reliable information. The **National Database and Registration Authority (NADRA)** had the responsibility to computerize census data and produce cards and the Multi-Biometric National Identity Card project, developed in conformance with international security documentation issuance practices, was launched in 2000. The program replaced the paper based Personal Identity System that had been in use since 1971. The country is now well advanced in reaching its citizen with precision. With the introduction of this comprehensive and sophisticated computerized system, NADRA has been successful in reducing the identity theft to a bare minimum.

 The agency now manages a centralized data warehouse with data on over 120 million people (among 188 million people) and has delivered secure national biometric ID cards to 97 million people. The difference is composed of the children. This database enables Pakistan to react rapidly in case of crisis. During the 2010 floods that affected over 20 million people, the government organized monetary aid to flood victims who lost their house and very often their ID proofs. The NADRA organization took the lead on the survey, identity reconciliation and aid disbursement for both the state and the citizens. Leveraging the biometric database, NADRA was able to target 1.7 million beneficiaries for a cash transfer program.

As of today, the Pakistan national ID system covers up to 98% of the adult population and is close to reaching universal coverage. This high coverage is due to many requirements put in place to encourage people to register; for example an ID card is necessary to obtain a passport or open a bank account. However **the birth registration rate remains really low and the country is committed to using the centralized ID system to help accelerate the adjustment of this rate.**

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To this goal NADRA is collaborating with the union councils – the smallest jurisdiction under provincial government – which are in charge of birth registration, enabling the councils to use NADRA's infrastructure, such as mobile van. NADRA's approach to increase registration **was tailor-made**, it took into account the high rate of mobile penetration and designed a mobile application to pre-register births. The organization also hired female drivers to register children in areas reserved for women. NADRA also provided computers and software and incentivized registration by offering grants from the Benazir Income Support Program to women. **This collaboration enables the improvement of birth registration data and the consolidation of the system leveraging existing data and infrastructure.**

## The circular link between the civil registration and digital IDs

To conclude, civil registration and national identification both have the potential to initiate the establishment of an eCivil registration system. The integration process that can be taken relies on several prerequisites.

For instance, **the existence of a centralized computerized system** allowing databases to communicate with **a unique ID number** greatly enhances the reunification of the various identities when multiple registers are compartmentalized.

A **qualified staff involved in the coordination of services**, such as hospital and law courts, is also an important precondition to the integration of the ID ecosystem. As explained previously, two pathways can be followed to build an eCivil registration system, starting either from the civil register or from the eID database.

With an overall and integrated mind-set, every brick of the system be can be used to consolidate the others. This process is illustrated by the circular link show in Diagram 8 below.

Diagram 8: The circular link between the civil register and the eID database
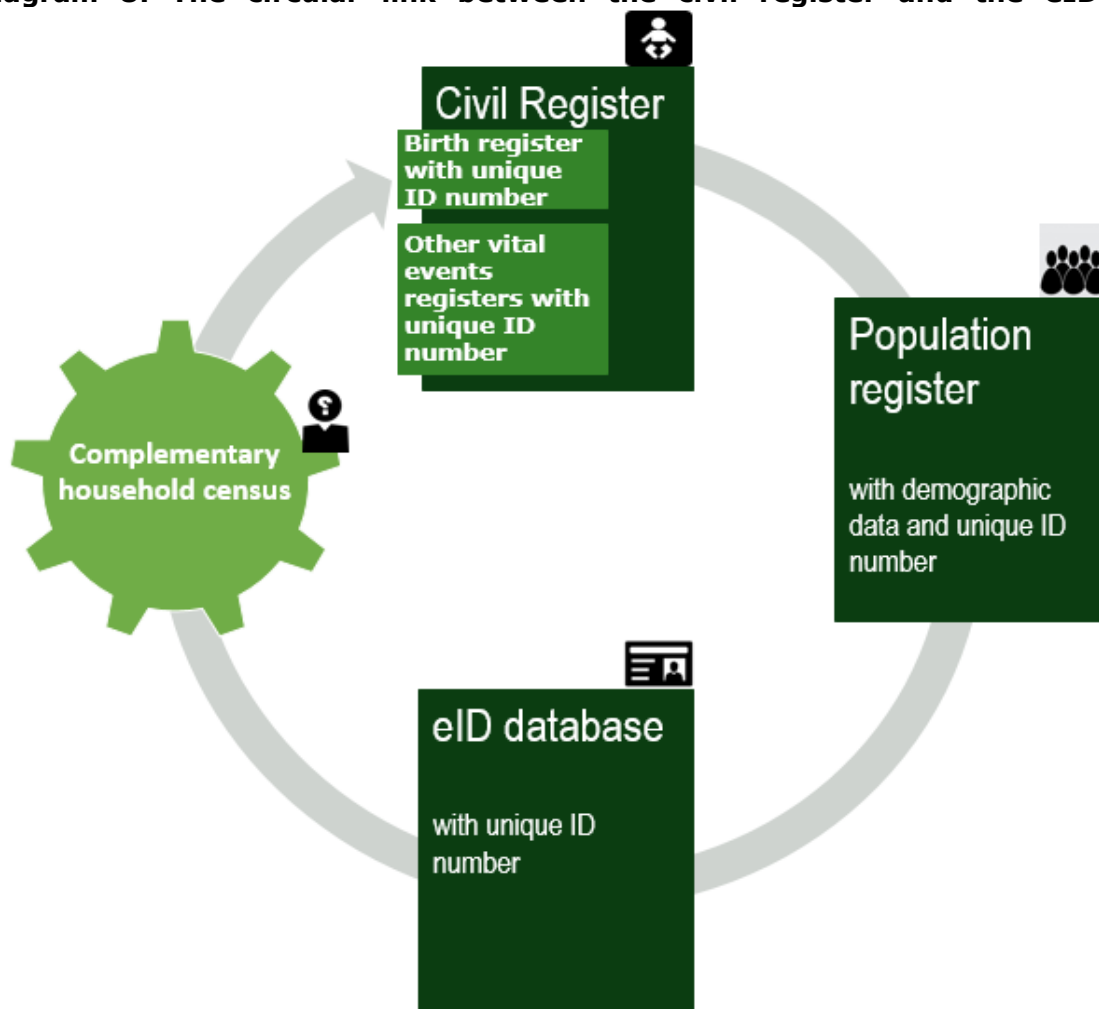
4. Recommendations for the good implementation of an eCivil Registration

The number of stakeholders involved in the ID ecosystem requires coordination in many fields and at many levels. Recommendations for the good implementation of an eCivil Registration system should include a right balance between **legislative** guidance, **technical** requirements and **organizational** support.

4.1. Solid legal and institutional arrangements

To initialize the creation or the improvement of a reliable eCivil Registration system, political authorities must be fully committed to modernize their legal frameworks when needed.

The first step relies on **the establishment of a legal and administrative framework giving power to a competent and independent agency** in case such agency does not already exist. Some countries chose to entrust a department within a specific ministry, while others have created an ad hoc agency. It is necessary to establish, at least a coordination committee attached to a Ministry or to the Prime Minister in order to oversight operations.

For example, the Ministry of Home and Cultural Affairs in Bhutan appointed a specific department of Civil Registration and Census, whereas Nigeria established a National Population Commission to carry out civil registration. National identity policies are often managed on a higher level than civil registration, which is often overseen by city or state institutions.

However, some countries opt for a single organization to manage both in order to encourage interoperability. Mauritania has its civil registry and population register managed by the National Agency in charge of the Population Register and Secured Documents. Institutional arrangements depend on the **jurisdictional culture and national laws that are in place**. It is important that those laws describe precisely the overall system that the country aims at implementing, including audit procedures, penalties, and funding arrangements.

Alternative models have also proven to be efficient when properly managed. NADRA's status for example, allows the organization to finance its operation by selling its identity management services to both countries (Sudan, Kenya, Sri Lanka, Nigeria and Bangladesh)[9] and private telecom or financial companies. NADRA's mandate to provide a public service (registration of citizens) is rolled out thanks to a hybrid model that is funded via the provision of eID applications.

Before any legislative process is launched, a study must be conducted in order to assess the impacts of computerization on the existing laws. Significant areas to address are: secure electronic archiving, electronic signature of certificates of events by the officers, data protection and confidentiality. By nature, civil status registration activities impact is cross-sector and involves several ministries. As a consequence, data protection and transfers must be clearly defined from the beginning and be taken into account in the legislation.

The law should also include standards and uniform registration procedures and independent supervision for evaluation processes. Whether the organization of the

identification system is centralized or not depends on the country's traditional organizational structure. **Centralized structures enable maintenance and control over the entire system**, while facilitating the introduction of new standards and technologies easily[10]. This type of organization also encourages

Various institutions are involved in the improvement of identity management systems and merging those systems requires agencies and ministries to agree on the path to be taken.

There is, therefore, a strong need to define data standards, especially in terms of format and sharing. Agencies responsible for civil registration and identification may have opted for different norms and strong technical and institutional arrangements are required, given the multiplicity of actors. Health institutions for example, are naturally designated to inform civil registration on births, deaths, and foetal deaths occurring in their facilities. In practice, registration offices are often located in health facilities and automatically send updates to the central civil register which is why those various stakeholders need to agree upon common standards for data transmission.

Moreover, in order to establish this kind of regulatory and comprehensive legal framework, developing countries may **use the draft law offered by the UN to support** legislative efforts in the area of civil registration. This draft can provide the

nationwide harmonization and research for best practices. Moreover, centralized structures allow a better communication between information systems. Ministries must be encouraged to embrace the process of integration rather than protecting their own systems and databases for example.

first steps and objectives a country can take. The detailed articles of the law can be found on the "**UN Handbook on Civil Registration and Vital Statistics System – Preparation of a Legal Framework**". This report gathers information on registration from the standpoint of international recommendations.

Finally, the establishment of an eCivil Registration requires **safeguards for the integrity of collected data** and comprehensive laws pushing for the protection of privacy while preserving interoperability.

Legal and regulatory concerns have to be raised in order to secure the use of the data contained in digital identity cards, devices and databases. And, as far as interoperability is concerned, many countries can find inspiration in what the European Union is currently discussing in terms of identity management and cross-border flows of data protection. For example, **the eIDAS regulation** gives an example of how to promote the use of electronic identities in order to increase trust in cross border electronic transactions

4.2. Computerized system

The switch to a digital system is crucial to implement a secured national identity platform.

Digitization of civil registration's records offers a solution that addresses much of the problems of data losses and errors, costs and delays. Obsolete paper-based CRVS must be reorganized in order to meet

security standards. The civil register contains important population information that must be fully available electronically which encourages accuracy and completeness.

Electronic systems allow to extract back-up copies of data on a regular basis, and are, as a consequence, more able to save data. Moreover, computerization also improves the quality of data recorded on the civil registry. It is the most reliable way to ensure completeness, availability and traceability of data. Also, building a computerized register makes it easier to produce sophisticated statistical indicators[11] on both national and small areas.

This process of computerization has to be coupled with an evaluation of the staff training needs. In order to be managed efficiently, the system has to be supported by competent staff and governments must make sure that new requirements are within the employees' usual expertise. As a consequence, it may be **necessary to organize training sessions**. Systems integration and computerization call for processes that include periods of training for registrars who needs to be able to manage software efficiently. Civil workers need to meet the qualifications in terms of electronic registration and certification of events.

Computerization also provides the benefits of making demographic data available for a wide number of public agencies that have a need for planning policies[12].

As an example, the authorities of **Ghana** implemented a nationwide intercommunicated system able to transmit information from health facilities to each level of registration (central, regional and local). As a consequence data is registered and transmitted in real time. Moreover, elements of information gathered in the Central Registry are accessible by multiple agencies such as the Electoral Commission, the National Identification Authority and the Statistical Service.

Computerization is possible even in developing countries where local infrastructure is sometimes too weak to support computers. Alternative solutions may be chosen to electronically reach the central register. Indeed, computerized systems present the advantage to be easily linkable to other technological solutions.

Mobile technology, for example, has the power to reach remote areas and transmit information on a regular basis. In **Uganda**, the Mobile Vital Records System (VRS) is using mobile technology to overcome the poor communication network between rural villages and registration offices. Thanks to mobile phones, village registration agents are able to record births and send details about vital events on new-borns for legal registration. The data is transmitted to local hospitals via a 3G web-based application and then is stored in a computer database.

Even though computers may be complicated to install across 100% of a territory, **they do allow interoperability with mobile technology.**

To conclude, information and communication technology has the potential to provide an efficient tool to extend the coverage of registration and identification, standardise and integrate data, and produce comprehensive and timely vital statistics. In order to successfully complete the process of computerization, it is crucial to develop a guide of standard procedures that must be applied in a uniform and consistent manner across the country. Countries can find a model for that in the Civil Registration and Vital Statistics Digitisation Guidebook (http://www.crvs-dgb.org/en/), an online resource designed specifically for African countries to develop effective and sustainable CRVS systems.

4.3. The Personal Identification Number (PIN) as a unique identifier

When a country seeks to implement a unique ID, the key is to **associate a unique identifier for each person under the form of a number**.

This unique number, which can be shared across different government databases, can provide a unique entry point to retrieve the rest of the identification elements related to the citizen in each database, ensuring convenience, security and accuracy.

Many experiences from various countries with different levels of development have showed the efficiency of opting for a **unique Personal Identification Number (PIN) given at birth.** This identification number is usually composed of the date of birth coupled with random numbers that emerge from computerized algorithms. Where each individual has a unique identification number from birth, it is possible to significantly enhance the availability and quality of statistics through linkage across databases. Indeed, the absence of a foundational number leads each database to speak a different language by "naming" each individual differently. Using different numbers across multiple databases hinders the communication between them.

This phenomenon led the Government of India to launch a nationwide program called **Aadhaar** in 2009. The aim was to identify 1.2 billion Indians (as young as five years old) with biometrics by providing a unique and secure national identification number linked to a bank account.

That system has proven to be a driver for both social and financial inclusion. As of today, 950 million Indians received their Aadhaar unique number, enabling them to open a bank account and prove their eligibility for energy subsidies[13]. Consequently, Indians now have the opportunity to prove their identity by matching their unique identification number to their fingerprints and/or iris scan.

It should be noted that this type of solution entails connectivity to a central database; when this is not possible, a match-on card system can be considered.

The benefits of generalizing the use of unique registration numbers to every public service and administration can be important too. All agencies are able to share information and to communicate without inaccuracies and duplicates. The implementation of a personal number also reduces fraud and eliminates duplications in

various registers. A person's identity is represented by his/her unique number. This number provides an administrative support for the population register to communicate with the social protection database or the eID database for example. The identification number can be used in the **interaction between authorized government agencies and individuals. This may be useful to avoid mixing up people's identity in a society where many citizens have the same name.**

The unique ID number can be used for a variety of public and private services. It can be coupled with other physical characteristics, such as biometric information, or with an element of information that is supposed to be personal such as a password**.**

When it comes to authentication, biometrics remains the most secured element to be associated to the unique identification number. Many programs use biometrics in order to de-duplicate enrolments and make sure that each citizen has only one identification number linked to one registered identity.

For example, this choice was made by Ghana, whose government decided to implement a biometric ID card linked to the unique identification number. The Ghanacard project, completed with the support of the World Bank, aims at increasing financial inclusion and to deliver public services more efficiently (safety nets, health insurance and so forth).

4.4. Ensure coordination and interoperability between services through an overall approach

Generally speaking, the biggest risk of fragmentation resides in an overlapping or incomplete identity system.
The absence of **an integrated approach can even lead to major incompatibilities** that will require harmonization, which can be timely and expensive. Many applications would be strengthened by a wide network of connections within the system. For example, social and tax services could benefit from sharing data, as it would lower their administrative costs of information research and monitoring.

As a consequence, implementing an **electronic management** module linking various services to the civil registry is necessary to ensure good coordination between civil registration, digital identities and public and private services. Vital events can occur in different places, and many organizations may be involved depending on the country's structure. That is why, civil

registration operations need to be linked and interfaced with systems that cater for the demands of individuals and institutions in the country[14].

The need for **an integrated system is, first of all, driven by financial concerns**. The upfront costs of a foundational identification system and enrolling the whole population can be significant but it is certainly more cost-effective than having to improvise systems of identification for each intervention[15]. A digital civil registration system must be integrated with, and connected to, many public and private institutions that deliver services.

Interoperability and connections are needed for **practical reasons**. Indeed, birth records from health registers should represent the source of registration whenever possible.

Healthcare services have to continuously send updates to birth and death registration offices (ex: maternity wards and funeral services) when such events occur in their facilities. **City halls, law courts and notaries have to be digitally connected as well** (and religious authorities when applicable) in order to notify registration services each time a legal event occurs for the production of a certificate or for complementary annotations (marriages, divorces, adoptions, judicial separations, legitimations).

Here the central registration office should be linked to **the ministry of foreign affairs in the country and/or consulates abroad** in order to be able to record every legal event concerning nationals, including those occurring outside of the national territory. An integrated civil registration system should include linkages across every agency that provides a flow of information.

As far as the population register is concerned, the connection between various public services is crucial. Social protection ministries will need to access it for the selection of beneficiaries for safety nets or unemployment insurance while electoral commissions tend to establish or revise the voter list with the help of the population register. In any case, there is a strong need

for a **holistic approach.** Even though the population register is not connected to every public service during its implementation, **it is important to keep in mind that it will be eventually. The whole system must be planned for full-scale implementation,** even at the pilot stage. **Close communication and coordination of activities among national public and - private if needed - stakeholders are crucial to consolidate the system.**

To this end, standardized procedures must be implemented in order to produce systematic workflows in every level of operations. **The cross-sector nature of eID requires strong leadership and appropriate coordination across government agencies.**

Finally, the need for coordination does not only fall upon national organizations but also international donors that have to shape up their actions as well. Many international institutions are involved in research and funding for civil registration and digital identities systems, such as the World Bank, the Inter-American Development Bank, and the World Health Organization. As a consequence**, those organizations have to coordinate at each level** in order to ensure the interoperability and the integration of the systems.

4.5. Strong public communication and incentivization

Permanent communication through campaigns of awareness in order to inform the population about the benefits of such system is necessary to increase demand. Governments play a key role in unlocking the potential benefits by providing digital public services and paving the way for further service digitization to the benefit of citizens, businesses and consumers[16].

Those benefits need to be communicated clearly to users and the use of eGovernment solutions should be incentivized. The dialogue must be engaged towards promoting, developing and implementing programmes that **pave the way to greater economic, social and political inclusion.** To this end, governments should **focus on the specific**

needs of the population, which can vary from one country to another[17].

One approach to encouraging civil participation relies in **creating incentives** for registration in order to support demand from the population as soon as the adequate infrastructure to supply this demand is implemented. When a government decides to put in place e-government services, **communication on the secure identification solution has to focus on enabled use cases rather than product features**.

Indeed, interventions in the improvement of identity systems have to be supported by both citizens and public services. Since 1998, South Africa had required both beneficiary children and parents to be registered in order to have access to the Child Support Grant program. The Aadhaar program in India was also linked to strong incentives from the beginning. In Brazil as well, the implementation of incentives for health facilities to register children has been an efficient measure to encourage birth registration in Brazil. In 2002 the Ministry of Health established a R$5 allocation for each child registered in maternity wards of hospitals run by the National Health Service. To receive this incentive, the hospital must prove that the child received a birth certificate before leaving the facility[18]. Both supply and demand **should be encouraged by the awareness of the benefits from a robust integrated e-civil registry, especially when it comes to service delivery**.

Administration workers must be aware of the advantages that will be brought by such systems in terms of cost and time. Service delivery can be made more efficiently at different levels of administration, especially in terms of costs because eGovernment services are potentially able to yield up to $50bn annual savings for governments in the whole world by 2020[19].

For example, the government could communicate about the gain in terms of transparency of processes and increased convenience, with online government services available 24/7 from everywhere.

Moreover, one or several campaigns of information have to be implemented so **understand that security features protect their data** in order to avoid the population being reluctant to provide personal information during both registration and discretionary censuses.

5. CONCLUSION

Envisioning a circular mindset allows government to provide a unique legal identity for all.

This unique identity gives populations a reliable means to claim for their rights. **It is of great importance but is currently hindered by the fragmented ID ecosystems that are in place in many low and middle-income countries.** This fragmentation is mainly due to eID programs that were often implemented as a means to rapidly identify the population, but it has been proven that the multiplication of stand-alone registers cannot be efficient, especially when these are not linked to a modern electronic civil register. Even though the great potential of civil registration and ID systems is well known, the lack of coordination among donors and ministries is the primary reason for the poor state of the ID ecosystems**. Those eID initiatives should not ignore the information contained in the civil register** when one is in place, but rather focus on how to be integrated to it.

Indeed, the smaller the civil registration's coverage is, the less reliable the digital ID system will be. Civil registration gives vital events that occur in an individual's life an **official status**, while national electronic identity schemes bring a solution to **establish and provide credentials for a person's identity in a way that is unique and secured**. Acknowledging the legal identity of an individual and providing that person a secured solution to prove this official status are complementary. Permanent registration linked to secure identification benefits both state and population by enabling financial cuts and ensuring that development measures leave no one behind. This social and economic inclusion is unlikely to be brought about if a legal unique ID for all is not provided.

As a solution to splintered ID ecosystems, a circular link allows several integration pathways to reach a unique legal identity for all, in a flexible manner depending on the country situation. This concept is representative of the dynamics that underpin the identity environment. Whether legal identities must be merged or simply created, this circular relationship provides a mean to build and consolidate a robust management system built around a unified eCivil register. This approach places digital identification and civil registration as the cornerstones of the ID ecosystem and ensures the establishment of one legal ID for all, and not more than one.

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Annex

The UN handbook on Civil Registration and Vital Statistics Systems defines vital events as follows:

Live birth: complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life [...]. All live-born infants should be registered and counted as such irrespective of gestational age or whether alive or dead at time of registration and if they die at any time following birth, they should also be registered and counted as a death.

Foetal death: death prior the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy. The death is indicated by the fact that after such separation the foetus does not breathe or show any other evidence of life [...].

Death: permanent disappearance of all evidence of life at any time after live birth has taken place (post-natal cessation of vital functions without capability of resuscitation). This definition therefore excludes foetal deaths.

Marriage: act, ceremony or process by which the legal relationship of husband and wife is constituted. The legality of the union may be established by civil, religious or other means as recognized by the laws of each country.

Divorce: final dissolution of a marriage, that is, the separation of husband and wife which confers on the parties the right to remarriage under civil, religious and/or other provisions, according to the laws of each country.

Annulment: invalidation or voiding of a marriage by a competent authority, according to the laws of each country, which confers on the parties the status of never having been married to each other.

Judicial separation: disunion of married persons, according to the laws of each country, without conferring on the parties the right to remarry

Adoption: legal and voluntary taking and treating of the child of other parents as one's own, in so far as provided by the laws of each country.

Legitimation: formal investing of a person with the status and rights of legitimacy, according to the laws of each country.

Who we are

The Secure Identity Alliance is dedicated to supporting sustainable worldwide economic growth and prosperity through the development of trusted digital identities and the widespread adoption of secure eServices.

The Alliance offers support and expertise to allow government agencies and other public bodies to implement their digital ID projects and realize the wide range of economic, public health, electoral and sustainability opportunities offered by the shift to digital service provision.

The Alliance brings together public, private and non-government organizations to foster international collaboration on Digital ID challenges and the issues of data security, citizen privacy, identity, authentication and more.

The Alliance plays a key role in sharing best practice and uncovering the new generation of eIdentity and eDocument technologies crucial to building the trusted framework on which to drive eGovernment, and global economic growth, forward.