BEYOND IDENTITY: AN ECOSYSTEM TO SUPPLY QUALITY PUBLIC SERVICES

A Zetes white paper

zetes

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DRIVING THE CREATION **OF A MODERN, COMPUTERISED, CENTRALISED CIVIL REGISTRATION SYSTEM**

In developing countries, we all too often find that citizen ID programmes lack ambition. Their aim is often limited to just identification, so they fail to address a wider scope that would allow the Government to manage detailed data about the population and individuals. This would provide the possibility of setting up customised programmes to fit actual needs. This white paper sets out a detailed analysis of the characteristics and issues related to setting up an ecosystem to supply quality public services, and offers some strategic advice for a successful implementation.

Introduction

The main task of a government is to work towards the well-being of its citizens. There are many ways to achieve this; the means are available and include two fundamentals:

1. To perform tasks in the public interest from an overall standpoint of town and country planning, such as:

   - **infrastructures;**

     - transportation;
     - electricity;
     - drinking water;
     - health care;
     - education, etc.

   - **regulations;**

     - population policies;
     - migration policies;
     - social policies.

2. To provide a personalised public service to and population groups and individuals.

In both cases, a precise knowledge of the elements (the population in the first case, and the individual in the second one) is a necessary condition for efficient results. In the first case, the demographic characteristics of the target population, both qualitative and quantitative (numbers, fertility rate, migration, mortality, birth rate, marriage, etc.) constitute a valuable planning tool. In the second case, knowledge of every individual making up the population is essential in order to provide personalised services. To satisfy this need for thorough knowledge of the elements, a variety of up-to-date data sources must be chosen to contribute to the data and information assets, and particularly trade databases of authorised organisations in the private sector and sectoral databases of Government organisations including civil registration systems.

THE CIVIL REGISTRATION SYSTEM: CORNERSTONE OF THE PUBLIC SERVICE ECOSYSTEM

Our discussion particularly aims to show how the civil registration system contributes to a public service ecosystem, and the minimum characteristics required of it for a modern public sector and a competitive State that is able to provide personalised services that relieve people of administrative burdens and are quick, practical, and inexpensive.

"WHEN A CIVIL REGISTRATION SYSTEM IS ONLY USED MANUALLY, EVEN THE MOST AMBITIOUS PUBLIC SERVICE PROVISION ECOSYSTEM CONTAINING IT COULD NOT BE COMPETITIVE OR SIGNIFICANTLY IMPROVE THE USER EXPERIENCE."

International institutions have been clamouring for digital, personalised and borderless services for almost fifteen years. Beyond demonstrating the utility of the civil registration system alone as a data source, we choose to consider, amongst many other things, characteristics without which the ecosystems of developing countries would be isolated from the rest of the world without any real opportunity to compete with the major economies, or significantly widen their markets beyond national borders. To avoid such a shambles, an information system dedicated to public administration must be approached as an architectural work whose components have been predetermined, each one chosen for its contribution to the final creation. They are then implemented only at the appropriate time, as defined in the project timetable.

MODERNISATION IN THE DIGITAL AGE

To imagine modernising public administration without the basic functionalities of digitisation, dematerialisation, interoperability, digital identification and data protection, would be taking a backwards step.

We acknowledge the modernisation of the public sector, in particular using ICT, digitisation, and systematic dematerialisation as the basis of an efficient public administration and a driver of competitiveness in the underlying economies. In the rest of this document therefore, we analyse the fundamental characteristics of ecosystems supplying public services. We also present the advantages of the civil registration system information system based on digitisation as the technological substrate for a modern public administration. The results obtained by Governments that have carried out this digital transformation amply demonstrate that this is the right path to follow.

Communication between human beings is accelerating rapidly thanks to the Internet and digital technologies

that allow almost instantaneous exchanges, as well as transactions that were still manual until very recently. The environment in which we live is undergoing a relentless metamorphosis. The approaches, tools and strategies implemented are transforming, whether deliberately or not, social relations in the broadest sense (culture, economy, democracy and social networks) by progressively and relentlessly turning this into an information society.

"THE ULTIMATE GOAL IS TO IMPROVE THE EFFICIENCY AND PRODUCTIVITY OF PUBLIC SERVICES, TO PROMOTE DEMOCRATIC PROCESSES, TO REINFORCE PUBLIC POLICY, AND TO ACT AS A LEVER FOR ECONOMIC DEVELOPMENT."

In many countries around the world, public administration practice is continually evolving, being modernised and computerised in leaps and bounds. The provision of online public services and the stimulation of e-commerce, whilst ensuring the security of computer infrastructures, are some of the beneficial effects of this transformation. The ultimate goal is to improve the efficiency and productivity of public services, to promote democratic processes, to reinforce public policy, and to act as a lever for economic development. These developments progress at the same rate as the advancement of digital technologies. This involves digital information exchange, supplying or receiving services (finding information, providing information, ordering, receiving products (material or not), carrying out financial transactions) by taking the best possible advantage of information and communication technologies.

It also involves offering a new, open system that acts as a decision-making aid for the design, production, and supply of online services, whilst taking advantage of the experience acquired by users of social networks, online commerce tools and the internet generally.

At the same time, in general in developing countries, despite digital tools and technologies being free,

and despite the example of online administration demonstrating its role in competitiveness and economic renewal, public administrations and the private sector carry on operating almost manually. Many of their users (citizens, companies, governments, international institutions, etc.), however, already use social networking tools every day and with relative ease.

In view of the gap between developing countries and the rest of the world, the issue of switching to digital administration is extremely urgent. It has been shown that the non-digitisation of the public administration and economic transactions, silo operation and manual interoperability also contribute to the disappointing performance of public services in developing countries.

WHY DO WE THINK AN ECOSYSTEM LIKE THIS IS ESSENTIAL?

The present white paper is not a presentation of governance or online administration, even though it does talk about that frequently; it is intended to shed light on the minimum essential characteristics that the ecosystems of the public administration should have during their start-up phase to contribute effectively to rational government and provide quality public services.

We believed it was necessary to publish the results of our analysis of this very important subject, leaving out the details and focusing on general considerations concerning the fundamental components and the order in which they should ideally be implemented.

The following factors determine our wish to share the results of our examination of this important subject:

- the steady progress towards the information society;
- the increasing attention that developing countries are devoting to digital administration;
- badly undertaken initiatives to construct national ID databases in certain countries
  - even though the identification functionality is important, or even essential, it is still just one function amongst others;
  - the tool to aim for, then, should not be an isolated "National Identification Database", but an "Ecosystem for Governance", of which the National ID Database is just one of the key components.
- The needs of developing countries in terms of tools are essentially aimed at assistance in determining administrative and town & country planning programmes and projects.
- These programmes must be centred on the population, the family and the individual.

The term "Provision of services by the public administration" covers the following main areas:

1. The State's relationship with the citizen in terms of the rule of law, namely democracy via digital channels, citizenship (e participation).

2. Services to the users of public services, whether national or foreign, natural or legal persons.

3. Interconnection of public administration organisations and their integration to facilitate internal Government operations.

4. The Government's relationship with the international environment.

5. Promoting economic growth and social cohesion through measures that facilitate and secure the operation of economic activity.

MANY PLAYERS

Attainment of the above objectives requires an information ecosystem able to operate in a network of stakeholders, especially the various public administration bodies, individuals, companies and authorised entities in the private sector. The ecosystem concerned - a complex and tricky environment - should manage individuals as well as a multitude of private and public institutions dealing with the free flow and ultimately, cross-border agility of goods, persons, financial products, rights and obligations. It should operate as an expert system, able to suggest relevant decisions concerning the user, particularly by accurately determining the nature and level of service to be offered. The supply of a quality service requires the capability to identify, locate, and characterise the user and, according to the transaction, the capability to track and even monitor it. In addition to individuals, the State also conducts relations with international institutions (AU, UN, EU, Interpol, ICAO, etc.), regional institutions (ECOWAS, UEOMA, OHADA, etc.), state organisations from other countries (ministries, embassies, consulates, etc.), non-governmental organisations, etc.

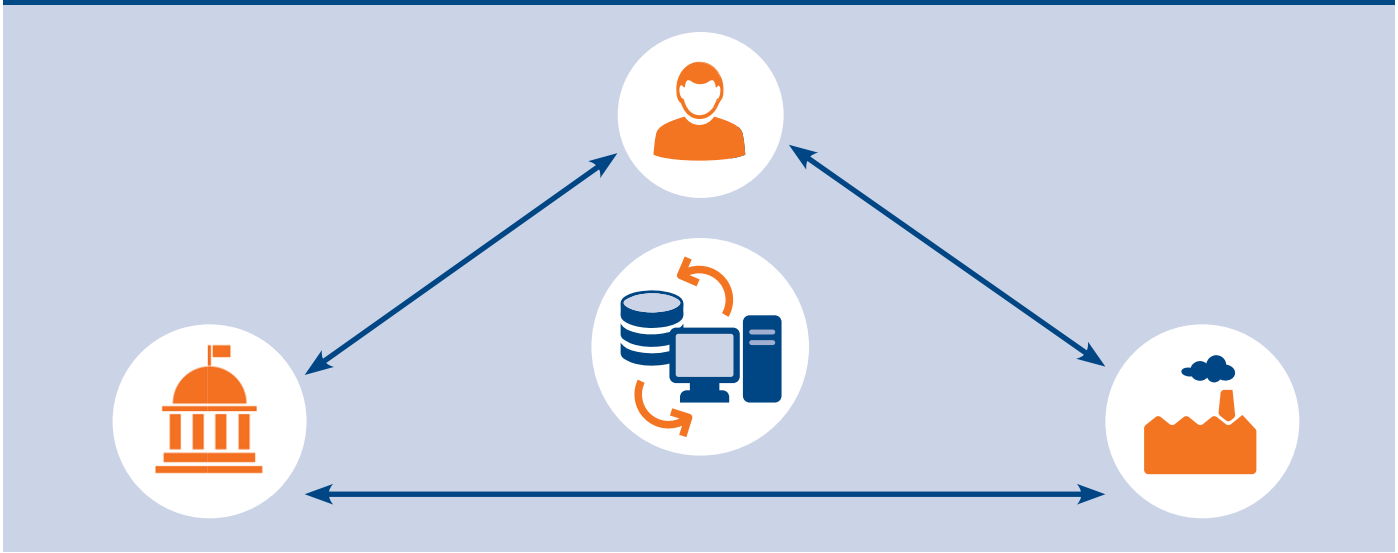
"ANOTHER PURPOSE OF THIS ENVIRONMENT IS TO ENSURE THE SAFETY OF BOTH THE INDIVIDUAL AND THE NATIONAL TERRITORY, WHILST CONTRIBUTING TO THE SECURITY OF THE INTERNATIONAL COMMUNITY."

In such a context, only the State has the sovereign duty to offer, create, and manage the environment that should enable all targeted services to be efficiently provided to individuals. Another purpose of this environment is to ensure the security of both the individual and the national territory, whilst contributing to the security of the international community.

To simplify the discussion, we limit the functional perimeter of the ecosystem to the services that the State provides directly to citizens (see point 2 above). The aim of this document is to present the minimum characteristics required for an ecosystem dedicated to the supply of services to the users of public services, in order to operate efficiently.

Our discussion does not concern the ecosystem, but is limited to the necessary and sufficient functionality and characteristics. It also does not mention the infrastructure, management, operation (operational functions and activities) or the management of systems for the recording and statistics of vital events.

INFORMATION ECOSYSTEM CAPABLE OF IMPROVING THE NETWORKING OF STAKEHOLDERS



THE NECESSARY SPEED OF TRANSACTIONS

Traditionally, to provide services to people, public administrations verify the legal identity of the user by demanding paper ID documents, most notably the identity card and/or a civil status certificate to determine the rights and wishes of the applicants. For example, the birth certificate, death certificate, marriage certificate, and divorce certificate situate the individual within society and with respect to their nuclear family and enhance their rights to social assistance, tax exemptions, inheritance, food allowances and remarriage.

"THE DIGITISATION OF DOCUMENTS, ELECTRONIC ID AND THE DEMATERIALISATION OF TRANSACTIONS ON AN AGILE IT PLATFORM ARE A MANDATORY MOVE FOR DEVELOPING COUNTRIES."

But in today's global economy where competitiveness, aggressiveness, and responsiveness rule the day, one of the factors for success is the speed at which transactions can be carried out if they are not instantaneous. Because computerisation alone cannot achieve these objectives, the digitisation of documents, electronic ID, and the dematerialisation of transactions on an agile IT platform, are a mandatory move for developing countries that no longer wish to remain restricted to their marginal internal markets, of which they only actually control a small part.

These are the basic principles from which we approach the prospective study of the characteristics of public service provision ecosystems.

TERMINOLOGY

Ecosystem

"The identity ecosystem for service provision" is part of an approach that goes beyond just identification and encompasses the whole universe of governance in its economic, democratic, spatial, and temporal dimensions. The term "ecosystem" imposes a holistic approach, taking into account the whole environment, particularly through its main facets, which are: technology, methodology, organisation, players and users, who interact.

This ecosystem would ultimately aim to achieve fluidity and automation of the tasks formerly performed manually, with a view to improving, for example, the efficiency and competitiveness of public services. In 2019, the ground is sufficiently fertile because the Internet and social networks support the flow and sharing of information (text, audio, video) amongst tens of millions of people simultaneously, almost in real time.

Successful online administration projects in several parts of the world have shown us the following (1):

- online administration supports administrative procedures, improves the quality of services, and increases the internal efficiency of the public sector;
- digital public services substantially reduce the administrative loads on companies and users by making the interdependent relationships that each category of player might have with the public administration faster, more efficient, more practical, more transparent, and less expensive;
- the implementation of digital technologies in processes and transactions with a view to modernising public administrations is a source of additional social and economic utilities that benefit society as a whole;
- the concerted switching to digital by public administrations is a contributory factor to the ultimate success of interactions with other governments and the private sector and in community markets such as ECOWAS, ECCAS, etc.

The above discussion could suggest that simply switching the operation of public administrations to digital is all it takes to obtain the same expected results, but that is not the case

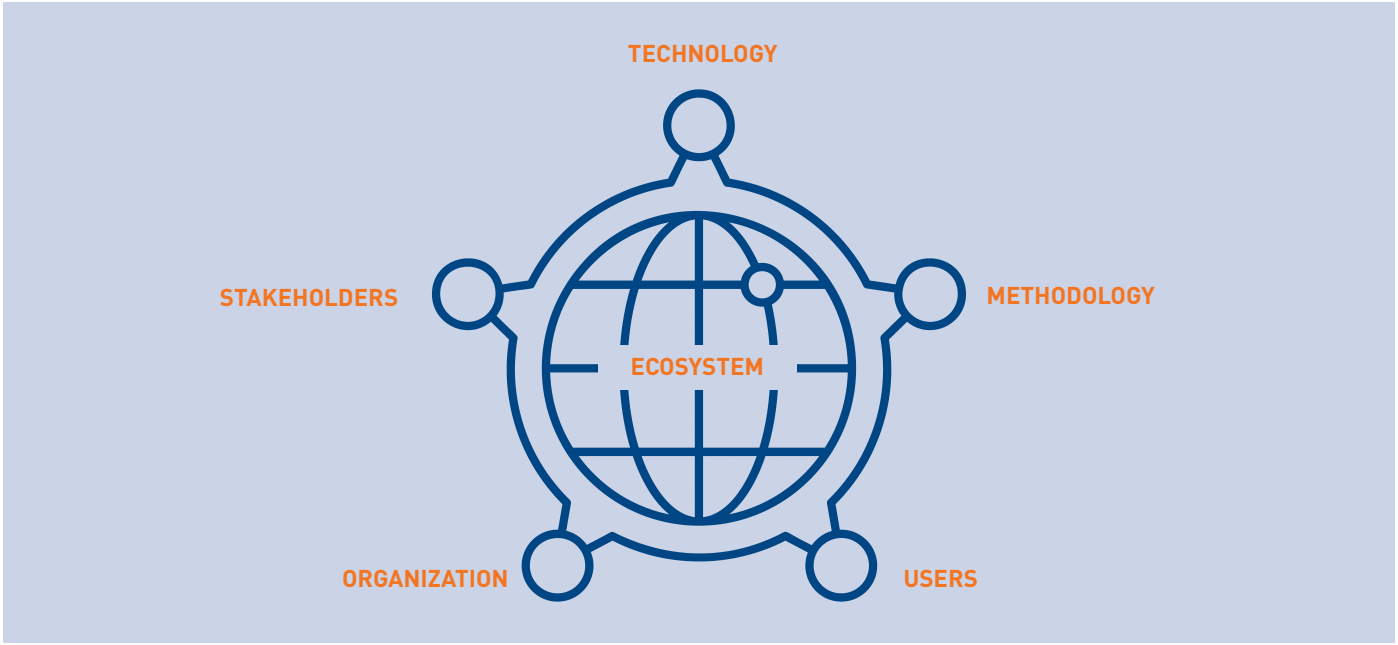
The apparently easy success observed is actually based on a custom architecture and infrastructure with at least one characteristic that should be mentioned: Handling of updated demographics, mainly of the resident population, on a national basis and on the subnational scale down to neighbourhoods and including regions, departments, prefectures, cantons, municipalities, towns, etc.

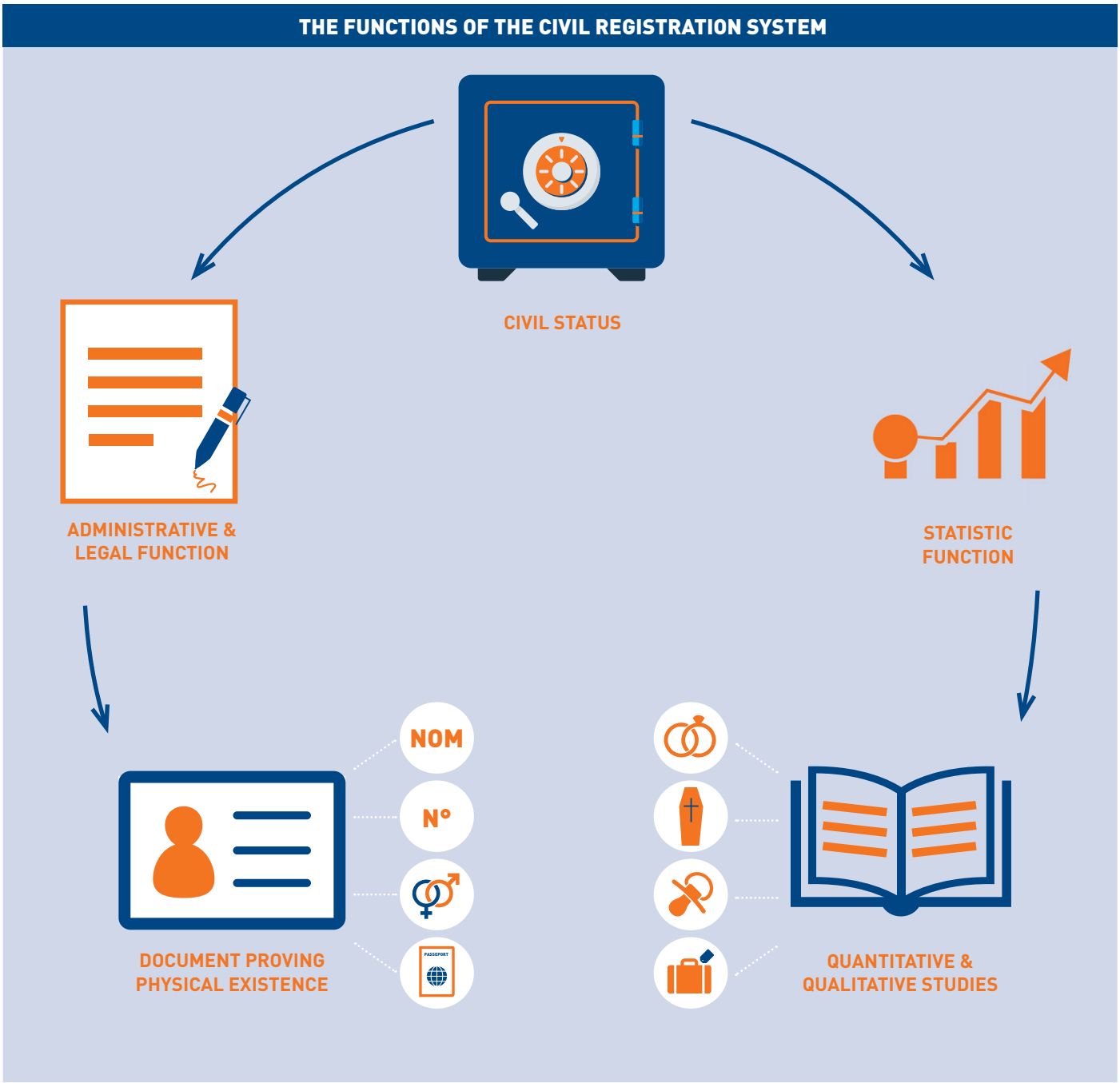
The designation "identity ecosystem for service provision" requires at least the availability of immediately accessible vital statistics, obtained from updated data as well as a move towards digital by the public administrations, most of which still operate mainly in manual mode and silo

Civil registration system

From an organic point of view, the civil registration system is the institution in charge of collecting specific events from the life cycle of human beings, recording them, and updating them whenever vital events occur. More concretely, it is a legislative framework that governs the recording of births, marriages, deaths, divorces, adoptions, recognitions, etc.

On request, this generally public service extracts named data and issues it in the form of certified documents, most notably birth certificates, marriage certificates, death certificates, etc.




THE FUNCTIONS OF THE CIVIL REGISTRATION SYSTEM
CIVIL STATUS
ADMINISTRATIVE & LEGAL FUNCTION
STATISTIC FUNCTION
NOM
N°
PASSEPORT
DOCUMENT PROVING PHYSICAL EXISTENCE
QUANTITATIVE & QUALITATIVE STUDIES

From a legal point of view, the civil registration system represents the natural person, identifies him or her, and records all relationship events (marriage, affiliation, etc.) between that person and certain other individuals. It thus determines the individual's capacity to accomplish certain other legal acts.

"FROM A LEGAL POINT OF VIEUW, THE CIVIL REGISTATION SYSTEM REPRESENTS THE NATURAL PERSON, IDENTIFIES HIM OR HER, AND RECORDS ALL RELATIONSHIP EVENTS (MARRIAGE, AFFILIATION, ETC.) BETWEEN THAT PERSON AND CERTAIN OTHER INDIVIDUALS. IT THUS DETERMINES THE INDIVIDUAL'S CAPACITY TO ACCOMPLISCH CERTAIN OTHER LEGAL ACTS."

The civil registration system essentially fulfils two functions:

- an administrative and legal function for the issuing of legal documents proving the existence of natural persons, updated facts concerning them, and their matrimonial and affiliation status;
- a statistical function that supplies the results of quantitative and qualitative studies of the characteristics of the population via themes such as birth, fertility, mortality, marriages, migrations, etc.

By keeping track of events, the statistical function makes it possible to monitor the development and dynamics of the population and to analyse trends in fertility, mortality, marriages, etc. It is an essential source of data for public statistics.

The administrative and legal functions mentioned above require that each natural person be unambiguously identifiable at the earliest possible point in his or her life cycle, ideally from birth; which is why it is necessary to record births within the first few days of life.

The registration of birth is when the civil registration system recognises the natural person and gives him or her an identity (last name, first names, gender, date of birth, personal identification number, etc.) and, where applicable, a citizenship, and a nationality, three rights enshrined partially in the "Universal Declaration of Human Rights" and in the "Declaration of Children's Rights".

WHY REGISTER BIRTHS AND DEATHS?

Since it does not track migration flows, the civil registration system cannot reflect an extremely precise image of a whole population. Nevertheless, knowledge of births and deaths lets you make an estimate of the numbers of the biggest contingent, and thus identify trends and statistics to obtain a clearer picture of reality in the field.

WHY REGISTER THE CAUSES OF DEATH?

The recording of diseases and causes of death makes it possible to draw up an effective public health policy, particularly concerning mothers and babies. As the WHO states, data on births and deaths according to age, gender, and cause of death are the cornerstone of public health policy planning.

Vital statistics

Vital statistics are produced based on vital events such as live births, deaths, marriages, divorces, separations, annulments, adoptions, legitimations, and recognitions. To ensure the accuracy of vital statistics, additional data must be taken into account; in particular, the address of permanent residence and the balance of migration flows.

Statistics in general are useful data and tools to analyse economic and social phenomena, to understand them and interpret them.

Vital statistics, a subset of demographic statistics, have a variety of uses. Given the wealth and diversity of the data they comprise, they lend themselves very readily to being grouped according to category for demographic, economic, health and social purposes, etc.

Vital statistics represent:

- the collection of data concerning vital events occurring from birth to death, inclusive;
- collection of characteristics of the person whose event data was collected;
- processing of the data collected;
- interpreting the results of data processed;
- sharing the results and their interpretations.

From the statistics, crucial information about the population can be deduced, which helps governments refine and rationalise their planning and decision-making, particularly in the following areas:

- administration;
- international comparability;
- demographics, ideally to be refined using data on migration and naturalisations;
- legal;
- scientific research;
- socio-economic.

The main uses of these statistics are:

- ☑ demographic estimates and forecasting;
- ☑ analyses by cohort and period;
- ☑ drawing up mortality tables;
- ☑ calculation of health indicators;
- ☑ epidemiological studies;
- ☑ defining public health programmes;
- ☑ defining mother and child health programmes;
- ☑ defining family policies;
- ☑ planning certain consumer goods markets.

The data sources used to calculate efficient and accurate statistics should include data on migration movements and naturalisations, which are of demographic importance. Since population numbers appear in the denominator of the calculation formula for most indicators, if not adjusted to reflect migration flows, the population number used could be either higher or lower than the real number, which will always lead to incorrect results and inappropriate decisions.

Our discussion will not go into greater detail about the role of either migration flows and naturalisations in particular or about the population register in general, because a complete civil registration system represents the majority of any resident population, and is therefore easily sufficient to illustrate our position and our recommendations.

Online administration

Often called e-government, online administration is defined as the implementation of Information and Communication Technologies (ICT) as a vehicle and support for the operation of the public administration jointly with appropriate professional procedures. Its aim is to consolidate public policies, improving democratic processes, and improving the efficiency of administrative services.

We shall limit our discussion to improving the performance of public services.

The implementation of ICT requires old professional procedures to be adjusted to fit the new digital-based mode of operation.

Electronic identification

Electronic identification is a process that consists of using personal identification data in an electronic form unambiguously representing a legal person or a natural person acting on his or her own behalf, or on behalf of a legal person (2).

CURRENT TRENDS IN **DEVELOPING COUNTRIES**

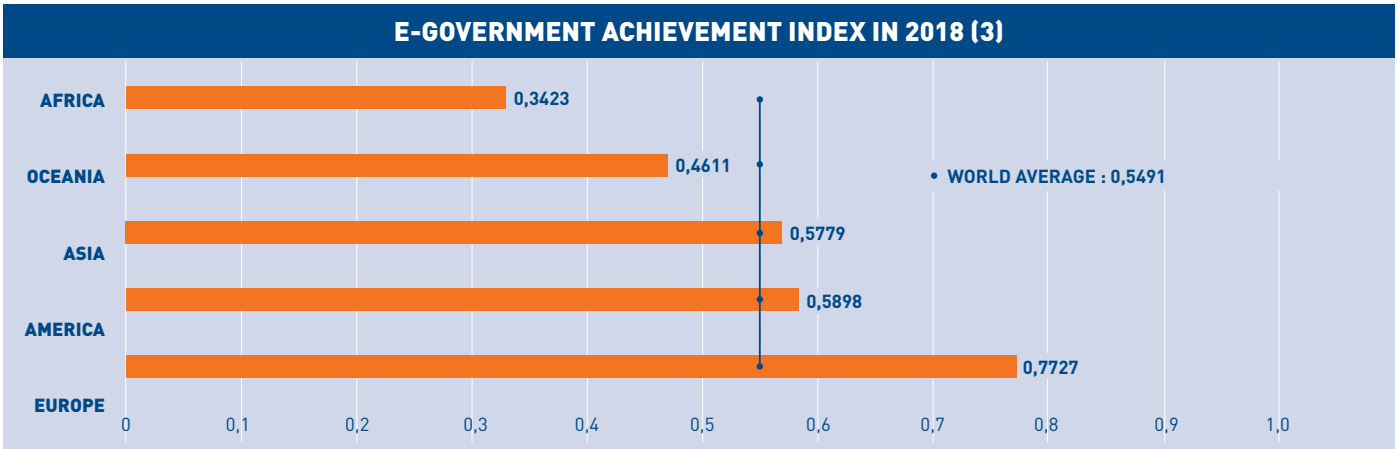
Very few developing countries have initiated a real project to transform their civil registration system into an information system accessible from anywhere in the country. At a time when a trend towards decentralisation is sweeping the globe, this type of initiative should be a necessity. In almost all developing countries, the "civil registration" information system is characterised as follows:

- it does not cover the population exhaustively despite good intentions, plans, and projects in progress in certain countries;
- it is not yet totally computerised despite the work in progress in certain countries;
- it does not yet constitute a central reference that is accessible nationwide, due to a lack of total computerisation and implementation of a relevant architecture.

That is why there is not yet a nationwide information ecosystem incorporating, amongst other things, the civil registration system and a national biometric identification database to constitute a central and computerised reference of secure legal identities. Such an ecosystem has to serve as the basis on which to build a national architecture integrating all the sectoral information systems in the country, including the private sector.

It seems that many countries only attribute secondary importance to the civil registration system's role as a source of quality data for the compilation of vital statistics, even though the importance of this role is universally recognised. Instead, they value it mainly for its legal and administrative functions.

Many countries are starting to develop a National Identification Database with the ambition of registering all residents, both citizens and foreigners. This type of project is dedicated to national needs and ignores the community aspect. This is bound to raise technical problems for the interoperability of services between countries; an inevitable situation within communities and common markets (ECOWAS).



Identification database

The defined population is enrolled by collecting, for each registered individual, the data mentioned in the frame at right.

When the individual's enrolment is complete, a Personal Identification Number, also called Unique Identification Number or Personal Identification Code, is generated and linked to the enrolled person and to his or her digital identity.

The national identification database is continually updated in case certain events have occurred, such as:

- change of address of main residence;
- name change (last name);
- name change (first names);
- data correction;
- supply of missing information;
- new births.

The national identification databases are currently not synchronised with the civil registration systems.

Identification data as known to the civil registration system;
- last name;
- first names;
- gender;
- date of birth;
- identification data concerning parents (mandatory for minors).

Biometric data, most notably:
- photograph of face;
- fingerprints;
- image of each iris.

Contact information:
- address of main residence;
- mobile phone number;
- email address.

NEED FOR A MODERN, JUST, **EQUITABLE AND HIGH-PERFORMING PUBLIC SERVICE**

Governments are responsible for creating a platform for the modernisation of public services by moving towards an online administration system to benefit the public administration itself, as well as users and organisations in the private sector and civil society. This platform should produce and deliver building blocks for electronic identification, data digitisation, integration of public organisations, interoperability in general and particularly open to the private sector, security of data and transactions, etc. The necessary technical characteristics certainly go beyond the brief outline just presented. We focus our attention on the minimum information resources required for the efficient management of public services for the user.

Authenticate, Identify

In principle, the State has a National Identification Database, which contains the personal identification data for each individual. A personal identification code is allocated to each natural person enrolled. In the National Identification Database, the State has enough personal identification data to produce electronic identification means (chip, smartphone, etc.) to authenticate and identify the user before providing any service.

The National Identification Database component is useful because every resident must be included in the administration's records, and must therefore be directly and unambiguously identifiable.

DETERMINING THE CIVIL STATUS DATA OF THE PUBLIC SERVICE USER

The nature and level of service to be provided to the individual is largely determined by the updated civil status data. The updated civil registration system must therefore be available and accessible on demand as a component of the ecosystem. The following examples of social services outline the importance of having a thorough knowledge of an applicant's civil status:

- ☑ family allowance;
- ☑ back-to-school allowance;
- ☑ parental leave allowance;
- ☑ personalised housing benefit;
- ☑ allowance for handicapped adults;
- ☑ active solidarity benefit;
- ☑ invalidity allowance;
- ☑ solidarity allowance for elderly persons;
- ☑ integration allowance;
- ☑ first-time job seeker's benefit;
- ☑ etc.

DETERMINING THE SOCIAL STATUS OF THE USER

Some of the above services need data located in sources other than the civil registration system. This leads to the conclusion that a civil registration system is just one source amongst many, without which a National Identification Database would not be able accurately to determine the social status of the individual (unemployment, handicap, hospitalisation, invalidity, etc.) to authorise or refuse a service. Losing a job is not a vital event in terms of civil status. As such, it cannot be recorded in the civil registration system.

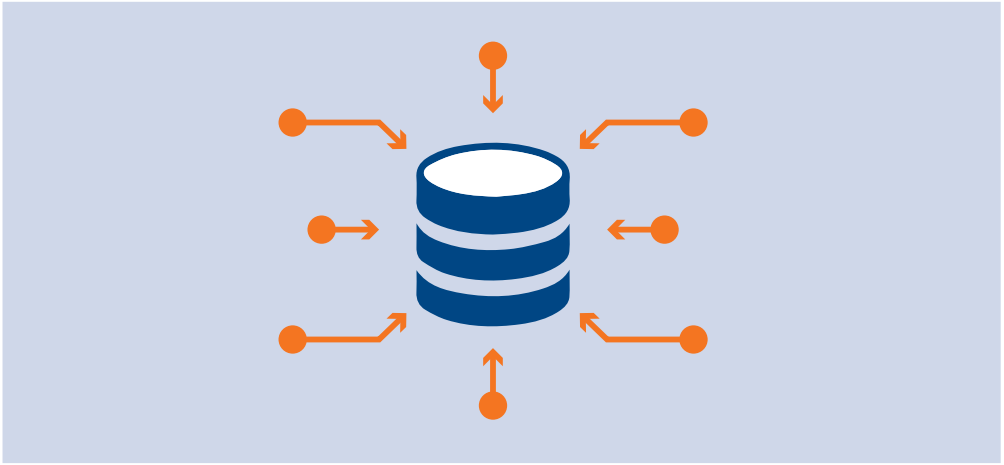
Identification is not an end in itself, and only represents a part of the solution to be implemented to improve the State's management of its citizens and its relations with its citizens. For example, the granting (or not) of a personalised housing benefit could be determined by evaluating some of the data listed below:

- amount of rent for a tenant;
- amount of loan for a person buying the property;
- household composition;
- address of main residence;
- professional situation;
- taxable income.

The result is that State management of information resources spread across the public administration bodies must also constitute an essential objective of the ecosystem.

UTILITY OF **VITAL STATISTICS**

Demographic and health statistics are very important for the purposes of supplying services. The level of service provided to the individual and to aggregations of the population, notably the numbers and the sociodemographic structure of the population, have a direct link with the statistics.



Data aggregated over the entire population is essential in planning the management of public affairs and allocating resources precisely and fairly. Services must be provided as quickly as possible despite an increasing population and therefore also an increasing number of requests. The same applies to determining the rights and obligations of the user of public services.

In addition, the State needs correct and up-to-date data, complementary to the data in the civil registration system, concerning the user of the public service. This information must allow the State to properly carry out its personalised administrative and social functions for the user.

From the point of view of the public or private organisations that use them, vital statistics can be considered as a set of digital information enriched by comments with semantic value, which contribute to rational decision-making during socio-economic planning, tracking and evaluation of programmes, and the calculation of demographic and social indicators. Public administrations need them very much in order to execute their tasks efficiently.

A civil registration system that ensures exhaustive coverage of the population and the territory is very useful for the statistics. It contains information and data that contribute to enabling the following objectives to be achieved:

- detecting discrepancies between territorial subdivisions concerning certain characteristics;
- assigning priorities to the administrative subdivisions according to the scale of the disparities;
- identifying and rationally allocating human and budgetary resources to the relevant entities and players of the public administration.

It is important to note that the civil registration information system and the resulting statistics constitute a highly significant source of data on populations, although incomplete and insufficient in many respects.

Public and private institutions, including personal services, adapt to the demographic dynamic, the family and social status of the individual. They therefore take advantage of the vital events recording and statistics system. The same applies to public and private bodies involved in human rights, maternal health, child health, and the health of the population overall.

The possibility of reporting statistics on request on a national or subnational scale is extremely useful for planning, decision-making, and the tracking of programmes for the purpose of comparing the prescribed quality level to the quality of the results obtained and making adjustments if necessary.

Below are some examples of the use of vital statistics (4).

Estimating the population

It is essential for the State to know its total population nationally as well as the population of each administrative subdivision the country comprises.

Since a population increases through live births, it is essential for the National Identification Database to take into account the births that are presumed to be known to the civil registration system. Correspondingly, since a population decreases through deaths, the identity of any deceased must be marked person in the National Identification Database so that it will not be counted in the total population calculation from the date of death.

The national population figure obtained from the civil registration system is not accurate because it does not allow for net migration (subtracting the people who leave the country and adding the people who settle in the country):

- after recording the birth, the civil registration system has almost no further knowledge of the internal and external migration movements of either parents or children;
- the civil registration system is also not the infrastructure dedicated to registering individuals, whether citizens or foreigners, who settle in the country or who emigrate.

The population of subnational subdivisions could be obtained by means that are not discussed in this document. On the other hand, the national population figure could be used, given that citizens and permanent resident foreigners constitute its largest contingent and that an estimate approaching the true figure can be made if the growth rate is known.

The population figure is required input data for the planning process, the calculation and distribution of financial, human, and equipment resources nationally and locally, and is also used to determine most demographic and social indicators.

Defining public health programmes, especially for mothers and children

The register of deaths is the only representative source of information on mortality according to cause of death, provided that recording is universal, continuous, and permanent. This information concerning cause of death is a considerable advantage for the implementation of relevant health measures targeted on, for example, population groups or territorial subdivisions, with a view to improving the health of the population. Timely recording of causes of death and immediate analysis provides essential information for an immediate response to the morbidity of

time in the form of information messages and intervention plans. Targeted results can be obtained by sorting the data according to criteria such as the following:

- place of residence;
- age;
- location of occurrence of the event:
  - hospital;
  - home;
  - city;
  - countryside;

- delivery method;
- weight at birth;
- gestational age;
- birth order;
- age of the mother;
- marital status of the mother;
- etc.

When the population covered by the statistics concerns a particular target, for example mother and/or child, appropriate measures to prevent specific diseases and deaths can be set up, and actions can be planned, executed, and evaluated.

Simply put, civil registration systems contain enough information to calculate statistics that can achieve many objectives, including the following examples:

- training doctors and informing pregnant women about malformations and injuries due to obstetrical trauma;
- evaluating perinatal mortality and the outcome of pregnancies and births;
- understanding the dynamics of fertility;
- analysing the impact of separation and divorce on mothers and children, with a view to using the law to protect mothers and children and allocate appropriate resources to them;
- studying the effects of maternal characteristics on the development of young children;
- evaluating the quality of healthcare service provision;
- analysing the influences of public and private health services on birth;
- studying family formation dynamics.

Understanding the socio-economic aspects of the population

Socio-economic criteria offer the possibility of segmenting the population on a national and local scale according to age, gender, level of education, ability to read and write, occupation, type of activity, situation with regard to their profession, ethnic group and/or nationality, etc.

By comparing different groups on the basis of vital statistics of the same type, e.g. birth rate, infant mortality rate, mortality rate by cause of death, we could begin to understand the disparities due to the socio-economic situation of each group, and apply preventive or corrective measures.

Producing development indicators

Vital statistics are also used to calculate important demographic and socio-economic indicators concerning standard of living or quality of life, particularly:

- indicators of fertility and mortality:
  - total fertility rate;
  - infant mortality rate;
  - under-5 mortality rate;
  - maternal mortality rate;
  - life expectancy at birth;
  - gross mortality rate.
- proportion of the population living in poverty;
- proportion of the population suffering from hunger;
- proportion of the population without drinking water;

- social and health indicators:
  - literacy rate;
  - prevalence of diseases.

The civil registration information system, as sole source of information, does not allow the exact population to be calculated because net migration and naturalisations are not included in it, even though they must be counted in order to produce an accurate estimate of the population numbers required to calculate the indicators.

Planning social housing

Birth, mortality, and marriage rates and data concerning the size and composition of families and households provide information on the needs of the building sector in general, and social housing in particular.

Planning for school facilities and teacher training

Birth rates and marriage rates are also indicators that help to determine the need for school infrastructures and the human resources to support the operation of schools, nurseries, etc..

Estimating the consumer goods market

One of the biggest concerns of any business is to avoid both unsold goods and out-of-stock situations. Stock management of consumer goods based on an appropriate information system helps to make rational stock forecasts. That is how vital statistics and projections concerning births, deaths, and marriages inform the sizing of stock locally in many business sectors, for example the manufacture and sale of toys and foodstuffs, medicines, and clothing for newborns, as well as maternity wear and wedding dresses. The stock of each of these products can be determined by gender and age to further refine the commercial prospects likely to be revised upwards or downwards according to sales compared to previous years.

Requirements

Vital statistics must be reliable in order to avoid leading to imprecise conclusions that could be detrimental to individuals and society. Statistics production institutes should objectively evaluate the civil registration system from which they take their data in terms of exhaustive coverage of the population and the territory, and assume their responsibility accordingly to implement, where necessary, the complementary data sources necessary to reach the required level of quality.

The return on investment of the implementation of an exhaustive, computerised, centralised, and living civil registration system also lies in the savings achieved by the various user organisations by relying on official statistics that are known to be reliable, rather than attempting their own calculations, which are outside their core business and lead to high costs.

WEAKNESSES OF A NATIONAL IDENTIFICATION **DATABASE ALONE**

If not synchronised with the civil registration information system, any national identification database would have several weaknesses; specifically:

- deceased persons would not be marked as such, to contribute to the logical reduction of the population figure:
  - any population estimate based exclusively on such an identification database would not match reality;
  - the presence of deceased persons in the database is a factor in compromising security due to identity theft attempts that could occur.
- not all newborns are systematically registered in the identification database so that, in addition to identification, they can contribute to the logical increase in population numbers: in many developing countries, it can be a challenge just to persuade parents to declare the birth for inclusion in the civil registration system. It is therefore highly likely that many parents, after declaring births for inclusion in the civil registration system, would not always register their newborns in the national identification database, largely to avoid paying for transportation to the registration centre for a second time, and facing the inevitable queues again. As a result, any estimate of the population numbers based on the national identification database would be inaccurate because, for example, not all newborns had been taken into account.

In addition, as their name suggests, national identification databases are intended to, and are limited to, the identification of the persons enrolled; which turns out to be insufficient for the purposes of efficient public administration, planning, and public service provision.

To determine with precision the rights of the individual and the appropriate level of service, the organisations that supply services to the individual cannot do without at least all the vital events, up to date and with fast and immediate access; most notably:

- last name;
- first names;
- date of birth;
- place of birth;
- citizenship
- nationality;
- legitimacy;
- family composition;
- composition of the household, in principle not registered in the civil registration systems.

In addition to offering good services to the user, the public service supply ecosystem must have a qualitative framework by focusing the service on the user and, secondarily, by proceeding as follows:

- ☑ eliminate or at least minimise red tape;
- ☑ reduce delays;
- ☑ put public services on line;
- ☑ promote online self-service;
- ☑ assist with the procedures for fulfilling civic obligations;
- ☑ make information accessible as a public resource.

As an illustration, social assistance, in the countries that adopt it, is a national solidarity infrastructure intended to provide benefits, in monetary form, services, educational actions, social actions, to persons unable to afford their essential needs, such as access to health care, accommodation, food, clothing, cleanliness, education, etc. Its purpose is to reintegrate, rescue, apply prevention, and benefit to the categories of person listed below as examples:

- families with children;
- elderly persons, whether independent or dependent;
- persons with a disability;
- persons in economic difficulty;
- persons experiencing family difficulties;
- persons with social integration difficulties;
- etc.

In view of the categories of potential beneficiaries of social assistance, it turns out that a national identification database alone could not supply the information required to qualify the applicant and determine his or her rights in terms of disability, financial difficulties, family problems,

social integration difficulties, etc. Even all the updated vital events would not suffice, which is why the need for information that can be used to launch an ecosystem for a modern and efficient public administration can be summarised as "at least all of the updated vital events". Note that social assistance is strongly based on the persons' family status, of which the civil registration system provides legal proof, which is why it is mandatory for it to be present in the ecosystem from the start.

In developing countries, because civil registration systems are not computerised and do not provide exhaustive coverage of either the national territory or the population, national identification database construction processes, such as currently under development, are not and could not be based on them. Under these conditions, with the resistance that such projects could encounter, there is no guarantee that all resident nationals would enrol. A national identification register that did not manage to enrol the entire population of the country could not be used as the main source to generate reliable demographic statistics accurately reflecting the nature and level of services to be provided to the individual, short of relying on the good old manual method.

OUR RECOMMENDATIONS

As a priority, developing countries need an infrastructure that contributes to the rational development of projects and to enlightened planning, instead of just a "National Identification Database". The latter is nevertheless one of the main components of the infrastructure concerned. Moreover, national security and the unavoidable omnipresence of the net, which brings its share of challenges related to fraud and identity theft, make it necessary to create such a database. It is not a sufficient measure, however and is certainly not an end in itself.

The State's concern cannot be limited to the security aspect of authenticating the individuals present in its territory, certainly in developing countries. It must also be capable of characterising the population and every individual member of it, in order to offer the personalised public services that best meet the needs. Should the State's primary role not be to provide its population with an environment for fulfilment and sustainable growth? How can this environment be offered without tools to provide a prior understanding of the elements, the characteristics of the population, of the person, and based on that, their needs?

The national identification database must, at least, be accompanied by a modern and computerised civil registration system offering a centralised view on the national level.

Because the modernisation of the civil registration information system would take years, we can consider that its creation should have begun yesterday.

"BECAUSE THE MODERNISATION OF THE CIVIL REGISTRATION INFORMATION SYSTEM WOULD TAKE YEARS, WE CAN CONSIDER THAT ITS CREATION SHOULD HAVE BEGUN YESTERDAY."

Alongside this close collaboration with a computerised civil registration system that is living and known to be reliable, the ideal approach would be to build on the databases of the organisations that make up the public administration, with each one enriching the ecosystem of its own batch of data and specific information. The potential sources of data, supplementary to the civil registration system and the "National Identification Database", could include the databases concerning the following sectors:

- employment;
- social integration;
- transportation;
- health;
- education;
- professional training;
- trade;
- justice.

All these elements put together will contribute to the unified ecosystem supporting State planning in particular.

Identification, although essential, is just a small useful part, but unfortunately is not sufficient.

Slide to digital

Developed countries have a significant head start thanks to the modernisation of their public administration by computerisation, the digitisation of data, the dematerialisation of transactions, the offer of public services that are self-service and on demand, securing the legal identity, the modernisation of the civil registration system, the implementation of a population register , the creation of a unified information system that incorporates the now interoperable bodies of the public administration, tasked with aiming to satisfy users within the shortest possible times and at low cost.

Our objective is to lead developing countries to adopt the following attitudes, emulating the developing countries:

- ☑ considering the switch to digital as necessary for the modernisation of the public administration and its efficiency;
- ☑ setting out a sound basis on which to build the public service supply ecosystem;
- ☑ to resolutely enter the era of data digitisation and the integration of information systems;
- ☑ considering the civil registration information system to be a precious source of data and information and so-called vital statistics that are useful in many ways;
- ☑ building an information asset based on sectoral data sources, open to the Administration.

[1]On the subject of the Population Register, refer to the Zetes White Paper "At the heart of the population register – Issues, analysis and approach", published in May 2018.

Minimum composition required of the infrastructure

The infrastructure that we recommend should have at least the following characteristics:

- a national identification database;
- a computerised civil registration system with national geographical coverage taking into account the whole population and offering a central view on the national level, whether its architecture is centralised or decentralised;
- a strong coupling of the national identification database with the civil registration information system, with a view to active and permanent synchronisation, a mandatory step towards the real population register;
- gradual integration of the public administration bodies;
- gradual digitisation of data, information and transactions;
- electronic identification tools and trust services, particularly the authentication of websites, electronic registered letters, electronic signature, etc.

Although the digitisation of data and integration of public administration bodies are not directly necessary for the calculation of vital statistics, they contribute, in combination with computerisation, to improving the performance of public services, to reducing operating costs, and to easier and faster access by a greater number of users to data, information, and services.

We therefore take the opportunity to insist on the urgency of a controlled move towards the information society.

In other words, to settle for just a national identification database would be to take the easy option and indefinitely postpone the modernisation of the civil registration system. This modernisation is obviously far more difficult and longer to implement, but extremely beneficial, necessary and essential to satisfy users, prime the digital economy, and be equipped with one of the levers of competitiveness.

The first phase of a plan to switch to digital should involve a global analysis that leads to at least a strategy for transformation, innovation, and development that the State must implement. When taking a closer look, this is an essential issue for the development of the territory, which suggests broadening the field of action beyond the technological space and into training in schools to teach new skills and information and support to the population.

Prerequisites of strong coupling with the civil registration system

Vital statistics systems owe their accuracy, exactness and completeness to the civil registration systems, which are their main source and on which they are solidly based. They must apply the following principles:

- Universal coverage of the following elements:
  - all vital events;
  - all geographical zones in the country;
  - all the groups that make up the country's population, including the most marginal ones;
- la continuité de la collecte des données et de l'élaboration des statistiques de l'état civil.

The permanent availability of vital statistics depends on this.

It must be said that the modernisation of the civil registration system does not enjoy that same priority in the developing countries taken individually. Under those conditions, even if it were desired, the strong coupling of the national identification database with the civil registration system would not produce the expected results, due to the civil registration system not being computerised and centralised.

CHALLENGES
TO BE FACED

Above and beyond all the necessary conditions specific to the implementation of a public administration ecosystem based mainly on the civil registration system, the success of this type of project depends on many other factors, which often constitute major challenges to be faced. These challenges pertain to the global telecommunication infrastructure, access to this infrastructure, tariffs, interoperability, etc. These are often imperatives about which many international organisations have expressed concerns and even recommendations. We go over some of them in the following paragraphs in order to highlight all of their importance in setting up a high-performance public service ecosystem.

We approach the challenges from a technological angle, without forgetting the social point of view, i.e. the relationships that groups of individuals are sure to have with the project. We list the main obstacles to be overcome without providing technical solutions because many free recipes exist, as well as offers of solutions in the form of services.

Moreover, the plan to implement a modern public service supply ecosystem is sure to cause concern, scepticism, and even defiance from some of the population. Appropriate communication must be deployed in order to overcome this reaction.

The following arguments are often used to justify opposition and concerns to which the government must respond:

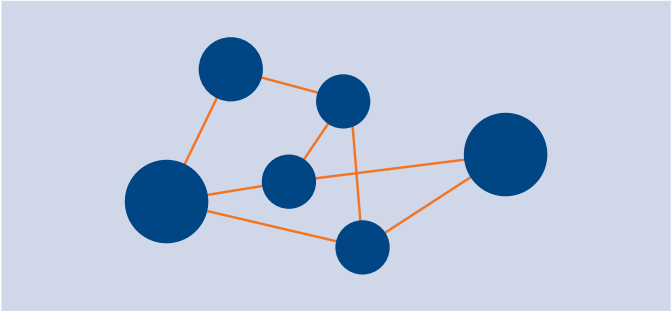
- the true utility of the project;
- accuracy, 'up-to-dateness' and security of the personal data in the databases:
- the dangers of personal data flowing through cyberspace, over which the Cloud casts its own additional veil of fog;
- privacy and personal data being exposed to cybercrime and misuse by the State itself.

Trust and transparency

Unless it is imposed by force, the success of an online administration requires the trust of its users. This means that the State must be predictably transparent concerning how personal data is used. Users would simply want reassurances that the State itself is not violating their rights, identity, individual and public freedoms, or their privacy. The State will succeed in this by adopting a transparent attitude based on the following actions:

- giving the user access to his or her data held by the public administration;
- protecting personal data
- informing users about the arrangements put in place to protect personal data;
- informing users about how data is used;
- allowing users to establish the identity of players who access their data;
- giving users the possibility of monitoring how their data is used;
- allowing users to supply a particular document or piece of information only once.

Before the project begins, the State should inform the population about the purposes of the system and, in particular, the role of the biometric data component, if any.



Interoperability

In the functional perimeter of the present document, interoperability aims to break the silo operation of the sectoral information systems that mainly make up the public administration and today's private sector; it aims for the interconnection of sectoral information systems that continuously need to communicate, exchange data, and execute transactions beyond their own borders. In addition to its technical connectivity, application, organisational and syntactic aspects, it also has a semantic facet, which requires all the players involved in transactions and data exchanges to understand them in the same way. Some advance work is therefore required:

- to define a vocabulary for each type of data;
- to define the semantics of each term in the vocabulary;
- to define the authentic data sources;
- to publish the authentic data sources;
- to provide the means of access to authentic data sources;
- to update the sectoral information systems to use the defined formats and vocabularies.

Even though it is a complex objective, interoperability must rightly be considered one of the fundamental technical conditions on which a successful online administration without silo operation depends, to a non-negligible extent.

The ideal is to draw up a "Normative interoperability framework" that defines the rules for computer interoperability between the organisations that constitute the public administration, which would be based on APIs, standard data formats, norms, standards, electronic signature, authentication, digital identity, service-oriented architecture, cloud computing, IPV6, etc. The following components of interoperability could be identified:

- technological interoperability;
- semantic interoperability;
- application interoperability.

DATA AND INFORMATION ASSETS

The whole set of data and information held in the databases of the public administration constitutes an asset whose careful management affects users, the private sector, and the public administration itself. The standardisation of data must be applied, within a regulatory framework that would consider all the information systems of the organisations likely to use the norms, standards, languages, formats, and other elements that were chosen or defined and to interoperate (data, services) in the public administration sphere. Only one instance, reusable by all, of a type of data may be available in a unique source of data, known as authentic, with responsibility for its updating falling to the information system to which it belongs.

The uniqueness of the instance of a type of data implies the concept of sharing and reuse of the resource.

The pooling of resources and data has the advantage of reducing development costs and deployment times.

Norms, standards, and open software

To prepare the administration's ecosystem for future use beyond the boundaries of the information systems of the various organisations and to facilitate their national and subnational integration whilst controlling the cost and security aspects of this action, it is recommended that norms, international standards, and open source codes are adopted with the following characteristics (5):

- ease of deployment;
- independence;
- maturity;
- openness;
- relevance;
- recognition by the industry;
- etc.

National and Community norms and standards will be implemented to ensure a sustainable creation that is immune to tampering. In particular, for the network, it

seems logical to migrate to IPV6, whose strengths are now well known, whilst guaranteeing cooperation with IPV4 systems.

More generally, it is desirable to maintain an encoding system, data application formats, and data structuring formats.

Quality of communication

In developing countries, users of telecommunications and the internet have to cope with irregular connections on a daily basis. This is a source of inconvenience and damage to the social and commercial activities that depend on them. Ideally, they would also wish for good internet connectivity with broadband coverage.

LOW DATA SPEED

Reliable and fast operation of online services and social services, characterised by high data flow rates, must be guaranteed. Many countries still have 2G coverage, which only allows phone calls and text messages, spanning much of their area. Data rates should be raised to at least the minimum threshold necessary for acceptable use for the purposes of online administration and social interactions. The availability of a decent data rate is a factor for social inclusion, user satisfaction, and the success of online administration projects.

PREVENTING MONOPOLIES

Monopolies, exclusive positions, and dominant positions should be prevented so that prices are unconstrained and low-cost internet use can soon be accessible.

INTERRUPTED CONNECTIONS

The use of social networks, even in conditions of poor connection quality, tends to make users more demanding of the continuity of connections, data flow, and the response time of online services.

E-Inclusion: access for all

The success of online administration also largely depends on its being used by the entire population. In the context of developing countries, a significant segment might have access difficulties for the following reasons:

- low level of education;
- no mobile phone;
- technophobia;
- disability;
- digital divide.

WHITE ZONE, GREY ZONE

In many countries, even developed ones, there are so-called white zones, where there is no mobile phone reception. This obliges residents (those who can afford it) to use more expensive offers, such as radio loop or satellite, where available.

Grey zones are areas where phone network coverage is poor.

TOWARDS DIGITAL INCLUSION

Appropriate measures must be taken to bridge the digital divide by ensuring the necessary network coverage in white and grey zones. In parallel, the following complementary actions should be conducted:

- making services accessible via several channels:
  - computer;
  - telephone;
  - television;
  - mobile terminal.
- facilitating access for disabled persons;
- training the population in the use of online service

Deployment of the high-speed network is critical for access to digital public services; especially in digital deserts.

E-ACCESSIBILITY: FOR ELDERLY AND/OR DISABLED PERSONS

The inability to use online services due to a disability is a source of discrimination and exclusion, both socially and professionally. People affected by blindness, visual impairment, deafness, hearing impairment, motor disabilities and cognitive disabilities must therefore be enabled to access online services: an ethical, political, and social prescription that could be inspired by the international standards produced for that purpose.

HIGH PRICES

The price of telecommunications generally and internet access in particular are so high in certain countries, that they create a brake to the wider use of online services.

PERSONAL MOBILITY

Allowing users outside the national territory to access services whilst securing transnational flows.

Electronic identification

Electronic transactions, whether with the public administration (e.g. public services) or e-commerce, require electronic identification, but many users are still suspicious of this.

The challenge in this situation is to win the trust of the main players by developing a secure platform for interoperability between the public administration and its users. When implemented, it could boost the private sector, especially companies, by proving that secure electronic identification and authentication do exist. The rich technological arsenal includes the following tools in particular:

- digital signature;
- digital seal;
- digital time stamp;
- electronic registered letters;
- etc.[2]

The successful nationwide adoption of an electronic identification system will make it easier to convert users to the concept of electronic identification for authentication with public administration bodies. In its role to promote economic growth and social cohesion, the State should encourage the private sector to use electronic identification tools in online services and electronic transactions more generally. Note that banks and insurance companies have already started along this path.

For the countries that have made this choice, the identification database comes at the right time for the identification of physical persons. It is important, however, for the civil registration system to be updated each time a death event occurs.

[2]For more information concerning the services related to authentication and digital signatures, go to https://confidens.zetes.com.

Red tape

Complicated administrative procedures are obviously an obstacle for the users of administrative services. Certain arrangements make it possible to eliminate unnecessary steps and reformulate complex procedures in order to reduce costs and deadlines. This most notably involves:

- offering electronic services by default, ideally via a one-stop shop;
- ensuring that the user gives a particular piece of information or a particular document to the administration only once;
- adapting administrative procedures to make them more flexible, easy, and pleasant to use.

Resistance to the project

One of the initial objectives of the "Public service online administration ecosystem" project is to have a module for the identification of all persons living in the country. For this purpose, for the countries that choose to do so, managing to enrol the entire population in the "National identification database" component, including the members of all the groups that are potentially hostile to the project, is a challenge. It means that the State must persuade all the stakeholders to buy into the idea.

The introduction of this type of information system so profoundly revolutionises the daily practice of businesses, the perimeter of responsibilities, current legislation and interpersonal relations, that it is necessary for the various participants, beneficiaries, and stakeholders to be identified and supported. This is a challenge to be faced and a mandatory transit point on the way to successful enrolment of the entire population and popular acceptance of the project.

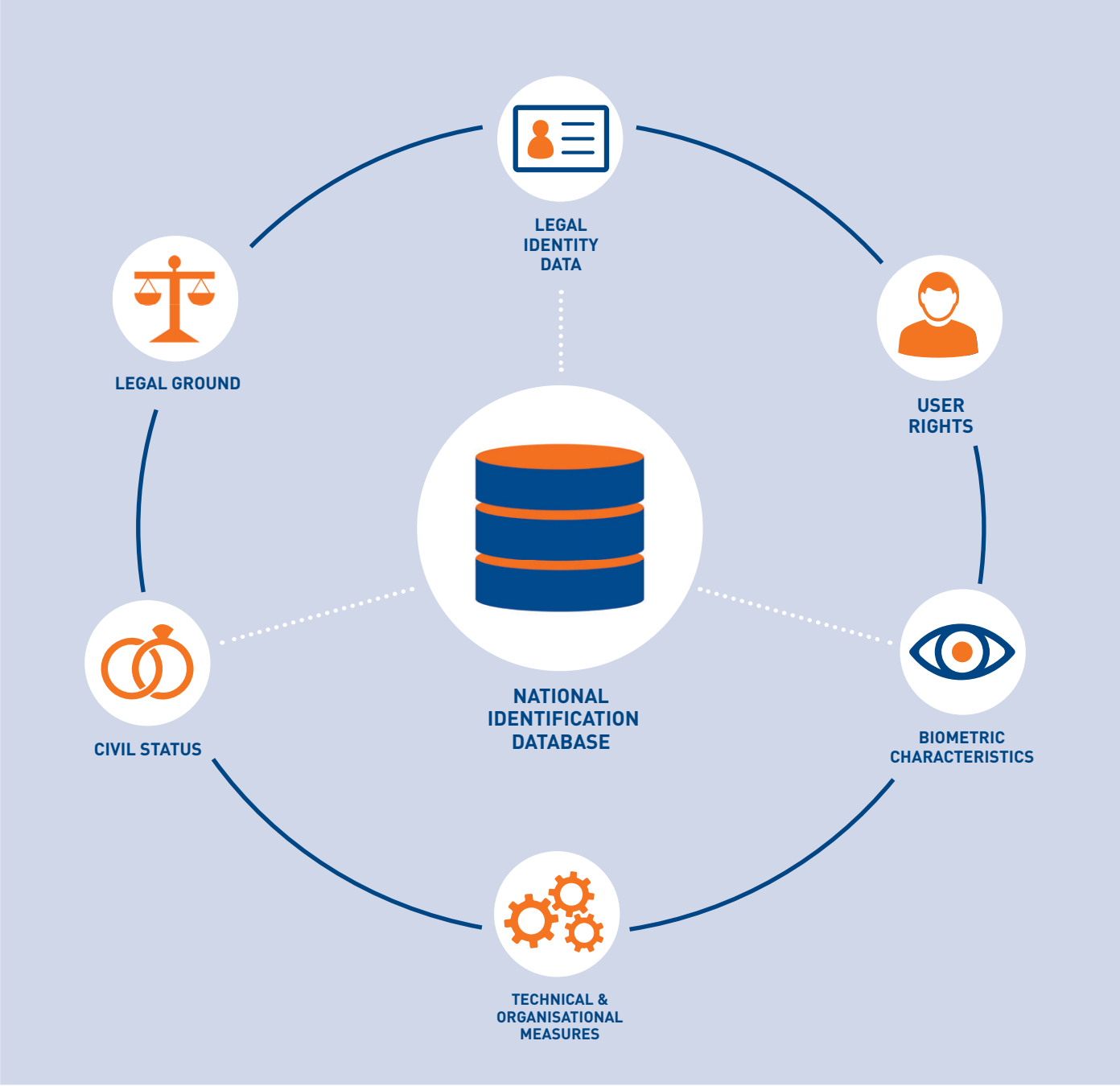
For this purpose, it would be wise to support all stakeholders through this change via a proper change management project.

Protecting privacy and personal data

The databases that contribute to data and information assets consist of data concerning the private and family life of users. The "National Identification Database" component in particular, for those countries that adopt it, directly or indirectly contains all the legal identification data as well as the vital records, in addition to biometric characteristics. In these circumstances, it is essential to uphold individual rights and freedoms, which mainly refers to the protection of personal data. The processing of certain types of personal data may be subject to legal restrictions. This could apply in particular to:

- racial or ethnic background;
- political opinions;
- religious or philosophical convictions;
- union membership.

For similar reasons, data concerning health, sexuality, and sexual orientation must be prohibited. This could also apply to some biometric and genetic data. Moreover, special care must be taken with the processing of data involving criminal convictions, infractions, and related security measures.


LEGAL IDENTITY DATA
USER RIGHTS
BIOMETRIC CHARACTERISTICS
TECHNICAL & ORGANISATIONAL MEASURES
CIVIL STATUS
LEGAL GROUND
NATIONAL IDENTIFICATION DATABASE

Online administration is such a profound shake-up of users' habits, that users will be apprehensive concerning the potential theft of their digital identity in cyberspace. They might also fear that the Government intends to use their personal data for some secret purpose, or other types of misuse. A reassuring way to proceed would be by adopting appropriate legal measures.

LEGAL BASIS

Legislation concerning the online public administration, confidentiality of communications, and protection of personal data must be drawn up to ensure the protection of the fundamental rights and freedoms of natural persons, especially their privacy, and must cover the entire life cycle of the data, particularly the following phases:

- collection;
- registration;
- use;
- transmission during transactions;
- archiving.

Moreover, the controlled use of data by the private sector must be formally regulated by law. The legal provisions that must accompany the creation and introduction of a digital public administration ecosystem should be the result of a general study of the legal barriers and organisational difficulties that would be sure to arise during the process of moving the information systems over to a unified digital ecosystem. They could be based on principles of lawfulness, loyalty, and transparency concerning the processing of personal data (6) and the provisions of the GDPR.

PROTECTING AND SECURING DATA

Sufficient data security must be guaranteed using appropriate technical and organisational measures, particularly against loss, destruction, accidental or deliberate damage, illegal use, and unauthorised use of data. When the ecosystem has a role as a lever for the growth of the digital economy, legal and technical security of the network and data is a necessary condition to win the trust of stakeholders, who include economic operators, who are potential clients of the ecosystem.

UPHOLDING THE RIGHTS OF USERS

The user should have the right to control his or her data and how it is used, via measures and tools that are easy to implement.

The following examples are taken from the EU's reference text concerning the protection of the personal data of persons residing in the Union. This protection must be ensured throughout the life cycle of the data, most notably during collection, processing, circulation, archiving, etc:

- right to be notified;
- right to object to a decision made on the basis of automated processes;
- right to access;
- right to rectification;
- right to erasure;
- right to transfer;
- right to oppose;
- right to restrict data processing;
- right to data portability.

CONCLUSION

We wish to emphasise that developing countries need a tool or, even better, an ecosystem that supplies the necessary information on the population, the various groups that make up the population, families, and individuals in the context of public administration and the provision of services to persons and populations.

The world has seen many revolutions, without which our societies would not be as they are today:

- electricity;
- industrialisation;
- transportation;
- information technology
- etc.

The efficiency of public administration in many Western societies is largely based on harnessing these revolutionary discoveries. Imagine a world without electricity, computers, aviation, railways, shipping, road haulage, space transportation, cables and pipelines.

Now the digital revolution, which is one of many arms of the IT galaxy, has become at least as important and essential as all the revolutions that preceded it.

AN OPPORTUNITY FOR THE STATE TO BE A DIGITAL TRANSFORMATION LEADER

We have developed our arguments mainly around public services, against a background of the information society as an ultimate goal in light of current technologies. The transformation must be viewed as urgent for the present and a vision of the future that concerns every sector of society, particularly economic (the digital economy), social (social networks, relationships in general), professional (trades), cultural, and public service areas.

When facing such a major transformation, the public administration in developing countries must serve as an example by completing a successful digital conversion. This exemplary performance would facilitate the State's role of regulator as it carries the responsibility of making necessary legislative and technical provisions for the efficient, harmonious, and secure operation of the future and inevitable information society:

- stimulating the future market of the digital economy;
- working towards digital access for all;
- protecting the users of the public service, social networks, and consumers.

Whatever the functional perimeter of the creation of the online administration, the design of the project must take into account all the major roles under the State's responsibility:

- services to users of public services, whether nationals or foreigners, individuals or organisations;
- interconnection of public administration organisations in a digital network and their integration to facilitate internal Government operations;
- the Government's relationship with the international environment;
- promotion of economic growth and social cohesion;
- the State's relations with citizens in terms of the rule of law.

A successful online administration is the engine that drives all the stakeholders called upon to contribute to the fascinating, innovative, and very complex operation of the new model of society: the information society. Outside of any technical difficulties, the emergence of this new era demands that personal services be focused on the individual and his or her participation. Complete knowledge of the individual in terms of vital records, sociodemographic criteria and health data, is therefore necessary for this purpose.

THE INEVITABLE COMPLEXITY OF THE CHALLENGE TO BE FACED

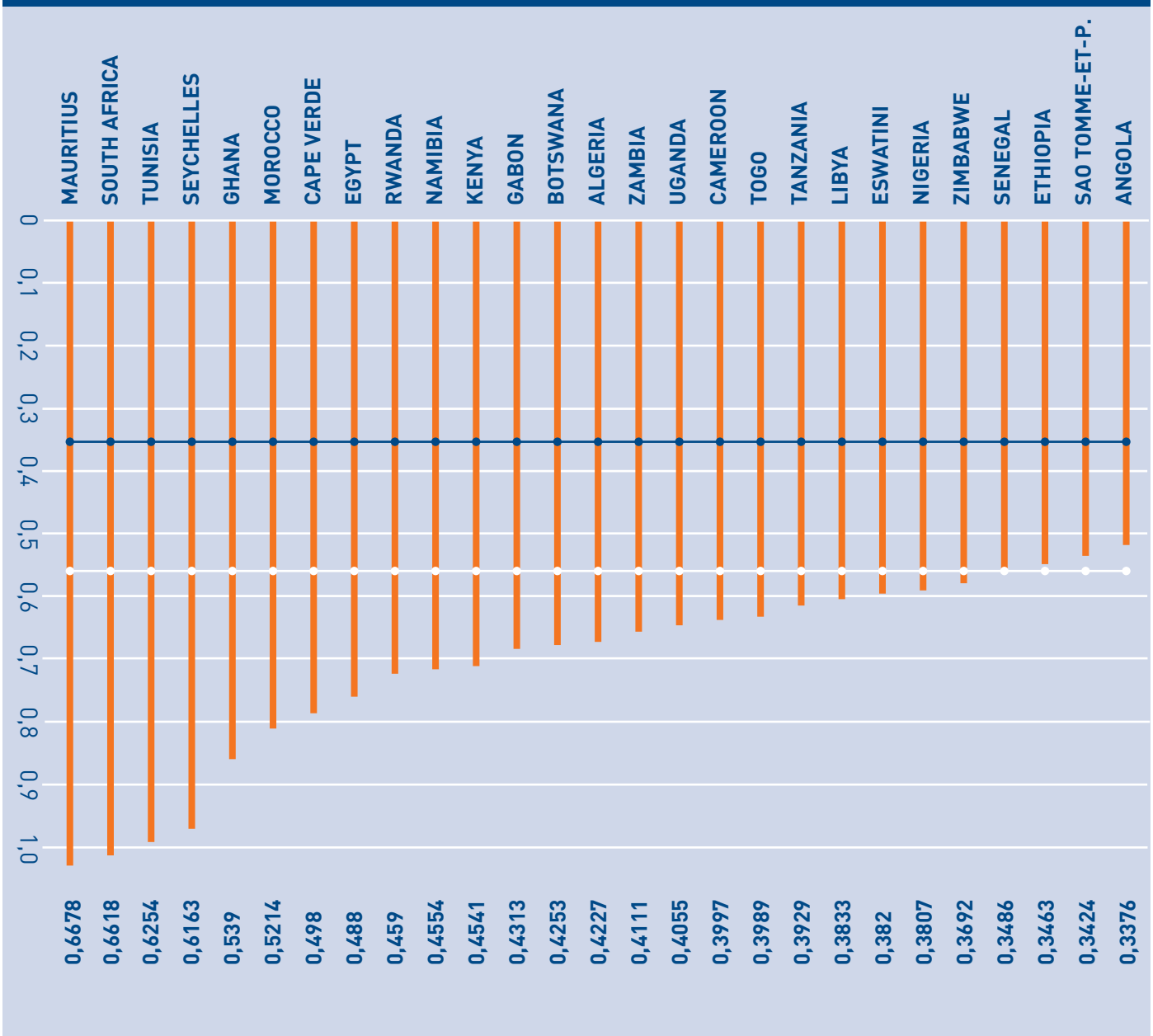
Even if the objective were limited to online services, far short of the overall need, the modernisation of public administration cannot be summed up merely by the electronic publication of data, documents, network connectivity, the use of email or the internet, or the availability of a civil registration system which generally does not include all the characteristics required for the exhaustive and efficient operation of an online service provision ecosystem.

An online administration project must therefore be approached by defining a Public Administration Information System Architecture, which would also cover the design of interoperability. This information system architecture designed for the public administration would facilitate the successful integration of public organisations because it would harmonise operating procedures using building blocks that are shared resources; in particular, technical standards, formats, as well as the data and information assets that it has taken care to redefine, and whose use it would manage, whilst promoting and protecting it.

Humanity has already taken its first steps into the digital era and the information society, and it is urgent for developing countries to resolutely set a digital course in order to prevent the digital divide from widening, lest they be deprived of a lever for economic competitiveness. The issue is far greater than simply the efficient supply of public services. In the short term, it involves the development of a digital economy, given the increasing importance of digital in the economy generally. Financial transactions extend beyond classic points of sale, with worldwide e-commerce in which dematerialised transactions take place irrespective of where participants are physically located.

The populations of developing countries are sufficiently mature in their use of IT tools, including mobile terminals, for States to start converting to digital. The end result: improved inclusion, convenience, simplification, speed and ease, etc. One of the main factors for the success of

E-GOVERNMENT ACHIEVEMENT INDEX IN 2018 (3)



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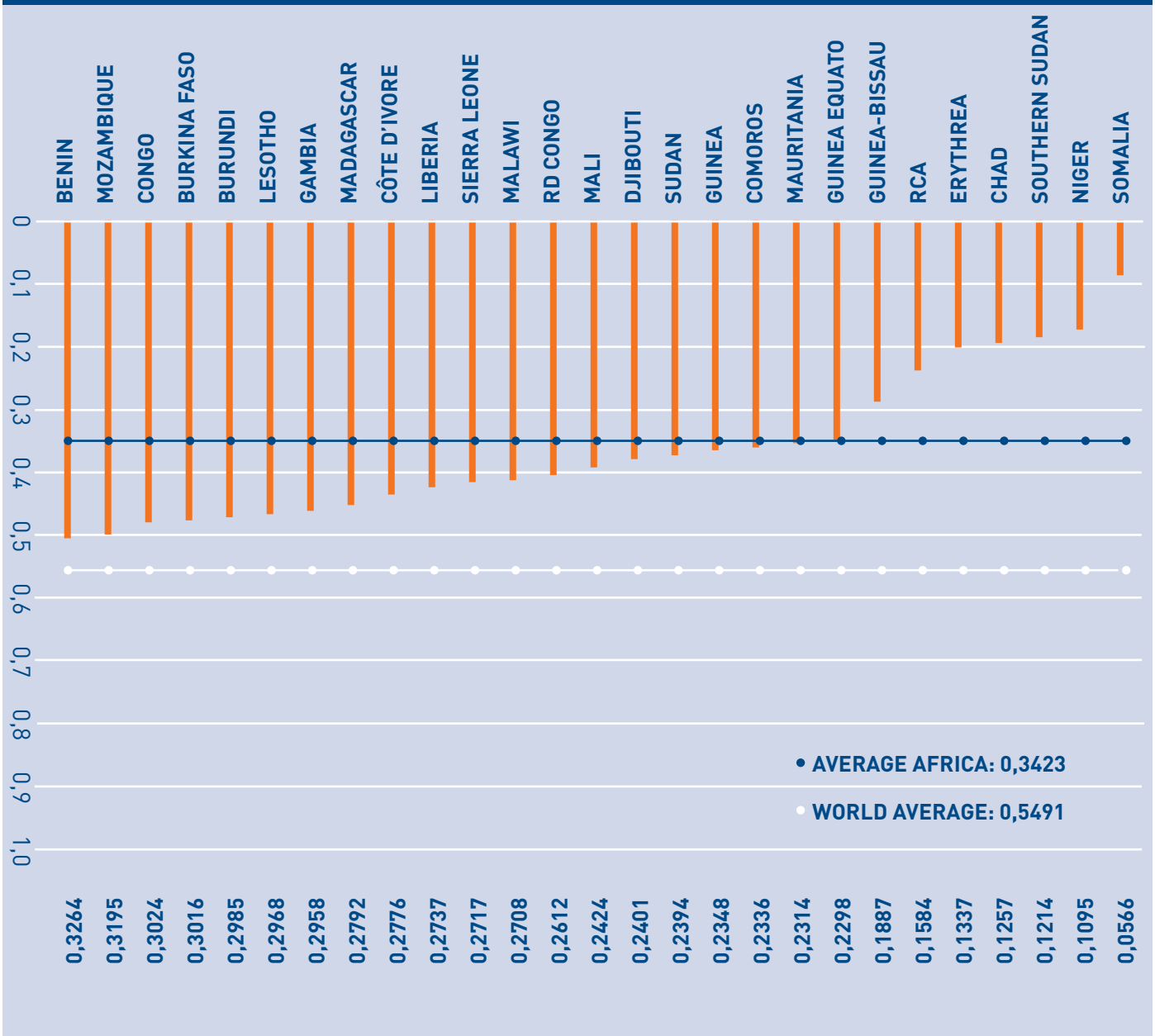

adopting digital processes is the user's trust in the State and in the legislative and technical tools that protect data and secure transactions.

A MINOR CONCERN?

It is no secret to anyone: developing countries are completely dependent on the rest of the world in industrial and technological terms and in every manufacturing sector, because their industrialisation is still in its infancy. Particularly in the fields of information and communication, two of the components that drive the ecosystems of the information society, this dependency is total, and affects communication, software, processors, networking technologies, etc.

In this context, it is appropriate to remember that the communication problems caused by the situations mentioned as examples below illustrate how far the developing countries have fallen behind developed countries as of 2019:

- the Voyager probes launched in 1977 (over 42 years ago) are somewhere at least twenty-one billion (21,000,000,000) kilometres from Earth and are still communicating;
- landing a probe on a planet involves communication problems that require, even in 2019, operation in autonomous mode under the control of the probe itself with the risks that this entails.

"THERE IS A LOT OF CATCHING UP TO DO, AND THERE ARE SO MANY AREAS INVOLVED THAT FOCUSING ON MODERNISING THE CIVIL REGISTRATION SYSTEM COULD SEEM RIDICULOUS; AND YET, IT IS URGENT TO DO SO."

There is a lot of catching up to do, and there are so many areas involved that focusing on modernising the civil registration system could seem ridiculous; and yet, it is urgent to do so.

Because information systems are generally exposed to the risk of hacking, we recommend the systematic adoption -in addition to classic security arrangements - of freeware in order to control source codes and help avoid some spyware. Moreover, in view of widespread attacks on information systems, architectures must protect themselves against destabilisation, paralysis and denial of service, in particular by implementing authentication, data integrity and the confidentiality of data, software, and the human or hardware participants during transactions.

INTEGRATING THE PROJECT IN A GLOBAL STRATEGY

The digital conversion must be approached in the context of a global strategy that identifies and defines support actions as levers for the success of the operation:

- education and training;
  - adapting school curricula to provide training for IT careers;
  - resolutely and proudly priming Research and Development to feed innovation;
  - adjusting teacher training programmes according to the objectives and ambitions;

- educating and training the population in the use of digital tools;
- promoting a culture of sharing tools and knowledge in the framework of a national burst of energy.

- fostering user trust:
  - the information society characterised by the predominance of immaterial procedures raises legitimate fears because of the flow of sensitive data (private life, banking, finance, etc.) and in the absence of sufficient perspective to prove its efficiency;
  - the State has a duty to do everything possible, especially in terms of data protection, to win the trust of users.
- upgrading networks to the data rate required to favour inclusion, the digital economy, competitiveness, and social networks.

For the State, this involves adopting a different mindset and creating public policy with a view to simplifying the user's life and relations with its own organisations.

Interoperability, meaning the ability to connect sectoral information systems within one State, to achieve organisational, relational, semantic, syntactic, and technical harmony, is one of, if not THE PRIMARY need of online administration projects, and therefore also the information society (7).

The success of cross-border interoperability of national administration ecosystems, most notably in ECOWAS and ECCAS, will require technical and strategic harmonisation that should be upheld as a goal during the creation of national systems, in the absence of community directives.

THE NECESSARY IMPETUS

Developing countries have an urgent need for appropriate tools to allow efficient public administration, including fair, equitable, and rational management of public services focused on the population, family, and the individual. In an ideal world, all the data held by various public bodies should be made available and accessible at least to the entire public administration, including data concerning incoming and outgoing migratory movements. The civil registration system as a data source characterises the individual and family so well that it is eligible to play a fundamental role in any public administration ecosystem.

"THE CIVIL REGISTRATION SYSTEM AS A DATA SOURCE CHARACTERISES THE INDIVIDUAL AND FAMILY SO WELL THAT IT IS ELIGIBLE TO PLAY A FUNDAMENTAL ROLE IN ANY PUBLIC ADMINISTRATION ECOSYSTEM."

In principle, each organisation of the public administration that provides services to people has its own specific database, for example concerning the employment situation, health, etc. This sectoral database would supplement the data in the civil registration systems. It is important to note that, in 2019, developing countries have a different approach to digital strategy than developed countries. Developed countries have already gone digital to a large extent, have integrated the organisations that make up their public administration, and are now aiming for improvements by implementing the latest advances (5G, Internet of Things, etc.). In contrast, many developing countries do not yet have a civil registration system in compliance with international standards, have not initiated digitisation, and have not begun to integrate the organisations of their public administration.

Unfortunately, with every day that goes by, this gap grows wider and the dependency becomes stronger. A competitive economy becomes more difficult to achieve,

and the well-being of citizens is postponed yet again. Has the time not arrived, therefore, to start boldly, bravely, and enthusiastically modernising the public administration via an ecosystem where the civil registration system could at least partially characterise the population groups and the individual?

BEWARE OF FALLACIES

In view of the current trend, the easiest thing to implement would appear to be a "National identification database", but this is deceptive. This is because it is insufficient for good decision-making and the provision of public services focused on the population, the family, and the individual in particular.

The sole use of a National Identification Database is to identify.

"THE SOLE USE OF A NATIONAL IDENTIFICATION DATABASE IS TO IDENTIFY."

We believe that the needs formulated recently by certain developing countries are oversized, a little bit off point, and not squarely aimed at creating infrastructures dedicated to a public administration that cares about the welfare of the individual. The following needs should be considered as a priority:

- modernising the civil registration system, i.e. computerising it and aligning it with international standards:
  - adapting the legislation according to need;
  - starting at least by replacing the paper registers of the various civil registration centres with their digital equivalents. We realise that this apparently simple formulation is actually a challenge, because of:
    - the amount of work required;
    - the specific details and non-compliances to be dealt with;
    - the need to train dedicated personnel for this work;
    - efficient management in terms of leadership, tracking, maintenance, etc.
- integrating the various organisations of the public sector into a unified information ecosystem whilst limiting the developments related to the specific features and needs of each independent organisation;
- creating interoperability of the unified information ecosystem with a view to creating a platform based on open APIs, industry standards, and data formats
  - developing a benchmark standard framework that defines strategies, norms, standards, software building blocks, etc. with a view to interoperability.

To settle for a non-computerised civil registration system would be like entering a race in your family car when the other competitors are all driving Formula 1 cars. Due to the nature of the data it stores, the civil registration system is a tool whose standardisation and computerisation are major challenges to be overcome before tackling the job of building the foundations of a public administration ecosystem focused on the population, the family, and the individual.

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ABOUT ZETES

Zetes is a technology company specialising in supply chain optimisation and citizen identification solutions. Our Supply Chain Solutions help companies achieve agility, visibility and traceability across their connected supply chain. Our People Identification division provides public authorities and supranational institutions with solutions to enable authentication of citizens in view of the issuing of secure ID and travel documents and the creation of national registers or voters' lists.

Zetes is headquartered in Brussels and has more than 1,200 employees in 22 countries across EMEA with a revenue of € 269.3 million in 2017. In 2017, Zetes became a subsidiary of the Panasonic Corporation.

ABOUT THE PEOPLE ID DIVISION

Zetes' People ID division provides secure solutions to public authorities in order to correctly identify their population and meet the most stringent international requirements for issuing documents and organising democratic elections. We have more than 10 years of experience in the implementation of sensible projects for governments and supranational organizations. Our solutions are characterized by their reliability, which is combined with our flexibility and ability to execute. This approach allows us to offer the best guarantees to citizens to prove who they are and exercise their democratic rights.

More information: peopleid.zetes.com

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