



**iCivildot<sup>®</sup>**

**THE GHOST CHILDREN  
CONUNDRUM AND THE ICIVIL  
SOLUTION**

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## THE ABSENCE OF CIVIL REGISTRATION LEADS TO PERPETUATING POVERTY

The numbers are shocking : today, there are approximately 230 million children under the age of five who have never been officially registered at birth, in other words, they have no legal existence. This means that they were born, will grow up and eventually die in complete anonymity, illegal immigrants in their own country! There are multiple reasons for catastrophe - considering the number of people concerned, we can even consider it to be a humanitarian catastrophe - : influence of local customs, beliefs, ignorance, neglect, remoteness, poverty, inadequate infrastructure ...

The lowest levels of birth registration occur in sub-Saharan Africa (44%) and South Asia (39%), these regions have the highest number of births and children under the age of five. These unregistered children have, unsurprisingly, almost always poor parents, who were also excluded or marginalized. However, the lack of registration will exacerbate and perpetuate this poverty and marginalization. The emergency is to protect these children from social exclusion, which is both a cause and a consequence of the low birth registration rate. Indeed, in the absence of this precious door-opener that constitutes a birth certificate, they will find themselves forbidden access to basic services such as health or education and exposed to the worst dangers: forced labor, abduction,

illegal adoption, prostitution ... Because if they are invisible in the eyes of civil society, they are unfortunately not in the eyes of exploiters and traffickers of all kinds. And because of this «invisibility,» the discrimination, abandonment and abuse they face will be more likely to go unnoticed.

Later on in life, « invisible » children reach adulthood, and they will not be able to claim any rights or benefits (family allowances, social security benefits, retirement, etc.). Nor will they be able to get an identity card, apply for a declared job, open a bank account, buy real estate, assert their rights to inheritance or even obtain a passport to travel abroad. The only documents they will have access to, will be illegally obtained, forged or falsified. Deprived of citizenship, they will not be able to participate in the democratic life of their country either.

However, birth registration is the first individual right everyone should have: a fundamental and structuring right, one that will allow an individual to gain access to all the other rights. We also call it « the right of rights» as it formalizes the premises of a legal contract between the individual and his country of birth.

From a State's point of view, the absence of a reliable and efficient civil register and therefore reliable statistical and demographic data makes it nearly impossible to plan or apply effective development strategies in areas as crucial as health, education, housing

and sanitation, employment, agriculture and even industry. Not to mention the drawing-up of electoral lists allowing all the citizens of a country to exercise their democratic rights. It is therefore undeniable that a quality civil data is an essential tool for good governance.

Finally, if we were to go beyond the strictly national framework, it becomes obvious that precise and complete demographic data is extremely valuable to the international community to the extent that it will provide international organizations, financial institutions and NGOs with indicators to help them to plan their actions with greater precision and therefore efficiency.

The lack of birth registration - and more generally of vital events - is therefore also a collective concern for human development.

How, in our age of technological prowess, can we still tolerate that such a situation, which deprives hundreds of millions of human beings of their most essential rights?

## THE MEETING OF ADAMA AND FRANCIS AND THE INCEPTION OF ICIVIL

There is no such thing as fate, provided that we take the trouble to seek a proper solution to a problem that endangers the lives of millions of people. And this is how Francis Bourrières and Adama Sawadogo imagined iCivil and tested it, life-size, in the field, in Burkina Faso. The personal investment and stubbornness of Adama, a young and talented Burkinabé engineer combined with Francis' creativity, did the rest. Adama Sawadogo chose to cease his entrepreneurial activity, and to devote himself to the future of his country.

The story is worth telling... Adama had been asked to build a school in his village that was deprived of one. He was surprised and shocked to find out that most of the children who came to enroll at the school did not have a birth certificate. Which, in retrospect, explains the absence of a school in the first place! In fact, the authorities didn't build one because they were unaware of the demand, in this case the presence of a large number of young children Adama came back profoundly marked by this discovery because he'd never imagined that such a situation could still exist at such a level. He decided to react and put an end to this catastrophe. To do this, it was absolutely necessary to design a solution that would

allow the establishment, as quickly as possible, of a reliable and exhaustive civil status register that lists ALL births without leaving anyone by the wayside. Adama's brainchild was about to come to life with the discovery of an existing technology born from chance and chaos, the « bubble code », that Francis Bourrières had invented with a few researchers. This groundbreaking technology would become the fundamental building block of the solution.



Francis and Adama's first met at a trade show in Ouagadougou. Adama came to listen to Francis' presentation. Francis was presenting the revolutionary solutions of his company, Prooftag in Africa.

The idea was to sell the bubble code to prevent document fraud for all official legal documents. Adama, who came to listen to him replied that there's not much point in delivering authentic and unfalsifiable documents to people who don't legally exist. In this case, the remedy was worse than the evil. He added that many people are precisely forced to produce false documents (identity cards, driving licenses, etc.) because they are unable to provide a birth certificate. This blunt statement by Adama during a short exchange immediately undermined Francis' strategy. In a fraction of a second, Francis understood that civil registration was the priority.

And this is how the first discussion between Adama and Francis started : to build a reliable civil registration system. Six months later, the solution that Adama had dreamed of was born in Prooftag's R&D department. As the technical and cultural issues were very well formulated by Adama, it quickly appeared that the «bubble code» associated with an IT solution was the key to the invention.

This solution would, in fact, make it possible to solve once and for all, both the problem of birth registration and that of real-time updating of civil

registers with a view to establishing a file of reliable, efficient and universal vital civil data. The solution, was named iCivil and it has been placed in advanced experimentation in Burkina Faso since August 2015 under the impulse of Adama. It revolves around a secure ecosystem managing both the creation of civil registration data, their recording and the issuance of an authentic document retracing them.

## WHY ICIVIL IS REVOLUTIONARY

It is important to analyze the technical and legal constraints of establishing a civil register which led to the invention of the «iCivil» solution.

iCivil solves a triple technical problem in the regulatory process leading to the establishment of an authentic registration of a civil status.

The purpose of iCivil is to provide a response to the difficulties faced by governments in the creation of a civil register, starting with the registration of the first vital event in civil life: the birth of an individual.

According to the methods known and in force in all the countries having set up a civil database, a sworn Civil Registration Officer (CRO) enters the events which were declared to him and witnessed in conditions imposed by law. The CRO is today the guarantor of the authenticity and the integrity of the recording as well as the certificates which are delivered. This guarantees the authenticity and integrity resulting from the administrative processing of a recording carried out according to a logic of uniqueness:

- a unique operator: the CRO alone is empowered to register the vital event
- a unique location: the civil registration center
- a unique moment/time: registration is carried out within a fixed time limit, generally only a few days after the vital event.

This constrictive unitary treatment is the source of complexities:

- the CRO and the multiple number of players associated with an event, typically for a birth: the newborn, the parents, the midwife, medical staff...
- the location of registration is in opposition with the physical location where the event took place. Typically for a birth, the registration office isn't near the place of birth.
- the moment requires a deadline factor which must be combined with the time necessary to reach the registration location, typically for a birth: the distance between the place of birth and registration center requires a means of transport compatible with the deadline for registration.



In countries which have a strong infrastructure and means of transport and which have set up a local administration offices within a tight network, these constraints have been fairly well managed by an appropriate distribution of a sufficient number of registration centers. This allows processing according to « traditional » administrative methods. However in countries or regions which have not benefitted from similar developments, the material requirements to meet the objectives of authenticity and integrity of vital event registration are not always respected, and often prove to be so constraining that the registration of an event is simply overlooked. It is therefore extremely difficult, to obtain authentic and viable documents, especially if the administrative methods and rules of unity exposed above have to be scrupulously applied.

This problem snowballs in regions where the population doubles every 25 years.

Producing a centralized civil registry without resorting to the old administrative methods is indeed a technical problem, one that is resolved with iCivil. Although this problem was identified a long time ago, nobody had yet found a solution, hence the numerous publications and alerts launched by international organizations concerned about the difficulties encountered by governments in keeping records of reliable vital events (despite the very strong involvement of many NGOs and the millions of dollars invested annually). **As a result, in Africa, only 50% of birth declarations lead to an official registration!**

iCivil is an integrated solution. It combines a system and process which ensures the security of operations carried out for the registration of vital events by

eliminating the requirements for a unique operator, a unique moment and a unique location imposed by « traditional » vital event registration method. For this, the declaration of the vital event is performed remotely from the registration's location, it already has the value of being pre-recorded and can be performed by different operators. It is possible to perform this step with the existing infrastructure in developing countries, and thus enables the implementation in regions which do not have the infrastructure adapted to meet current administrative requirements for the registration of a vital events. For this, the iCivil device works with a server and common terminal hardware (smartphone), which are integrated into a communication network in which a terminal communicates with one or more servers. In iCivil, the system includes, for each declaration, an identification medium which meets the following three characteristics:

- i) A unique identification code
- ii) A unique authenticating element with 100% resistance to counterfeiting which is guaranteed for the entire life of the individual,
- iii) An identification code with a digital representation of the authenticating element which are paired in a database of authentic identification media. The characteristics of an identification medium are independent of the allocation of the identification medium to an event recorded or to be recorded. They exist before the event even exists, as the identification medium must be available when the event occurs.

Typically this support comprising these 3 characte-

ristics is called a « bubble key ».

The system also includes a declaration terminal (with iCivil, it's a smartphone) configured to carry out the declaration of an event remotely from the server, by an operator during the event. The method which implements the system and its specificities, comprises a declarative step in which the identification "bubble key", carrying the identification code and the unique and non-reproducible authenticating element, is assigned to an individual in the context of an event, at the time of the event, and in which the data relating to the event is transmitted to the server previously associated with the identification code. It also includes a verification process where the identification code is received in the civil registration center and a step of printing a document confirming the authenticating element with its electronic and / or visual representation.

In addition, iCivil produces technical effects outside the hi-tech field. The implementation of the iCivil system and process allows the declaration having the value of remote pre-recording of an event relating to one or more individuals, the secure processing of information relating to this event and the production of official documents relating to the event. The declaration is made independently of the Civil Registration Officer (the CRO) and in a different place from that where the CRO acts. iCivil therefore makes it possible to get rid of the obligations of place and time uniqueness, and makes it possible to increase the time available between the time when the event occurs and the time of the formalization of said event in the civil registry and / or the issuance of an official document relating to said event. iCivil produces several effects:



# REGISTRATION OF A BIRTH WITH ICIVIL

## STEP 1 : AFTER THE NEWBORN'S BIRTH

### AT THE MEDICAL FACILITY (HOSPITAL)

A pre-registered bubble bracelet is placed on the newborn.

The midwife (or any other authorized personnel) scans the bracelet with the iCivil application and fills in the form with the newborn's vital information on the smartphone

An encrypted SMS is sent to the central civil registration server. The system verifies the existence and availability of the attributed number. The database is incremented with the newborn's data

## STEP 2 : LATER ON...

### AT THE TOWN HALL OR ANY CIVIL REGISTRATION CENTER IN THE COUNTRY

The parents present their child's bubble bracelet to a civil registration officer

The bracelet is scanned, and its bubble code is verified. Compliance leads to the recognition and the registration of the child. The bracelet can be used for the delivery of other administrative documents

The birth certificate can be issued with the copy of the bracelet's bubble code. The child has a legal existence.

The technical elements contributing to this effect following their interactions are: the server, the database and the declaration terminal. Being able to declare remotely can be considered as an effect inherent to the digitization of a known process and / or in the use of telecommunications tools to implement it.

However, iCivil does not consist in the computerization of a known process but in the implementation of new procedures, replacing existing administrative procedures, by incorporating into these new processes technical solutions implemented through a computer system allowing to meet the expected requirements for a civil registry despite the «expansion of space ».

iCivil offers a system and a method for the secure processing of data transmitted through a basic communication network, as well as the production of official documents certifying the authenticity of the data. This effect belongs to the technical field of security, in particular authenticity and integrity, the handling and processing of information and associated data. The technical elements contributing to this effect are:

- i) Identification media comprising at least one unique identification code and at least one authenticating element, paired in a database of authentic identification media;
- ii) the acquisition and transmission of the identification code by the terminal;
- iii) the server configured to verify the existence and availability of the identification code received in the database of the authentic identification media. The «bubble key» precisely brings together integrity and security by establishing this inviolable link between the physical universe to which the individual belongs and the digital universe in which his vital event is stored. The interaction of the known elements of a computer system with the new characteristics of the technical elements of the “bubble key” identification media of iCivil allows the implementation of a new process allowing remote declaration and recording, securely in an event database. The implementation of the new iCivil process makes it possible to get rid of the current purely administrative method based on the transcription of declarative data, iCivil allows the secure treatment of the data transmitted through a basic telecom infrastructure despite a high risk of fraud or default.

The remote reporting of events intended to be officially registered in a civil registry allows an operator to transmit data to be registered without having to physically travel to register it. This effect is technical and related to communication.

The proposal of computerizing the current administrative method does not allow this result to be achieved, which explains why it has not been deployed at a large scale even though the tools have been available for many years. Secure data processing allows official registration and creation of official documents, the authenticity of which is guaranteed and can be verified using the authenticating element of the identification medium assigned to a specific event.

Extended time between event and collection of certificate: the implementation of the characteristics of the process also makes it possible to extend the time available between the time when an event occurs and the time of its official registration in the register by an administrative office and / or obtaining an authentic certificate of the event. In absolute terms, it is not created by the system and the process of technical limit to this «dilation of time», that only an administrative order can limit. This effect cannot be substituted by a simple change of the administrative rule to give increased time to complete an entry in the civil registry, but corresponds with a disruption of the principle of unity of place of declaration and entry in the civil registration database, an intangible principle in the existing administrative procedures for the security of the official registration, which is made possible by the technical characteristics of iCivil without affecting the security of the official

registration.

In iCivil, increasing the period during which beneficiaries of the declaration of an event will be able to obtain registration and an authentic certificate relating to this event, allows them to choose the moment in which they engage their physical and economic efforts to get to a civil registration center. The choice of this moment can be conditioned by their own individual health, personal or family or professional life, availability of means of transport and communication channels, as well as economic resources.

The advantage of increasing the time available for people cannot therefore be seen as simply facilitating an intellectual task. It is in fact an improvement of their life comfort and their capacities to carry out an operation which is made possible by a technical solution, such as those which have been brought by other numerous inventions in the various fields of technology.

The bottom line is that 100% of newborns are registered, so there is no more room for ghost children. The immediate consequence is the total dedication of human capital to the benefits of the community and to each country in general.

iCivil is, by nature, the essential prerequisite of any



effective CRVS system and to all public policies of allocation and management of Rights.

This is why iCivil is revolutionary.

## **CIVIL STATUS IS THE GATEWAY TO THE DIGITAL ECONOMY**

Indeed, if the digital society which is imposing itself on us today is a chance for developing countries, and in particular for the African continent, it requires, in order to function properly, all its players to be identifiable and identified. iCivil meets this challenge by developing a dynamic population census solution, thanks to which it is no longer necessary to wait several generations to build a comprehensive and fully operational civil registry. This means that all children born before iCivil existed, but also their parents and grandparents (and beyond if necessary) can be taken into account in this digital civil registration database which can be used all around the world.

Thus, the countries that implement iCivil will equip themselves with a modern and efficient governance tool allowing objective planning, citizen participation, anticipation, optimization and pooling of resources. It will indeed become possible (and easy) to know, in real-time, in addition to the real size (and no longer estimated size) of the population, its distribution by age, by gender, or even the rural population / urban population ratio. All of which are determining factors when defining priorities for action and devising relevant economic and social policies.

As for the citizens, holders of a tamper-proof personal ID medium, they can, on demande, receive administrative documents with guaranteed integrity and authenticity. And, strengthened by this new digital citizenship, they will become full-fledged economic players.

iCivil therefore is a formidable development accelerator!





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