Birth registration on mobile phone: ICTs serving Civil Registry

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Abstract: In Senegal, a large part of the population has no identity document or is not recorded in the registers. Several factors may explain this: lack of knowledge and difficulties in accessing civil registration services, lack of confidence in these services and lack of organization of these services. Mobile phones, whose use is spreading across Africa, could be a relevant solution to facilitate the process of birth registration, especially in rural areas. In Senegal, a team of researchers has developed and tested a solution to declare and register births thanks to mobile phones (feature phones). The main objective was to create a simple access tool for people with very little experience of ICTs. Therefore, the singularity was the establishment of a process of co-design with village chiefs and civil registrars who will be end users of the applications. This paper aims to present this experimentation.

Introduction

In Senegal, it is indeed customary and religious law, and the French colonial law that inspired the law that today regulates the status of people (marriage, death, birth, legal identity). However, the presence of several normative systems has led to the fact that many Senegalese are not recorded in the registers of civil status. For a long time, this situation does not present real disadvantages as the procedures that needed to have identity papers were few undertaken: low mobility, low schooling beyond elementary courses, missions supported by traditional and religious chiefs at the local level.

Today, the Senegalese travel more within the country and abroad; they are more likely to go to college and university, and finally the formal salaried work that

demands declarations to social security and tax authorities is developing. This is why requests for official identity documents increase.

At the same time, the infrastructures for the issuance of identity documents are mainly located in urban centres and many rural areas remain isolated and poorly served in terms of public services.

In this context, the diffusion of ICT, especially mobile phones, and their uses are opportunities to provide better access to public services. Confident of this, companies in the sector work to offer innovative services and technologies. However, the difficulties in developing digital tools are to make them accessible to the greatest number and to facilitate their appropriation.

In this paper, we first describe the context of civil registration services in Senegal and the situation of the dissemination of ICT in public services. After that, we will present an initiative to develop a mobile phone application for the registration of births. This experiment was conducted in the region of Kolda.

Civil status and birth registration in Senegal

The civil status in Senegal is governed by the law n° 72-61 of 12 June 1972 establishing the Family Code. By law, all births must be reported to the officer of civil status within a month and fifteen days. The declarations may emanate from the father or mother, parent or a close relative, the doctor, the midwife, the matron or other person present at the birth. Beyond the period of one month and fifteen days, the civil status officer may receive a late declaration during the period of a year, starting from the birth, provided the person who makes the registration produces a certificate from a doctor or a midwife or he does attest birth by two witnesses. In the margin, the words "late registration statement" is affixed. Beyond one year, the civil status officer may establish the birth certificate as a decision justice.

The challenges of e-government in the case of the administration of the civil registry.

Since the late 1990s, the Senegalese government has engaged in a modernization of the state for the improvement of governance and. This approach relies in particular on the development of e-government whose

mission was entrusted primarily to the Agency of State Information Technology.

As part of the modernization policy of the great registers of the state, the Delegation to the Computer was, in the 90s, started a project for the electronic archiving of civil registration in Rufisque center, in particular to fight against degradation of civil status resources. However, the generalization phase of the project at the national level has not followed. Only the city of Dakar had developed a similar project. In this context, the SAFEFOD (African Society for Education and Training for Development), Senegalese NGO, working for the development of good governance, has, for example, developed computer applications to support local authorities in management of civil status. For instance, it has designed a program for managing civil status to facilitate recordkeeping and administration of civil status documents.

However, the problem of the computerization of the Senegalese civil status remains unsolved even if it is a definite asset to improve the system. On the 541 centers for civil status, distributed on the territory, only 7 of 15 "considered more or less functional" were equipped with computers in 2011. Thus, service agents of civil status of the city of St. Louis, which has more than 200,000 inhabitants, fulfil their missions on large paper records and issue legal acts on handwritten forms. This creates an often tedious task, when it needs to identically reproduce the same act, and a lengthy waiting time for citizens came to ask a copy of some act. As we shall see later, this mode is extremely detrimental to the proper functioning of the service because it generates a delay in the execution of tasks and errors are all the more possible.

Under these conditions, the challenges of projects to improve services civil status are many and varied.

First, part of the Senegalese population has not been declared at the birth and so has not legal identity documents. According to a report from the Departments of Planning and Local Government and that of the economy and finance, a little less than 75% of Senegalese children under 5 years were registered in the civil registry in 2011. The causes of this are many:

1) Lack of knowledge of civil registration services:

Most of people ignore of the importance and usefulness of services, especially in remote areas and in the absence of public services. They also ignore the functioning and procedures: ex. Cost of procedures, roles of different stakeholders (courts, village chiefs, civil status officer).

The staff itself is poorly trained and motivated and ignores the procedures. We observed in the field that some of the officials had their jobs, not for their skills

or experience but their allegiance to local potentates. Some consider their position and the benefits that go with it as a reward for their political commitment and not as a public service.

2) The lack of access to services of the civil registry may be geographic, economic, socio-cultural.
The remoteness and isolation, means no local service or authority to register the notifications of birth. The main centres are located in the towns and district while secondary centres are located in the main towns of rural community. This administrative organization has the major drawback to ignore the difficulties caused by the distance: some villages are completely landlocked and roads and tracks are missing;

Illiteracy makes any administrative approach an obstacle course full of pitfalls. According to data from the Senegalese National Agency of Statistics and Demography, illiteracy affected 67% of women and 48% of men in 2006. Furthermore, the official language of Senegal administration is French, which learning takes place in public schools, attended by a part of the population and not in the Koranic schools (daaras).

3) The lack of reliability, and therefore confidence, in the services of the civil registration is due to various dysfunctions: Faintheartedness to face bureaucratic, intricate and slow public services (manipulation of records and papers); Irregularities are found in the issuance of copies of acts; corruption when the staff supplements its income; opacity and ignorance of procedures: the operation of the service is often away from the laws governing civil status; procedures are not harmonized and there are no procedures manual; fraud and scandals. All of these constraints has emerged what we call an ordinary corruption. That is to say that people often completely unrelated to the service offering their services and mediation, against payment, to move forward (or not) the issue. These practices fully participate in the actual opacity experienced by citizens.

4) The low level of resources made available to services:
The available resources (material, financial, human, etc.) are in gap with the needs of users and to ensure optimum working conditions for employees of the registry office. That means that human resources are inadequate and poorly adapted to the effective and efficient performance of the missions; also that significant financial resources are generated by the registry office but deviated largely from their destination namely funds communities.

There are many dysfunctions of the relationship between national, primary and secondary services, means lack of coordination; and finally, problems in the preservation of registers relating to the conditions of archiving had been observed resulting damage or destruction of registers.

A solution experimented in Senegal: Birth registration on mobile phones

In 2011, Orange Labs was contacted by Aide & Action to collaboratively research a solution to increase birth declarations in Senegal[1]. This NGO focused on education already conducted awareness operations about necessity of birth declaration. For Aide & Action, birth registration is an issue for education because many children are unable to continue their studies without identity documents: they cannot validate their first degree and so are forced to stop their studies too early.

In parallel with the awareness efforts, the NGO wanted to experiment a technical solution to facilitate birth declaration. This solution was expected to provide benefits like:

- o shorten the travel usually required to declare a birth
- o shorten the delay : in Senegal, a birth must be declared within one month and fifteen days, failing which the process becomes more complex and parents have to pay for it, which discourages many of them.

Kolda, the place of experiment

Kolda region is located in southern Senegal, in Casamance. The economic situation of Kolda region is quite difficult: the majority of people living there is extremely poor. This situation is due and aggravated by the crisis in Casamance ("insecurity"), the isolation, the lack of socio-economic infrastructures and the low revenues of population based essentially on agriculture. In this region, birth declaration rate is also lower than in other regions of Senegal. According to the observations made by Aide & Action, only 1% of births are declared in the normal delay of one month and fifteen days. The Demographic and Health Survey conducted in Senegal in 2010 and 2011 shows that in Kolda region, only 56,6% of children under the age of five have been declared (against 74,6% in average in Senegal).

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[1] Other solutions of birth registration via mobile technology have been designed and tested at the same period (eg Uganda and Liberia). However, the available information and the progress of work have not allowed to estimate their scope and to make a comparison of these different solutions.

A solution on mobile phones

The choice of mobile technology was almost immediate given the low equipment rate in computers and fixed lines. According to GSMA (Groupe Spéciale Mobile Association), in Sub-Saharan Africa in 2010, there were 28 mobile connections for each fixed line subscription[2]. In contrast, the mobile phone is widespread (in Senegal, 76,84% penetration rate, at the end of 2011, according to telecom regulator ARTP[3]), even in rural areas, and the network coverage, at least in areas chosen for the experimentation was good (at least GPRS[4] network available)[5].

To limit the costs, it was essential that the technical solution works on feature phones[6]. Orange was already able to provide a technical platform, Orange Widgets, developed to run light mobile applications - called "widgets" - on mobile phones with low capacities. In addition, the volume of data exchanged to run these applications is also limited, requiring not more than a GPRS network. Orange Labs still had to:
- o develop the mobile applications to declare a birth and register it
- o set up the database
- o and develop a Website to enable the administrative court to consult the births registered.

The village chiefs will be responsible to declare the births on mobile phones. Civil registrars will also be involved: they will be equipped with mobile phones to consult birth declarations concerning their center, report them on registers and add a registration number.

After numerous exchanges with Aide&Action who acted as an intermediary between Orange Labs and people in the field, a first version of storyboard of the service has been designed. The process and data to be collected for birth registration were also validated by Senegalese authorities for civil state (Kolda Regional Court).

The general principle of the service is described in the following figure:

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[2] Source: "Sub-Saharan Africa Mobile Observatory 2012", prepared by Deloitte and GSMA, 13 November 2012
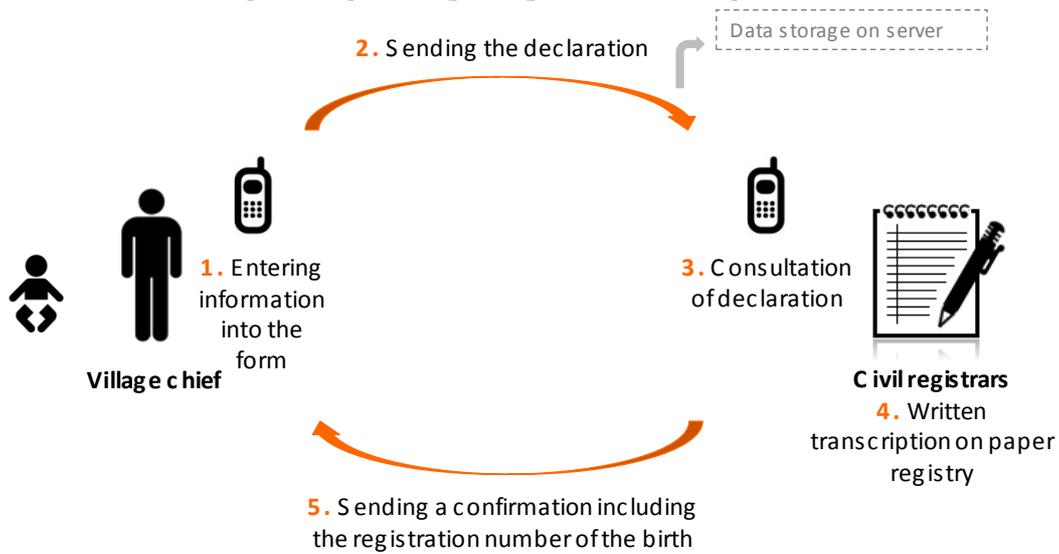
[3] ARTP: Autorité de Régulation des Télécommunications et des Postes

[4] GPRS: General Packet Radio Service

[5] In case of network coverage problems, solutions such as temporary storage on mobile phones could have been implemented

[6] The mobile phone chosen for the experimentation is Nokia C1 (~30$)

Figure 1: general principle of Birth Registration

2. Sending the declaration

Data storage on server

1. Entering information into the form

Village chief

3. Consultation of declaration

Civil registrars

4. Written transcription on paper registry

5. Sending a confirmation including the registration number of the birth

Note: in a second time, through this birth registration number, parents can collect the extract of birth certificate

Three applications had to be developed:

- o The main application, for village chiefs: a mobile form to fill in the information needed to register a birth
- o One application for civil registrars so that they can consult for each birth regarding their area, the information sent by the village chief. They can then report this information on the paper register and affect a registration number to the birth, which they send through the application. This number will then be associated to the birth in the database
- o One application for both village chiefs and civil registrars: to consult all the birth declarations regarding their area. Through this application village chiefs can consult the registration number affected by the civil registrars to a birth. With this number, parents can then request a paper copy of the declaration when they want.

From a purely technical view, the solution was found.

The real challenge laid rather in the usability of the service: how to convince and help people who are novice in the use of ICTs to use a mobile application? And beyond, the issue is also to convince village chiefs, who are not administrative people to appropriate formal and constraint administrative procedure and language.

Service design: en essential involvement of users

Before any development begun, two service designers from Orange Labs went to Dakar, to meet two village chiefs and one civil registrar. The original purpose of this meeting was to submit the first "paper version" of the service to future users, to collect their suggestions and adapt the service to make it more easy to use for future users.

Generally village chiefs are older than the average people from their village, as it is a function that cannot be accessed without some experience. Some of them are illiterate but as village chiefs they can benefit from the help of literate people in the village for any action requiring reading or writing skills.

All future users of the service, met during the design step, already had a mobile phone they used primarily to make calls and also to send and receive SMS. One of the village chiefs did not speak French and, as mentioned above, was regularly helped to send SMS or read them. But using mobile applications was not in their habits.

For this work session with future users, service designers relied on:

- o A mobile phone similar to Nokia C1 which would be used during the experimentation, with mobile widgets installed on it
- o A document describing the general principle of the service
- o A storyboard document showing the future screens of the service as proposed by Orange Labs

This meeting with future users of birth registration service was also an opportunity to start training these users. They discovered and handled mobile applications already developed on Orange Widgets platform (information widgets, games …): how to use the soft keys, how to get to the application, how to navigate into the application, how to close the application, etc. They were also explained the general principle of the service (see figure 1) with the three applications involved. Thereafter, the NGO was responsible for training other users but the support of these early users was valuable because they played the role of referees and actively participated in the training of their colleagues. A kind of viral training system was established, with users training and helping other users.
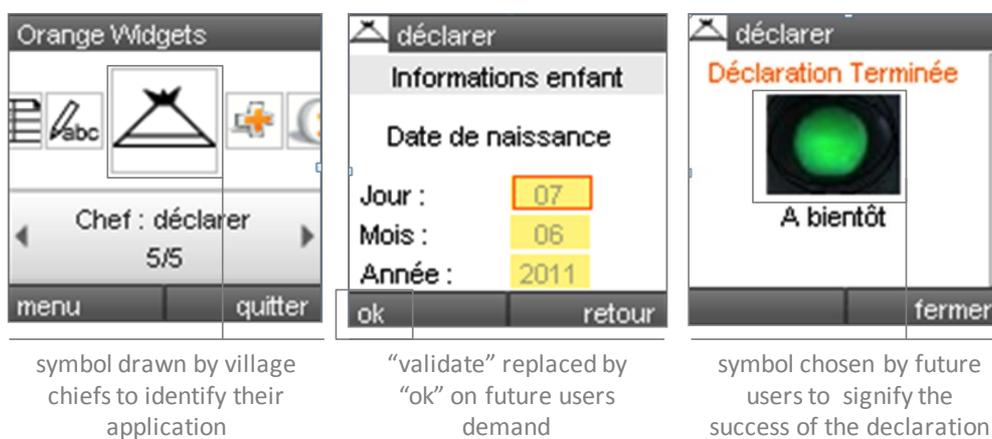
Then, the **co-design** step really began with the presentation to future users of the storyboard detailing the screens of the service as primarily designed by Orange Labs.

Regarding the particular case of birth registration, the content of the service itself was quite constrained by the obligation to comply the administrative procedures. So, to encourage the appropriation of the service by users, the only element which can be adapted was the User Interface (symbols, labels, information visualisations).

This step is particularly important because, as already mentioned, the future users of the service, although almost all of them already own a mobile phone, only had basic use of it. In addition, ICT services on mobile and computer have generally been designed by and for Westerners, often based on references from the world of business: symbols, vocabulary, hierarchical menus, etc. In Africa more than anywhere else, with lots of people who have never been in touch with technological tools, many people do not have the same references.

Therefore, it is essential to adapt the user interfaces of services as much as possible.

Some examples of suggestions of future users, applied in the design of services are illustrated in figure 2.

Figure 2: screenshots of Birth Registration service

| symbol drawn by village chiefs to identify their application | "validate" replaced by "ok" on future users demand | symbol chosen by future users to signify the success of the declaration |

On the first screenshot, the symbol drawn by village chiefs represents the traditional hat worn by these chiefs. Originally, the symbol used to represent this application for village chiefs to declare the births was a baby. But village chiefs asked service designers to use this symbol, a Peul hat, very representative of this ethnic group, a minority group in Senegal but a majority group in the region of Kolda. According to village chiefs this symbol would be better understood and better identified by their peers. We also analyze this as a manner to appropriate the service.

On the second screenshot, the term "validate" created confusion among future users, they didn't understand it in this context. This is a typical example of a reference from the business world, usual for Westerners but judged too complex by village chiefs and civil registrar who were not sure to fully understand the mining. They recommended to use a simpler label, "ok", more reassuring because there was no doubt on an hidden meaning.

These first two examples show that to appropriate the service, village chiefs wanted the application to reflect their image, with their own vocabulary and traditional symbol.

But the third example is a bit different. On this screenshot, originally only a text message was displayed to indicate to the users that the declaration was successfully done and transmitted to civil registrars. Service designers asked village chiefs and civil registrar what would be the most appropriate symbol to add on this screen, to clarify and reassure users. They chose a green light, similar to traffic light, which is quite far from the traditions but their own way to formalize the information.

This first step of work with users has improved the service but other improvements were made to the service after the experimentation phase.

A continuous improvement of the service, thanks to users' feedback

The experimentation phase lasted 2 months at the end of 2011. 22 villages from Dioulacolon and Guire Yero Bocar rural communities, 3 areas of Kolda town and 3 registration centres were involved in the project. 133 births were declared on mobile[7] during the test period (5th of September to 20th of November 2011): 100% of children born in the villages chosen for the experimentation were declared.

New meetings with users of the service were held at the end of the test phase. Many suggestions for improvement have emerged of the interviews.

One of them concerns the presentation of information. At the end of the declaration process, a summary of the information entered in the application was presented to village chiefs before final validation. Users have judged it fairly readable in its current form, namely a consolidated text. Service designers

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[7] During the test period, birth registrations were made both through mobile and following the usual process

proposed to vocalize this summary but this proposal was, surprisingly for us, rejected by village chiefs: they felt uncomfortable and ineffective listening to a long text, often in a noisy environment. It should also be noted that the French, which is the language used for administrative procedures, is not spoken by all users of the service or at least is not their maternal language. They preferred another textual presentation but more like a form, underlying the most important information (see figure 3 below). Once again, this is a clear manner to appropriate the administrative speech, not the technology, by simplifying it and highlighting the essential information.

Figure 3: screenshots of Birth Registration service

first version   new version , after experimentation

Other improvements can be made to the service in order to further improve its accessibility. For example, the possibility to choose a local language, suggested by some participants in the experimentation, may facilitate use by a larger number of people. .

Conclusion.

According to the United Nations Public Administration Network (UNPAN) the development of e-government in Africa, despite a slight increase, is still lagging behind compared to world average[8].

Factors mentioned to explain this situation are primarily poor infrastructure (electricity, telecom network) but the reluctance of governments is also questioned: the digitization of administration is widely perceived as an interference phenomenon for work habits and well established procedures. So

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[8] Source: Economist Intelligence Unit, "E-government in Africa"
http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpan050224.pdf

there is not much pressure from the top for the development of e-government services in Africa. Some analysts believe that this development will come through mobile, so in the form of m-government services. The appetite of users for these services is then crucial and their integration in the design process is a key success factor for the use and the appropriation of m-government services.

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