

The Evolution of the e-ID card in Belgium: Data Privacy and Multi-Application Usage

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Abstract: Since mandating in 2004 that all Belgian citizens carry electronic identification cards (e-ID), Belgium has been at the forefront of trends in electronic identification. As an e-ID card has become a necessity for service provisioning, the government has also started with distribution of e-ID cards to non-Belgians and children under the age of 12. Up until quite recently, the e-ID card only held the basic information of citizenship. This paper will examine the evolution of the e-ID card, and discuss the privacy issues of multi-application data on one card as the recent announcement of data for additional applications reopens the discussion of data linkage and data privacy for a card that is mandatory in usage.

Keywords- e-ID; privacy; transparency; applications.

I. EVOLUTION OF BELGIAN E-ID

As this paper focuses on the evolution of e-ID in Belgium, we will not go into the concept of citizen acceptance of identity cards (paper or digital), as there are a number of papers that cover this from social and political aspects [1] [2] [3]. Acceptance has never been the issue, unlike in the UK [4], as Belgium has mandated the use of identity cards with the creation of a National Register of natural persons in 1983 [5]. The register issues unique identifiers for each Belgian citizen in the form YYMMDDNNCC, where YYMMDD refers to the date of birth of the citizen, and NNN is an even number for females and odd for males. CC is a checksum so errors can be detected when processing the number automatically. The register also keeps track of current and past addresses and keeps a record of all the citizen's identity-related documents: passport, driving license and other relevant data. So citizens and residents cannot opt-out, but must carry the e-ID for identification and for service to be provided [4]. So choice is not part of our discussion.

In terms of acceptance, Belgians have already been used to showing national ID cards for identification for services, but the use of these paper-based ID cards have been on an event-oriented basis, and these respective events have not been tracked on a longitudinal basis. For example, a citizen may make a photocopy of his ID card for his bank to open a bank account. But that particular event of opening the bank account using the ID card is not recorded on a digital format in a public data facility where someone can use this event on a longitudinal basis [6].

For reasons of both efficiency and service provisioning, Belgium decided in early 2000 to be an early adopter and to trial the concept of a digital version of the paper-based national ID card. In Spring 2003, a pilot project across 11 municipalities was a trial of the e-ID and its implementation. In Spring 2004, the Belgian government decided, after approval of its legislative body, to mandate the e-ID for the whole country. A timeline of the e-ID implementation can be seen in Figure 1.

Although at the e-ID launch, there was only one application one can use the card for, e-Tax-on-Web [7], it was envisioned that this will be the basis for future service provisioning for several layers (federal, regional, local) of Belgian governance. However, this was initially concerning to Belgians because of e-digital trails how the numerous events of usage of their ID card are used, and by whom.

This paper will examine the transparency of what data is held on the card, as who has the right to use/view that data have been concerns for the changeover from paper-based to digital ID cards. We discuss what data is held on the e-ID card, and what applications are available for e-ID at present in Belgium. We end with an explanation of privacy and transparency in Belgian e-ID cards, and how multi-application usage may be in the near future of this card.

II. E-ID IDENTITY DATA

The initial paper-based document included the following pieces of information on the citizen: name (family name, up to two given names, and the initial of a third name), address, title, nationality, place and date of birth, gender, and a photo of its holder.

For the e-ID card, it is visually similar to the previous identity card and shows the same information as the paper-based document, except for the address. It also contains a hand written signature of its holder and also of the civil servant who issued the card. It also mentions the validity dates of the card (the card is valid for five years), the card number, the national number of its holder, and the place of delivery of the card [8].

All this information is also stored on the chip in a so-called e-identity file. The identity file is around 200 bytes long, and is signed by the National Register (RRN). In addition to the identity file, there is also an address file (about 150 bytes). This address file is kept independently as

the address of its holder may change within the validity period of the card. The RRN signs the address file together with the identity file to guarantee the link between these two files. The corresponding signature is stored as the address file's signature. As biometric feature, Belgium decided to use a photo (3 KBytes, JPEG format). This photo is (indirectly) signed through the RRN, as its hash is part of the user's identity file [8]. An example of a Belgian citizen can be seen in Figure 2. Cards for kids and for foreigners look differently.

Kids cards contain a unique safety feature to contact parents in case of emergency. This feature allows third parties to enter a list of preset phone numbers by way of a unique phone number and the child's RRN, both visible on the kids-ID card. If a child is injured the parents can then be easily be contacted. The child's parents are the ones that determine the preset list of phone numbers via a secure online database [9].

For usage of the e-ID card, there have been initial teething pains, with police cars needing to be equipped with readers in their glove compartment so people stopped for a possible violation can have their e-ID card read. When first issued, citizens had to carry an extra piece of paper with the e-ID card, as a police officer without a reader could not see the address of the citizen, which is one of the fundamental pieces of information requested from the ID card [6].

III. DATA HANDLING AND E-ID BENEFITS

The basic identity data are now digitally included in a microchip on the identity card, with a reader mechanism that allows a person to identify himself digitally and to place an electronic signature using the card and a password. In this way, storage and usage of citizens' data becomes a bit more user-centric.

According to the National Register [10], the benefits of an e-ID card are:

- Self identify on Internet;
- 24/7 availability of particular documents via Internet;
- Ability for the card holder the possibility to check information regarding themselves, that in the register or in the Rijksregister of the natural persons stands, to consult, and in order to know, which authorities, institutions and persons during the last six months have consulted or improved have, with exception of the municipal and judicial authorities, that entrusted are with the investigation and the repression of punishable facts;
- A protected electronic connection, online information exchange with the authorities or with private enterprises;

- A protected manner via the Internet commercial operations export, as well as a buyer as in the quality of seller (online buy and sell);
- Via the web numerous forms fill in: load declaration, request of a study appropriation or of an excerpt from the register;
- Through self to identify, get entry to various places: container park, building of an enterprise, library, sports hall ;
- Mails sign or recorded send mails.

The development team at FEDICT (the Federal ICT office) has developed add-ons in Mozilla and other browsers to enable the citizen use of e-ID. It is already supported on several operating systems, including Linux (Open SUSE).

IV. MULTI-APPLICATION E-ID CARDS

Having an application that is mission critical to the citizen is one driver to get users to want to switch from paper to digital form. By promoting government applications such as tax on web, registered mail, social security registration of new personnel, online consultation of government data, as well as the distribution to twelve-year olds of a free smart card reader when they get their e-ID card, the home penetration with readers was expected to increase in the short term [9].

These new applications offered by use of the eID are expanding, and the government feels that it will create a surplus value form for the citizen and for the concerned authority. But it is not clear if the citizens feel the same way, especially with data linked for different applications on the same card.

In August 2011, it was reported in the press [11] that the amount of personal information being stored on the compulsory Belgian ID card is being extended. In future personal social security information will also be stored on the e-ID card. The SIS (social security) card is being discontinued. Within the next year, pharmacies and doctors will start using e-ID cards instead of the SIS card in order to obtain personal social security information about their patients and customers. The two systems will operate in parallel for a while, and then the current SIS card will disappear by the end of 2013. The social security authorities and health insurance bodies are already paving the way for the switch-over [11]. At the time of the e-ID initial launch, although it was technically feasible to integrate the SIS data, at the political level it was considered to be too high an infringement on personal privacy and the integration was blocked [9]. The question might be at this time, what has changed? The willingness of the public, or the need for cost efficiency? As the public cannot opt-out, the sensitivity of the use of e-ID for multiple data applications needs to be of concern to the government.

V. PRIVACY AND TRANSPARENCY

Unlike the Austrian e-ID, which from the onset has attempted to be privacy-friendly through the use of unlinkability schemes, the Belgian e-ID card has not addressed any aspects of privacy such as unlinkability, or anonymity, as discussed by Pfitzmann et al. [13]. At present no other national e-ID card design scheme in Europe puts emphasis on privacy beyond data protection and retention [4].

Where event-based transaction data is retained in identified form, it can result in a collection of data that reveals a great deal about the individual and their behaviour. Such 'data trails' may be used to trace back over a person's past, or analysed to provide an abstract model of the person, or 'digital persona'. This digital persona may then be used by government agencies as a means of social control, for example.

Since the 1980s, basic mechanisms for privacy-enhancing identity management under control of the user have been proposed [12] [13] [14]. Control by the user requires that he firstly knows about actual and potential processing of his personal data and secondly that he in principle can decide case-by-case on data disclosure to specific parties, possibly in the limits given by law and society. The most effective, yet not always realistic way to protect one's privacy is data minimisation, i.e., to disclose as little personal data as possible.

From a privacy point of view, the main issue in addition to the data-minimisation principle is the purpose-binding principle of data should only be collected and used for a specific purpose.

In Belgium, the citizen can ask for and use his data, see if they are correct and see who has used them, as government workers also have to use their own e-ID card to provide the service. There is a website maintained by FEDICT, the national IT organization, that allows citizens to track their national ID number and who has been using it for what purpose. With their e-ID card, the citizen can open the data cabinet in which his data are safely stored with his identification key. The citizen can verify the data, eventually ask for correction, use his data, and see who, and at what time, entered the data cabinet. This level of transparency of the process and privacy authentication has been important in the enforced uptake.

A data privacy error was made in Belgium by including the structured register number in the certificates stored in the electronic ID card. This is something that must be avoided: the number leaks too much personal information about the citizen; in this case, age as the register number uses the date of birth in the number.

The only biometric included on Belgian e-ID cards is the holder's photo, which is about three kilobyte in size and not suited for automatic recognition of the cardholder. Correct implementation of biometric features is a very complicated issue, and may not be realistic and cost-effective. The Belgian eID card costs about €12.50, including the chip,

maintenance of the infrastructure and two certificates per cardholder with a validity of five years [8].

The authorities have switched over on 17 October 2008 to the production of e-ID cards on the New Belgium Root certificate. As each e-ID card has been initialized with a genuine copy of the Belgian Root CA certificate, the e-ID card can be used as a trusted source as users can verify the chain of trust within the Belgian PKI system by loading the Belgium Root CA certificate from her/his smart card. Apart from revoking the use of an e-ID card's keys when it is stolen, card holders also have the possibility to have the electronic signature capability of an e-ID card revoked, even before using a card [8].

VI. CONCLUSIONS ON THE FUTURE OF MULTI-APPLICATION DATA

The data from the SIS card will add information on the kind of health insurance the citizen holds (and that the citizen is insured, which is required in Belgium). Health records are not stored on the e-ID card. But the e-ID card is the linkage to the Crossroad Banks of Belgium, which are internal governmental information brokers on social security status, business information and car registration.

The question remains how cross linking of data may be used in a manner not fit for purpose, and what kind of legislation or audit trails will be utilized to protect citizen data privacy going forward as the government pushes to add multiple application usage to the e-ID card.

By promoting government applications, registered mail, social security registration of new personnel, online consultation of government data, together with the distribution to twelve-year olds of a free smart card reader when they get their e-ID card, the home penetration with readers is expected to increase in the short term.

However, privacy in a technological sense has not yet been included in the current version of the e-ID card. Belgian reliance on e-ID as a form of authentication and access means that no one can opt-out of the scheme, which makes security, transparency and privacy paramount to longer term interoperability within the EU. As new applications are added to the card, Belgians may get more wary of what can and cannot be linked together on the same card.

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