

Study of the Perception on the Portuguese Citizen Card and Electronic Signature

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Abstract. This article presents an analysis of the adoption the Citizen Card in Portugal based on a survey, in which 601 citizens participated. The survey focused on the knowledge of the card and of its features, as well as in the digital signature capabilities. First the survey population was informed about the concept of the Citizen Card, its applicability, and the technological mechanisms associated with their use. We extracted a set of conclusions, which may be useful to countries seeking to implement this type of technology/procedures.

Keywords: Citizen Card, Digital Signature, Digital Citizenship.

1 Introduction

The Portuguese Citizen Card has been recently created and implemented. It allows, not only the citizens authentication, but also the digital signature of documents, with legal value. Therefore, an assessment of the existing knowledge on this issue is critical, as well as an assessment of the users acceptance of this technology, that includes fingerprint authentication of the user in association with the possession of the card.

This paper will start by describing the Citizen Card, the technological and political context of deployment and the associated costs. This paper will also make a small presentation of the implemented digital signature process, clarifying the concept and the used technologies. The results of an inquiry made to 601 Portuguese citizens are then presented and, finally, the results are discussed.

2 The Citizen Card

2.1 Context Information

The Citizen Card is a unique identification card, in the sense that it substitutes most of the previous existing identification cards: Health System Card, Identity Card, Fiscal Identification Card, Social Security Card and Electoral Identification Card. The card can be used both for physical and electronic recognition. Physically, the card is a classic Smart Card, presenting:

- In the front:
 - The user's picture (in black and white);
 - Name
 - Surname
 - Gender
 - Height
 - Nationality
 - Date of Birth
 - Civil Identification Number
 - Expiration date
 - Chip (responsible for the electronics functionalities and for storing the digital certificates and other protected information)
 - Optical reading field
- In the back:
 - Father and mother names
 - Fiscal Identification Number
 - Social Identification Number
 - Health System Identification Number.

The Citizen Card expires after five years and can be exchanged in the 6 months period prior to expiring or when the information that it contains changes.

The Citizen Card is the result of the technological project of modernization of the public administration, created by the XVII Constitutional Govern. The Citizen Card is a pillar of the modernization strategy, aiming to simplify, aggregate, and de-materialize the processes in a secure environment. The system is supposed to provide [1]:

- Better accessibility to the public services and, therefore, better services provided;
- Administrative processes and procedures simplification.
- Guaranties in the citizens' recognition process.
- Services Integration.

2.2 Technologies

The Citizen Card, being an electronic card it is, obviously, a result of the new Information and Communication Technologies and requires hardware and software in order to be fully used. For the citizen to be digitally identified by a public service it is required that the service is equipped with a digital card reader. At the present time there are four types of reader:

- Simple reader: it consists on an external reader, without *Pinpad* (a pad for the insertion of a Personal Identification Number), connecting to a computer through a Universal Serial Bus (USB).
- Reader for telephonic authentication: it is a reader with *Pinpad* that generates a one-time use password, from the data existing in the card.

- Combined reader: aggregating both the simple reader capabilities (reading information for later use) with the capability of the telephonic reader (generation of the password).
- Accessibility reader: reader with special features, designed for the visually impaired.

For the readers to work, the hosting system must have installed an application specifically developed for the integration of the Citizen Card. This application is available for download at <http://www.cartaodecidadao.pt>. This application will allow the user to visualize the information stored in the card, accordingly to the authorizations previously provided by the citizen, and interconnect with other applications developed in this scope, also allowing registering digital certificates for authentication and signature of documents and electronic actions.

2.2.1 Digital Signature

The digital signature of a document is similar do the handwritten signature, in the sense that it associates an author to the document in such a way that it can be verified by a third party. The Digital Signature consists of a binary sequence that is always unique for each signed document [2]. The digital signature aims to assure to origin and authenticity of the document, while assuring the integrity (it is very unlikely for two sets to originate the same sequence) and the authenticity of the document (once the public key of the issuer is associated to its owner's identity through the digital certificate that is signed by a known certifying entity). It is also prevented the repudiation of the document by the signer, once there is an unique association between the public and the private key and this is known only by its owner.

The public key is the verifier of the corresponding pair, the private key, used to sign the document. Despite being a pair, one cannot be obtained through the other, as long as they have been well constructed. The role played by the certifying entities is crucial for the security of the entire process, once it is necessary to be sure that the public key is in fact from who it is claimed.

2.2.2 Digital Certificates

The digital certificates are public documents, cryptographically secured, controlled by the certifying entities. It is the certifying entity responsibility to establish and assure the identity of those possessing certificates belonging to the infrastructure, protect the access to the information, define certificate creation policies and update revocation lists [3]. These documents can have, typically they do, a limited lifetime which can be controlled by a non-changeable expiry date or by a revocation certificate. A revocation certificate is a document, issued by a certification entity, stating that a given public key belongs to some entity and that it is not valid after a certain date.

For a digital certificate to be considered as qualified it has to be issued by a credentialed certifying entity. If so, digitally signed documents have, under the Portuguese law, the same value of a manually signed document.

Popular certificates are those that are issued by the users, like:

- X-509
- SPKI (Simple Public Key Infrastructure)
- PGP (Pretty Good Privacy)

3 The New Portuguese Citizen Card

To better understand the context in which the Citizen Card is implemented in Portugal, it is necessary to analyze other countries existing similar projects. Germany, Spain, Estonia, Austria, Italy, Belgium and Portugal share the same adopted principles in the implementation of the national identification card, sharing a common methodology and scope [4].

The modernization of the public services processes and methods was a challenge considered to be crucial for the sustainability of State, as it is now, both in Portugal and in Spain. The transformations there were seen as necessary, made it mandatory for those countries to deploy means of digital authentication with legal value. Therefore, the adoption of an electronic identification card, usable across the several State services, comes as natural.

3.1 Advantages of the Citizen Card

All Portuguese citizens will be required to have an electronic Citizen Card. But the transition can be done because the old identification card (a paper card with some of the citizen's information and photograph) has expired, because some of the information that it contains has changed (like the address or the marital status), or because the citizen recognizes the advantages of the new card and decides to claim one and use it.

The advantages of this new card, according to the Portuguese State are:

- Reduction from five cards to one.
- Possibility to authenticate and digitally sign in the dematerialized processes of the public services, using the Internet (increase in productivity and efficiency for both the services and the users).
- Increase in security.
- Increase in the harmonization between different countries public services.
- Better public services.

4 Perception Survey

4.1 Methodology

In order to study the perception on the Citizen Card of the Portuguese citizens a survey was prepared and 601 citizens from the Portuguese mainland answered to it. The citizens were contacted through telephone and the survey was also available on the Internet. This mix of telephone and Internet answers tries to overcome the problems inherent to the traditional methods, as the type of persons that has a

non-VoIP telephone at home gets more and more specific in Portugal. On the other hand, Portugal has a wide cover of Internet and most of the citizens use it.

The questions in the survey were:

1. Do you know the Citizen Card? (binary answer)
2. Do you have a Citizen Card? (binary answer)
3. What is the difference between the Portuguese Identity Card and the Portuguese Citizen Card? (textual answer)
4. Do you know what the Digital Signature is? (binary answer)
5. Do you know how to digitally sign a document? (binary answer)
6. Have you ever used the Digital Signature? (binary answer)
7. Do you find the Digital Signature safer than the manuscript signature? (binary answer)

The survey also collected some data on the citizen, like occupation, age, gender and the region where the citizen lives (divided in North, Lisbon, Center, Alentejo and Algarve). The answers were then balanced accordingly to the real distribution of the Portuguese population in order to compensate social factors that could affect the perception on the Citizen Card (for instance, Alentejo is a region where the communist party prevails, so the political view of the government actions, including the Citizen Card, can be very different from the views in other regions). The answers were also balanced in order to have the relative weight of the answers of women and man could be the same as the relative weight of women and man in the Portuguese Population.

The survey was done between the 14th December 2010 and the 7th January 2011. 601 citizens answered the survey. 61.7% were female and 38.3% were male.

4.2 Results

4.2.1 Question 1: “Do You Know the Citizen Card?”

Almost 95% of the inquired citizens have some kind of knowledge on the Citizen Card (Figure 1), what is a reflex of the Government’s capability to disseminate this information and, therefore, disseminate the importance of adopting the Citizen Card.

The obtained results have an error margin of 1.7% at a 95% confidence level.

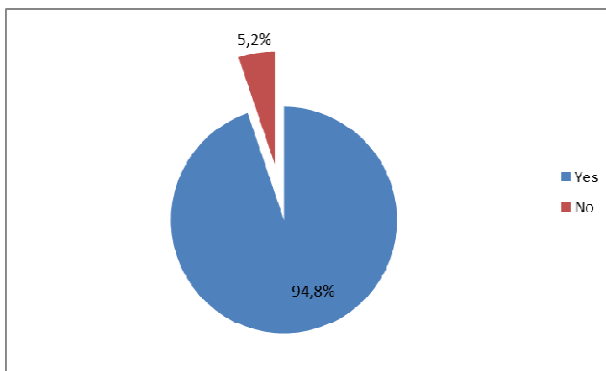


Fig. 1. Answers to the question: “Do you know the Citizen Card?”

4.2.2 Question 2: “Do You Have a Citizen Car?”

Almost 60% of the answers are from citizens that already have adopted the Portuguese Citizen Card (Figure 2). Some of them have adopted it because of the advantages associated with it, but many probably did so because the old identification card has expired, because their marital status has changed, or for any other reason that made the adoption mandatory. Looking back on the study, it would have been interesting to question the motivations for the adoption. The obtained results have an error margin of 3.9% at a 95% confidence level.

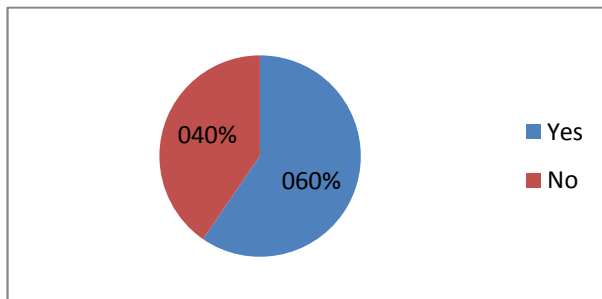


Fig. 2. Answers to the question: “Do you have a Citizen Card?”

4.2.3 Question 3: “What Is the Difference between the Portuguese Identity Card and the Portuguese Citizen Card?”

This was an open question that aimed to bring some light on another underlying question: if the citizens know what the citizen card is. The large majority of the inquired citizens knew that the new card substitutes several of the old cards, but only a few mention the electronic capabilities of the Citizen Card.

4.2.4 Questions 4 to 7, Relative to the Digital Signature

The results on the remaining questions allow some qualitative conclusions, but limited quantitative, once the telephone operators have detected a semantic problem on these questions. When the citizen requests a Citizen Card he has to sign in a digital pad and for many citizens this is the digital signature. Therefore, the authors were asking about one thing and many of the citizens were answering about another. This problem does not affect those saying that they do not know what the digital signature and therefore we can conclude, from the obtained answers and with a 95% confidence level, that:

- At least 36.51% of the citizens do not know what the digital signature is.
- At least 53.15% of the citizens have never used the digital signature.
- At least 69.31% of the citizens do not know how to digitally sign a document.
- At least 39.79% of the citizens do not find the digital process of signing (whatever that means) safer than the traditional process and, therefore, will probably consider the Citizen Card as no more than the aggregation of the several old ones.

5 Conclusions

This study has proven that the concept of an electronic enabled unified identification card has reached a considerable part of the Portuguese Population. Despite this, the number of citizens that know that the card substitutes several old identification cards is considerably larger than those that know that it has electronic capabilities. This might be a consequence of the fact that the adoption of the card is mandatory, when the old identification card expires or when a citizen changes address or changes is marital status, combined with a use limited to non-electronic environments in those people not familiar with Information and Communication Technologies.

The Portuguese Government will need to better promote the electronic capabilities and their advantages if it plans to use the Portuguese Citizen Card to transform the Portuguese Public Services.

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