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SURVEY ON EU'S ELECTRONIC-ID SOLUTIONS VERSION 1.0, 10. AUGUST 2004

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Abstract: Administrative processes in the public and the private sector are increasingly carried out electronically. For both e-Government and e-Commerce identification and authentication of the parties involved is needed. Several states have launched or are in the process of defining electronic identity (e-ID) solutions, such as citizen card projects. This document surveys e-ID projects of EU member states and gives an overview of pilot projects and standardization efforts.

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1. Introduction

All EU member countries have some sort of identity document. Either mandatory or voluntary, some of them are in the form of an ID card. Proving one's identity is a part of everyone's life, since both the public and the private sector have many applications for it. With the increasing importance of e-Government and e-Commerce, where transactions are conducted electronically, the ability to prove one's identity without personal contact is of vital importance. Additionally, means to create electronic signatures are often needed in this context to create legally binding contracts. As a consequence, smart cards offering this functionality, subsequently called electronic ID (e-ID) cards, are being introduced in several countries.

1.1. Intention of this survey

Since e-ID cards are introduced on a regional or national level, many different solutions exist across the EU member states. Additionally, the implementation level of e-ID solutions range from *"a small pilot project is planned"* to *"a fully featured nationwide rollout is on the way"*. This survey has been conducted to give an overview on current status and efforts of e-ID related projects. Since an e-ID solution not only consists of smart cards, issues like national legislation and standardization or concepts for unique citizen identifiers are covered as well. Finally, an overview on standardization efforts and international pilots is given.

1.2. The EU Directive for Electronic Signatures 1999/93/EC

The EU Directive for Electronic Signatures, denoted as 1999/93/EC, is the basis for all national signature acts, since member states within the EU are enforced to adopt it into national law. The directive's scope is as follows:

*"The purpose of this Directive is to facilitate the use of electronic signatures and to contribute to their legal recognition. It establishes a legal framework for electronic signatures and certain certification-services in order to ensure the proper functioning of the internal market."*¹

In connection with e-ID, electronic signatures are often a key factor enabling strong and unique authentication. In terms of the directive, so called advanced electronic signatures are required to be¹

- *uniquely linked to the signatory,*
- *capable of identifying the signatory,*
- *created using means that the signatory can maintain under his sole control,*
- *linked to the data to which it relates in such a manner that any subsequent change of data is detectable.*

An advanced electronic signature that is based on qualified certificates and created by a secure signature-creation device satisfies the legal requirement of a handwritten signature.

Nevertheless, in order to guarantee lifelong unique identification of citizens for e-IDs some additional requirements are necessary, as the citizen's personal data in the certificate may not unmistakably distinguish her from all other persons, certificates may expire, or citizens may have various electronic signatures.

¹ EU Signature Directive 1999: Directive 1999/93/EC of the European Parliament and of the Council on a Community framework for electronic signatures. Official Journal L13/12, 1999.

2. National Solutions

In the following sub-sections, we survey the e-ID approaches of the 25 EU member states. The focus is on solutions on unique identification and electronic signatures. Throughout the survey we use the term “*qualified signature*” for electronic signatures that fulfil article 5.1 of the EU Signature directive 1993/99/EC, i.e. electronic signatures that have the same legal effect as handwritten signatures.

2.1. Austria

The Austrian Citizen Card concept (Bürgerkarte) has been initiated by the government in a cabinet council on November 21, 2000. This concept initially aimed to use smart cards to facilitate the communication with public bodies but it is not restricted to smart cards only. The Austrian Citizen Card concept² does not require a special card. It is rather stating functional requirements at a certain level of abstraction. Thus, every hardware device meeting the requirements can be used as a “Citizen Card”, i.e. mobile phones, USB tokens, etc.

The major requirements in this concept are electronic signatures and identification. Since the Austrian government has adopted the European Directive for Electronic Signatures (1999/93/EC) in the year 2000, electronic signatures are legally accepted³. Therefore, implementations of the Citizen Card concept are required to be capable of creating qualified electronic signatures. The qualified signature and the certificates used are not sufficient for unique identification. This leads to the second main requirement: having a unique identifier. Within the Citizen Card concept, an identification framework for high-quality citizen identification was developed that at the same time satisfies data protection requirements. A unique source personal identification number (sourcePIN) derived by strong encryption from the citizen’s base unique identifier – usually based on the Central Register of Residents – is stored in every citizen card. This sourcePIN is wrapped in an electronically signed XML-structure asserting that the sourcePIN is generated by the governmental register. Additionally, this XML structure – the so called Identity Link⁴ – contains the citizen’s public key, i.e. a link to the certificate, in order to have a link between the qualified electronic signature and the sourcePIN used for identification within administrative procedures. To meet data protection requirements, “sector specific personal identifiers (ssPIN)” for the public sector or “private sector specific personal identifiers (pssPIN)” for the private sector are derived from the sourcePINs. So it is possible to identify a citizen by the use of electronic signatures and by comparing the certificate included with the key contained in the Identity Link.

Every implementation meeting the requirements mentioned above are electronic Citizen Cards in terms of the Austrian E-Government Act⁵. Actually, there exist several smart cards suiting the needs of the Citizen Card concept. So the issuance of Citizen Cards is not bound to governmental institutions only. For example the membership card of the Austrian Computer Society (OCG) is an implementation of the Citizen Card concept. Additionally, a mobile phone provider supports the Citizen Card concept using so-called administrative signatures. Other implementations follow suit, such as the implementations of student service cards at some universities. Even bank cards and the Austrian health insurance card are announced to be usable as Citizen Cards.

² The Austrian Citizen Card Concept. Retrieved April 9, 2004 from http://www.buergerkarte.at/en/was_ist_die_buergerkarte/index.html

³ Signature Law 2001: Bundesgesetz über elektronische Signaturen (Signaturgesetz – SigG), BGBl. 1 Nr.190/1999, BGBl. 1 Nr.137/2000, BGBl. 1 Nr.32/2001.

⁴ Hollosi A., Karlinger G.: XML Definition der Personenbindung, 2004. Retrieved April 9, 2004 from <http://www.buergerkarte.at/konzept/personenbindung/spezifikation/aktuell/Personenbindung-20040224.pdf>

⁵ The Austrian E-Government Act: Federal Act on Provisions Facilitating Electronic Communications with Public Bodies (E-Government-Gesetz – E-GovG), 2004.

2.2. Belgium

It was on July 19, 2001 when the Council of Ministers made the decision to introduce the new electronic identity card in Belgium. The law has finally passed Senate in April 2003. The Belgium government started the distribution of e-ID cards in April 2003 with the pilot phase in eleven cities for a period of six months, allowing the system and its logistics to be tested on a real scale⁶. Approximately 360,000 cards using Sun Microsystems Java technology were distributed⁷. The new e-ID credit sized card will deliver the same official functions as the traditional identity cards and in addition the card will be the main identification and authentication instrument for accessing e-Government services.

The Belgium government initially planned to start the country wide rollout by the end of 2003. However, because of uncertainties regarding the distribution scheme the rollout was initially deferred to 2004. In the new strategy, the Belgian government has decided to introduce this card over a period of three years and the e-ID card will be issued to every citizen or resident above the age of twelve years by the end of 2006⁸. The card's validity period will be 5 years. This card will also be used as a travelling document for countries accepting the Belgium ID card, such as within the EU.

FEDICT, the Federal Department of Information and Communication Technology, has authorized the Computer Sciences Corporation to develop generic tools for the Belgian electronic identity card. FEDICT will make these tools available to any organization wanting to integrate the identity cards as a method of identification and authentication in its applications⁹. The project costs are estimated to EUR 10 million for the pilot phase and EUR 100 million for the whole project¹⁰

As far as privacy is concerned, every citizen can monitor the name of organizations and individuals who have consulted or updated his file in the last six months.

2.3. Cyprus

Basing our information on a study regarding the Electronic Signatures Regulation in the European Union from April 2004, Cyprus is the only accession country which has not adopted the EU Directive for Electronic Signatures so far.¹¹ Apart from a possible participation in an eEpoch follow-up activity (see section 3.8), there are currently no plans to introduce e-ID cards in Cyprus.

2.4. Czech Republic

A national law on electronic signatures went into force in 2000, implementing the EU Directive for Electronic Signatures. There is currently no information about e-ID projects available.

⁶ Europa - IDA: Belgian electronic ID card officially launched. Retrieved April 9, 2004 from <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&parent=whatsnew&documentID=1012>

⁷ Belgium, France prepare to roll out electronic ID cards. Retrieved April 9, 2004 from <http://www.electronicstimes.com/tech/news/OEG20030701S0055>

⁸ Europa - IDA: Belgium close to solving electronic ID cards distribution deadlock. Retrieved April 9, 2004 from <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&parent=whatsnew&documentID=2014>

⁹ CSC working with ZETES to develop tools for the Belgian electronic identity card. Retrieved April 9, 2004 from <http://be.country.csc.com/en/ne/pr/1259.shtml>

¹⁰ Europa - IDA: Belgian electronic ID card officially launched. Retrieved April 9, 2004 from <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&parent=whatsnew&documentID=1012>

¹¹ Jos Dumortier: Electronic Signatures Regulation in the European Union, K.U. Leuven University - Belgium, April 2004. Retrieved June 23, 2004 from <http://www.csd.bg/fileSrc.php?id=479>

2.5. Denmark

The public sector in Denmark has not introduced any electronic identity card, and there are currently no plans to do so. General web-based PKI services are provided that will be used in e-Government processes. The service is based on the Electronic Signature Act, which entered into force in October 2000 and is based on the EU Directive for Electronic Signatures.

2.6. Estonia

Estonia started issuing national electronic ID cards in January 2002. The card is issued by the Citizenship and Migration Board. Within one year, more than 130,000 cards have been issued. By June 2004 the total number of cards issued is 516,843 and it is planned that by 2007 one million cards will be rolled out¹².

The electronic ID card is mandatory for all Estonian residents, including both Estonian citizens and resident aliens. It is the primary domestic identification document, and can be used to sign documents digitally.

Estonia has transposed the EU Directive for Electronic Signatures by the Digital Signatures Act of 8 March 2000. It entered in force on 15 December 2000. The last law having amended this act entered in force on 1st of August, 2002.¹³

The card has a machine-readable zone and a chip, an electronic device containing the visual data on the card and two security certificates to verify the individual and to supply digital signatures. The card's chip contains citizen's personal data printed on the card as well as the keys and certificates used to verify them. For resident aliens with valid papers, the ID card also contains residence and work permit data.

A user can consolidate many features (work passkeys, bank cards, health insurance card) into one card via agreement between the company and the state.

2.7. Finland

Finland is a pioneer in the implementation of the electronic identity concept. The Finnish Ministry of Interior, through the Population Register Centre, issued the first national electronic identity cards (FINEID) in December 1999. However, the electronic identity card has not been as popular as it was expected. Until March 2004, about 26,000 Finns have acquired the card¹⁴.

Citizens can apply at the local police authorities to obtain such cards whereas the Finnish Population Register Centre supplies the on-board certificates which are used in electronic identification. The card is also an official travel document for Finnish citizens in 19 European countries. Currently, it also provides access to online banking and insurance services, educational services, and services provided by regional administration and public administration¹⁵. In future, identification can be done from a mobile device such as a cellular phone equipped with a special chip¹⁶.

¹² Retrieved June 5, 2004 from <http://www.id.ee/pages.php/03030102>.

¹³ Study for the European Commission-DG Information Society Nr. C 28.400 'The Legal and Market Aspects of Electronic Signatures.

¹⁴ Finland: Plans of new combined electronic id-card. Retrieved April 9, 2004 from <http://www.e.finland.fi/netcomm/news/showarticle.asp?intNWSAID=9958>

¹⁵ The Finnish Population Register Centre: FINEID. Retrieved April 9, 2004 from <http://www.fineid.fi>

¹⁶ e-Europe: Electronic Identity – Rollout: Information on Finnish e-ID. Retrieved April 9, 2004 from <http://www.electronic-identity.org/rollout.shtml>

Finland claims to be the first country in the world to have legislation for the use of an electronic identity card. On July 28 1999 the Electronic Identity Cards Act has passed the Parliament. This act became effective on December 1, 1999.

The project's costs for the FINEID project, including the application, amount to approximately EUR 1,7 million. For the implementation phase, a budget of approximately EUR 3,4 million was reserved¹⁷. The identification card's digital certificate is valid for three years.

2.8. France

In France, there are some working groups developing e-ID solutions in parallel. Mentionable projects are

- Titre Fondateur
- Citizen Electronic ID Card (CEC)
- Daily Life Card
- The CPS card and the SESAM-VITALE card

The Titre Fondateur project has been launched by the Ministry of the Interior and is assessing the requirements for e-ID cards with or without the possibility of creating electronic signatures. This project is a key factor in the French e-Government strategy. The French Minister of the Interior announced on September 26, 2003, that French citizens will be equipped with e-ID cards by the year 2006¹⁸. Based on the results given by the Titre Fondateur project, the Ministry of the Interior will lead the project in order to develop the e-ID card for the future.

The Citizen Electronic ID Card (CEC) project has been launched by the Ministry of the Interior, Social Affairs and Finance in March 2001. A complete demonstrator followed in November 2002. Furthermore, it was planned to test the complete system by piloting it in two cities in 2003. Larger pilots may be started in the future based on the results given by previous tests. The aim of this project is to provide three functionalities¹⁹:

- proof of identity,
- as a travel document in the EU area,
- e-Administration or accessing administrative process by the use of the Internet.

The main objective is to increase the productivity and effectiveness of administrative processes. Since the French government has adopted the EU Directive for Electronic Signatures (1999/93/EC) in March 2000, the CEC card can be used for legally effective electronic signatures as well.

The Daily Life Card Project was started by the Ministry for the Civil Service and State Reform, which launched a call to develop a smart card providing citizen identification and authentication for accessing public services.²⁰

Both, the CPS card and the SESAM-VITALE card are only used in the healthcare and social insurance sector. The former supports electronic signatures too.

¹⁷ Slagmolen B., Pastors A., Case Study ITAFIT: Finnish Electronic Identity Card- FINEID Card, January 2000.

¹⁸ Speech at the 4ème Forum Mondial iDémocratie, September 26, 2003. Retrieved April 9, 2004 from http://europa.eu.int/ISPO/ida/jsps/dsp_showDocument.jsp?printerVersion=1&documentID=1599

¹⁹ eEurope – Smart Cards: Electronic Identity Whitepaper V.1.0, June 2003.

²⁰ Interchange of Data between Administrations (IDA): eGovernment Factsheet – France – National Infrastructure. Retrieved April 9, 2004 from <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&parent=whatsnew&documentID=1280>

2.9. Germany

Germany has adopted the EU Directive for Electronic Signatures (1999/93/EC) to a national act²¹ in 2001, building the basis for further activities in the field of electronic identities. Since the qualified certificate alone is not sufficient in order to identify users within e-Government processes, the German Bundesdruckerei²² develops an e-ID solution based on smart cards – the German Citizen Card (Bürgerkarte). On the one hand, this citizen card is a signature card following the EU directive. In addition to a qualified signature, the citizen card contains two more certificates, the so called IDENT- and the ADDRESS-certificate. These two certificates are the digital equivalent to a conventional registration certificate thus containing the user's registration data. More specifically, the IDENT-certificate contains the given name, surname, additional names, common name, date of birth, place of birth, and gender. The ADDRESS-certificate contains the surname, additional names, common name, title, postal zip, and the detailed address. Both certificates follow the X.509 V3 specifications. These additional certificates make the difference between an ordinary signature card and the German Citizen Card as defined by the Bundesdruckerei.

In 2003, three cities in Germany, Ulm, Passau and Bremerhaven, launched a pilot project releasing 500 citizen cards to interested people. Through this pilot phase, citizens could test various online services offered by their cities, e.g. a service for requesting absentee polling cards, a service for making amendments to the wage tax card, a service for registering dogs or services for tax purposes. This pilot project was intended to cease in June 2003.

Beside this pilot, no further mentionable activities could be discovered in our survey. No nation wide rollout of citizen cards following one of these concepts has been started yet.

2.10. Greece

Currently, there is no e-ID project in Greece. The only preparatory step in this direction is a national law on electronic signatures which implements the EU Directive for Electronic Signatures. This law went into force in 2001.

2.11. Hungary

Hungary adopted the EU Directive for Electronic Signatures (1999/93/EC) to a national Electronic Signature act in the year 2001.

In October 2002 the Hungarian government started an initiative in order to enable users to be identified by the use of a smart card infrastructure. Therefore the Hungarian Ministry of Informatics and Communications and the Ministry of the Interior are working on an appropriate certification authority supporting a smart card infrastructure. Overall, the Hungarian government is establishing a framework of laws and decrees so that further governmental electronic services can soon be offered to the citizens, such as e-Voting.²³

Thus, there is an ongoing project on electronic ID in Hungary, but no detailed information is available yet.²⁴

²¹ German Signature Law: Gesetz über Rahmenbedingungen für elektronische Signaturen und zur Änderung weiterer Vorschriften, Bundesgesetzblatt Jahrgang 2001 Teil I Nr. 22, May 2001.

²² Product Citizen Card (Bürgerkarte) of the Deutsche Bundesdruckerei. Retrieved April 9, 2004 from http://www.bundesdruckerei.de/en/products/citizen_card/index.html

²³ ICA Country Report, ICA 37th CONFERENCE, Tallinn Estonia, September 2003.

²⁴ CEN/ISSS WS e-Authentication: Vision document on a common approach for Electronic ID for the European Citizen., 14.04.2004. Retrieved June 24, 2004 from http://www.sk.ee/porvoo5/doc/Vision_document_008.pdf

2.12. Ireland

In Ireland, identity cards issued by the government do not exist, nor is there a single identification number or national identifier for natural persons. However, in 2003 Ireland has introduced a personal Public Services Number (PPSN) to facilitate citizen's access to all public services.

Although the Information Society Commission has recommended the establishment of a citizen identity system, it will take a couple of years to put such a system in place. The Information Society Commission has recommended that the approach must be agreed and incorporated into any future e-Government architecture²⁵.

As regards electronic signatures, the government has substantially transposed the EU Directive for Electronic Signatures with the Electronic Commerce Act of 2000²⁶.

Ireland's government has established an agency called 'Reach' to develop a strategy for the integration of public services and to develop and to implement the framework for electronic government. For this, Reach is issuing the Public Services Card to the citizens. It is not intended that the Public Services Card will be a national identity card. It is designed to meet the needs of people to identify themselves when using public services. The new card doesn't have to have a photograph, date of birth or any other personal data. It will be based on the existing Social Services Card of which about 2.5 million are in circulation. At a basic level, the card and a PIN number will be enough to access some services, but where a greater level of security is required, one of the possible technologies that could be used is digital signatures and certificates / Public Key Infrastructure (PKI). This latter feature will support electronic signatures²⁷.

2.13. Italy

In March 2001 Italy issued its first electronic identity card, the 'Carta d'Identità Elettronica' (CIE). The cards have initially been introduced in 83 major cities and by the end of 2002 over 50,000 cards have been issued. By 2008 around 50 million people are expected to hold the new cards, which can also be issued to children. However, the distribution process had to be delayed due to technical issues. The large scale distribution of the cards is expected to start in May 2004²⁸.

The Italian Electronic Identity Card (EIC) is a 'hybrid' card with two distinct technologies embedded within each and every card – a microchip and a 'laser band' (containing personal data, a hologram, a signature and other indelible citizen information) that can store data up to 2.8 MB. This card also works as a travelling document within EU countries²⁹.

The e-ID card was described by Italian Law 127/1997 and implemented by Labour Decree 437/1999. The technical rules were published in the summer of 2000. This card is valid for 5 years.

2.14. Latvia

Latvia has adopted the EU Directive for Electronic Signatures (1999/93/EC) on the 1st of January 2003.³⁰ Moreover, the Latvian government released their "E-Government Functional

²⁵ Information Society Commission – eGovernment: More than an Automation of Government Services

²⁶ State of Affairs: The Electronic Identification of Citizens and Organizations in the EU.

²⁷ Reach - connecting people and public services. Retrieved April 9, 2004 from <http://www.reach.ie>

²⁸ Multimedia victoria - eGovernment Resource Centre: eGovernment - Italy. Retrieved April 9, 2004 from <http://www.egov.vic.gov.au/International/Europe/Italy/italy.htm>

²⁹ Customer Case Study: The Italian Electronic Identity Card. Retrieved April 9, 2004 from <http://www.baltimore.com>

³⁰ J.Dumortier et.al.:The legal and market aspects of electronic signatures, icri, Katholieke Universiteit Leuven. Retrieved 28 June, 2004 from <http://www.secorvo.de/publikationen/electronic-sig-report.pdf>

Model” in 2002 including guidelines for the implementation of ID cards and electronic signatures.³¹ Currently, Latvia is also working on the implantation of several governmental electronic services.³²

The actual electronic ID card project in Latvia is based on a set of legal regulations, but it leans mainly on the “Regulations of Citizen’s and Foreigner’s identification cards” which came into force in October 2003. From the technical point of view, the microprocessor which is mounted on the Latvia e-ID card contains a crypto-processor that supports electronic signatures.

The usage area of this card was widely defined, e.g. it can be used as an electronic identity document, for electronic signature creation, for self-government, as library and transportation card, for travelling, etc.⁴⁰

The visual content of Latvia’s e-ID card covers name and surname, identification code, citizenship, sex, birth date and place of birth, photo, a hand written signature, registered domicile (at will), nationality (at will) and height.⁴⁰

The electronic content of the card includes the identification code, name and surname, sex, photo, registered domicile, electronic signature, state code, card-type, card-number, issuing authority, issue date and date of expiration, permanent permissions type for foreigners [optional] and work permission (yes/no) [optional].⁴⁰

In Latvia, every citizen, foreigner, refugee, and every stateless person gets a unique registration number by the Population Register thus getting an e-ID card too.³³

2.15. Lithuania

The Lithuanian government has adopted the EU Directive for Electronic Signatures (1999/93/EC). Due to some gaps in the Lithuanian act on Electronic Signatures the law has been amended in June 2002.³⁴

On 31st of December 2002 the government of Lithuania released their “E-Government Concept”. This concept contains several guidelines that foresee an identification and authentication system. A group of experts has been initiated to develop a strategy for an electronic identification system which likely includes electronic ID cards for citizens containing personal data, social insurance details and medical records. Actually, the Lithuanian government enforces mainly the development of the infrastructure and the backbone system of their e-Government concept.³⁵

2.16. Luxembourg

Luxembourg has adopted the EU directive for Electronic Signatures (1999/93/EC) on the 14th of August 2000. The government of Luxembourg has initiated the eLuxembourg initiative which follows the eEurope2005 program. Within the eLuxembourg project a strategy and

³¹ The state of e-Government in the EU candidate countries: 8. Latvia, CCICMT, 27.02.2004. Retrieved June 24, 2004 from http://www.ccit.government.bg/news.asp?news_id=116&lng=en

³² The state of e-Government in the EU candidate countries: 8. Latvia, CCICMT, 27.02.2004, Retrieved 24 June, 2004 from http://www.ccit.government.bg/news.asp?news_id=116&lng=en

³³ Porvoo e-ID Group, Report of the Seminar on Interoperable European Electronic ID/Public Service Cards held on 20/21 May 2003 in “Gamle Logen”, Oslo.

³⁴ Information Society Development Committee, Government of Republic of Lithuania. Retrieved 24 June, 2004 from http://www.ivpk.lt/main_en.php?cat=40&gr=1&sub=5

³⁵ The state of e-Government in the EU candidate countries: 9. Lithuania, CCICMT, 05.03.2004. Retrieved 24 June, 2004 from http://www.ccit.government.bg/news.asp?news_id=118&lng=en

several objectives have been defined. One of these objectives is to introduce an electronic identity card in order to identify citizens uniquely.³⁶

The Luxembourg's commission for information society (CNSI) announced on 19th of March 2002 that a PKI working group will be set up in order to investigate the possibility of developing a national electronic ID card. This investigation should take place in cooperation with several governmental registers and the citizens.³⁷

Despite the eLuxembourg initiative, besides a software based PKI-system which provides services both for the public and the private sector as well, there are no concrete plans for an national electronic ID card in the near future.³⁸

2.17. Malta

The Ministry for IT and Investment launched the e-ID in April 2004. The e-ID is the electronic version of the current national identity card, which allows all Maltese citizens to securely access and use e-Government services from the comfort of their homes or offices. The government of Malta has set a target that by the first three months of year 2005, 90 per cent of government services will be available online to individuals on a personalised basis. The only prerequisites to acquire an e-ID are being a Maltese citizen and having a Maltese ID card.³⁹

Acting as a digital authentication gateway, the e-ID verifies identities based on three security levels: The first level (for the delivery of basic public services) uses a PIN code and password to establish a person's identity. The key can take many forms, including a PIN number or a long-digit number similar to what is found on the credit and debit cards. The second level (for legally binding transactions or those of a commercially or personally sensitive nature) uses digital certificates. And the third level (for financial transactions and services that may impact health and safety) uses smart cards, potentially together with biometric technology. Presently only the first level of security is offered, however the second level will soon be offered.⁴⁰

The Malta government, through the government portal website <http://gov.mt> has provided several online services to their citizens. These include VAT related services, verification and payment of VAT balances, tax related services, verification and payment of inland revenue services, company related services, end-to-end registration of a company, social services, and other personal information on social benefits etc.

In order to receive an e-ID, the citizen first has to register at a local social policy centre which will then send her/him an email and a hard copy acknowledgement with a PIN number. The citizen can then login on the www.gov.mt portal to activate her e-ID.⁴¹

The programme for the electronic identity system was originally developed by Microsoft Corporation and Exigy – a local IT solutions company – and was customised by the Malta Information Technology and Training Services (Mitts Limited) – the government IT agency. In order to protect the privacy of citizens, a trusted third party from the private sector is

³⁶ eLuxembourg-initiative: Dossiers. Retrieved June 23, 2004 from http://www.eluxembourg.lu/dossiers/egovernment/1_objectifs/index.html

³⁷ eLuxembourg-initiative: Actualités - CNSI du 19 mars 2002 : Résumé des travaux. Retrieved June 23, 2004 from <http://www.eluxembourg.lu/actualites/2002/03/1903CNSI.html>

³⁸ CEN/ISSS WS e-Authentication: Vision document on a common approach for Electronic ID for the European Citizen., 14.04.2004. Retrieved June 24, 2004 from http://www.sk.ee/porvoo5/doc/Vision_document_008.pdf

³⁹ The Institute for eGovernment is the eGovernment Competence Center at the University of Potsdam. Retrieved May 15, 2004 from <http://www.e-lo-go.de/html/modules.php?name=News&file=article&sid=5669>.

⁴⁰ Microsoft Corporation. Retrieved May 15, 2004 from <http://www.microsoft.com/resources/casestudies/CaseStudy.asp?CaseStudyID=14865>.

⁴¹ The Institute for eGovernment is the eGovernment Competence Center at the University of Potsdam. Retrieved May 15, 2004 from <http://www.e-lo-go.de/html/modules.php?name=News&file=article&sid=5478>.

responsible for the initial face-to-face registration of citizens and businesses. It issues credentials and validates identities and rights of access.

2.18. Netherlands

In the Netherlands, there are two national ID numbers: one for people to pay tax and another ID database is managed on municipal level. The introduction of a unique number for e-ID purposes is currently underway. The legal background for a hierarchical nationwide PKI is already in place. The Act on Electronic Signatures of 8 May 2003 entered in force on 21 May 2003 and implements the EU Directive for Electronic Signatures. According to governmental plans, starting from 2007, there should be a smart card based e-ID solution in place that replaces other identity documents.

2.19. Poland

There are currently no plans to introduce e-ID in Poland. A preparatory step in this direction might be the implementation of a national law on electronic signatures in 2001⁴² according to the EU Directive for Electronic Signatures (1999/93/EC).

2.20. Portugal

Portuguese government adopted the EU Directive for Electronic Signatures in 2003, although there was a decree-law on Digital Signatures already before the directive's publication. In addition to the adoption of the EU Directive there are some further draft regulations on technical issues.

Despite this fact, no information on significant plans for electronic ID solutions could be found. There are ongoing discussions in Portugal regarding electronic IDs. Actually, the Portuguese conventional identity cards contain the owner's fingerprint, but not electronically.⁴³

2.21. Slovakia

Slovakia is making progress in introducing the concept of electronic identity. The country has already transposed the EU Directive for Electronic Signature (1999/93/EC) by the law on e-signatures (law-no.: 215/2002) which entered into force in May 2002. So far, however, there is only one certification authority in Slovakia and state administration bodies have difficulties reading electronic signatures⁴⁴. One main obstacle to the full implementation of electronic signatures in practice is a lack of software applications.

2.22. Slovenia

In Slovenia the national e-ID project was started in February 2003. The EU Directive, for Electronic Signatures was transposed by the 'Electronic Commerce and Electronic Signature Act' adopted by the Parliament in 2000.

There are three certification authorities for the e-ID cards:

- SIGEN-CA issues qualified certificates for citizens and for legal and natural persons, registered for performing activities.

⁴² Act on Electronic Signature (Poland) of 18th September 2001. Retrieved June 28, 2004 from <http://www.geocities.com/wi-ko/st/law/epustawaen.htm>

⁴³ CEN/ISSS WS e-Authentication: Vision document on a common approach for Electronic ID for the European Citizen., 14.04.2004. Retrieved June 24, 2004 from http://www.sk.ee/porvoo5/doc/Vision_document_008.pdf

⁴⁴ Retrieved 28 June, 2004 from <http://www.slovakspectator.sk/clanok.asp?vvd=2004014&cl=15728>

- SIGOV-CA issues qualified certificates for employees and certificates for servers of public administration institutions.
- SI-TSA issues trusted time stamps for applications of public administration institutions.

The keys stored in the e-ID cards will be valid for 3 years for electronic signatures and for 5 years for other authentication functions.

In Slovenia the e-ID card is not mandatory. The Official issuance of e-ID is planned for the end of 2004.

2.23. Spain

Spain was one of the first countries having a law on electronic signatures. In anticipation of the EU Directive for Electronic Signatures, in the Royal Decree 14/99, the aims have been to promote security and recognition of legal effectiveness of electronic signatures. Additionally, the provision of certificate services is regulated. Spain's certification services in the form of a centralized PKI are provided by the project CERES (CERTificación Española - Spanish Certification)⁴⁵.

The currently used certificates are regulated in the Technical Annex of Royal Decree 1290/1999⁴⁶. Standard technologies like X.509v3 are used. The core technology is supplied by Entrust. By 2002, the National Mint has issued more than 100,000 certificates. The price of a card for the user is EUR 13.

A major provider for electronic identity cards is the "Fábrica Nacional de Moneda y Timbre" (FNMT - Project Mint). In the TASS⁴⁷ project, starting in 1995 as a pilot project in Córdoba, cards have been issued to the general public to increase services offered by the Ministry of Labor and Social Security. The use of biometrics for secure identification is also envisioned within this project.

A nationwide PKI exists. Electronic identity cards are currently issued to civil servants, e.g. the Ministry of Economy⁴⁸. The latest and most ambitious project is carried by the National Police, which plan to distribute 6.5 million electronic identity cards by December 2004 to Spanish citizens. A pilot scheme to test this rollout is currently being introduced in Ávila.

2.24. Sweden

In 1998, the SIS (Swedish Standards Institute) approved standards regarding electronic ID⁴⁹ as proposed by the SEIS (Secured Electronic Information in Society) association. They are based on PKCS#15 and X.509v3. The ongoing work is covered by a project of the GEA (The Swedish Alliance for Electronic Commerce) called "Tillit och Säkerhet (Trust and Security)".

In November 2000 the Swedish Parliament approved the act on Qualified Electronic Signatures, which implements the EU Directive for Electronic Signatures (1999/93/EC). This act entered into force on January 1, 2001.

⁴⁵ Spanish Public Certification Authority. Retrieved April 9, 2004 from <http://www.cert.fnmt.es/ingles/que.htm>

⁴⁶ Real Decreto 1290/1999. Retrieved April 9, 2004 from <http://www.setsi.mcyt.es/legisla/internet/rd129099.htm>

⁴⁷ TASS project. Retrieved April 9, 2004 from http://www.fnmt.es/en/html/taid/cc_taid_ta.asp

⁴⁸ Spanish Ministry e-identifies its employees. Retrieved April 9, 2004 from <http://europa.eu.int/ISPO/ida/jsps/index.jsp?fuseAction=showDocument&documentID=1492&parent=chapter&preChapterID=0-140-194-349-355>

⁴⁹ SS 61 43 30: Electronic ID Application, SS 61 43 31: Electronic ID Certificate and SS 61 43 32: Electronic ID Card - Swedish Profile.

By now, electronic ID cards are issued (sold) by the Swedish Post acting as a national CA and all major Swedish banks. These are combined visual and electronic ID cards. For this, the SETEC ID-Card is used. At its core, SETEC's SetCOS™ card operating system is used. It is pre-personalized with two key pairs. These cards are additionally used to access e-Services of governmental agencies and some private companies.

2.25. United Kingdom

In the UK, identity cards issued by the authorities do not exist. Due to the public's traditional hostility towards the idea of identity cards, such a document does not even exist on paper. However, recently the Home Secretary has announced to Parliament that the government has decided in principle to introduce a national identity card scheme following a consultation paper published in July 2002⁵⁰. The UK government plans to have e-ID cards to be compulsory from 2013. This is subject to getting consent from Parliament. In connection with the electronic signature, the government has already passed national laws, e.g. the so called Electronic Communications Act 2000.

The cost of setting up the system over the next three years would be GBP 186 million but the total cost is tipped to be GBP 3 billion.

Not exactly an e-ID but few pilot projects testing the use of smart cards are already in place. NERSC (North East Regional Smart Card Consortium) has issued smart cards in 26 pilot cities. More than 12,000 cards have been issued with a target of 2 million cards in 10 years. The NERSC card will facilitate citizen's authentication, secure access to a number of applications including concessionary travel & pre-paid ticketing schemes, and government applications such as school and student management etc⁵¹.

3. Standardization and International Pilots

In this section we survey some international initiatives and pilot projects that are considered important for interoperability of e-ID. The list is not meant to be complete; it rather should give some reference to initiatives that address e-ID beyond the domestic solutions.

3.1. eEurope

The probably most important initiative towards "e-Services" in the EU is eEurope⁵². It is a political initiative that settles concrete action plans agreed by the European Council.

The first phase "eEurope 2002" has been agreed by the European Council at the Feira Conference, 19-20 June 2000. In the area of e-ID the action plan⁵³ settled an action "secure networks and smart cards" as part of the main objective "a cheaper, faster, secure Internet". The action plan highlighted that there is the need to accelerate, consolidate and harmonise use of smartcards across the Union. Among the actions taken was the establishment of an eEurope Smart Card Charter⁵⁴.

⁵⁰ Home Office – Identity Cards. Retrieved April 9, 2004 from <http://www.homeoffice.gov.uk/comrace/identitycards/>

⁵¹ Appendix B: NERSC Project Statement. Retrieved April 9, 2004 from [http://www.alnwick.gov.uk/alnwick/council.nsf/bfa5d133c51e615480256a1c0059f20c/6a4657662851dab880256c6b0031bb61/\\$FILE/Alnwick%20IEG2%20Appendices.pdf](http://www.alnwick.gov.uk/alnwick/council.nsf/bfa5d133c51e615480256a1c0059f20c/6a4657662851dab880256c6b0031bb61/$FILE/Alnwick%20IEG2%20Appendices.pdf)

⁵² eEurope homepage, Retrieved August 10, 2004 from http://europa.eu.int/information_society/eeurope

⁵³ eEurope 2002 Action Plan, Retrieved August 10, 2004 from http://europa.eu.int/information_society/eeurope/2002/action_plan/pdf/actionplan_en.pdf

⁵⁴ eEurope Smart Card Charter, Retrieved August 10, 2004 from <http://www.eeurope-smartcards.org/>

eEurope 2002 has been succeeded by the eEurope 2005⁵⁵ which has been launched at the Sevilla European Council, 21-22 June 2002. In particular the e-Government objective to have interactive public services by end 2004 raised the need for e-ID. The action plan e.g. states that *"The development of secure and seamless access to e-Government services depends on deployment and the effective use of electronic authentication means."* Secure e-Government and Identity Management is among the e-Government research and development focus⁵⁶.

3.2. EESSI

The EU Signature Directive⁵⁷ is an important legislative provision on recognition of electronic authentication in the EU. Still – for interoperability of solutions – technical standards are needed. Upon request by the European Commission, the European Electronic Signature Standardisation Initiative (EESSI) has been launched in 1998 under the umbrella of the Information and Communication Technologies Standards Board (ICTSB).⁵⁸

Within EESSI, the European Committee for Standardization - Information Society Standardization System (CEN/ISSS) and the European Telecommunications Standards Institute (ETSI) have developed several standards on technical requirements for signature creation devices and systems, technical and organisational requirements for certification service providers, or formats for electronic signatures or digital certificates.

A set of standards on the technical requirements for qualified signatures has been published as reference numbers in the Official Journal of the European Union⁵⁹ and, thus, form a common set of requirements on signature products throughout the EU.

3.3. CEN TC224

The CEN Technical Committee 224 on machine readable cards and related device interfaces and operations (TC224) has created a working group CEN/BT/WG 159. As EESSI ceases in 2004, WG 159 takes up several EESSI standards for further maintenance, mainly the ones published as reference numbers and related standards on secure signature creation devices⁵⁹. Based on a recommendation of CEN/BT/WG 159⁶⁰ it is expected that several of the EESSI standards taken up by TC224 will be transposed to European Standards.

TC 224 has also established a working group WG 15 on European citizen cards in 2003, a kick-off meeting took place in February 2004. It is expected that draft standards for CEN Enquiry is submitted end of 2004 / beginning of 2005.

3.4. Porvoo Group

The Porvoo Group on interoperable European electronic identities is a network for parties in charge of public certificates for citizens, i.e. mainly public authorities that issue identity certificates. It is a follow up to the eEurope Smart Card Charter⁶¹ Trailblazer TB1 on

⁵⁵ eEurope 2005 Action Plan, Retrieved August 10, 2004 from http://europa.eu.int/information_society/eeurope/2002/news_library/documents/eeurope2005/eeurope2005_en.pdf

⁵⁶ IST eGovernment R&D focus, Retrieved August 10, 2004 from http://europa.eu.int/information_society/programmes/egov_rd/focus/index_en.htm

⁵⁷ EU Signature Directive 1999: Directive 1999/93/EC of the European Parliament and of the Council on a Community framework for electronic signatures. Official Journal L13/12, 1999.

⁵⁸ EESSI homepage, Retrieved August 10, 2004 from http://www.ict.etsi.org/EESSI_home.htm

⁵⁹ Commission Decision 2003/511/EC of 14 July 2003 on the publication of reference numbers of generally recognised standards for electronic signature products in accordance with Directive 1999/93/EC of the European Parliament and of the Council.

⁶⁰ Recommendations of CEN/BT/WG 159 to CEN/BT, Doc. CEN/BT/WG 159 N 29, April 29, 2004

⁶¹ eEurope Smart Card Charter, Retrieved August 10, 2004 from <http://www.eeurope-smartcards.org/>

electronic identity⁶² (see section 3.1 above). The Porvoo Group has been named after the location of its first meeting in Provoo, Finland, April 2002. By August 2004, five meetings of the Porvoo Group took place.

3.5. CEN eAuthentication Workshop

CEN/ISSS has launched a workshop on eAuthentication for smart-cards and eGovernment applications in 2003⁶³. The workshop is based on a decision of the eEurope Smart Card Charter (see section 3.1 above) to forward the Open Smart Cards Infrastructure in Europe (OSCIE) deliverables relevant to eAuthentication to CEN/ISSS for transposition into CEN workshop agreements (CWAs).

According to the business plan⁶⁴, deliverables are expected within 2004 that inter alia comprise an e-ID functional architecture, business models for interoperable multi-application cards and systems, or user interface best practices manuals for multi-application smart card applications.

3.6. EUCLID

European initiative for a Citizen digital ID solution (EUCLID) is a European research project funded by the 5th Framework Programme. It aims at supporting the eEurope Smart Card Charter Trailblazer 1 (TB1) Public Identity. Inter alia, EUCLID provides the homepage for the eEurope Smart Card Charter TB1 and of the Porvoo Group⁶⁵ (see section 3.1 and 3.4 above).

3.7. PRIME

Privacy and Identity Management for Europe (PRIME) is an European research project funded under the 6th Framework Programme that has been launched beginning of 2004. The project⁶⁶ researches identity management with particular interest in privacy aspects.

3.8. eEpoch

eEPOCH⁶⁷ has been funded under the 5th Framework Programme. The project aims at demonstrating interoperability of smart card based e-ID solutions. The project is meant to be a proof of concept of eEurope Smart Card Charter (see section 3.1 above). Interoperability has been tested between six pilot sites.

⁶² eEurope Smart Card Charter TB 1 „Electronic Identity“ homepage, Retrieved August 10, 2004 from <http://www.electronic-identity.org/>

⁶³ CEN/ISSS eAuthentication Workshop information retrieved August 10, 2004 from <http://www.cenorm.be/cenorm/businessdomains/businessdomains/iss/activity/wseaut.asp>

⁶⁴ Business Plan for the CEN/ISSS Workshop on Electronic Authentication, Version 1.4, October 14, 2003, Retrieved August 10, 2004 from <http://www.cenorm.be/cenorm/businessdomains/businessdomains/iss/activity/wseauthbpv14.pdf>

⁶⁵ eEurope Smart Card Charter TB 1 „Electronic Identity“ homepage, Retrieved August 10, 2004 from <http://www.electronic-identity.org/>

⁶⁶ PRIME homepage retrieved August 10, 2004 from <http://www.prime-project.eu.org/>

⁶⁷ eEPOCH homepage retrieved August 10, 2004 from <http://www.eepoch.net/>