CS4200 - Project

# Project Proposal for
# eID
# *(Electronic Identity)*

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# Revision History

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# 1. Introduction

eID, short for **e**lectronic **id**entity, is the electronic counterpart to national identification card (NIC), driving license, passport, and other membership cards. In the changing world, which is moving more towards the online based services in public and private sectors, a person can present an eID electronically to prove his or her identity or their right to access information or services online. An example commercial eID scheme is the *Secure ID* from Verisign [6]. From an electronic identity perspective, one person is usually involved in multiple sectors (e.g. taxation, social security, education, telephony services, banking services) and also often fulfills different roles (e.g. a civil servant, a lawyer or a driver) depending of the context. Therefore, the corresponding data should be managed/accessed in an independent way.

The World Bank defines e-government as the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government [8]. These technologies can serve a variety of different ends such as better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The digital identity card is a physical token containing personal information used for proving that the holder is a specific person, a citizen of a given country. Dealing with this content-rich electronic identity will require adequate legal provisions in terms of data protection and personal control over personal data by the individual.

In Finland, the FINEID is used as the electronic identification card. The FINEID-card guarantees that the holder has been properly identified and that confidential information stays confidential and that electronic forms are received correctly [3]. Belgium has also started issuing its eIDs from 2004 which is for every citizen above 12 years [8]. There are many other countries such as India and Philippines thats are in the process of formulating national eID systems. European Union has also proposed a EU based eID in 2006. Also there are many other countries such as Australia[4] and UK[7] where plans for implementing eID systems failed due to mainly reasons related to privacy. Thus implementing a eID system at this time would be better for Sri Lanka, as it could solve the inefficiency of the existing system as well as Sri Lanka will get a leading hand with its e-governance efforts.

## 2. Development of eID

All around the world governments are concerned about and investigating the electronic identification of citizens. Sri Lanka, which has used a national identity card (NIC) for a longtime, is now in the process of developing a new electronic NIC or an e-NIC. This project is a collaboration between the Department of Registration of Persons [1] and the ICT Agency in Sri Lanka.

The e-NIC project envisages developing an ICT solution for automating the ID application processing procedure, ID card issuance procedure, ID card information authentication procedure, issue new ID cards and building necessary ICT infrastructure implement the proposed ICT solutions. The proposed e-NIC is only an alternative to the existing NIC in an electronic form and to make it harder to forge [2]. But it doesn't specifically address many issues mainly related to the online presence of a citizen.

The needs for an eID could be easily understood when the differences between a conventional identity card and an eID are identified. Most people envisage a national identity card as one that is issued by a government agency to all adults to uniquely identify the individual. This card may include a photograph of the individual and must be carried by the individual when in public. Also this must be produced on demand for scrutiny by law enforcement personnel and other official. Identity card provides the primary proof of identity necessary to provision of services to the individual and dependents and potentially allows comprehensive surveillance of the individual. On the other hand network users have traditionally authorized themselves by user names and passwords. This procedure works as long as the networks and databases are small and the amount of users limited. When the number of users and connected networks grow some kind of more secure, legal and universal solution is needed.

**Comparison:**

The following table gives a brief comparison between the present national identity card and an eID:

|  | Existing NIC | Proposed eID card |
|---|---|---|
| *Requirements* | Prove identity | Multi-purposed |
| *Issue/Update Time* | More than one day (at least) | Less than one hour |
| *Physical Built* | Papers | Plastic + Electronic |

| Identification Number | Unique number on card face and central register | Unique number for each adult on card face, on chip and on central database |
|---|---|---|
| Card Storage Capacity | Card face data | Card face data, Internal memory chip and/or magnetic strip |
| Data Related to Security | Hidden image based feature to validate ID | Encrypted PIN number, Digital certificate |
| Possession of card readers to access | Any one | Any one, But depend on access level and type, providing data will differ |
| Database/ Registry Access | File and Papers in registration of persons department | On line central database access (depend on access level and type) |
| Technical restriction on enhancements | Re-issue | Depends on size of chip (no need of re-issue for all enhancements) |

**Advantages of eID:**

The eID will be more reliable than a paper based ID as it provides more data security with privacy features. The use of digital signatures make it harder or even impossible to make a forged ID as the duplicate ones would invalidate the digital signatures with which the data stored inside the card would be digitally signed. A citizen with an eID would have the ability to use it for various different services, thus it would be multi-purposed. One of the unique aspects of the eID is its ability to authenticate the holder not only in the real world, but also in the virtual world. eID would enable it's holders to authenticate themselves securely when using an online service, while protecting their privacy.

Convenience to both the users and the authorities is one another advantage the eID system would bring in. Specially the time and effort that had to be spent for issuing and updating the IDs could be reduced by a huge amount with eIDs. Also the data that are saved in the eID could be easily updated by the authorities, thus it would make up to date information. Also authorities would have the control over eIDs as all services would be connected to a centralized system with multiple access levels for different services.

A unique feature the eID system would have is the multi language support, which could be done using transliteration methods, while making the services very much usable

specially in a multi ethical community like Sri Lanka. For example the central database could hold data in one specific language, but a service user who prefers some other language could be satisfied by showing the final results in the language they would expect.

## Disadvantages of eID:

The eID system as a whole has few drawbacks when it comes to the wide usability. As a national level eID would be issued national wide, it should provide equal opportunity to any citizen in obtaining a service. But when going outwards from city centers, the access to Internet becomes more unreliable and expensive. This could make the people in those areas not getting the full benefit from the eID system. Technical knowledge level of the citizens also plays a major role as some level of competency would be needed to get the full benefits of the system.

## Privacy Issues:

The use of identity data by default in electronic transactions enables serious risks for the privacy of e-ID holders. There are many eID implementations that were objected or failed due to concerns raised related to privacy, such as in Australia[5]. Privacy means different things to different people. Some people do not like to be treated in a large system as only a number, while others may object to being watched or tracked via collective data the system might produce. Also in terms of autonomy, the fear of having a person's actions recorded and reported may prevent individuals from using the system to the full capacity and this might lead the failure of the system as a whole. Thus the proposed eID will address the privacy issues as a fundamental requirement, because it is understood that the privacy enhancing technologies are most effective when integrated in the design stage[10].

Although privacy-enhancing features of the eID could help to achieve privacy of a citizen, applications that offer unconditional anonymity to individuals can be abused by malicious users. Using the eID in new application domains such as in e-commerce applications, security requirements play an important role[12]. Hence, the eID will have an accountability-supporting infrastructure, which could give a reasonable trade-off between anonymity and control.

# 3. Project Implementation Plan

A project of eID is not something that could be completed by a single subgroup during the project span, including the real implementation. But also producing a demonstrable outcome at the end would be essential. To make this happen the project scope is formulated in such a way that it could be shared by different persons in the group, or could be divided into different time frames to come up with a demonstrable outcome at the end.

## 3.1. Implementation

Three major components of the eID project are identified as follows:

A) eID Card

B) Back End Infrastructure

C) Front End Infrastructure

These three components can be considered as three different entities, but with total interoperability. Each of these major components of the scope can be divided into multiple sub divisions as follows.

**A. eID Card**

1. Physical Card – This is to build a physical device which could be of a plastic enclosed an electronic device of small size.



*Figure 1: Front face of eID*

2. Data on/in the card – There could be several types of data that kept inside the card in a digital format. But there is the possibility of having a physical interface where some basic data could be printed on the card's faces *(Figure 1)*. What are the data that are going to be kept in/on the card could be decided upon when it comes to the designing phase.

3. Data security – As some data is being kept in the card in a digital format, there should be ways to secure these data from unauthorized tampering. This could be done with a

read only memory or other digital security methods or a hybrid of the both. Also this would include different access levels for the data kept in/on the card.

4. Features – What specific details are in the card, and how and for what they could be used could be decided in the design phase.

5. Interface – The eID will be able to interfaced to any PC via a USB interface, thus making it easily usable on online presence. *(Figure 2)*
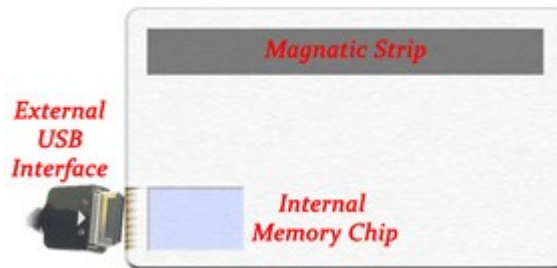


*Figure 2: Back face of eID with external interface*

6. User documentation – This will include the end use manuals and other documentations related to using the eID on different platforms and services.

## B. Back End Infrastructure

1. Database - Centralized, share common key/id no

2. Secure Access Interfaces (APIs) - Access from different departments

3. Data security

4. Maintenance

5. Specific software

6. System Documentation

## C. Front End Infrastructure

1. Issue

2. Maintain/Renew

3. Use/Access - Different Access Levels

4. Specific hardware

5. Specific software

## 3.2. Project Implementation Requirements

The following are some of the important requirements according to the current proposed plans.

**Hardware:**

For the implementations of eID projects some specific hardware related to cards will be needed as listed below.

● Facility to make an electronic card with memory chip, magnetic strip

● External card reading cable (or device)

● Equipment/Facilities to read/write magnetic strips (if used)

● Server (or PCs) for back end testing

**Software:**

For the implementation, the basic software infrastructure will be based on a FOSS operating system and other available FOSS software. The software that will be created will also be FOSS based.

## 3.3. Proposed Project Schedule

The following is the proposed time line for the project.

| | April '08 | May '08 | June '08 | July '08 | August '08 | September '08 | October '08 | November '08 | December '08 | January '09 | February '09 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Submission of Draft Project Proposals | ■ | | | | | | | | | | |
| Submission of Final Project Proposals | ■ | | | | | | | | | | |
| Finalizing with Supervisors | | ■ | | | | | | | | | |
| Submissions of Software Requirement Specification | | ■ | | | | | | | | | |
| Submission of Literature Survey | | | ■ | | | | | | | | |
| Submission System Design Document | | | ■ | | | | | | | | |
| Project Developments | | | | | | | | | | | |
| Making Physical Card (eID Card) | | | | ■ | | | | | | | |
| Implement Database and Data security (Back End Infrastructure) | | | | ■ | | | | | | | |
| Develop Specific Software (Back End Infrastructure) | | | | ■ | | | | | | | |
| 1st formal evaluation | | | | | ■ | | | | | | |
| Implement card Data and Features (eID Card) | | | | | | ■ | | | | | |
| Develop Secure Access Interfaces (APIs) (Back End Infrastructure) | | | | | | ■ | | | | | |
| Implement Specific hardware (Front End Infrastructure) | | | | | | ■ | | | | | |
| 2nd formal evaluation | | | | | | ■ | | | | | |
| Implement Data security and Features (eID Card) | | | | | | | ■ | | | | |
| Implement Specific software (Front End Infrastructure) | | | | | | | ■ | | | | |
| Testing and bug fixing | | | | ■ | ■ | ■ | ■ | ■ | | | |
| Implementation | | | | | | | ■ | ■ | ■ | | |
| 3rd formal evaluation | | | | | | | | | | ■ | |
| Final evaluations | | | | | | | | | | | ■ |

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# 4. Literature Survey References

For the literature survey in preparing this document the following online documents, white papers and research papers were refereed.

[1] Registration of Persons Department, Sri Lanka

- o http://www.rpd.gov.lk, Last accessed on 13 May 2008.
- o Ministry of Internal Administration of Sri Lanka had already invited bids for e-National Identity Card (e-NIC) Project.
- o So the chances of this project going into real implementation is very less.
- o Yet this can be developed into something like a technical feasibility model for eIDs.

[2] e-National Identity Card Projects (ICTA/e-Governance Projects)

- o http://www.egovcoe.gov.lk/egovprojects/ViewDetail.asp?prjid=31, Last accessed on 13 May 2008.
- o http://www.icta.lk/insidepages/ReGov/Projects&Implementation/eNationalIDCard.asp, Last accessed on 13 May 2008.
- o ICT Agency of Sri Lanka has already started a project for a new eID for Sri Lanka

[3] FINEID.FI - Technical information about electronic identity

- o http://www.fineid.fi/en, Last accessed on 13 May 2008.
- o FINEID is one of the very successful implementation of a national level electronic identity
- o The are various levels of information about electronic identity is contained on web site by the Population Register Center.
- o This site contains information about card readers, card reader software and creating an on-line services utilizing certificates of FINEID.
- o FINEID used a smart-card based identification card, based on Public Key Infrastructure.
- o There are two more sites related to this www.vaestorekisterikeskus.fi, and www.etu-klubi.fi, with more general information for the holders of electronic ID cards.

[4] Caslon Analytics, From Australia Card to Access Card

- http://www.caslon.com.au/australiacardprofile.htm,
  Last accessed on 13 May 2008.
- This web site give many details about the Australia Card and the 2006 national government services Access Card which are very similar to our requirements.
- The access card has features like fields with different access levels.
- But the cards were abandoned in December 2007 by the incoming ALP government, which announced the closure of Office of the Access Card and abandonment of Access Card.

[5] Australia's Proposed ID Card: Still Quacking Like a Duck, Greenleaf, Graham, UNSW Law Research Paper No. 2007-1

- Available at http://ssrn.com/abstract=951358, Last accessed on 15 May 2008.
- This another paper that discuss about the Access Card for Australia, when it was in the proposed stage.
- Here we get some information about the proposed access card, which is a smart-card based identification card.
- Also this has some information that are for and against the need for an electronic national identity card for Australia.

[6] Digital ID Introduction, Verisign, Inc

- http://www.verisign.com/support/tlc/per/whitepaper.htm,
  Last accessed on 15 May 2008.
- This document provides us various information related to the using digital Ids for online authentications in various transactions.

[7] ID Cards After September 11, Privacy International

- http://www.privacy.org/pi/activities/idcard, Last accessed on 15 May 2008.
- There are certain privacy issues raised in some other countries in past in relation to id cards.
- Specially it is stated that attempts to create national ID cards in the US, Korea and Taiwan have all fa lied because of public opposition.
- But that won't be an issue when it comes to Sri Lanka, as we are a very positive public opinion towards NIC cards, but still the could be concerns over online security and usability.

[8] Advanced Applications for e-ID Cards in Flanders, ADAPID Deliverable D2, Requirements Study, April 2006

- o Available at https://www.cosic.esat.kuleuven.be/adapid/docs/adapid-d2.pdf, Last accessed on 15 May 2008.
- o This document describes different privacy issues and details the requirements related to privacy protection.

[9] Electronic ID-cards and Anonymity, Jan Enlund, Department of Electrical Engineering, Helsinki University of Technology

- o Available at http://www.tml.tkk.fi/Opinnot/Tik-110.501/1999/papers/ electronic_id/Electronicidandanonymity.htm, Last accessed on 15 May 2008.
- o This has more technical research on the FINEID of Finland.

[10] Identity in Digital Government, A report of the 2003 Civic Scenario Workshop, Jean Camp, Kennedy School of Government, Harvard University

- o This thesis specifically addresses different privacy issues related to online identity and digital governance.

[11] Next Generation of Digital Identity, Fuluparfoll and Jasonbaragry, Telektronikk 3/4.2007

- o This article has few basic information related to privacy in the digital presence.

[12] A Methodology for Anonymity Control, in Electronic Services Using Credentials, Vincent NAESSENS, June 2006

- o This paper has information related to providing anonymity with control level of control on electronic services.