

For discussion
on 20 December 2001

**Legislative Council Panel on Information Technology
and Broadcasting**

Legislative Council Panel on Security

**Non-immigration Applications for
Incorporation into the Smart ID Card**

Introduction

In late 2000 and in early 2001 we consulted Members on the plans of the Administration to issue a smart ID card as the replacement for the current one. We flagged up that a major advantage of a smart ID card was that, in addition to immigration-related applications, the chip embedded in the card would enable the card to be used for multiple applications which we believe will be highly convenient for citizens. The applications - subject to feasibility studies - we suggested the card could initially be used for digital certificate; driving licence; library card; change of address; and e-purse.

2. We have now conducted the necessary feasibility studies and wish to put forward the conclusions of the Administration on which applications the new smart ID card should be used for and how. We also address the privacy concerns that have been expressed.

Digital Certificate

3. A digital certificate (e-Cert) can be regarded as an “electronic-ID” of the user. It can be used for authentication of the identity of the parties involved and for ensuring integrity, confidentiality and non-repudiation of the data transmitted in an electronic transaction. The use of e-Certs involves a trusted organisation (a certification authority) checking to ensure that the user is the person whom he claims to be. Using an e-Cert the person can prove who he is, as well as send his messages in an encrypted form. The person receiving the message can check with the certification authority to see if it is

really sent by the person who claims to be the sender, and whether it has been altered. And under the Electronic Transactions Ordinance (Cap. 553), digital signature supported by an e-Cert which is recognised under the Ordinance has the same legal status as a hand-written signature. The Hongkong Post (HKPost) is a recognised certification authority under the Ordinance. It is established to kick-start the development of e-business in Hong Kong.

4. When we consulted Members in late 2000, our proposal regarding e-Certs was that we would reserve space on the ID card for that function. We now consider that we should be more proactive in this area - which is of fundamental importance for the widespread use of secure, authenticated electronic transactions. We now therefore intend to make it as easy as possible for members of the public to obtain an e-Cert issued by the HKPost, by integrating the process into the initial ID card replacement process.

5. Since its establishment in January 2000, HKPost has been issuing e-Certs for use for secure e-business and e-government transactions. However, e-Certs have yet to attract widespread usage - only 45 000 have been issued so far. HKPost has recently introduced measures to streamline the application and installation procedures to make them much more user-friendly. However, the main hindrances lie in the lack of applications to attract users - and the absence of a critical mass of e-Cert holders to drive the development of applications. That said, matters are changing with, for example, some banks working with HKPost to develop Internet banking applications. HKPost has also worked with the Hongkong Exchange to launch e-Cert-based online stock trading service. And the Jockey Club has launched its Internet betting service using e-Certs. The Government's Electronic Service Delivery Scheme also provides services using e-Certs e.g. renewal of driving/vehicle licences, tax filing, change of address records in Government departments, voter registration. Applications are developing in the market but the critical mass of users is not there.

6. If we simply reserve capacity for an e-Cert in the ID card - as we had originally proposed - only a small percentage of people would be likely to take the necessary steps separately to apply for installation of e-Cert onto their ID cards. If, however, we integrate the embedding of an e-Cert onto the card as part of the one-stop ID card replacement programme, members of the public are much more likely to take it up. We intend to do this in respect of the HKPost e-Cert for free - and for the free e-Certs to be valid for one year.

This will be an option members of the public can choose. Thus, while it will be very simple for members of the public to obtain the e-Cert by opting in, they will be free also to opt out. Through our one-stop service, members of the public can indicate their acceptance either before or at the time of application for the new ID card and the e-Cert will be automatically loaded onto the card at the time of issue.

7. We believe that this unique opportunity of reaching 6.8 million people should be used to create a deep infrastructure to push forward e-business and to promote secure authentication, transmissions and transactions over the Internet. The smart ID card issue exercise gives us a considerable edge over others in achieving this. A large scale promotion exercise will be carried out by the Government and HKPost to encourage the public to opt for installing the free e-Certs in their smart ID cards. We expect that, with this critical mass of users, the market will respond with e-applications which in turn will sustain the momentum for use and subsequent take-up of e-Certs outside the free e-Cert period.

8. We have considered the question of whether or not we should allow certification authorities recognised under the Electronic Transactions Ordinance other than HKPost to be permitted to load their e-Certs onto the chip. In technical terms, it is feasible to allow e-Certs issued by recognised certification authorities (including commercial certification authorities) to be embedded onto the smart ID card, without prejudicing the security regime of the whole system. However, as a matter of policy, we consider that, at this time, we should only have Government applications on the smart ID card. We believe there could be unease amongst Members and the public if we were to introduce commercial applications at this stage. We therefore do not wish to change this position lightly, nor without full public backing.

9. We do not rule out the possibility of having commercial applications on the card at some stage, if and when the public are ready to accept such. And indeed the electronic purse function – as set out in paragraphs 20 and 21 below - would likely be such a commercial function. We propose to keep the matter under continuous review.

10. In respect of our scheme for HKPost's e-Cert, if there is widespread public support for providing the option for e-Certs issued by recognised certification authorities other than HKPost to be allowed to be embedded onto the smart ID card, then we believe that this should be

considered. But it would not be part of the one-stop ID card replacement exercise. In such circumstances, ID card holders could opt out of the free e-Cert scheme and choose to install the e-Certs of other recognised certification authorities after the smart ID cards have been issued to them.

Driving Licence

11. We previously recommended that, subject to feasibility study, the smart ID card should be used as the driving licence. We have looked exhaustively at the various possibilities that exist (physically engraving data onto the ID card itself, storing data in the chip, a combination of engraving and storing, or using backend systems alone) and taken account of Members' concerns about privacy, convenience, voluntary choice and storage of too much data on the chip. After detailed scrutiny, we intend to leapfrog the notion of embedding data in some way on the card surface or in the chip. Instead, from 2005/2006, the public will not be required to carry a driving licence unless they wish to, and driving licence details will be held on backend computer systems. Updating of driving licence data and traffic enforcement action will be carried out directly through the backend computer systems. The smart ID card will be used for checking of driving licence data and other value-added functions. The background and the considerations for various options are set out in paras 12 to 15 below.

12. Licence on the chip option. We have looked very hard at the option of storing driving licence data on the chip. This has the convenience of doing away with one card and of using the chip. But it has several draw-backs. First, in order for anyone to access the data, they would require a smart card reader. This would cause considerable inconvenience for the many thousands of people, in particular professional drivers, their employers, car rental companies, etc., who need to produce or see the licence for employment or social purposes, driving abroad, etc. Second, for enforcement purposes, frontline traffic policemen would also all have to be equipped with smart card readers in addition to the existing equipment they need to carry. Third, the chip on the card would need to be updated every time the backend data is updated, and licence holders who are not familiar with kiosk operation and payment may have difficulty in updating or renewing the licence at self-service kiosks. Fourth, in case the smart ID card is lost or damaged (about 500 per day), a temporary driving licence will need to be issued while the ID card is being replaced. Fifth, the 17 overseas governments which currently

accept our driving licence for reciprocal driving purposes would be most unlikely to accept a chip version. In short, this is not a user-friendly option.

13. Licence engraved on the ID card. We have also looked at the possibility of engraving the licence on the ID card. But this also has considerable drawbacks. First, in order not to compromise immigration-related security features, the driving licence part would have to be very small. Second, suspension of licence cases would pose great problems. In order not to infringe privacy, we would not like an open indication on the card that a licence had been suspended. To get round this would mean reissuing the ID card - a complex, time consuming and not cost-effective matter for the public - without the licence. This will involve the (7,000 odd each year) individuals making additional trips to the Immigration Department and Transport Department to have the smart ID card re-issued without the licence during suspension and then subsequently with the licence re-engraved after suspension. Third, the engraving on the card would need to be updated every time the backend data is updated. Fourth, a lost or damaged ID card would also mean the need for a temporary driving licence.

14. Licence in the backend. We have thus concluded that the most user-friendly and cost-effective option is to leapfrog data on the ID card options and to have the driving licence data in the backend system - and to use the smart ID card to access data and valued-added functions. The details of the scheme are as follows –

- (a) the Transport Department will upgrade its transport licensing computer system VALID III to VALID IV by end 2004 and the Police will introduce their next generation beat radio system as part of the new Command and Control Communications System (CC III) by 2005/2006. When the VALID IV and CC III are both fully operational by 2005/2006, citizens will no longer be required to carry a driving licence for traffic enforcement purposes. Citizens will thus have the choice not to have any physical licence at all. They will still, however, have the option of getting a physical licence, if they wished one, for personal, employment or social purposes, e.g. driving abroad;
- (b) enforcement by the Police will be carried out through direct checking of driving licence data in the backend computer

system. Police officers will use voice recognition or key pad to input the ID card number and retrieve the information required for enforcement in seconds. The enforcement capabilities of the Police will thus not be adversely affected; and

- (c) citizens will be able to use the e-Cert embedded on the smart ID card (or subject to further study a PIN or other means) to authenticate their identity in order to check detailed driving licence information in the backend computer system through, for example, the Electronic Service Delivery Scheme network. The system would have other value-added functions such as checking updated entries for new driving entitlements or the number of driving offence points, etc.

15. The scheme has the beauty of giving maximum flexibility and convenience to citizens, of meeting the employment needs of professional drivers and social needs such as driving abroad, and of using new technology with minimum additional investment. It also avoids any question of compulsion to have something (driving licence data) on the chip – which Members had expressed disquiet about before.

Library Card

16. At present, the Leisure and Cultural Services Department (LCSD) issues plastic library cards with a barcode number for the public to access library services and facilities. Some 2.5 million plastic library cards have been issued, with an estimated additional issue of 300,000 cards per annum.

17. LCSD intends that the library card application be incorporated into the smart ID card by using the HKID number to be stored in the chip of the smart ID card to gain access to library services and facilities. This application requires no extra data to be stored in the chip of the card. The application will be voluntary and library users will have the option to be issued with plastic library cards or to use the smart ID card for library use. Users who do not have ID cards (children under 11 or visitors) will still naturally be able to obtain the normal library cards. This scheme is simple, obviates the need for citizens to carry a separate card (if they so wish) and may well encourage library usage.

Change of Address

18. We have previously suggested that one of the functions the smart ID card could be used for is “change of address” by electronic means. With the incorporation of free HKPost’s e-Certs , as set out in paragraphs 3 to 10 above, this function becomes one readily available for anyone who opts for an e-Cert. Change of address is an important and private matter. We thus believe that it is one where a high degree of authentication should be required. That is, an e-Cert - or some form of identification equally secure - should be required if a citizen wishes to notify the Government electronically.

19. At present one can do online change of address using one form for four departments/office (Transport, Inland Revenue, Rating and Valuation, and Registration and Electoral) and an e-Cert. We will work to bring more departments into the one form submission.

Electronic Purse

20. We previously recommended to reserve capacity in the chip for the implementation of an e-purse - and stated that we did not believe that the time was yet ripe for taking the matter forward. We do not believe that the situation has changed much in the last 12 months.

21. The Hong Kong Monetary Authority (HKMA) has recently completed a Review of Retail Payments Services in Hong Kong. The HKMA has concluded that the international development of e-legal tender is yet to mature. At an appropriate time, the HKMA may launch a study on e-legal tender in view of changes in market demand, both within and outside Hong Kong. We shall consult relevant LegCo Panels before taking a firm view on whether and how any e-purse functions might be incorporated into the chip. Thus at this stage, we continue to believe that it is wise to reserve capacity on the chip, thus providing flexibility to introduce such applications if and when it is considered appropriate.

Other Possible Functions

22. The chip will also have capacity for other possible future functions. However, such developments are still in their infancy in general -

and in Hong Kong. It will take time for the ideas to mature and for the public to become comfortable with using the chip for a wider variety of functions. But the potential use of the chip is large and new possible functions are emerging all the time. We shall continue to explore the best use of the smart card technology and consult Members when ideas mature.

Legislative Amendments

23. Members will separately be asked to approve legislative amendments to the Registration of Persons (ROP) Ordinance (Cap. 177) and Regulations in order to provide for, among others, the smart elements of the new ID card, the value-added non-immigration applications and the ID card replacement exercise. In respect of the value-added non-immigration applications, the proposal is for the ROP Ordinance to empower the Chief Executive in Council to specify in a new Schedule the non-immigration applications that require the storage of additional data in the chip or printing of additional information on the card surface to be incorporated into the new ID card. The details of the implementation of these non-immigration applications will be provided for in the relevant legislation, where appropriate, and hence subject to LegCo examination and scrutiny.

24. Among the applications set out in this paper, only the e-Cert application requires the storage of additional data in the chip. Therefore, the e-Cert application will be specified in the new Schedule. No further legislative amendment to the Electronic Transactions Ordinance will be required for embedding an e-Cert into the smart ID card. There are already rigorous safeguards in the Electronic Transactions Ordinance and the Code of Practice issued under it to protect data stored in e-Certs against hacking or leakage of data, irrespective of the medium containing the e-Cert.

25. Both the library card and driving licence applications do not require the storage of additional data in the smart ID card and hence, they will not be provided for in the Schedule. However, the library card application will require a simple legislative amendment to the Libraries Regulation (Cap. 132AL) to provide for the use of smart ID card as a library card. We intend to table the amendment in late 2002.

26. For the driving licence application, using the smart ID card to check driving licence data stored in the backend computer system will not require any legislative amendment. However, the idea to remove the requirement to carry a physical licence while driving will entail amendments to the Road Traffic Ordinance (Cap. 374), the Road Traffic (Driving Licences) Regulations and other related legislation, e.g. tunnel legislation. This will be separately pursued and, with a planned implementation date of 2005/2006, the relevant legislative amendments will be processed at a later stage in 2005.

Ease of Use by the Public

27. The schemes we have set out above will allow the public to carry two less card (driving licence and library card) and to use the smart ID card for any purposes that require an e-Cert such as online stock trading, e-banking and e-government services. We believe that the public will find these features highly attractive.

28. In order to ensure that members of the public will know what choices are open to them and how to use the smart card functions, we will embark widespread publicity campaigns. These will explain to citizens what is available, how to choose and how to use. To cater for those citizens who do not have access to computer facilities - or smart card readers - themselves, we shall upgrade the self-service kiosks with smart card readers so that citizens can use whatever features are incorporated in the card. There are currently some 100 self-service kiosks installed in popular locations by our contractor under the Electronic Service Delivery Scheme.

Choice and Privacy Issues

29. We have taken full cognizance of Members' and the public's concerns over choice and privacy.

30. As regards choice, many Members were concerned that members of the public should not be required to have any non-immigration functions embedded in the card. None of the applications we are now proposing are compulsory. All are voluntary options for members of the public to choose. The e-Cert is optional - and free. The driving licence function simply uses new technology to access data currently already in backend computers, and in

a way that obviates citizens from carrying a driving licence. And the smart card allows citizens to enquire about their driving licence status. The library card is optional.

31. As regards privacy, we have all through our thinking kept the concerns of Members and the Privacy Commissioner uppermost in mind in deciding how to take matters forward. The decision to make all current applications optional is a clear indication of this. The decision not to store excess data on the chip is an indication of this. The complete separation of immigration data from other data is an indication of our concern to ensure security and thus privacy. A list of the privacy related measures and actions taken is attached at Annex for Members' information.

Annex

Cost for Implementing Non-immigration Applications

32. In considering the funding application for the smart ID card project, Members were told that the smart ID card project will cover the provision of the infrastructure for introducing non-immigration applications and the cost for implementing individual non-immigration applications would be separately sought.

33. Both the e-Cert and library card applications will require upgrading of backend computer systems in HKPost and LCSD, at a one-off non-recurrent cost of less than \$10 million each. These will be met under the Computerisation Block Vote of the Capital Works Reserve Fund. HKPost will absorb the recurrent costs for giving out free e-Certs, because they believe there is a business case to do so.

34. For the implementation of the driving licence application, the majority of the cost will be incurred in the context of the development of Transport Department's VALID IV and Police's CCIII. We do not envisage any significant additional cost over that already envisaged.

35. We will provide self-service kiosks with smart card readers to facilitate use by the public by upgrading the existing kiosks under the Electronic Service Delivery Scheme. Subject to negotiation with the contractor, the cost may be met by the contractor.

Advice Sought

36. Members are invited to comment on the various applications and issues set out in this paper.

**Information Technology and Broadcasting Bureau
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Proposed Data Privacy Protection Measures

Card

- Data to be printed on card surface will be no more than that in the current card
- Only minimal data will be collected and stored in the chip
- More sensitive data will be kept at back-end computer systems as at present
- Thumbprints stored on card will be in the form of a set of meaningless digits (a template) and cannot be used to reconstruct the original thumbprints
- Data for different applications will be segregated
- Data will be encrypted to prevent unauthorized access or alteration
- Only authorized persons can have access to the data/applications on card which they are authorized to access
- Card will be protected by advanced security features and cryptographic technology

Back-end computer system

- There will be stringent system access control, including passwords, different levels of access authority and audit trails
- Sensitive data will be encrypted in the database and during transmission
- Individual departments involved will maintain their own database as at present so as to guarantee separation of uses from each other

- Advanced technology will be employed to protect integrity of the data at hardware, software and application level
- Use of tamper-resistant hardware security devices to protect security of system

Card holders

- For all the initial non-immigration applications, card holders will have a choice on whether to include the applications on the card, i.e. they will have a genuine and non-discriminatory choice
- Card holders can view what data are stored on the smart ID card through self-service kiosks

No identity theft

- The thumbprint template stored on card may be used to authenticate the card is identity holder to prevent identity theft

Government users

- The collection, storage, use and release of data must comply with the law, in particular, the Personal Data (Privacy) Ordinance
- Only authorized departments/officers can have access to the relevant database
- No sharing of database by Government departments. The situation will be the same as at present
- Immigration Department will conduct Privacy Impact Assessments at different stages of the project
- The Privacy Commissioner for Personal Data will be informed of the findings of each assessment and his views will be taken into account in formulating and revising the data protection measures