

For discussion
on 21 July 2003

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

**Review of the Funding Strategy for
Hongkong Post's Certification Authority Service**

Purpose

This paper informs Members of the outcomes of the review of the funding strategy for Hongkong Post's certification authority service.

Background

2. The Electronic Transactions Ordinance (ETO), which seeks to facilitate the use of electronic transactions, was enacted in January 2000. The ETO provides a clear legal framework for the conduct of e-business by according electronic record and digital signature the same legal status as that of their paper-based counterparts. The ETO also establishes a voluntary recognition scheme for certification authorities (CAs) that issue digital certificates. Digital certificates can be used not only for ensuring the confidentiality of electronic transactions but also for generating digital signature (a secure form of electronic signature¹) which ensures non-repudiation of an electronic transaction and the authenticity and integrity of the information transmitted in the transaction.

3. The ETO provides that, for transactions under law with signature requirement, a digital signature supported by a recognized digital certificate satisfies the signature requirement. To ensure that

¹ Under the ETO, an "electronic signature" means any letters, characters, numbers or symbols in digital form attached to or logically associated with an electronic record, and executed or adopted for the purpose of authenticating or approving the electronic record.

Hong Kong had the necessary infrastructure for the conduct of e-business in a secure manner and that the relevant parties would be able to make submissions under law with signature requirement via electronic means upon the enactment of the ETO, the Hongkong Post (HKP) launched its CA service in January 2000. As provided for under the ETO, the Postmaster General is a recognized CA and the HKPCA is the first organization to start providing recognized CA service under the ETO. Since then, HKPCA has been issuing digital certificates, under the brand name “e-Cert”, to individuals and organizations under separate certification policies. The CA service of HKP, a trading fund department, is intended to be financially self-sufficient.

4. In 2001, the Public Accounts Committee (PAC) of the Legislative Council examined the Director of Audit’s Report No. 36 on the results of value for money audits, which covered, among other things, the CA service provided by HKP. In its report tabled in the Legislative Council in July 2001, the PAC expressed concern that:

- (a) there had been a significant variance between the estimated and actual number of digital certificates issued by HKP (171,000 in the period January 2000 - March 2001 versus 5,900 in the period January - December 2000); and
- (b) although HKP’s CA service was intended to be financially self-sufficient, it had been operating at a significant loss (a loss of \$1.4 million in 1999-2000 and an estimated loss of \$8 million in 2000-01).

5. In response, the former Secretary for Information Technology and Broadcasting undertook to review the Government’s strategy for funding HKP’s CA service in late 2002 in order to resolve any conflict between the Government’s financial objective (i.e. self-sufficiency of HKP’s CA service) and its broader objective of promoting e-business, taking into account the readiness of the community in adopting digital certificates, the maturity of applications using digital certificates in the market and the general development of the CA market in Hong Kong.

Latest Developments

6. Since the Director of Audit's review of the HKPCA service, the Government and HKP have been taking various measures to promote digital certificates and development of applications making use of digital certificates, and to enhance HKP's CA service. Three CAs in the private sector have also been granted recognition under the ETO.

Promotion of digital certificates

7. Although the technology underpinning digital certificates has been around for some years, digital certificates are still relatively new to the general community. To promote awareness and encourage the use of digital certificates, the Commerce, Industry and Technology Bureau, Information Technology Services Department and HKP have been working closely with industry organizations and other relevant Government departments to promote digital certificates to the business sector and the general community through seminars, exhibitions, roving shows, IT awareness courses and school talks; production and distribution of publications and CD-ROMs; and broadcast of information about digital certificates on the television and radio.

Development of Applications Making Use of Digital Certificates

8. The Government has taken the lead to promote the development of applications that make use of digital certificates. In the past few years, more applications in both the public and private sectors making use of digital certificates have been launched, providing a high level of security to customers. There are now 16 public services available via the Electronic Service Delivery (ESD) scheme that support the use of digital certificates, over 20 non-ESD services involving over 50 Government departments adopting e-Cert, and 18 internal services of the Government adopting e-Cert. e-Cert is also used in electronic submissions to regulators in the financial sector.

9. As regards private sector applications, HKP has been working closely with its business partners to develop new applications and e-Cert is now used in services such as online stock trading, betting

and auction. HKP has also partnered with four local banks to issue bank-Certs which are e-Cert variants branded with the corporate names of the participating banks. Under this model, users can conveniently apply for and obtain their bank-Certs through the branches of participating banks and then use the bank-Certs to conduct e-banking and other electronic transactions.

10. In March 2002, HKP partnered with a commercial technology provider to jointly launch a mobile e-Cert service, which is the first in the world to support wireless applications on a wide range of handheld devices for community-wide adoption. Applications supported by mobile e-Cert embedded in personal digital assistants include online stock trading and a mobile payment system where consumers can easily and securely purchase goods and pay bills via wireless devices. The Hong Kong Jockey Club, which is currently using e-Cert in its Internet betting service, is also exploring the feasibility of adopting HKP's mobile e-Cert in its Internet betting services.

11. HKPCA will soon introduce with its business partners business-to-business and business-to-customer online payment solutions such as credit card payment gateway, credit card holder authentication and corporate e-payment services.

Enhancement to HKP's CA service

12. HKP has implemented a series of enhancement measures to make its CA service more user-friendly, such as providing online application, payment and renewal services; free door-to-door delivery of e-Cert; a more user-friendly installation kit; a central key generation service for subscribers who prefer not to generate private keys themselves; and an e-newsletter to subscribers to provide up-to-date information.

Developments in the CA Market

13. Since the enactment of the ETO, three commercial CAs have been granted recognition under the ETO. They are Digi-Sign Certification Services Limited, Joint Electronic Teller Services Limited, and HiTRUST.COM (HK) Incorporated Limited. JETCO mainly serves its

members in the banking community, while HiTRUST specializes in server certificates. Digi-Sign, a subsidiary of Tradelink Electronic Commerce Limited, has issued over 90,000 recognized digital certificates which are mainly used in electronic submission of trade-related documents. Digi-Sign has also begun to expand its client base to cover the general community and the recognized digital certificates issued by it can be used in certain public services and private sector services such as Internet betting.

Free e-Cert on Smart ID Card

14. Although the adoption of digital certificates has been picking up with the promotion of digital certificates, availability of more applications, enhancement to HKPCA's service, and more entrants into the CA market, digital certificates have yet to attract widespread usage in the general community. The main hindrances lie, from the perspective of users, in the lack of applications attracting them to apply for and use digital certificates, while application developers need a large pool of digital certificate holders to make a business case for them to develop applications that make use of digital certificates.

15. To create a critical mass of digital certificate holders to drive the further development of e-business and E-government, the Government together with HKPCA have taken the opportunity of the identity (ID) card replacement exercise starting this year to offer an option of one year's free use of e-Cert to be embedded in the smart ID card. The application and issue of e-Cert will be integrated into the ID card replacement process in a one-stop manner to encourage citizens to opt for the free e-Cert. We will also carry out a massive promotional campaign to enhance the opt-in rate.

16. We believe that this unique opportunity of reaching 6.9 million people will help create a deep infrastructure to push forward e-business and promote secure transactions over the Internet. Riding on this initiative, HKP and its business partner will shortly launch new fund transfer (eCheque) and email payments services using e-Cert. We expect that, with the critical mass of e-Cert holders created by the free e-Cert on smart ID card initiative, the market will respond with more

applications using digital certificates which will in turn sustain the momentum of use and subsequent take-up and renewal of e-Cert on smart ID card as well as other media.

The Review

17. We started a review of the funding strategy for HKP's CA service in late 2002. In the course of the review, we have taken into account the latest developments mentioned and reviewed the funding strategy for HKPCA, having regard to the financial projections of HKPCA and developments in the CA market.

Financial Projections of HKPCA

18. With the promotion of digital certificates, availability of more applications and enhancement to HKPCA's service, the adoption of e-Cert has been picking up. As at end June 2003, HKPCA has issued over 130,000 e-Certs. The average number of e-Certs issued per month has also been growing - from 493 in 2000, 3,452 in 2001, 4,179 in 2002 to 5,440 in 2003 (as at June).

19. To sustain its business viability, HKPCA has, apart from enhancing its revenue stream, also implemented various measures to contain its operating costs. For instance, it has deleted three posts at manager rank through re-organization and implemented various cost cutting measures. As a result, its operating costs were reduced by over 18% from 2000-01 to 2002-03. HKPCA will continue with its efforts to contain costs through re-organization and re-engineering of its workflow where appropriate.

20. Based on the projections of revenue from the issue of personal e-Cert (other than the free e-Certs embedded in smart ID cards) and other e-Certs (i.e. organization, encipherment and server e-Certs), renewal of e-Cert on smart ID card, back-up copies of e-Cert on smart ID card, mobile e-Cert, sharing of revenue generated by its business partner, and income from other e-Cert related services, HKP expects that breakeven of its CA business would be achieved in 2006-07, and the

cumulative operating loss would be paid back in 2010-11.

Assessment and Conclusion

21. Security has been consistently cited as a key concern by parties involved in electronic transactions. The technology behind digital certificates is generally accepted by the IT industry as one of the most secure forms of authentication technology which should be promoted and adopted to enhance security in electronic transactions. Digital certificates are thus an indispensable part of our infrastructure for the further development of e-business. The Government should take the leading role in establishing and sustaining this basic infrastructure for e-business to prosper.

22. By introducing the CA service, HKP is not looking for short-term financial gains, but rather to provide an essential e-security infrastructure for the promotion of e-business in Hong Kong, with the aim of operating the service on a self-sustainable basis in a longer term. Although HKPCA has been operating at a loss, we believe that the adoption of e-Cert will pick up with the offer of one year's free use of e-Cert on smart ID card and the new applications to be launched by the business sector. The increasing number of users holding digital certificates issued by other recognized CAs would also help provide the incentive for application developers to launch further business applications using digital certificates.

23. We have examined HKPCA's financial projections and are satisfied that, while HKPCA has been operating at a loss, it should be able to be financially self-sufficient in the longer term. We have no plan to change the funding strategy for HKPCA at this stage.

Way Forward

24. We will continue to work closely with HKP to promote wider adoption of e-Cert in the community, in particular to encourage citizens to opt for the free e-Cert on smart ID card. HKPCA will also step up its efforts to launch further applications with its business partners so as to enhance usage of e-Cert. We will monitor HKPCA's financial

position closely and keep the funding strategy for HKPCA under review, taking into account the adoption of digital certificates in the community, applications using digital certificates in the market, and development of the CA market in Hong Kong.

**Communications and Technology Branch
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