

Commentary

Hong Kong's Multiapplication Smart ID Card

Hong Kong plans to implement a “smart” identity card for all residents in May 2003. This card will contain identity information and provide support for value-added applications from government and third-party businesses.

Hong Kong's Immigration Department publicly launched its existing ID card system in 1987, with its supporting computer systems having been commissioned in 1982. Much has changed in technology, politics, business and the population in the 20 years since the system was originally conceived, making it outdated and no longer able to meet the growing needs of the Hong Kong Special Administrative Region (SAR) government.

Between November 1999 and June 2000, the Hong Kong Immigration Department studied the feasibility of introducing a new ID card and the supporting back-end computer systems to meet growing demand. As a result, the Smart Identity Card System (SMARTICS) project was launched as a “smart” replacement for the current antiquated system and as a key part of its Digital21 strategy for building a digital economy. Public implementation of the project is planned to begin in May 2003, with complete replacement of the existing ID card to occur over a four-year period.

Although Hong Kong already has an ID card, the new card is controversial because it will support applications for government and third-party business interaction as well as provide identity information. As opposed to many countries, the primary reason for the controversy is not “Big Brother-related”; instead, it is fueled by concerns of how secure the cards will be against forgery and theft, as well as how much data will be stored on the cards, and the security of that data. The Hong Kong SAR government is the first to implement a multipurpose, multiapplication smart ID for its entire population. These applications are intended to enhance the efficiency and delivery of government services, as well as provide benefits such as convenience, access, greater security, easy auto-immigration clearance (in 15 seconds) and streamlined, secure e-commerce.

Despite serious privacy concerns, government surveys indicate that citizens generally support the smart ID card. The government has stated that the benefits gained by e-business, online services and digital government outweigh the security and privacy risks. Also, compared to many other countries, Hong Kong's small population of 6.8 million makes this a relatively low-cost project. The entire rollout — including the cards, devices, terminals, network hardware, supporting computer systems and integration into existing systems — is expected to cost HK\$3 billion (\$392 million).

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Studies found only a 10 percent cost difference in implementing a system based on a smart ID vs. a non-smart ID. It was also determined that the cost of the card would be the same whether it was used exclusively for multiple immigration applications or for multiple applications by the government and by third parties. Based on the government's feasibility study recommendations, the new smart ID will likely be a contact card.

Security of the smart ID and its contents has been a top concern. Only the most basic information is stored on the card, ensuring limited misuse if it is lost or misplaced. Instead, information about the services to which the consumer subscribes will be combined with the ID of the consumer. As minimal information is stored on the card, the consumer need only update the card with the basic information, such as which services are subscribed to. This can be done from a backup performed by the consumer or by the third party, making the process much easier than replacing lost credit cards.

The card is secured by using biometric fingerprints consisting of both thumbprints, which are stored as data that cannot be used to reconstruct the record of the thumbprints through reverse-engineering. Recording the information of two thumbprints provides a form of human redundancy — in the event that one thumb is damaged, the other can still be used to check identity.

Not only is the card owner authenticated by the reading device, but the reading device is authenticated by the card before either can interoperate with each other. The smart ID also supports an on-card set of permissions for which class of device it can authenticate, and what functionality it can provide to that device. The data on the card is segmented and encrypted using separate keys, only allowing access to data that is authorized by their role. An on-card cryptoprocessor performs secure key generation and provides secure key storage and secure key usage for digital signature and message encryption key pairs. Encryption will be in the form of SHA-1 hash function, 1,024-bit RSA, with digital certificates conforming to the X.509 v.3 standard.

Enterprises can take advantage of the smart ID by 1) using the ID and authentication of the owner provided by the card or 2) by loading applications onto the card itself. A government-appointed authority will determine and control which applications can be loaded onto the card, and will manage the certification of these applications. This authority will also govern which devices can be used under the smart-card scheme.

Once the authority certifies an application, installation on the smart ID will not be mandatory. Instead, it will be up to each individual card owner to decide which optional applications he or she wants to use. The card owner will also be able to view the information stored on his or her card by any of the applications by using a home PC. The only mandatory applications will be to provide a unique identity to any individual residing in Hong Kong, as well as immigration status and driver's license. Additional government applications will be linked to the ID, such as tax, jury duties, voting and appointment/meeting management, without the need to store additional information on the card itself.

Bottom Line: The Hong Kong SAR government is continuing its history of pioneering smart-card use. Once implemented, Hong Kong will be well-positioned to deliver efficient government services as well as provide greater security, community benefits, access and streamlined secure e-commerce to its entire population. The implementation of the SMARTICS project will take Hong Kong a long way toward its goal of being one of the first truly digital economies.