

Fingerprint Authentication

Chen Tai Pang, Lawrence

Institute for Infocomm Research

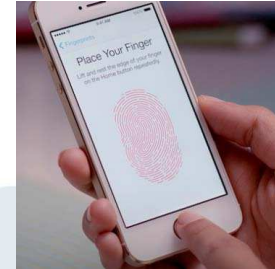
Chairman, Biometric Technical Committee

IT Standard Committee

Context: Threat of Mobile Devices to Traditional Banks



**REPLACED BY?
SECURITY?
ACCESS TO CUSTOMER?**



OR?



Payment Server

Type of Smart Cards with Biometrics

Memory Card

- Only store the biometric template on card
- Lowest cost but lowest security
- Eg: e-passport

ISO/IEC 7816-11

Match-on-Card

- Able to perform template matching on card.
- Stores template of owner during registration
- Performs matching of query template send to smartcard with the already enrolled template
- Hybrid or full match-on-card type
- Balances cost and security

ISO/IEC 24787

System-on-Card

- Contains the biometric sensor on card
- Performs biometric data capture, feature extraction and matching on card
- Highest cost and security

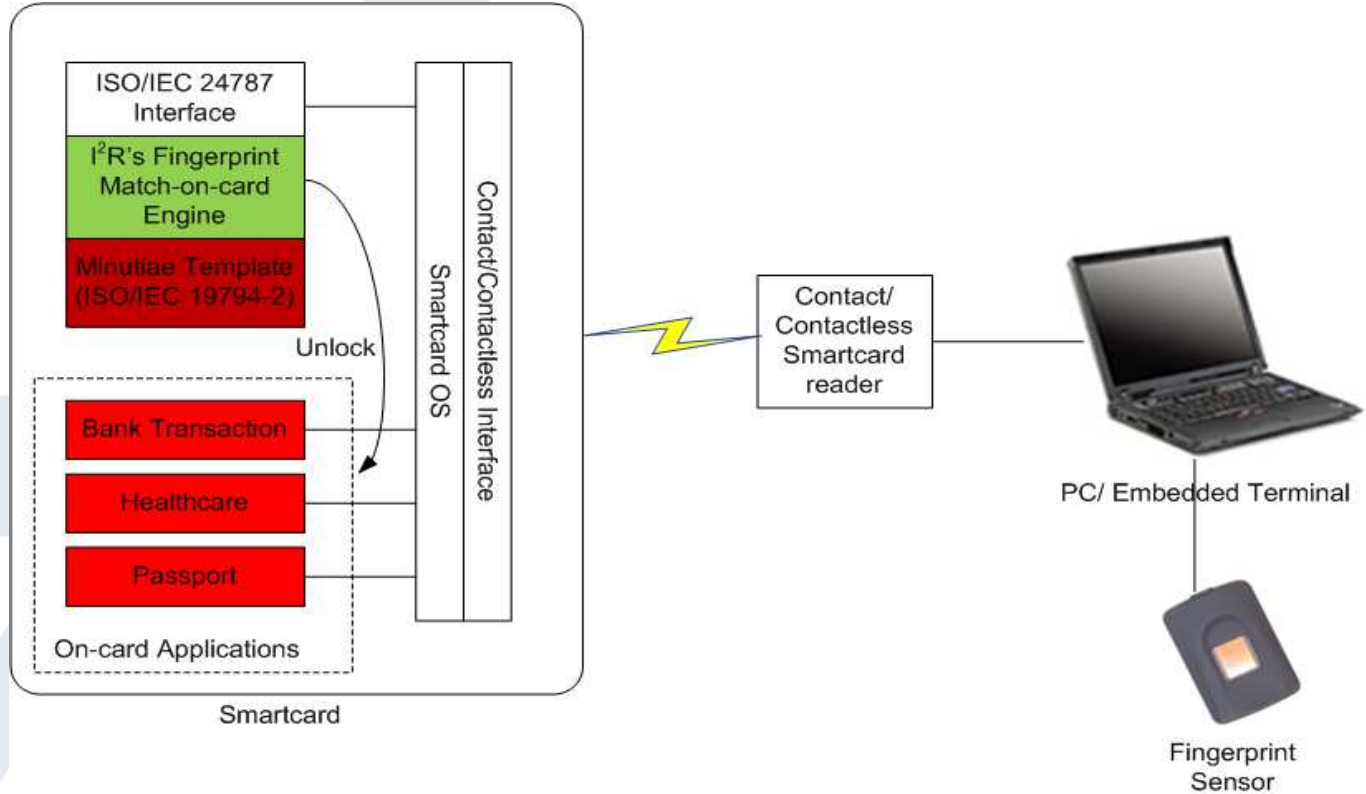
ISO/IEC 17839-1
ISO/IEC DIS 17839-2
ISO/IEC CD 17839-3

ISO/IEC Standards

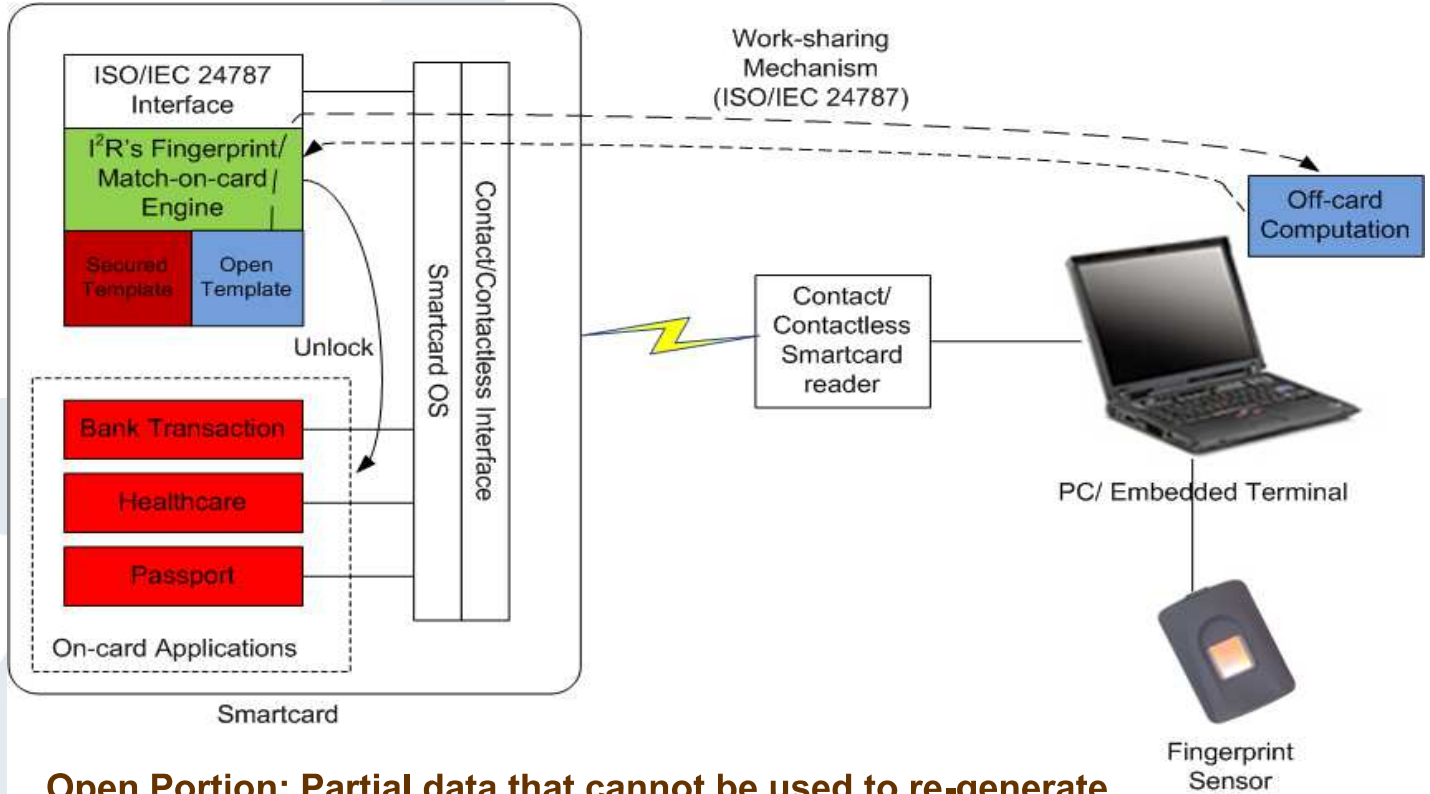
SC17:

- ISO/IEC 7816-11:2004 Identification cards -- Integrated circuit cards -- Part 11: Personal verification through biometric methods
- ISO/IEC 24787:2010 Information technology -- Identification cards -- On-card biometric comparison
- ISO/IEC 17839-1:2014 Information technology -- Biometric System-on-Card -- Part 1: Core requirements
- ISO/IEC DIS 17839-2 Information technology -- Identification cards -- Biometric system on card -- Part 2: Physical characteristics
- ISO/IEC CD 17839-3 Information technology -- Identification cards -- Biometric system on card -- Part 3: Logical information interchange mechanism

Full Match-on-card (MoC)



Hybrid MoC



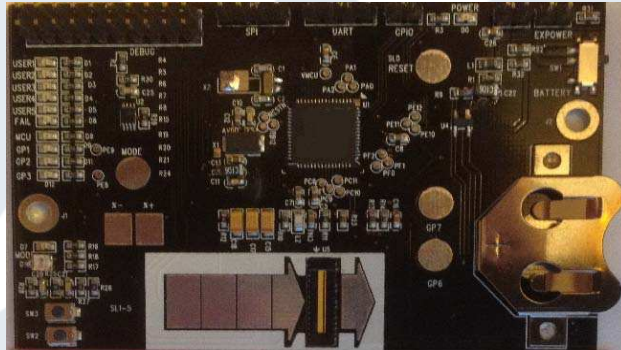
Open Portion: Partial data that cannot be used to re-generate template. Used to speed up operation.

Secure Portion: Always retained in secure memory.

Fingerprint System-on-card

Features:

- Usual contactless card form factor, with area/swipe fingerprint sensor
- **Bend-able?**
- 32-bit MCU with smartcard chip.



Functional prototype
with swipe sensor.

Confidential

CREATING GROWTH. ENHANCING LIVES.



BTC: ISO Standards

- Biometric Technical Committee, Chairman

SC17:

- Editor of ISO/IEC 24787-2:2010 (on-card biometric comparison)
- Editor of ISO/IEC DIS 18584 Test Methods for on-card biometric comparison applications

SC37:

- Editor of ISO/IEC 29794-4:2010 (biometric sample quality: finger image) and co-editor for ISO/IEC 29794-4 (biometric sample quality: framework) and ISO/IEC 19794-2:2010 AM1 (finger minutiae data)



THANK YOU

