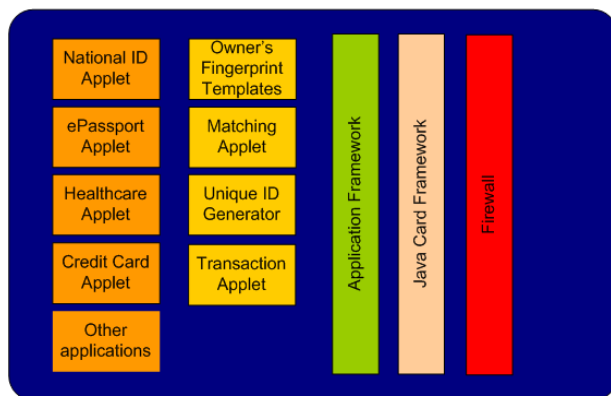


Bio-Java Card

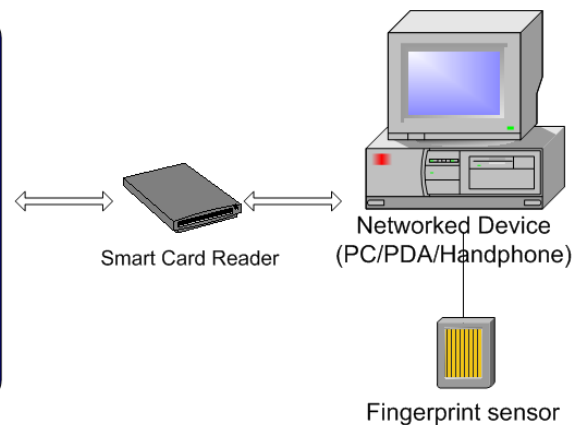
Introduction

Smart Card is considered to be one of the most secured means to store biometric templates while providing mobility to the card user. Traditionally, the biometric template stored in the smart card has to be transmitted to a local terminal such as a PC or PDA to perform user verification. Unfortunately, this method reduces the security level of the system.

To avoid revealing the biometric template stored in the smart card and thereby increasing the security level of the system, the identity verification is performed on the smart card itself. If verification is successful, subsequent transactions are then enabled. I²R's Bio-Java Card technology is a biometric enabled smart card running on Java Operating System for identity verification on the smart card itself using fingerprint technology.



Smart Card



Overview of Bio-Java Card Processing

Challenges

The main technological challenges are:

- Ability to perform fingerprint matching within 2 seconds so that the waiting time is acceptable for the public.
- Ability to perform the fingerprint matching with limited working memory.
- Low cost solution so that it can be used in most of the smart cards present today.
- Sufficiently high accuracy with acceptable level of False Acceptance Rate and False Rejection Rate.

Specifications

- Smart Card with 8-bit, 5 MHz CPU core, 2Kbytes RAM and 8Kb EEPROM or better
- 7Kb footprint
- Requires minimum of 460 bytes RAM
- Average processing time is 6 sec. with 8-bit 5 MHz Java Card and 2 sec. with 16-bit 25MHz Smart Card
- Customizable template size (min. 128 bytes for fingerprint)
- Running on Java, but can be customized for any smart card Operating System

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Performance

Average Verification Time:

- 8-bit Java Card running at 5MHz
CPU: 6.5 seconds
- 8-bit Java Card running at 30MHz
CPU: 2.4 seconds
- 16-bit Java Card running at 25MHz
CPU: 2.2 seconds
- 16-bit Proximity Card* at 13.58MHz
CPU: 1.2 seconds

*Note: The communication throughput of this card is 424Kbps.

Benefits

- High security - the data stored securely in the chip can prevent lost or stolen identity cards from being altered or used by other people.
- Greater convenience - the card can be used for multi-applications e.g. ID card, passport and library card, all by using only one card.
- Fast Quality service - services (government or commercial) can be done online at home or at self-service kiosks without long queues and waiting times.

Applications

Examples of applications include:

- Smart VIP (Electronic Passport)
- Security Access Card
- Biometric Enabled Machinery
- PC logon
- Healthcare
- Mobile and electronic commerce for next generation mobile phones
- National identity card system
- Public Key Infrastructure (Private Key Management)
- Bank Card/ Credit Card