



# **Beyond PIN**

## **Biometric technology in payments**

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**Precise Biometrics**

**Multos World, Malaysia**  
**2009**



# Topics

- **Biometrics – a market overview**
- **Different biometric deployments**
- **Biometrics in use in Asia**
- **Integration/enhancement to EMV**
- **Biometrics in banking – value-add and impact**
- **Match-on-Card for Multos**
- **Future**



# This is Precise Biometrics



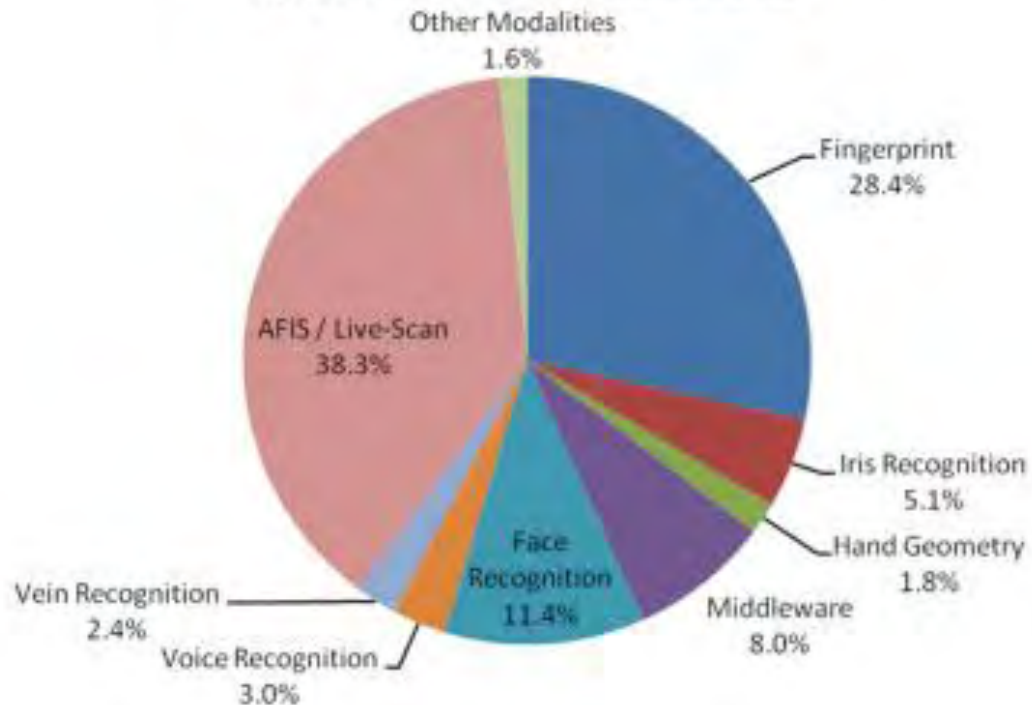
- **World-leading supplier of Match-on-Card**
- **Founded in 1997**
- **Headquartered in Lund, Sweden**



# Biometrics market

**Biometric Revenues by Technology, 2009**

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# Biometrics – A quick comparison

Finger	Face	Iris	Vein	Voice
<p>High user acceptance, standardized, cost-efficient, several suppliers, WBF in Win7, active use only, most widely deployed biometrics</p>	<p>2d face recognition can use any camera – low cost, low learning curve for user, non-touch</p>	<p>High accuracy, can be used also on the move (short distance), non-touch</p>	<p>High accuracy, <b>"invisible"</b> biometrics – leaving no trace, semi-non touch, active use only</p>	<p>Perceived as non-intrusive, low-cost hardware,</p>
<p>Some association with criminal data-bases/law enforcement. some sensors (optical mainly) subject to fake finger challenges</p>	<p>Can capture images in passive mode (unknown to the person) - may seem intrusive, dependant on environmental factors for good image capture, perceived low accuracy</p>	<p>Lower user-acceptance – may seem intrusive, few suppliers, more expensive hardware</p>	<p>Sole supply only-controlled by patents, no standardization, very little research – eg no studies on how veins age, expensive hardware</p>	<p>Risk of high false reject rate – dependant on environmental factors (background noise, etc), perceived as challenged by sickness (cold, cough, etc)</p>



# Matching possibilities

**1:n = identification**



**1:1 = verification**



## Identification, 1:n

- **Fingerprint is stored and matched in a database**



# Verification, 1:1

## Match-on-device



## Match-on-Card

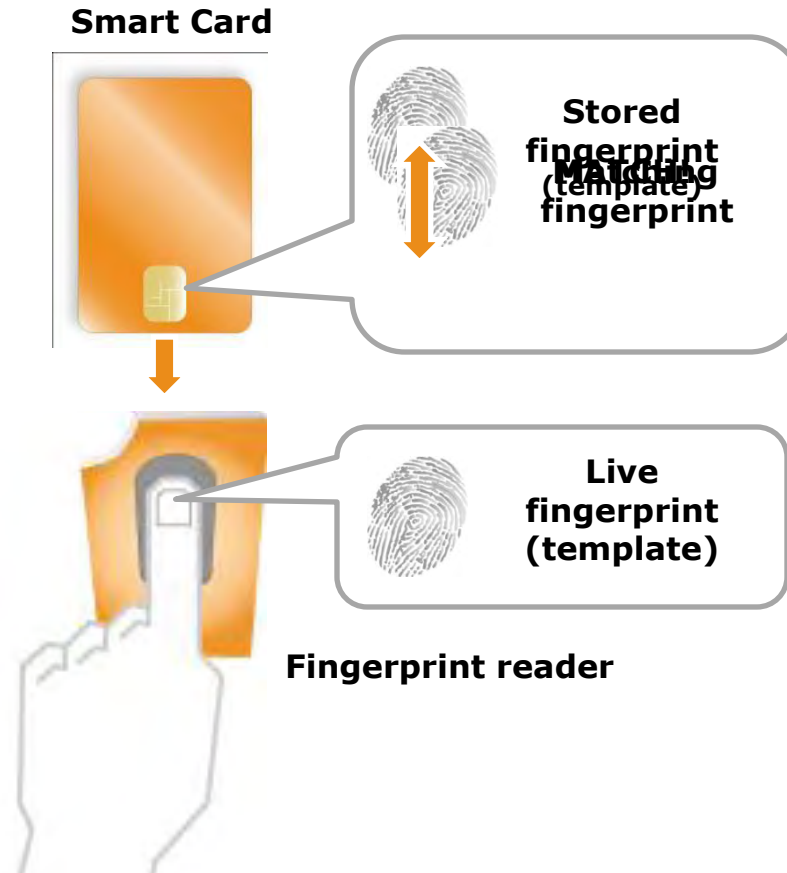


## Match-on-PC/Server



# Precise Match-on-Card™

## This is how it works



# Different biometric deployments

- **Online databases**
  - Pay-by-Touch
- **Match-off-Card**
  - Hong Kong Immigration Card
- **Match-on- Card**
  - Thailand National ID
  - US Department of State



## **Biometrics in use in Asia**

- **Banks in Japan**
- **Hong Kong national ID**
- **Thailand national ID**
- **Aeon Bank, Hong Kong**



# Integration/enhancement of EMV

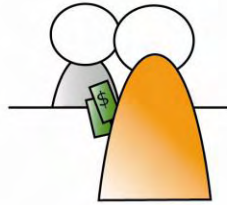
- **Third factor authentication**
  - Resolve shoulder surfing
- **Alternative to PIN**
  - Secure against forgetfulness
- **Activation of Card**
  - Secure against card distribution fraud
- **Match-on-Card**
  - Compatible with existing Security Architecture
  - Card remains issuer representative



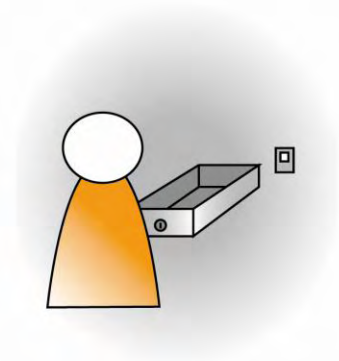
**BANKING SOLUTION**  
**- CUSTOMERS -**



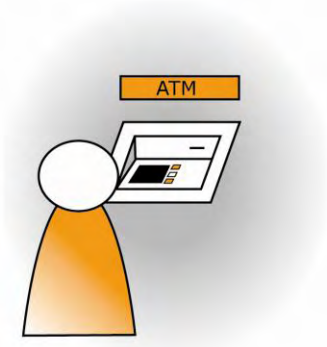
**BANK KIOSK**



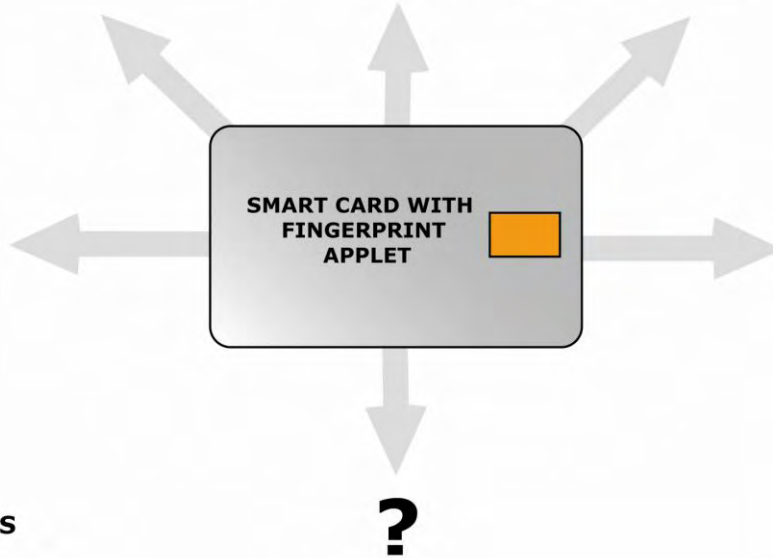
**TELLER/CASHIER**



**SAFE DEPOSIT BOX ACCESS**



**AUTOMATED TELLER MACHINES**



**E-BANKING/E-ACCESS**



**BANKING SOLUTION**  
**- EMPLOYEES -**



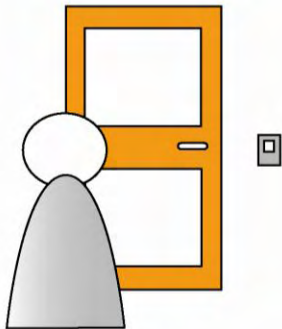
**CORPORATE ID CARD**



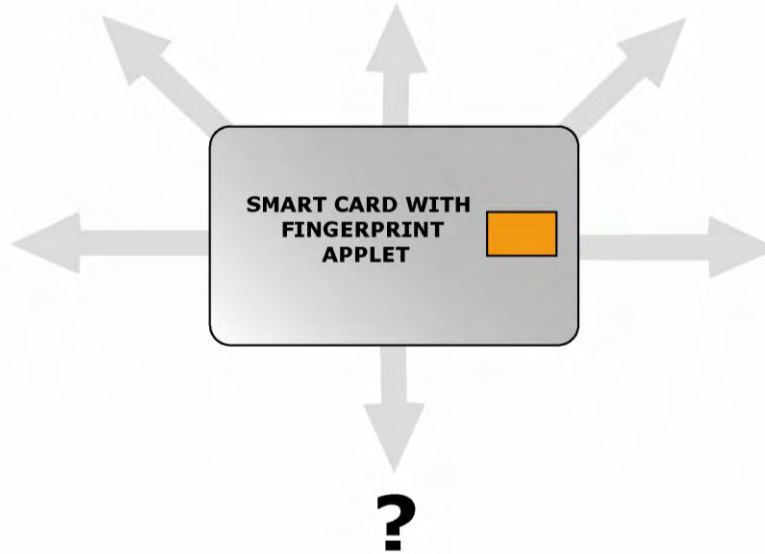
**ELECTRONIC SIGNATURE/  
AUTHENTICATION**



**SINGLE SIGN-ON/  
LOGICAL ACCESS**



**PHYSICAL ACCESS**



**CASHIER/TELLER**



# **Impacts of biometrics in banks**

- **Resolution of the forgotten PIN problem**
- **Need to enroll the users' biometrics**
- **Personal data and privacy**
- **Distribution and delivery of cards**



## Match-on-Card on Multos Cards

- **Precise BioMatch™ M is a MEL codelet used to add Precise Match-on-Card™ technology to any MULTOS enabled smart card.**
- **Precise BioMatch™ M is implemented according to the MULTOS Biometry API, which ensures interoperability among different cards and MEL applications.**
- **Precise Match-on-Card is also available natively on many of the products of Multos International, such as I4E and I4F**
- **Contact or Contactless – Match-on-Card will work on both**



# Implementing Match-on-Card

- **At any point of the lifecycle**
  - Production
  - Personalization
  - Any time after issuance
- **Precise BioMatch is loaded or *activated* – already available on all cards!**
- **Flexible introduction of fingerprint recognition in an already installed card base**
- **Greatly reducing the cost associated with deploying a biometric authentication system**



## **Future - Banking**

- **There is a strong trend to find alternative ways of authenticate users also in banking. Not necessarily for verifying financial transactions.**
- **Already existing project and initiatives around the world – Japan, India, Africa**
- **From a technology standpoint we are there today. Our Brazilian partner Smartcon demonstrated EMV Biometrics at the Multos World Event in Taipei already 2006**



# Benefits for banking

- **More convenience for the cardholder**
  - **Authenticate himself/herself without typing anything – with the same security offered as off-line PIN**
- **Cardholder privacy**
  - Match-on-Card technology assures that the template is stored only on the chip and not in a database, etc.
- **Avoids the most trivial of all EMV attacks: PIN social-engineering and shoulder surfing**
- **Backward compatible**
  - Non-biometric EMV Terminals and non-biometric EMV cards interoperate seamlessly with biometric-enhanced EMV terminals and cards



## Future – SIM

- **Complementing PIN**
  - Third Factor
  - Increased Security
  - Protection against “Shoulder Surfing”
- **Replacing PIN**
  - Resolving Forgetfulness
  - Illiteracy / Inumeracy
  - Ease of Use
- **Making the card Truly Personal**
  - Preventing shared use
  - Non Duplication



## Combination of Two Current Developments

- **Banking**

- Make the token Truly Personal
- Create a Log Trail with Irrepudiation
- Secure Sensitive Parts of the Network

- **Mobile Cash**

- Emulate or Integrate Banking
- Retain the Established Attraction of the Mobile
- Set a New Transaction Standard



## **Concrete Advantages of Biometrics**

- **Banking Acceptance**
  - Personal
- **Technological Fit**
  - Match on Card
  - JAVA
  - Limited Size
- **End User Acceptance**
  - Trust
  - Ease of Use and Speed
- **Differentiation from Other Security Mechanisms**



# Thank you!

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