Towards non-repudiable authentication through biometrics and smart cards

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Presented by: Ishmael Msiza

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Overview

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- A Few Definitions
- Reasons for Identity Theft
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- Some Challenges

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Part A: Introduction

A Few Definitions

- Identity authentication refers to an act or process of verifying the attributes and/or characteristics of some thing

- This thing can be anything, however in the context of this discussion, this thing could be a person, a network device, or even an identity authentication device itself

- This act or process of verifying these attributes could be knowledge-based, token-based, biometric, or a combination of some or all three

- An act or process where one thing illegally assumes the identity of some other thing, is known as identity theft

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Reasons for Identity Theft

- Classified information access

- Employment access

- Insurance claims

- Medical identity theft

- Criminal identity theft

- System reproduction

- Hobbyism

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Identity Theft: How is it Done?

- Knowledge based platform – e.g. PIN/password hack or social engineering

- Token based platform – e.g. people exchange, lend, and/or lose their access cards

- Two form platform – e.g. steal somebody's ATM card, provided that you have access to their PIN

Possible Solution?

- Two form platform – biometrics and smart cards

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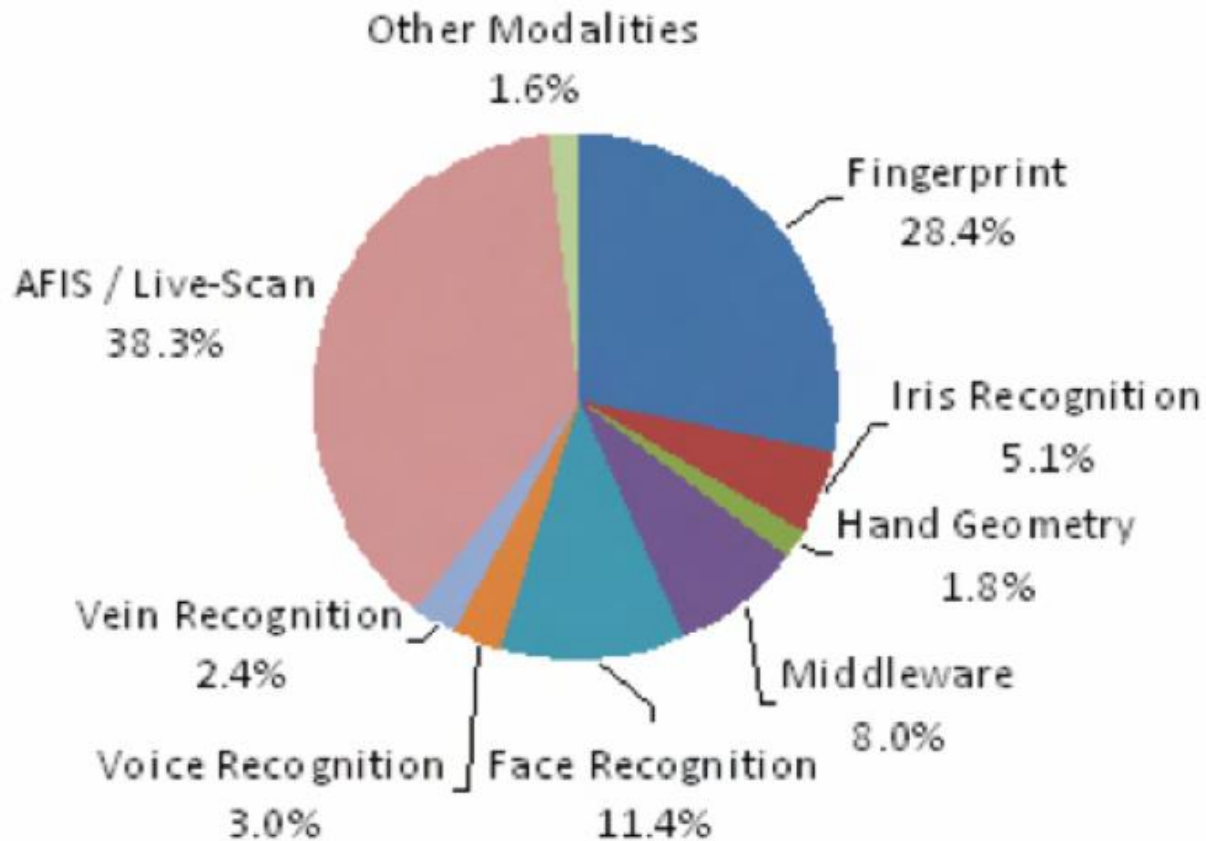our future through science

Part B: Biometrics

Biometric Authentication

- A science that uses a person's behavioral and/or physiological traits to establish their identify, or verify their claimed identity

- These traits could be their iris, fingerprint, face, voice, gate, and others

- Fingerprint recognition is currently the most popular mode of biometric authentication
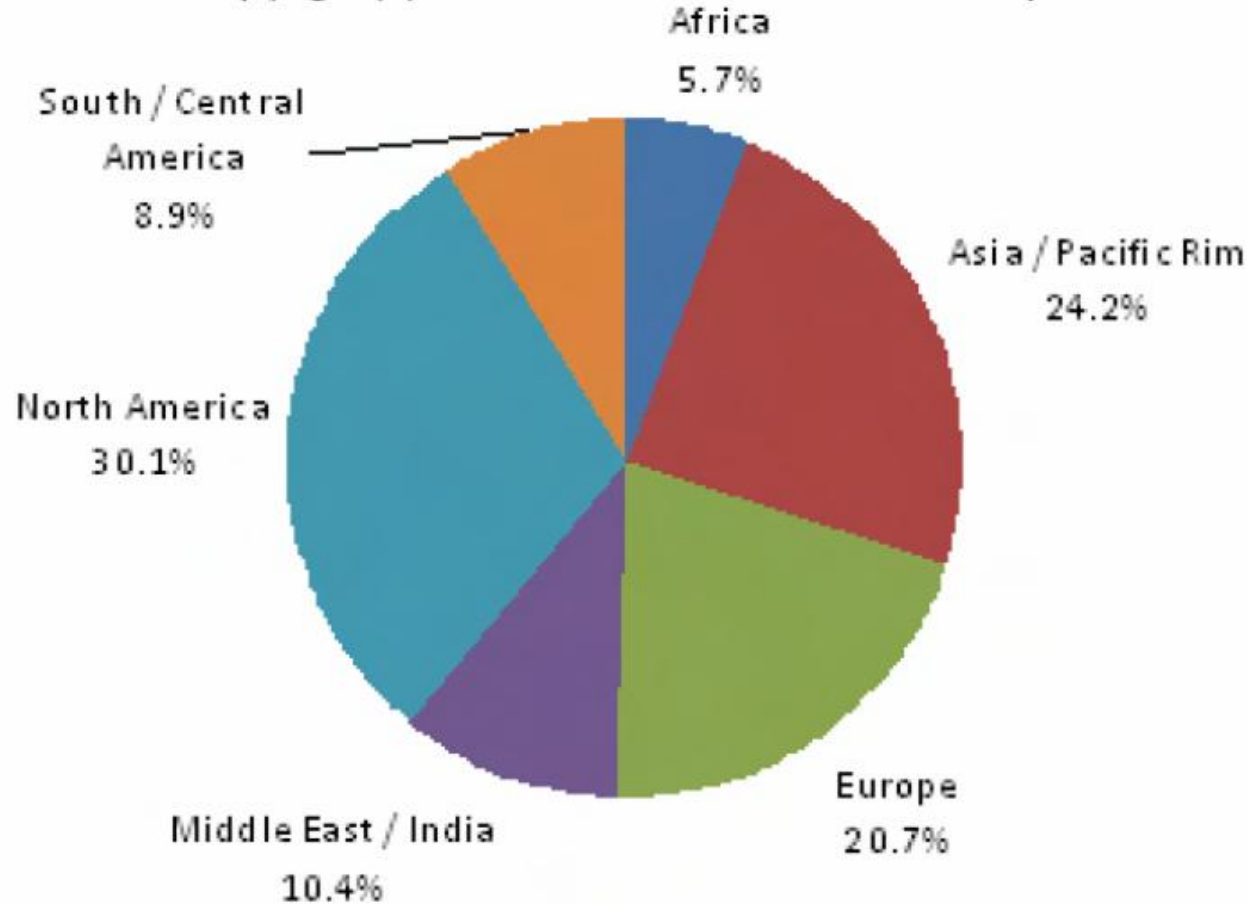
Biometric Revenues by Technology, 2009

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Other Modalities 1.6%

Fingerprint 28.4%

AFIS / Live-Scan 38.3%

Iris Recognition 5.1%

Hand Geometry 1.8%

Vein Recognition 2.4%

Middleware 8.0%

Voice Recognition 3.0%

Face Recognition 11.4%

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Biometric Recognition – Africa Needs to Catch-up

% of Biometric Market by Global Region, 2009

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- Africa 5.7%
- Asia / Pacific Rim 24.2%
- Europe 20.7%
- Middle East / India 10.4%
- North America 30.1%
- South / Central America 8.9%

Part C: Biometrics and Smart Cards

Fingerprint Recognition and Smart Cards

- Secure storage (replaces vulnerable passwords)
- Portable storage (provides a "portable" biometric database)
- Non-repudiable (provides positive audit trail of events)
- Store-on-card and match-on-device
- Store-on-card and match-on-card
- Cost savings (reduces helpdesk support costs for password resets & work related costs)
- Can bind cardholder to card

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Biometric Authentication Solutions

- Fingerprint recognition systems
- Iris recognition
- Otoacoustic emissions
- Face recognition systems

Smart Cards

- Smart ID systems
- Smart card designs
- Service delivery terminals
- Smart card security research
- Secure smart card applications

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Some Challenges

- Integrity versus secrecy

- Compromise

- Revocation

- Sensor spoofing/Liveness detection

- Peer review methods

- Privacy considerations

Source: M1/07-0185rev

- Environmental conditions

Part D: Conclusion

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Concluding Remarks

- The scourge of identity theft is becoming rife, mainly due to people's unfavorable conditions

- Current identity authentication methods are easily compromised

- There is an urgent need for Africa to adopt biometric authentication technologies

- A platform that combines the use of biometrics and smart cards for identity authentication is not easily compromised

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Questions, Answers, and Discussions