

# Speaker Verification for Mobile Authentication within the Broader Biometrics Security Sector

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# Agenda

- Mobile Biometrics Landscape
- How Mobile Biometrics Compete
- How Mobile Biometrics Complement
- Summary

# Mobile Biometrics Landscape

## Speaker

- Predominate biometric
  - Centralized established architecture (any phone)
  - Emerging local device and hybrid architectures
- Applications – Government, Enterprise and Commercial

## Finger Print

- High End Mobile or Smart Phone
  - Imbedded dual purpose sensor - local enroll/match (instead of trackball)
    - Authentec (Leader) – RF live skin layer, UPEK – Silicon active capacitance
  - Commercial Applications Emphasis
- Specialized Mobile Devices
  - Imbedded sensor with local or centralized matching
  - Government (AFIS) and Specialized Applications Emphasis
- Mobile Phone SIM Card
  - Stored and Matched on SIM
    - Precise Biometrics – Based on e-government standardized card solutions

# Mobile Biometrics Landscape...cont.

## Facial

- High end or smart phone software
  - Emerging local device and hybrid architectures
- MOBIO - Maemo Nokia N9900, FP7 European research project
- Polar Rose FaceLib, Full face detection & tracking of faces in video

## Iris

- Emerging smart phone software
- Local enroll/match
- OpenCV (computer vision)

## Signature

- PDA/Smart phone Pen Based
  - Crypto-sign, Cyber-sign

## Finger Vein

- R&D

# How Mobile Biometrics Compete

All of today's biometrics utilize the same high level functional processes. Beyond that each Biometric diverges into their own unique functional processes.

- Speaker
  - Most natural for speech applications
  - Contactless (hygiene)
  - Enables hands free applications
  - Software based, ubiquitous
  - Lower cost
  - Dynamic anti-spoofing schemes
- Finger
  - Most natural for large number of touch applications
  - One swipe ease of use
  - Fingerprint does not vary greatly over time
  - Can support large number of government initiatives

# How Mobile Biometrics Compete

- Facial
  - Most natural for social applications with photos and videos
  - Contactless
- Iris
  - Potential high accuracy
  - More private than facial
  - Contactless
- Signature
  - Most natural for pen based applications

# How Mobile Biometrics Complement

- **Multi-biometric (fusion) for better overall authentication result**
- **One biometric can operate when the other is unavailable**
- **Current Examples**
  - **Many Specialized Multi-modal Mobile Devices**
    - L-1, Motorola, MaxID, MorphoTrak
  - **Mobile Biometry (MOBIO)**
    - FP7 European research project develop new mobile biometrics services face and voice, individually or jointly.
    - Looking for use cases now
  - **SPIE**
    - A face verification scheme fused with voice and handwritten signatures
  - Apple patent application

# Summary

- Commercial mobile phone biometrics
  - Voice currently leads - moving towards standards
  - Other biometrics & multi-biometrics will grow
    - Usability, accuracy, demand and costs uncertain
    - Methodology not standardized
- Specialized mobile devices
  - Finger and Iris lead - established and standardized
  - Multi-modal, multi-biometrics required