



# Privacy in Biometric Applications

*RISE conference  
December 10, 2010*

Marcel Boogaard  
HSB identification B.V.  
boogaard@hsb.nl

# Topics



- About HSB identification
- Vision on Biometrics
- Protect Our Privacy
- The Bright & Dark Sides of Biometrics
- Privacy in Biometric Applications
- Case studies

# Our Strategy



- Focus: “Electronic identification of People”
- Innovation: Deliver best of class biometric middleware & solutions
- Main position in niche market of middleware & solutions
- Multiple award winner for own product innovations
- Long history in smart cards & biometrics



# Proven Products



Focus on own developed software products:

- **BioRegistrator**<sup>®</sup> , multimodal biometric platform
- **CardCare**<sup>®</sup> , smart card management system

Building identification *solutions* with this products:

- Enrolment registration, verification systems
- Multimodal biometric matching capability
- Mobile or fixed



# Our Markets



- Government, NGO's: homeland security, justice, immigration, defense
  - Visa / ePassport enrolment & verification, Civil ID, Voter registration, National ID, people control, Registered travelers, biometric border control
- Healthcare
  - (national) health cards, Health ID solutions
- Finance, retail
  - biometric payment services
- Education / industry
  - multifunctional campus card solutions, company cards (logical & physical access control, payment), citizen cards

# Vision



- Growing opportunities in identification
- More & larger databases
- Strong need for interoperability: standardisation
- Cost effective solutions
- More deployments will result in
  - New technologies
  - Multi-modal strategy
  - Better accuracy
  - Smaller / mobile devices



# Protect Our Privacy



- What consumers *want*...

The image displays three social media profiles to illustrate consumer privacy concerns:

- Facebook:** Kathryn Orland's Profile. The profile shows a photo of Kathryn Orland, her name, and a list of friends including Reiner Heyden, Mich Sardell, and Erin Akag. A sidebar on the left contains navigation links like 'My Profile', 'My Friends', and 'My Privacy'. A section titled 'Oregon Flyer' is also visible.
- LinkedIn:** Martin Buckland's Profile. The profile shows his name, a photo, and a bio: 'I am passionate about helping the 500k+ executive and those who aspire to become business leaders manage their careers.' It lists his current role as 'Management Consulting' in Toronto, Canada, and his education at 'Hendon Police College, London, UK' and 'Liding College Upper School'. It also shows '500+ connections' and a list of websites.
- Twitter:** A screenshot of a Twitter page showing a tweet from David Warlick: 'Just back from bike ride -- humid here. Finishing up fun project... more later...'. The page also shows a list of other tweets and a sidebar with user avatars and a 'Welcome back, David Warlick' message.

acnttien jaar gevangenisstrat en tbs wegens moord, ontucht en het zoekmaken van een lichaam. Kort na de uitspraak verbrak Sander V. de samenwerking met de advocaten Anker en Van der Goot kort na de uitspraak. Hij wilde graag een frisse blik op zijn zaak in hoger beroep, aldus de laatste. In een reactie op het besluit van Moszkowicz meldde Van der Goot V. niet terug te kunnen nemen als die dat zou willen. „Er is sprake van een vertrouwensbreuk.”

## Reizigersgegevens ov illegaal bewaard

DEN HAAG, 9 DEC. Gegevens van reizigers in het openbaar vervoer worden door drie grote vervoerbedrijven en de uitgever van de OV-chipkaart te lang bewaard. Het gaat om het GVB in Amsterdam, de RET in Rotterdam, NS en het bedrijf Trans Link Systems. Bovendien hebben deze bedrijven geen goed beleid voor het bewaren en verwijderen van informatie over reizen van houders van een OV-chipkaart. Dat heeft het College Bescherming Persoonsgegevens vandaag bekendgemaakt. Het verwijt NS verder studenten niet goed te informeren over in- en uitchecken. (ANP)

## NS: verbetering Fyra en Sprinter

Door een onzer redacteurs  
DEN HAAG, 9 DEC. De hogesnelheidstrein Fyra tussen Amsterdam en Rotterdam zal vanaf april

# Protect Our Privacy

- What consumers *do not want*....
- Medical data
- Travellers information
- Cellphone information
- And more....
- *How about personal biometric data ?*



# The Bright Side of Biometrics



- New technology = good
- Easy & effective (process)
- Secure data, assets
- Privacy protection



How ?

- Authentication of Card solutions
  - 1-to-1 matching

# The Bright Side of Biometrics



## Project Examples:

- Healthcare solution - considerations
  - central storage: national verification possible among all locations (1-many duplicate check) or
  - only storage on card: highest privacy protection (1-to-1 verification)
  
- Matching-on-card solutions



## Any Dark Side of Biometrics ?



- New technology = fear (ethnicity, age, etc.)
- Dirty
- Intrusive
- Criminal association
- Privacy concern



About biometrics:

*Creates identity theft or Protection of Identity ?*

# Privacy in Biometric Applications



- Functionality
- Proportionality
  - Type of data
  - Time of storage
  - Location
- Transparency
  - Persons right to check data
- Security
  - Authorizations
  - System security

# Privacy in Biometric Applications



- The Human Factor
  - Create user awareness
  - Privacy
  - Create benefits, efficiency, participation
  - Userfriendly system

# Privacy in Product Design



- Separate biometric from other information sources
  - Linked with BioID
- Encrypt information
  - Domain encryption
  - One way hash technology
- Templates vs. Images
  - Interoperability ?
- Increase accuracy levels
  - prevent ID shift
  - Improved liveness detection (fingerprint)
  - Multimodal strategies

# Biometric case studies

- Healthcard
- Biometric Authentication Services
- Duplication systems: who is who ?
- ID control in Justice chain



# Healthcard



- Healthcare solution - considerations
  - central storage: national verification possible among all locations (1-many duplicate check) or
  - only storage on card: highest privacy protection (1-to-1 verification)

# Healthcard

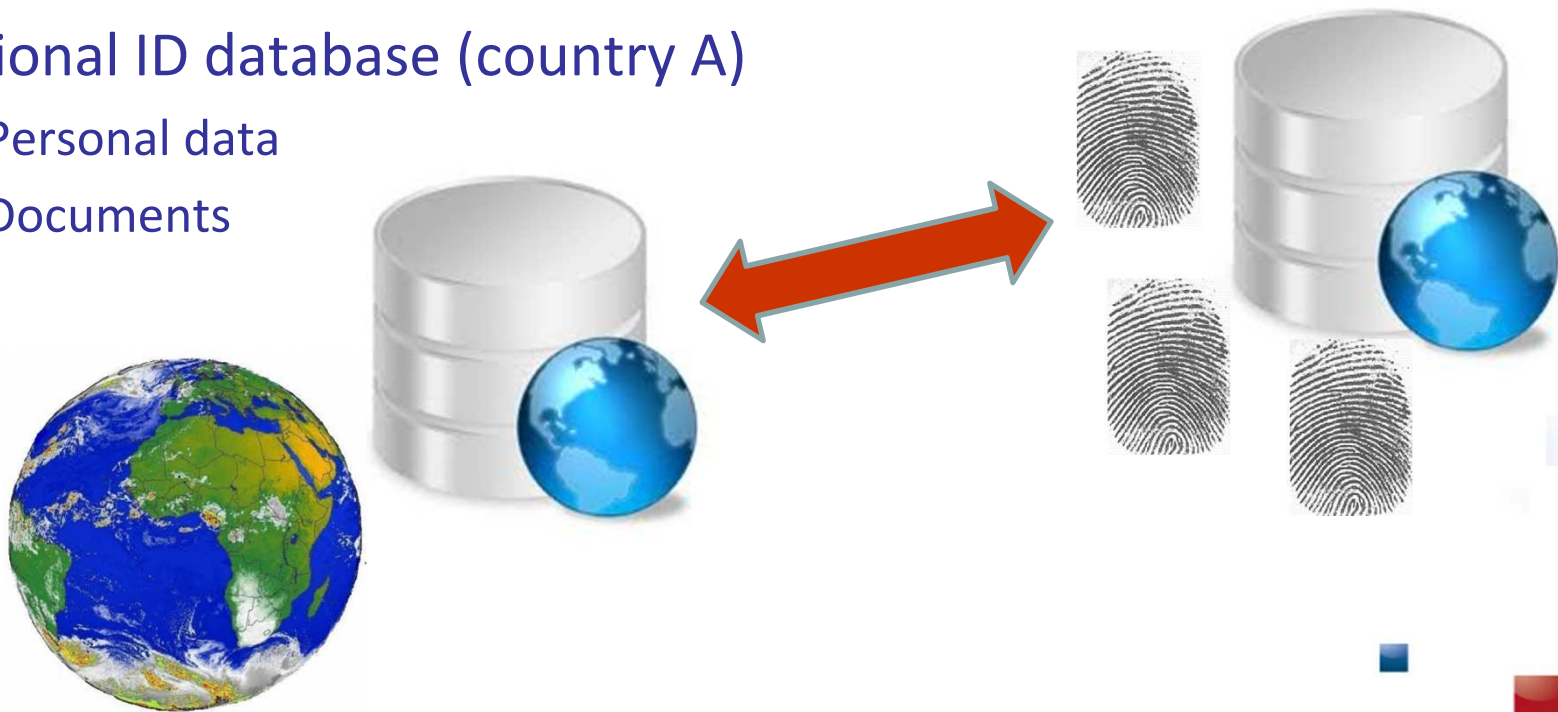
- Matching-on-card solutions



# Biometric De-duplication Service



- Biometric database (country B)
  - Biometric data & BioID
  
- National ID database (country A)
  - Personal data
  - Documents



# Who is the real Mr. X ?



Real case solution:

- Offline registration with biometric registration kits
- Encrypted files into fingerprint duplication server
- Result:

| ID                  | Registered | Sex     | Names        |
|---------------------|------------|---------|--------------|
| 123456-1            | 2010-06-31 | Male    | X            |
| <i>Matches with</i> |            |         | <i>Score</i> |
| 234567-2            | 2010-05-31 | Male    | 368 A B      |
| 000000-1            | 2010-05-21 | Unknown | 58 M S       |
| <hr/>               |            |         |              |
| 234567-2            | 2010-05-31 | Male    | A B          |
| <i>Matches with</i> |            |         | <i>Score</i> |
| 123456-1            | 2010-06-31 | Male    | 174 X        |

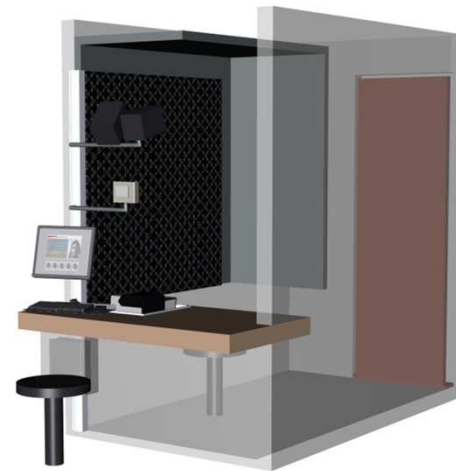
Yes or No ?

Yes or No ?

# ID control in Justice Chain



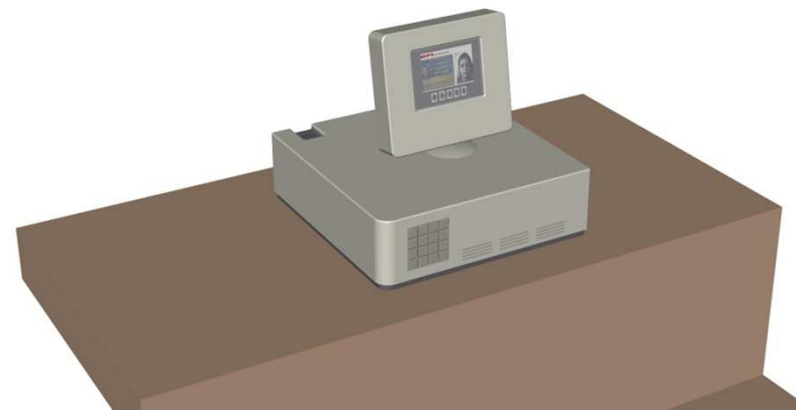
- Countrywide project with 1 unique criminal ID for police forces, courts, prison services to prevent identity fraud
- Large roll out of biometrics in prison services:
  - Fingerprint checks at transportation to courts, other prisons, hospital
  - operational in 80 prisons
  - Visitor control



# ID control in Justice Chain



- System architecture
  - Webbased biometric enrolment and verification stations
    - *Capture qualified photos*
    - *Enrol 10 fingerprints*
    - *Scan ID documents*
  - Central AFIS & BioRegistrator®
    - *Duplicate search at enrolment*
    - *Verification stations*



# Forensic vs. Civil Biometrics

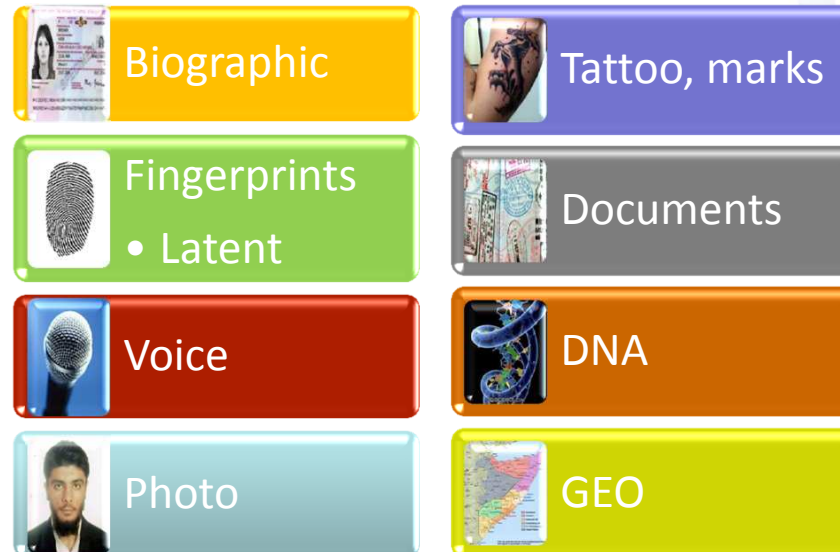


## ■ The Forensic Biometric Approach

- Intelligence (more is useful)
- Database storage

## ■ Civil Biometrics

- Less information
- Verify ID



# Some Thoughts



- Who cares about privacy ?
  - Create awareness about biometrics
- Human factor: high acceptance, transparency (what does the system do)
- Product design
  - customer dependent
  - less is more



## HSB identification B.V.

Polanerbaan 15  
3447 GN Woerden  
The Netherlands

<http://www.hsb.nl>  
e-mail: [info@hsb.nl](mailto:info@hsb.nl)