



Biometrics for trusted identity: TURBINE approach

Public eID: Cross-Border & Cross-Sector applications

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FP7 Integrated Project TURBINE (TrUsted Revocable Biometric IdeNtitiEs)



Agenda



- **Identity in the Travel Document.**
- **Biometrics in e-Identity**
- **TURBINE:**
 - A FP7 project
 - Crypto-biometrics principles
 - TURBINE challenges
- **Biometrics profile for EU cross-border application**



From Passport to e-Passport a short survey of identity check



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Travel document : passport usage



- Process for identity verification:
 1. To authenticate the document: issuer, securities, etc...
 2. To check document personalisation
 3. To check the link between document data and holder
- Majors identity's issues
 - Fake travel documents
 - Genuine travel document with fraudulent personalisation
 - Stolen travel document with photo substitution
 - “Stolen” travel document with similar individual

Travel document security issue



- Travel document & Identity:
 - an growing business for organise crime
 - Illegal immigration
- Major update on travel document
 - Electronic: to authenticate the genuine travel document and information consistency by electronic signature
 - Biometrics features: face (M), fingerprint and iris to link the document and the holder



Biometrics in e-ID



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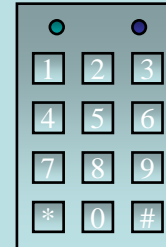
Trusted e-Identity



To have: token



To know: PIN



To be



Biometrics for e-ID ...



- Biometrics characteristics:
 - Universality,
 - Uniqueness,
 - Permanence,
 - Collectability.

It is **FOREVER!**

BUT ...

- A biometric information can be:
 - Collected without consent,
 - Captured from a trace,
 - Stolen from a data base,
- Nobody can revoke his/her biometrics
 - **Protection schemes**
are essential!



TURBINE

Biometrics for identity:

protected, trusted, revocable & multiple



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What is TURBINE?

- TURBINE is the acronym of **Trusted Revocable Biometric Identities**
- TURBINE is a FP7 funded Integrated Project (ICT)
- TURBINE started in Feb. '08 for three years
- TURBINE is a consortium with ten partners!
- TURBINE website
<http://www.turbine-project.eu>
- TURBINE is focusing on
 - “privacy protection” and associated architecture,
 - fingerprint modality and finger minutiae representation.



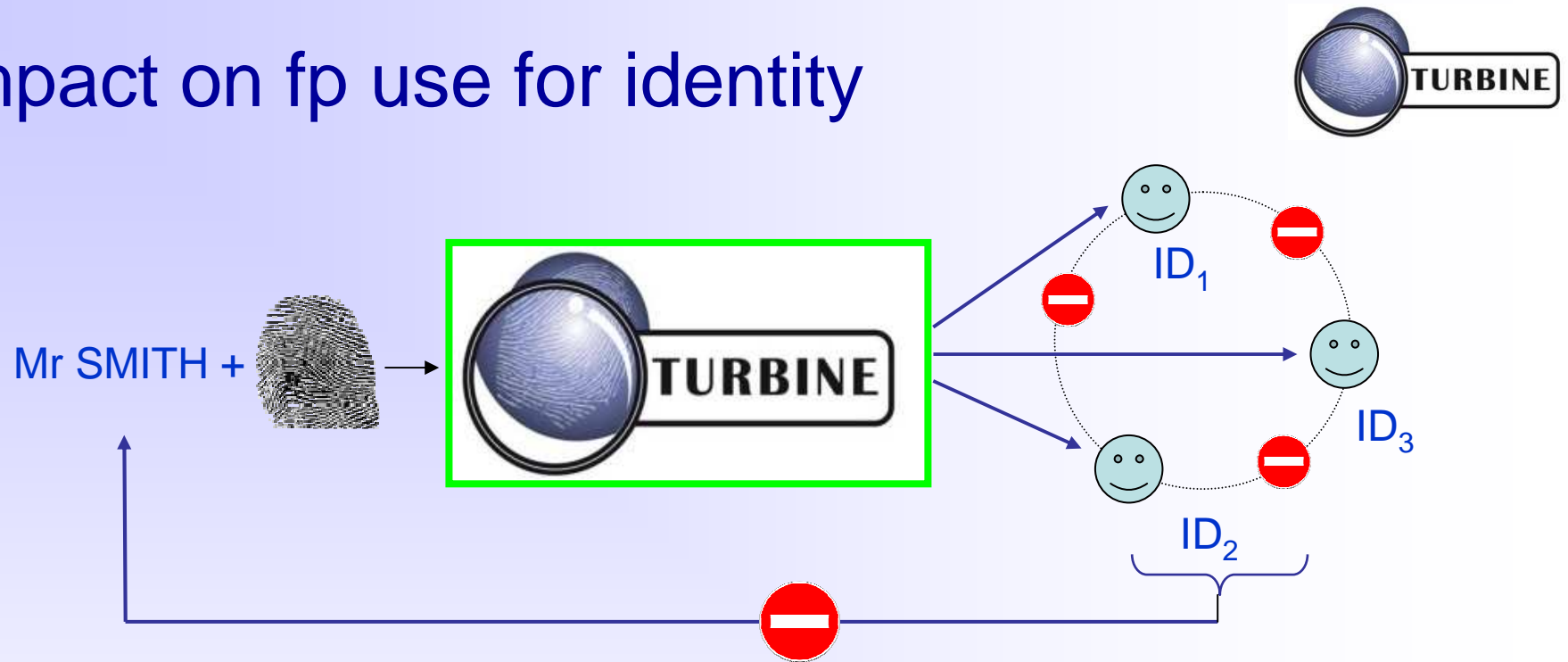
Crypto-biometrics: impact on identity management



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Impact on fp use for identity



To transform fingerprint

1. into “pseudo-identity”

- Parameters create independent identities: ID₁, ID₂, ... ID_n
- No possibility to link different “pseudo-identities”

2. without reverse-engineering capability

→ **Revocation of pseudo-identity is possible!**



Identity Management: Objectives

TURBINE assumption: performances & irreversibility.

Then, what potential impact on ID Management?

1. ID enrolment or verification (*unchanged*),
2. **Duplicate ID** check at enrolment stage,
3. **ID revocation** and **ID re-issuance**,
4. **Multiple ID** management,
5. **Stored information**:
 - Pseudo-identity,
 - Auxiliary data,
 - Supplementary data.
6. Identification of action for **personal data**
(see recital 26 of Data Protection Dir. 95/46/EC)

Bridges are needed with others project like FIDIS or PrimeLife



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Turbine challenges

- Performances
 - As example, FVC 2002: FRR (FAR 1%) = 0.11%, FRR (FAR 0.1%) = 0.14%, EER = 0.14%
 - Interoperability of solutions: PIV in US
- Security:
 - Attacks on link ability of pseudo-identities
 - Counter-measures to be adopted
- Privacy:
 - Identity management must be in accordance with EC 95/46 Directive on Data Protection
 - TURBINE expects an opinion from EDPS



Application profiles



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Application of Biometric in Identity

- CEN/ISSS Focus Group published a report on cross border identity application
 - http://www.cen.eu/cenorm/sectors/sectors/iss/focus/biometrics_fg.asp
- A combination of different storage and comparison locations assures application scenario flexibility and allows interoperability
- Some suggested examples:
 - *Border crossing, non-supervised*
biometrics stored on token and compared on device.
 - *Registered traveller*
biometrics stored on server and compared on server;
or biometrics stored on token and compared on device;
or biometrics stored on token and compared on token.
 - *Protection of sensitive medical data*
biometrics stored on device and compared on device;
or biometrics stored on token and compared on token



Conclusion

- Biometrics is a key techniques for trust in the Identity Management scheme
 - When will be it necessary? As for Travel Document:
when e-ID fraud offers business opportunities
- The biometric challenges within ID Management scheme are:
 - To provide mechanisms for trust
 - To provide privacy (or data) protection
- TURBINE objectives are to address technical barriers associated

<http://www.turbine-project.eu>



Thank you for your patience!

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