TESTING OF MRTD PRODUCTS

STATE OF PLAY

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Agenda

- Why is testing of eMRP necessary?
- What needs to be tested?
- Which specifications are applicable?
- How to run a professional test scheme?
- Where are governmental test schemes available?
- ICAO activities on developing a Doc 9303 Compliance Regime
Why is testing of eMNP necessary?

- As with every major investment product we plan to buy, we want to be sure that
  - It works as expected (Functionality incl. Interoperability)
  - It is secured against attacks (Security)
  - It sustains its quality for a long time (Durability)
What needs to be tested?

- Functionality
- Security
- Durability

Processes
Systems
E-passport

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What needs to be tested?

Test standards by international organizations

- Functionality
- Security
- Durability

Processes
- Bespoke

Systems
- Bespoke

e-passport

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What needs to be tested?

Business process must be efficient and secure

Functionality

Security

Processes

Specify and test

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What needs to be tested?
Clear architecture and test plans are key

Functionality

Systems

Integration test on site (SAT)

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What needs to be tested?
ICAO Test Standards for eMRP

Functionality

L7: LDS application data
L6: LDS application protocol
L5: not applicable
L4: RF transmission protocol
L3: RF protocol activation (initialization and anticollision)
L2: RF power and signal interface
L1: Physical characteristics (booklet, antenna, SCIC, durability, aging)
What needs to be tested?
ICAO Test Standards for eMRP chip: Tools

Functionality

L1: Physical characteristics
L2: RF power and signal interface
L3: RF protocol activation
L4: RF transmission protocol
What needs to be tested?

Security evaluation of chip and LDS application

- Target of Evaluation:
  - RFID-Controller (HW), embedded-SW (OS), MRTD, ICAO LDS application
- Life-Cycles:
  - development, manufacturing, personalisation
- IT-Security Certification according to:
  - Protection Profile: MRTD

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What needs to be tested?
ISO 27000 + ICAO Best Practice to design ISMS

ISMS = Information Security Management System

<table>
<thead>
<tr>
<th>Object name</th>
<th>Protection Requirements</th>
<th>Personal data: (yes/no)</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality</td>
<td>Medium</td>
<td></td>
<td>Publication of personal data may significantly harm the institution’s public and international reputation.</td>
</tr>
<tr>
<td>Integrity</td>
<td>High</td>
<td></td>
<td>Widespread fraudulent use may cause ruinous financial obligations.</td>
</tr>
<tr>
<td>Availability</td>
<td>Low</td>
<td></td>
<td>Unavailability of e-authentication can be covered satisfactorily by offline verification for a few days.</td>
</tr>
</tbody>
</table>

Major Damage Scenarios:
- Integrity: Sample Threat 1
- Confidentiality: Sample Threat 2

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What needs to be tested?
Systems performances are tested permanently

Durability

Systems

Personalization

Delivery

Enrolment

Testing indicators
- Product life time
- Performance Indicators
- Quality Assurance Level (AQL)
- Service Level Agreements

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What needs to be tested?
Durability testing for 10 y warranty

- Sheet binding
- Climate
- Impact / Pen
- Back pocket
- Torsion Fatigue
- Delamination
- Colour Fastness
- Resistance to Chemicals
- Datapage Abrasion
- X-Ray

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How to run professional test scheme?
Apply qualification and acceptance procedures

Government testing towards requirements

- Analysis of requirements
- System architecture
- Integration testing
- Component specifications
- Component qualification

Supplier testing solutions

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Which specifications are applicable?
ICAO Doc 9303

- **Doc 9303:**

- **Supplement to Doc 9303 (Release 10, May 20th 2011)**

- **Supplemental Access Control (SAC) for MRTDs (Version 1.01, November 11th 2010)**

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Which test specifications are applicable?

ICAO Technical Reports

- **TR: RF Protocol and Application Test standard for e-Passport Part 2:**

- **TR: RF Protocol and Application Test standard for e-Passport Part 3:**
  - Tests for Application Protocol and Logical Data Structure, Version 1.01, Feb 20th 2007

- **TR: Durability of Machine Readable Passports**

- **TR: Tests for Supplemental Access Control (tbd)**
  
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Which test specifications are applicable?
Selection of other standards

- German BSI: TR-03105 Conformity tests for official electronic ID documents, 2010
- German BSI: Common Criteria Protection Profile MRTD with ICAO Application, BSI-PP-0026, 2010 and PP-0055, PP-0056

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Which test specifications are applicable? Still some gaps

- **Missing:**
  - Test on physical security features (Doc 9303 V1)
  - Test of quality of VIZ, MRZ
    (OCR test specs work in progress)

- **Not tested:**
  - optional data groups, like DG11, DG12 for additional personal / document data
  - Content of data groups, like facial image or finger print
Which governmental test schemes are available?
ANTS, France: e-passport certification

Agence Nationale Des Titres Sécurisés, France
(see http://www.ants.interieur.gouv.fr/evenements/How-it-works.html)

- Issues set of formal certificates
- Works with accredited test labs

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Which governmental test schemes are available?

BSI, Germany: e-passport certification

- Federal Office for Information Security (BSI, Germany) with accredited test house

(see list http://alturl.com/rr3ky)

Certified e-passports by BSI: e.g. Germany, UAE, South Korea, Austria, Latvia

(see complete list of certified documents/document components http://alturl.com/tad6e)

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ICAO is issuing DOC 9303 since decades, but does not yet provide any service confirming compliance to the ICAO standards.

ICAO Implementation and Capacity Building Working Group (ICBWG) is currently working on a concept, how ICAO could provide such a service.

An initial working paper has been submitted to the ICAO MRTD TAG in Sept 2011.

Work in progress!
THANK YOU!

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