ICAO Recommended Security Features in Travel Documents

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Presentation overview

❖ Gemalto in brief
❖ ICAO and Security of Machine Readable Travel Documents
❖ Synthetic substrates – Focus on polycarbonate
❖ Recommended security features
❖ From secure features to secure implementation
❖ Summary
Gemalto in key figures

Innovation
- 9 R&D sites worldwide
- 1,400 engineers
- Over 5000 patents

Global footprint
- 17 production sites
- 30 personalization facilities
- 77 sales & marketing offices

Experienced team
- 10,000 employees
- 90 nationalities
- 40 countries

Financials 2009
- €1.654 billion revenue
- €171 million operating income
Gemalto - Contributing to over 50 Government Programs

- Over 20 ePassport references including
  - Denmark, Estonia, France, Italy, Morocco, Norway, Portugal, Singapore, Sweden, Turkey, USA

- Over 15 National eID references including
  - Bahrain, Belgium, Finland, Lithuania, Hong Kong, Oman, Portugal, Qatar, Saudi Arabia, Sweden, UAE

- 9 eHealthcare programs including
  - Algeria, Azerbaijan, France, Gabon, Germany, Mexico, Slovenia

- 31 personalization centers
Offering a flexible approach adapted to your needs

**Sealys**
*Secure documents*
- Travel documents
- ID cards
- Healthcare cards

**Coesys**
*Secure solutions*
- Turn-key Identity solution
- Enrolment → Issuance → Application
- Local Professional Services

**Allynis**
*Secure services*
- Fully personalized Secure Document
- Mass batch & individual personalization
- Managed Applications
ICAO, Travel Documents, and Security

❖ ICAO: International Civil Aviation Organization created in 1947
  • 188 contracting countries
  • Promotes and ensures co-operation and interoperability between nations to ensure the development of civil aviation in a safe and orderly manner

❖ ICAO Document 9303 = Standard for Machine-Readable Travel Documents
  • Specifications for Machine Readable Travel Documents, Visas and ID cards

❖ Specifies format, layout, characters, MRTD technologies that are to be used for official travel documents

❖ Plus:
  It recommends security measures to counter document fraud
Role of security features

_xlim

- Security threats
  - Complete reproduction, copying
  - Reuse of parts of authentic documents
  - Photo substitution & data alteration

_xlim

- Security levels
  - Level 1 – Overt visual/tactile features – Quick inspection
  - Level 2 – Simple equipment – Expert
  - Level 3 – Laboratory equipment – Forensic analysis

_xlim

- Individual security features
  - How do they counter the threats?
  - How easy is it to verify them?
Synthetic datapage substrates
Recommended features

Basic features
- Optically dull
- Resist splitting
- Attachment
- Optically variable feature
  - Inks, DoVIDs, CLI, …

Recommended features
- Tactile
- Laser perforation
- Window
- + DoVID as recommended optically variable element
Focus on polycarbonate as the synthetic substrate

- Requirements fulfilled by polycarbonate documents
  - Resistance against splitting
  - Protection against complete reproduction
  - Protection against photo substitution
  - Protection against reuse of parts of authentic documents

- Provided that
  - All layers made of polycarbonate, laminated together with heat and pressure
  - Security elements and laser engraving inside the document
Recommended: Tactile features

Tactile elements
- Feature(s) can be verified with sight and touch (1st level)
- Positive, negative, lines, microtext, etc.
- CLI/MLI as a special optically variable case

Role in brief:
- 3D nature cannot be copied
- Ensures that data is inside the surface
- Ensures that data has not been accessed through the surface
- Laser engraving through relief leaves characteristic pattern

Relief serves as a lens and deviates laser beam

Multiple Laser Image
Tilting the document
Continuous relief across portrait
Recommended: DOVID

**DOVID - Diffractive Optically Variable Image Device**
- Easy visual 1st line verification
- Transparent for laser engraving or metallic for easy verification
- High resolution diffractive surface with various visual effects

**Role in brief**
- Optical variability cannot be copied
- Difficult to reproduce
- Data protection of (transparent embedded DOVID)

**Developments**
- Metallic element to go with laser engraving
- Transparent and metallic elements in one
Recommended: Laser perforation

Laser perforation
- Tiny holes through the document created with special laser
- Typically the holes form the document holder’s photograph when looked at in back light (1st level)

Role in brief
- The physical holes cannot be copied
- Difficult to reproduce (specific laser technology)
- Protection of personal data (redundant info in perforation)

Developments
- Tilted Laser Image with two different images

All pictures are of ImagePerf by IAI
Recommended: Transparent feature

- Transparent element
  - Part of opaque core replaced with transparent material
  - Ideally still 100% polycarbonate to resist splitting

- Role in brief
  - Easy visual 1st line verification
  - Transparency cannot be copied
  - Further protection against splitting
  - Protection of personal data if personalized

- Developments
  - Combines well with other features such as printing, optical variability and personalization

All pictures are of Sealys Window by Gemalto
Secure implementation of security features

- Document construction allows for 3D design:
  - Layers of personalization
  - Layers for each security feature
  - Position and interaction of features

- MLI (Gemalto)
- Transparent Kinegram (OVD Kinegram)
- Sealys Window (Gemalto)
- Surface relief (Gemalto)
- ImagePerf (IAI)
Summary: Advantages of the recommended features

- **Tactile features**
  - Cost efficient
  - Combine well with other features
  - A must for laser engraved polycarbonate

- **DOVIDs**
  - Number of effects from level 1 to level 3
  - Continues to evolve

- **Laser perforation**
  - Adds another technology to the personalization phase

- **Window feature**
  - Links document’s two sides
  - Combines well with other features
  - New and developing
Thank you.

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