

Fluent border control: biometric passport perspective

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Setec in brief

- **Setec is a leading card vendor and developer for public authorities, banks and telecom operators in Northern Europe**
- **60% of net sales in Government and Corporate sector (2004)**
- **Setec is owned by Gemplus International A.S., the world's leading provider of smart card based solutions**

Setec history

- **1885:** Security Printing House of Bank of Finland established
- **1983:** Payment cards
- **1987:** Passports
- **1988:** Smart card solutions
- **1991:** Setec Oy started its operations
- **1994:** SIM cards
- **1995:** EID cards
- **2000:** EMV cards
- **2003:** Biometric passports
- **2005:** Setec – a Gemplus company
- **2005:** World's first two nation wide issuances of ICAO & EU compliant biometric passports

Biometric chip in passport

- **Chip is a new security feature of passport**
- **It also introduces new functionality for the passport that can be used e.g. to automate border control**
- **(Demonstration)**

Efficient use of biometric chip

- You must be able to relay on the chip
- Automated systems may relay completely on the chip
 - Use of active authentication strongly recommended
 - Extended Access Control gives stronger protection to holders identity, but will slow the process
 - There is no common EAC, nor a specified way to recognize the used EAC
- Speed is essential

Border control process

- **Currently no automated border control except in few countries and usually for country's own citizens**
- **Generally country's own citizens passports are not inspected very thoroughly**
- **The level of the inspection depends on**
 - **How susceptible the traveller is personally**
 - **Travellers country of origin**
 - **Travellers country of departure**
 - **The level of security in travellers document**
- **The inspection usually takes less than 20 seconds**

Border control process (2)

- **The level of inspection on the border control can roughly be divided to 3 levels**
- **Level 1: Quick visual inspection**
 - UV light a common tool (not always used)
- **Level 2: More thorough visual inspection**
 - Magnifying loop usually available
 - Border control readers can check visual features and can be teached to recognize different features of passports
- **Level 3: Database queries**
 - On passport
 - On passport holder

Changes that chip brings

- **Automated lines will start to be available and will relay on the chip**
- **In manual inspection the chip will not be always used: it's a new security feature that may or may not be checked**
- **The use of chip will probably be part of level 2 and level 3 checks (chip support in border control readers)**
- **In manual inspection the same information that is on the data page is checked (fingers or iris mainly for automation)**

Visual security features

- **Current border control process relays mainly on visual features**
- **Easily recognizable and hard to counterfeit features allow fast and efficient verifying of a passport**
- **Border control of many countries will relay mainly on visual features for a long time**

ICAO recommendations on visual security features

- Some updates on upcoming sixth edition of ICAO's Doc 9303
- List mandatory and additional features:

Mechanism	Data page	Visa pages
Anti-scan pattern	Basic	Basic
Document number on all pages: fluorescent print or perforated	Basic	Basic
Micro-printed text	Basic	Basic
Rainbow printing	Basic	Basic

ICAO recommendations (2)

Mechanism	Data page	Visa pages
Thread sewing with back-sewn lock stitch or an equivalent technique	Basic	Basic
Two-colour guilloche pattern	Basic	Basic
UV dull background	Basic	Basic
UV fluorescent ink (visible or invisible)	Basic	Basic
Invisible fluorescent fibres and/or planchettes	Basic	Additional
Visible (fluorescent) fibres and/or planchettes	Basic	Additional
Anti-copy features (utilizing some additional features listed here)	Basic	-

ICAO recommendations (3)

Mechanism	Data page	Visa pages
Background of the data page different from visa pages	Basic	-
Portrait and biographical data integrated to the basic material	Basic	-
Security background guilloche overlapping the portrait area	Basic	-
Absorbency and roughness	Basic (paper)	Basic
Chemical sensitizers	Basic (paper)	Basic
Watermark	Basic (paper)	Basic
Reactive inks	Basic (paper)	Additional

ICAO recommendations (4)

Mechanism	Data page	Visa pages
Anti-peeling of layers (utilizing some additional features listed here)	Basic (paper)	-
Heat-sealed laminate or overlay or an imaging technology and substrate	Basic (paper)	-
Optically variable security features (e.g. OVI ink, DOVID, lenses)	Basic (plastic) Additional (paper)	-
Deliberate error in microprint	Additional	Additional
Duplex security pattern	Additional	Additional
Front to back (see-through) register feature	Additional	Additional

ICAO recommendations (5)

Mechanism	Data page	Visa pages
Infra-red drop-out inks	Additional	Additional
Infra-red fluorescent inks	Additional	Additional
Inks with optically variable properties	Additional	Additional
Latent (intaglio) image	Additional	Additional
Metallic inks	Additional	Additional
Metameric inks	Additional	Additional
Multi-colour and/or fluorescent sewing thread	Additional	Additional
Penetrating numbering inks	Additional	Additional
Phosphorescent inks	Additional	Additional

ICAO recommendations (6)

Mechanism	Data page	Visa pages
Photochromic inks	Additional	Additional
Programmable thread-sewing pattern	Additional	Additional
Relief (3-D) design feature	Additional	Additional
Tactile feature	Additional	Additional
Tagged inks	Additional	Additional
Thermochromic inks	Additional	Additional
An optically variable feature superimposed on the portrait	Additional	-
Biographical data page as an integral page of the passport book	Additional	-
Digital signatures	Additional	-

ICAO recommendations (7)

Mechanism	Data page	Visa pages
Duplicate information in a machine-readable form	Additional	-
Embedded steganographic images	Additional	-
Machine-verifiable biometric feature	Additional	-
Secondary portrait image of holder	Additional	-
intaglio printing	Additional (paper)	Additional
Security thread	Additional (paper)	Additional
Watermark in register with printed design	Additional (paper)	Additional

ICAO recommendations (8)

Mechanism	Data page	Visa pages
Embedded security thread	Additional (paper)	-
Special features in the security thread	Additional (paper)	-
Every page printed with different background	-	Additional
Index or collation marks printed on the fore-edge of visa pages	-	Additional
Page numbers printed in background on visa pages	-	Additional

Easily recognizable visuals

- **Efficient visual features for international use are the ones that can be detected on most borders**
 - **Detectable by naked eye**
 - **UV features**
 - **Detectable with magnification**
 - **Can be taught to most border control readers**

Proprietary visual features

- **Machine readable security features**
 - **Substance features**
 - **Structure features**
 - **Data features**
- **These will allow fast verifying of passport, but are mainly for issuing countries own use**
- **Usually need special machinery on the border**

Summary

- **Efficient passport for international use will have both:**
 - **A fast and interoperable chip**
 - **Easily recognizable visual security features**
- **Most checks on foreign passports**
- **Sharing information between countries on the features of passports is important**
- **Updating passports with a chip is a good opportunity to update the visual features**
- **Decisions taken with passports today will set requirements for border control in the future**

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