

# Electronic Identification Documents Development Trends

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# Content

- Motivational Factors and Legal Basis
- HP Experience
- Security Concerns

# UN Security Council Resolution 1373

- Security Council unanimously adopts wide ranging antiterrorism resolution - Sept 2001
- “2. Decides also that all States shall:
  - “(g) Prevent the movement of terrorists or terrorist groups by effective border controls and controls on issuance of identity papers and travel documents, and through measures for **preventing counterfeiting, forgery or fraudulent use of identity papers and travel documents**
- “3. Calls upon all States to:
  - “(a) Find ways of intensifying and accelerating the exchange of operational information, especially regarding actions or movements of terrorist persons or networks; **forged or falsified travel documents**; traffic in arms, explosives or sensitive materials; use of communications technologies by terrorist groups; and the threat posed by the possession of weapons of mass destruction by terrorist groups



28/09/2001

# Motivational Factors

- Security after Sept 11th, 2001 & UN security resolution 1373
- Fight against criminality and terrorism
- Identity document counterfeiting prevention
- Fight against the illegal immigration / employment
- On-line access to the governmental services (eGovernment)
- Easier and faster traveling (automatic gates, frequent traveler programs)

# Legal Basis and Standards

- EU Legislation
  - ePassports (Council Regulation EC 2252/2004, Directive 95/46/EC, Regulation 45/2001),
  - eID / ECC (CEN/TS 15480 – driven by GIXEL & DIF, standards for ECC; not supported by Finland, Belgium, Sweden, Austria, ...)
  - eRP (Council Regulation EC 380/2008)
- National Legislation
- ICAO
  - ICAO 9303 (3 Parts - ID-3, Visas, ID-3 documents)
- ISO
  - ISO 7501 (9303), 7816 (contact chips), 14443 (contactless chips) and 180006c/Gen 2, 19794 (biometrics)
- BIG, BSI

# EU Initiatives and Projects

- STORK (ICT-PSP)
  - mutual recognition of eIDs
- BioP@ss MEDEA+
  - development of advanced secure and interoperable smart card platforms for e-administrative applications (a specific goal – converging eID and ePassports)
- NETC@RDS
  - a step towards the electronic European Health Insurance Card

# ICAO NTWG Current Initiatives

- Guidance to authorities regarding secure issuance incl. identity management and online applications
- Guidance to authorities regarding identity verification
  - Inspection procedures
  - Document fails to read
  - Sensitive data reading
- Development and standardization of test methodologies
- Photograph formats (quality?)
- Transliteration issues (e.g. Arabic alphabet)

# Trends

- De-centralised vs Centralised solution
- Paper based vs Polycarbonate
- Non-chip vs Chip (contactless / contact)
- The e-document is everything that non-eDocuments are, but in addition, with a chip
  - Inks
  - OVD's of many hues and flavors
  - Security printing
  - Paper and accompanying measures to protect
  - Watermarks of various technologies
  - MLI / CLI
  - Many other physical features
- New electronic security features (BAC, PA, AA, EAC = CA + TA) and functions



# Functions

- Biometrics (ICAO)
- Electronic authentication (online / offline)
- Qualified digital signature
- Additional functions
  - Driving License (e.g. Belgium, Estonia)
  - Social Insurance (e.g. Belgium, Portugal)
  - Health Insurance (e.g. Austria, Estonia, Finland, Italy, Portugal)
  - Emergency (e.g. Italy)
  - eBanking (e.g. Austria, Estonia, Portugal)

# Biometrics

- **Wikipedia:** from Greek “*bios*” life, “*metron*” measure “*Study of methods for uniquely recognizing humans based upon one or more intrinsic physical or behavioral traits*”
- Physiological (Face, Fingerprints, Iris, Hand, Hand veins, DNA, etc.)
- Behavioral (Signature, Keystroke, Voice, etc.)
- Key processes
  - Enrollment
  - Template creation
  - Identification (1:N) / Verification (1:1)

# Biometrics II.

- ICAO tested and recommended: Face (15-20kB), Fingerprints (10kB), Iris (30kB)
  - Plain images (not template)
  - Compression (JPEG2000)
  - Contactless IC chip as a data storage technology
    - Useability (neither direct nor line-of-sight contact)
    - Data Storage (capacity)
    - Performance

# Data on eID

- Document number
- Personal data (incl. official notes and observations) and identifiers
- Biometrics
- Qualified digital signature components
- Authentication certificate components
- Other

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# Security Concerns

- Counterfeiting
  - Unauthorized copy or reproduction of a genuine document (incl. using components from legitimate document)
- Skimming
  - Reading the electronic data in a chip surreptitiously with a reader in the vicinity of the travel document
- Eavesdropping
  - When data from a chip are intercepted by an intruder while it is being read from an authorized reader
- Document fingerprinting

# Security Concerns II.

- Cloning
  - Copying the data that has been placed on a chip
- Look alike fraud
- Alteration
  - Deletion, masking, modification, tampering with biographical data
- Substitution
  - Substitution of impostor's biometrics in place of the original holder's biometrics

# So what?

- Unauthorized access
  - Easily readable (BAC) = that is the purpose!
- Pragmatics of mischief
  - Distance
  - Power
  - Visibility
- At what price?
- And then “what” do you have



# Misleading news often makes headlines

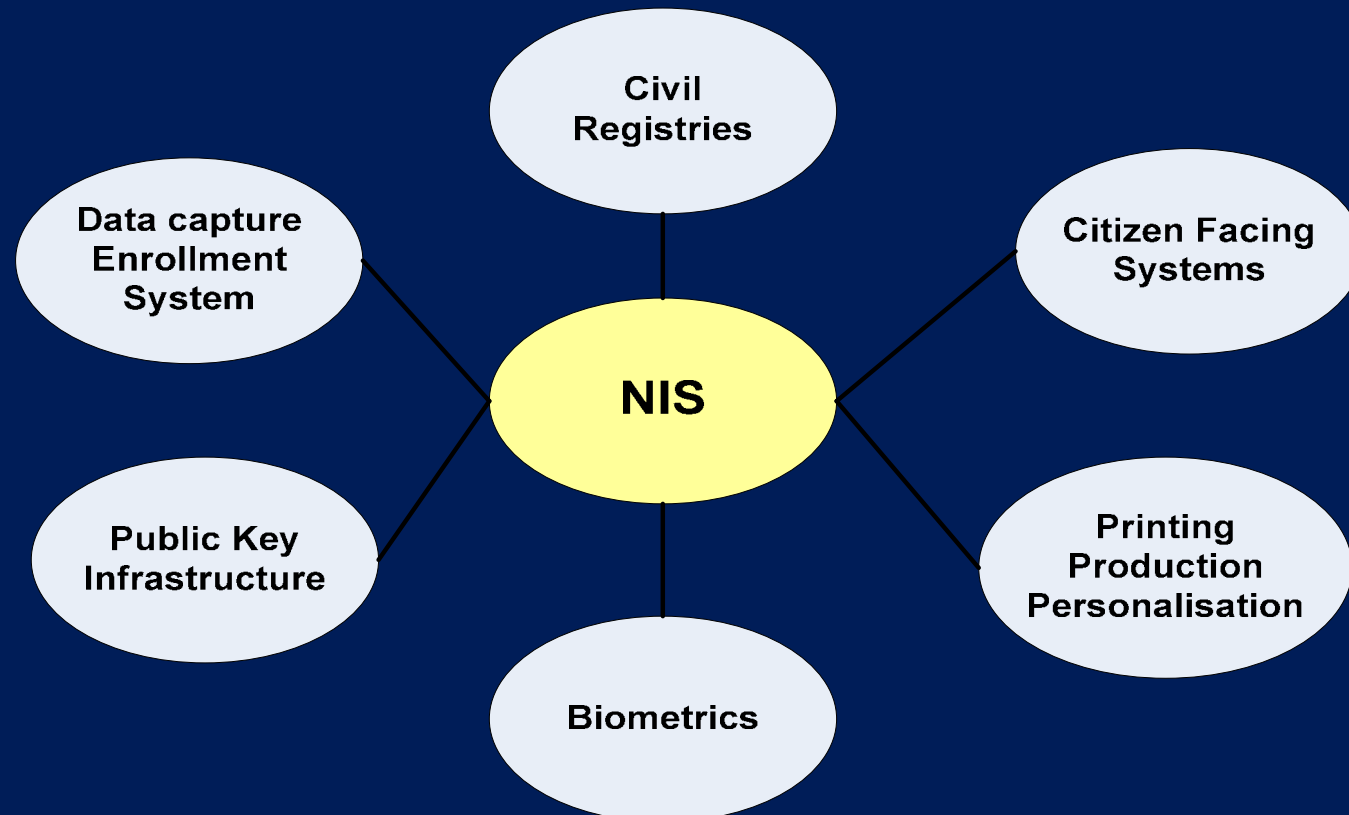
- „Passport chips used in SK can be copied within an hour“ ([www.zive.sk](http://www.zive.sk))
  - AA prevents cloning
  - British passport not using AA, i.e. passport was not hacked
  - Chip purpose (in passport)
    - Is the person same as the one to whom the passport was issued?
    - Were the data modified since the issuance?
  - Certificates exchange

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# HP National Identity System eco-system

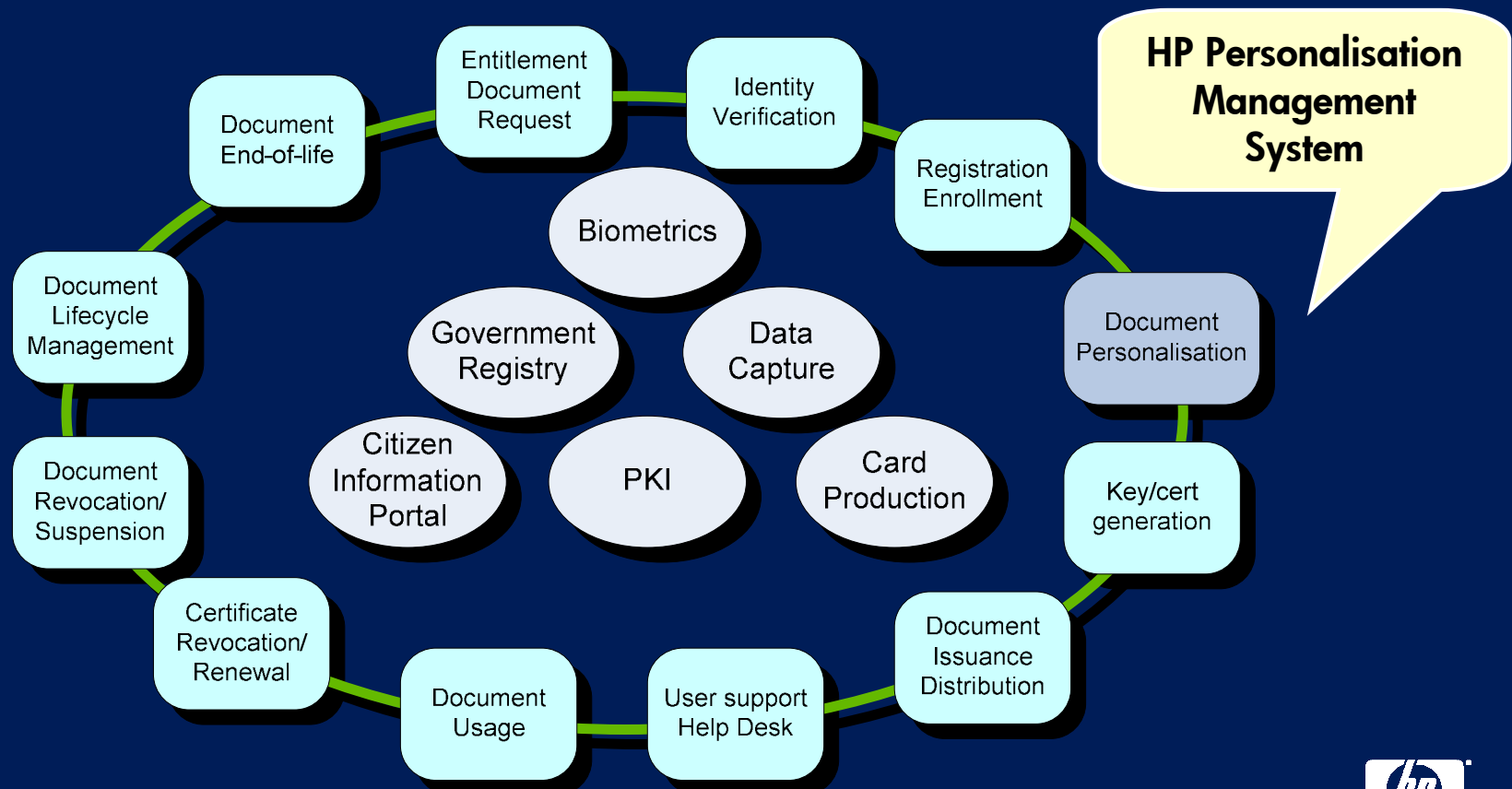
- Partners provide specialist technology
  - biometrics, chip OS, document printing ...
- NIS is the “data exchange platform”
- NIS encodes customer business rules





# Identity credential lifecycle

- Lifecycle management for credential documents
- “Cradle-to-grave” of identity management





# Slovak NPC History

- Slovak NPC phase I - **Driving licenses**
  - Project duration: 25.2.2004 – 28.7.2004
  - Full production: 2.8.2004
- Slovak NPC phase II – **National ID cards, Residence permit cards and any type of ID-1 document**
  - Project duration: 10.8.2005 – 6.3.2006
  - Full production: 7.3.2006 (NID – personalise since July 2008)
- Slovak NPC phase III – **6 types of Slovak biometric travel documents (ePassports)**
  - Project duration: 22.2.2007 – 15.1.2008
  - Full production: 1.1.2008
- Slovak NPC phase IV – **Secondary biometrics**
  - Full production: 1.6.2009

# Main features of Personalization technology solution

- Centralized personalization
- Laser engraving & inkjet personalization / ePersonalization according to the ICAO & EU standards
- Personalization of any type of ID-1 / ID-3 documents
  - Driving licenses
  - National ID cards
  - Residency permits
  - ePassports
- Integration to Mol subsystem for issuing and tracking status of an application for personalization
- Integration to PKI infrastructure (CSCA, DS certificates, CVCA/DVCA, IS certificates)



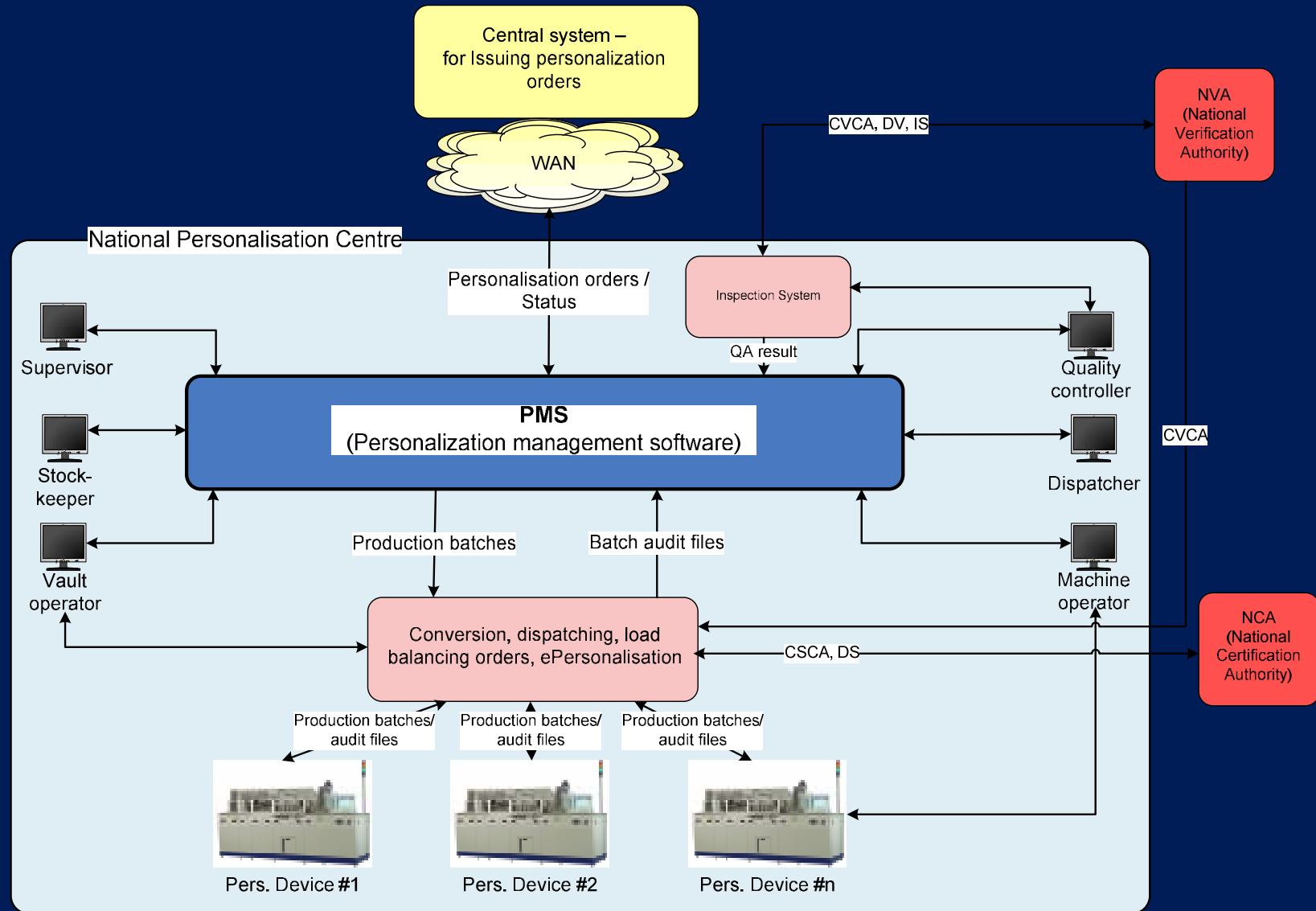
# Main components of Personalization technology solution

- Laser engraving equipments
  - Datacard MPR 5000 (ID-1) / PB6500 (ID-3)
  - Current production capacity about 2000 ID-1 and 1000 ID-3 personalized documents per shift per machine
- PMS (Personalization management software)
  - Flexible software application supporting the process of personalization and production logistics of any type of ID-1 and ID-3 document including ePersonalization (**currently being extended to support secondary biometrics**)
  - Application software developed on Microsoft .Net technologies
- Thick polycarbonate ePassports
  - Designed and manufactured by SDU, delivered by HP
- Multilayered polycarbonate blank cards
  - Outside of HP scope (different suppliers)

# HP Responsibilities

- System integration
- IT infrastructure delivery
- Personalization business process definition
- Requirements specification analysis for PMS SW
- Driving the process of developing application SW and requirements on customization of personalization machine SW
- Driving the process of acceptance test definition and fulfillment
- Defining roles and responsibilities in the personalization process
- Coaching and support for operations at NPC

# National Personalisation Centre



# Lessons learned I.

- Fair copies procurement
  - independent procurement vs. complex delivery
- Fair copies delivery
  - pre-numbered documents vs. not numbered fair copies
  - numbering schema
  - completeness and integrity control
  - quality control

# Lessons learned II.

- Quality of polycarbonate
  - achievable sharpness, blackness
  - order of the layers
  - TKO foil
  - background printing (colors, tolerances)
  - chip in the polycarbonate datapage
- Quality of booklet paper
  - inkjet personalization (ink, font type & size)
  - leafing technology
  - storing of the booklets (temperature & humidity)
  - ionizing, antistatic liquid

# Lessons learned III.

- Stock management
  - fair copies/documents passing
  - fair copies delivery reconciliation
  - shift closing report
  - stock taking report
- Document holder's photo
  - quality of polycarbonate
  - quality of incoming image
  - colorful vs. grey-scale image
  - size of image on the document
  - background printing
  - special mask on the photo
  - MLI feature

# Lessons learned IV.

- Machine speed vs. Quality of personalization
  - overhead (up to 22%)
  - job management (size of packages and batches)
  - laser engraving / inkjet (leafing) / ePersonalization
  - usage of different reading devices
- ePersonalization
  - quality control procedure
  - certificate management
  - active authentication support
- Documents dispatching
  - barcode usage (packages, envelopes, crates)
  - electronic delivery confirmation

Questions?

**Thank You!**

