

# Technology Choices for Identity Cards

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# From Paper Documents to a Digital Society



*Up until now, citizens have identified themselves with an official document.*

Users are identified and authenticated using digital documents

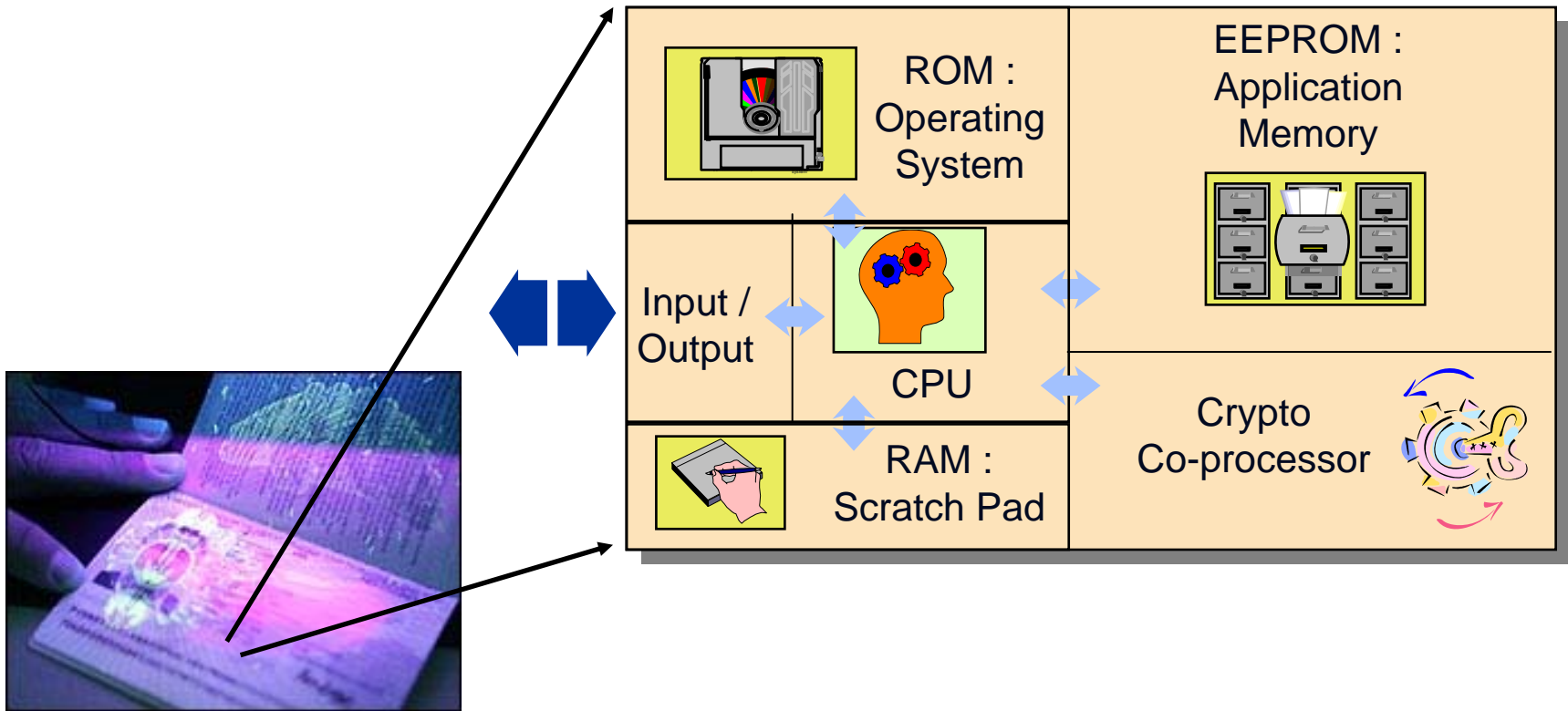
ID

NOW

e-ID



# e-IDs contain a sophisticated computer Chip



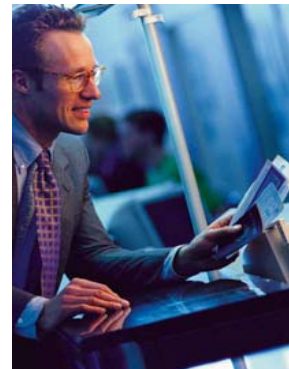
*An e-ID contains a tamper resistant portable computer*

# Smart Cards as e-IDs add considerable benefits to Governments

- ✦ e-ID smart chip technology *protects the individual's privacy* while securely assuring their identity by using PIN codes or biometrics.
- ✦ e-ID's proven security *increases confidence* in a credentialing system.
- ✦ Using e-IDs does not require on-line access to central databases as they can perform *citizen verification and identity authentication off-line*.
- ✦ Virtually impossible to counterfeit, the e-ID provides a *strong countermeasure against Identity theft*.
- ✦ e-ID's Digital signatures *contribute to the accountability* of government officials and employees.
- ✦ e-ID's enable *Citizen authentication and accountability*.

# Smart cards as e-IDs add considerable benefits to citizens

- ✦ Smart chips are a secure vault that *protects the personal information* of the citizen. The owner is in control of their e-identity.
- ✦ An *e-ID* can quickly *verify and authenticate a citizen* in order that *such things as traveling can be made easier and safer* and citizens can *securely access* government online services.
- ✦ *e-ID enhances the citizen's privacy* by only allowing access to specific authorized e-identity information.
- ✦ Smart chip technology *prevents unauthorized hijacking* of an e-ID when lost or stolen.
- ✦ Citizen verification and identity authentication can be done *off-line*.



# ID Card Machine Readable Technologies

## ★ **Passive technologies**

- Magnetic stripe
- Bar Codes (1D & 2D)
- Laser stripe

## ★ **Active technologies**

- RFID Tag
- Contactless RF
- Contact Smart Card
- Dual Interface Smart Card
- Hybrid Smart Card

# ID Card Security Technologies

## ★ **Passive technologies: visual & forensic**

- Security Printing
- OVD / OVI
- Holograms
- Laser stripe
- Plastic Laminates
- UV Inks

## ★ **Active technologies: computational capability = e-ID**

- Contactless RF
- Contact Smart Card
- Dual Interface Smart Card
- Hybrid Smart Card

# E-ID Uses in the USA

## **Employee identification**

- ✦ DoD CACs
- ✦ PIV cards
- ✦ TWIC
- ✦ FRAC

## **Citizen identification & Travel documents**

- ✦ ePassports
- ✦ WHTI Pass cards
- ✦ Enhanced Driver's Licenses
- ✦ Social Security cards?

# ePassport:



- ✦ ePassport international specification created by ICAO (MRTD)
- ✦ Minimum ICAO requirements ignore citizen privacy.
- ✦ Industry spoke out on Privacy concerns
- ✦ US State Department in conjunction with GPO reconsidered privacy concerns and enhanced the security requirements of US ePassports.
  - Now incorporate closed cover shield
  - Random number ISO 14443 Answer To Query
  - Basic Access Control for access to electronic credential
  - Updated page designs and printed security features
- ✦ Outstanding use of several passive security features to increase the difficulty of counterfeiting and tampering with ePassports
- ✦ ***The Gold Standard of US identification credentials***
- ✦ EU now implementing EAC for biometric storage in ePassports

# FIPS 201 PIV II cards

- ✦ To Authenticate & Identify Federal Employees
- ✦ HSPD-12 → FIPS 201 (NIST)
- ✦ PIV cards in process of being rolled out
- ✦ GSA Managed Services Issuance
- ✦ Individual agencies issuance
- ✦ Dual Interface smart card
  - Contact and contactless interfaces



# TWIC Cards

- ✦ To authenticate and identify Port workers
- ✦ In process of roll out : 75,000 to 150,000
- ✦ Dual Interface Smart Card
  - Contact and contactless RF
- ✦ Enhancing Contactless security beyond PIV



# FRAC

- ✦ For authentication and identification of emergency responders
- ✦ Pilot in National Capitol Region
- ✦ Programs in Cities and States emerging
- ✦ Dual Interface Smart Card
  - Contact and contactless RF interfaces



## WHTI PASS Cards Land Border Crossing

## ISO 18000-6C UHF RFID

- ✦ State Department along with DHS CBP selected UHF Vicinity RFID tag (30' range) for PASS cards in Dec 2007.
- ✦ RFID PASS cards transmits a unique (& static) identification number to a reader on each read.
- ✦ PASS card system retrieves from the Pass Card Database the identification information associated with the unique identification number. This is an ONLINE system due to card limitations and design architecture choice.
- ✦ CBP Officer then validates person presenting the card, matches the information available on their screen about the registered card holder.
- ✦ ISO 18000-6C RFID tags are an emerging technology for identity applications and as such has vulnerabilities that must be understood and have appropriate mitigations in place.

# Real-ID & Enhanced Driver's Licenses

- ★ Real-ID: Future state issued driving licenses conforming to Real ID will not utilize any active electronic authentication or verification technology unlike the PIV, TWIC, FRAC, or ePassports.
- ★ Machine readability by printed MRZ barcode only.
- ★ **Enhanced Driver's License** to be used for land border crossing will use same RFID as WHTI PASS cards but issued by issuing state not Department of State. Includes citizenship.

# US Immigration programs

## ✦ US VISIT

- Biometric capture of fingers & face
- 2 fingers to 10 finger capture

## ✦ Permanent Resident “Green Cards”

- proprietary “*Lasercard*” optical memory cards (forensic card)
- proprietary expensive readers with slow operation; not generally used
- Privacy invasive (fingerprint printed on card etc)
- Requires protective sleeve to protect sensitive laser material.
- Time to review the Green Card? Add a chip?

## ✦ Immigration...

- Temporary worker credential may become a reality....
- Another RFID or a smart card credential?



# Social Security Cards

A smart card opportunity?

- ★ Looking to reform Social Security Cards. HR 5404.
- ★ U.S. Rep. Mark Kirk (R-Ill.) shows a proposed new Social Security card at the Dirksen Federal Building (February 2008)



# US Identity programs & Policy Overview

- ★ Many US Government identity & travel document programs alive today
  - PIV, TWIC, ePassport; Driver's License; Green Cards; etc
  
- ★ Common thread is to verify the identity of the user
  - At both Application/Enrollment and usage
  - Each program has unique scope, purpose and membership
  - Different levels of authentication of enrollment/application credentials
  - Varying factors of authentication for each program implementation
  - Is the person presenting the card the person they claim to be?
  - Is the credential authentic and valid?
  
- ★ Identity programs largely considered in isolation for specific purposes. Interoperability across systems minimal today.
  
- ★ Privacy considerations essential in Identity programs.

# Summary of programs

- ✓ Smart Card technology is now well established in several US Government identification and travel document programs.
- ✗ Real-ID : Printed Barcode for machine readability only.
- ✗ WHTI : RFID now being pioneered in PASS cards.
- ✗ Enhanced Driver's License (EDL) also adopting RFID tag technology.
- Immigration. Smart Card technology has a great deal to offer in raising the bar against counterfeiting and ensuring the card holder is who they say they are. Don't have to rely on on-line systems.
- Policy challenges remain
  - Congressional education & lobbying
  - Agency counseling and advocacy
  - Policy legislation
  - Secure ID Coalition (Gemalto; Oberthur; NXP; Infineon; Adobe; RSA)

# Smart Card technology is the right choice for e-ID

- Smart Card E-ID technology = Digital Security
  - is the local security agent of the issuer in the hands of the user.
  - exponentially increase the difficulty to make a counterfeit document
  - verify their user and authenticate systems creating a chain of trust.
  - provide portability of digital credentials
  - ensure non-repudiation for transactions.
  - work hand in hand with Biometric technologies
  - protect the privacy of their user.
- ✓ Smart Card technology is proven, cost effective, tamper resistant countermeasure to identity theft and improving travel document security.

# Conclusion

Making Choices is a a top down process

- Start with clear policy & requirements for an application
- Define specific privacy & security requirements
- Identify appropriate security features needed
- Perform Privacy Impact Assessment
- Select best, cost effective technologies for implementation
- Perform Security evaluation & certifications
- Pilot the implementation. Perform technology comparisons.
- Finalize implementation choices and roll out the system.

**Choices: top down**

**POLICY → SECURITY & PRIVACY →  
TECHNOLOGY → IMPLEMENTATION**

Make a smart choice :

Smart Cards (Secure Digital Devices)

Thank You

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