OVD KINEGRAM
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Enhanced Physical and Logic Security

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Workshop on
Storage and Processor
Card-Based Technologies
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Presentation Outline

- KINEGRAM® Technology
- Card Security: Lessons Learned
- KINECHIP Technology
- How does KINECHIP work ?
- Functionality and Reliability Tests
- Commercialisation Status

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OVDK / KURZ: Competence in Governmental ID Security

- Technology leader in optical security for over 20 years
- Unique, high-security authentication features
- Only available to governmental entities
- Co-operate with local technology leaders to provide the optimal security solution

KINEGRAM® Technology: Leader in OVD Security

The KINEGRAM® technology secures:

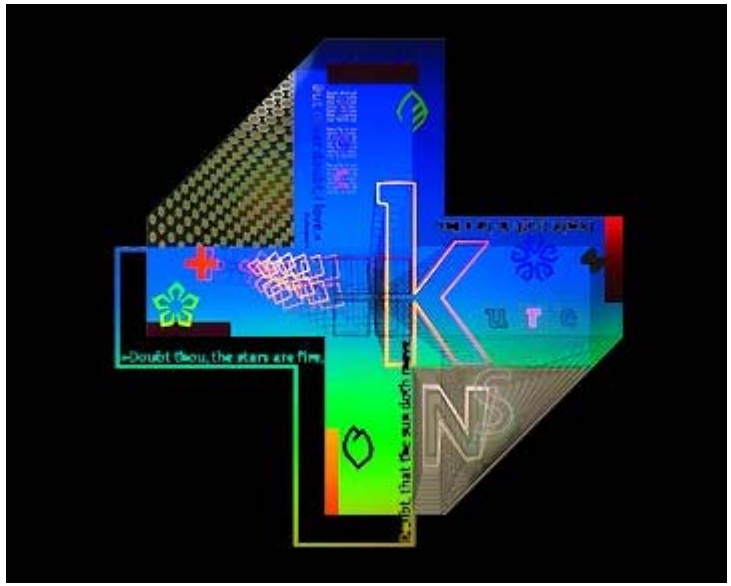
- 80 government documents in more than 30 countries
- The uniform EU Format Visa (Schengen)
- 12 currencies including the 5, 10 and 20 Euro.

KINEGRAM® Technology: Performance and Security

The KINEGRAM® security device:

- unique and secure against technological compromise
- easy to verify and easy to communicate
- easy to incorporate, reliable and stable

KINEGRAM® Technology: Optically Variable Effects



OVD KINEGRAM: 20 years of Machine Readability

- First prepaid Phonocard® system with optically coded cards and readers inaugurated in 1979; used in 65 countries.
- Machine-readable optical codes applied to the reserve series of Swiss banknotes.

KINEGRAM® Technology: Machine Readability

Machine-readable features of the KINEGRAM® technology:

- Copy-resistant, machine-verifiable feature
  -Diffractive Area Code (DAC)

New!

- KINEGRAM® in combination with chip technology
  - KINECHIP (integrated DLC)
  - OPTOCHIP (separate DLC)

KINEGRAM® Technology: Diffractive Area Code

- Enables objective and automatic authentication of documents
- Represents 8 bits of information for linking to class or type
- Examples: German Driver's License and Residence Permit

KINEGRAM® Technology: Diffractive Area Code

- Verifiers are commercially available
- Currently incorporated in over 30 travel documents

KINEGRAM® Technology: Machine Readability

- Engineered, high-security diffractive structures can be measured to verify the authenticity objectively

- The information incorporated into the diffractive feature can provide a link to
  - the rightful bearer
  - document information
  - card data

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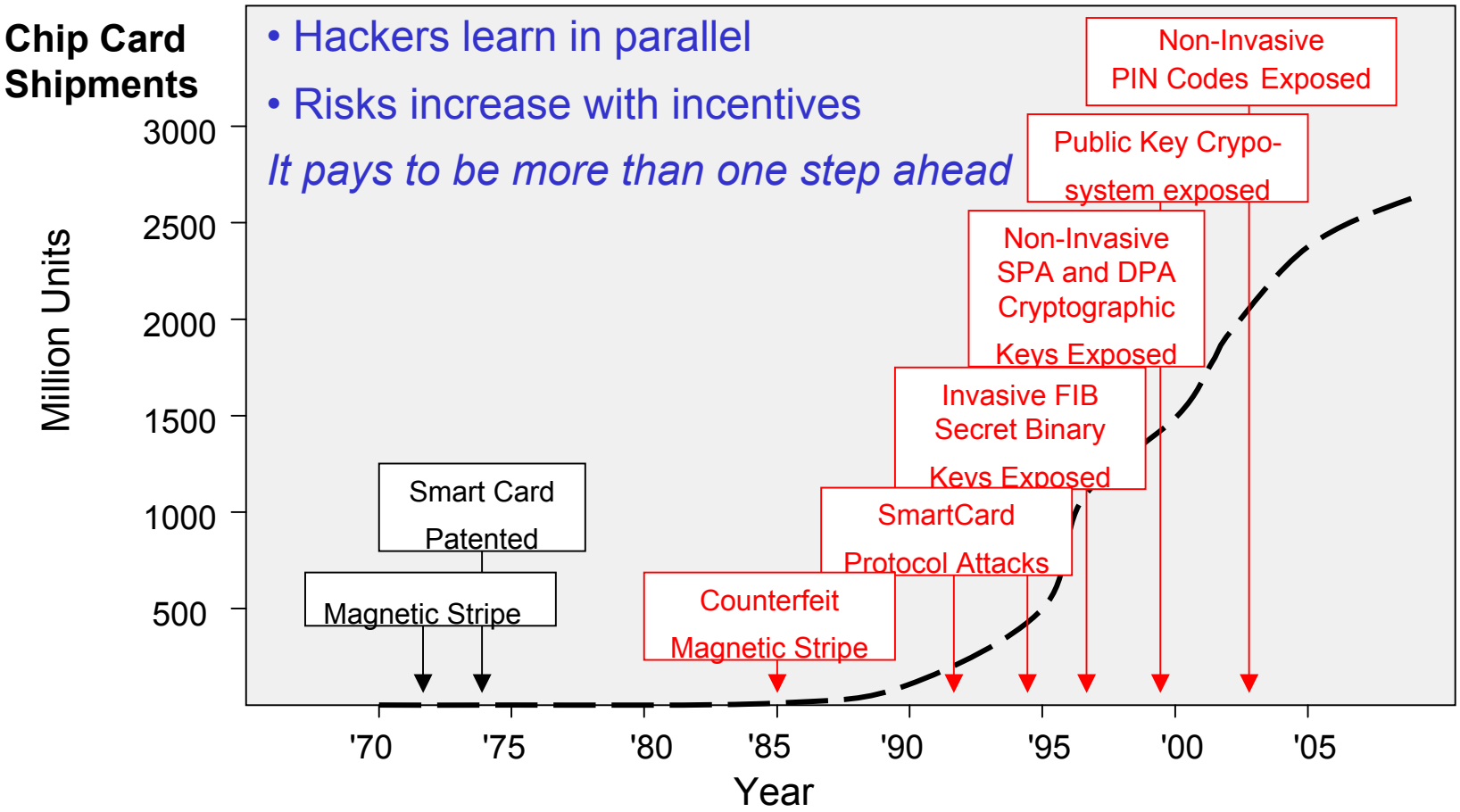
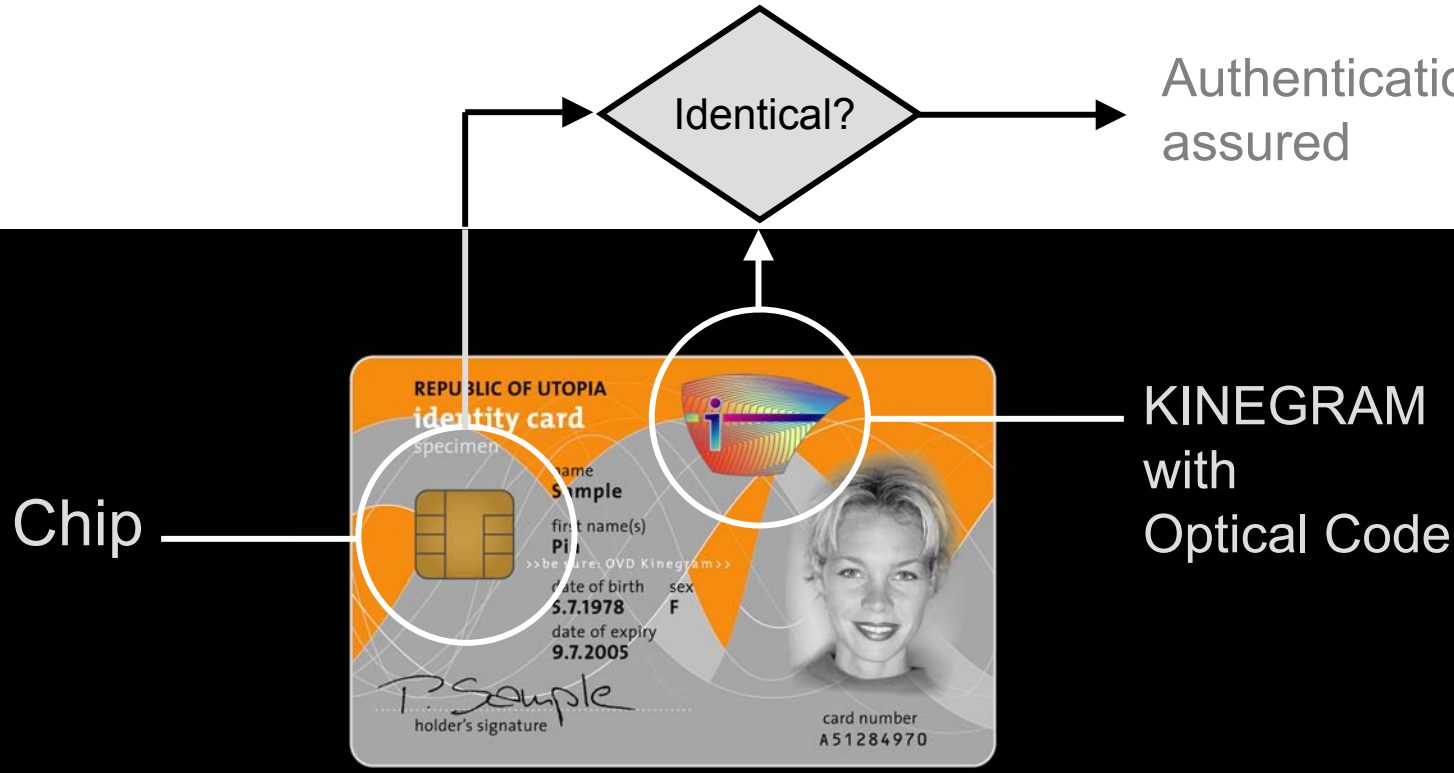
Card Security : Lessons Learned



KINECHIP Solution: Physical Security & Enhanced Logic Security



KINECHIP Technology: Features

- Imparts physical security and additional logic security
- Enhances existing security measures for chip cards
- Employs high security non-holographic diffraction technology
- Enables quick and easy authentication
- Offers visual and/or automatic verification

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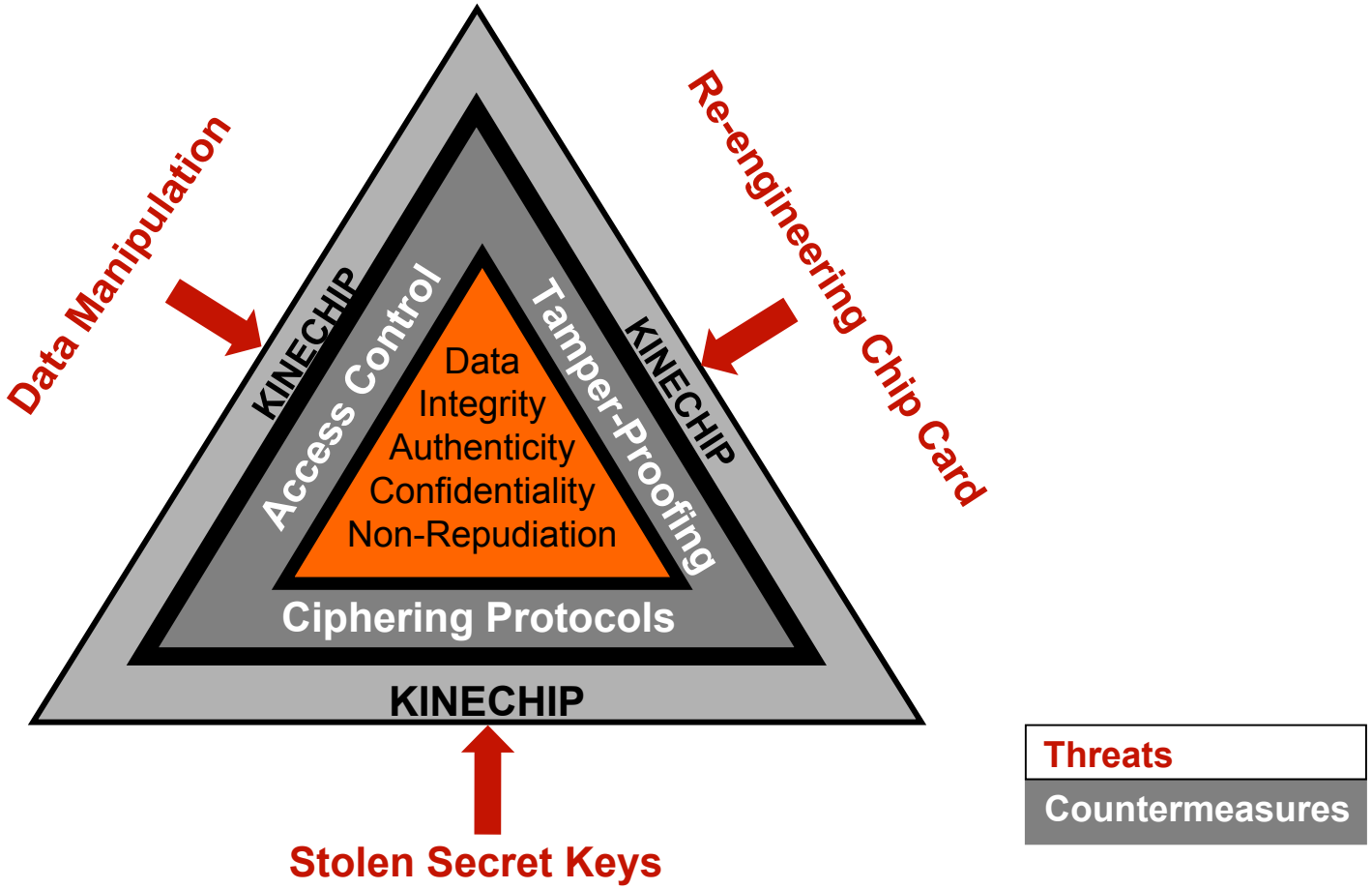
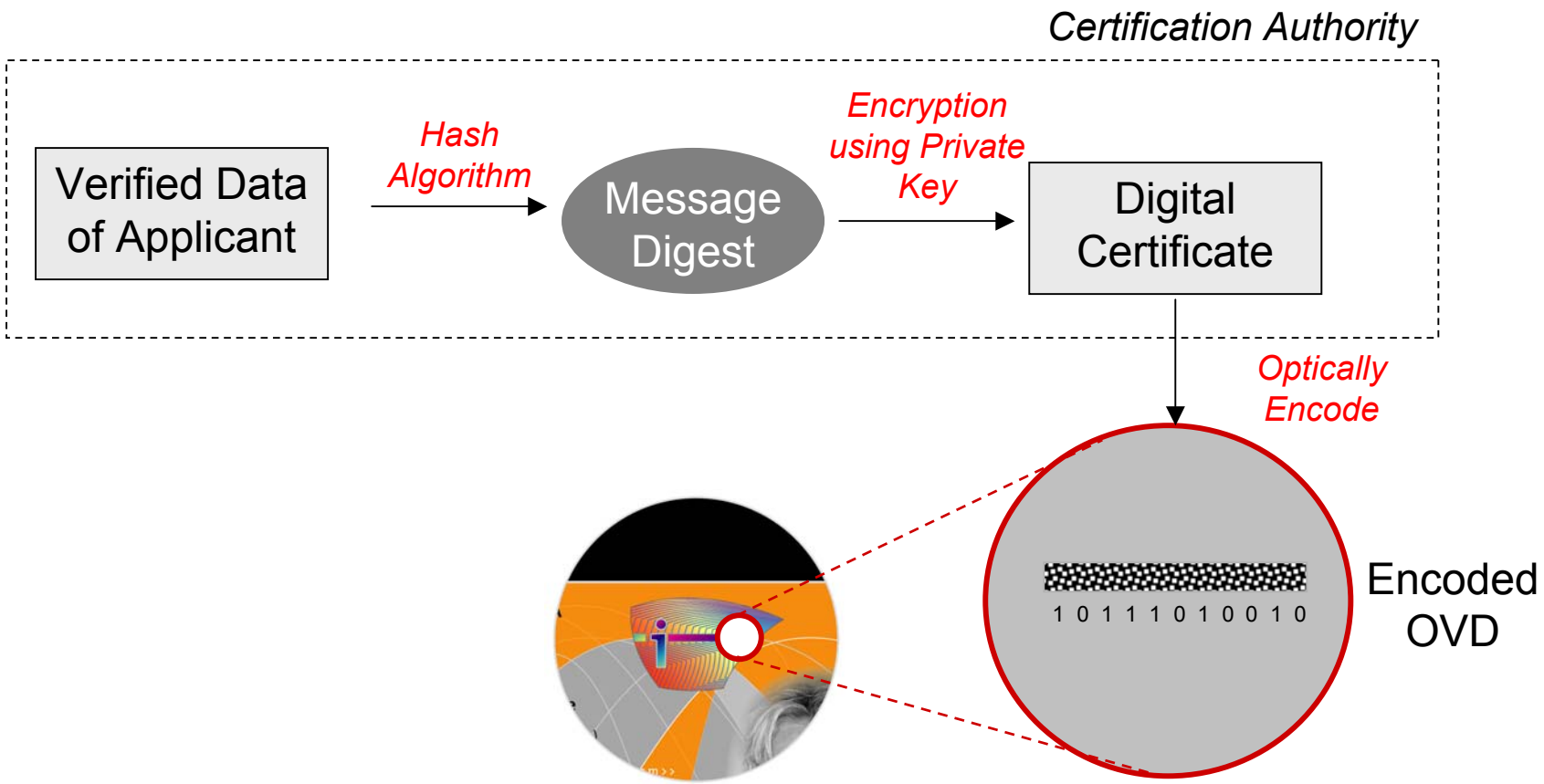
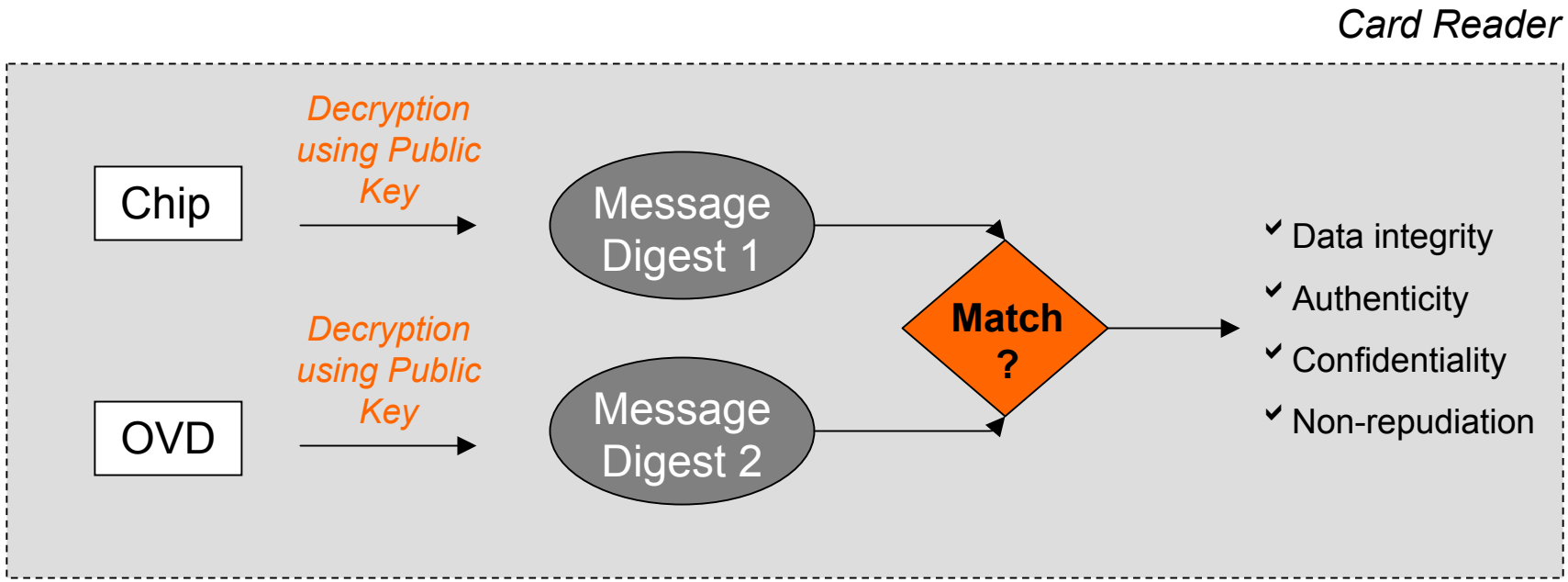
KINECHIP Technology: Enhanced Logic Security



How does it work ? Step 1: Personalisation

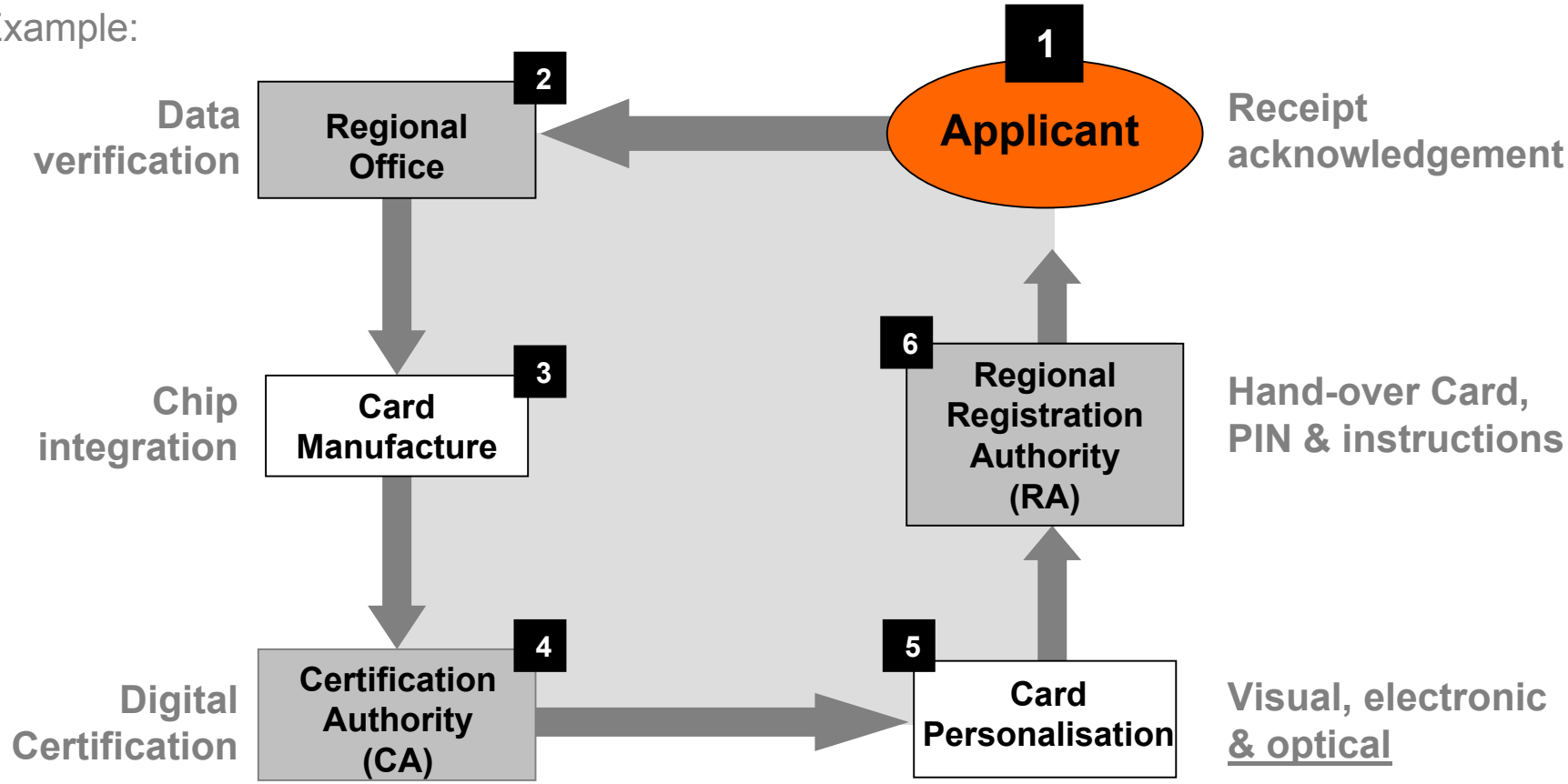


How does it work ? Step 2: Verification



KINECHIP Solution: Process Integration

Example:



KINECHIP Advantages

Advanced physical and logical security with one solution

- KINEGRAM® provides first-line security features:easy to verify, easy to communicate
- Diffractive code functions as additional security key
- Technology required to reproduce the device is not commercially available

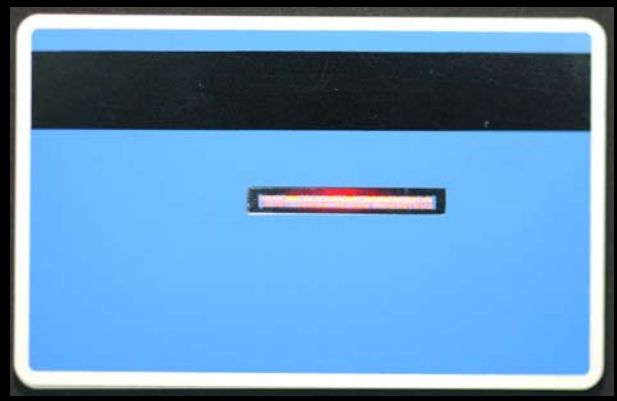
More confidence at the same speed

- Time required to verify authentication remains unchanged
- Does not impose additional requirement from card holder or inspectors

Added security where you need it

- Can be implemented selectively at counterfeit-prone regions
- Standard card readers easily upgradable

OPTOCHIP Solution: Prototype Cards



- IC Card: 1 kilobyte of EEPROM with an 8 bit CPU
- Optical Code:
  - **160 diffractive data fields** with a pre-and post-amble
  - Applied to the back of the card
  - Individualised through laser action

A KINEGRAM® is on the front of the card for 1st-line verification

OPTOCHIP Solution: Prototype Readers

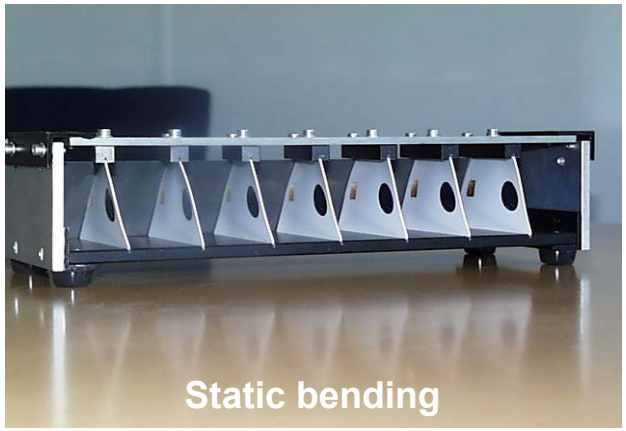
- Prototype reader has no moving parts and reads the optical code and IC card simultaneously.
- Optical reader head (13 mm x 42 mm x 50 mm) built onto a standard smartcard reader

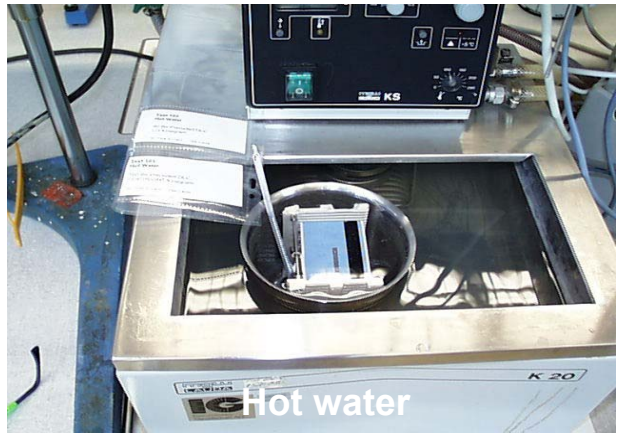
OPTOCHIP Prototype: Reliability Tests

Prototype OPTOCHIP Cards (over 600 pieces) were tested using procedures of international standards

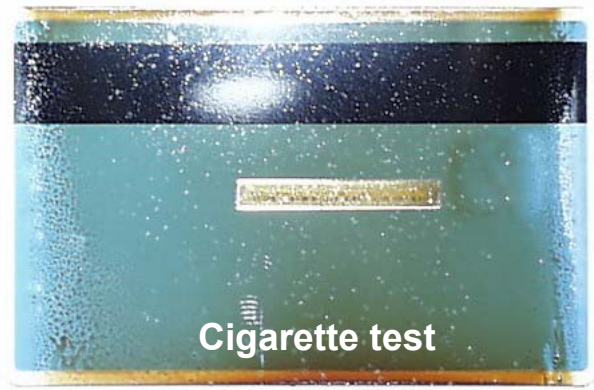
Test	Good bits	Test	Good bits
impact strength	100%	fingerprint	100%
surface strength	100%	solution of ethyl alcohol	55%
dynamic bending strength	100%	resistance against UV light	100%
dynamic torsional stress	100%	temperature cycle	100%
bending stiffness	100%	perspiration test, alkaline	100%
static bending	100%	perspiration test, acidic	100%
soft temperature	100%	solution of acetic acid	0%
cold resistance	100%	coffee, with milk and sugar	100%
ageing test	100%	cola	100%
endurance test, humidity	100%	nicotine from cigarettes	100%
plasticizer, DOA	100%	endurance test, abrasion	100%
solution of sodium carbonate	93%	embossing test	100%
hot water	100%	Taber test (abrasion test)	100%

OPTOCHIP Prototype: Reliability Tests

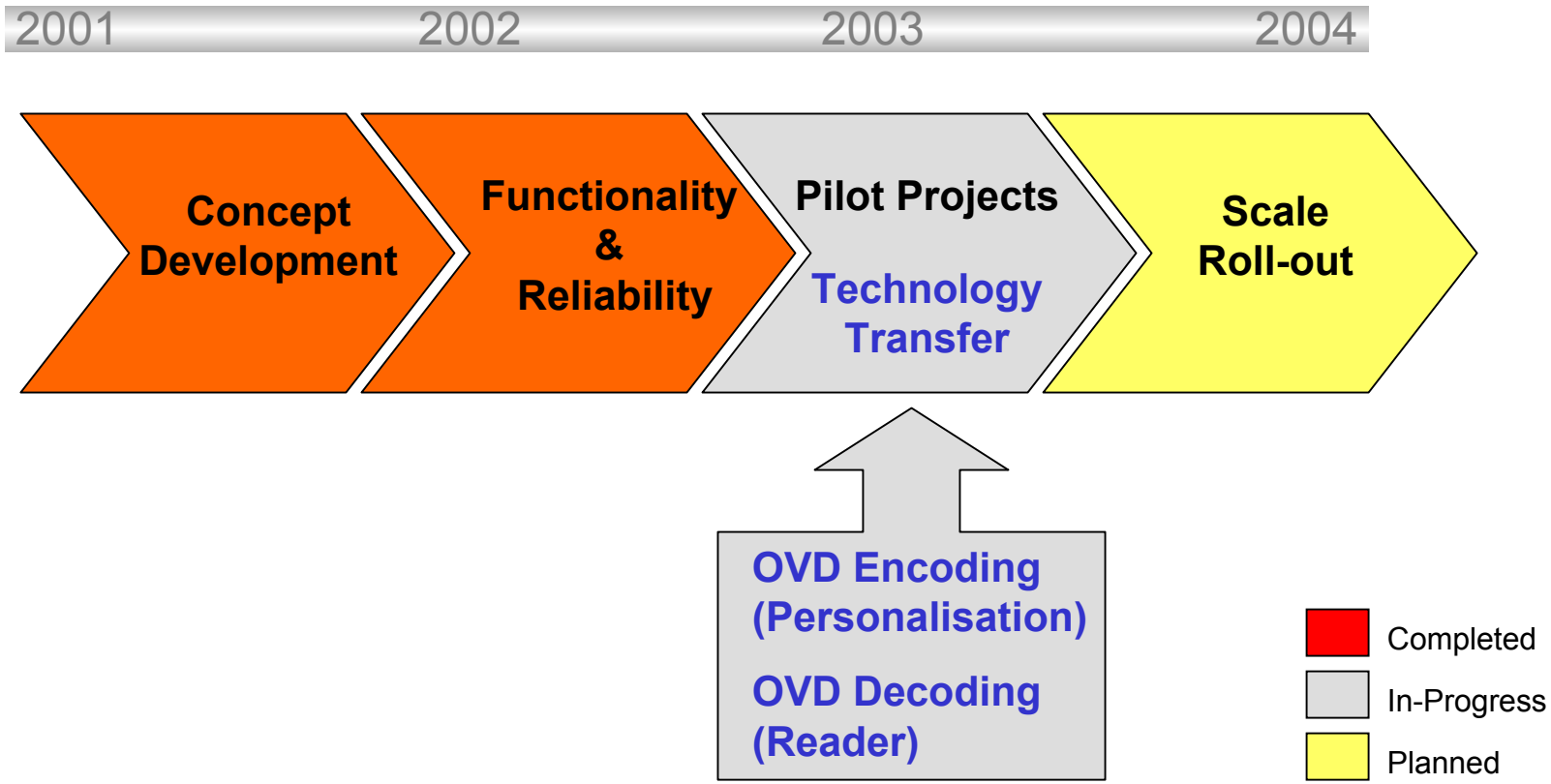

Static bending


Hot water


Various chemical tests


Cigarette test

KINECHIP / OPTOCHIP: Commercialisation Status



Summary

- The KINEGRAM® has proven its success as an optical ID security device for over 20 years
- KINECHIP is a cost-effective, robust solution for chip cards enhancing both physical and logic security
- OVDK/Kurz is committed to continuous R&D to counter the threat from counterfeiters
- Our solutions are implemented through co-operation with local technology leaders

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