

Enhanced Physical and Logic Security

Wayne Tompkin, Ph.D.
OVD KINEGRAM
A member of the KURZ Group

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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

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.



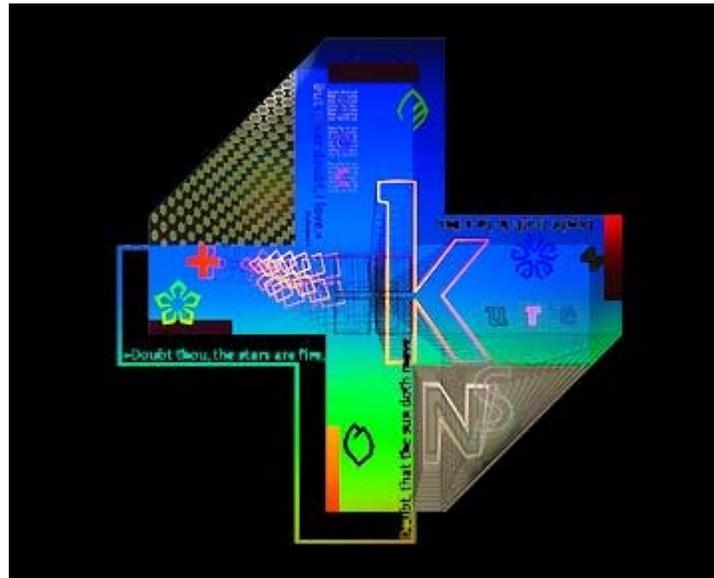
KINEGRAM® Technology: Performance and Security

The KINEGRAM® security device:

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

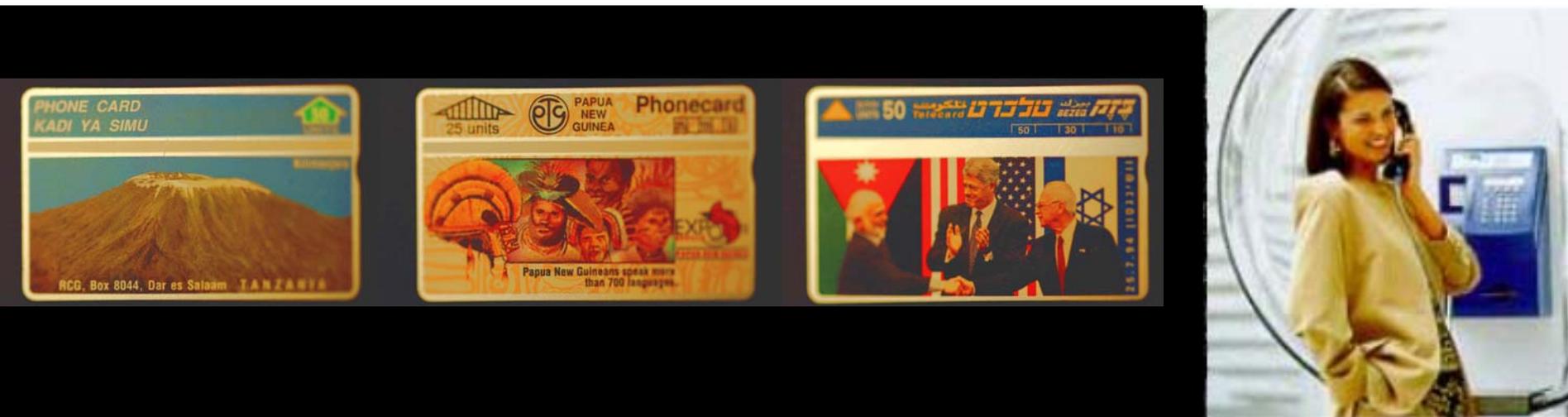


KINEGRAM® Technology: Optically Variable Effects



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)

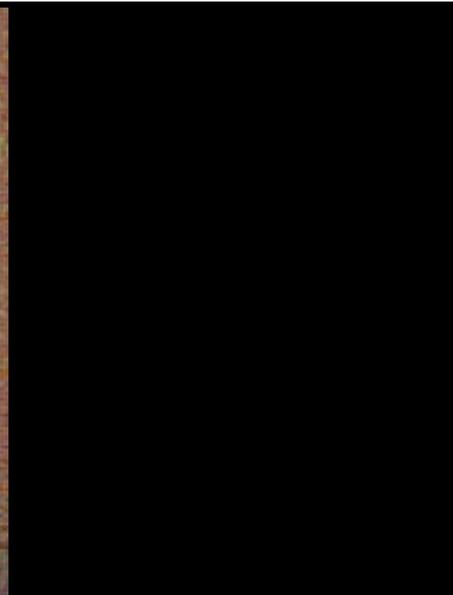
KINEGRAM® Technology: Diffractive Area Code

- ▶ 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

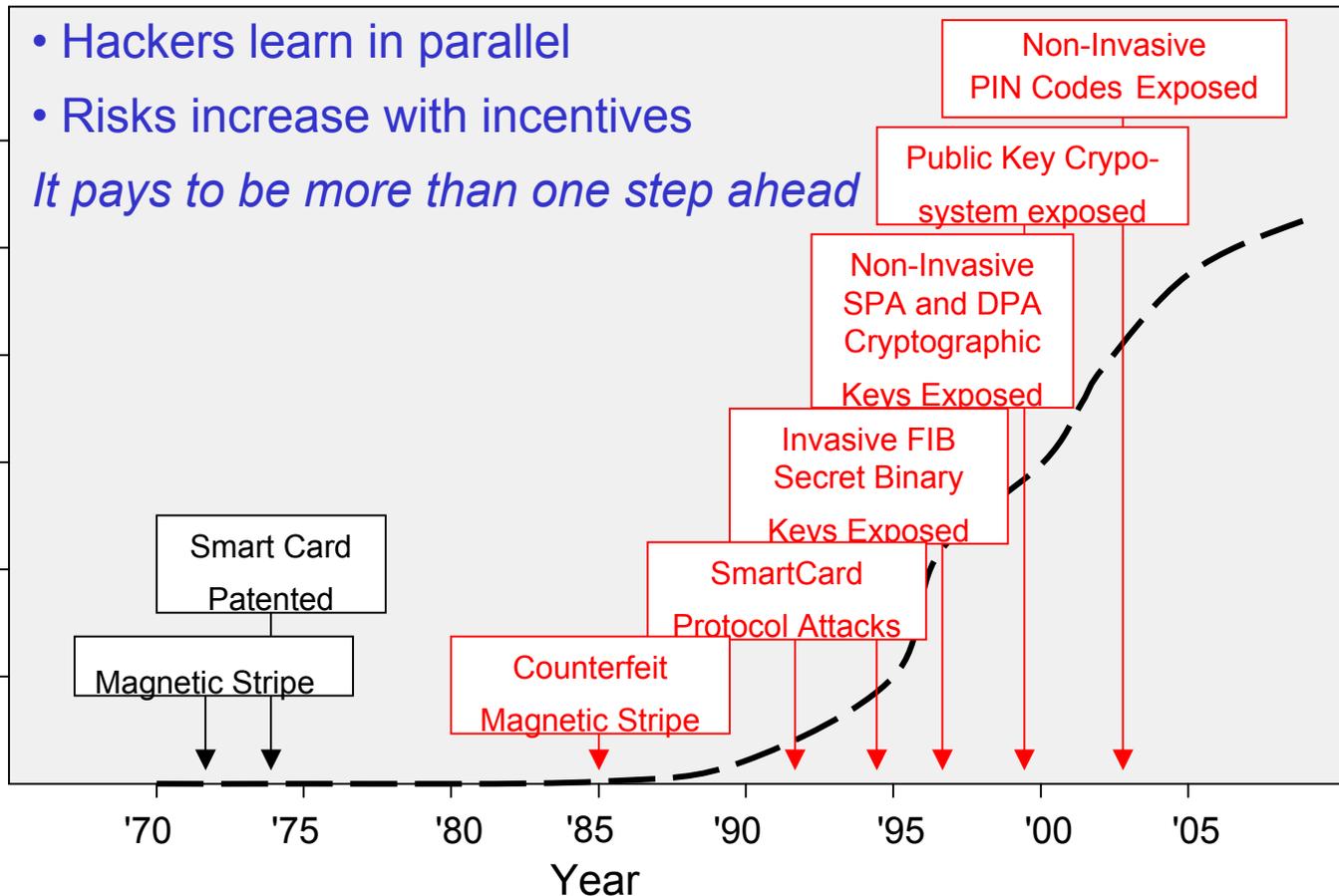
Card Security : Lessons Learned

Chip Card Shipments

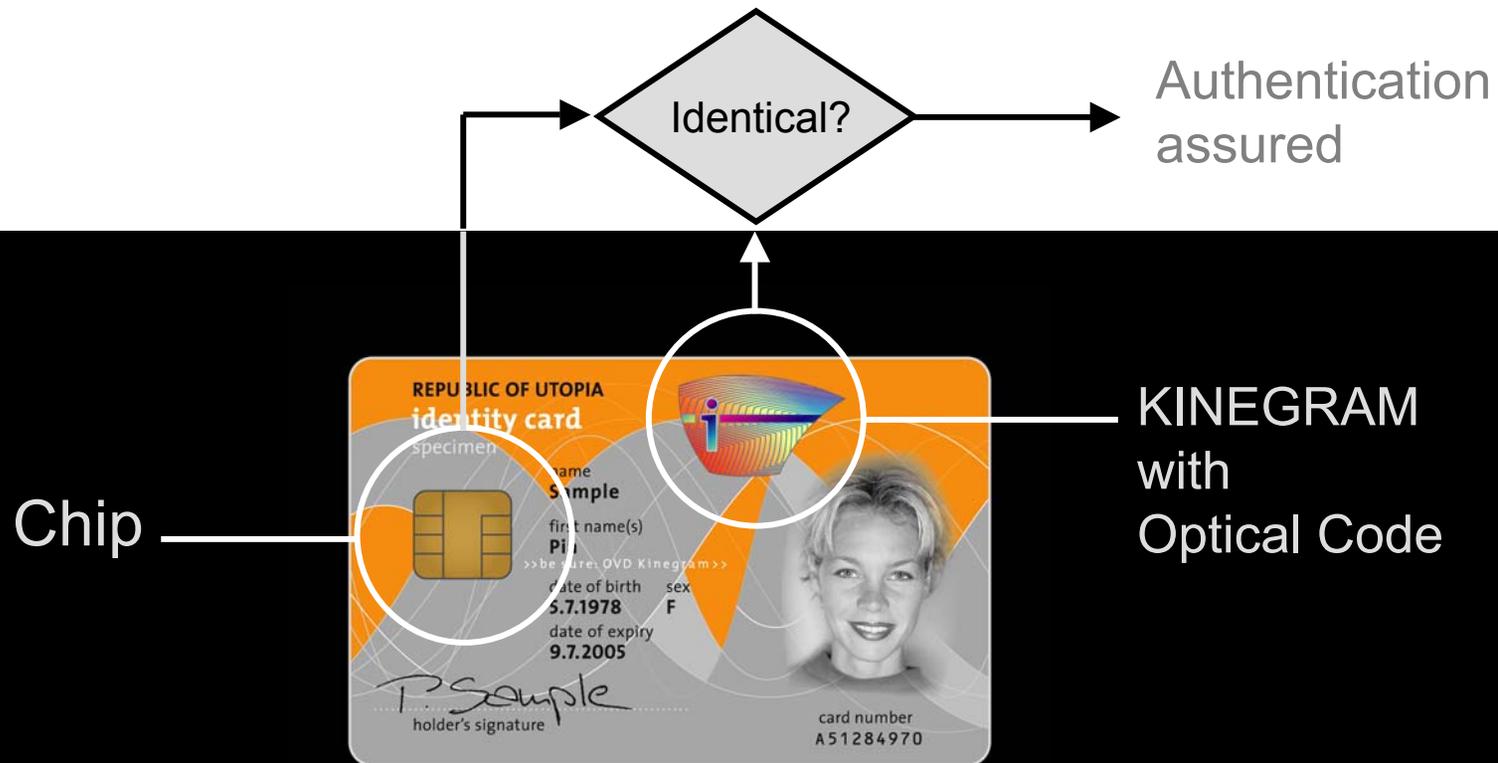
Million Units

3000
2500
2000
1500
1000
500

- Hackers learn in parallel
 - Risks increase with incentives
- It pays to be more than one step ahead*



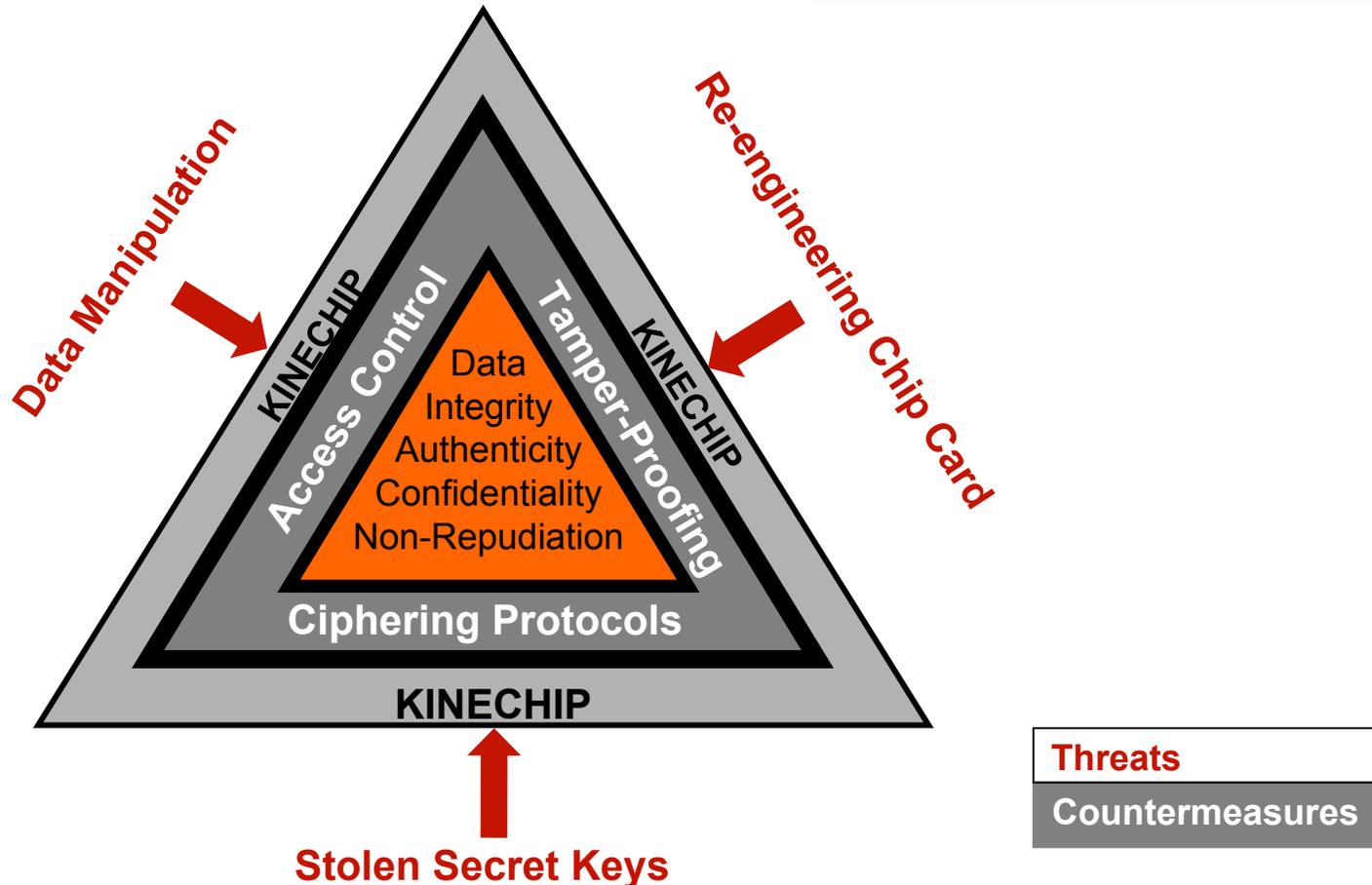
KINECHIP Solution: Physical Security & Enhanced Logic Security



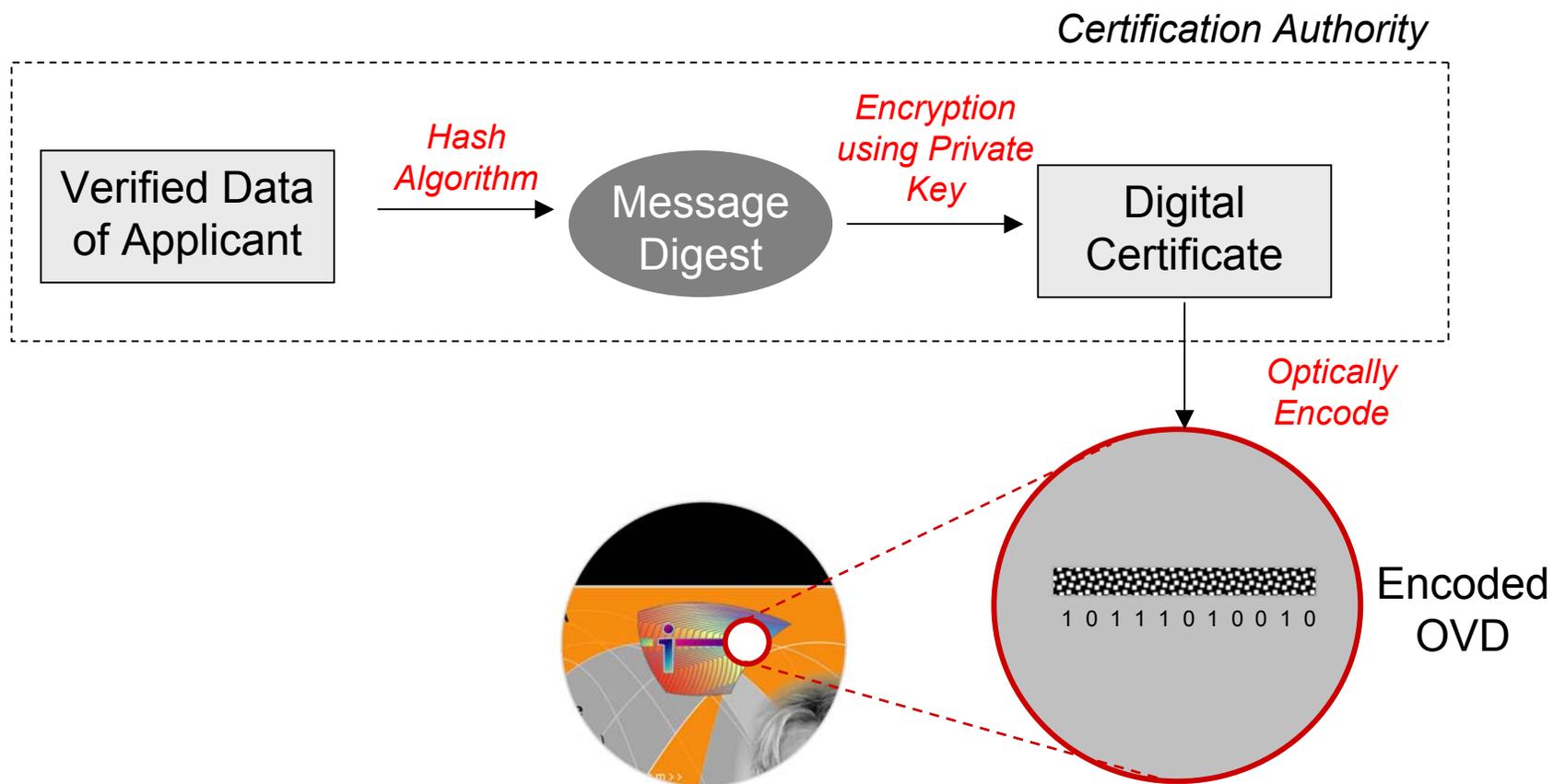
KINECHIP Technology: Features

- ▶ 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

KINECHIP Technology: Enhanced Logic Security

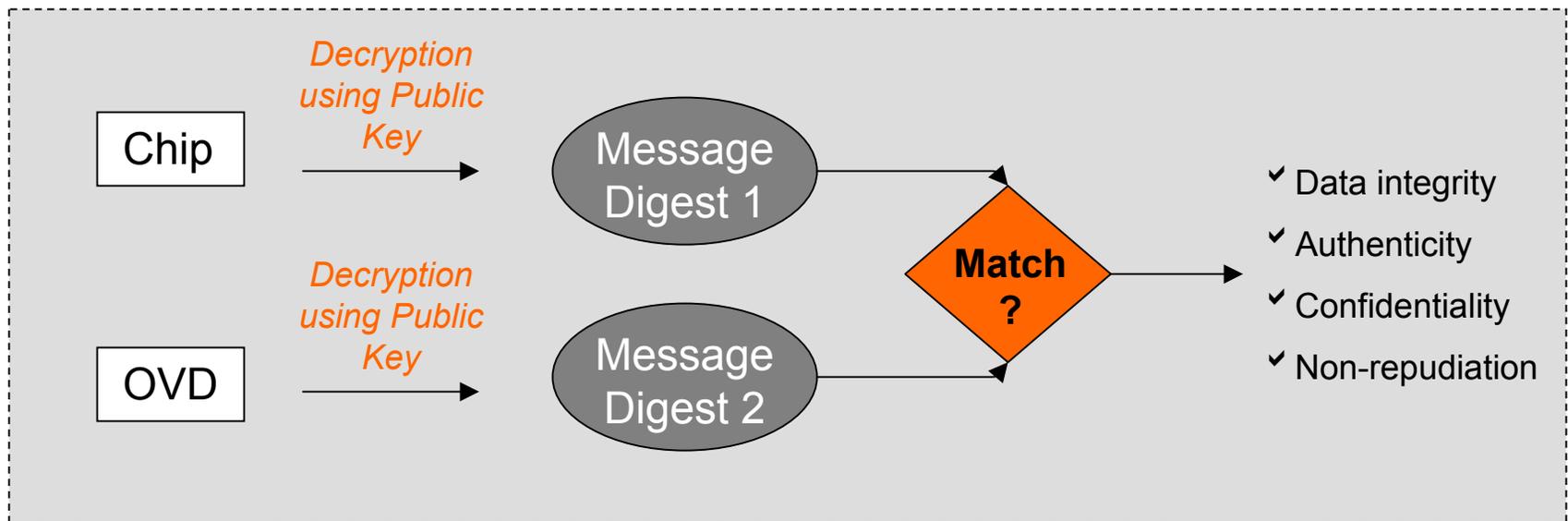


How does it work ? Step 1: Personalisation



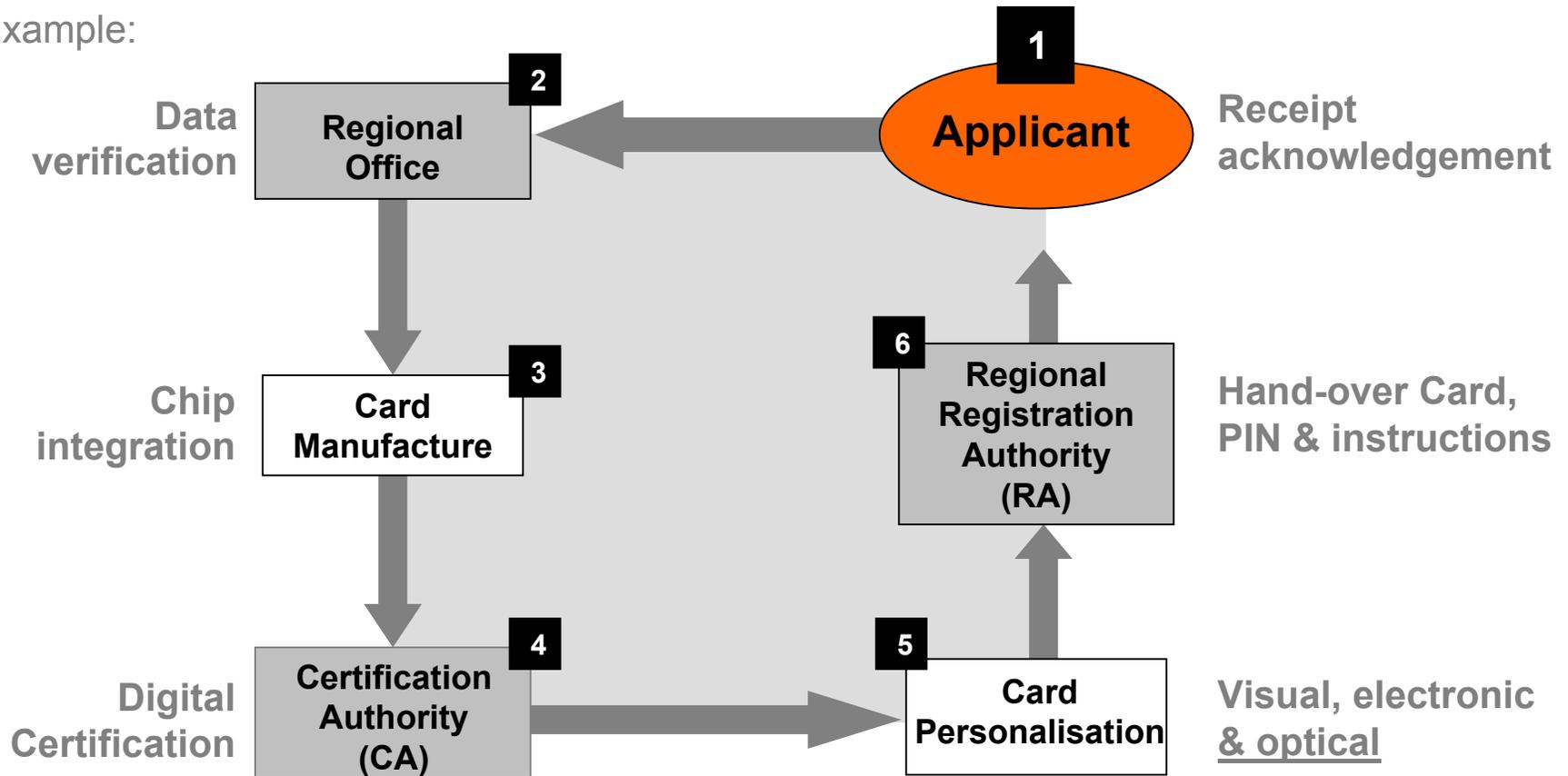
How does it work ? Step 2: Verification

Card Reader



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

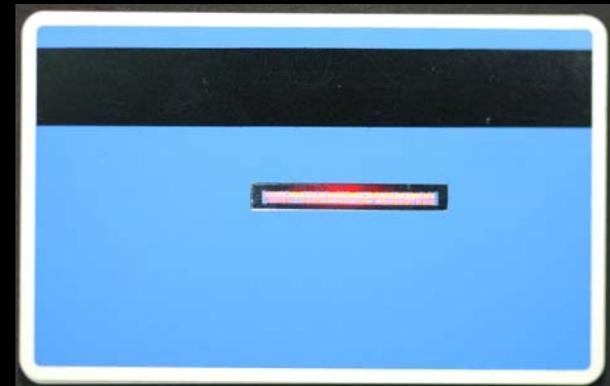
- ▶ Time required to verify authentication remains unchanged
- ▶ Does not impose additional requirement from card holder or inspectors



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

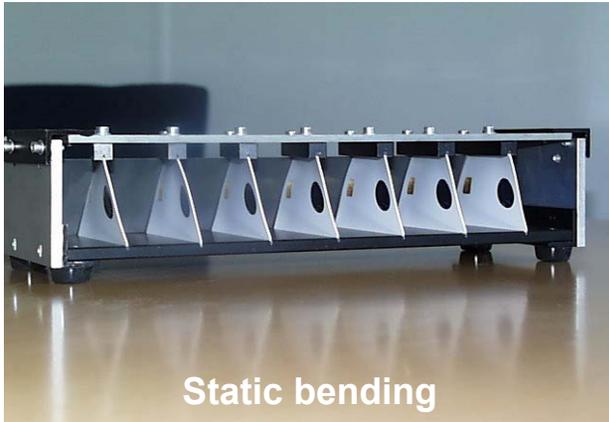


OPTOCHIP Prototype: Reliability Tests

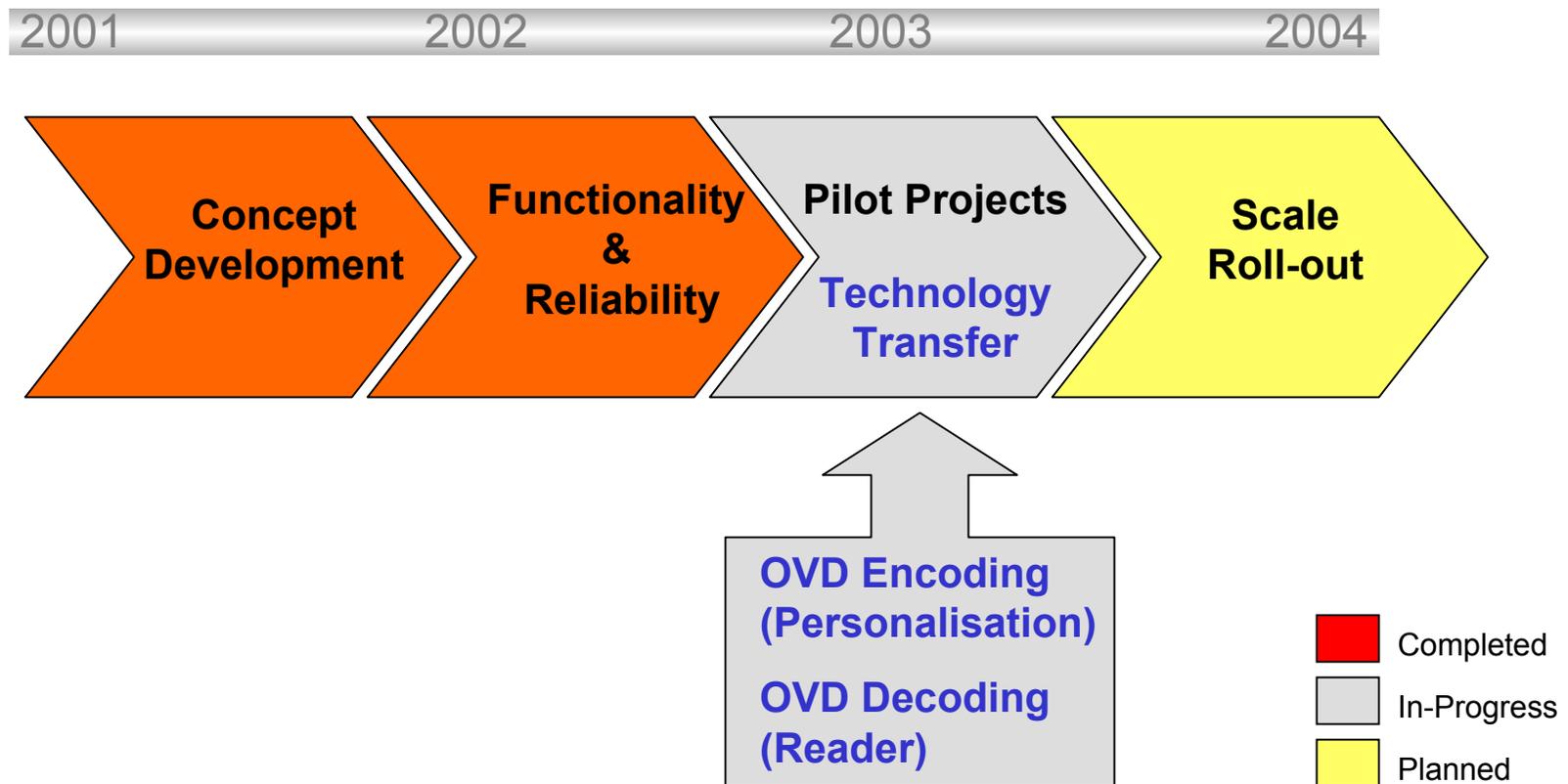
Prototype OPTOCHIP Cards (over 600 pieces) were tested using procedures of international standards

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



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**

Contact

Oliver Moesgen
Sales & Marketing Manager
KURZ Transfer Products
Oliver.Moesgen@kurzusa.com
T: 704 651 6599



KURZ TRANSFER PRODUCTS
Charlotte, NC / USA

