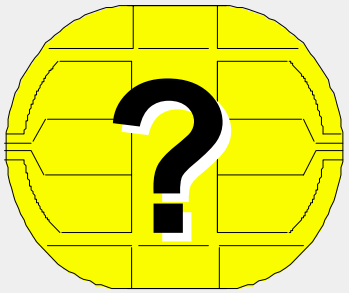
Banking Smart Card

Current Payment Methods

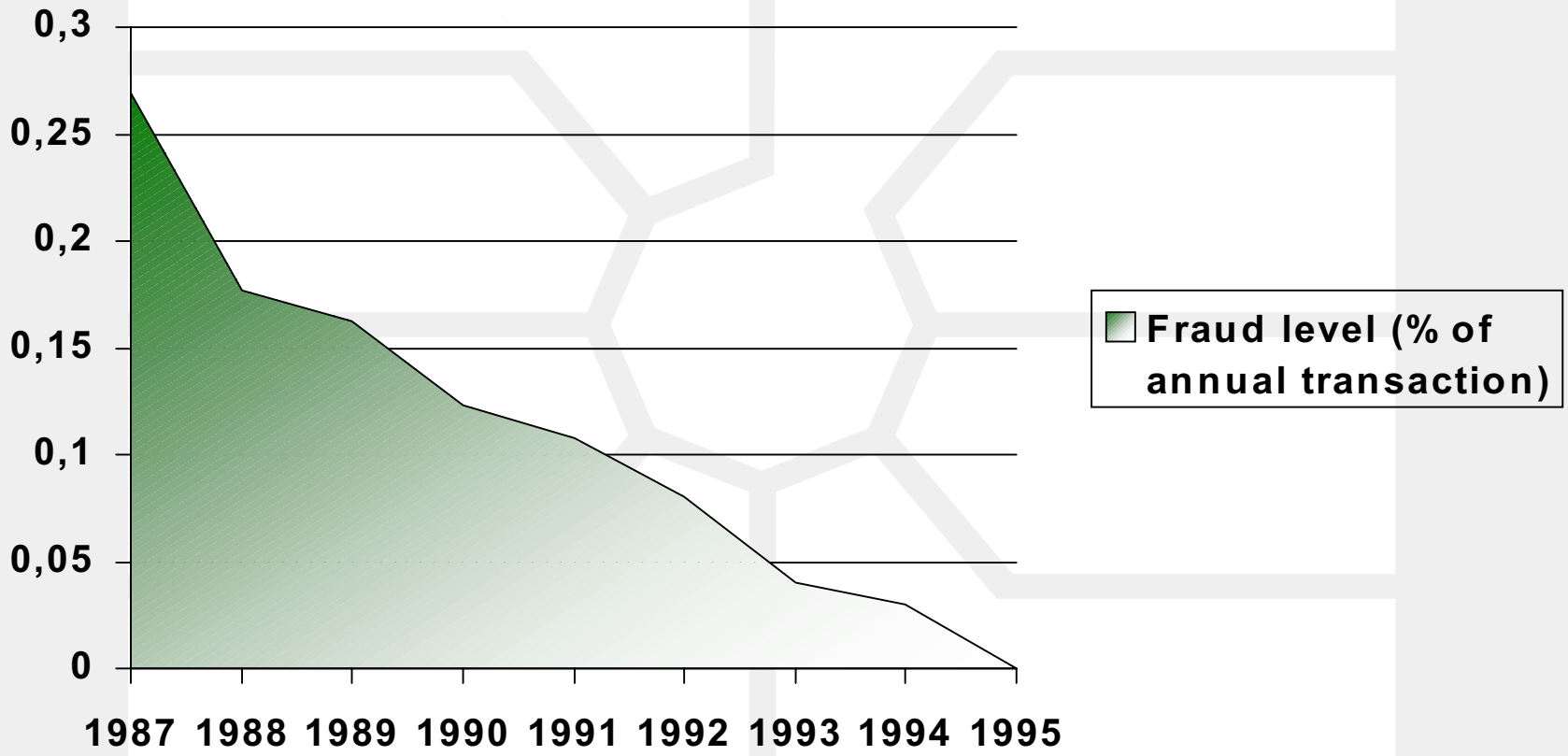
- **Cash**
  - 85% of all transactions
  - Cash handling is very costly
- **Cheques**
  - High cost per transaction (x2)
- **Magnetic Stripe Cards**
  - Subject to fraud
  - On-line communication costs
  - No multi-application capability

Benefits of smart cards



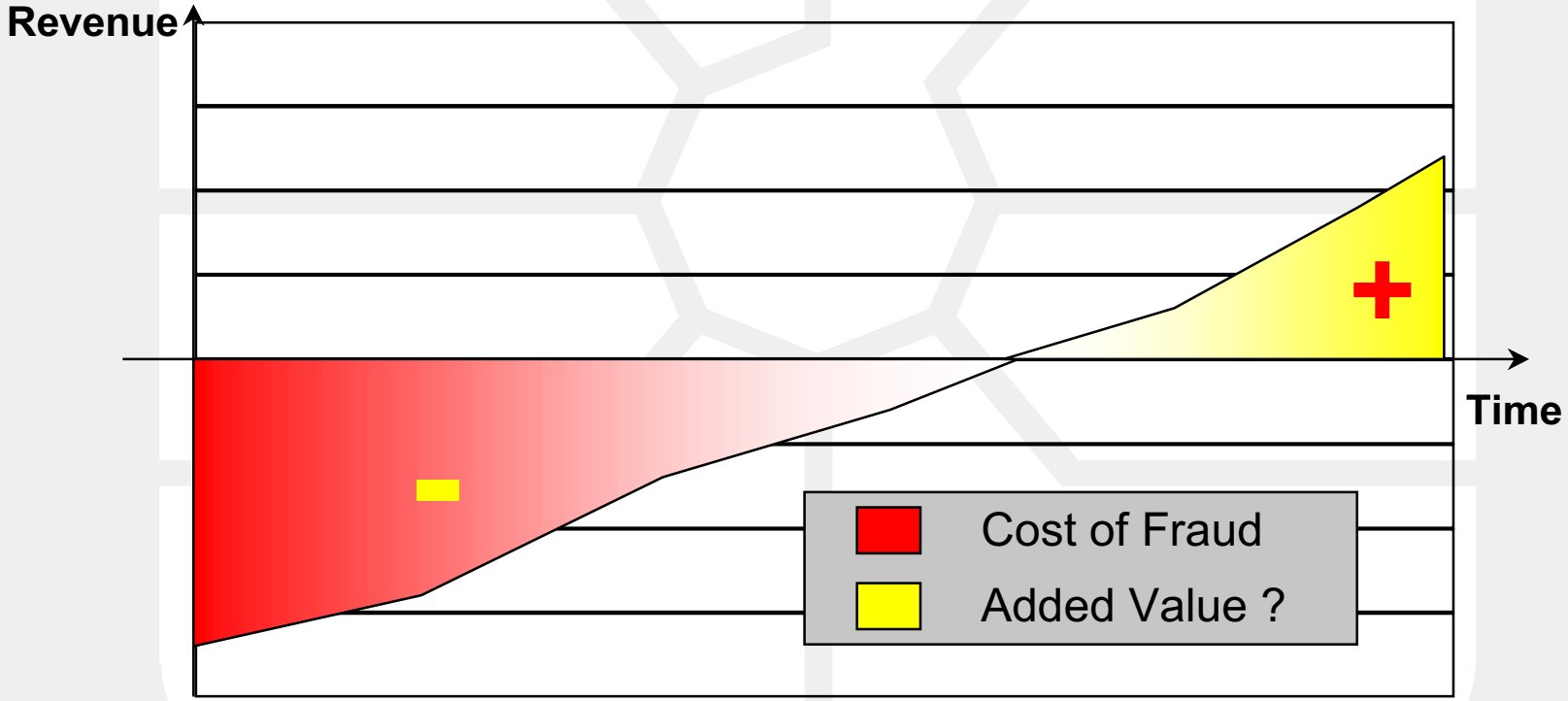
- **More Flexibility**
  - New market opportunities
  - Multi-application capability - New services
  - Merchant/Cardholder Relationship Programs
- **More Security**
  - Offline PIN cardholder verification
  - Improved Risk Management
  - Reduced Fraud
- **Less Costs**
  - Reduced Online Authorization Costs
  - Reduced Number of Cards

Benefits of smart cards

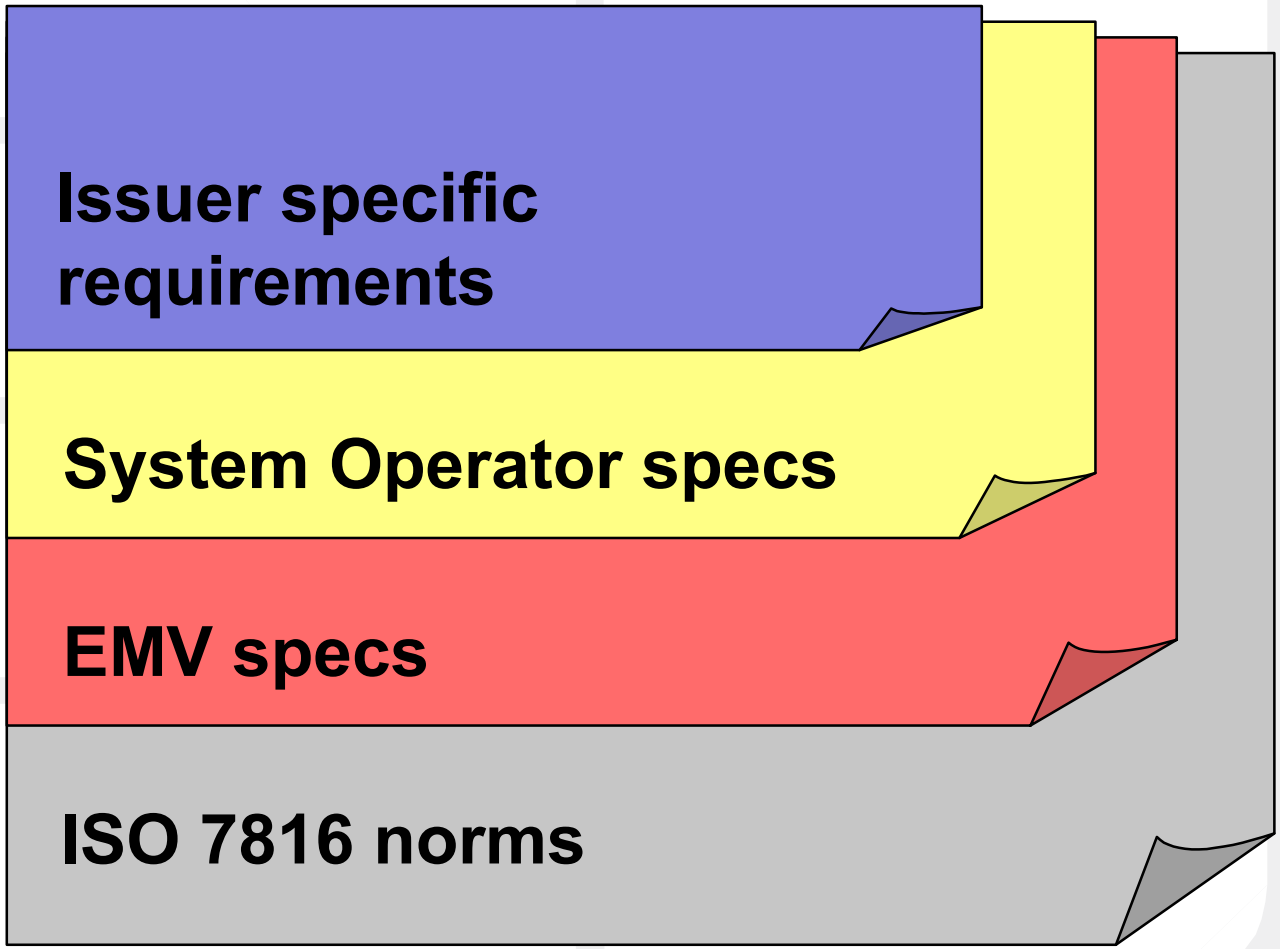


Business Case

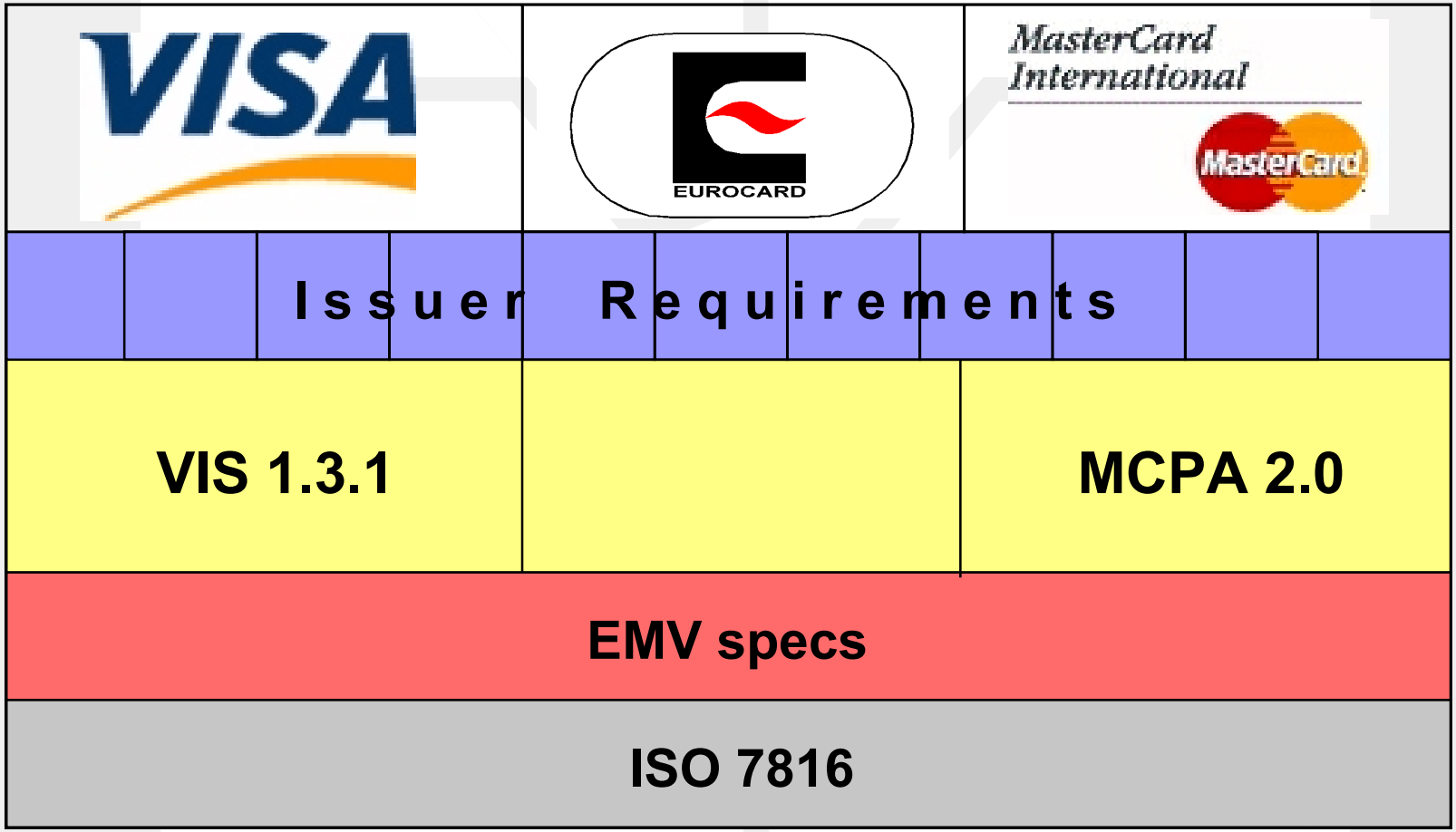
Only smart cards can provide a means to generate extra-revenue



Banking Standards



Banking Standards



EMV specifications

- Defined by Europay / Mastercard / VISA
- To Guarantee interoperability of smart cards for Debit and Credit applications
- EMV is NOT sufficient to develop an application

EMV specifications

EMV ver. 3 + Errata (June 98)

- **Defines**
  - Electromechanical characteristics
  - Logical interface and Transmission protocols
  - Data Elements & commands
  - Application selection
  - Security aspects
- **Does not define**
  - Physical data structure
  - Operating system
  - Personalization procedure

VIS

Visa Integrated circuit card Specifications

- Defines VISA options of EMV specifications
- VIS is sufficient to develop a Chip Card application

VIS

VIS 1.3.1

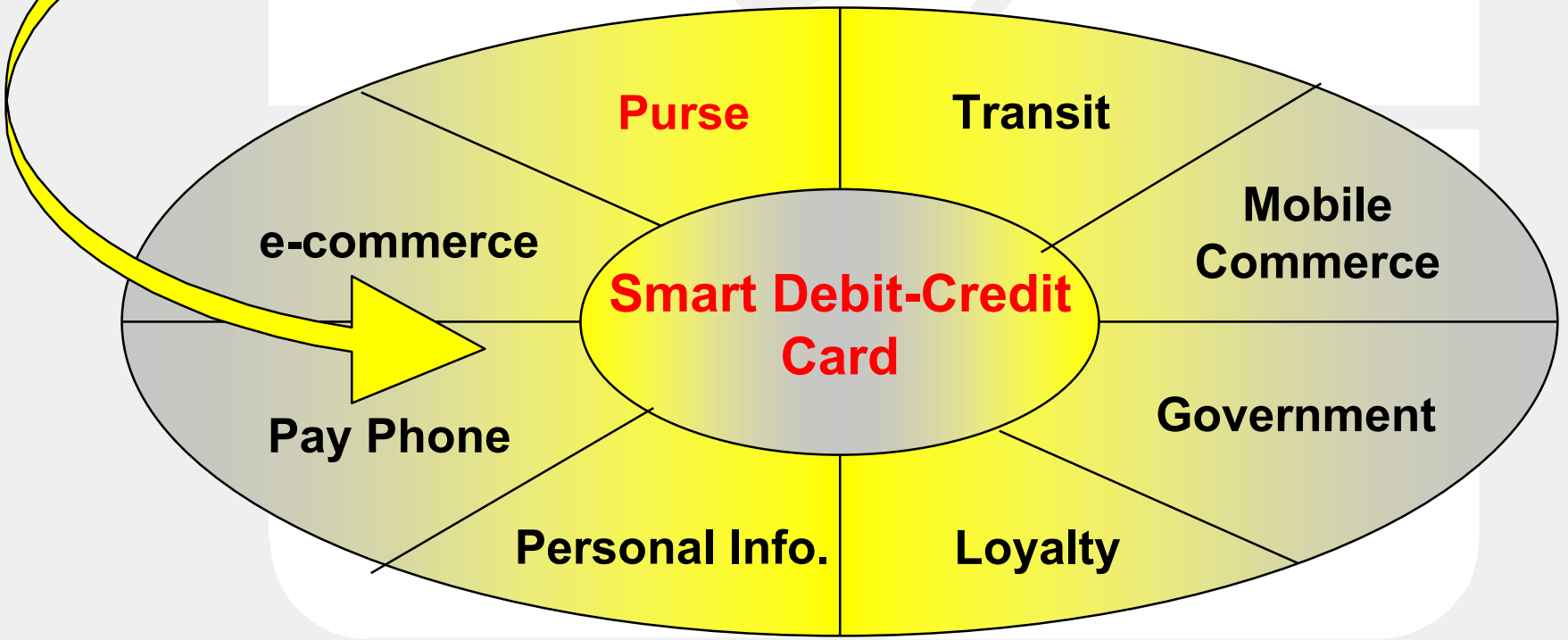
- **Defines**
  - Data elements and functions (from EMV)
  - Card Risk Management processing
  - Calculation of cryptograms
  - Additional VISA specific commands and data elements
- **Does not define**
  - Proprietary processes, data & commands
  - Operating system
  - Personalization procedure

MCPA

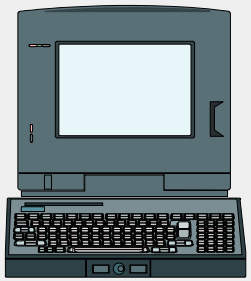
Visa Integrated circuit card Specifications

- Defines Mastercard options of EMV specifications
- MCPA2.0 is sufficient to develop a Chip Card application

Smart Debit-Credit As Core Application



Channels



PC

P.o.S.

ATM

GSM

E-Purse

Transit

e-commerce

Mobile Commerce

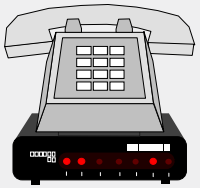
Smart D/C + Authentication

Payphone

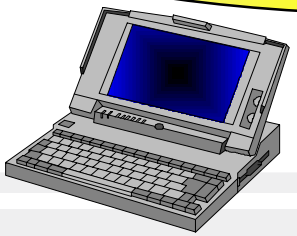
Government

Personal Info.

Loyalty



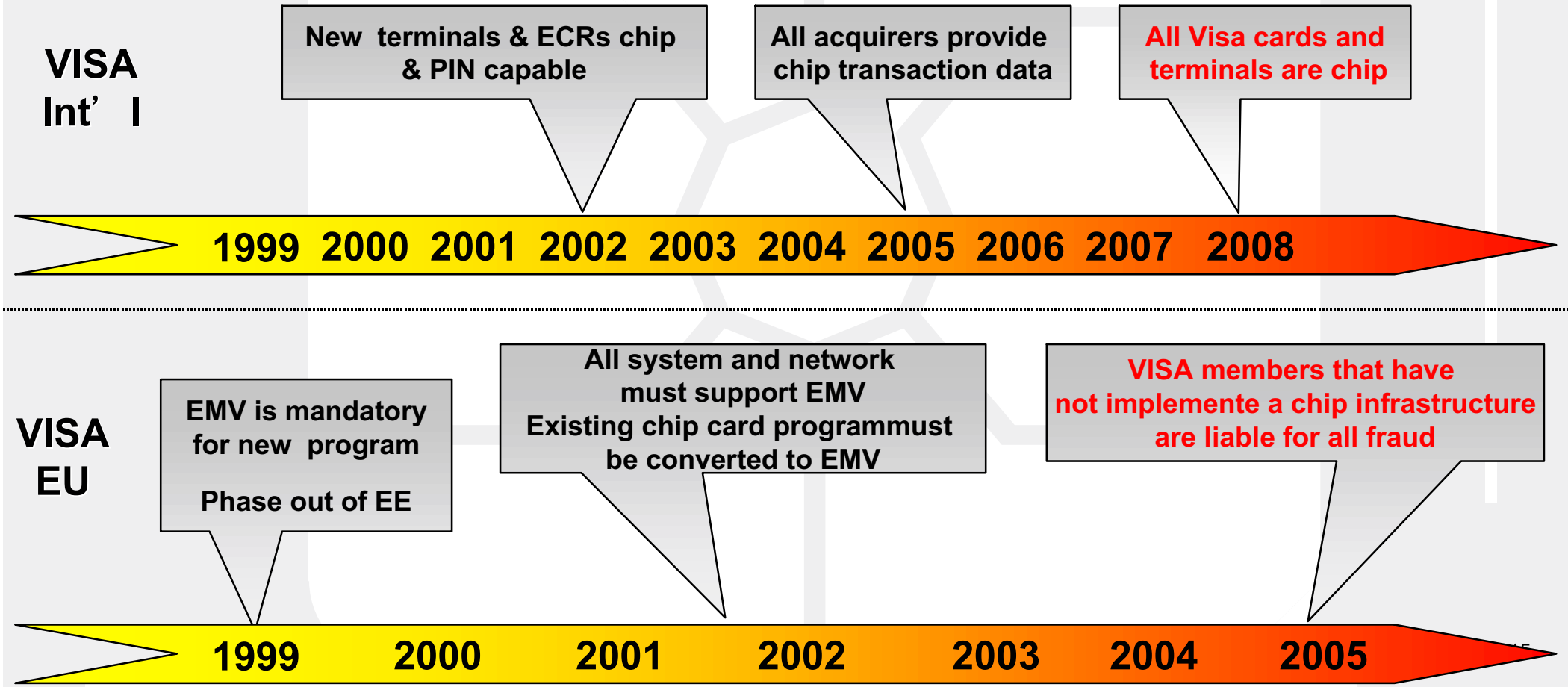
Phone



PDA

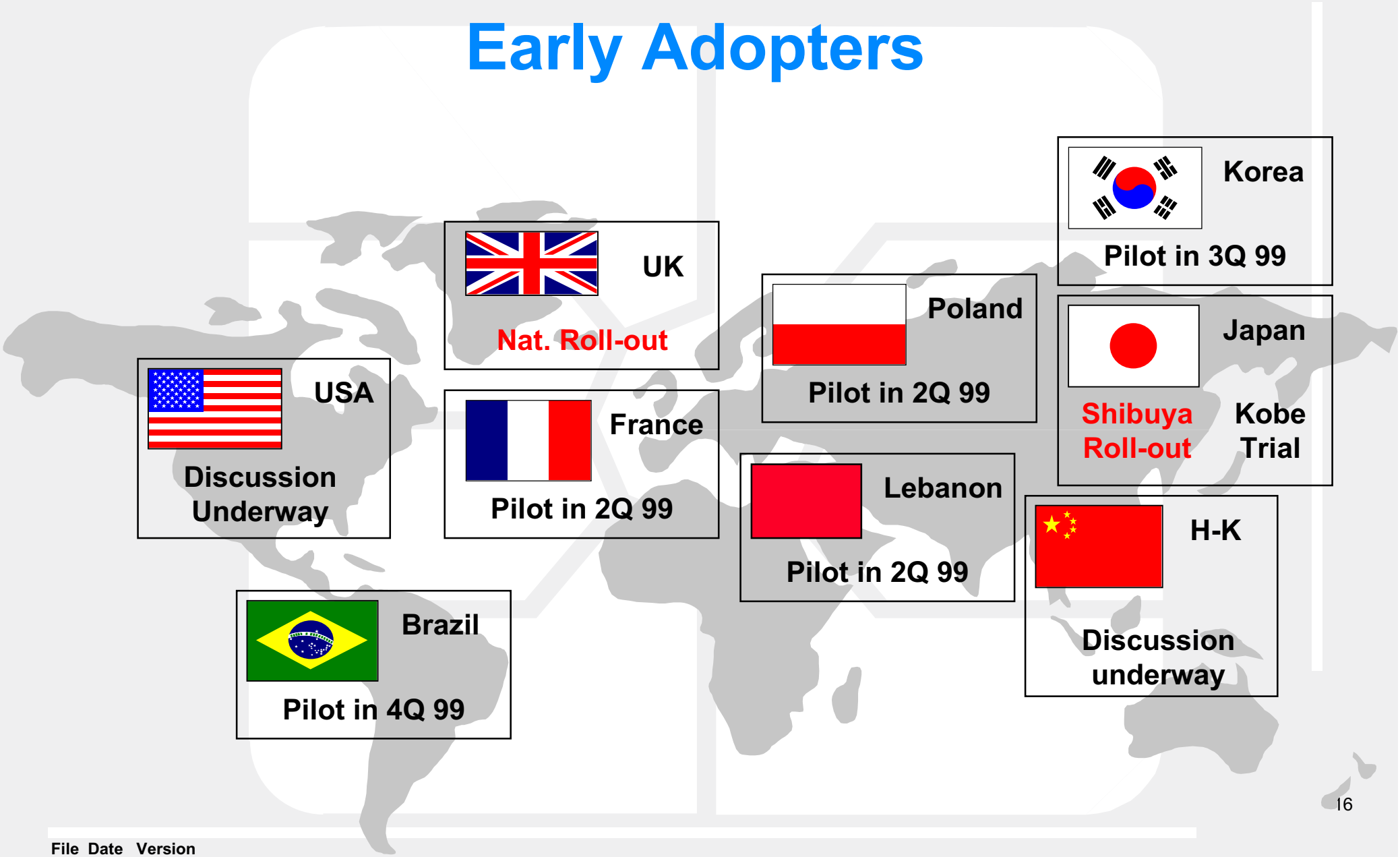
Set-Top Box

Migration



File Date Version

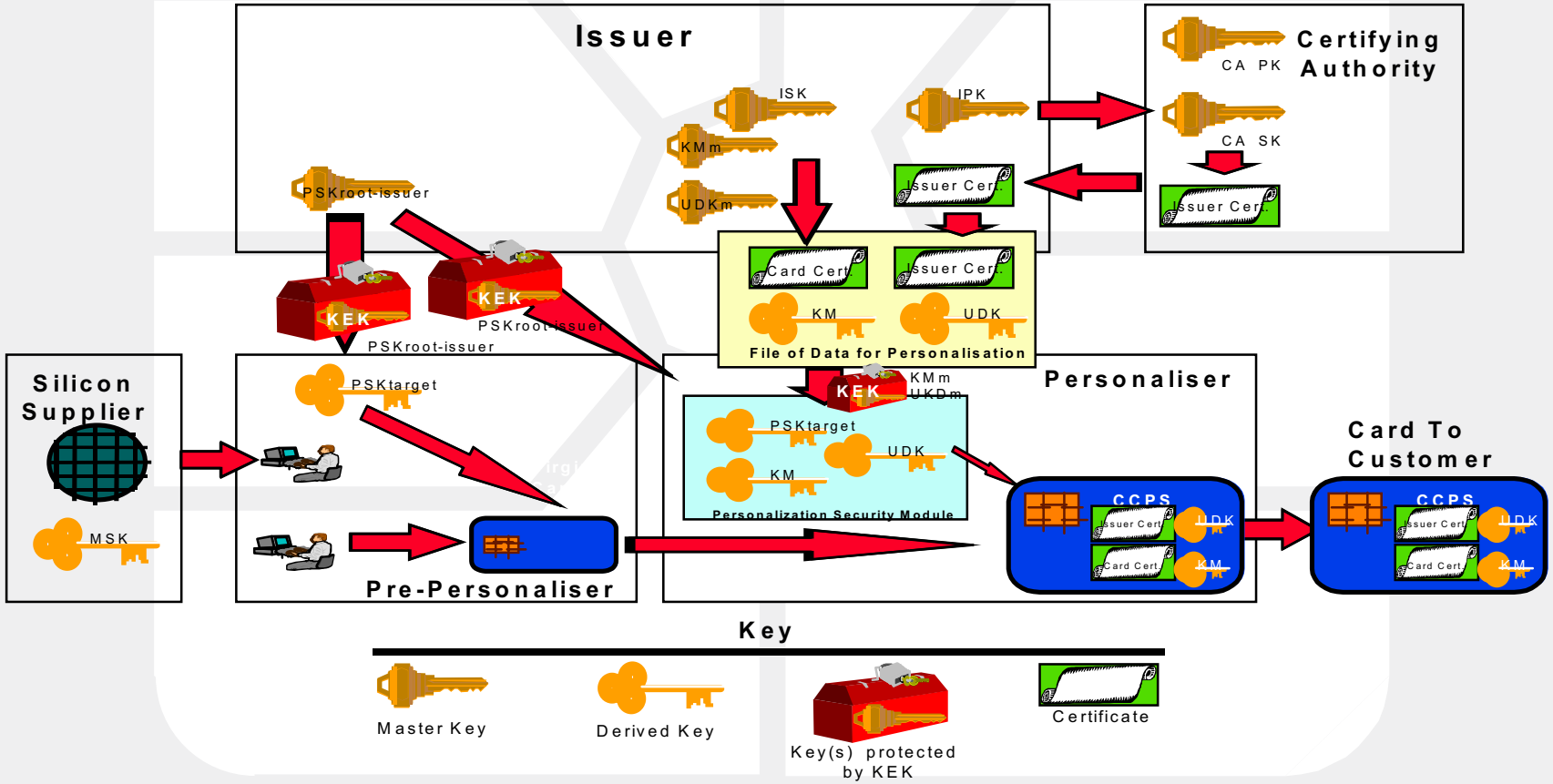
Early Adopters



Smart Debit-Credit Features

- Off-line Data Authentication
- Off-line Authorization Controls
- Off-line Cardholder Verification
- On-line card/issuer Authentication
- Ability to update card parameters
- Transaction certificate audit trail

Key Management



Key Management Services

- **RSA keys for Static data authentication**

  Generation issuer secret and public keys
  Transportation of the issuer RSA public key to the Certification Authority which will generate the issuer public key certificate
  Secure transportation of keys + certificate to issuer and personaliser

- **DES keys**

  Generation of the issuer DES secret keys : keys encryption keys, master personalisation keys, master MAC and master payment keys
  secure transportation to the issuer and personaliser

Personalization

- Magnetic Stripe Encoding
- Electrical personalization
- Graphical personalization (embossing, thermo-printing, laser engraving, …)
- Card Despatching & Mailing
- Report Files (Audit Trail)