Smart cards

Trends, technologies and futures

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A brief overview of smart cards

- Invented in 1974
- Contain a microprocessor (CPU, RAM, ROM, etc)
- Already 500 million in circulation

The Old Smart Card Market

- Dominated by card manufacturers
- Cards and applications inseparable
- Proprietary systems constrain growth

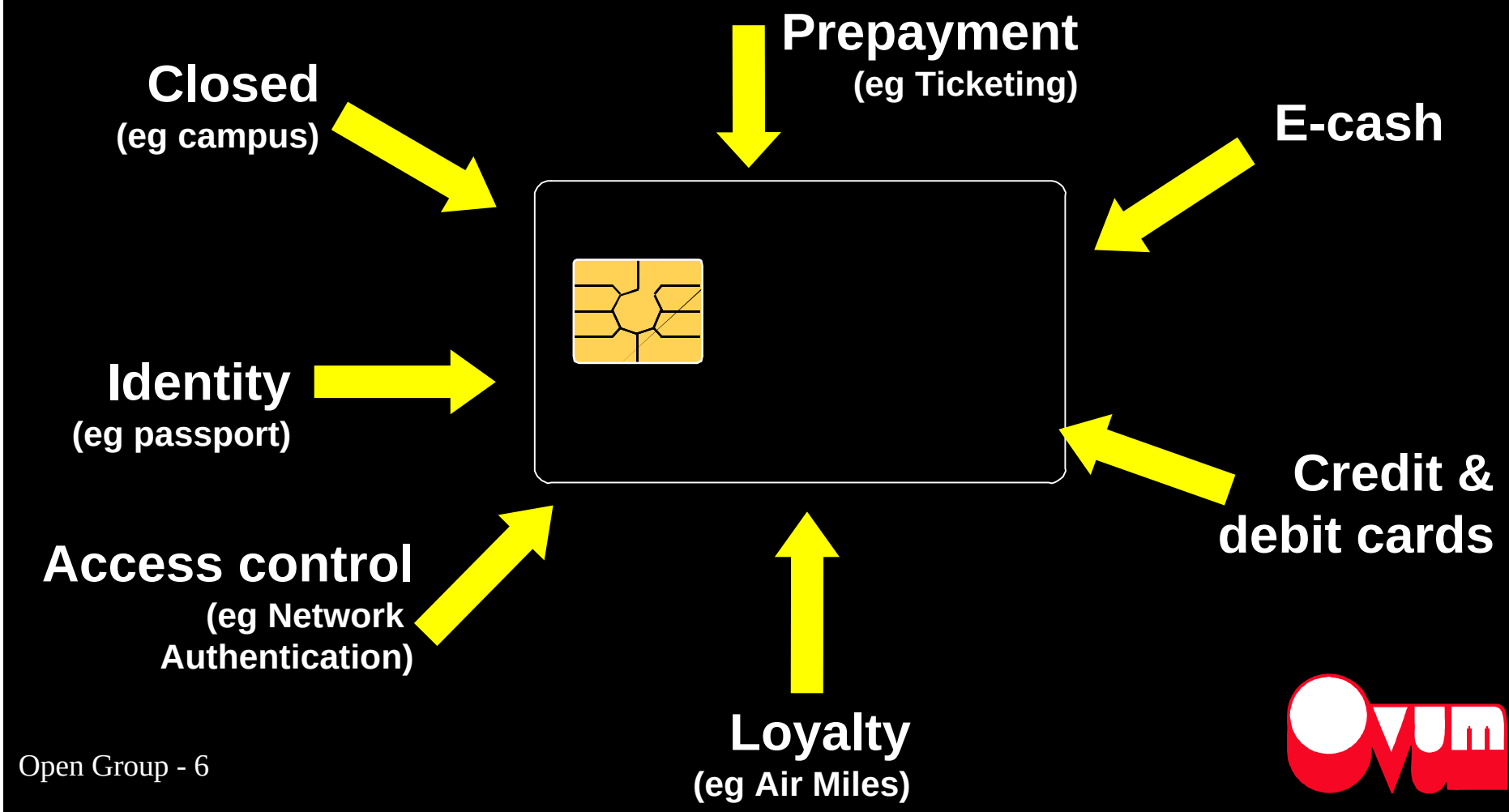
The New Smart Card Market

- Focused on applications
- Enabled by new technology
- Predicated on interoperability

Focused on applications

- A smart card gets its usefulness from its applications
- Applications bring context and functionality
- Applications differentiate card schemes

Core smart card applications



Enabled by new technology

- Ease of application development
- Divorce of application from card
- Multiple applications from multiple suppliers
- Dynamically-loaded applications

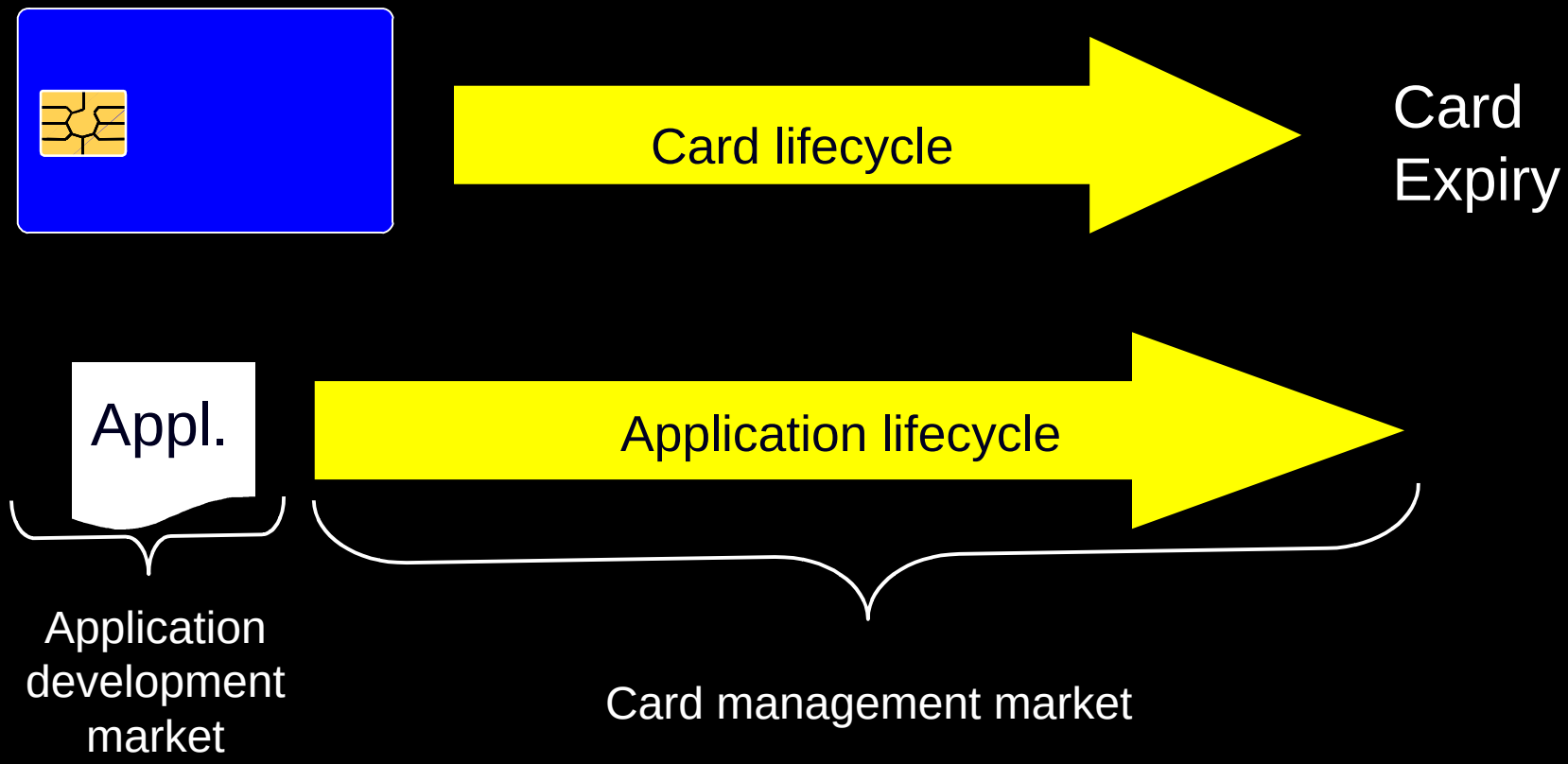
Traditional card & application life cycle

Card & application lifecycle in step

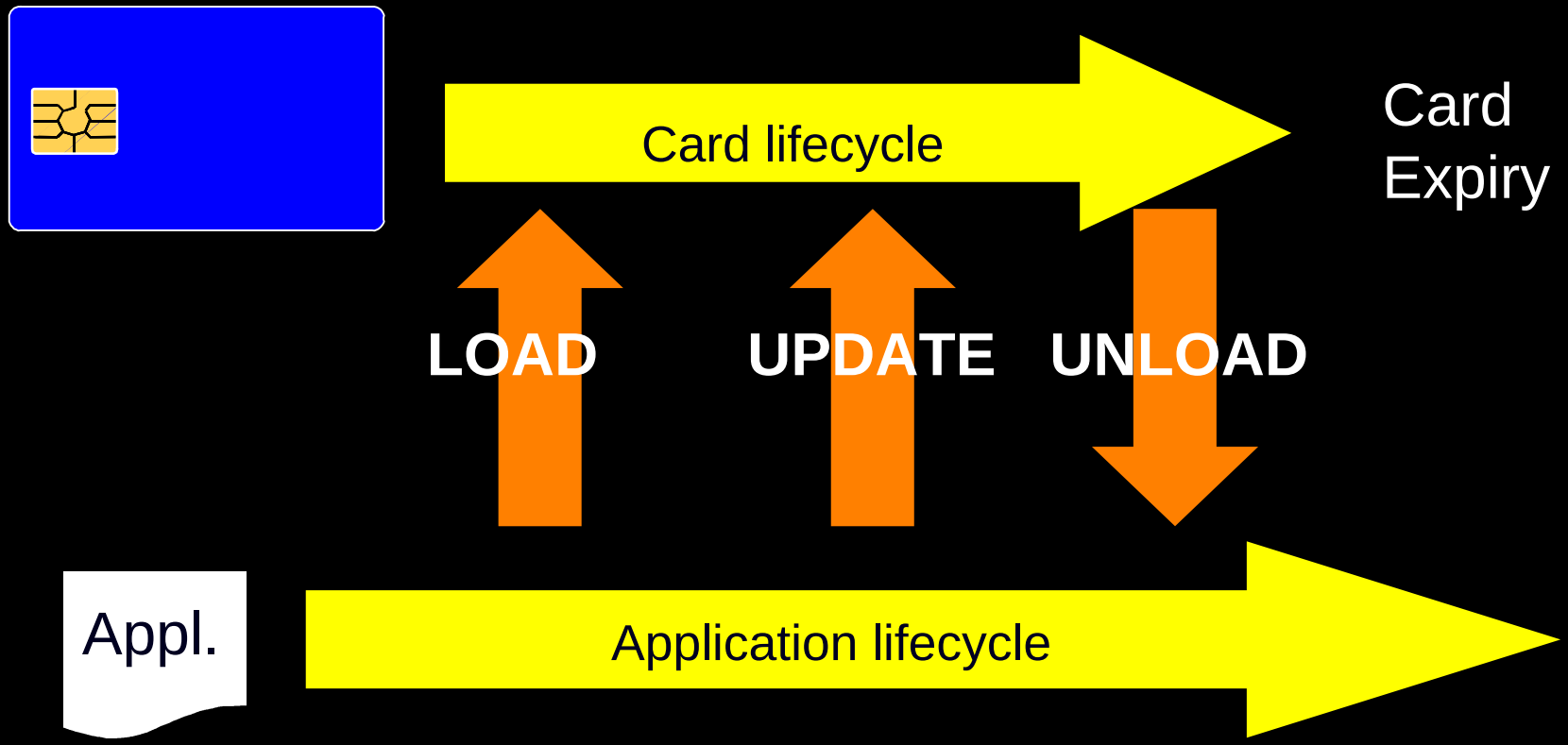
Card fabricated with application on board

Card Expiry = Appl Expiry

New card and application life cycle

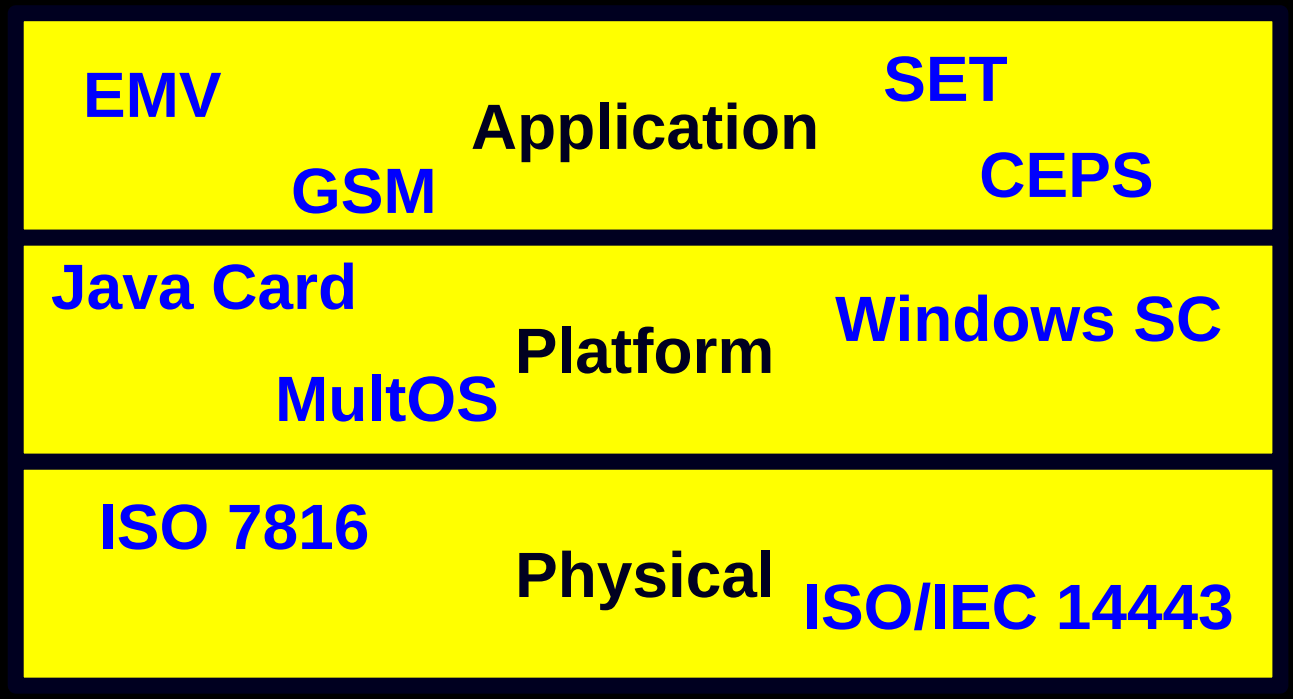


Dynamic loading



The New Smart Card Market ...

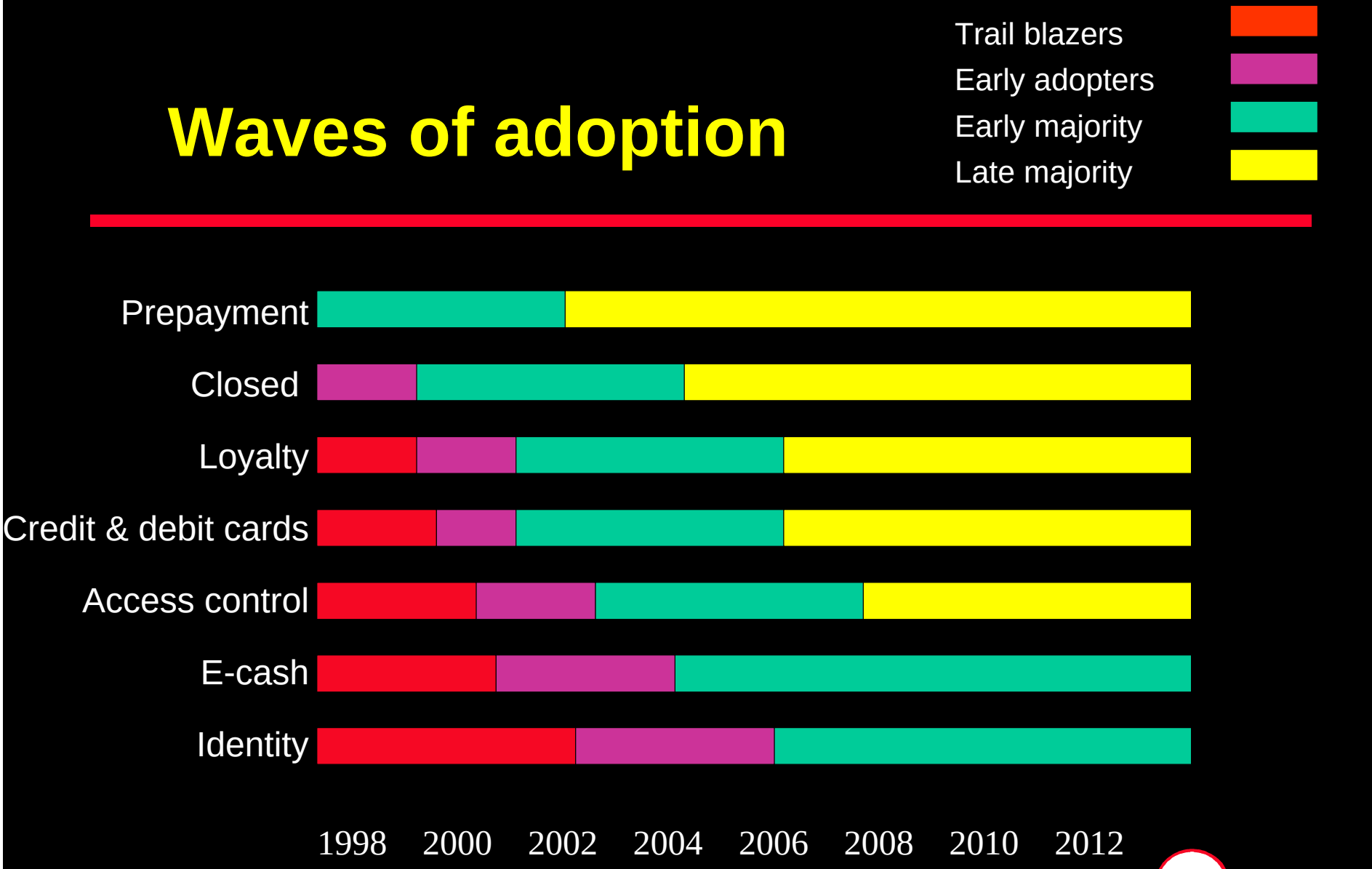
Predicated on interoperability



Smart card applications are not equal

- Some applications are more profitable in the short term
- Some applications are technically difficult to deploy
- Some application will meet cultural resistance
- Some applications are very expensive to deploy

Waves of adoption



An example

Hong Kong

- 4 million Octopus cards issued

Contrast this with….

- 100,000 cards issued by Mondex & Visa combined

E-cash successes

E-cash failures

- There are ***no*** e-cash successes, in terms of the number of transactions

Example - Upper West Side Manhattan:

- Cards issued - 94,000
- Transactions - 53,000

Multiple applications are the way forward

- A compelling offer to consumers
- From multiple suppliers
- Requires new business relationships
- Issues of branding and customer ownership
- Requires standards - currently missing

The card as personal computer

- Cards are built free of applications
- Retailers add pre-installed applications
- The consumer owns the card
- The consumer add/deletes as desired

A shift in mind-set is required

Current card issuers:

- **may not own the card**
- **may not own the infrastructure**
- **may not have their brand on the card**

Summary

- Smart cards are not the new thin client
- They are an important enabler for several technologies
- They extend existing infrastructures
- They will be everywhere shortly

Thank you

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