ID4Africa 2017 – Session Credential security

Understanding modern security controllers

- which chip do you need for your identity document?

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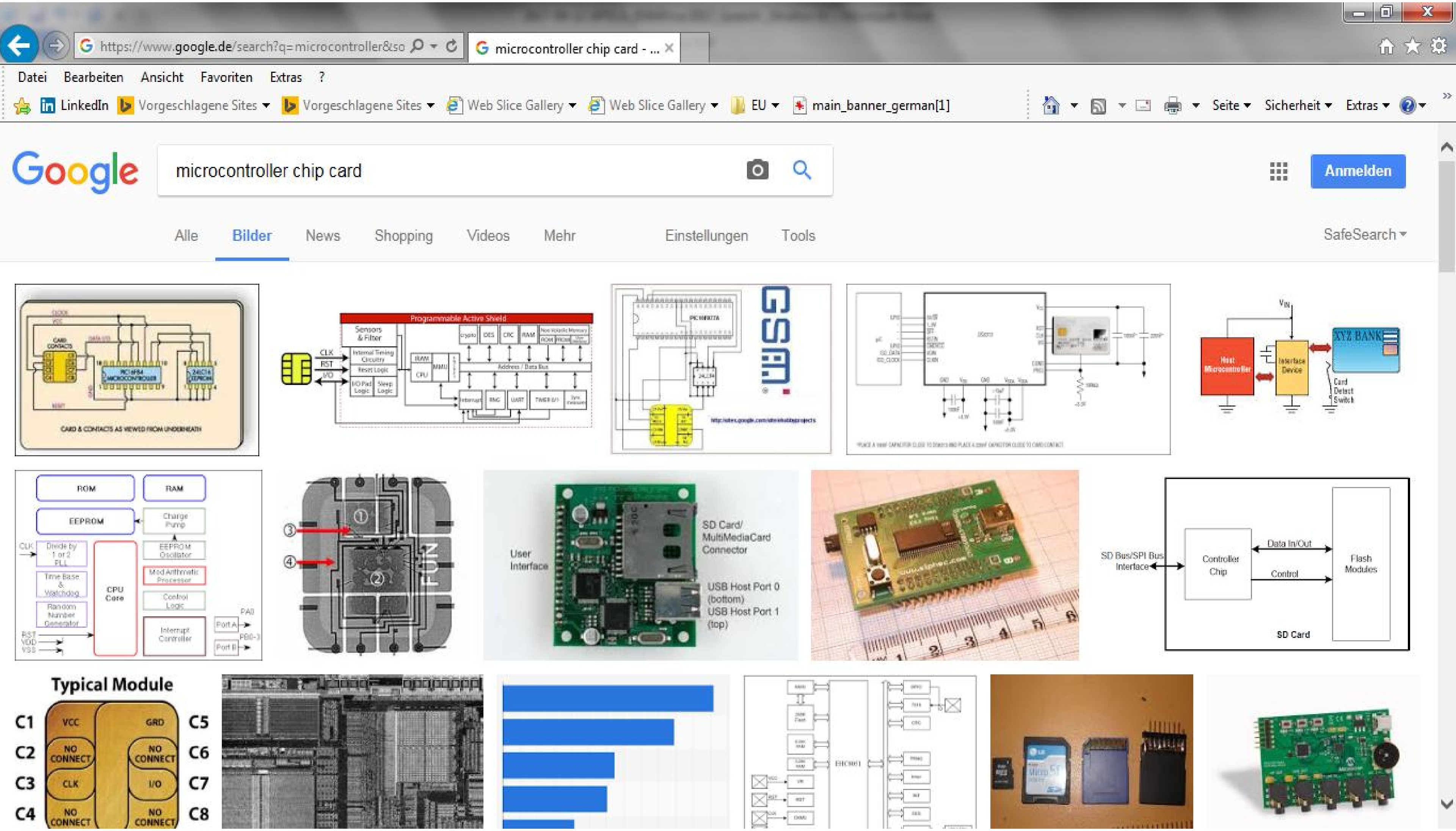


https://www.google.de/search?q=microcontroller&so

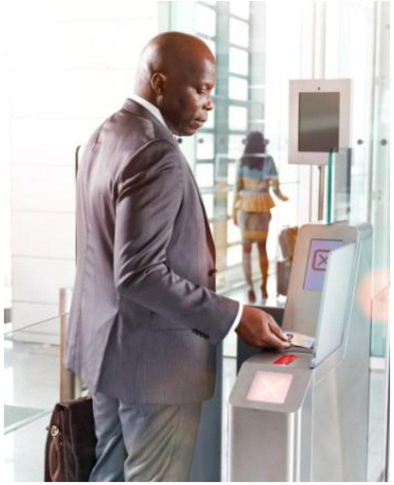
microcontroller chip card

Infineon Technologies at a Glance

The Company

- Infineon provides semiconductor and system solutions, focusing on three central needs of our modern society:
  Energy Efficiency, Mobility and Security
- Since 1999, Headquarters in Neubiberg (near Munich), Germany
- More than **36,000** employees worldwide (as of Sep. 2016)
- Combined pro-forma revenue of ~6,473 bn €* in Infineon 2016 fiscal year
- 33 R&D locations; 20 manufacturing locations and worldwide sales & support network

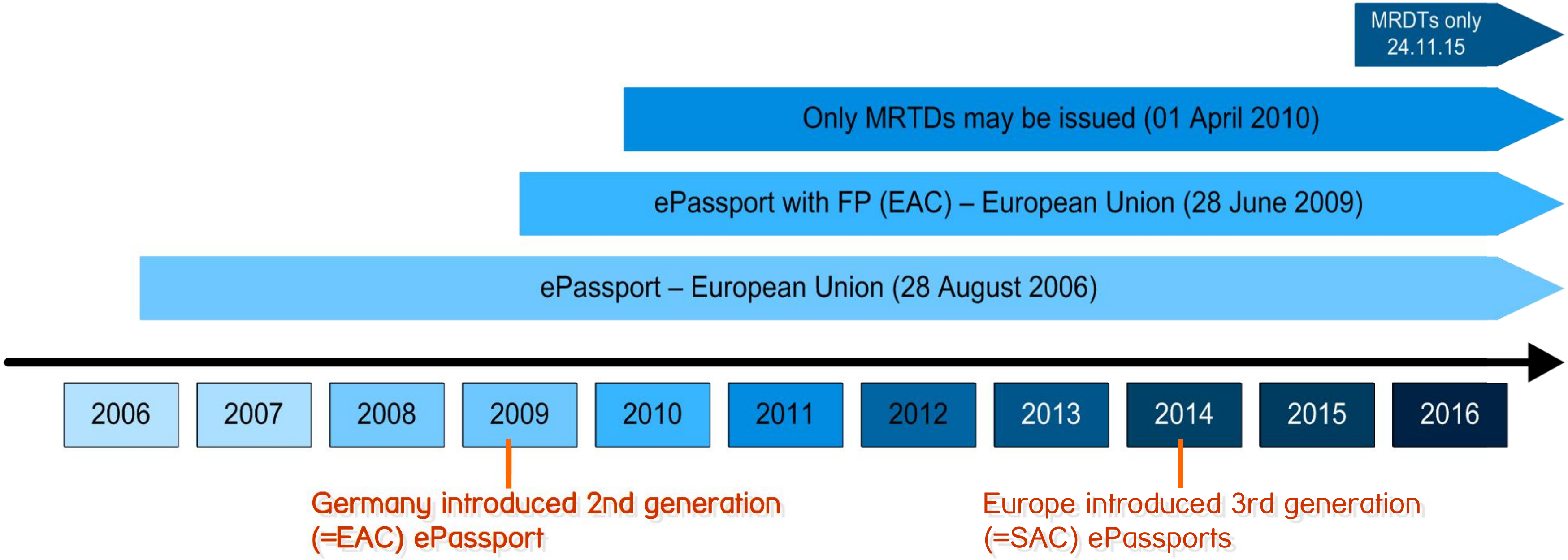
Smart Cards



Embedded Security

*non-audited figures

The timelines for the worldwide rollout of passports and eIDs


MRDTs only
24.11.15
Only MRTDs may be issued (01 April 2010)
ePassport with FP (EAC) – European Union (28 June 2009)
ePassport – European Union (28 August 2006)
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Germany introduced 2nd generation
(=EAC) ePassport
Europe introduced 3rd generation
(=SAC) ePassports

- Since 1999 first proprietary eID solutions (e.g. Finland eID)
- Triggered by 9/11 in 2001 Visa Waiver countries introduced ePassports
- With introduction of ePassports upcoing trend to use eMRTD applet in eID

- The main reason for chips has not changed the last 18 years ago – to secure your credentials. But this many years of development and the ongoing fight against attackers has dramatically changed and improved security controllers.

Why chip? There are reasons for it!!

Chips in Passports and ID cards enable automated gates, increase security and tie the document holder and the document together (biometrics)

John Smith
GD500048JOHNSMITH7206188M2410133<<<<<<
Passport No: GD50000048
Risk assessment

✓ Facial image check
✓ Iris check
✓ Visa check
☒ Passport data check
☒ Police check

The triangle of requirements for security controller 10 years ago for eID / ePassport

Security

☑ Sensor based security

☑ Strong dependence of HW – SW interaction

Performance

☑ 8bit architecture enough

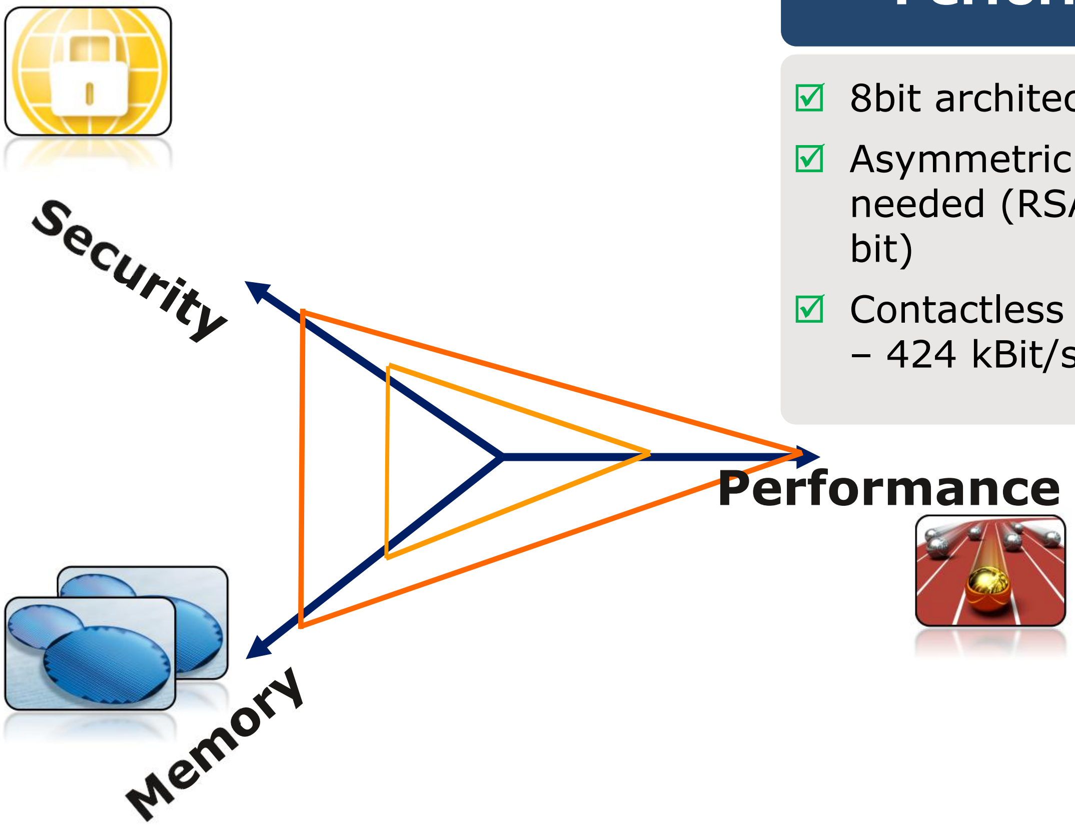
☑ Asymmetric CoProcessor needed (RSA up to 1024 bit)

☑ Contactless Speed @ 106 – 424 kBit/s required

Memory

☑ Chips based on EEPROM and ROM

☑ Memory size of 32 – Kbyte enough



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The triangle of requirements for a modern security controller for eID / ePassport

Infineon

Digital Security

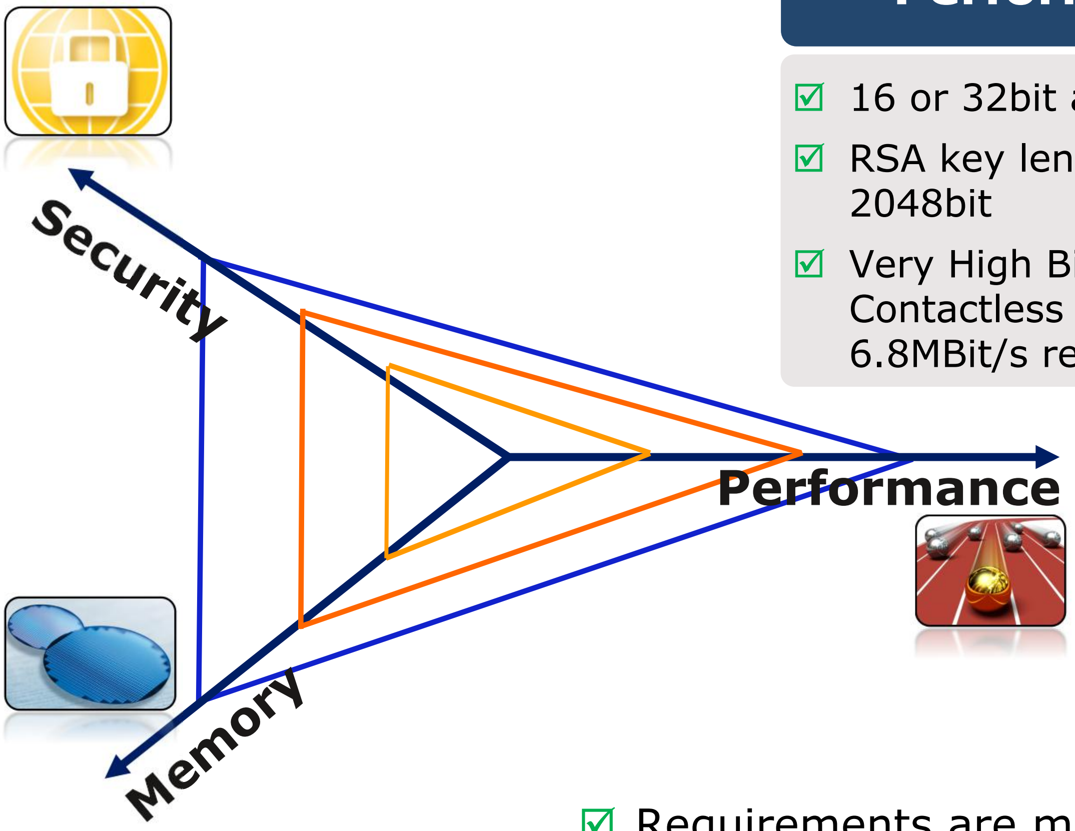
- ☑ Comprehensive error detection
- ☑ Self-checking dual CPU

INTEGRITY GUARD*

Flash Memory

- ☑ Flexibility & short time to market
- ☑ Memory size of up to 1MB

SOLID FLASH™* Mega Memory*



Performance

- ☑ 16 or 32bit architecture
- ☑ RSA key length >= 2048bit
- ☑ Very High Bit Rate Contactless Speed @ 6.8MBit/s required

VHBR*

☑ Requirements are met by SLE78/ SLC 52 security controllers

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Application specific requirements - Recommendations

ePassport Chip

ePassport chip:

- Contactless performance: Minimum 848KBit/s; for use cases with higher amounts of data (future ePass with eVisa, eStamp) VHBR with 6,8MBit/s is recommended
- Minimum memory 80KBytes: gives flexibility for SAC or EAC implementations
- Security controller itself should Common Criteria EAL6+ certified
- Compound certification of HW / SW / ePass application EAL 5+ or EAL4+
- Robustness for 10 years
- Use chips from the well-known chips suppliers for ePassports

eID chips

- Use your ePass chip! – with increased memory for multi – applications – make sure that such a family concept is available

Source: Infineon

Wrap-up

Chip in eDocuments are one of the most important security features

Chips tie the document holder and the document together by biometrics

ePassports enable Automated Border Control Gates

Contacless performance of ePassports is important and will become essential in future (VHBR)

Digital security (dual CPU security concept helps against increasing security attacks

Only use Common Criteria certified chips (EAL6+ recommended)

Use your ePassport chip also for your ID – maybe with more applications

Part of your life. Part of tomorrow.