

# IT Security in Large IT Infrastructures SS18

## Lecture 07: Wrap-Up

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IT Security Topics in Large IT Infrastructures

Literature Examples

Wrap up of the Lectures

Security Tests

- IT security aspects in large IT infrastructures
- Competing stakeholders/requirements: cost vs. usability vs. security vs. performance vs. ability to test vs. ...
- Understanding the impact of security topics, e.g., in order to get the budget for IT security measures
  
- Think about IT security at all!
- Think laterally :)

- Communication Networks
- Secure Payment
- CEO Fraud, Comfort vs. Security, Employees Travelling Internationally, APT
- Requirements for an ISMS based on the new ISO 27001:2013 Standard Exemplified by the BRZ Infrastructure
- Lifecycle and IT Security of a Bank Chip-Card from the Issuing to the Expiration
- Cloud Security
- Security Based on Open Specifications, Deutsche Gesundheitstelematik

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## Different Projects – Similar Security Aspects

- Management Attention
- Costs
- Appropriate Level of IT Security
- Security Procedures, ISMS
- People
- Often, politically exposed – mass media
- Risk Estimation
- Attack Scenarios
- Backwards Compatibility/Forward Compatibility
- Processing Speed
- Processing Power, Disk Space (RFID, Deutsche Gesundheitskarte)
- New Technologies

## Different Projects – Similar Security Aspects

- Who is responsible for security problems
- Security vs. usability
- How to secure confidential information
- Where to store secure keys?
  
- Think larger, how secure are crypto systems? Who listens to your communication?
- What influences the security of the system? E.g., problem with compression and AES encryption, RSA vs. ECC
- Where are your data processed, stored, ...? Do you know where your data will go?
- What problems arise if several data sources are linked? E.g., Linked open data uncovers confidential information?

- Different Communication Technologies (POTS, VoIP, GSM, SS7, WhatsApp, Skype, Social Media,...)
- Secure Encryption vs. (Lawful) Interception
- World Wide Communication
- Availability, Ease of use
- Interoperability
- Smartphone as Communication Centre

- More and More Electronic Means for Payment
- Online Banking
- Debit Cards, Credit Cards
- NFC, Smartphones
- World Wide Use
- Availability, Ease of use
- Penetration Test of Banking Infrastructure

- CEO-Fraud
- Comfort vs. Security
- Employees Travelling Internationally
- Advanced Persistent Threat (APT)
- Industry 4.0
- Critical Infrastructures

- Basics of an ISMS
- Example BRZ, Certification Processes
- Different security measures to secure the IT infrastructure
  
- Awareness, Understanding
- Secure Coding Standards
- Audits

# Lifecycle and IT Security of a Bank Chip-Card from the Issuing to the Expiration

- EMV Specification
- Shift of Liability
- Interoperability
- Structure/Security of Chipcards
- Card Vendor/Card Personaliser
- Card Management System
- Issuer, Acquirer
- Cryptography, HSM



- Many systems in the cloud
- Technical requirements (e.g., IP multicast)
- TAP technology, TAP in the cloud
- Aggregation of messages
- Processing applications
- Processing of security data in the cloud

- Security, transparency, confidence – cornerstones of the telematics infrastructure
- Sound security measures, provide a secure platform for services
- Multiple mechanisms to achieve trust (e.g., different smartcards, certifications, Konnektor)
- Multiple layers of security
- X.509 vs. CVC
- Different security mechanisms in order to access medical data
- Backup of medical data
- Common Criteria Certifications
- ISMS, monitoring of devices and news/web

- Complexity of systems increases test efforts
- Test environments only cover a subset of the features of the production environment
- Problems by testing in production environments
- Backward compatibility vs. new attack patterns leads to regular retests
- Test data vs. production data: certificates/private keys, configurations e.g. IP address, confidentiality of production data, . . .

## Further Work – Working with the ESSE team

- Working as a tutor
- Taking part in CTF contests as part of ESSE's CTF team  
Defragmented Brains – <http://www.defbra.at/>
- Researching IT Security in Large IT Infrastructures
- Projects
- Seminar aus Security
- Diploma Thesis
- Thesis
- Sometimes in cooperations with external partners

**Thank you!**

<https://security.inso.tuwien.ac.at/>

