Westfälische Hochschule
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The next step in IT security after Snowden

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if(is) internet security.

Content

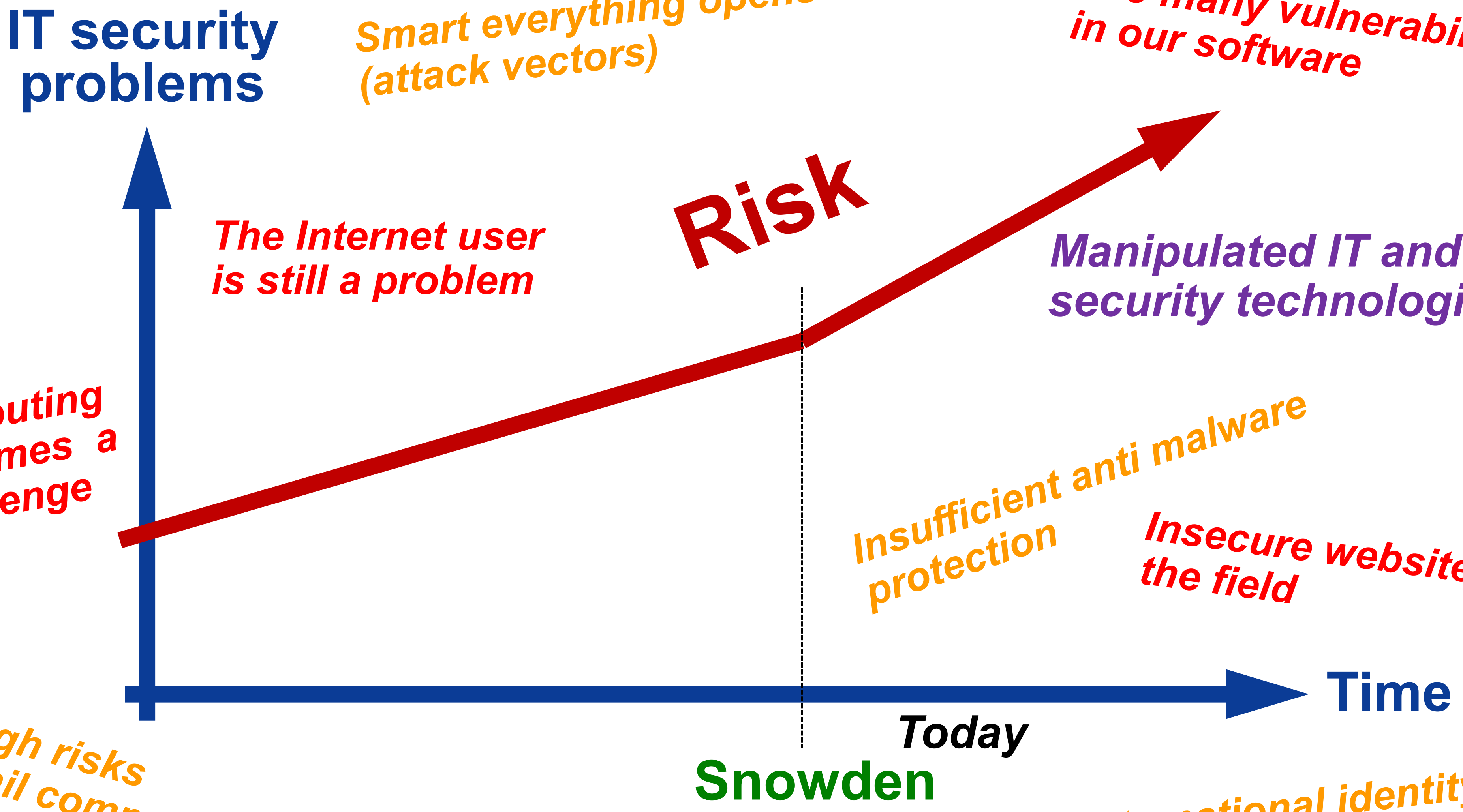
internet security.

- Evaluation of IT Security
- Much more encryption is needed
- Paradigm Shifts in IT and IT Security
- Summary

Evaluation of IT Security
→ Overview of the biggest problems

Smart everything opens new doors (attack vectors)

Too many vulnerabilities in our software



The Internet user is still a problem

Manipulated IT and IT security technologies

Cloud Computing becomes a challenge

Insufficient anti malware protection

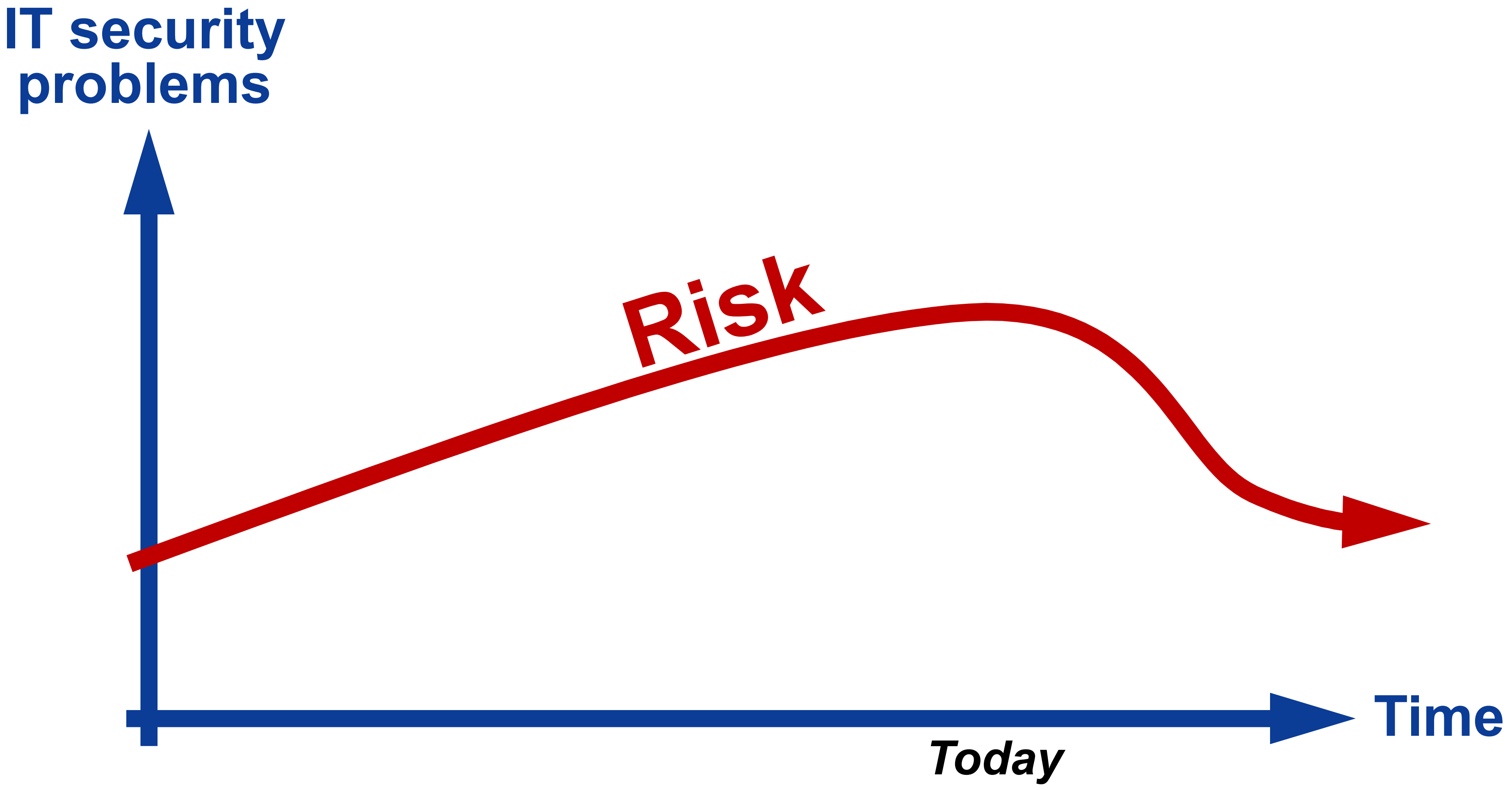
Insecure websites in the field

Too high risks in e-mail communication

Smartphones offer new attack vectors

No international identity management

Evaluation of IT Security
→ Our challenge



Active Encryption → Much more is needed

- Encryption for a sustainable protection of our data
  - IPSec (every 125th IP packet), SSL (every 7th IP packet), …
  - E-Mail-Encryption (~ every 20th E-Mail), ...
  - Disc-, File Encryption, …
- **Requirements:**
  - **Trustworthy encryption technology**
    (No backdoors, strong random numbers, correct implementation, ...)
    → *Very powerful IT security industry in DE*
    → *IT Security made in Germany*
  - **Trustworthy IT security infrastructure**
    (PKI with RA und CA; Root certificates, …)

Paradigm Shift – (1)
→ More responsibility less indifference

- **Producer responsibility**
  - Software and hardware will better matched and problems would be better identified and solved.

- **Validation / Certification**
  - Independent and qualified organizations prove (improve) the quality of IT (security) products and solution

Paradigm Shift – (2)
→ More proactive less reactive IT security

Reactive IT Security Systems

- Today we use a lot of reactive IT security solutions and that means we are always **running behind the attacker**.
- The idea of reactive IT security is, if we **detect an attack**, we try to protect us as fast as possible to **reduce the damage**.
- For example “reactive IT security systems” are
  - *Intrusion Detection Solutions*
  - *Anti-Malware products*
  - *Anti-Spam /-Phishing*
  - *…*

„Airbag approach“:
If it happens, it should hurt less.

Paradigm Shift – (2)
→ More proactive less reactive IT security

Proactive IT Security Systems

- Proactive IT security offers more **robust** and much more **trustworthy** protection.
- Here we use for example a security kernel with separation and isolation technology combined with intelligent cryptographic security mechanisms.

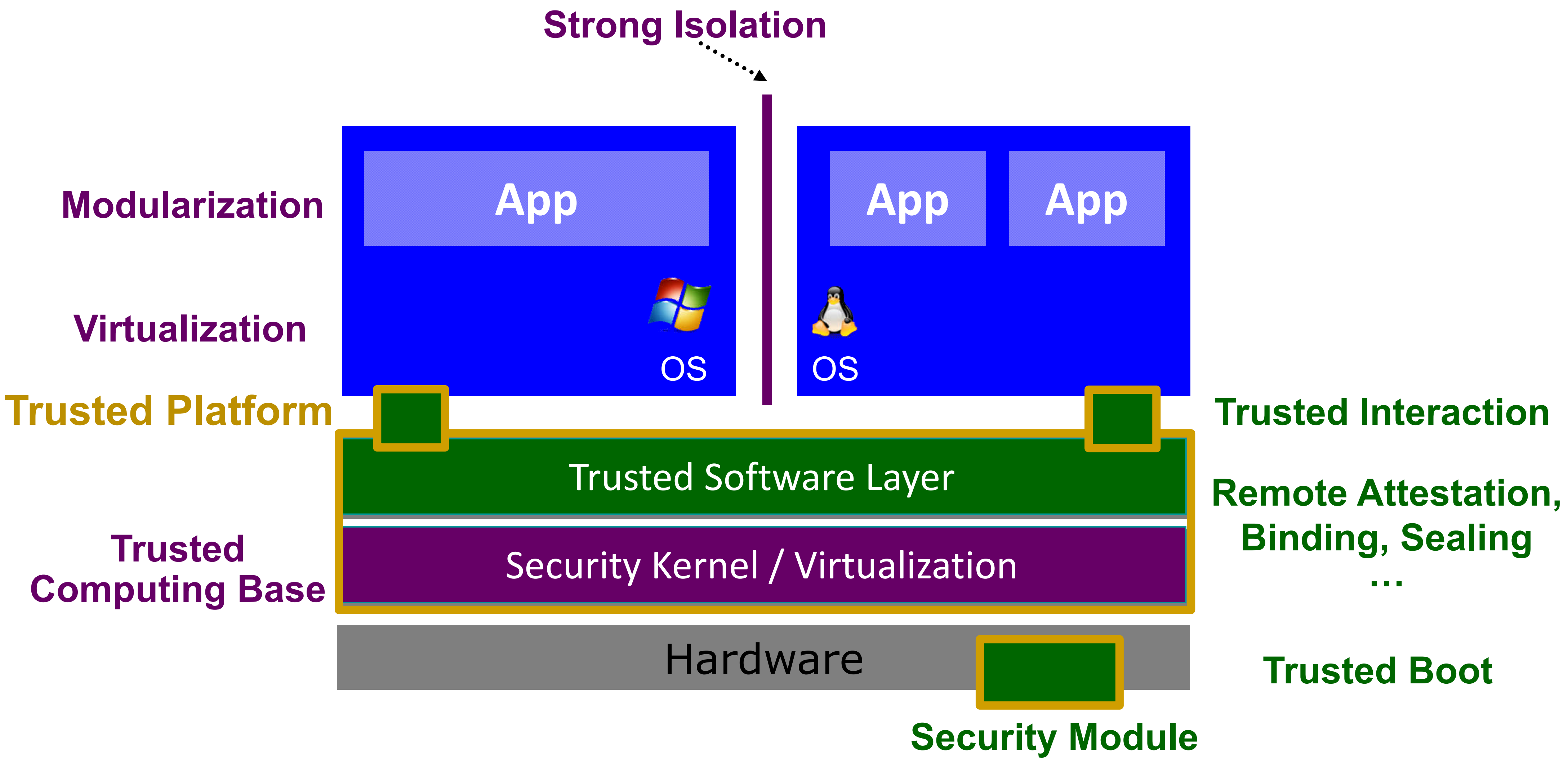
(Trusted Platform)

„ESP strategy“:
Avoid skidding, before it happens.

Paradigm Shift – (2)
→ Trusted Platform

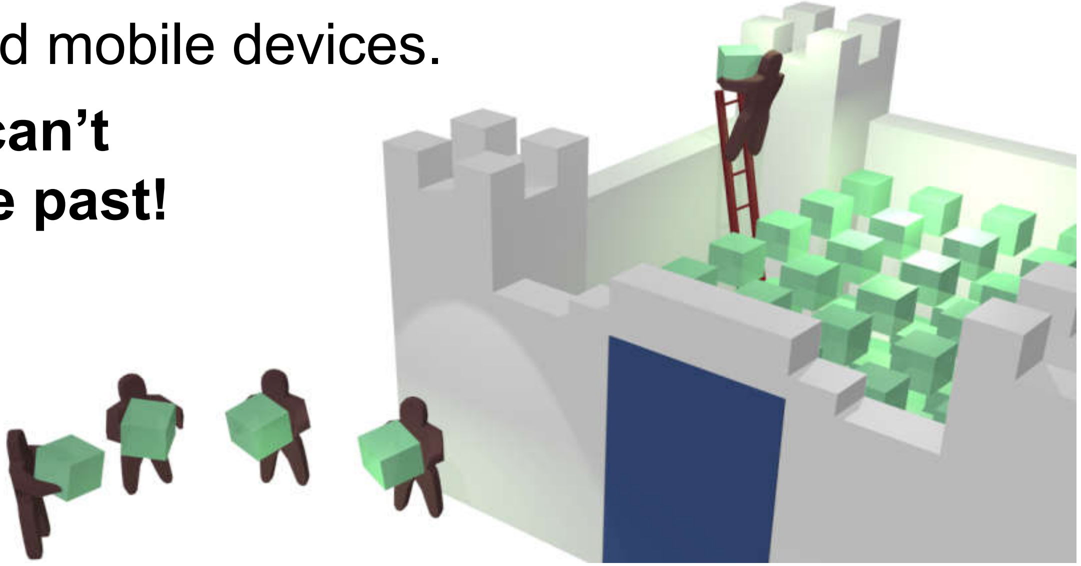
Robustness/Modularity

Integrity Control



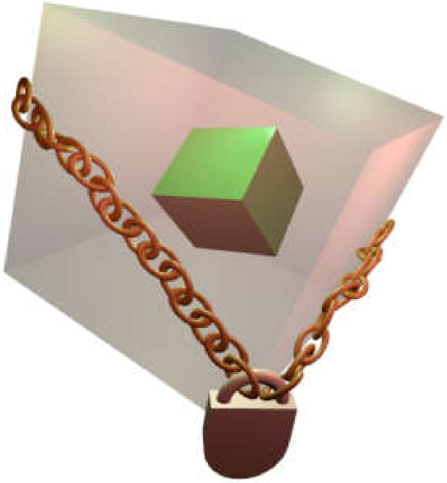
Paradigm Shift – (3)
→ More object less perimeter security

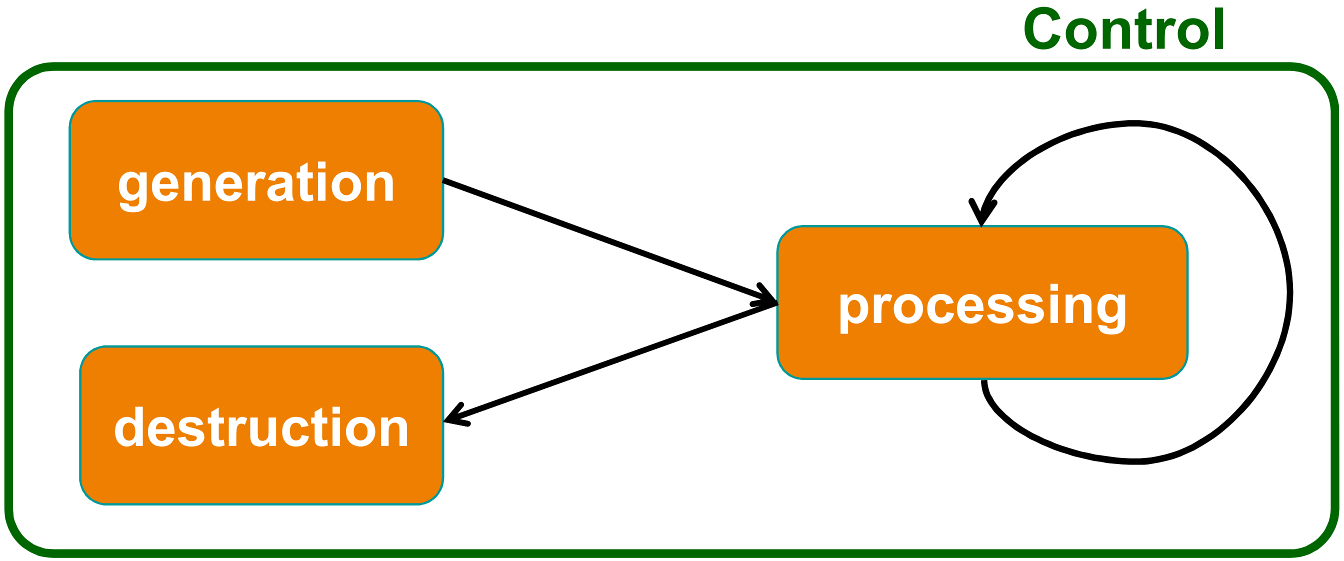
- **Perimeter security**
  - **Defense Model:**
    - Protect a set of computer systems and networks with the help of Firewalls, VPNs, Intrusion detection and so on.
    - Assumption: The computers and the networks are fixed installed.
  - **Evaluation:**
    - Modern world uses flexible and distributed mobile devices.
    - **Perimeter security can’t protect us like in the past!**



Paradigm Shift – (3)
→ More object less perimeter security

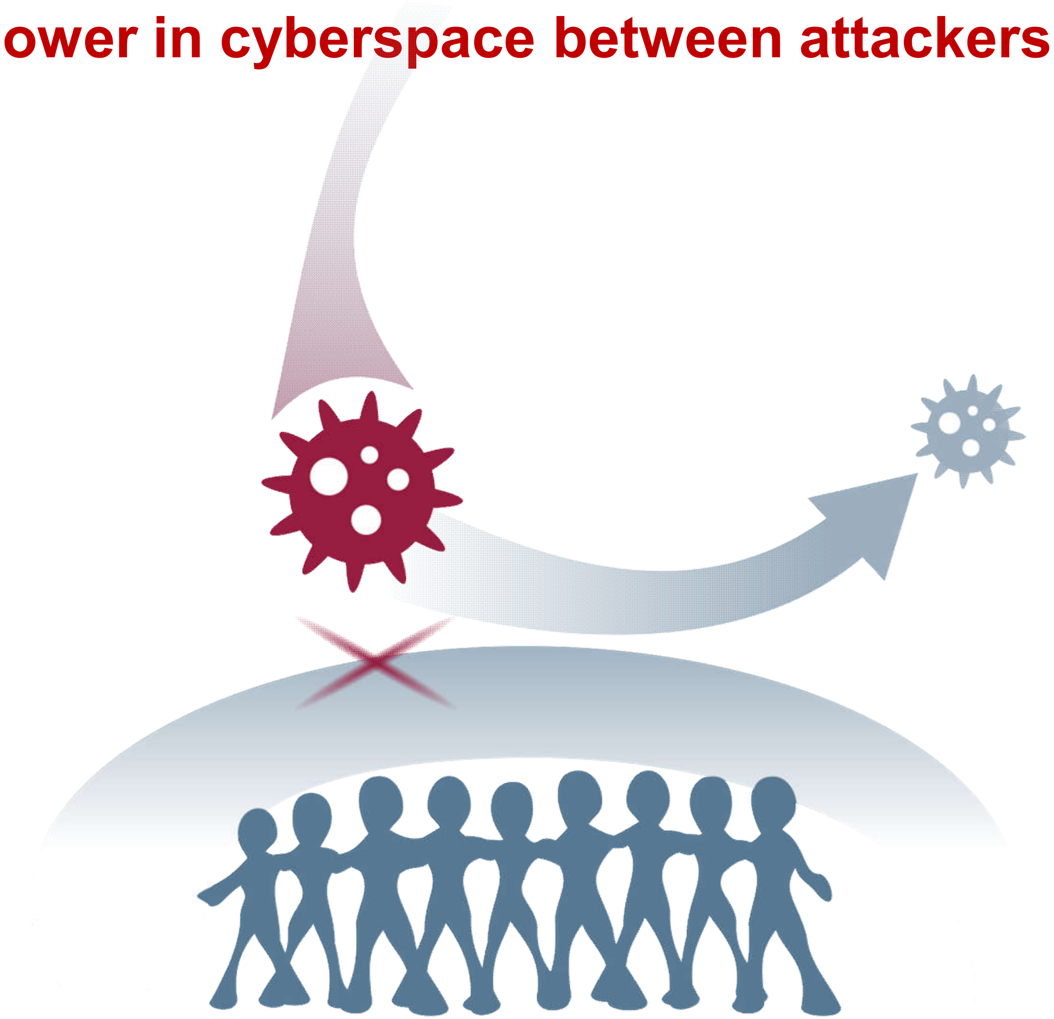
- Object Security (Information Flow Control)
  - Idea:
    - Domain **object-oriented security**, in which the objects are provided with **rights**.
    - The rights define **who can** use the object with **which action** in **which IT environment**
  - *Object Lifecycle Protection*
  - *Distributed Policy Enforcement (even on foreign systems)*





Paradigm Shift – (4)
→ More collaboration less separation

Imbalance of power in cyberspace between attackers and defenders.



Collaboration helps to overcome the imbalanced situation

The next step in IT security
→ Summary

- **Over the time our IT security problems have become bigger and bigger!**

- ***It is very important that we use much more encryption***

- **We need paradigm shifts in IT and IT security, so that we can build trust in using the Internet in the future**
  - **More responsibility less indifference**
  - **More proactive less reactive IT security**
  - **More object less perimeter security**
  - **More collaboration less separation**
  - **…**

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Thank you for your attention!
Questions?

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