



# eltic-Plus<sup>+</sup>

Smart Connected World



**Celtic-Plus Event**  
**28-29 April 2016, Stockholm**

## **SASAGEP**

# **Safe and Secure and Green European Processor**

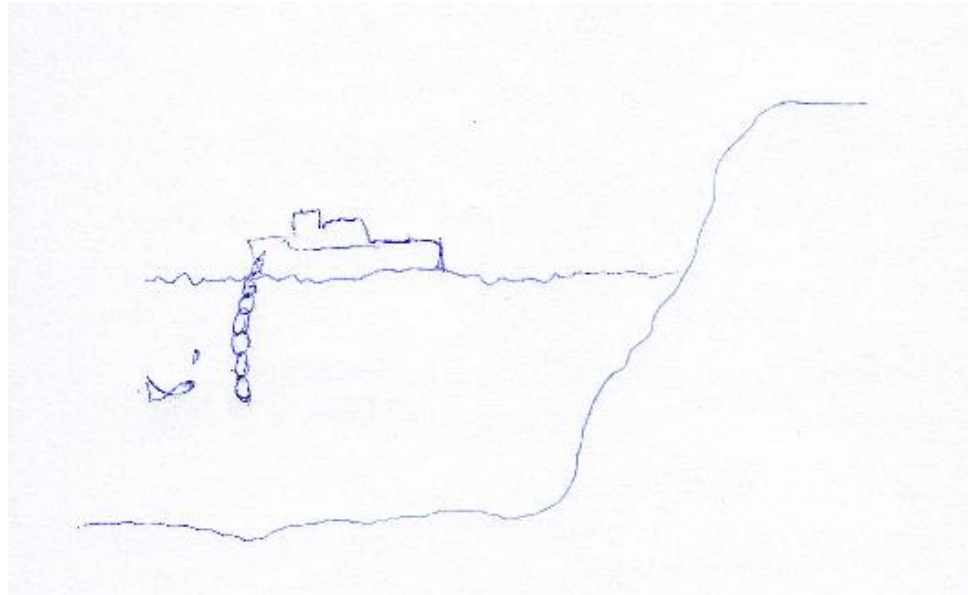
*Klaus Kinzinger*



# Basics

- IT security is an architectural feature and no add-on. One can not mount or reliably glue it onto hardware that by design has no support for it (von Neumann)
- A major technology leap is needed – an IT reboot, that ought to start with critical infrastructures and then should expand into the mass markets
- For economic reasons, in the mass markets energy efficiency is paramount for success

# Chain of Trust ?



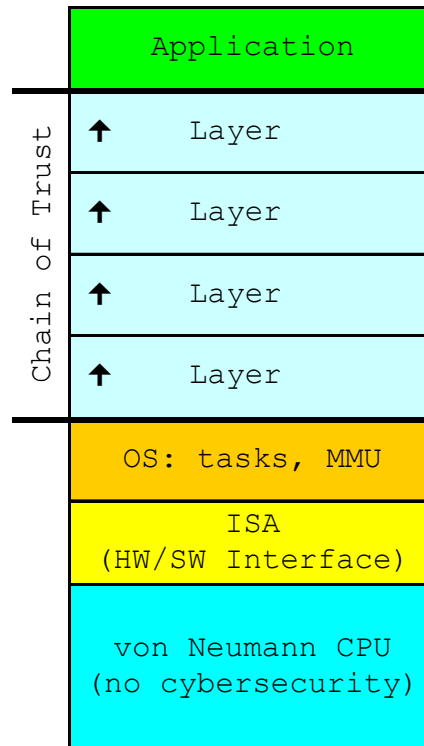
IT security can not exist  
without proper hardware anchoring

It never has and never will

# Exploit of a SW bug

Attacker triggers SW crash

Cyber attack



Attacker takes over control

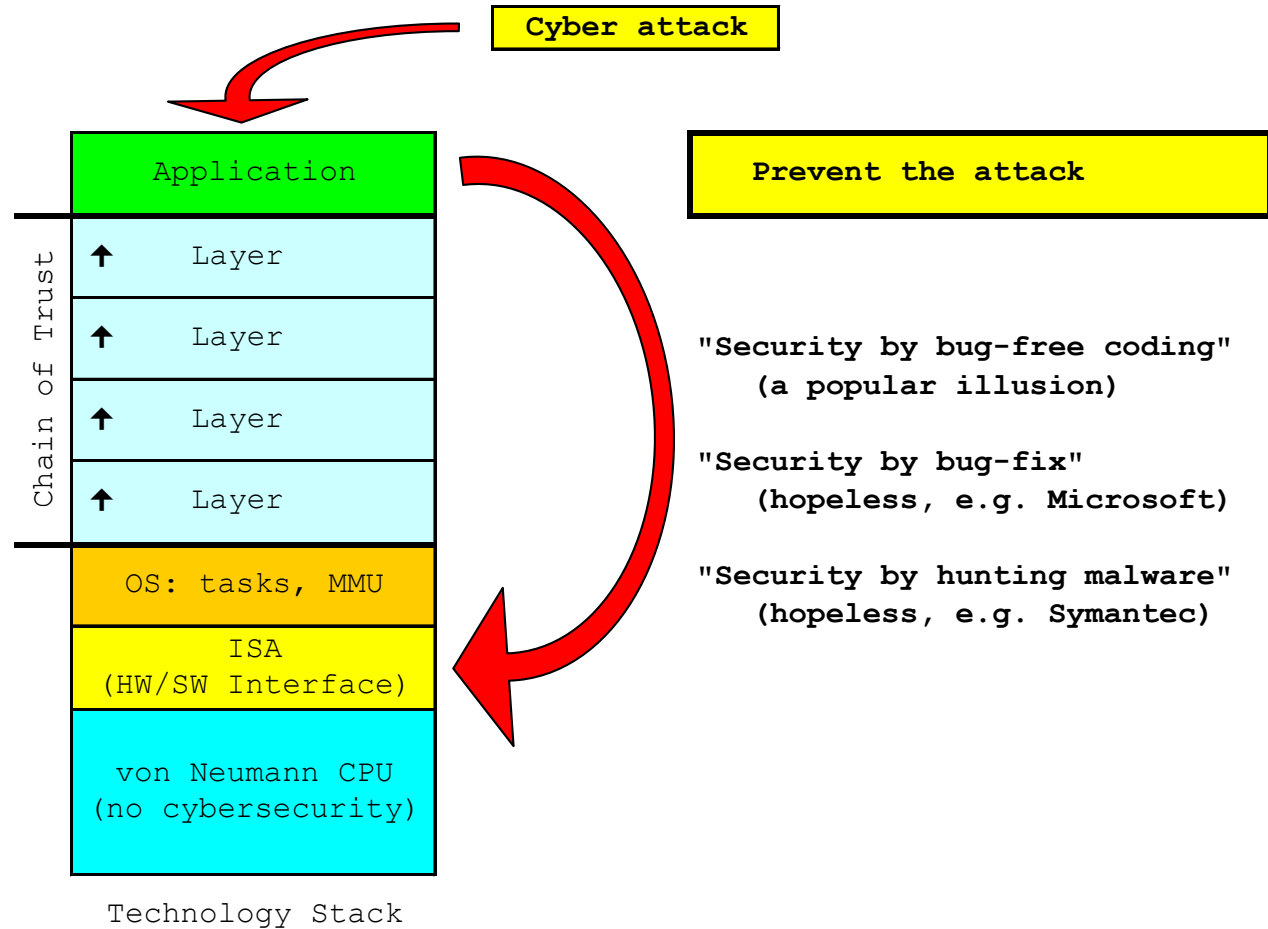
Exploit => bypasses the whole software stack (and any "chain of trust")

Control flow is hijacked and directed to the attackers machine code

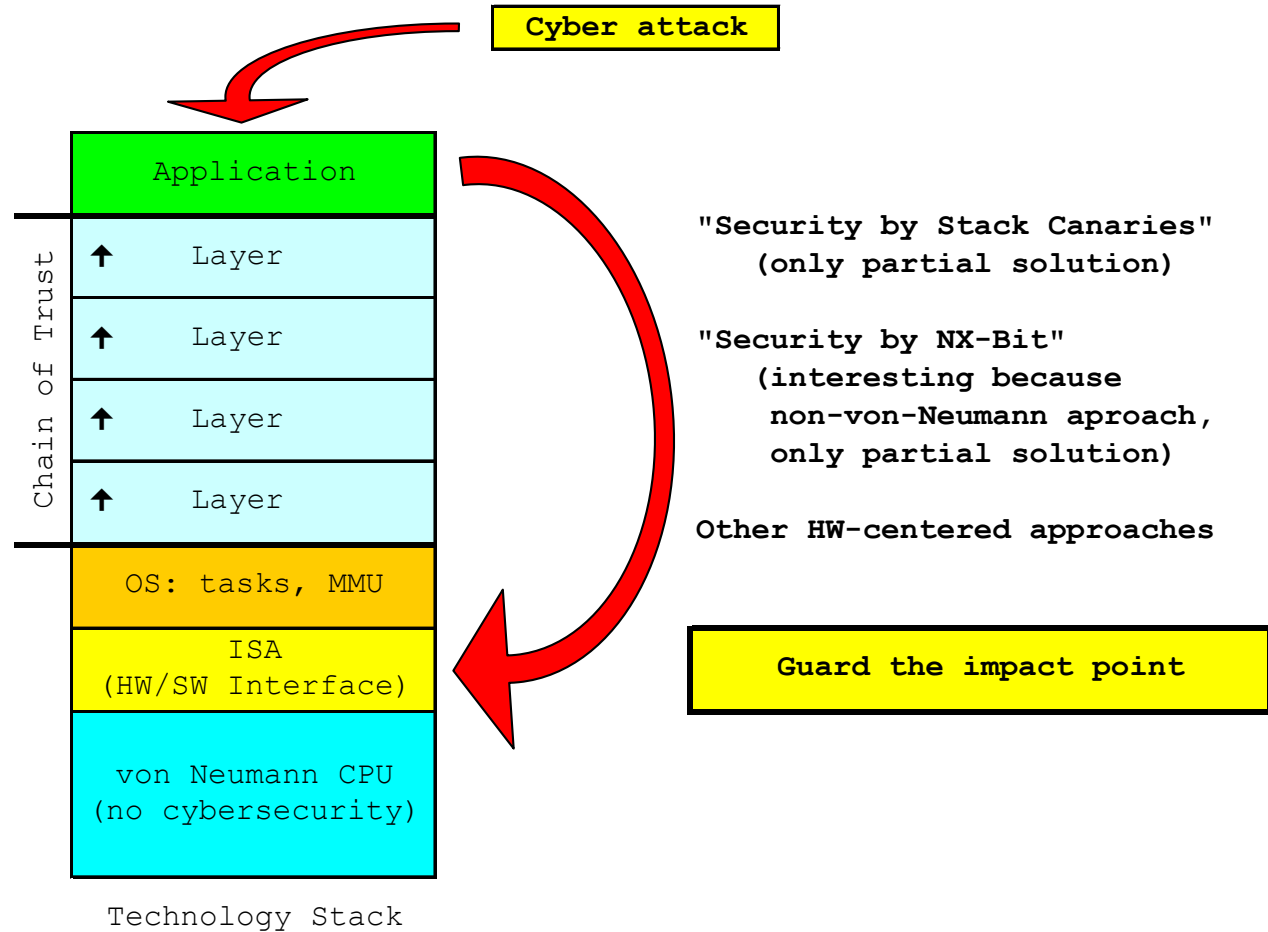
At ISA level, the system is unguarded and an easy prey

Technology Stack

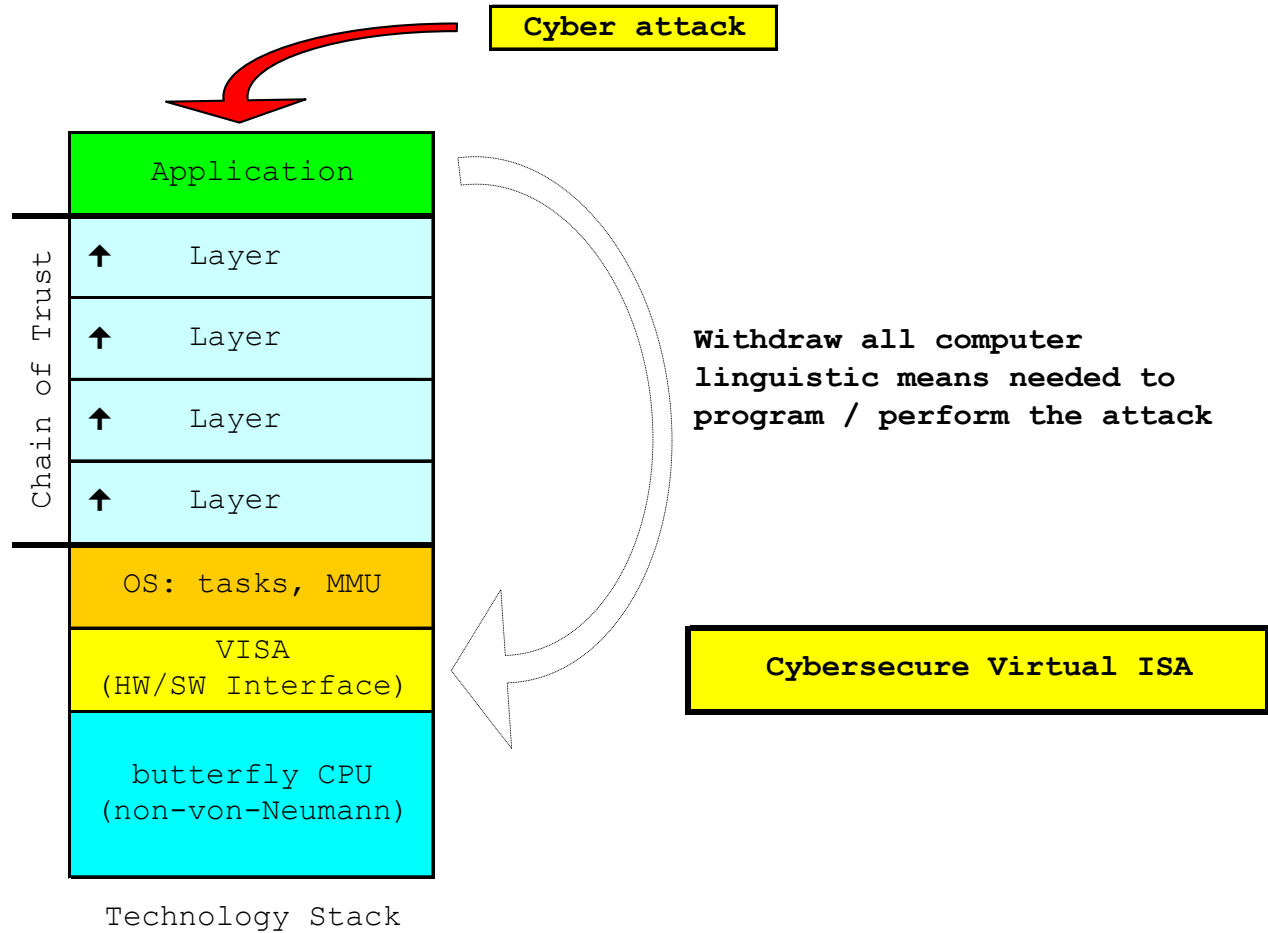
# Cyberdefense – Option 1



# Cyberdefense – Option 2



# Cyberdefense – Option 3



# It can be done !

So talk to me and join in

## Project Status

- *Carefully planned in a detailed 150 page paper*
- *Scientifically evaluated and verified by the Institute of Cryptography and IT Security at the Karlsruhe Institute of Technology KIT, Germany (=> LOI available)*
- *Two PCT patent applications covering (1) security / safety and (2) energy efficiency aspects*
- *Executive summary available*
- *SASAGEP is ready for the prototype phase for further proof of concept – mainly compiler / chip design issues – overall fine tuning and improvement, and implementation*



# Contact

Klaus Kinzinger

phone	+49 7222 9545 11
mobile	+49 171 8154 300
email	<a href="mailto:kinzinger@kinzinger.de">kinzinger@kinzinger.de</a>
home	<a href="http://www.kinzinger.de">www.kinzinger.de</a>

Kinzinger Automation GmbH  
Rauentaler Strasse 22/1  
D 76437 Rastatt  
Germany