Military Cyber Security

Kommando Cyber- und Informationsraum – Rapid Innovation
Cyberwarfare – ExoWarfare – Blockchain – Quantum Computing
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v1.1

Introduction: Thomas J Ackermann

Entrepreneur In Residence

ExoWarfare since 2008

CyberWarfare since 2002

USA Silicon Valley Dallas TX 18 years

Company Cruiser #3 of 7 - 2005

Internet Infrastructure BGP4 1994→

1st Neutral Data Center Silicon Valley 1999

Rapid Innovation

Blockchain

OVERVIEW

Keynote 1: The Situation

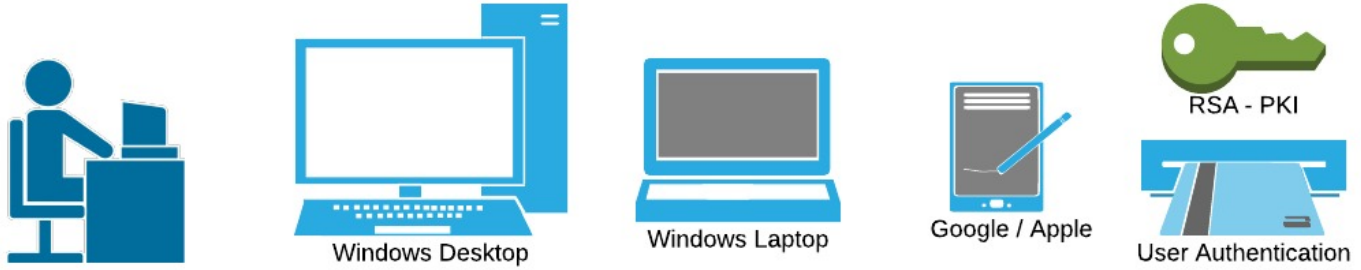
Which issues do we need to solve?
The “now” situation at Bundeswehr.

Keynote 2: A Strategic Solution

Aim High
Options through new technologies
Adaptation in the Bundeswehr

EVERYTHING IS PROPRIETARY

USER ENVIRONMENT

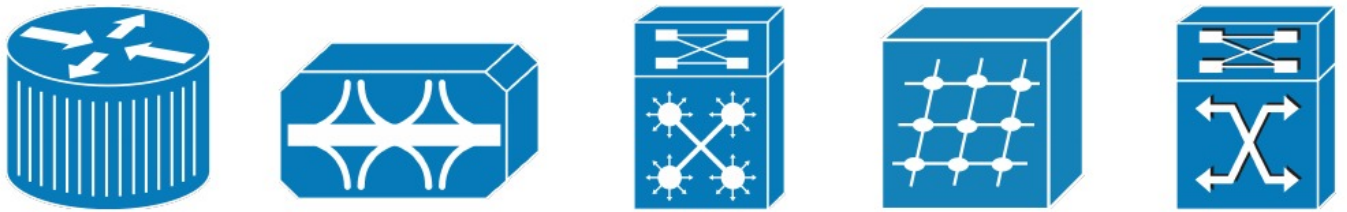


AWS
AWS cloud

HERSTELLER-ABHÄNGIG

ALLES PROPRIETÄR

VPC
virtual private cloud



INFRASTRUCTURE

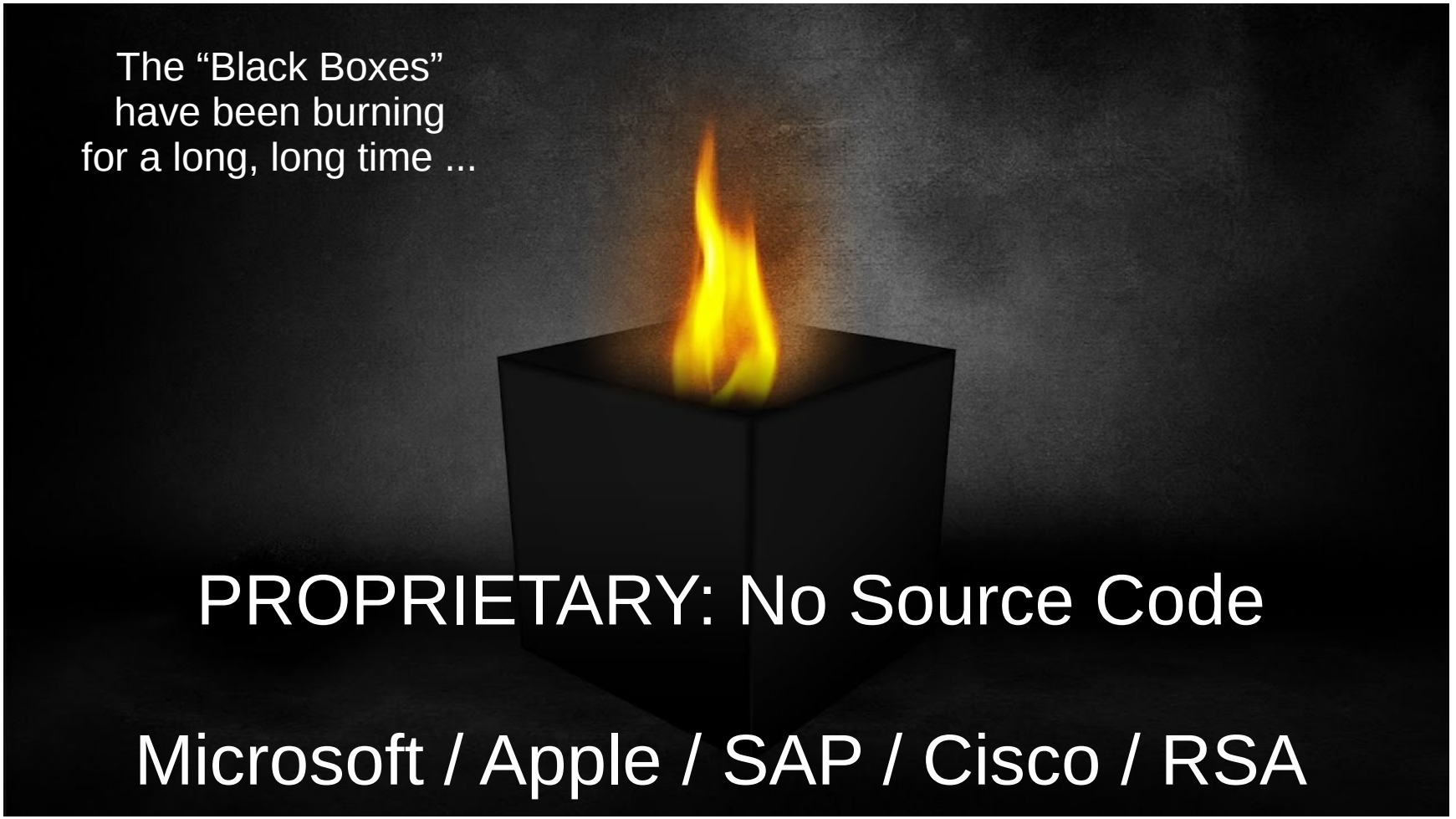
THE ISSUES

- Loss of Control: no software validation
- Security outsourced: external dependencies
- High attack vektor: centralized systems, insecure edge computing (desktops, mobile)

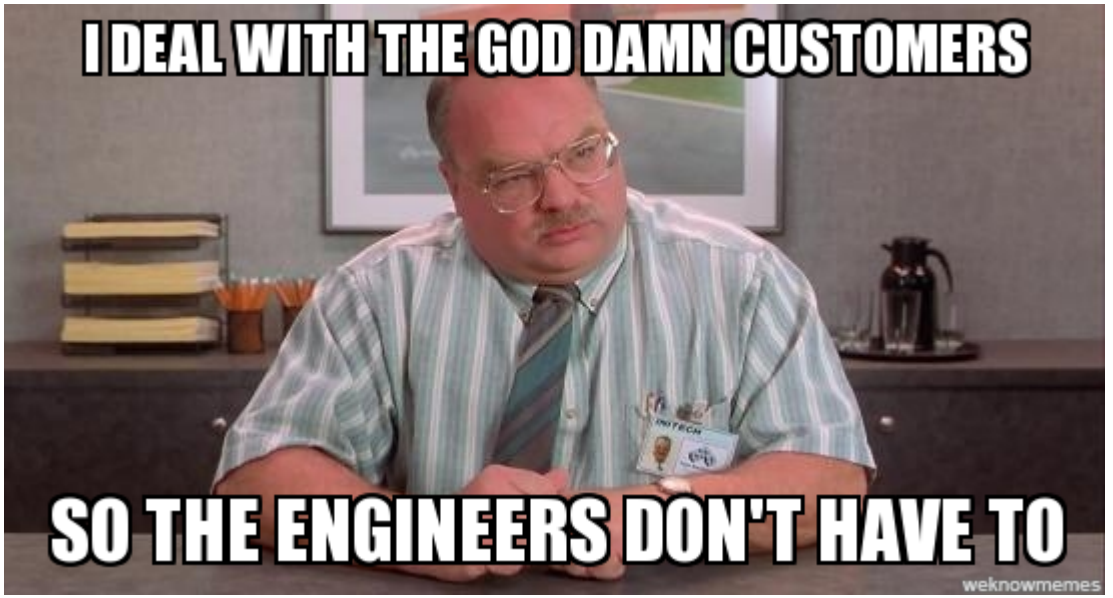
Consequence:

- Exponentially spreading damages (flaws / bricking, dDoS, ransomware, etc)
- Espionage made (very) easy

LOSS OF CONTROL



SECURITY OUTSOURCED



Blind trust in vendors,
their ability, skills, and resources:
This is the “Lame Duck” Position

HIGH ATTACK VECTORS

1 vulnerabilty is enough: example “WannaCry”

Disclosure? Maybe yes, maybe no (*NSA-Toolkit)

High centralization = easy prey

CONSEQUENCE: n^3* DAMAGES

“Like shooting fish in a barrel”

Exponential damages: money, reputation, time

CONSEQUENCE: ESPIONAGE

“RSA NSA”: Back Door for $$

“FISA” Warrants: ‘full take’ by secret court

United States Foreign Intelligence Surveillance Court (FISC, auch “the FISA Court”)

SITUATION TODAY - SUMMARIZED

This far the situation is familiar to you:

your systems work … exactly like this.

(as do ours at Bundeswehr).

KEYNOTE 2: WHAT TO DO?

The enormous advantages of technology make us more and more dependent on it - and increasingly vulnerable.

Resignation is no option.

… also no useful option:

A STRATEGIC SOLUTION

Target definition (“aim radically high”)
New formats, processes, norms, infrastructure

Options through new technologies
a new level of security: Blockchain

Adaptation for the Bundeswehr
Definition of norms, standard requirements, etc

TARGET: “Aim Radically High”

Bundesministerium der Verteidigung

Ministry of Defense

Deutsch Presse Gebärdensprache Leichte Sprache

Ministerium Themen Aktuelles Mediathek

Meldung

Cyber-Abwehr: Bundeswehr ist Vorreiter in Europa

KINETIC VS CYBER

Bundeswehr

Traditional Kinetic Defense:
- Only long-term changes
- Extremely expensive
- Likelihood of attacks: low
- Conflict resolution: more economic today then kinetic (see “Cold War”)

Heer Marine Luftwaffe

Cyber Security and defense:
- Agile
- Comparatively very inexpensive
- Likelihood of attacks: daily (!)

Cyber und Informations Raum (CIR)

“Class - not Mass”

RADICALLY NEW CONCEPTS

Bundesministerium der Verteidigung

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"A new solid infrastructure"

„IT-Architektur aus einem Guss"

Die Streitkräfte und auch die zivilen Organisationsbereiche bräuchten eine „IT-Architektur aus einem Guss". Die Themen Digitalisierung und Cyber seien untrennbar miteinander verbunden. In Zeiten, in denen alles vernetzt sei, „müssen wir uns ganz neu mit dem digitalen Raum auseinandersetzen". Die Bedrohung durch Cyberangriffe stelle eine eigene Dimension dar, sagte die Staatssekretärin. Sie seien billig und schwer auszumachen. „Es ist ernst", so Suder. Die Streitkräfte gingen die Herausforderung sehr dynamisch an.

“CLASS - NOT MASS”

“Drum beat” in definition of standards for the computing future
within Bundeswehr, also signal for our partners in economy and military (EU, NATO)

Regain control of systems and infrastructure

Dezentralize: lower the attack vektors

Agile adoption of new technologies

Innovations DRIVER – not “Follower”
Side effekt: *“make Bundeswehr cool again”* - specialist ‘geek’ recruiting

“DRUM BEAT” FOR STANDARDS

Standardized Software & Hardware Standards
(lower development cost and time lines)

Open systems with source code

Identity Standards
Authentication Standards
Transaction Standards
Encryption Standards
Unfalsifiable Log Data Standards
… and more.

(if this sounds a lot like “Blockchain”: it is)

RE-GAIN CONTROL

Mantra: we (Bundeswehr, Germany, Europa, NATO)
must not depend on the control and resources of others.

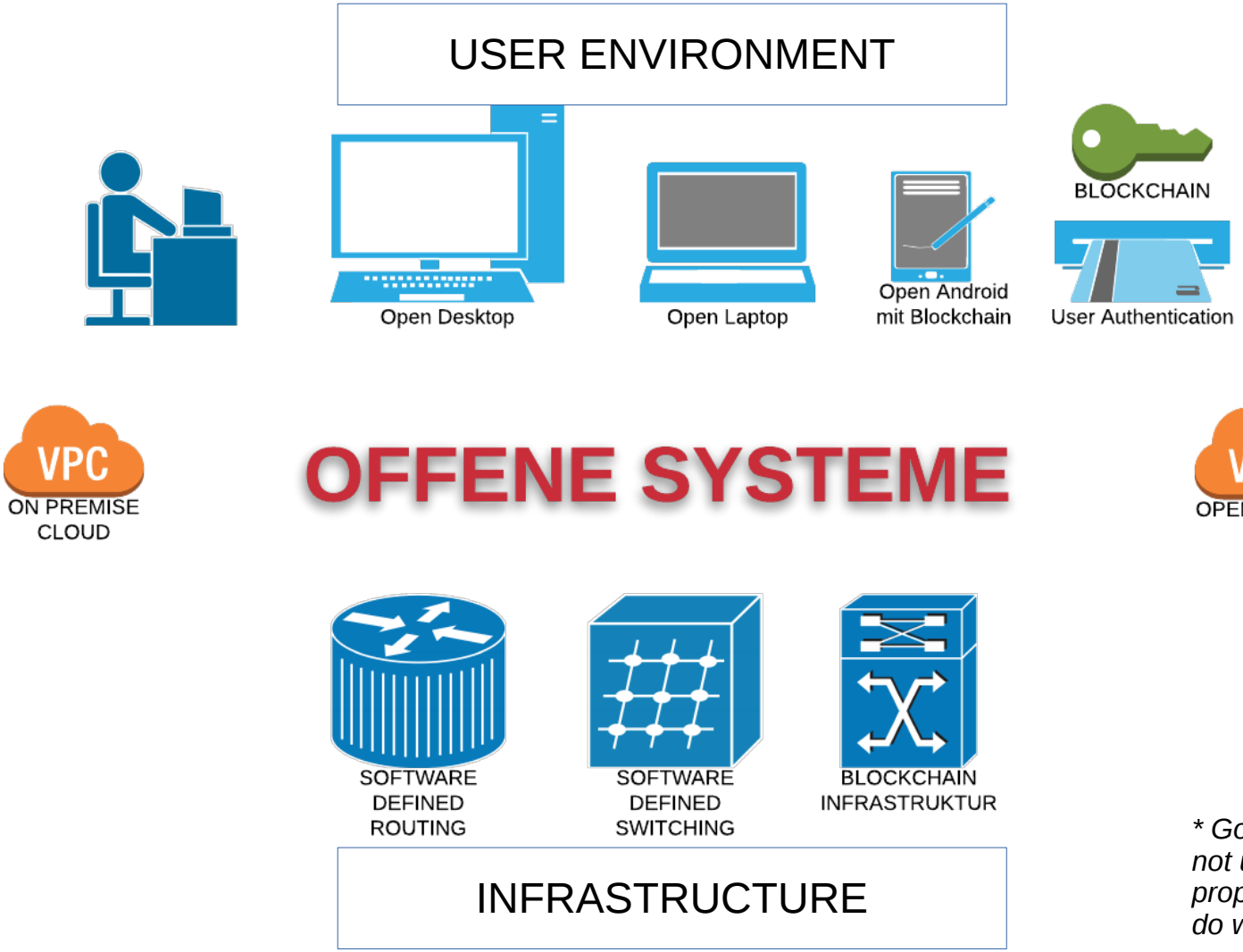
Today, there are many successful alternatives: open systems such as the Internet, open source soft- and hardware, Blockchain.

New technologies “mix the card deck” anew: Silicon Valley is out.

We do not need to re-invent the wheel,
but we can shape our own future independently.

Not by making new proprietary systems,
but by developing and using open technologies
- which we can share with our partners,
and / or co-develop in many fields – setting new open standards.

CONTROL WON!



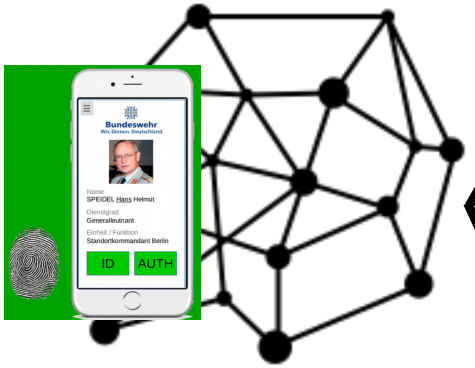
** Google, Facebook, etc do not use their competitor's proprietary software – why do we?*

DEVELOPED ONCE, USED OFTEN

Blockchain ID
Crypto Module
BUNDESWEHR

Example:
Identity Crypto Module

Private Bundeswehr Blockchain



- Guaranteed: true Digital ID
- Guaranteed: true user
- Unfalsifiable log entry
- Highest read speed
- High cost reduction
- Quick issue / changes

This “norm” / standard makes misuse or hacking extreme difficult – as such also the intrusion of mal-/ransomware, espionage, etc

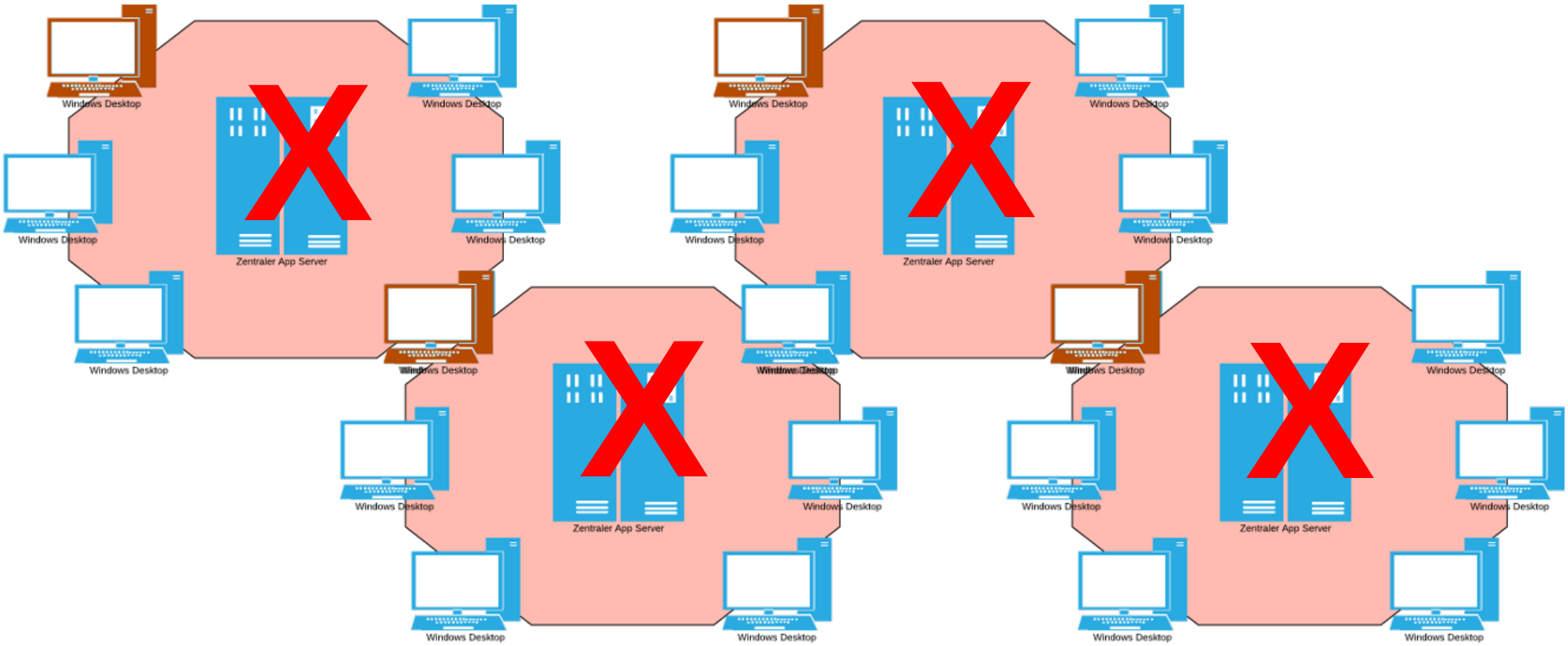
Access to military installations

Software access / authorization

Signatures / encryption

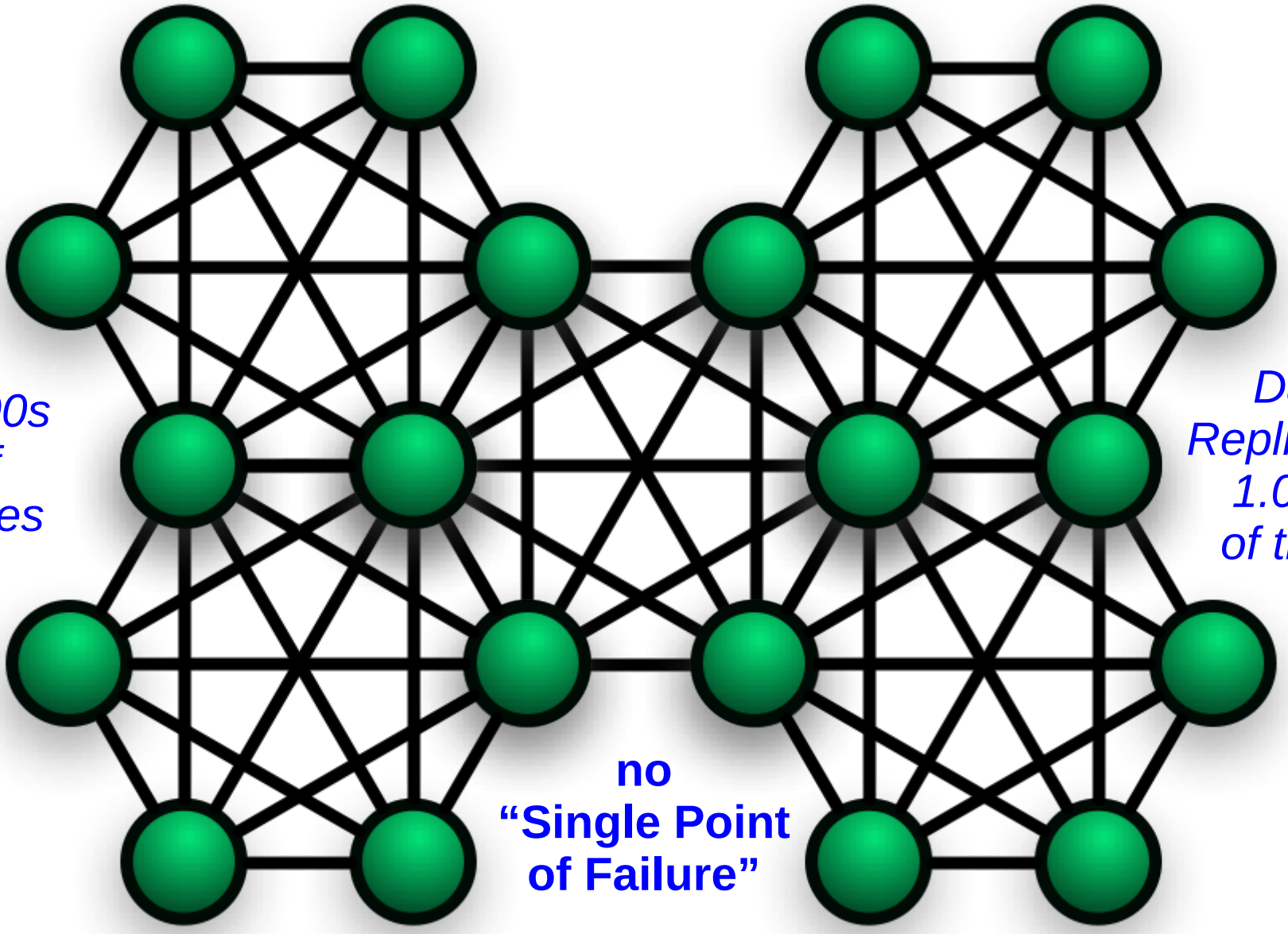
Transactions

DE-”CENTRAL”-IZATION?



Today’s centralization makes infrastructure (very) vulnerable.

LOWER ATTACK VECTORS

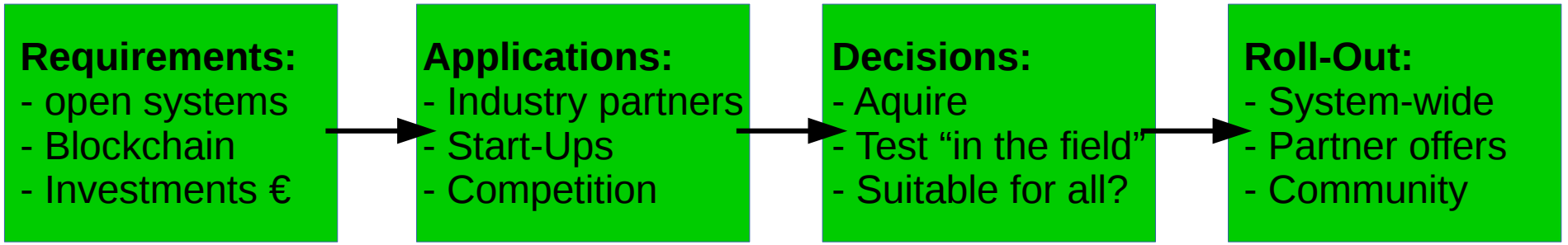


1.000s of nodes

Data Replication 1.000s of times

no “Single Point of Failure”

AGILE TECH ADOPTION



Like all militaries, we have one extra issue to solve, which private industry does not have: the BAAINBw acquisition process.

Grown over many years to spend taxpayer money wisely (in a useful manner) and with many levels of control, it has grown to a lengthy and time-consuming process which we have to make shorter and more efficient: Maybe programmable budget money via Blockchain?

INNOVATION “DRIVER”

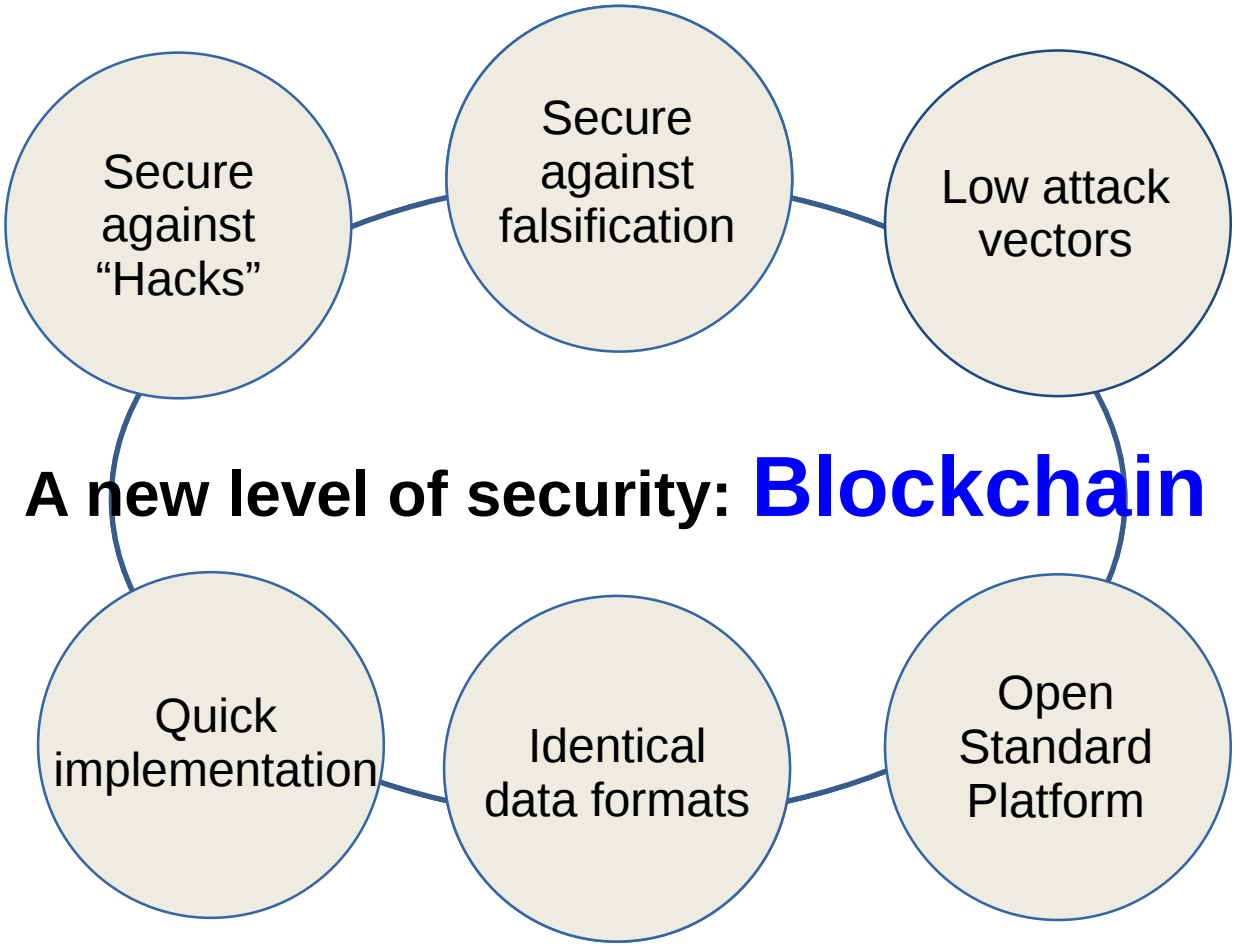
“Drive! Don’t Follow”

**The Bundeswehr is an organisation large enough
to initiate and set norms & standards:
in cyber defense, administration, and health care (medics).**

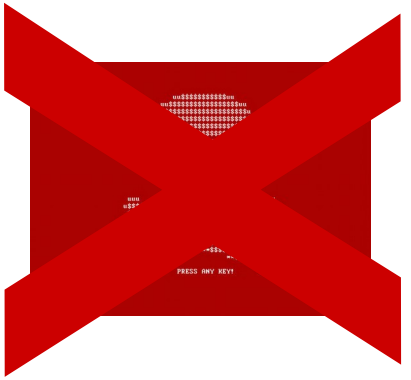
**If the Bundeswehr can radically change course
(many steps have already been taken),
then we can help and encourage others to do the same.**

This includes pushing innovation internally and externally!

NEW TECHNOLOGIES



CIR & BUNDESWEHR FUTURE



CYBER SECURITY	**CYBER DEFENSE**	**INNOVATION & DEPLOY**	**RECRUIT & TEACH**	**PARTNER OUTREACH**

NEW SOLID, SELF-CONTROLLED INFRASTRUCTURE
integrated in all branches, administration, medical / health care