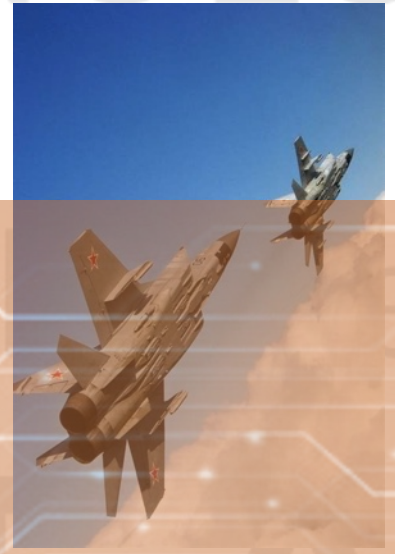
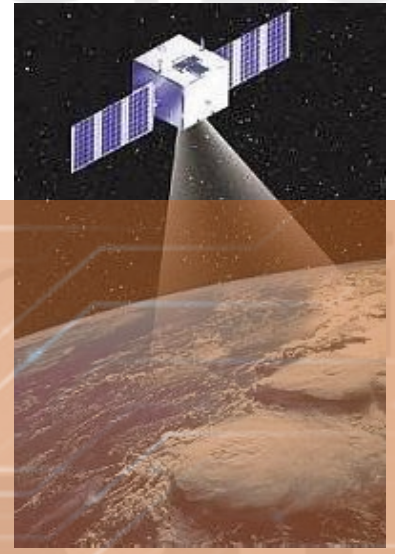
DREAMLAB
TECHNOLOGIES
Nicht glauben. Wissen.

CNO
PANEL 2023
THE INTERCHANGE OF NEW IDEAS

The State of Cyber

Cyber ist die fünfte Dimension

LAND	SEE	LUFT	WELTALL
			

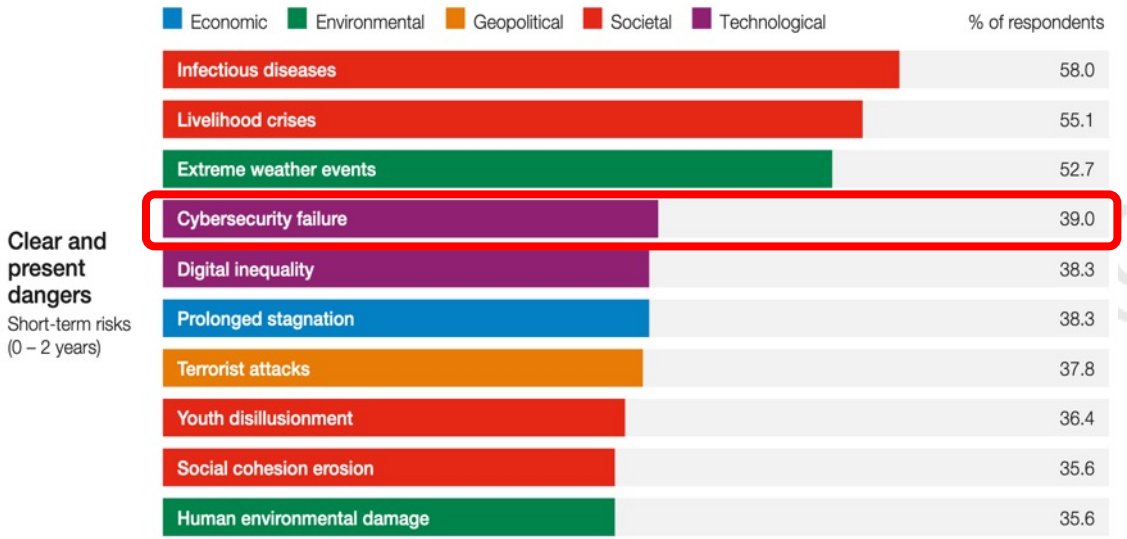
CYBER

Cyber Security Risiken sind globale Spitzenreiter

FIGURE I

Global Risks Horizon

When do respondents forecast risks will become a critical threat to the world?

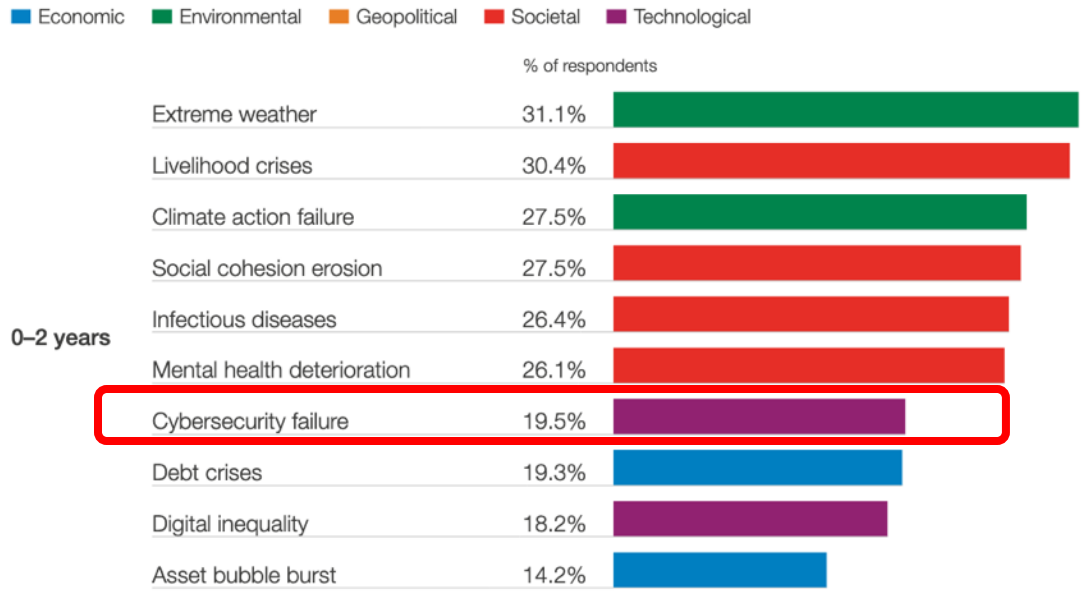


Quelle: https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf

FIGURE II

Global Risks Horizon

When will risks become a critical threat to the world?



Quelle: https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf

Die Schweiz ist ein Synonym für Kreativität und Innovationskraft…

… aber die Cyber-Sicherheit der Schweiz hinkt im globalen Vergleich massiv hinterher

Country/Economy	Score (0–100)	Rank
Switzerland	66.08	1
Sweden	62.47	2

Global Innovation Index 2021 rankings

GII rank	Economy	Score	Income group rank	Region rank
1	Switzerland	65.5	1	1
2	Sweden	63.1	2	2
3	United States of America	61.3	3	1
4	United Kingdom	59.8	4	3
5	Republic of Korea	59.3	5	1
6	Netherlands	58.6	6	4

GII rank	Economy	Score	Income group rank	Region rank
1	Switzerland	64.6	1	1
2	United States	61.8	2	1
3	Sweden	61.6	3	2
4	United Kingdom	59.7	4	3
5	Netherlands	58.0	5	4
6	Republic of Korea	57.8	6	1
7	Singapore	57.3	7	2
8	Germany	57.2	8	5
9	Finland	56.9	9	6
10	Denmark	55.9	10	7

The Global Innovation Index 2020 / 2021 / 2022

https://www.wipo.int/global_innovation_index/en/2020/
https://www.wipo.int/global_innovation_index/en/2021/
https://www.wipo.int/global_innovation_index/en/2022

VS

Country Name	Score	Rank
United States of America**	100	1
United Kingdom	99.54	2
Saudi Arabia	99.54	2
Estonia	99.48	3
Korea (Rep. of)	98.52	4
Singapore	98.52	4
Spain	98.52	4
Russian Federation	98.06	5
United Arab Emirates	98.06	5
Malaysia	98.06	5
Lithuania	97.93	6
Japan	97.82	7
Canada**	97.67	8
France	97.6	9
India	97.5	10
Turkey	97.49	11
Australia	97.47	12
Luxembourg	97.41	13
Germany	97.41	13
Portugal	97.32	14

Country Name	Score	Rank
Indonesia	94.88	24
Viet Nam	94.59	25
Sweden	94.55	26
Qatar	94.5	27
Greece	93.98	28
Austria	93.89	29
Poland	93.86	30
Kazakhstan	93.15	31
Denmark	92.6	32
China	92.53	33
Croatia	92.53	33
Slovakia	92.36	34
Hungary	91.28	35
Israel**	90.93	36
Tanzania	90.58	37
North Macedonia	89.92	38
Serbia	89.8	39
Azerbaijan	89.31	40
Cyprus	88.82	41
Switzerland**	86.97	42
Ghana	86.69	43

Global Cybersecurity Index 2020

https://www.itu.int/en/myitu/Publications/2021/06/28/13/22/Global-Cybersecurity-Index-2020

Die drei Schutz-Ziele der Cyber-Sicherheit

Braches im 2023

DDoS-Attacke auf Parlaments-Website

Von Reto Vogt, 8. Juni 2023 um 10:56

SECURITY BUND PARLAMENT CYBERANGRIFF DDOS

Die Webseite der eidgenössischen Räte ist angegriffen worden. Seit Mittwoch ist sie zeitweise nicht abrufbar.

https://www.inside-it.ch/ddos-attacke-auf-parlaments-website-20230608

Availability

NEWS

Nach Cyberangriff auf Xplain

Update: Sensible Daten von Bundesverwaltung und Fedpol landen im Darknet

Mo 19.06.2023 - 12:13 Uhr
von Yannick Züllig und Yannick Chavanne und René Jaun und Maximilian Schenner und lha, cka, yzu, rja

Cyberkriminelle haben den IT-Dienstleister Xplain angegriffen. Unter den Opfern sind auch die SBB, der Kanton Aargau und die Landespolizei des Fürstentums Liechtenstein. Auch sensible Daten der Bundesverwaltung und des Fedpol sind betroffen, wie Analysen nun zeigen.

https://www.netzwoche.ch/news/2023-06-05/ransomware-angriff-auf-it-dienstleister-trifft-auch-bundesstellen

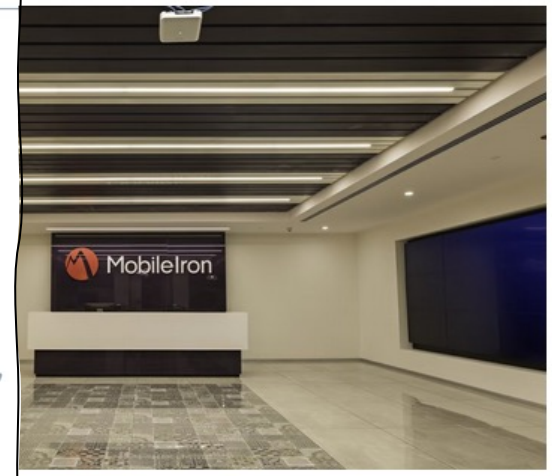
Confidentiality

Integrity

Hacker klauen Mitarbeiterdaten der Kapo Bern

Von Keystone-sda / hjm, 21. August 2023 um 11:06

SECURITY BREACH



https://www.inside-it.ch/hacker-klauen-mitarbeiterdaten-der-kapo-bern-20230821

Confidentiality

Breaches der (20)20er

'Shocking' hack of psychotherapy records in Finland affects thousands

Distressed patients flood support services after hack of private firm Vastaamo

Vastaamo patients reported receiving emails with demands for €200 to prevent the documents' publication. Photograph: Kimmo Brandt/EPA

https://www.theguardian.com/world/2020/oct/26/tens-of-thousands-psychotherapy-records-hacked-in-finland

POLICY | TECH | CYBERSECURITY

White House now says 100 con SolarWinds hack, but more ma

Plus nine federal agencies

By Jon Porter | @JonPorty | Feb 18, 2021, 4:40am EST

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and the Google Pri
Service apply.
SU

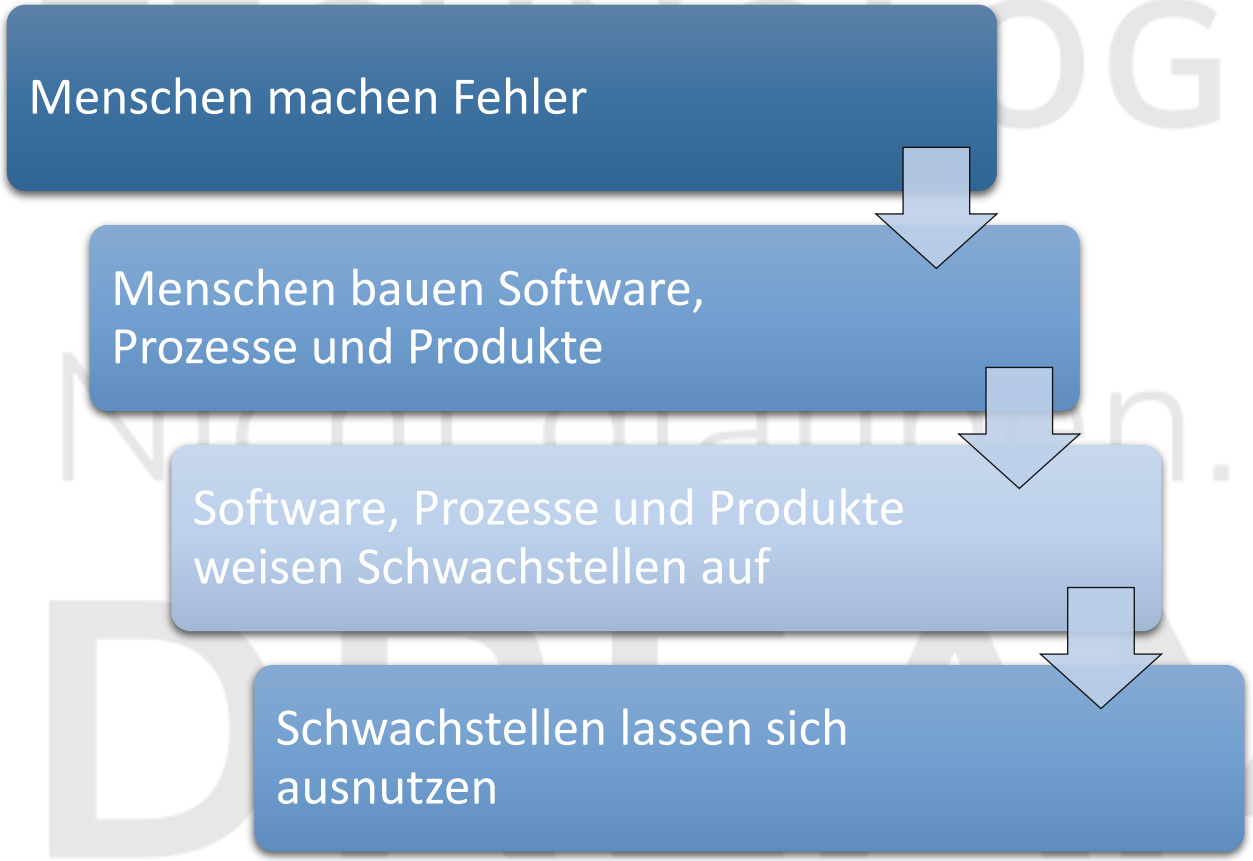
https://www.theverge.com/2021/2/18/22288961/solarwinds-hack-100-companies-9-federal-agencies

A Mysterious Satellite Hack Has Victims Far Beyond Ukraine

The biggest hack since Russia's war began knocked thousands of people offline. The spillover extends deep into Europe.

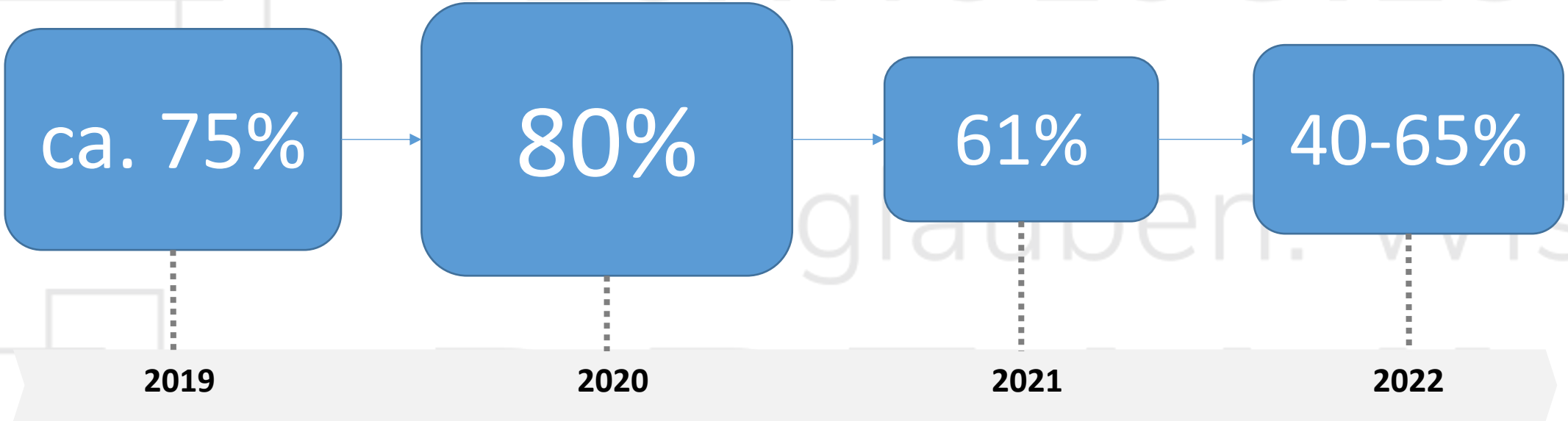
https://www.wired.com/story/viasat-internet-hack-ukraine-russia/

Treiber für die aktuelle Cyber-Situation:
Schwachstellen / Bugs werden zum Einfallstor



Treiber für die aktuelle Cyber-Situation:

Schwache, gestohlene oder geleakte und wiederverwendete Passwörter tragen zu Grossteil aller Hacks bei



https://www.verizon.com/business/resources/reports/2019-data-breach-investigations-report.pdfx
https://www.verizon.com/business/resources/reports/2020-data-breach-investigations-report.pdfx
https://www.verizon.com/business/resources/reports/2021-data-breach-investigations-report.pdfx
https://www.verizon.com/business/resources/T744/reports/dbir/2022-data-breach-investigations-report-dbir.pdf

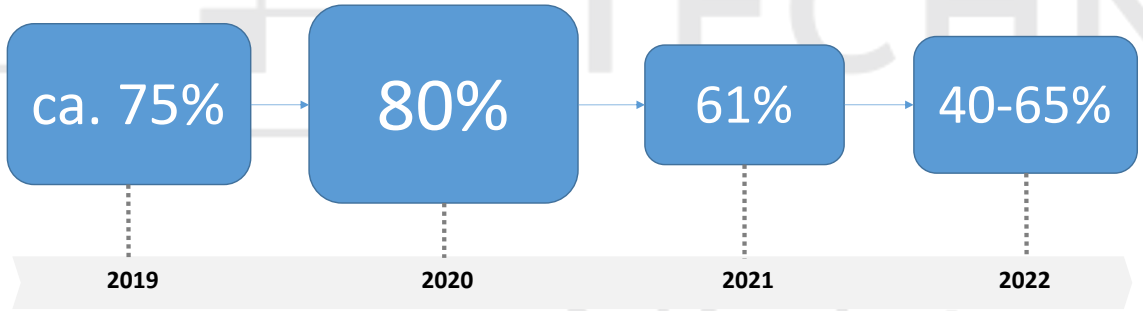
Treiber für die aktuelle Cyber-Situation:

(Spear-) Phishing / Malspam Attacken und ungenügend befähigte Mitarbeiter

https://www.avepoint.com/blog/de/protect-de/so-schuetzen-sie-sich-vor-phishing-ransomeware-angriffen

Treiber für die aktuelle Cyber-Situation:

Cyber-Security ist ein Prozess und Hygienefaktor, wird aber nicht so verstanden.

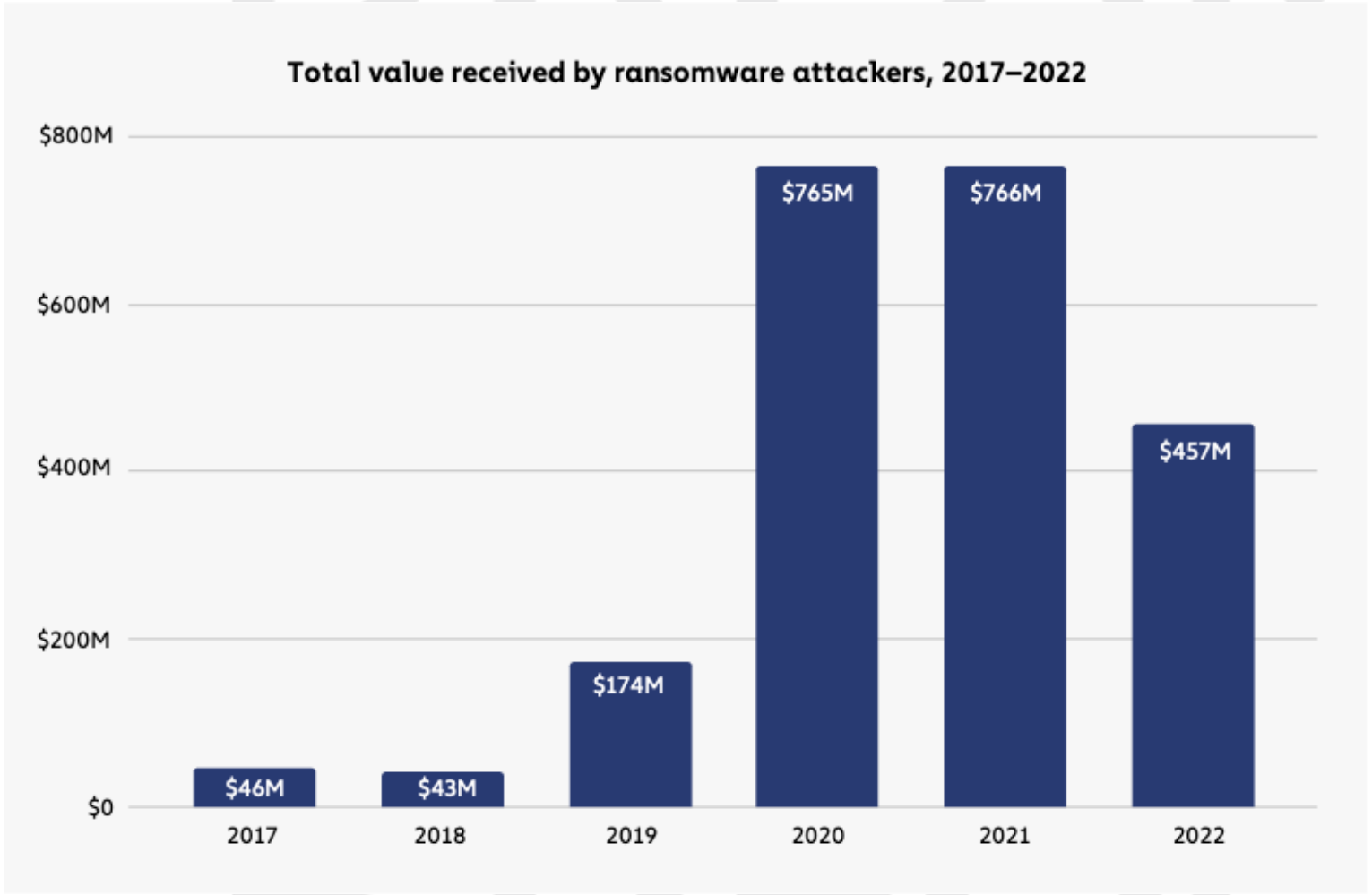


Wer sind die Angreifer?

Wer sind die Angreifer in der Cyber-Dimension?

Motivation + Fähigkeiten + **Opportunität (Angriffsfläche)** → **Risiko**.
Die Übergänge sind fliessend, Attribution ist sehr schwierig

Die Motivation von Cyberkriminellen



https://go.chainalysis.com/rs/503-FAP-074/images/Crypto_Crime_Report_2023.pdf

Meet Conti: Einblick in eine professionelle Cybergang

Programmers

Schreibt bösartigen Code und integriert unterschiedliche Technologien

Testers

Testet Conti-Malware gegen Sicherheitstools und verschleiert diese (alle 4h!)

Die meisten Antivirus Lösungen wirkungslos!

Administrators

Auf- und Abbau von Servern und Angriffs-infrastrukturen (botnets)

Reversers

Zerlegen Code und identifizieren Schwachstellen in gängiger Software, Hardware, und Cloud Services

Penetrationstester/Hacker

Kämpfen an vorderster Front gegen Sicherheitsteams von Unternehmen, um Daten zu stehlen und Ransomware einzuschleusen.

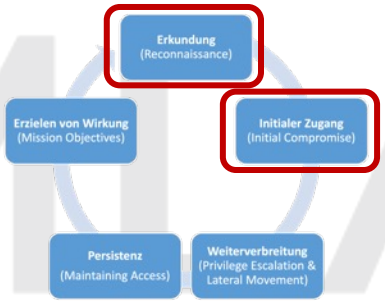
Wie gehen Cyber-Akteure vor?

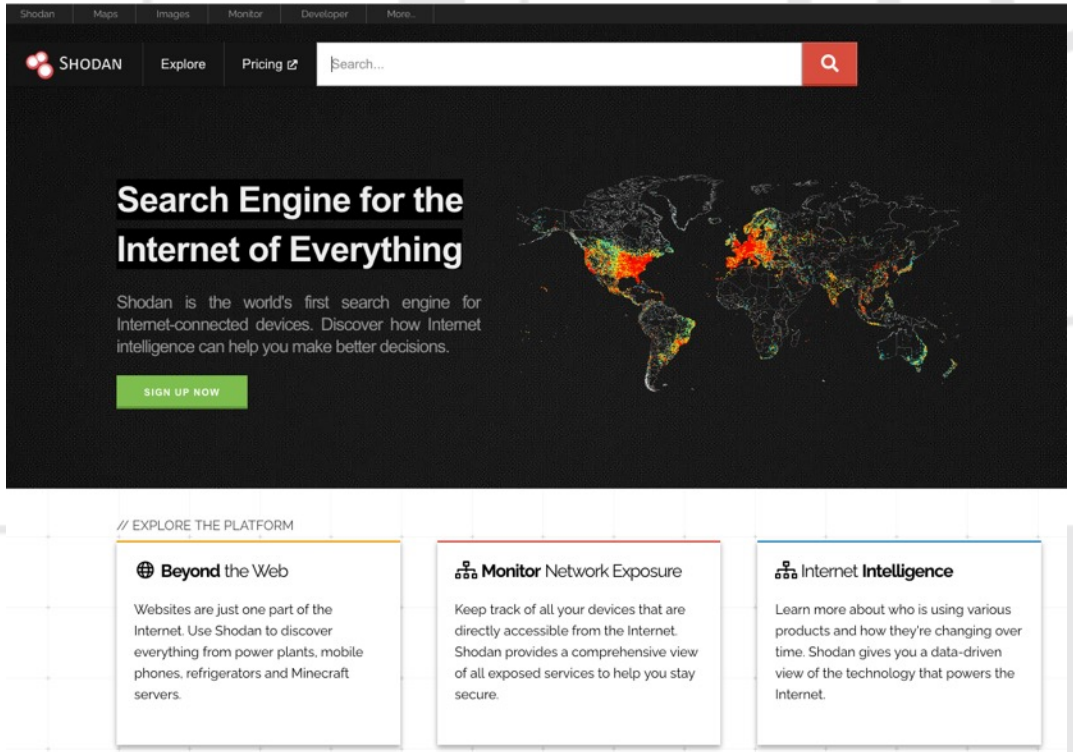
Ein Schritt nach dem anderen…

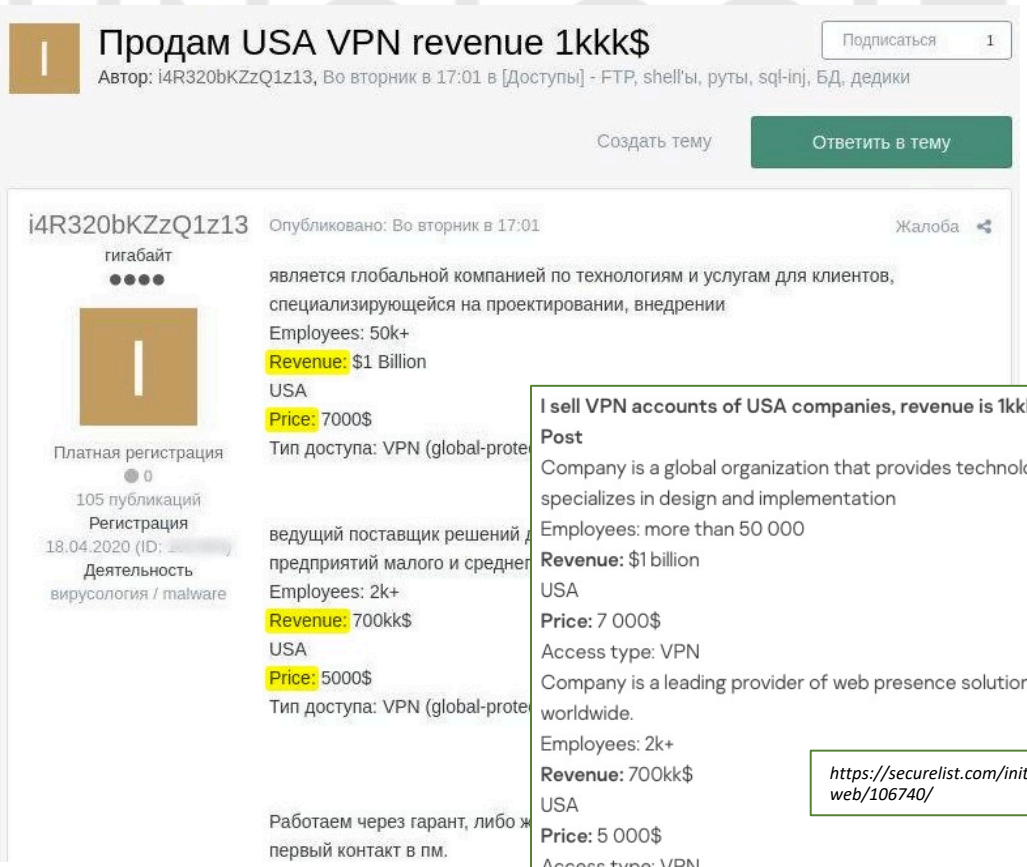
Verschlüsseln von Daten
Diebstahl von Daten
Manipulation von Daten
Beeinflussung von Kontrollprozessen
…

Fernsteuerung / Command and Control (C2)

Erkundung? Opportunismus …
… oder Outsourcing







I sell VPN accounts of USA companies, revenue is 1kkk$

Post

Company is a global organization that provides technologies and services for customers and specializes in design and implementation

Employees: more than 50 000

Revenue: $1 billion

USA

Price: 7 000$

Access type: VPN

Company is a leading provider of web presence solutions for small and mid-sized businesses worldwide.

Employees: 2k+

Revenue: 700kk$

USA

Price: 5 000$

Access type: VPN

We work with guarantees; otherwise, you pay a deposit and I will provide you with access information in advance.

First contact in private messages.

https://securelist.com/initial-access-data-price-on-the-dark-web/106740/

Wie gehen Cyber-Akteure vor?

Drei Wege zum Initial Compromise

Perimeter

A. Exploit (Schwachstelle)

C.

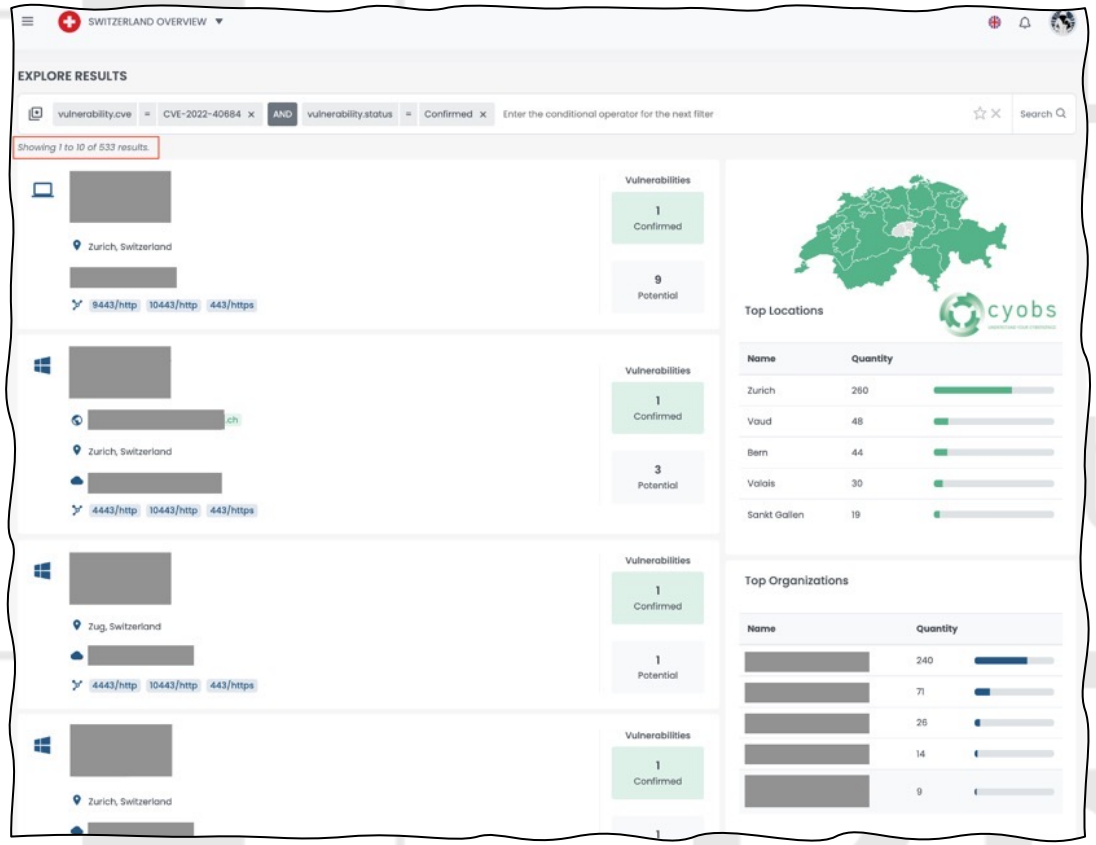
Phishing/Trojaner

B. Login / Remote Access

Passwörter / Credentials!

SSH, RDP, FTP, VPN, VNC …

Kritische Fortinet-Schwachstelle: 533 direkt angreifbare IT-Systeme in der Schweiz identifiziert



17.10.
2022

Kritische Fortinet-Schwachstelle: 533 direkt angreifbare IT-Systeme in der Schweiz identifiziert

10:11 Von Dreamlab Techno...

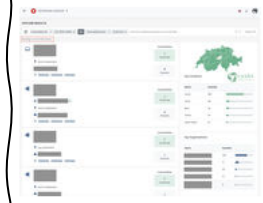


Bild Rechte:
Dreamlab Technologies AG

(Bern)(PPS) **Die seit zehn Tagen bekannte kritische Fortinet-Schwachstelle CVE-2022-40684 erlaubt Hackern, sich mit Administratorenrechten in verwundbare Systeme einzuloggen. Aktuellste Messungen legen offen, dass die IT-Infrastrukturen von 533 Schweizer Unternehmen diesbezüglich weiterhin ungeschützt sind. Unter den angreifbaren Firmen befinden sich mehrere Telekommunikationsanbieter, ISPs und Elektrizitätswerke. Schnelles Handeln ist dringend notwendig.**

Fortinet warnte am 6. und am 10. Oktober 2022 davor, dass die dokumentie ...Authentication Bypass" ihre drei Produkte FortiOS, FortiProxy und FortiSwitchManager betrifft. Die S... Vulnerability Scoring System) und ermöglicht Angreifenden, sich mit Admin... Oktober 2022 wurde von Horizon3-Forschern gezeigt, wie die Schwachstell...

17.10.2022

→ https://www.presseportal-schweiz.ch/pressemeldungen/kritische-fortinet-schwachstelle-533-direkt-angreifbare-it-systeme-der-schweiz
→ https://www.netzwoche.ch/news/2022-10-11/fortinet-bug-ermoeglicht-unerlaubten-admin-zugriff

Wo eine Schwachstelle ist, ist der Exploit meist nicht weit

CVE-2022-40684 exploit

All | News | Images | Videos | Books | More | Tools

About 53'700 results (0.50 seconds)

What is the Impact of CVE-2022-40684 Vulnerability? The CVE-2022-40684 vulnerability **allows adversaries to bypass authentication and login into the vulnerable systems as an administrator in FortiOS / FortiProxy / FortiSwitchManager products**. 18 Oct 2022

https://www.picussecurity.com › resource › blog › cve-20...

CVE-2022-40684: Fortinet Authentication Bypass Vulnerability ...

About featured snippets • Feedback

https://github.com › Chocapikk › CVE-2022-40684

Chocapikk/CVE-2022-40684: Fortinet Critical ... - GitHub

7 days ago — This POC abuses the authentication bypass **vulnerability** to set an SSH key for the specified user. Usage. root@kali:~# python **exploit**.py -h ...

https://github.com › CVE-2022-40684

horizon3ai/CVE-2022-40684 - GitHub

14 Oct 2022 — A proof of concept **exploit** for **CVE-2022-40684** affecting Fortinet FortiOS, FortiProxy, and FortiSwitchManager - GitHub ...

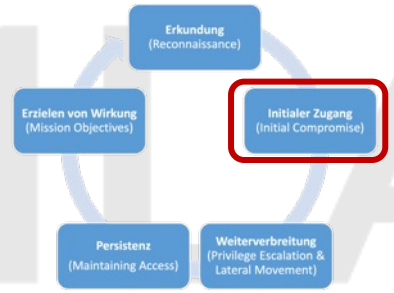
https://securityaffairs.co › fortinet-cve-2022-40684-poc

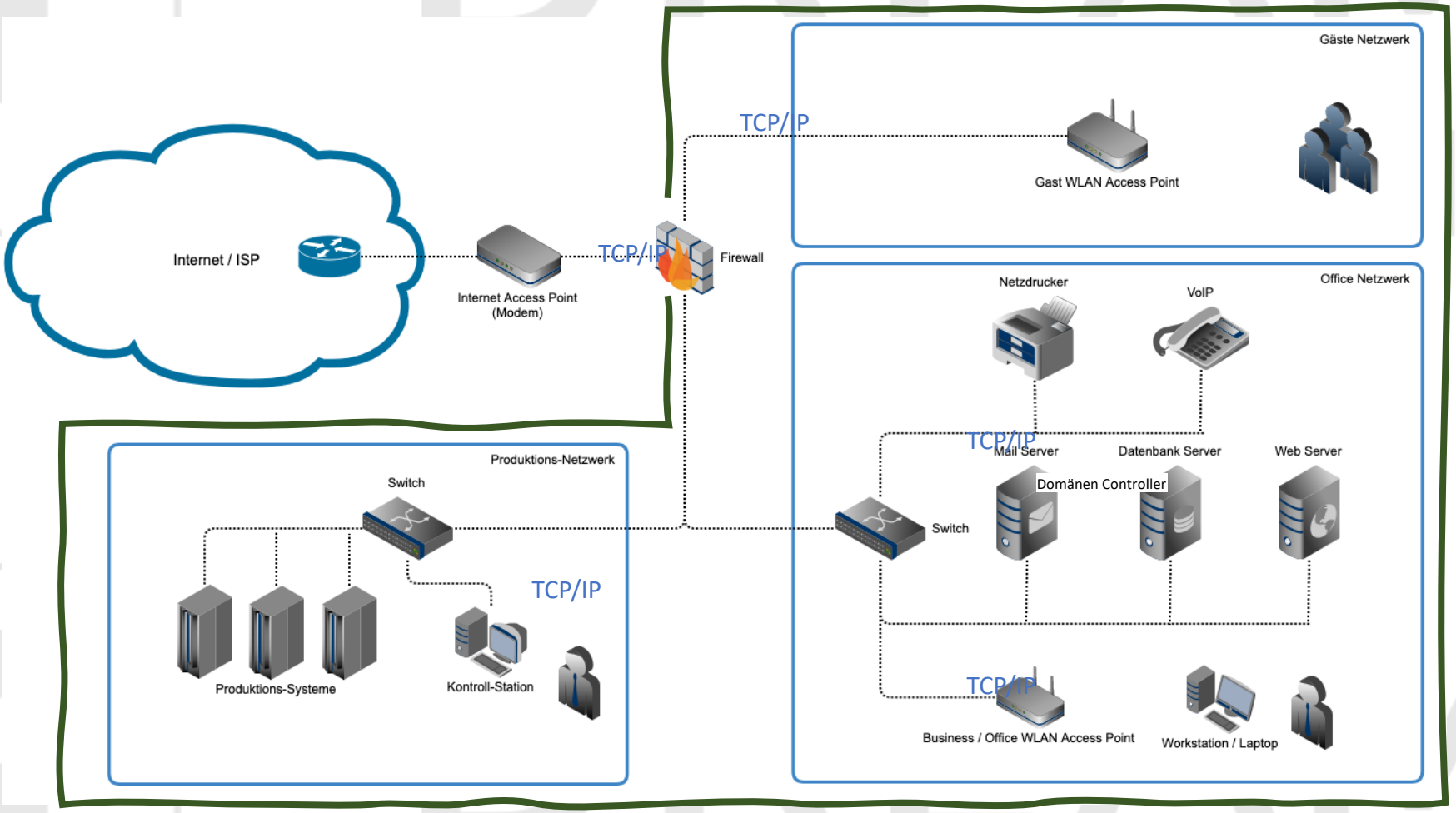
Experts released PoC exploit code for critical bug CVE-2022 ...

14 Oct 2022 — Experts released the PoC **exploit** code for the authentication bypass flaw **CVE-2022-40684** in FortiGate firewalls and FortiProxy web proxies.

Wie gehen Cyber-Akteure vor?

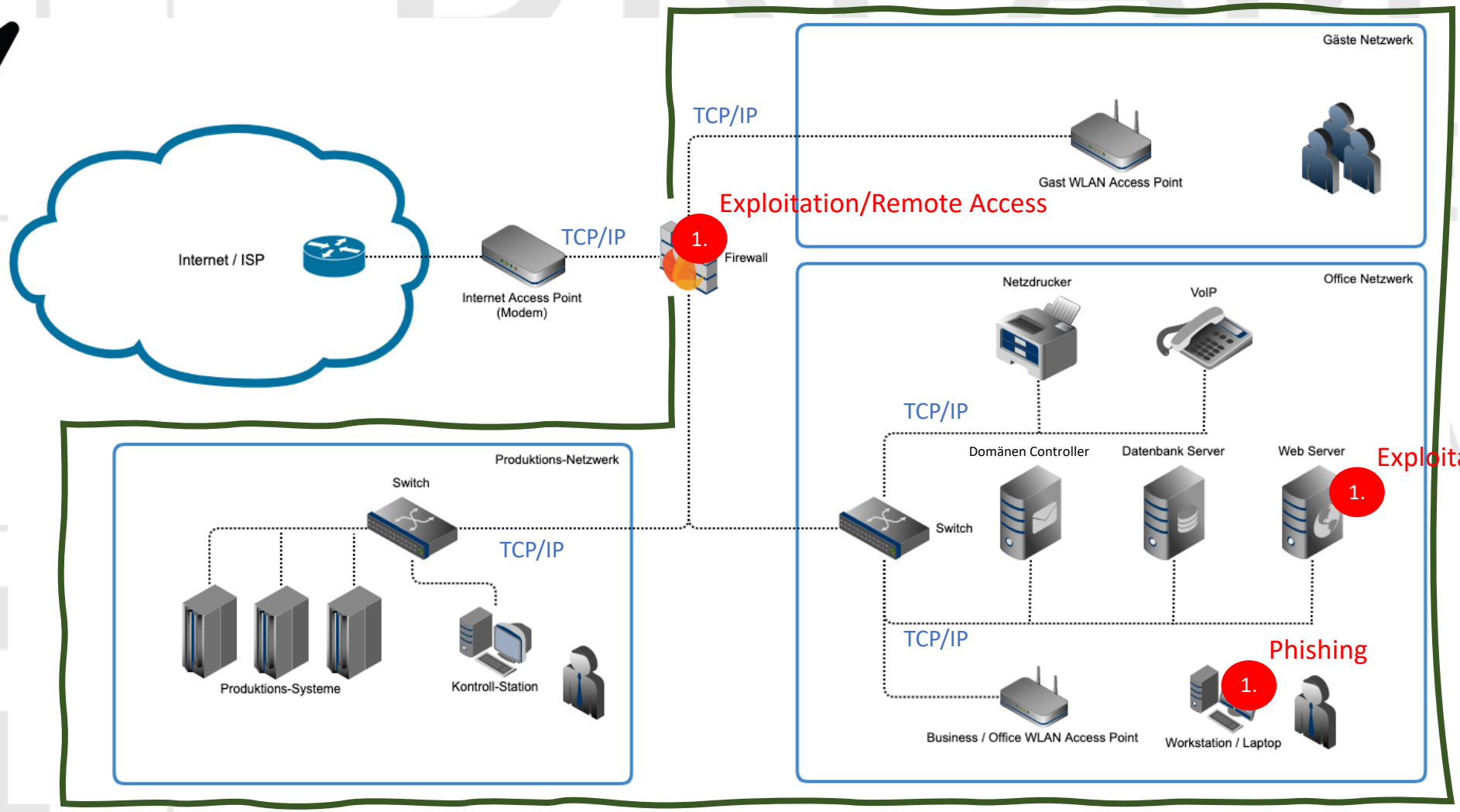
Vereinfachtes, typisches Unternehmensnetzwerk





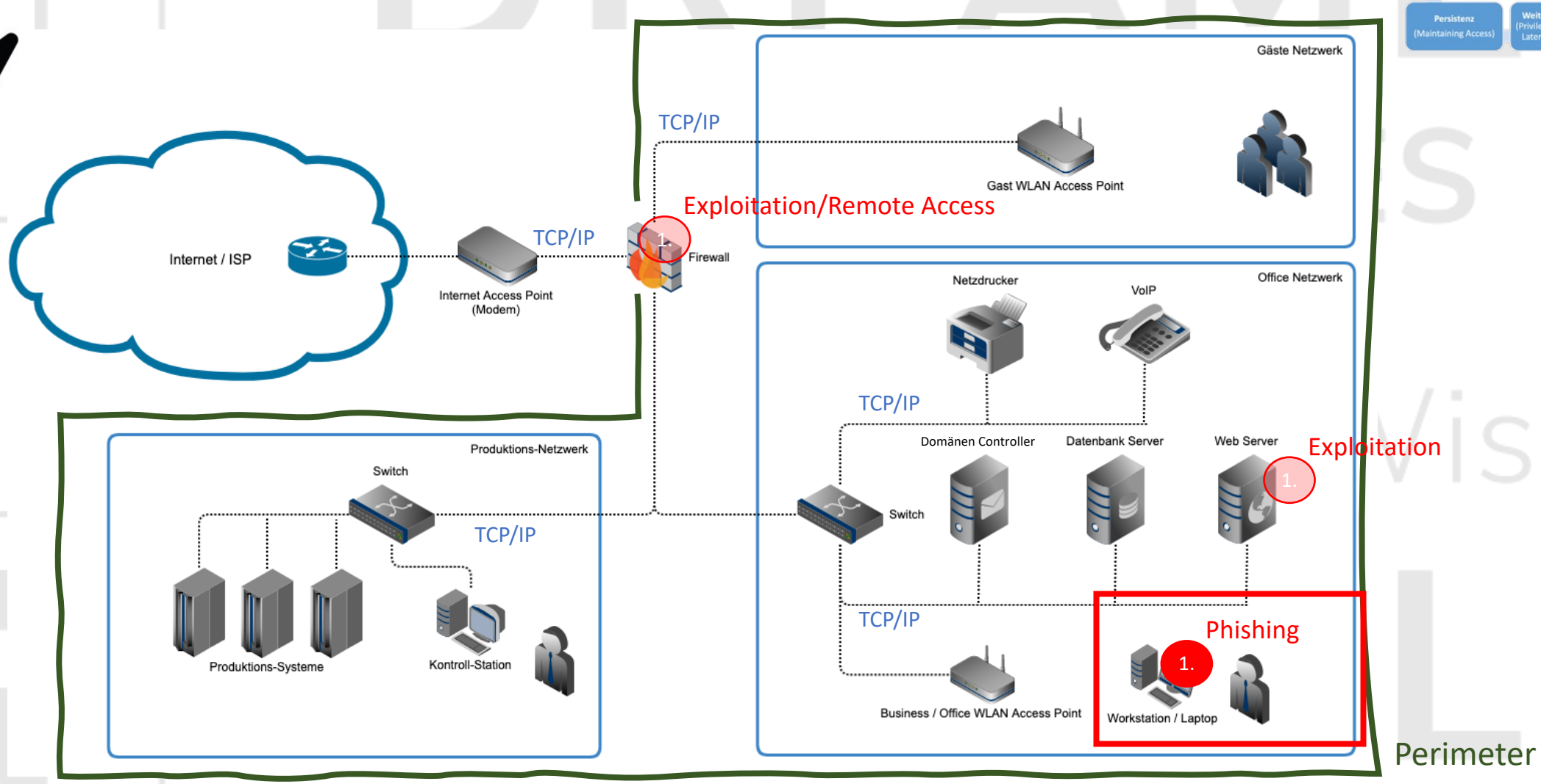
Wie gehen Cyber-Akteure vor?

Initialer Zugang



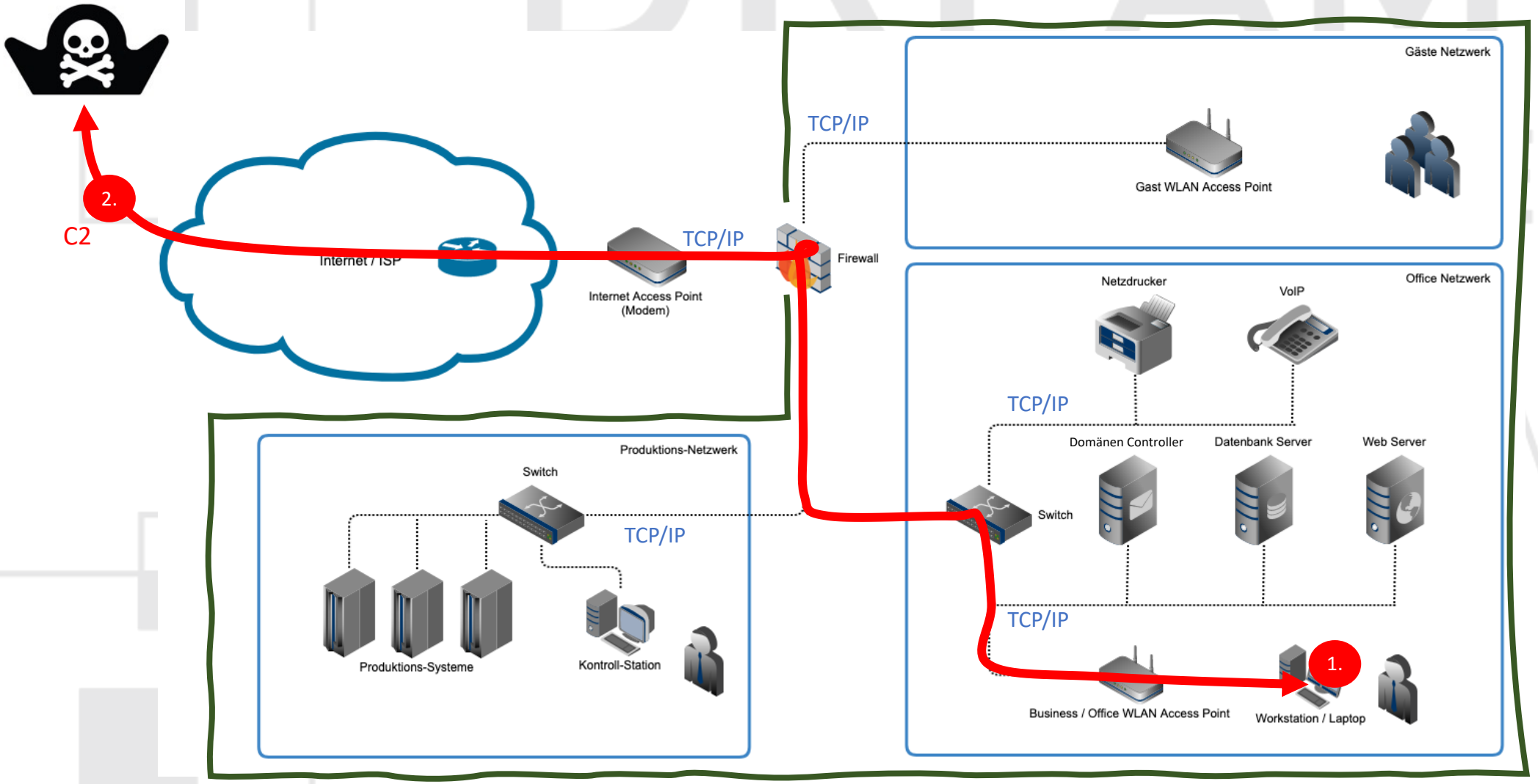
Wie gehen Cyber-Akteure vor?

Initialer Zugang



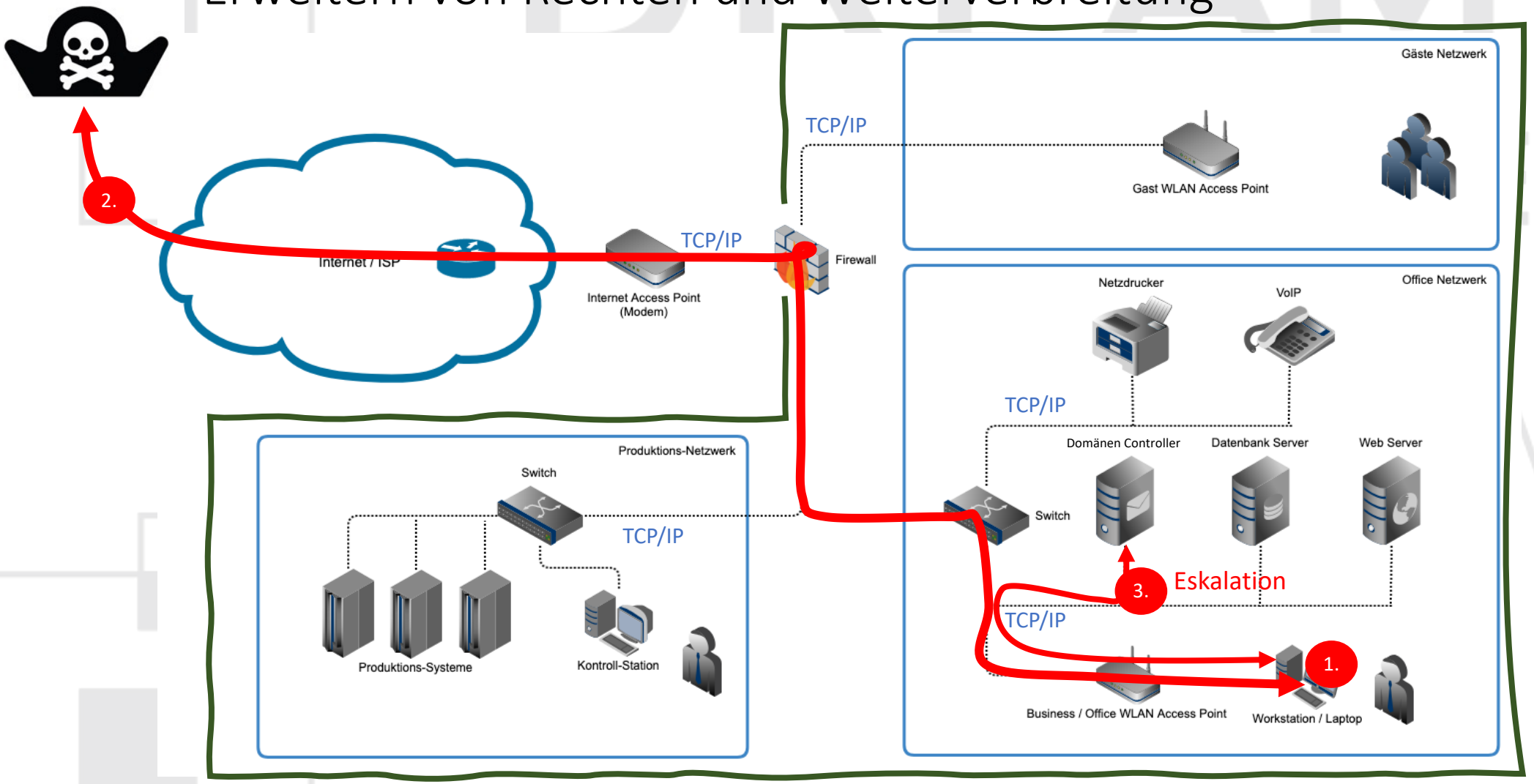
Wie gehen Cyber-Akteure vor?

Command & Control (C2)



Wie gehen Cyber-Akteure vor?

Erweitern von Rechten und Weiterverbreitung



Wie gehen Cyber-Akteure vor?

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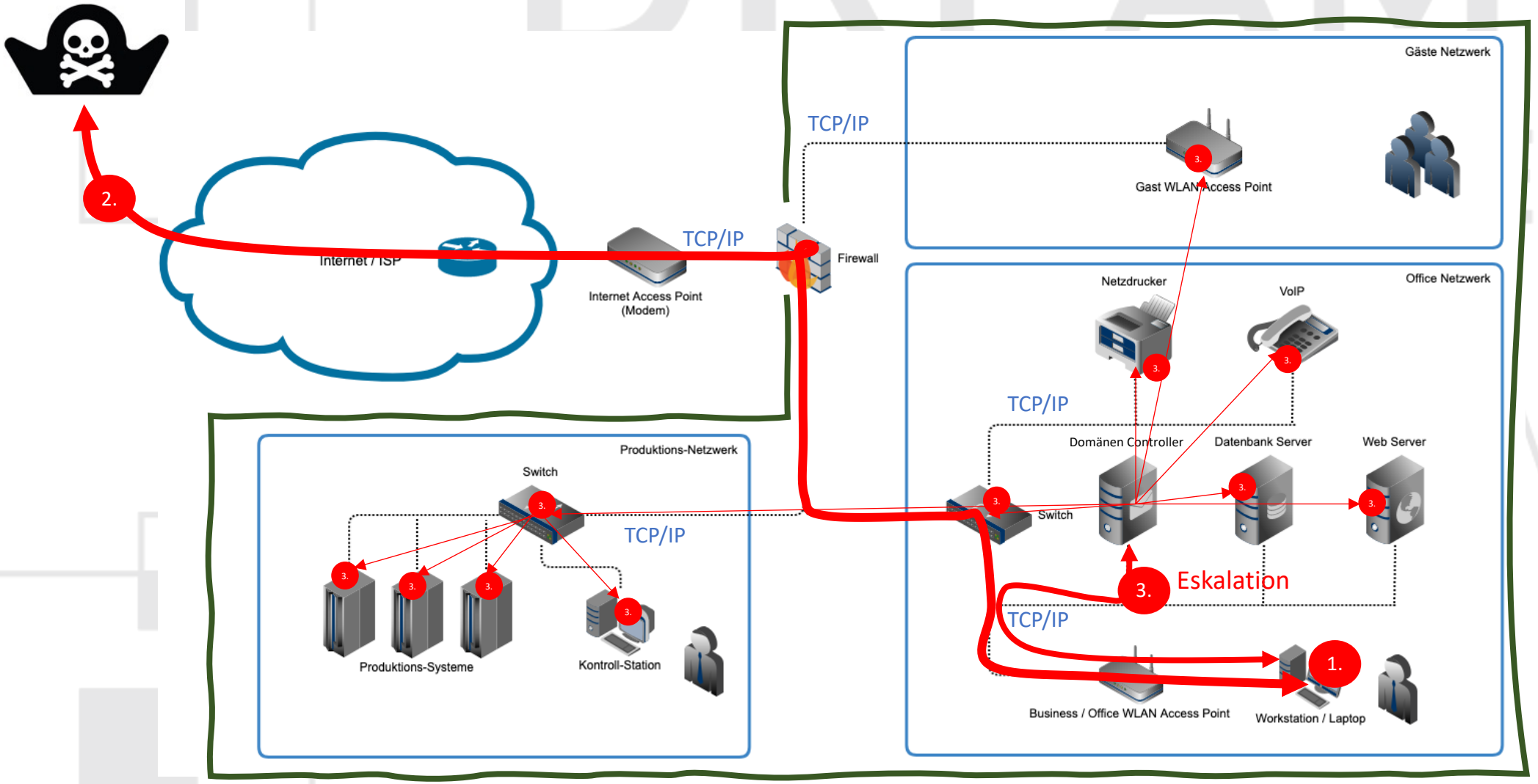
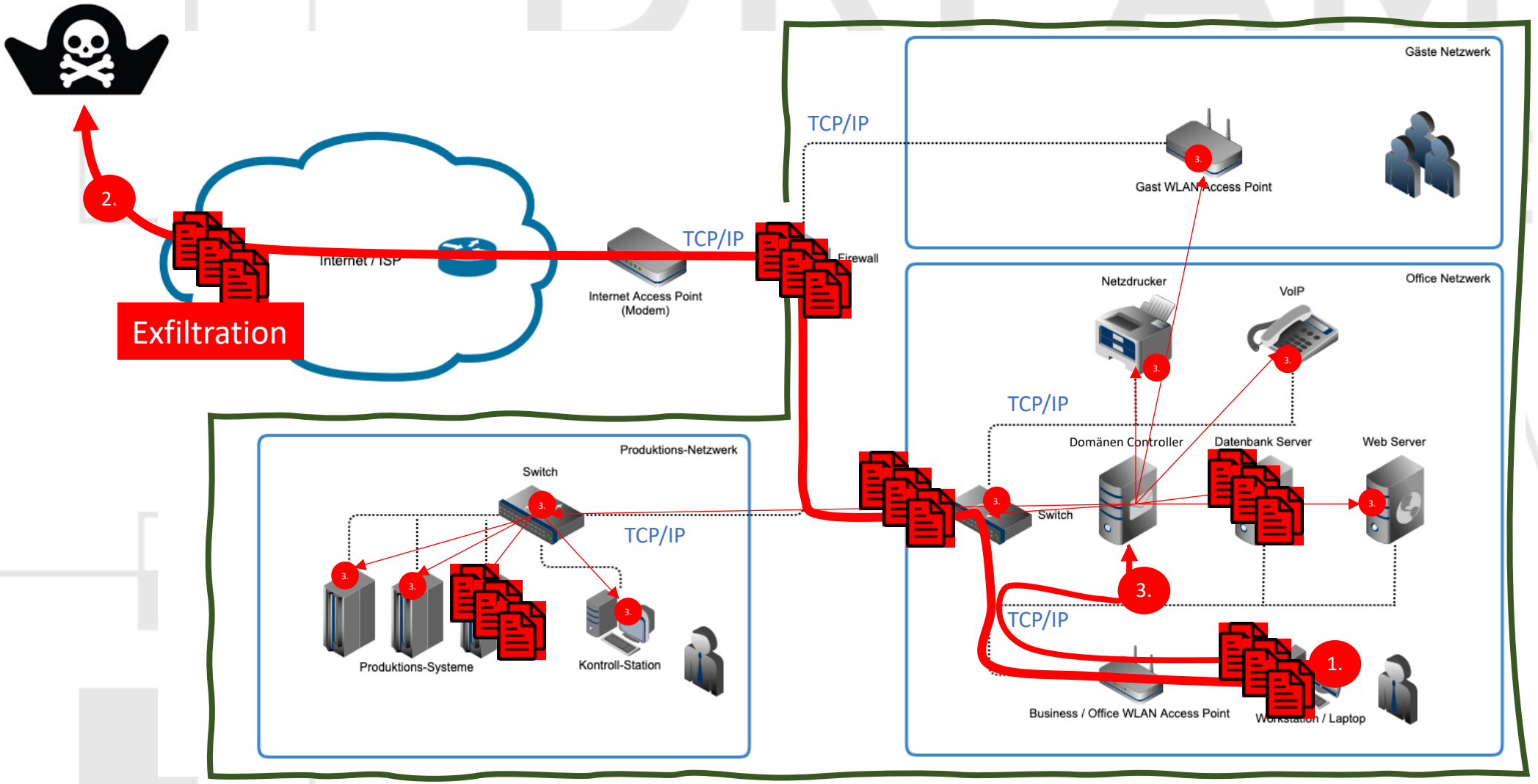


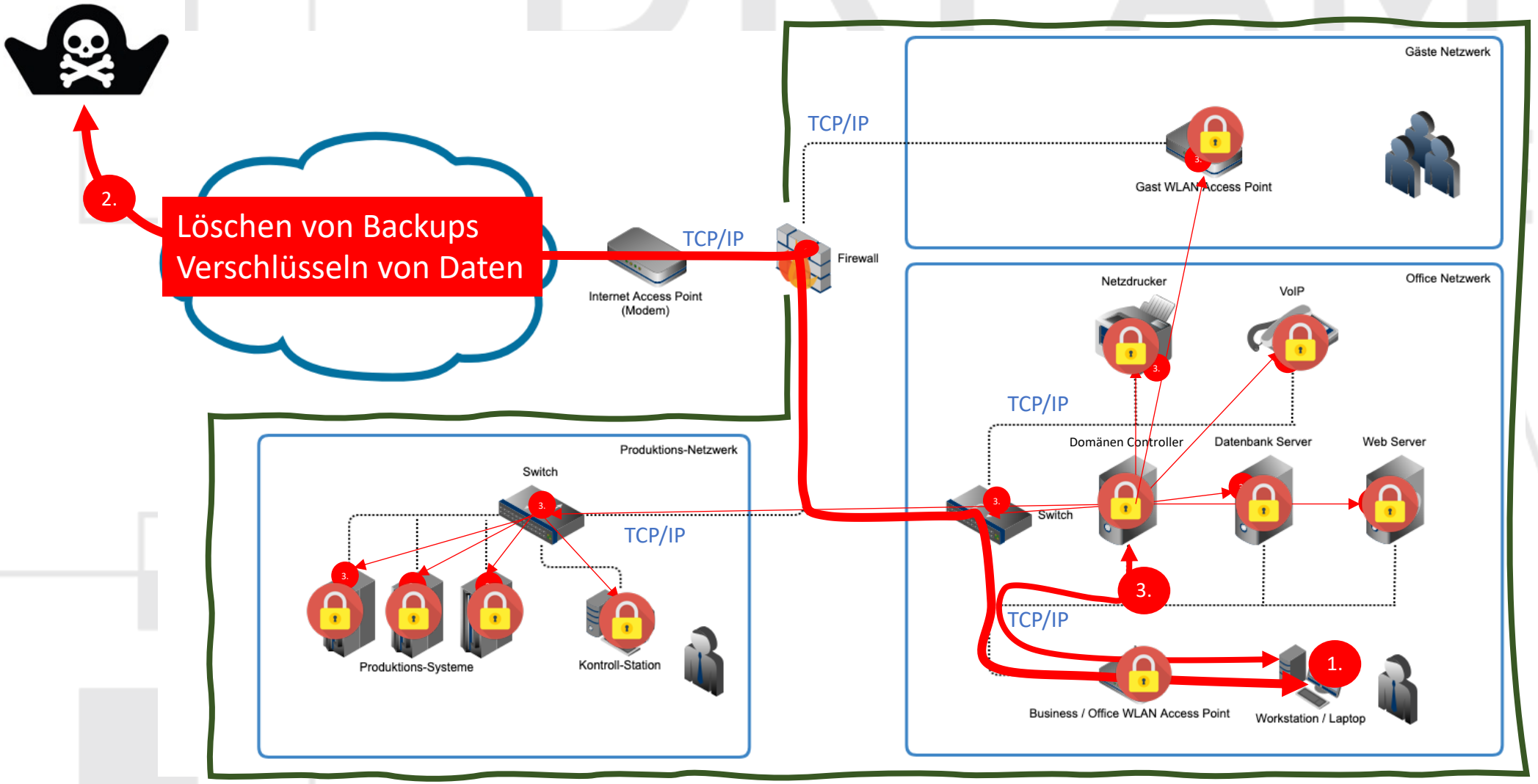
Wie gehen Cyber-Akteure vor?

Erreichen von Wirkung



Wie gehen Cyber-Akteure vor?

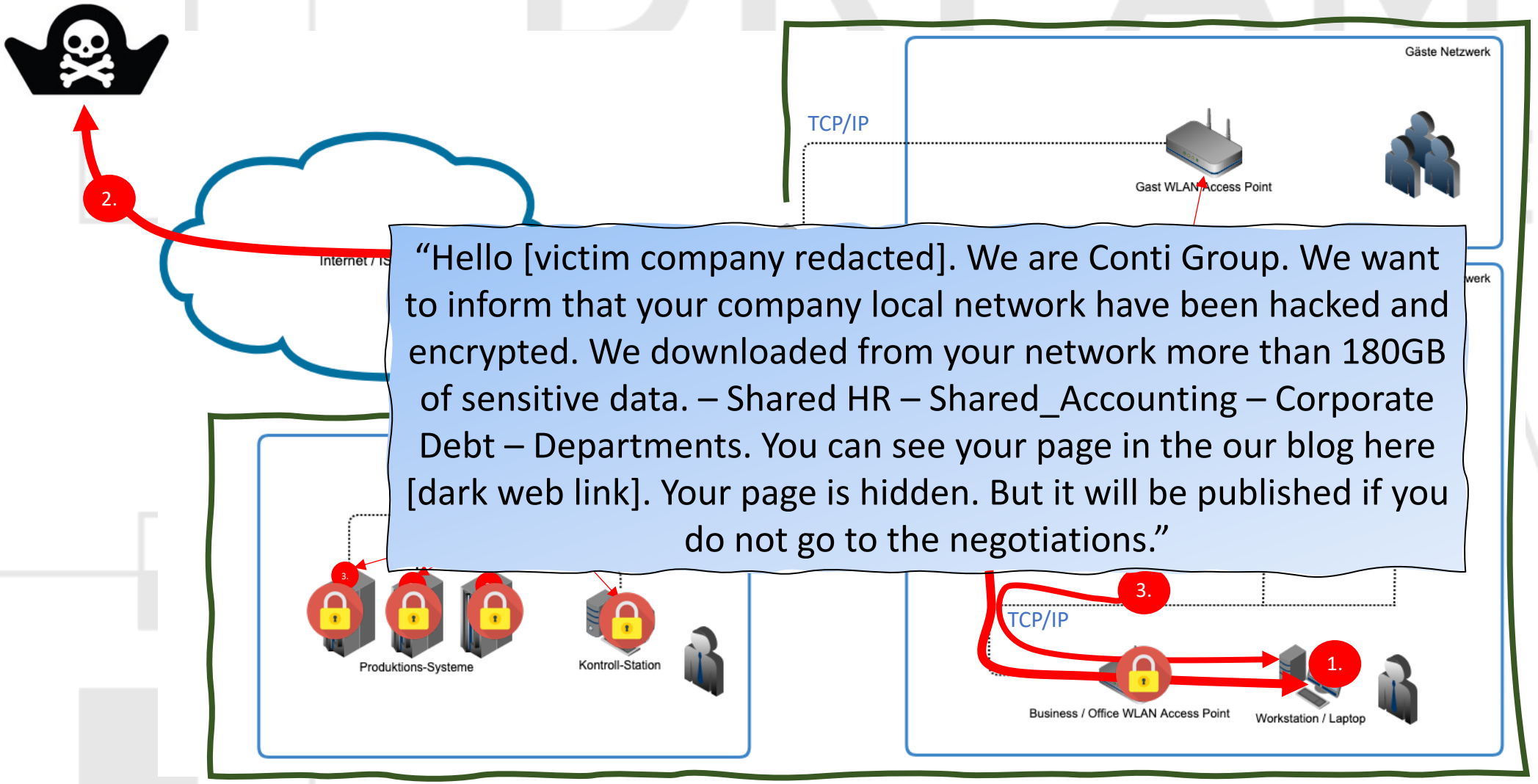
Erreichen von Wirkung



Perimeter

Wie gehen Cyber-Akteure vor?

Erreichen von Wirkung



Auswirkungen

Datenverlust

- Reputationsschaden
- Wirtschaftlicher Schaden

Unterbruch der operativen Tätigkeiten:

- Auftragsausfall
- Zahlungsausfall

Aufräum- und **Wiederherstellungsarbeiten**:

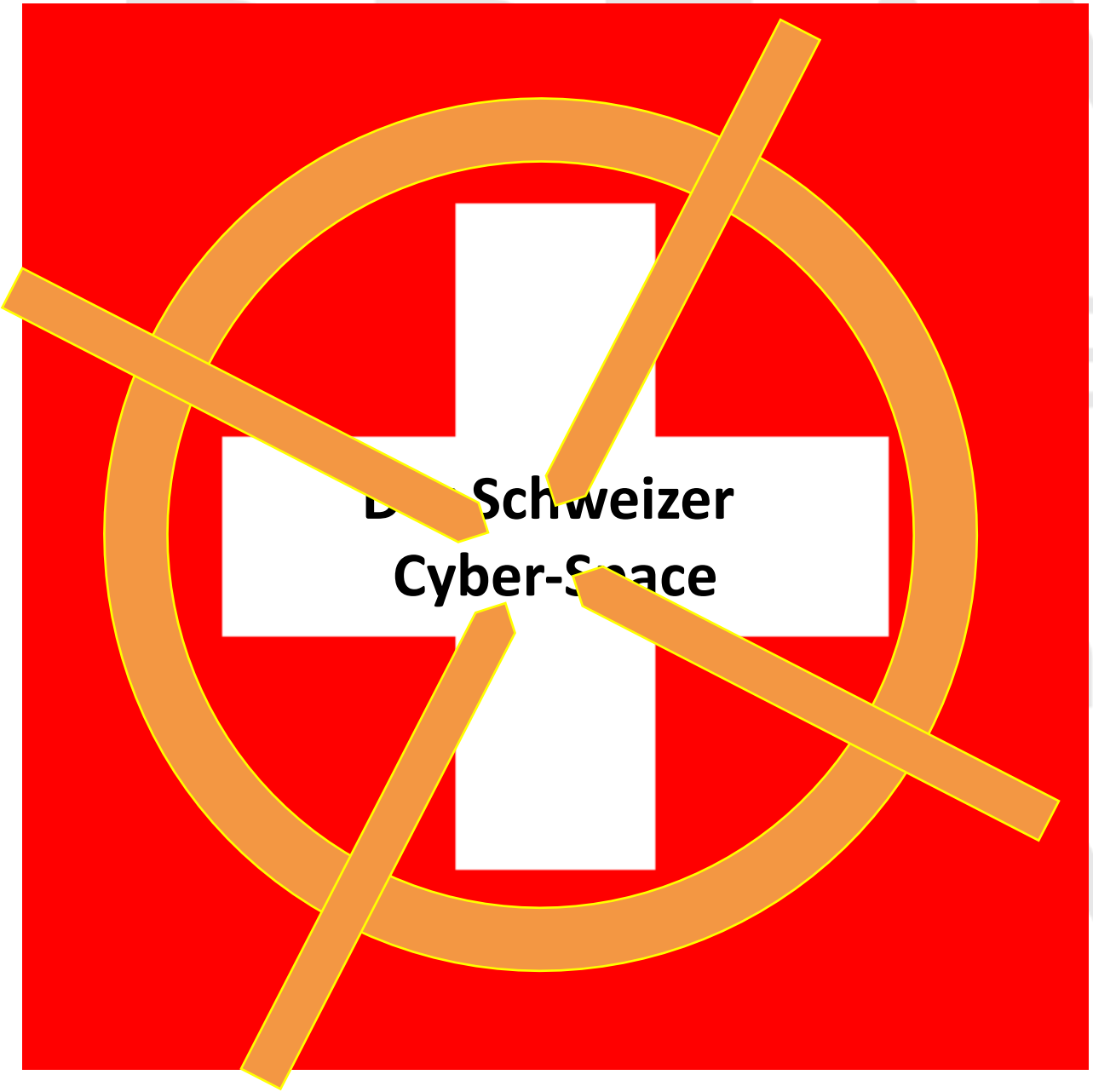
- Massive Belastung für Schlüsselressourcen
- Kostenfaktor

KONKURS

KATZ- UND MAUSSPIEL

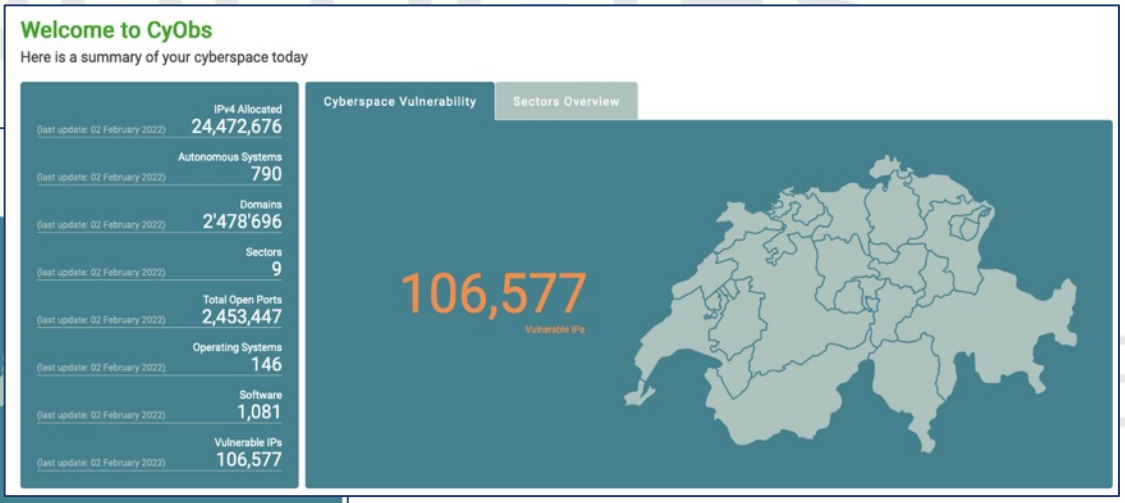
«Der Markt für Cyber-Versicherungen funktioniert grundsätzlich»

https://www.handelszeitung.ch/insurance/cyber-versicherungen-der-markt-funktioniert-598743

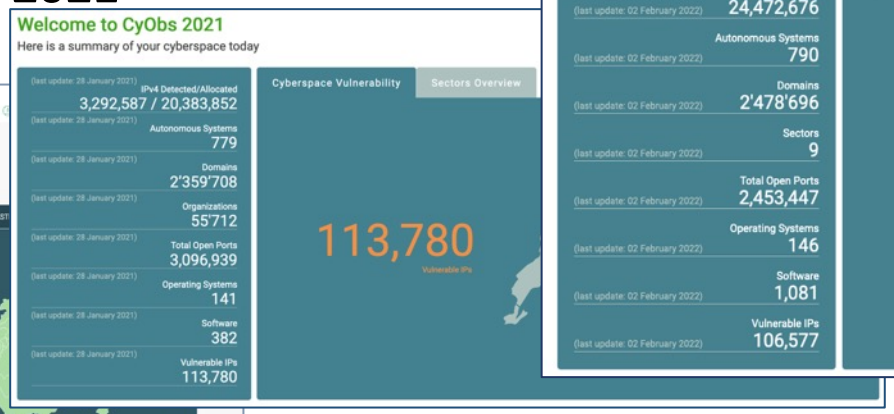

Schweizer
Cyber-Space

Die bekannten, öffentlich zugänglichen Schwachstellen im Schweizer Cyber Space nehmen zu

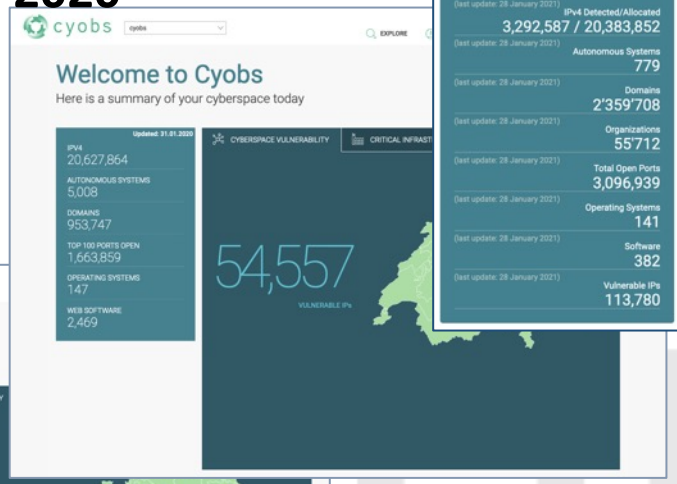
2022



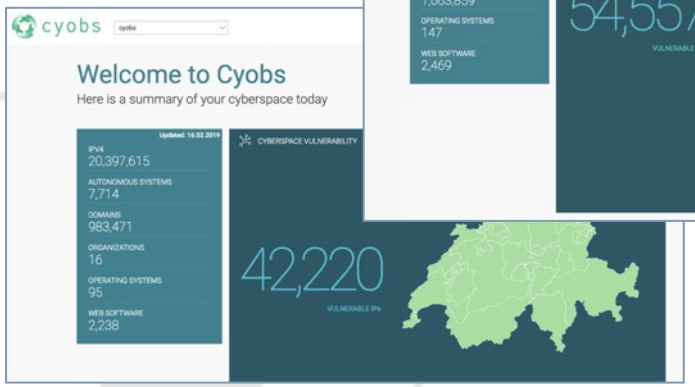
2021



2020



2019



Quelle: Dreamlab Technologies AG, CyObs & Audit Department, 31 January 2021

Der Schweizer Cyber Space in 2022

Weitere populäre Schwachstellen

cyobs

zimbra

- XML External Entity injection (XXE) vulnerability
- CVE-2019-9670
- CVSS Score 7.5
- Modification of system files possible
- **15** IPs affected

- Microsoft Exc… Vulnerability
- CVE-2021-344…
- CVSS Score 9.…
- **Remote Code…**
- **84** IPs affec…

- Microsoft Exchange Server Remote Code Execu…
- CVE-2021-26855
- CVSS Score 9.1
- Part of an attack chain - **Remote Code Executio…**
- **73** IPs affected

Source: Dreamlab Technologies AG, CyObs & Audit Department, 2 March 2022

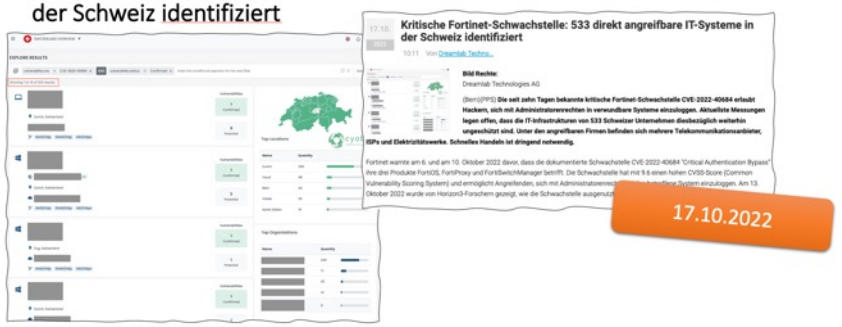
Der Schweizer Cyber Space in 2022

Bluekeep

BLUEKEEP

98 hits for Bluekeep (CVE-2019-0708)

Kritische Fortinet-Schwachstelle: 533 direkt angreifbare IT-Systeme in der Schweiz identifiziert



https://www.presseportal-schweiz.ch/pressemeldungen/kritische-fortinet-schwachstelle-533-direkt-angreifbare-it-systeme-der-schweiz
https://www.netzwoche.ch/news/2022-10-11/fortinet-bug-ermoeglicht-unerlaubten-admin-zugriff

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Der Schweizer Cyber Space in 2022

Weitere populäre Schwachstellen

CISCO

- Vulnerability in the web services interface of Cisco Adaptive Security Appliance (ASA)
- CVE-2020-3452
- CVSS Score 7.5
- Directory traversal attacks and read sensitive files on a targeted system
- **536** IPs affected

webmin

- Webmin Cross-Site Scripting RCE Vulnerability
- CVE-2021-31761
- CVSS Score **9.6 critical**
- **Remote Code Execution**
- **22** IPs affected

Der Schweizer Cyber Space in 2022

Log4Shell – Log4j Vulnerability

cyobs

- CVE-2021-4428
- High-severity (CVSS 10) vulnerability
- Affects the core function of Apache Log4j2
- Discovered in December 2021

Apache LOG4J™

57 IPs vulnerable
(as of 21.12.2021)

11 IPs vulnerable
(as of Feb 2022)

Swiss Universities and Government sites amongst affected IPs.

Command & Control Server in der Schweiz

RAT SPOTTING

Copy Excel CSV PDF

Search:

IP	PORT	TYPE	PAYLOAD	COUNTRY	FLAG	CERTIFICATE	FIRST DETECTION	LAST DETECTION	JARM	OTX PULSES
	80	cobalt_strike		Switzerland			2022-10-14 05:05	2022-10-14 05:05		
	443	metasploit	multi/meterpreter/reverse_http	Switzerland			2022-10-09 05:06	2022-10-09 05:06		
	443	cobalt_strike		Switzerland			2022-10-09 05:06	2022-10-09 05:06		
	80	cobalt_strike		Switzerland			4 05:06	2022-10-07 05:05		
	2222	cobalt_strike		Switzerland				2022-09-21 05:04		
	444	cobalt_strike		Switzerland				2022-09-21 05:04		
	8080	cobalt_strike		Switzerland			1 05:04	2022-09-21 05:04		
	443	cobalt_strike		Switzerland			2022-09-21 05:04	2022-09-21 05:04		
	443	cobalt_strike		Switzerland			2022-09-19 05:04	2022-09-19 05:04		
	80	cobalt_strike		Switzerland			2022-09-11 05:03	2022-09-11 05:03		

IP	Port	Type	Payload	Switzerland	Flag	Certificate	First Detection	Last Detection	JARM	OTX Pulses

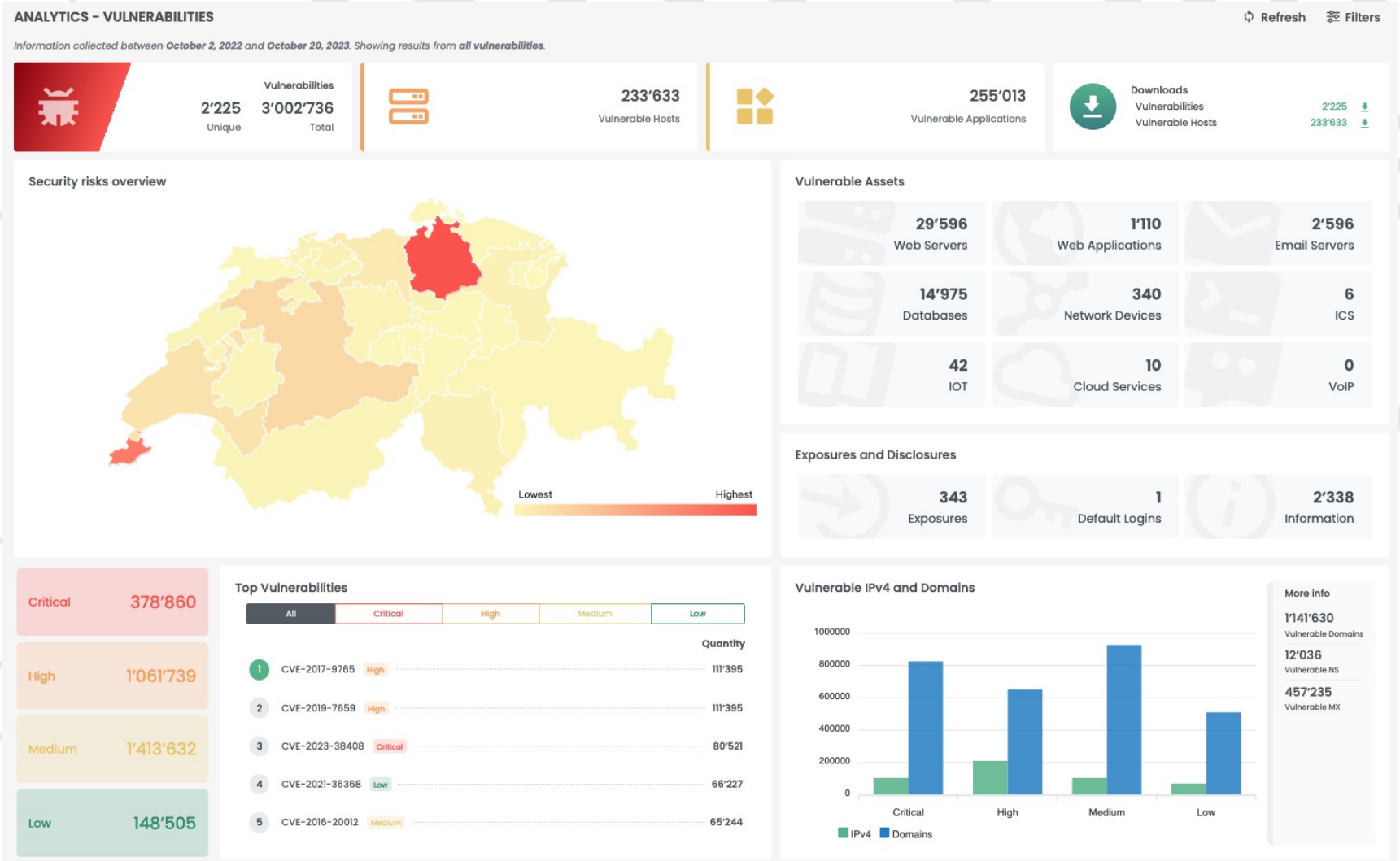
Showing 1 to 10 of 136 entries (filtered from 33,866 total entries)

Previous 1 2 3 4 5 ... 14 Next

134 in 10.2022
(vs. 98 in 03.2022
vs. 36 in 02.2021)

Source: Dreamlab Technologies AG, CyObs & Audit Department, 2 March 2022

Messung des Schweizer Cyberspace




Was hat sich bewährt?

Working on update 100% complete
Don't turn off your PC. This will take a while.

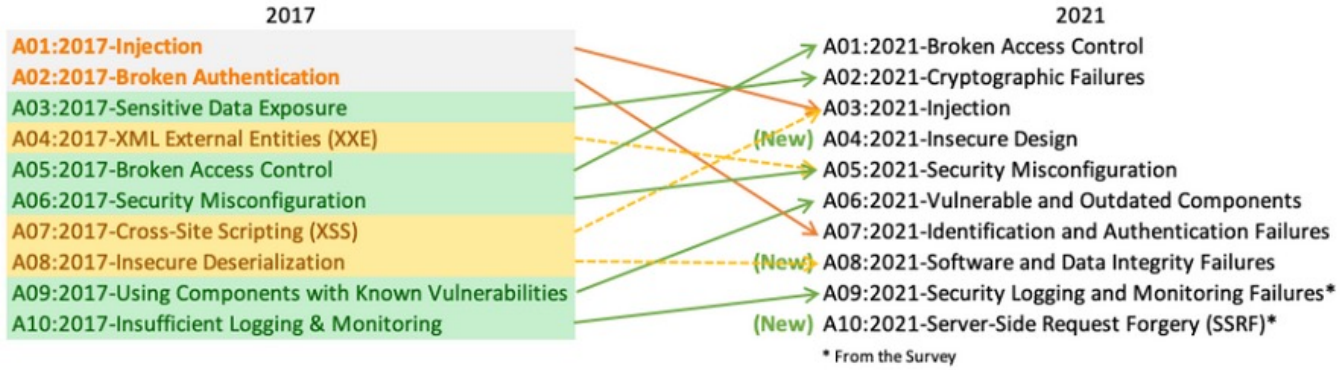
PATCH PATCH PATCH

Your PC will restart several times.

OWASP Top Ten – “Swiss Army Knife”for Web App Security

Top 10 Web Application Security Risks

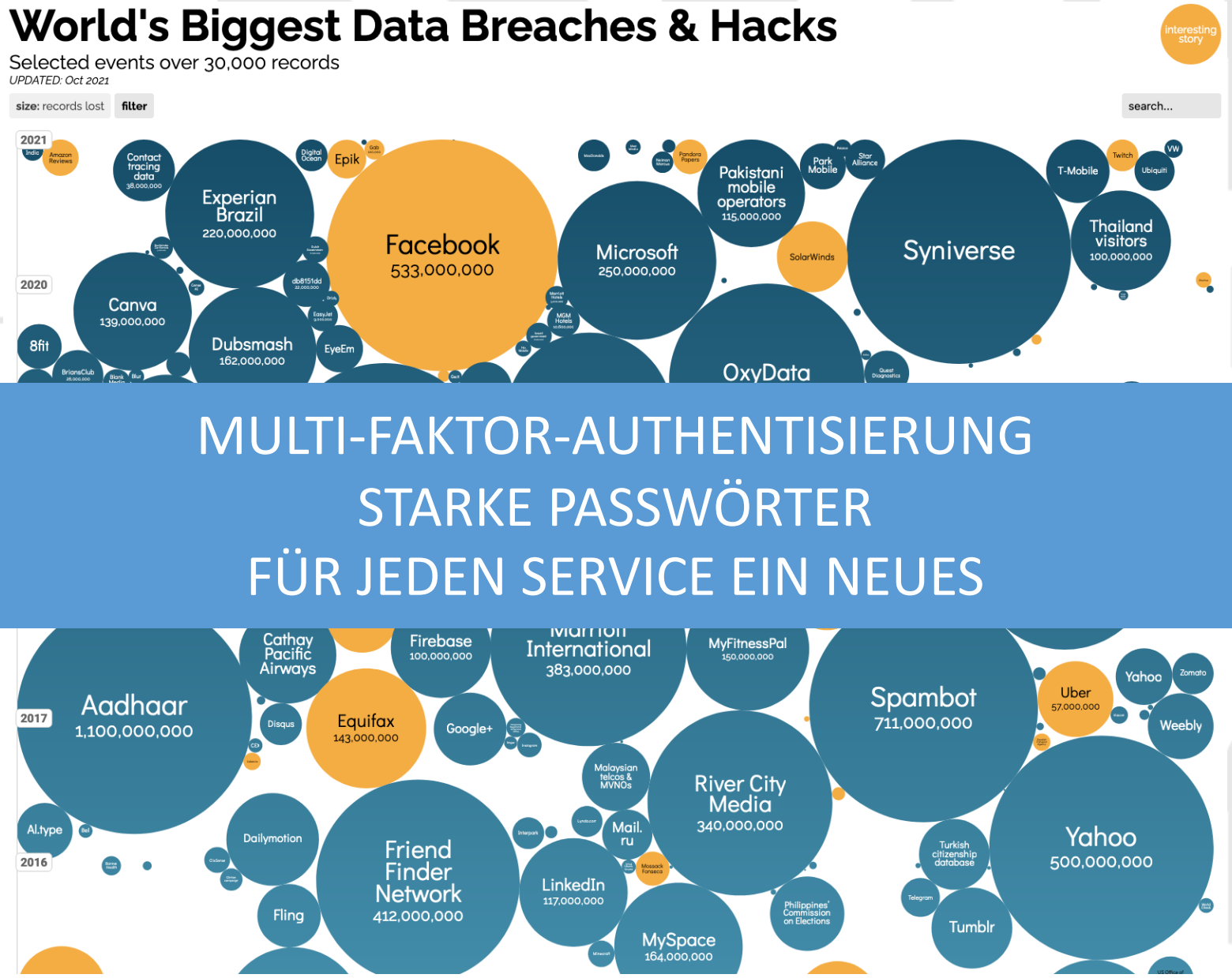
There are three new categories, four categories with naming and scoping changes, and some consolidation in the Top 10 for 2021.



https://owasp.org/www-project-top-ten/

Top Ten Cybersecurity Misconfigurations by NSA & CISA

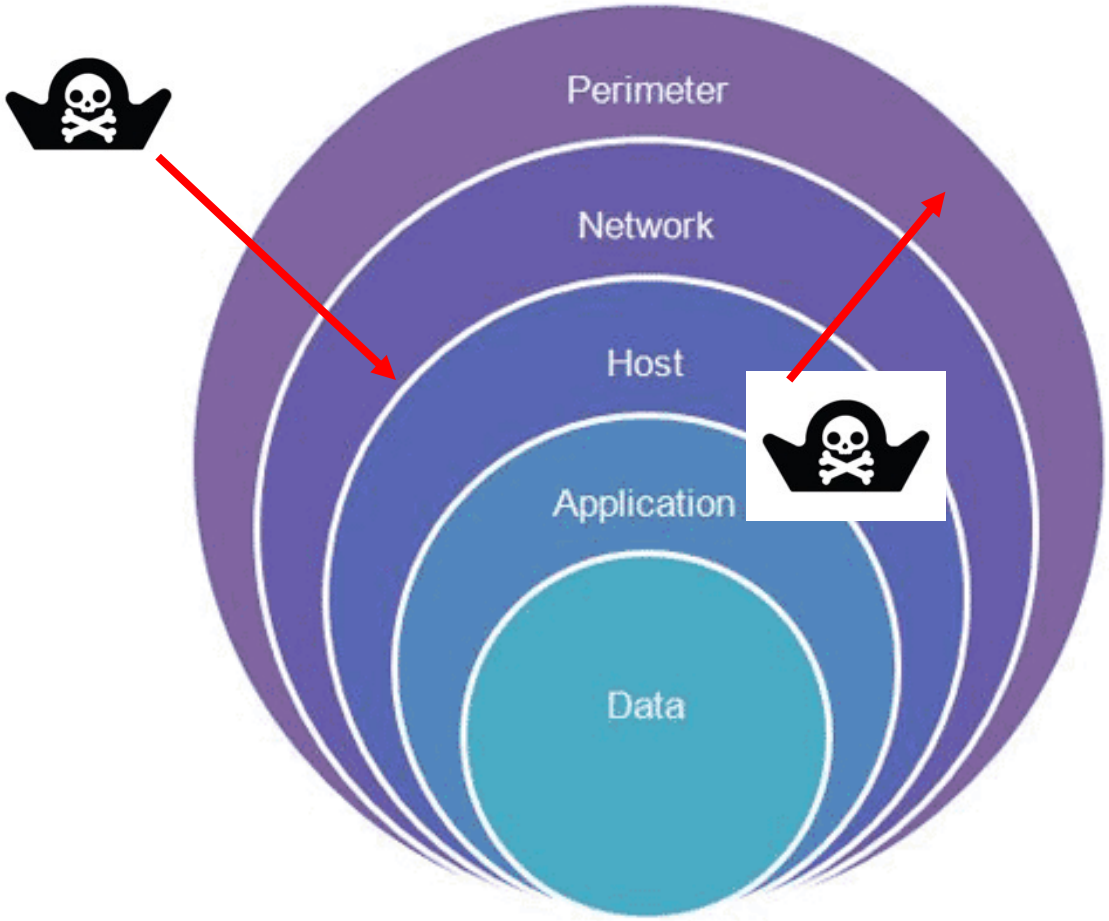
https://www.cisa.gov/news-events/cybersecurity-advisories/aa23-278a



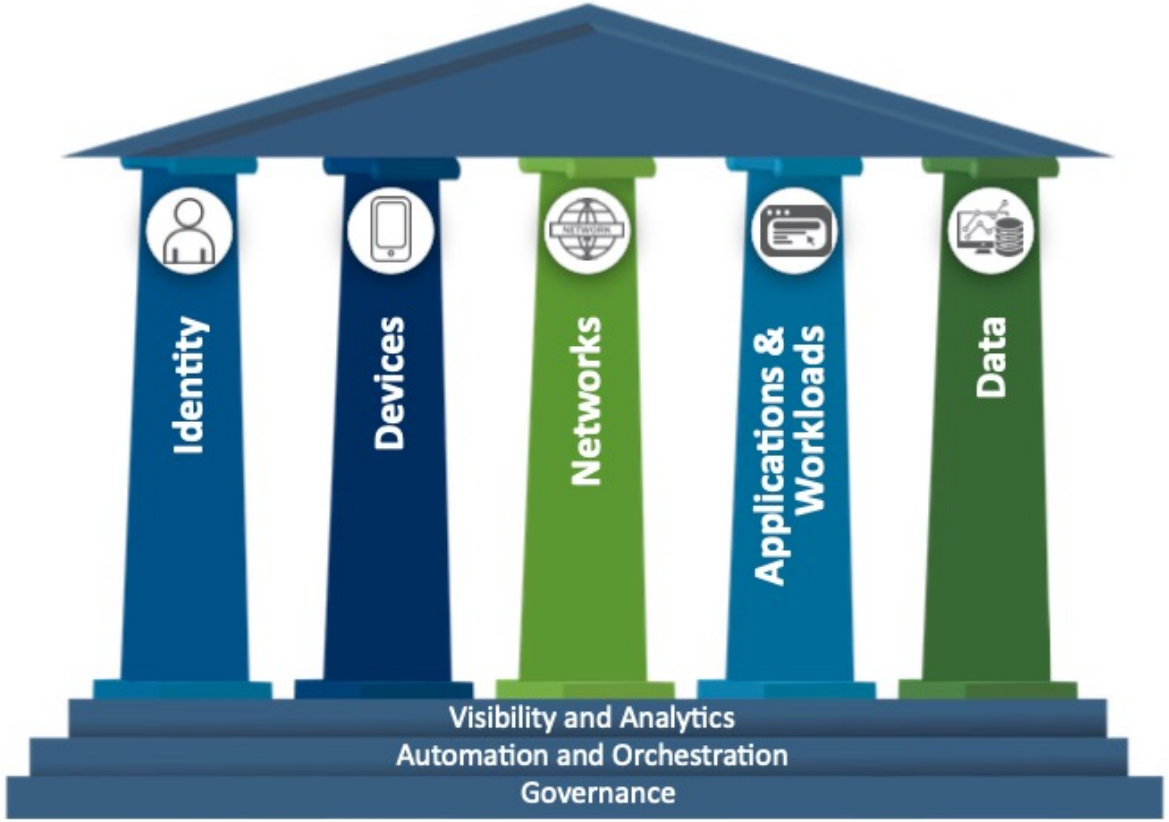
MULTI-FAKTOR-AUTHENTISIERUNG
STARKE PASSWÖRTER
FÜR JEDEN SERVICE EIN NEUES

https://www.informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/

Mehrschichtige Verteidigung (Defense in Depth) schafft Resilienz



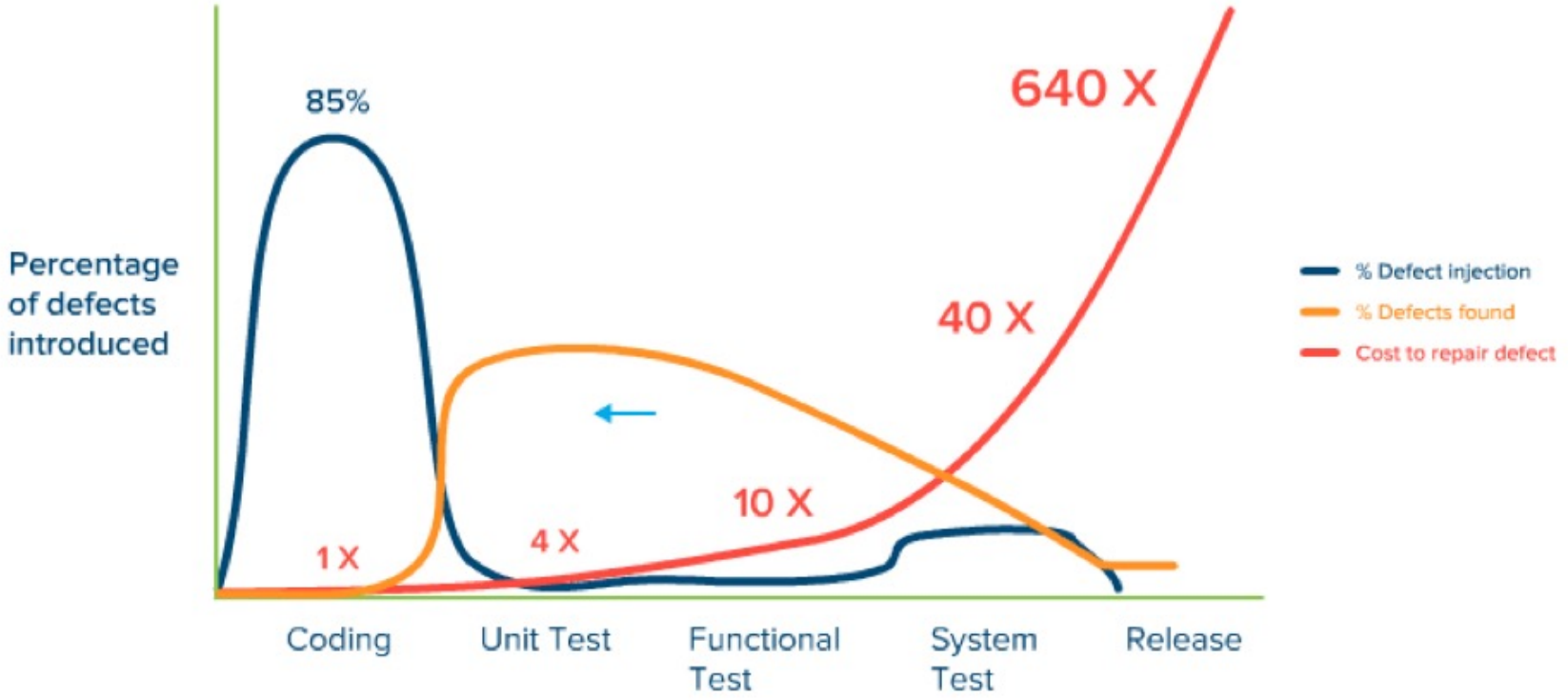
“Zukunft”: Zero Trust Architekturen



https://www.cisa.gov/sites/default/files/2023-04/zero_trust_maturity_model_v2_508.pdf

IT-Sicherheit in Projekten

<<<< SHIFT LEFT gilt auch für Cyber Security



Jones, Capers. *Applied Software Measurement: Global Analysis of Productivity and Quality.*

IT-Sicherheit in Projekten

IT-Sicherheit in agilen Projekten
Idealfall: Addendum zum Agile Manifesto

“Business people and developers must work together daily throughout the project.”

“Business people**, IT Security** and developers must work together daily throughout the project. “

http://agilemanifesto.org/principles.html

IT-Sicherheit in agilen Projekten
Ein Security-Epic als Dreh- und Angelpunkt für Security Requirements

- Analog anderer Nicht-Funktionaler Requirements
- Jeweilige Gründe für Story aufzeigen
- Akzeptanzkriterien definieren und durchsetzen

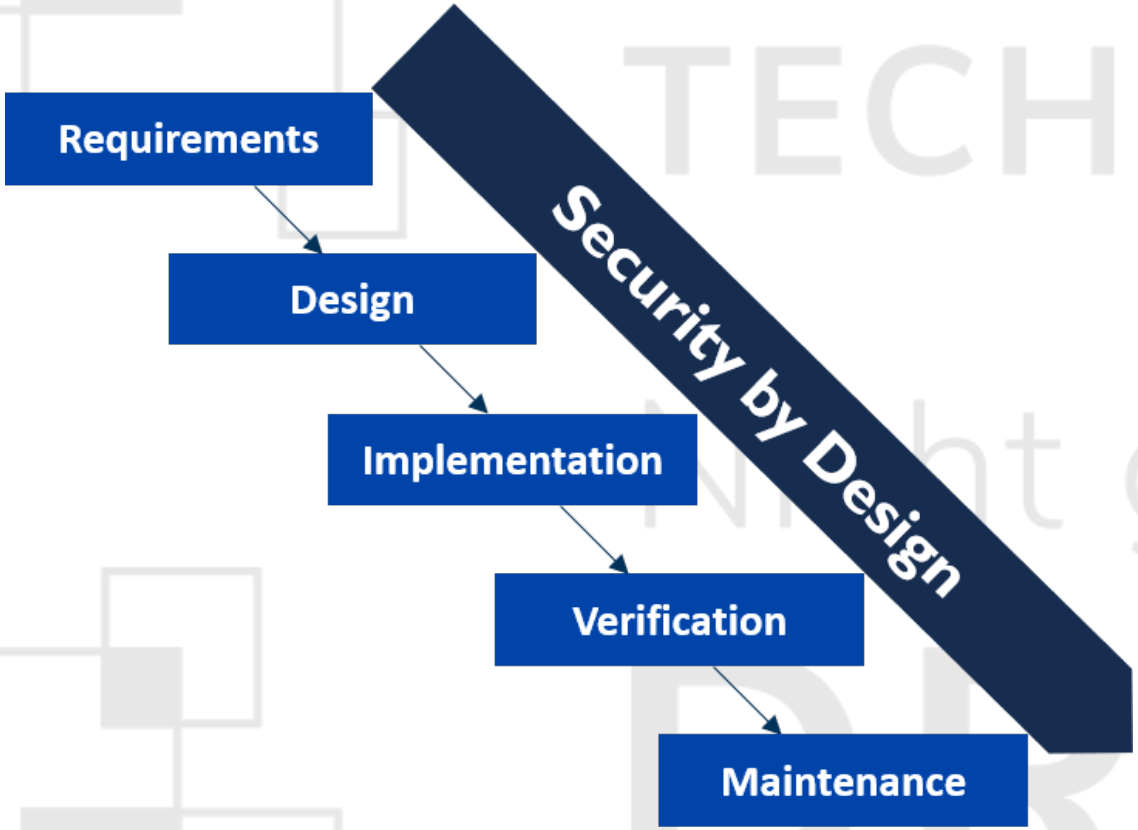
Quellen für generische User-Stories:

- SAFECode: Practical Security Stories and Security Tasks for Agile Development Environments
  http://safecode.org/publication/SAFECode_Agile_Dev_Security0712.pdf
- Handbook of secure agile software development.
  https://docplayer.net/657918-Handbook-of-the-secure-agile-software-development-life-cycle.html

Patching & upgrading

As	**a service manager**
I want	that any software component that is part of the product can be quickly and cost-efficiently security patched
so that	we minimise the time we are vulnerable to an attack.
Description	From the moment we become aware of a security vulnerability in our product, it will be a race against time. A failure to provide a security fix quickly enough may lead to the company having to take drastic measures, such as shutting down the service. This timespan typically ranges from hours to weeks, but cannot be known in advance. It is important to note that the security vulnerability may be in third-party code, but we still need to be able to provide a fix.
Acceptance criteria	>> For all (third-party) code that we do not have a formal maintenance contract in place, we must have a formal patch back-porting process in place. >> We have automated test cases that try to patch each component in the running system.
Refinement questions	>> How can we deploy patches? >> Are there components that are exceptionally hard to patch (e.g., third-party binaries, firmware or ROM code, components requiring formal certification or digital signature)?

Security by Design



https://cetome.com/images/security-by-design.png

Include security in every decision of the design process

Expect attacks and think about possible, realistic threats

Standards & Legislation

- ISO/IEC 27000-series
- ETSI EN 303 645: Baseline requirements for consumer IoT devices
- EU-GDPR, Art. 25: Privacy by design and default

IT-Sicherheit in Unternehmen

People

- **Befähigung** von Mitarbeitern
- Awareness und Verantwortung im Alltag
- Befolgen Richtlinien
- Umsetzen von Massnahmen
- Awareness und Verantwortung im Alltag

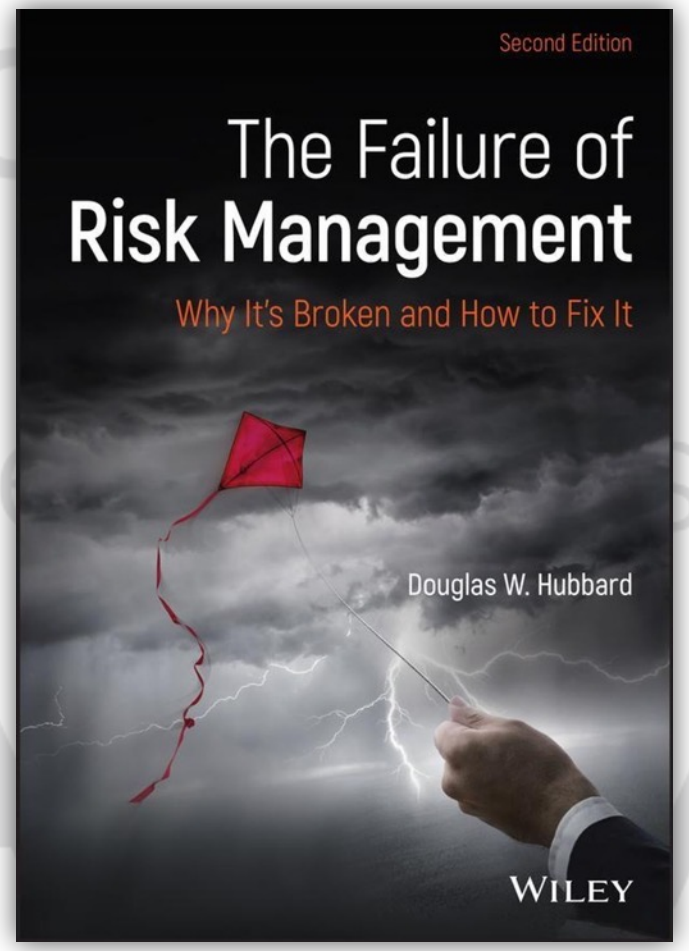
Processes

- **Gesamtverantwortung beim Top-Management**
- Management Buy-in mittels **einfacher (!)** IT-Security Policy
- Integration in Risikomanagement
- IT- und Security-Strategie
- Regelmässige Audits und Reviews
- IT-Sicherheit in Projekten

Technology

- Patchmanagement
- Vulnerability- und Netzwerk-Monitoring
- EDR-/ Antivirenlösung
- Regelmässige Penetrationstests
- Automatisierte Überwachung / Vulnerability Scanning

Empfohlene Lektüre




STOP
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TECHNOLOGIES
BEING
NAÏVE


Thank
You!

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