

Security as an enabler in technological development

Internet Forum, 27.10.2020

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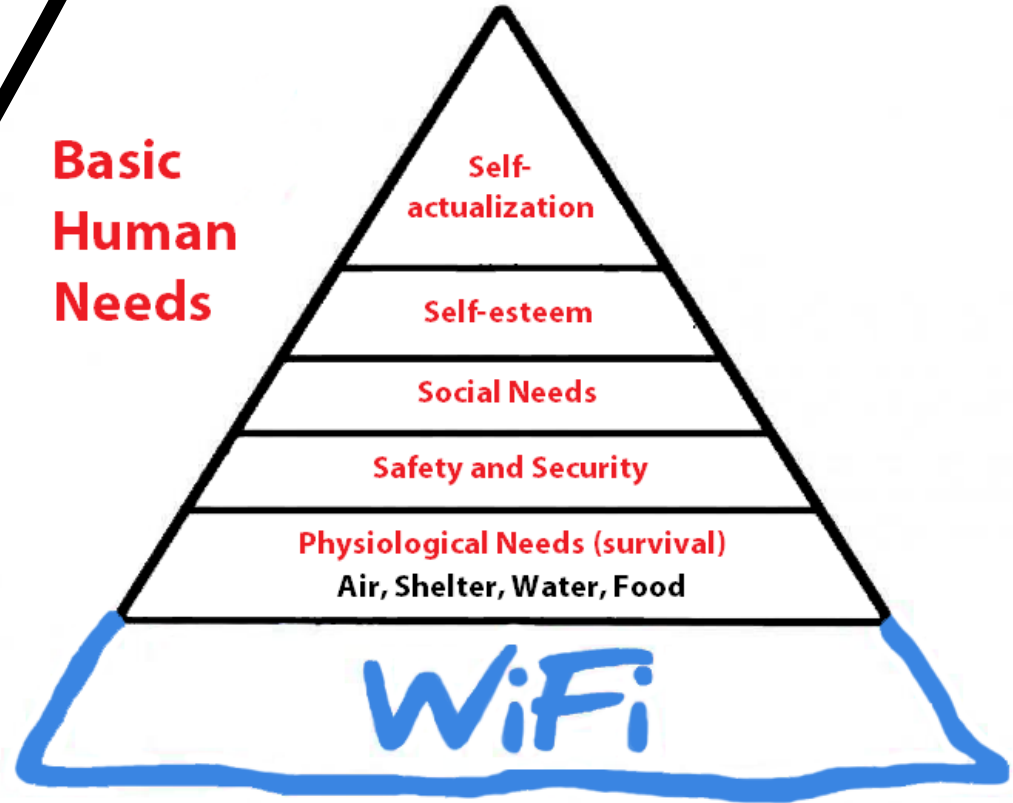
Adjunct Professor, University of Jyväskylä

Adjunct Professor, Tampere University

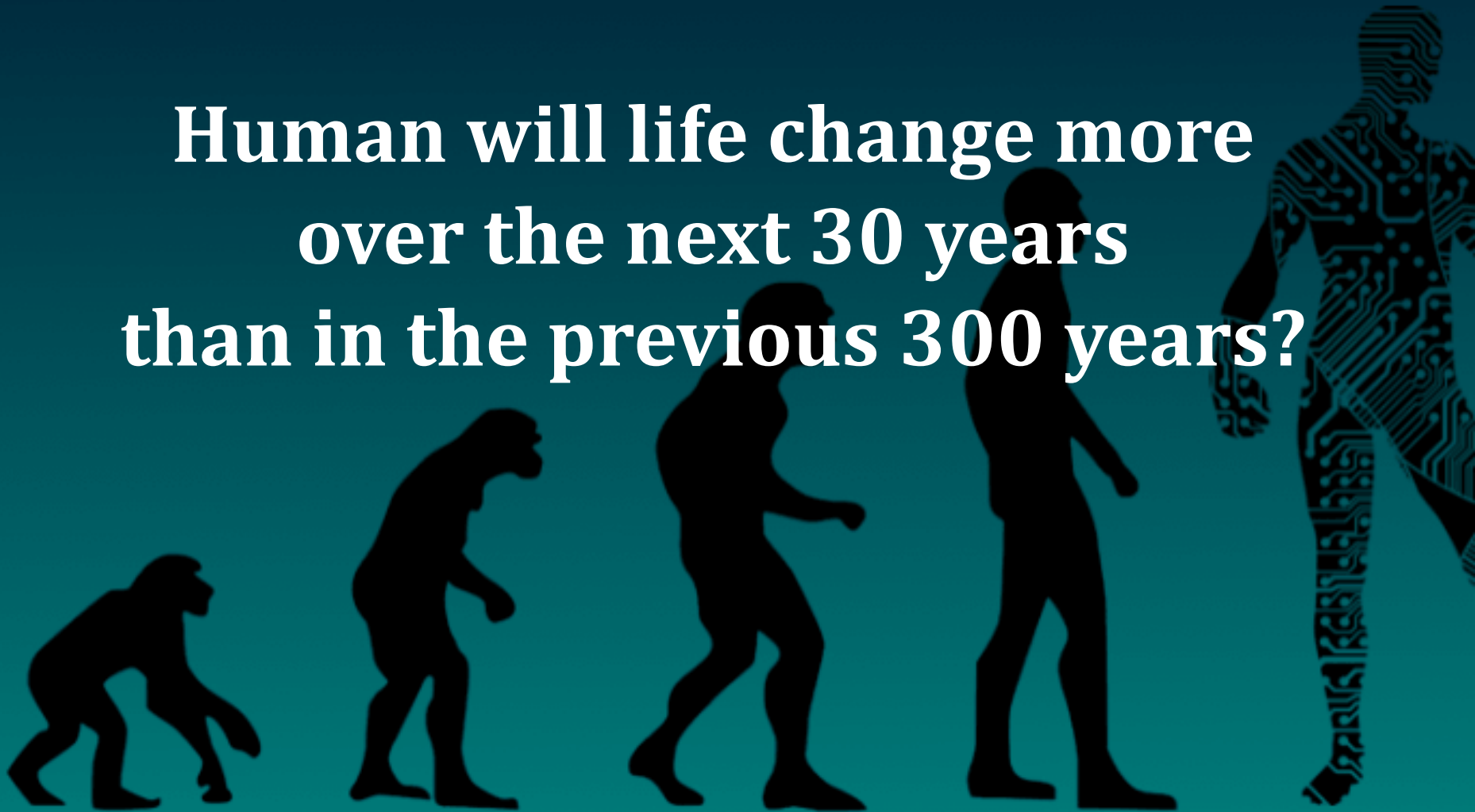
Twitter: @JarnoLim

Security is a
basic need
also in the
Digital
Era

**Basic
Human
Needs**



**Human will life change more
over the next 30 years
than in the previous 300 years?**



2020



2050



1720



**We must be open-minded
and courageous – key values**



Future cannot be predicted

Future is not predetermined

Future can be affected

Everything that can be digital, will be.

Everything?

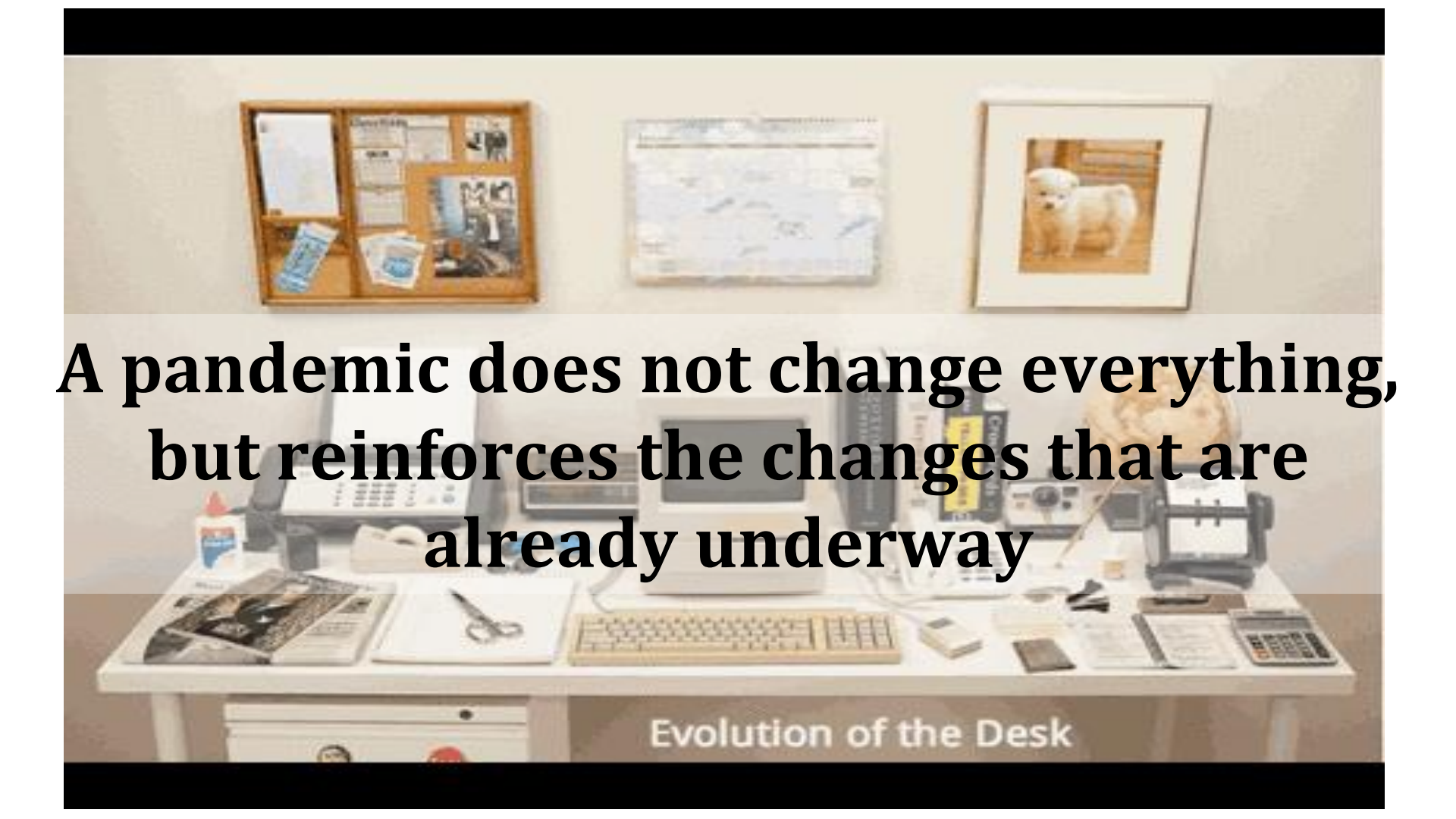


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ANT. J. TALLBERGIANUM

STAY STRONG



**A pandemic does not change everything,
but reinforces the changes that are
already underway**

Evolution of the Desk



Coronavirus &
Cybersecurity

**Cybersecurity now more
important than ever**



**Geography means nothing in cyber.
More cyber crimes than physical crimes.**



INTERPOL

B13

CYBERCRIME:

COVID-19 IMPACT



AUGUST 2020



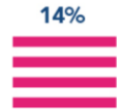
Malicious domains



Malware/
Ransomware

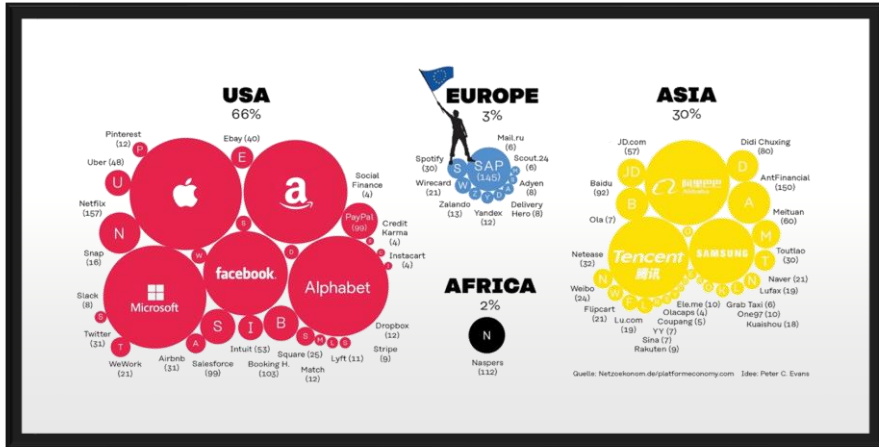


Phishing/
Scam/
Fraud



Fake news





National Defence University
Series 1: Research Publications No. 40

Digital Soviet Union

The Russian national segment of the Internet as a closed national network shaped by strategic cultural ideas

Juha Kukkola



U.S. DEPARTMENT OF STATE

Under Secretary Name About Us Remarks and Releases Privacy Shield Consultation **The Clean Network**

The Clean Network

THE **Clean** NETWORK

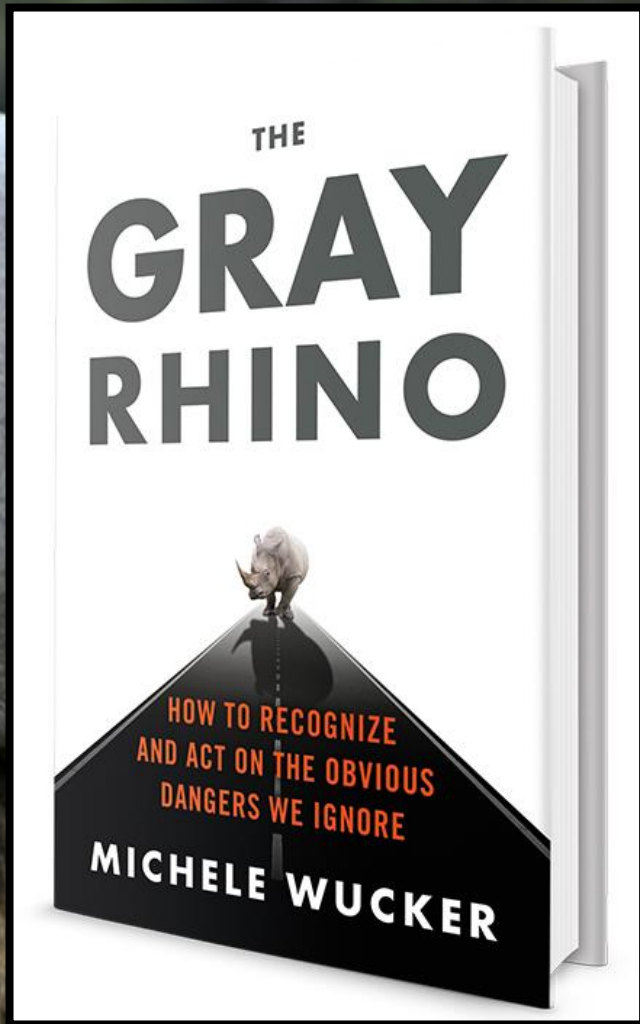
- Clean CARRIER
- Clean APPS
- Clean STORE
- Clean CLOUD
- Clean CABLE
- Clean PATH

What is happening / will happen? 1/2

- The corona crisis is testing the contingency plans in practice.
- The general feeling of insecurity and also the false feeling of security.
- Dependence on U.S. digital services and teleconferencing services is highlighted. A good thing?
- The importance of correct knowledge and media literacy is emphasized.
- People's dependence on digital services has grown steadily.
- People (hopefully) understand now better the importance of both cybersecurity and digital dependence.

What is happening / will happen? 2/2

- **The functionality of digital networks and digital services is in a very critical position.**
- **Vulnerabilities are quickly exploited in cyber attacks.**
- **The coronavirus accelerates the automation of digital services and biometric identification.**
- **Mobile location technologies and services are increasing.**
- **The effects of data leaks and cyber espionage during the crisis will become apparent in months, even years.**



THE
**GRAY
RHINO**



HOW TO RECOGNIZE
AND ACT ON THE OBVIOUS
DANGERS WE IGNORE

MICHELE WUCKER



“Cyber pandemic” next Gray Rhino?

“We should prepare for a COVID-like global cyber pandemic that will spread faster and further than a biological virus, with an equal or greater economic impact.”

- *World Economic Forum*



**Cybersecurity =
Protecting our societies,
our businesses and
our way of life**



The image features a hand holding a green printed circuit board (PCB) against a black background. The hand and the PCB are rendered with a metallic, copper-like texture. The PCB is populated with various electronic components, including resistors and integrated circuits, with labels such as 'TN193', 'TN188', 'TN187', 'TN196', 'TN179', 'TN180', 'TN181', 'TN182', 'TN183', 'TN184', 'TN185', 'TN186', 'TN187', 'TN188', 'TN189', 'TN190', 'TN191', 'TN192', 'TN193', 'TN194', 'TN195', 'TN196', 'TN197', 'TN198', 'TN199', 'TN200', 'TN201', 'TN202', 'TN203', 'TN204', 'TN205', 'TN206', 'TN207', 'TN208', 'TN209', 'TN210', 'TN211', 'TN212', 'TN213', 'TN214', 'TN215', 'TN216', 'TN217', 'TN218', 'TN219', 'TN220', 'TN221', 'TN222', 'TN223', 'TN224', 'TN225', 'TN226', 'TN227', 'TN228', 'TN229', 'TN230', 'TN231', 'TN232', 'TN233', 'TN234', 'TN235', 'TN236', 'TN237', 'TN238', 'TN239', 'TN240', 'TN241', 'TN242', 'TN243', 'TN244', 'TN245', 'TN246', 'TN247', 'TN248', 'TN249', 'TN250'. The word 'Cybersecurity' is written in a large, white, serif font across the center of the image, with a thick red horizontal line striking through it. The overall composition suggests a focus on digital technology and its security.

Reality

Feeling

**Objective
security**

**Subjective
security**



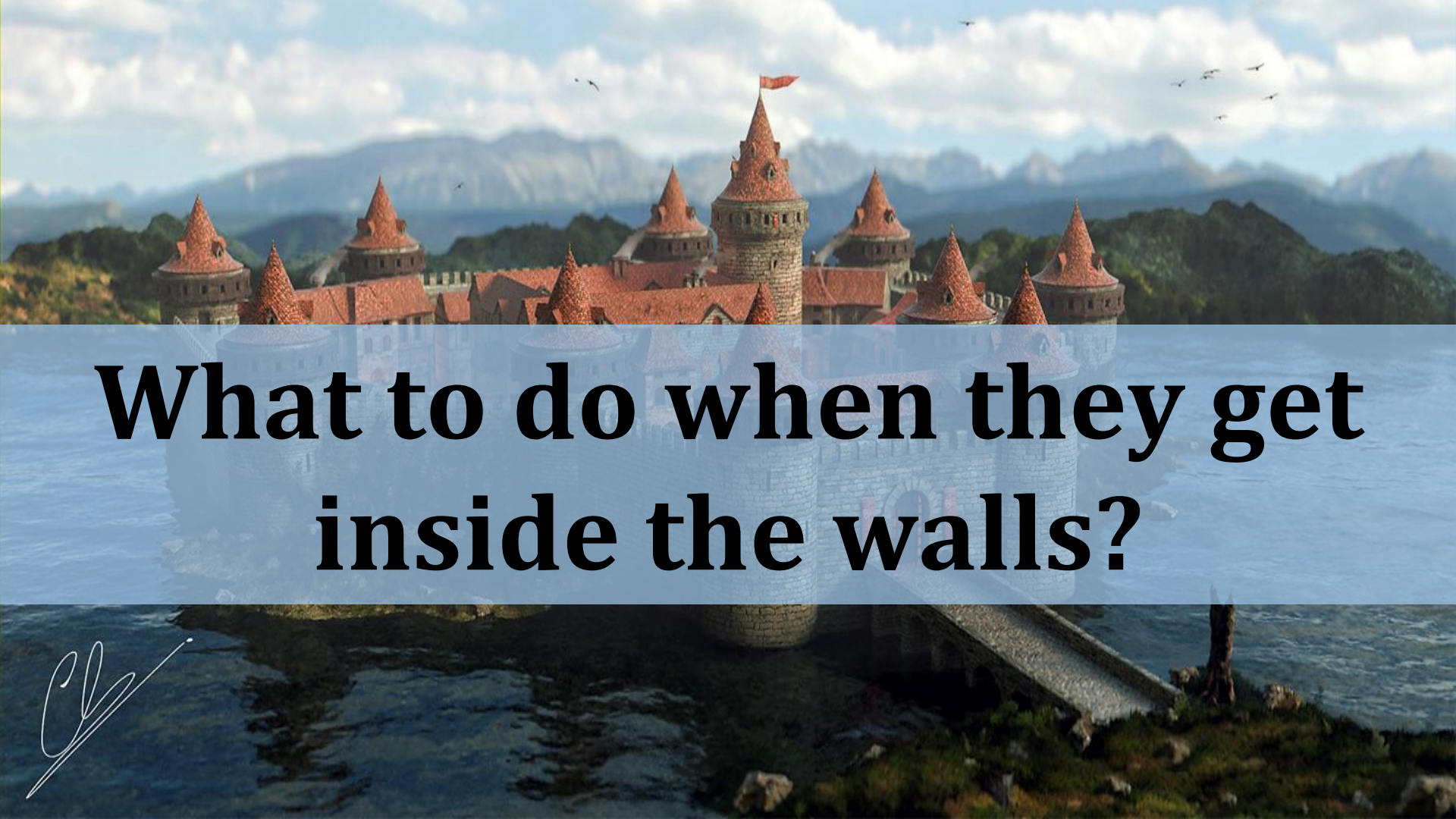
SECURITY

Resilience

Culture



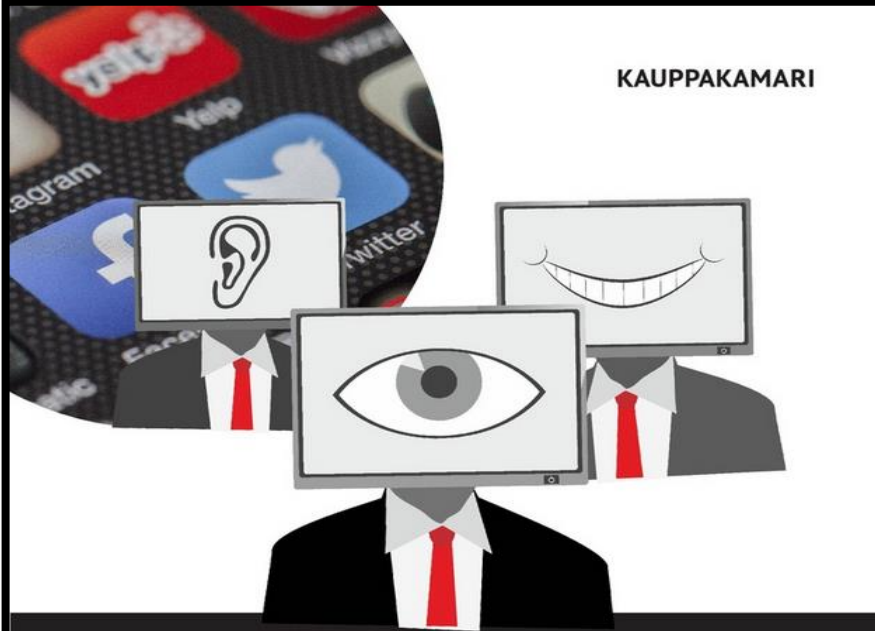
**Preparing is much
cheaper than dealing
with a crisis**



**What to do when they get
inside the walls?**

CB

KAUPPAKAMARI



“43 percent of Finnish companies would be inoperative after one day without a internet.”

Business community

and hybrid threats

2018

Key questions in modern security (also after COVID19)

- **How to maintain operational activity during a crisis?**
- **How to maintain mental and functional resilience?**
- **How to get out of the crisis as quickly as possible?**
- **How do the strategies of different countries / companies differ, and what are their pros and cons?**



**Every Company is a Digital
Company, and security is about:**

BRAND VALUE

BUSINESS CONTINUITY

CUSTOMERS TRUST



There isn't a single area of our life that won't be touched by the IoT in the next decade.

**Security
cannot be an
afterthought.**

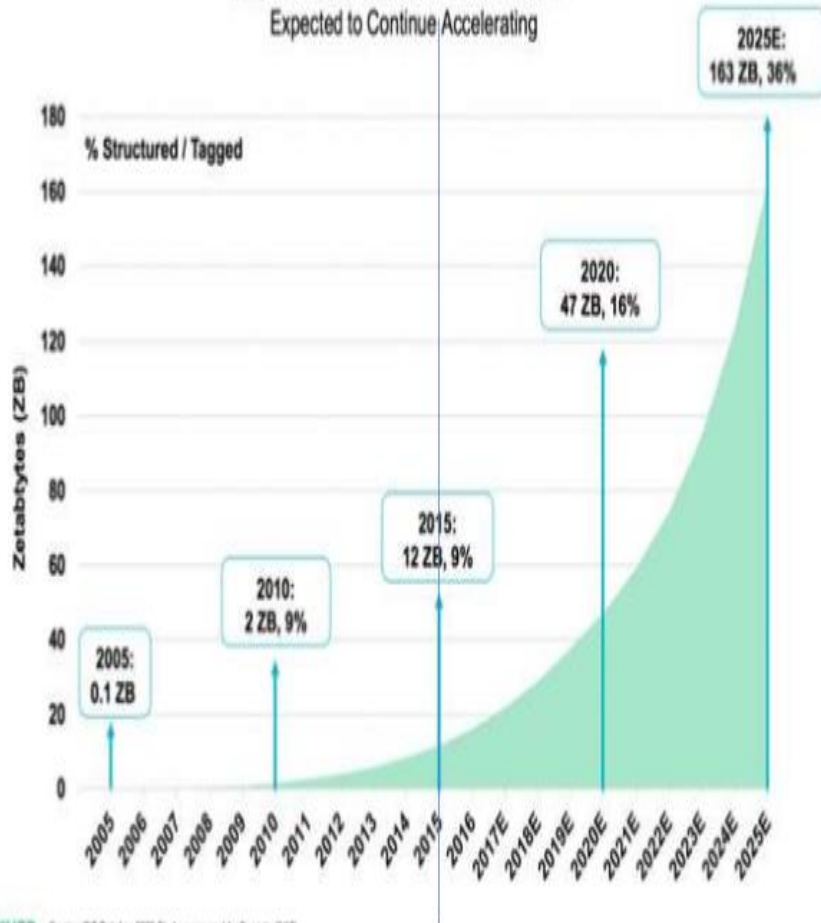
**Responsibility
as a Value**



A photograph of a person sitting on the floor in a server room, completely surrounded by a dense, chaotic mess of black, white, and yellow cables. The person is wearing light-colored trousers and dark shoes. The cables are tangled and crisscrossing in all directions, creating a complex and overwhelming visual. In the background, a server rack with blue and red ports is visible. The overall scene conveys a sense of extreme complexity and disarray.

**Complexity is
the biggest enemy of security**

Information Created Worldwide = Expected to Continue Accelerating



Source: IDC DataAge 2025 Study, sponsored by Seagate (2017)
Note: 1 petabyte = 1024 gibibytes, 1 zetta byte = 1024 petabytes

Data explosion

- 10 x grow between 2010-2018 (1,7 → 18.3 zettabyte)
- By 2025, the amount of global data is estimated to be 163 zettabyte.
- By 2050 possibly x 10 000 the amount of data from the current.

As a text, one zettabyte with 300 pages of books is 1 500 000 000 000 000 volumes.

*Data flows, data storage,
data-analytics and the value of data.*

Largest Global companies in 2018 vs 2008

2018				2008			
Rank	Company	Founded	USbn	Rank	Company	Founded	USbn
1.	Apple	1976	890	1.	PetroChina	1999	728
2.	Google	1998	768	2.	Exxon	1870	492
3.	Microsoft	1975	680	3.	General Electric	1892	358
4.	Amazon	1994	592	4.	China Mobile	1997	344
5.	Facebook	2004	545	5.	ICBC (China)	1984	336
6.	Tencent (China)	1998	526	6.	Gazprom(Russia)	1989	332
7.	Berkshire	1955	496	7.	Microsoft	1975	313
8.	Alibaba (China)	1999	488	8.	Royal Dutch Shell	1907	266
9.	J&J	1886	380	9.	Sinopec (China)	2000	257
10.	JP Morgan	1871	375	10.	AT&T	1885	238

Source: Bloomberg, Google



**Those who own the data –
own the future**



It is ok to collect
and analyze the
data but it has to be
done in a fair and
transparent way.



The risk of data manipulation

INTEGRITY




SECURITY

101
1010
0001



CONFIDENTIALITY



**The next big tech
trend is humanity**

Humanity as a value

**The primary question in technology won't be about
if something can be done -
*but if it should be done.***



What kind of values are driven by technology used in the world?



Apple может уйти из России: что ждать от закона о предустановке российского софта

24 Января 2020, 12:20



Importance of Ethics as a value

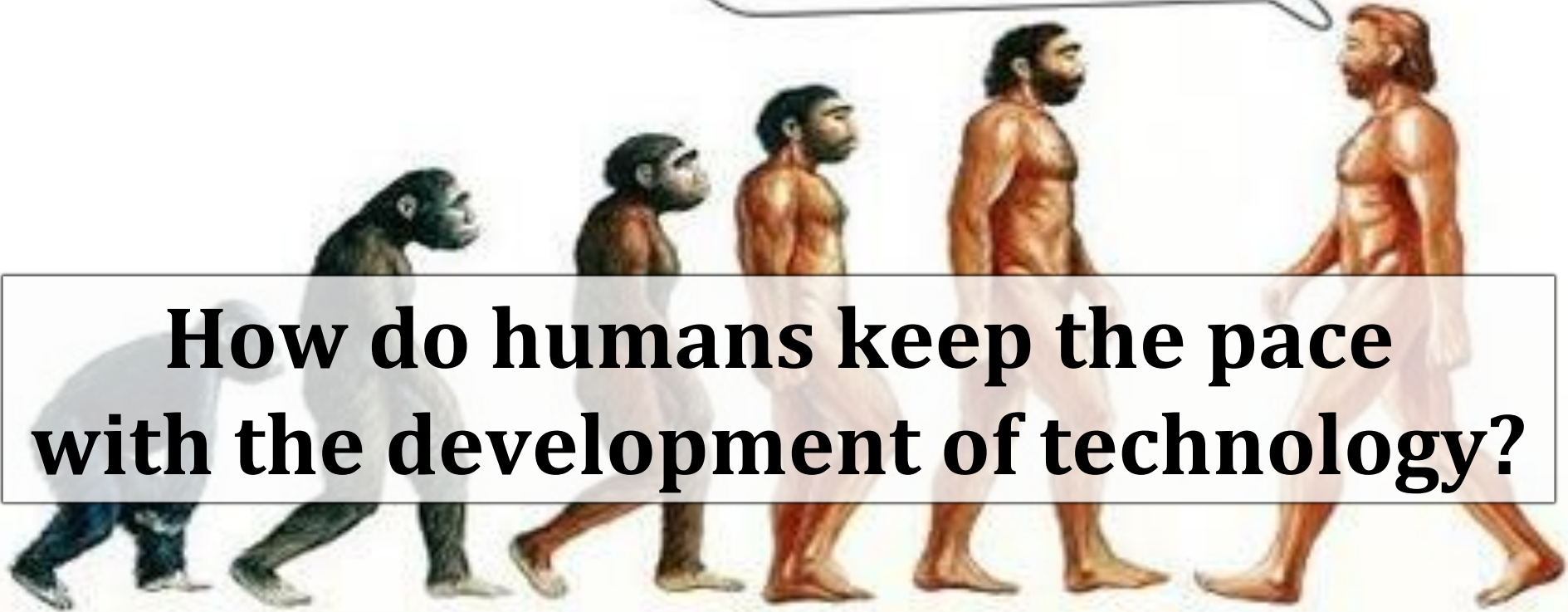
**The more we have
technology,
the wiser and more ethical
people should be.**

The background features a dark, futuristic cityscape at night, with numerous skyscrapers and buildings illuminated with lights. Overlaid on this is a large, glowing digital globe composed of a grid of points and lines. A complex network of bright, teal-colored lines crisscrosses the entire scene, creating a sense of global connectivity and data flow. The overall aesthetic is high-tech and digital.

**We are just at the beginning of how
technology is transforming our work,
our lives and our societies.**

**GO BACK, WE SCREWED
UP EVERYTHING. WE
NEED TO START OVER.**

**How do humans keep the pace
with the development of technology?**



New Normal in Security



The speed of change – unpredictable instability
(physical and especially digital environment)

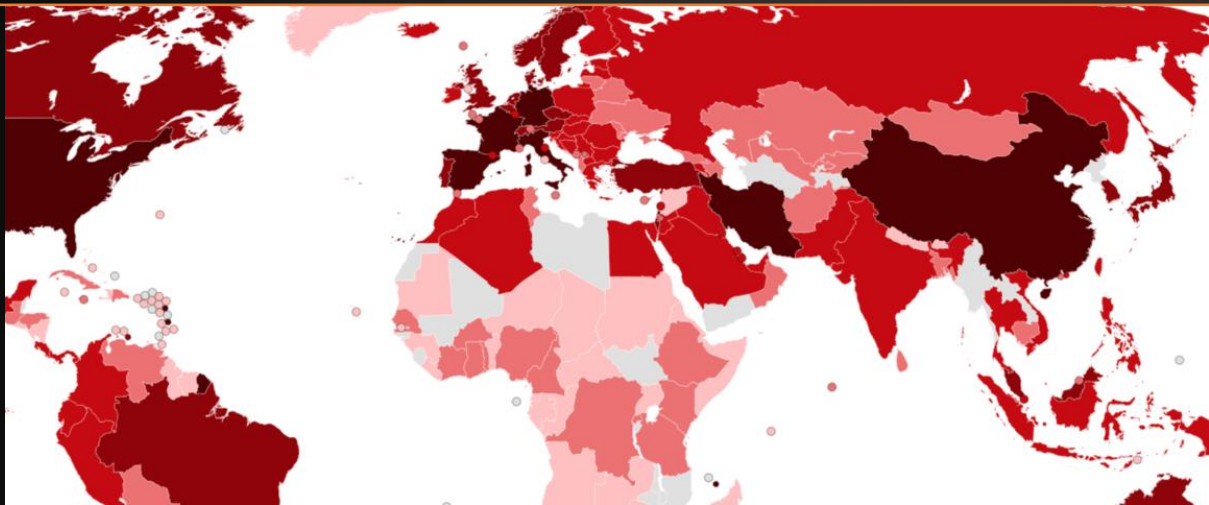
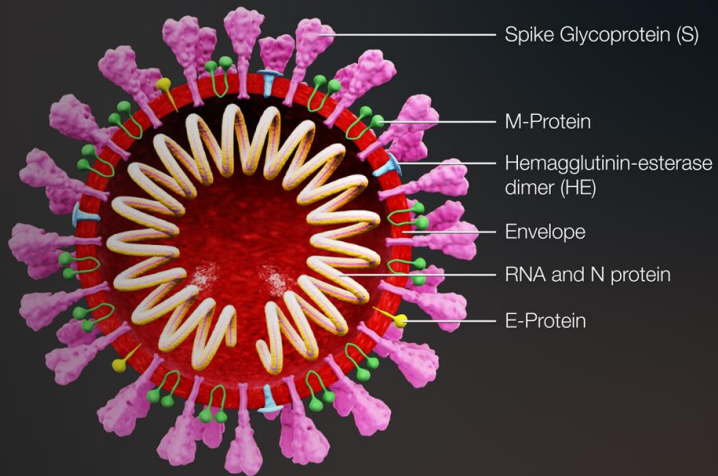
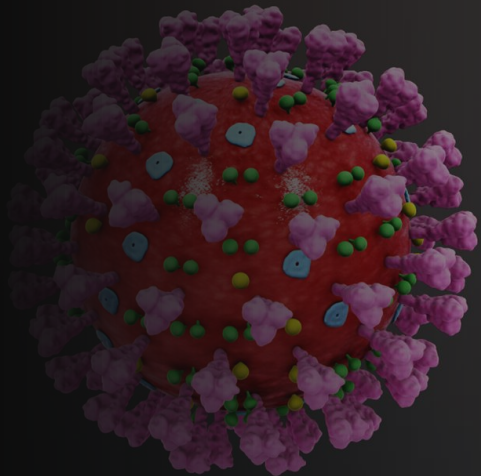
Complexity
(interaction of threats, “hybrid security”)

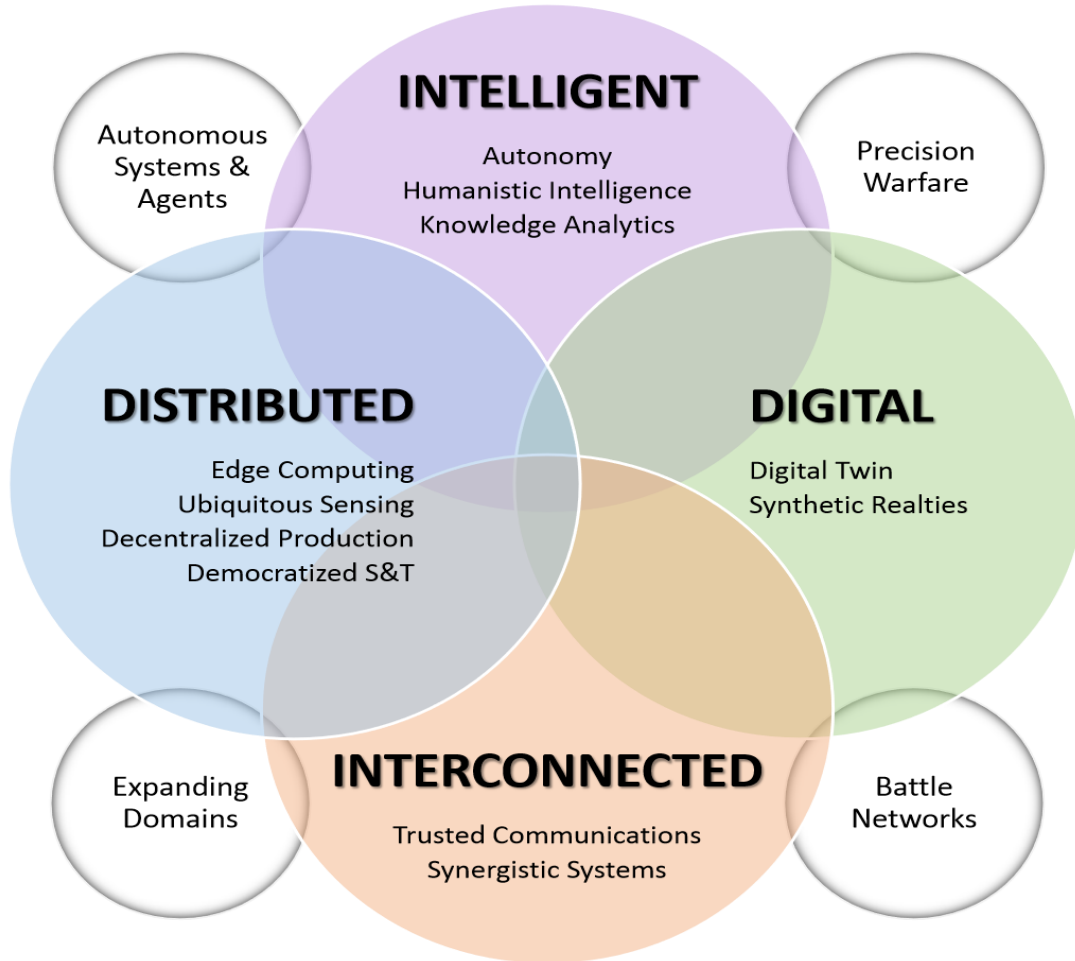
The blurring dichotomies



The speed of change – unpredictable instability
(physical and especially digital environment)

COVID-19





None of the technologies alone is revolutionary, but by combining them, something completely new can be achieved.

The catalysts are artificial intelligence and data (Big Data).



**Science & Technology Trends
2020-2040**

Exploring the S&T Edge

NATO Science & Technology Organization





**“Whoever becomes the
leader in AI will become the
ruler of the world.”**

- Vladimir Putin

Archive footage



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Commerce Department Prohibits WeChat and TikTok Transactions to Protect the National Security of the United States

The US will ban the use of WeChat on on Sunday to “safeguard the national security of the United States”.

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A photograph of the Earth from space, showing the Americas and surrounding oceans. The text is overlaid on the image.

Complexity
(interaction of threats, “hybrid security”)

The Global Risks Report 2020

Insight Report | 15th Edition

In partnership with Marsh & McLennan and Zurich Insurance Group

Forum
20

WORLD
ECONOMIC
FORUM

COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

2020 WEF Top 5 Global Risks

in terms of Likelihood

Extreme weather

Climate action failure

Natural disasters

Biodiversity loss

Human-made environment
disasters

in terms of Impact

Climate action failure

Weapons of mass destruction

Biodiversity loss

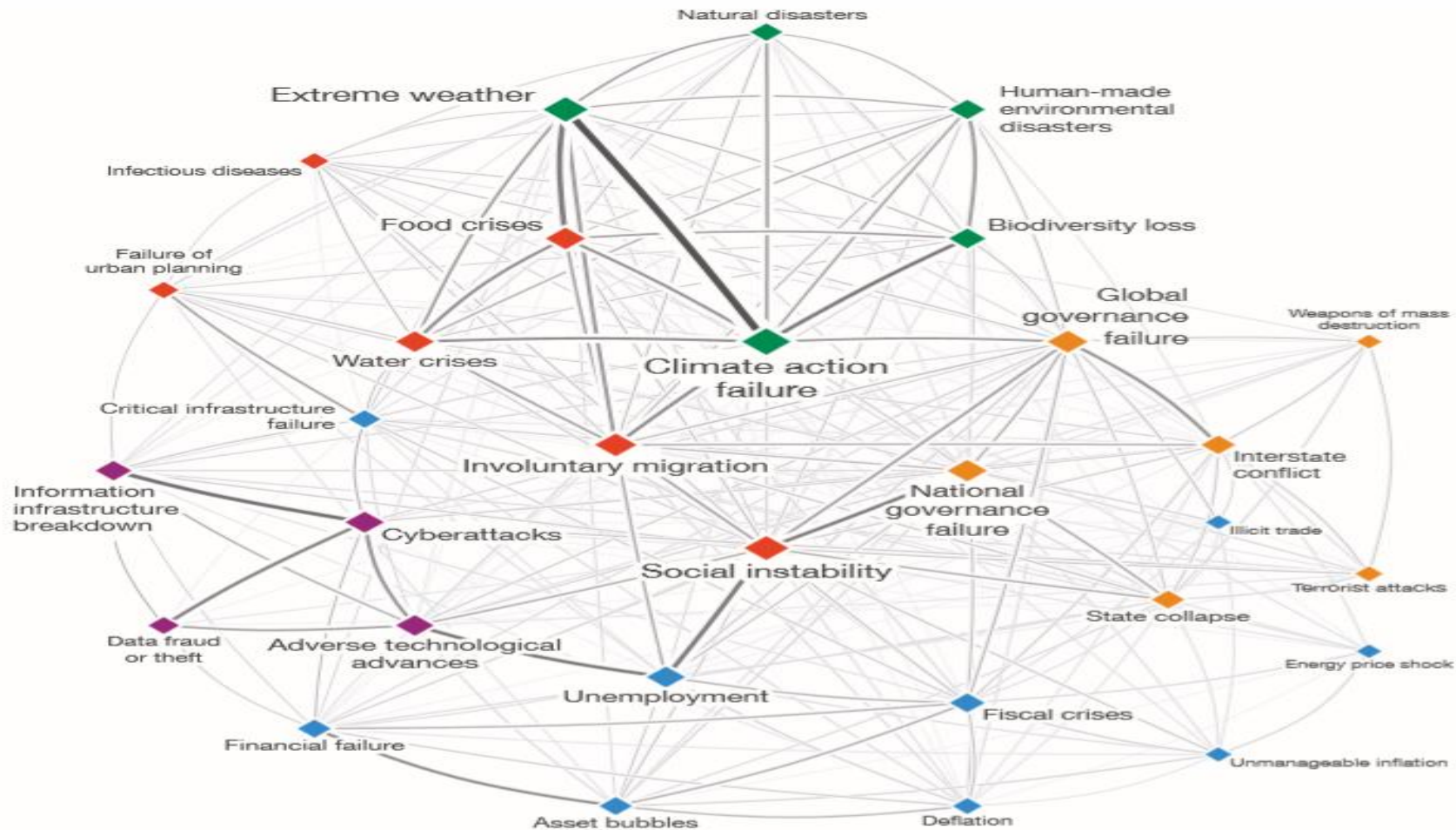
Extreme weather

Water crisis

Impact

Likelihood

Source: WEF



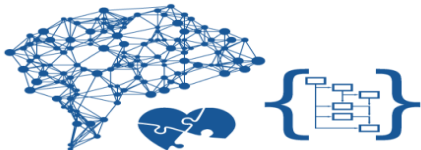
Top 10 skills

in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



A photograph of Earth from space, showing the Americas and surrounding oceans. The Earth is illuminated from the left, creating a bright horizon line. The text "The blurring dichotomies" is overlaid in white, bold, serif font across the center of the image.

The blurring dichotomies

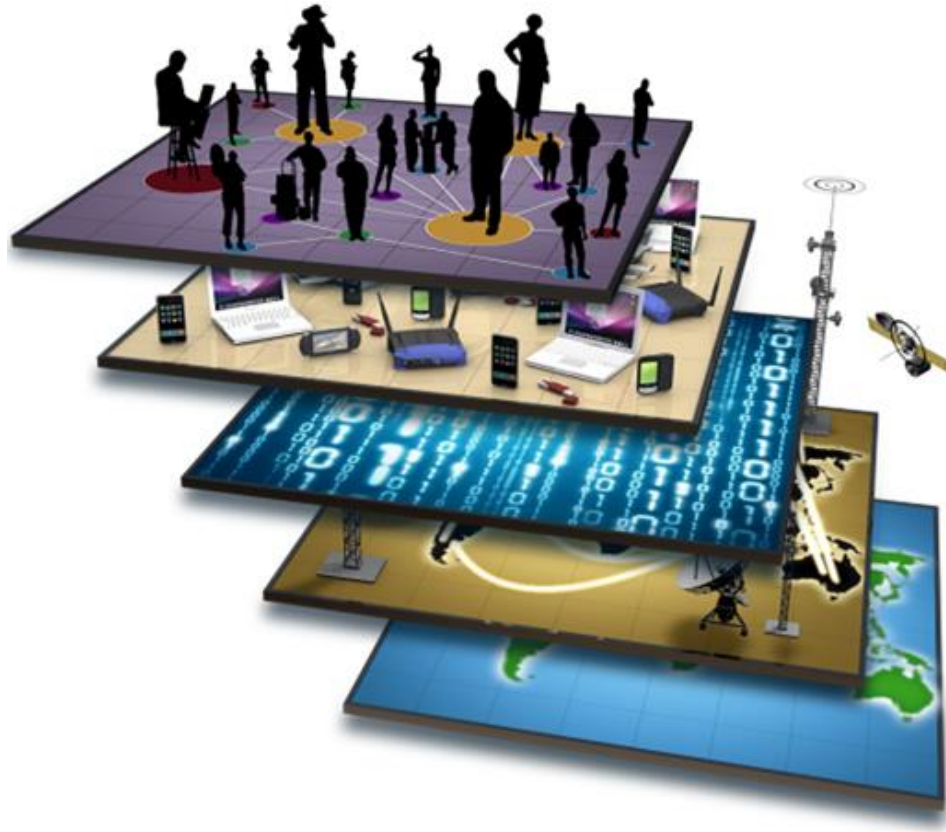


PEACE TIME

vs.

WAR TIME

Layers of Cyberspace



Social layer
(Cognitive Cyber)

Logical layer
(Software Cyber)

Physical Layer
(Physical Cyber)

Objective reality

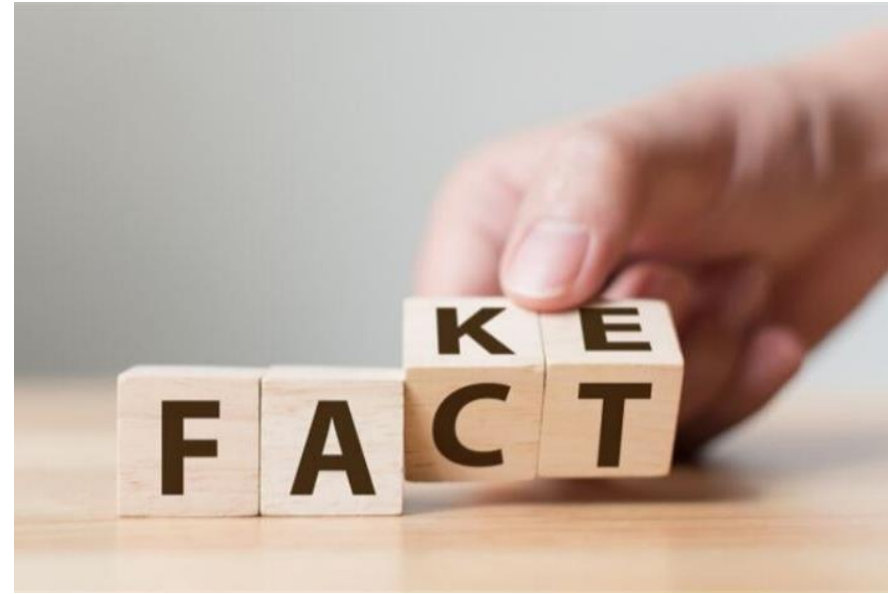


Subjective reality



**Biggest "cyberbattles" will be fought
over our thoughts**





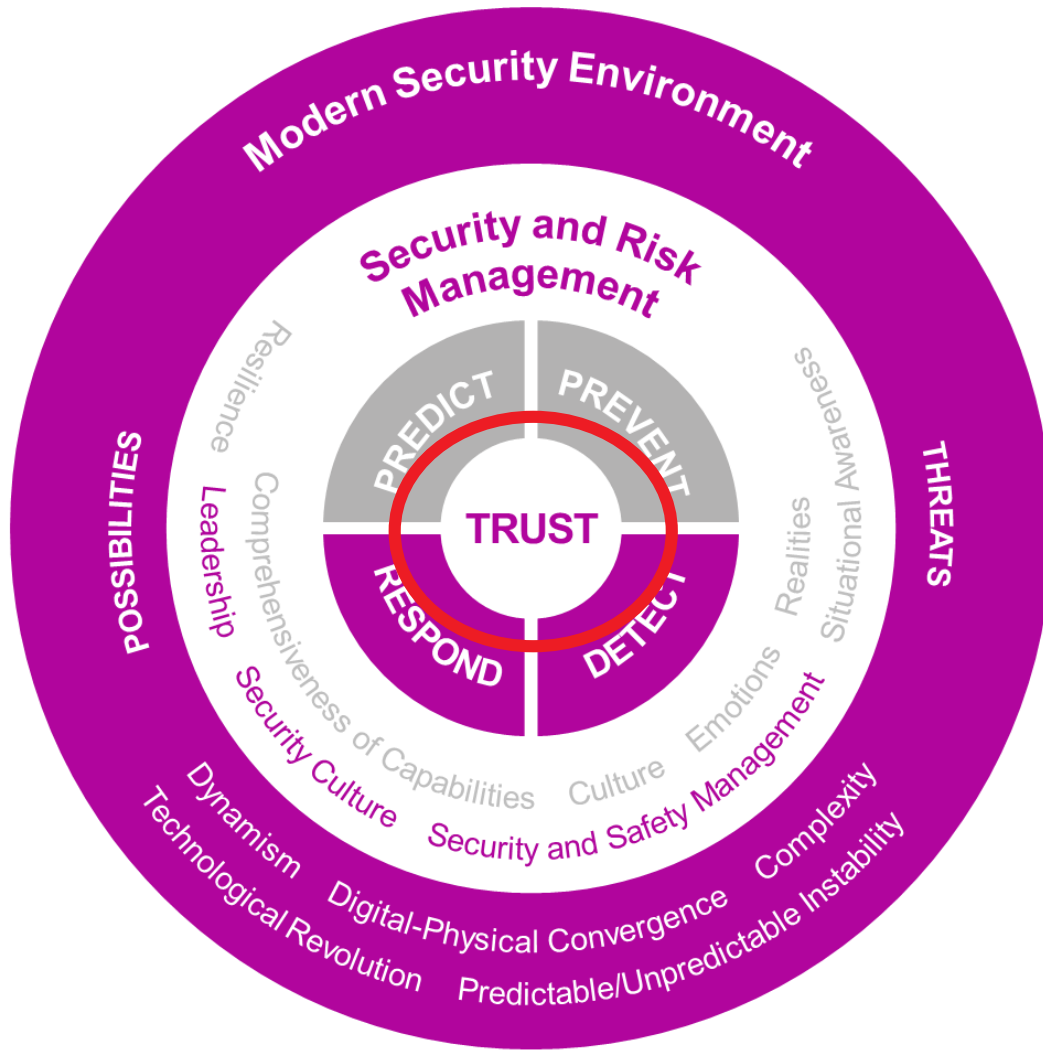
**“We’re not just fighting an epidemic,
we’re fighting an infodemic.”**

*Tedros Adhanom Ghebreyesus, Director-General of the
World Health Organization*

A close-up photograph of a computer keyboard. The central focus is a single, rectangular key colored in a vibrant light blue. On this key, the word "trust" is printed in a clean, white, lowercase sans-serif font. The key is slightly raised and has a subtle shadow, giving it a three-dimensional appearance. Surrounding this key are several other keys, all in a standard off-white or light grey color, which are slightly out of focus, creating a sense of depth. The lighting is soft and even, highlighting the texture of the plastic keys.

**To Whom and What
You Can Trust?**

The Value of Trust



A hand is shown from the bottom, cupping a glowing, semi-transparent globe of the Earth. The globe is illuminated from the top, creating a bright spot on its surface. The background is a dark blue night sky filled with numerous small, white stars. The text is centered over a semi-transparent white horizontal band that spans the width of the image.

**New paradigm:
Nobody or nothing should be trusted –
trust must first be earned.**

**We do what we say and
we say what we do.
Integrity as a Value.**

**Finland offers world-class expertise in
cybersecurity, software, hardware,
digital services and partnerships.**

FISC.fi

FISC
Finnish Information Security Cluster

**CYBER-
SECURITY
FROM
FINLAND**

FINLAND OFFERS WORLD-CLASS
EXPERTISE IN CYBERSECURITY
SOFTWARE, HARDWARE,
DIGITAL SERVICES AND
PARTNERSHIPS

#FINLANDWORKS



Trust itself is becoming very valuable intangible capital for companies and societies.

**“It is not the strongest species that survive, nor the most intelligent, but the ones responsive to change.”
- Charles Darwin**

Thank you

