

UNIVERSITY OF OSLO

EL og IT Forbundets
Teleentreprenørkonferanse, 7-8Feb2023

Digital transformasjon, trygghet og samfunnssikkerhet

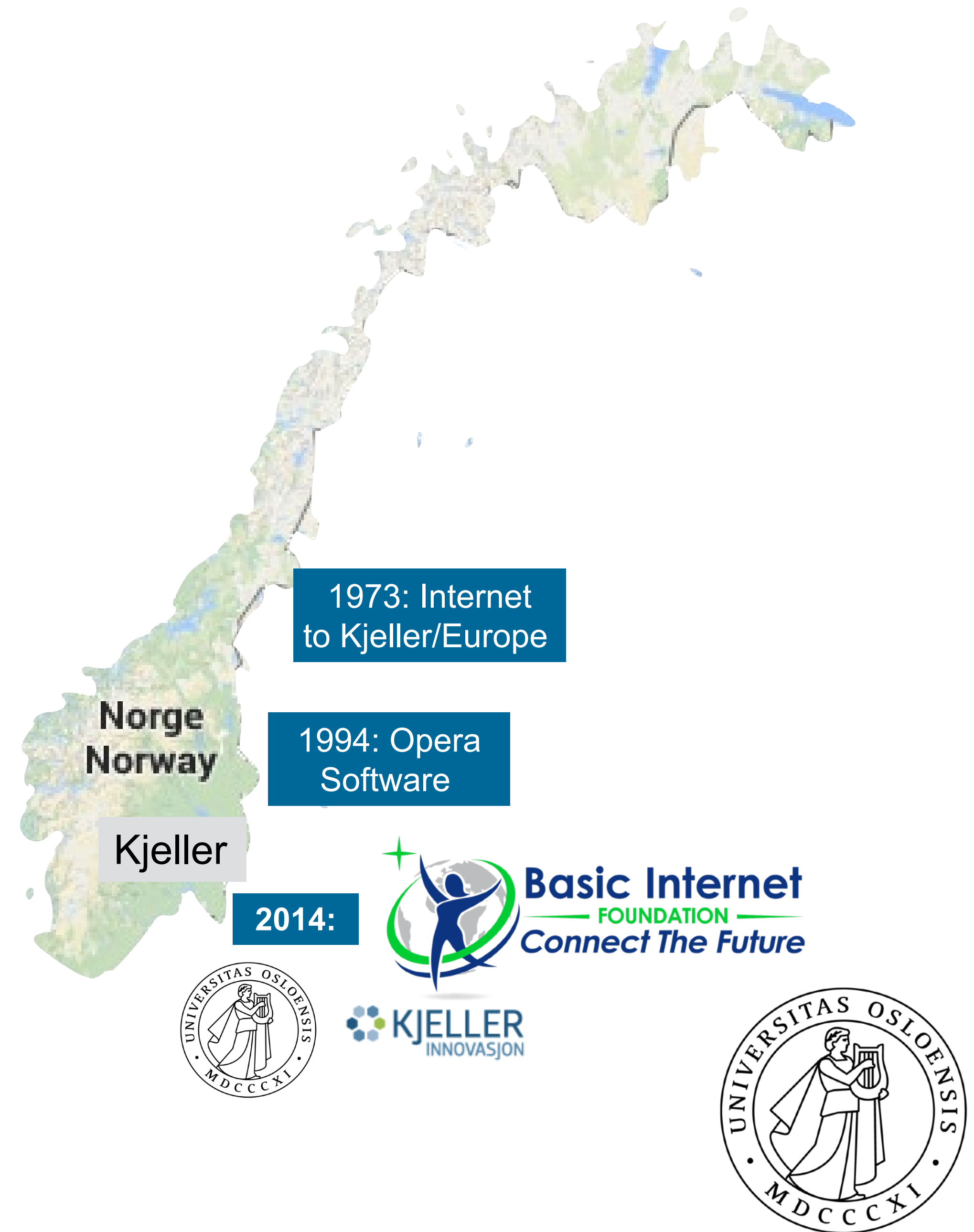
Josef Noll

Professor, Department of Technology Systems

Lead Digital Global Health, Centre for Global Health

Secretary General, Basic Internet Foundation

UNIVERSITY
OF OSLO



Fra Radio til Samfunnssikkerhet

- the inclusive view

→ "The German coming to the Nordics"

- **Radio**, Communications, **Remote Sensing**
- Siemens, European Space Agency (ESA)
- Telenor: 3G development (Kjeller)

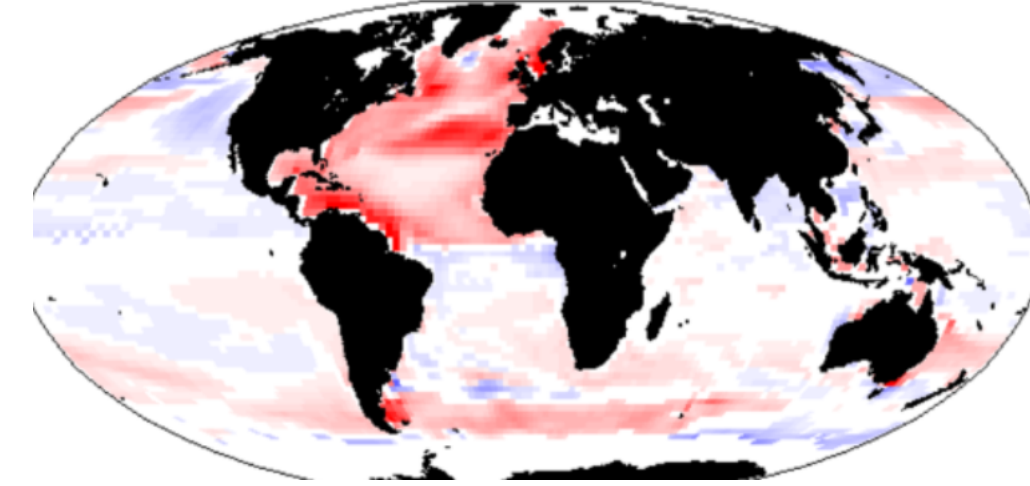
→ The Nordics & Baltics

- Internet to Europe (1973), Pioneers: Vint, Paal, Yngvar
- .php, OpenSource, Linux, Skype, Spotify
- OperaSoftware, FAST Search
- Nokia, Ericsson, Telenor, Telia

→ "Internet to Africa" (2012)

- Basic Internet Foundation (2014)

1992: "Remote Sensing & Climate Change"



1999: 3G System - Mobile Security

2004: Mobile Payment & Authentication



2006: 4G & IoT - IoT Security

2015: IMSI catcher
- mobile espionage
- **societal security**



2015: Security in IoT for Smart Grids (IoTSec.no)



2019: **Digital Divide** & Societal Security

2022: IoT cybersecurity – Graceful degradation and security by design
<https://www.devicechronicle.com/iot-cybersecurity/>



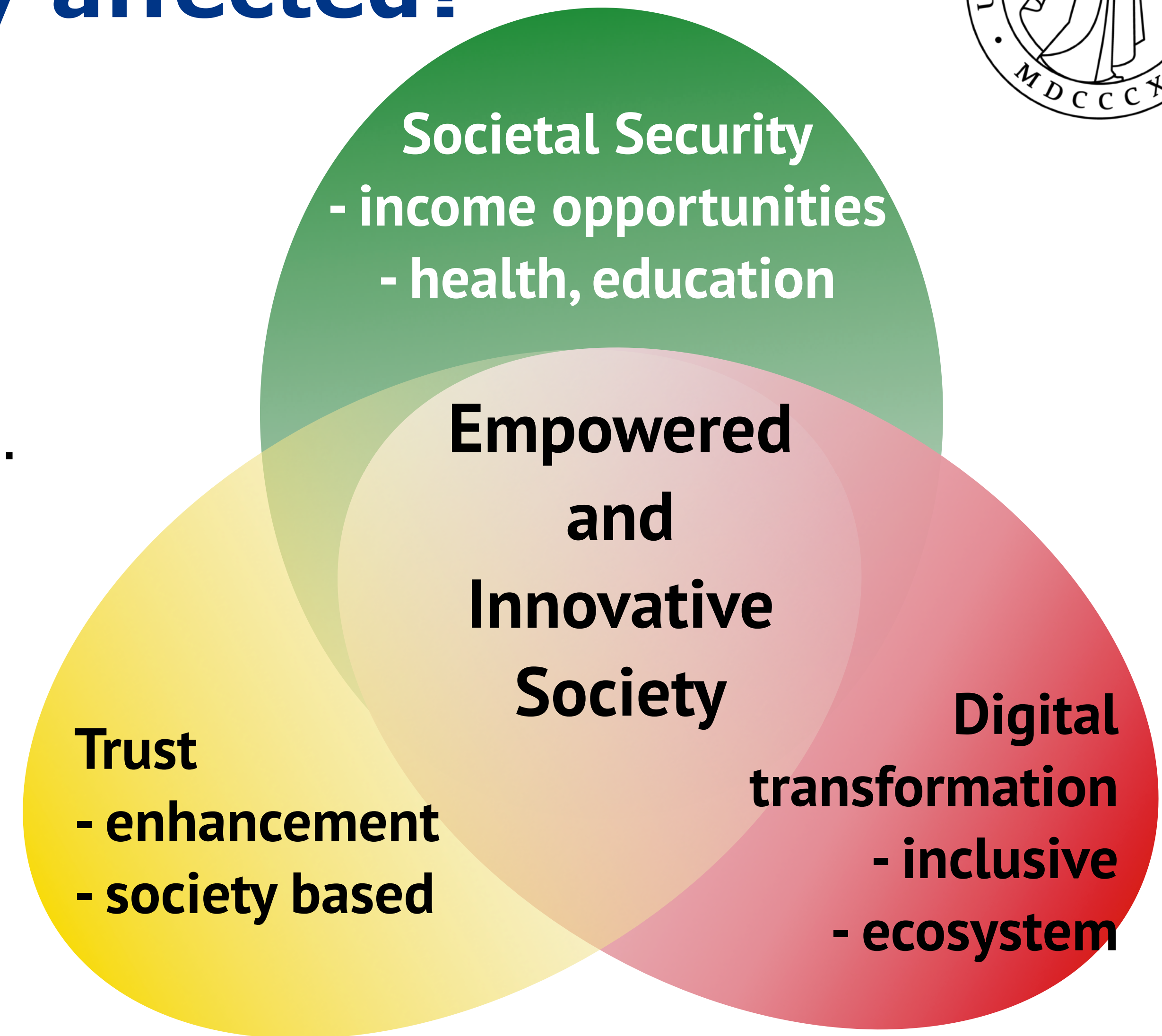
Digital Transformation

Trust

Societal Security

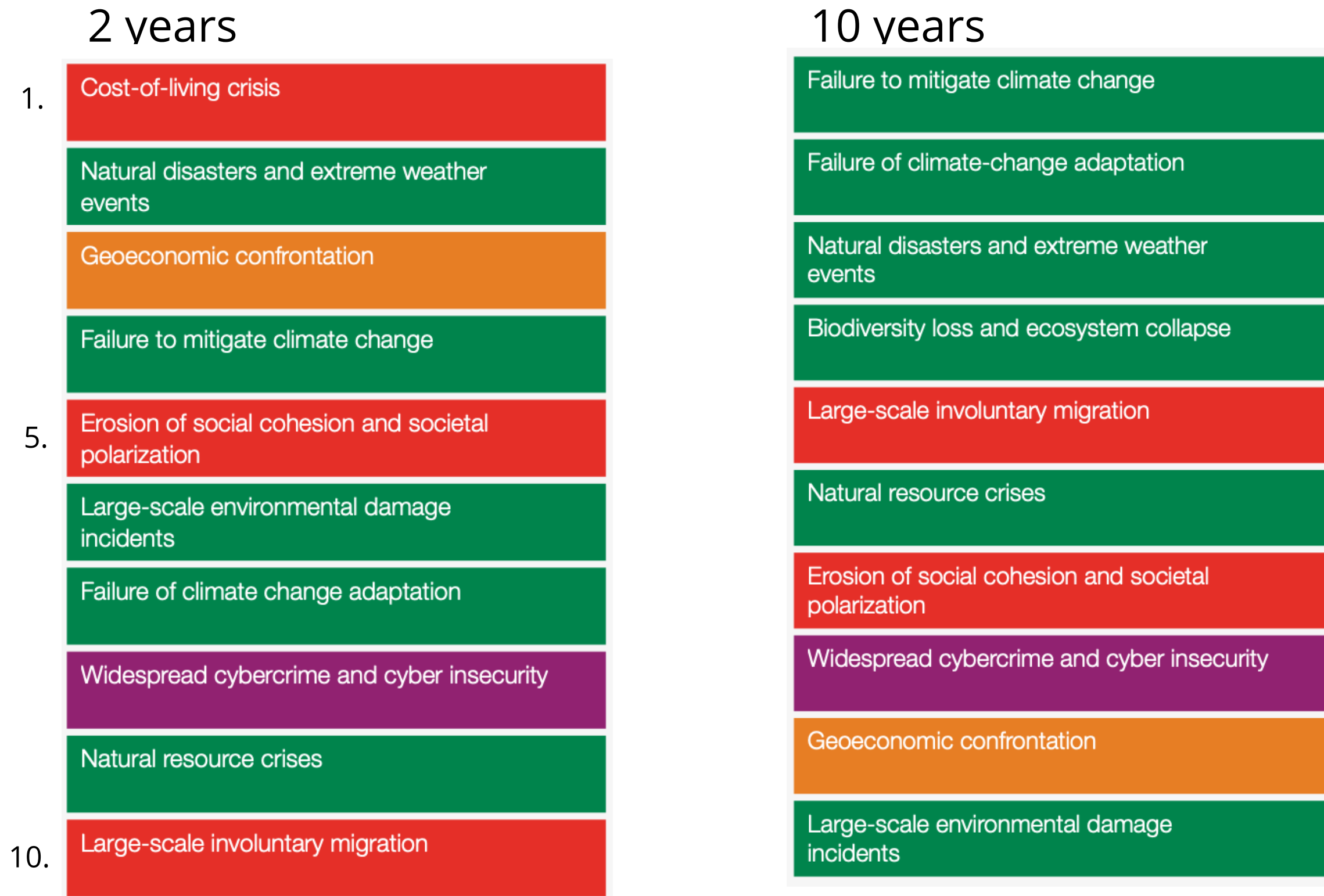
Is our Norwegian Society affected?

- Global challenges
 - Climate crisis
 - War in Ukraine, Ethiopia, Syria,...
 - Resources
 - Digital Divide
- Sustainable and Inclusive Future and the SDGs



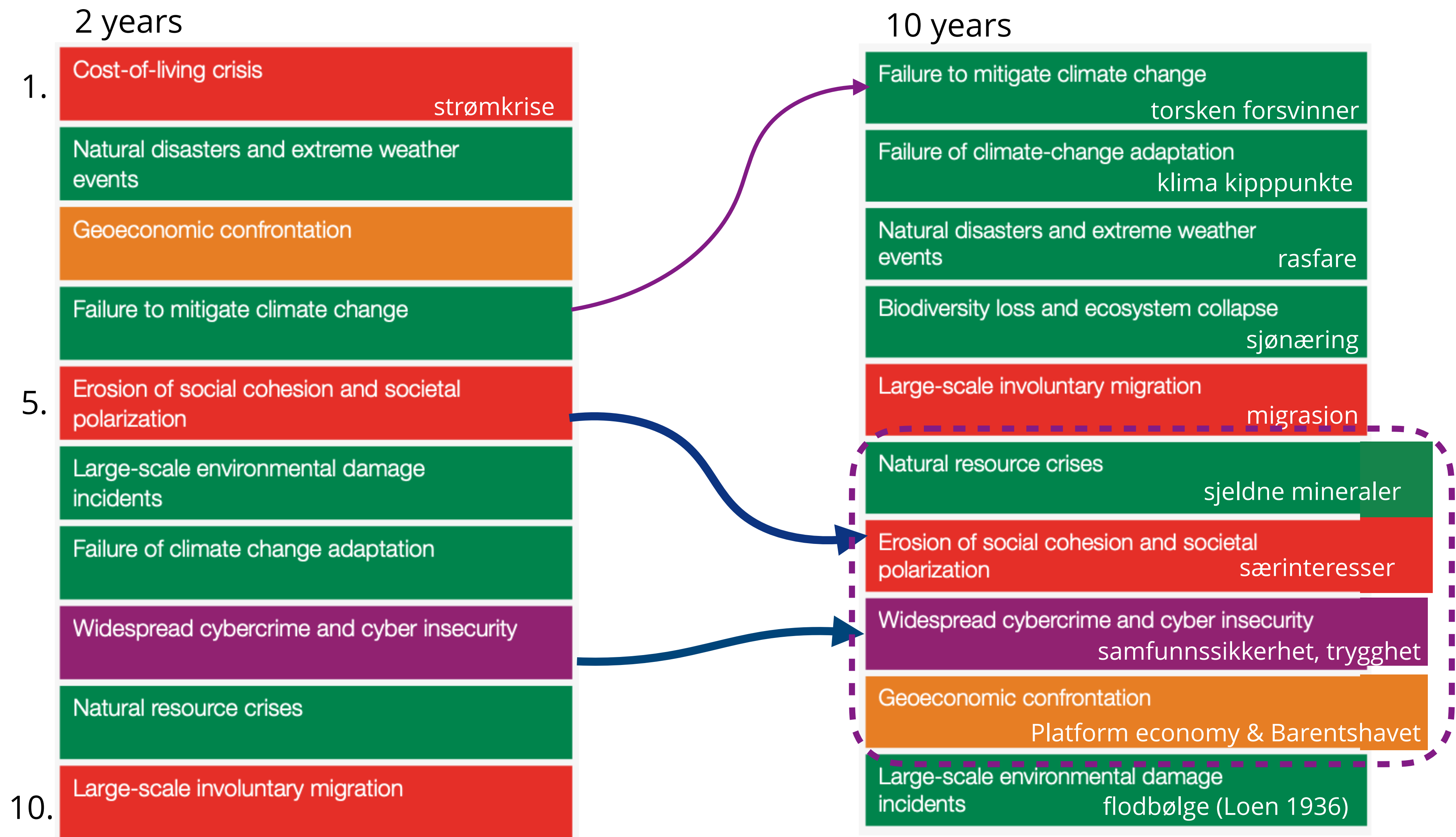
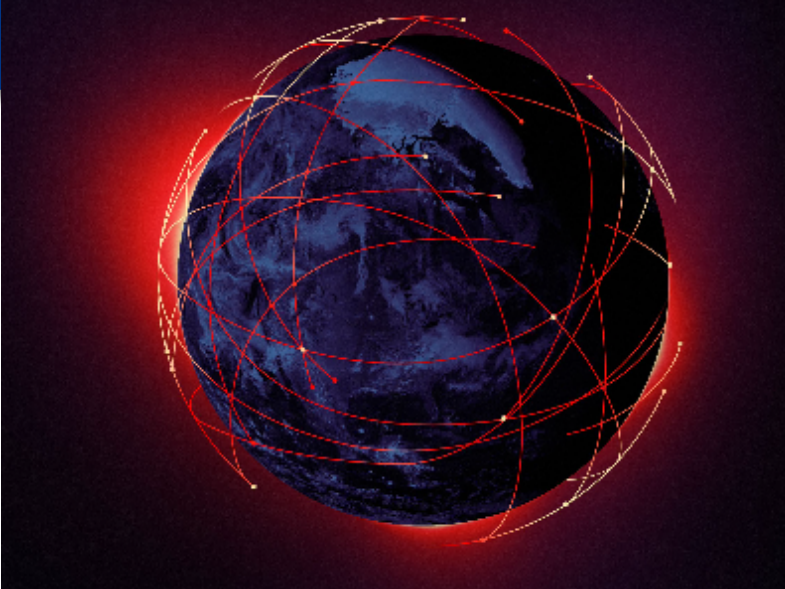
Tomorrow's Catastrophes

from today's crisis to 10 years from now



Global risks ranked by severity over the short and long term

Globale risikoer og samfunnssikkerhet



Global risks ranked by severity over the short and long term

Digital Transformation

Natural resource crises

sjeldne mineraler

Erosion of social cohesion and societal polarization

særinteresser

Widespread cybercrime and cyber insecurity

samfunnssikkerhet, trygghet

Geoeconomic confrontation

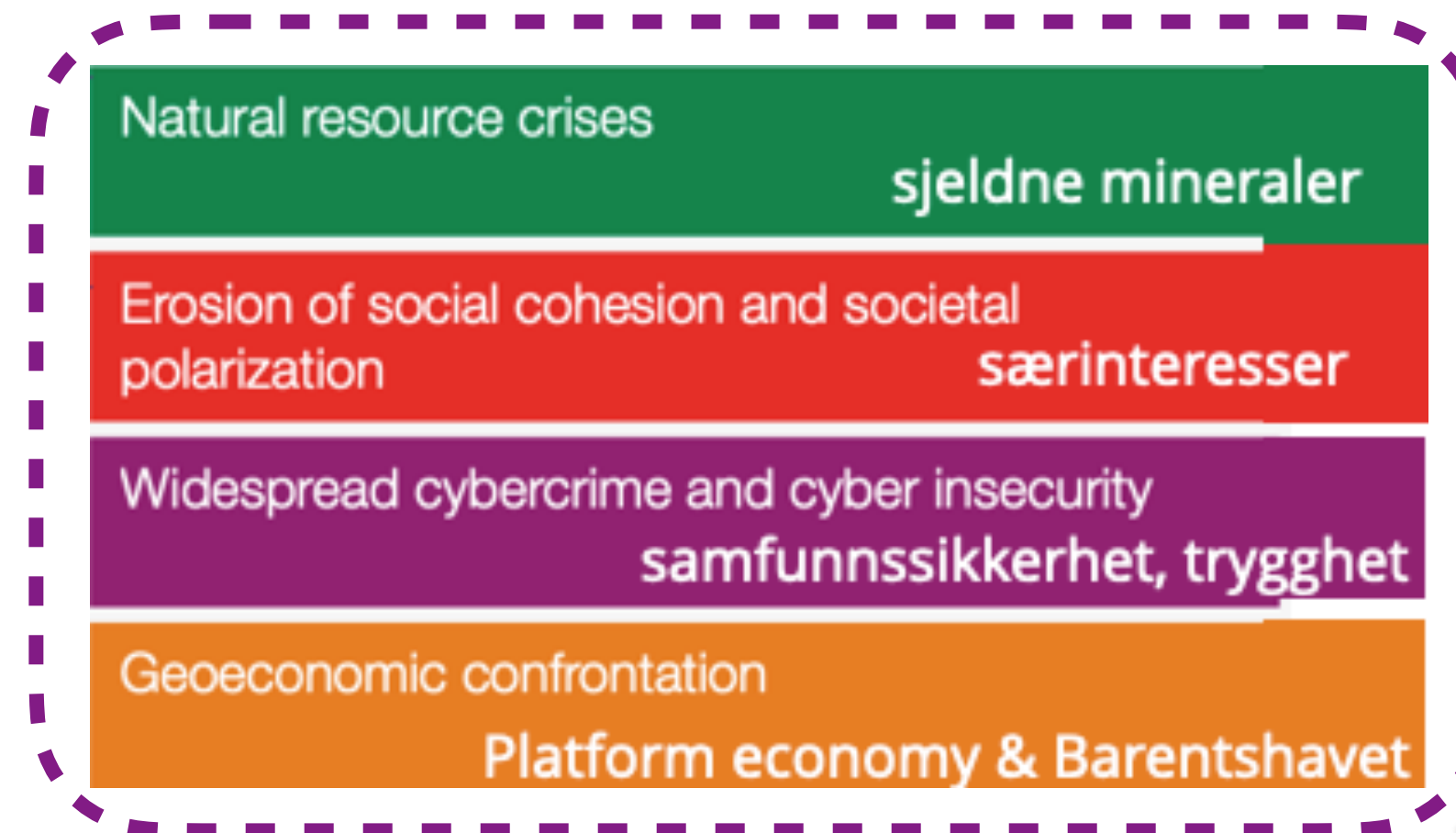
Platform economy & Barentshavet

Trust

Societal Security

Digital Transformation

- ➔ Economic perspective
 - electrical- and digital-transition
 - platform economy (AMAMA) vs people
 - economical perspective of SMEs
- ➔ Digitisation & Apps
 - TikTok and SocialMedia
 - Hate Speech
 - Deep Fake
 - Artificial Intelligence
- ➔ Ransomware
 - industrial systems (Mærsk)
 - wind-turbiner



impact of digital on the societal divide

Company ⇄	Country ⇄	Inflation-adjusted ^[5]
Apple		3,000
Microsoft		2,576
Saudi Aramco		2,450
Alphabet		2,000
Amazon		1,900
PetroChina		1,472
Tesla		1,235
Meta		1,078



Alphabet

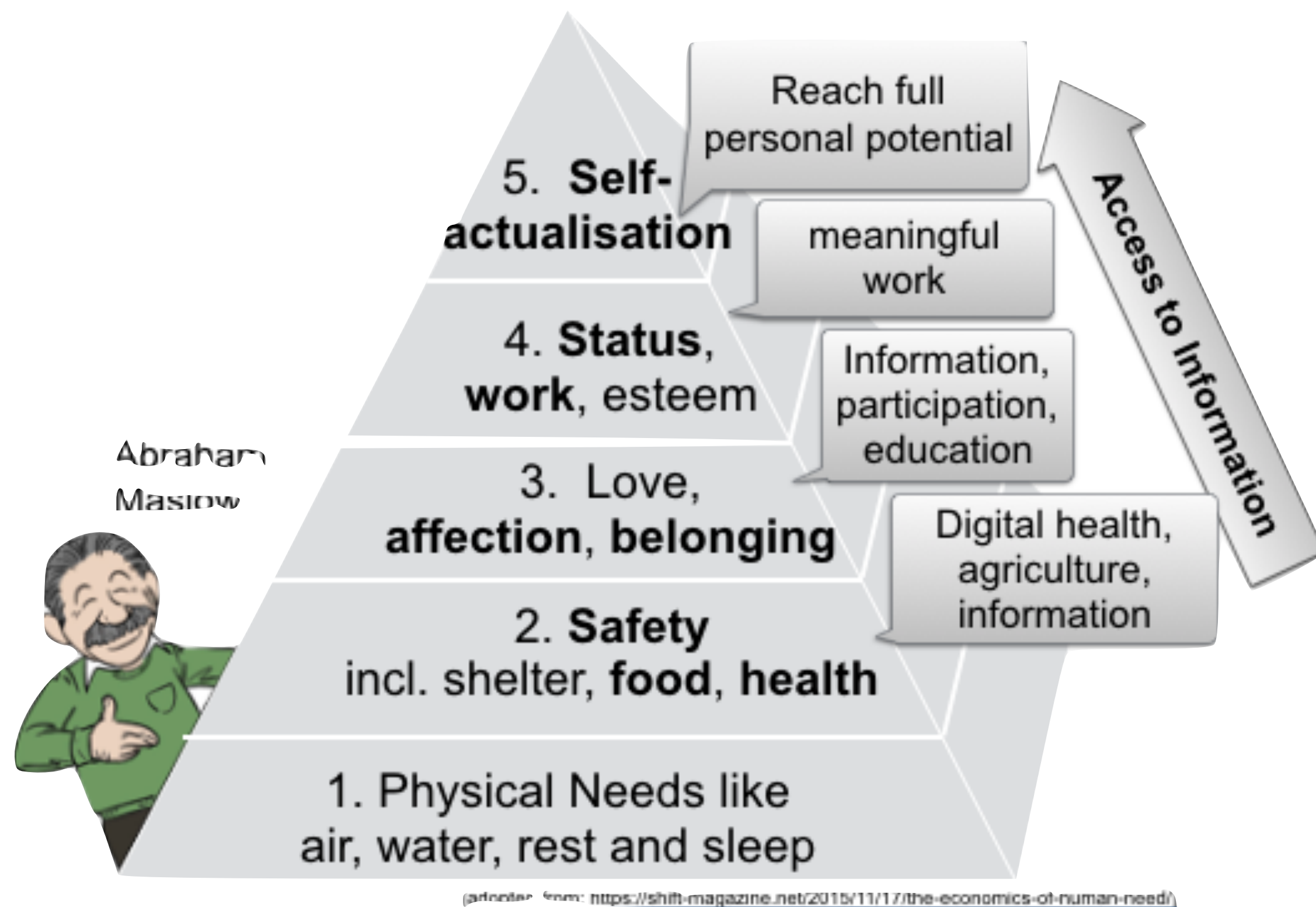
amazon



Meta

https://en.wikipedia.org/wiki/List_of_public_corporations_by_market_capitalization#2022

From Basic Needs to Meaningful Work



“Internet had the ability to dismantle the divide. Internet failed miserably, the divide is bigger than ever.”
Kate Gilmore, Human Rights, UNO

Shouldn't access to information be a basic human right?

Framework conditions for Telekom operators

Unstable economies are drivers for conflicts

- Social Mobility (WEF 2019)
 - Ability to move up the pyramid
 - 1) Denmark
 - 2) Norway
 - 3-5 other Nordics
- “local money more important than religion”
- Decent work
 - Main driver for instability is **no work**

70% live in countries with increased divide
IMF panel 2019



[Source: World Economic Forum, Palik et al. - Conflict Trends in Africa, 1989–2021, PRIO Paper 2022]

Digital Transformation

Trust

Erosion of social cohesion and societal
polarization

særinteresser

Widespread cybercrime and cyber insecurity

samfunnssikkerhet, trygghet

Societal Security

Trust in digital systems

Erosion of social cohesion and societal polarization
særinteresser

Widespread cybercrime and cyber insecurity
samfunnssikkerhet, trygghet

- ➔ TikTok and SocialMedia
 - profiling
- ➔ Hate Speech
- ➔ Deep Fake
- ➔ Artificial Intelligence
 - for whom?
- ➔ Social empowerment & societal benefit
- ➔ Trust enhancement
 - Framework for open AI
 - Protection of society



"On the Internet, nobody knows you're a dog"

[New Yorker, 1993]

profiling (TikTok)

"Everyone knows you are a dog"

2023

Trust in mobile & IoT systems

Dec 02, 2022

IoT cybersecurity – Graceful degradation and security by design for IoT devices

Opinion

- Value for owner & society
 - alarm
 - energy balance

- Social empowerment & benefit
 - who controls my energy?

- Trust enhancement



<https://www.devicechronicle.com/iot-cybersecurity/> Dec 2022

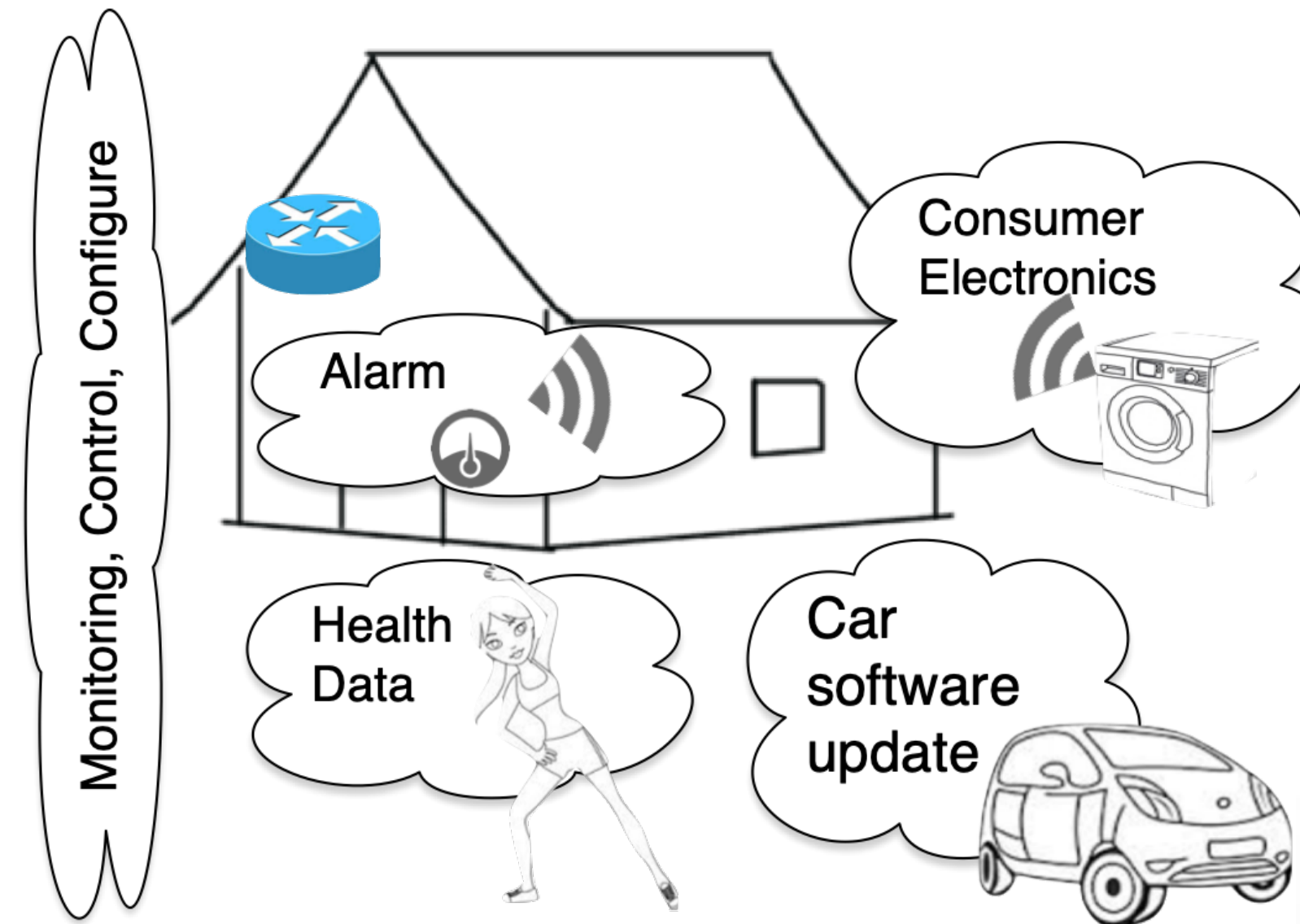
Next battle field: Smart Home

→ Interconnected devices

- audio, video
- consumer electronics
- heating, ventilation
- car charging

→ Home User

- Convenience & Security
- Health



profiling (Tibber, Smartly,...)
“access to my energy data”

“who buys Tibber?”



Digital Transformation

Trust

Societal Security

Societal Security

Traditional understanding

- Protection
 - borders
 - water/air
 - espionage
- Custom control
- Police, Fire
 - safety, hazard-control

Power Grid Cyber Attacks Keep the Pentagon Up at Night

A detailed look at why computers running the U.S. electrical infrastructure are so vulnerable to digital threats

By Michael McElfresh and The Conversation | June 8, 2015

The following essay is reprinted with permission from [The Conversation](#), an online publication covering the latest research.

It's very hard to overstate how important the US power grid is to American society and its economy. Every critical infrastructure, from communications to water, is built on it and every important business function from banking to milking cows is completely dependent on it.



Scott Wylie/Flickr

Secure the Internet of Things?

BSSN's Website Gets Hacked; Cybersecurity Expert Comments

25Oct2021

Translator: Dewi Elvia Muthiariny

Editor: Markus Wisnu Murti

25 October 2021 20:37 WIB

<https://en.tempo.co/read/1521083/bssns-website-gets-hacked-cybersecurity-expert-comments>



Hacking illustration. Shutterstock

TEMPO.CO, Jakarta - The National Cyber and Encryption Agency's (BSSN) website www.pusmanas.bssn.go.id got hacked and hit by a defacement attack. Cybersecurity expert Pratama Persadha said the attack was posted on Wednesday, October 20, by Twitter account @son1x777.

- Verkada (Mar2021) sw clients; live feed of 150 k cameras
- WD Digital MyBook - remote factory reset
- QNAP NAS - hack of QNAP cloud -> private homes/SMEs had storage encrypted "ransomware"
- BotenaGO - Netgear & LinkedIn routers
-

Societal Security in the digital age

- Framework conditions
 - economics (open Internet, privacy)
 - app control
 - .no has to be "Norwegian laws"
- Protection of data & infrastructure
 - energy is critical infrastructure
 - empowerment of every single person

"Hvor .no står, må Norske regler gjelder"

Samfunnssikkerhet og elektronisk kommunikasjon: politikk, personvern, samfunnsnytte

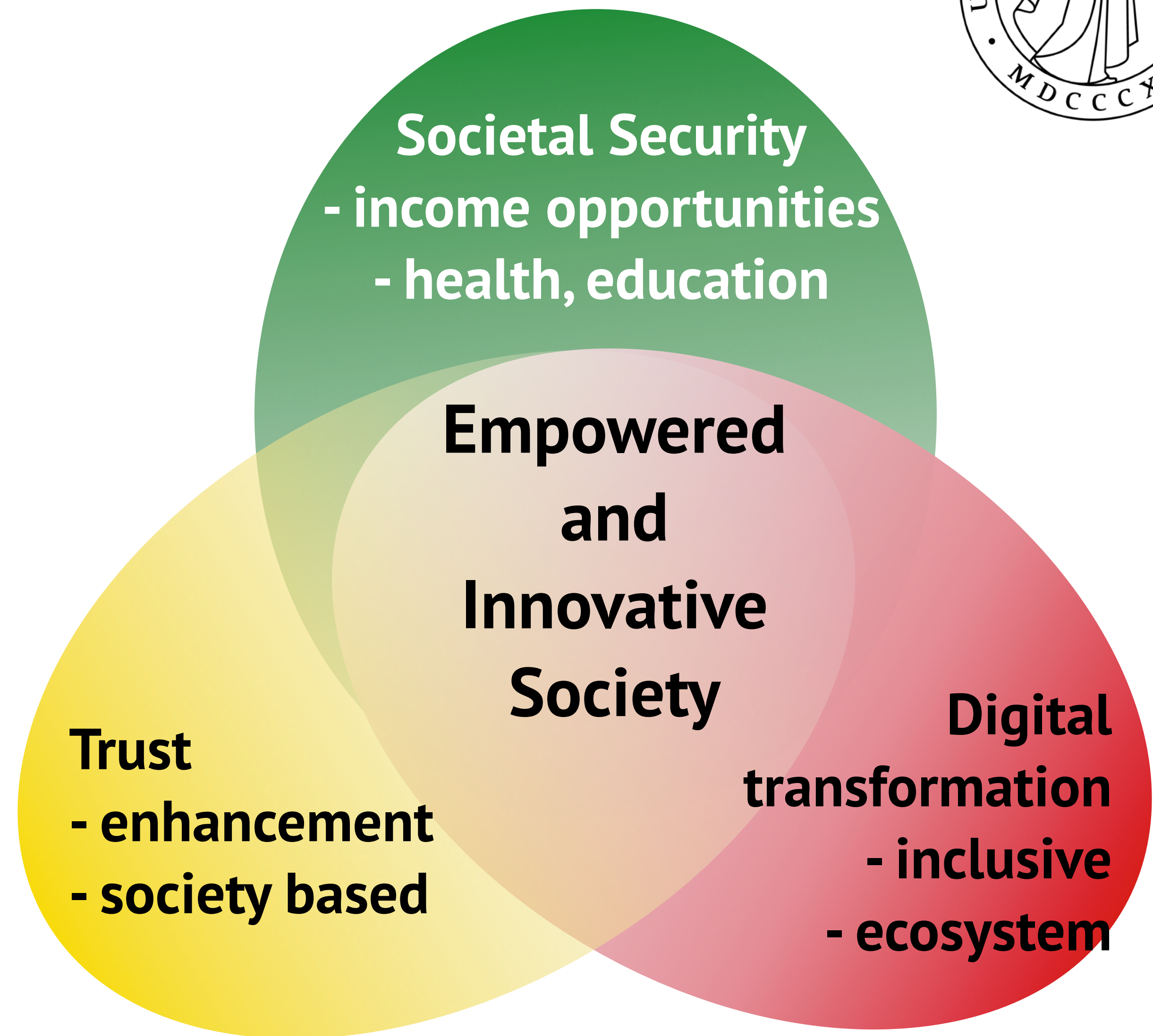
- Utgangspunkt: “ingenting er sikkert”
 - IoT sikkerhet “consumer electronics”
- Trygghet gjennom
 - sårbarhetsanalyse
 - isolasjon av kritisk infrastruktur
 - involvering, trening
- Avveining
 - personvern vs samfunnsnytte



[Source: [executivesecretary.com](https://www.executivesecretary.com)]

Summary

- Global challenges
 - Climate crisis
 - War in Ukraine, Ethiopia, Syria,...
 - Resources
 - Digital Divide
- "Nothing is secure"
 - we need framework conditions
 - Trust enhancement
 - involvement, training



The Business Model of access to the Internet does not fit for SSA

→ Western World

- fixed access (home, work) - 45 USD
- mobile access - 20-30 USD

→ Africa

- large distances
 - expensive access (500 USD for 5 Mbps)
 - negligible fixed broadband
- ability to pay

