

UNIVERSITY OF OSLO

Bahir Dar University, Seminar Cyber
Security - 30Dec2022

Digital Transformation, Trust and Societal Security

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UNIVERSITY
OF OSLO



From Radio & Telecom to Societal Security

→ "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, TeliaSonera

→ "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**

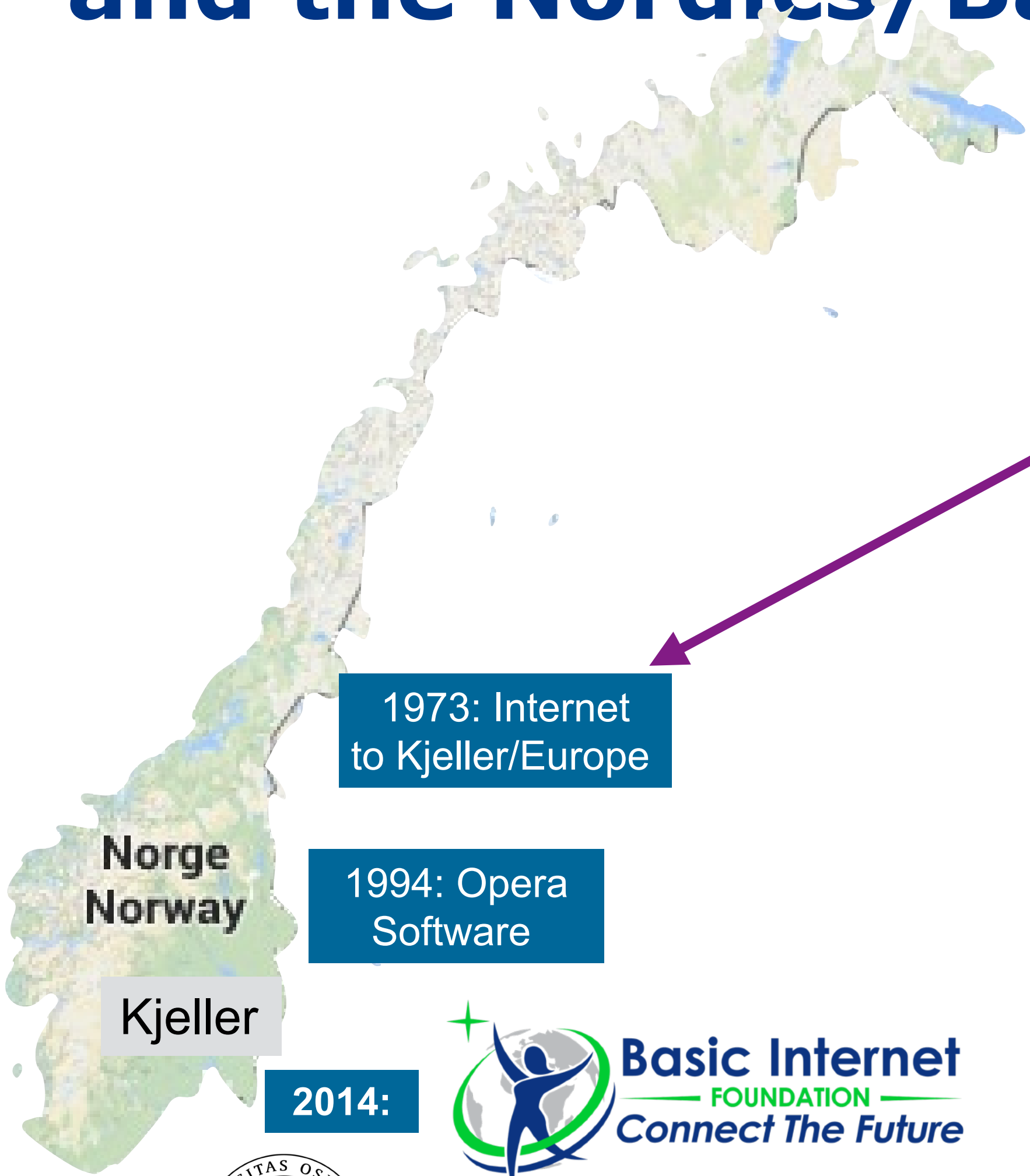
2015: Security in IoT for Smart Grids (IoTSec.no)

2019: **Digital Divide** & Societal Security

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



Inclusive digitalisation in Norway and the Nordics/Baltics (N8)



1973: Internet to Kjeller/Europe

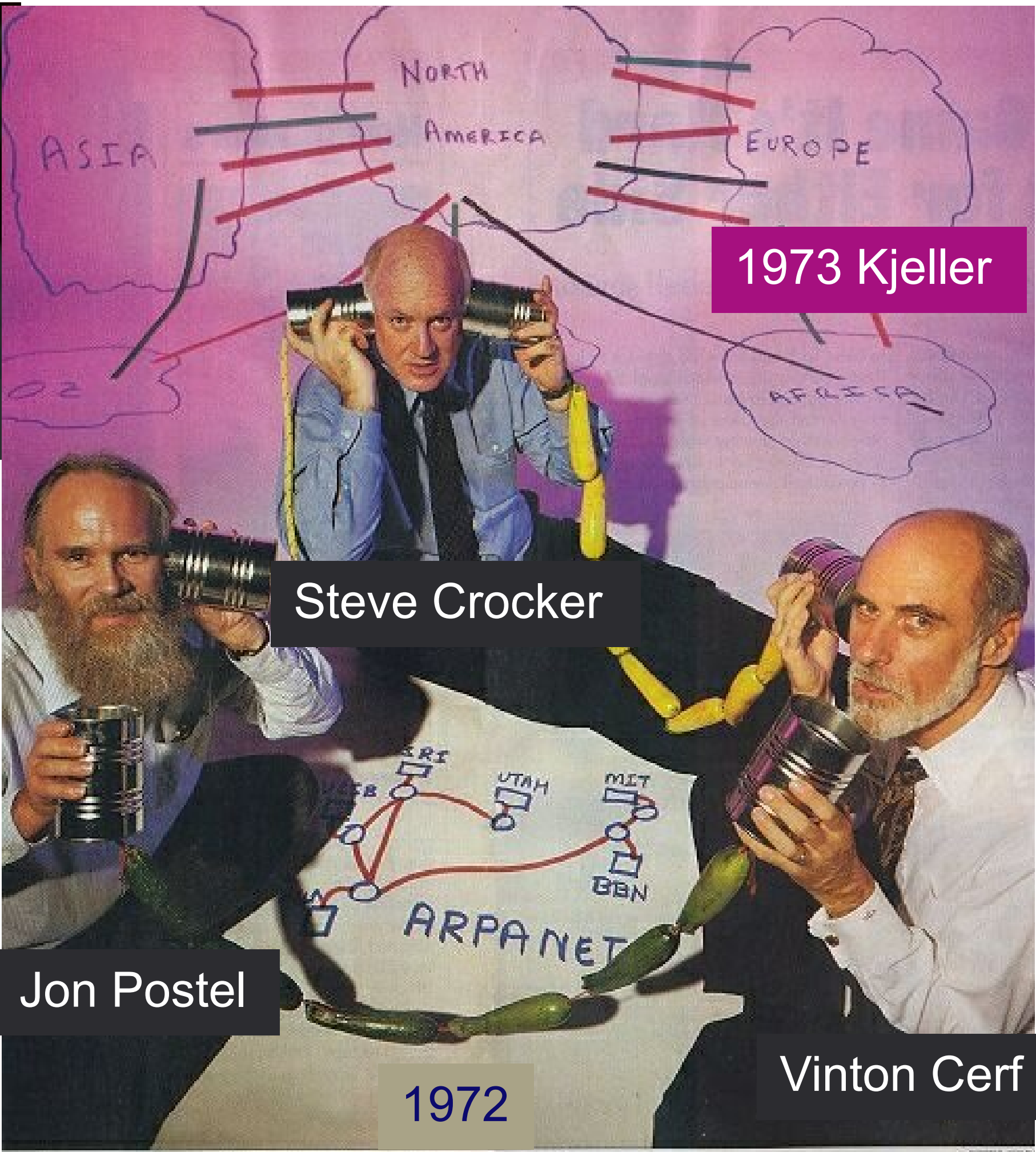
1994: Opera Software

2014:



Yngvar Lundh

Pål Spilling



Steve Crocker

Jon Postel

Vinton Cerf

1972

- Nordics & Baltics (N8)
- php, OpenSource, Linux, Skype, Spotify
 - Opera Software, FAST search
 - Nokia, Ericsson
 - GSM
 - GovStack.global, X-Roads

Source: <http://www.michaelkaul.de/History/history.htm>

Digital Transformation

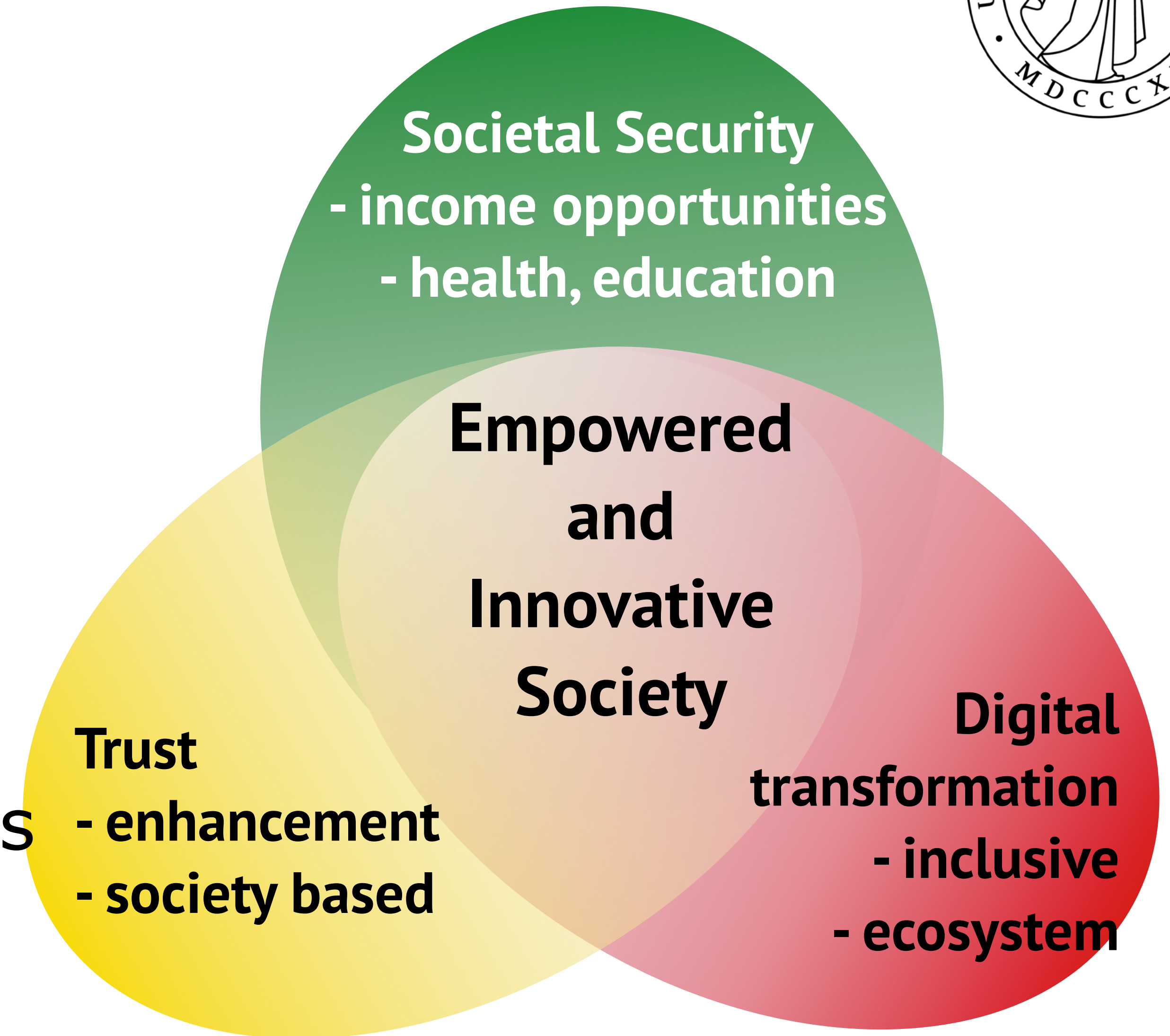
Trust

Societal Security

Sustainable Development Goals

Topic of Today

- Global challenges
 - Climate crisis
 - War in Ukraine, Tigray, Syria,...
 - Resources
 - Digital Divide
- Sustainable Development Goals
 - relevance for Ethiopia



Digital Transformation

Trust

Societal Security

Sustainable Development Goals

Digital Transformation

- Economy - AMAMA
 - digital processes
 - efficiency

- Digitisation
 - Access
 - Skills
 - Ecosystem

- App Economy
 - digital processes
 - apps, mobile, data

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

GDP (nominal) 0,111 trillion (est.)

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



From Basic Needs to Meaningful Work

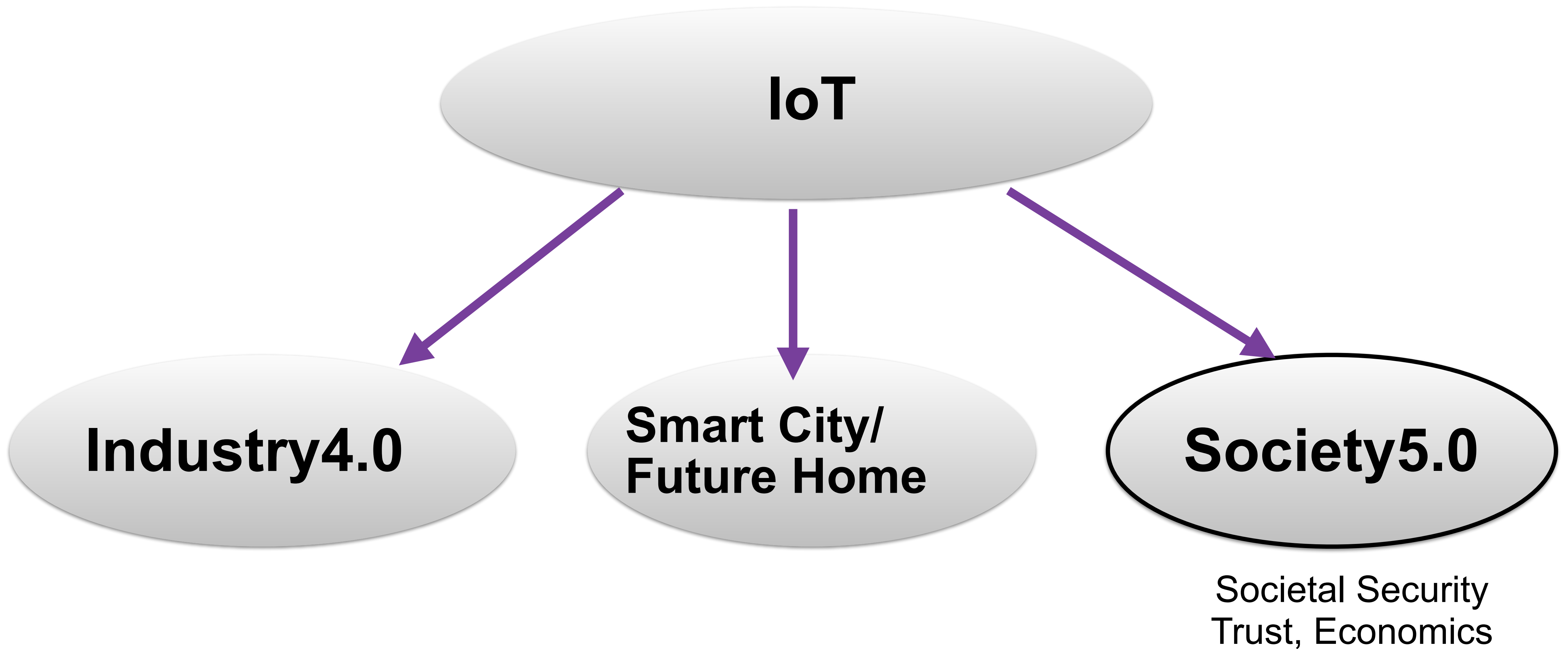


“Internet had the ability to dismantle the divide. Internet failed miserably, the divide is bigger than ever.”
Kate Gilmore, Human Rights, UNO

“Providing Internet to the basic of the pyramid isn't a question of affordability, but rather a question of sustainability”
Internet Governance Forum, Panel

(article from: <https://shift-magazine.net/2015/11/17/the-economics-of-human-need/>)

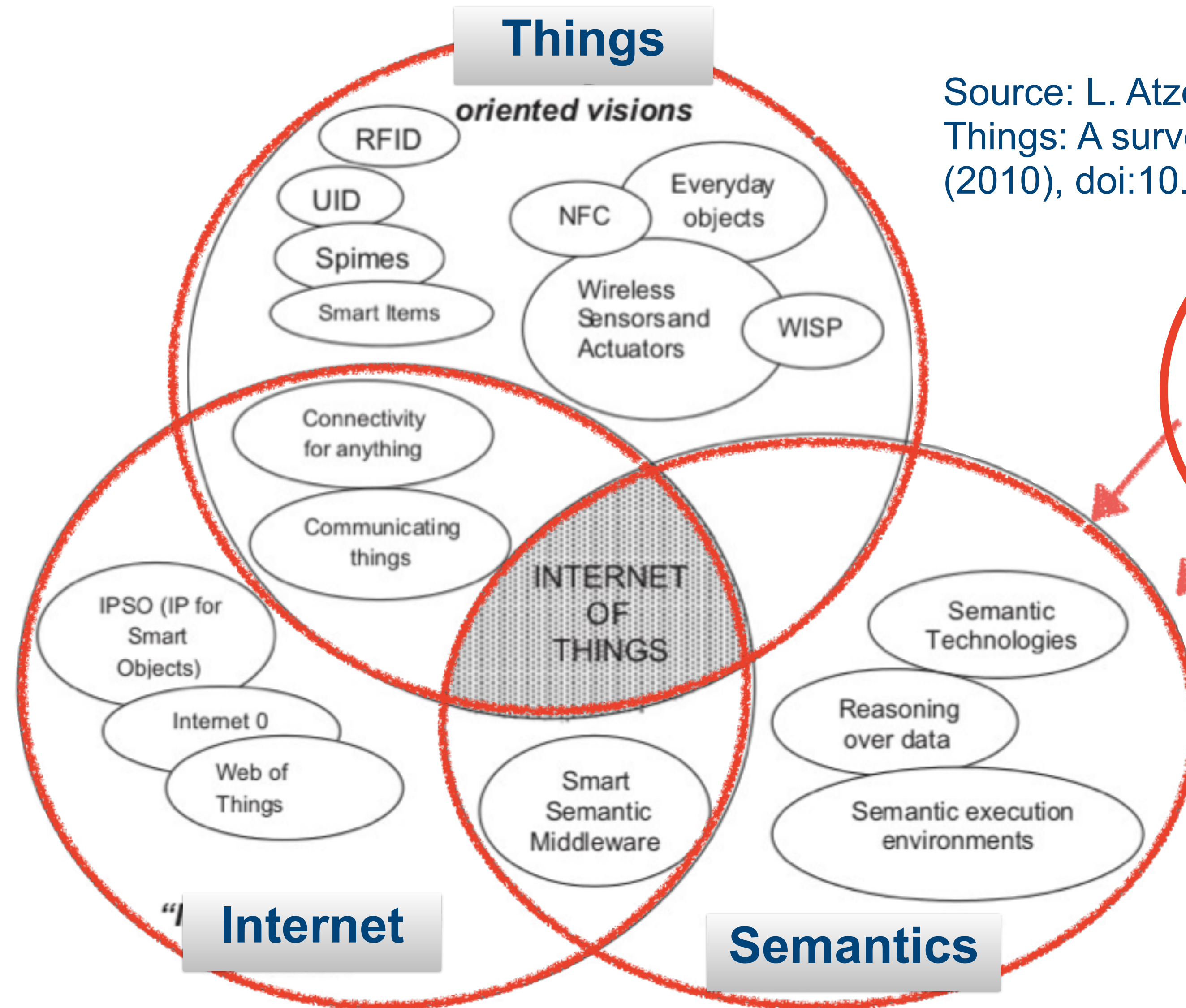
Internet of Things (IoT)



The Internet of Things (IoT)

Things

oriented visions



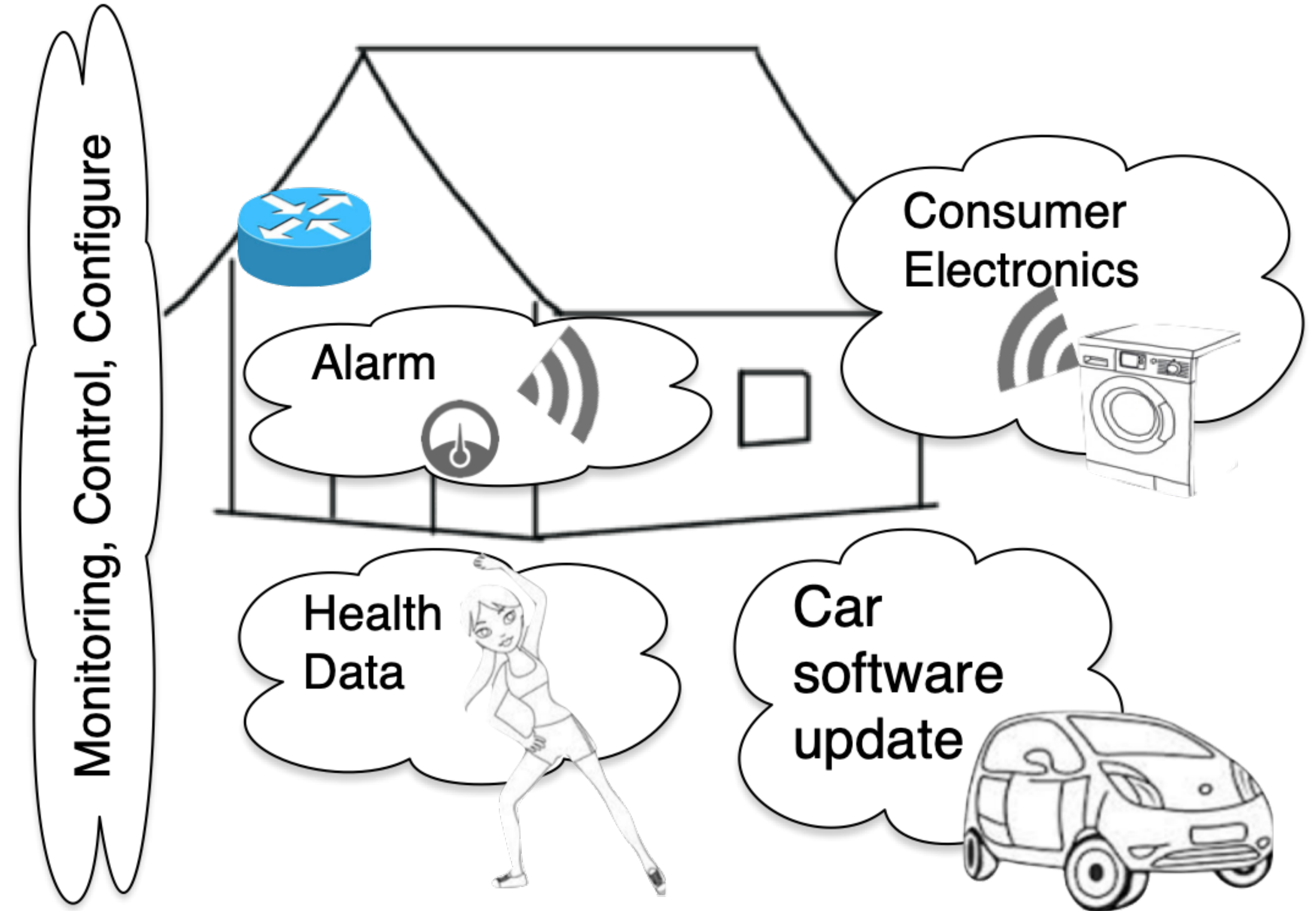
Source: L. Atzori et al., The Internet Things: A survey, Comput. Netw. (2010), doi:10.1016/

- * security
- * privacy
- * dependability
- * context-aware
- * personalised

- IoT =
 - Things +
 - Internet +
 - **Semantics**
- Things that communicate
 - with Things: computer,
 - understand the meaning,
 - takes own decisions

Example: Smart Homes

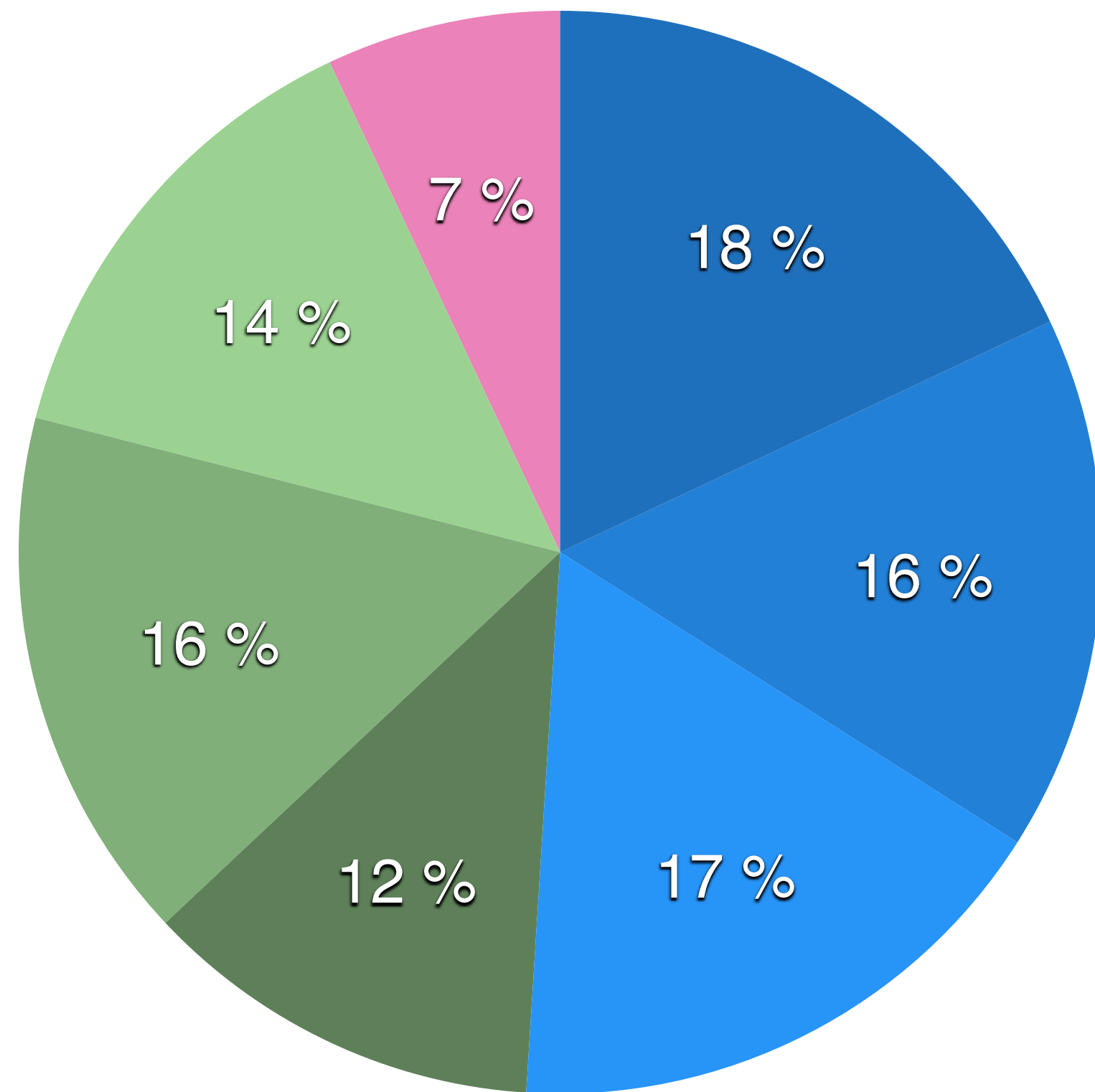
- Interconnected devices
 - audio, video
 - consumer electronics
 - heating, ventilation
 - car charging
- Home User
 - Convenience & Security
 - Health



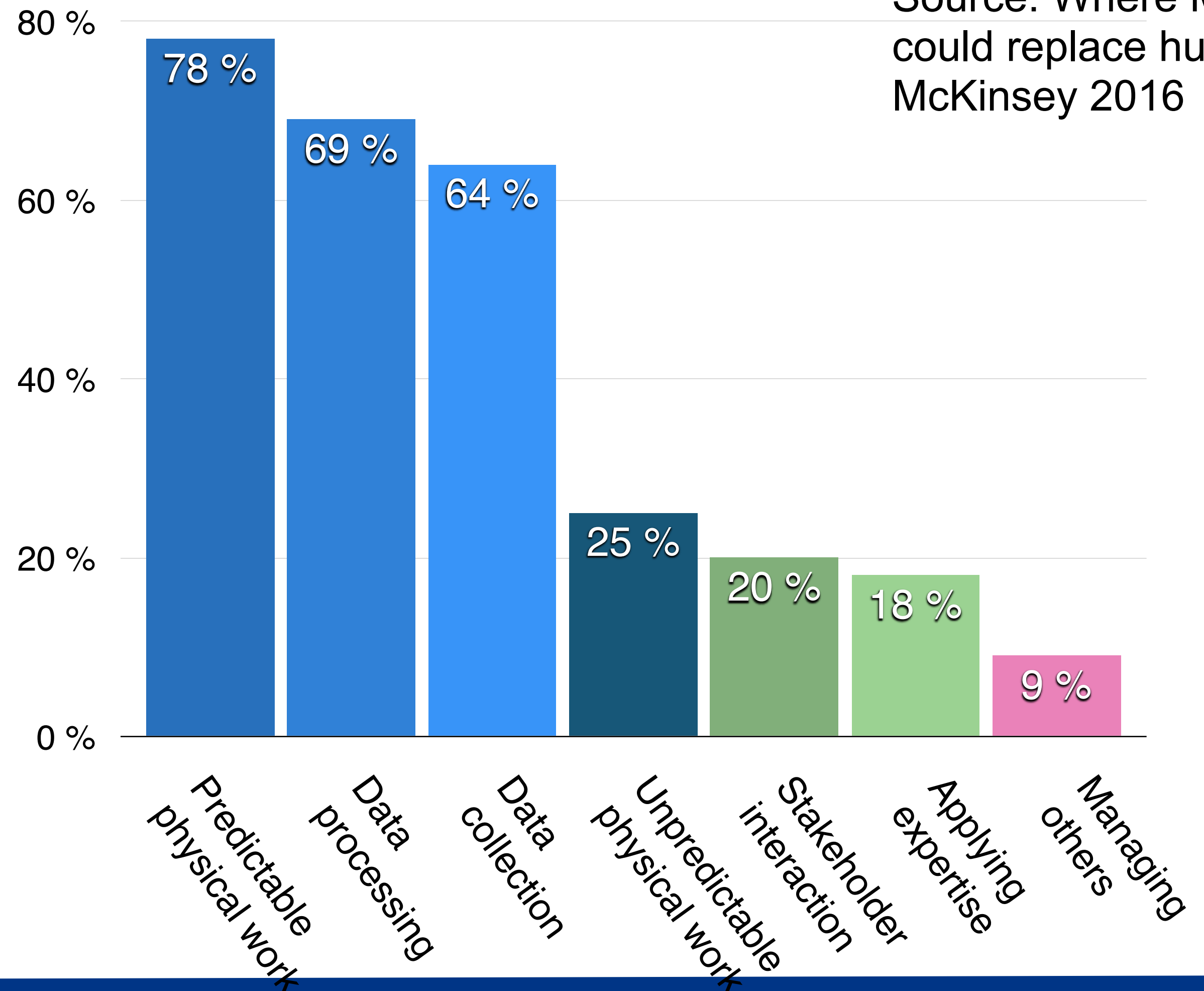
Automation will come

USA work force time spent [%]

- Predictable physical work
- Data collection
- Stakeholder interactions
- Managing others
- Data processing
- Unpredictable physical work
- Applying Expertise



Technical automation potential **2016** [%]



Source: Where Machines could replace humans, McKinsey 2016

Digital Transformation

Trust

Societal Security

Sustainable Development Goals

Trust in mobile & IoT systems

- Value for owner & society
 - alarm
 - energy balance
- Social empowerment & benefit
 - information access
- Trust enhancement

Dec 02, 2022

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

Opinion



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

Digital Transformation

Trust

Societal Security

Sustainable Development Goals

Unstable economies are drivers for conflicts

→ Social Mobility (WEF 2019)

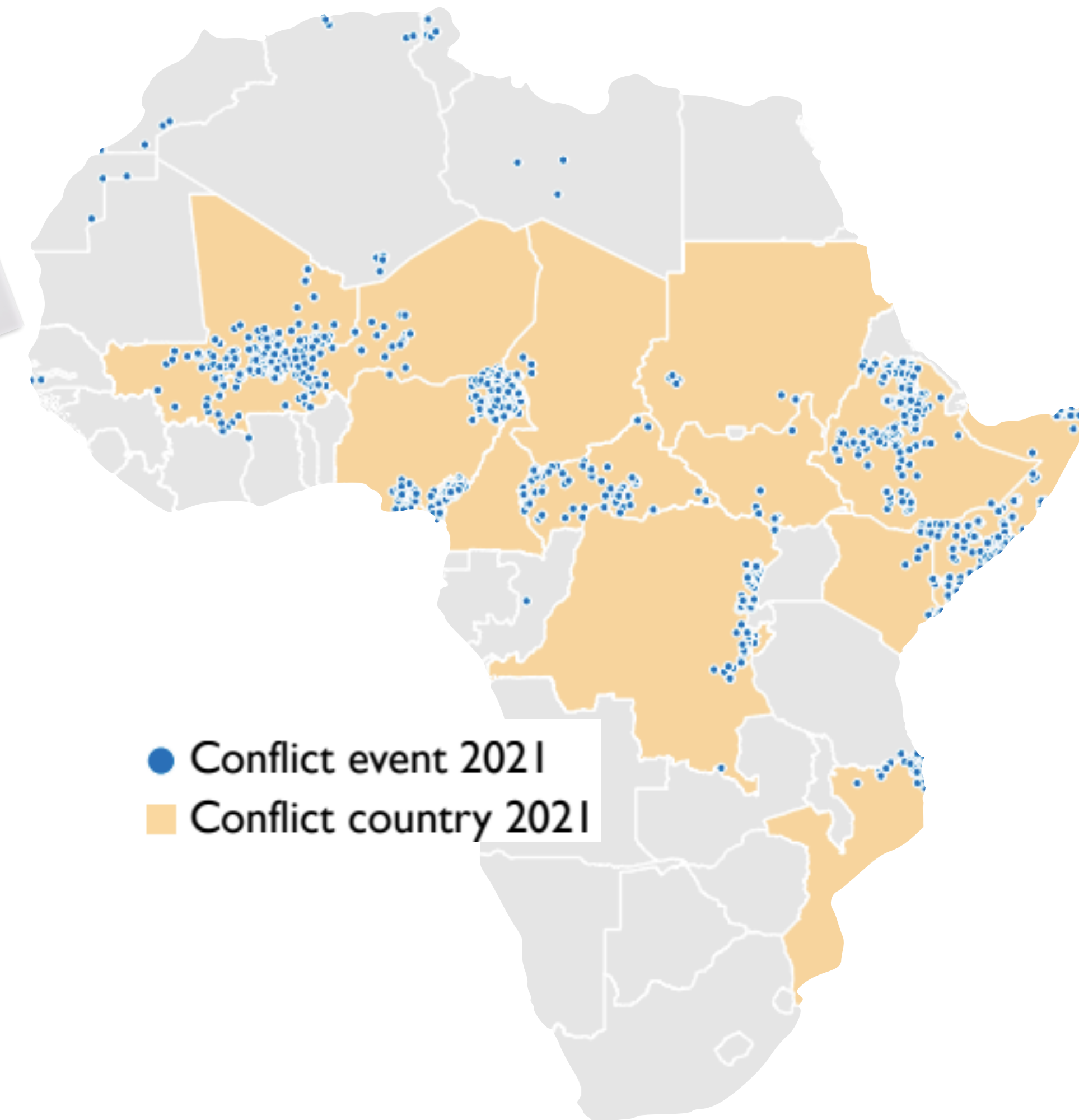
- Ability to move up the pyramid
- 1) Denmark
- 2) Norway
- 3-5 other Nordics

70% live in countries with increased divide
IMF panel 2019

→ “local money more important than religion”

→ Decent work

- Main driver for instability is **no work**



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

How can we “Connect The Future”?

Josef Noll @josefnoll · Jun 2

Amazing opening by @ITU @ITUsecGen Houlin Zhao, setting the scene for connecting every single human by 2030, and @meilinfung, addressing the history of the Internet and #NRENs to connect schools. We're in @CateKimambo @RosalynnMworia @UcsafT @AheriNet @cisskisumu @WSISprocess





Energy & Digital, enablers for the SDGs

7 AFFORDABLE AND CLEAN ENERGY



People without electricity

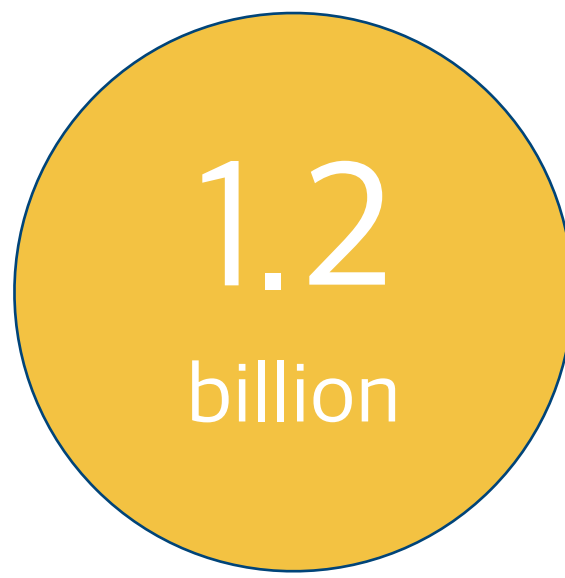
SDG 7.1 calls for universal access to ... energy by 2030

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



People not using Internet

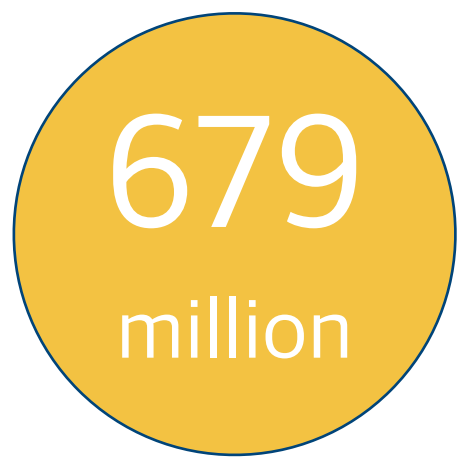
SDG 9c calls for universal, affordable internet access by 2020



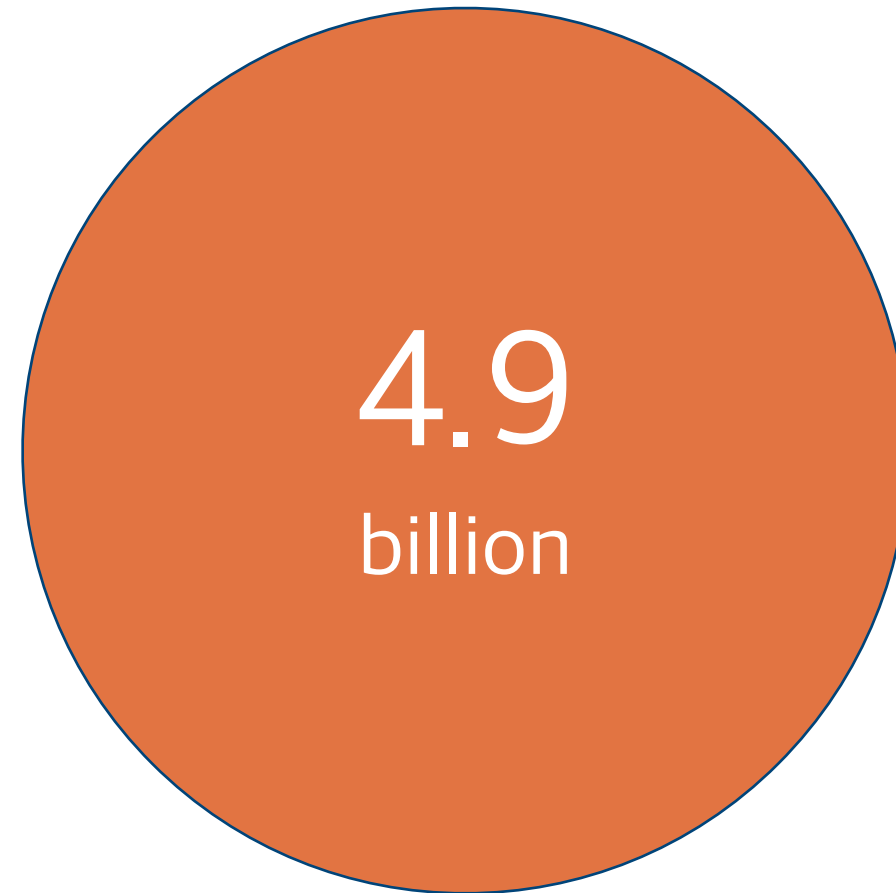
2010



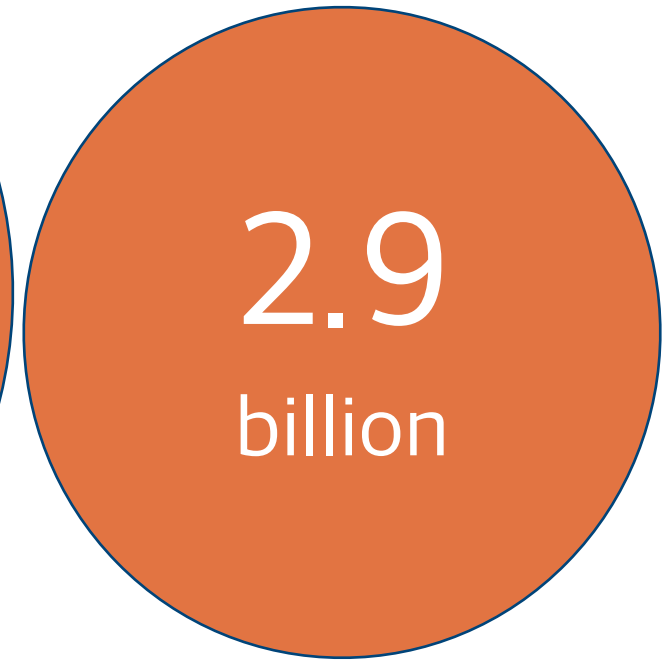
2020



2030 (trend)



2010



2021

96% in dev countries



2030 (hope)



WSIS Forum 2022

[WorldBank 2021]

<https://www.worldbank.org/en/news/press-release/2021/06/07/report-universal-access-to-sustainable-energy-will-remain-elusive-without-addressing-inequalities>

[ITU 2010, 2021]

<https://www.itu.int/hub/2021/11/facts-and-figures-2021-2-9-billion-people-still-offline/>

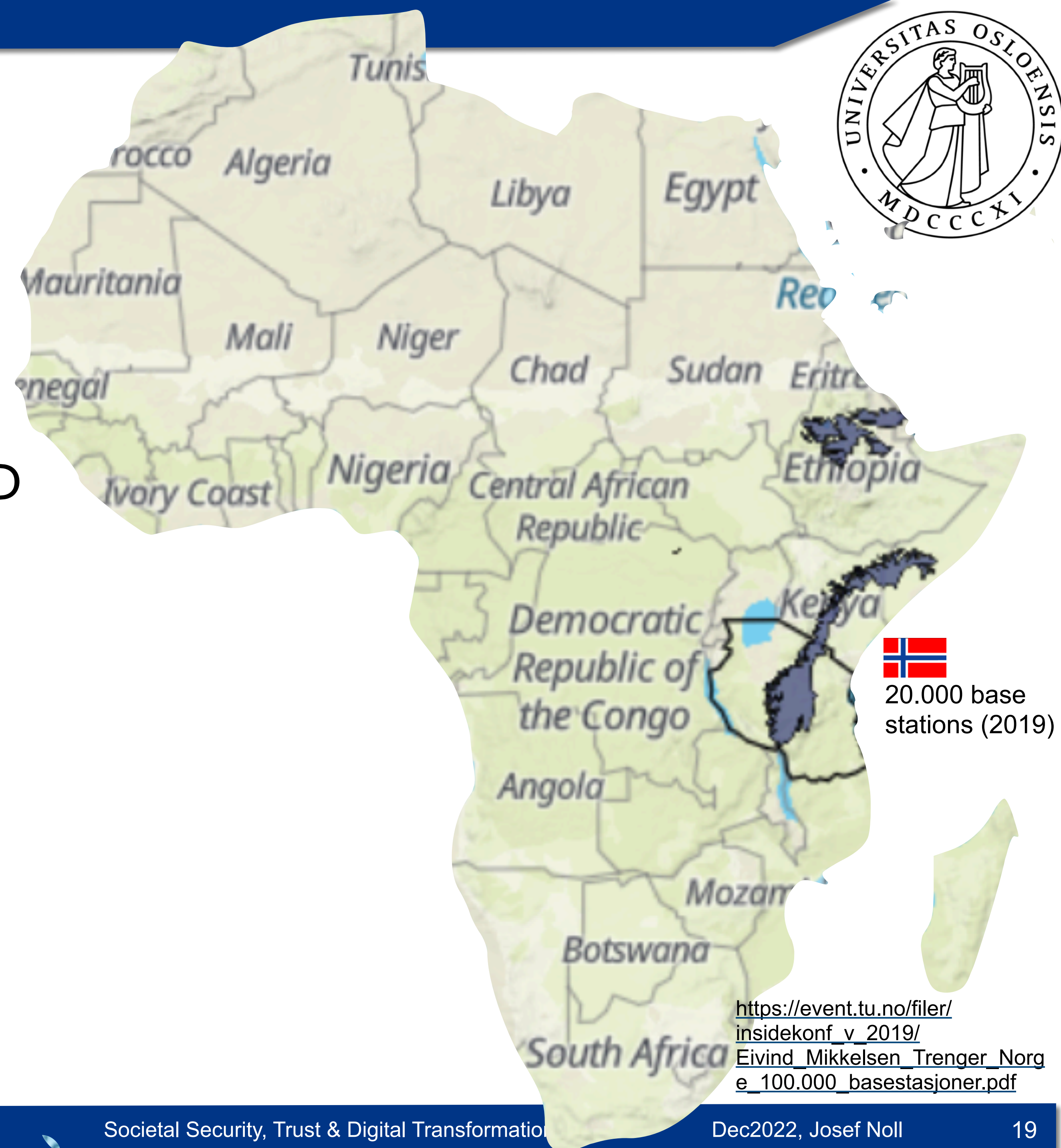
The Business Model of access to the Internet does not fit for SSA

→ 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



What if ...

We revisit access

We decentralise the Internet

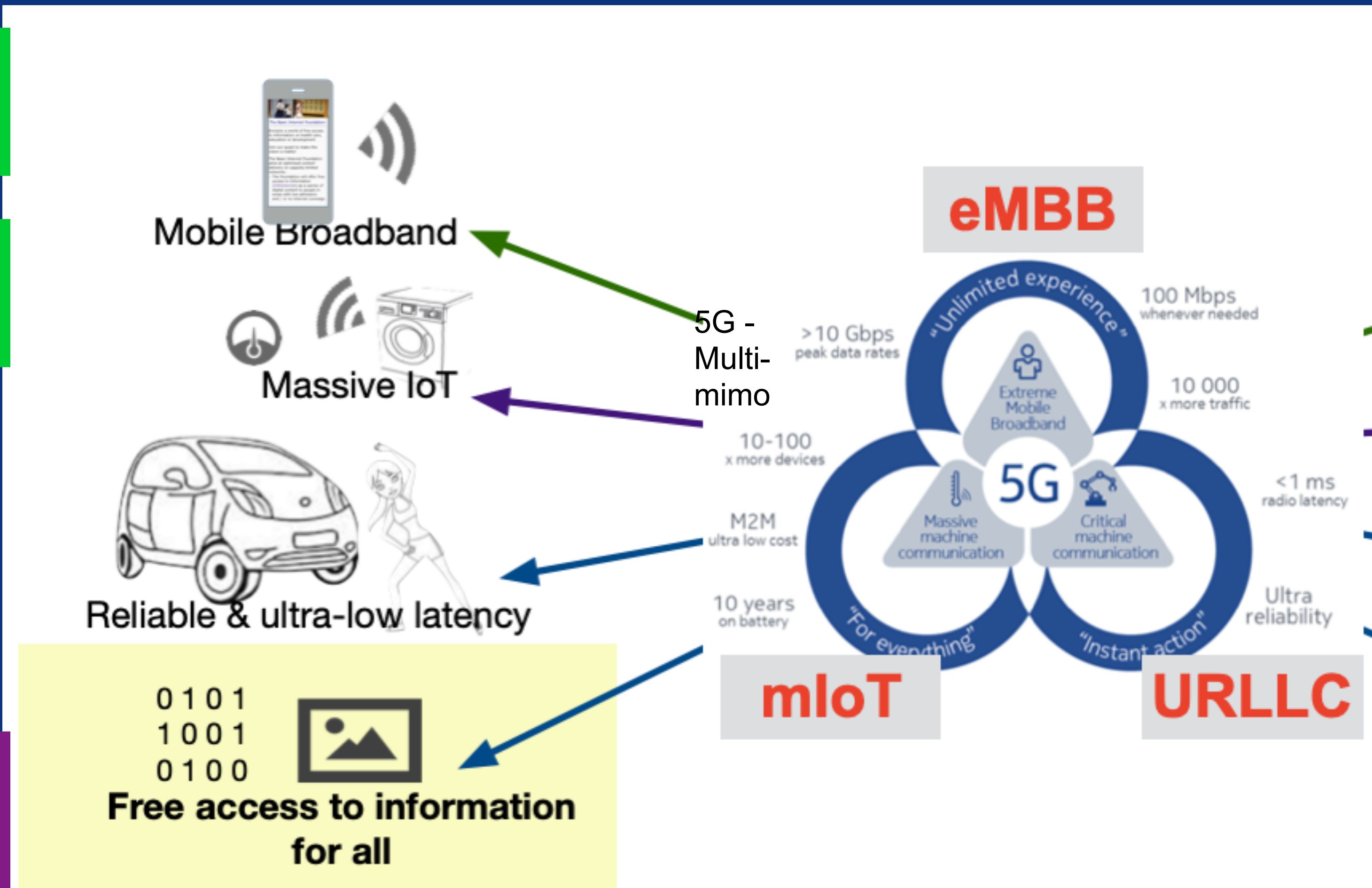
We use Universities to connect

Revisit Access

Road model: pedestrians & cyclists

Digital pedestrians, digital cyclists vs digital cars (broadband)

Internet Lite
as a Digital Public Good (DPG)?





Ethiopia did it!

→ COVID-19 response

- “free access to health & education”
- “zero rating”
 - Health (MoH): MoH.gov.et
 - Ephi.gov.et & Covid19.et
 - Education: National Digital Library NDL.ethernet.edu.et

→ follow-up from discussions after African Innovation Week (AIW2019)

ኢትዮ ቴሌኮም የከፍተኛ ትምህርት ተቋማት ተማሪዎች እና መምህራን ትምህርታዊ መረጃዎችን ከ <http://ndl.ethernet.edu.et/> በነፃ ማግኘት እንዲችሉ አደረገ

በአገራችን የኮሮና ቫይረስ (COVID-19) ወረርሽኝን ለመከላከል በመንግስት በኩል በርካታ እርምጃዎች እየተወሰዱ ሲሆን ከእነዚህም መካከል የገፅ ለገፅ ትምህርት በማቋረጥ ተማሪዎች ቤታቸው እንዲቆዩ መደረጉ ይታወቃል።

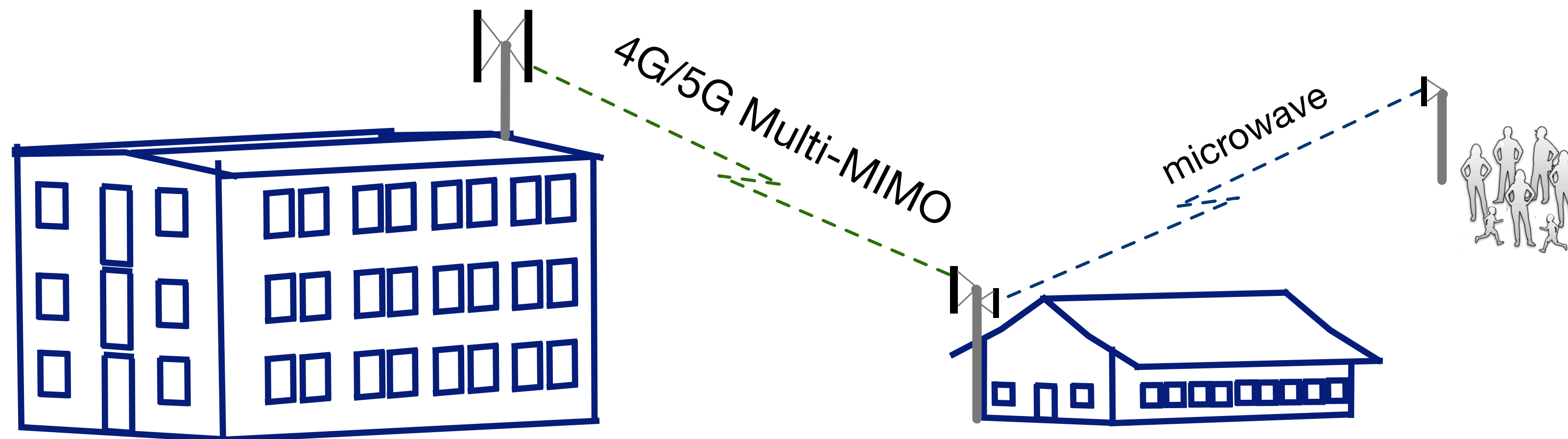
ከዚህ ጋር በተያያዘ ኩባንያችን ከግንቦት 21 ቀን 2012 ዓ.ም ጀምሮ የከፍተኛ ትምህርት ተቋማት መምህራን እና ተማሪዎች ከትምህርት ጋር ተያያዥነት ያላቸውን አጋዥ መረጃዎች ከ <http://ndl.ethernet.edu.et/> በነፃ ማግኘት እንዲችሉ በማድረግ የመማር ማስተማሩ ሂደት እንዲቀጣል የበኩሉን አስተዋፅኦ ማድረጉን በደስታ ይገልጻል።

በተመሳሳይ ሁኔታ ኩባንያችን ስለወረርሽኝ ወቅታዊ መረጃ ለህብረተሰቡ እየሰጡ የሚገኙትን የጤና ሚኒስቴር <http://www.moh.gov.et> ፣ የኢትዮጵያ ህብረተሰብ ጤና አገልግሎት <http://www.ephi.gov.et> እንዲሁም የተቀናጀ የኮቪድ 19 መቆጣጠሪያ ስርዓት ድረ-ገፅን <http://www.covid19.et> በነፃ እያቀረበ መሆኑ ይታወቃል።

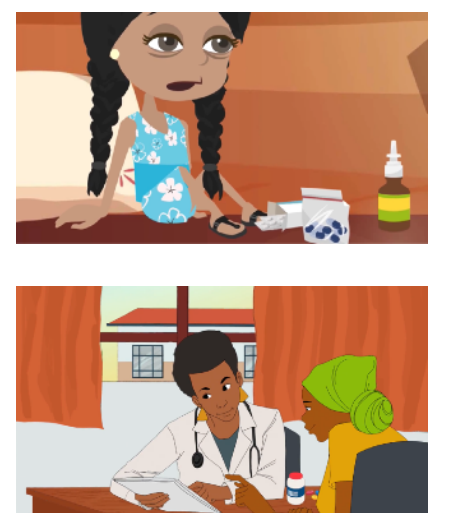
The role of Universities

“more toys for boys - or societal impact?”

- Inclusive and empowered (digital) societies
- From NRENs to Schools and Communities
- Regional Competence Centres (RCCs) for
 - the Digital Transformation
 - Connect Schools & Communities
 - practical experiences



InfoSpots for **CL&L**
 Community
 Learning &
 Living
 Labs



☰
🔍

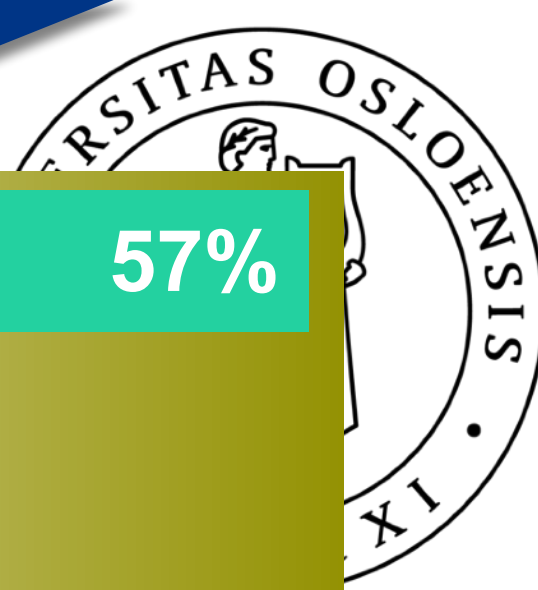
AfricaConnect3 project is co-funded by the European Union
 The AfricaConnect3 project receives funding from the European Union under Grant Contract DCI-PANAF/2019/411-583.

Digital Transformation

Trust

Societal Security

Sustainable Development Goals



Public Opinion on SDGs (afrobarometer.org)

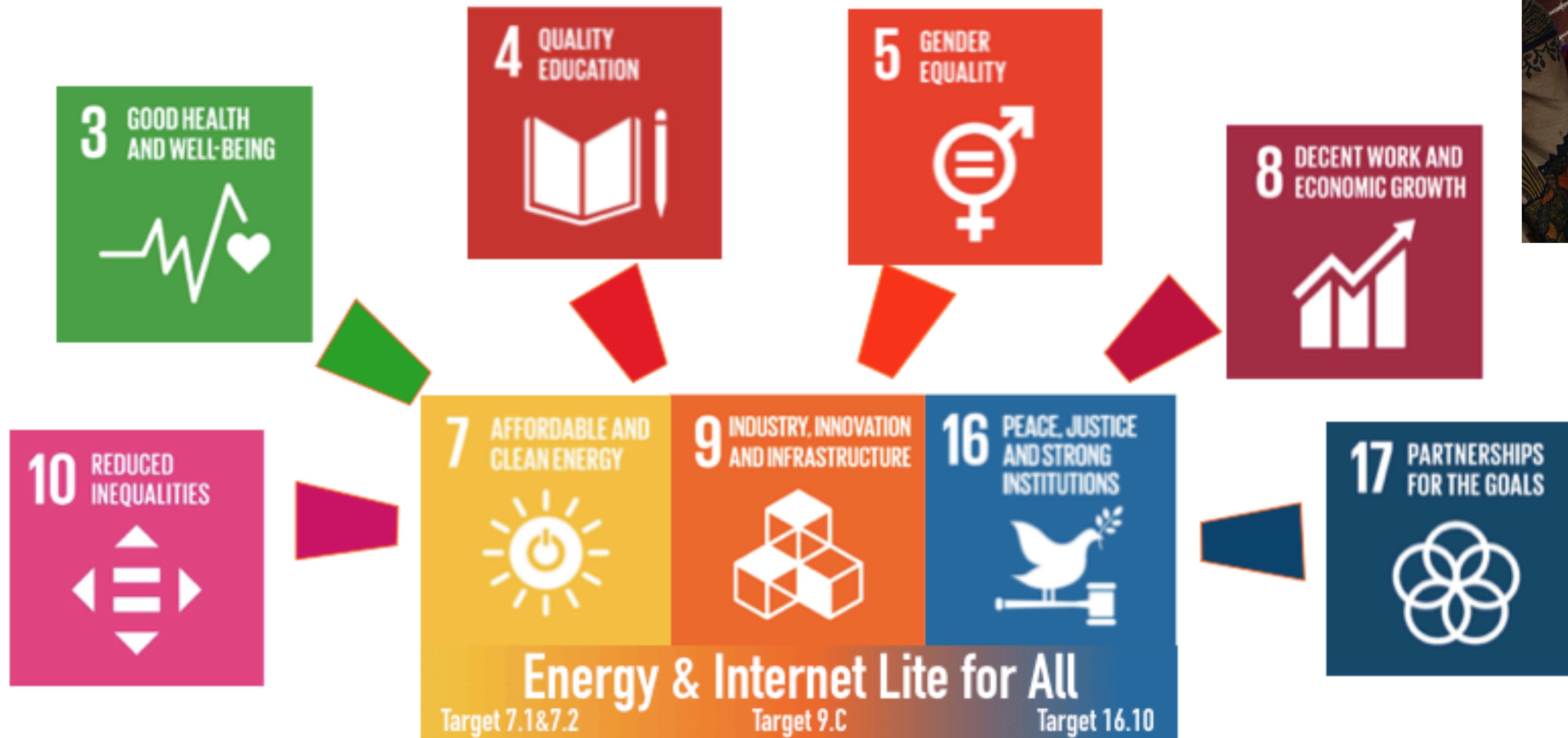
→ Priorities by people in Africa

- decent work
- zero hunger
- good health
- ...

The Economy is a Digital Economy - we need to pursue the Digital Transformation



“Join us to improve the life of **every human** through **free access to information** on the Internet....”



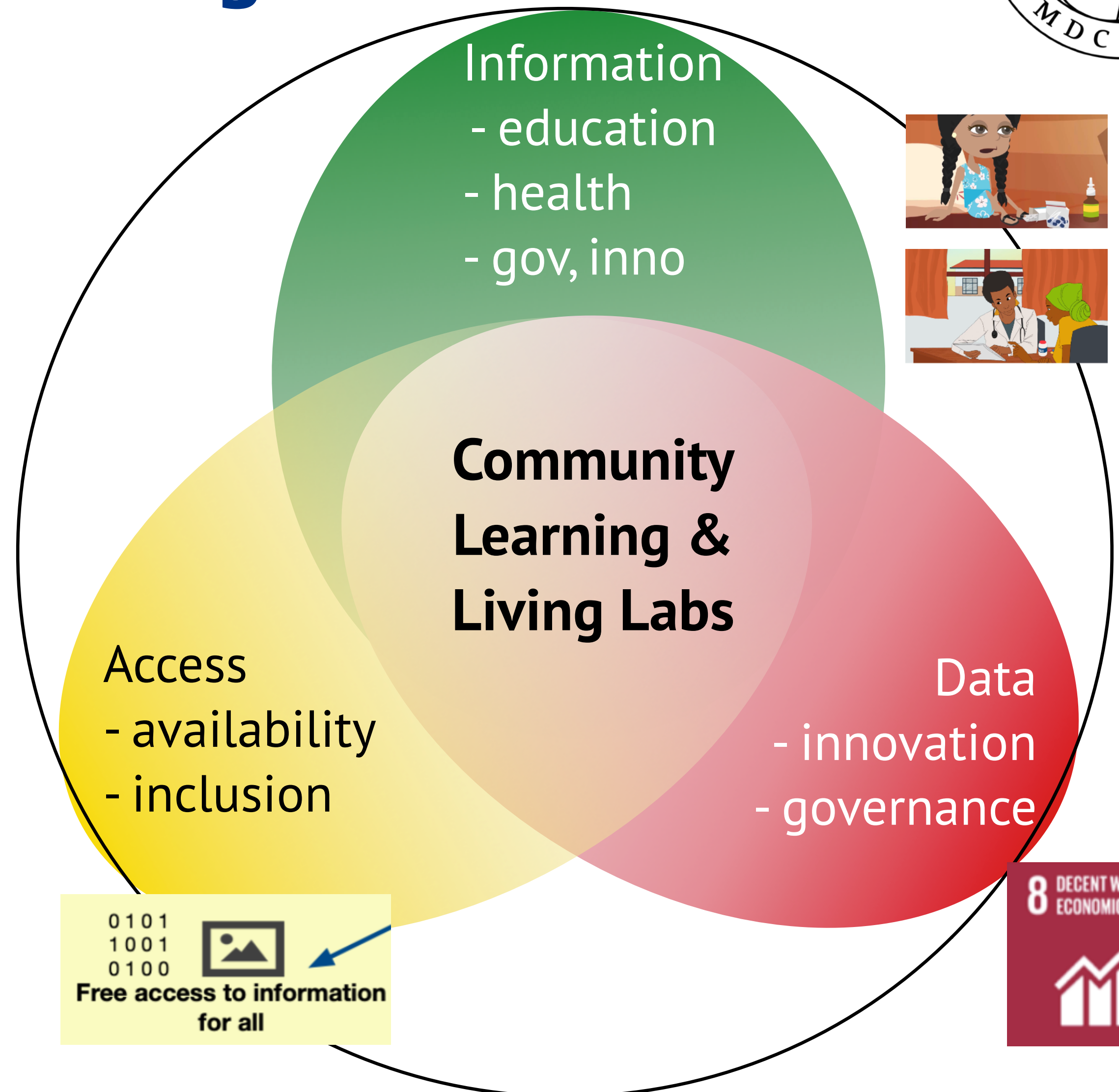
- SDG 1.4** Equal access to basic services
- SDG 4.A** Education facilities for effective learning for all
- SDG 5.B** Use of enabling technologies
- SDG 9.C** universal and affordable access
- SDG 16.10** ensure public access to information

Inclusive access for all through Schools & Community Learning Living Labs

- ➔ Trustworthy Information
 - Health, Education
 - Agriculture, Entrepreneurship

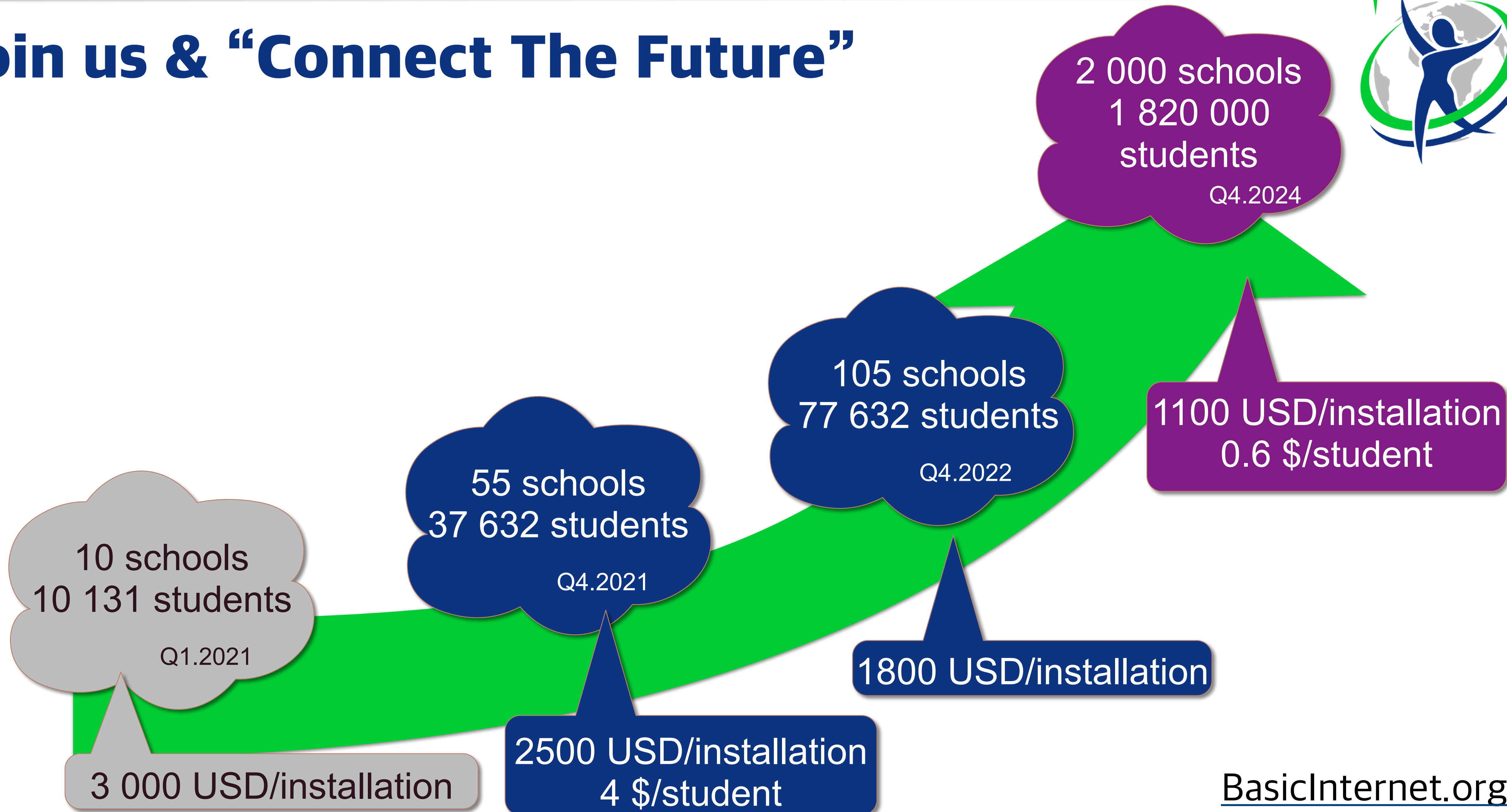
- ➔ Data repository
 - the data of our country!

- ➔ Regulatory Framework
 - **Free access** to Knowledge Portal





Join us & “Connect The Future”



BasicInternet.org