

UNIVERSITY OF OSLO

Bahir Dar University, Seminar Cyber
Security - 30Dec2022

Digital Transformation, Trust and Societal Security

Josef Noll

Professor, Department of Technology Systems
Lead Digital Global Health, Centre for Global Health
Secretary General, Basic Internet Foundation

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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**

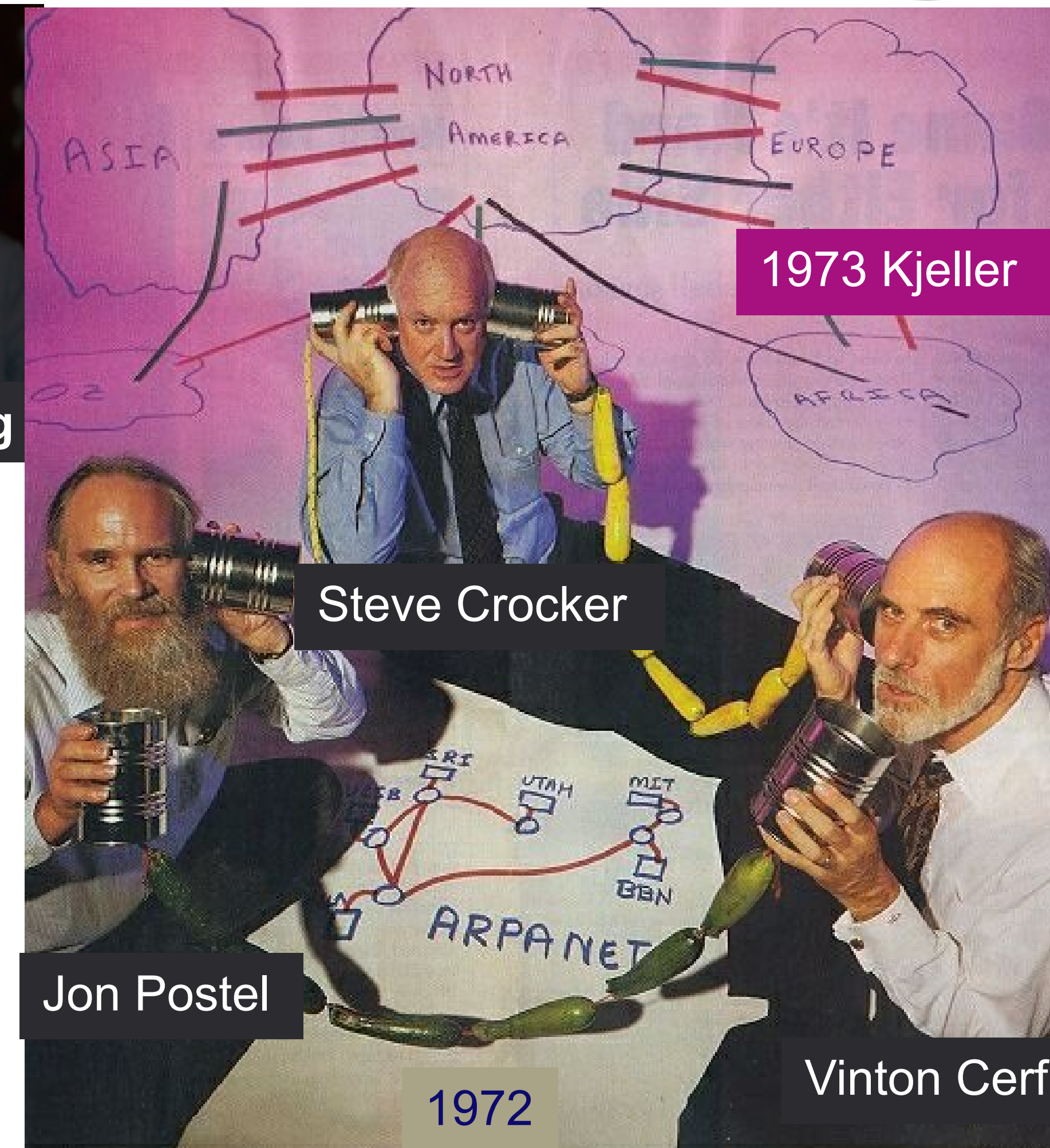
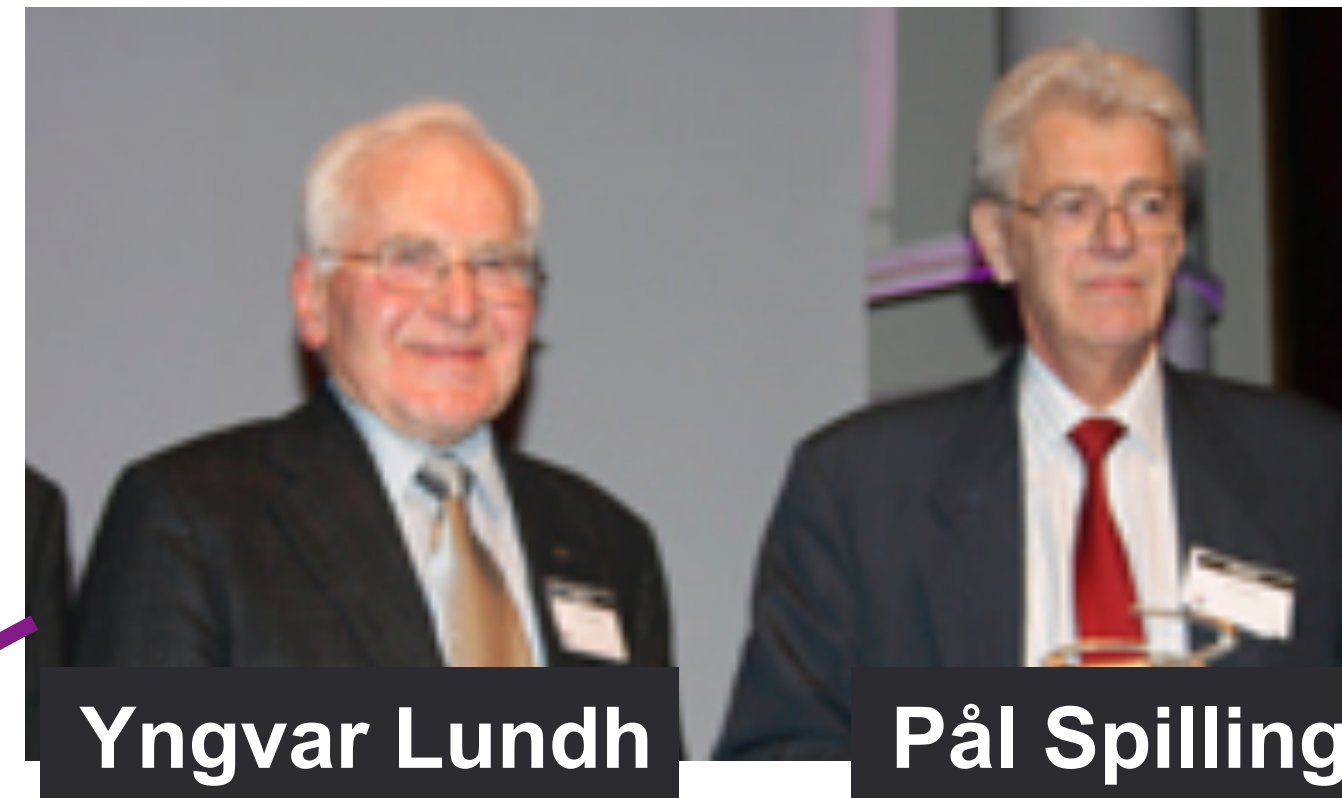
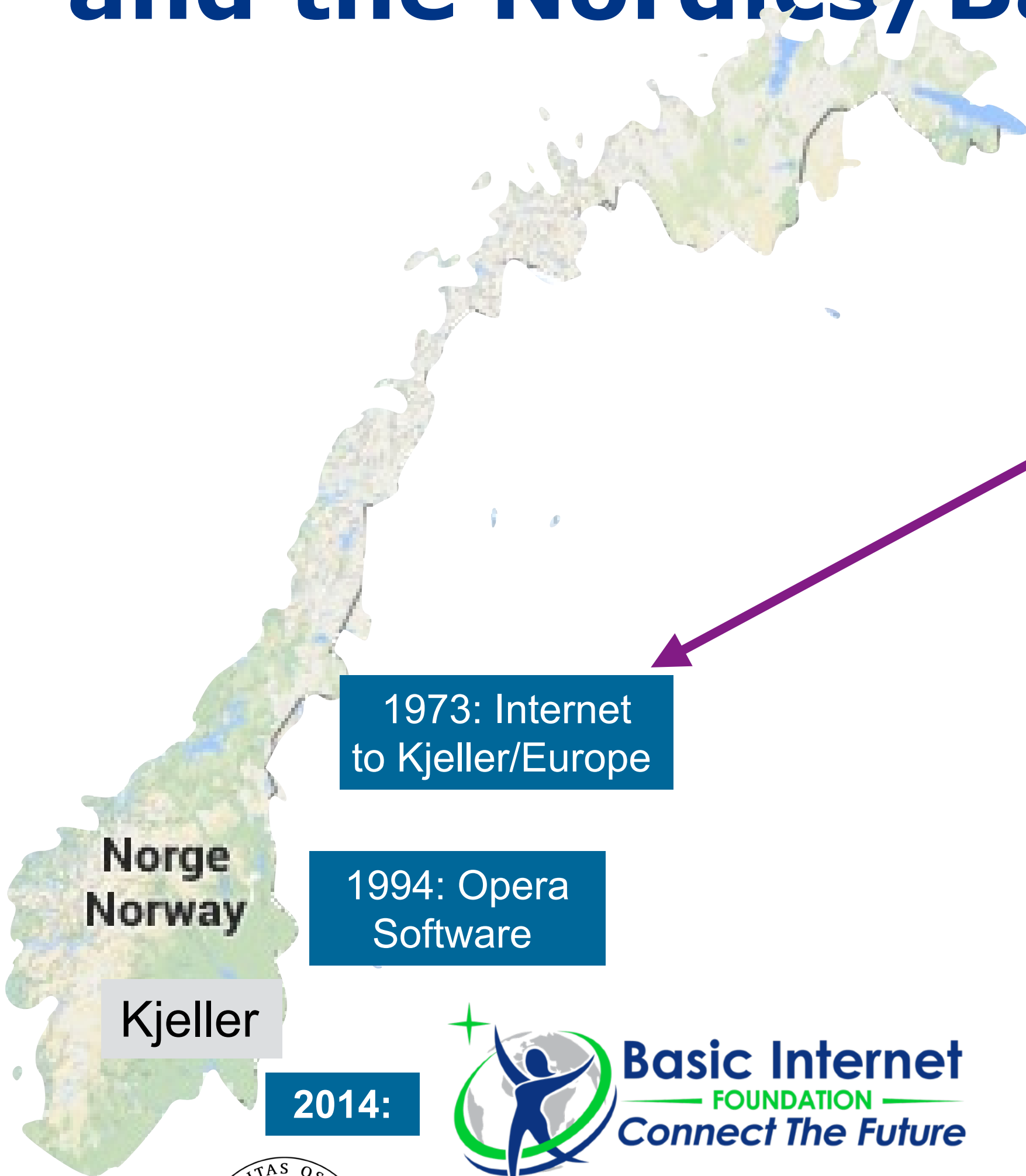
2015: Security in IoT for Smart Grids ([IoTSec.no](https://www.iotsec.no))

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)



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

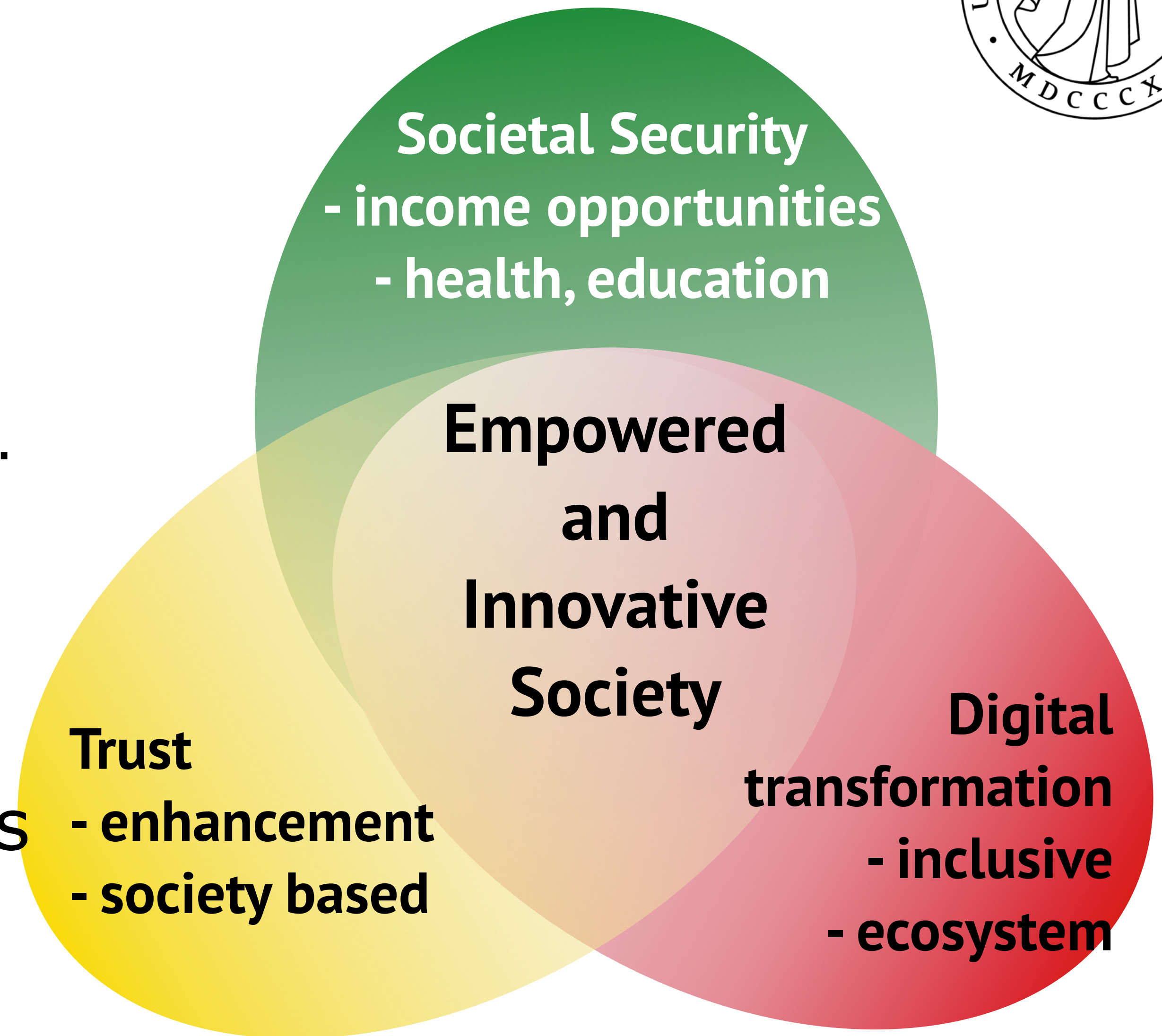
Trust

Societal Security

Sustainable Development Goals

Topic of Today

- Global challenges
 - Climate crisis
 - War in Ukraine, Ethiopia, 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

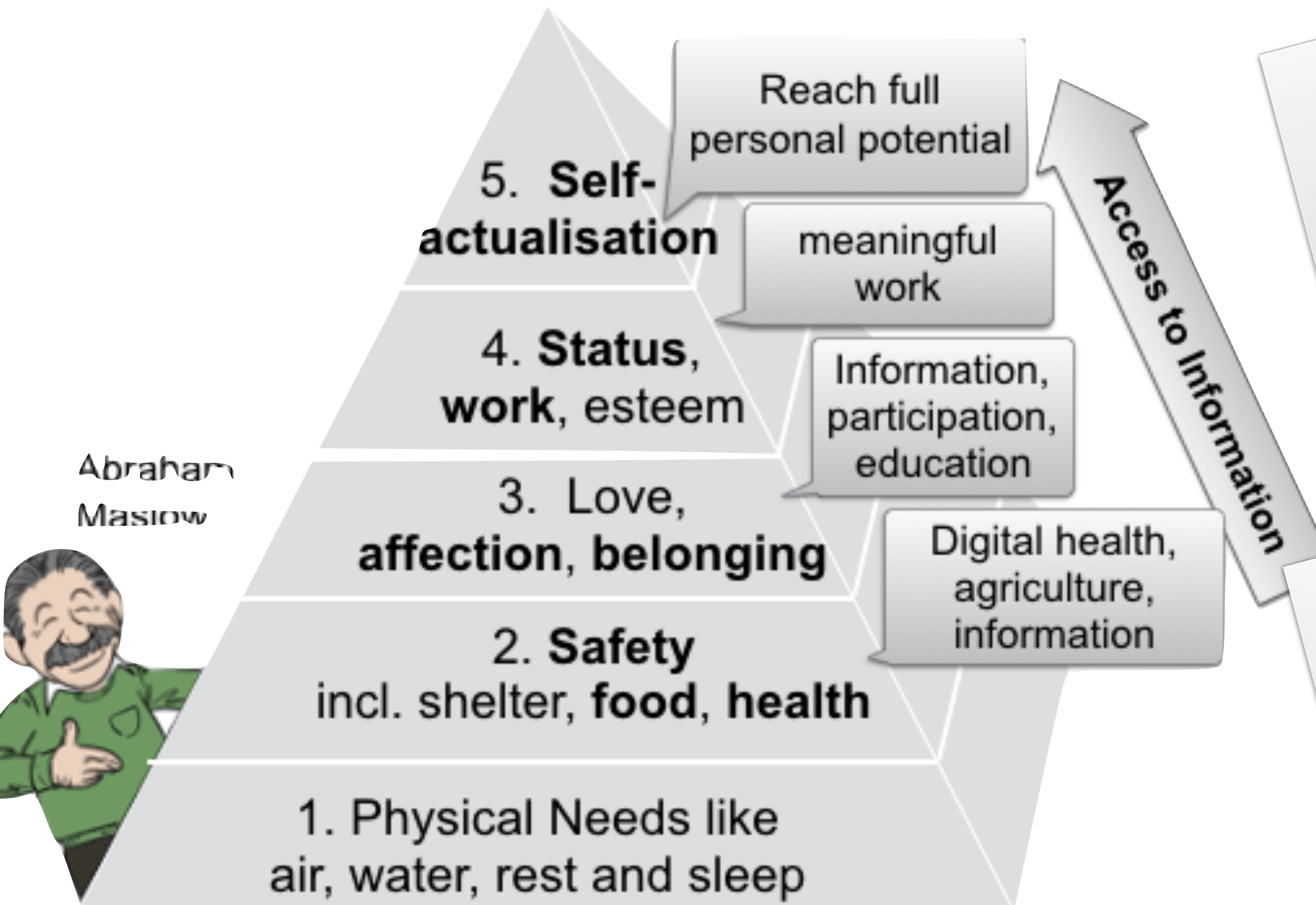
Company	Country	Inflation-adjusted ^[5]	
Apple		3,000	
Microsoft		2,576	
Saudi Aramco		2,450	
Alphabet		2,000	
Amazon		1,900	
PetroChina		1,472	
Tesla		1,235	
Meta		1,078	



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

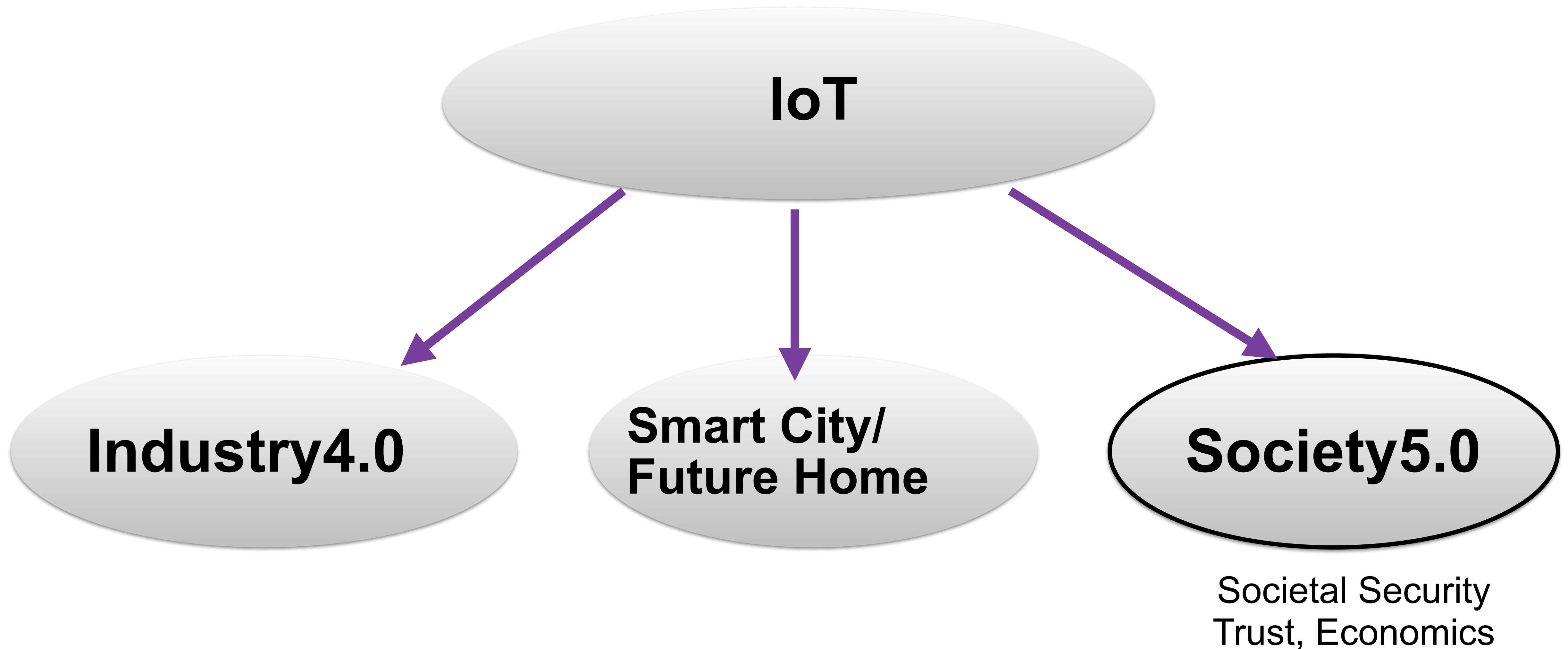


“Internet had the ability to dismantle the divide. Internet failed miserably, the divide is bigger than ever.”
Kate Gilmore, Human Rights, UNO

“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)



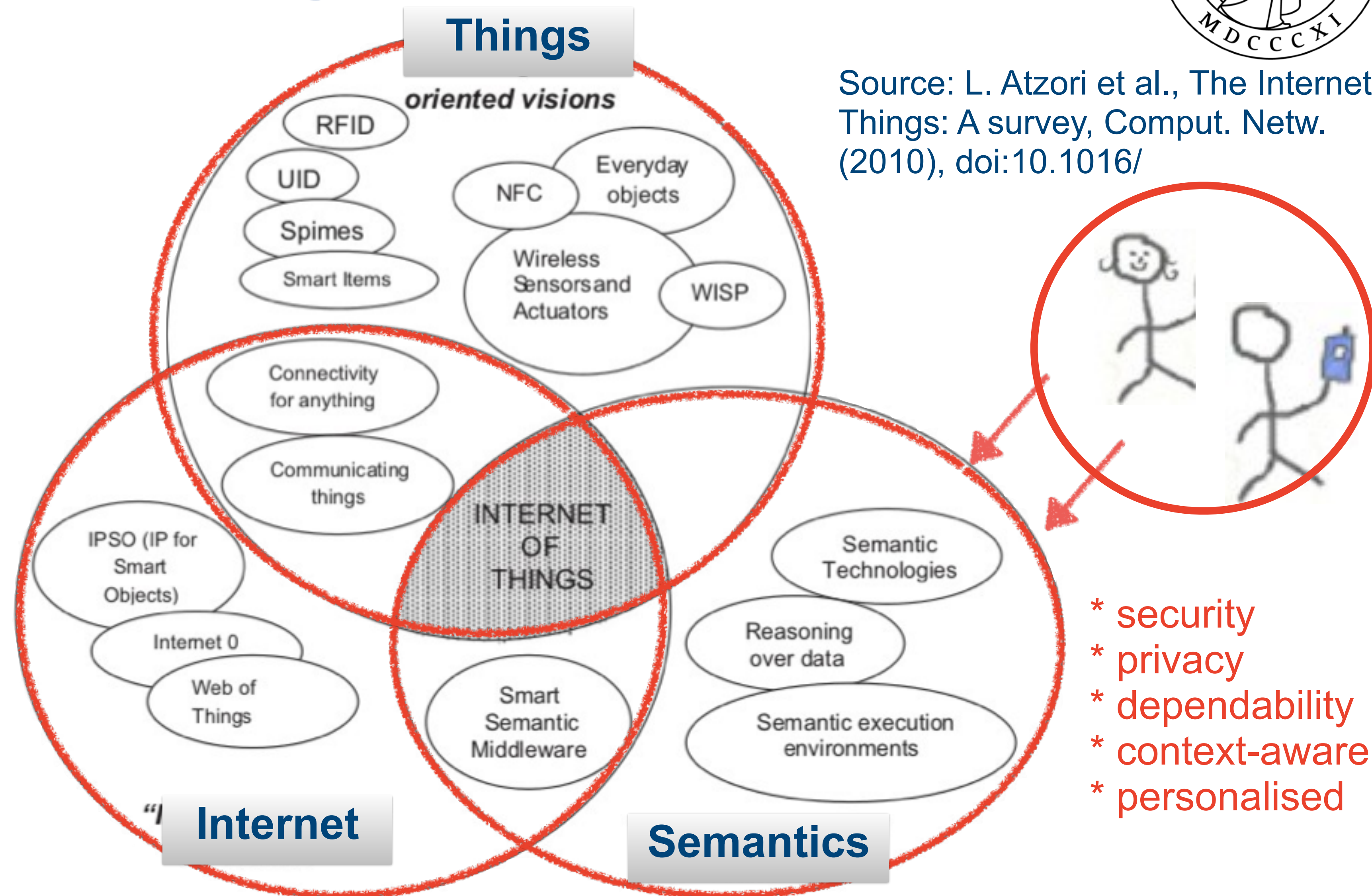
The Internet of Things (IoT)

Things

oriented visions

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

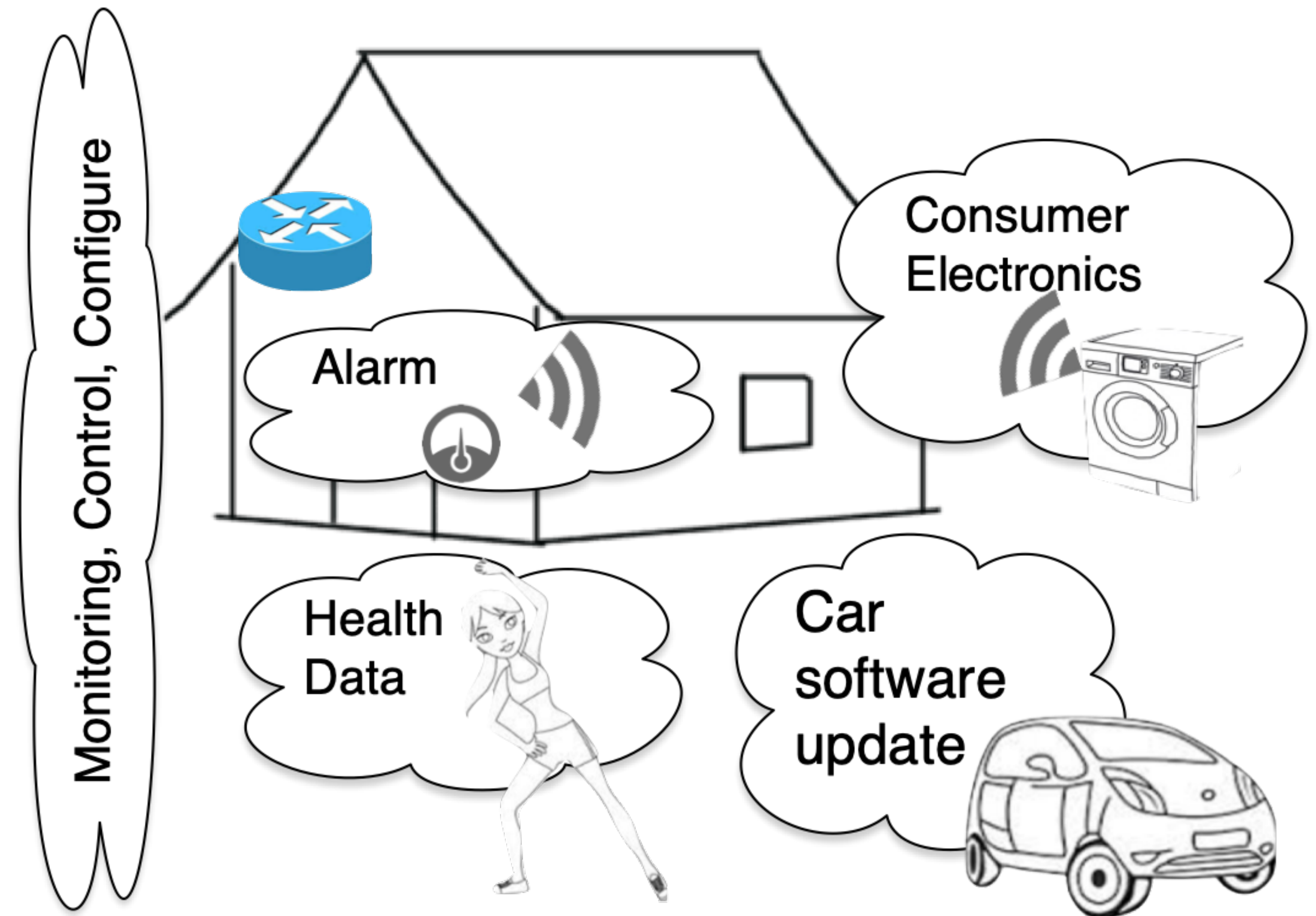
- IoT =
 - Things +
 - Internet +
 - **Semantics**
- Things that communicate
 - with Things: computer,
 - understand the meaning,
 - takes own decisions



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

Example: Smart Homes

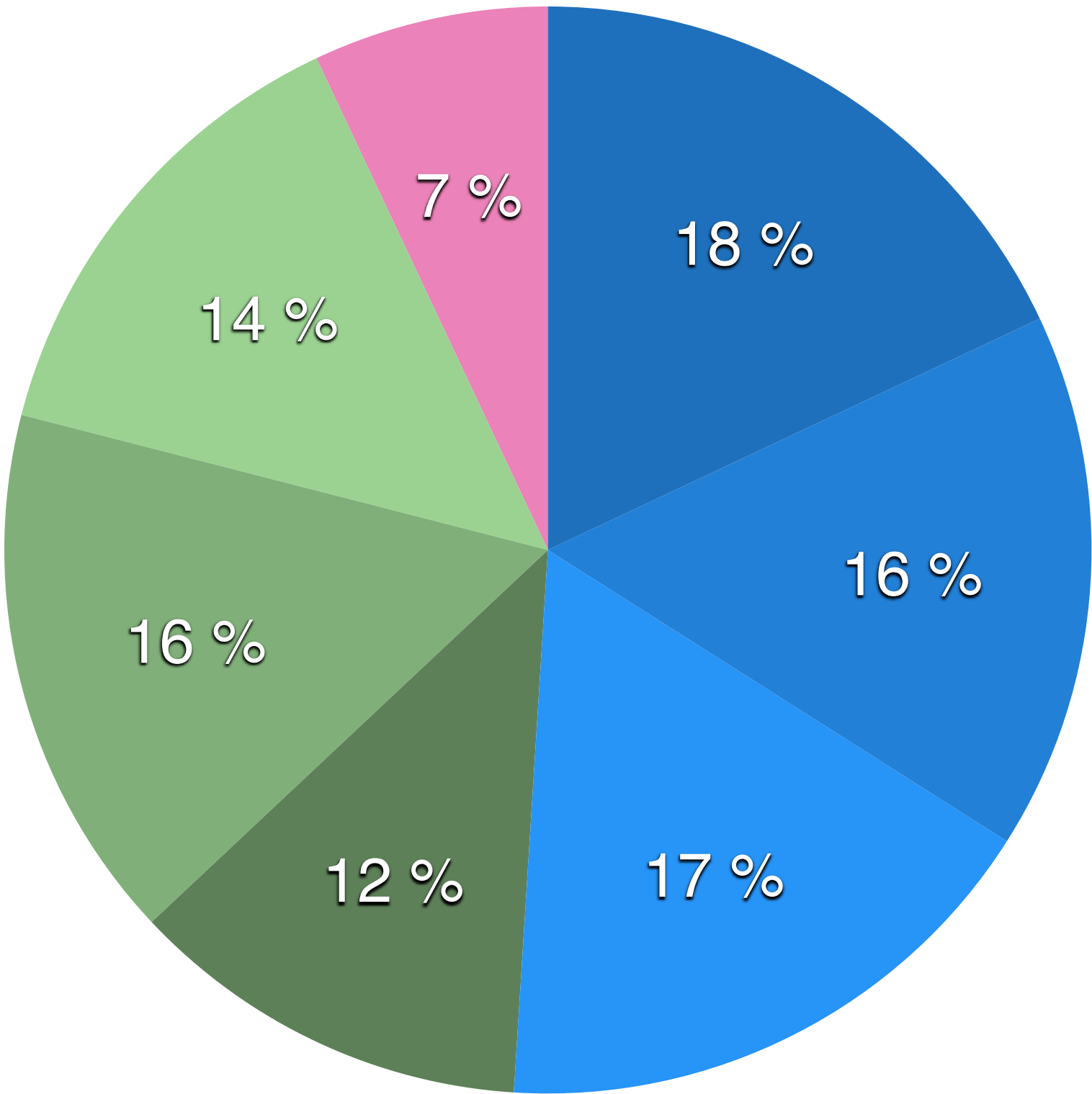
- ➔ Interconnected devices
 - audio, video
 - consumer electronics
 - heating, ventilation
 - car charging
- ➔ Home User
 - Convenience & Security
 - Health



Automation will come

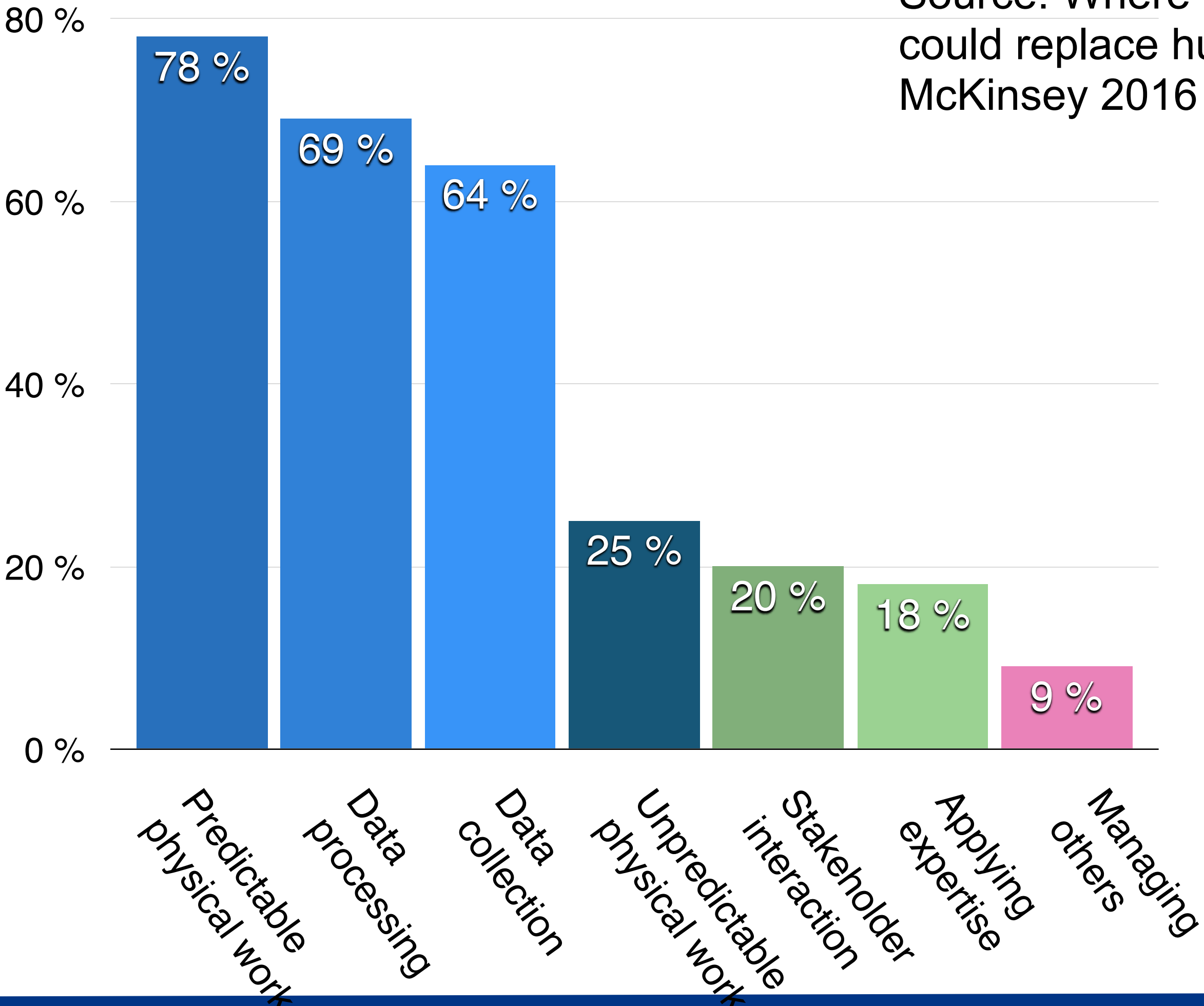
USA work force time spent [%]

- 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

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Sustainable Development Goals

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
 - information access
- Trust enhancement



<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
- “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

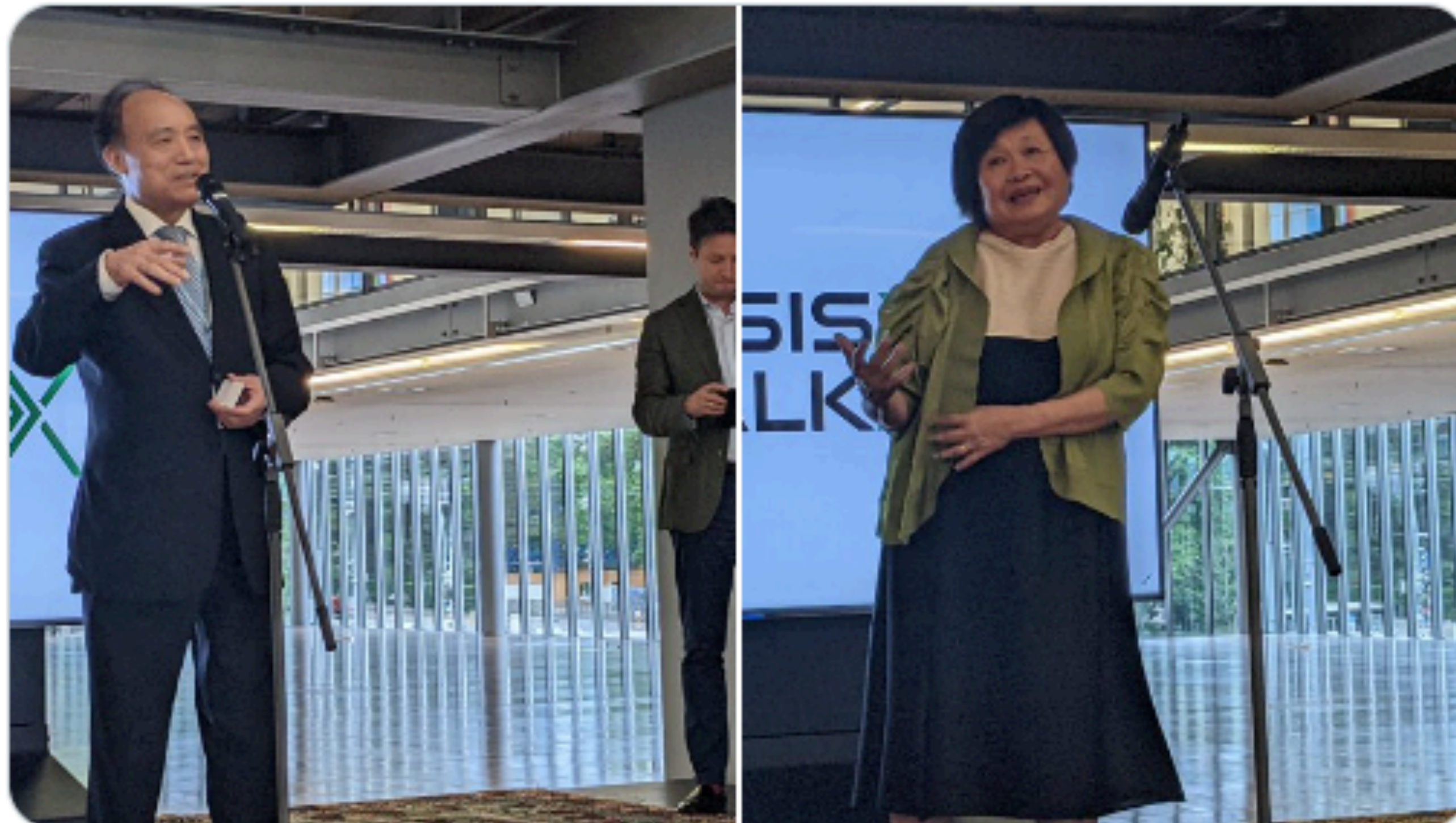


[Source: World Economic Forum, Palik et al. - Conflict Trends in Africa, 1989–2021, PRIO Paper 2022]

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

1.2
billion

2010

733
million

2020

679
million

2030
(trend)

[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>

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



People not using Internet

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

4.9
billion

2010

2.9
billion

2021

96% in dev countries

0
billion

2030
(hope)



WSIS Forum
2022

[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

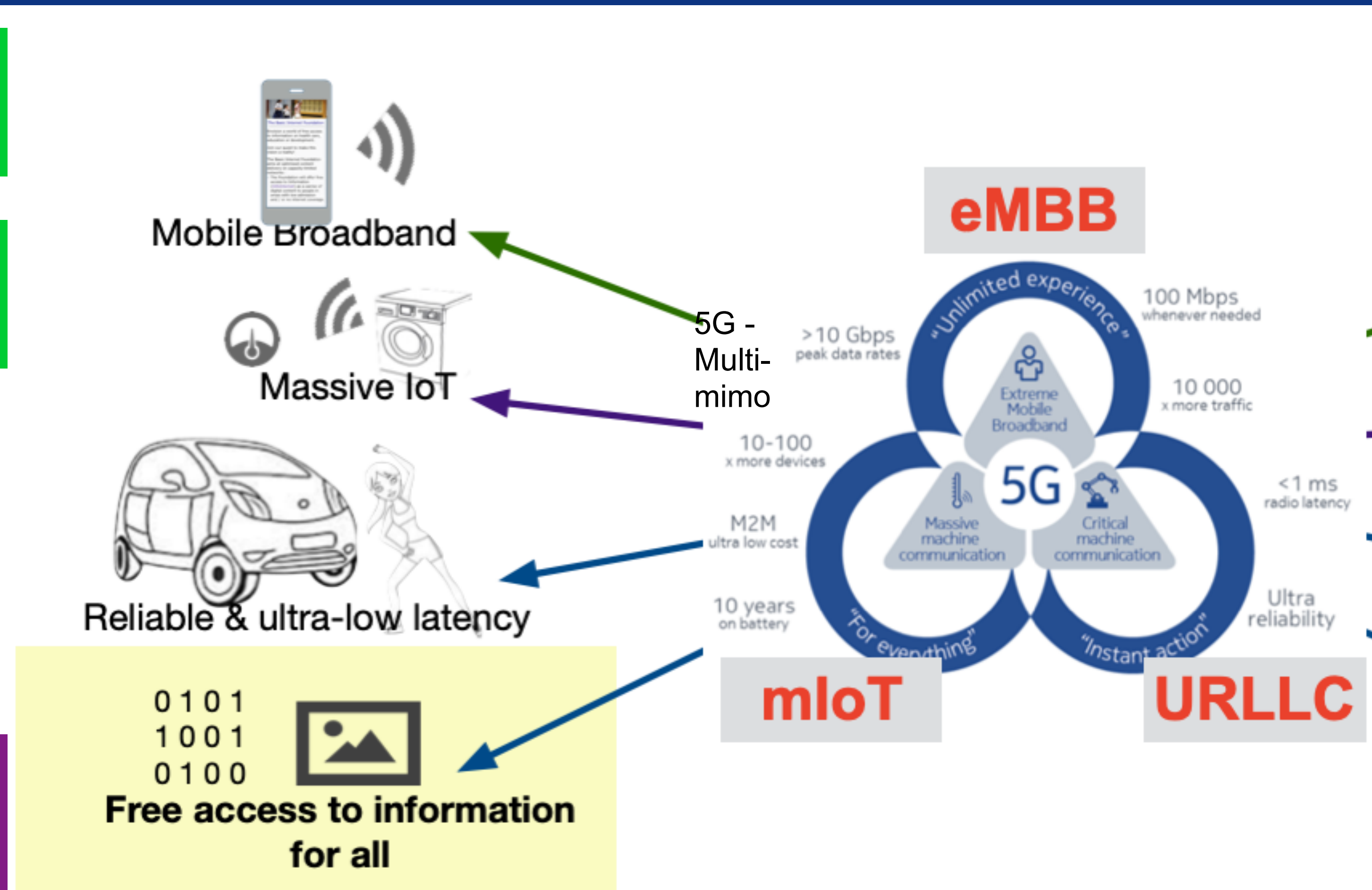
We use Universities to connect

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።

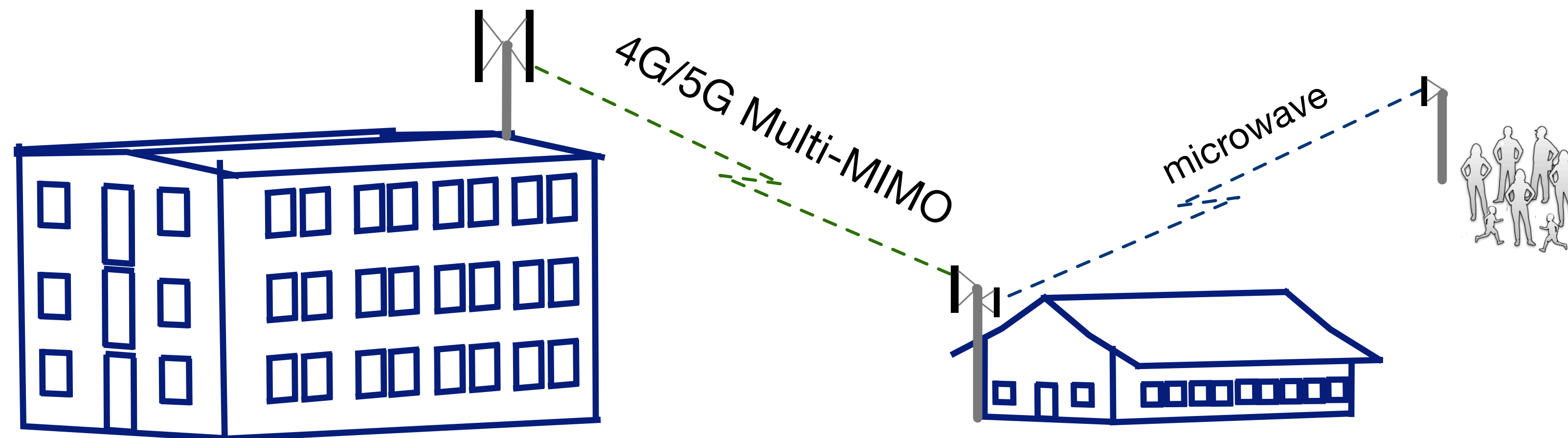
ከዚሁ ጋር በተያያዘ ኩባንያችን ከግንቦት 21 ቀን 2012 ዓ.ም ጀምሮ የከፍተኛ ትምህርት ተቋማት መምህራን እና ተማሪዎች ከትምህርት ጋር ተያያዥነት ያላቸውን አጋዥ መረጃዎች ከ <http://ndl.ethernet.edu.et/> በነፃ ማግኘት እንዲችሉ በማድረግ የመማር ማስተማሩ ሂደት እንዲቀጥል የበኩሉን አስተዋፅኦ ማድረጉን በደስታ ይገልፃል።

በተመሳሳይ ሁኔታ ኩባንያችን ስለወረርሽኝ ወቅታዊ መረጃ ለህብረተሰቡ እየሰጠ 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።

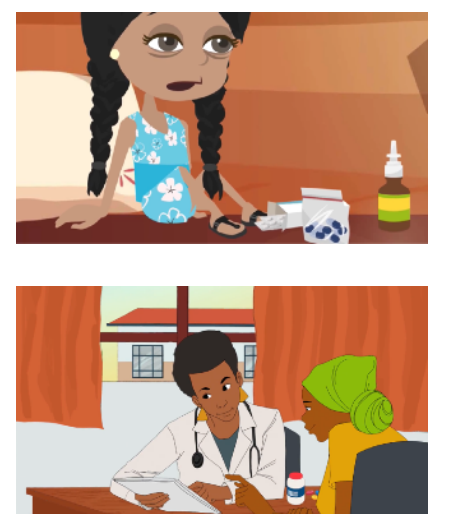
The role of Universities

“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



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



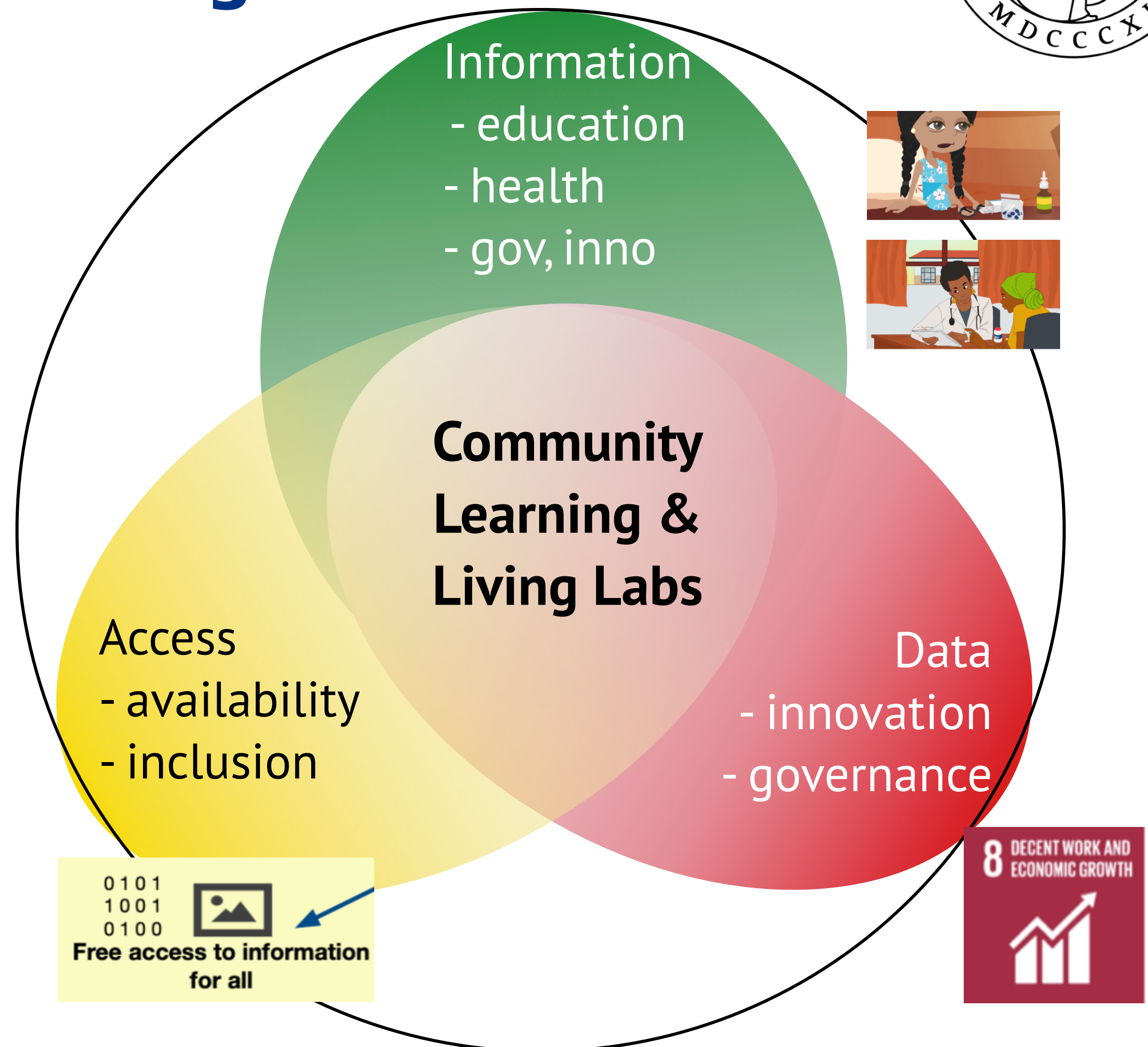
“Join us
to improve the life of **every human**
through **free access to information** on the
Internet....”



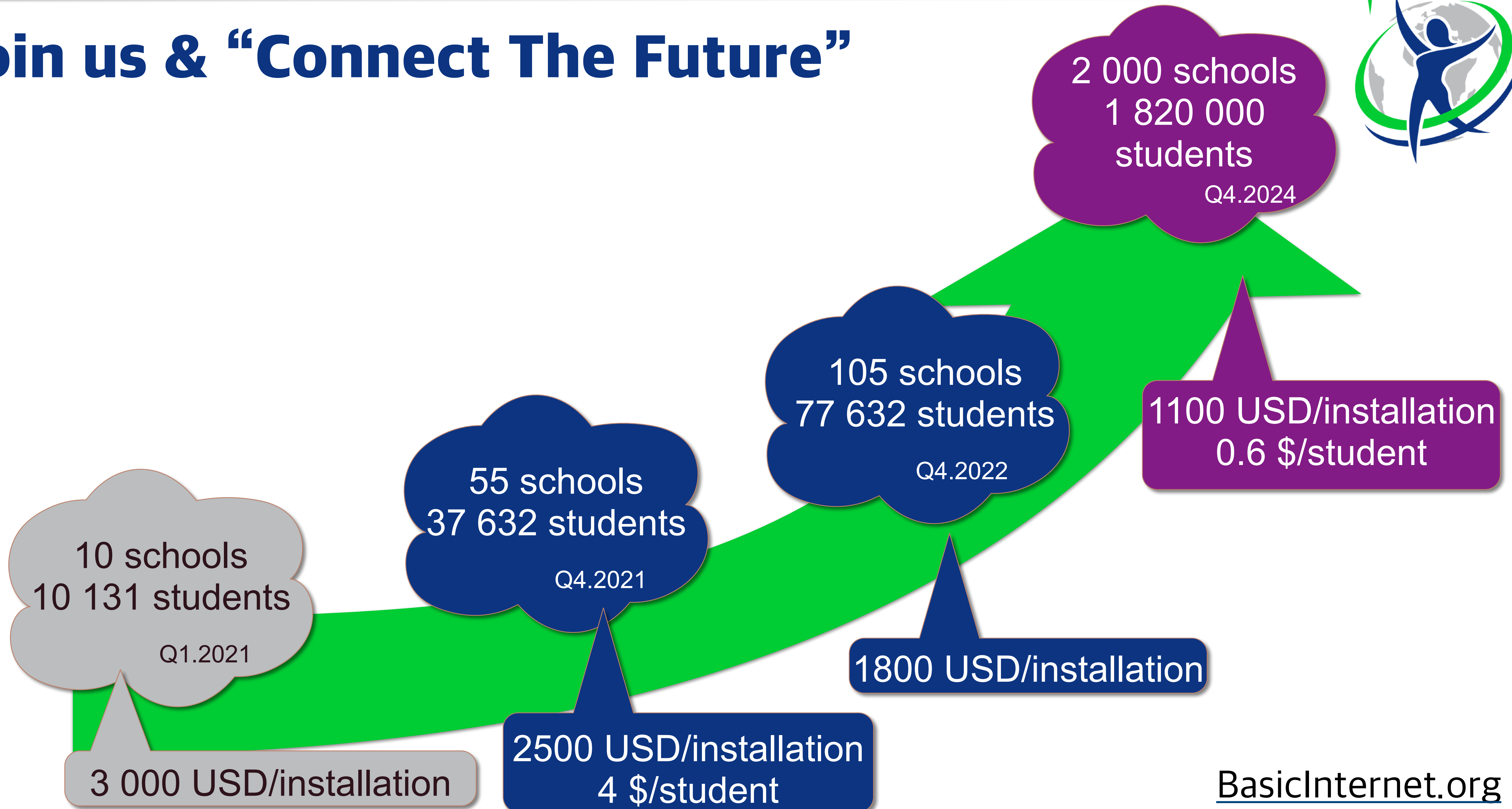
SDG 1.4 Equal access to basic services
SDG 4.A Education facilities for effective learning for all
SDG 5.B Use of enabling technologies
SDG 9.C universal and affordable access
SDG 16.10 ensure public access to information

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