

UNIVERSITY OF OSLO

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University Collaboration in Shaping the Future of Society

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OF OSLO



Feedback & Question

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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, Y
- .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/>



Academic fundamental values



Department of Political Science
University of Oslo

The ESGs and fundamental values

- The Rome Communiqué defined fundamental values as important elements of the EHEA:
 - Institutional autonomy
 - Academic freedom & integrity
 - Participation of students & staff in governance
 - Public responsibility for and of HE
- Except for academic freedom no definition and even academic freedom not fully agreed upon

ESGs European Standards and Guidelines (Standards and Guidelines for Quality Assurance in the European Higher Education Area)
EHEA European Higher Education Area
HE Higher Education

Public Responsibility for and of Higher Education Institutions (HEI)

→ Be critical, ask your questions

- to leaders, industry
- even to your professors

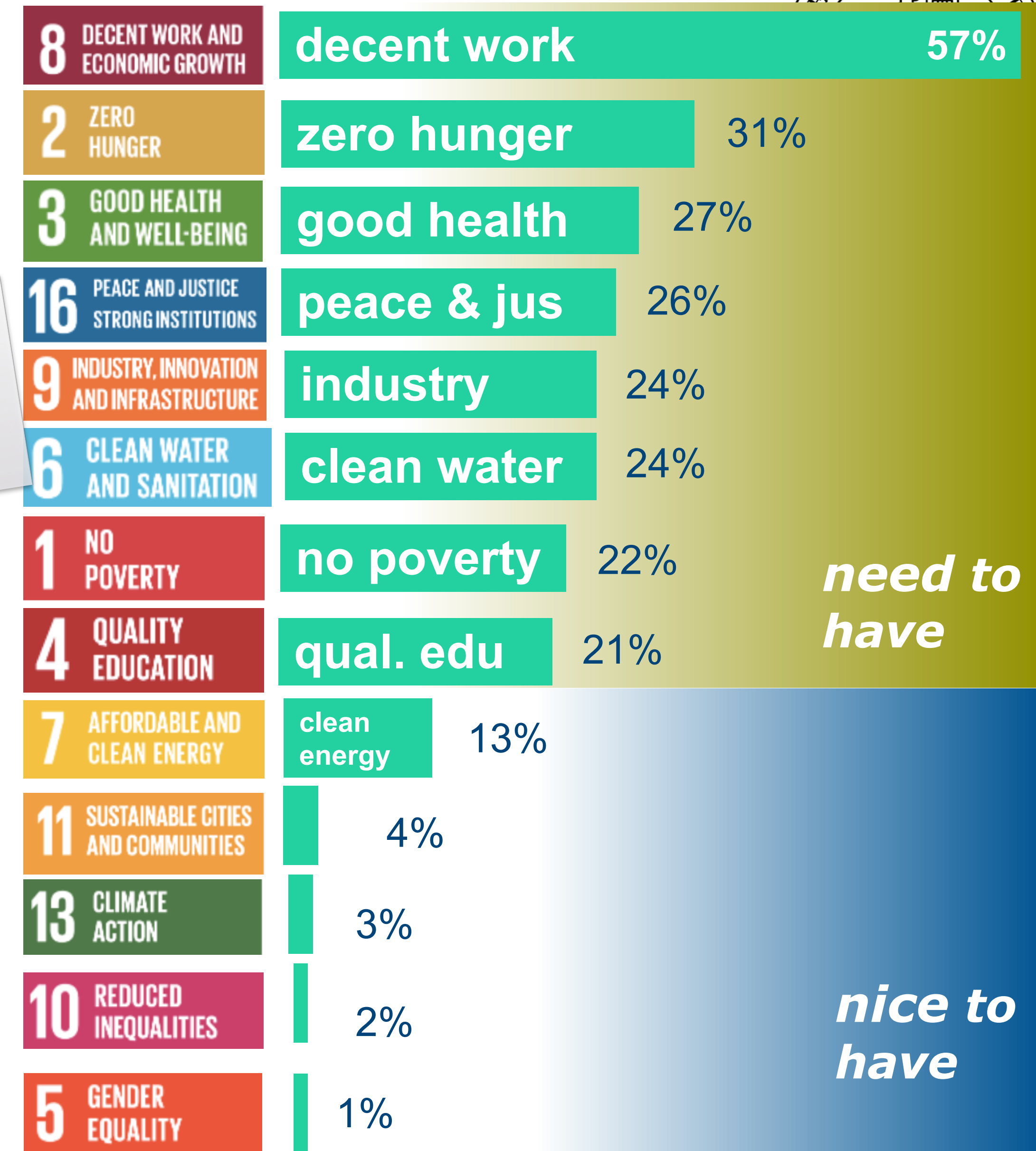
The Economy is a Digital Economy - we need to pursue the Digital Transformation

→ Contribute with knowledge

- dive deep into the "why"
- Example: who profits from Internet access?

→ Contribute to the society

- with knowledge
- with innovations

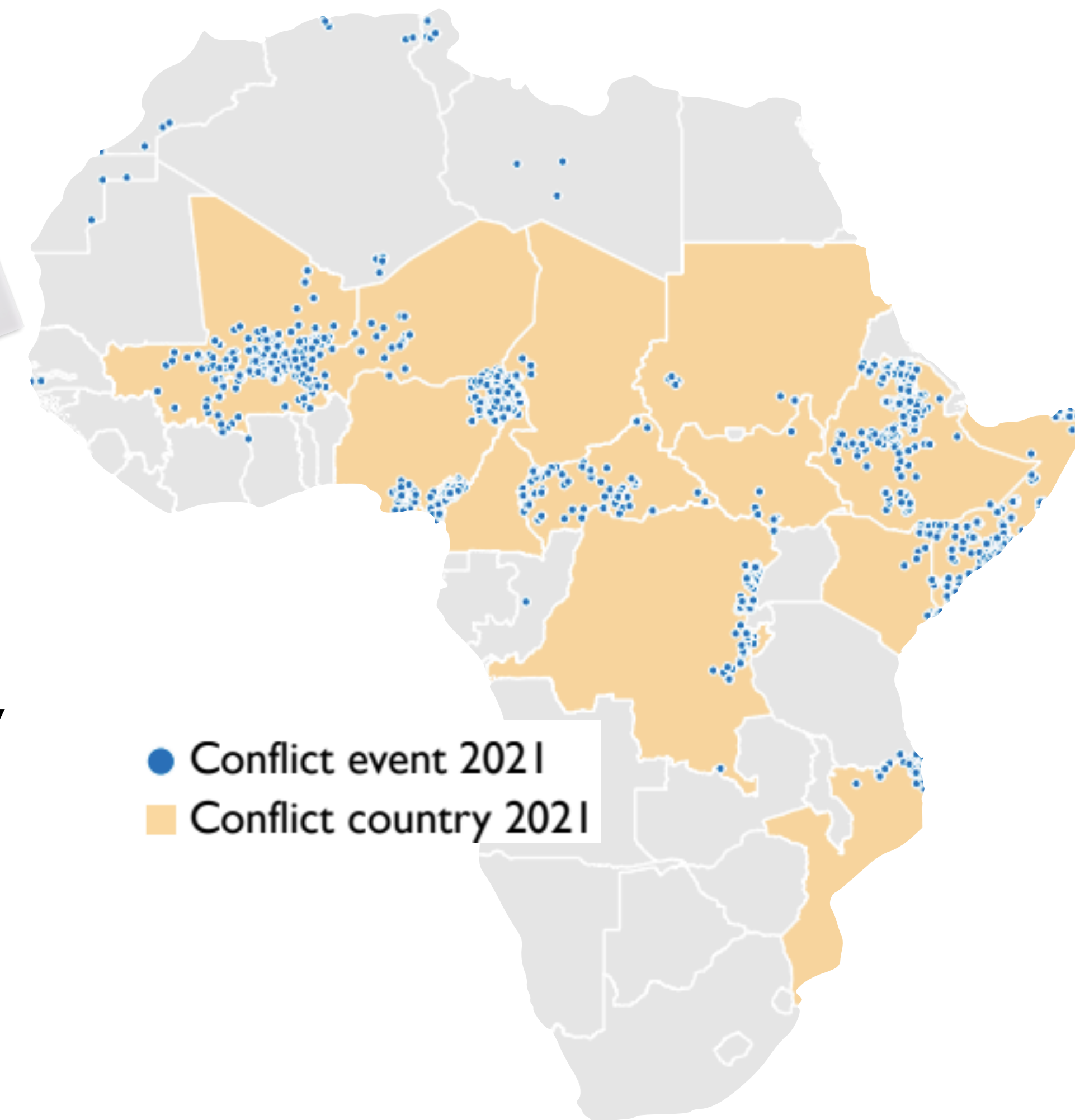


<https://blogs.worldbank.org/africacan/how-do-africans-priorities-align-with-the-sdgs-and-government-performance-new-results-from>

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]

I asked myself:

1. Is access to digital goods and information a universal human right?
2. How can we enable access, especially for people and groups left behind by traditional business models?
3. How can we provide local access to decentralised information to address global challenges and achieve the Sustainable Development Goals (SDGs)?





Catalysts for the SDGs?

Role of Internet?

Business model?

Business model?

How to “Connect the Future” and “Empower my Dreams”



→ Western World

- fixed & mobile & work - about 100-200 USD/family
-  17.000 base stations,  EU: 421.000 towers [Statista]

→ Example: Tanzania

- large distances (3 x size of Norway)
 - expensive access
 - negligible fixed broadband
- ability to pay: 10-20 USD/family

→ Europe vs Africa

- 6.8% vs 20% of land area
- 746 million vs 1.3 billion (2018)
- 112 vs 43 people/km² [Worldbank, Statista]

“RoI in Africa is 3% of
RoI in Europe”



17.000 base
stations (2022)

https://event.tu.no/filer/insidekonf_v_2019/Eivind_Mikkelsen_Trenger_Norge_100.000_basestasjoner.pdf

From Academia to Mobile Broadband

understanding the business

Jun1973: NO (Kjeller) & GB connected

Jun1986: RARE/TERENA...GEANT (NRENs in Europe)

1993 - **privatisation** of 2G (GSM)

1999 - 3G (UMTS): 3 x ROI expectation, Uni co-dev

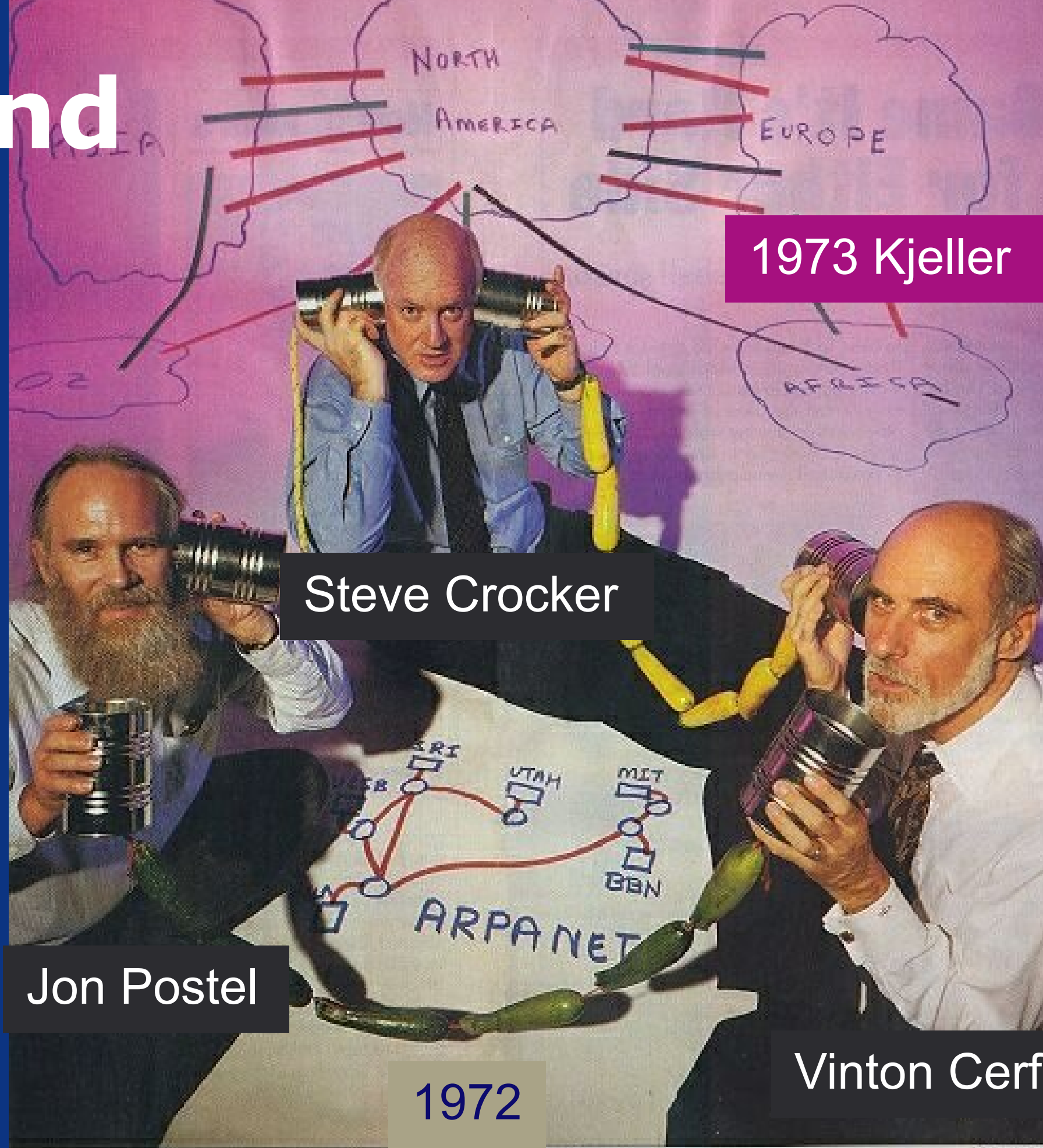
2004 - 4G (LTE): 120 km range, Supplier dev

Aug2003: Reykjavik “Cybersecurity”

Mar2023: “Societal Security” - Digital Equity - #ConnectTheFuture



Vint & Sigrid, Nordunet 2003



1973 Kjeller

Steve Crocker

Jon Postel

Vinton Cerf

1972

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

“The mobile Internet is purely commercial”

Catalysts for the SDGs?



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

SDG 17 Partnerships for the Goals

Role of the Internet?

World Summit of the Information Society - WSIS 2023



Doreen Bogdan
Secretary General ITU

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



What if ...

We revisit access

We decentralise the Internet

We use Universities to connect

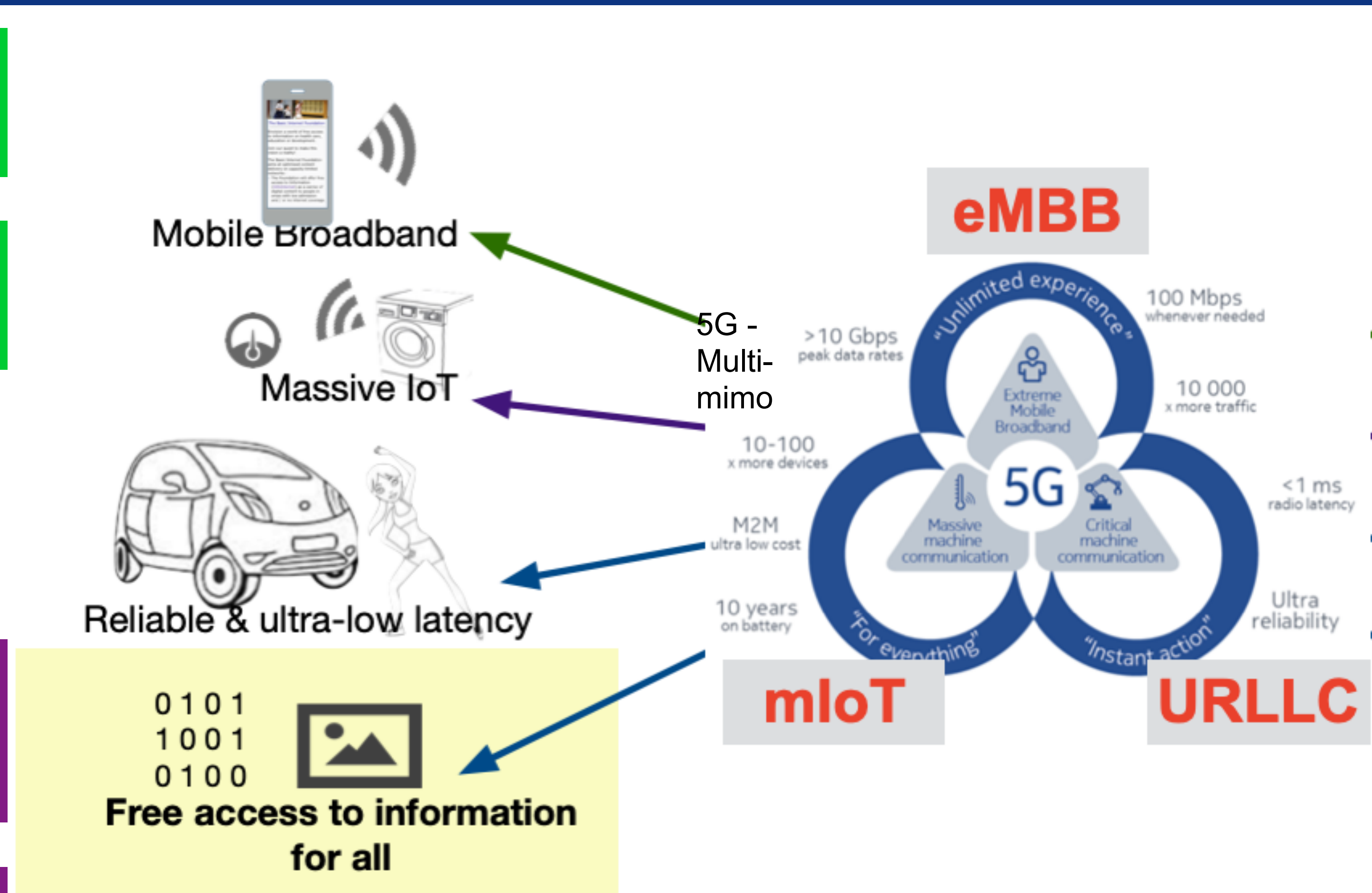
Revisit Access

Road model: pedestrians & cyclists

Digital pedestrians, digital cyclists vs digital cars (broadband)

Internet Lite
as a Digital Public Good (DPG)?

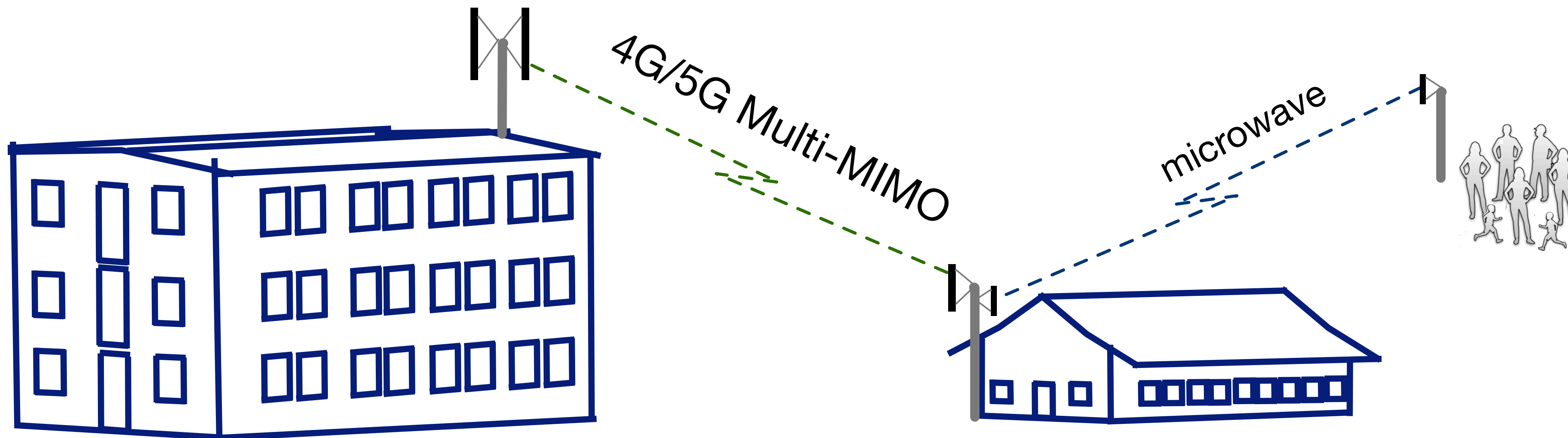
5G large cells
to achieve coverage



The role of Universities

Heart information, societal impact & other non-profitable services

- Feministic dev. & foreign policy
 - Values vs Things
 - WIR vs ICH ("values, inclusive, resilience")
- Access to Health Information, GovStack and Digital Public Goods
- Regional Competence Centres (RCCs)
- Connect Schools & Communities
- Non-profitable content at School-/Community-Centres



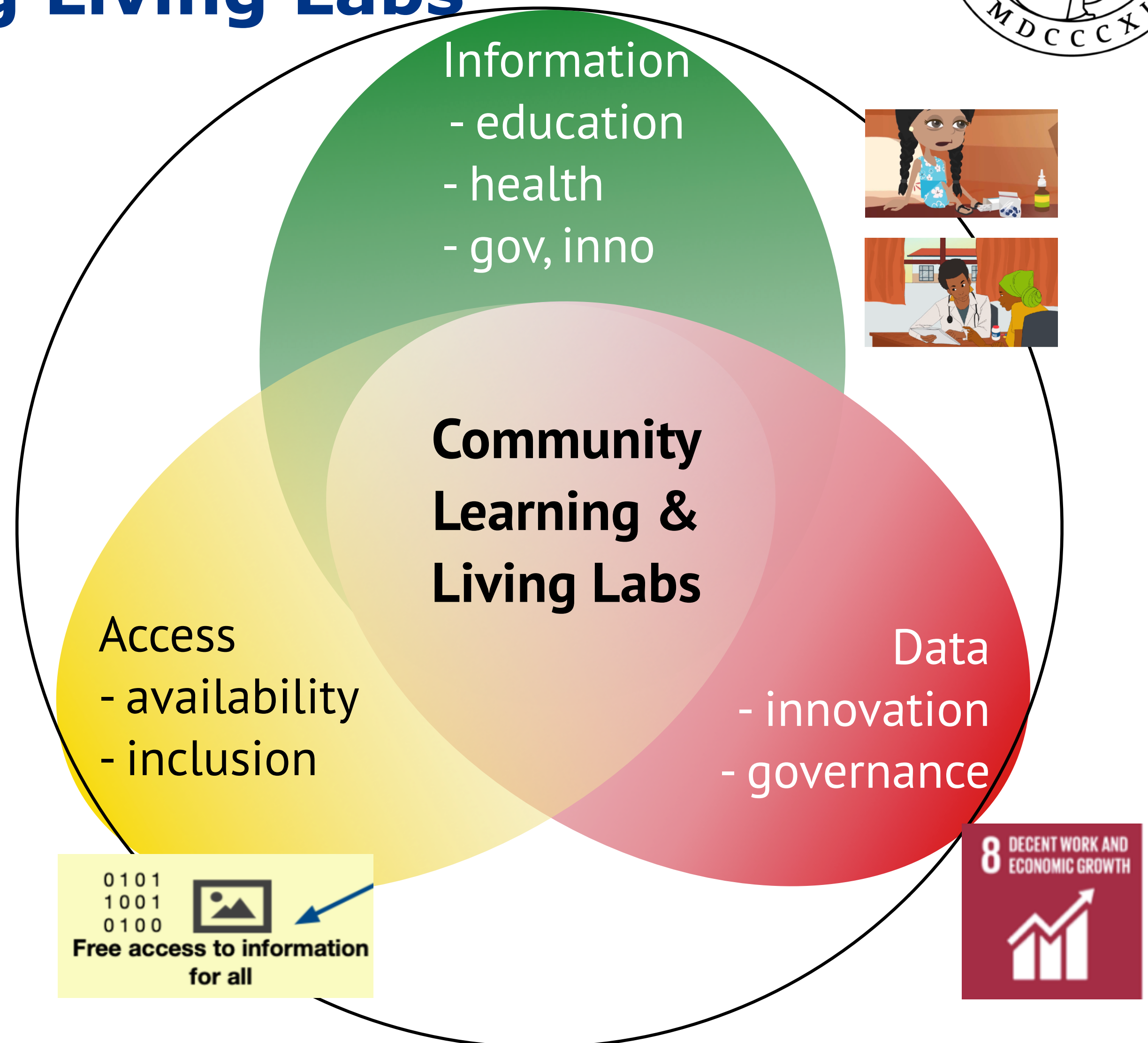
InfoSpots for **CL3**
Community
Learning &
Living
Labs



National Research & Education Networks (NRENs)

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 information



Phase III TZ (2023) - 300 schools

antenna



Esilalei (2019) 120 W solar panel, light & connectivity



Mto wa
Mbu

Lake
Manjara

Esilalei

4.6 km

Mbash - primary health station

The mobile phone has replaced the machete (even in places without Mobile Broadband)



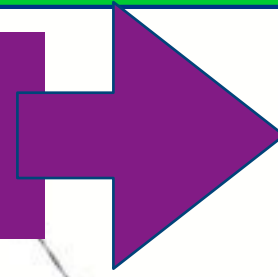
“Connect The Future” Selela Market Place



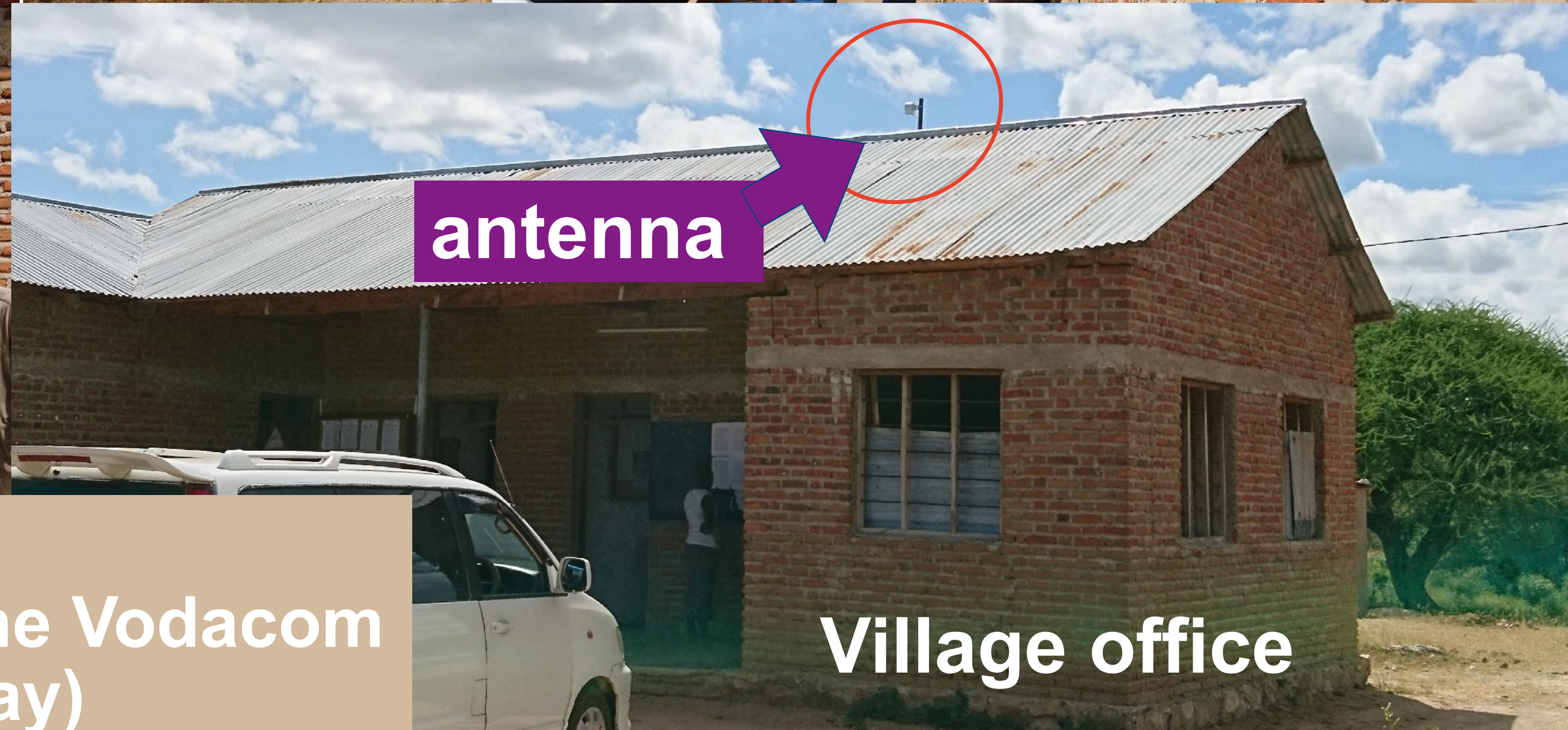
- Antenna in 6 m height
- Reaches Tigo tower > 20 km away



antenna



"Connect the Future" Izazi



Installation time: 1,5 h
catching the signal from the Vodacom
tower in Migoli (~10km away)

Village office

Migoli, Nyerere High School - 2019

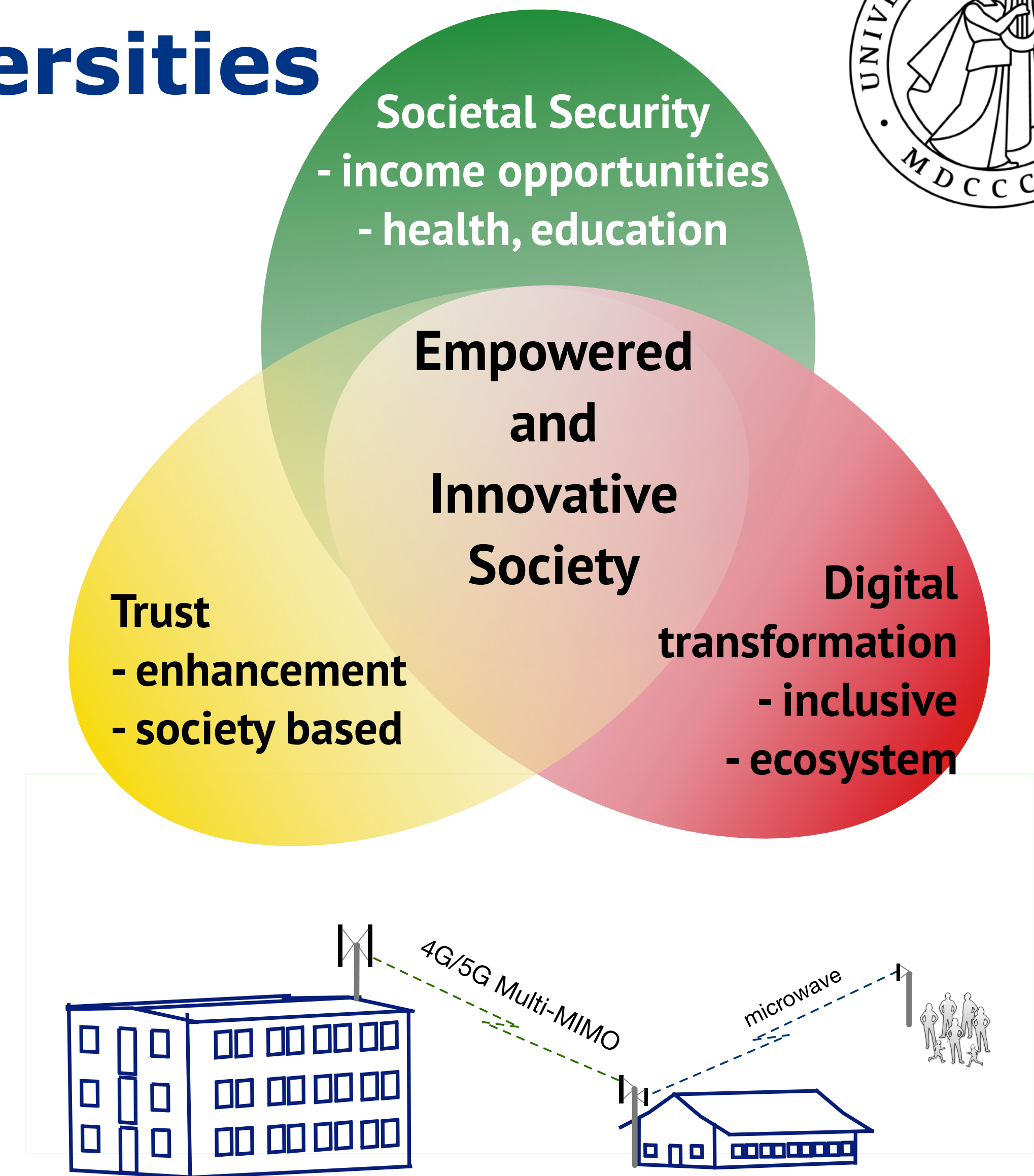


1271 pupils, 34 full-time teachers
9 m pole (above trees) base to connect
- Migoli health station
- Migoli village office



Conclusions: The Role of Universities

- “Revisit the access to Internet” in SSA
 - Decentralised (as the Internet)
 - Local knowledge
- Community Learning & Living Labs (CL3)
 - from NRENs to Schools to CL3
 - decentralised digital economies
- Collaboration
 - 5G Multi-MIMO for School Connectivity
 - Internet Lite, 5G large cells
 - Framework conditions



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