



# UNIVERSITY OF OSLO

**IEEE Connecting the Unconnected  
Summit, 14 Oct 2024, Dubai**

## Policy and Regulations for sustainable and inclusive Connectivity

Josef Noll

Professor, Department of Technology Systems (ITS)

Lead Digital Global Health at the Centre for Global Health (CGH)

Secretary General, BasicInternet Foundation

UNIVERSITY  
OF OSLO

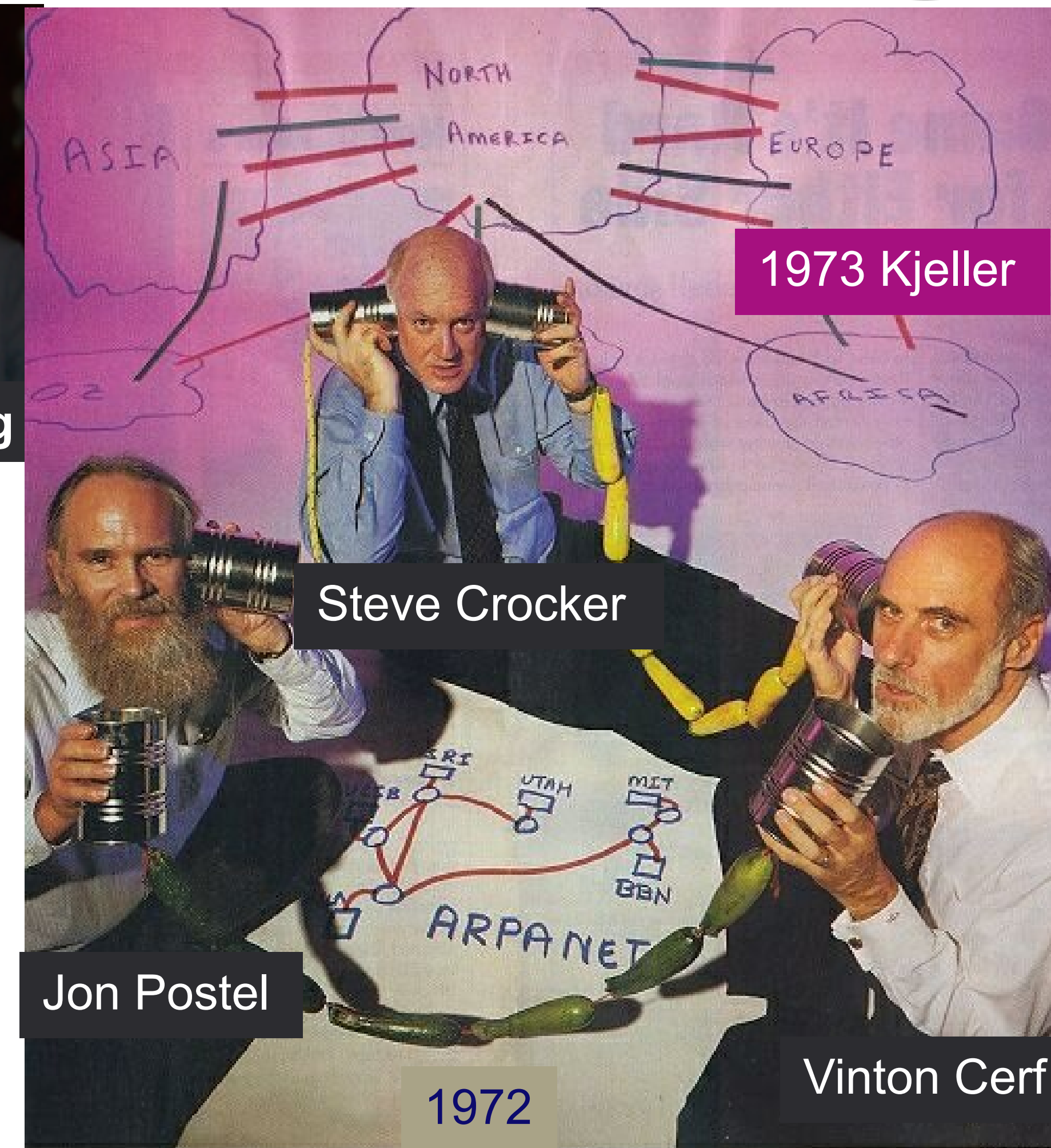
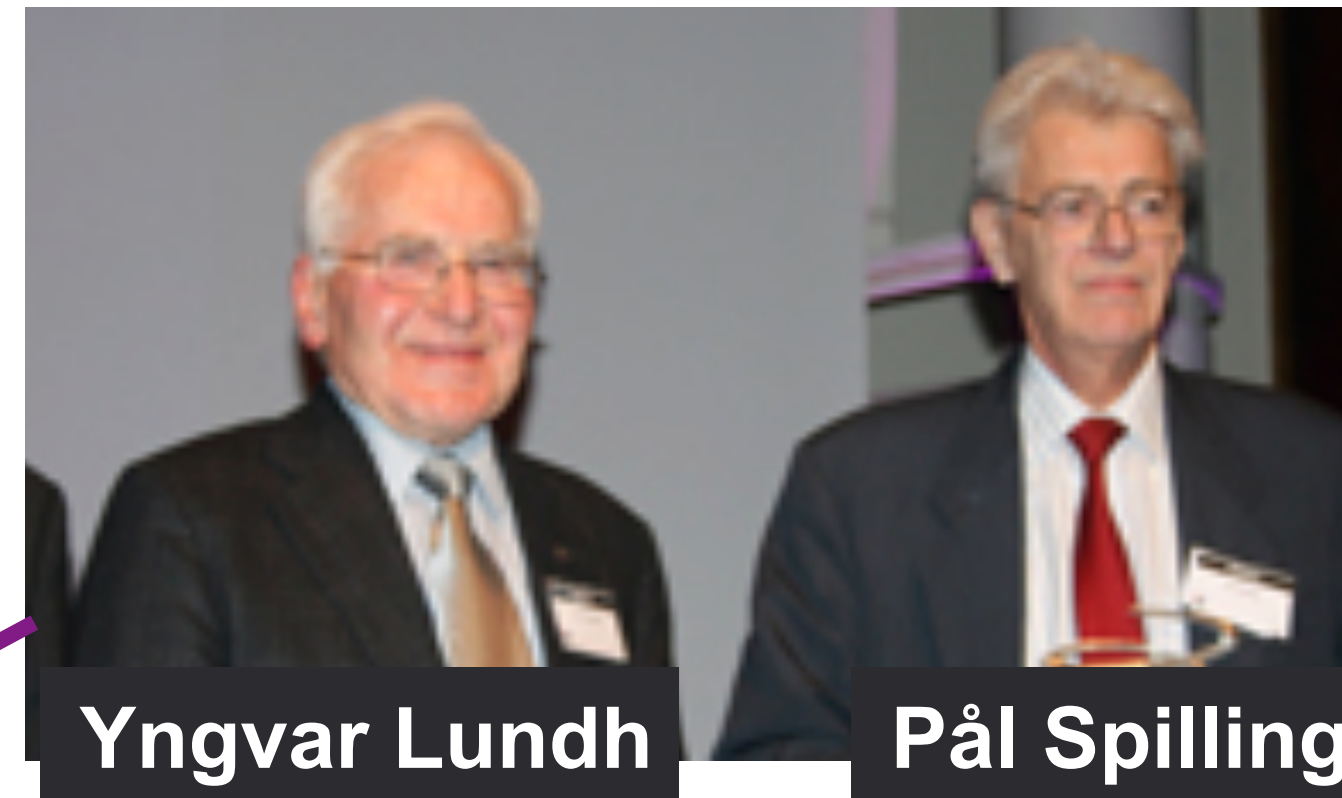
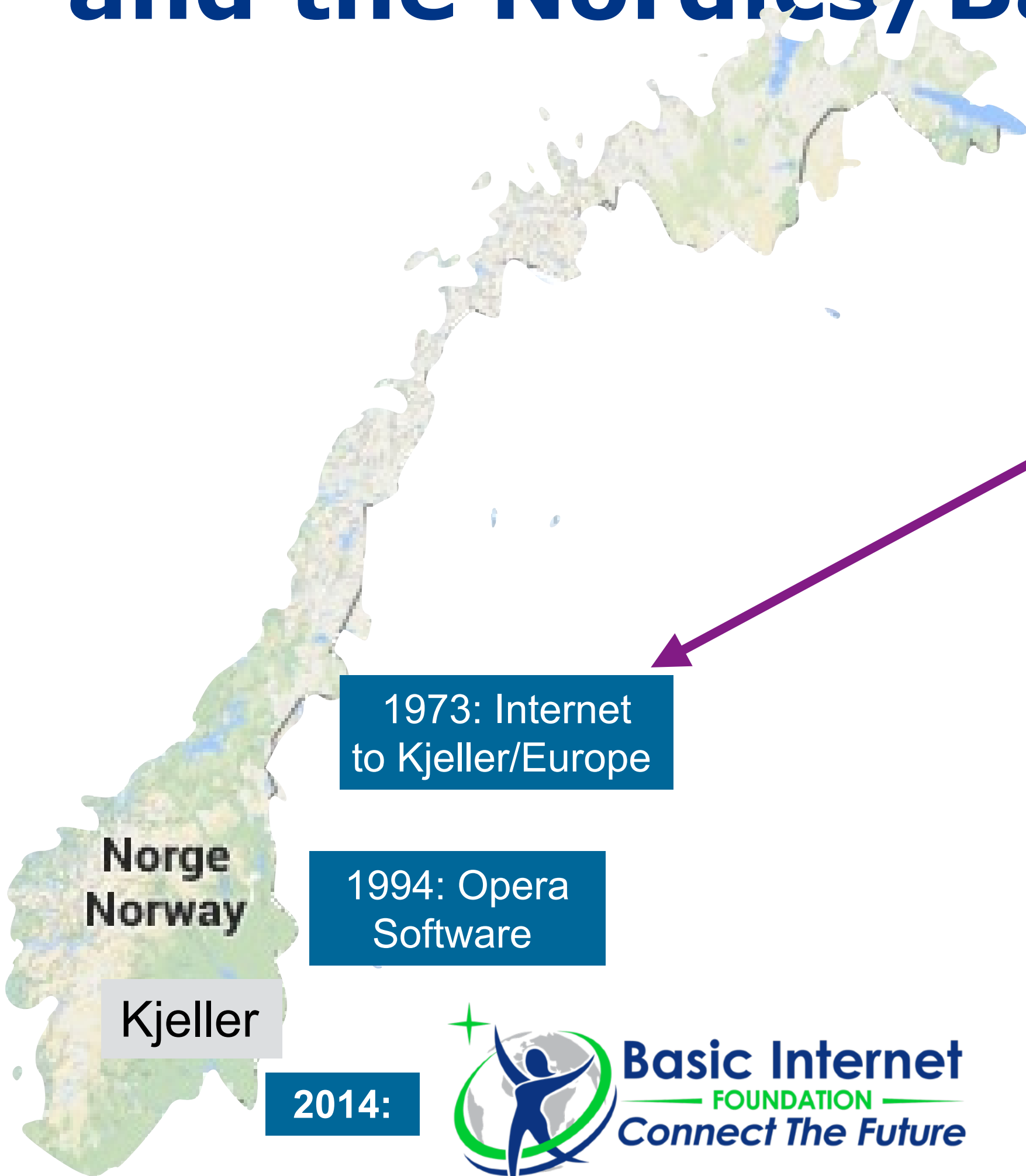


Usingo Secondary School, Kenya





# 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



# Sustainable Empowerment - 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





## 9.c

Significantly **increase access to information** and communications technology and strive to **provide universal and affordable access** to the **Internet** in least developed countries **by 2020**



- **57%** of the global population (4.6 billion people) using mobile internet
  - 30% decline in new mobile broadband (200 million new users in 2023)
  - **95% of unconnected** people in LDCs
- Adults in **rural 29% less likely** to use mobile Internet (compared to urban)
- Gender Gap: **Women 19%** less likely
- 41% South Asia, 36% in SSA





# Digital Inclusion?

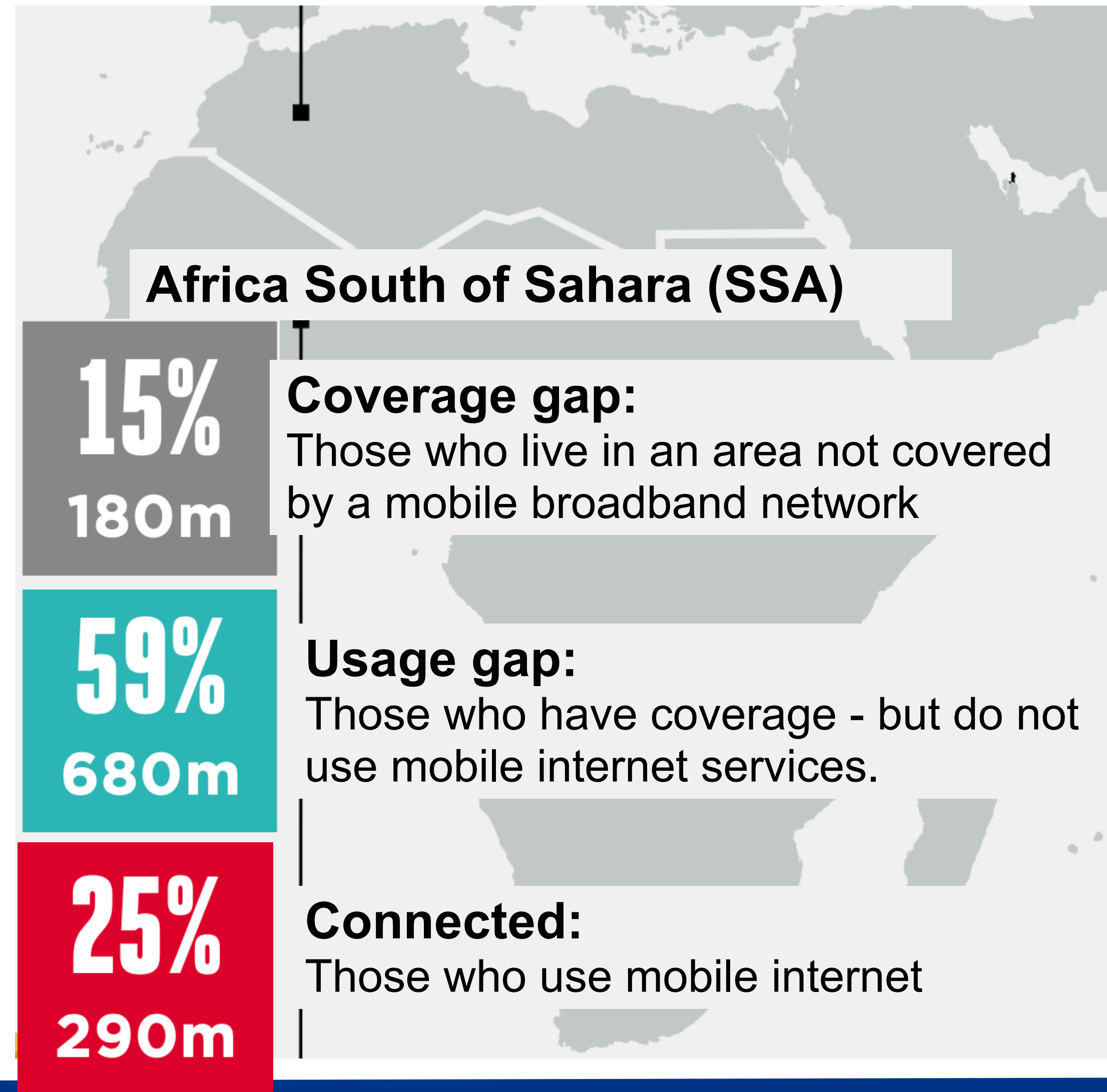


**SSA:**  
75% not using mobile internet

**SSA:**  
49% rural / urban gap

People in rural are more likely to have **reduced** their mobile **internet use**

**Women**  
900 million don't use **mobile internet** (2/3 living in SSA or South Asia)



## South Asia

4%  
80m

52%  
990m

44%  
840m

[Source: GSMA 2024]

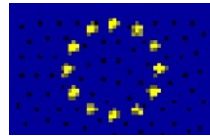


# Business model?



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

### → Western World

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

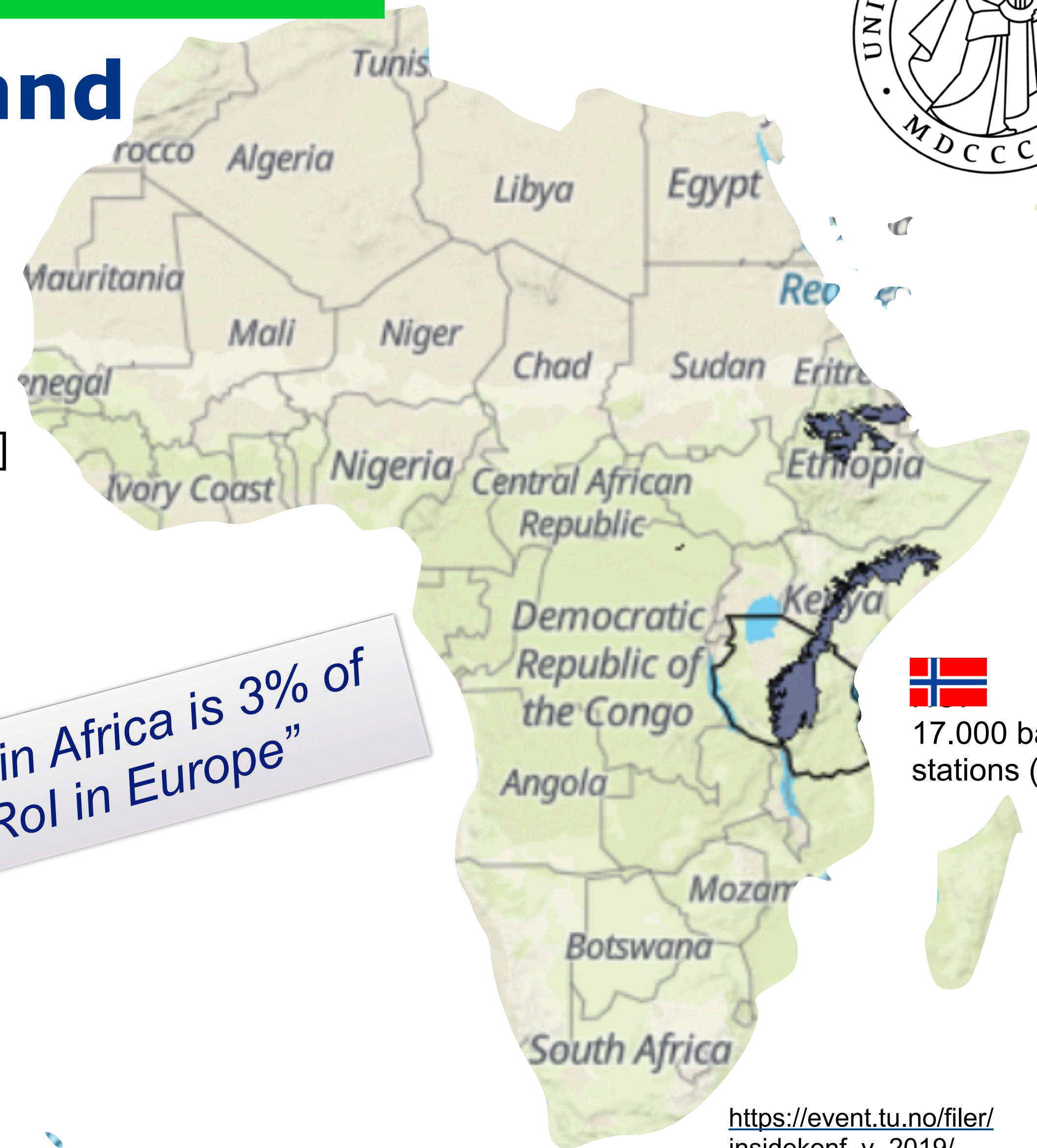
### → Example: Tanzania

- 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/km<sup>2</sup> [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](https://event.tu.no/filer/insidekonf_v_2019/Eivind_Mikkelsen_Trenger_Norge_100.000_basestasjoner.pdf)



# How can we “Connect The Future”? and what are the roles of the Universities



“Universities have a vital role in shaping the future of the society” (Session 369)

“Connect the Unconnected  
- how can we achieve it?”  
Prof Josef Noll, University of Oslo, 2023



Doreen Bogdan-Martin,  
Secretary-General ITU



# What if ...

**We revisit access**

**We decentralise the Internet**

**We use Universities to connect**

**We provide Digital Health Information**



**Policy:**

**“Apply the model of the road to  
the access to Internet”**

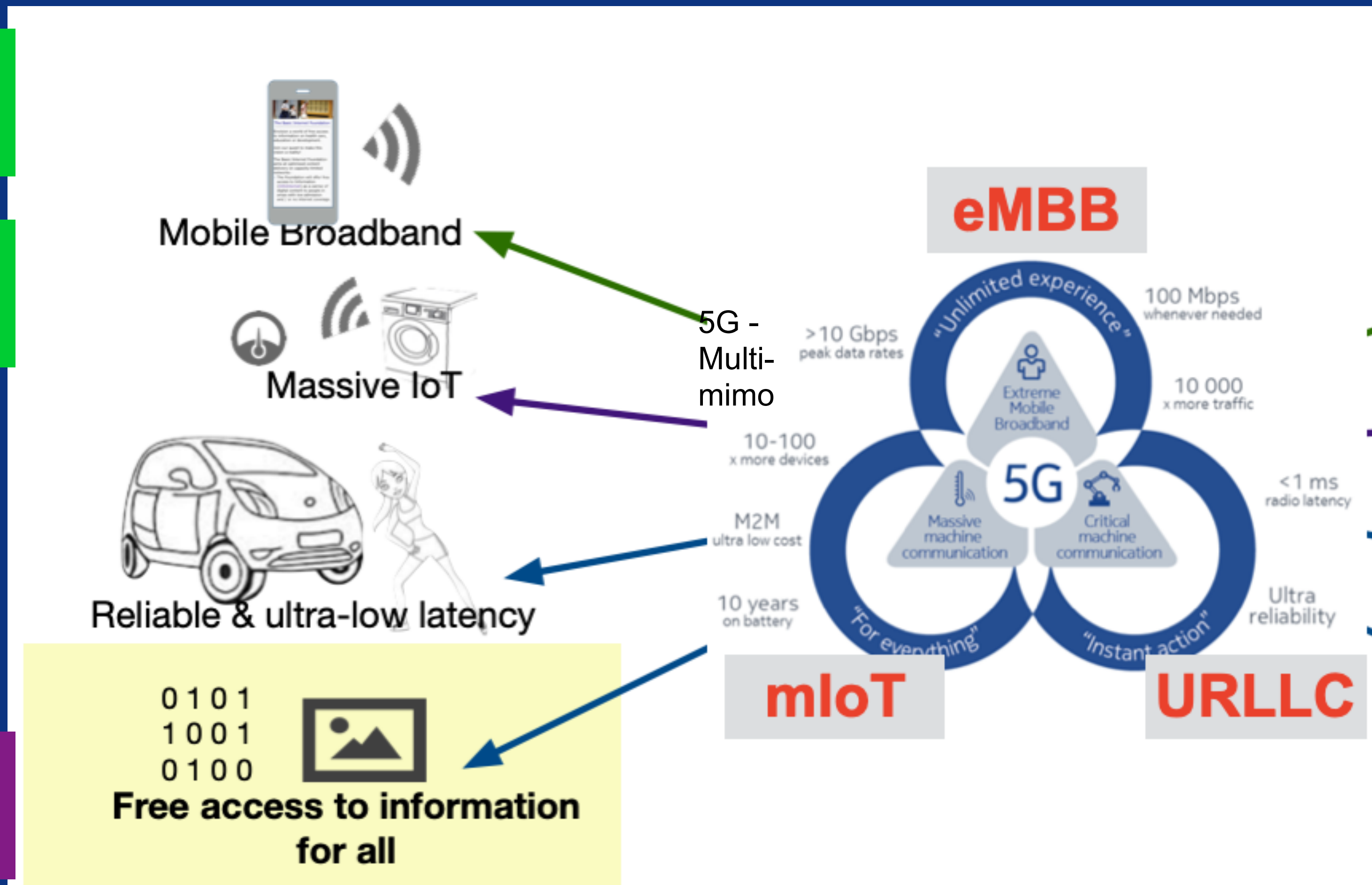


# Revisit Access

Road model: pedestrians & cyclists

Digital pedestrians, digital cyclists vs digital cars (broadband)

Internet Lite





# How can we “Connect The Future”?

## Specific focus: Girls & Women



World Summit of the Information Society - WSIS 2023



Doreen Bogdan  
Secretary General ITU



through  
**Community Learning &  
Living Labs (CLL3)**



# Digital Public Infrastructure (DPI)

Step 1:



[Source: <https://www.gatesfoundation.org/ideas/digital-public-infrastructure> ]

Step 2:



Policy: “We need to build the **digital roads**, but once we have built them, we provide **free access** for **Digital Pedestrians** and **Digital Cyclists**”

“the 1% business model”



## **Regulation:**

**“Provide (bandwidth-limited) access to schools and Community Learning & Living Labs (CL3) at the cost of <20 USD/month”**





# Inclusive Internet Access at 250+ schools

Catherine R Kimambo connecting her first village

<https://vimeo.com/368147538> - 2020

The first search was:  
Mount Kenya - our cultural heritage  
Usingo Secondary School, KE

“My mobile is more important than a weapon”

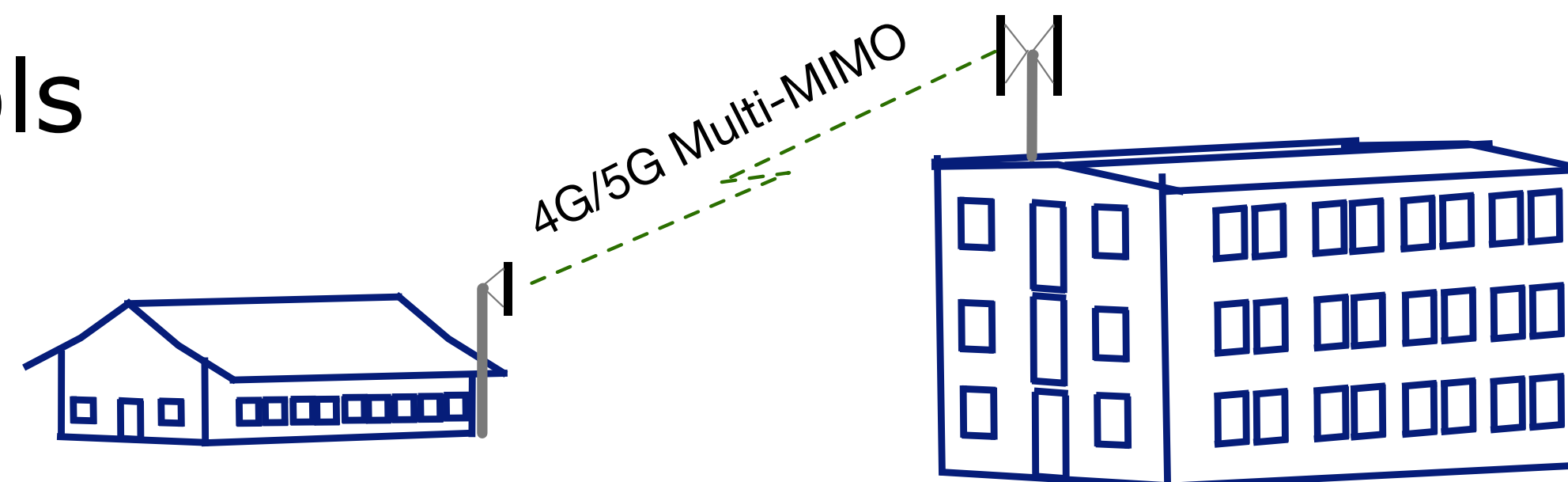
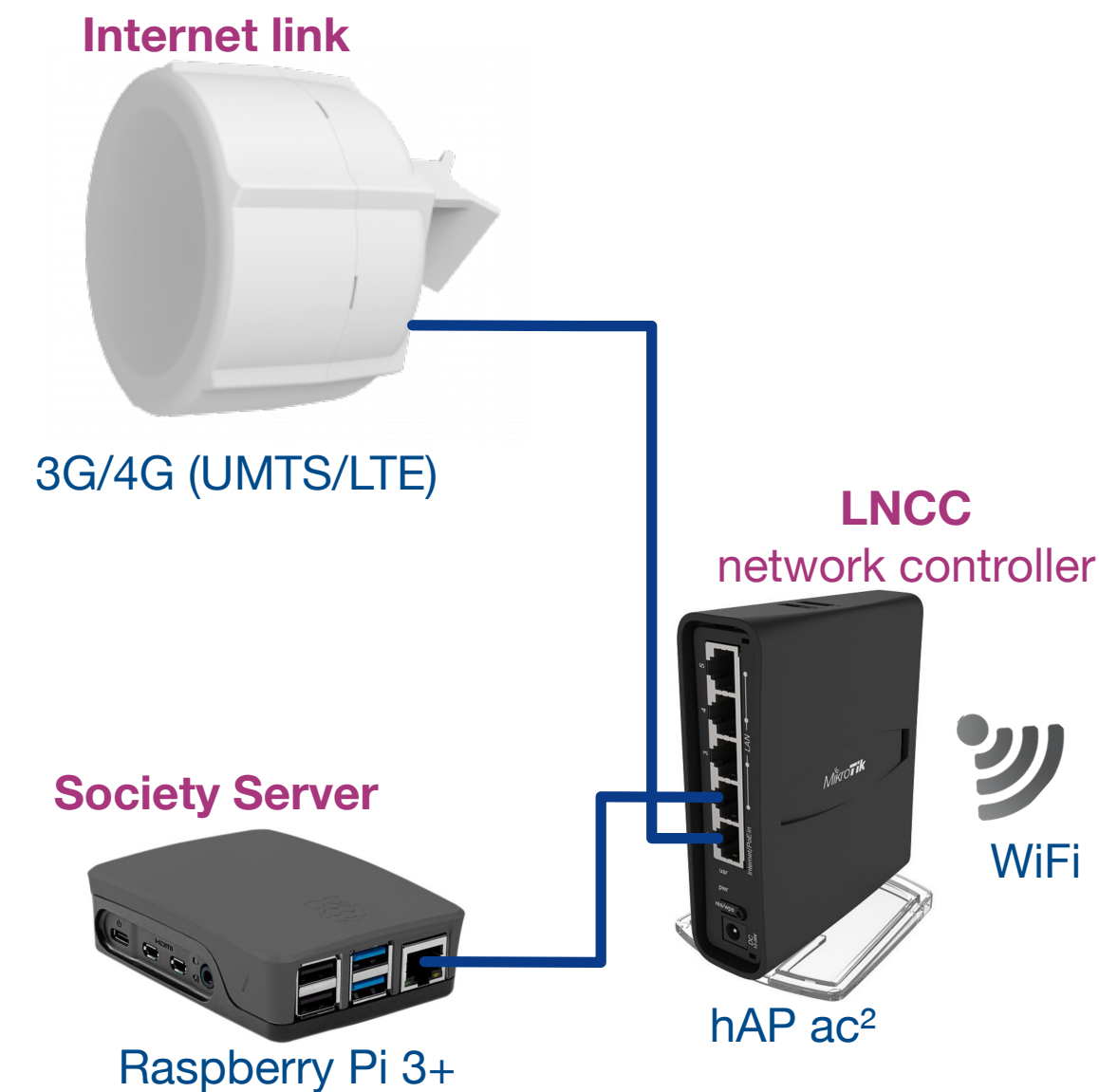
Head of Mbaash, TZ





# Solving the Challenge of Access

- ➔ Wireless information spot (InfoSpot)
  - Reaching out >20 km to 3G/4G network
  - Affordable solution: OPEX <20 USD/month
  
- ➔ Next: 5G access
  - University to schools





## Realisation:

**“Build Regional Competence Centres (RCC) at Universities” and let them connect the schools and communities**

**15%**  
**180m**

**Coverage gap:**

Those who live in an area not covered by a mobile broadband network

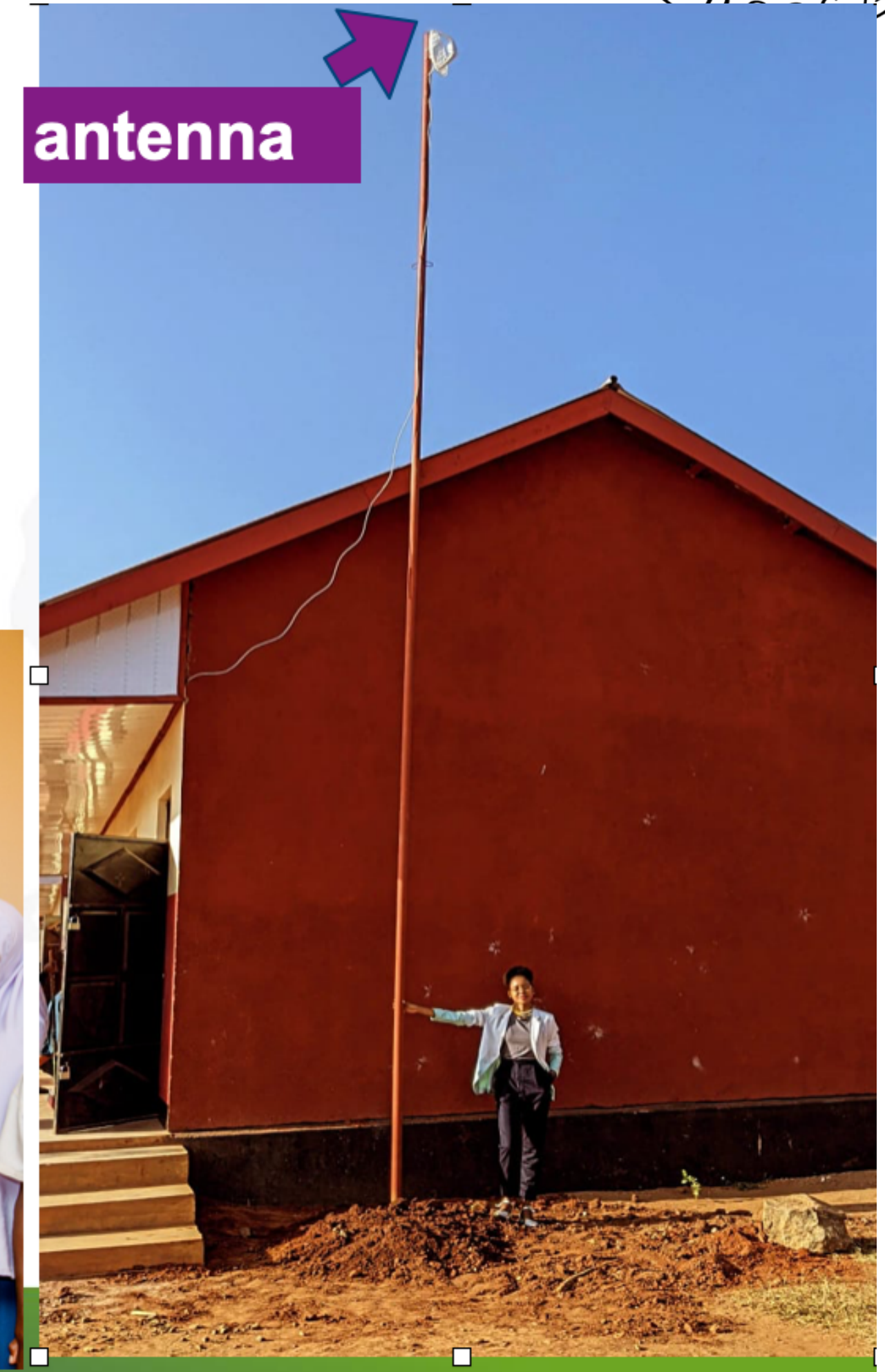




# Schools/Communities



- Regional Competence Centres (RCCs) at
- Connect the schools
- Content partnership
  - Health
  - Education, Energy
  - Gov. Services



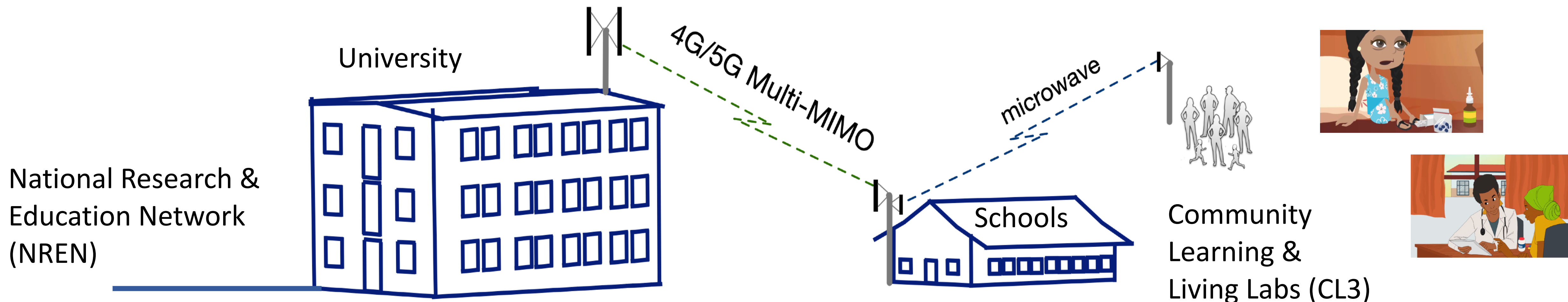


# Instantiation of Digital Public Infrastructure

collaboration by

- University to build Regional Competence Centres (RCCs) and connect via NREN and 4G/5G
- Mobile Operators to share infrastructure

- Government to support School Connectivity & CL3
- NGOs to establish digital friends and empower the community





# “Connect The Future” - Selela Market Place

antenna



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





# Invitation - let's cooperate on Free Access to Information for All

- ➔ 1. Promote Digital Pedestrians and Digital Cyclists for the access to digital roads (Internet)
- ➔ 2. Digital content partnership
  - ➔ health, education (GIZ: [atingi.org](http://atingi.org))
  - ➔ agriculture, climate change
  - ➔ governmental services,...
- ➔ 3. Connect schools and communities
  - ➔ Community Learning & Living Labs (CL3)



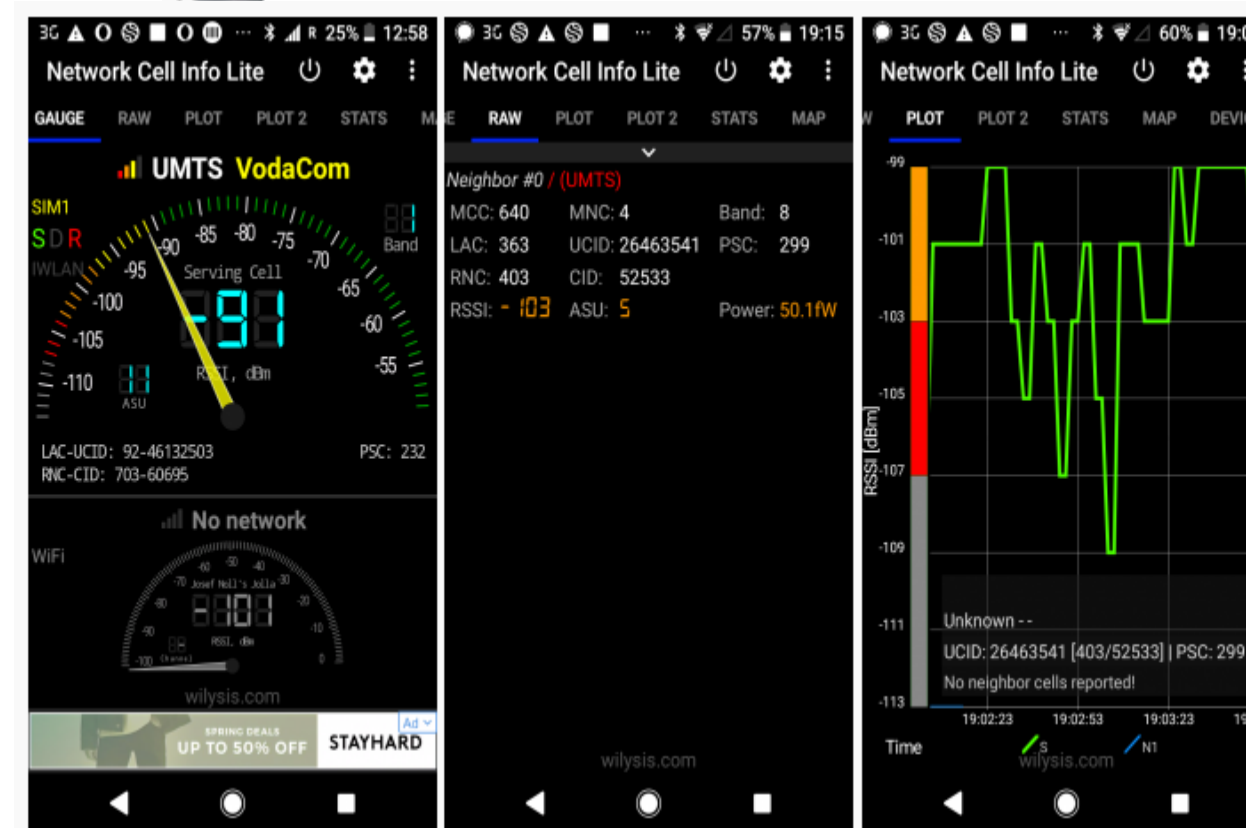




# Community-driven access



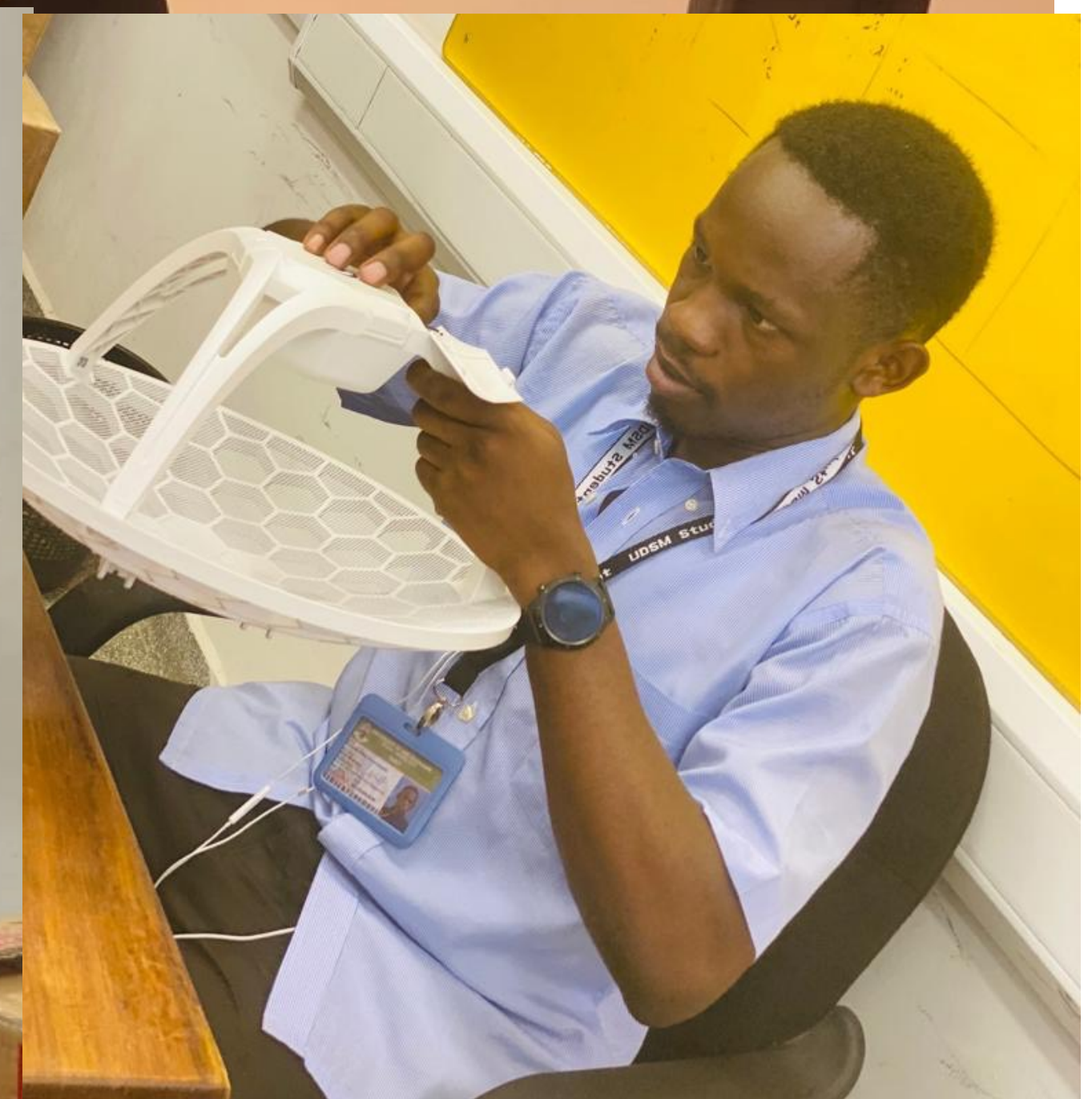
- Identify your need & sustainability (20 USD/month)
- Measure the mobile network
- Establish Connectivity





# Regional Competence Centre (RCC)

- Competence, Configure
- Install at schools/communities







# “Connect The Future ” Izazi



Antenna

Village office

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