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OF OSLO**



Basic Internet
— FOUNDATION —
Connect The Future

NURTURE Seminar, 16-17Sep2024, Hawassa

Connecting the Future for Schools and Community learning & Living Labs

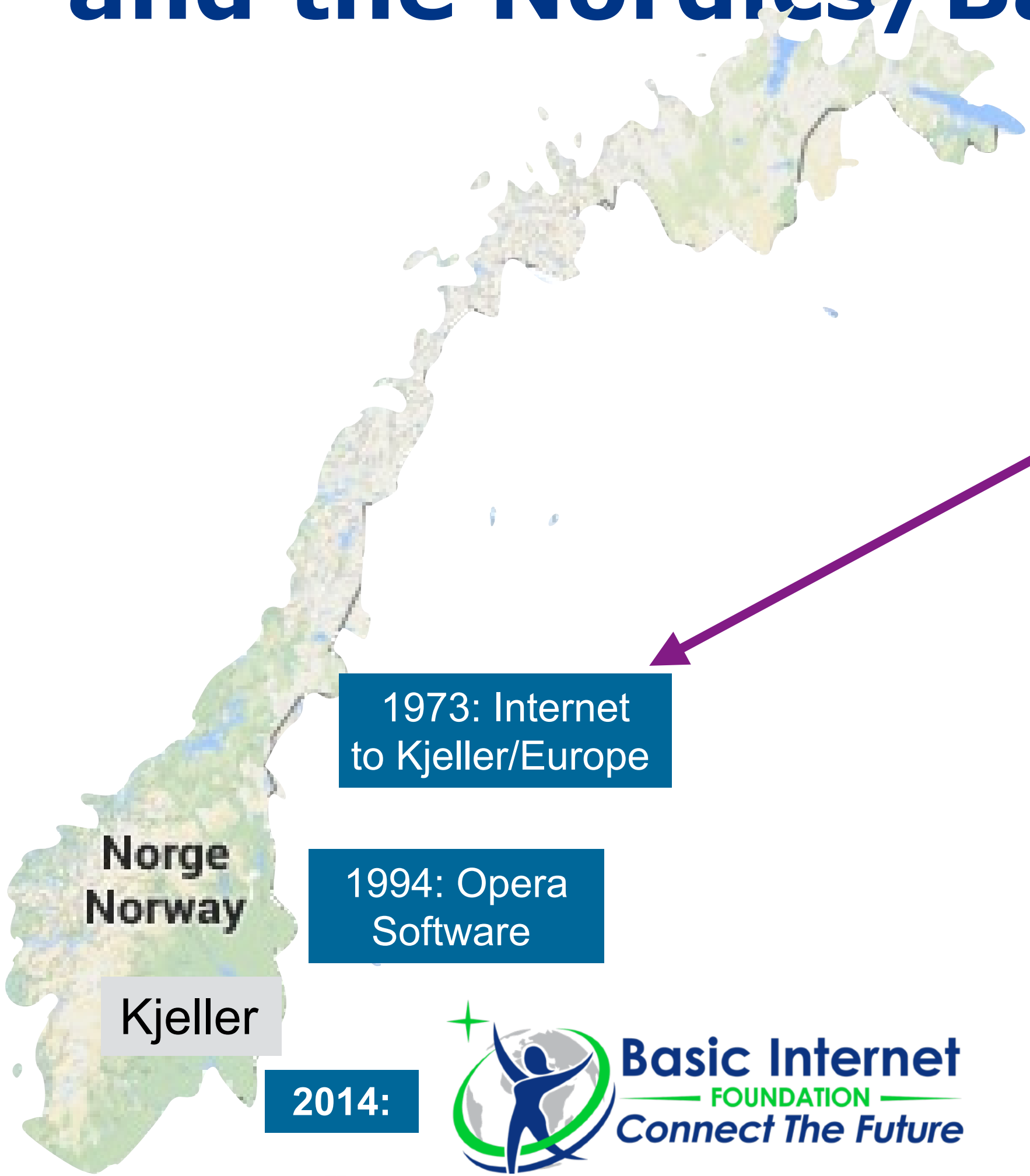
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Kjeller, Norway, m: +47 9083 8066, e:
info@basicinternet.org

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



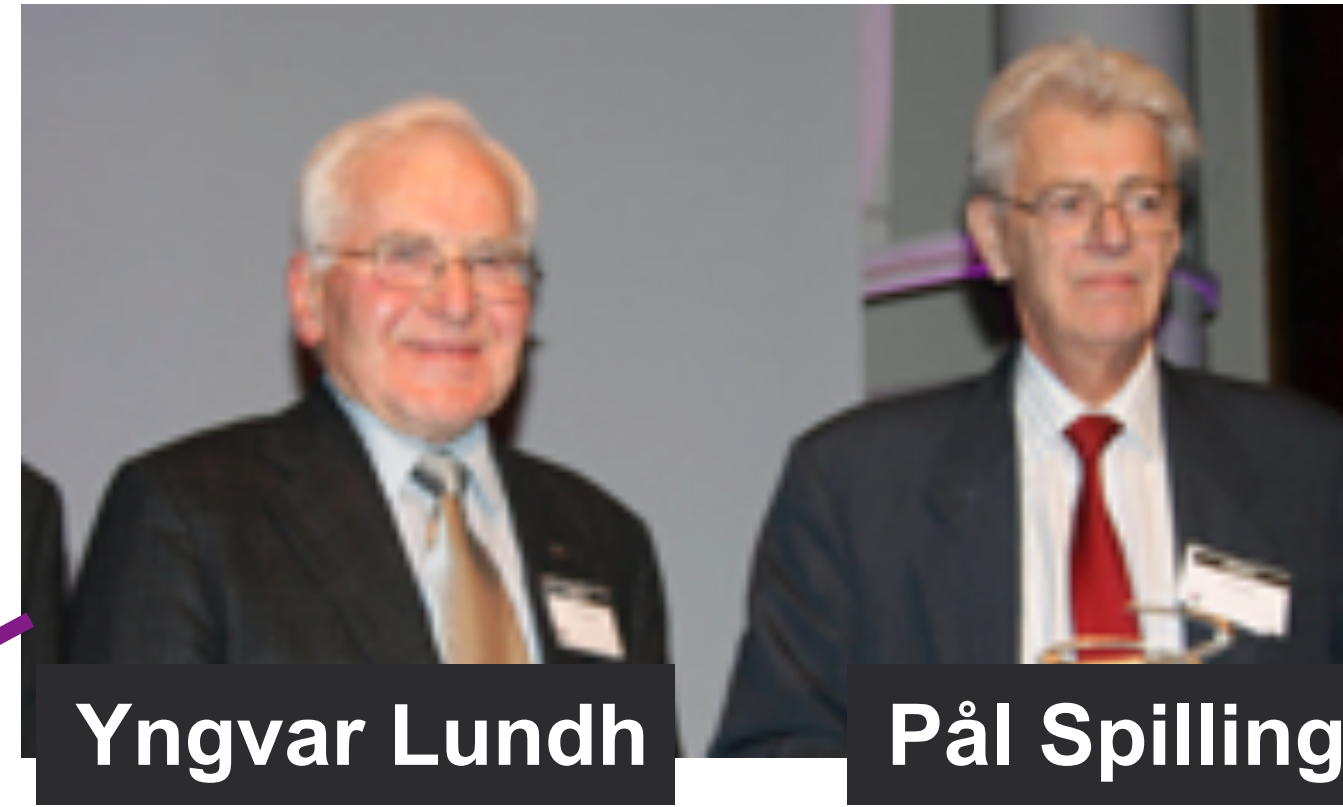
1973: Internet to Kjeller/Europe

1994: Opera Software

2014:



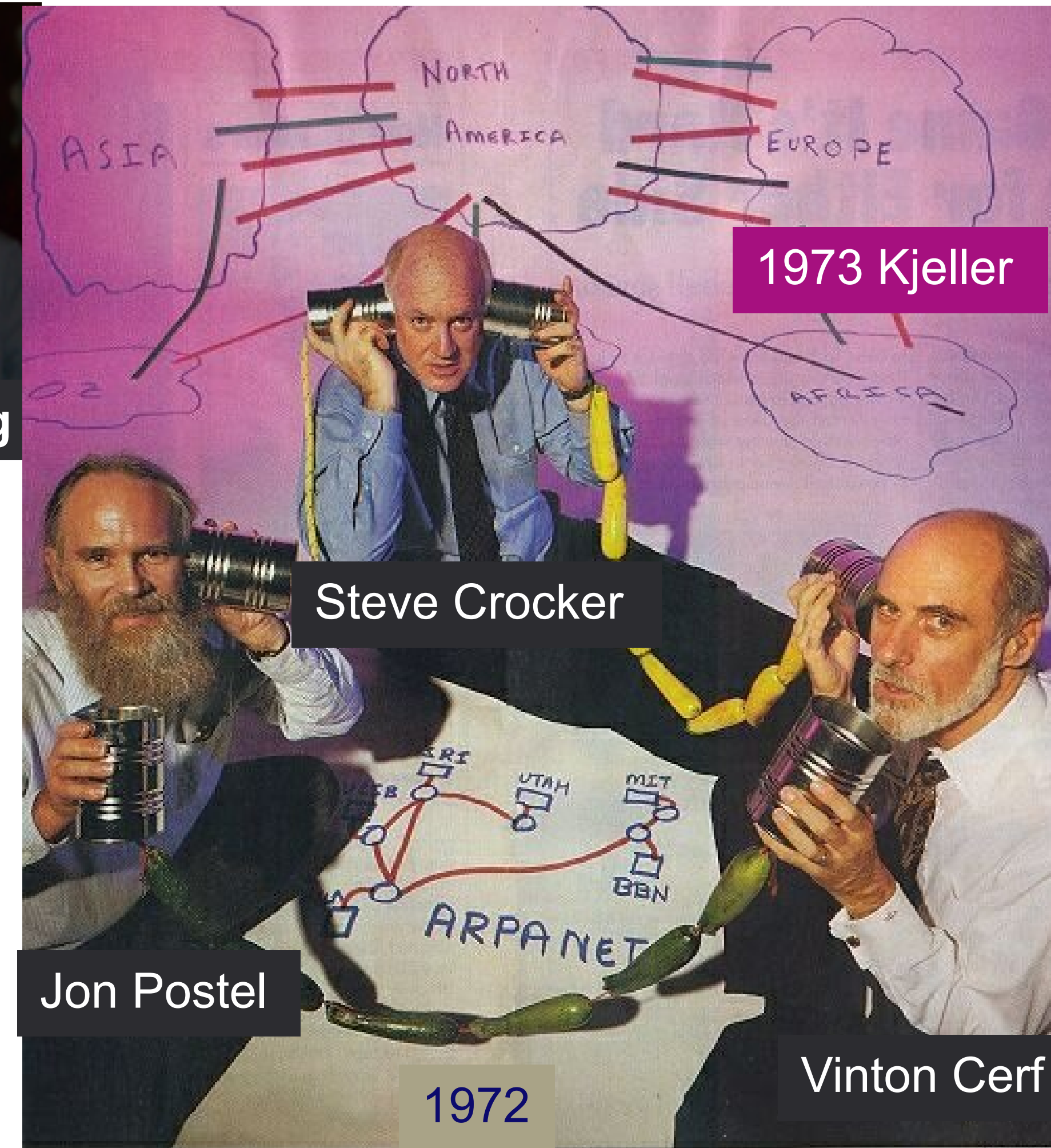
UNIVERSITY OF OSLO



Yngvar Lundh

Pål Spilling

.php, OpenSource, Linux, Skype, Spotify
 Opera Software, FAST search
 Nokia, Ericsson
 GSM
 GovStack.global, X-Roads



Steve Crocker

Jon Postel

Vinton Cerf

1972

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

Sustainable Empowerment - what are the 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



The State of Mobile Internet Connectivity 2023



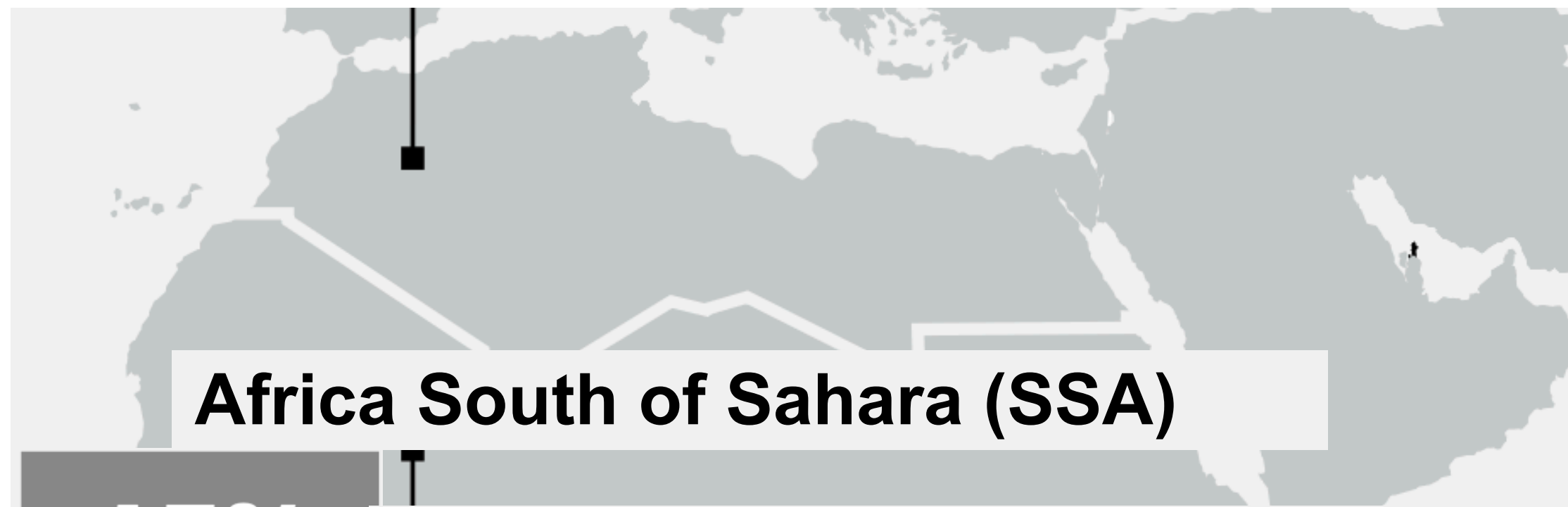
Digital Inclusion?

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)



15%
180m

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

59%
680m

Usage gap:
Those who have coverage - but do not use mobile internet services.

25%
290m

Connected:
Those who use mobile internet

South Asia

4%
80m

52%
990m

44%
840m

[Source: GSMA 2024]

Let's trigger our discussion

→ Please fill in:

<http://EGM.BasicInternet.org>



Drivers for Mobile Internet

Thanks for your help in addressing topics related to mobile Internet access. Your input is used as a basis for an academic study to identify evidence and gaps between mobile internet uptake and the impact on people, businesses, community, and society. For more information, please scroll down to the bottom of this page

Note: all answers are handled anonymously, thus we don't identify you. Your input is used to quality control our assumptions in the study.

josefnoll@gmail.com [Switch accounts](#)



Not shared

your country (TZ, KE, UK... or spell out: Tanzania)

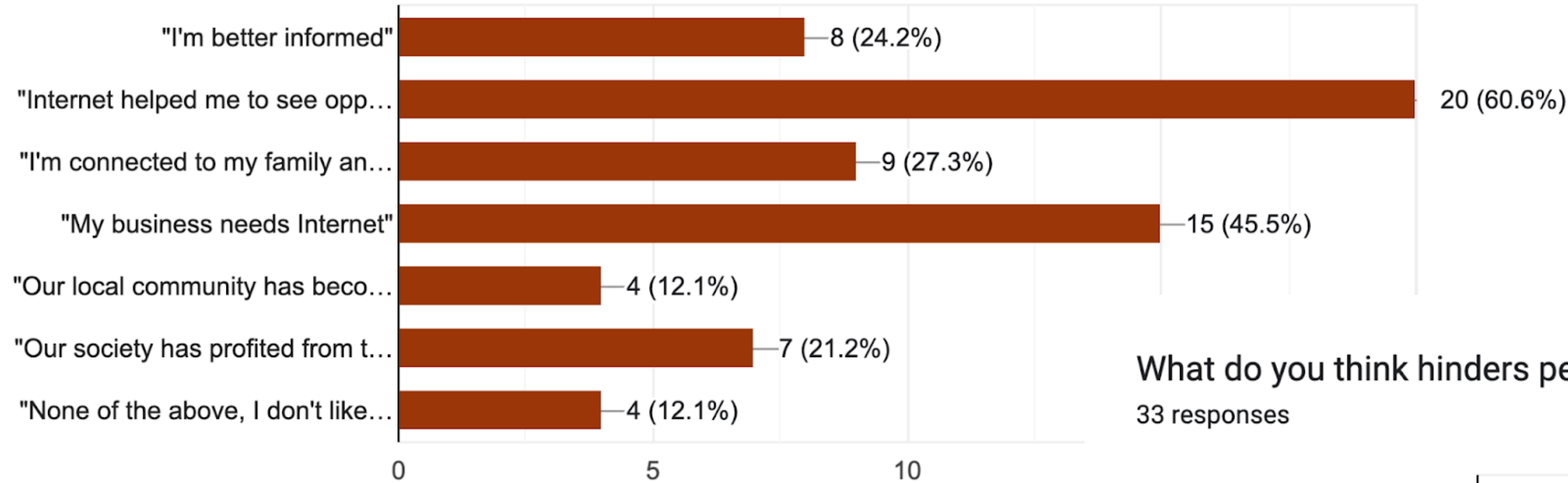
Your answer



Evidence - Gap Map (EGM) Mobile Internet Drivers & hinders

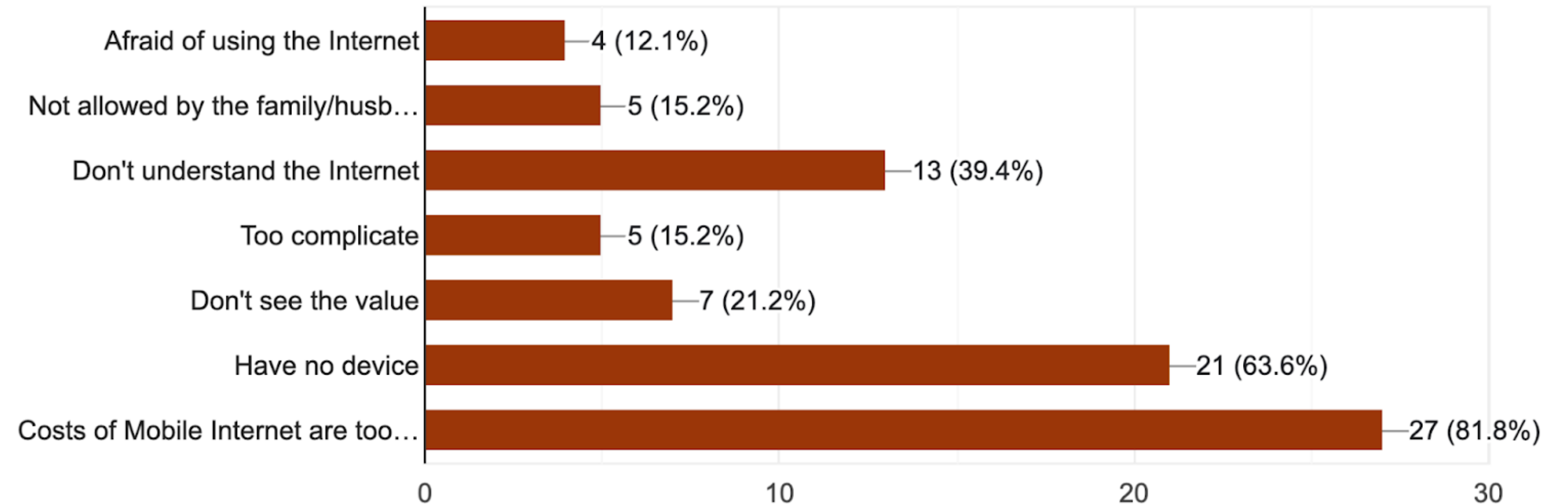
Out of the following statements, which fits for you?

33 responses



What do you think hinders people buying mobile internet? (max 3 answers)

33 responses



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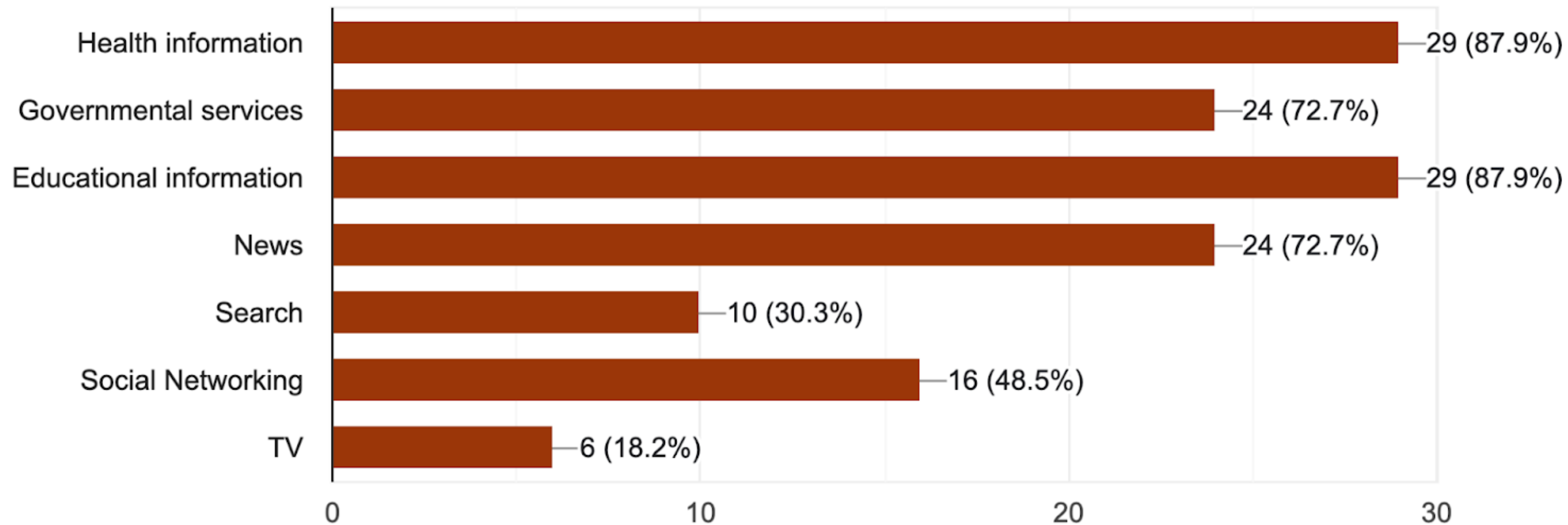
joosefnoll@gmail.com [Switch accounts](#)

Not shared

Expectations towards access Digital Public Infrastructure (DPI)

Which services should be available for everyone?

33 responses



“Internet had the ability to dismantle the divide.
Internet failed miserably, the divide is bigger than ever.”
Kate Gilmore, Human Rights, UNOG, 2017



Digitalsiseringsminister Nikolai Astrup (H) og direktør Jenny K. Lindqvist i Ericsson under en pressekonferanse om 5G-teknologi i Telias lokaler i Nydalen i Oslo i oktober 2019. Foto: Håkon

-5G-nettet er til fordel for teleoperatørene, ikke forbrukerne

29Apr2020


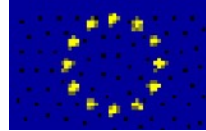
<https://basicinternet.org/5g-is-for-the-benefit-of-telecomm-operators-not-us-as-consumers/>



The Business Model

Mobile Internet in SSA

→ Western World

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

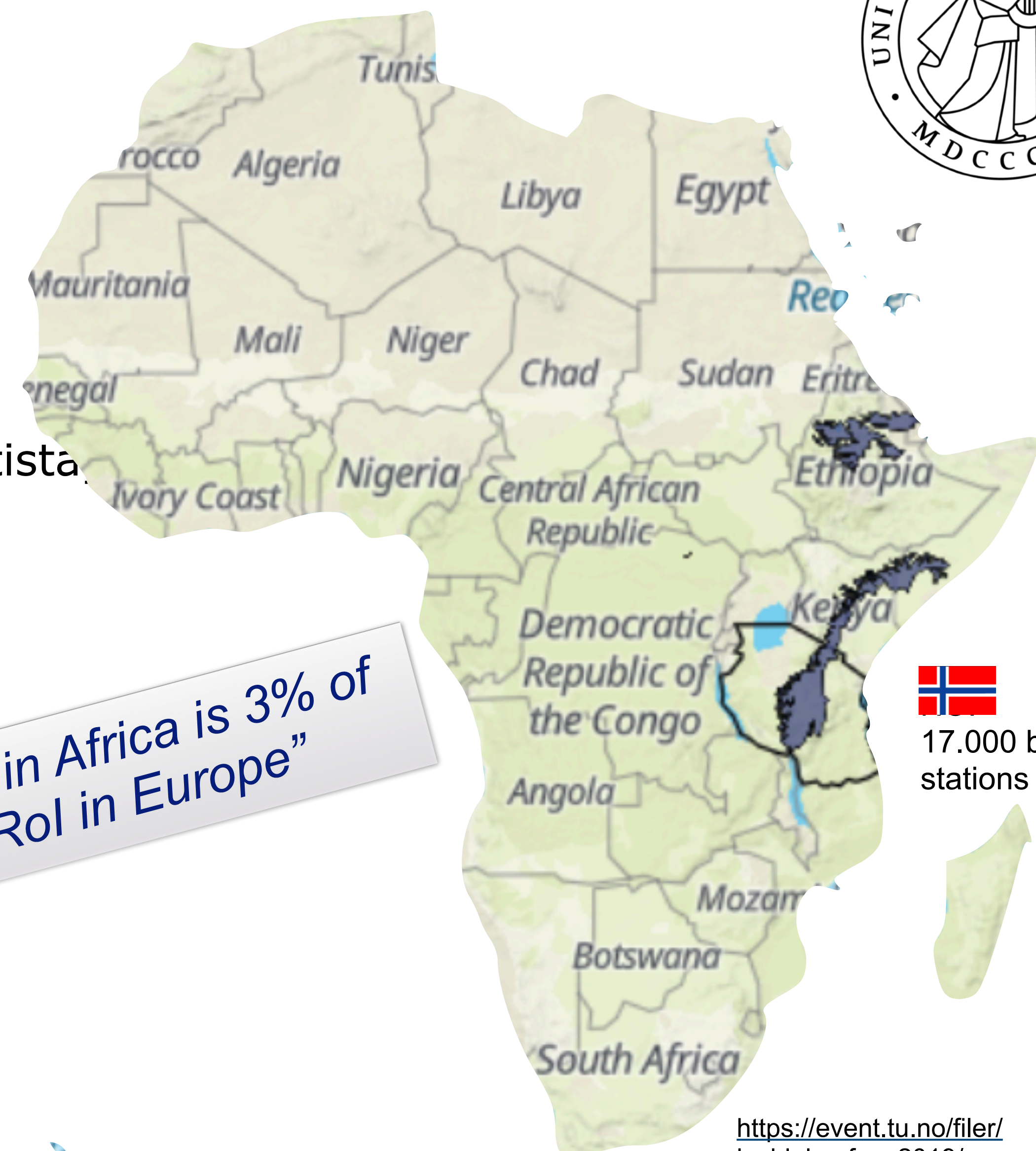
→ Example: Tanzania


- 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

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

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

“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

Revisit Access

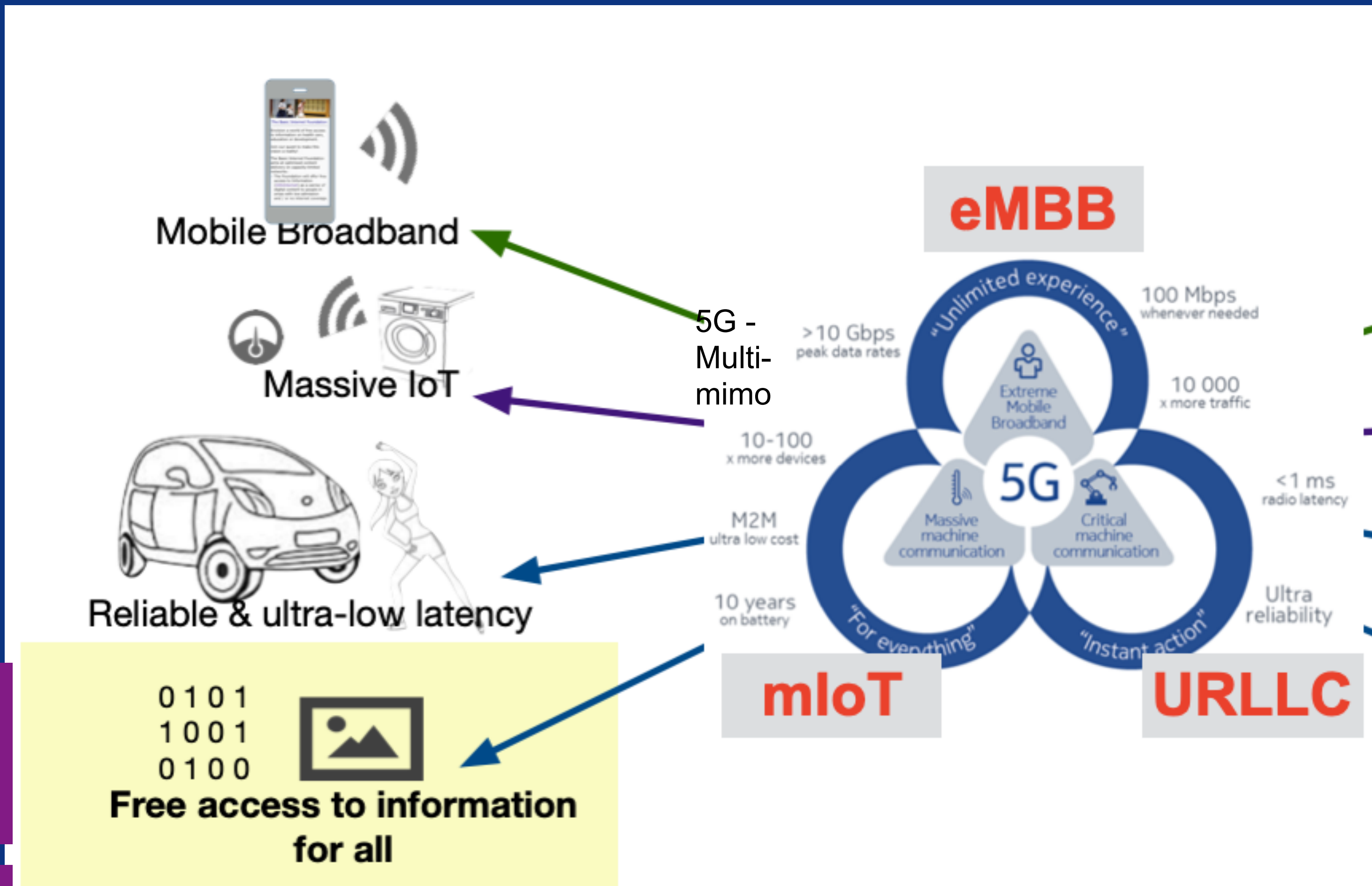
5G lacks digital inclusion

Road model:
pedestrians & cyclists

Digital pedestrians, digital
cyclists vs digital cars
(broadband)

Internet Lite
as a Digital Public Infrastructure (DPI)

& 6G large cells



Digital Public Infrastructure (DPI)

Step 1:



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

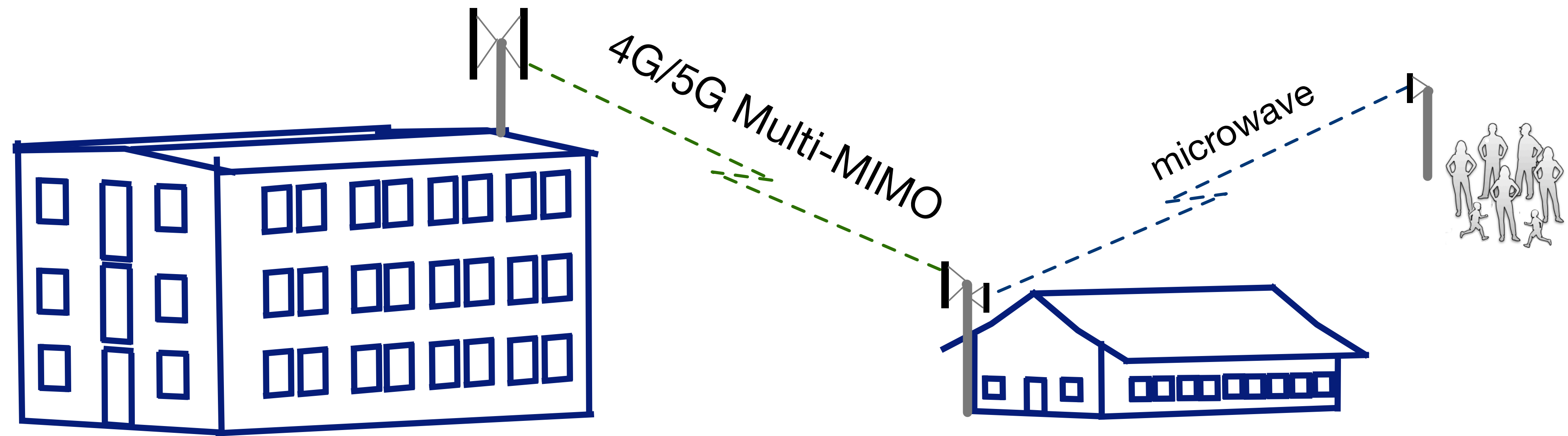
Step 2:





Instantiation of Digital Public Infrastructure

- build: Regional Competence Centres (RCCs)
- connect: Schools & Communities (CL3)
- provide: Non-profitable content



InfoSpots for CL3
Community
Learning &
Living
Labs



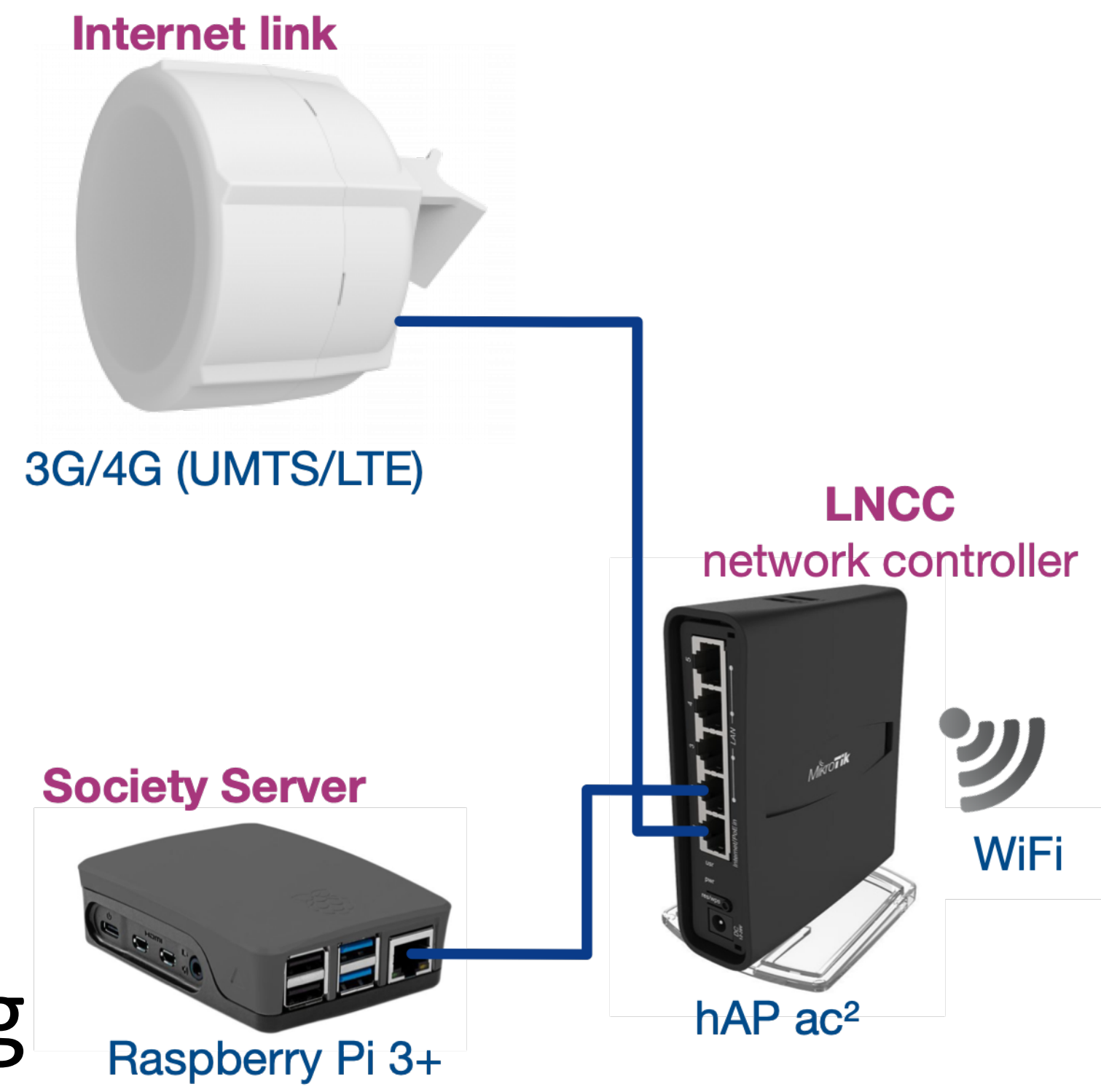
National Research & Education Networks (NRENs)

Step 1: Configure & Connect



Rural Internet Access: The InfoSpot

- Reaching out 20+ km to mobile network
- Affordable solution
 - OPEX <20 USD/month
 - CAPEX
 - 420 USD equipment
 - 1200 USD install & training



Regional Competence Centres (RCC)

→ University Collaboration for Connectivity & Digital Transformation







Step 2: Create Content & Involve the users



Digital Health Promotion



foster Digital Health
Education
DigitalGlobalHealth.eu



Scene from Antimicrobial resistance (AMR) animation



UiO : Global Health
DigitalGlobalHealth.no

2) Providing the information through animations

Snapshots from platform, HIV and Cysticercosis animations

Kisababishi ya Tegu

Mnyoo bapa aitwae *Taenia solium*, husababisha binadamu kuugua vibaya sana. Binadamu hupata minyoo hao kwa kula nyama ya nguruwe mbichi au isiyoiwa vizuri, yenye malengenge ya minyoo (cysts). Ndani ya utumbo wa binadamu, malengenge hayo hutoka katika nyama na kujishikiza kwenye ukuta wa utumbo na kufanyika minyoo ambao hukua na kutaga mayai.

Dodoso ya Tegu
Tafadhali jaza utafiti kuhusu Tegu

Jinsia yako ni ipi?

- A) Me
- B) Ke

Je, umewahi kusikia kuhusu minyoo aina ya tegu?

- A) Ndio
- B) Hapana
- C) Sijui

Je! Umewahi kusikia kuhusu minyoo ya tegu kwenye wanyama aina ya nguruwe?

- A) Ndiyo
- B) Hapana



Results: **Knowledge increase** in
 Cysticercosis (TSCT) 60%
 Tuberculosis 30%
 HIV/AIDS 13%

[Source: Christine Holst, UiO (Nov2019)]

SESA – Smart Energy Solutions for Africa is a collaborative project between the European Union and nine African countries (Ghana, Kenya, Malawi, Morocco, Namibia, Nigeria, Rwanda, South Africa and Tanzania) that aims at providing energy access technologies and business models that are easily replicable and generate local opportunities for economic development and social cohesion in Africa.

Electricity Basics

- ★ Basic elements of electricity
 - Voltage, Current, Resistance, Power, AC and DC
 - Parallel and Series connection
- ★ Calculation
 - Ohm's Law
 - Power Law
- ★ Wattage and Watt hour
- ★ Daily power consumption and Peak load

Power = Volts x Current	$P = V \times I$	Watts
Volts = Power ÷ Current	$V = P \div I$	Volts
Current = Power ÷ Volts	$I = P \div V$	Ampere
Resistance = Volts ÷ Current	$R = V \div I$	Ohm
Energy = Power x Time	$E = P \times t$	Watt-hour



01-Basics of Solar Systems

To kick off this course, we start from the very basics. This video will provide you with a better understanding of how electricity is measured, an overview of the solar energy technologies existing, what to consider about sun power, the key component of a PV system (including batteries) to finally touch upon the pros and cons of solar PV technology.

See [the slides \(.pdf\)](#)

Introduction

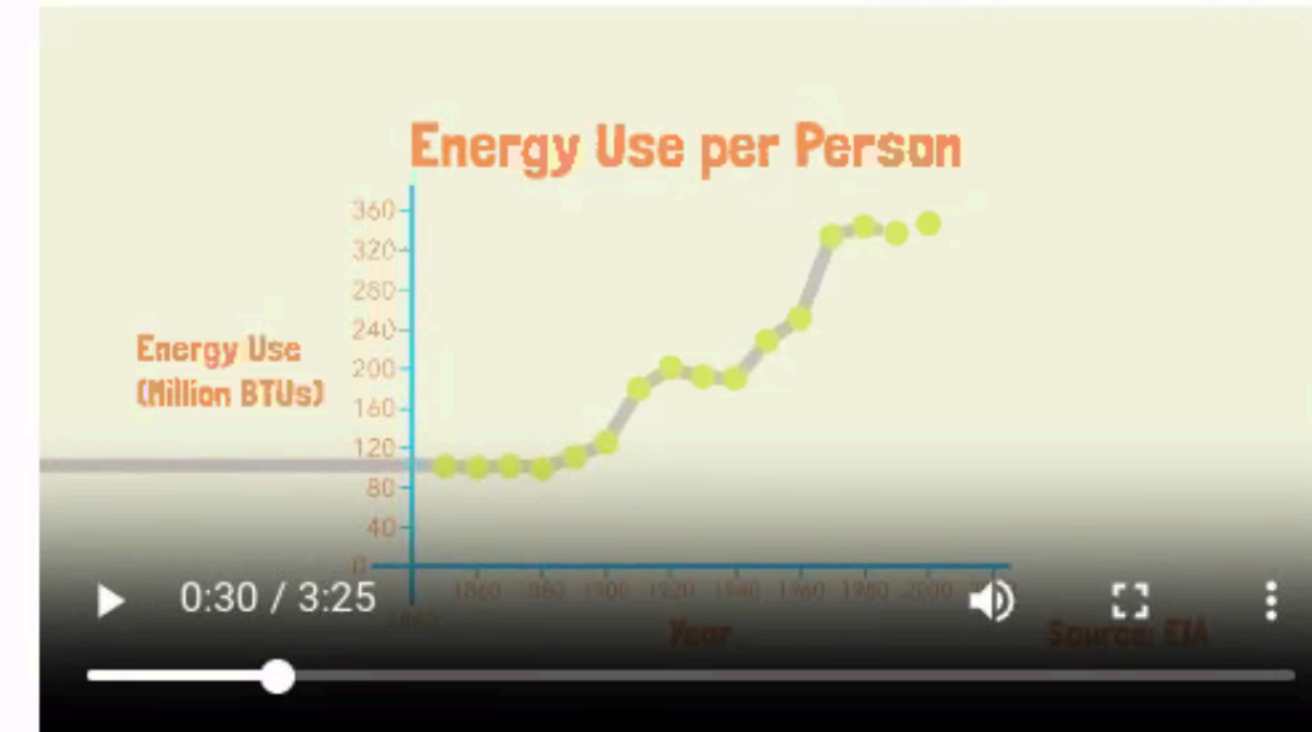
- Sizing is an art of determining solar PV systems components needed to run a certain load requirements



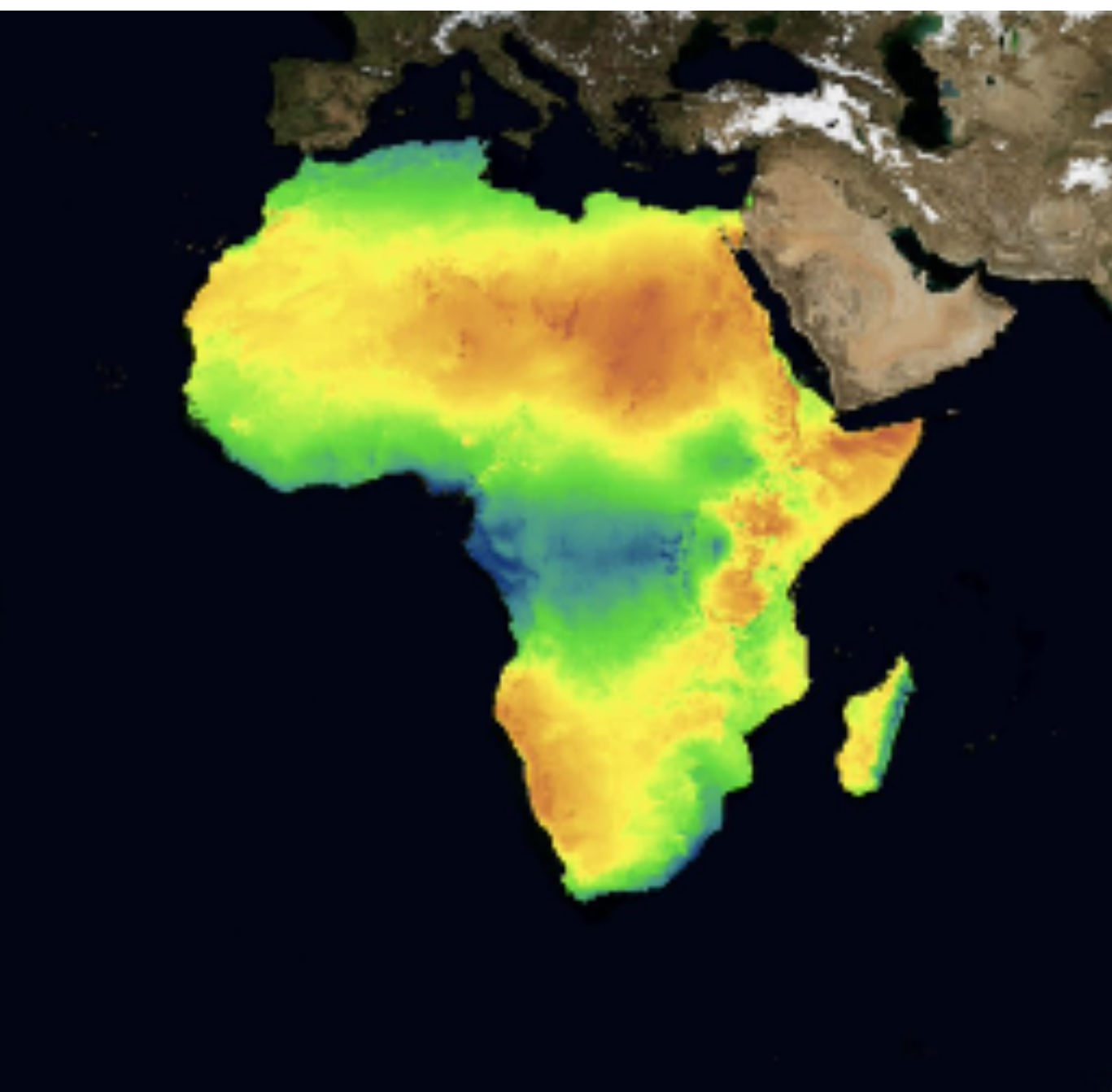
02-Sizing Solar PV Systems

How much power would you need for your site and what size of equipment (batteries, module/panel, charger controller, inverter) would you need for that? The answer is in the video.

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Suitable Conditions, and Examples of Solar Power installations



Suitable conditions for Solar Power

Calculations of electricity needs

A house has the following electrical appliance usage:

- Two 15 W lamp used 5 hours per day.
- Two 40 W fan used for 4 hours per day.
- One 68 W 19-in TV used 5 hours per day
- One 17 W satellite used 5 hours per day.

→ Design a solar PV standalone system to meet the load requirement

Assumptions:

- Location: Kumasi, Ghana
- PV module specification: $P_m = 110 \text{ Wp}$; $V_m = 16.7 \text{ Vdc}$;
- $I_m = 6.6 \text{ A}$; $V_{oc} = 20.7 \text{ A}$; $I_{sc} = 7.5 \text{ A}$



[Source: toolbox.SESA-euafrica.eu]

From Energy Information to Energy Monitoring & Control



- Models for solar production forecast
- Weather forecast
- Energy Monitoring

- Empower through knowledge

Solar production forecast

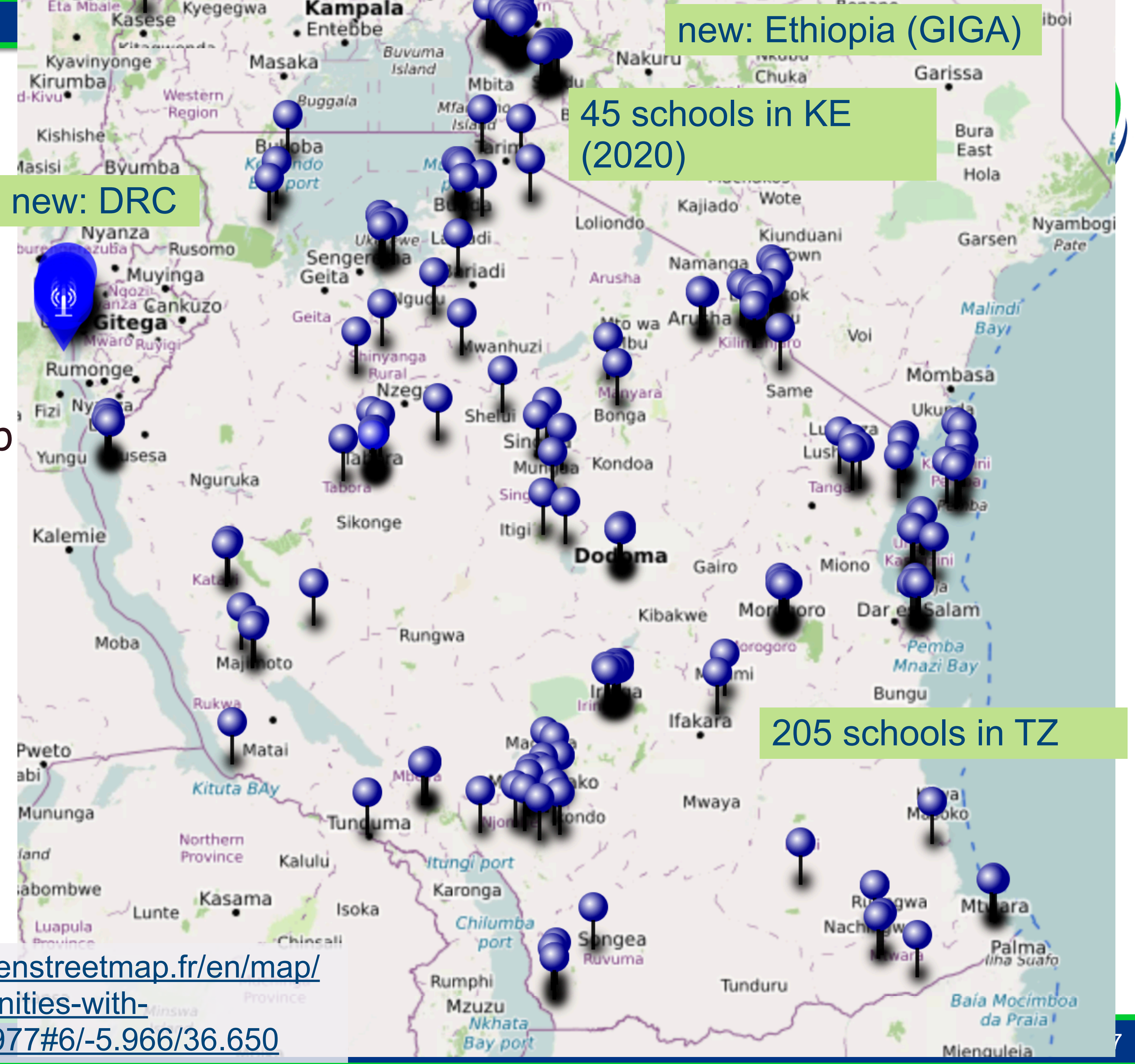
	Now estimated power producti...	8 157 W
	This hour energy production	7,7 kWh
	Next hour energy production	7,8 kWh
	Remaining today energy prod...	24,5 kWh
	Tomorrow estimated energy ...	14,0 kWh
	Today Highest power p...	11 minutes ago

	Sunny	12,6 °C		
	Forecast Home ho...	14,9 °C / 13,5 °C		
13:00	14:00	15:00	16:00	17:00
13,5°	14,5°	14,9°	14,9°	14,7°

	energy today	20,9 kWh
	lifetime energy	9 575,8 kWh
	current power	7 104,9 W

6G societal vision

- Connectivity everywhere
 - ★ every school (GIGA)
 - ★ Community Learning & Living Lab (CL3)
- Affordable access
 - ★ "5 for 50" (5 Mbps for 50 kTZS = 20 USD)
- Digital Public Infrastructure (DPI)
- Join us: BasicInternet.org



https://umap.openstreetmap.fr/en/map/schools-communities-with-infospots_1011977#6/-5.966/36.650