



UNIVERSITY OF OSLO

DRC connectivity - 24Feb2026

Beyond Connectivity - Affordable Access for Education, Health and Empowerment (**AA4EDU**)

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UNIVERSITY
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Our Group Our impact Our expertise What's up



In Africa and the Middle East

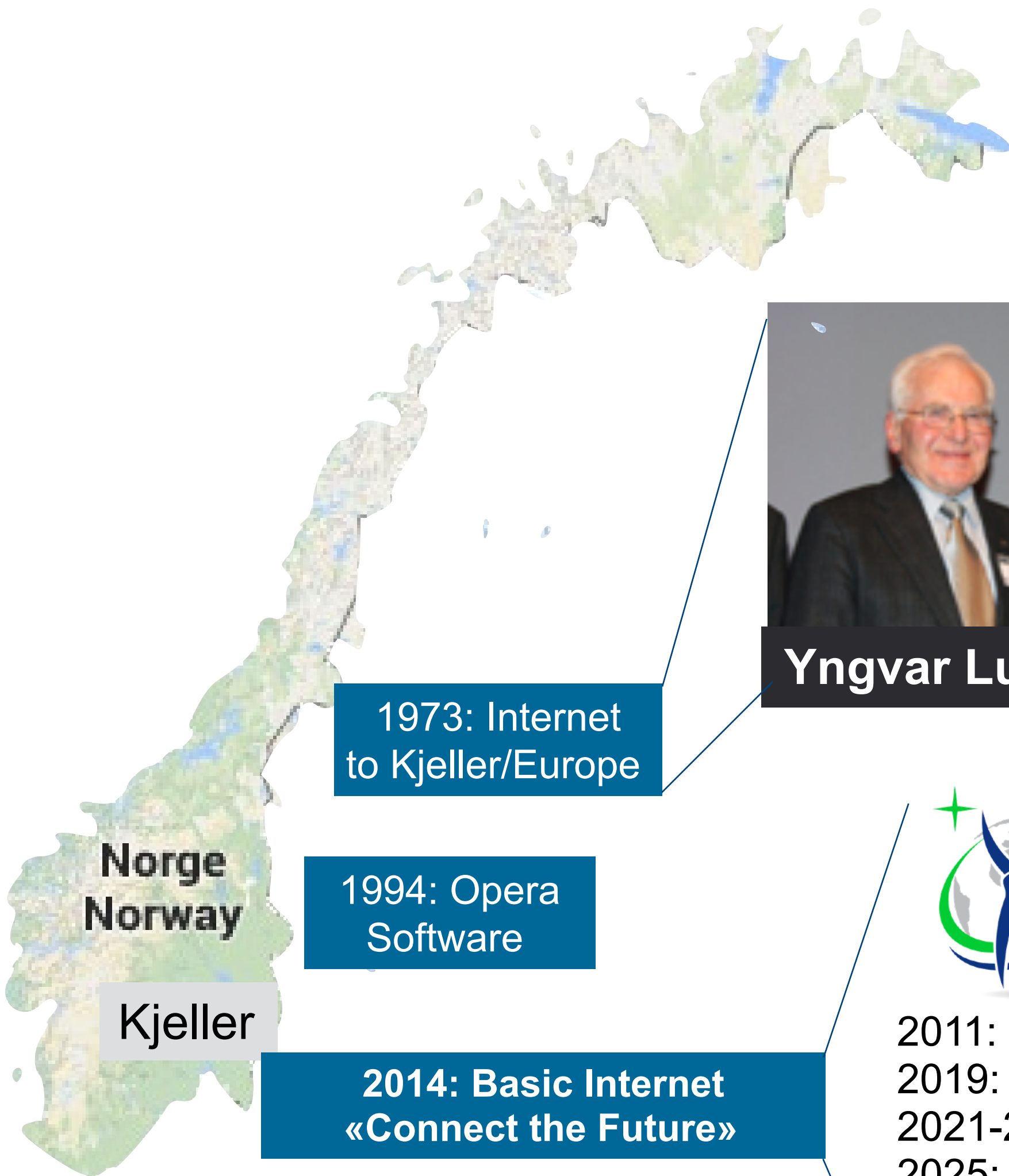
Connecting Africa, transforming lives

Operating across 18 countries in Africa and the Middle East, Orange delivers a unique multi-service model that goes far beyond traditional telecoms. Our mission is to meet essential needs for 161 million customers, providing connectivity, financial services, access to energy, and digital skills training. By investing heavily in infrastructure and innovation, we have become a key partner in the

<https://www.orange.com/en/our-group/our-international-presence/africa-and-middle-east>



Mobile Internet as basis for empowerment



1973: Internet to Kjeller/Europe

1994: Opera Software

2014: Basic Internet «Connect the Future»



Yngvar Lundh

Pål Spilling

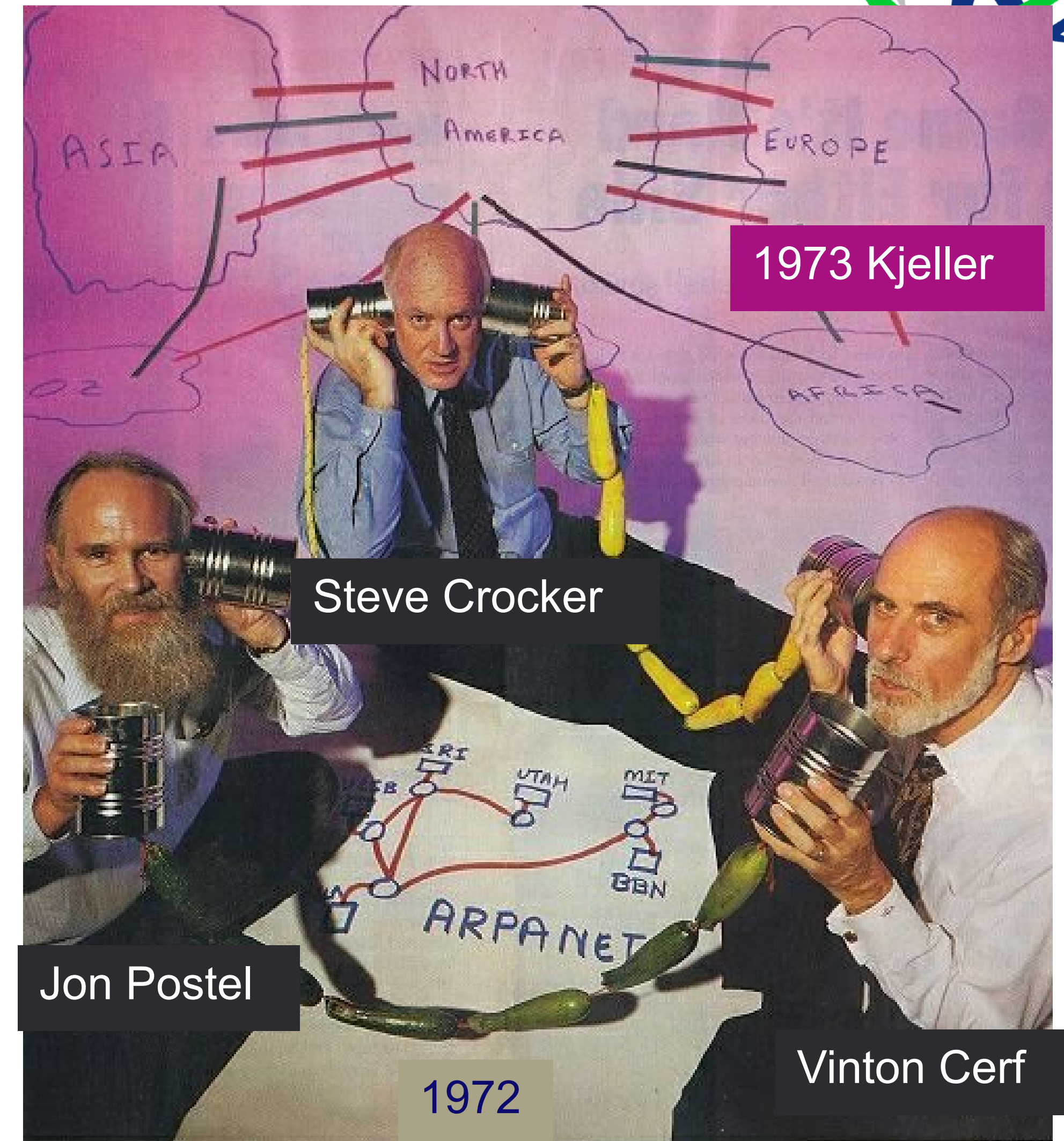


Basic Internet
FOUNDATION
Connect The Future

2011: Lisala in DRC (satellite)
2019: Tanzania & Mali (Orange)
2021-24: 250 schools TZ, KE
2025: Affordable Access AA4EDU
2026: Ethiopia (DHP4DPI.eu)
2026: **DRC**, Malawi



KJELLER
INNOVASJON



Steve Crocker

Jon Postel

Vinton Cerf

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

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

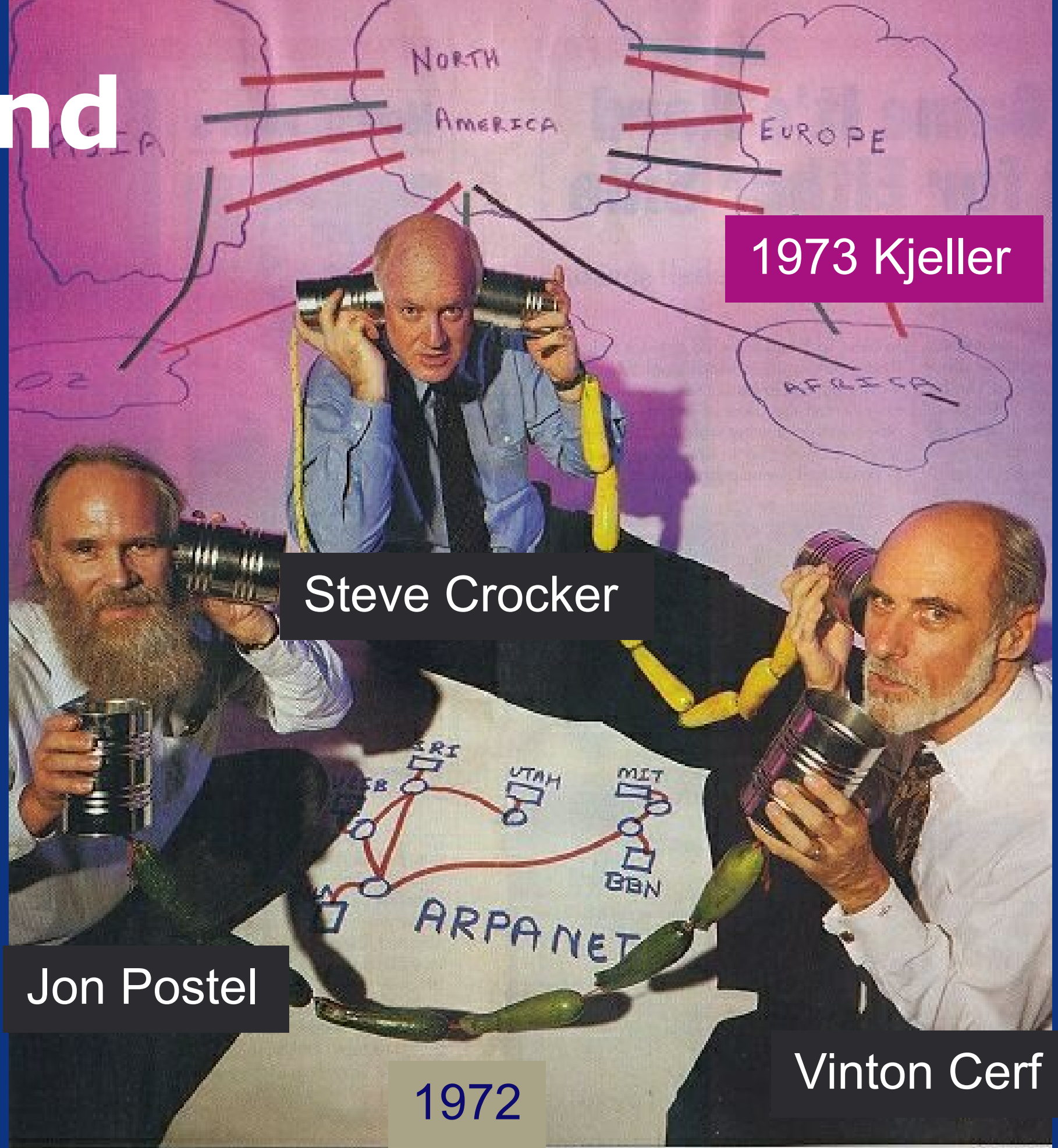
2004 - 4G (LTE): 120 km range, Supplier dev

Aug2003: Reykjavik "Cybersecurity"

Mar2023: "Societal Security" - Digital Equity - #ConnectTheFuture



Vint & Sigrid, Nordunet 2003



1973 Kjeller

Steve Crocker

Jon Postel

Vinton Cerf

1972

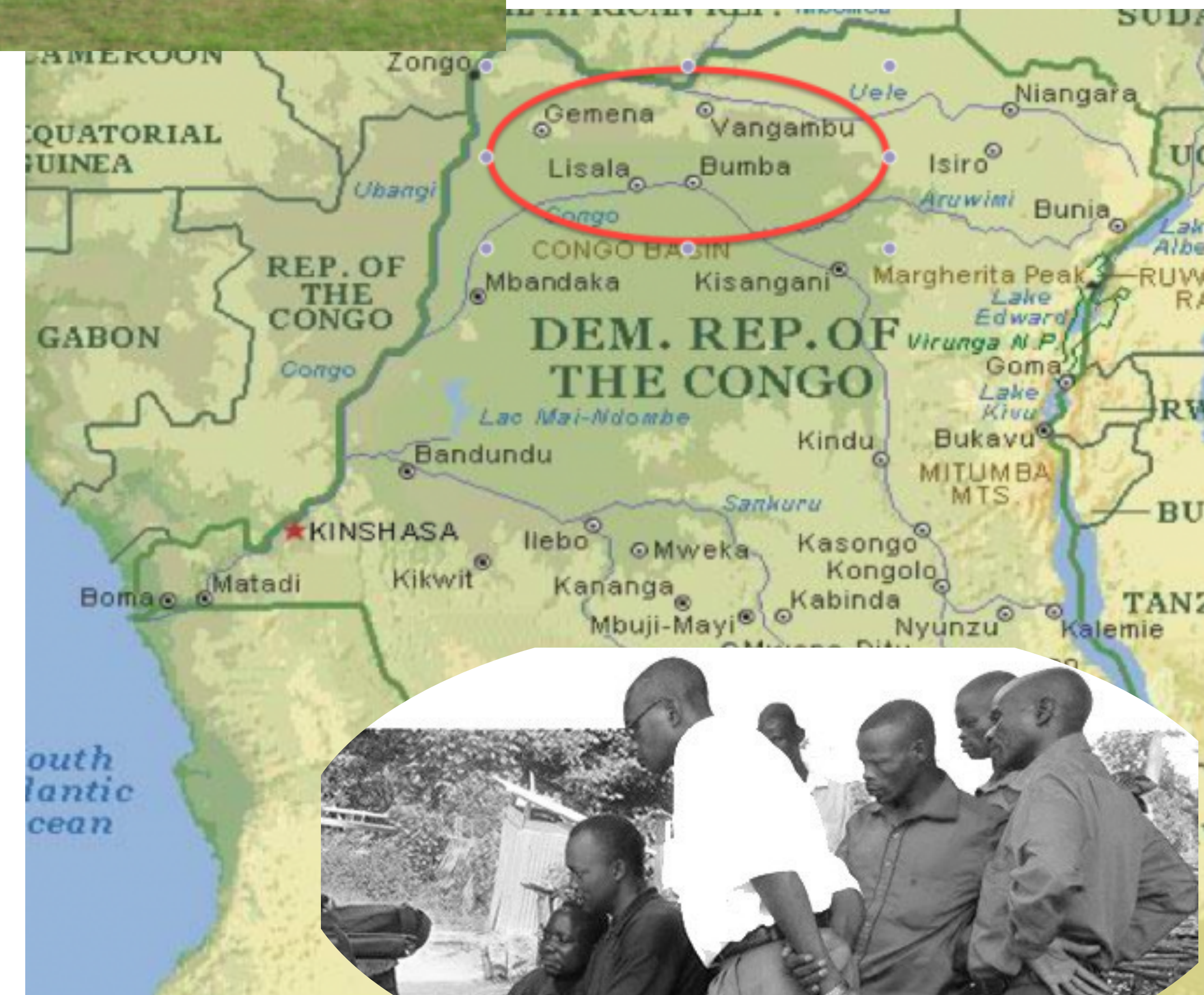
Source: <http://www.michaelkaul.de/History/history.htm>

"The mobile Internet is purely commercial"

Lisala (DRC) 2011



- ➔ Internet provision to various parts of DRC
 - satellite-based operation in 2011
- ➔ Connection to a.o. University of Lisala
- ➔ Experiences from Internet provision
 - Expensive access: 2000 US\$/month for 1 Mbit/s
Note: 80 Mbit/s for 66 US\$ (NO), factor:
2.420 or **0.04%**
 - Requirement for self-sustainable infrastructure



Sustainable Empowerment - catalysts for the SDGs and health empowerment



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

Establish Digital Public Infrastructure (DPI) *and apply the model of the road*

Step 1:



Step 2:



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

at the school, health station and community centre

Our Journey

- ➔ 2011: Lisala in DRC
 - satellite is too expensive (200 USD+)
- ➔ 2019: Tanzania & Mali (Orange)
 - 10 pilots in villages, OPEX <20 USD/month (10 GB)
 - 15%-60% Health knowledge increase (HIV/Aids, Tbc, Cysticercosis)
- ➔ 2021-24: 250 schools in Tanzania & Kenya
 - Package-based mobile broadband does not work
- ➔ 2025: Affordable Access for Education, Health and Empowerment (AA4EDU)
 - launch at the Internet Governance Forum (IGF2025)
 - Vodacom TZ Foundation: unlimited data, 10 Mbps, 60 kTZS (~20 USD)
- ➔ 2025: Ethio Telecom joined AA4EDU
 - unlimited data for less than 10 USD/month
- ➔ 2026: Digital Health Promotion for Digital Public Infrastructure (DHP4DPI.eu), Ethiopia
- ➔ 2026: DRC, Malawi - **invite Orange** for AA4EDU

J. Noll, C. R. Kimambo, P. Mmbando, 2021, "Impact of School Connectivity on Societal Empowerment", https://its-wiki.no/images/f/fd/Impact_SchoolConnectivity.pdf

Hypothesis on Sustainable Business Models

Our aim is to create sustainable business models for the OPEX of school connectivity. Our hypothesis is that "free access to information on the Internet" can be established for an OPEX of less than 20 USD/month, and thus satisfy the recommendation from the School Connectivity Panel discussion¹¹ in February 2019 in Dar es Salaam. The evaluation focuses on three models, though is open for upcoming other business models:

- I. **Wholesale approach** - a mediator acts as a wholesale agent towards mobile operators, and purchases say 100 GB/month for 10 schools. Thus, instead of each school paying TZS 35.000/month, the total bill will be e.g. TZS 200.000 for the 10 schools. This model is in use by the Basic Internet Foundation a.o. in Norway.
- II. **Tax Reduction** - The amount of information used for school connectivity is accounted for as net costs and reduces the yearly license fee paid by mobile operators for the use of mobile frequencies. As an example, connecting 100 schools accounts for 1 Terabyte (1 TB) of data per month, or an estimated net cost of 500 USD/month¹². This net cost can be reduced from the yearly license fees.
- III. **License Regulation** - Access to school and health content is provided free of charge ("zero-rated") as part of the license conditions for the mobile network licenses. The government of Ethiopia has established such a regulation as part of the COVID-19 response (see Figure).



⁸ The DigiL project (2017-2020) focussed on Digital Health provision through information spots in Tanzania, see: <http://DigiL.BasicInternet.no>

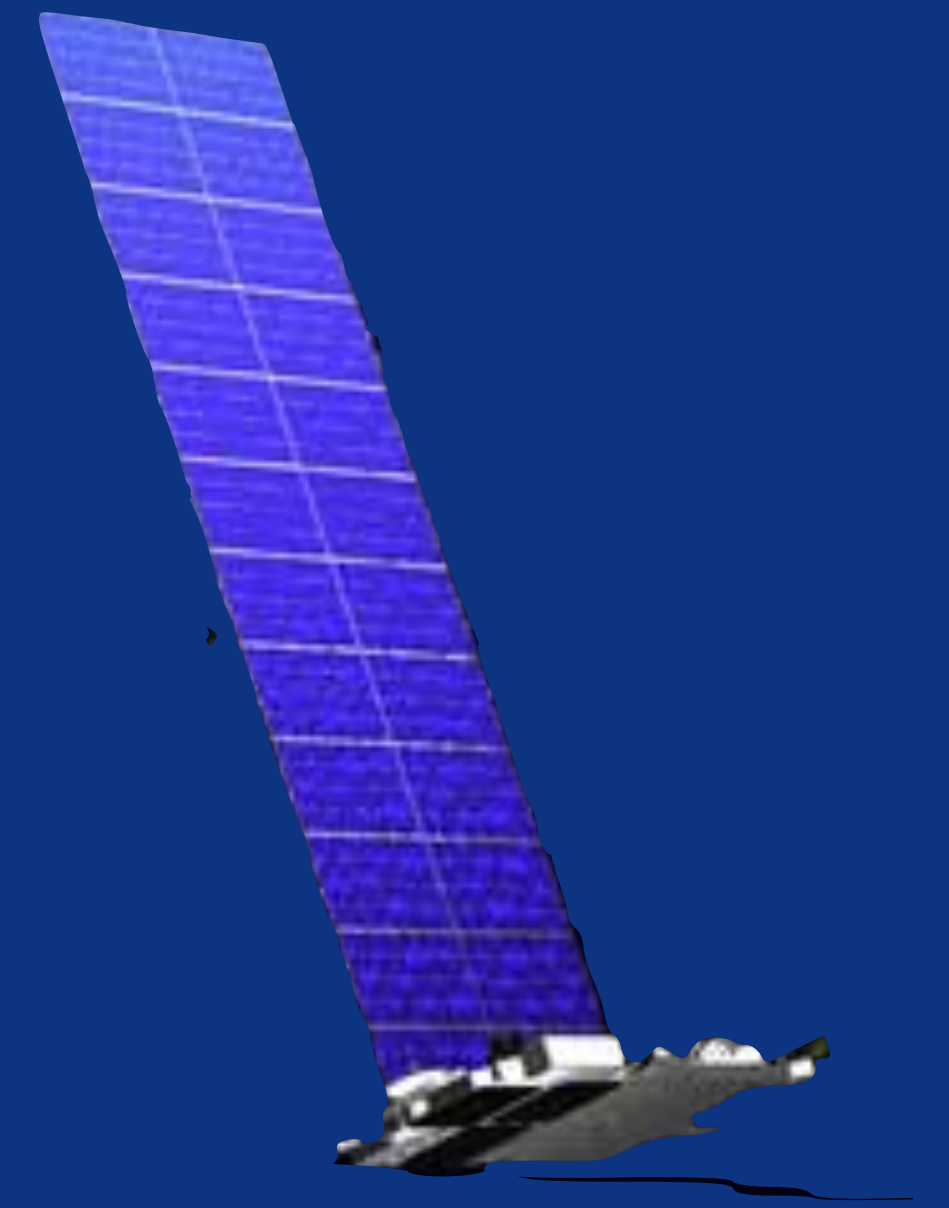
⁹ GIGA is a unique partnership launched by ITU, the UN specialized agency for information and communication technology and UNICEF - <https://news.itu.int/mapping-schools-worldwide-to-bring-internet-connectivity-the-giga-initiative-gets-going/>

¹⁰ GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators - <https://www.gsma.com/aboutus/>

¹¹ Sustainability in School Connectivity-Feb2020 - https://its-wiki.no/wiki/DigiL:TZ-Sustainability_SchoolConnectivity_Feb2020

¹² The estimated net costs of 1 TB = 500 USD are based on existing commercial offers by OPTUS in Australia, offering 75 GB for AUD 50 ~ USD 35 (12Jul2020) <https://www.whistleout.com.au/Broadband/Mobile-Broadband-Plans>

Pathway Starlink access for Community Network



Pathway: Wireless Information Spots (InfoSpots)

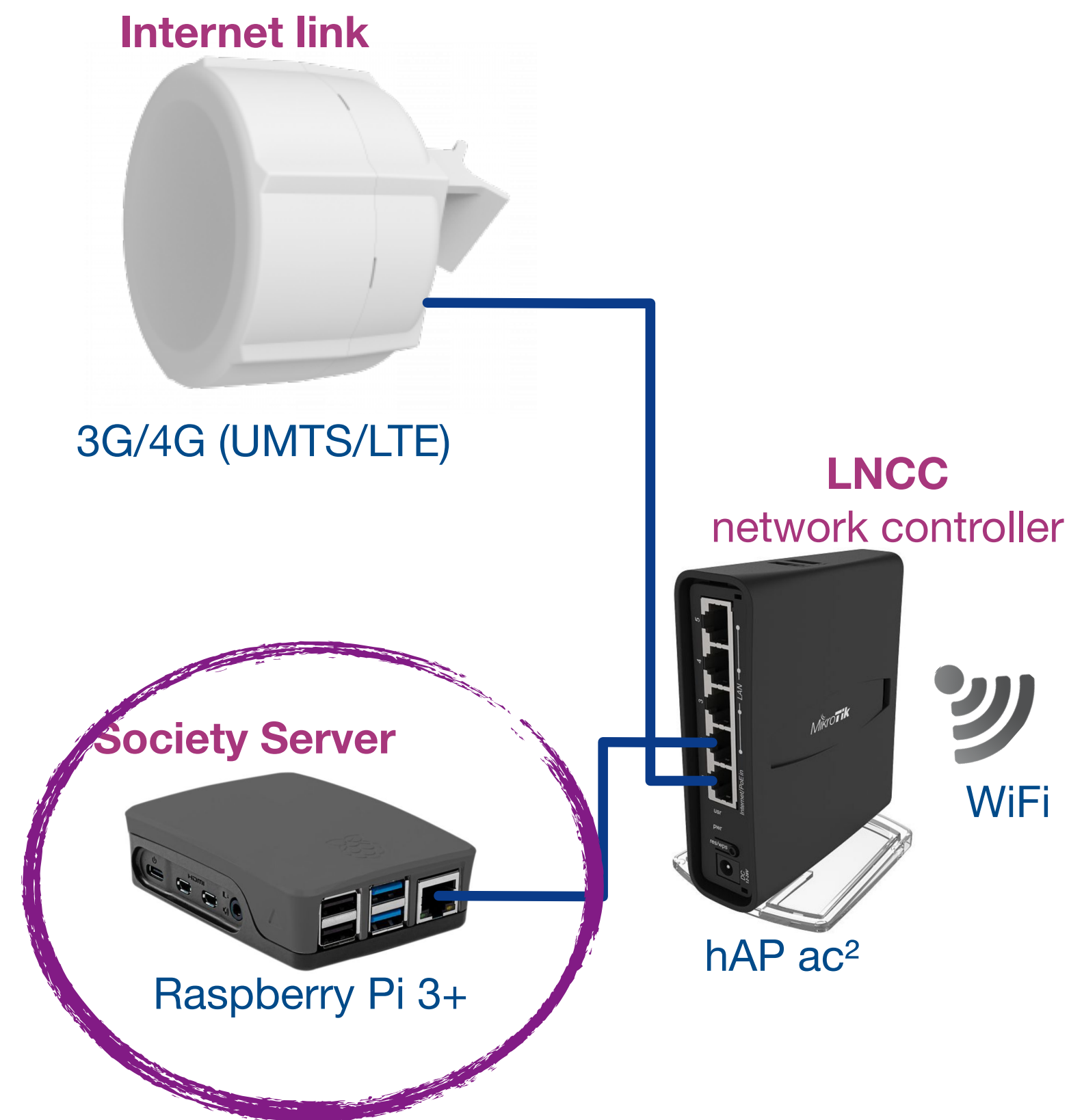




Our approach:

Local empowerment & ownership

- wireless information spot (InfoSpot)
- Reaching out >20 km to mobile network
- Affordable solution: **OPEX** <20 USD/month
- piloted with Orange



2025: AA4EDU launch

Affordable Access for Education, Health and Empowerment (AA4EDU)

by Josef Noll | Oct 20, 2025 | Digital health, Digital inclusion, Internet access, School connectivity

- ➔ Internet Governance Forum 2025, Norway
- ➔ Launch partner: Vodacom TZ Foundation
 - Claire Sithorpe (GSMA),
 - Sudhir Dixit (IEEE CTU),
 - Jorge Perreira (DG Connect, EU),
 - Asim Adeel (GIZ),
 - Catherine Kimambo (African Child Projects),
 - Nicholas Nazar (ISOC TZ),
 - Jonathan Muringani (Basic Internet Foundation) and
 - Prof Josef Noll (UiO)



AA4EDU for launch partner Vodacom Tanzania

On Friday, 27 Jun 2025, we launched "Affordable Access for Education, Health and Empowerment" (AA4EDU) as part of the Internet Governance Forum (IGF) 2025.



2021-2024 Connected 250+ schools in TZ, KE, ET



Koje Secondary School, ET, 2019



Usingo Secondary School, Kenya, 2021



“Connect the Unconnected” Selela Market Place



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

“Connect the Unconnected” Izazi



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

2019-2021 “Digital Inclusion” DigI.BasicInternet.no



[Source: Christine Holst, UiO]

UiO : Global Health
DigitalGlobalHealth.no



2026-2029

Digital Health Promotion for Digital Public Infrastructure (DHP4DPI)

Background:

- Lack of digital participation and costs of access
- Lack of inclusive digital infrastructures in SSA, e.g. only 35% of the population in Ethiopia has mobile internet
- Digital Health Information is fragmented

Goals:

- “Knowledge that changes the world”
- Support Digital Health Promotion (DHP) for All
- Establish health information in schools and communities
- Pave the way for inclusive digital public infrastructure (DPI)
- 229 weeks of exchange between Norway and Ethiopia



Project Owner: Universitet i Oslo (UiO), Project leader: Josef Noll (jnoll@uio.no)

Collaborating partners: University in Jimma, Ethiopia, and Norwegian Institute for Public Health (NIPH)

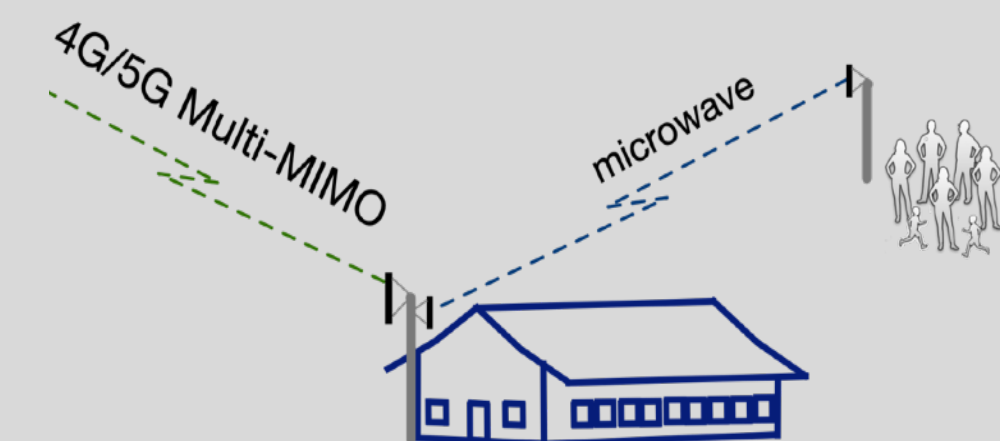
Project period: 2026-2029

Application type: Collaborative Project to Meet Societal and Industry-related Challenges

Public funding: 5 mill. NOK

Web-site: <http://DHP4DPI.eu>

Project Number: 359797



Access Technology comparison

Pathways for Digital Public Infrastructures (DPIs)

	capital invest. (CAPEX) [USD]	Op. exp. (OPEX) [USD/month]	power [W]	download data rate [Mbps]	Comments
LEO (Starlink)	388 - 500	50 - 62 (DRC)	40-60 W	200	(1) needs stable power, Community Network License? political
GEO (Eutelsat Konnect))		1 USD/GB		50-100	(2) 1 GB for 1 USD, Mobile World Congress 2026
TV white space	~700	80-120	40	10-20	Licensing, costs of receivers
Mobile Broadband	140	10-20	20	5-20	(3) "Affordable Access" AA4EDU Tanzania, Ethiopia
Mobile Network Extension InfoSpot	450	10-20	60	5-20	(4) decentralised, own community server, >25 km to mobile tower
Fibre	200 /km	10-50	20	50-500	last mile challenge not solved
Community Networks	500	1-2	20	5-50	(5) licensing, cost of access, buz model, billing
National Research & Education Networks					WACREN, UbuntuNet, RENU,

(1) starlink.com Kisumu (KE) & Kinshasa (DRC), (2) <https://africa.konnect.com/en/satellite-internet/packages>, (3) country specific, (4) extension of mobile network, (5) cost of towers, need access from LEO to mobile network
 further reading: [reports.BasicInternet.no](https://reports.basicinternet.no) (2020)

National Research and Education Networks (NRENs)

- organised by Universities
 - GEANT (EU) and Nordunet as pioneers
- support by national and EU funding
- AfricaConnect1...4



<https://connect.geant.org/2026/02/23/africaconnect-receives-a-e40-million-boost-from-the-eu-to-expand-digital-infrastructure-for-research-and-education-in-sub-saharan-africa>



Silvia Fiore



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The European Union (EU) has granted an additional €40 million for the AfricaConnect project, under the EU's [Global Gateway Strategy](#), aimed at enhancing digital connectivity and research capabilities across Sub-Saharan Africa. The fourth phase has officially begun and the implementation has started.

Following the strong foundation laid by the previous AfricaConnect phases since the start of the project in 2011, this latest project iteration takes a significant leap forward in enhancing the digital infrastructure for research and education (R&E) communities across Sub-Saharan Africa. Within a four-year term, AfricaConnect's newest chapter is dedicated to improving access to high-speed connectivity and deepening global collaboration to better support research, education, and innovation. It also responds to the growing needs to accelerate digital education and

Additional Slides

Health information through animations

Snapshots from platform, HIV and Cysticercosis animations

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[Kuhusu](#)
[Wasiliana nasi](#)
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Epuka Tegu

Kisababishi ya Tegu



Mnyoo bapa aitwae *Taenia solium*, husababisha binadamu kuugua vibaya sana. Binadamu hupata minyoo hao kwa kula nyama ya nguruwe mbichi au isiyoiva 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

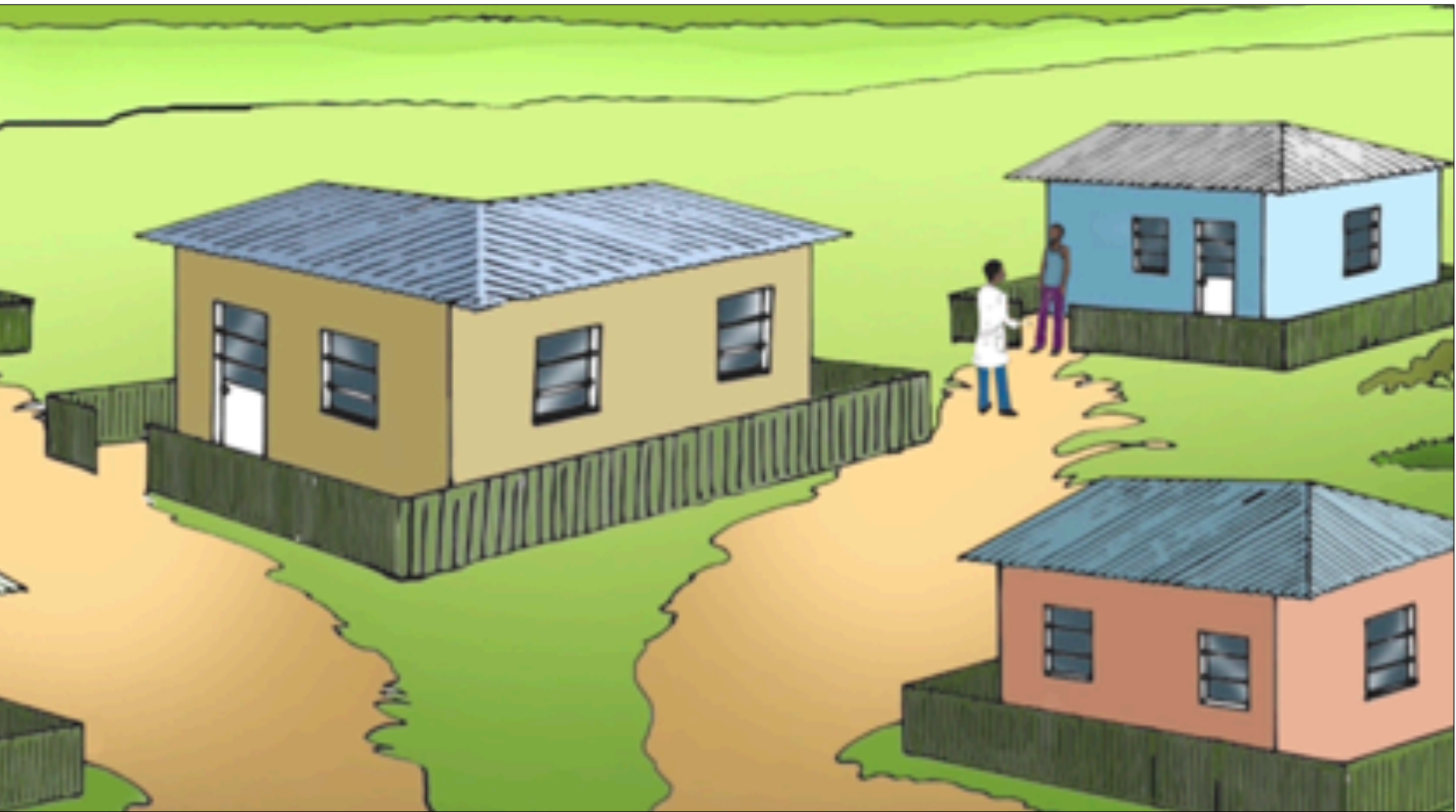
☐ B) Hapana

☐ C) Sijui

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

☐ A) Ndiyo

☐ B) Hapana

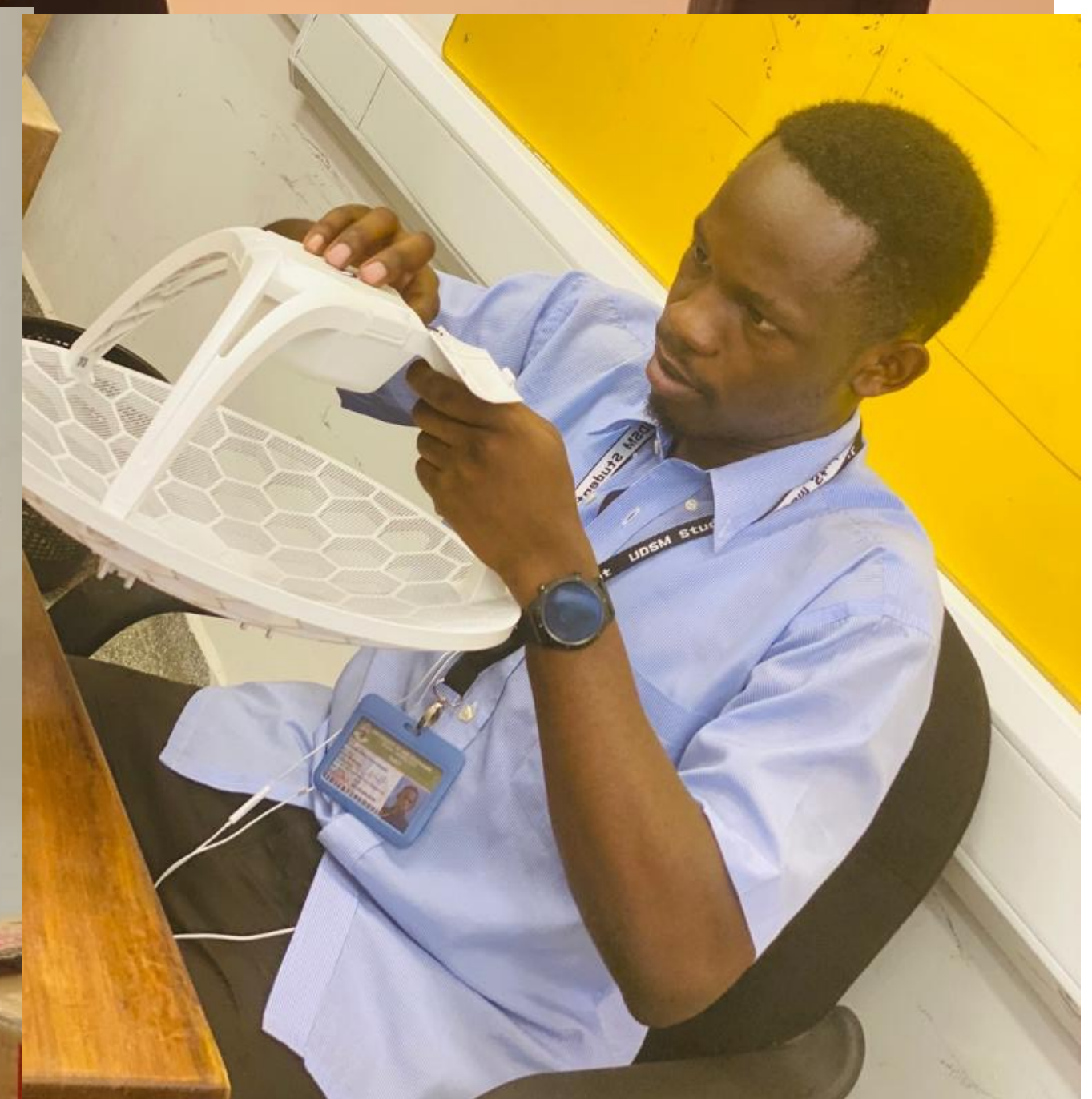


Results: **Knowledge increase** in
 Cysticercosis (TSCT) 60%
 Tuberculosis 30%
 HIV/AIDS 13%

[Source: Christine Holst, UiO (Nov2019)]

Regional Competence Centre (RCC)

- Competence, Configure
- Install at schools/communities





Schools/Communities



- Connect the schools
- Create content
 - Health
 - Education, Energy
 - Gov. Services

