

UiO : **Department of Technology Systems**
University of Oslo

IN5390/9390 Lecture, 25Oct2021, UiO, Oslo

Digital Platforms for Development - “Connect the Unconnected”

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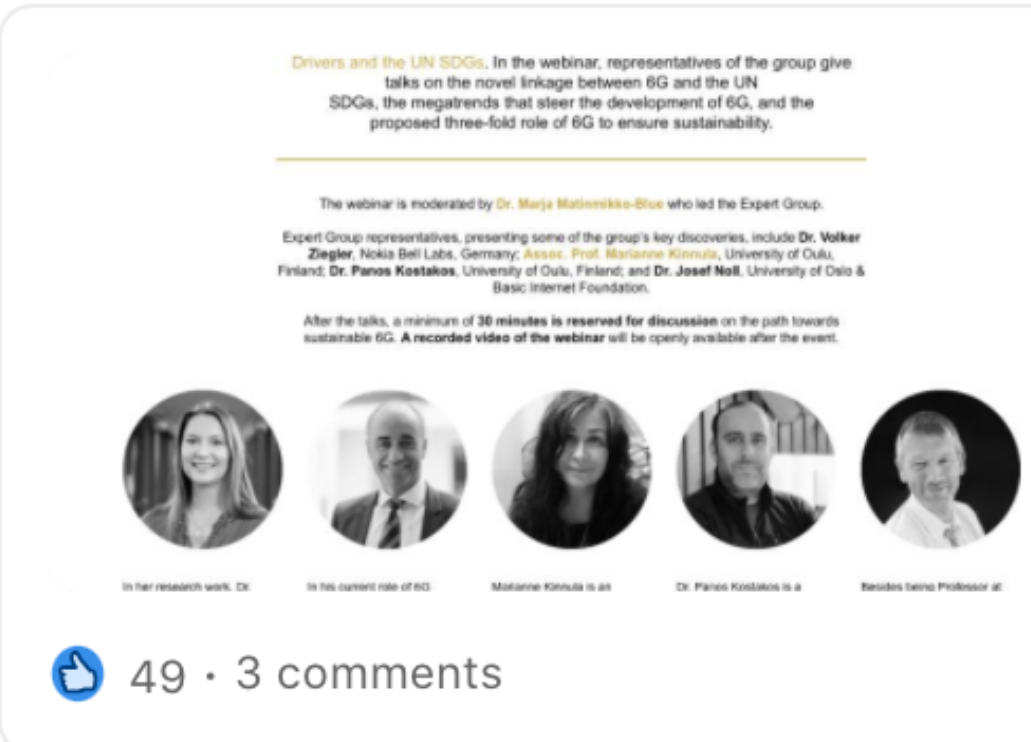


About

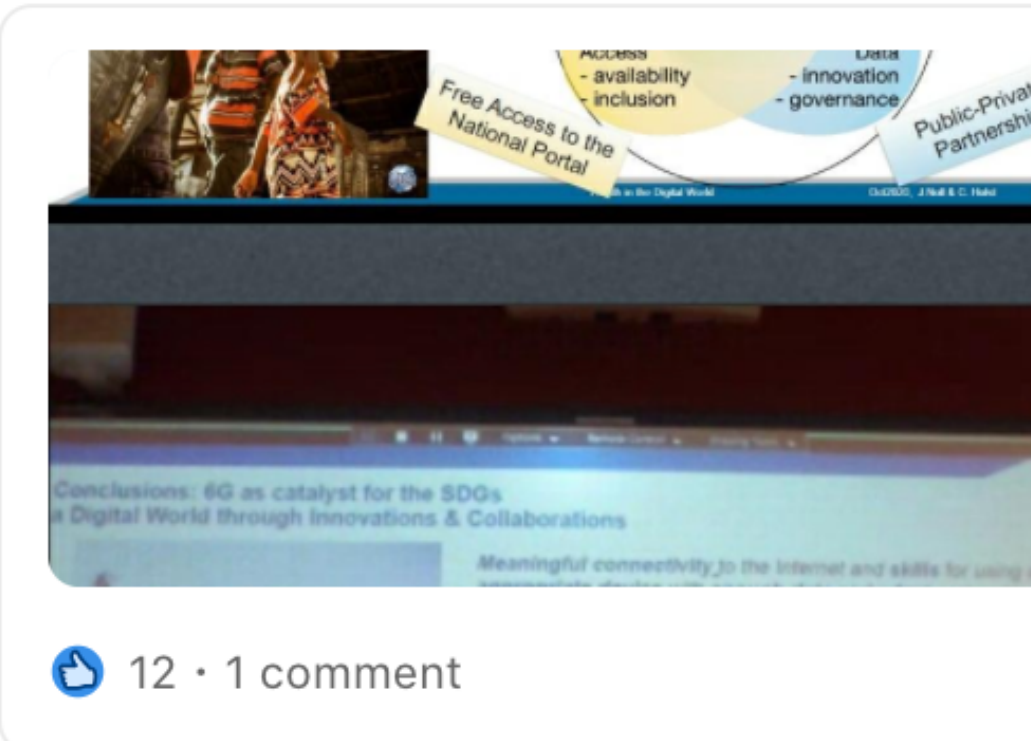


<http://LinkedIn.com/in/JosefNoll>

- ➔ German
“Ordnung muss sein”
- ➔ European Space Agency (ESA ESTEC) (1991-1997)
 - 1992: “Remote Sensing and Climate Change”
- ➔ Telenor (1997-2005)
 - Group Leader 3G/UMTS
- ➔ UiO (Ifi & ITS: 2005-...)
 - Cyber-, IoT-, Societal Security
 - Digital Global Health (CGH)
- ➔ Basic Internet Foundation
 - Connect the Unconnected



The first webinar in the 6G Research Visions Webinar Series “Challenges for 6G Addressing a Sustainable Future – What Is Missing Today?” will present the findings by the expert group members who prepared the White Paper on...



Thanks Rashid to help spreading the message that "we need to think new" to ensure that mobile technologies like #5G and #6G become the Catalyst for the #SDGs. And frankly speaking, I guess everyone agrees that "free..."



Fokus on #SDGs and #JobCreation requires #DigitalInclusion, especially free #Access, #Skills, #Regulations and #Inclusion. #Basic4All Basic Internet Foundation

Starting Point:

JOSEPH E. STIGLITZ

WINNER OF THE NOBEL PRIZE IN ECONOMICS

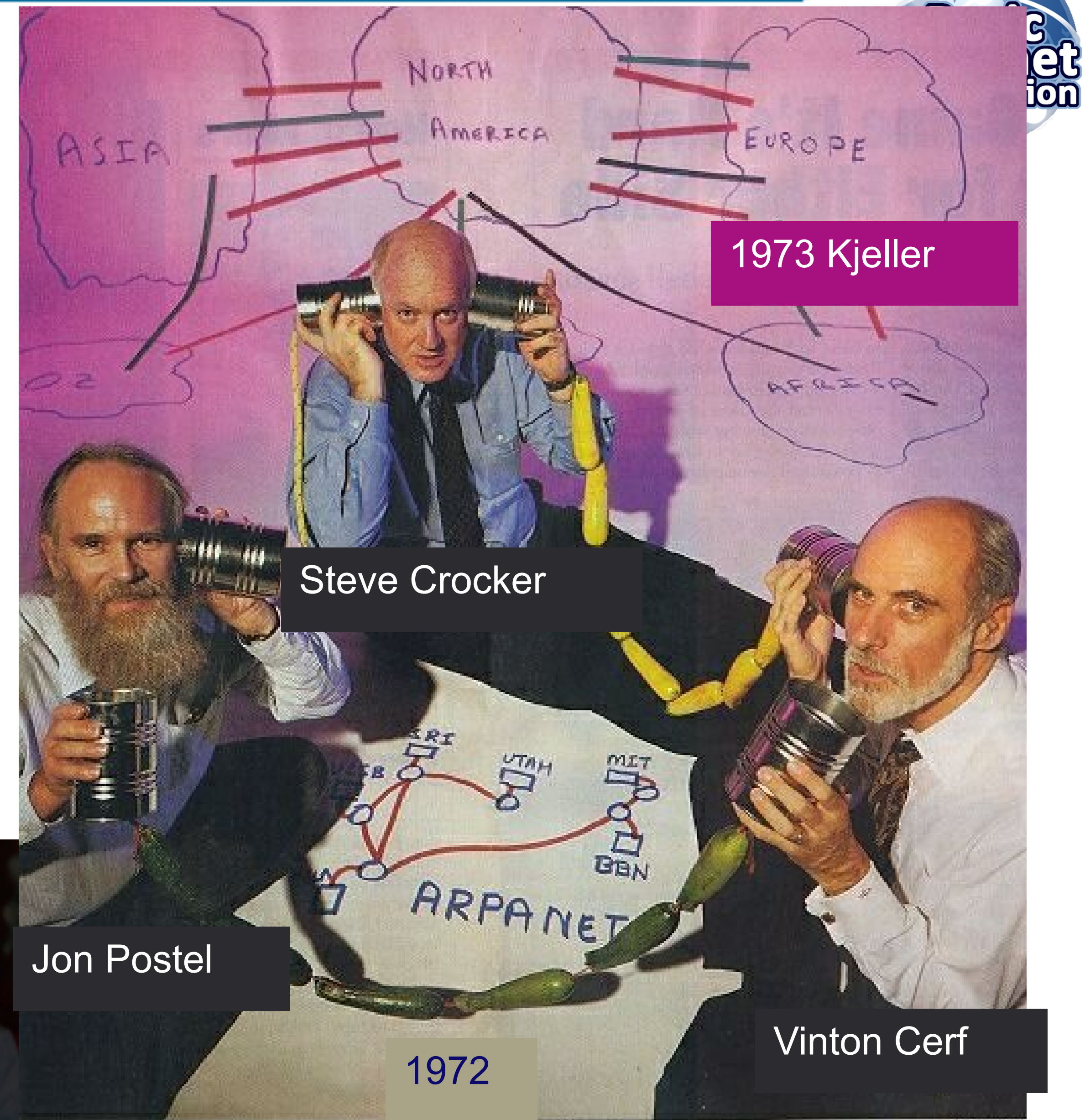
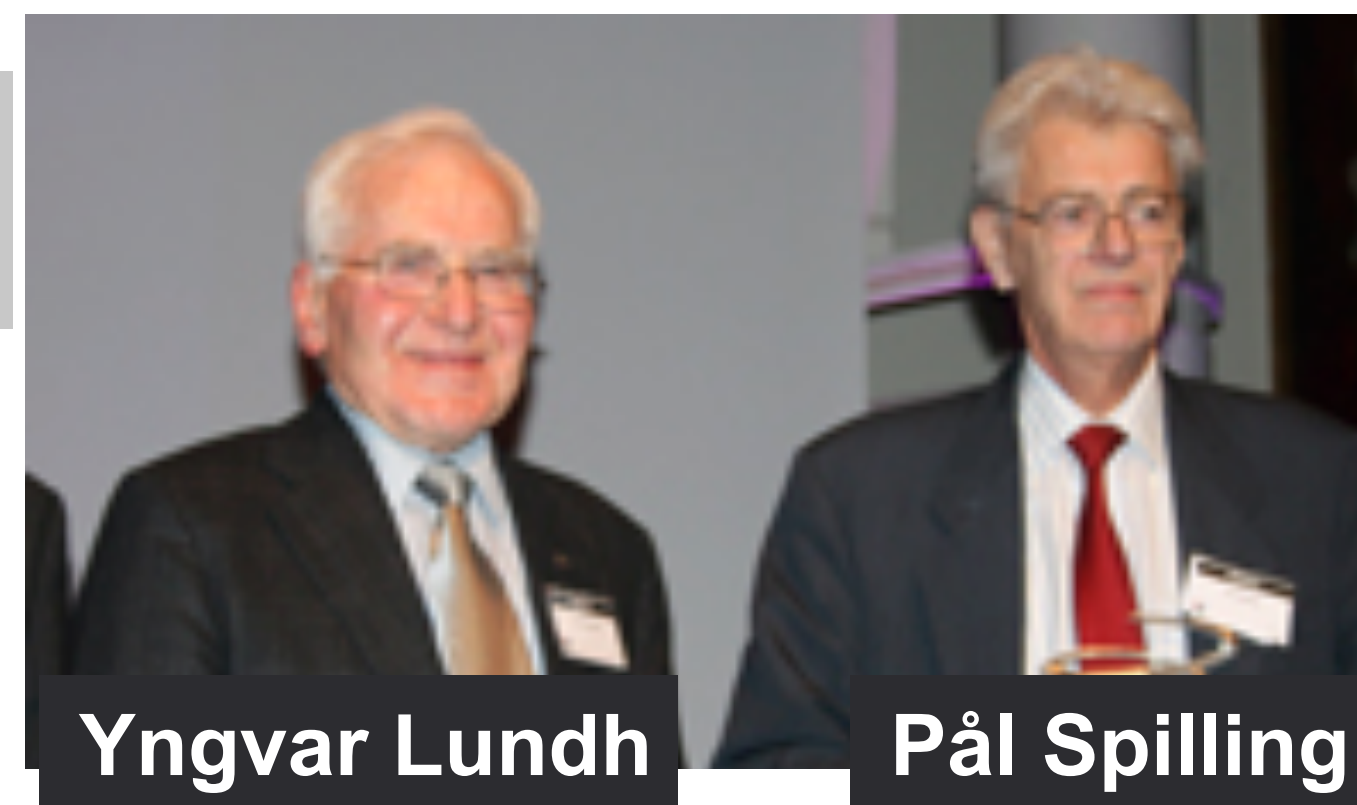
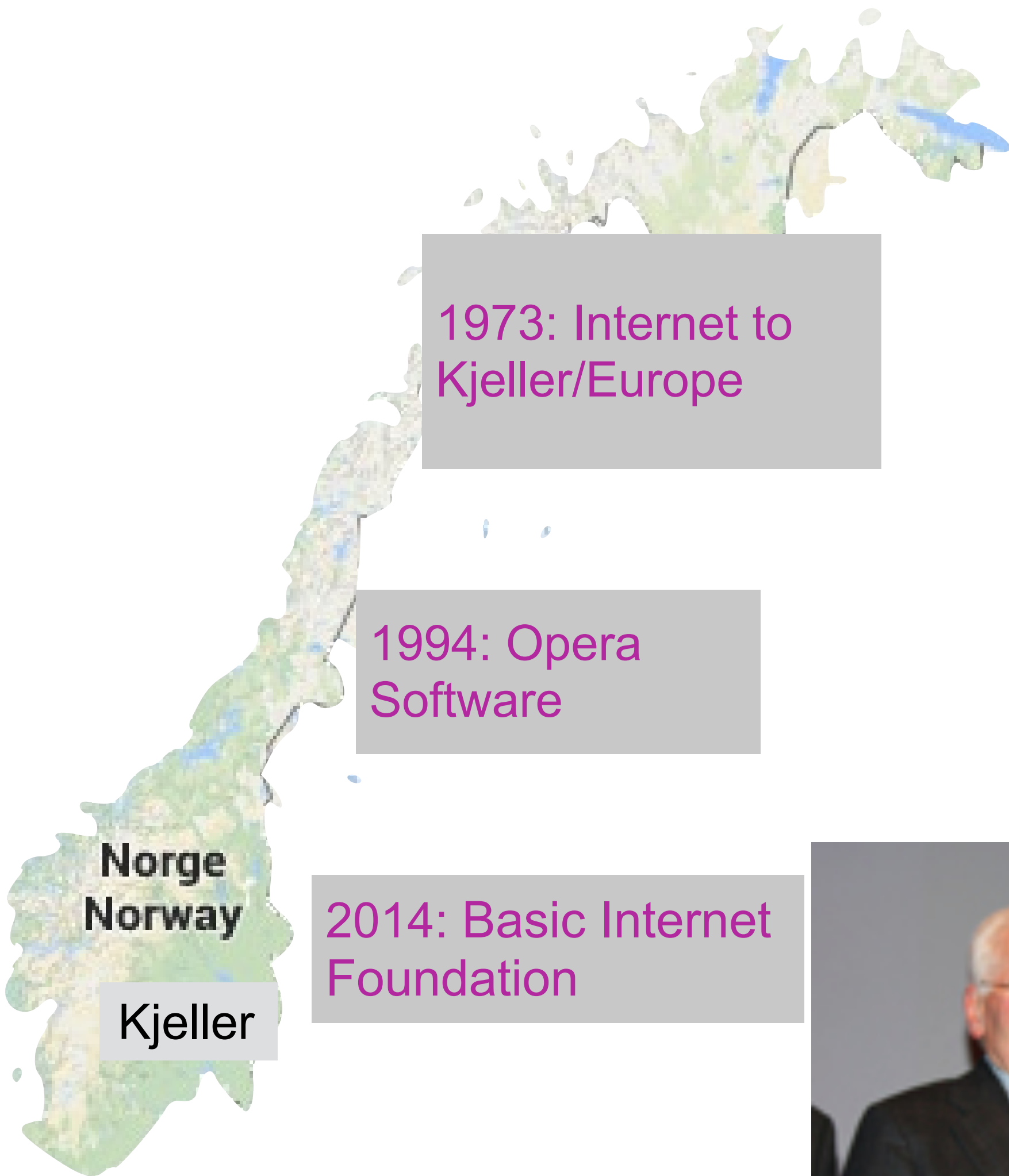
THE PRICE OF INEQUALITY

#Internet4All

“Internet had the ability to
dismantle the divide.
Internet failed miserably, the
divide is bigger than ever.”
Kate Gilmore, Human Rights, UNOG -
2019

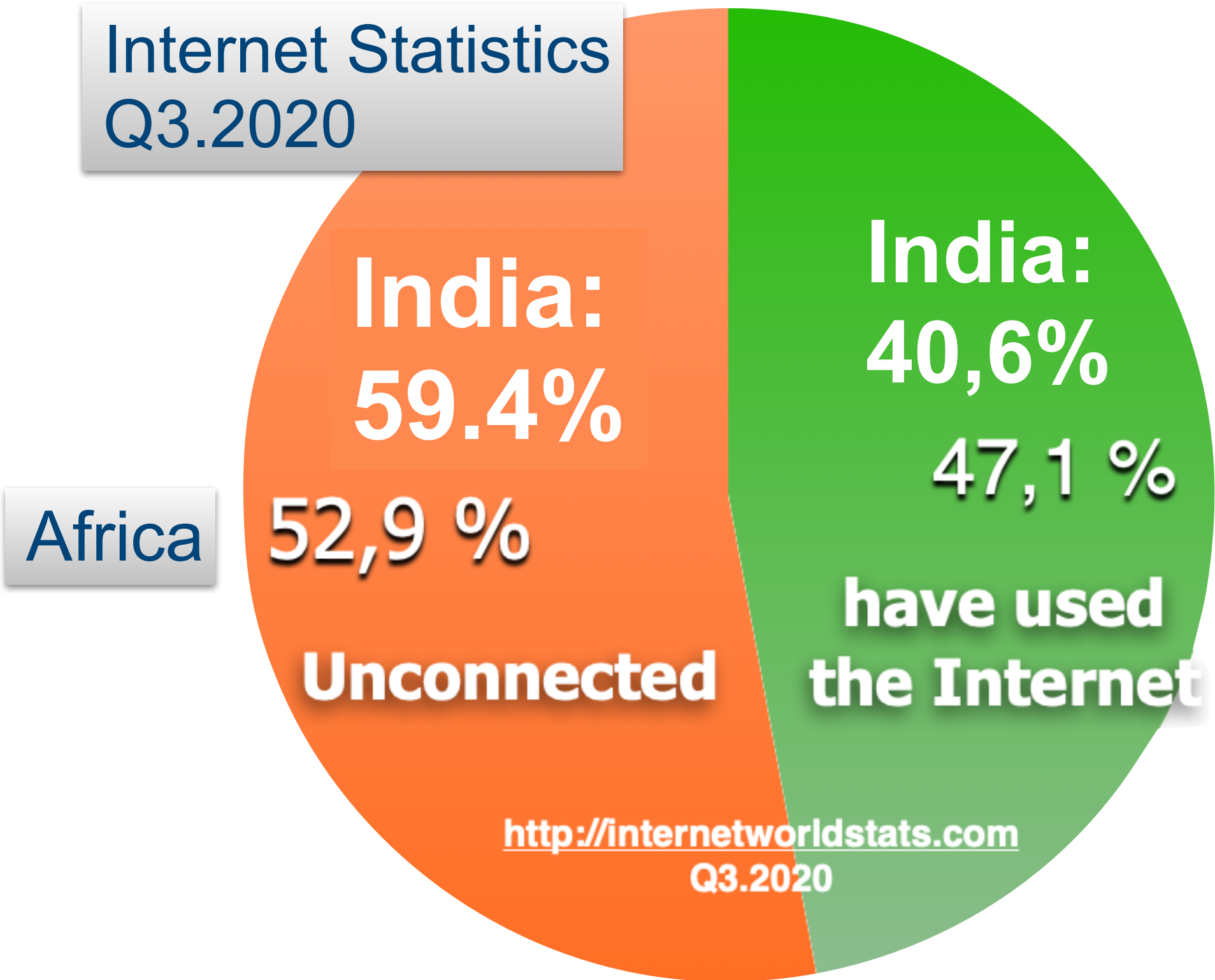
HOW TODAY'S DIVIDED SOCIETY
ENDANGERS OUR FUTURE

Next Generation Internet as basis for empowerment and trust



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

“Connect the >50% unconnected”



Reality on the ground

“There is no broadband in rural areas”
(in South of Sahara Africa - SSA)

Broadband = Mobile Broadband

TZ: 640 USD for 4 Mbit/s
GH: 600 USD for 5 Mbit/s
KE: 600 USD for 10 Mbit/s
“every single month”

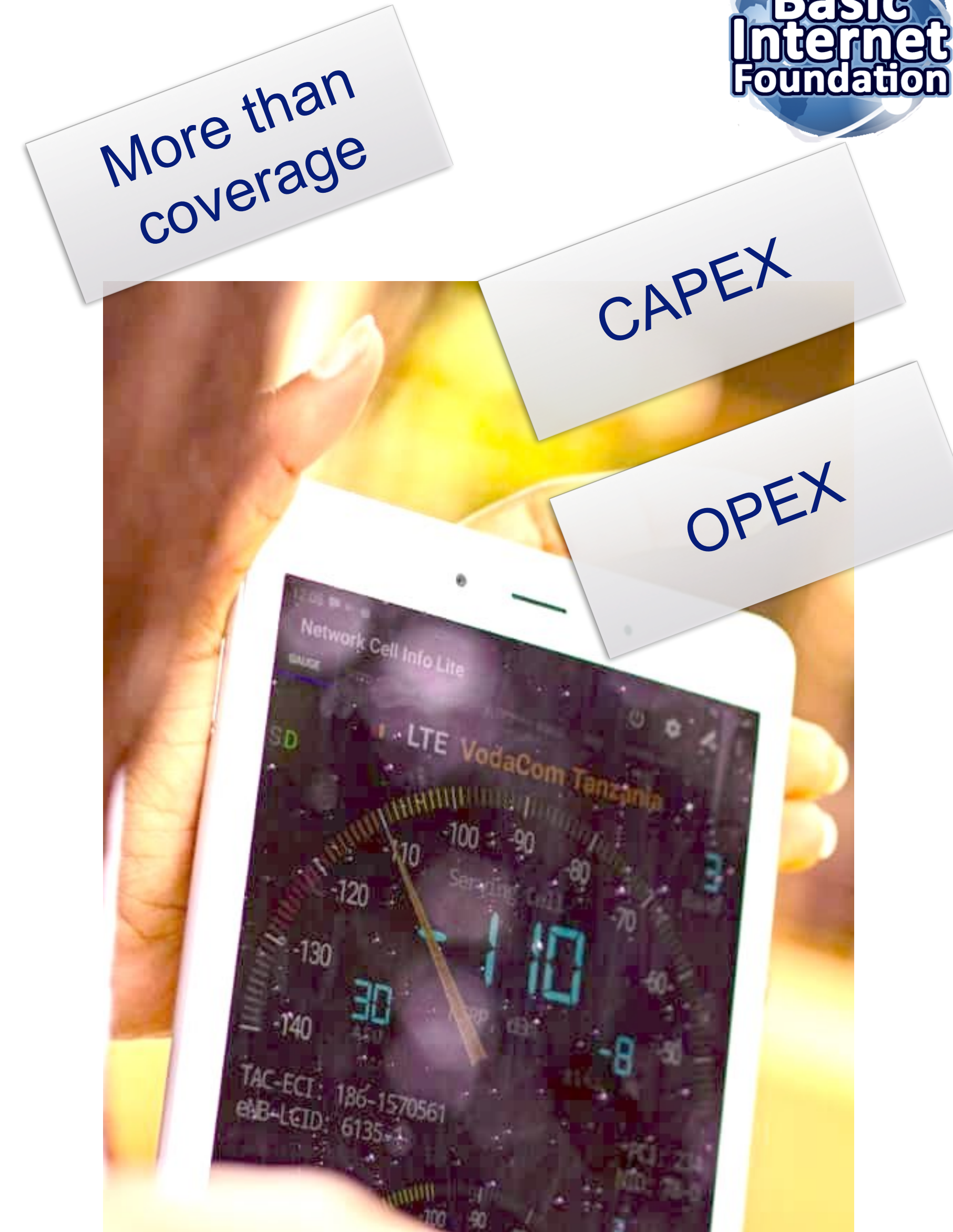
The Buz model of operators / device manufacturer / mobile industry ...

ASIA INTERNET USE, POPULATION STATISTICS DATA AND FACEBOOK DATA - JUNE 30, 2020						
ASIA	Population (2020 Est.)	Internet Users, (Year 2000)	Internet Users 31-MAY-2020	Penetration % Population	Users % Asia	Facebook 31-MAR-2020
India	1,380,004,385	5,000,000	560,000,000	40.6 %	24.3 %	251,000,000

Reality of the Digital Divide

- Internet through the mobile network
 - Mobile network is business-driven

- “Boys have the toys”
 - digital divide in both devices
 - ▶ Example Smartphone ownership:
33% male, 16% female (Bangladesh)
 - mobile broadband access



“Our vision is to improve the life of **every human** through **free access to information** on the Internet....”



Internet light for All

- the “walk on the Internet”

Road Infrastructure

→ Basic infrastructure

- free usage for pedestrians & cyclists
- authentication for cars
- Pay for use model when a license plate is required



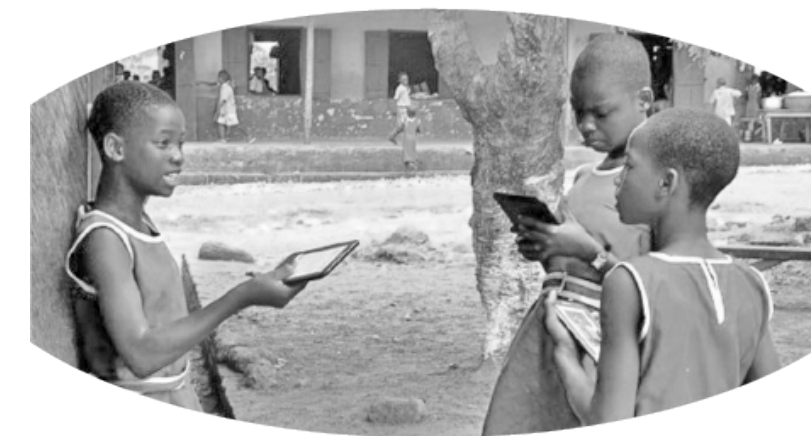
→ Highways & toll roads

- speed & comfort
- often privately managed

Internet Lite Infrastructure

• Basic Access

- free access of information
- text, pictures and local video



• Broadband and Mobile services

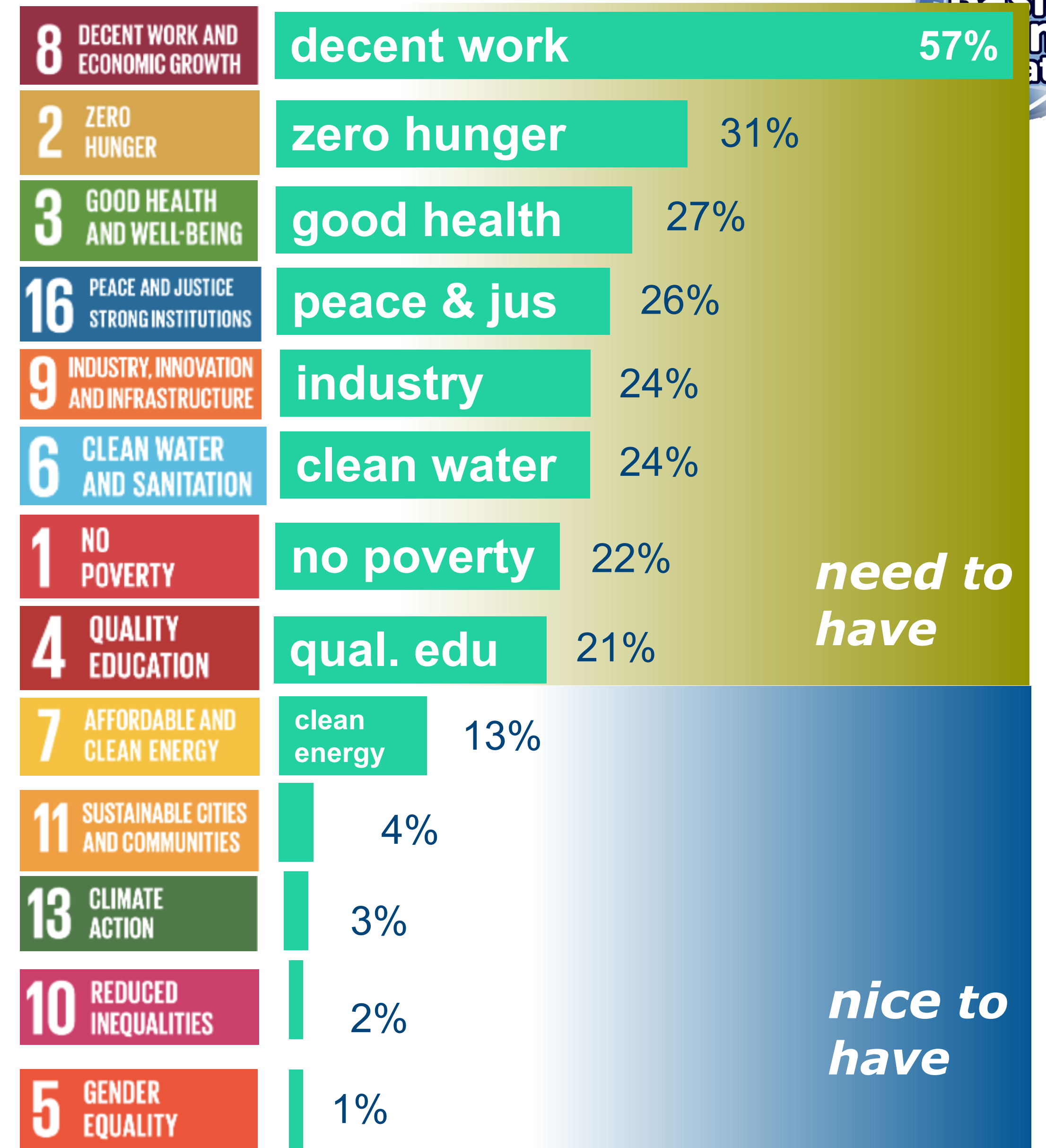
- Voice, video & games
- speed & comfort
- privately managed



Internet and the SDGs in Africa

Source: afrobarometer.org

- Public Opinion on SDGs
- Priorities by people in Africa
 - decent work
 - zero hunger
 - good health
 - ...



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

How? - 10 min discussion

Internet light for All

- the “walk on the Internet”

Road Infrastructure

→ Basic infrastructure

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- authentication for cars
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→ Highways & toll roads

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Internet Lite Infrastructure

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• Broadband and Mobile services

- Voice, video & games
- speed & comfort
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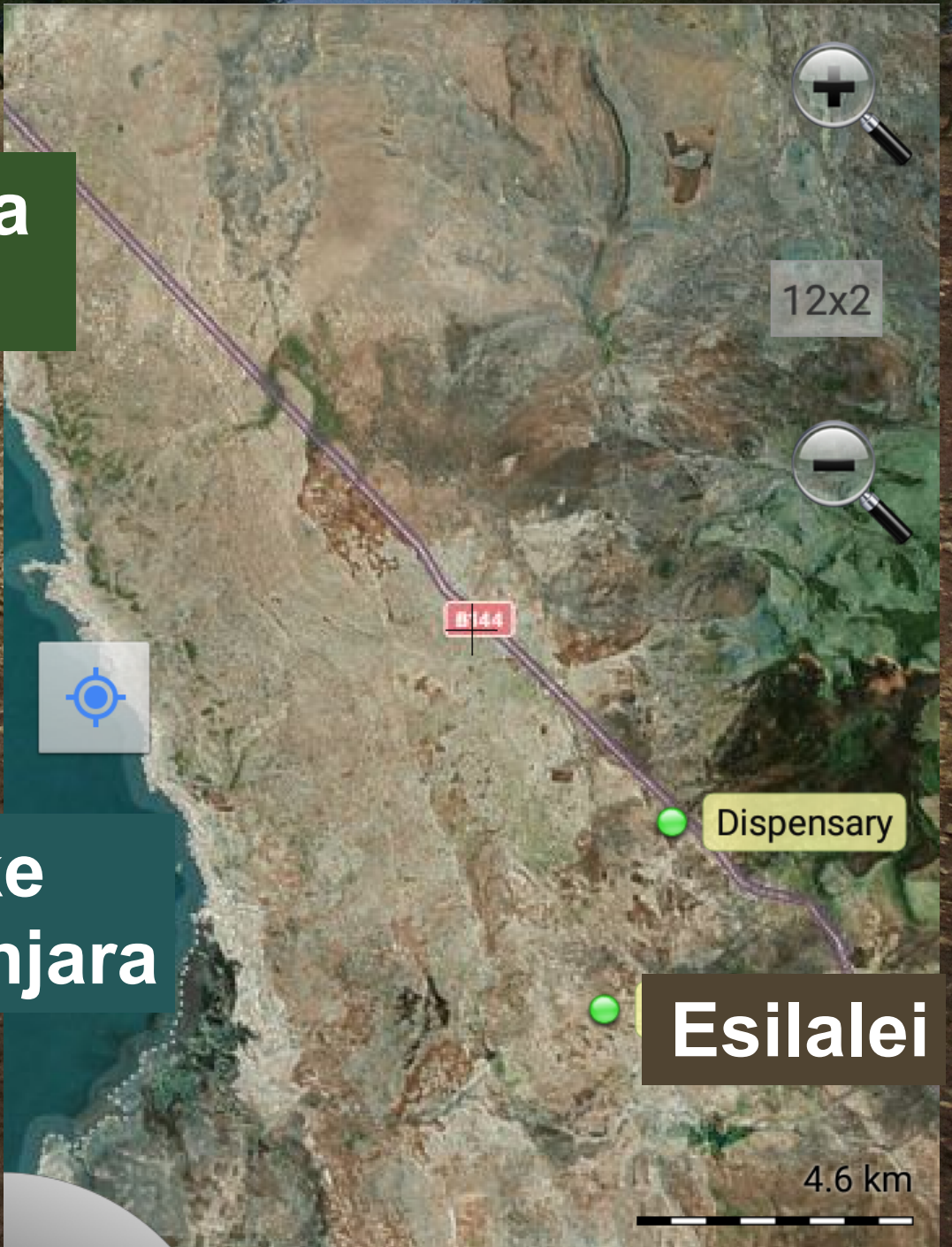
#Digital Inclusion
#Societal Empowerment
#Digital Health
#Women and Girls



Mto wa Mbu

Lake Manjara

Esilalei, TZ



Esilalei (Arusha)



The three pillars of our mission

Digital Empowerment of All
fostering sustainable Business &
Meet the SDGs

1 Affordable and meaningful internet access for all

Every single human
3.5+ B unconnected

Affordable backhaul and local
coverage

Free access to Basic Internet
(**Internet Lite**)

2 Digital Knowledge platform

Digital Public Goods for free
(DPGs: light/heavy)

Capacity Building: Digital, Health,
Edu, Communications,....

Village/School platform

GovStack.global, EduStack

3 Innovative business models

Freemium model
- free Internet Lite
- premium Broadband

Value & business creation

local services & content

Tight coupling to evolve with new technology trends, such as AI, ML, 5G, and cloud, to add value and adapt to user's digital capacity

Addressing the Priorities of Norway



Norwegian Ministry
of Foreign Affairs

Summary

Meld. St. 11 (2019–2020) Report to the Storting (white paper)

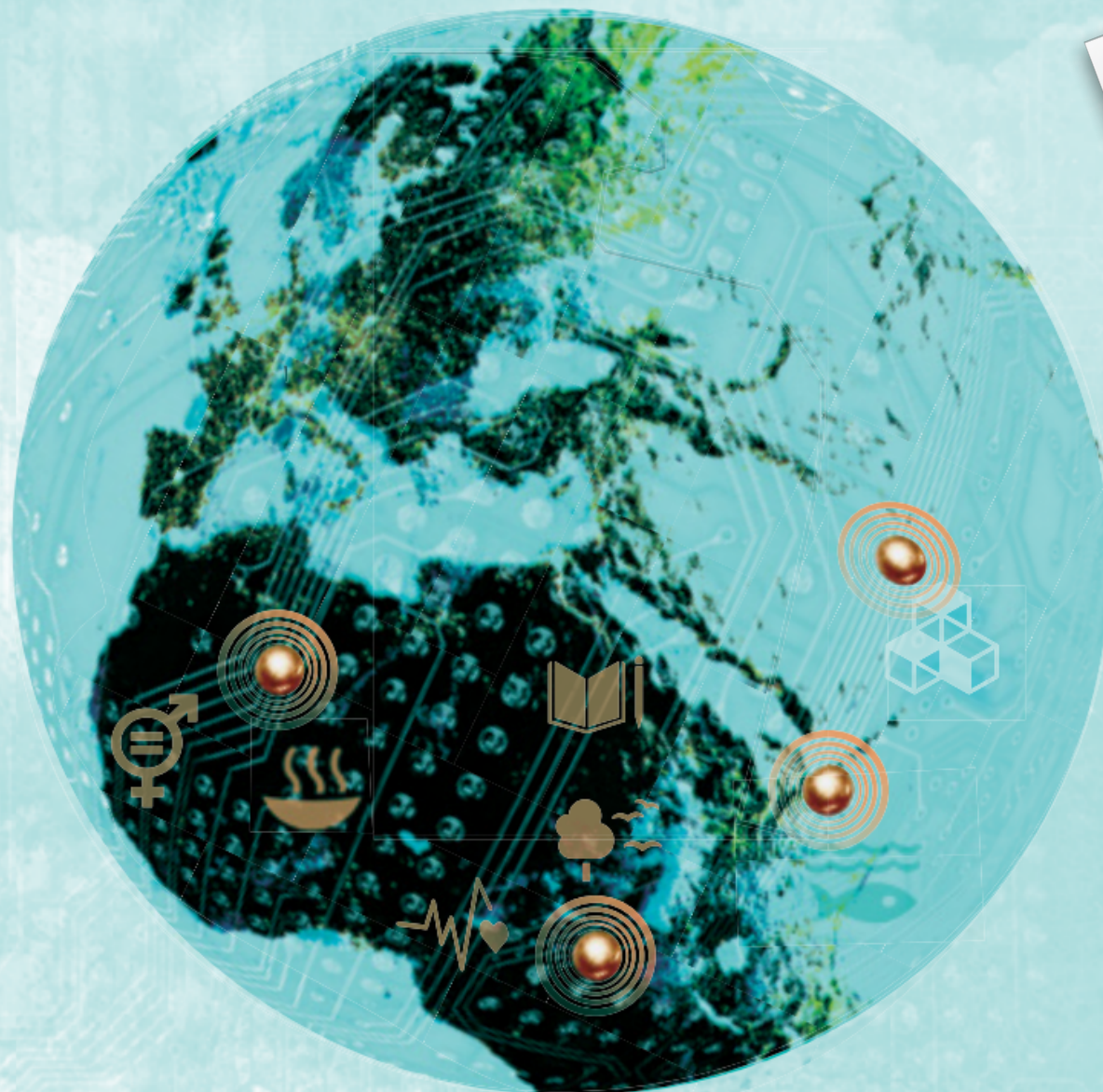
Digital transformation and development policy

Access

Skills

Regulations

Inclusion



16

Meld. St. 11

Digital transformasjon og utviklingspolitikken

2019–2020

Boks 2.2 Digital inkludering og tilgang til informasjon for alle

Norge støtter stiftelsen Basic Internet Foundation gjennom finansieringsmekanismen Visjon 2030. Stiftelsen, som er et samarbeid mellom Kjeller Innovasjon og Universitetet i Oslo, bruker digitalisering til å gi tilgang til informasjon som et grunnlag for inkludering og styrking av individers og lokalsamfunns rettigheter.

Basic Internet Foundation jobber med å gi fri tilgang til informasjons-internett eller «Internet Lite», og har som overordnet mål å sikre digital inkludering. Stiftelsen har utviklet en løsning der digitalt innhold som krever mye båndbredde (for eksempel videoinnhold) siles ut, mens «lettere» innhold (tekst og bilder) gjøres åpent tilgjengelig. Stiftelsen anslår at én persons betalte bruk av innhold som krever større båndbredde, kan finansiere fri tilgang til «lettere» informasjonsinnhold for flere titalls brukere.

Stiftelsen har utviklet billige løsninger for wi-fi-hotspots som installeres i landsbyer som ikke har internettdækning. Helseinformasjon fra lokale helsemyndigheter lastes opp på en lokal server tilknyttet en wi-fi-hotspot, og dette innholdet kan lastes ned gratis av landsbybefolkningen. I tillegg skal stiftelsen tilby svært rimelig «Internet Lite» til landsbybefolkningen i samar-

beid med lokale mobiloperatører. Dette testes nå ut i Tanzania og DR Kongo.



Figur 2.4 Leder av lokalsamfunnet, Mbaash, foran lokal helseklinikk som har fått internett tilgang via Basic Internet Foundation.

Foto: Josef Noll, Basic Internet Foundation.

Providing Internet for All

- **Free access to Information** (Internet Lite)
 - 1) Access - one **Information Spot** per village
 - 2) Skills - Health, Education, Agriculture
 - 3) Regulations - Freemium model
 - 4) Inclusion -
Free access for all #LeaveNoOneBehind
- Internet Lite & **Freemium** model for access
 - **free access to National Knowledge Portal** for all
 - **premium** access to **broadband**
 - sustainable solution

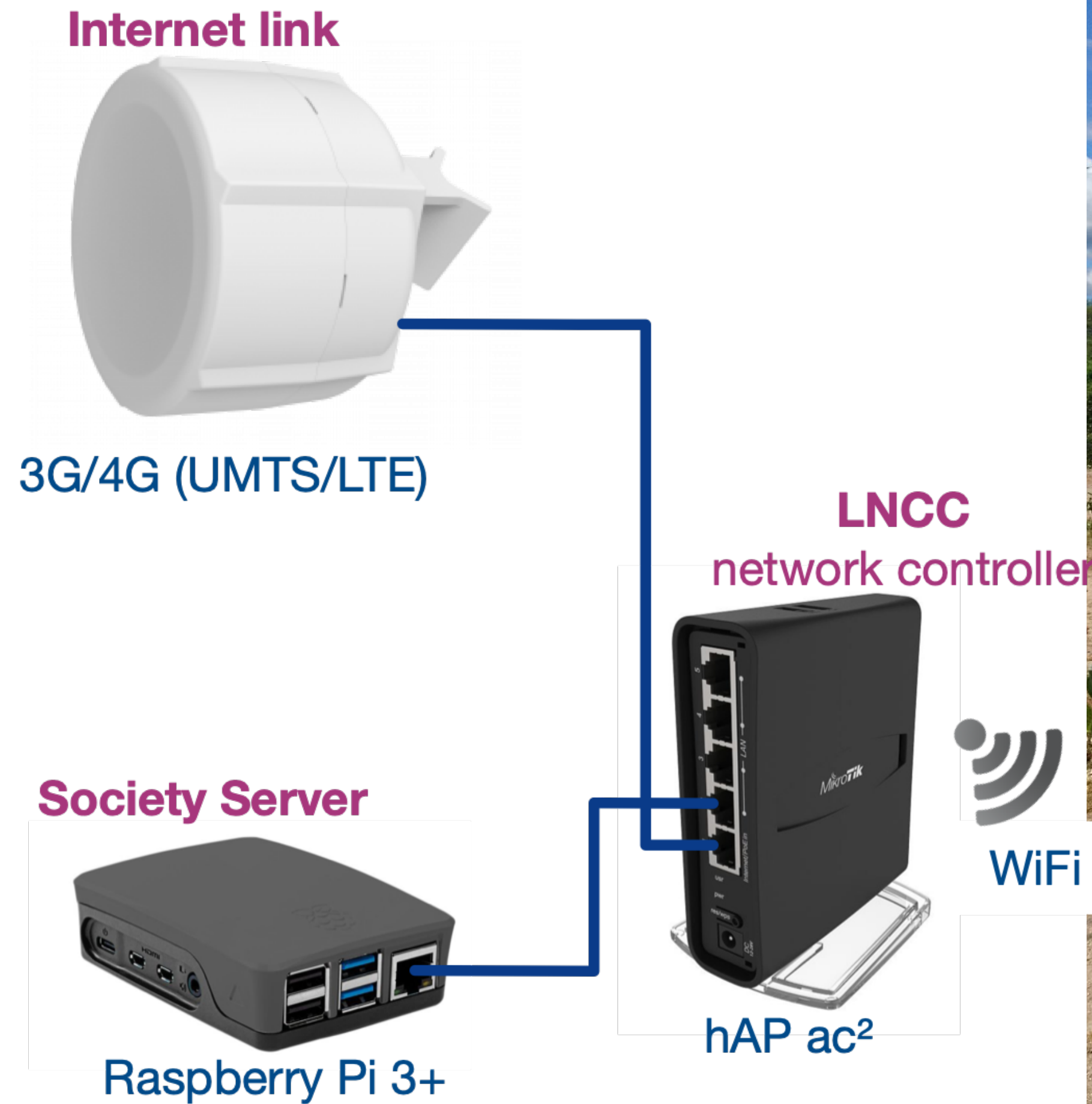
+18 dB
>20 km

“Providing Internet to the basic of the pyramid isn't a question of affordability, but rather a question of sustainability”
Internet Governance Forum, Panel, WI

At least
one **Information Spot**
per village

Technology Used

<http://Solutions.BasicInternet.no>



School Connectivity

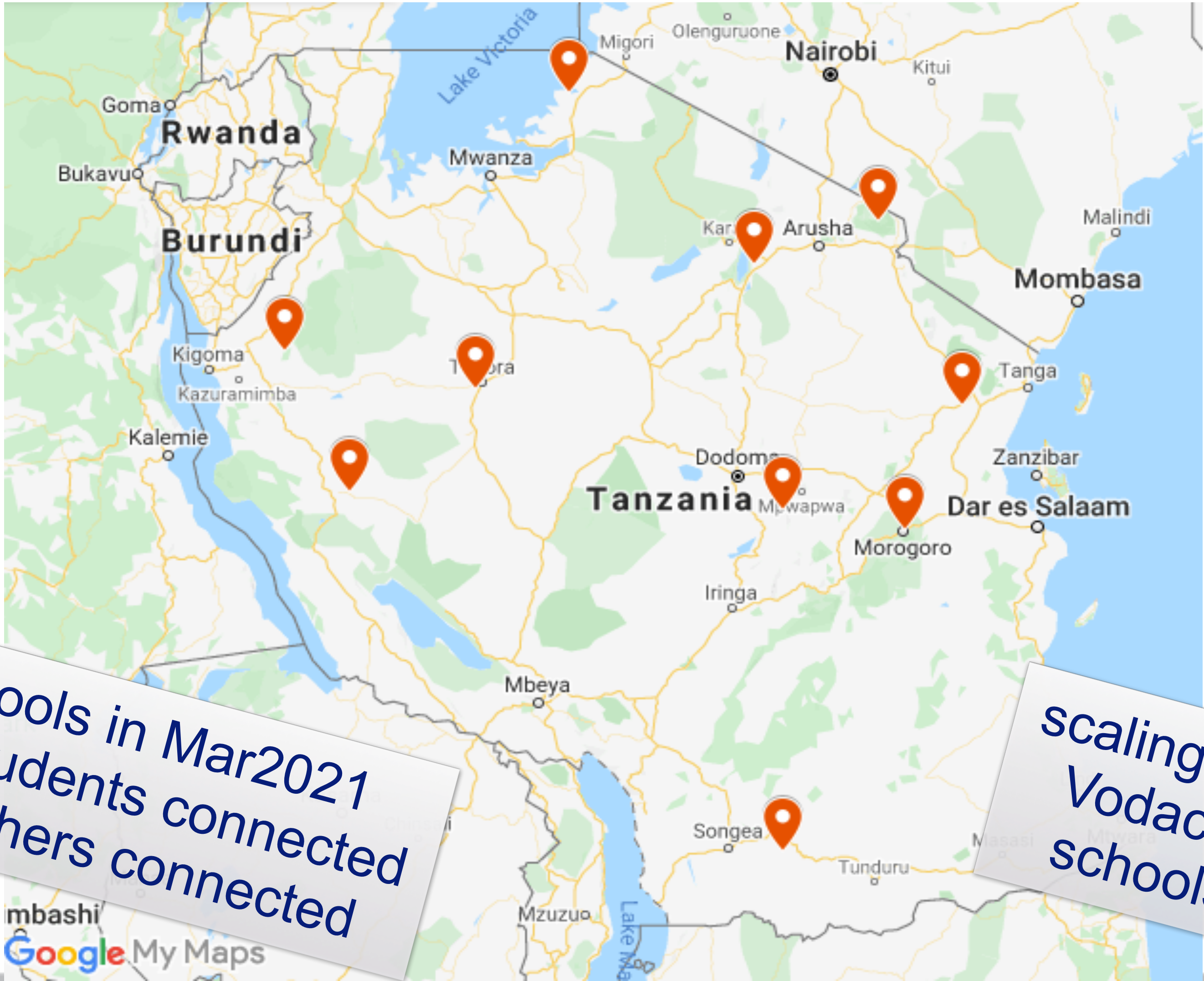
Examples of Activities

- ➔ **Tanzania** - feasibility of affordable OPEX
 - 10 schools (Mar2021) → 50 (Nov2021) → 200 (Q1.2022) → national framework
 - UCSAF, MCIT, Mobile Operators (Vodacom, TTCL, Airtel, Halotel), Shuledirect
- ➔ **Kenya** - private sector collaboration
 - 50 schools Oct2021 → National Framework
 - harmonisation with UNICEF and national strategy
- ➔ **Ethiopia** - support of MoE initiative
 - pilot 1 school → proposal to BMF (phase 1) national framework 50 schools
- ➔ **Rwanda** - harmonisation with UNICEF RW
 - Focus on affordability, reduce from 225 USD/month
- ➔ **Sierra** Leon - preparing pilot in the North
 - 3 schools → 60 (Q2.2022) → 350 (Q1.2023)
- ➔ **South Africa** - social justice & digital empowerment
 - discussions with THUMA Foundation and Western Cape University



Reference Tanzania

Catherine connects schools



10 schools in Mar2021
10.131 students connected
427 teachers connected

scaling up to 50 schools with
Vodacom Dec2021 & 150
schools UCSAF Q1.2022

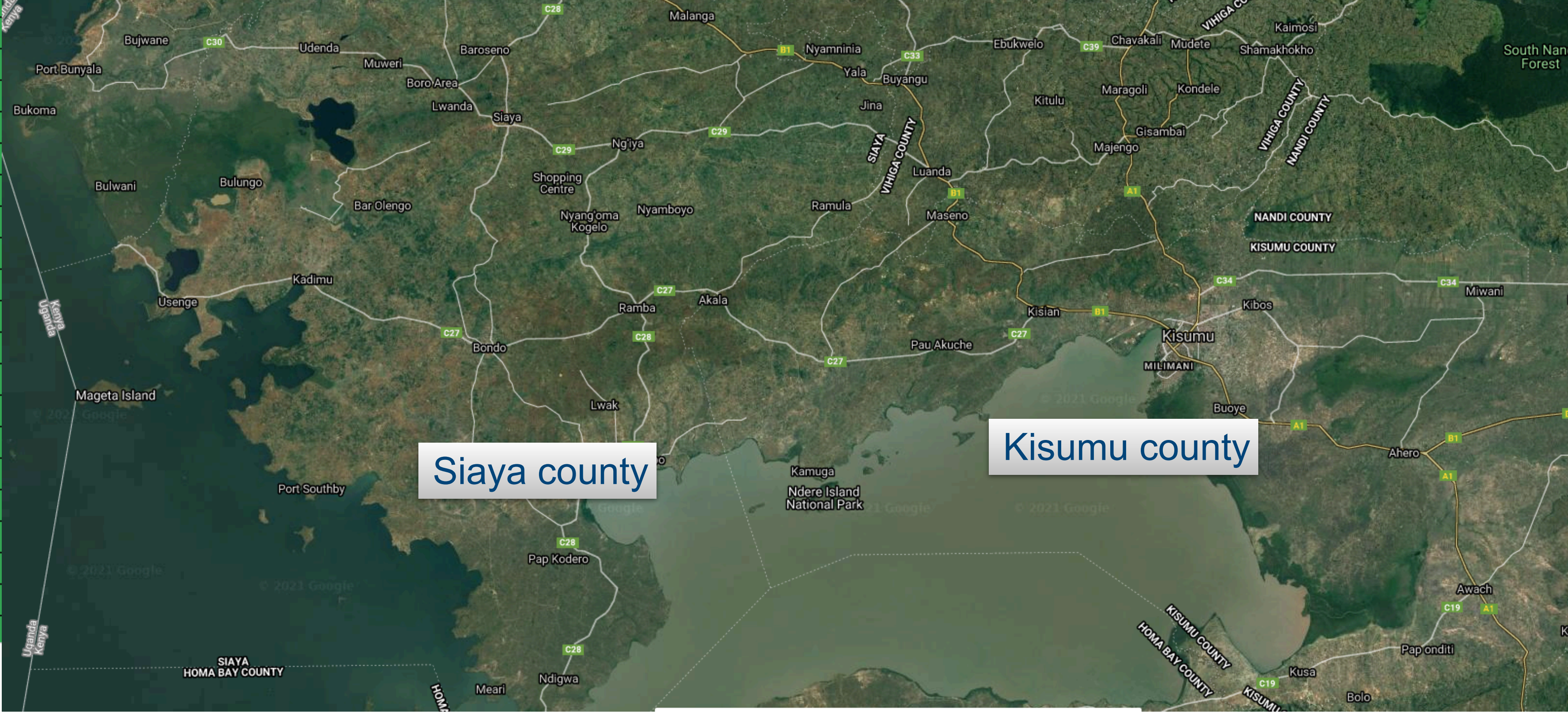


Kenya: 50 schools in Sep/Oct 2021

- parallel to GIGIconnect first phase
- AHERI conference 3Nov2021

PRJ#	School identifier	contact	region	geo-location
1	Ukwala Boys Secondary School	Robert Otieno	Kisumu	55RR+F7 Luhano, Kenya
2	Siaya Township Secondary School	John Malamba	Siaya	378M+QM Siaya, Kenya

3	Ugenya High School	
4	Lwak Girls Secondary School	
5	Sifuyo Mixed Secondary School	
6	Nyambare Mixed Secondary School	
7	Segere Mixed Secondary School	
8	Kambare Mixed Secondary School	
9	Maranda High School	
10	Usenge Boys Secondary School	
11	Ng'i'ya Girls High School	
12	Nyambare Mixed Secondary School	
13	Chianda High School	
14	Got Osimbo Girls Secondary School	
15	Ndigwa Mixed Secondary School	
16	Ambira Boys High School	
17		
18		
19		
20	Sa	
21	St	
22	Ny	
23	Sir	



sponsored by our premium partner



12 countries in Africa

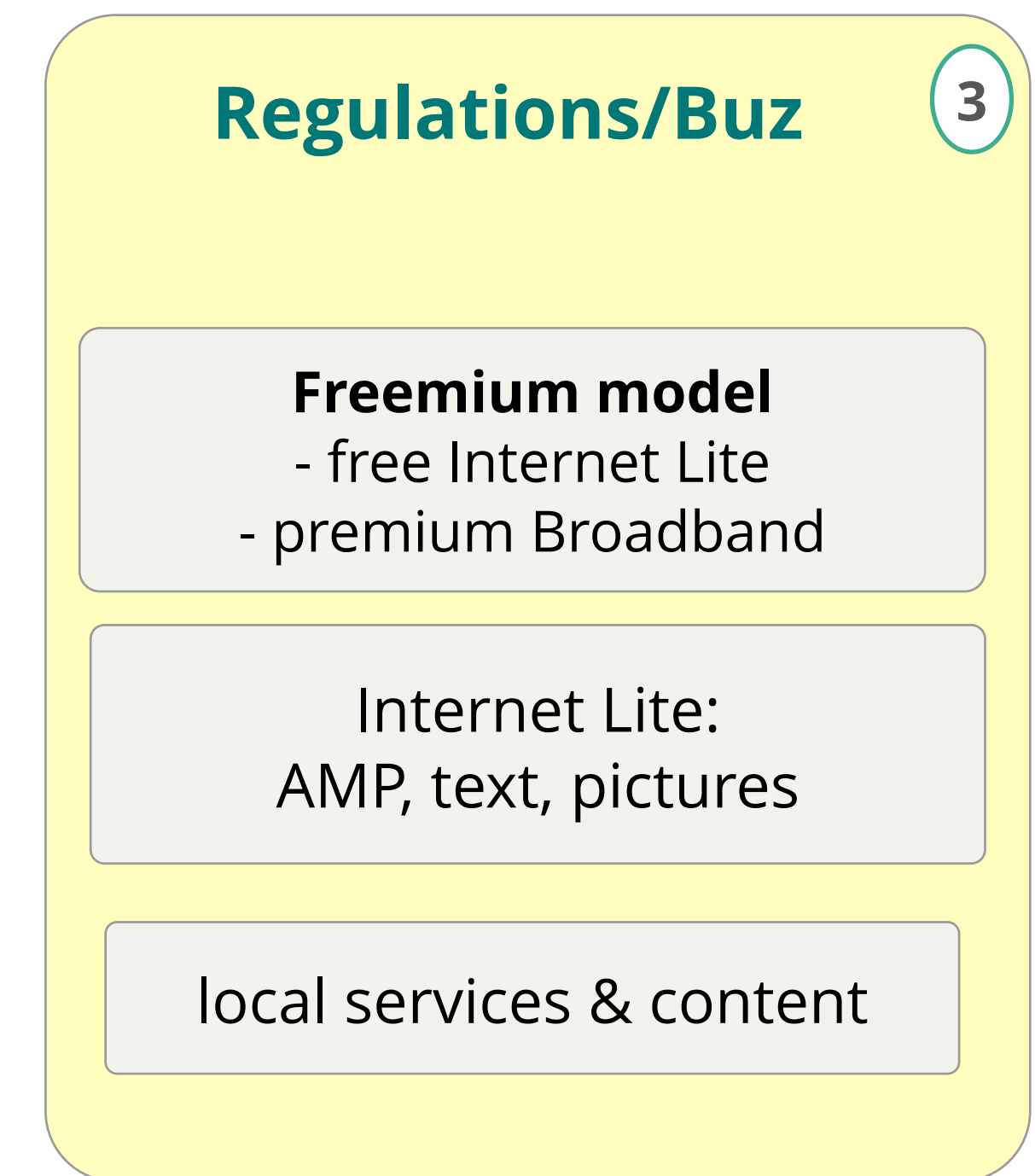
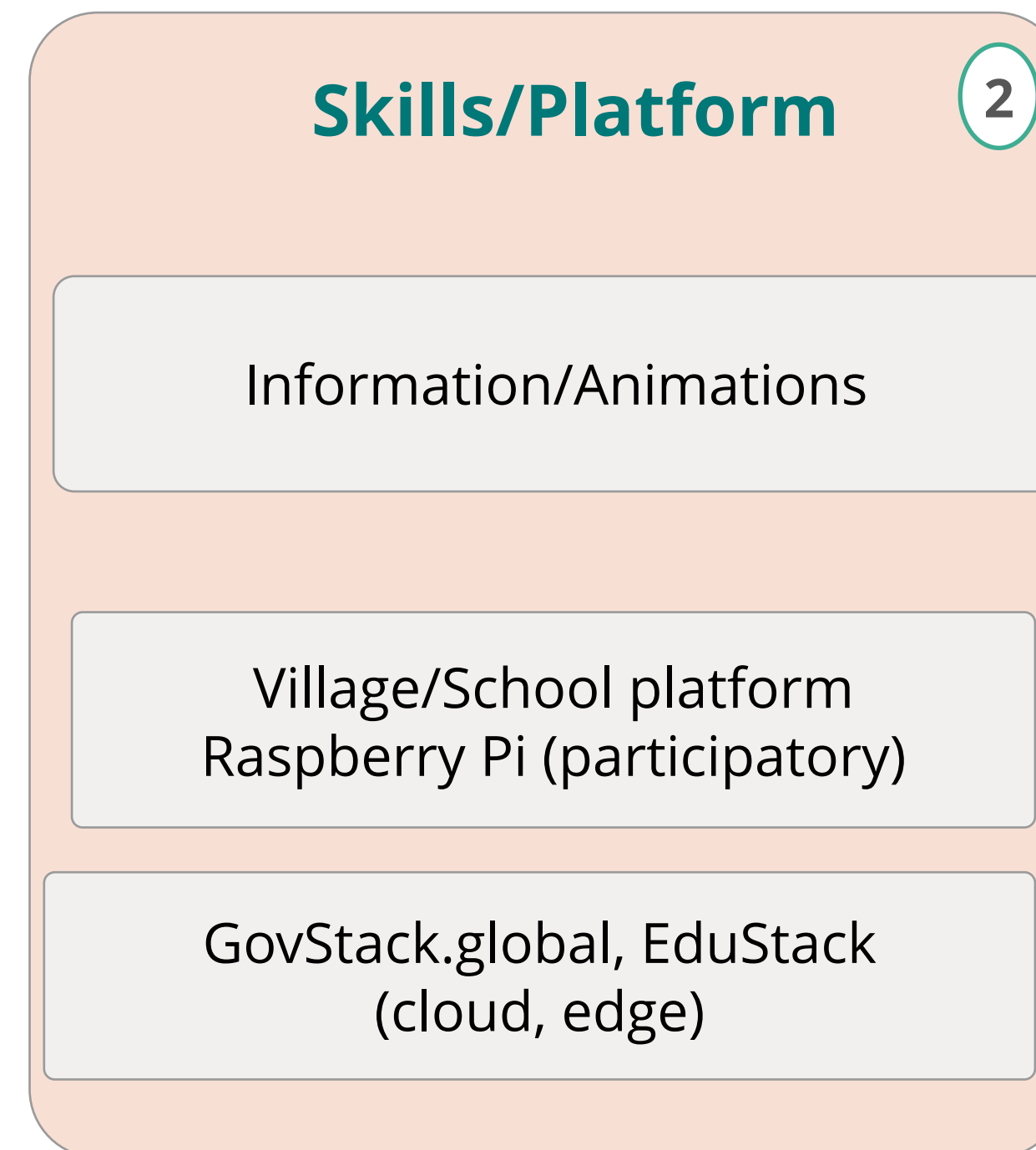
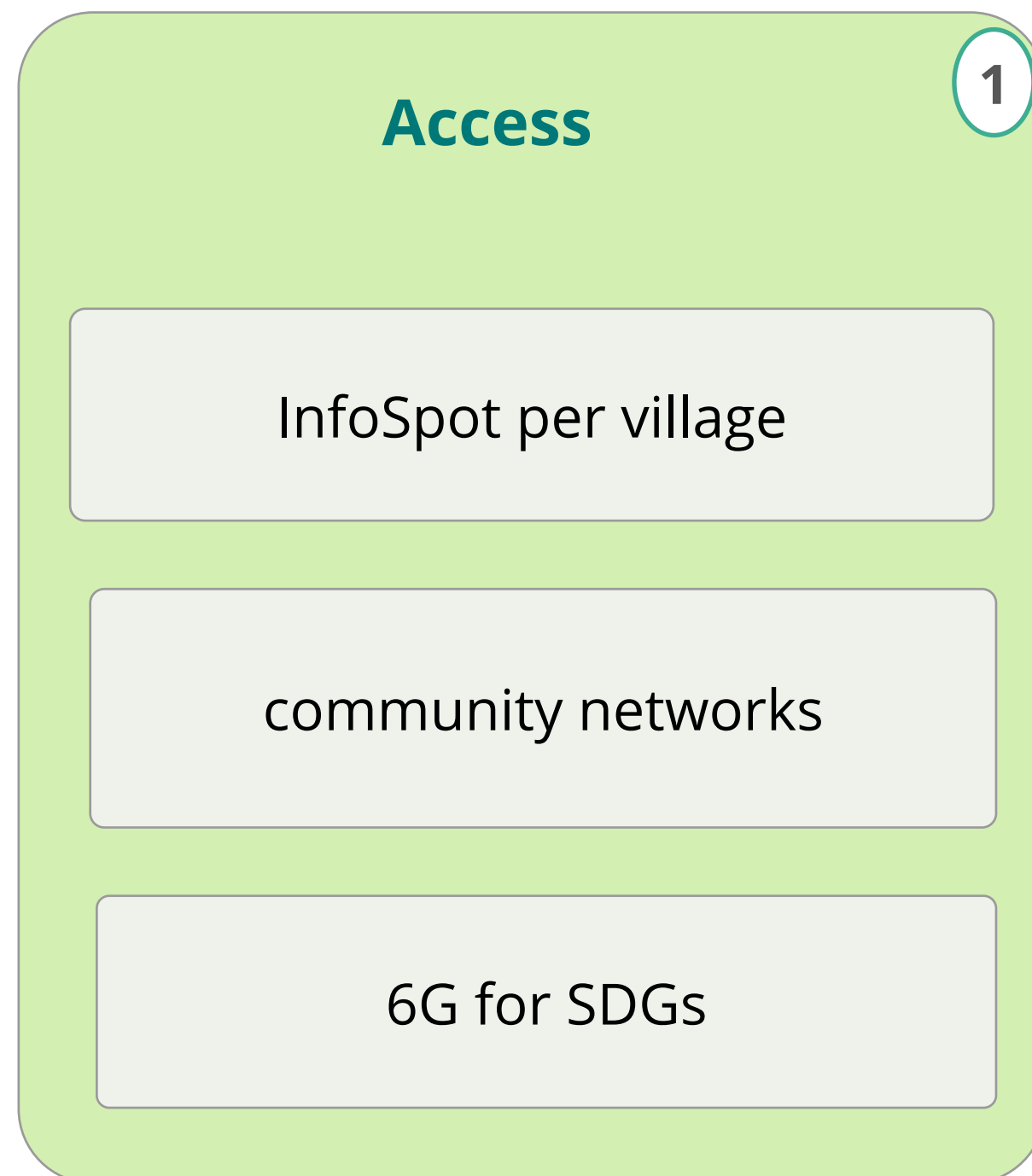


Ethiopia:
Koye Secondary School



Tanzania:
scale up to
200 schools

Our common work: Create the platforms

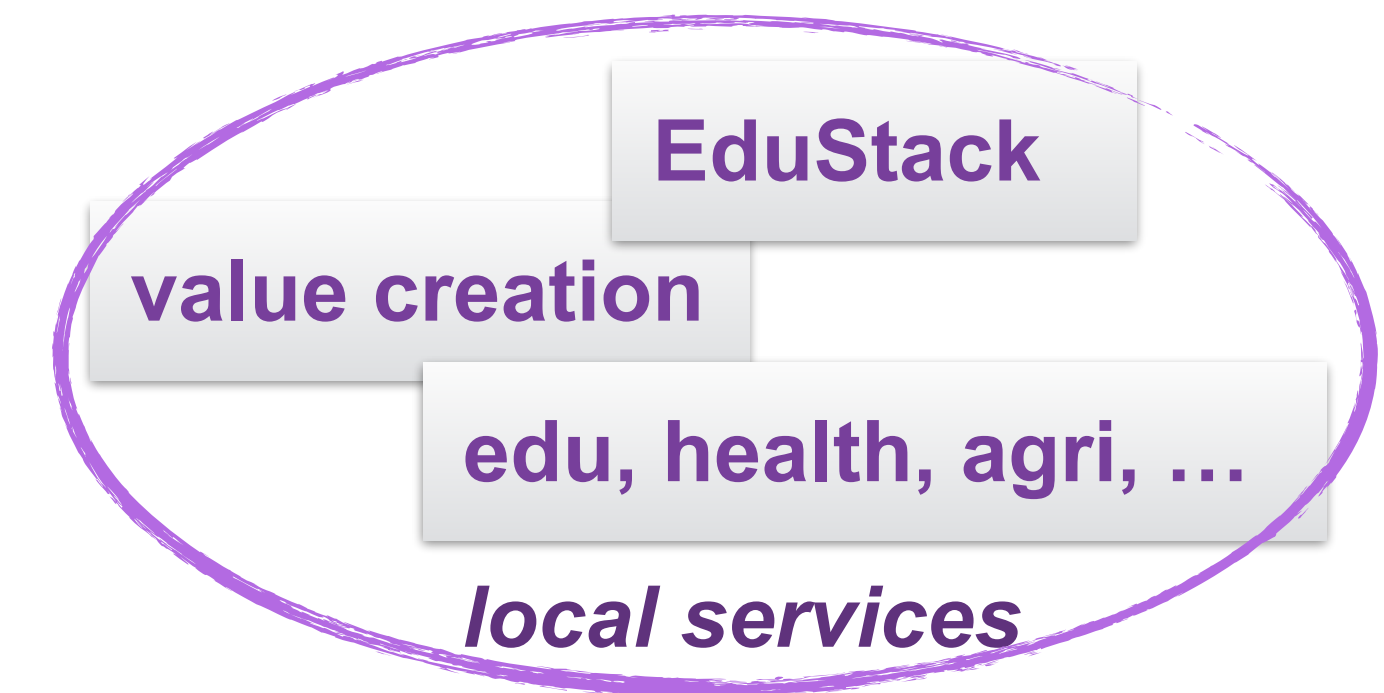
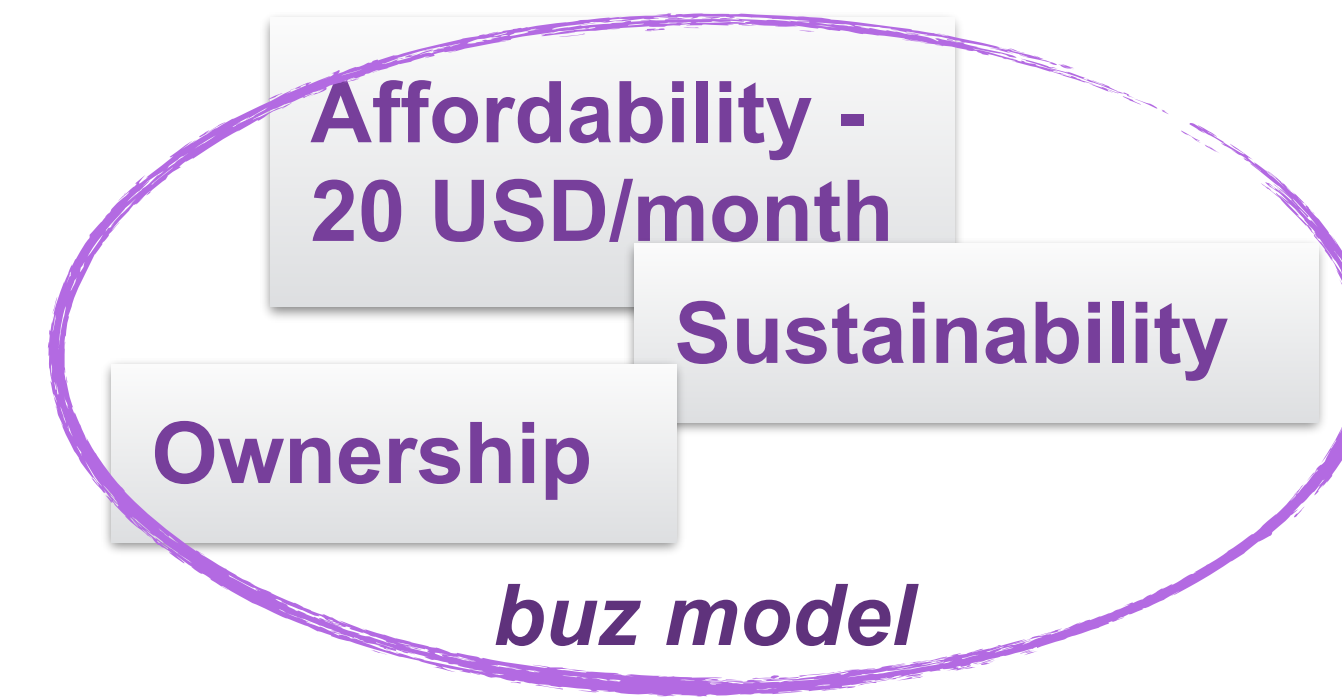
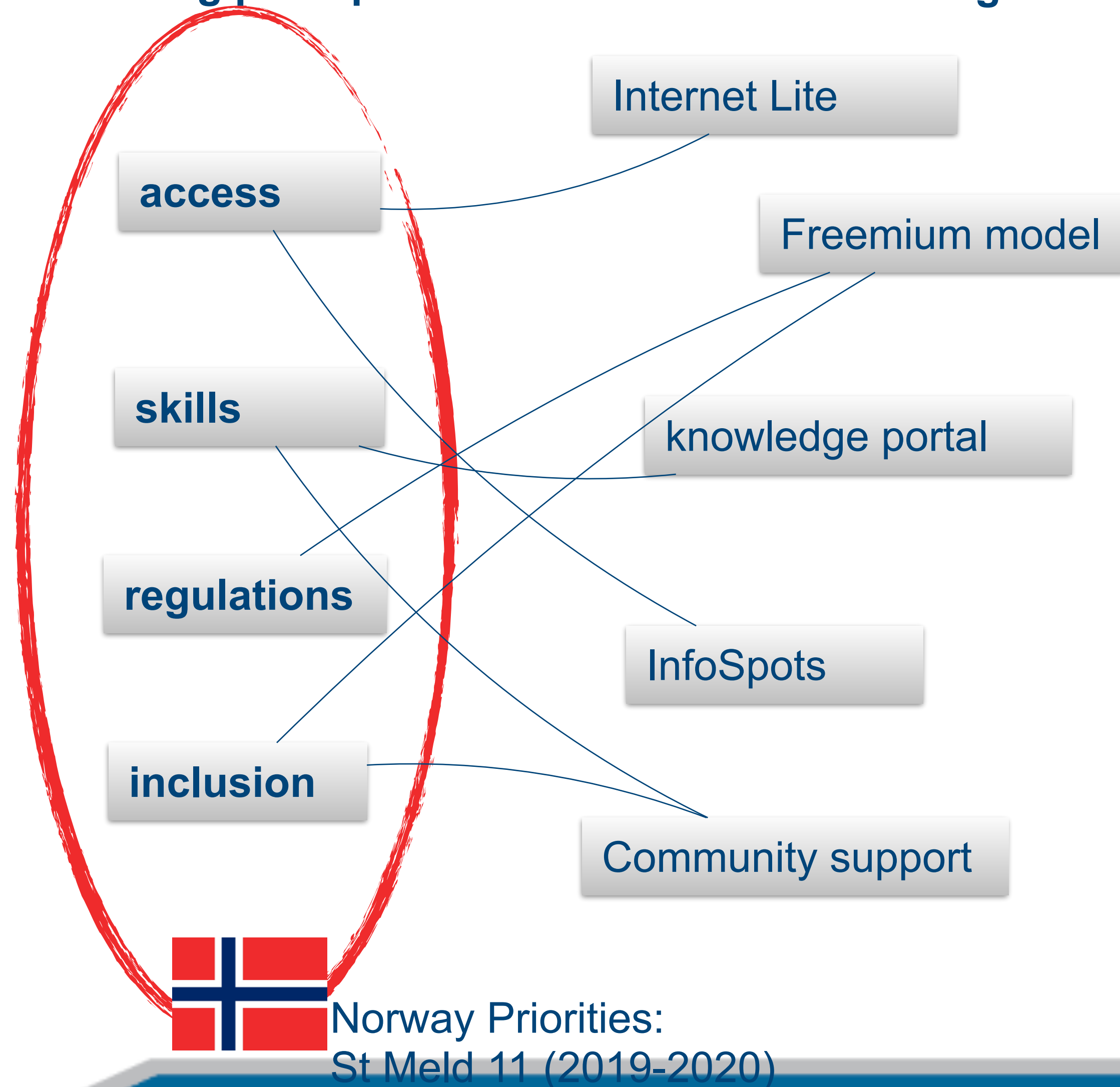


AI4Good, Digital Public Goods (DPGs), Digital Transformation Centres (DTCs)

Integrated Approach

Guiding principles

realised through



Access - platforms

- InfoSpot per village
- Community Networks
- 6G for SDGs







Selela Market Place



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

From Arusha to Iringa





Izazi



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



Antenna

Village office

Access - platforms

- ➔ InfoSpot per village
 - <http://Reports.BasicInternet.no> - Yeboo village platform
- ➔ Community Networks
 - <http://Villages.BasicInternet.no>
- ➔ 6G for SDGs
 - 6G Framework - access for all



Discussion

Regulations & Business

- Freemium model
- Internet Lite
 - Text, pictures
- Local services & content

Regulations/Buz

3

Freemium model
- free Internet Lite
- premium Broadband

Internet Lite:
AMP, text, pictures

local services & content

Decentralised value creation

- Freemium model for access
 - free access to **Internet Lite**
 - premium access to broadband
- support Community Networks
 - democratise the access to the Internet
 - **InfoSpots** with local content
 - ▶ increase the value in the society

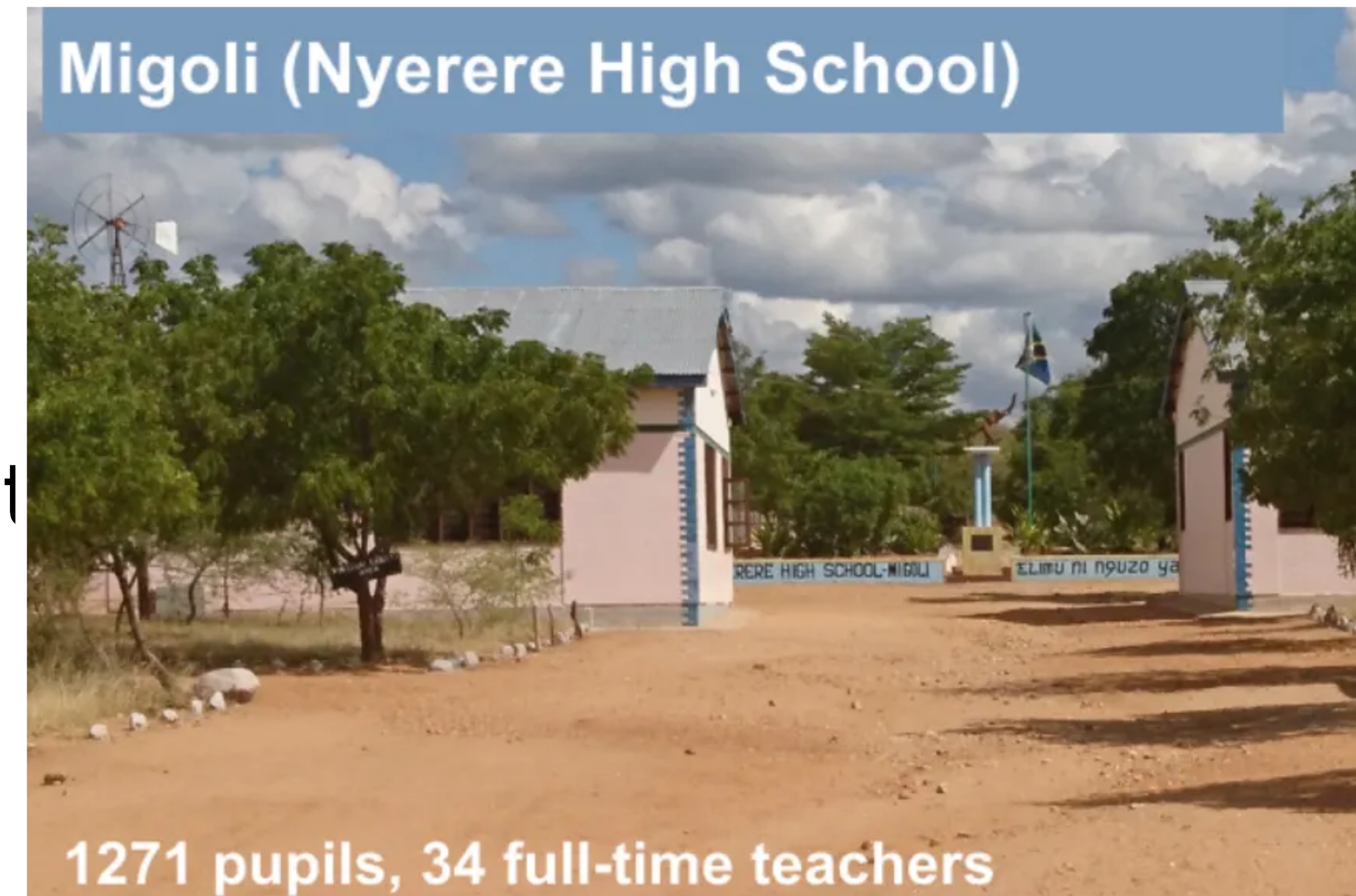
Basic Internet Foundation

Internet Lite to the Migoli High School

josef

8 months ago

The Migoli High School has 1271 pupils (Apr2019) and 35 full-time teachers. The high school is located about 3 km outside of Migoli in the Iringa district in Tanzania.

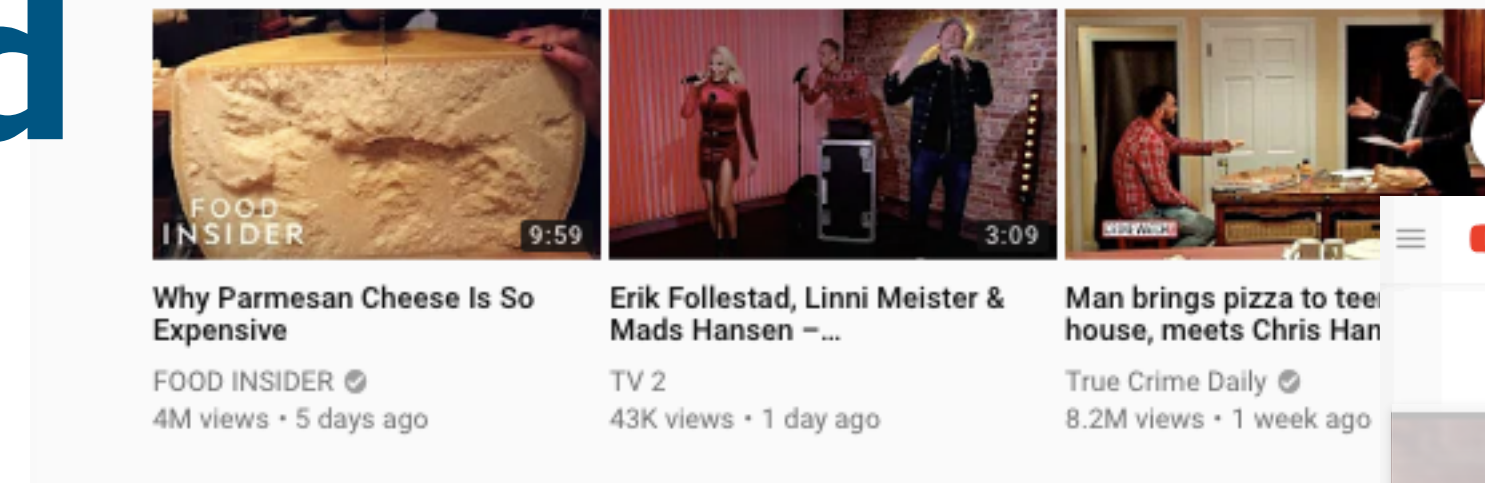


<https://basicinternet.org/internet-lite-to-the-migoli-high-school/AMP/>

InfoInternet Standard

Konzept:

free



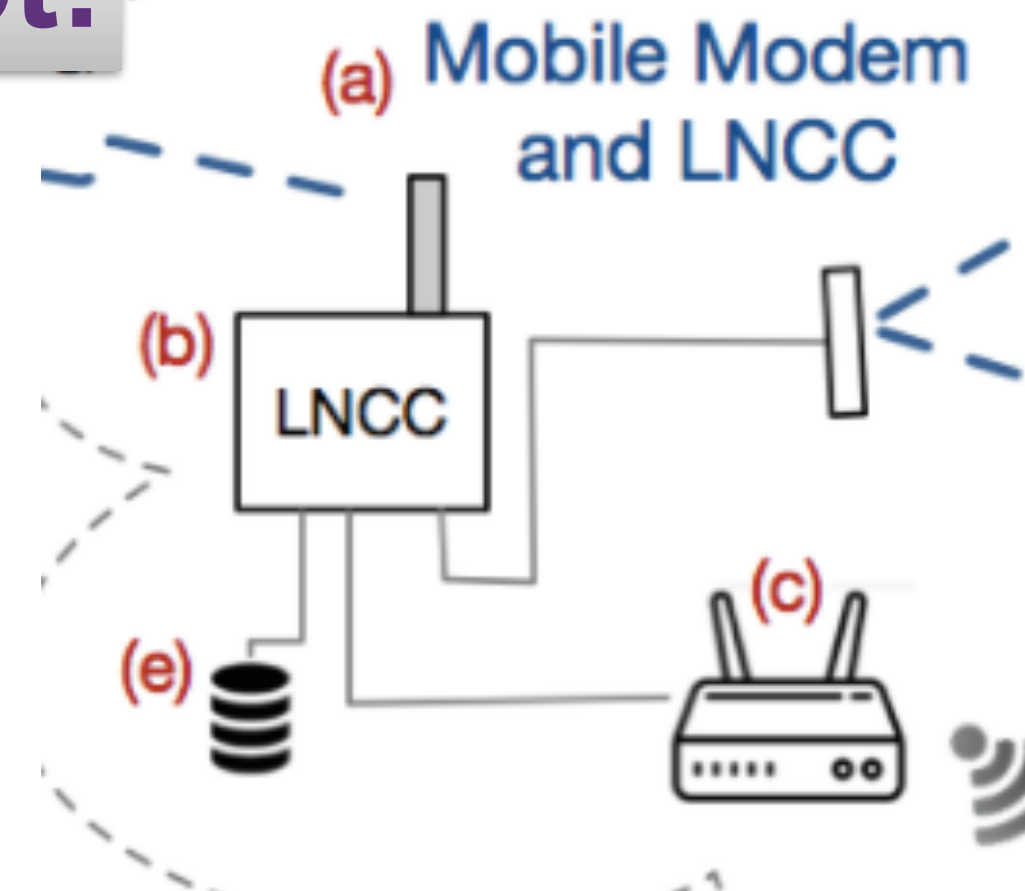
premium

Add voucher
to see the movie

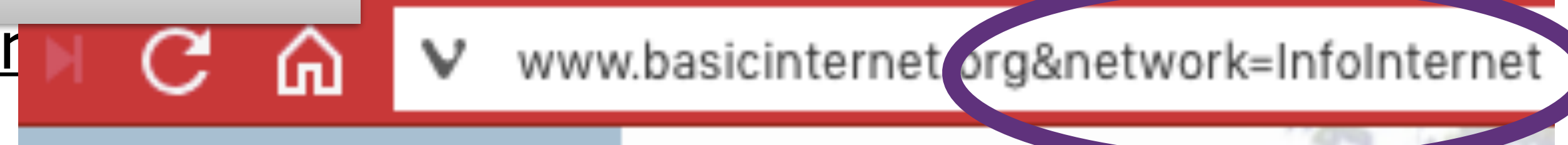
5qhx9

Submit

Pilot:



Standard:



- Network responsiveness
- InfoInternet Standard development
 - **Konzept:** www-filtering
 - ▶ free: text & picture, premium: video
 - **Pilot:** www metadata & inspection
 - ▶ address, port & deep packet analysis
 - **Standard:** proxy & html5 standard,
 - ▶ <http://BasicInternet.org&standard=InfoInternet>

Free access to information - in Ethiopia

- Government Ethiopia - Agreement
 - “free access to health & education”
 - Ministry of Health
 - Ministry of Education
- Ethio Telecom offers “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 (AI



ግንቦት 24 ቀን 2012 ዓ.ም

ኢትዮ ቴሌኮም የከፍተኛ ትምህርት ተቋማት ተማሪዎች እና መምህራን ትምህርታዊ መረጃዎችን ከ <http://ndl.ethernet.edu.et/> በነፃ ማግኘት እንዲችሉ አደረገ

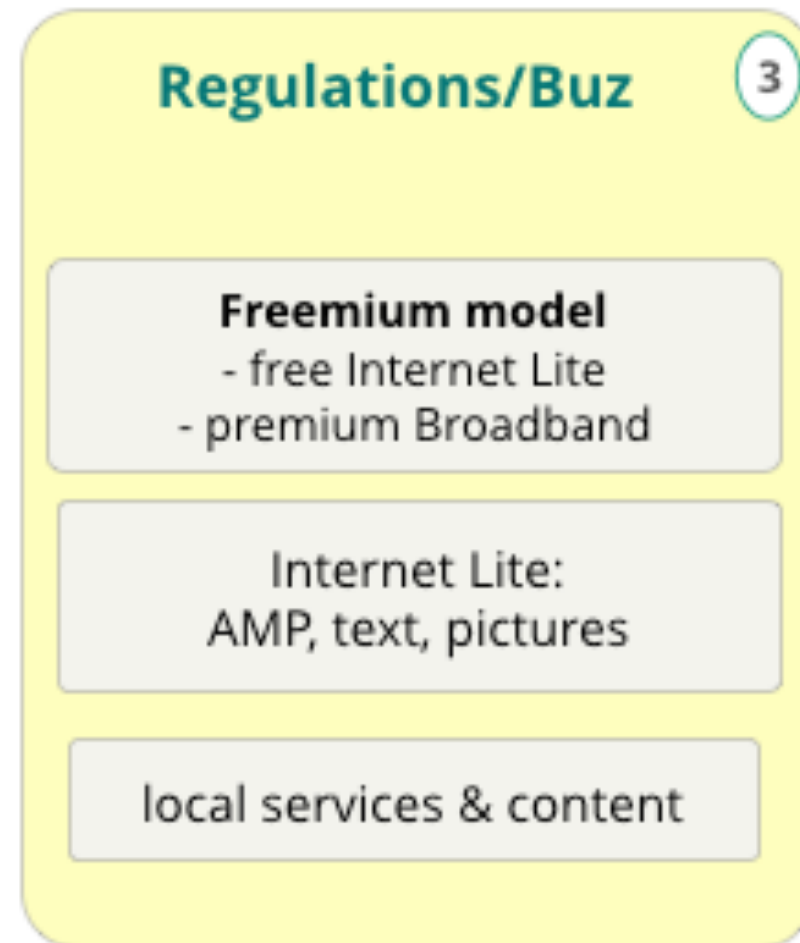
በአገራችን የኮሮና ቫይረስ (COVID-19) ወረርሽኝን ለመከላከል በመንግሥት በኩል በርካታ እርምጃዎች እየተወሰዱ ሲሆን ከእነዚህም መካከል የገፅ ለገፅ ትምህርት በማቋረጥ ተማሪዎች ቤታቸው እንዲቆዩ መደረጉ ይታወቃል።

ከዚህ 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 ስለወረርሽኙ ወቅታዊ መረጃ ለህብረተሰቡ እየሰጡ የሚገኙትን የጤና ሚኒስቴር <http://www.moh.gov.et>፣ የኢትዮጵያ ህብረተሰብ ጤና ኢንስቲትዩት <http://www.ephi.gov.et> እንዲሁም የተቀናጀ የኮቪድ 19 መቆጣጠሪያ ስርዓት ድረ-ገፅን <http://www.covid19.et> በነፃ እያቀረበ መሆኑ ይታወቃል።

Regulations & Business

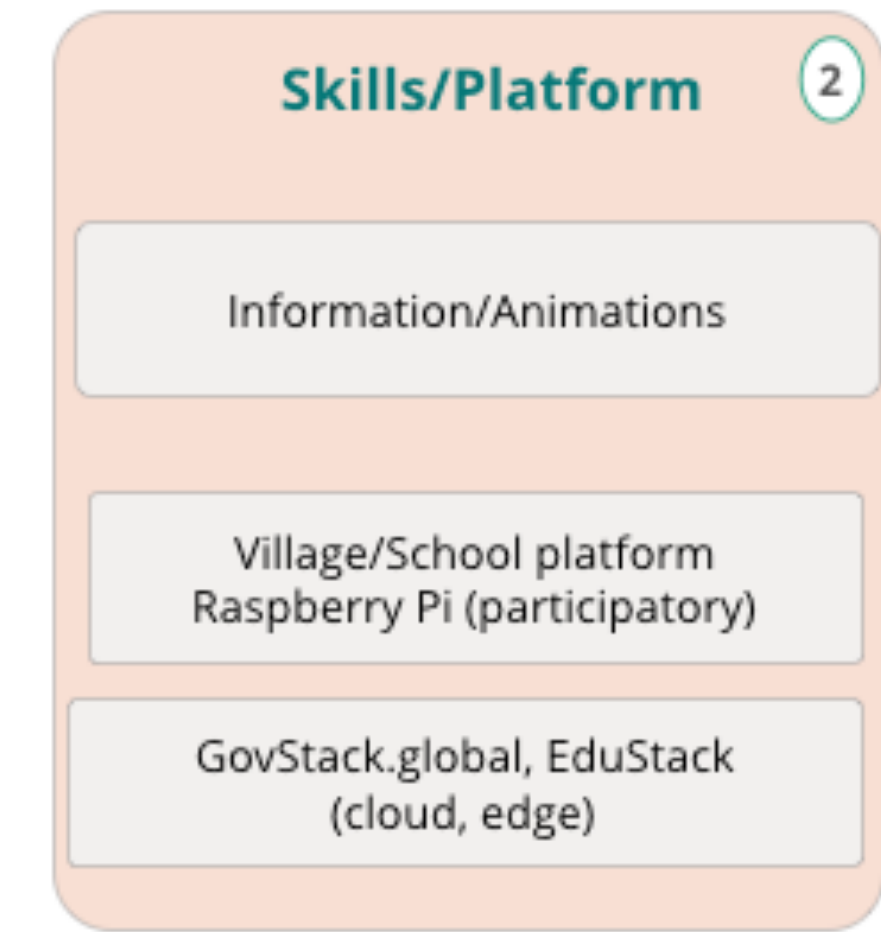
- Freemium model
 - Internet Lite & Broadband
 - Regulations: free access
- Internet Lite
 - Text, pictures & AMP
- Local services & content



Discussion

Skills & Platform development

- Type of content
- Participatory approach
- International involvement



Societal areas of focus

- **Digital Knowledge portal** initiative
- Open source software and content (Pro-Digital Public Goods - DPGs)
- Multimedial content strategically tailored for target groups and communities
- Educational programs and trainings
- Empowering and fostering 21st century digital skills

Societal goals: “leave no one behind” and social inclusion through digital -> mission.

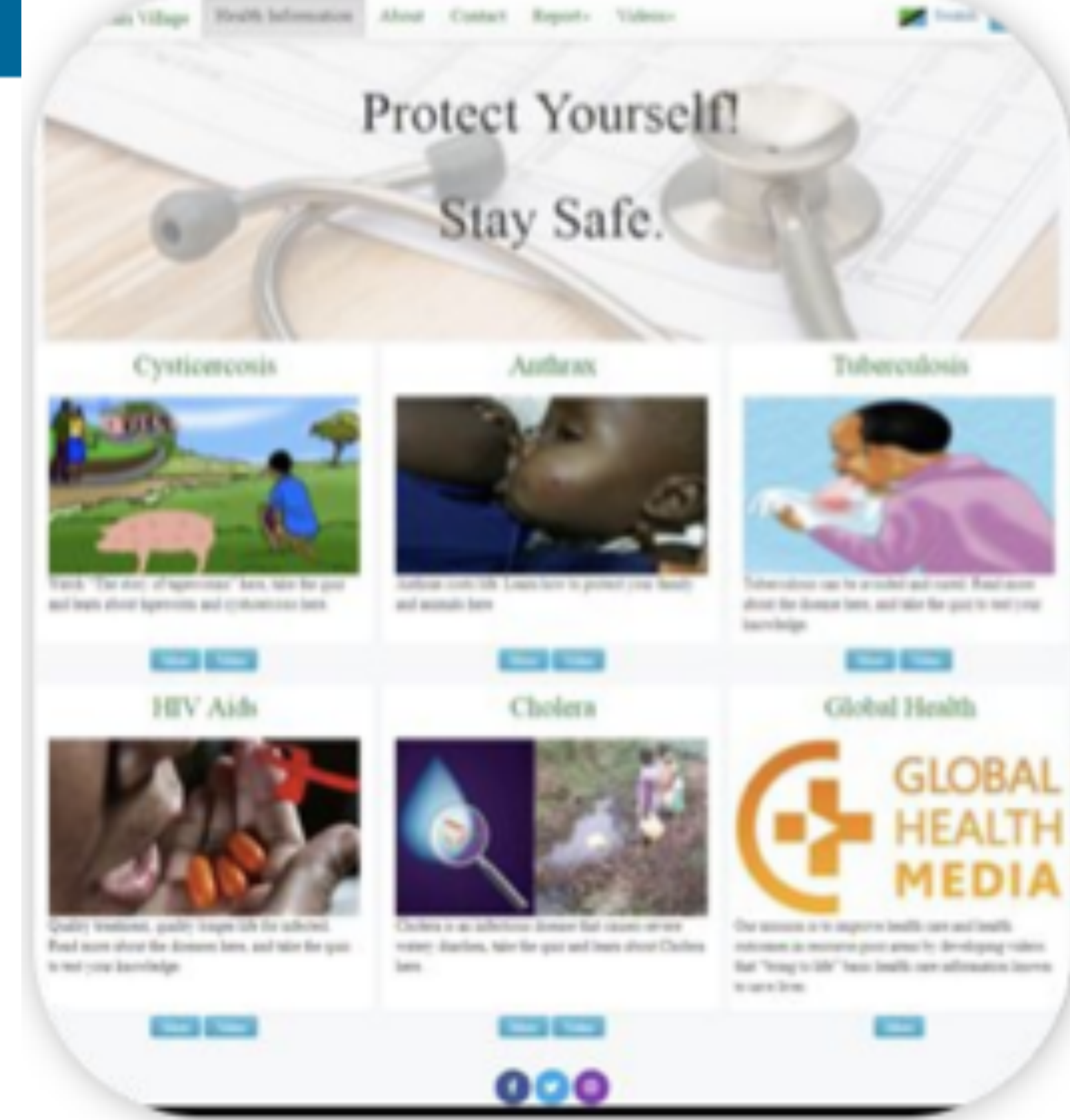
We focus on:

- - vulnerable groups, girls and women, bridging the gender gap
- - discriminated groups in the society
- empowering people in rural areas, semi-literates and illiterates,
- empowering women businesses



Village Platform yeboo.com

- ➔ Everyone has free access to the village platform yeboo.com
- Health Messages
- Reporting/Feedback
- Sustainable Business



Animation based Digital Health Promotion (DHP)

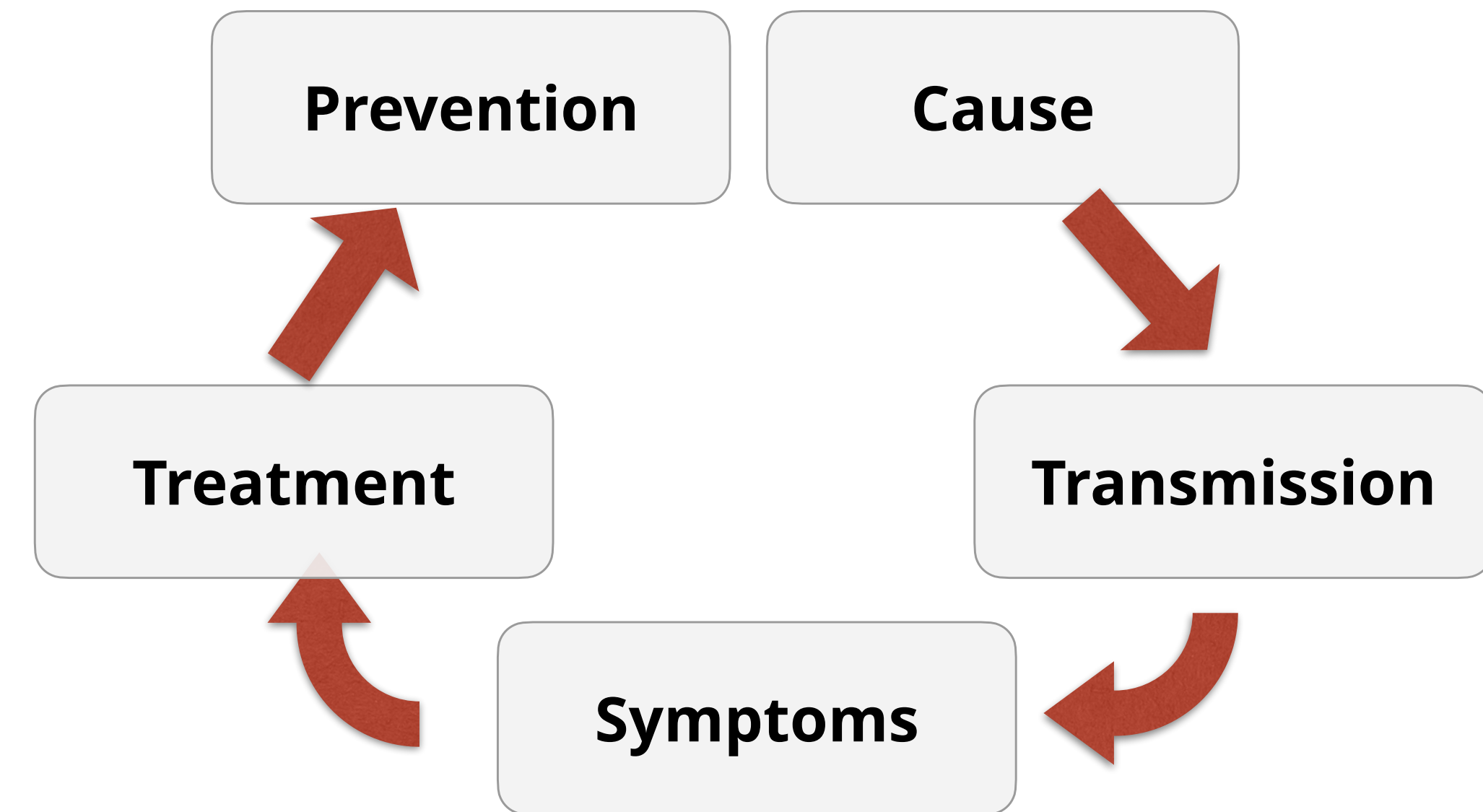
<http://DigitalGlobalHealth.eu>



Causes of Anthrax



Anthrax is a disease caused by parasitic species of bacteria called *Bacillus anthracis* that attacks domestic animals and wildlife, human being and some birds. Anthrax bacteria can live in the soil for a long time. Cases of anthrax in human being and animals was witnessed and reported in most areas of Tanzania, particularly Arusha and Kilimanjaro regions.



Survey Anthrax

Please complete the survey about Anthrax

What is your Gender

- ☐ A) Female
- ☐ B) Male

Have you ever heard about Anthrax?

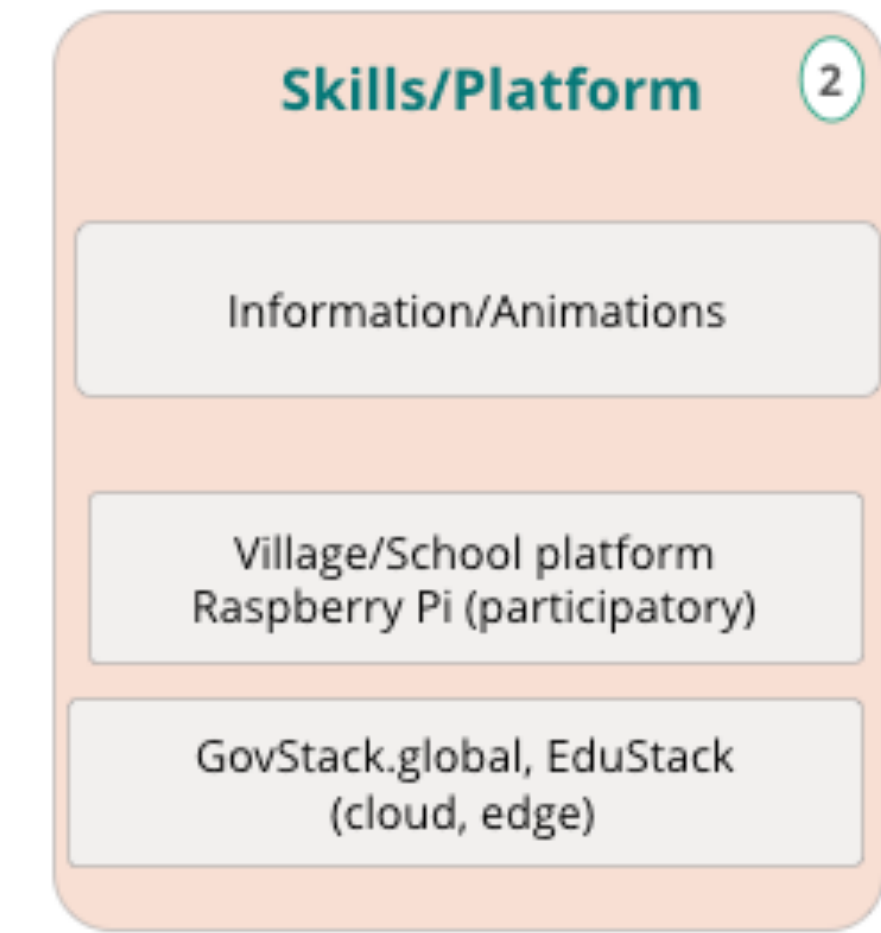
- ☐ A) Yes
- ☐ B) No
- ☐ C) I don't know

Have ever heard of anthrax outbreak? (Check one box)

- ☐ A) Yes

Skills & Platform development

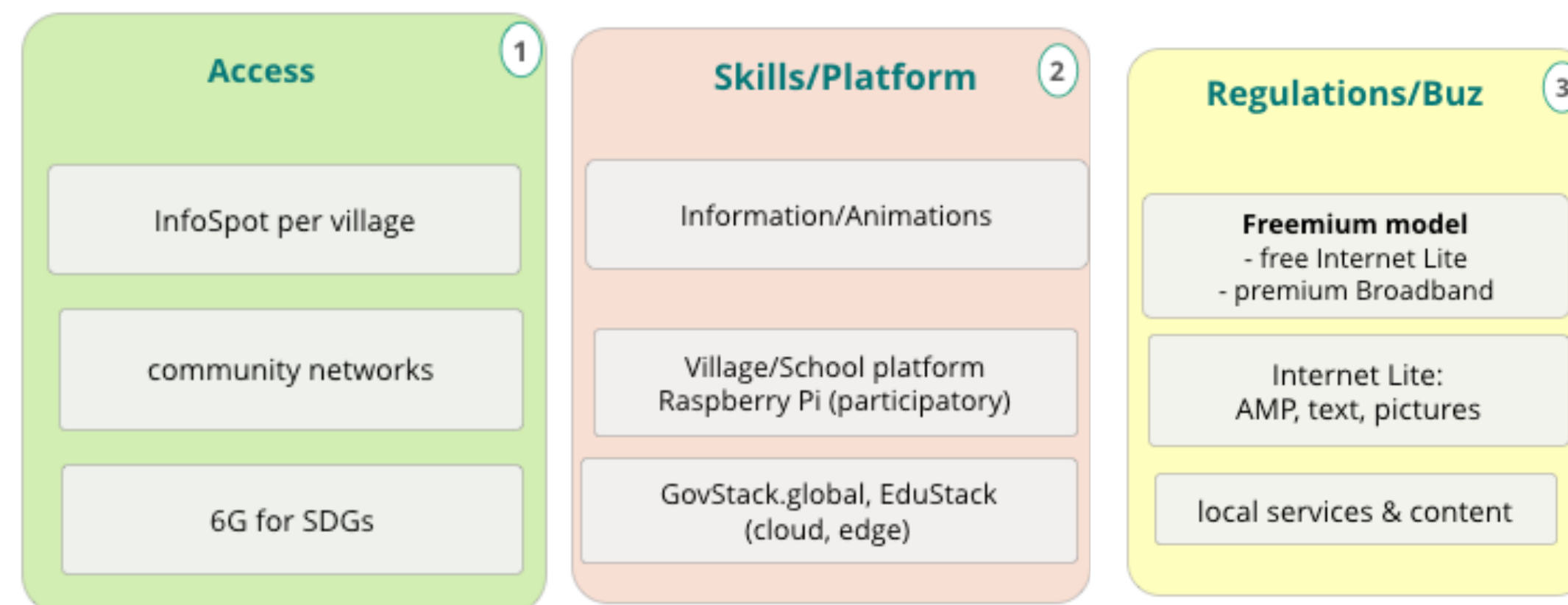
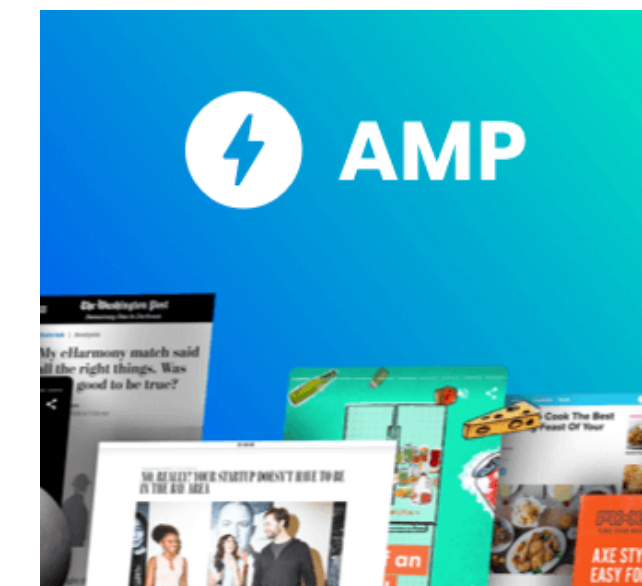
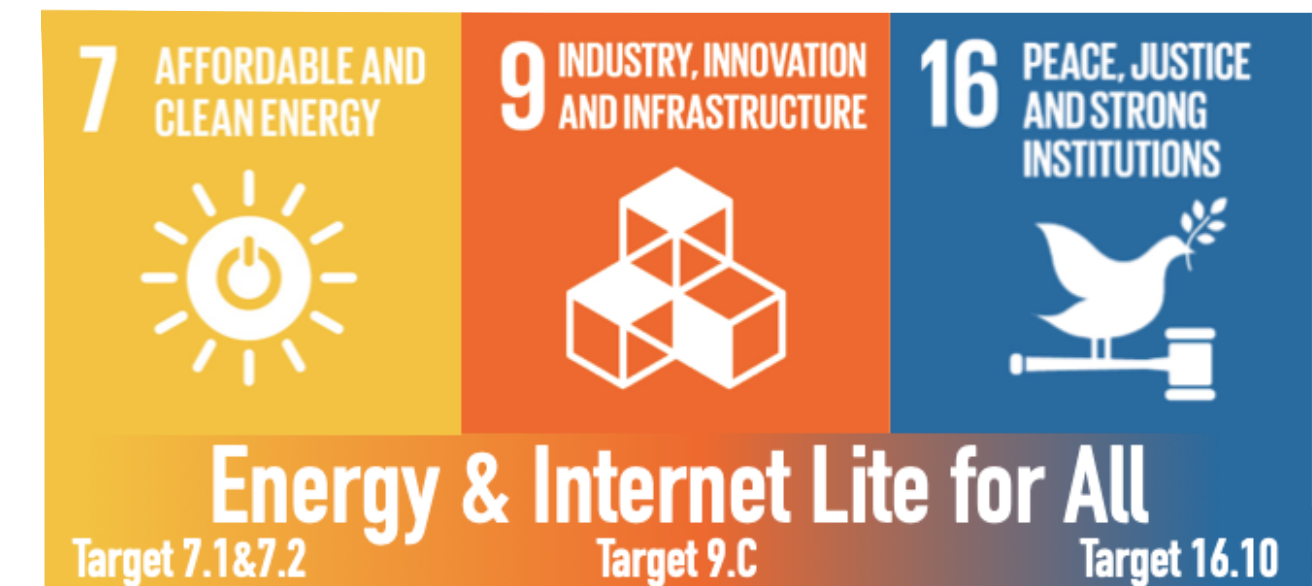
- ➔ Type of content
 - DigitalGlobalHealth.eu
 - yeboo.com
- ➔ Participatory approach
 - Contribution for everyone
 - how to organise a community with 500.000 people?
- ➔ International involvement
 - <http://GovStack.global>
 - EduStack
 - Cloud/Edge harmonisation

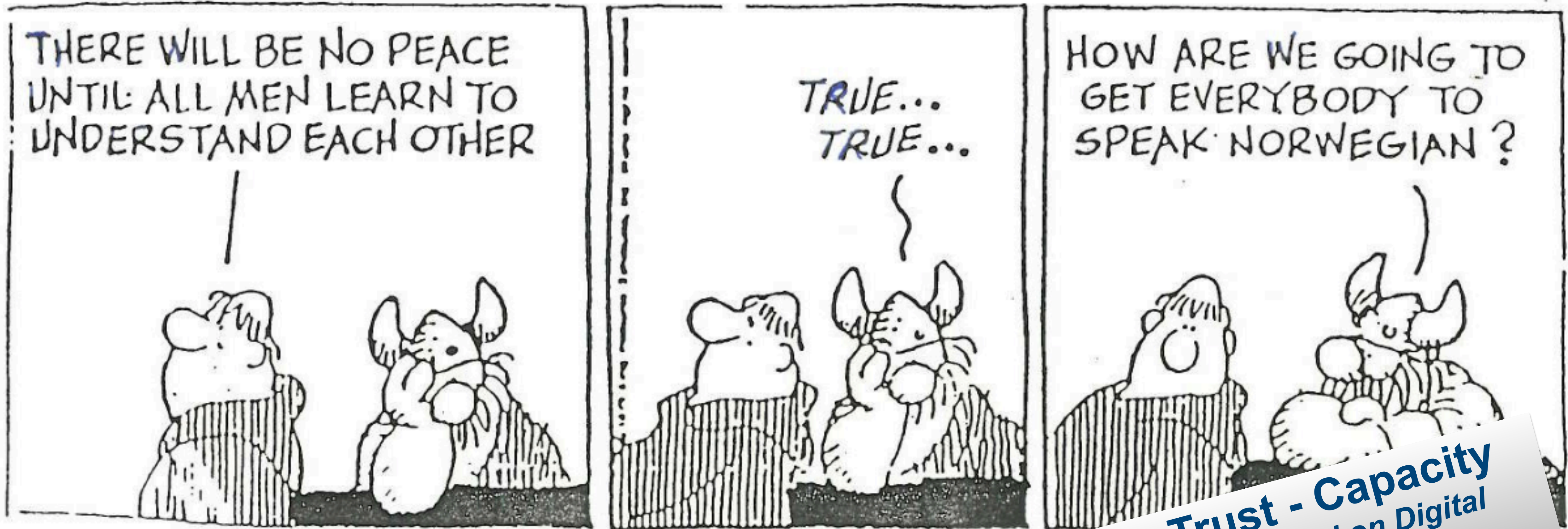


Discussion

Please contribute: Solutions for ~3.5 Billion non-digital people

- Value proposition:
 - **Freemium access:** Basic4All
 - Local empowerment, Relevant content (Village empowerment)
- Technology and Skills
 - Local Info Spots
 - Off-line broadband content
- **Affordability** & Regulations
 - **OPEX <20 USD/month** per school
 - Public-private partnership
 - Free access to national **knowledge portal**





Inclusiveness - Trust - Capacity
United Nations High Level Panel on Digital
Cooperation 2019