UNIVERSITY OF OSLO

IGF 5G & GenZ, 29Nov2022

Empowering Community through 5G and Learning Living Labs (CL3)

Josef Noll
Professor, Department of Technology Systems (ITS)
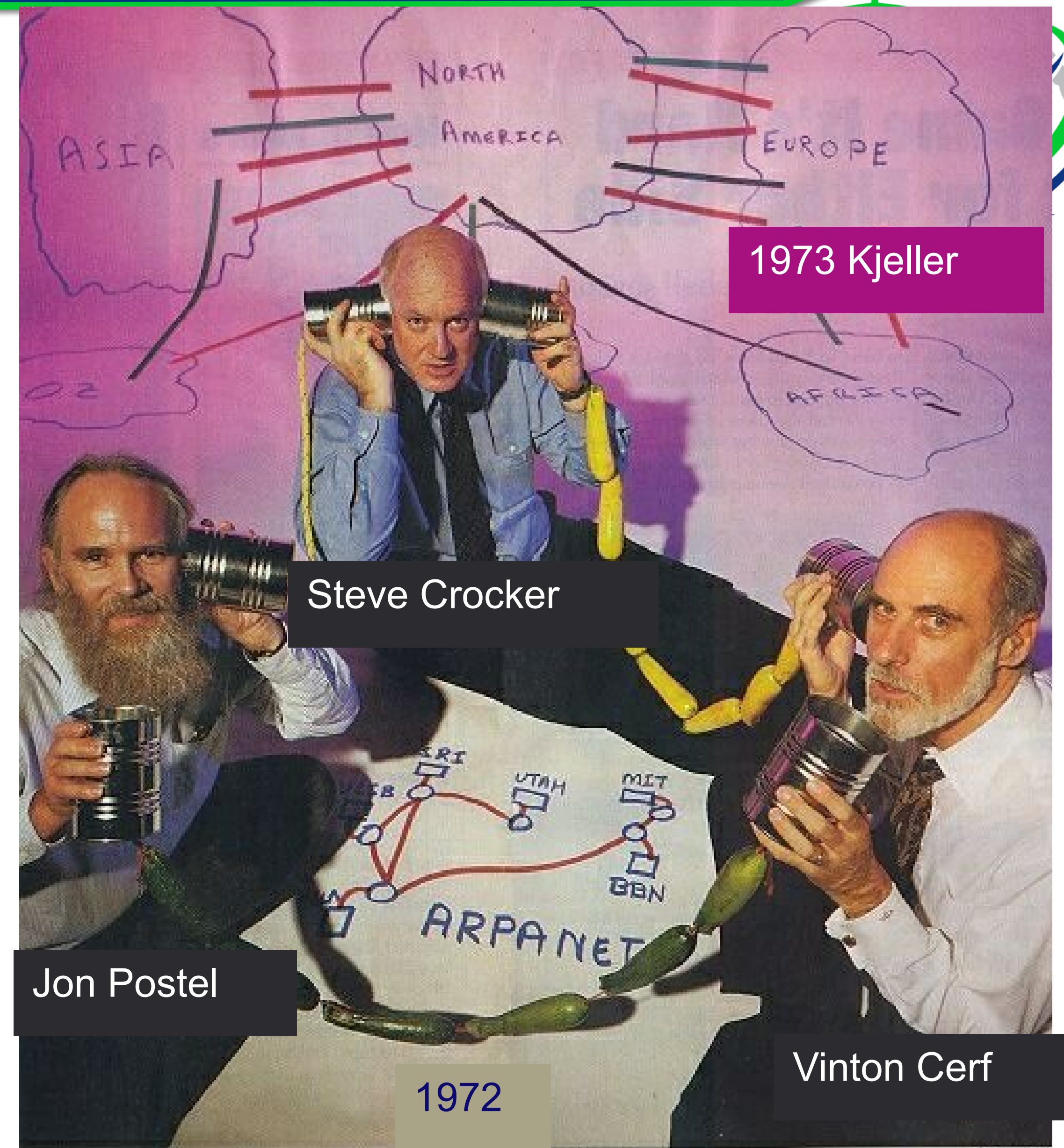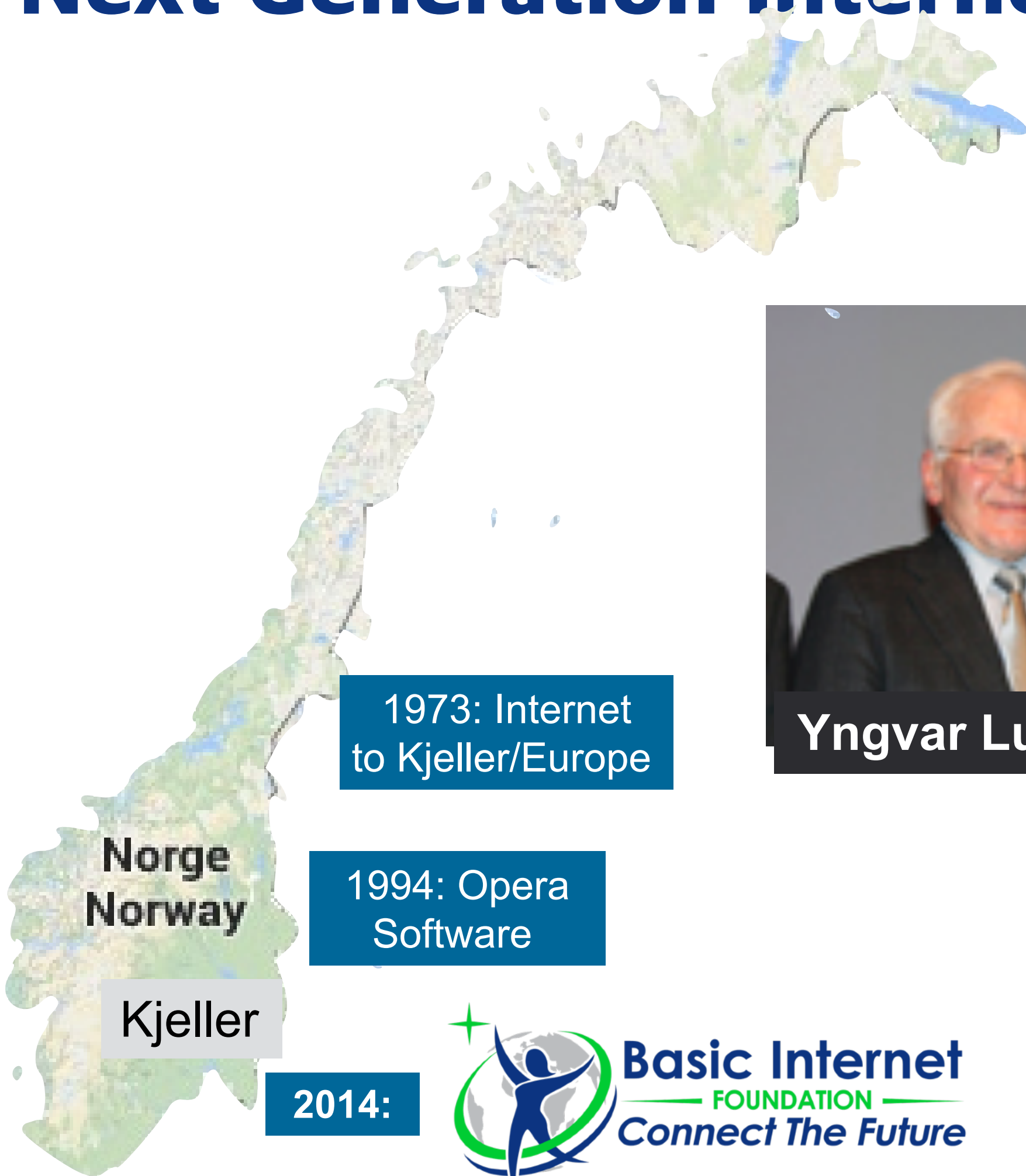Lead Digital Global Health at the Centre for Global Health (CGH)

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An inclusive
Next Generation Internet

1973 Kjeller

Steve Crocker

Jon Postel

Vinton Cerf

1972

1973: Internet to Kjeller/Europe

Yngvar Lundh   **Pål Spilling**

Norge Norway

1994: Opera Software

Kjeller

2014:

Basic Internet
FOUNDATION
Connect The Future

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

How can we "Connect The Future"?
Specific focus: Girls & Women

Josef Noll @josefnoll · Jun 2

Amazing opening by @ITU @ITUSecGen Houlin Zhao, setting the scene for connecting every single human by 2030, and @meilinfung, addressing the history of the Internet and #NRENs to connect schools. We're in @CateKimambo @RosalynnMworia @UcsafT @AheriNet @cisskisumu @WSISprocess
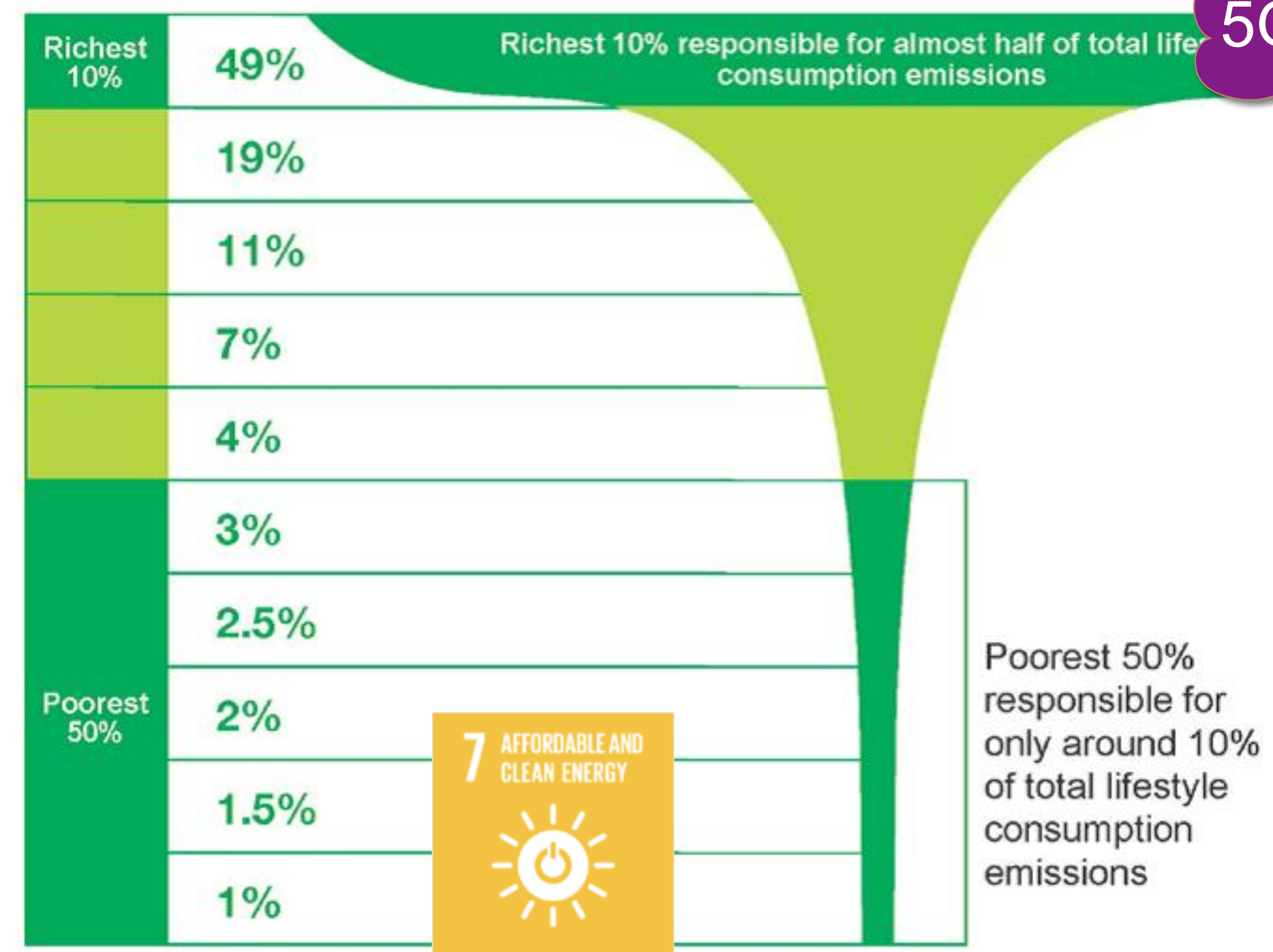
Empower my dreams

3

Inequality in Energy & Digital Access

Percentage of CO$_2$ emissions by world population

World population arranged by income (deciles)

Income decile	%
Richest 10%	49%
	19%
	11%
	7%
	4%
	3%
	2.5%
Poorest 50%	2%
	1.5%
	1%

Richest 10% responsible for almost half of total lifestyle consumption emissions

5G,6G

Poorest 50% responsible for only around 10% of total lifestyle consumption emissions

7 AFFORDABLE AND CLEAN ENERGY

[Source: Oxfam.org, 2015]

9% NATIONAL ASSESSMENT FOR MEANINGFUL CONNECTIVITY
(2021, BASED ON PILLARS' AVERAGE)

3% ESTIMATED TO HAVE 4G SPEEDS

15% ESTIMATED TO OWN A SMARTPHONE

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

7% ESTIMATED WITH UNLIMITED ACCESS

10% ESTIMATED TO HAVE DAILY INTERNET USE

[https://webfoundation.org/docs/2022/02/MC_Rwanda_FS_Screen_V1.pdf]

Universities and National Research & Education Networks (NRENs)

AfricaConnect3 project is co-funded by the European Union

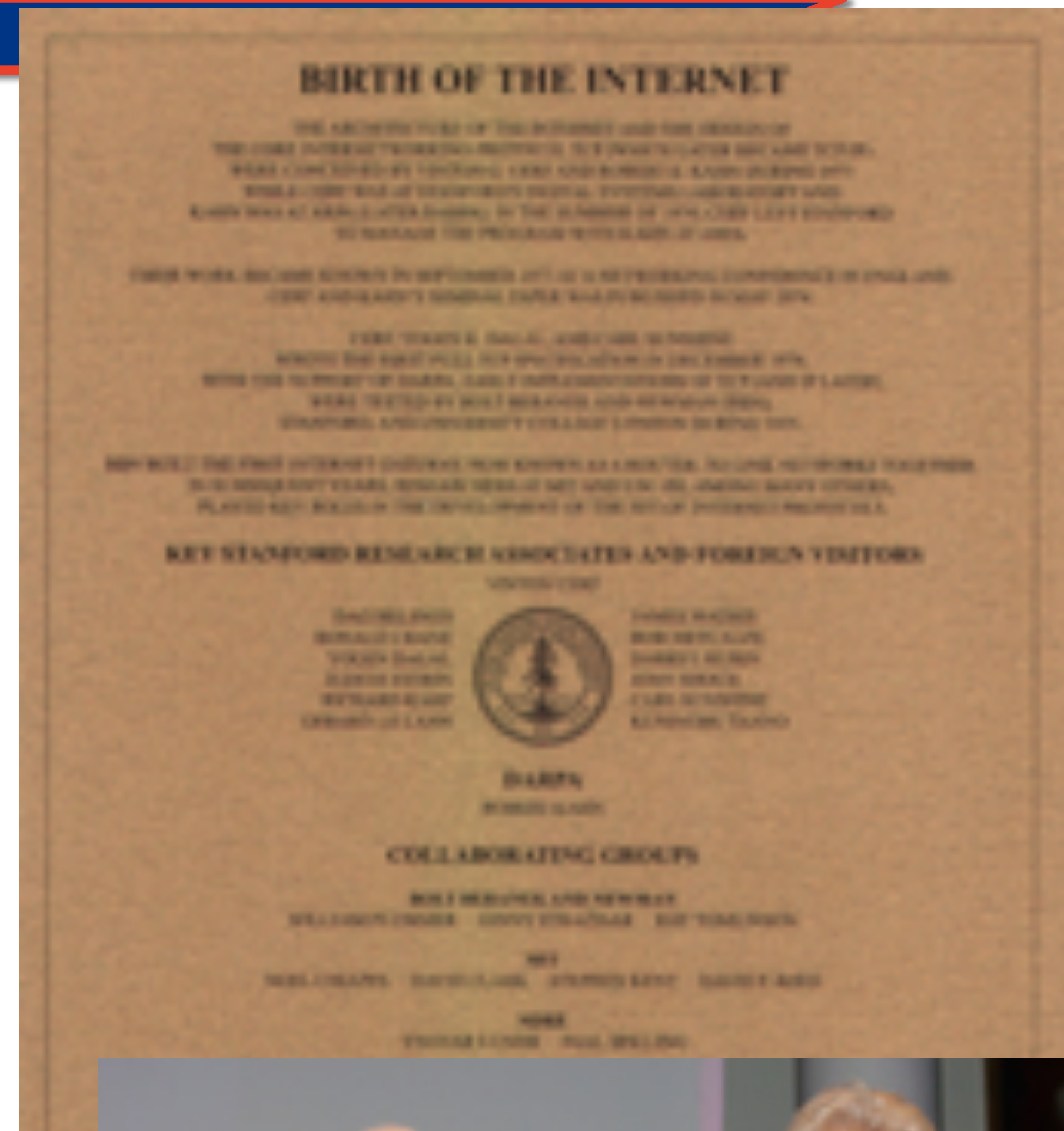The AfricaConnect3 project receives funding from the European Union under Grant Contract DCI-PANAF/2019/411-583.

➡ Connecting Universities & Research
  ▪ Digital Public Goods
➡ Services: Eduroam
➡ Non-profitable services
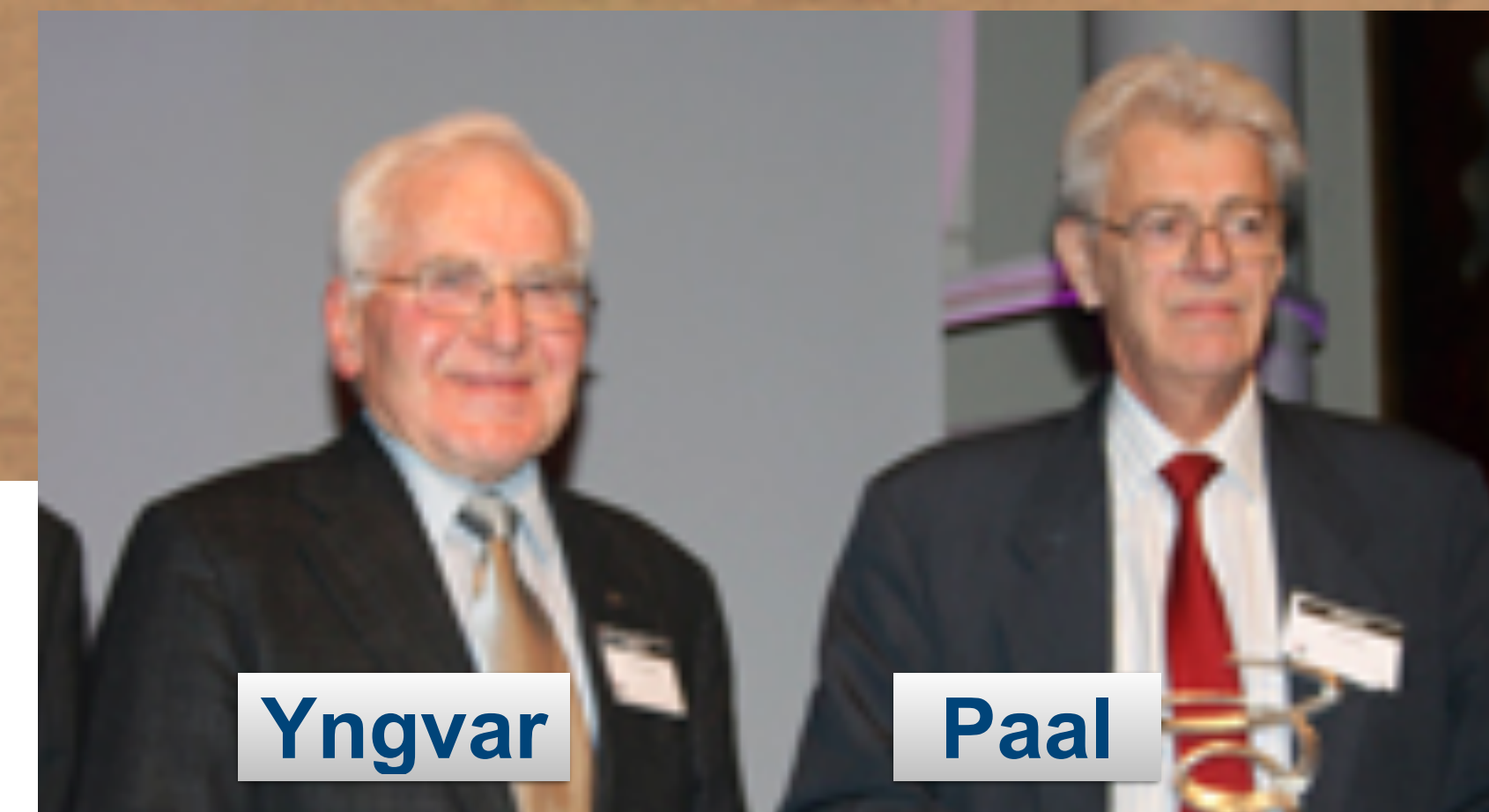
➡ Decentralised Innovation Creation
➡ Base to IT industry

Internet and the Nordics

- 1. Arpanet Connection to Kjeller (June 1973)
- List_of_Internet_pioneers [Wikipedia]
  - Yngvar Lundh, Paal Spilling
- Application areas
  - .php, OpenSource, Linux, Skype, Spotify
  - OperaSoftware, FAST Search
  - Nokia, Ericsson
  - Telenor, TeliaSonera
- Mobile Internet & Digital Transformation
  - GSM
  - GovStack.global

BIRTH OF THE INTERNET
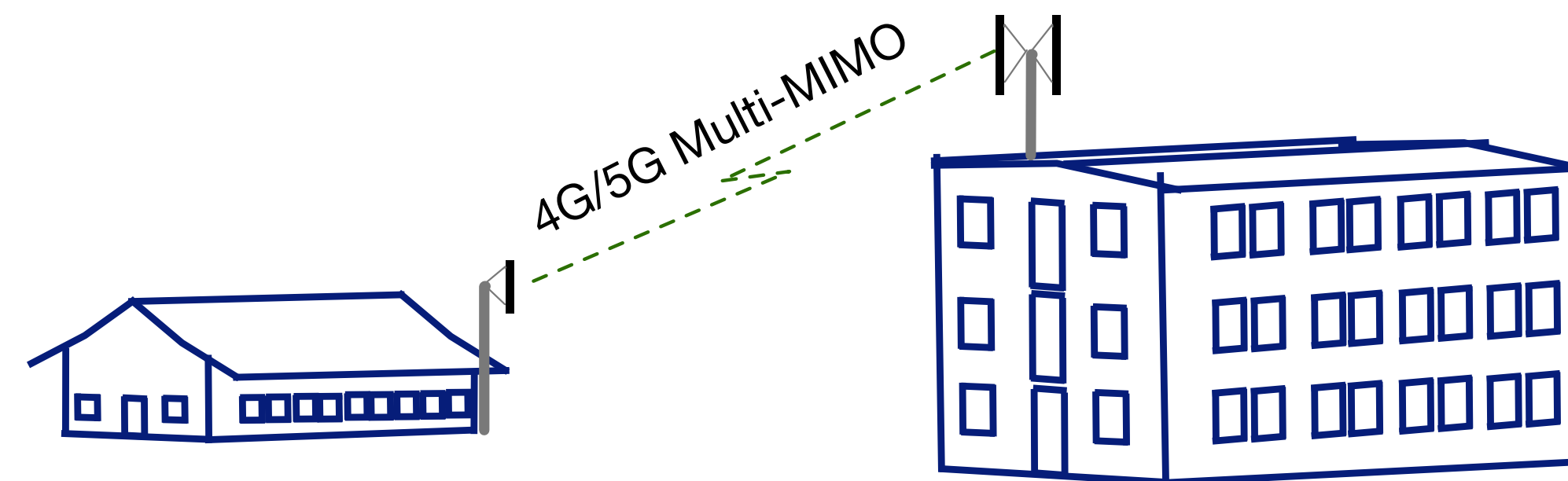

Vint
Sigrid

Yngvar
Paal

The Guild (EU) – ARUA (Africa)

➡ Research for the (digital) Society

➡ Regional Competence Centres (RCCs) for
- the Digital Transformation
- Connect Schools & unconnected Communities
- practical experiences

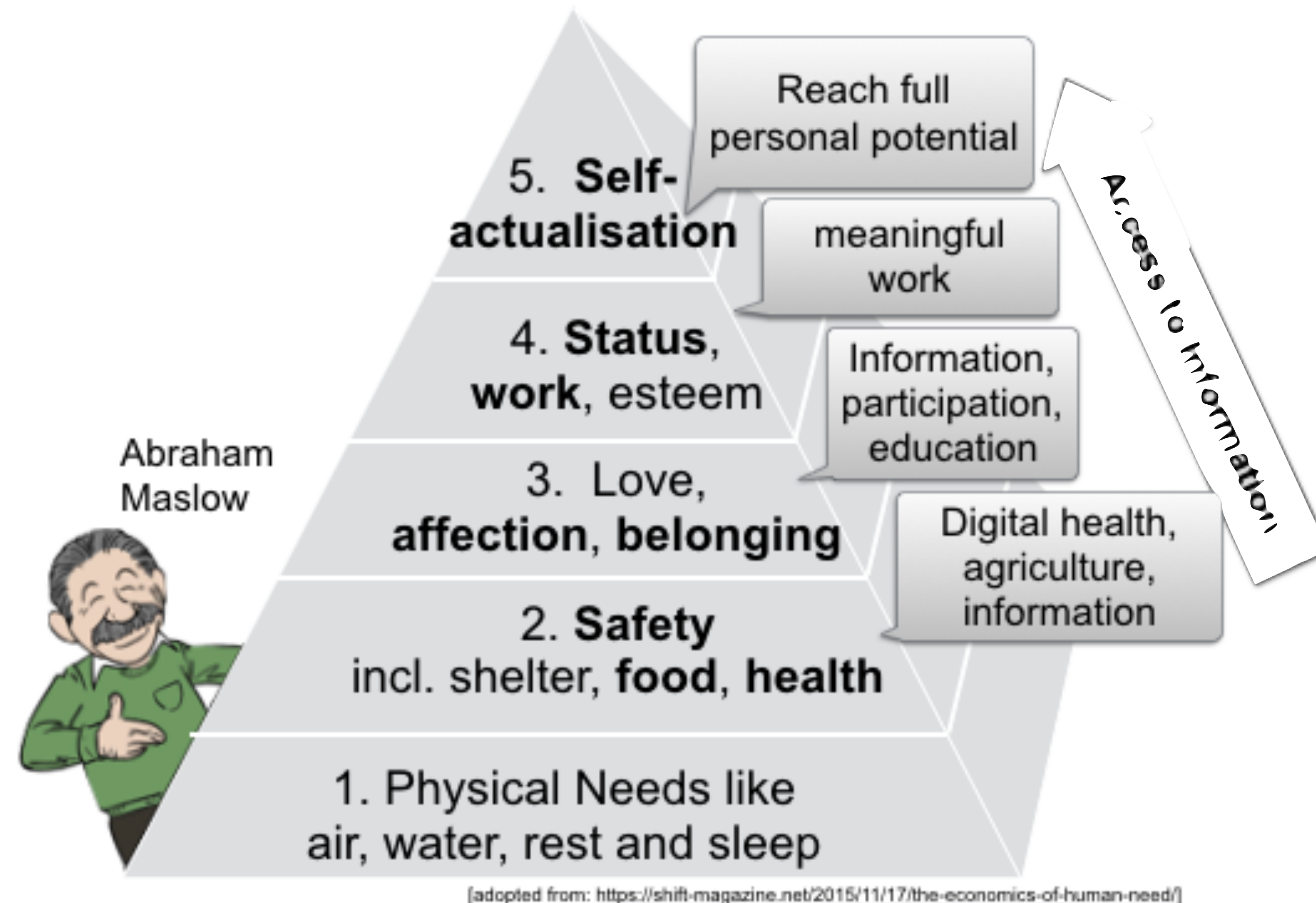➡ Real world search based on needs from the communities

ARUA and The Guild in full support of the proposed joint AU-EU Innovation Agenda

Through the proposed AU-EU Innovation Agenda, announced on 14 February ahead of the AU-EU summit, universities are assuming a central place in the development of AU-EU relations.

4G/5G Multi-MIMO

How to we reach every single human?

[adopted from: https://shift-magazine.net/2015/11/17/the-economics-of-human-need/]

➡ Digital Public Goods (DPGs) & GovStack
- decentralised DPGs
- digital transformation
- GovStack for local governments
- digital health empowerment?

➡ Local communities
- Women saving networks
- Women health networks

Priorities in (rural) Africa

SDG	Priority	%
8 DECENT WORK AND ECONOMIC GROWTH	decent work	57%
2 ZERO HUNGER	zero hunger	31%
3 GOOD HEALTH AND WELL-BEING	good health	27%
16 PEACE AND JUSTICE STRONG INSTITUTIONS	peace & jus	26%
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	industry	24%
6 CLEAN WATER AND SANITATION	clean water	24%
1 NO POVERTY	no poverty	22%
4 QUALITY EDUCATION	qual. edu	21%

need to have

7 AFFORDABLE AND CLEAN ENERGY	clean energy	13%
11 SUSTAINABLE CITIES AND COMMUNITIES		4%
13 CLIMATE ACTION		3%
10 REDUCED INEQUALITIES		2%
5 GENDER EQUALITY		1%

nice to have

Afrobarometer.org

"As a mother of six children, I am expected to be the home keeper; I wash, clean, and cook. It is merely my responsibility to be constantly available and do everything for my family. So with this heavy responsibilities, I cannot find time to use the computer and the Internet at home"
Female, 45 years

Mumporeze, N., & Prieler, M. (2017). Gender digital divide in Rwanda: A qualitative analysis of socioeconomic factors. Telematics and Informatics, 34(7), 1285–1293

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

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

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

Digital Public Goods & GovStack

1A: We recommend that by 2030, **every adult** should have **affordable access** to digital networks, as well as **digitally-enabled** financial and **health services**, as a means to make a substantial contribution to achieving the **SDGs**…

1B: We recommend that a broad, multi-stakeholder alliance, involving the UN, create a **platform** for sharing **digital public goods**, ….

➡ Affordable access to DPGs and GovStack

➡ Community involvement

➡ Decentralised DPGs

Community involvement
for meaningful access tailored towards the needs & capabilities

➡ WIR vs ICH
  - **W**erte
  - **I**nclusivität
  - **R**esilience

Self-actualisation
Entertainment

Empowerment, Work
Digital Transformation

Explore, Affection
Opportunities
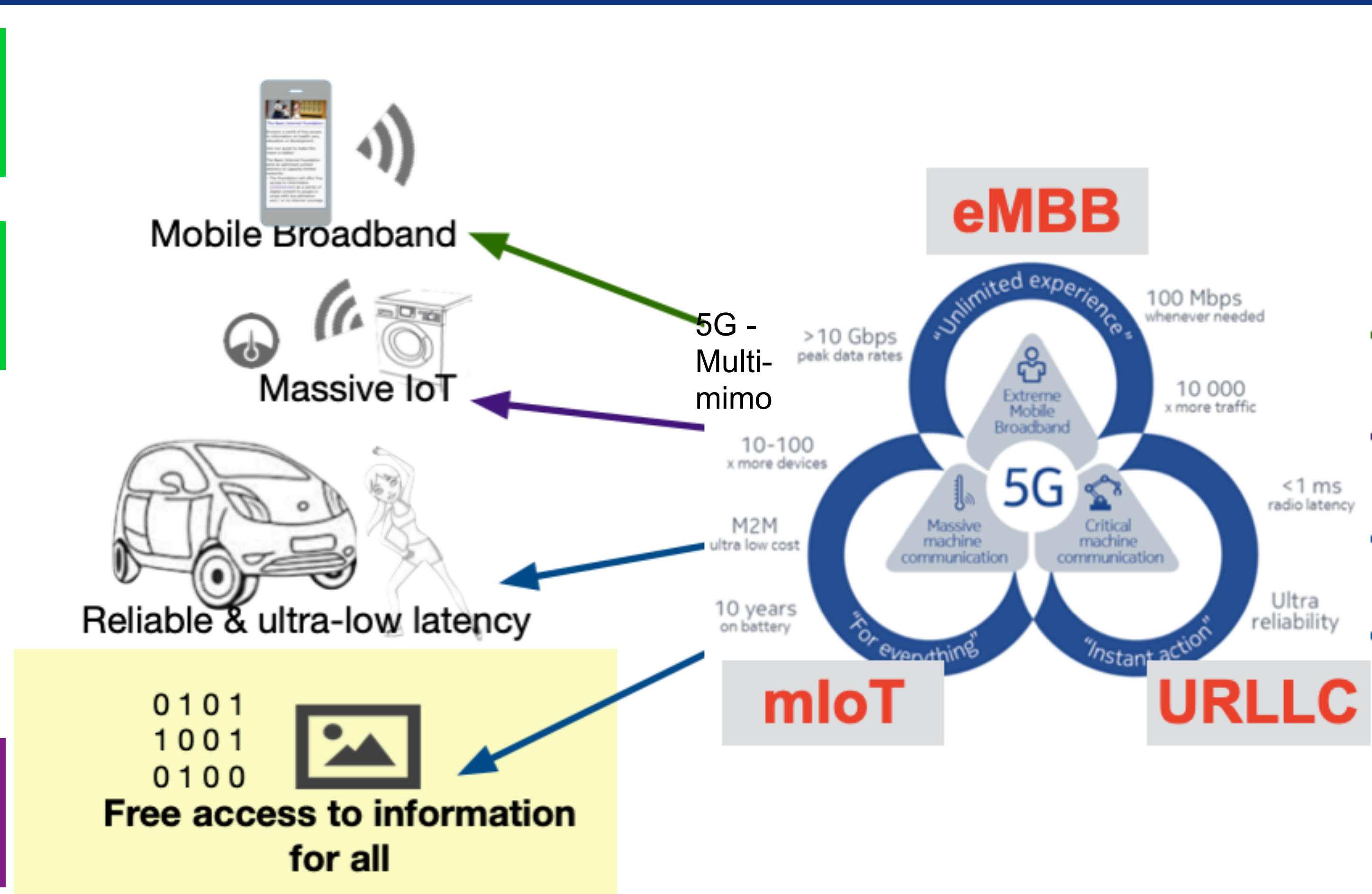
Value creation
Trust & confidence

Need to change?

Road model: pedestrians & cyclists

Digital pedestrians, digital cyclists vs digital cars (broadband)

Internet Lite

Mobile Broadband

Massive IoT

5G - Multi-mimo

Reliable & ultra-low latency

0101
1001
0100
Free access to information for all

eMBB

>10 Gbps peak data rates

100 Mbps whenever needed

10 000 x more traffic

Unlimited experience

Extreme Mobile Broadband

10-100 x more devices

M2M ultra low cost

10 years on battery

Massive machine communication

5G

Critical machine communication

<1 ms radio latency

Ultra reliability

"For everything"

"Instant action"

mIoT

URLLC

Histories

"My mobile is more important than a weapon"

Head of Mbaash, TZ

Catherine R Kimambo connecting her first village

https://vimeo.com/368147538 - 2020

Mount Kenya - our cultural heritage

Usingo Secondary School, KE