

**Centre for African Research on Enterprise and Economic
Development (CAREED) seminar, 21May2025**

Instantiation of the Digital Public Infrastructure (DPI) in Sub-Saharan Africa

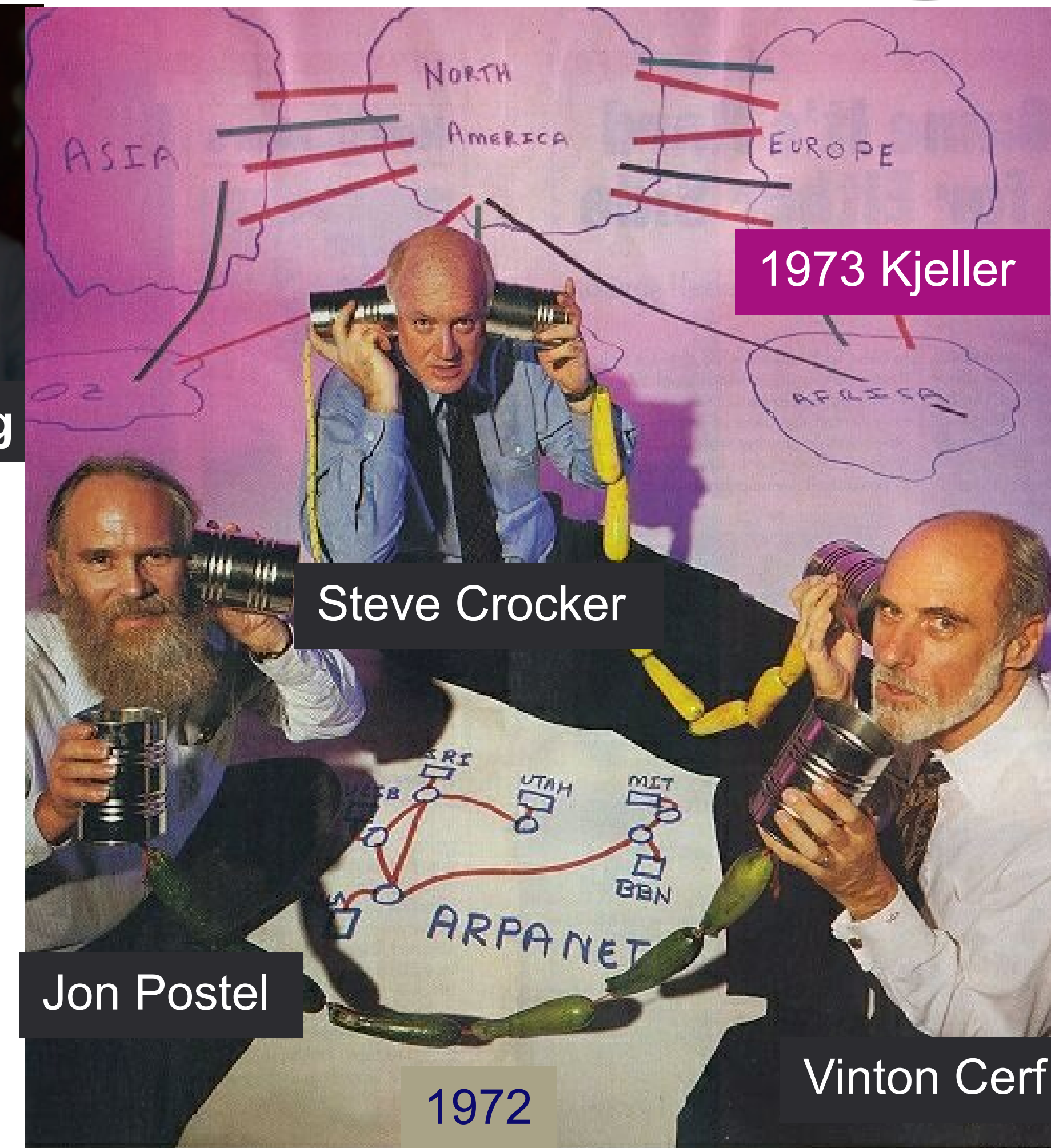
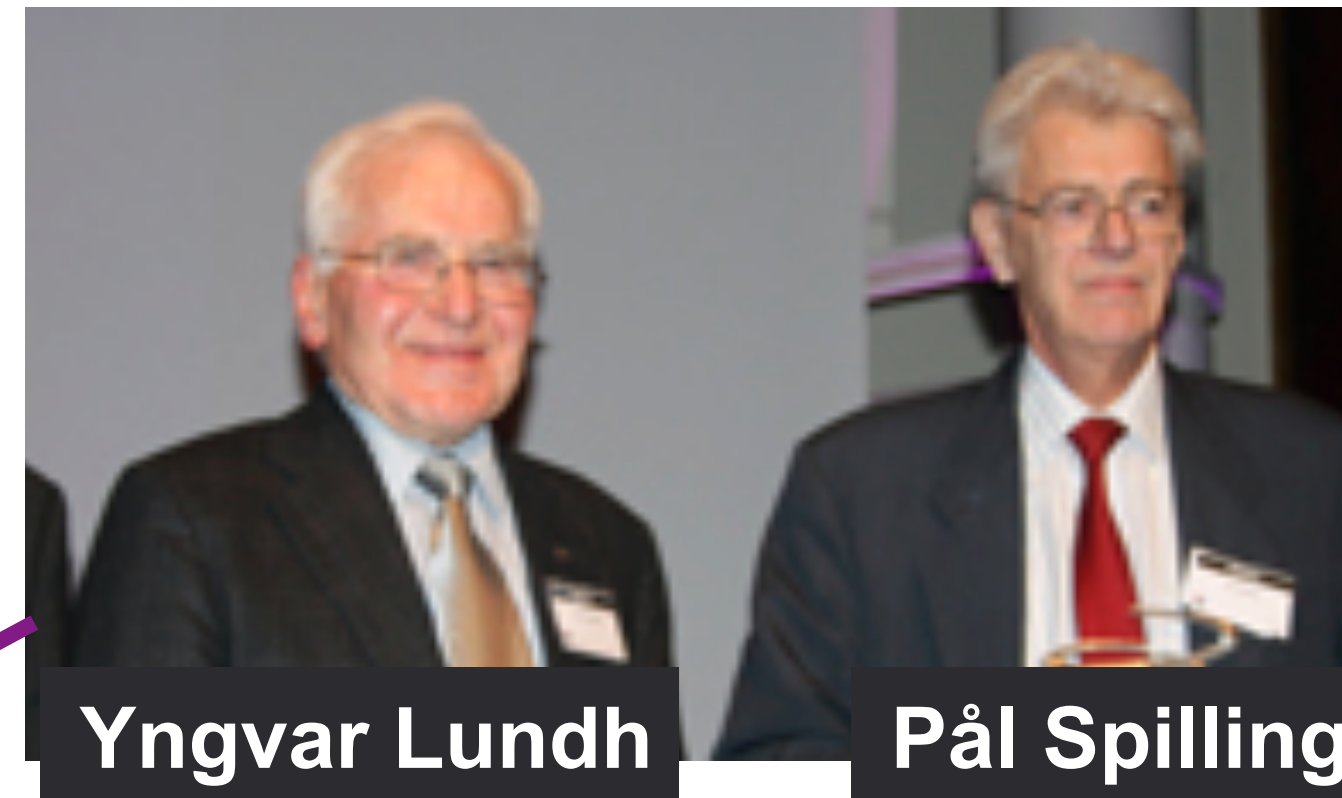
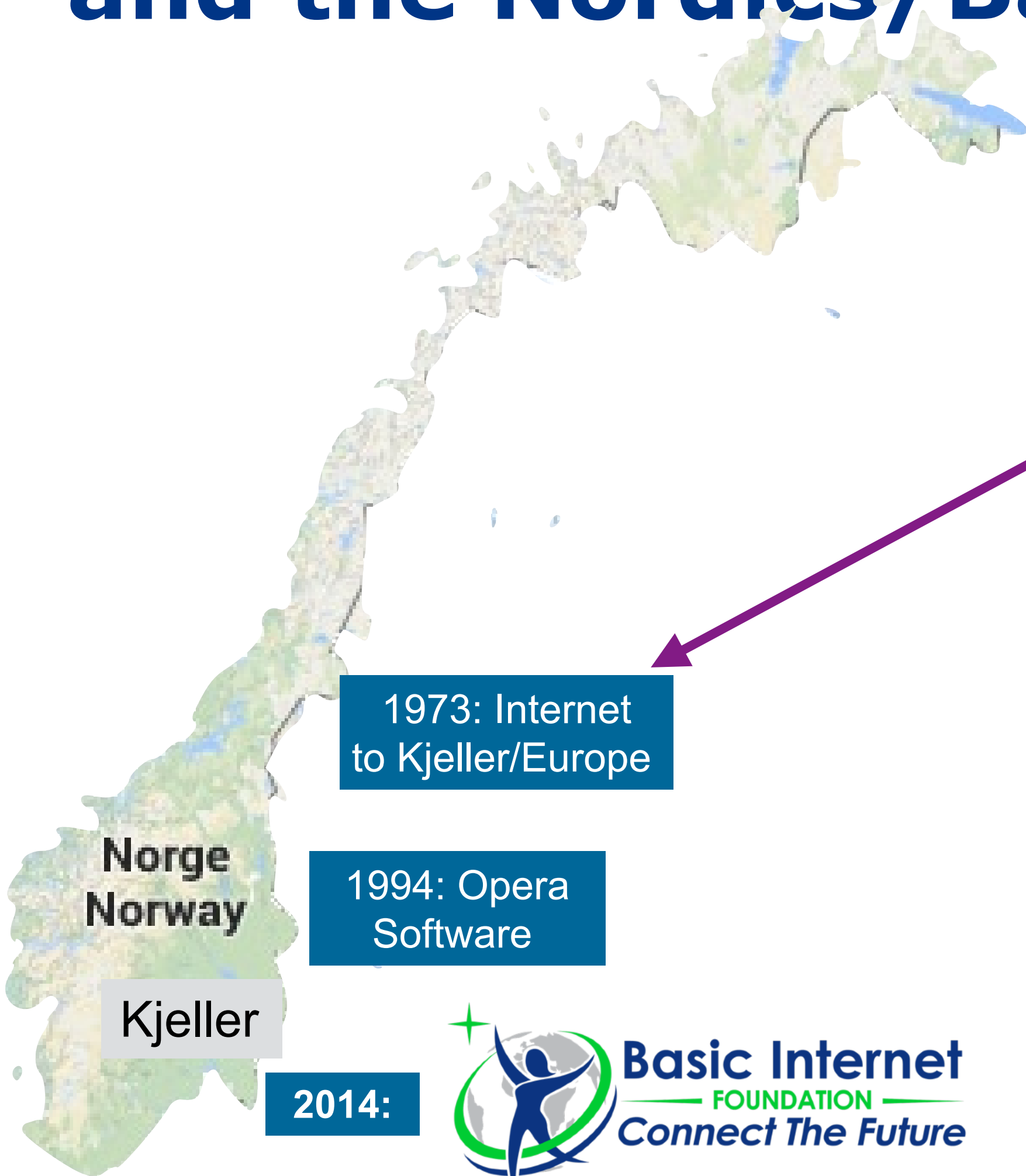
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Inclusive digitalisation in Norway and the Nordics/Baltics (N8)



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



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



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?

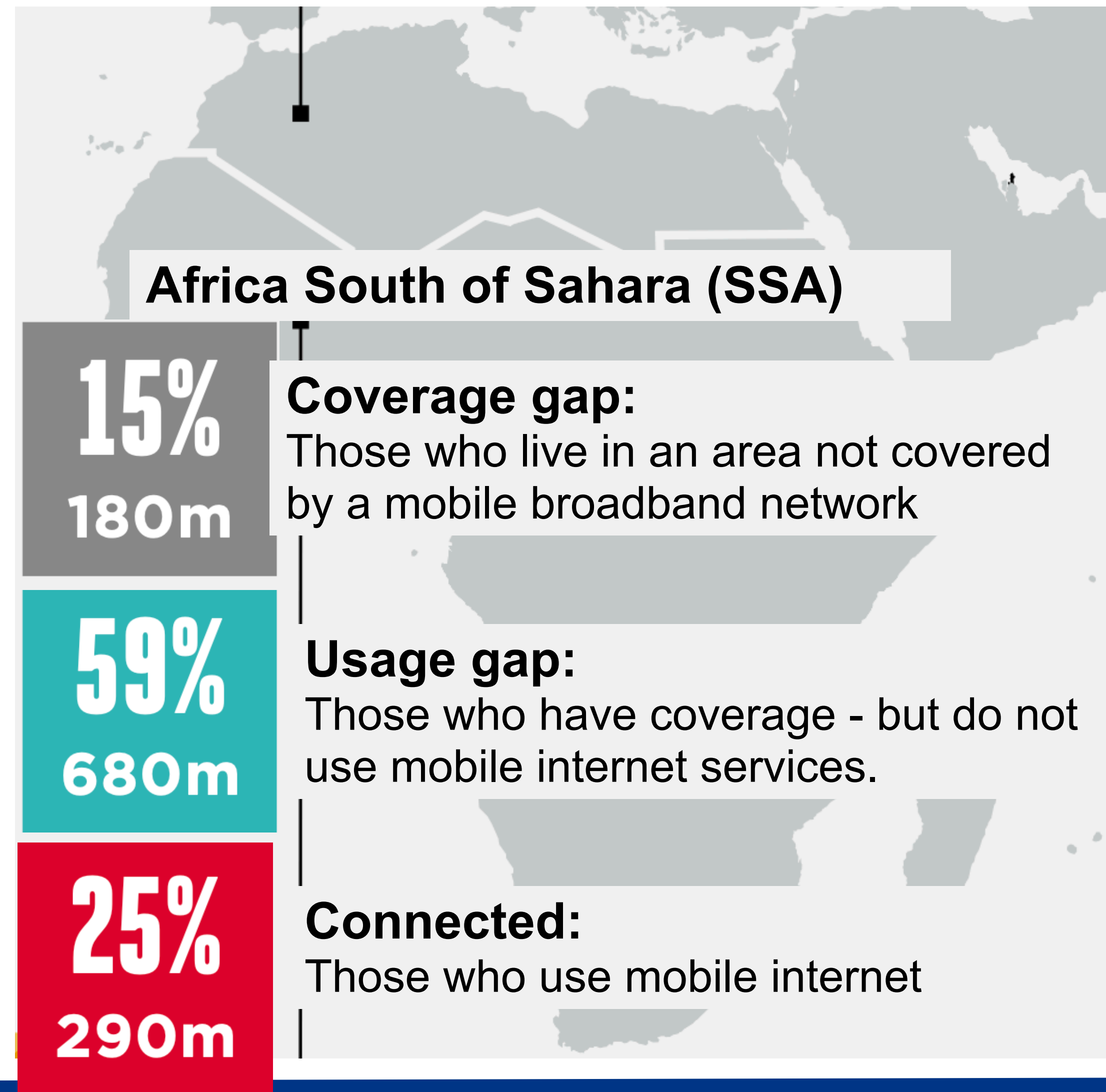


SSA:
75% not using mobile internet

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]

JOSEPH E. STIGLITZ

WINNER OF THE NOBEL PRIZE IN ECONOMICS



THE PRICE OF INEQUALITY

HOW TODAY'S DIVIDED SOCIETY
ENDANGERS OUR FUTURE

Inequality in the digital era

- Health-, Education-information, Gov services
- Artificial intelligence, machine learning
- high-performance computing
- do we lack the unconnected?

Commercialisation of the Internet

understanding the business

Jun1973: Norway (Kjeller) connected, then London

Jun1986: RARE/TERENA...GEANT (NRENs in Europe)

1993 - 2G (GSM) **privatisation** of Telecom

1999 - 3G (UMTS): 3 x ROI expectation, Uni co-dev

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



Societal Security - Digital Public Infrastructure (DPI)

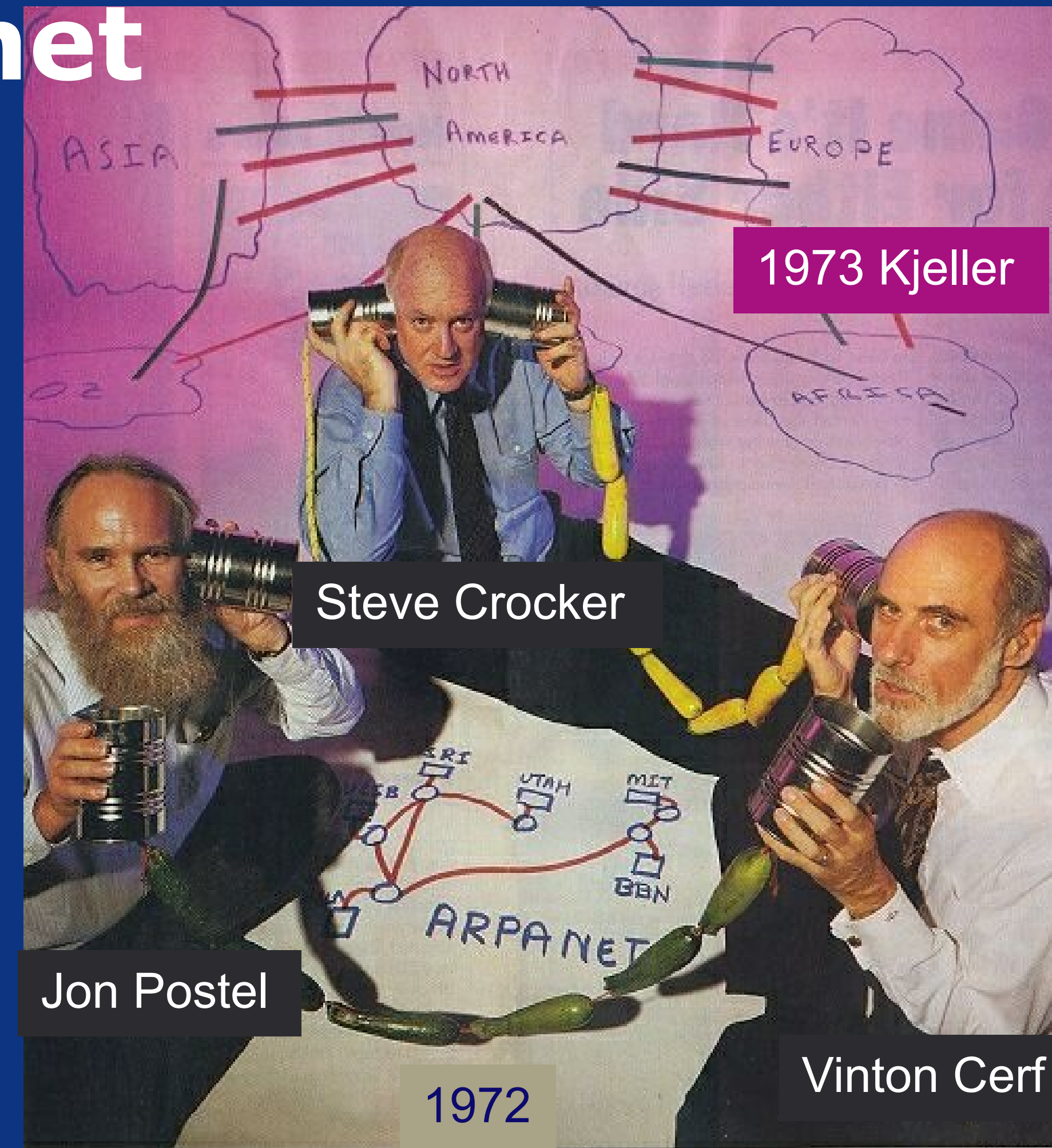
Aug2003: Reykjavik "Cybersecurity"

Jun2019: UN High Level Panel on Digital Cooperation

Mar2023: Digital Public Infrastructure (DPI)



Vint & Sigrid, Nordunet 2003



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

1. Is access to digital information a universal human right?

2. How can we enable access, especially for people and groups left behind by traditional business models?



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

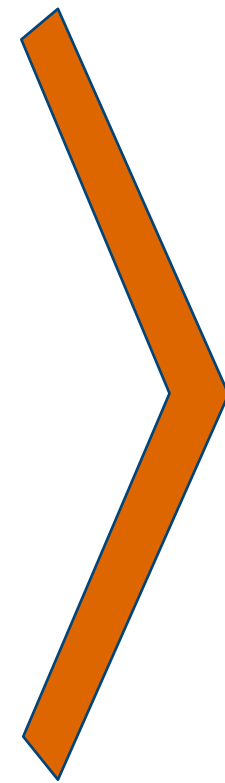
SDG 17 Partnerships for the Goals



Evidence Gap Map (EGM) on Mobile Internet Uptake

Study by Basic Internet Foundation and GSMA M4D, Aug-Dec2024

What are the **drivers and barriers** for mobile internet uptake?



Once people have **access** to the internet, what do they **use it for**?



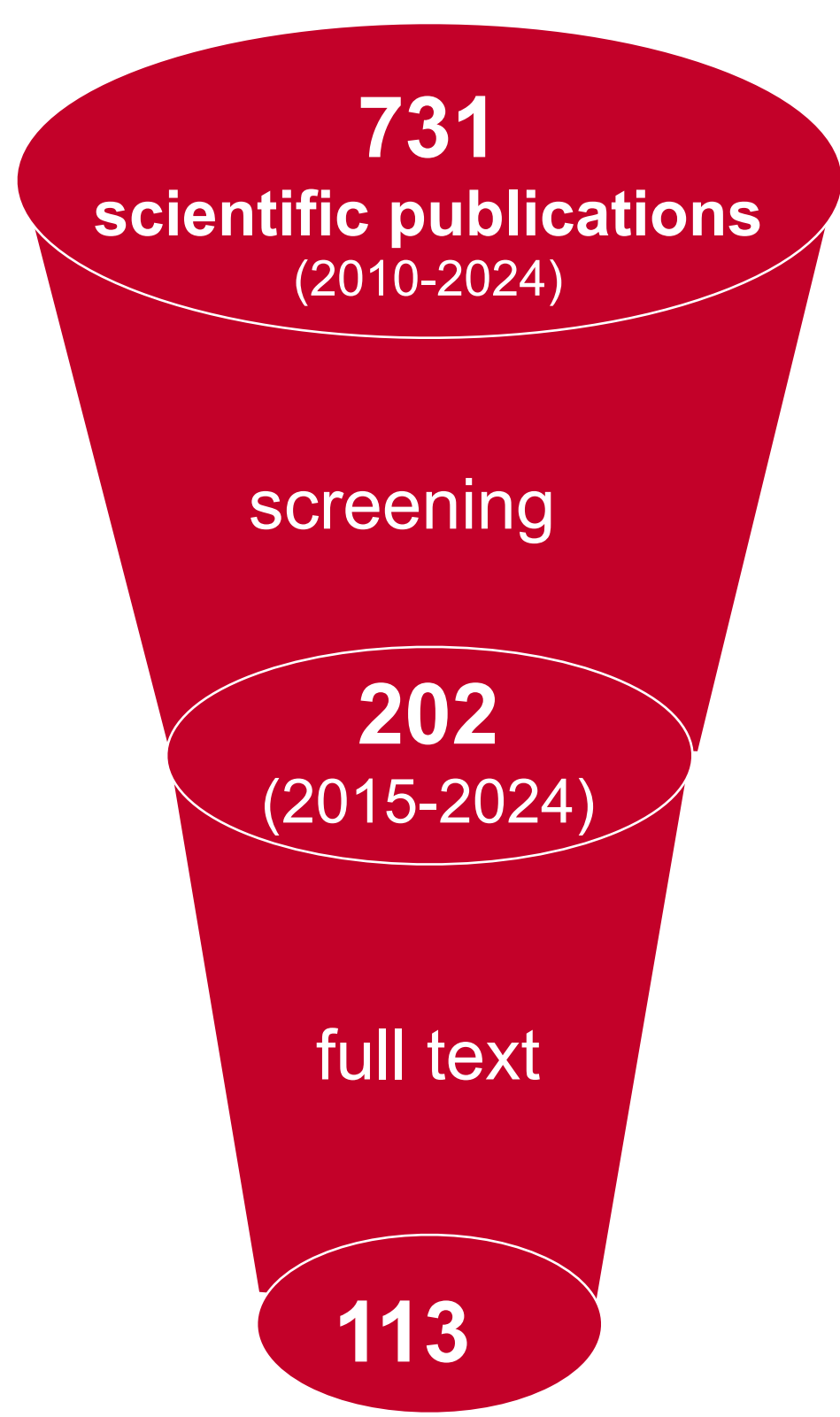
What are the **impacts** of this use?

Focus on gender and country (SSA and SA), then age and urban-rural



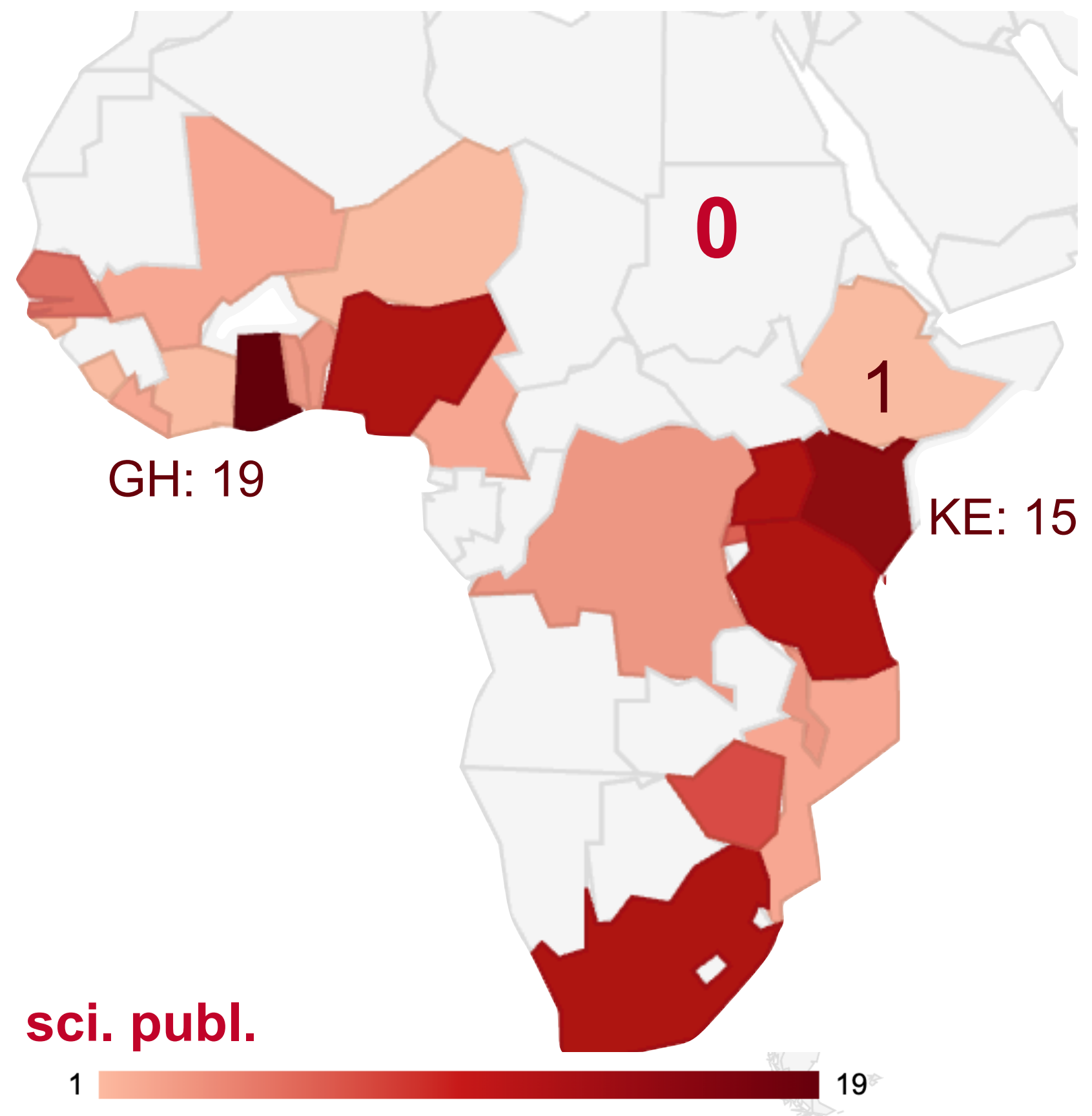
Process and Evidence

EGM Mobile Internet Access



Evidence

of scientific publications



A desktop design from so-called experts that may feel they know it all. Once they design it, it is not context-specific, it won't be accepted and it won't be effective." (developer, Ethiopia)

1 paper mentioning Ethiopia:

Coggins et al., 2022, "How have smallholder farmers used digital extension tools? Developer and user voices from Sub-Saharan Africa, South Asia and Southeast Asia", Global Food Security, 32

Debsu, et al. 2016. "Mobile phones for mobile people: the role of information and communication technology (ICT) among livestock traders and Borana pastoralists of southern Ethiopia". Nomadic Peoples 20(1), 35–61



The Impact of Mobile Internet?

what are evidences and gaps?

What are the **drivers**
and **barriers** for mobile
internet uptake?

Regulations (enabling/
disabling)

Handset affordability and
service costs

Cultural/social norms
around phone ownership

Fear and lack of trust

User profiles

Access to information as a
driver

Coverage

Once people have **access** to the
internet, what do they **use** it for?

1 - Access to services
utilities, health, emergency, governmental, ..

2 - Civic Engagement
*Political civic action, legal awareness,
organising around rights*

3 - Fun, entertainment, leisure
Gaming, sports, social media, Porn

4 - Financial services
*Mobile money, banking, remittances, income
generation*

5 - Community cohesion
safety, security, group organising

6 - Connection to family and friends

7 - Access to information

What are the **impacts** of this use?

Individual social inclusion or exclusion

Realisation of socio-economic rights

Efficiency
Life management

Political engagement
Voter turnout, activation and participation

Individual economic effects
*business, jobs, livelihood changes, remittances,
sales distribution*

Security
*stalking, gender-based violence, device theft,
scamming*

?

1

5

3

7

1

3

1

4

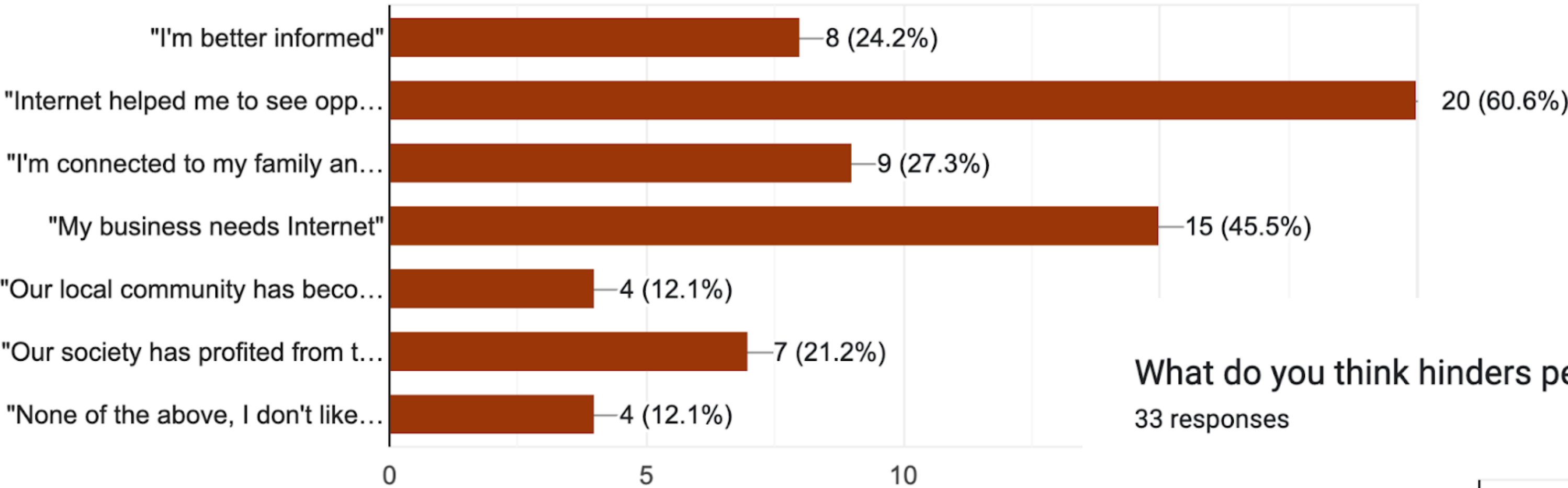
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EGM Mobile Internet, Drivers & hinders

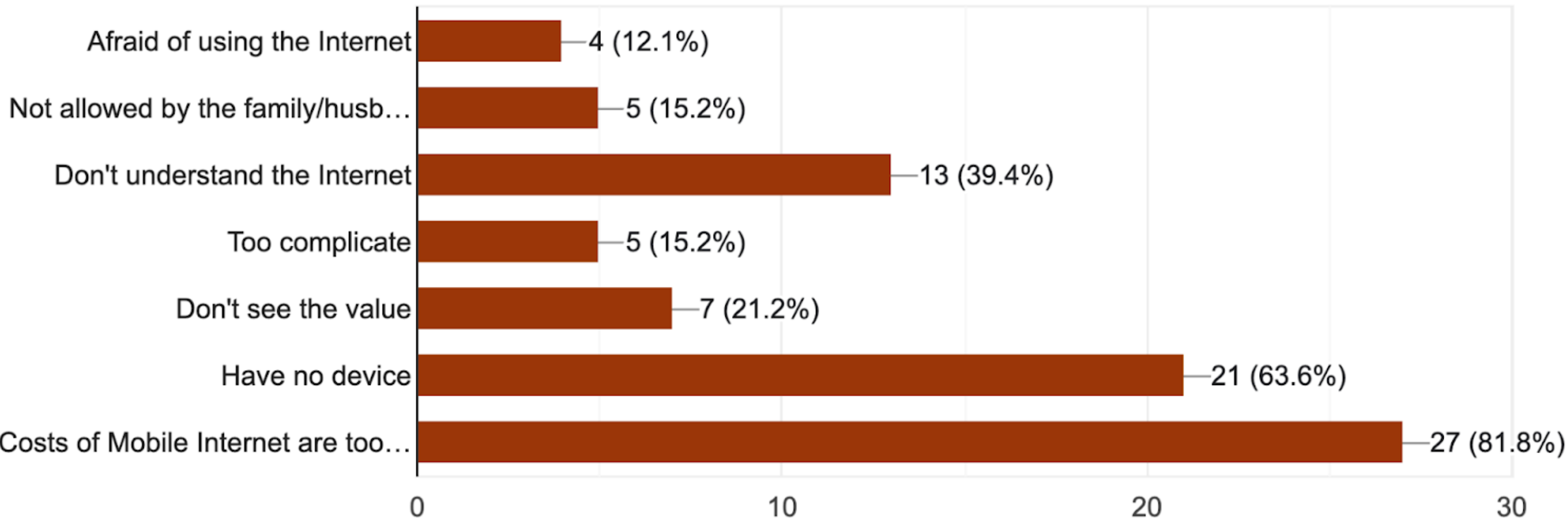
Out of the following statements, which fits for you?

33 responses



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

33 responses



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.

EGM - overview



Evidence Gap Map Mobile Internet: from Drivers & Barriers to Service usage and Impacts		1- Access to service s	2 - Civic engage ment	3 - Fun & entertai nment	4 - Financi al service s	5- Comm unity cohesi on	6 - Connec tion to family and friends	7- Access to inform ation	Individ ual social inclusi on or exclusi on	Realisa tion of socio- econo mic rights	Efficien cy& Life manag ement	Politica l engage ment	Individ ual econo mic effects	Securit y& violenc e	SSA	SA
Digital skills	20	11		2	11	5	7	3	9	4	18		13	1	14	5
User profiles	75	35	2	9	38	15	24	21	35	21	68	3	32	3	54	15
Policy - regulatory	9	5	1		4		1	1	4		8	1	4		9	
Handset affordability and service costs	44	20	1	7	17	7	11	16	20	11	39	3	17	1	38	8
Cultural /social norms	41	18	1	7	18	7	13	11	21	10	33		15	3	27	12
Fear and lack of trust	23	17	2	1	14	4	11	2	10	7	21	1	9	1	12	7
Access to information	37	23	1	1	26	10	18	10	14	12	31	1	19		26	6
Network coverage	17	8	1	1	8	2	4	5	7	1	16	1	8		14	4

Findings EGM Mobile Internet

Drivers *for uptake of Mobile Internet*

Digital skills, education

Youth divide, access to information



Use of Mobile Internet

Access to services

Connect with family and friends

Impact

Improved social and emotional well-being

Better life management

Economic opportunities

Women's participation and income generation

Barriers

Costs

Socio-cultural norms

Gender- and rural-urban divide

Findings of the EGM Mobile Internet



Gaps
lack of evidence

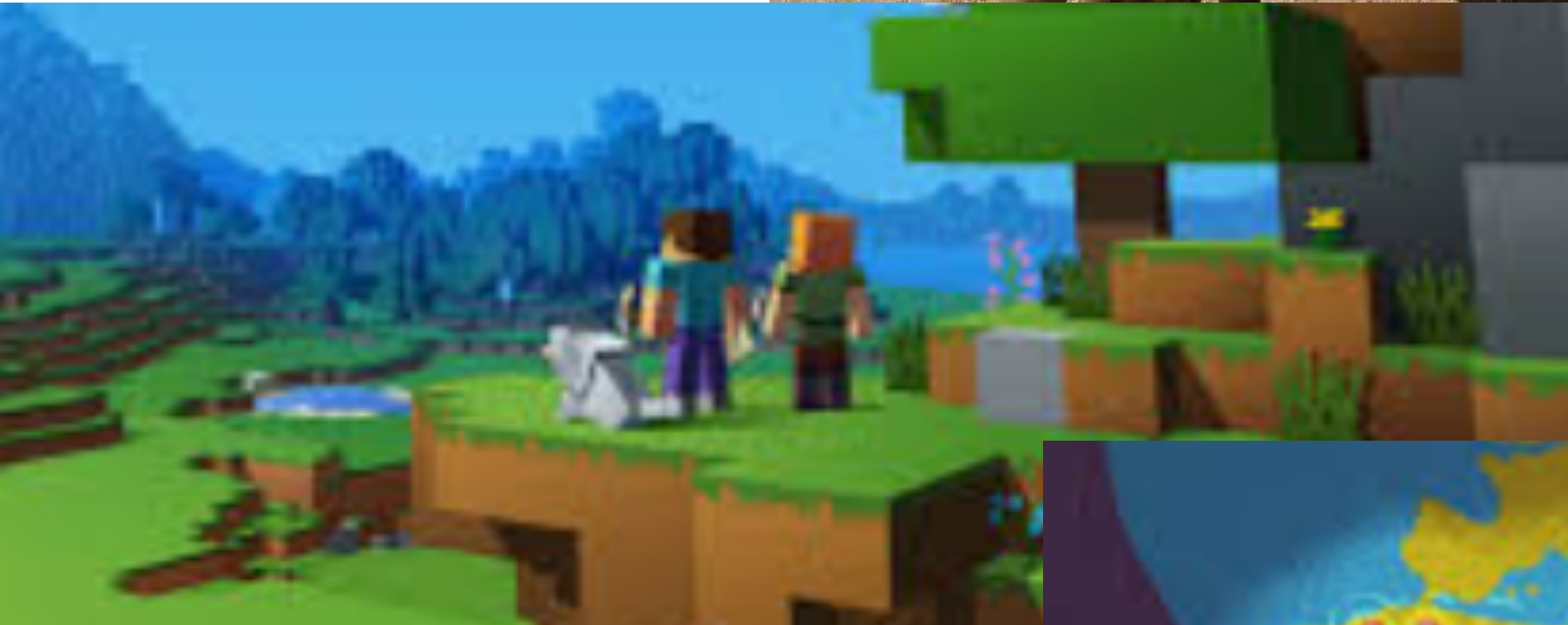
Absence of explicit policy regulations

Lack of attention of role of service providers

Knowledge
Portal

Use of mobile internet for entertainment

Omission of emergency services, legal awareness, human rights and community safety





Recommendations for Researchers and Practitioners

Researchers *under-researched aspects*

Policies and regulations

Digital literacy

Role of service providers

Negative uses and consequences

Practitioners

Nuances of digital literacy and user profiles - **meet user needs**

Innovation: inclusive business models, governance processes to address **cost**, **cultural** and **societal norms** hampering women

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

Step 1:



Step 2:

0 1 0 1
1 0 0 1
0 1 0 0



**Free access for
digital pedestrians
and digital cyclists**

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

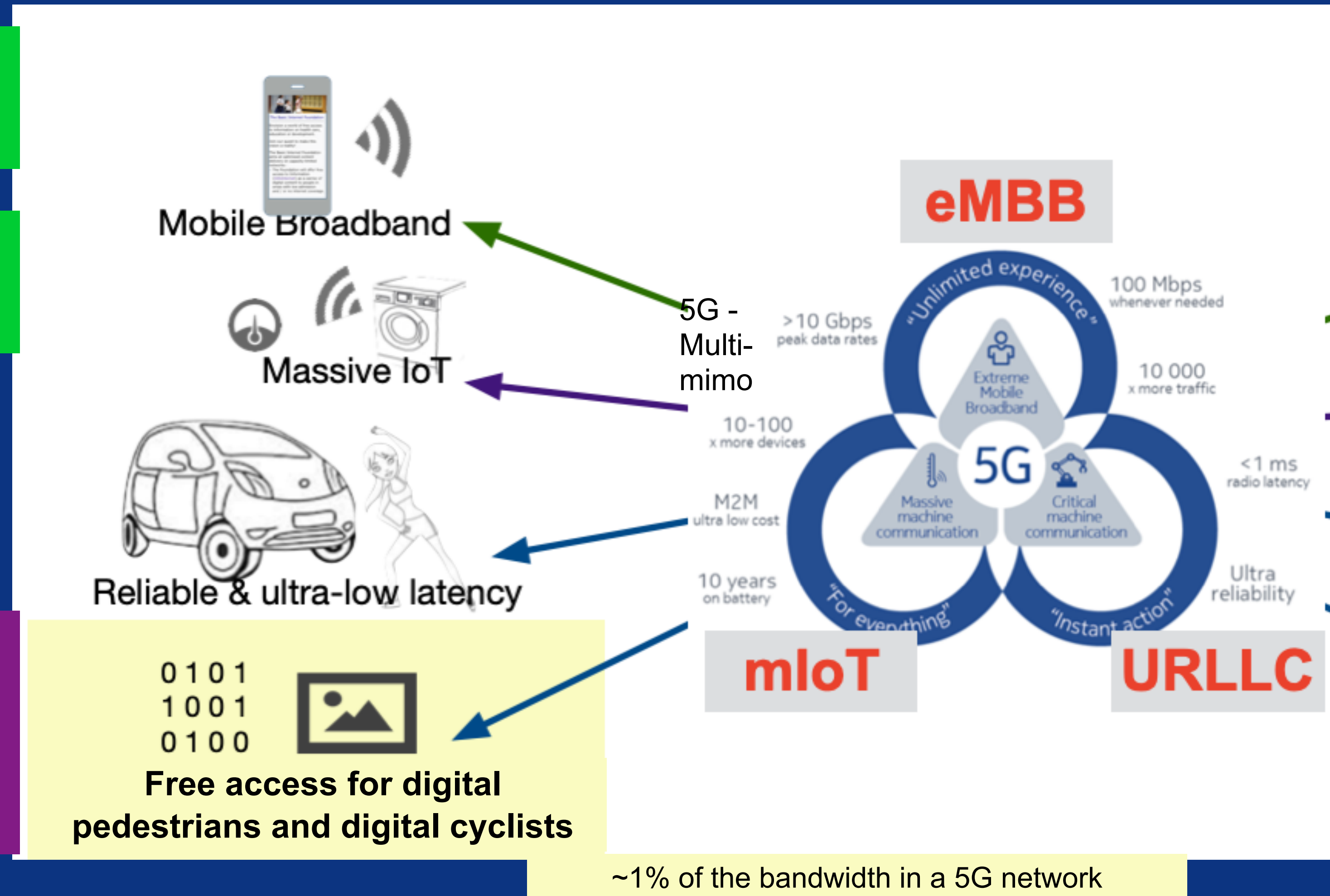
realised through 5G network slicing and protocols like AMP

Revisit Access

Road model: pedestrians & cyclists

Digital pedestrians, digital cyclists vs digital cars (broadband)

Internet Lite
“the walk on the Internet”





Recommendations for Policy Makers

Policy makers

Targeted policies and regulations to address the **cost of access** and the negative consequences, e.g. digital divide

Instantiate the Digital Public Infrastructure (DPI) to ensure an inclusive access to mobile Internet

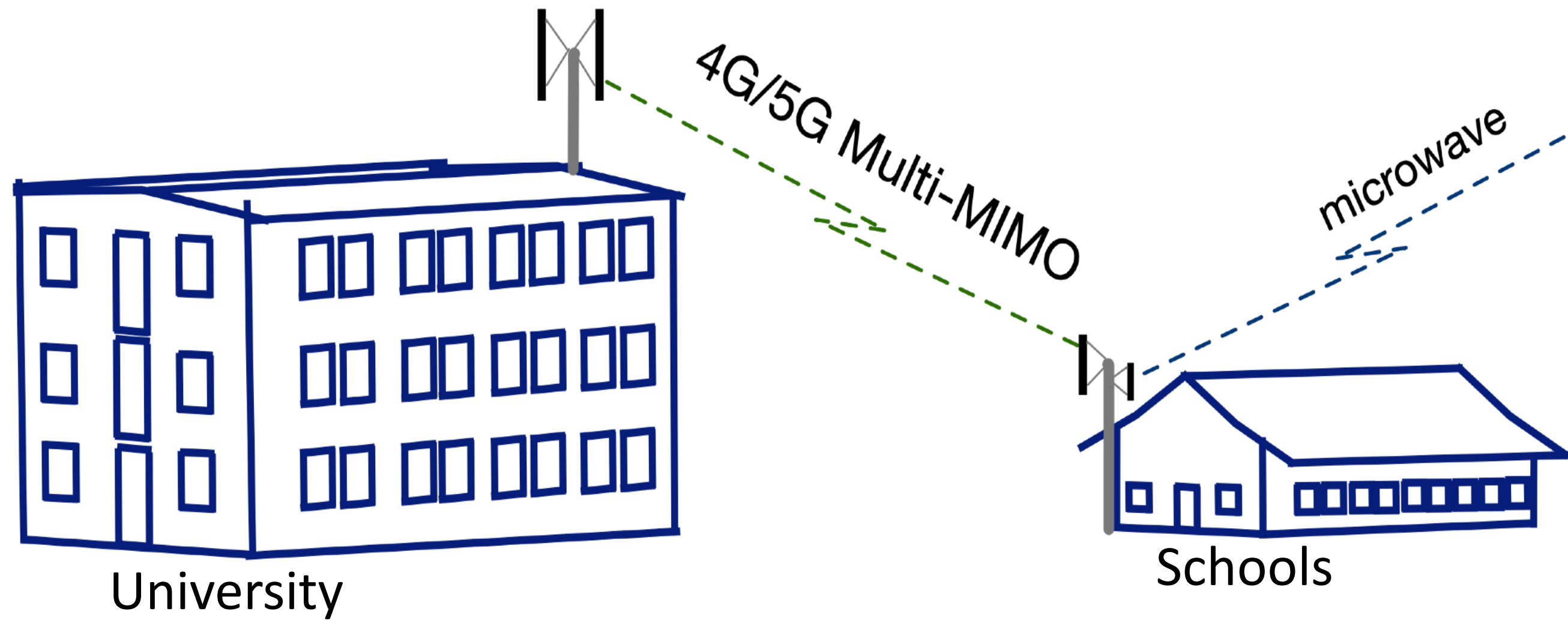
Support efforts to increase digital literacy and the use of mobile internet for **women's empowerment**.



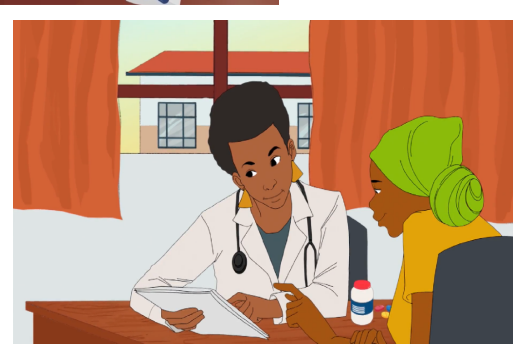


Pathway(s) for inclusive DPI

National Research & Education Network (NREN)



Community Learning & Living Labs (CL3)



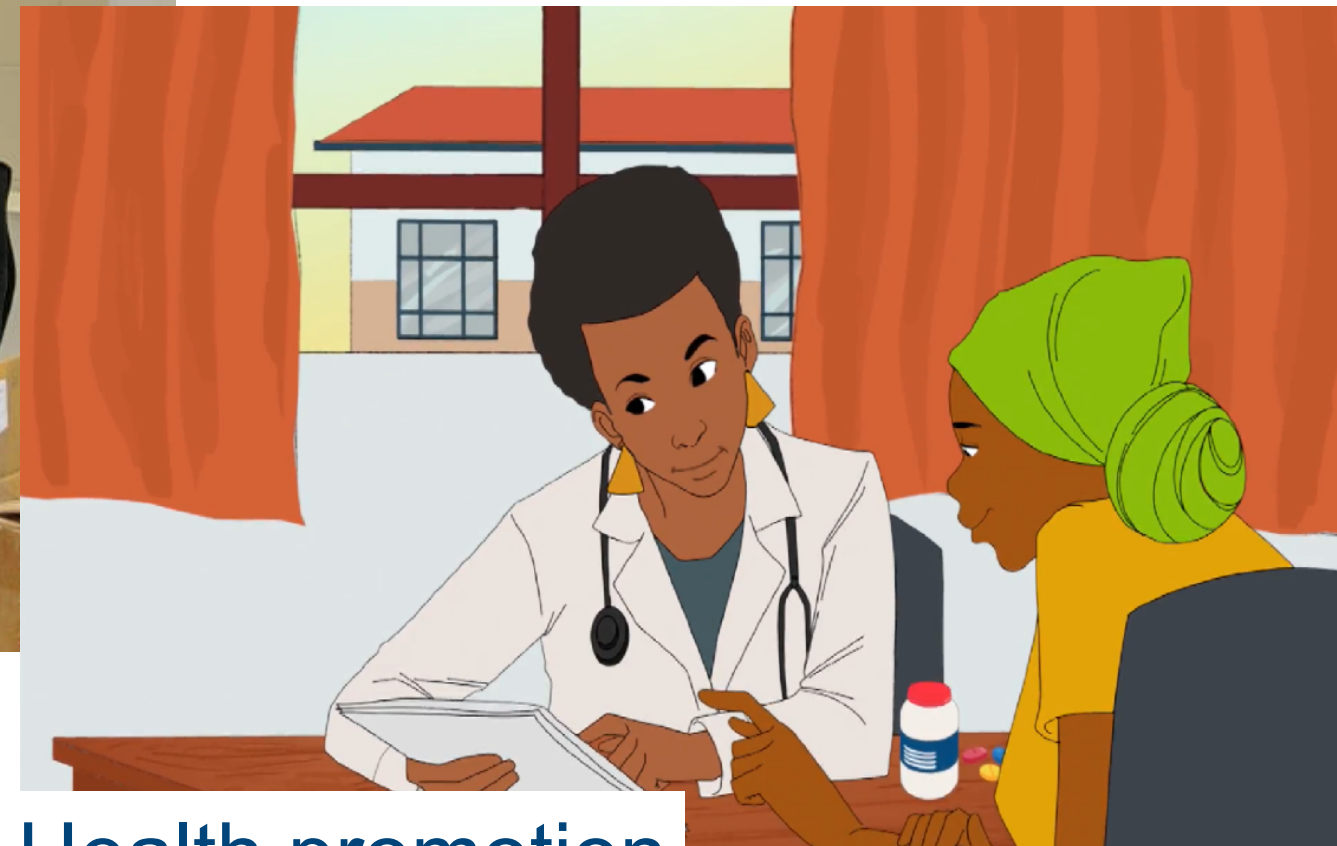
1. Strengthen the NRENs
2. Enable Universities to connect
3. Connect all schools
4. Establish CL3 in each community

Work with communities in SSA

antenna



University students connect schools



Health promotion



Community Networks



“Mount Kenya”



Internet Governance Forum

[IGF2025.no](https://www.intgovforum.org/)



IGF 2025 Launch / Award Event #223 Affordable Access for Education and Health (AA4EDU)

Subtheme

(Building) - Universal Access and Digital Rights

<https://www.intgovforum.org/en/content/igf-2025-launch-award-event-223-affordable-access-for-education-and-health-aa4edu>

IGF 2025 Open Forum #66 The Ecosystem for Digital Cooperation in Development

Session

<https://www.intgovforum.org/en/content/igf-2025-open-forum-66-the-ecosystem-for-digital-cooperation-in-development>

- 23-27Jun2025 in Norway
- hybrid (online & virtual)