



UiO : University of Oslo



**Wireless World Research Forum, WWRF #44,
Copenhagen, 29Jun-1Jul2020**

6G for Digital Inclusion and Catalyst for the SDGs

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Let's face it:

5G IS FOR THE BENEFIT OF TELECOMM OPERATORS, NOT US AS CONSUMERS

By josef | 24 June 2020 | Digital cooperation, Digital divide, Digital inclusion, Mobile Networks



Digitaliseringsminister 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

from <https://titan.uio.no/teknologi/2020/5g-nettet-er-til-fordel-brukerne>, created by Bjarne Røsjø, 29Apr2020 in Norwegian

o helped develop the 3G network, is very critical with respect to 5G: telecom operators' revenues», he says.

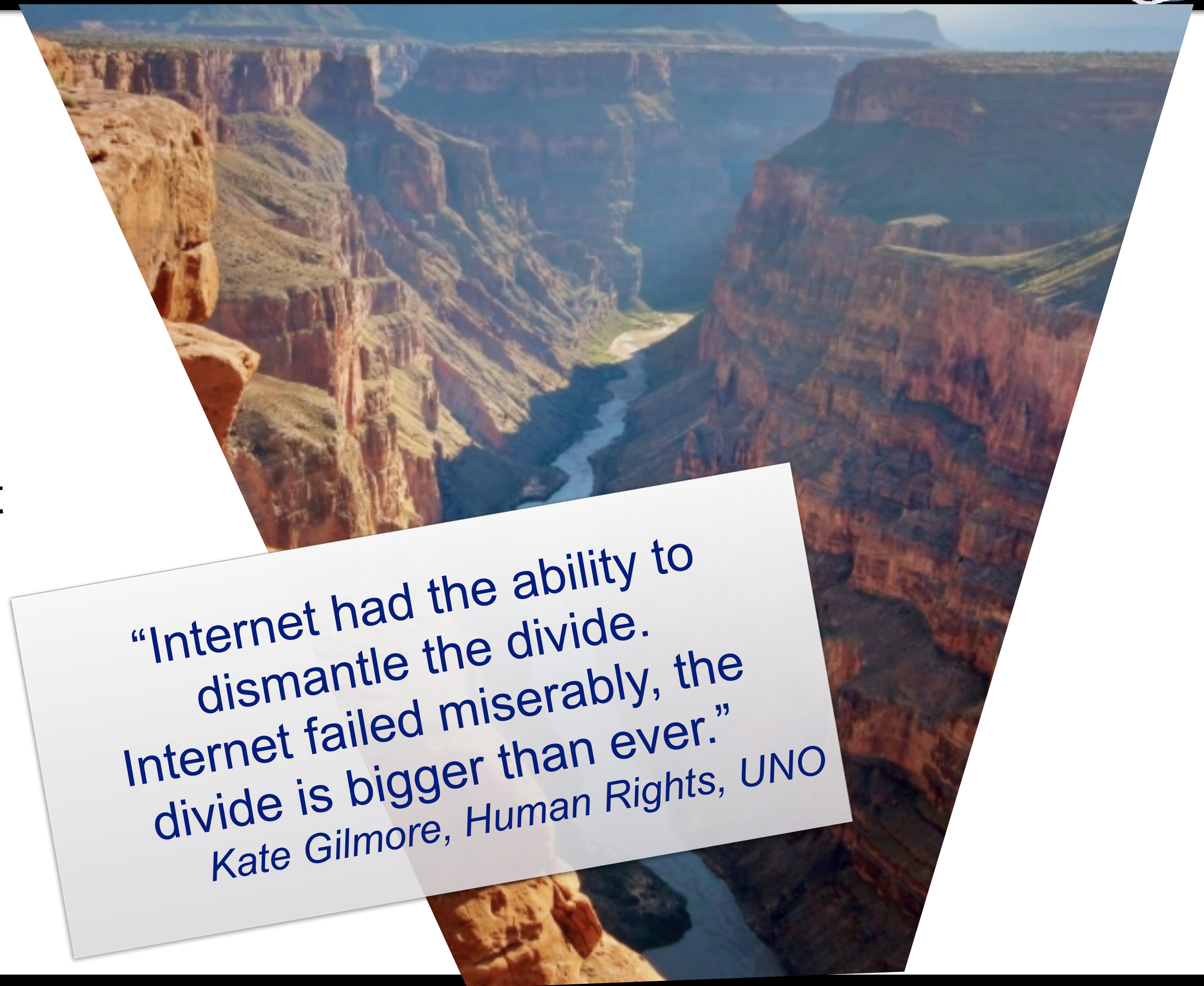
Missing **5G for All**

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

Free access to information for all

What digital divide really means

- The digital divide threatens our society
 - ➔ 3.9 Billion are unconnected
- Huge costs for the society
 - ➔ not sufficient digital skills
 - ➔ not contribution to labour market
- Hampering innovation
 - ➔ no purchasing power
 - ➔ no ability to adopt innovations



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

if you'd rather like to listen to

JOSEPH E. STIGLITZ
WINNER OF THE NOBEL PRIZE IN ECONOMICS



THE PRICE OF ~~INEQUALITY~~

HOW TODAY'S DIVIDED SOCIETY
ENDANGERS OUR FUTURE

Digital Divide:

~~Health
Information~~

~~Education~~

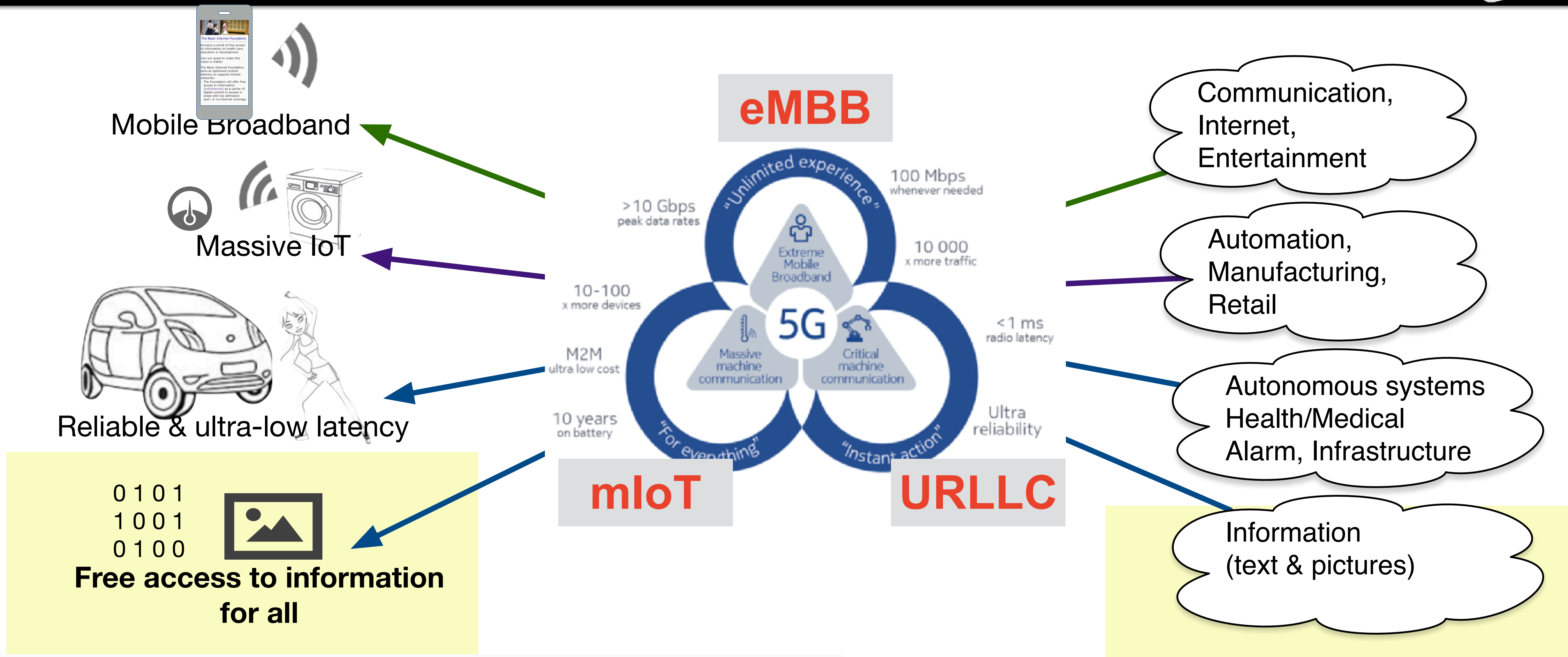
~~Decent work~~

~~Equality~~

~~...a future....~~



5G network slicing for Free Access to Information for All



Thanh van Do, Josef Noll, Sudhir Dixit, Bruno Dzogovic, Van Thuan Do, Boning Feng, "Reducing Inequalities with 5G Internet Light Network Slice", 5G World Summit, IEEE 5G World Forum, 9-11July2018, Santa Clara, California, USA

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
- discussions at African Innovation Week (AIW2019)



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።

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IEEE
Future
NETWORKS

Enabling 5G and Beyond



**International Network
Generations Roadmap (INGR)**
Virtual Workshop
**Connecting the
Unconnected**

Sudhir Dixit
Ashutosh Dutta
CTO WG co-chairs
16 June 2020

United Nations High Level Panel on Digital Cooperation

- Jun2019 report: Recommendations
 - ➔ Inclusiveness
 - ➔ Digital Public Goods (DPGs)

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**...



Nikolai
Astrup

Melinda
Gates

Jack
Ma

Bogolo
Kenewendo

Nanjira
Sambuli

Akaliza
Keza Ntwari

Vint Cerf

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

EAC:
- Akaliza (RW)
- Nanjira (KY)
- Bogolo (BW)

6G for the Sustainable Development Goals (SDGs)

the catalyst for the goals



- 9.C Affordable Internet
 - ➔ Internet Lite
 - ➔ Freemium model for access
 - ➔ “virtual broadband”
- 16.10 Access to Information
 - ➔ Health, Education, Agriculture..
 - ➔ Digital Public Goods
- catalyst for SDG 3, SDG 4, SDG 5, SDG 8, SDG 10...
 - ➔ SDG 17 partnership
- SDG 3 Good Health
 - ➔ 3.3 - End the epidemics of AIDS, tuberculosis, ...
 - ➔ 3.4 - Reduce by one third premature mortality due to communicable diseases
 - ➔ 3.7 - Ensure universal access to sexual and reproductive health-care...
 - ➔ 3.8 - Achieve universal health coverage
 - ➔ 3.C - Substantially increase health financing and the recruitment, development, training and retention of the health workforce
 - ➔ 3.D - Strengthen the capacity of all countries, in particular developing countries, for early warning, ... national and global health risks

Agenda - Digitisation in Development

- Norway
 - ➔ “Digitisation in Development” (Astrup, Unicef, Telenor)
 - ➔ UNO High-level panel on Digital Collaboration

- International perspective
 - ➔ Germany-Norway collaboration West-Africa
 - ➔ G20 Compact with Africa



Addressing the Priorities by

- Report to Parliament 11 (2019-2020),
Priorities
 - ➔ Access, skills, regulations, inclusion
- “Boys have the toys”
 - ➔ digital divide in both **devices**
 - ➔ and **mobile broadband** access
- **Costs** of Access
 - ➔ School connectivity (SDG indicator 4.A.1)
 - ➔ Digital Health for primary health facilities
 - ➔ Community involvement/digital transformation



Norwegian Ministry
of Foreign Affairs

Summary



Access

Skills

Regulations

Inclusion

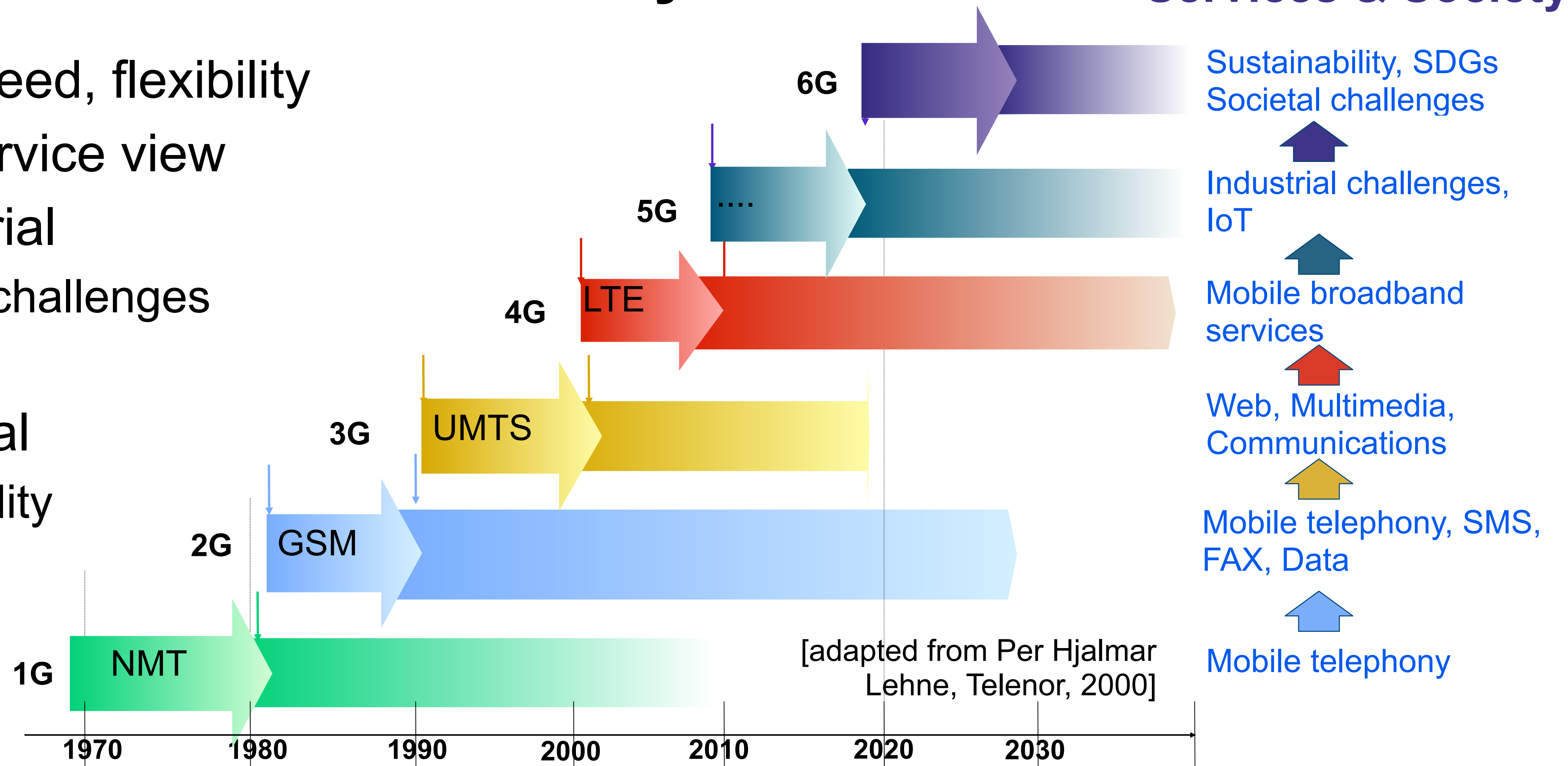
Meld. St. 11 (2019–2020) Report to the Storting (white paper)

Digital transformation
and development policy



6G: Digitisation of the Society

- 1G-3G: Speed, flexibility
- 3G-4G: Service view
- 5G: Industrial
 - ➔ Business challenges
 - ➔ ownership
- 6G: Societal
 - ➔ sustainability

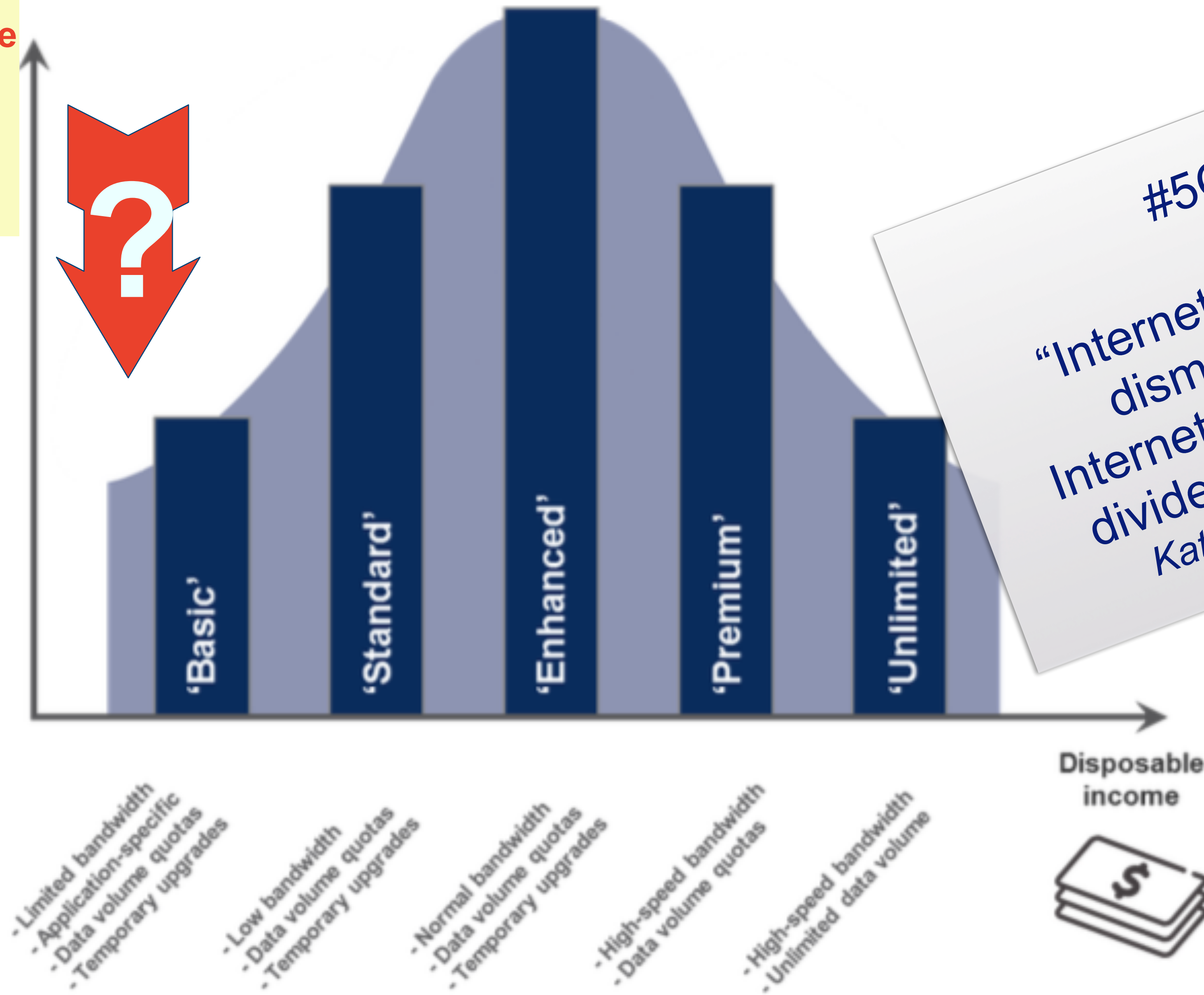


Step 1: Let's address **every single human**

- Internet Lite
- One Information Spot per village
- Free Access to Health & Education

Telecom view on digital inclusion

Addressable
Market

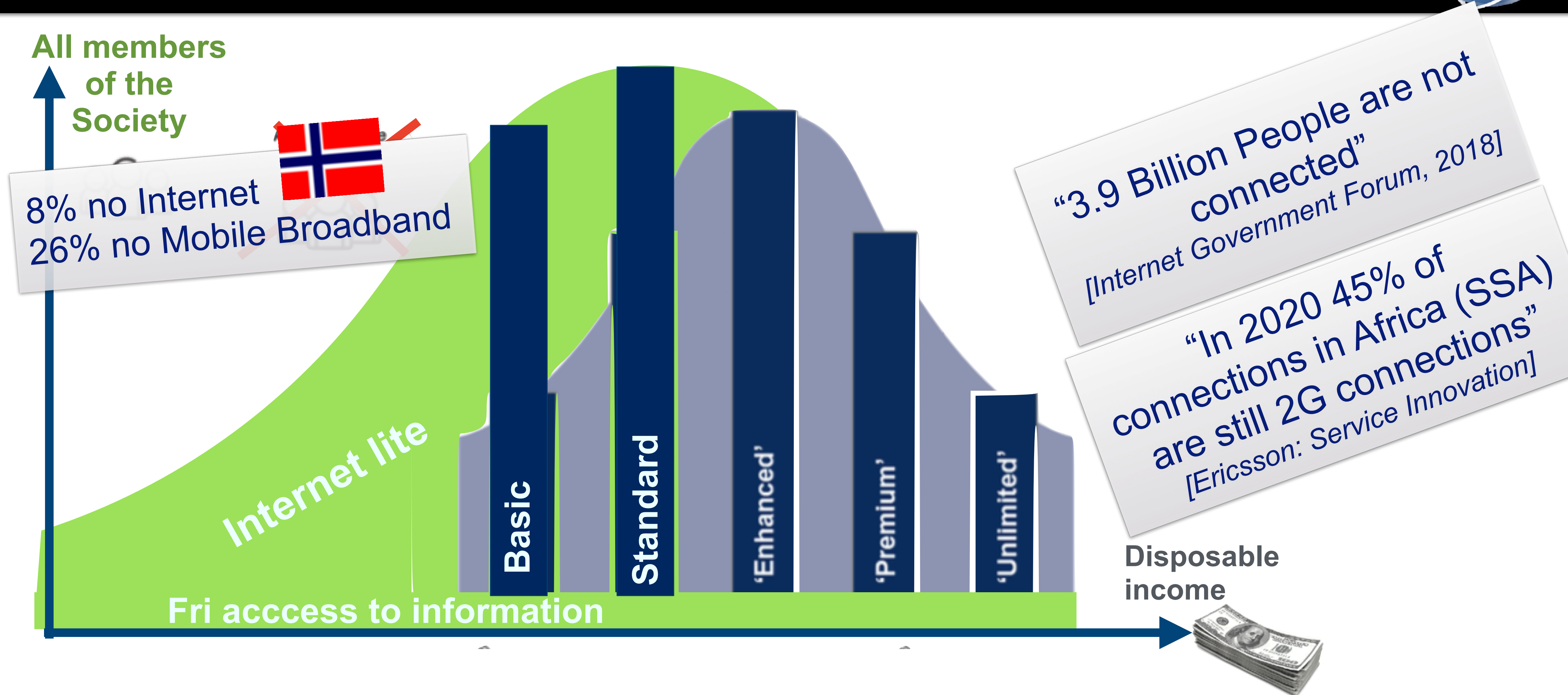


#5Gfor All?

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

Source: Service Innovation through Smart Networks, Ericsson,
<https://www.ericsson.com/assets/local/networks/documents/service-innovation-through-smart-networks.pdf>

6G (#5GforAll) for digital inclusion



[Adapted from: Service Innovation through Smart Networks, Ericsson, 2018]

Step 2: Let's solve the **problem of access**

- Internet Lite
- One Information Spot per village
- Free Access to Health & Education

No magic, exist today.... Lightweight Protocols, e.g. AMP

BasicInternet.org/Mission/?amp

Our Mission

We make digital inclusion happen to improve the life of every single human, by providing free access to the internet and its information

The Challenge

Access to information is crucial for participation, education, and health care.

Worldwide, more than 800 million people don't have access to basic information.

Internet Lite - AMP experience

4

Million People Don't Have Access To The Internet

800

People Don't Have Access To Basic Information

70

BasicInternet.org/Mission

OUR MISSION

We make digital inclusion happen to improve the life of every single human, by providing free access to the internet and its information

Full Web experience

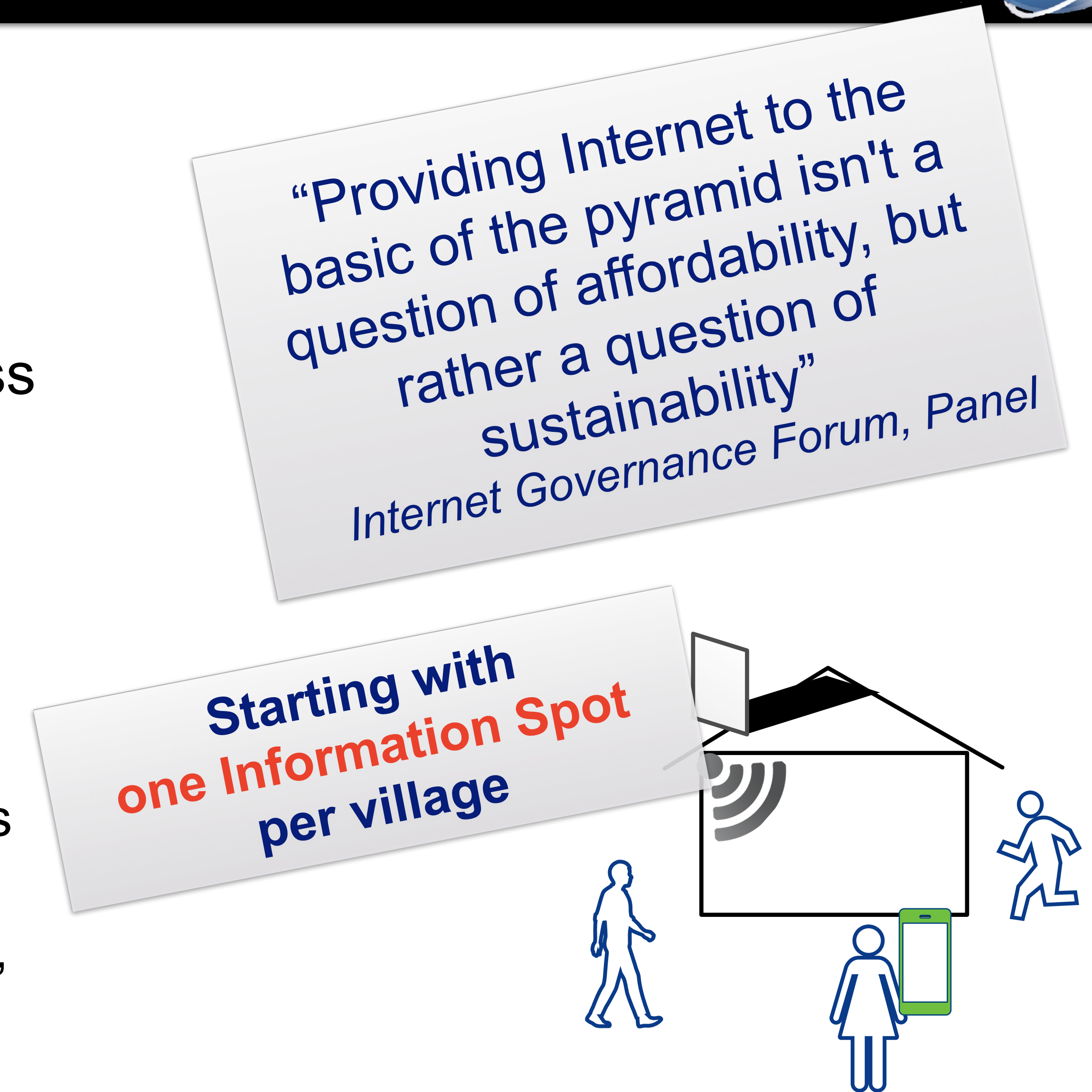
THE CHALLENGE

Access to information is crucial for participation, education, and health care.

Worldwide, more than 800 million people don't have access to basic information.

Our solution

- We build Information Spots in Villages
 - ➔ Wifi Spots with Free Access to Information
 - ➔ Focus on Digital Health
- We introduce the **Freemium** model for access
 - ➔ Free access to information
 - ➔ Premium access to broadband content
- We build the basis for Sustainable Development
 - ➔ Catalyst for the Sustainable Development Goals (SDGs)
 - ➔ for Health, Education, Agriculture, Decent Work, ...



“Connect the Unconnected” Selela Market Place



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



“Connect the Unconnected” Izazi



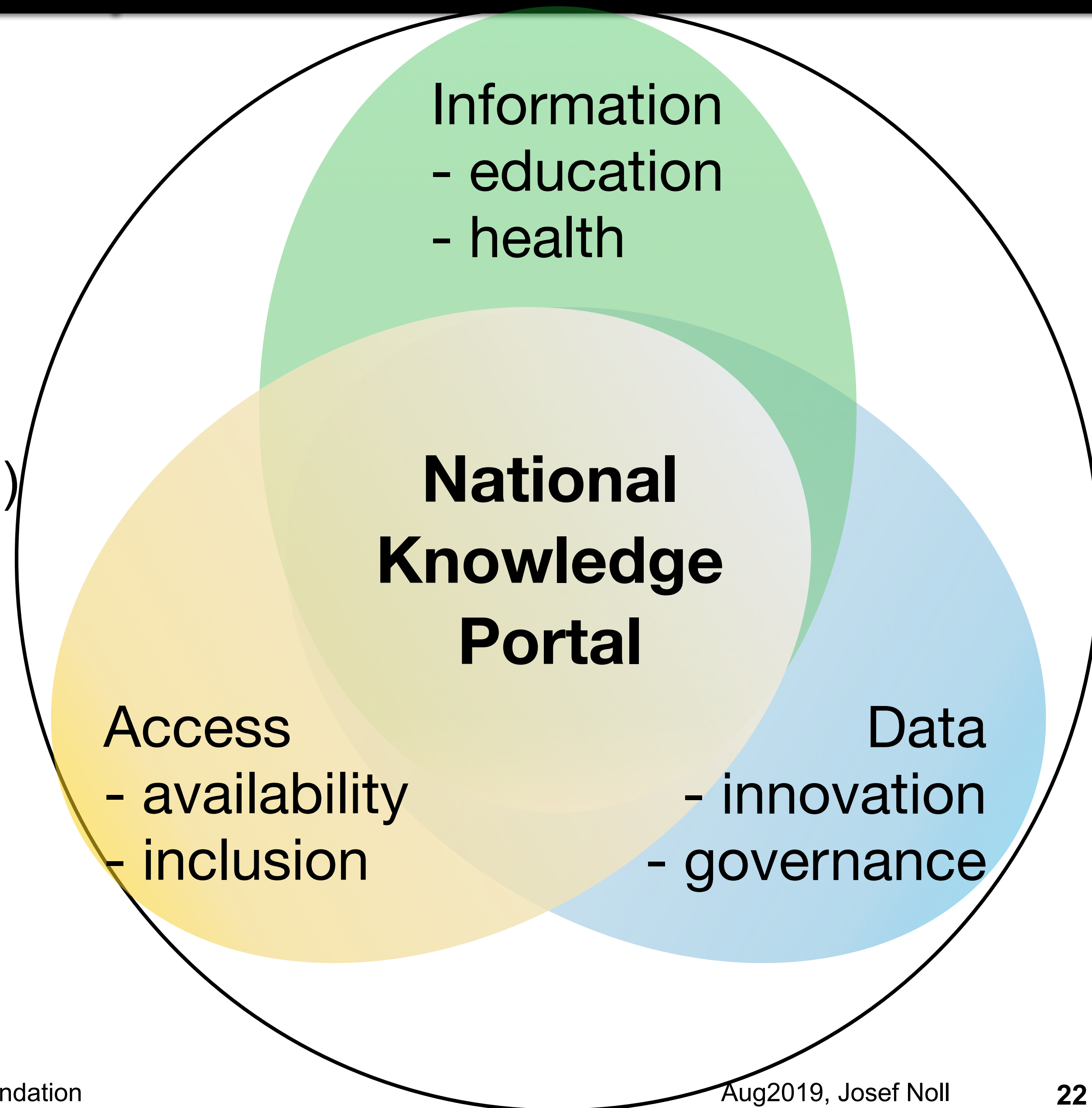
Installation time: 1,5 h
catching the signal from the Vodacom
tower in Migoli (~10km away)

Step 3: Integrated Approach for Digital Inclusion

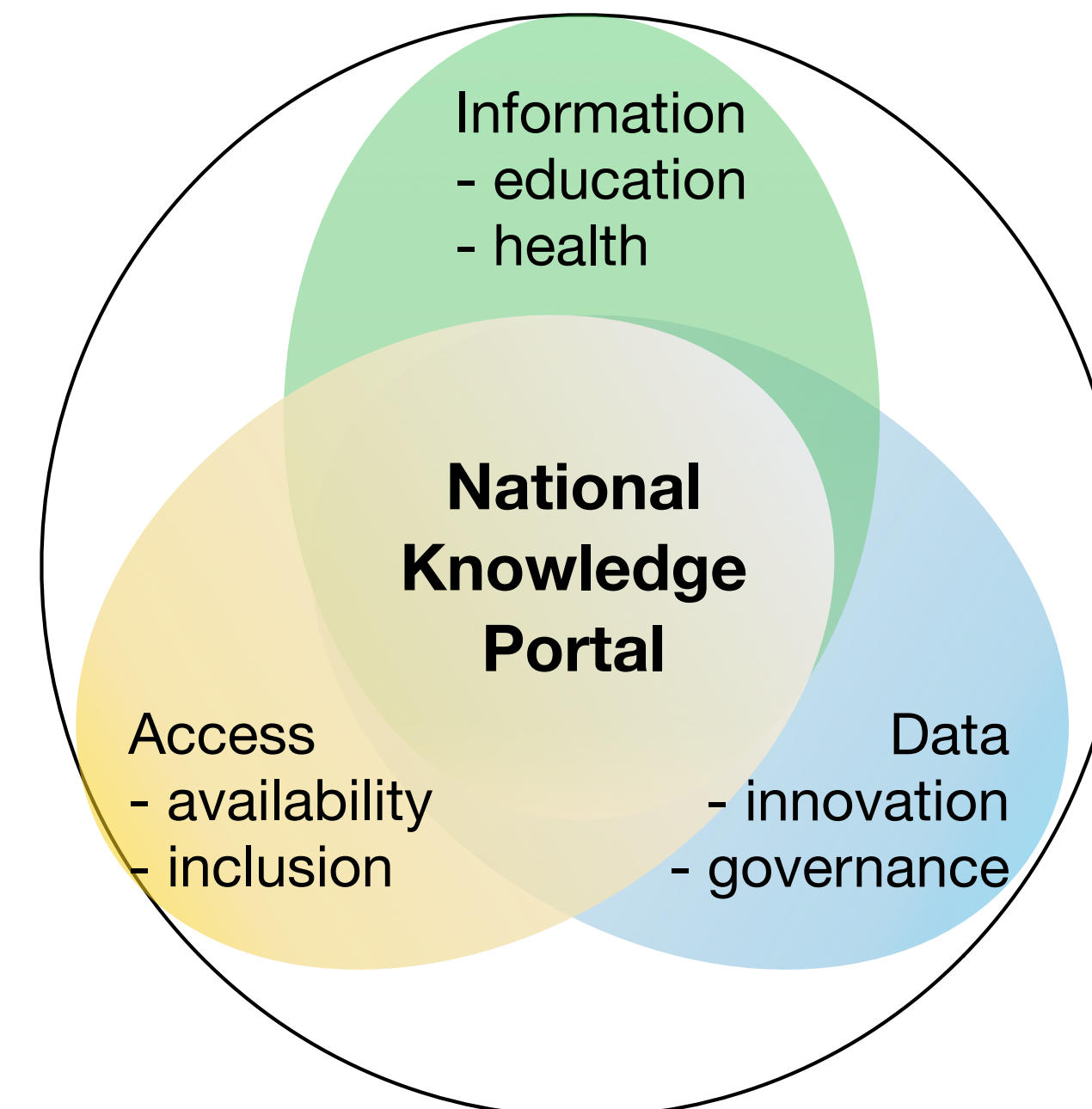
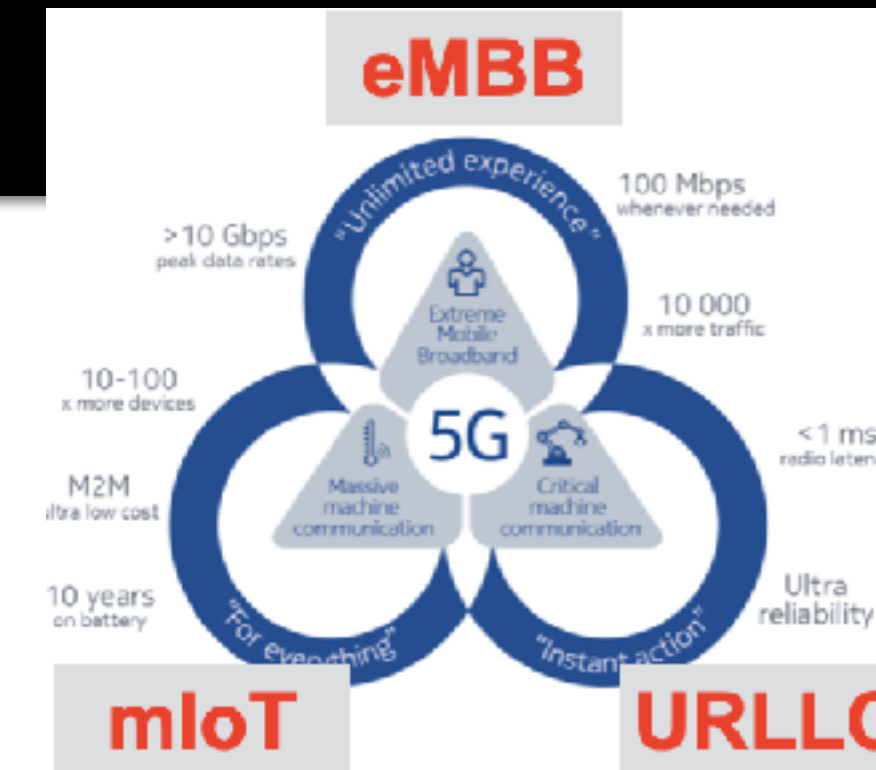
- National Knowledge Portal
- “Access, Skills, Regulation & Inclusion”

National Knowledge Portal

- Repository for Health Data
- Trustworthy Health Information
 - ➔ Source for Digital Health Promotion (DHP)
 - ➔ Education, Digital Public Goods (DPGs)
- Regulatory Framework
 - ➔ Free access to Knowledge Portal



Conclusions



- Sustainability in Mobile Development
 - ➔ 5G is not answering the Digital Divide
 - ➔ 5G is not contributing to the Sustainable Development Goals
- Address the Grand Challenges
 - ➔ Digital Inclusion and Societal Empowerment
 - ➔ The National Knowledge Portal
 - ➔ Access
 - ➔ Skills
 - ➔ Regulations
 - ➔ Inclusion

