



Digital Inclusion and Empowerment

The killer app for 6G

Josef Noll

University of Oslo & Basic Internet Foundation

Kjeller, Norway

josef@jnoll.net, m: 9083 8066

Background for BasicInternet Main Message



Basic Internet Focus

- Grand Challenges

- Climate
- Resources (radio, minerals)
 - Kobald (East - DR Congo)
- Divide

- Digitisation

- Mobile Networks
- IoT
- Automation
- ...

- Will enhance

- the digital divide



- How are **we** going to **address the challenges?**

- Digital Inclusion and Empowerment

- Specific Solution:
 - Internet Lite for All
 - **Freemium** Model for **Access**

Digital Divide

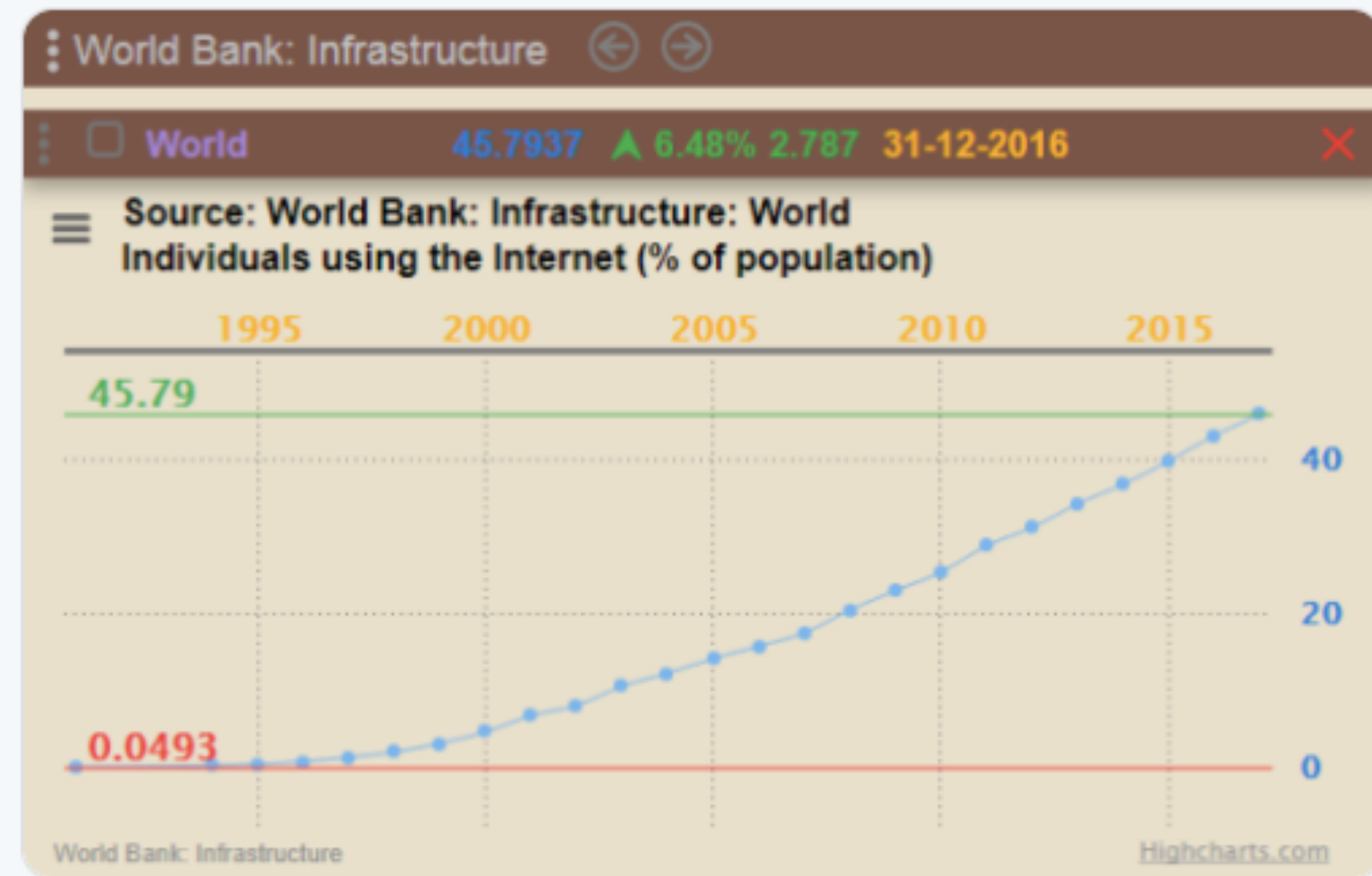
“Internet had the ability to
dismantle the divide.
Internet failed miserably, the
divide is bigger than ever.”
Kate Gilmore, Human Rights, UNO



webapperc @webapperc · Nov 5

Replying to @timberners_lee

Addition information in form of chart World individuals using the Internet as percent of population to 2016 according @worldbankdata by web app ERC (Economic RESTful Client) #OpenData #dataviz #webapp



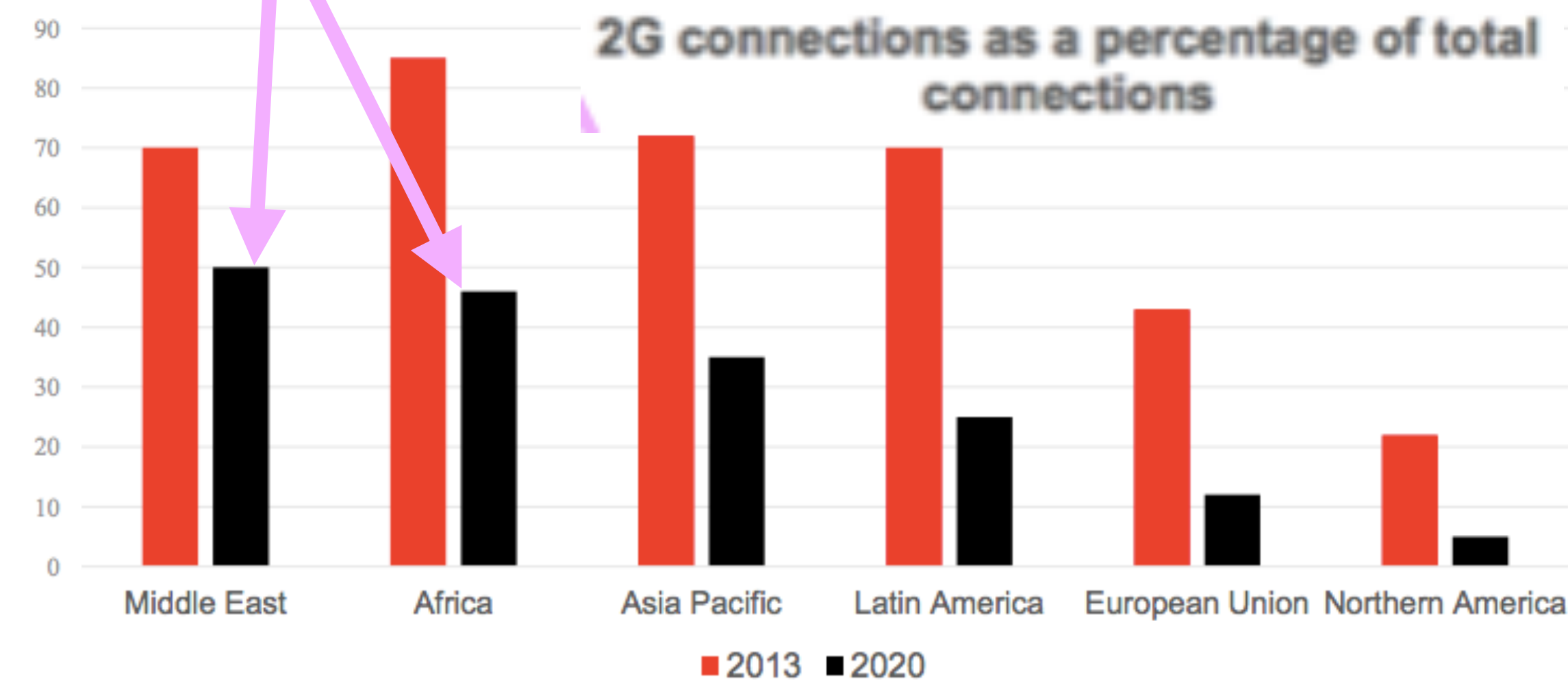
The challenge of area coverage

- Land area Norway, 385.178 km²
7500 basestasjons
- <http://www.mynewsdesk.com/no/telenor/pressreleases/sjekk-naar-du-faar-4g-der-du-bor-1399662>
- Tanzania 947.303 km² = **3 x** Norway,
- Mali 1.240.000 km² = **4 x** Norway
- DR Congo 2.345.000 km² = **8 x** Norway
- Economy in building Wireless Broadband

#5GforAll



~50% 2G in 2020



Digital Inclusion of everyone

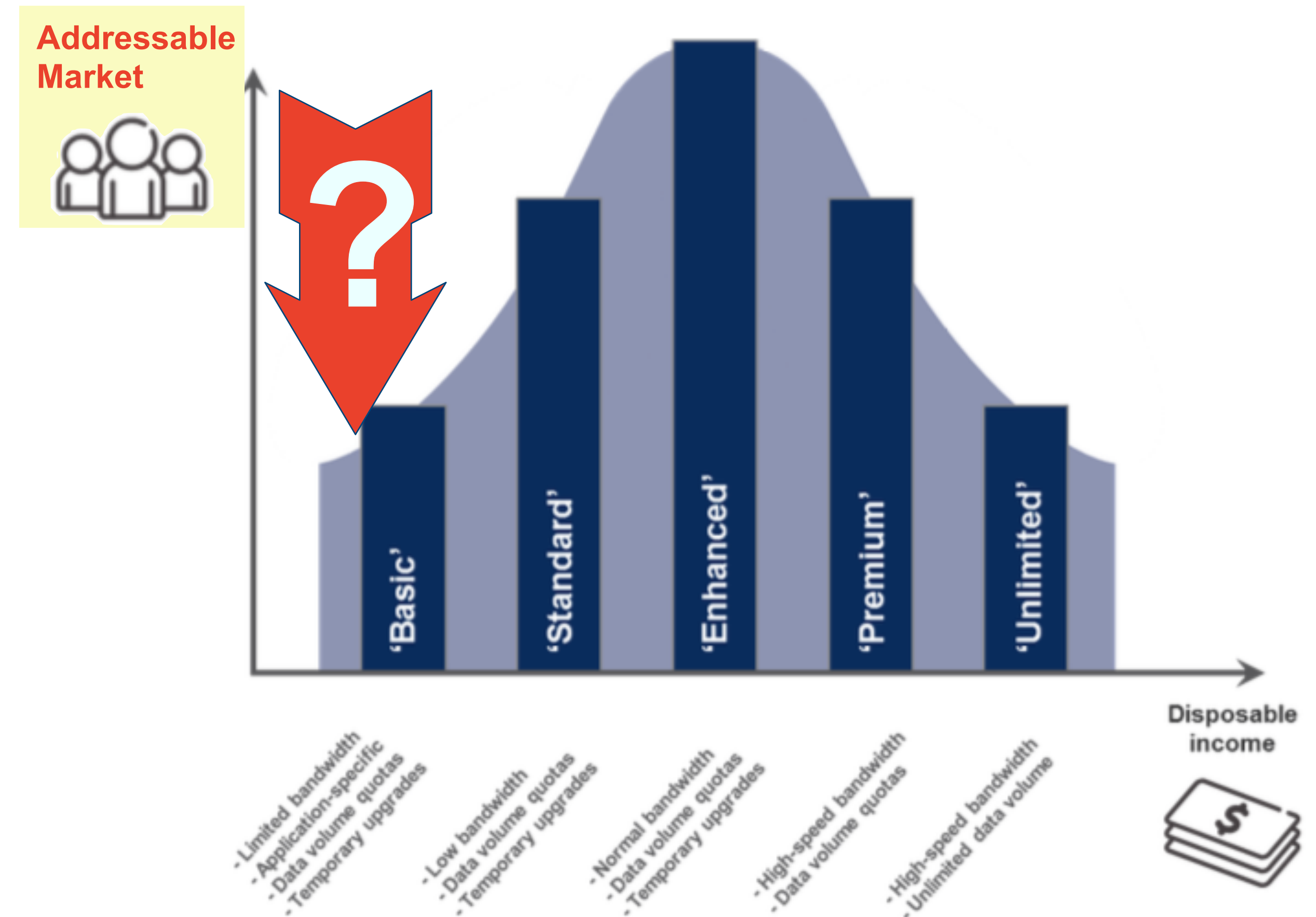


- **Business aspects**
 - ➔ OPEX, CAPEX
 - ➔ Income models?
- **Traditional business** models are too slow
 - ➔ Mobile broadband roll-out dominated by return on investment
 - ➔ Premier league, Bollywood **outranges non-profit content**
-

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

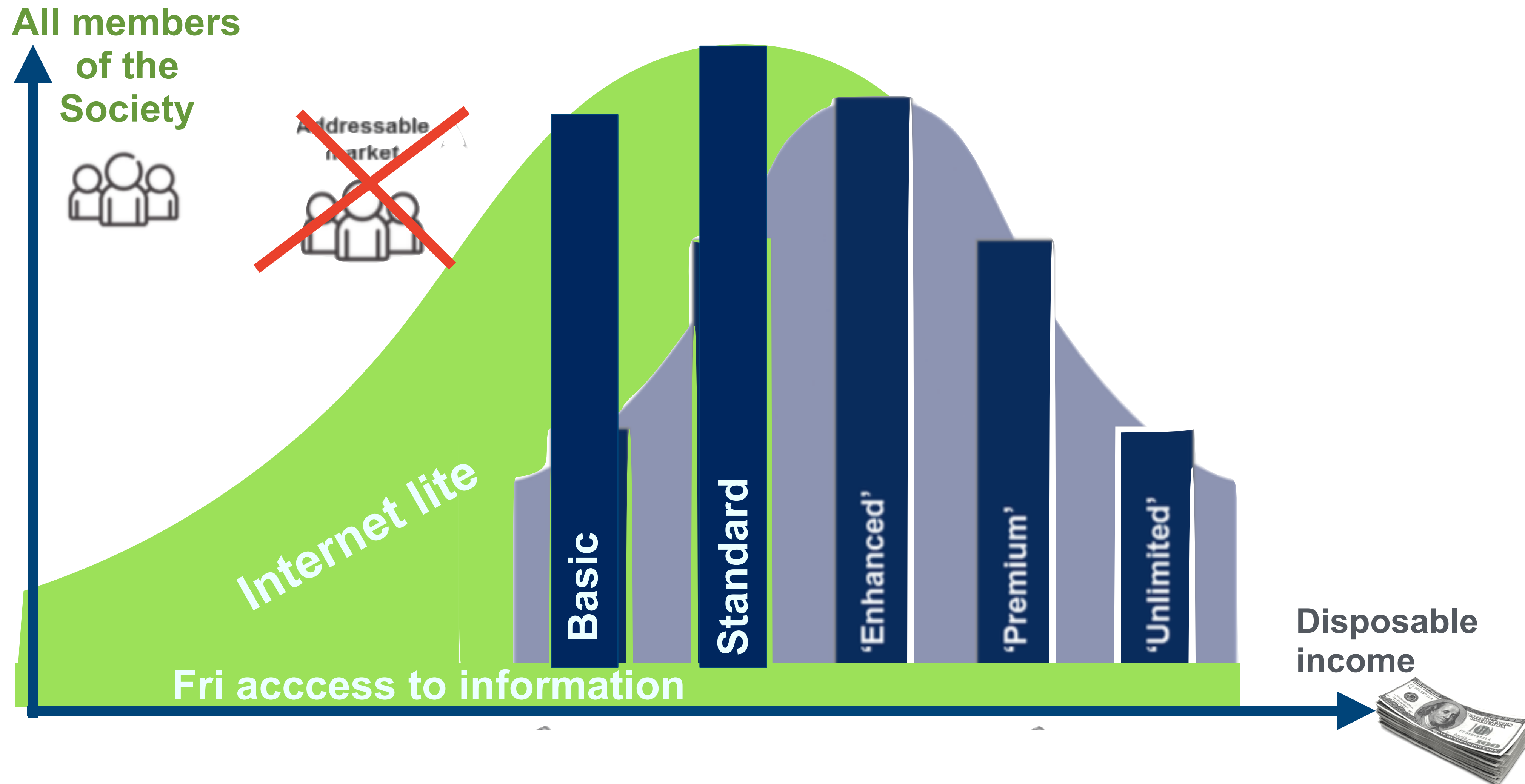
Telecom view on digital inclusion

- Traffic categorization
 - text, pictures & local video
 - broadband services
- Service-aware charging & control
 - **Freemium** model for access
 - free information
 - premium broadband
 - 1 premium pays for 300 free



[Source: Service Innovation through Smart Networks, Ericsson, 2018]

6G (#5GforAll) for digital inclusion



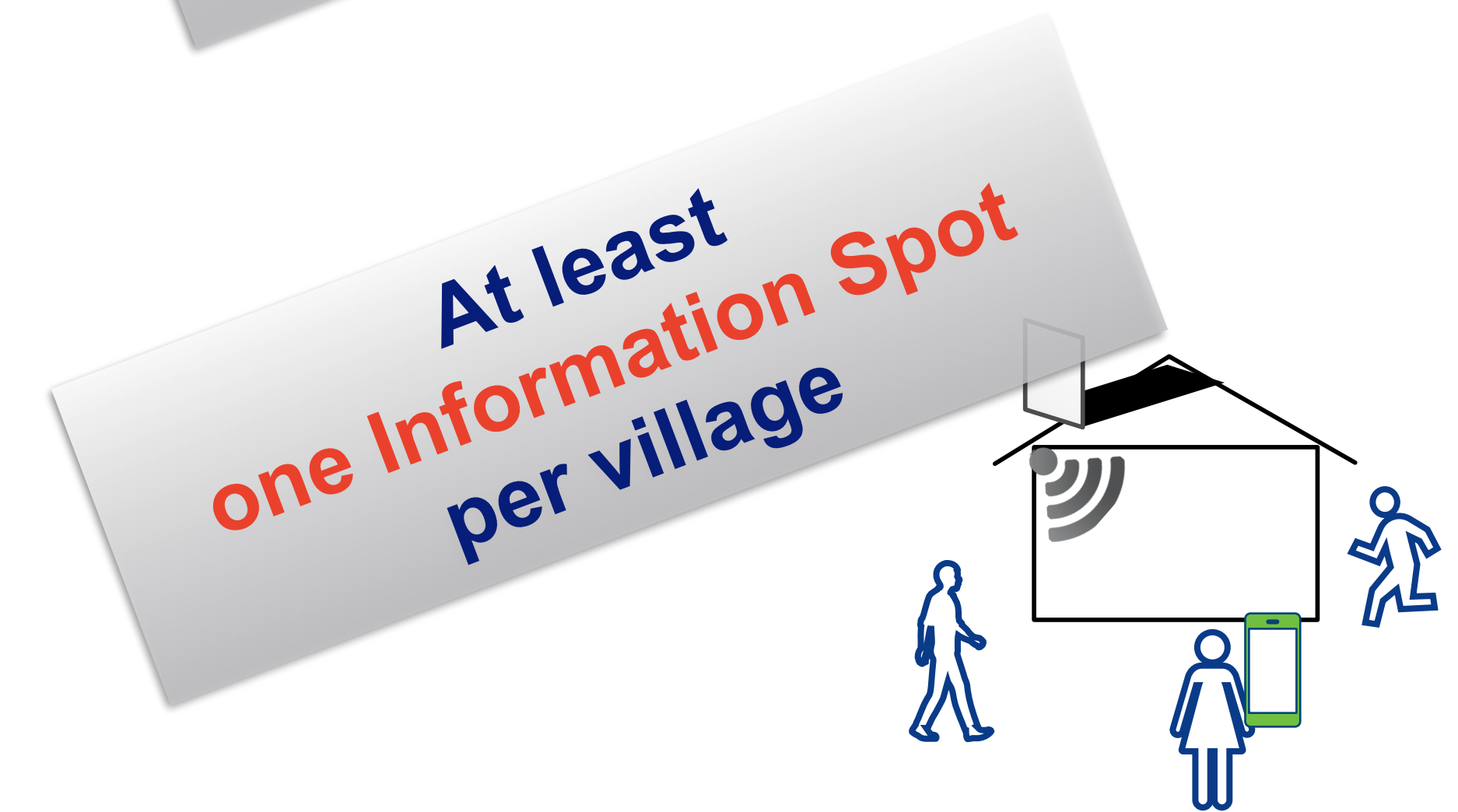
[Adapted from: Service Innovation through Smart Networks, Ericsson, 2018]

Main Message



- “Internet Lite for All” is the catalyst for the SDGs
 - ➔ free access to information for everyone
 - “walking and cycling on the Internet”
 - ➔ Digital Inclusion and Empowerment
- Freemium model for access
 - ➔ free access to information for all
 - ➔ premium access to broadband
 - ➔ sustainable solution

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



Internet lite for all *the catalyst for the goals*

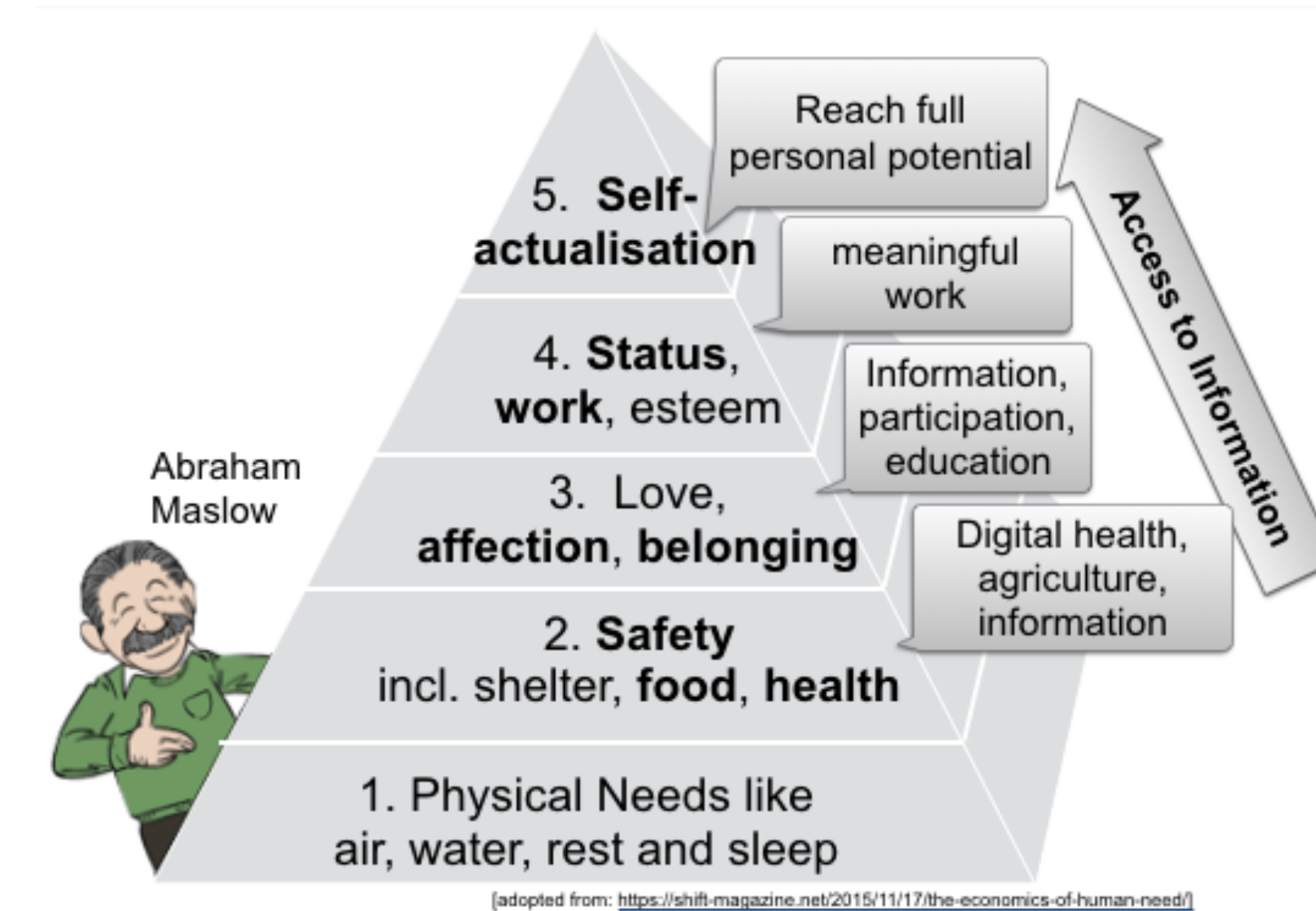


Strategic Goals

1. Get the message “**Internet lite for all**” across
2. Establish the **Sustainable Business Model** for Freemium Access
3. **Demonstrate** the proof of concept

How to reach the Strategic Goal 1

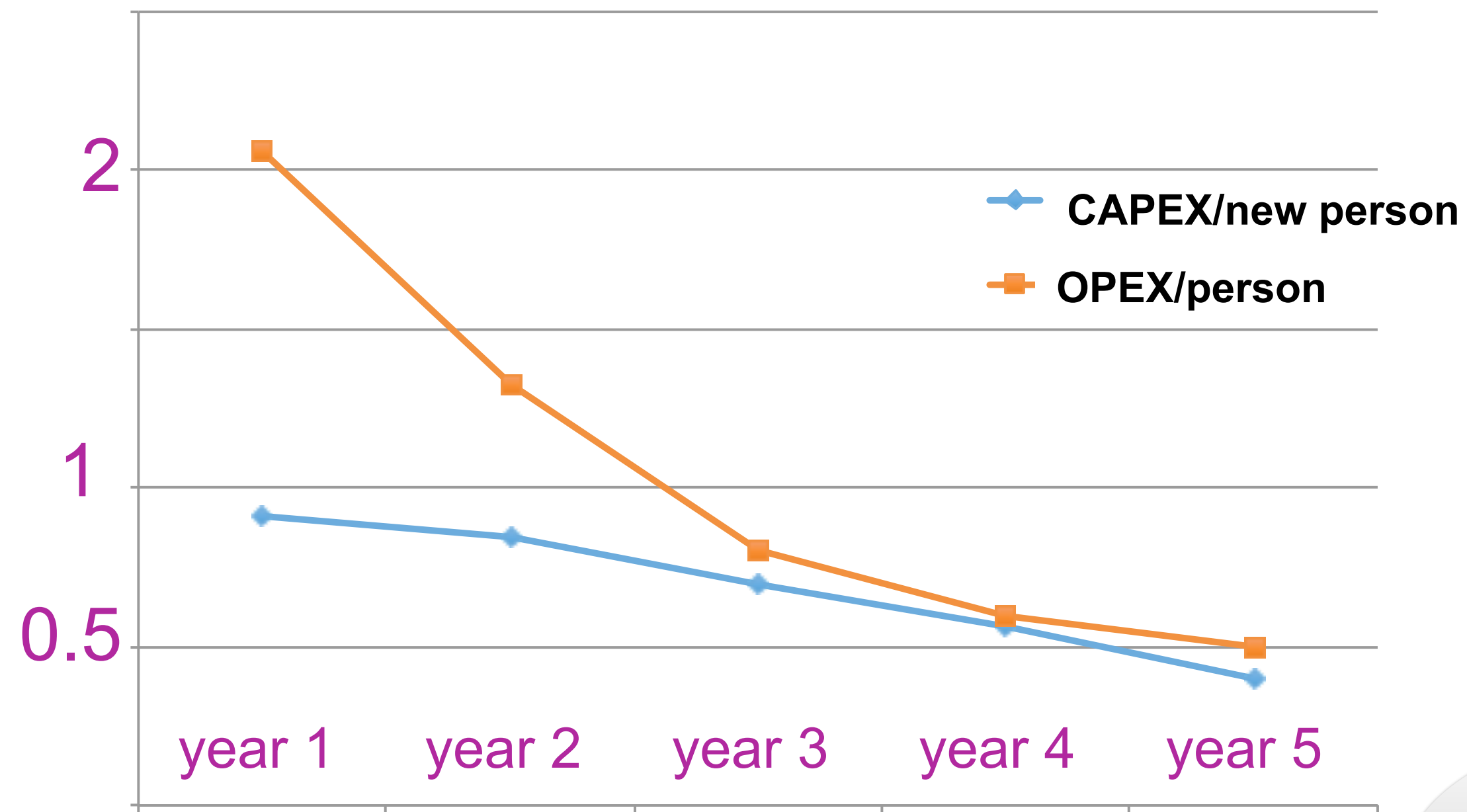
- **1. Get the message across - “Internet lite for all”**
 - ➔ as part of the framework: health, energy & information as building blocks for enabling the society
 - ➔ Norwegian Government, Governments in Africa
 - ➔ United Nations, Internet Governance Forum (IGF), ITU
 - ➔ Strong partnerships
 - Aid organisations
 - Digital health as enabler for better health and digital literacy
 - industrial partners in need for communication
 - Energy suppliers (micro-grids) as partners
 - Telecom providers (**Orange in Mali agreed**)
 - 6G for All: **“Digital Inclusion is the killer app for 6G”**



Estimation Cost of ICT development

Comparison - societal costs

Costs/user/month [US\$]



- local Wifi spots
- based on Satellite connectivity

half a
dollar is
enough*



Child Protection
Child taken into care
average cost per year

£64,819

Unemployment
Job Seekers Allowance
per claimant per year

£10,025

Care for the Elderly
Residential care for older
person per year

£28,132

**exclusion
Education**
Exclusion from school
per pupil per year

£11,192

Source: UK GOVERNMENT UNIT COST DATABASE
www.data.gov.uk/sib_knowledge_box/toolkit

Google translate Partnership for Digital Africa

<http://www.aftenposten.no/meninger/debatt/Kronikk-Som-gjesteland-pa-G20-toppmotet-ma-vi-bidra-til-a-endre-verden--Erna->

Comment: As a guest country at the G20 summit, we must change the world. Erna Solberg

G20:
Compact with Africa



In July last year was Erna Solberg invited by Angela Merkel for this year's G20 meeting. Here from a meeting between the German Chancellor and the Norwegian Prime Minister in Berlin in November, where Norway's participation as guest country at the economic summit were among issues discussed.

Secretary-General's High-level Panel on Digital Cooperation



PANEL DOCUMENT

- Press release
- Terms of reference
- Panel member bios

Call for Contribution

G20 can therefore help the economies and international organizations use their resources more effectively to create growth and job creation.

3. Health and education.

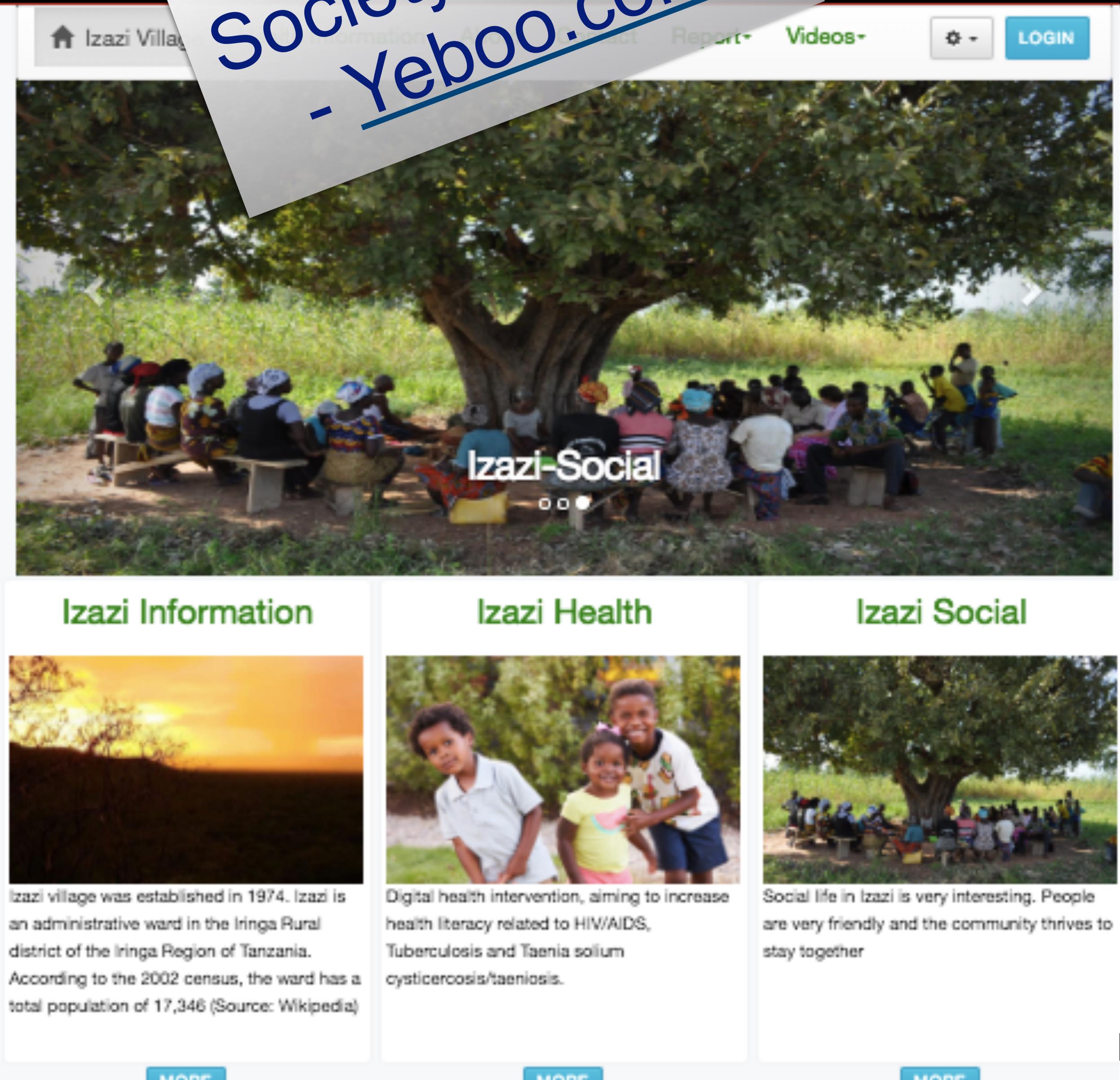
Norway has long had a heavy international involvement. Education and health are associated with economic growth.

- Providing Free Information
 - ➔ through Information spots
 - ➔ Freemium model for access



Information Spot
Freemium Access

Society Platform
- Yeboo.com



Izazi Village

Report Videos

LOGIN

Izazi-Social

Izazi Information

Izazi Health

Izazi Social

Izazi village was established in 1974. Izazi is an administrative ward in the Iringa Rural district of the Iringa Region of Tanzania. According to the 2002 census, the ward has a total population of 17,346 (Source: Wikipedia)

Digital health intervention, aiming to increase health literacy related to HIV/AIDS, Tuberculosis and Taenia solium cysticercosis/taeniosis.

Social life in Izazi is very interesting. People are very friendly and the community thrives to stay together

How to reach the Strategic Goal 2

- 2. Establish the **Sustainable Business Model** for Freemium Access

- ➔ Selling of vouchers
- ➔ Sponsored content
- ➔ Banking, online-shopping
- ➔ governmental:
 - health
 - education
- ➔ Costs of non-delivery
 - UK:
- ➔ Local entrepreneurship
 - mobile charging

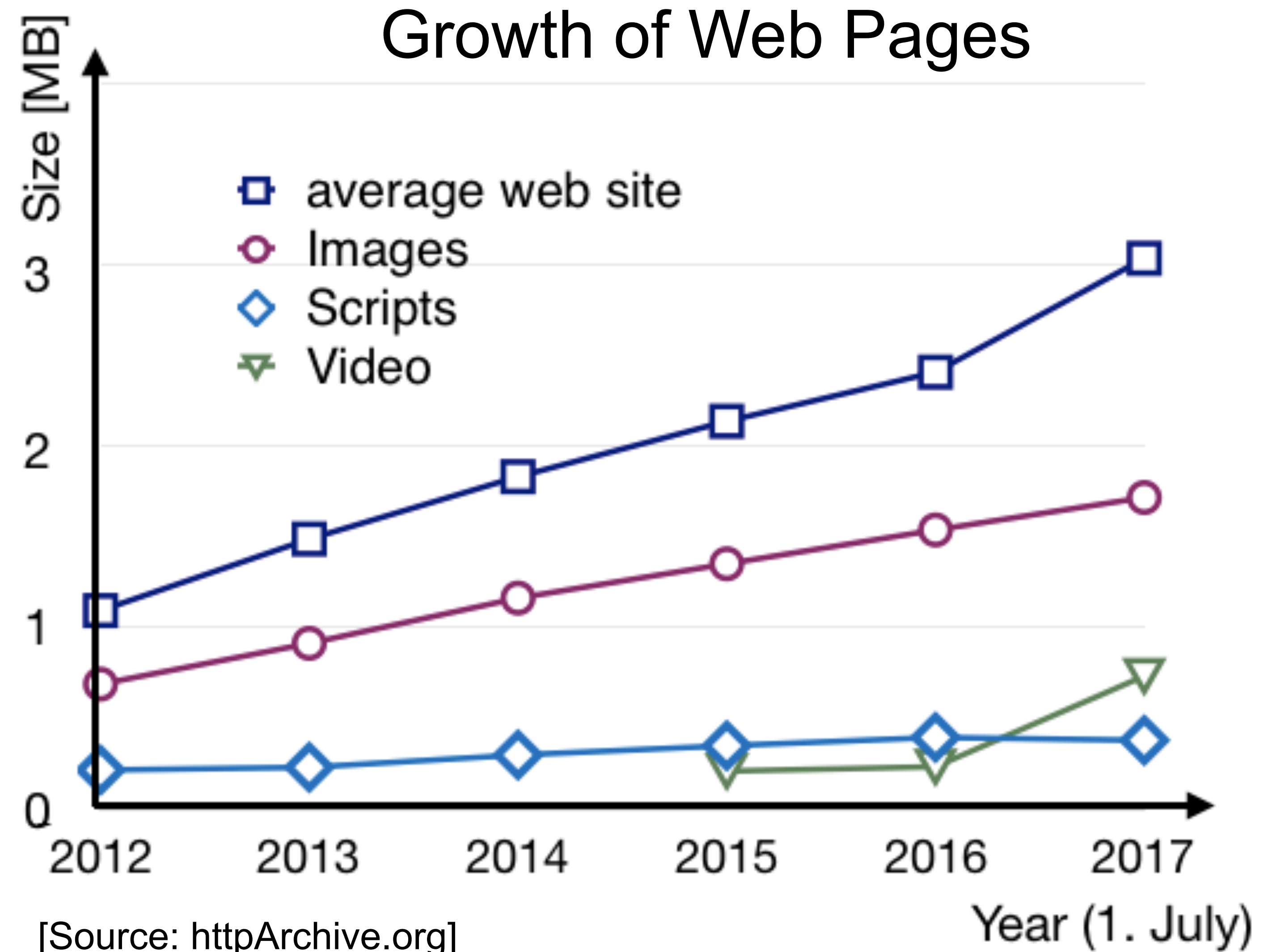


How to reach the Strategic Goal 3

- **3. Demonstrate the proof of concept**
- Pilot demonstrations & Operational Excellency
 - ➔ Technology works already, more than 4 years of operation
 - Germany: Caritas Kinderdorf
 - Norway: Health Stations
- Support with strong partners
 - ➔ Tanzania: Digital Global Health as Enabler
 - ➔ Orange Mali: Empowerment of the Society
 - ➔ Caritas Kinderdorf: Proof of concept with 100+ devices
 - ➔ India: Governmental Support of Grand Panchayats

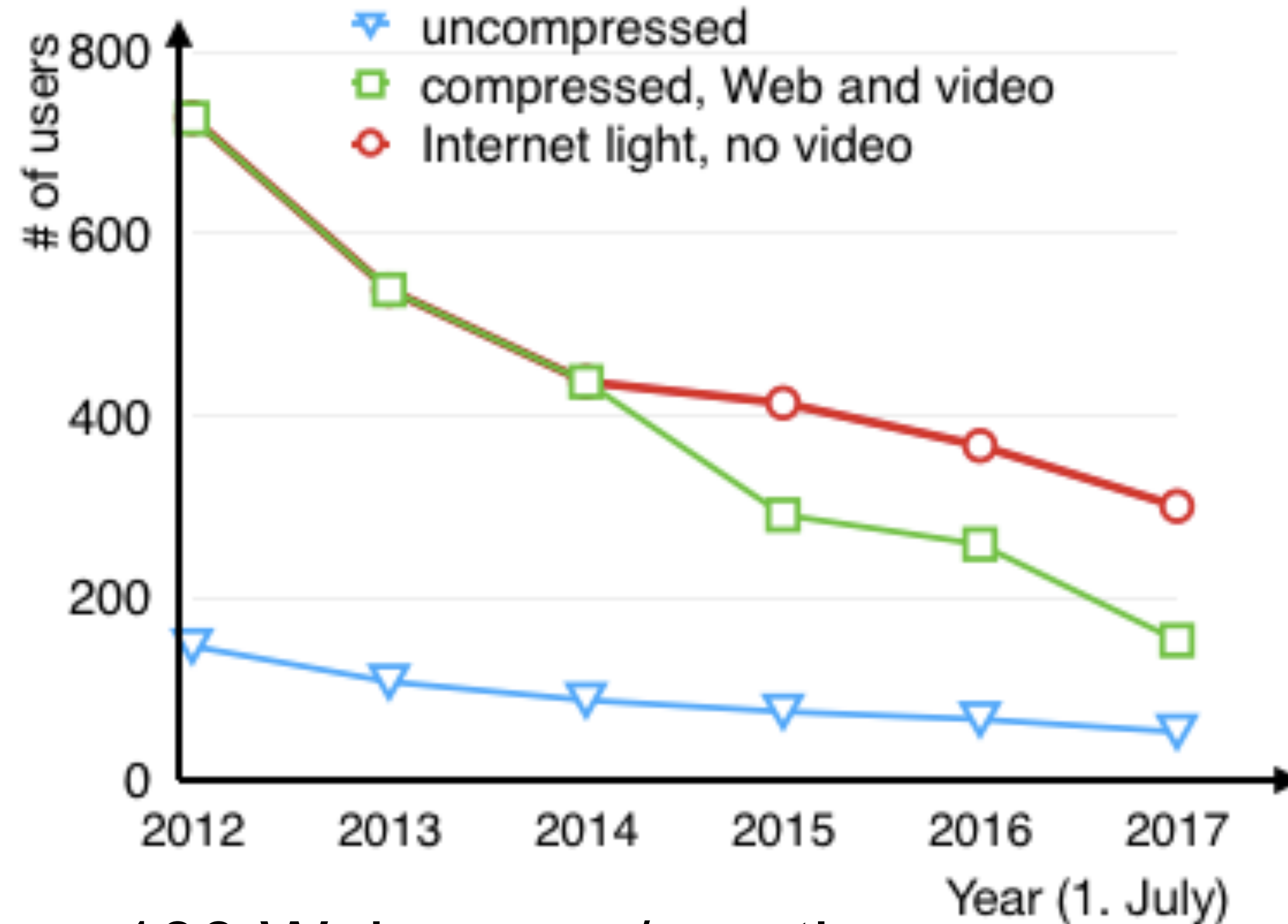
Internet light: Demand for information only

- Average Web Pages
 - ➔ growth: 1 to 3 MB within 5 years
 - ➔ images: ~3x
 - ➔ video: ~5x
- Web page growth counteracts network development
-

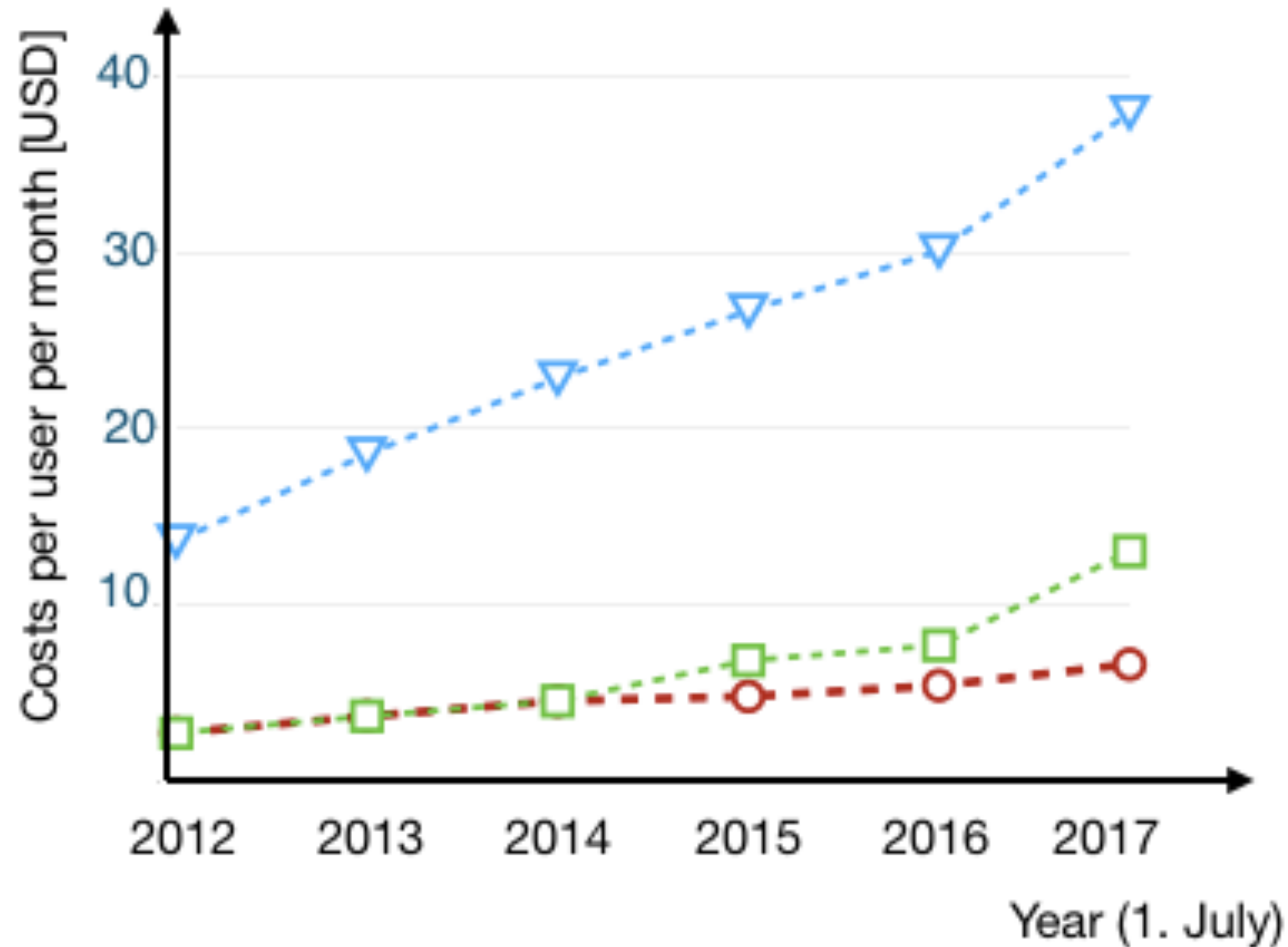


Impact of Web Page size

of users supported



Cost per month per user

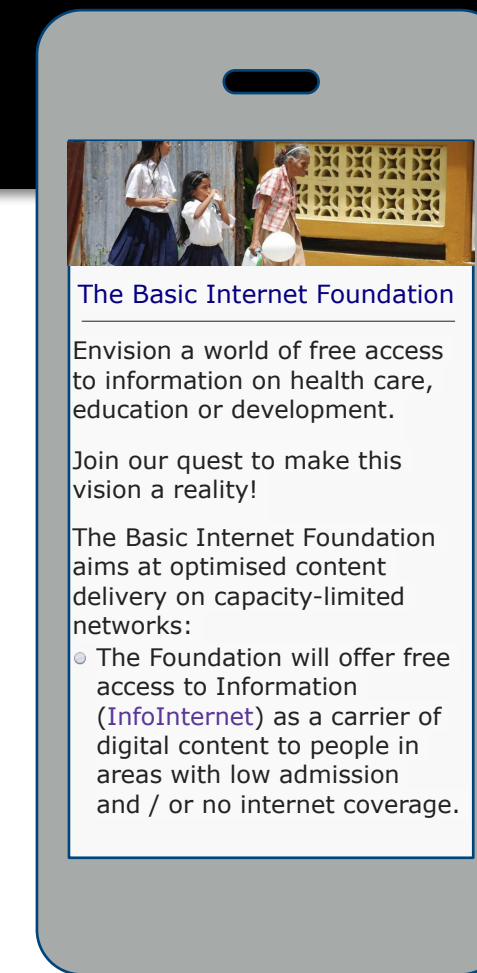


- ➔ 100 Web pages/month
- ➔ using 1 Mbit/s satellite link

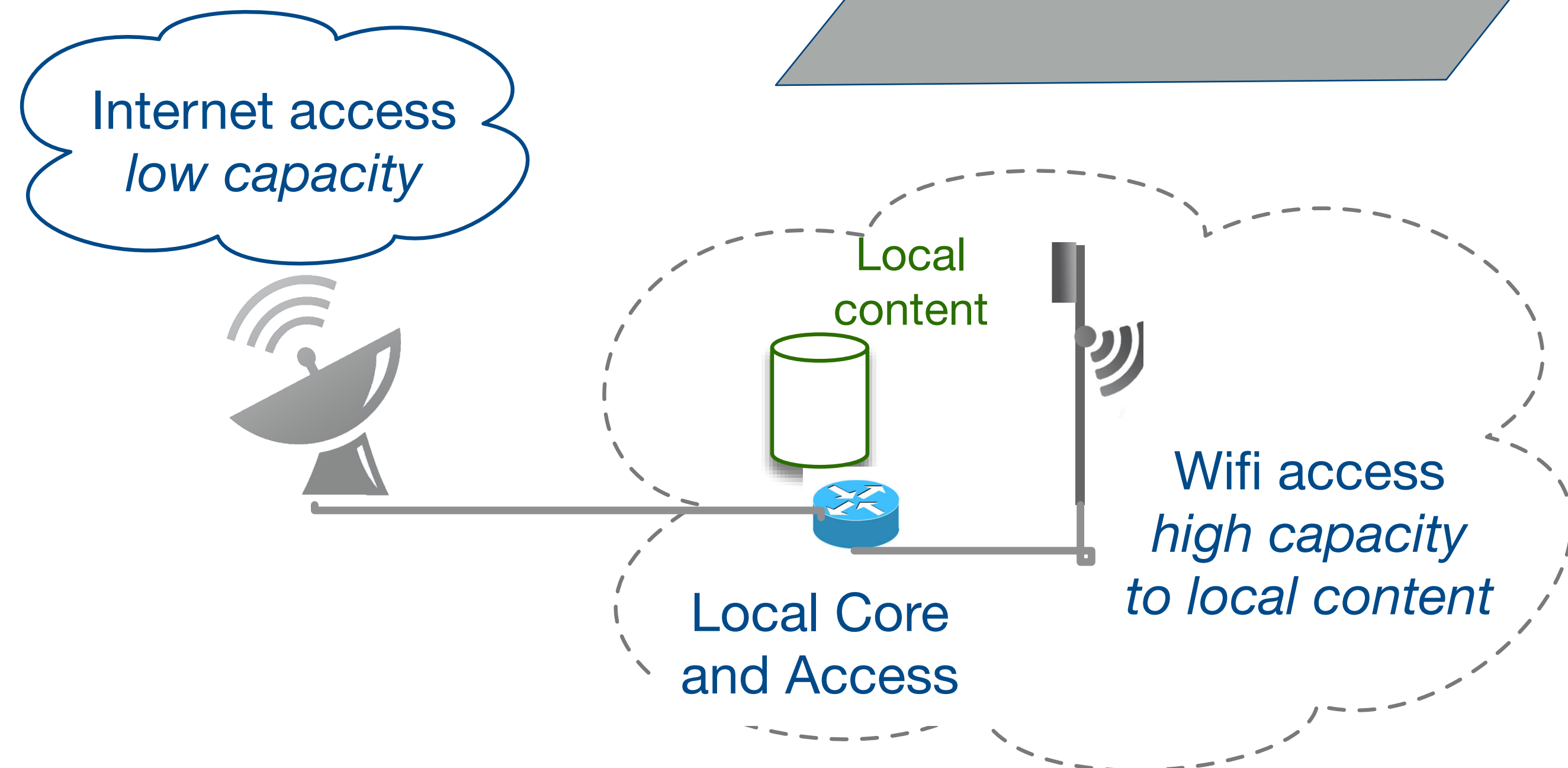
[derived from: <http://Archive.org>]

The Network Responsive Web

- Network responsive Web
 - ➔ through InfoInternet Standard
 - ➔ Adapt to network capabilities
 - Car queue in remote areas
 - Mobile tethering (Wifi)
 - ➔ Server-side adaption of content
- Examples
 - ➔ Opera Mini (proxy)
 - ➔ Chrome (compression)



Responsive design



InfoInternet Standard

- Guidelines **InfoInternet** Standard

- ➔ Internet Neutrality, “all content”
 - free information (text, pictures, local video)
 - paid entertainment (broadband, download)
- ➔ Network responsiveness

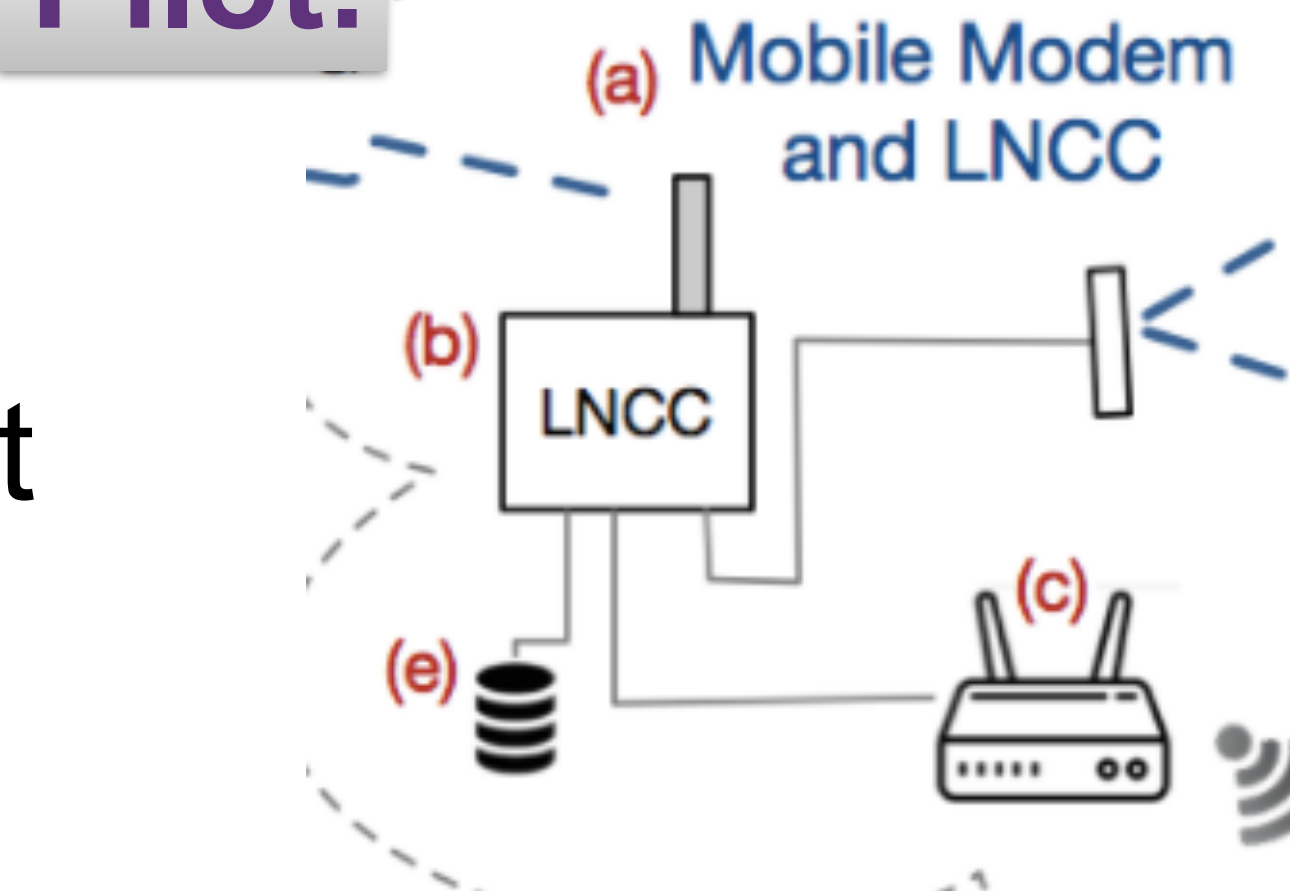
- InfoInternet Standard development

- ➔ **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>

Konzept:

free

Pilot:



Standard:



Pilot activities

- Caritas Kinderdorf (Germany) - 9 buildings to connect with Basic Internet
 - ➔ upgraded platform with measurement of traffic
- GravidPluss
 - ➔ 3 hospitals running with Internet Lite
- Reducing Violence (Trygt Svangerskap)
 - ➔ HiOA project med 21 helsestasjoner
- India
 - ➔ Pilot with BSNL (statens operatør) in 2 Panchayats
- Søknader:
 - ➔ NORGLOBAL 2019
 - ➔

Collaboration: Caritas - Basic Internet Foundation

- Internet lite in the Caritas Kinderdorf (Bottrop, DE)

- ➔ Free information access for 60 children/youngsters
- ➔ Pedagogical concepts including the children

- Partnership with Caritas (Diozöse Essen)

- ➔ Digital Participation for all
- ➔ Social Innovation “Social Digital Hubs”
- ➔ Free Information access “Internet lite for all”



India pilot

- Two 90 degree antennas (feeding 1-2 hot spots)
- One Wi-Fi access point for the village Panchayat
- Two Wi-Fi access points for the areas
- One Mikrotik router (Local network control center)
- One local server(?)
- Costs of the equipment by Basic Internet Foundation
- BSNL to provide fibre backhaul (capacity of about 100 Mbps)

Locations of Pilots in Two Villages from Gram Panchayats in the district of Chhatarpur in the state of Madhya Pradesh



Conclusions: Using Internet Lite to empower the society

- **Internet lite** for **all**
 - ➔ “Nobody should be left out from the Digital Society”
 - ➔ Give everyone **access to digital information**
- **Traditional business** models are too slow
 - ➔ Mobile broadband roll-out dominated by return on investment
 - ➔ Premier league, Bollywood **outranges non-profit content**
- Address the Digital Divide through Internet lite
 - ➔ Provide at least **one Information Spot** in each village
 - ➔ **Internet lite for all** - the freemium model for access
 - ➔ **Premium** access to profitable content - **sustainable** solution



Partners



FR



ES



Ministry of Health, TZ



UiO

S A N D S



TZ



USA



UK