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Freemium Model for Smart Network Access

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Outlook

- Smart Networks - for whom?
  - ➡ Industry (secured wireless, Industry 4.0)
  - ➡ Consumer (IoT, Entertainment)
  - ➡ Individuals and Societies (…)

- Addressing the Grand Challenges
  - ➡ Climate
  - ➡ Resources
  - ➡ Societal Gap

- Freemium Network Access "Internet lite for all"
  - ➡ Application specific routing
  - ➡ Digital Empowerment

Smart Networks for Industry

- Core demand
- Edge intelligence
  - ➡ Edge/fog computing
- End-to-end QoS and isolation
  - ➡ network slicing
  - ➡ heterogeneity(?)

1	5G may be disruptive for the manufacturing industry
2	Edge computing for shifting intelligence to the network
3	Network slicing for providing end-to-end QoS & isolation
4	Many industrial requirements not fully addressed yet
5	Close interaction of the whole ecosystem needed
6	Industry 4.0 may become THE killer application for 5G ☺

[Source: Andreas Mueller, Bosch, 2018]

largest security project in EU

58 partners from 12 countries

**80 M€ budget 35 M€ EU&national**

Secured Connected Trustable Things (SCOTT)

- 15 industry-driven Use Cases (TRL 6-7)
- 40 Technology Building Blocks
- 25 Demonstrators
- 5 Domains: Automotive, Aeronautics, Home/Building, Rail, Healthcare, - truly "cross-disciplinary"
- 2017 – 2020 (started in May 2017)

SECURITY

PRIVACY

TRUSTABILITY

USABILITY

SAFETY

Automotive
Home
Rail
5G
Avionics

High-level vision for each domain

- Home/Infrastructures: Cost-efficient monitoring and management for trusted services

- Mobile: Configurable networks providing reliable services

- Automotive: Security architecture for accident-free transport

- Rail: Highly flexible train composition

- Aeronautics: Security-Safety
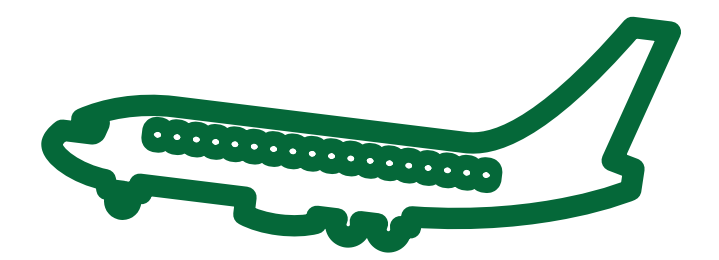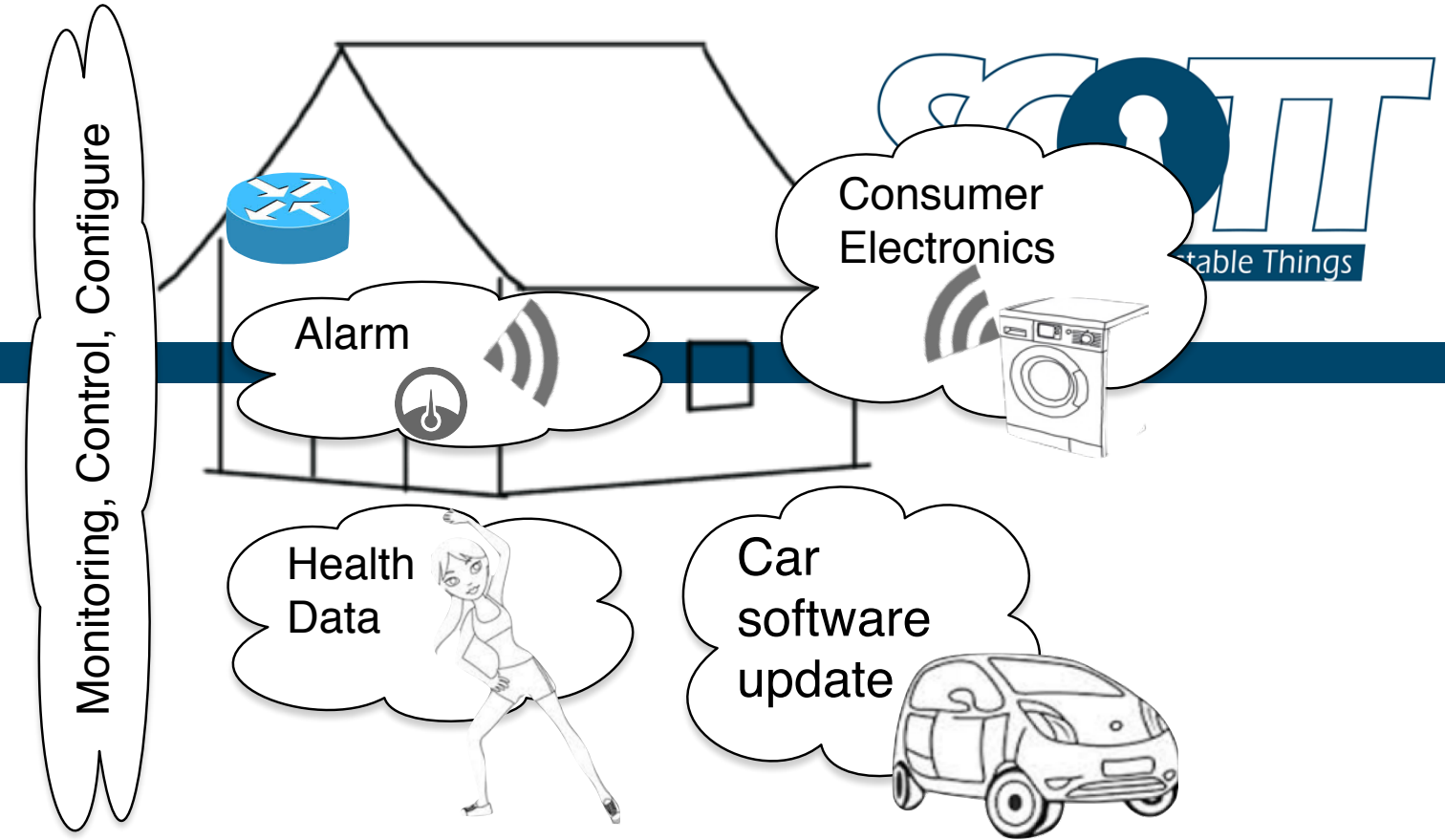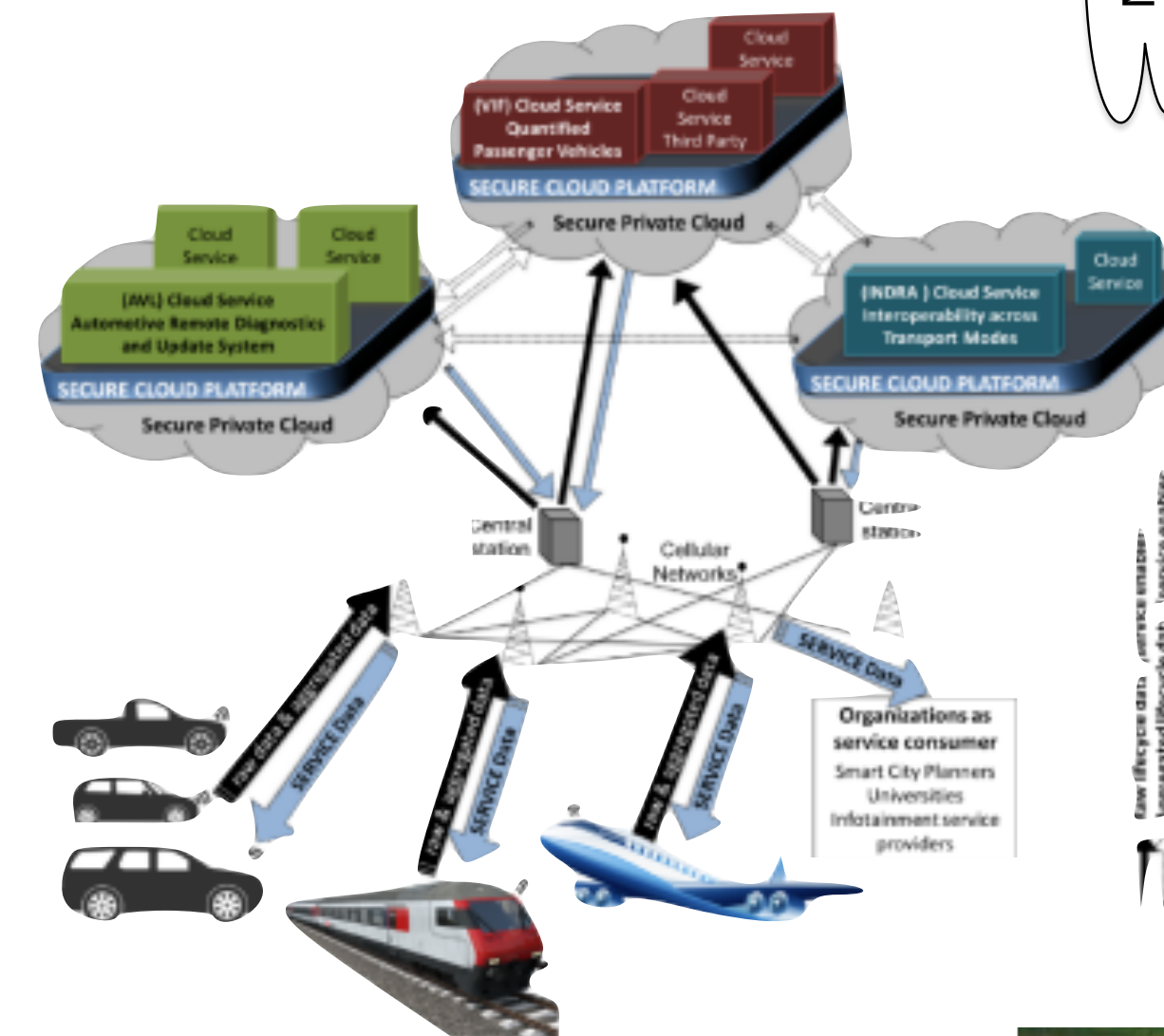
Smart Networks - the home domain

- Cost-efficient monitoring and management for trusted services
  - Wireless management
  - Security monitoring
  - Service harmonisation (5G@home)

- The digital Divide
  - 10x increase in Mobile Broadband (2013-2019) [1]
    - Netflix, YouTube, Hulu
  - 26% of NO-subscribers don't have [2]
  - 8% (400.000) NO not connected to the Internet [3]
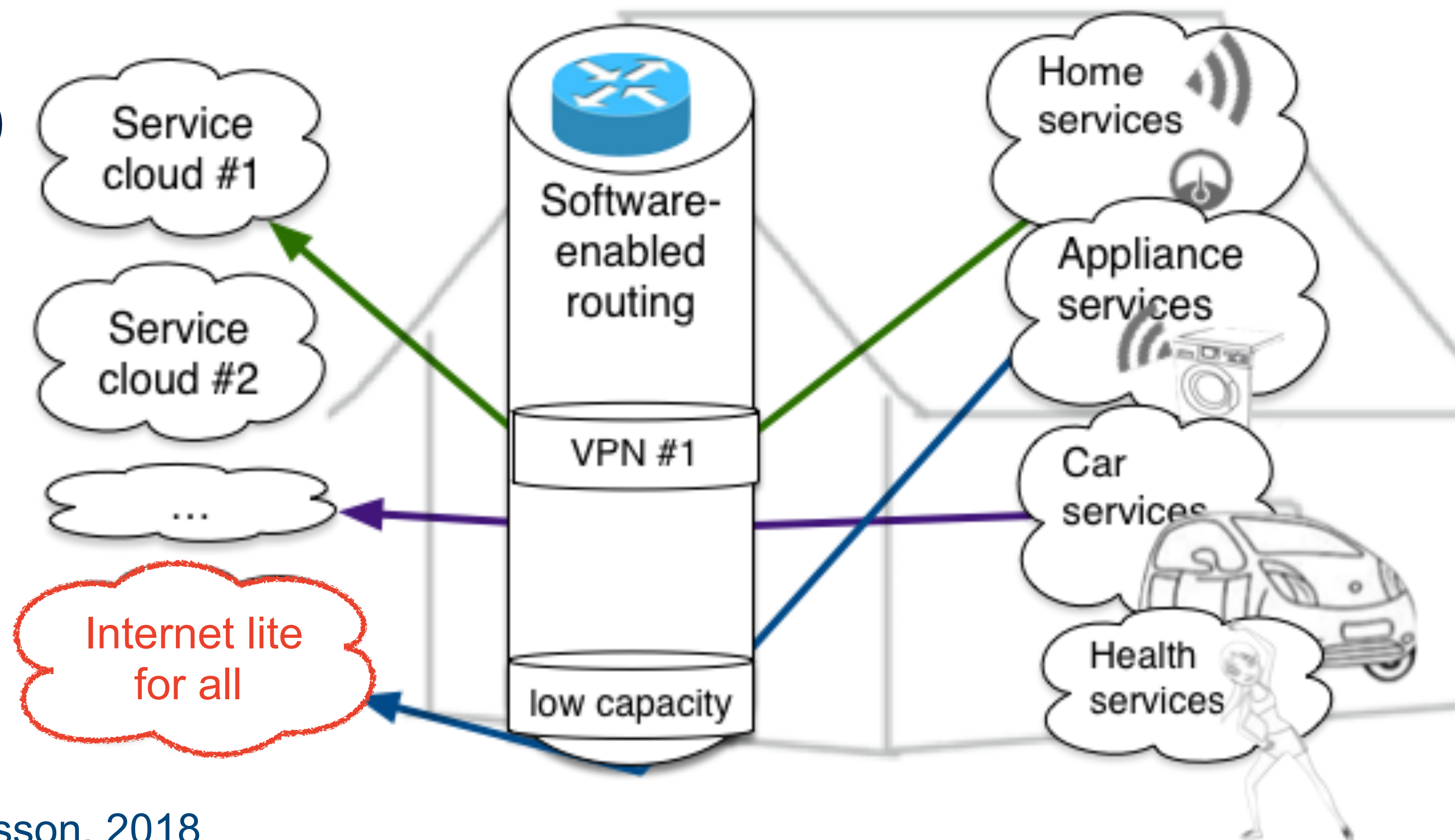
[1] Service Innovation through Smart Networks, Ericsson, 2018
[2] Norwegian Communication Authorities, NKOM.no, 2018
[3] "Sauebonden som aldri…", aftenposten.no, 7Okt2018

Smart Networks in a changing world

- Smart networks
  - ➡ End-to-end service quality
  - ➡ Security and Privacy
  - ➡ Application specific routing
  - ➡ Service differentiation
  - ➡ 5G@Home

- Will enhance
  - ➡ the digital divide

- Grand Challenges
  - ➡ Climate
  - ➡ Resources (radio, minerals)
    - ‣ Kobald (East - DR Congo)
  - ➡ Divide

- How are **we** going to address the challenges?
  - ➡ Smart Networks for border control
    - or -
  - ➡ Digital Inclusion through Freemium Model for Access **#5GforAll**

The challenge of area coverage

- Land area Norway, 385.178 km^2
  7500 basestasjons
  - http://www.mynewsdesk.com/no/telenor/pressreleases/sjekk-naar-du-faar-4g-der-du-bor-1399662

- Tanzania 947.303 km^2 = **3 x** Norway,

- Mali 1.240.000 km^2 = **4 x** Norway

- DR Congo 2.345.000 km^2 = **8 x** Norway

- Economy in building Wireless Broadband
  #5GforAll

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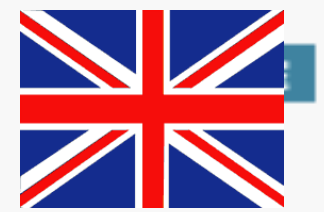*Kate Gilmore, Human Rights, UNO*

~50% 2G in 2020

2G connections as a percentage of total connections

■2013 ■2020
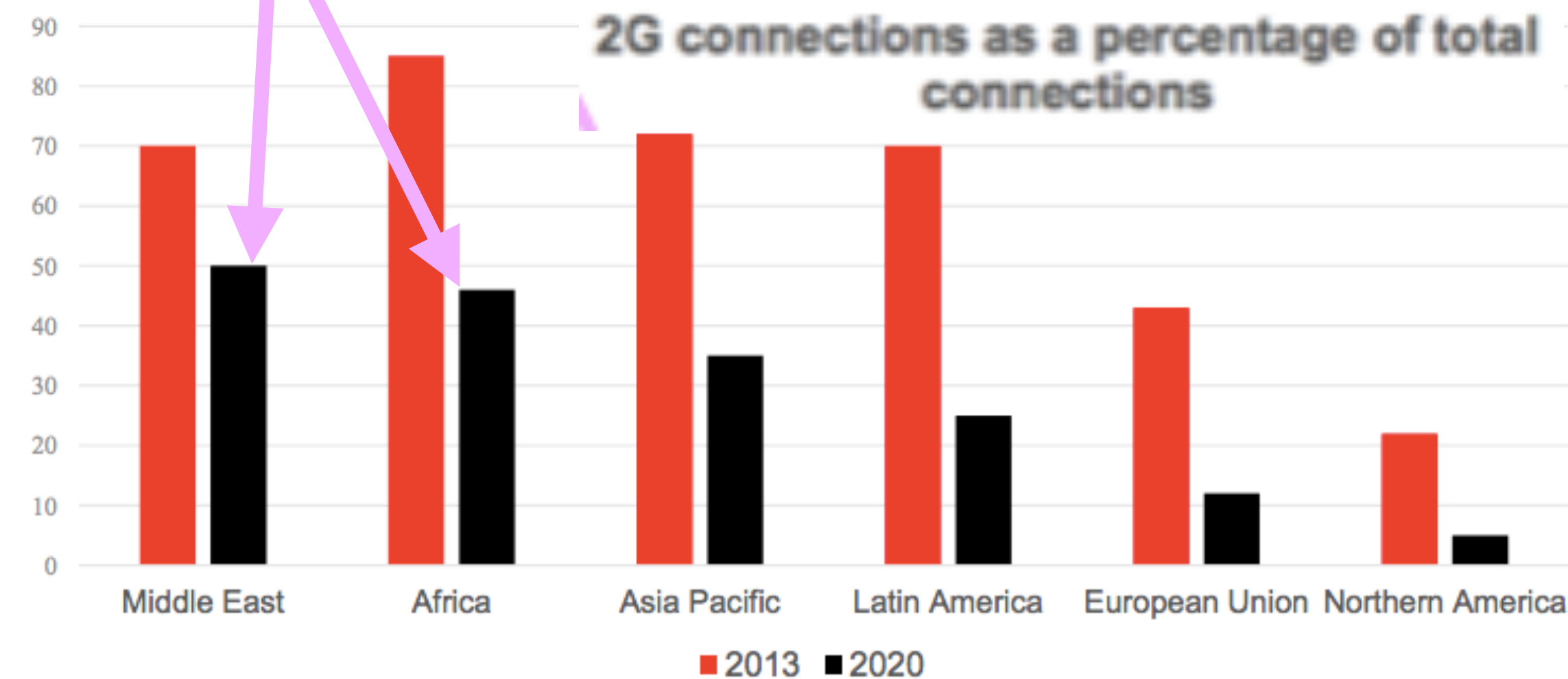
Partnership for Digital Africa

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

ERNA SOLBERG (H), PRIME MINISTER
UPDATED: 30.JAN.2017 9:39 P.M. I PUBLISHED: 30.JAN.2017 7:58 P.M.

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.

1. UN sustainability goals and Agenda 2030:

Germany has chosen this agenda as a backdrop for their entire program for the presidency, and I lead a group at the United Nations that will drive towards implementation.

We will work to ensure that the G20 goes ahead with its own specific commitments to help achieve sustainability goals.

2. Migration and partnership with Africa:

The world is experiencing the greatest influx of refugees since World War II. Europe, and especially Germany, have seen the consequences of that.

It is necessary to improve the situation where people break up close. Germany will use its chairmanship to do something about the problems which people belong. There is no minimum job creation and private investment. There are agreements with African countries wishing to achieve it.

G20 can therefore help the countries and international organizations use their resources more on measures which 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.

Internet lite 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

PENNSYLVANIA
★ GSF 0001
GOLD STAR FAMILY

Péage
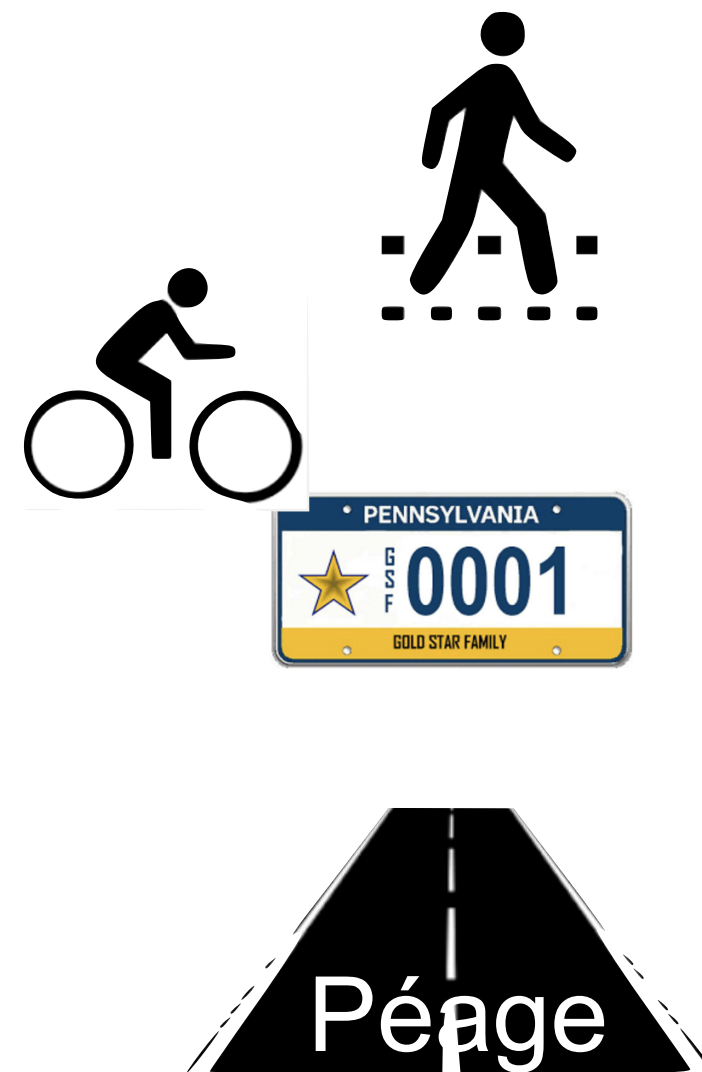
Freemium Model "Internet Lite for All"

- Free Access
  - ➜ free access of information
  - ➜ text, pictures and local vide...

- Premium Access
  - ➜ Broadband, speed & comfort
  - ➜ Voice, video & games
  - ➜ privately managed

multimedia++

- *"Non discriminating access"* project
  - ➡ funded by RCN and Mfa/Norad (14.9 MNOK for 2017-2020)
  - ➡ Tanzania: digital health

Migration and Partnership with Africa

Basic
Internet
Foundation

- Example: Digital Tanzania
  - ➡ Unconnected: 13 Million people in 4.000 villages
  - ➡ Combined effort

GSM + Wifi
➡ 200W
➡ MicroBTS

2. Migration and partnership with Africa:

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- Funding requirements
  - ➡ 0.25 B€ for Digital Tanzania
  - ➡ 4.5 B€, DE for hosting refugees (2017)
  - ➡ 89 B€ 2016-bugdet for EU Frontex border control

Cost: 70 kUS$/village

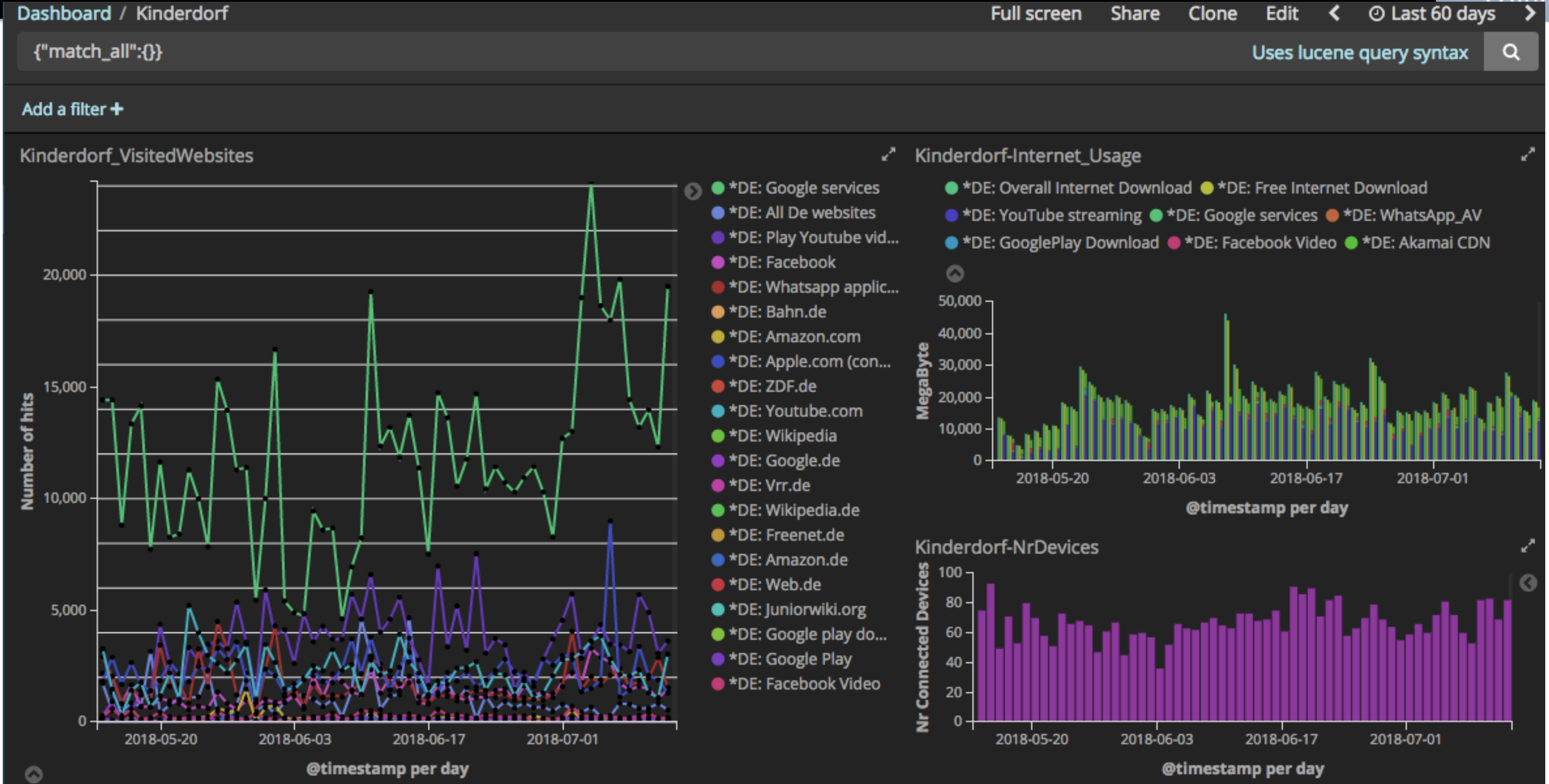1 USD/month for Telecom   @Basic4all

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"

Im Kinderdorf „Am Köllnischen Wald" haben alle WLAN WAZplus

Harald Uschmann
01.05.2018 - 10:48 Uhr

Das Internet im Kinderdorf ist sicher: Prof. Josef Noll, Kinderdorfleiter Thomas Evers und Mitarbeiter Devim Huys (v.l.) stellen das Projekt vor.
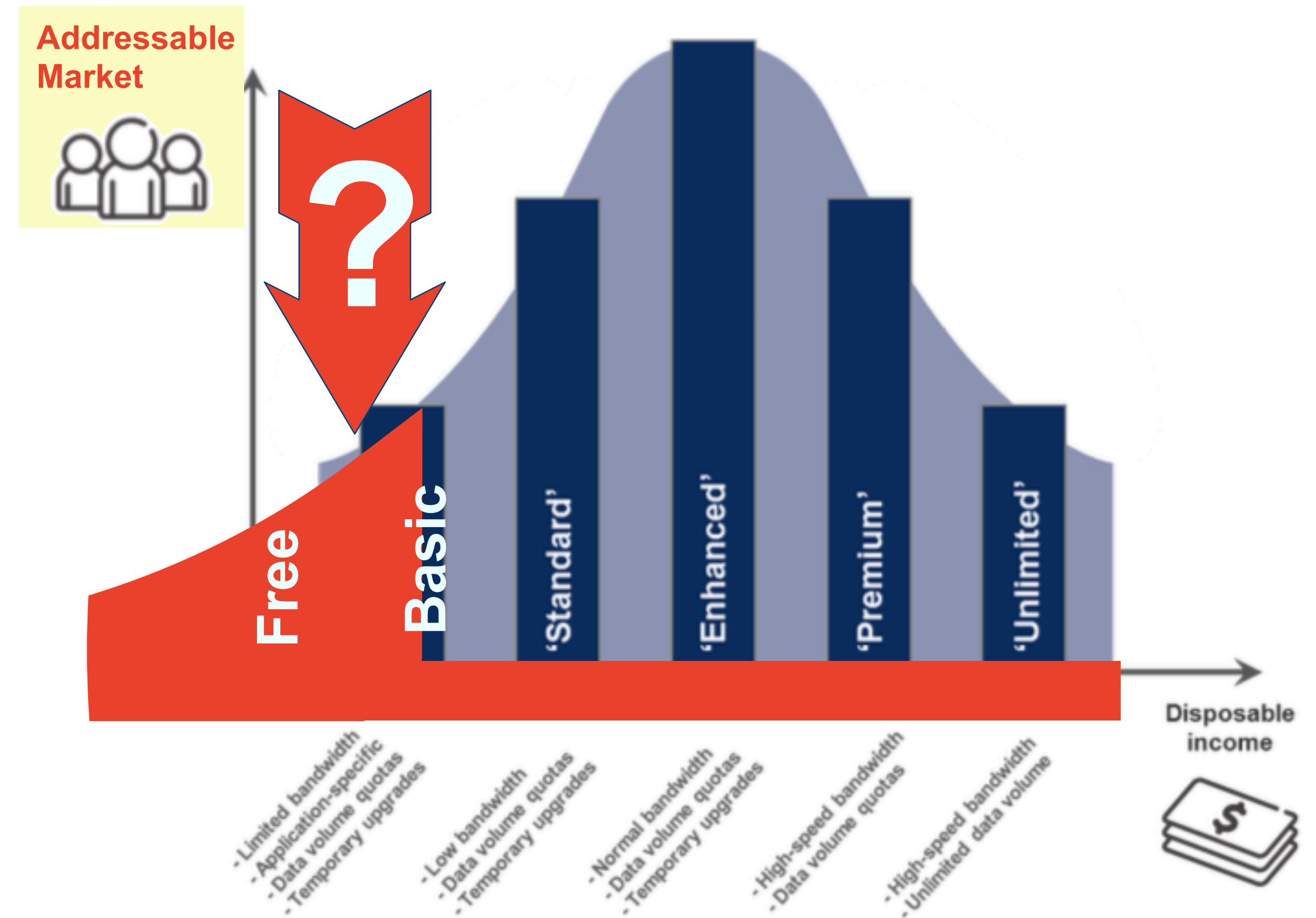
Foto: Joachim Kleine-Bür...

Overview service offers & Network Management

Smart Network contribution for 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

Addressable Market

Free | Basic | 'Standard' | 'Enhanced' | 'Premium' | 'Unlimited'

- Limited bandwidth
- Application-specific
- Data volume quotas
- Temporary upgrades

- Low bandwidth
- Data volume quotas
- Temporary upgrades

- Normal bandwidth
- Data volume quotas
- Temporary upgrades

- High-speed bandwidth
- Data volume quotas
- Temporary upgrades

- High-speed bandwidth
- Unlimited data volume

Disposable income

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

- **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 Smart Networks
  - ➜ 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