UiO : Department of Technology Systems
University of Oslo

Master Studies at ITS@UiO, focus:
- Wireless Networks and Security
- Sustainable Infrastructures

Josef Noll, Christian Johansen, Toktam Ramezani, Elahe Fazeldehkordi, Seraj Fayyad, Maghsoud Morshedi, Øivind Kure, Leif Nilsen, Pål Orten, Abul Kaosher, Torleiv Maseng, Paal Engelstad, Terje Tjelta, Lars Bråten.....

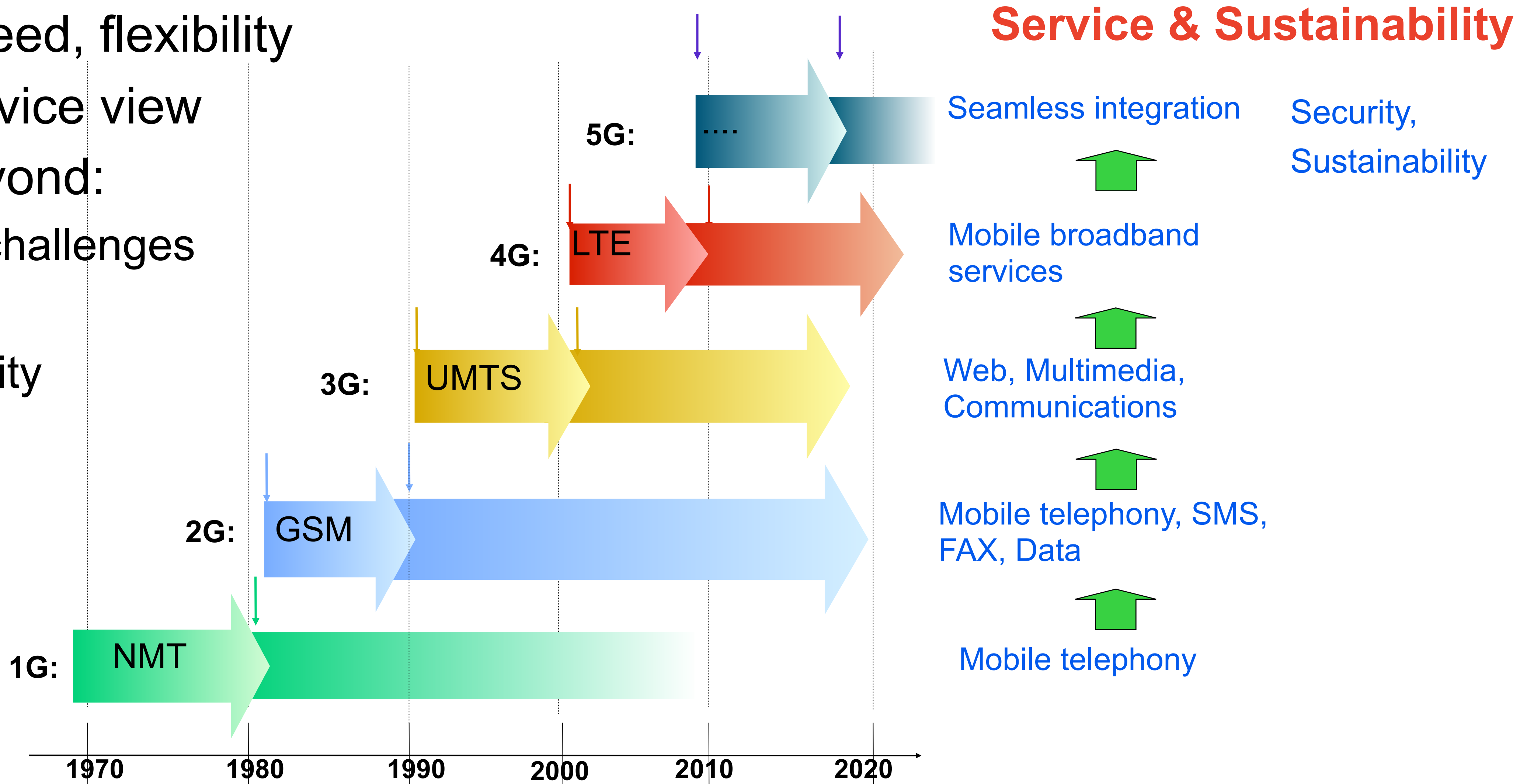http://www.mn.uio.no/its - http://ITS-wiki.no

"Our Journey of Today"

- "The last time we were connected by wire was at birth!" [Motorola]

- Three main Areas
  ➡ Security and Privacy in IoT
  ➡ Change of Business Models
  ➡ Sustainability and Digital Inclusion

- Social responsibility: access for everyone
  Basic Internet Foundation

JUST CLOSE YOUR EYES AND IMAGINE THE WIRE.

5G: Speed, Bandwidth, latency and much more

- 1G-3G: Speed, flexibility
- 3G-4G: service view
- 5G and beyond:
  - Business challenges
  - ownership
  - sustainability

Service & Sustainability

5G: .... → Seamless integration

4G: LTE → Mobile broadband services

3G: UMTS → Web, Multimedia, Communications

2G: GSM → Mobile telephony, SMS, FAX, Data

1G: NMT → Mobile telephony

Security, Sustainability

1970   1980   1990   2000   2010   2020

[adapted from Per Hjalmar Lehne, Telenor, 2000]

Area 1:

Security and Privacy in IoT

- Car industry: Liability in IoT driven business models
- Energy: Cost of providing of Energy -> Cost of Reliable Network
- Telecom:

The change of Business Models

Background: Mobility

Challenging Research
- 5G = Heterogeneous Networks
  - massive broadband
  - thousands of devices (Internet of Things)
  - ultra reliable, short latency
  - sustainable networks
- Small Cells
- Indoor communication
- Virtual Networks
- Privacy

FOTO: HEIKO JUNGE/SCANPIX

- Mobilnettet vil svikte igjen

Endelig har Telenor funnet ut hva som gikk galt da nettet brøt sammen, men professor og mobilekspert Josef Noll tror ikke vi har sett slutten på Telenors problemer.

Addressing the Threat Dimension for IoT

- Hollande (FR), Merkel (DE) had their mobile being monitored

- «and we believe it is not happening in Norway?

18. Dezember 2014, 18:14 Uhr   Abhören von Handys

So lässt sich das UMTS-Netz knacken

[source: www.rediff.com]

[source: Süddeutsche Zeitung, 18Dec2014]

Zwei Hacker zeigen
UMTS-Antenne lassen
sich knacken (Foto: dpa)

Building the Norwegian Smart Grid Security Centre
IoTSec.no

| Home | Research Areas | Security Centre | Publications | About us |

The IoTSec - Security in IoT for Smart Grids initiative was established in 2015 to promote the development of a safe and secure Internet-of-Things (IoT)-enabled smart power grid infrastructure. The Research Project received funding from the Research Council of Norway (RCN) to contribute to a safe information society.

IoTSec addresses the basic needs for a reliable and efficient, uninterrupted power network with dynamic configuration and security properties. It addresses in addition the needs of businesses and end users of additional IoT services by exploring use cases for value-added services with the intent to design the building blocks for future services that consider the necessary security and privacy preconditions of successfully deployed large-scale services. IoTSec will apply the research in the envisaged Security Centre for Smart Grids, co-located with the Norwegian Centre of Excellence (NCE Smart).

About

The IoTSec initiatives drives Research for secure IoT and Smart Grids

#iotsecno

Josef Noll   Nov
@josefnoll

NCE Smart Partnerkonferansen @KristinHalvorsen og Nasjonal senter for Sikkerhet i SmartGrid #IoT
pic.twitter.com/FLLua94

«Open World Approach»
everything that is not declared closed is open

Norge
Norway
Gjøvik
Kjeller
Oslo
Halden

Economics in IoT

Partners and Collaborations

- UiO
- UNIK
- NR
- Simula
- NTNU

Academia

- Smart Innovation Østfold
- eSmart Systems
- Fredrikstad Energi
- EB Nett
- Movation

Industry

- Smartgrid Centre
- Norw. Data Protection Auth.
- Forbrukerrådet

Interest Org.

- EyeSaaS
- mnemonic

Industry

- Mondragon Unibersitatea
- University of Victoria
- Universidad Carlos III
- La Sapienza
- COINS Research School
- Nimbeo
- H2020 and ECSEL projects

International

Area 2:

The change of Business Models

- Car industry: Liability in IoT driven business models
- Energy: Cost of providing of Energy -> Cost of Reliable Network
- Telecom: uO (MicroOperator), Partnership

http://www.scmagazine.com/iot-security-forcing-business-model-changes-panel-says/article/448668/

Volvo to 'accept full liability' for crashes with its driverless cars

But decide on rules so we can make the dang vehicles

IoT security forcing business model changes, panel says

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To secure the Internet of Things and to build trust with customers, the way that vendors approach manufacturing, distributing and supporting devices and solutions must change, a panel of security pros said Monday at the National Cyber Security Alliance's (NCSA's) Cybersecurity Summit held at Nasdaq.

"Business models will have to change. We used to build them [products], ship them and forget about them until we had to service them," said John Ellis, founder and managing director of Ellis & Associates. "We've moved to a new world where we have to ship and remember."

OUT-LAW.COM   🔴   🐦 68   f 22   in 78

ability" for collisions involving its autonomous vehicles, the company has

The "sharing economy" for energy companies?

Ved å bygge internett for alle, og ved å skape relevante og uunnværlige digitale tjenester, kan vi bidra til en bedre verden, skriver Sigve Brekke.
📷 FOTO: Heiko Junge, NTB scanpix

IKT er den nye oljen! | Sigve Brekke

[Source: aftenposten.no]

**Sharing Economy:
"Telenor will create a digital ecosystem in Pakistan"**

eSmart:labs

Home   About   Visit esmartsystems.com

Prosumer bidding and scheduling in electricity markets

🕐 12. January 2016   📁 Ukategorisert   👤 Administrator

[Source: eSmartSystems.com]

Area 3:

Sustainability and the Agenda 2030

- 17 main goals
- 169 associated targets
- "Free access to Information" (InfoInternet)

Partnership for Digital Africa

Basic Internet

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. | 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.

1. UN sustainability goals and Agenda 2030:

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Our contribution:
- Information for all (InfoInternet)
  - ➔ free access to text and pictures
    - the "walk on the Internet"
  - ➔ paid access to amusement
    - "Toll Roads"
- The catalyst for the SDGs

Péage

Goal: Include people with 1 USD/month for communications

Free local info
- health
- education

Non-discriminating access for Digital Inclusion
Pilot in Rural Areas for Information for All

Tanzania
- health as basis for development
- reach women and girls
- towards global digital health

Congo (DRC)
- Internet + GSM network
- enabler for digital society
- digital services, light, radio

Partnership for Information for All

Come and visit our
Digital Health Spot
at
Kjeller
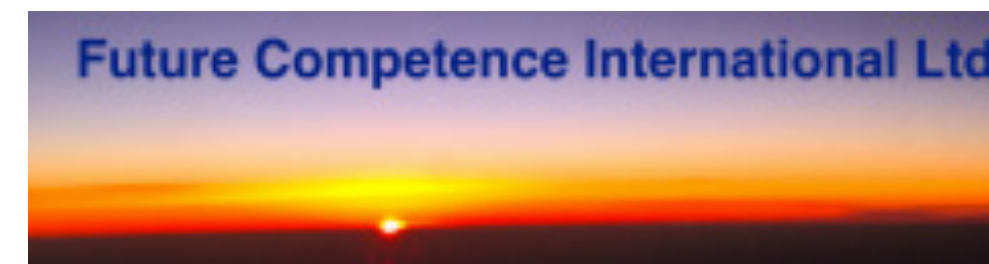
Conclusions

- Things (IoT) are driving the digital societies

- Three main areas for a Master Thesis
  - Security and Privacy in IoT
    - IoTSec.no, Privacy Label
  - Change in Business models
    - Liability, Quality of supply,
  - Digitisation of the Society
    - 4 Billion without Internet

- Sustainability and Digital Inclusion
  - UNO Sustainable Development Goals (SDG 2030)
    - Free access to basic information: InfoInternet
    - Partnership: IT-industry, Banks, Public, Telecom
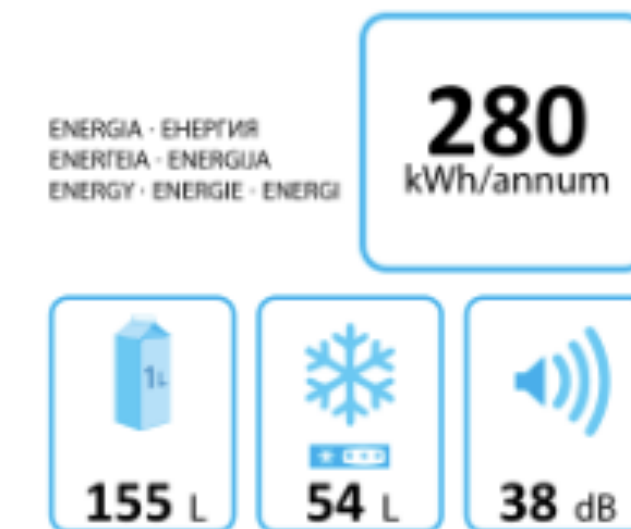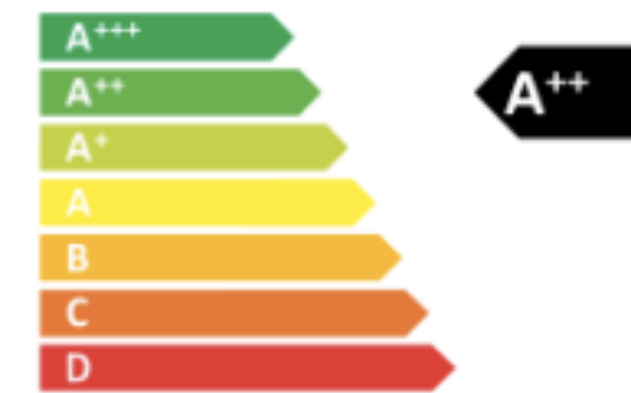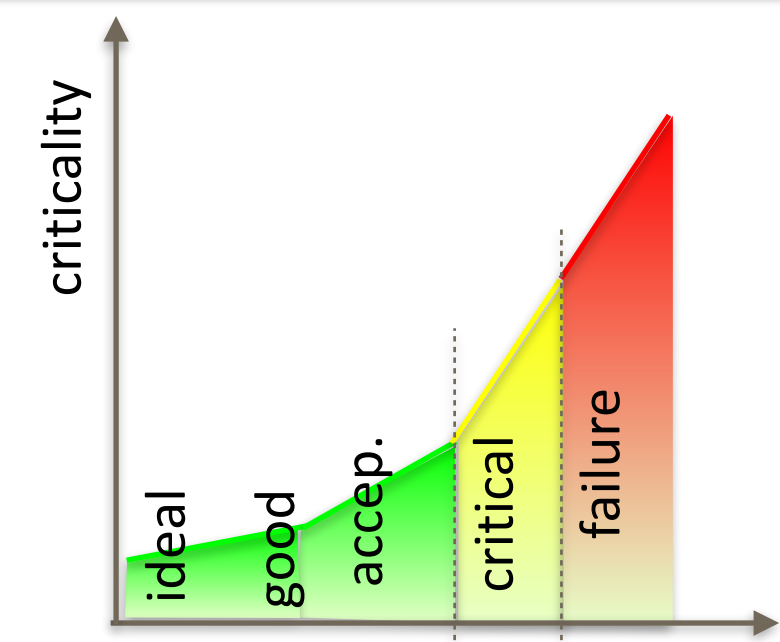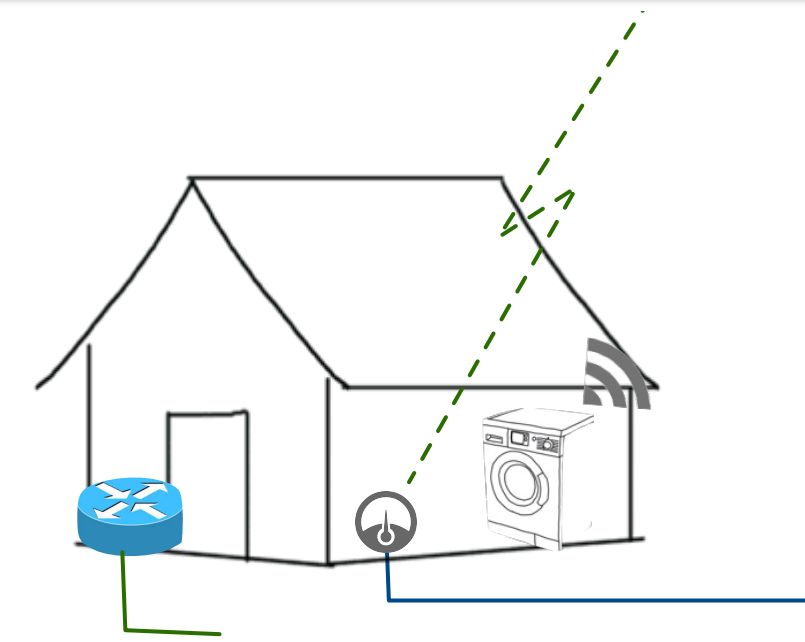
Digital Health Spot for 300 €
Creating digital access for the unconnected

Basic Internet

Digital inclusion
The catalyst for sustainable development

300 € digital health hotspot
60.000 € connecting a village in TZ
250.000.000 € connecting all villages in TZ
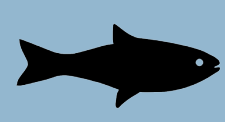89.000.000.000 € EU border control per year

- Digital society
- Agricultural and rural development
- Education
- Health
- Food, water and shelter

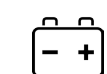|		
80 € Solar panel	30 € Regulator	
50 € Hotspot	20 € USB-charger	
50 € Tablet	15 € LED light	
20 € Battery	20 € Materials	

Come and visit our Digital Health Spot at Kjeller

digi.basicinternet.no