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**Kick-off**



Trygt  
Svangerskap

# **Technology Challenges in Trygt Svangerskap**



Josef Noll, Serhat Sama, Zyyad Shah,  
Maghsoud Morshedi,

<http://ITS-wiki.no>

# Digital Health - more than .docx

- From Internet to Internet of Things
  - ➔ how has Internet changed Health
  - ➔ how will IoT change Health
- Lessons learned from GravidPluss
  - ➔ App development & Questionnaires
- Trygt Svangerskap
  - ➔ A more fail-safe approach to Questionnaires
  - ➔ Multi-language translation made easier
- Internet provision at Health stations
  - ➔ Economy, Security and Privacy
- The global perspective

Agenda 2030 and SDG 3: (Digital) Global Health




The screenshot shows the homepage of the Trygt Svangerskap website. At the top, there is a navigation bar with the site logo, the name 'Trygt Svangerskap', a search bar, and a 'Go' button. Below the navigation bar are links for 'Hjem/Home', 'FAQ', 'Privacy', and 'Om oss/About us'. The main content area features a heading 'Trygg Svangerskap' followed by a paragraph of text in Norwegian. To the right, there is a sidebar with sections titled 'Om prosjektet', 'Deltager' (listing names like Lena Henriksen, Mirjam Lukasse, etc.), 'Partner' (listing HIOA and UiO), and 'Helsestasjoner' (listing various health stations like Alna, Bjerke, etc.).

## From Internet to Internet of Things (IoT)

### Internet related topics to Health

- *Dr. Google*, information is there
  - ➔ Changed role of doctors
- IBM Watson
  - ➔ Cancer diagnosis
- Genetics
  - ➔ Gene analytics
  - ➔ Personalised medicine

### Internet of Things (IoT)

- Sensors driving the development
  - ➔ Big data (massive data)
  - ➔ Machine analytics
- Changed business processes
  - ➔ international/global business
  - ➔ insurance
  - ➔ costs
- *“whatever happened until now, it will just accelerate with a factor 10”*
  - ➔ 3 times faster, 3 times more



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

But decide on rules so we can make the dang vehicles

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

SC Magazine > News > IoT security forcing business model changes, panel says

Teri Robinson, Associate Editor

Follow @TeriRnNY

October 22, 2015

## 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



22



78

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

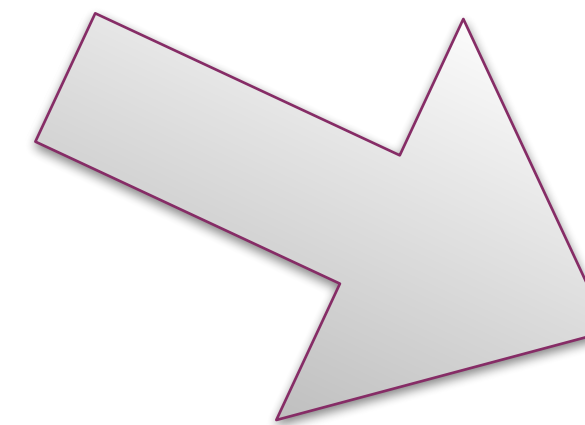
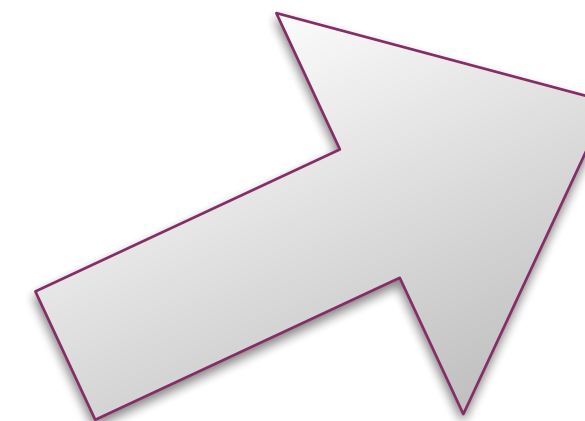
## Impact for Digital Health and Trygt Svangerskap

- Think globally
  - ➔ develop once, open for re-use
    - Free-lancers for new languages
  - ➔ “*where else can our findings be applied?*”
- Health Ecosystem
- Agenda 2030 and Sustainable Development Goals
- [TrygtSvangerskap.no](https://www.trygtsvangerskap.no)
- Questionnaire
  - ➔ Fail-safe development
  - ➔ 4 languages
  - ➔ develop once
- Digital ecosystem
  - ➔ Information
  - ➔ Ethics
  - ➔ Health Network



## Technology Development


- Questionnaire
  - ➔ Development
  - ➔ Translation
  - ➔ inclusion of video
  - ➔ randomisation
- Wireless access
  - ➔ Tablet
  - ➔ Wireless-/Mobile Networks
  - ➔ Digital Health information





BEDRE HELSE FOR MOR OG BARN

LANGUAGE:  
 Vennligst velg ditt språk  
 اپنی زبان منتخب کریں  
 Fadlan dooro luqaddaada




Blodsukker



Mat & Drikke




Fysisk aktivitet



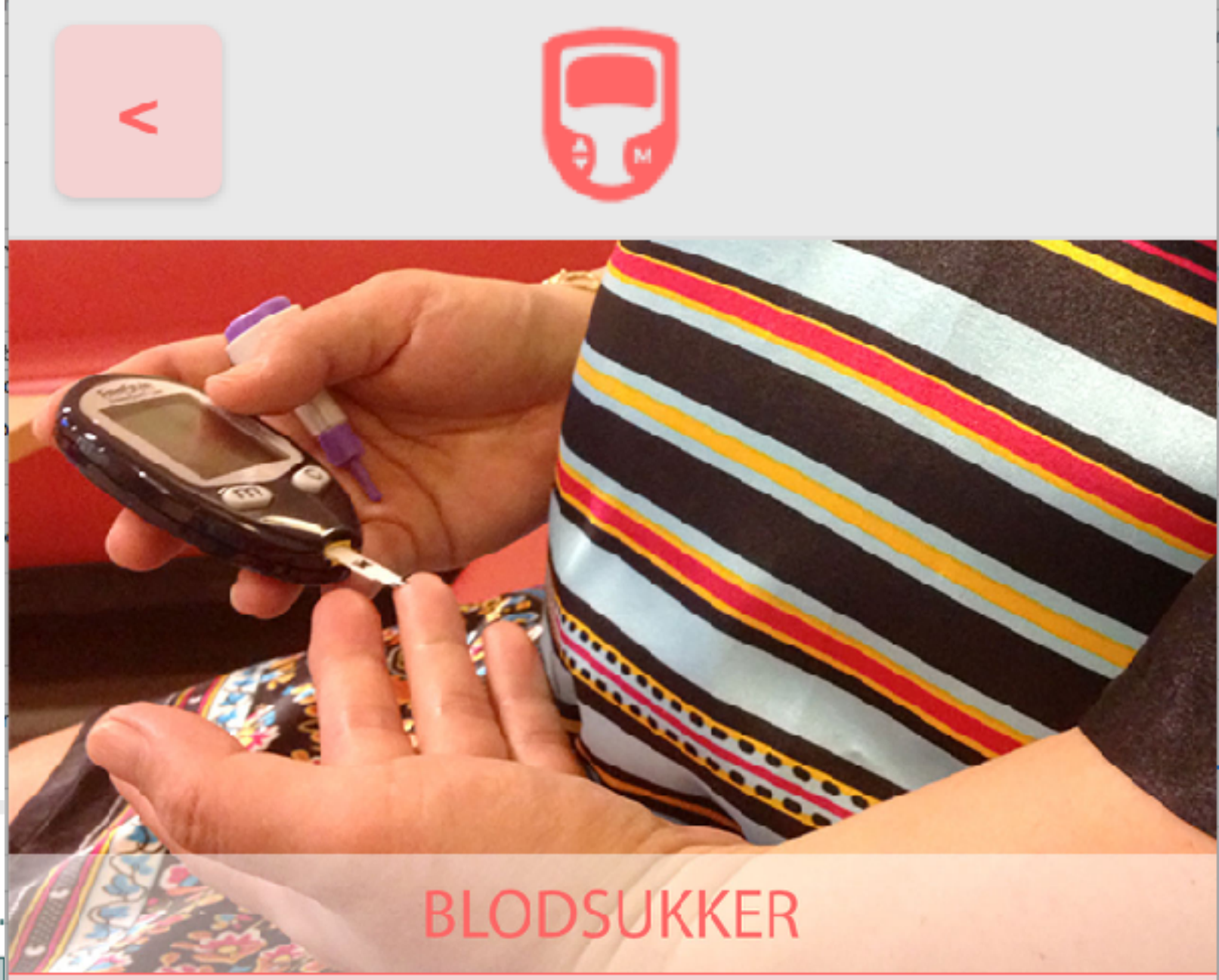
Diabetes

Min matkultur

Jeg ønsker å få informasjon basert på et:

- Norsk kosthold 
- Pakistansk kosthold 
- Somalisk kosthold 

- Min vekt
- Mine mål
- Mitt aktivitesn...
- MIN PROFIL**
- Mitt sykehus og fødeplass
- Min matkultur
- Min vekt og høyde
- Mine mål
- Mitt aktivitesnivå
- Språk



BLODSUKKER

- Registrer blodsukker
- Ditt blodsukker over tid
- Min erfaring med mat og blodsukker
- Om svangerskapsdiabetes
- Skriv ut blodsukkerverdiene

# Lessons learned from GravidPluss.no



**GravidPluss: Health App**

Hjem/Home **FAQ** Privacy Om oss/About us

FAQ - vanlige spørsmål [edit]

Vedlagt finner dere svar på spørsmål angående GravidPluss appen

- GravidPluss app for Android [Klikk her for å laste ned](#)
- GravidPluss app for iOS er på [Apple iTunes](#).

**Blodsuktermålinger** [edit]

Hvordan aktiverer jeg blodsukkerapparatet for første gang?

1. Bruk en nål/skarp gjenstand til å trykke på set-knappen. Fortsett å trykke helt til skjermen viser "PAR".
2. Trykk så på M- knappen så det står "Yes" på skjermen.
3. Trykk på set-knappen (med nål/skarp gjenstand) igjen, så skal apparatet automatisk slå seg av, og de blå lysene vil begynne å blinke. Dette betyr at apparatet er aktivert.

NB! Batteriene til blodsukkerapparatet trenger å full-lades minst en gang før de kan brukes.

Hvordan overfører jeg blodsukerverdiene automatisk til mobiltelefon?

1. Sjekk at Bluetooth funksjonen på din mobil er slått på. Du kan sjekke dette på følgende måte, iPhone: Innstillinger- generelt- aktiver Bluetooth
2. Åpne App

1 FAQ - vanlige spørsmål  
2 Blodsuktermålinger  
3 App installasjon  
3.1 iPhone installasjon  
3.2 Android installasjon  
3.3 Android og iPhone



- Questionnaire
  - ➔ Time consuming development of questionnaire, non-automised
  - ➔ 3 languages
    - ▶ Urdu: mixture of arabic digits and urdu text
  - ➔ not designed for re-use
- App for Android and iPhone
  - ➔ updates to be up-to-date
  - ➔ difficult maintenance
- Digital ecosystem
  - ➔ email and phone, not Web



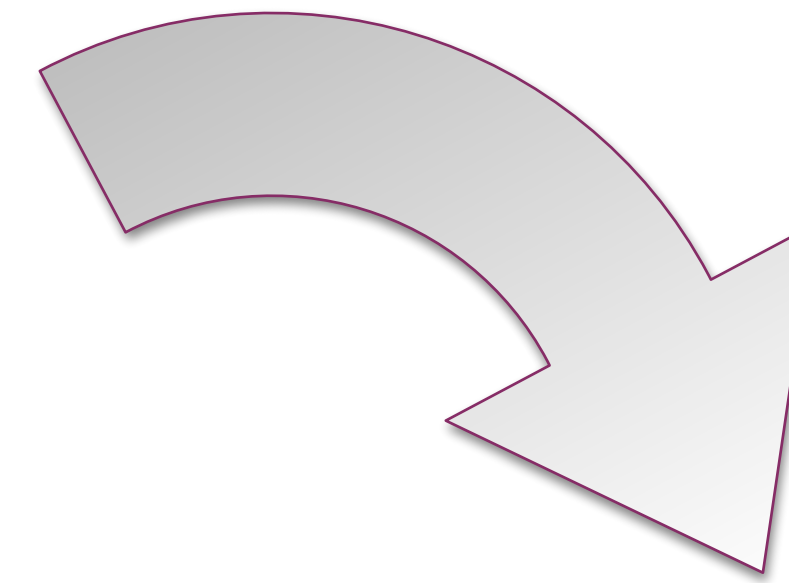


## TrygtSvangerskap Technology development

- Questionnaire development
  - ➔ Start with structured document (.xls)
  - ➔ Semi-automatic conversion to Web language (.php)
- Translation tool
  - ➔ Corrections: EN -> EN
  - ➔ Translation: EN -> Somali, Urdu
- Health station access
  - ➔ Tablets with 4G
  - ➔ Health stations with Wifi



TrygtSvangerskap-  
Questionnaire\_EN.xlsx



[q.TrygtSvangerskap.no](http://q.TrygtSvangerskap.no)




Welcome / Vekloppen  
Trygt Svangerskap

PLEASE ENTER YOUR NAME AND SURNAME

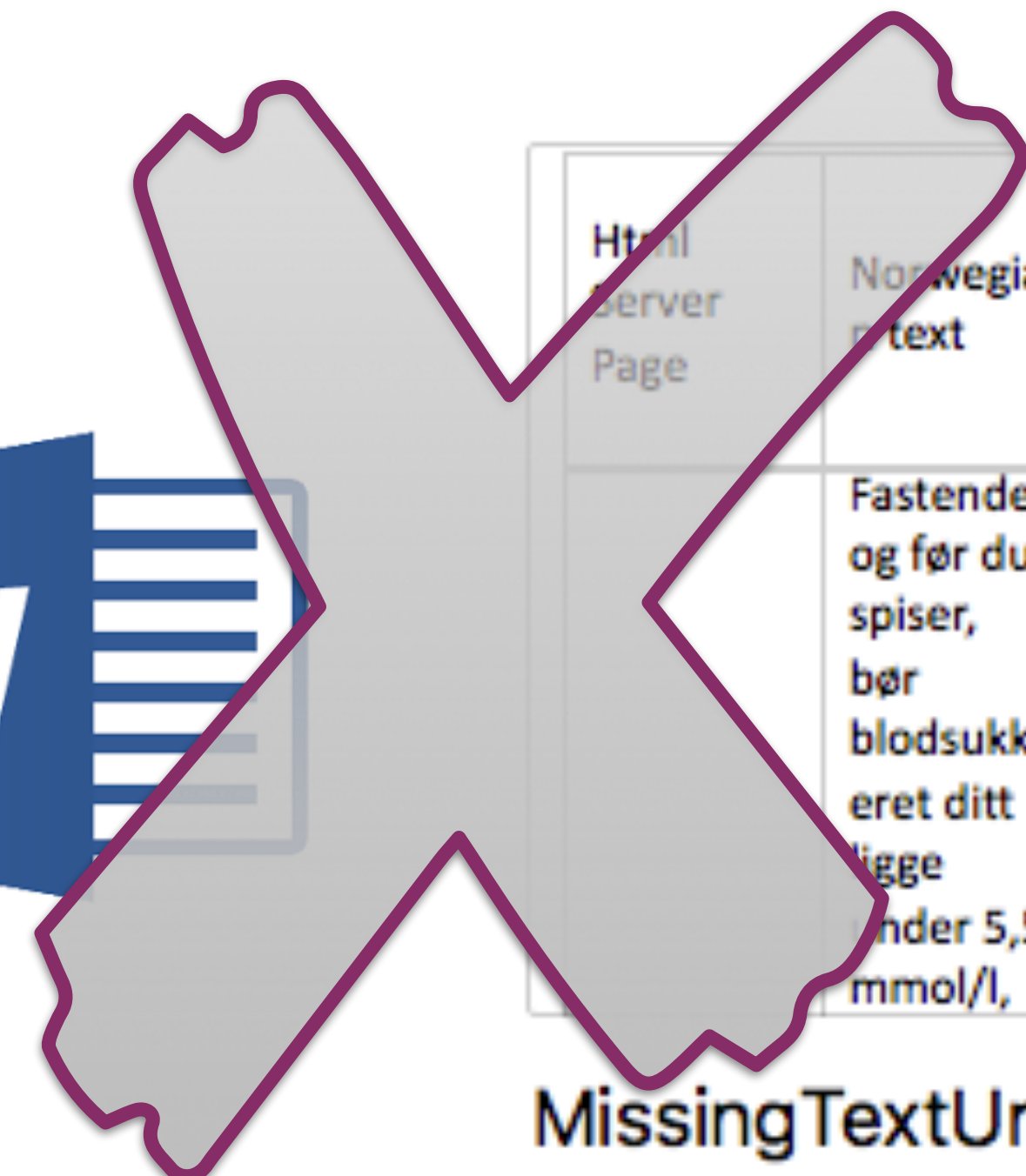

Name:  Surname:

PLEASE SELECT YOUR LANGUAGE:  
VENNLIGST VELG DITT SPRÅK:



## Translation tool



Html Server Page	Norwegia text	To be replaced by the following Urdu text
	Fastende og før du spiser, bør blodsukkeret ditt ligge under 5,5 mmol/l,	خون میں شوگر کو خالی پیٹ اور کھانے سے پہلے 5,5 mmol/


MissingTextUrduSomali.odt  
31 KB

[translate.TrygtSvangerskap.no](http://translate.TrygtSvangerskap.no)

Please select the language you want to enter

Languages -

- EN
- NO
- SO
- PK



Trygt Svangerskap

Welcome to Safe pregnancy

Thank you for agreeing to participate in the Safe pregnancy study

It will take approximately 15 minutes to answer all the questions. You can easily take a break and return to the questions on the tablet if necessarily and change your answers if needed.

SEND

### 1 - Questions regarding your pregnancy

1.1 - In Which week of your pregnancy are you now?

1.2 - Was this pregnancy planned?

Yes  No



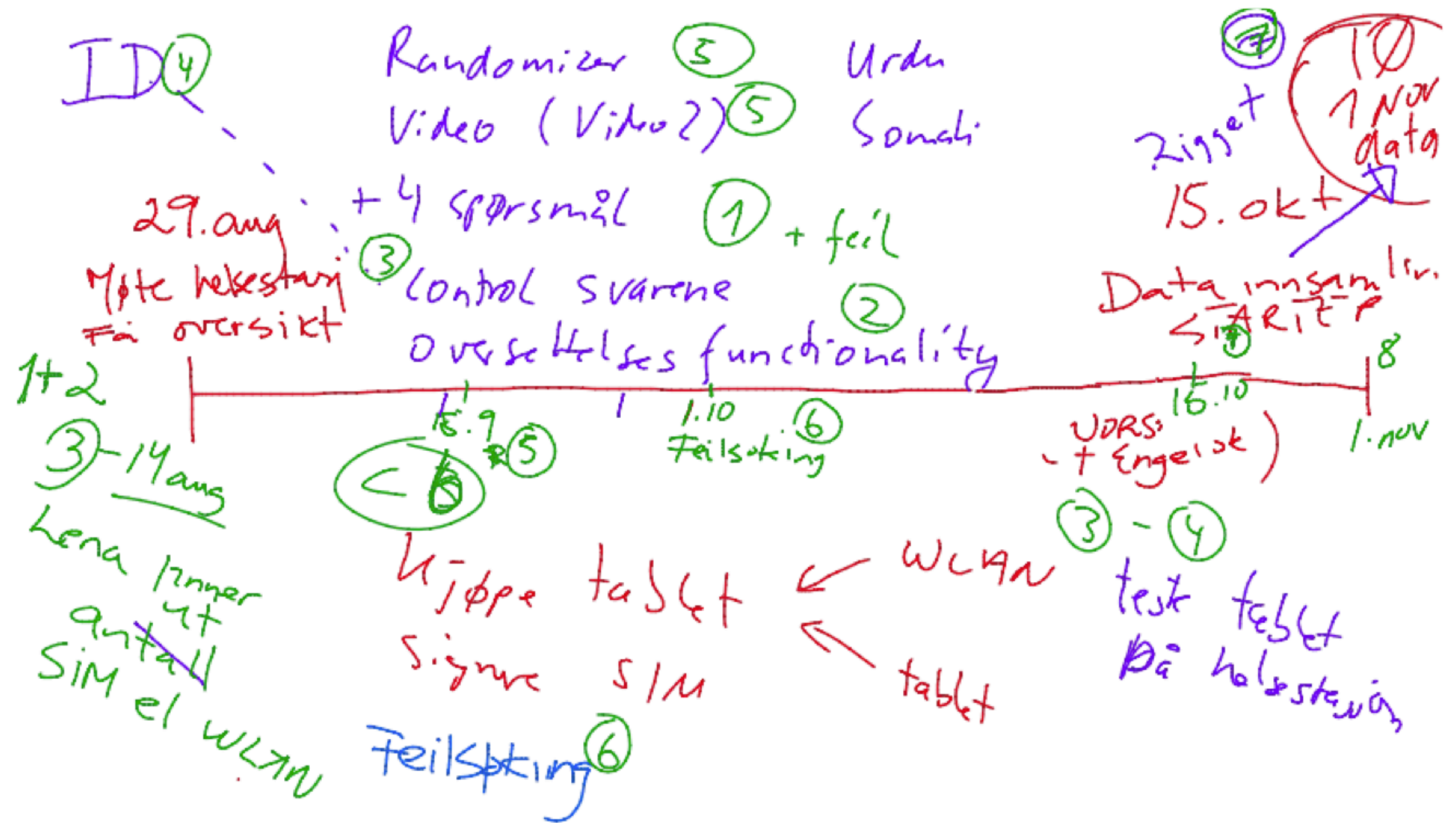
## Tablet and Wifi Access

- Each tablet with 4G communication
  - ➔ Restricted access in the tablet
  - ➔ Economy: one SIM card per tablet
- Health station with Wifi
  - ➔ Restriction on network site
  - ➔ higher initial costs (+900 kr)
    - cheaper tablets (-400 kr)
    - cheaper monthly costs (-90 kr/month)
  - ➔ bring your own device (BYOD)



## Open issues

- Time line
- Audio (voice over)
- Randomisation
- Data availability
  - secured server
  - role-based access
- Questionnaire 2



## Sustainability and the Agenda 2030

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



# The Basic Internet Foundation



## Digital Health

- digital health info
- digital access
- hotspots with health info



## Education

- access to information, hotspots
- schools and community centres
- Off-line videos/courses



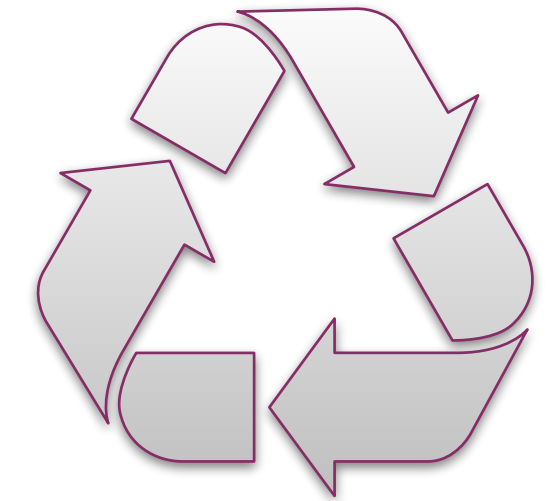
## Work

- digital Society
- digital Knowledge
- **Digital Services**



## A tool for the world?

- digital health info
- digital access
- hotspots with health info



USA: 33% of the GDP from digital  
Financial services: 57%, Buz Services 54%  
[source: Accenture & Oxford Economics, 2016]

# 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-Solberg-614076b.html>



**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.

# 3. Health and Education

- “nobody pays for a health video”
  - ➔ 10 min of video or 10 months of information?
  - ➔ need for 2-2,5% of bandwidth for free information
- Health as basis for further development
- Education
- Participation in the Digital Society



## 3. Health and education.

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



[adopted from: <https://shift-magazine.net/2015/11/17/the-economics-of-human-need/>]



## Conclusions

- Online presence
  - Questionnaire: [q.trygtsvangerskap.no](http://q.trygtsvangerskap.no)
  - Translation tool: [translate.trygtsvangerskap.no](http://translate.trygtsvangerskap.no)
  - Web access: Basic Internet infrastructure
  - Open Issues: Health Centre access
- Agenda 2030 and the Sustainable Development Goals
  - Health as basis for further development
  - “nobody pays for a health video”
  - 10 min of video or 10 months of information?
  - From [TrygtSvangerskap.no](http://TrygtSvangerskap.no) to Digital Global Health
- Digital **Global Health**

Digital Information  
Interactivity

