# AAL FOR ALL

## MULTISTAKEHOLDER CO-CREATION SESSION

27 SEPTEMBER 2016

AAL FORUM ST.GALLEN

CHAIR: DR. RENS BRANKAERT

ENSAFE

# Programme

- **Setting the scene:**
  - Introduction to the ENSAFE project
  - Gociety technology
  - Technological sensor opportunities for elderly (HELICOPTER)
  - Integration into a cloud platform
  - User involvement in ENSAFE
- **Interactive Co-creation session:**
  - Multi-stakeholder perspective on innovation
  - Impact of innovation in a wellbeing context

# Part 1: Setting the scene



# Aim of the project

- ENSAFE stands for:

**E**lderly-oriented **N**etwork-based **S**ervices **A**imed at independent li**fe.**

- Supporting more effective prevention and self-care strategies by creating a smarter, more accessible and versatile link among **elderly**, their **living environment** and **support network** around them.

# Target group

- Elderly people:
  - Support their lives, enabling them to live longer independently at home.
- Informal caregivers:
  - Monitor and receive signals during abnormal situations which need their attention.
- Formal caregivers:
  - Access to full set of data, suitable for being linked to clinical data management tools and policies.

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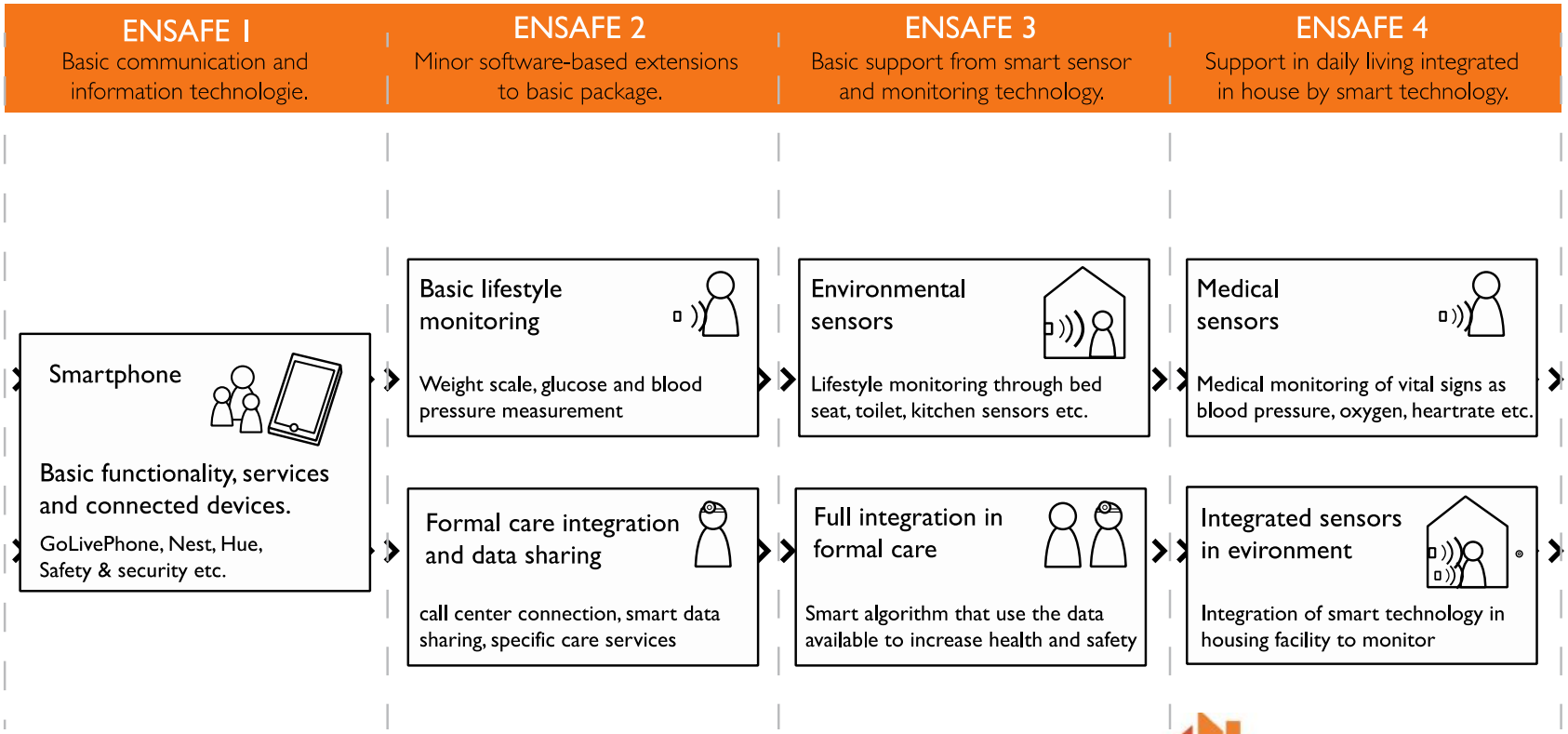
# Product portfolio

- Sum of products is stronger then the individual parts
- Challenge is fitting these together into a single business case
- … the ENSAFE solution

# Continuum of Care

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# Business Case

| Consumer Market | Mixed Payment model | Mixed Payment model | Institutional Payment model |
|---|---|---|---|
| **ENSAFE 1**<br>Basic communication and information technologie. | **ENSAFE 2**<br>Minor software-based extensions to basic package. | **ENSAFE 3**<br>Basic support from smart sensor and monitoring technology. | **ENSAFE 4**<br>Support in daily living integrated in house by smart technology. |

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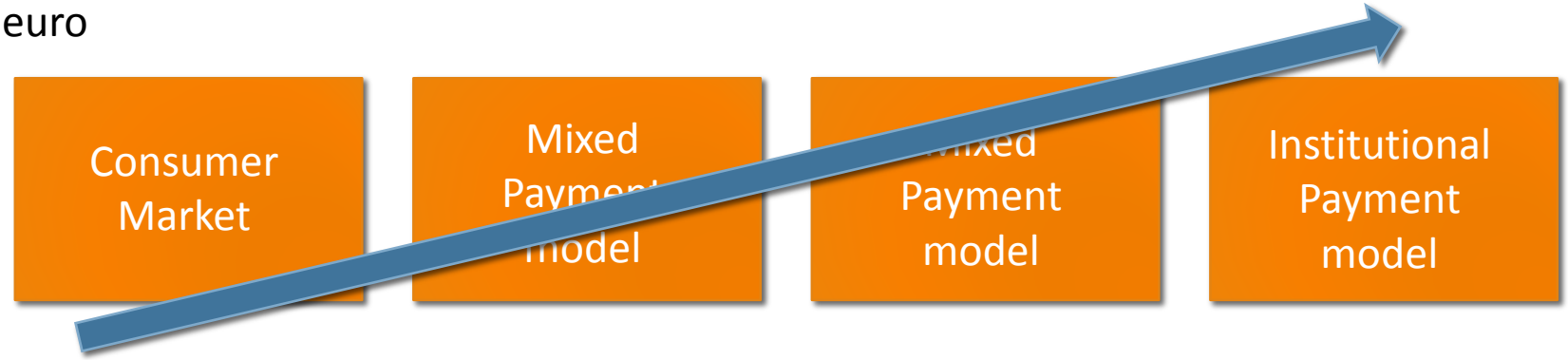
# Business Case

200 euro




10 euro

| ENSAFE 1 | ENSAFE 2 | ENSAFE 3 | ENSAFE 4 |
|---|---|---|---|
| Basic communication and information technologie. | Minor software-based extensions to basic package. | Basic support from smart sensor and monitoring technology. | Support in daily living integrated in house by smart technology. |

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# Project details

- Duration: July 2015 – June 2018
- Total Budget: €2.1 million
- Made possible by the AAL programme

- Four countries in Europe
  - United Kingdom
  - Netherlands
  - Sweden
  - Italy

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# Participating organisations












# ENSAFE user invovlement..

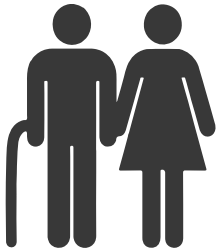
https://youtu.be/MovX_1LkGT0


AAL for all, multi stakeholder co-creation

27 September 2016

# Aging challenges:

Loneliness:



30% feels lonely

Security:

16% sometimes unsafe

Active:

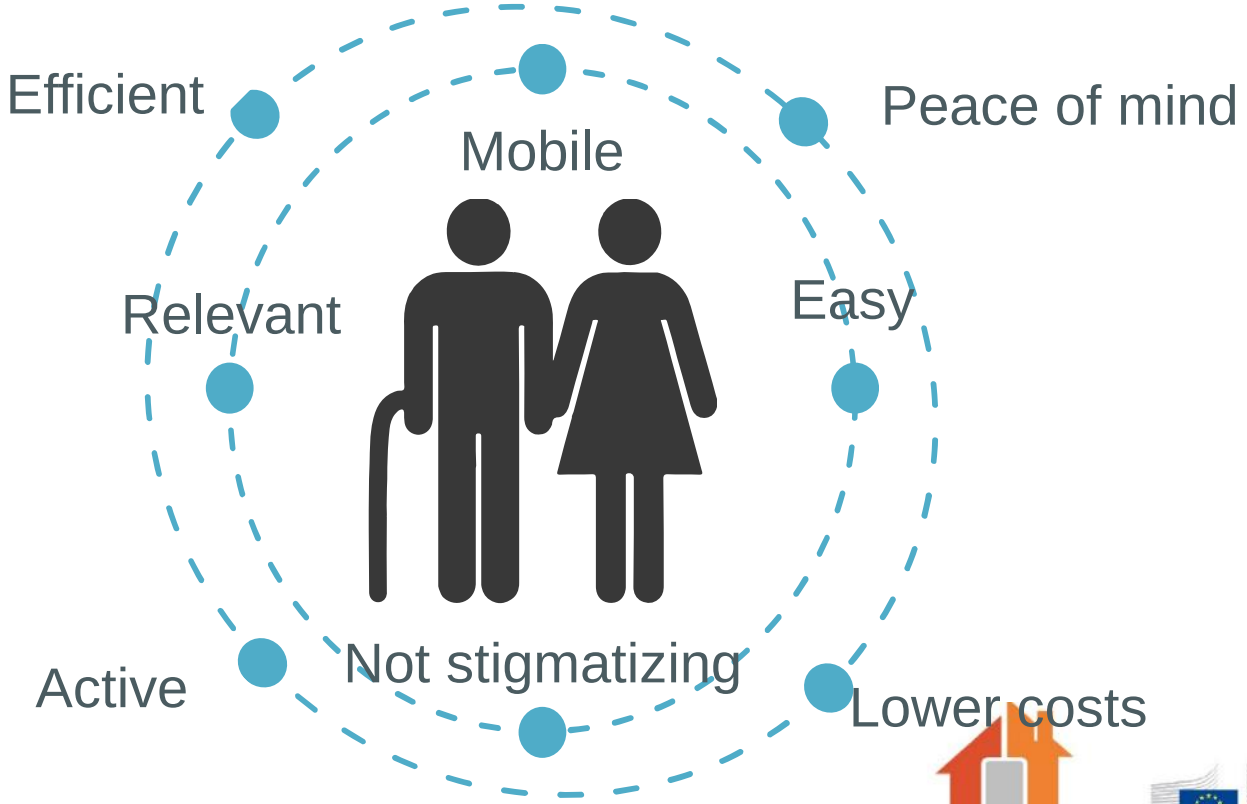
15% not coming outside

Falls

1% of total health care expenditure

2030

# User centric for all relevant stakeholders:

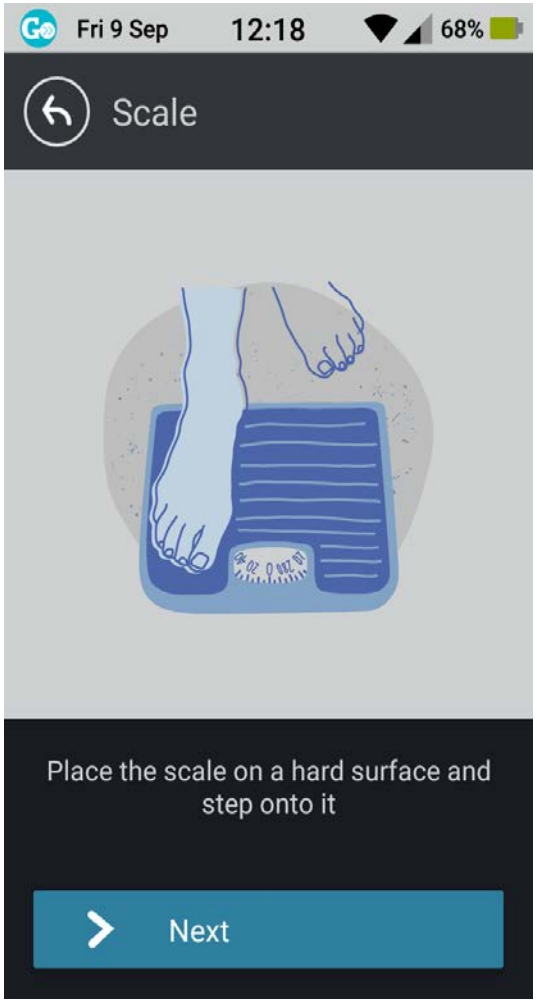


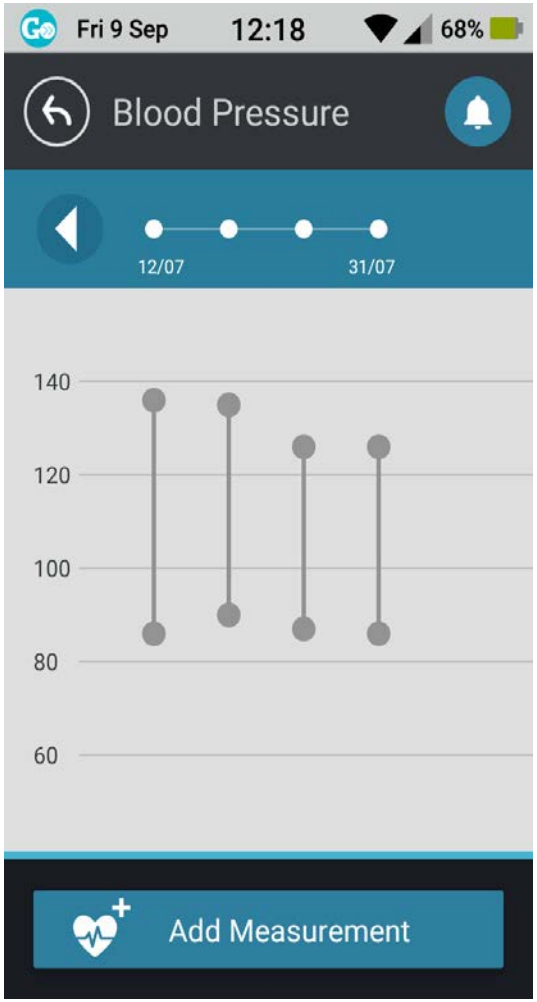
# Smartphone more important for seniors than young generation:

The smartphone will become a smart-companion

# What we offer:

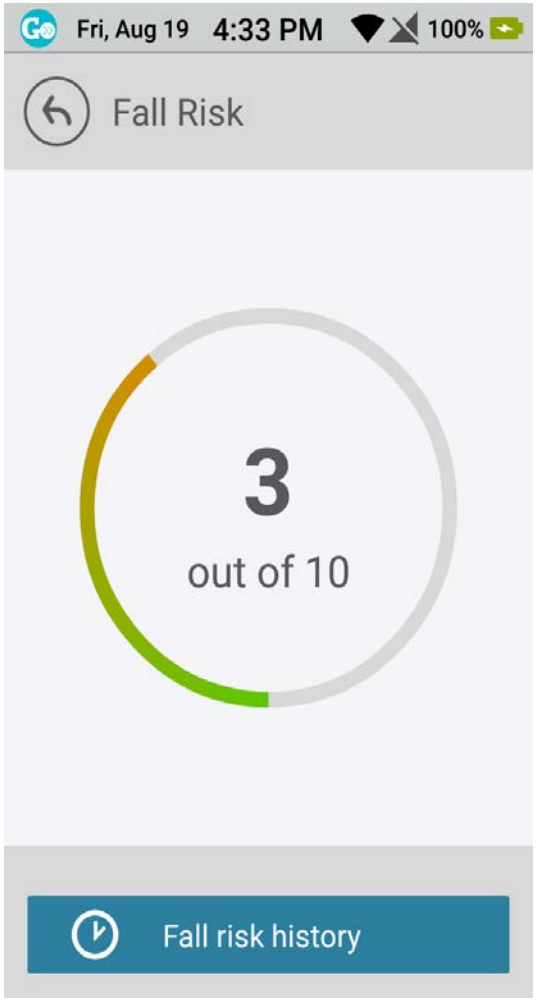
# Health analytics:

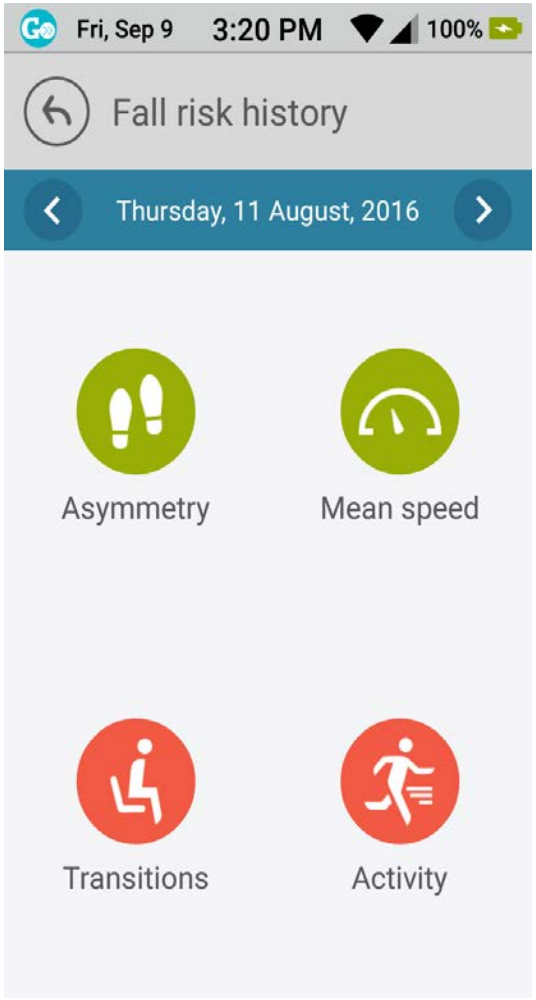



“ Trend and abnormality indication ”

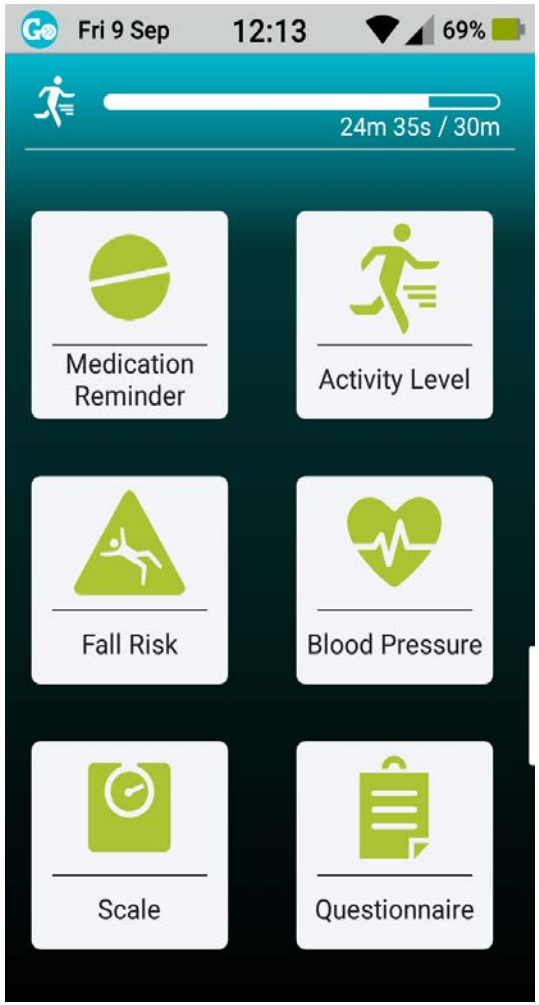
# Prevention:

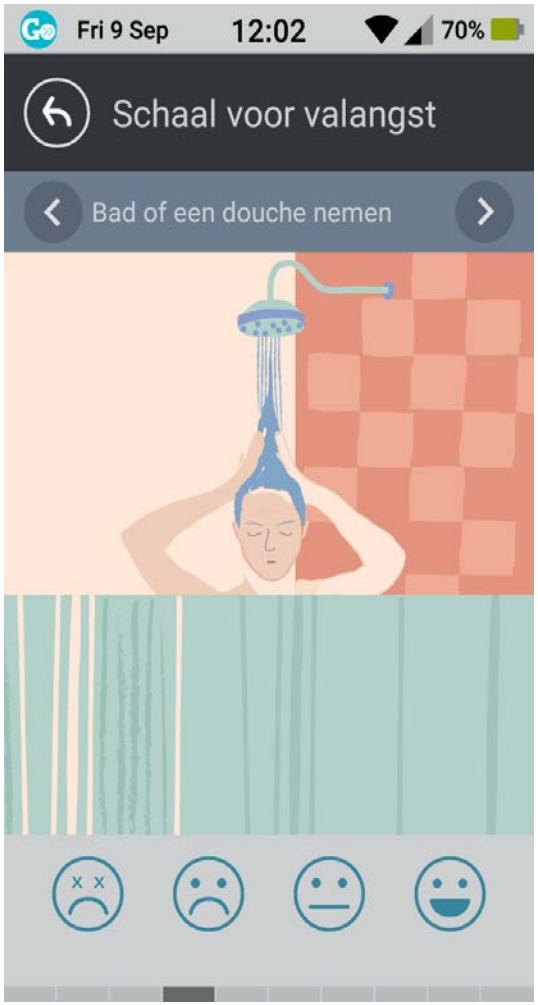



“ Catch your clients before they fall..! ”

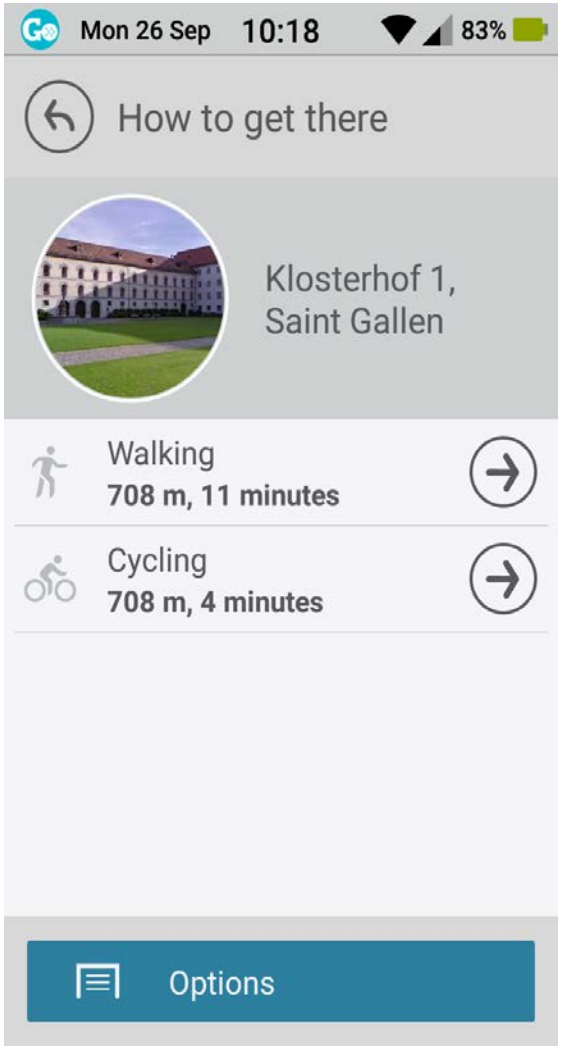
# Quality of life:

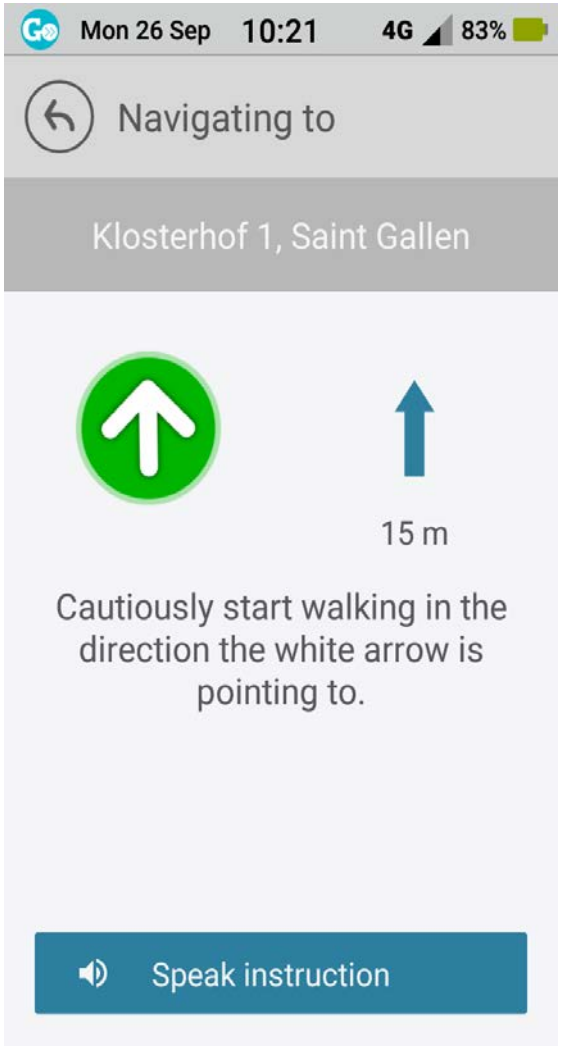



“ besides objective, also subjective data “

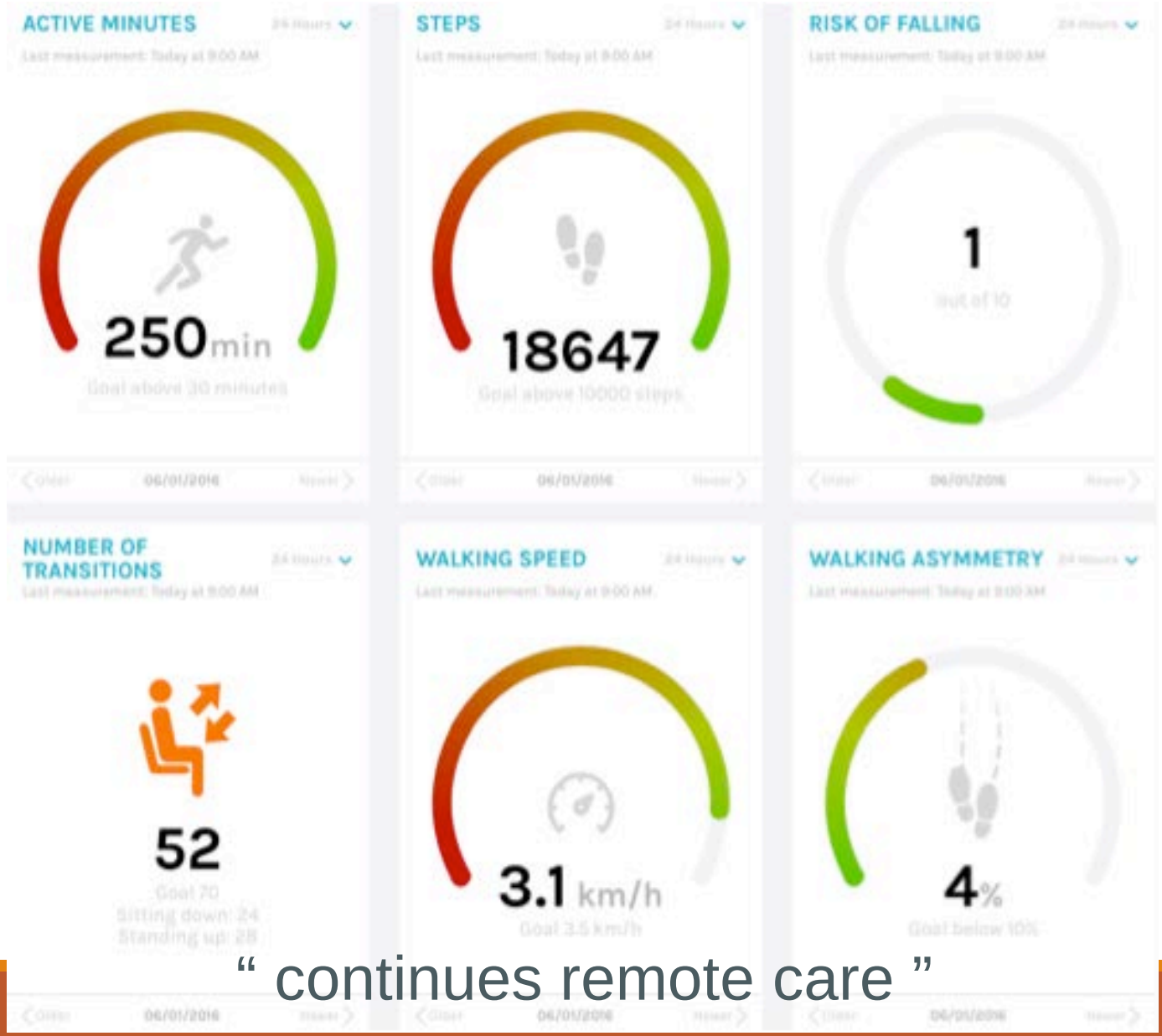
# Mobility & safety:



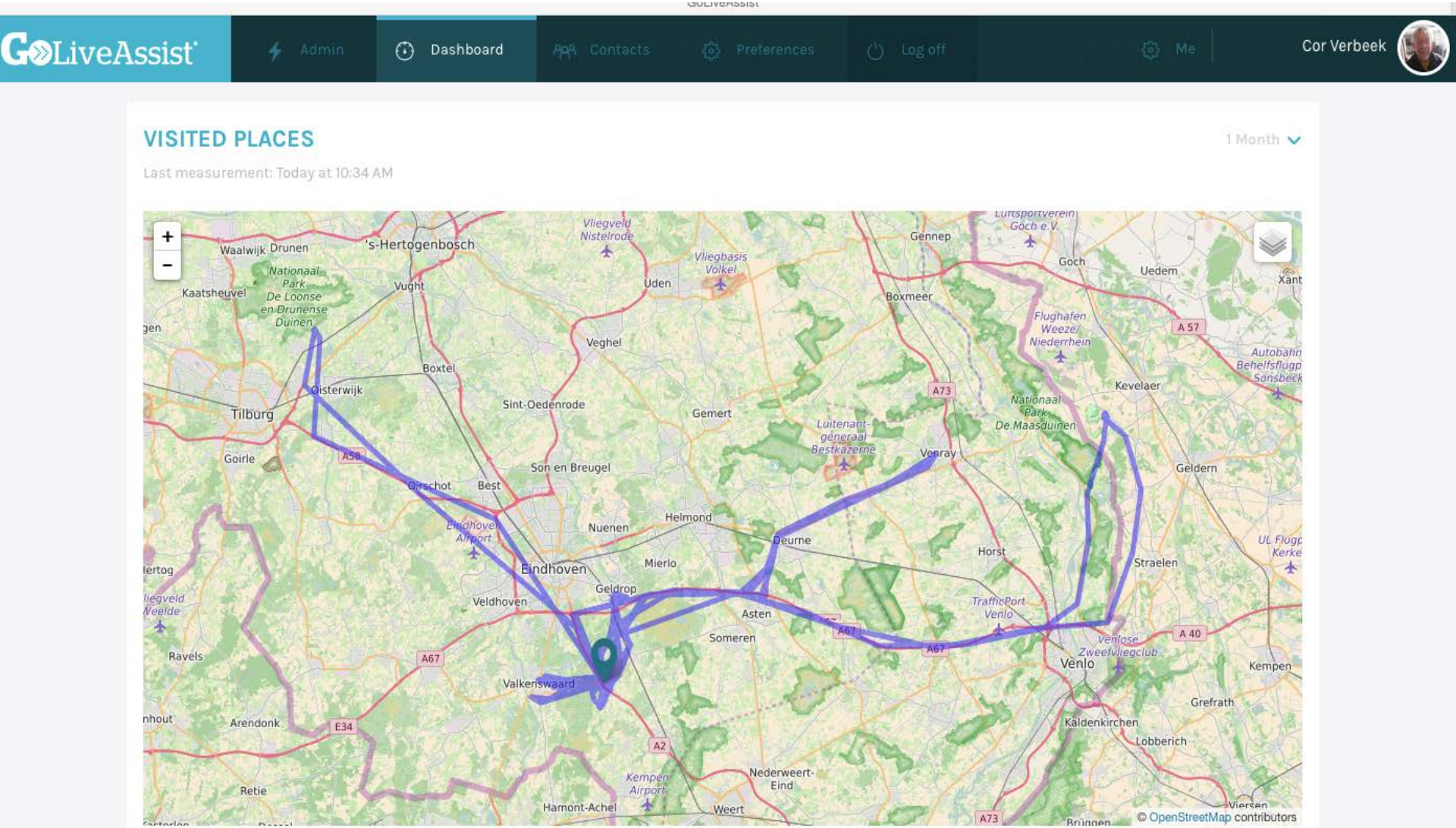

“ Polygonal safe zones “

# GoLiveAssist dashboard:




“ continues remote care ”

# GoLiveAssist dashboard:

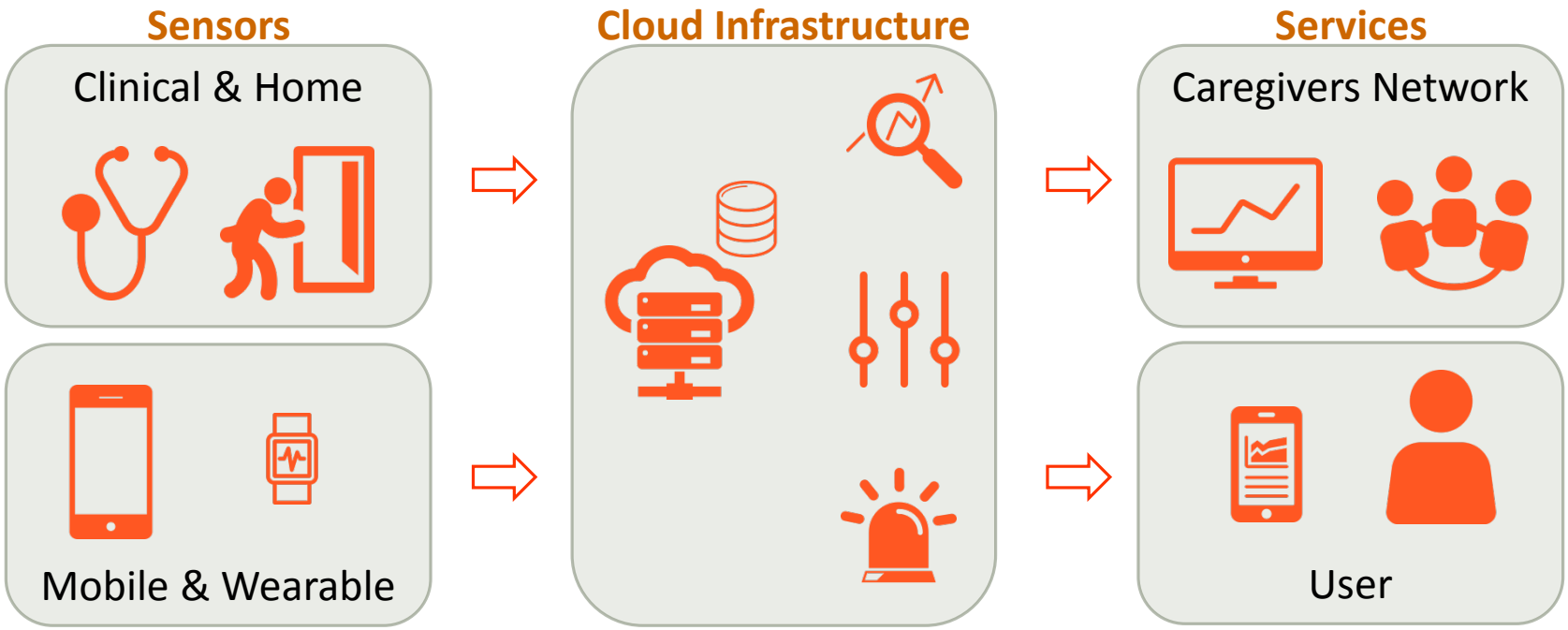



“ continues track & trace ”

# Longterm road map: Tricorder for older adults

“ every six month new functionalities ”

# ENSAFE architecture



# Why “home” sensors ?

| | | |
|---|---|---|
| Data accuracy | ☺ | ☹ |
| Data dimensionality | ☹ | ☺ |
| Expressiveness | ☺ | ☹ |
| Monitoring continuity | ☹ | ☺ |
| Intrusivity | ☹ | ☺ |

- Support indirect, **behavioral** monitoring
- Integrate/complement clinical monitoring

# Which sensors ?


Blood pressure


Bodyweight scale


Blood glucose


Blood oxygen

CLINICAL


Motion (PIR)


Bed occupancy


Door/window

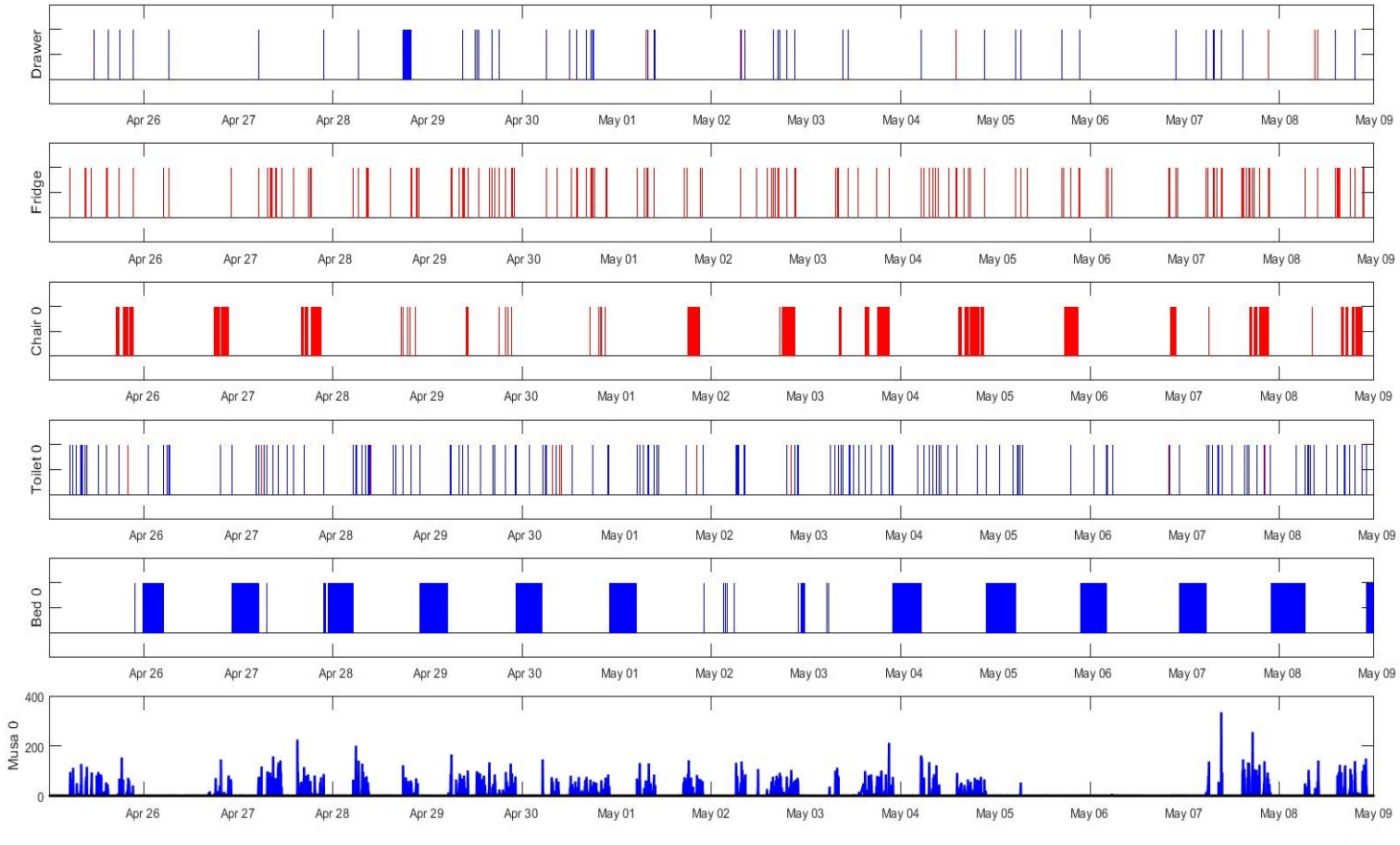

Appliance power


Toilet


Chair occupancy

HOME

# Sensors output




Food drawer

Fridge

Chair

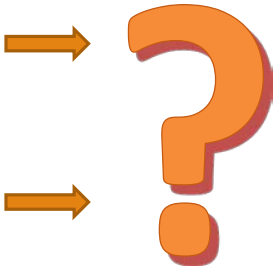
Toilet

Bed

Wearable

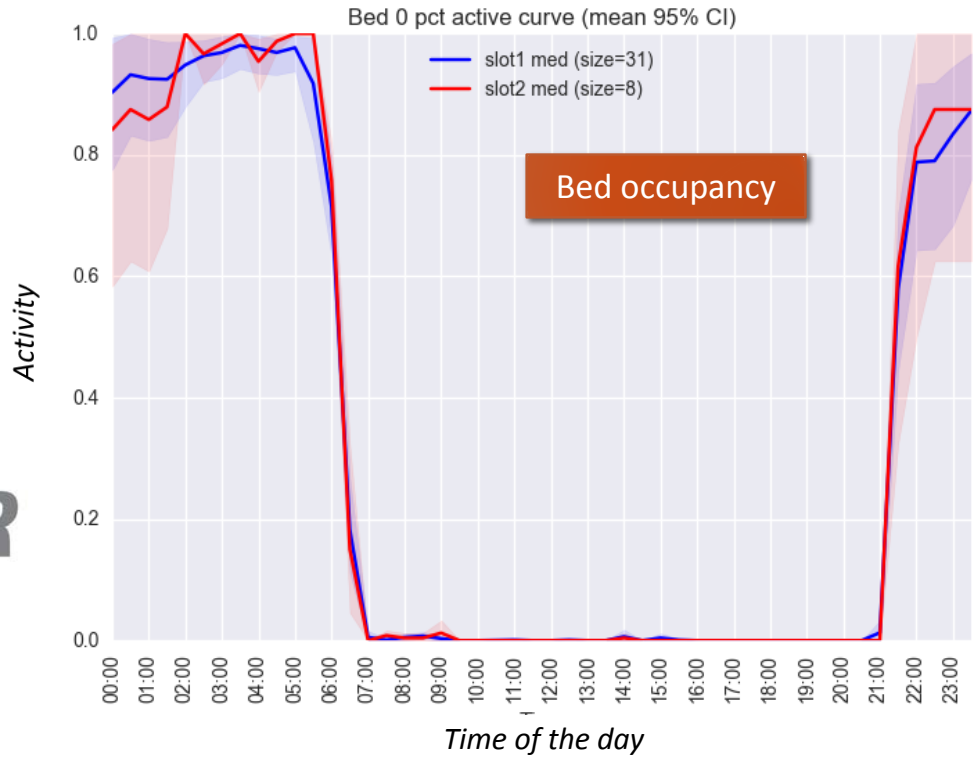
# Home sensors: data processing

| | | |
|---|---|---|
| Data accuracy | ☺ | ☹ |
| Data dimensionality | ☹ | ☺ |
| Expressiveness | ☺ | ☹ |
| Monitoring continuity | ☹ | ☺ |
| Intrusivity | ☹ | ☺ |



- Raw sensor data not suitable for direct inspection
- Need interpretation, fusion, visualization
- Large variability of human behaviors
- No absolute reference
- Relative changes are significant
- Anomaly detection
- Trend analysis

# Models




HELICOPTER

Looking for **shifts** in the **average** behaviour:

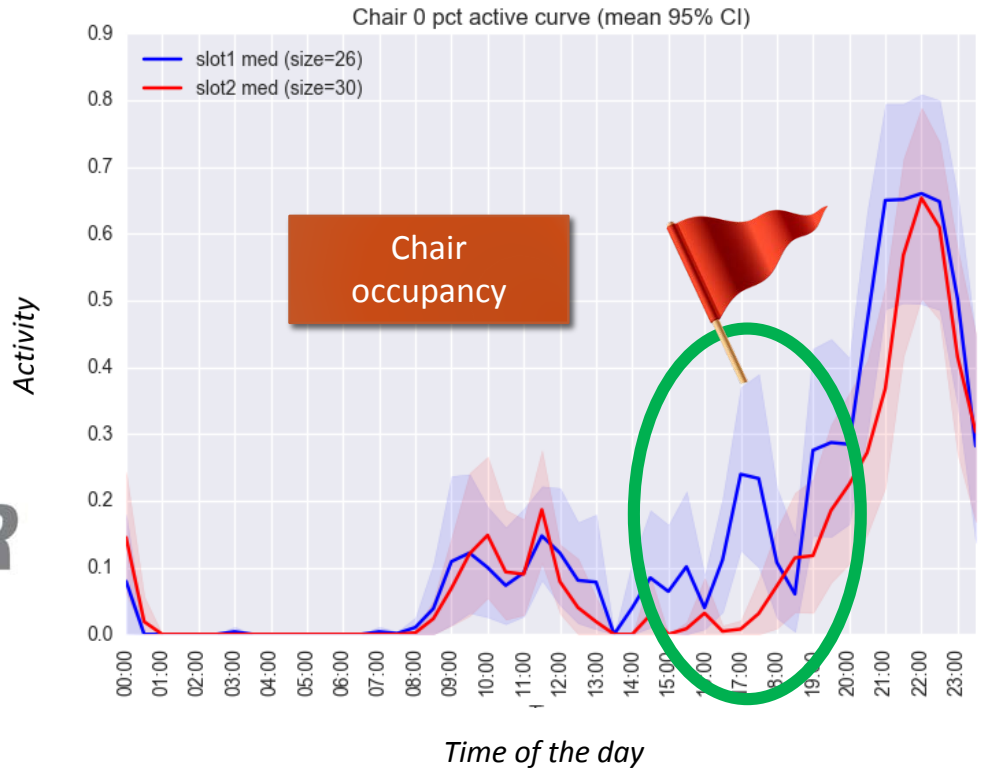
Each **point** in the solid curve represents the **expected (i.e. mean) active time** of the sensor within the time slice (30 min. in this case).

Shaded areas represent the **confidence interval** of the estimate

Two different months are compared (red vs. blue: no significant deviations is shown).

# Models

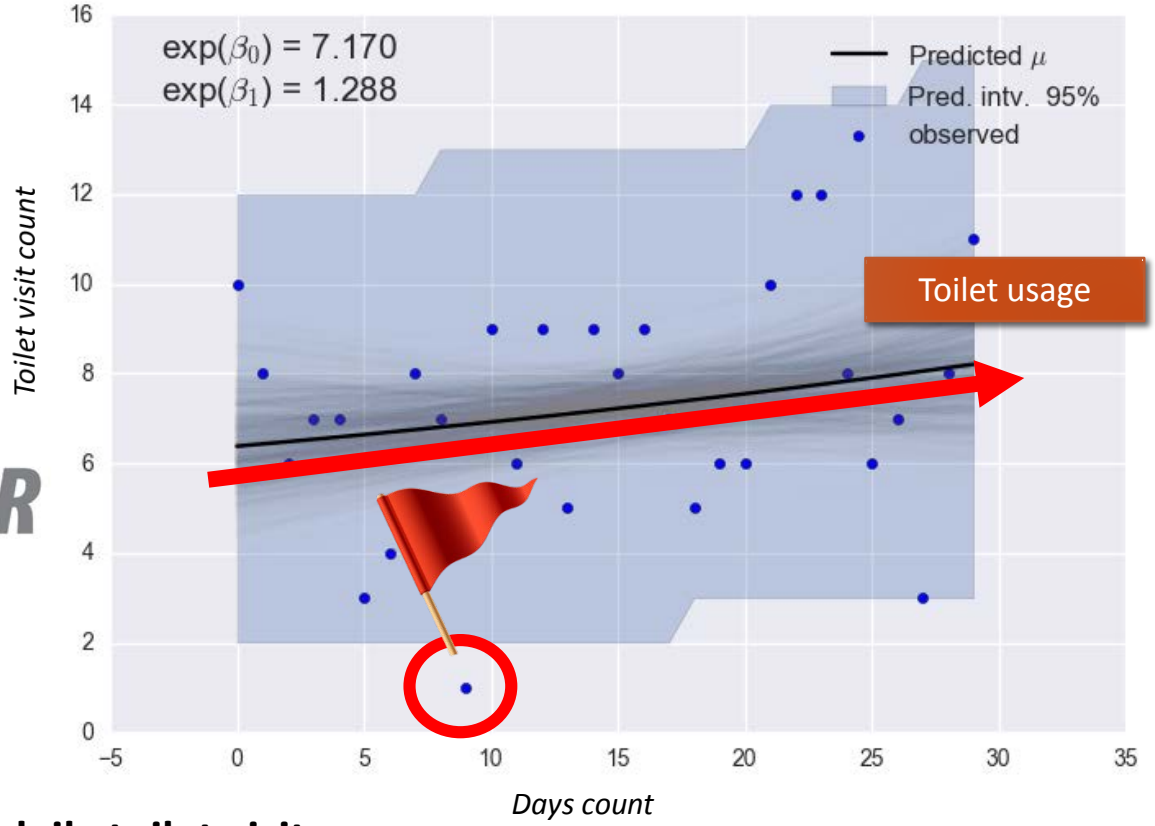
HELICOPTER




PROBLEM: How to automatically recognize meaningful behavioral changes (different from normal statistical fluctuations) ?

Differences in averaged behaviors exceeding confidence intervals

# Models




- Bayesian Poisson regression of **daily toilet visits**
- Solid black line: **predicted** average toilet visits (trend)
- Shaded blue areas: plausible prediction intervals (toilet visits)

- Trend analysis
- Anomaly detection

# ENSAFE platform - Design goals

- Scalability
  The platform should be able to scale to support the different flavours and actors of elderly healthcare in the EU

- Technical openness
  The platform should be able to integrate with different technical environments

- Commercial openness
  The platform should support, welcome and embrace third party suppliers and consumers and their business models

- Respect for the individual's wish and integrity

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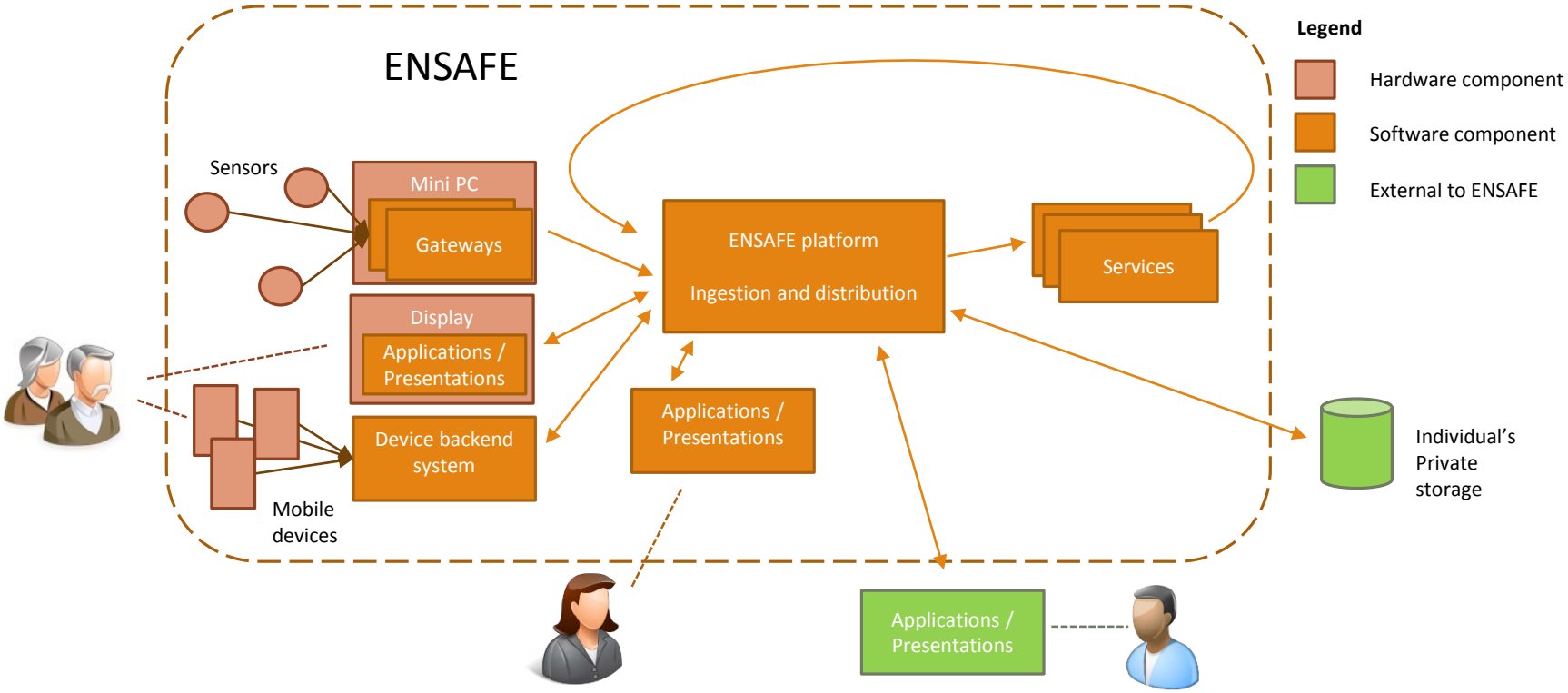
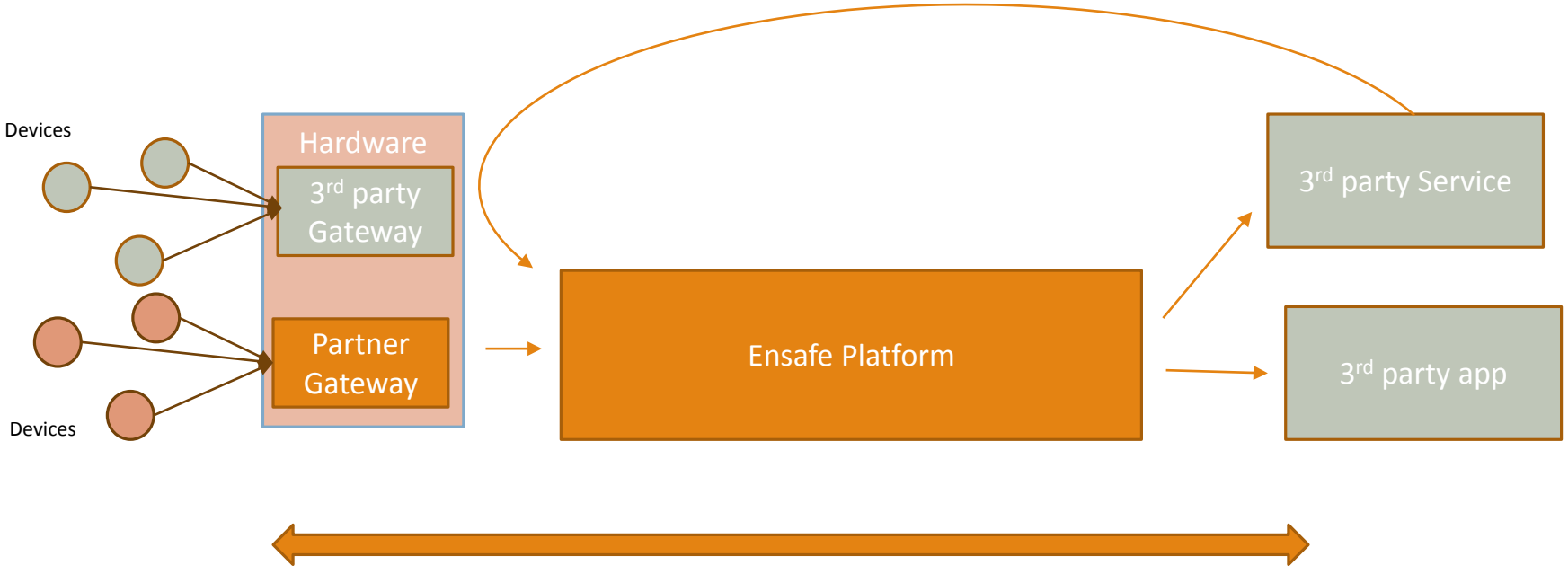
# ENSAFE platform – Ecosystem



# Platform open to 3rd parties




Scalability
Technical openness
Commercial openness

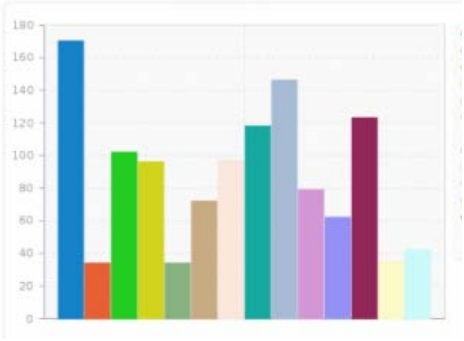
# Co-creation with users

- **Joint** methodology for case finding at beginning of the project..
- … resulted in a **large scale survey** among senior users…
- … which results were validated by **Focus Groups** in the different countries…
- … and will now be followed up with **Co-creation sessions**!

# Survey– set up

- Joint methodology for case finding set up by partners.

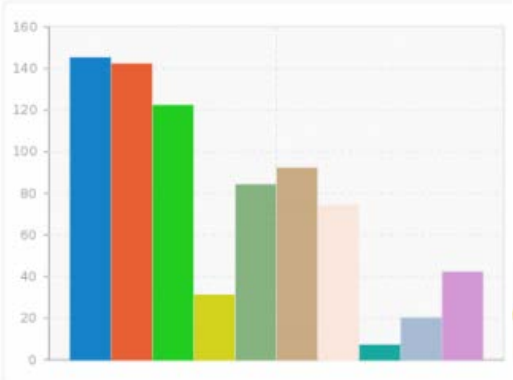
- Resulted in a survey including questions about the following topics:
  - demographic measures
  - technology use
  - daily activities
  - mobility
  - health conditions.



- 418 surveys from SE, IT, UK and NL (368 active responses).

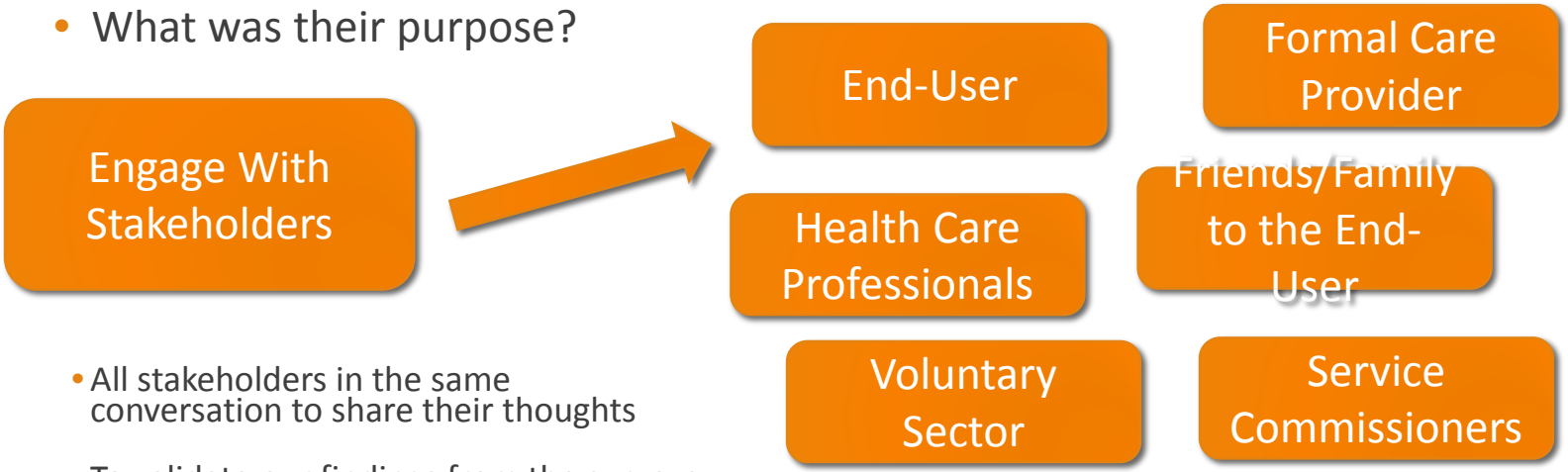
# Survey - results

- No be major differences between the countries concerning type of technology used by target group.
- Most of them perceive themselves as medium-level users (48%), followed by low level (25%)
- Technology used the most for contact with family and friends (71%), followed by email (57%) and browsing on internet (48%).
- Almost 50% of the participants indicate to experiences barriers when using technology.



# Focus Groups

- Set up of Focus groups in different countries
  - What was their purpose?




- All stakeholders in the same conversation to share their thoughts
- To validate our findings from the surveys
- To gain an understanding of what perceptions stakeholders held over technology, health and care in general and what they valued the most. How they deliver and receive care services.
- Both current and future states

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# Focus Groups

How?

Clean Language Techniques – Not Influencing Answers

Laddering – Making sure we get to the root cause/idea

We used ICE's Creative Graphic Scribes to capture a visual story


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# Focus Groups

- Results
  - How did we analyse the conversations?
    - The responses of participants who took part in the focus group were transcribed and analysed using an iterative and well-documented thematic analysis approach.
    - From this a 31 page report was created

# Focus Groups

- Results
  - A common understanding of ‘Care’
    - It is personal and human
    - It is putting somebody else’s needs ahead of your own
    - The importance of having face-to-face contact

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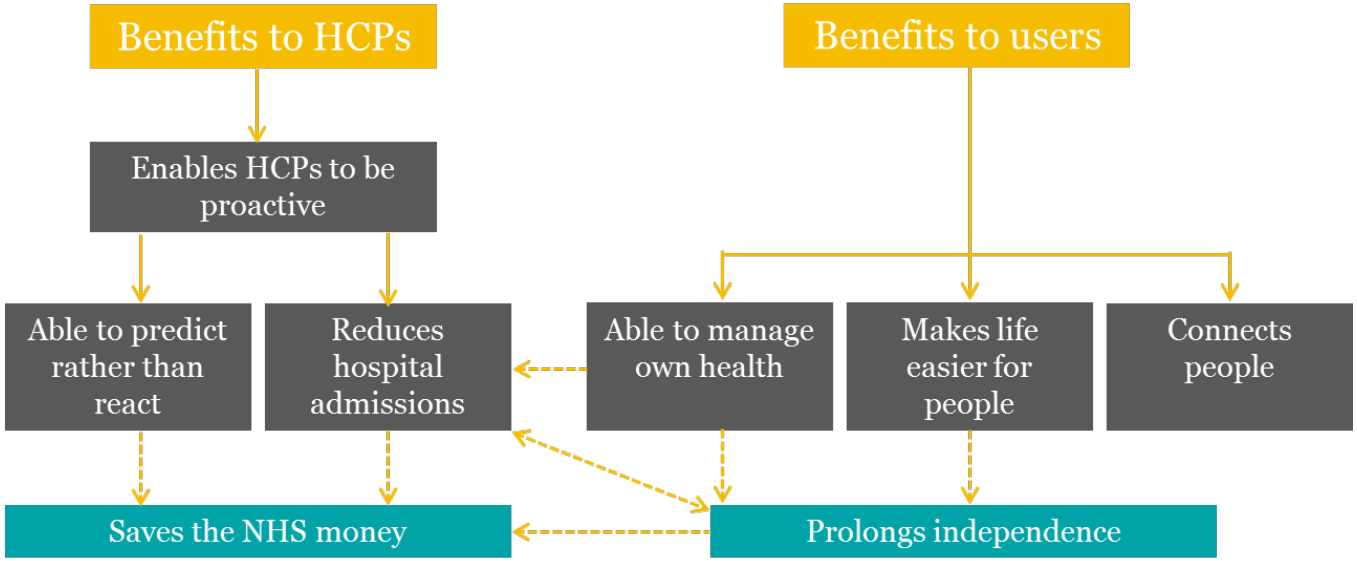
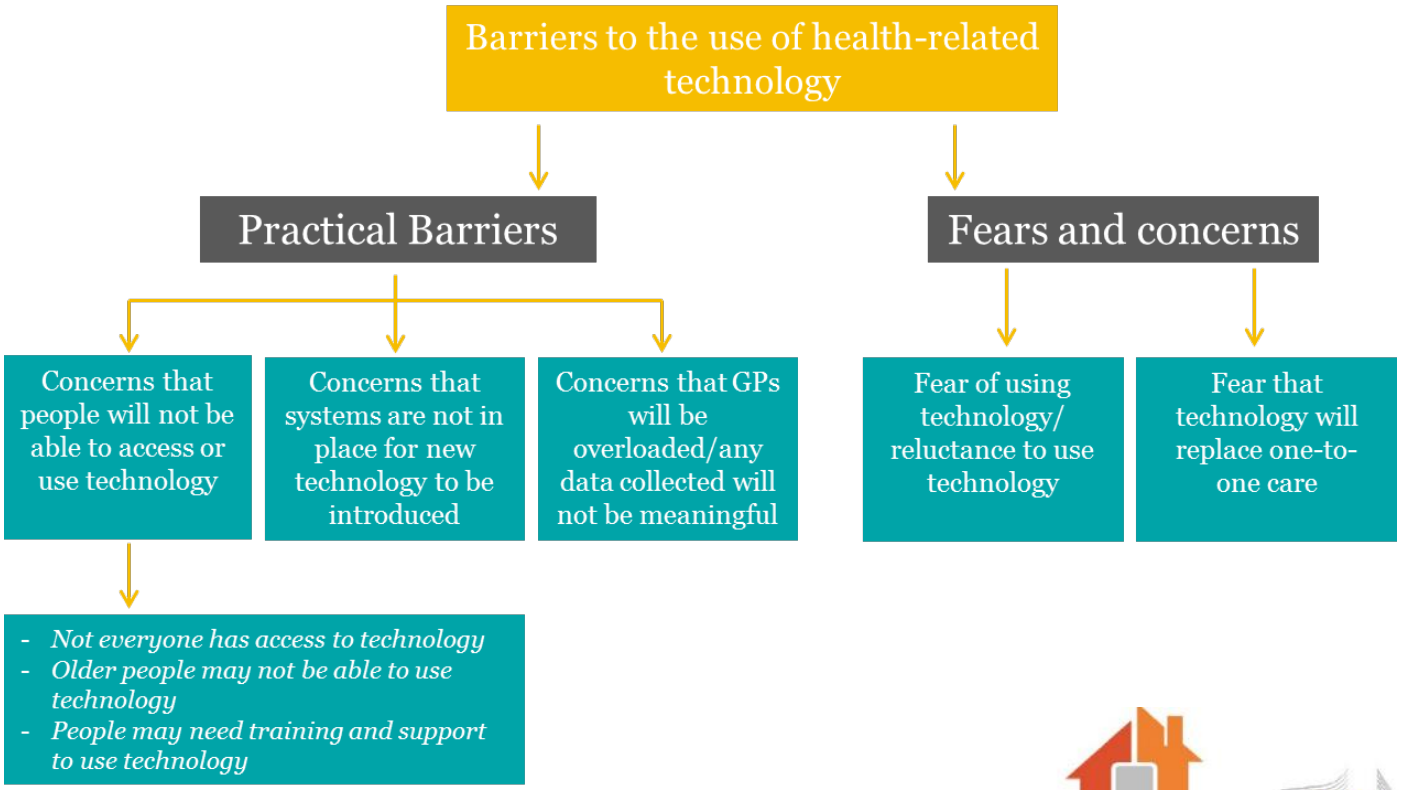
# Focus Groups

- Results
  - The benefits of introducing technology



# Focus Groups

- Results

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# Focus Groups


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# Part 2: Co-creation session

# Different roles in innovation

- Different stakeholder have a different role in innovation
- In the context of healthcare this stakeholder network is complex and we need strategies to align these
- By looking through the eyes of someone else you might get new ideas and perspectives on your own idea

# Different roles in innovation

- Divide into five groups based on your role:

- Industry/Companies
- Knowledge institutes
- Family members/users
- Government/Municipality
- Care organisations

# Round 1: The platform

*The ENSAFE offers services and products that should grow with the individual situations of users. To achieve this the solutions should be **usable**, **affordable**, and **fitting with current practises.***

*Discuss:*

- *Introduce yourself to each other*
- *Share your first view on the stakeholder role*
- ***What would your stakeholder need or want this solution to be and why?***

# Round 2: The perspectives

*From the other stakeholders you probably heard a very different view on the ENSAFE system and service.*

*Discuss:*
*What where the conflicts with other stakeholder groups and how can we resolve them?*

# Thank you!

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