


# 5<sup>th</sup> Nordic Seminar on technical Measurement of Physical Activity and Sedentary Behavior

## SurPASS: AUTOMATING DEVICE-BASED MEASUREMENT OF PHYSICAL ACTIVITY

On behalf of the SurPASS team  
Nidhi Gupta



A construction worker wearing an orange hard hat and a high-visibility orange safety vest over a grey t-shirt is carrying a large wooden frame over their shoulder. The worker is looking upwards and to the right. The background is a blurred cityscape with buildings.

# **VISION**

*Device-Based  
Measurement system for  
surveillance and cohorts  
on MEANINGFUL  
24/7 Physical Behaviors  
FOR ALL*





# MEANINGFUL 24/7 DOMAIN SPECIFIC PHYSICAL BEHAVIORS

## WORK



SB



LIPA



MVPA

## DOMESTIC - LEISURE



SB



LIPA



MVPA



Sleep



# DEVICE-BASED MEASUREMENTS FOR ALL WHAT IS REQUIRED?



**LOW BURDEN**  
ON PARTICIPANTS AND ADMINISTRATORS



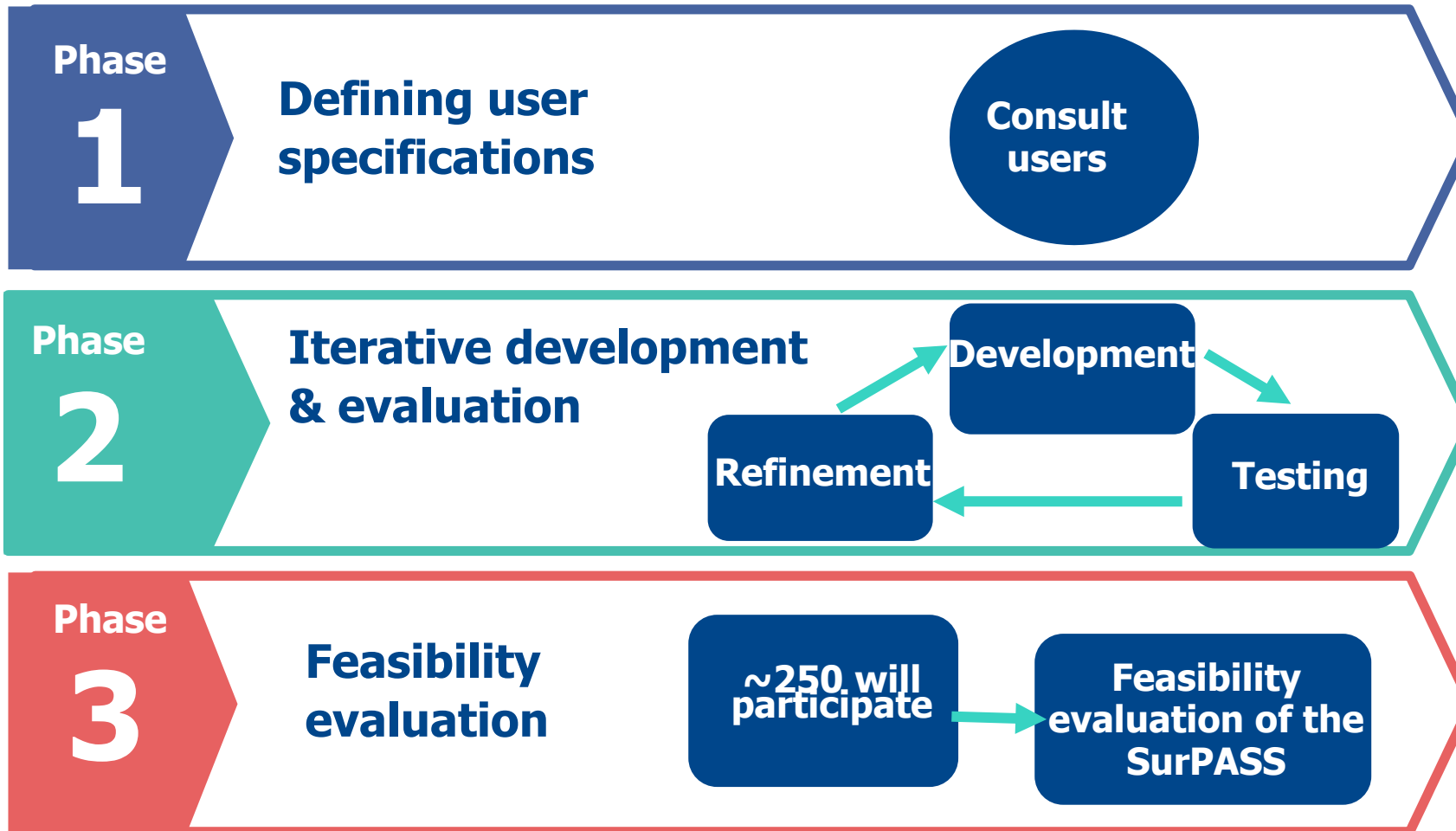
**DATA FLOW AND SECURITY**



**FLEXIBLE AND SCALABLE**



# DEVELOPMENT OF THE SURPASS SYSTEM







## The app

On participants  
phone

# THE SURPASS SYSTEM

NFA

Projekt  
Internal Test

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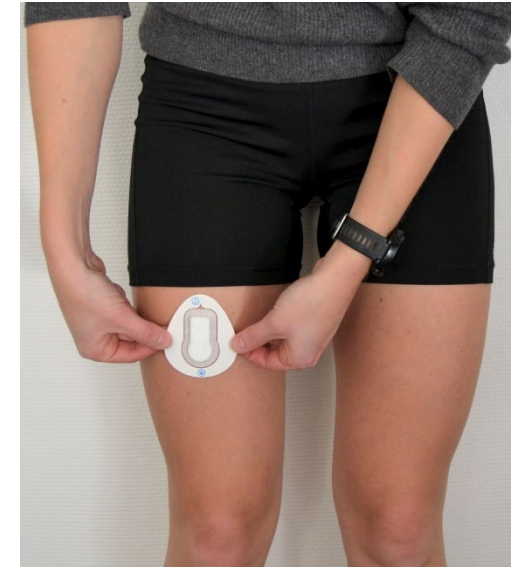
## The web-app

For researchers



## The backend

The brain of system



## The sensor

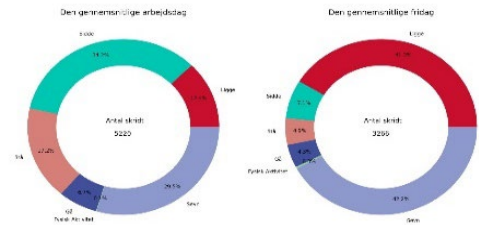
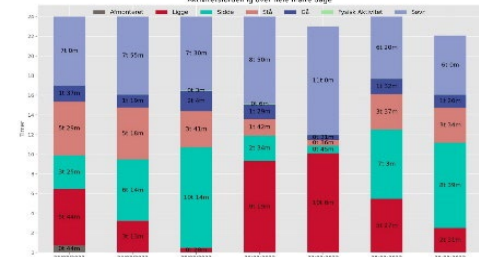
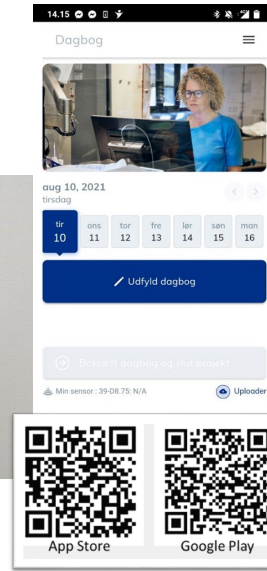
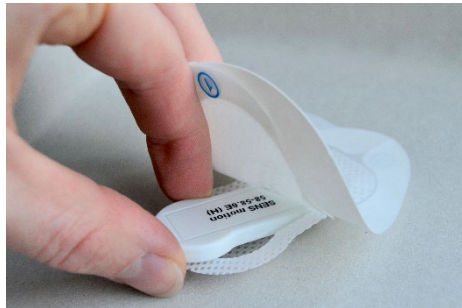
On participants body



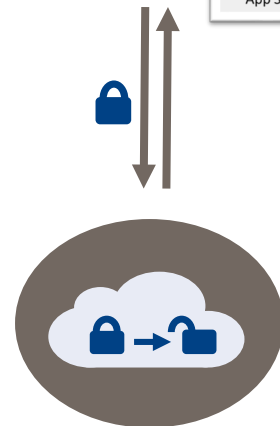
# THE SURPASS MEASUREMENT SYSTEM

- No battery charge
- Record for 3 consecutive weeks
- Cheap

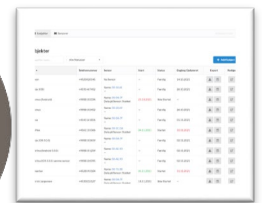
7 days measurements



- Fully automatic data processing
- Fully automatic data analysis



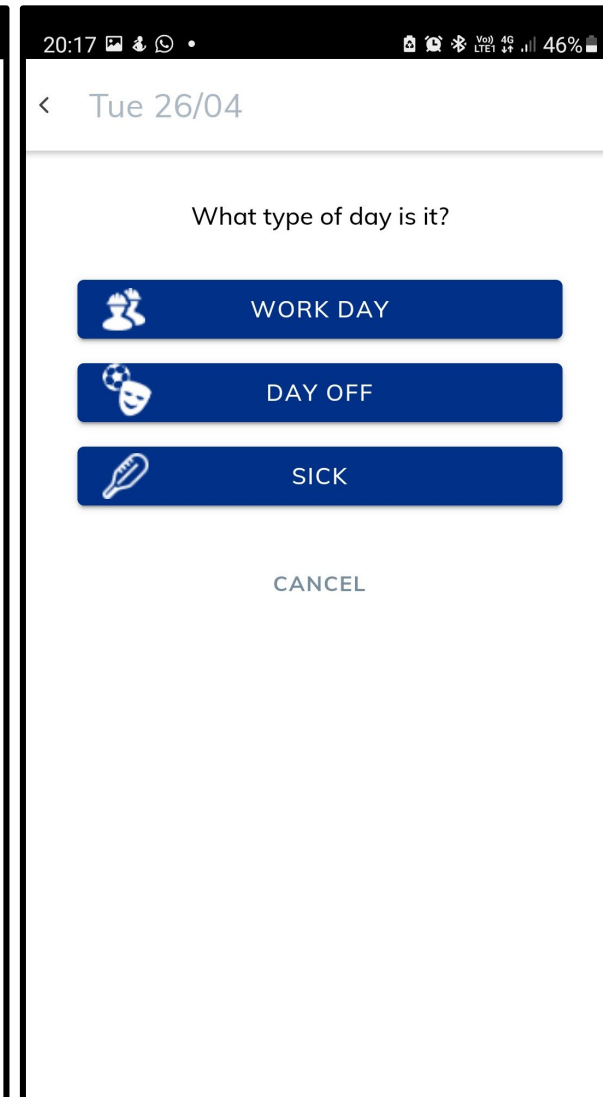
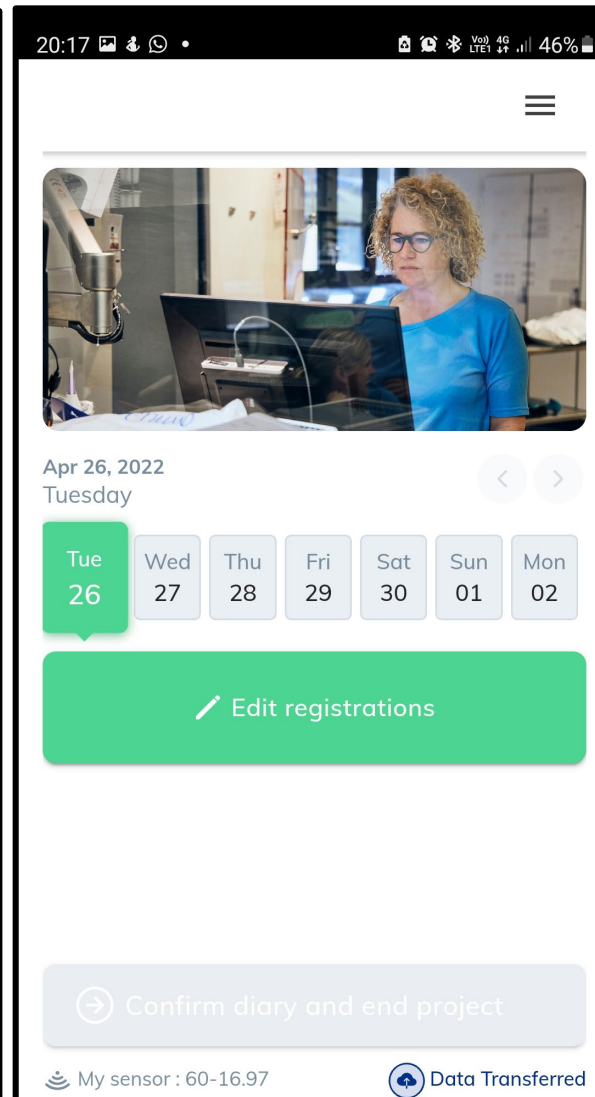
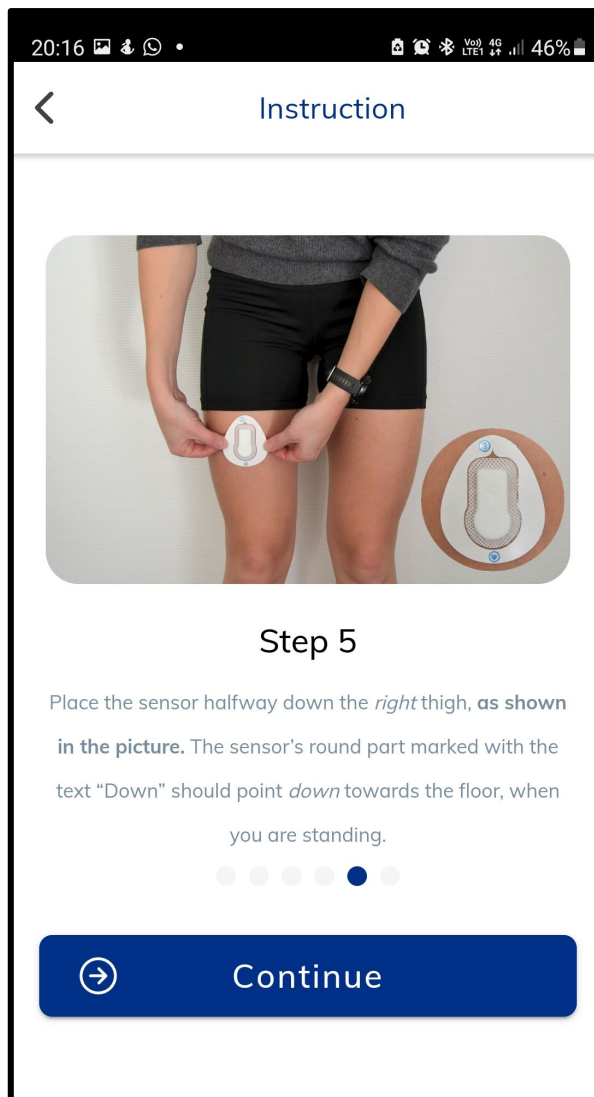
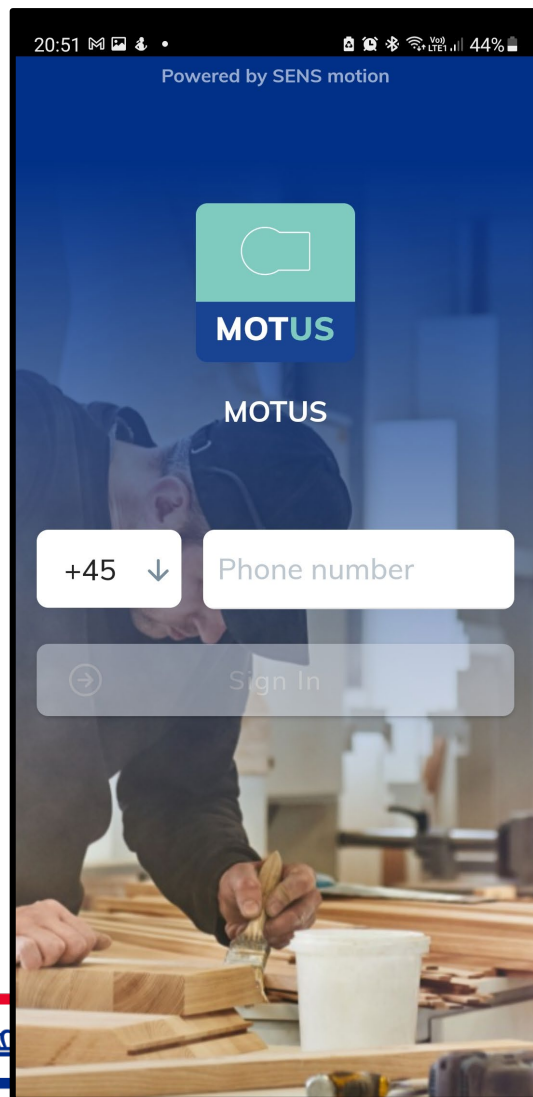
ActiPASS/Acti4



**Faster result generation**



# THE APP

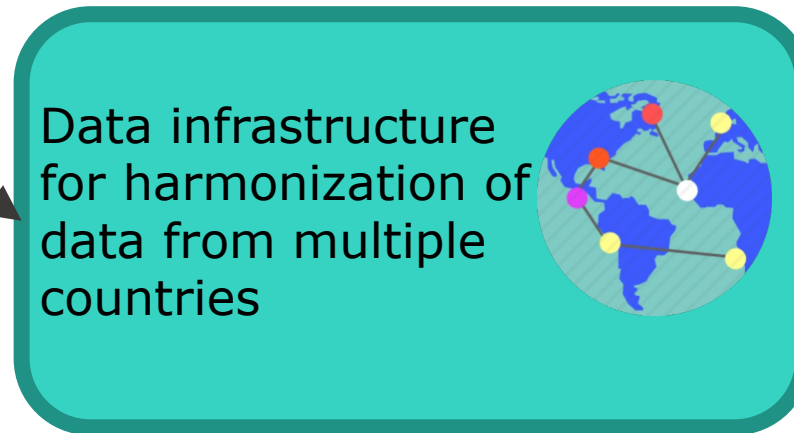
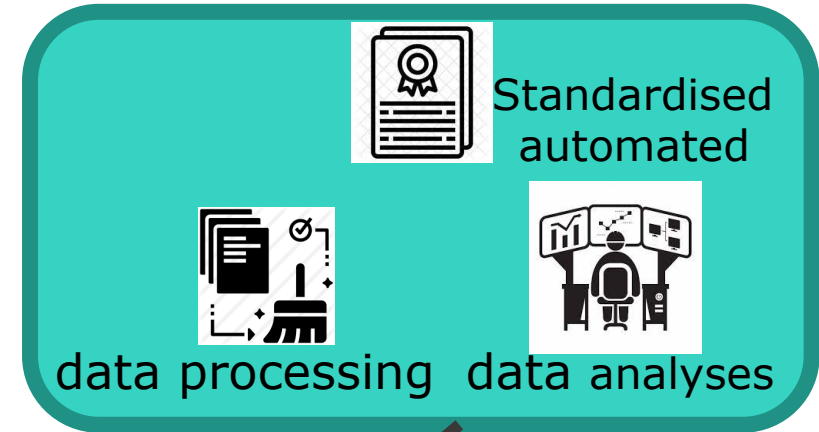




# UNIQUENESS AND NOVELTY

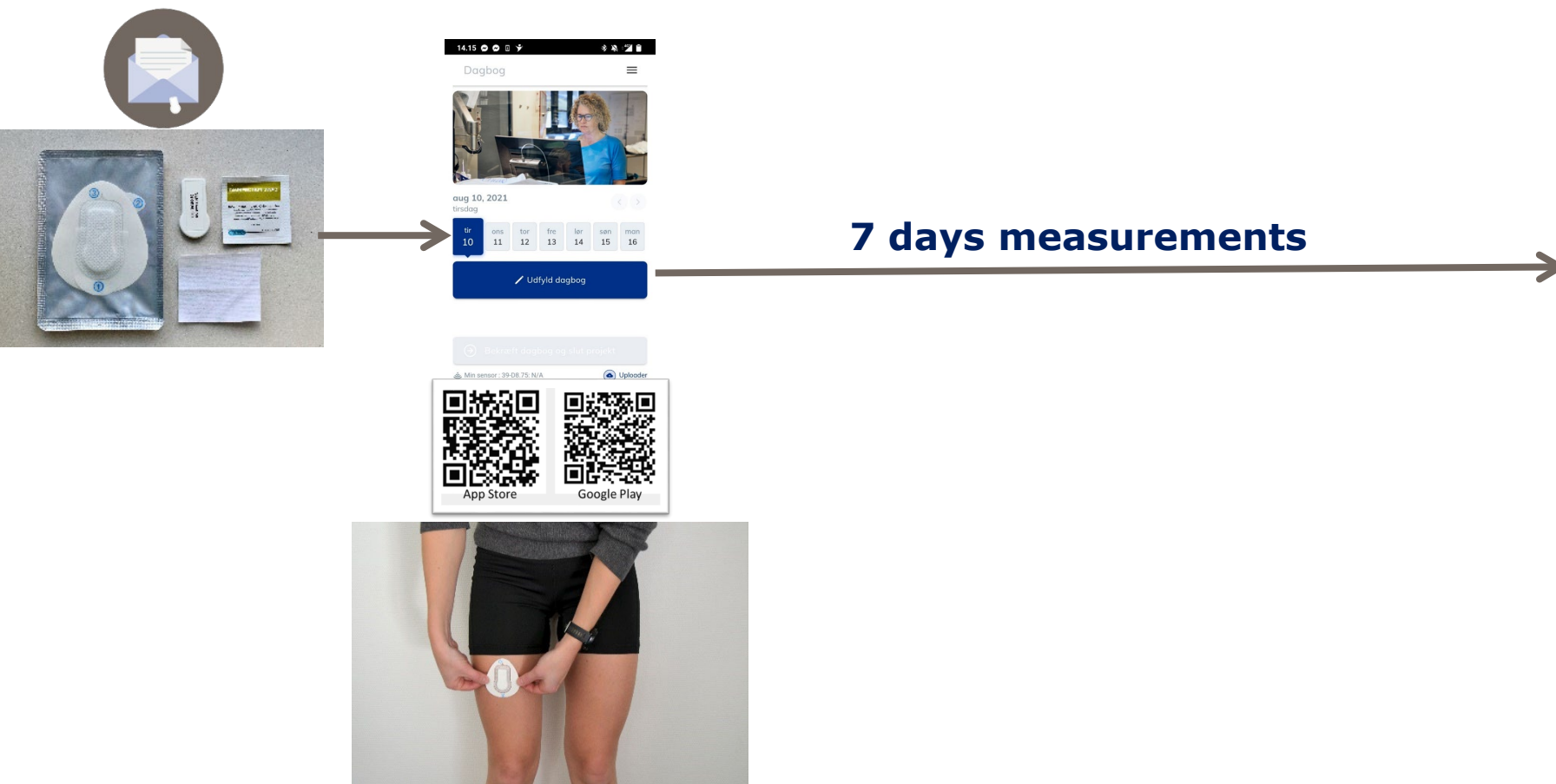


Back-end (the brain)





# USER PRE-FEASIBILITY TEST OF THE SYSTEM (N=38)



- Questionnaire
- Semi-structured interview

- Participant experience and expectations
  - Device attachment
  - App usage
  - Postage
  - Burden
- Administrator experience
  - Web-app
  - burden



# MOTUS STATUS AND ITS FUTURE

The system is in feasibility phase and is ready to go

**Denmark**

**Nordic/EU**

**Non-EU**

## Sensor and App



Danish  
English



Language  
translation  
needed



Language  
translation  
needed

## Web-app

English



Language  
translation  
needed



Language  
translation  
needed

## Back end



Country specific  
discussions needed



Country-specific  
discussions  
needed

*A cultural adaptation and a feasibility trial of the system should be conducted when used in various regions and countries in the future*



# Project Team

## National Research Centre for the Working Environment



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Nidhi Gupta



Patrick Joseph Crowley



Jon Roslyng Larsen



Rasmus Kildedal



Kristina Thomassen

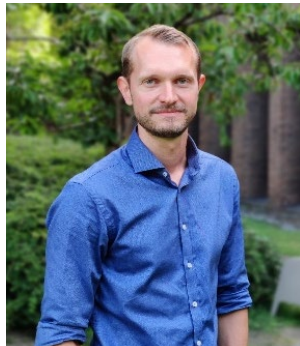


Tonje Pedersen

## SENS motion Denmark



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Uppsala University,  
Sweden



# Rebranding The System



**Work.  
Move.  
Measure.**



# Thank you

find more information about the project here:

[https://nfa.dk/da/forskning/strategiske-forskningsomraader/om-msb/om\\_msb\\_researchers](https://nfa.dk/da/forskning/strategiske-forskningsomraader/om-msb/om_msb_researchers)

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