



## Responsive Engagement of the Elderly promoting Activity and Customized Healthcare

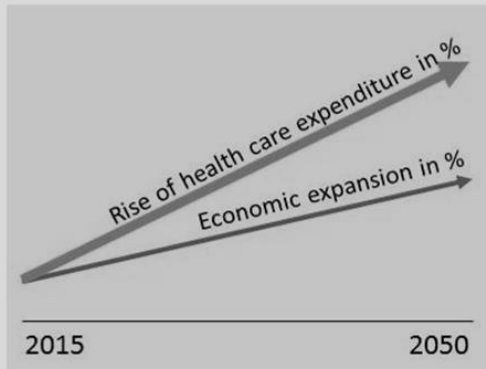
Horizon 2020: Industrial Leadership, PHC-21 2015: Advancing active and healthy aging with ICT: Early risk detection and intervention

# Cross-Domain Integration and Standardisation in the Project

Prof. Dr.-Ing. ThomasBock



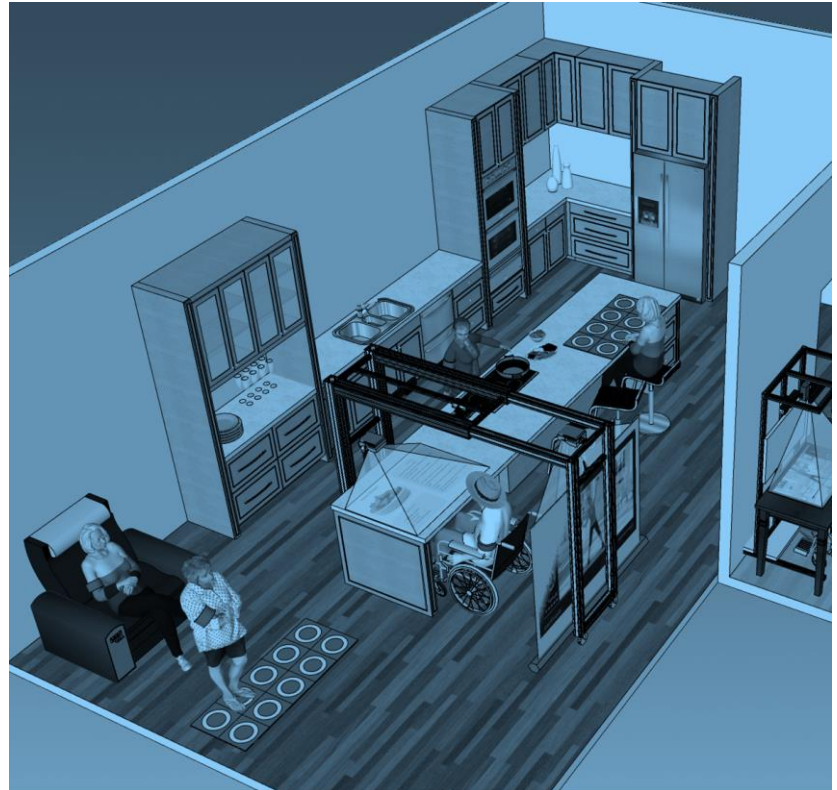
# New care environments for elderly counteracting skyrocketing health expenditures



Health expenditure vs. economic expansion in the EU by 2050

## Proactive care environments

- Sensing capability
- Machine learning/ AI
- Digital engagement
- Training and rehabilitation
- Socializing and nutrition



# Ecosystem Approach



Technische Universität München

Technical  
University of  
Denmark



Technische Universiteit  
Eindhoven  
University of Technology



ÉCOLE POLYTECHNIQUE  
FÉDÉRALE DE LAUSANNE

UNIVERSITY OF  
COPENHAGEN



Fraunhofer  
IAIS

ARJOHUNTLEIGH

GETINGE GROUP

ALREH<sup>®</sup>  
M E D I C A L

food innovations gmbh  
biozoon.



SmartCardia

sturm.



Hôpitaux  
Universitaires  
Genève



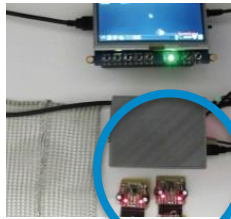
SCHÖN  
KLINIK  
Bad Aibling



LYNGBY-TAARBÆK KOMMUNE

# REACH Tool Kit: Techniques, Processes, Technologies + Combination Rules

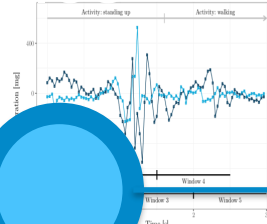
Digital elements



Ambient sensors



Wearable sensors



Machine Learning



User engagement techniques



Physical elements



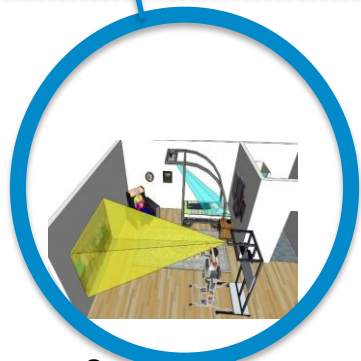
Gaming for ADLs



Technology guided physical activity



Personalised nutrition

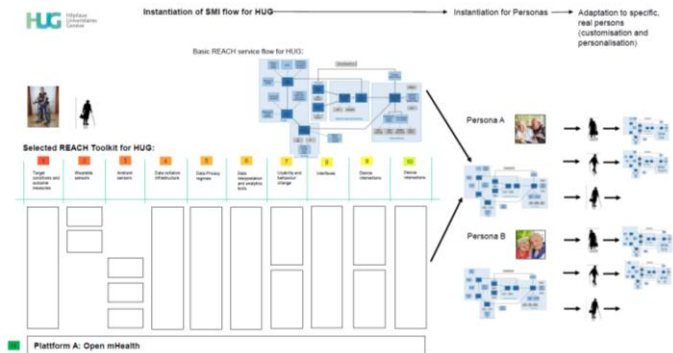
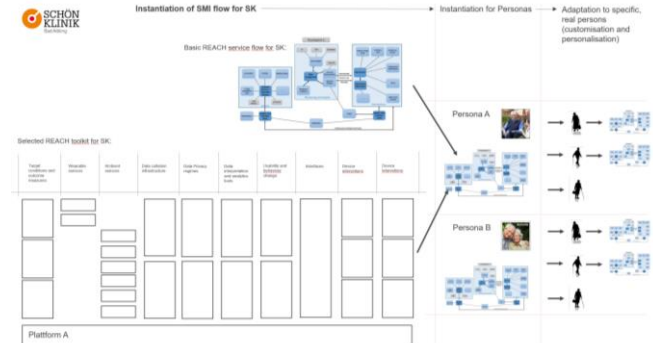
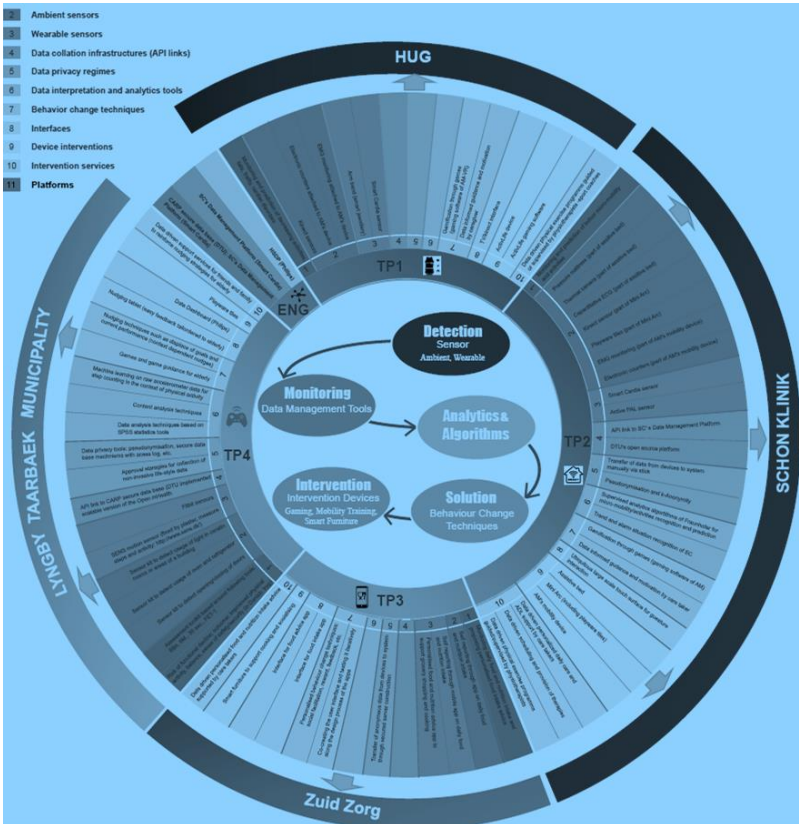


Smart Furniture

➔ Use case specific combinations within ecosystem



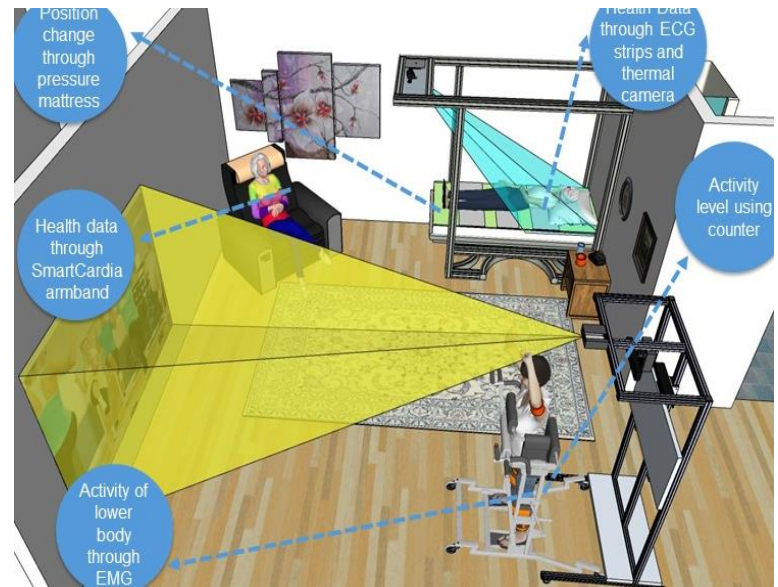
# REACH Tool Kit: Techniques, Processes, Technologies + Combination Rules



# Exemplary Combination of Toolkit Elements in 4 Touchpoints

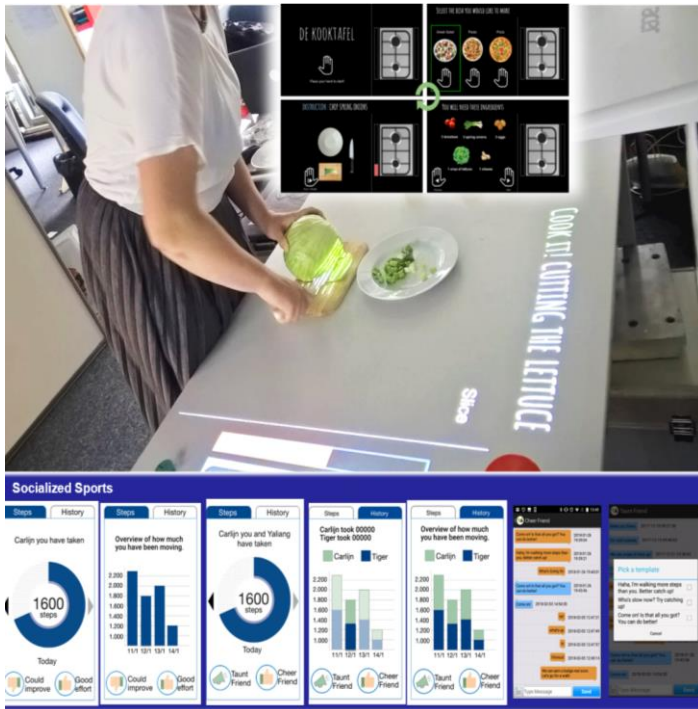


Geriatric hospital



Elderly rehabilitation facility

# Exemplary Combination of Toolkit Elements in 4 Touchpoints



Elderly community centers



Elderly home and day care

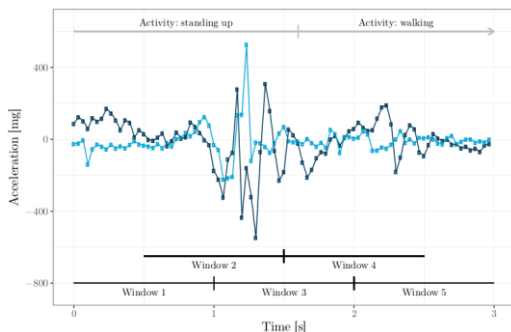
# Combination of various Machine Learning & AI Approaches for early Detection and Just-In-Time Interventions

Micro-Activities

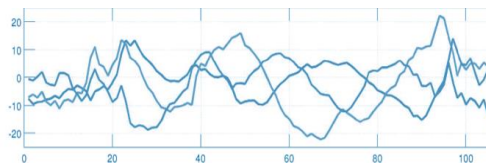


Macro-Activities

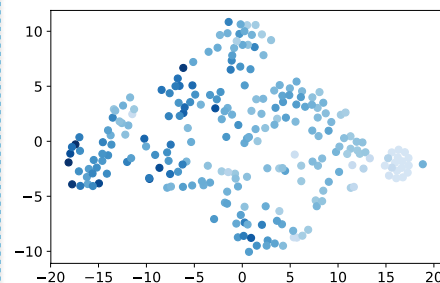
Activity & ADL recognition/  
prediction



Recognition/ prediction of  
trends of physical activity



Profiling and prediction of  
impact of interventions on  
specific persons





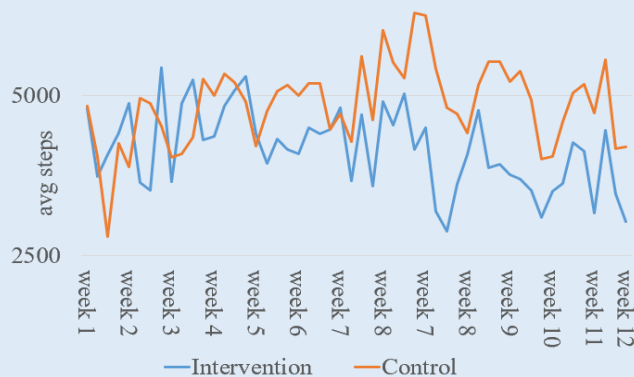
# REACH gathers Medical Evidence for Impact of REACH Solutions

## 9 week RCT Trial (n=29)

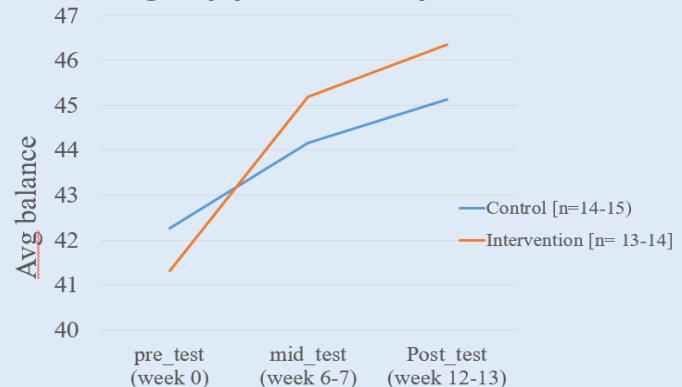
- Playful physical exercise with REACH
- Improving physical and functional abilities?
- Accompanied by changes in physical activities outside?



**Average steps per day: intervention (5159,49 steps): control (4853,80 steps)**

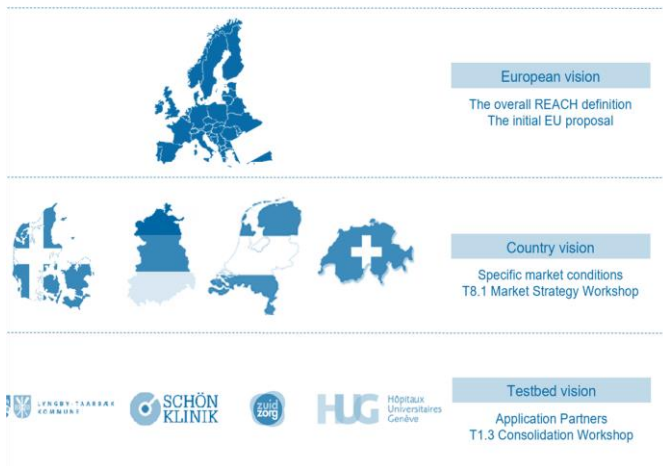


**Avg. BB scores of control and intervention group pre, mid and post test**



# REACH develops Business Models and Standardisation Elements

## Business models



→ Development of business mechanics for REACH solutions in the different EU countries and their specific reimbursement systems

## Standardisation

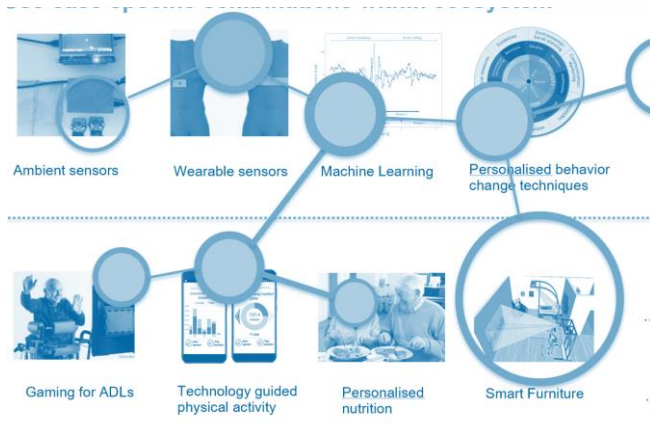
Contribution to...

- ISO TC 314 Ageing Societies (TUM: convener of working group; DIN: secretary)
- IEC SyC Active Assisted Living
- German National committee NA 023 BR-01 SO Alternde Gesellschaften

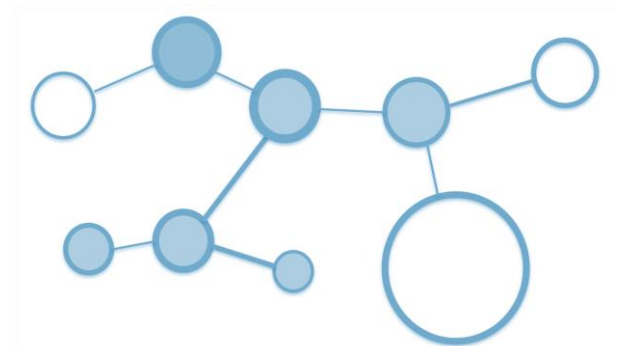
→ Promotion of the inclusion of digitalization-/technology- based proactive and predictive approaches in standardisation

# REACH serves as a Prototype for a new Generation of highly interdisciplinary Standardisation Areas

## REACH “Ecosystem Approach”    ISO TC 314 “Ecosystem Approach”



→ REACH specifies a board array of elements, knowledge, and rules about their combination for specific solutions for ageing people in REACH Touchpoints and use case settings



→ ISO TC 314 specifies elements, rules, best practices (including the interlinking of existing standards) for the integration of solutions cross stakeholders to create age inclusive communities (work, dementia, etc.).

# REACH's Advantages of contributing to Standardisation

With the contribution to the various standardization committees, REACH gains...

- 1. Identification of worldwide trends and markets**  
(e.g. dementia and ageing workforce state new potential REACH targets providing scale-up possibilities).
- 2. Place elements in guidelines/standards that can create a “market pull” for REACH solutions on a worldwide level**  
(including emerging markets such as Asia soon and Africa later) to achieve a faster scaling up.
- 3. Create and standardise interfaces to potential elements / players outside REACH** allowing a **market oriented** research and development of even more comprehensive ecosystem solutions in the **FP 9 for future economies of scale.**

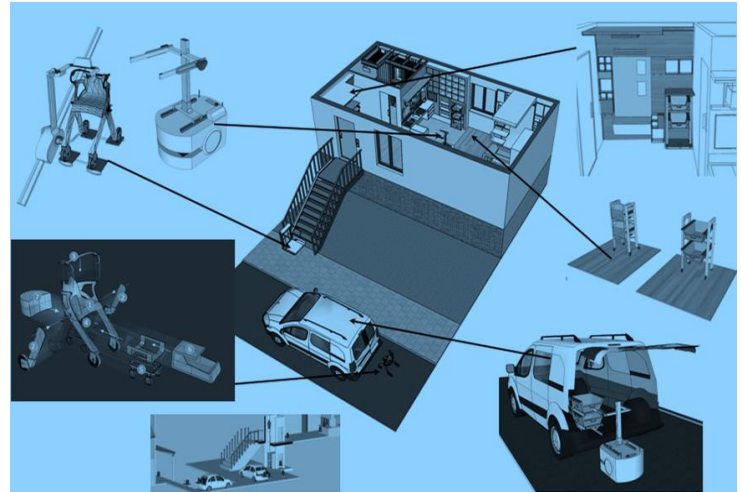


# What is next? Transfer of REACH solutions to new areas...

## Health promoting/facilitating New Work environments



## Health promoting/facilitating mobility and liveable cities



**This project has received funding from European Union's  
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**RESPONSIVE ENGAGEMENT OF THE ELDERLY  
PROMOTING ACTIVITY AND CUSTOMIZED HEALTHCARE**

**WWW.REACH2020.EU** 