

A large, complex network graph with nodes and edges in various colors (red, purple, blue, green, yellow, orange) overlaid on a map of Denmark. The nodes are of varying sizes and colors, and the edges are thin lines connecting them.

Technical University of Denmark

ENGINEERING SYSTEMS

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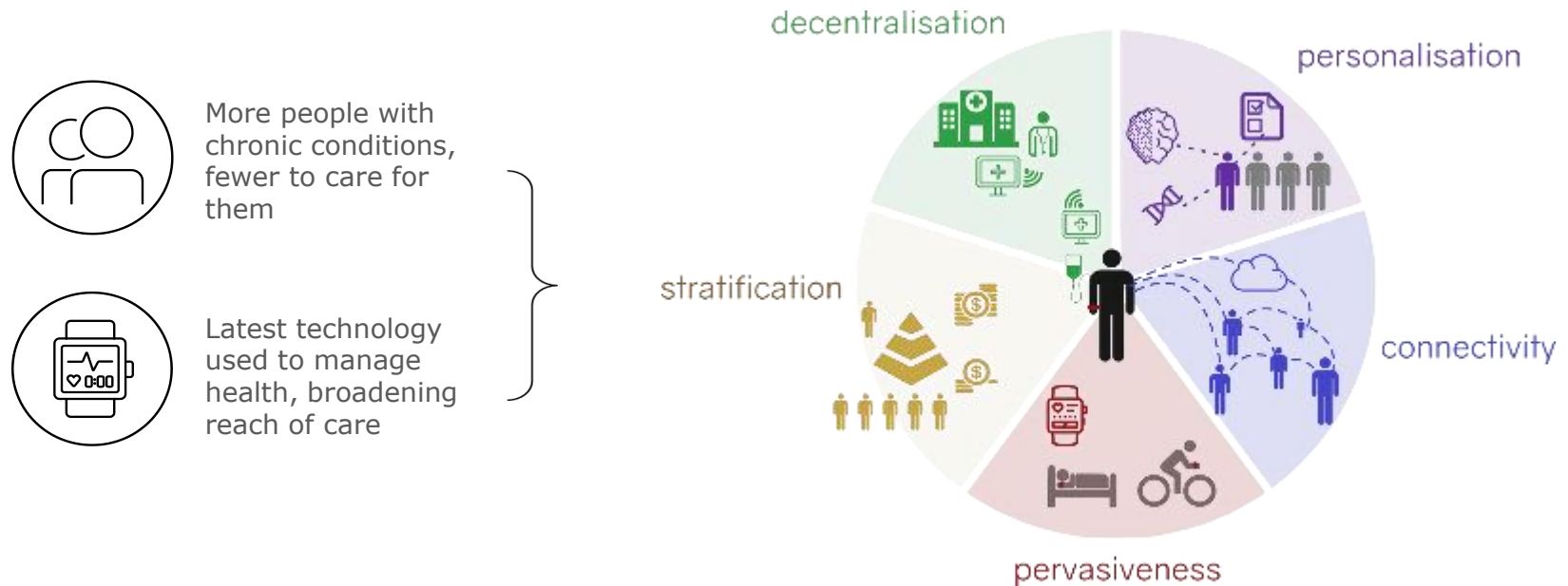


Francois Patou
Postdoc



Hysse B. Forchhammer
Leading Neuropsychologist

Engineering better health and care



Patou, F., & Maier, A. (2017).
 Engineering Value-Effective Healthcare Solutions: A Systems Design Perspective.
 In *Proceedings of the 21st International Conference on Engineering Design (ICED17)*, Vol. 3: Product, Services and Systems Design (pp. 31-41). Design Society.

16 April 2018

Themes

Research Projects

- > The Artificial Pancreas
- > EEG-based Alzheimer Diagnosis
- > RADMS
- > GazeIT
- > Detection of mortality after cancer surgery
- > MDNARCA II
- > Motivating Physical Activity
- > SCAUT
- > Sound & Health
- > Smart Wearables for Dementia Monitoring
- > REACH
- > REAFEL
- > Biometric Healthcare Research Platform
- > The Play-Fry Trial
- > TEAM
- > RACE
- > Research Hub for Digital Enhanced Living

PhD Projects

Studies

Publications



Engineering Systems Design in Healthcare: Smart Wearables for Dementia Monitoring

Smart wearables are capable of both supporting people with dementia and generating data about their behaviour. This project explores how this could be leveraged in a connected care system to enable active ageing.

Background

Smart technology and wearable sensors are growing in popularity and being woven into our everyday lives. Concurrently, the population is ageing, giving rise to challenges such as an increasing prevalence of dementia. This motivates us to harness the capabilities of smart wearables in addressing such challenges. Already, our smartphones and smartwatches are able to provide intelligent reminders, guide us home, enable us to engage with friends and family, and monitor aspects of our wellbeing. This functionality is well-suited to improving independence and quality of life among the elderly and cognitively impaired; however it is the young and healthy who are adopting these products. We are therefore interested in exploring how wearables might be adapted to match the needs and capabilities of the dementia care network, and integrated into care practices. In doing so, we hope to guide designers and other stakeholders towards realising this vision of a connected care system.

Project Objectives

The first phase of the project focuses on gathering information to understand the needs of the dementia care network and relating these to functionality offered by existing smart wearables. An outcome from this will be a basic

PARTNERS

- > DTU Management Engineering
- > Dementia and Memory Clinic...
- > VhTek - Videncenter for hj...

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explore how existing smart technology could be adapted and implemented in practice for personalised, connected dementia care



<http://www.es.man.dtu.dk/research/phd-projects>

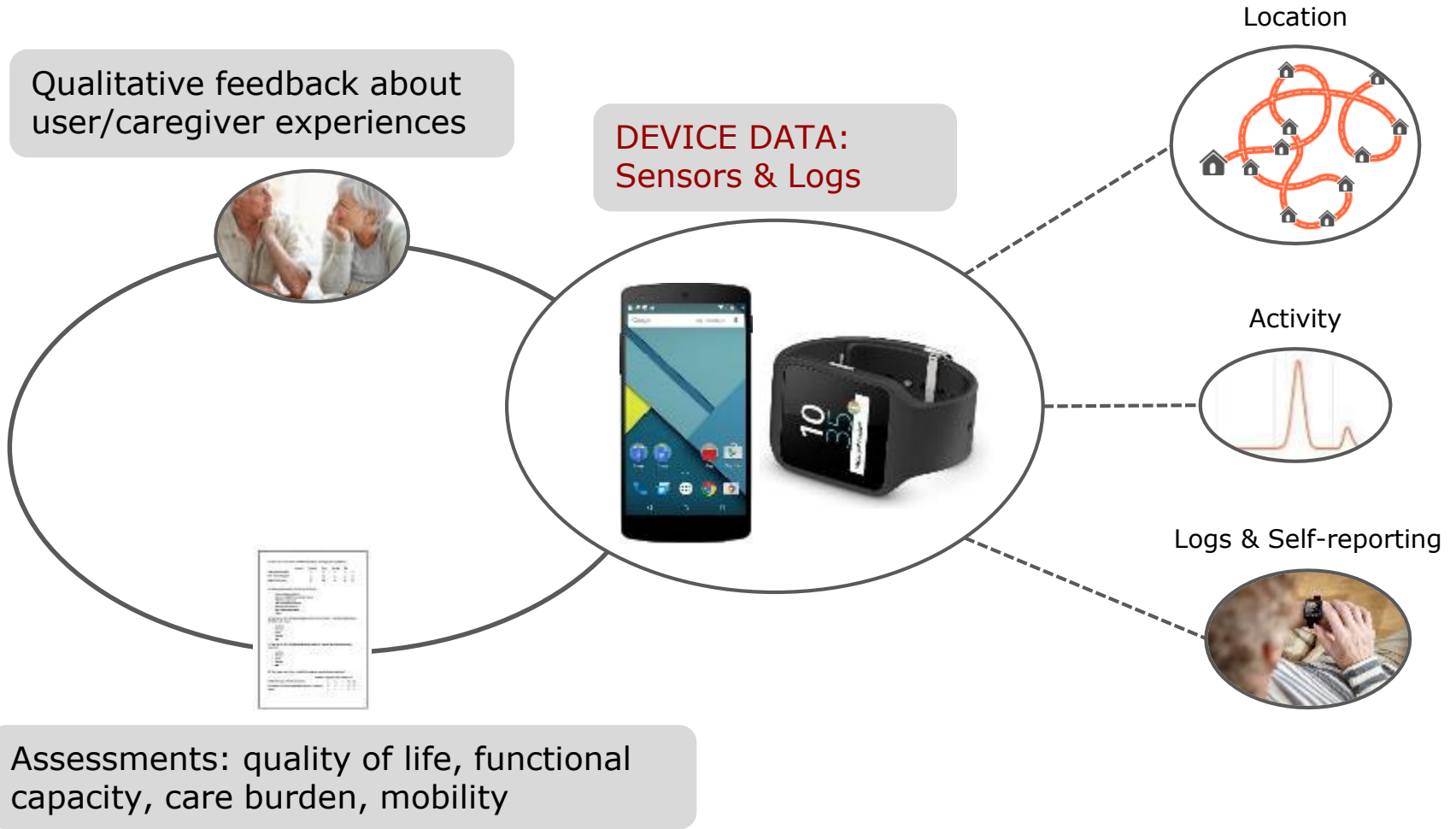
AWEAR

Adapting wearable technology for monitoring and support in everyday life with dementia

Julia Rosemary Thorpe, PhD Student



AWEAR



Vision: sensing behaviour to improve care

Maintain independence and quality of life:

- Support cognitive rehabilitation from early on
- Timely detection of events and decline
- Targeted intervention

Adapting wearable technology for the elderly with dementia

Kristoffer Rønn-Andersen,
Design and Innovation

Paulia Bien, Computer
Science

Supervisors:

Professor Anja Maier

Julia Thorpe, PhD Student

Ali Gürcan Özkil, Assistant
Professor, PhD

Partners:

Rigshospitalet-Glostrup

VihTek

PhD Project Period:

Sep 2015 – Feb 2016

- Create a prototype to support users with dementia using existing technology: smartphone, smartwatch & apps



- Evaluate the prototype: meeting the needs of people with dementia, technical viability, usability and technology acceptance



Communicating eHealth data in dementia care

Patrick Leese, Digital Media Engineering

Supervisors:

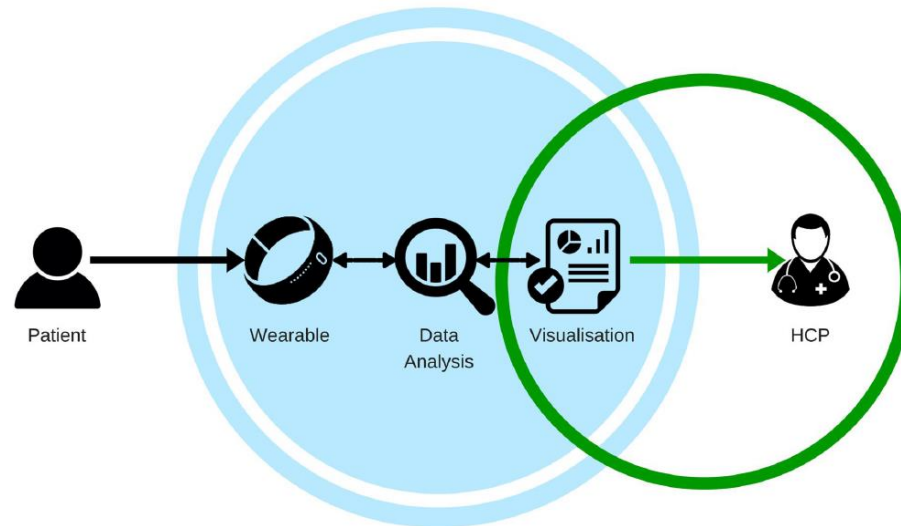
Professor Anja Maier
 Julia Thorpe, PhD Student

Partners:

Dementia and Memory Clinic, Rigshospitalet-Glostrup
 Fertility Clinic, Rigshospitalet

PhD Project Period:

January – May 2016



[Prototype: web portal](#)

Personal healthcare technologies:

Healthcare international research competition

System design considerations in crowd-sourced mHealth for cognitive rehabilitation



+ mattress sleep tracker



Day time physical activity
Cardio; Weight; Stretching



Night time
Quality of sleep, duration, phases



Cognition

- 6 finalists. Leading universities. DTU Engineering Systems only European
- Pilot study – April 2017-January 2018; >50 participants recruited & equipped
- 2 winners announced in mid 2018 + potential full study sponsorship

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Thank you!

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DTU Management Engineering
Rigshospitalet-Glostrup
VihTek - Videncenter for hjælpemidler og
velfærdsteknologi

External links:

www.cachet.dk/research/projects/wearables-for-dementia
www.regionh.dk/vihtek/Sider/smartwearables

