



# Accelerating innovation activities by integrating healthcare professionals

## Initiative 5: Cochlear implants digital aftercare



This project is funded by Interreg Deutschland-Danmark with money from the European Regional Development Fund.

## **Authors**

Thomas Huynh, Kiel University, Institute for Innovation Research, Chair of Technology Management (CAU)

Carsten Schultz, Kiel University, Institute for Innovation Research, Chair of Technology Management (CAU)

## **Access & Acceleration**

### **Lead partner**

Horst-Günter Rubahn  
University of Southern Denmark  
Mads Clausen Institute  
Alsion 2  
6400 Sønderborg, Denmark

Email: [info@accessinnovation.eu](mailto:info@accessinnovation.eu)  
[www.accessinnovation.eu](http://www.accessinnovation.eu)

### **Project management**

DSN Connecting Knowledge  
Kiel, Germany  
[www.dsn-online.de](http://www.dsn-online.de)

## Accelerating innovation activities in the ideation and development process by integrating healthcare professionals

The objectives of this part of work package 4 were to improve the idea generation and acceleration of innovation activities in companies and organisations in the programme region through the intensive analyses of user requirements and market trends (as systematic technology forecasting). In order to achieve these overall goals, the CAU Kiel was collaborating with several companies in the programme region in scope of 8 different project initiatives. The objective within these project initiatives is to support companies in their innovation activities – particularly the ones with the most promising innovation potentials – through scientific investigation, while taking into account the needs and requirements of relevant stakeholders in the healthcare sector.

### Initiative 5: Cochlear implants digital aftercare

#### Cooperation partner

**The Cochlear Implant Center Schleswig-Kiel (CIC):** CIC is since 1995 a joint institution of the *Landesförderzentrum Hören in Schleswig* and the UKSH Kiel. The cooperation refers to the medical and therapeutic support of a hearing-impaired child or adolescent and that of a hearing-impaired adult starting with the diagnosis and the fitting with a cochlear implant to the basic therapy/follow-up therapy after the operation.

#### Background

The healthcare system is undergoing a transformation away from the paternalistic doctor-patient relationship toward a patient-centred care approach. Decision support systems can serve as a key driver in this change. They facilitate the collection of data on patients' medical health parameters and capture the knowledge of professionals for the standardisation and the conformity of care. Based on this, it is possible to outsource segments of the medical care, thus relieving the professionals. In the context of follow-up care for cochlear implant patients, day clinics are increasingly being pushed to their capacity limits, and some patients have to travel long distances for follow-up examinations. However, the division of labour also requires the willingness of patients to accept the transfer of medical services onto more general healthcare providers, as well as the acceptance of automated systems that partially replace the personal doctor-patient interaction and assign a greater role in care to patients and other stakeholders.

#### Aim and activities

In the course of a cooperation with the CIC, the patients' acceptance of different technology-based aftercare alternatives was investigated in an explorative evaluation process. For this purpose, the patients went through the regular aftercare process, a software-based aftercare alternative, which can be performed by external service providers such as hearing care professionals, and an app-based aftercare alternative, which the patients can perform independently. In the requirements analysis both the willingness of patients to carry out medical services themselves and the willingness to use the services of more general providers – in addition to the care in the expert centre – were investigated, as well as the preferences regarding the use and combination of automated systems. CAU Kiel benefited from the medical expertise and practical implementation capabilities of the CIC. On the other hand, CAU Kiel was able to contribute its expertise in different research methods in the field of patient-centred innovation research. The explorative study combined quantitative and qualitative methods in the form of expert interviews, observations and surveys to ensure more diverse and in-depth insights into the motives of patients regarding the acceptance of a decentralisation of medical services.

## Results

The findings of the quantitative studies show that the majority of patients are willing to take over medical services themselves or to have them performed by hearing care professionals. Regarding the perceived state of health and the personal characteristic of how long the patients have been cochlear implant users, a higher willingness of the patients to transfer medical services from the expert centre can be determined. In addition, patients tend to be open-minded with regard to the integration of automated procedures into their care. With regard to the willingness to innovate and the trust in technologies, a high acceptance behaviour of the patients regarding automated systems could be determined.

## Publications

Arndt-Rannow, M. (2021). Automated decision support systems in healthcare – An analysis of the acceptance of patients using the example of the telemedical aftercare in the Cochlear Implant Centrum Kiel – *Master thesis*.



## Key facts

- Total budget: 2.9 million Euros
- Around 1.7 million Euros funding granted by Interreg Deutschland-Danmark
- Project duration: April 2019 – March 2022

## Project partners

- Centre for Innovative Medical Technology (CIMT)
- Danish Life Science Cluster
- Kiel University, Institute for Innovation Research (Technology Management)
- University of Lübeck, Clinic for Orthopaedics and Trauma Surgery (University Hospital Schleswig-Holstein), Campus Lübeck
- University of Southern Denmark, Mads Clausen Institute
- University of Southern Denmark, Maersk Mc-Kinney Moller Institute

## Network partners

- Business Development Agency Kreis Plön GmbH
- Exoprosthetic network.SH
- Hochschule Flensburg
- Kalundborgegnens Erhvervsråd
- KiWi, Kiel Economic and Structure Development Corporation
- Life Science Nord Management GmbH
- ScanBalt
- Sorø Erhvervn, Sorø Kommune
- Syddansk Sundhedsinnovation