

SYMPOSIUM

Innovation and implementation of complex rehabilitation technology: state-of-the-art ideas and solutions/products

TUESDAY 20TH OF APRIL 2021

Interreg
Euregio Meuse-Rhine
European Regional Development Fund



Ministerium für Wirtschaft, Energie,
Industrie, Mittelstand und Handwerk
des Landes Nordrhein-Westfalen

AGENTSCHAP
INNOVEREN &
ONDERNEMEN

Vlaanderen
is ondernemen

Provincie Noord-Brabant



provincie limburg



In rehabilitation many novel technology innovations do not mature and are not implemented in rehabilitative care. These technologies could however facilitate increases in training frequency and intensity, assist the patient in home-training, or just offer support in daily life.

The Euregional network I2-CoRT is bridging this gap between healthcare, rehabilitation technology innovation and knowledge with the support of the Interreg V-A Euregion Meuse-Rhine programme (www.i2-CoRT.eu).

The project partners kindly invite you to an online symposium on state-of-the-art, ideas and solutions regarding innovation and implementation of complex rehabilitation technology:

Several keynote speakers will share their views with you on future developments and challenges in rehabilitation medicine and the growing importance of rehabilitation technology. The i2-CoRT partners and the cooperating companies will present to you the results from the i2-CoRT project related to the technologies and technology-assisted rehabilitation approaches that have been developed. Also the three i2-CoRT clinical test centres in the Euregion will present themselves. On the following pages you will find an overview of the symposium programme.

REGISTRATION

You can register for the symposium via the following website:

<https://www.i2-cort.eu/i2-cort-symposium-2021-registration/>

The symposium is free of charge, but registration is mandatory.

Please register before **April 17th 2021**.

Venue:

The i2-CoRT symposium will be online.
You will receive a link after confirmation of your registration.

Target groups:

This symposium will be interesting for all rehabilitation specialists, therapists, researchers, companies, organizations and patients concerned within this field.



RPE/AME

RWTH AACHEN
UNIVERSITY

CHU
de Liège

UHASSELT EDM

JESSA
ZIEKENHUIS

Maastricht University

PXL

TU/e Technische Universiteit
Eindhoven University of Technology
Where innovation starts

WeLL
Wellness in Health Living Lab

LIÈGE
université

Zuyd University
of Applied Sciences

ZU
YD

- 09.15** ● **Opening online platform**
- 09.30** ● **Welcome & Introduction**
Henk Seelen, PhD, Adelante Zorggroep, project leader i2-CoRT project, Hoensbroek, NL.
- 09.40** ● **Invited lecture: Future developments and challenges in rehabilitation medicine**
Henk Seelen, PhD, Adelante Zorggroep, project leader i2-CoRT project, Hoensbroek, NL.
- 10.00** ● **Invited lecture: Brilliant Failures: Working together, Failing together, Learning together**
Prof. Dr. Paul Iske, Maastricht University, School of Business and Economics, Maastricht, NL.
- 10.45** ● **Break**
- 11.00** ● **Invited lecture: Rehabilitation Robotics**
Prof. Dr. Dirk Lefeber, Free University of Brussels, Faculty of Applied Sciences, Department of Mechanical Engineering, Brussels, B.
- 11.30** ● **ReHab-TOAT: training approach, clinical feasibility and pilot study results**
Jule Elmanowski, MSc, Adelante Zorggroep, Hoensbroek, NL.
- 12.00** ● **Invited lecture: Wearable sensors for measuring physical behaviour in chronic conditions: current and future developments, applications and challenges**
Hans Bussmann, PhD, associate professor, Erasmus Medical Centre, Department of Rehabilitation Medicine, Rotterdam, NL.
- 12.30** ● **Break**
- 13.00** ● **Understanding patient arm-hand daily activity beyond the rehabilitation sessions**
Gustavo Rovelo-Ruiz, PhD, Hasselt University, Expertise Centre for Digital Media, Hasselt, B.
- 13.15** ● **Embroidered Inflatables: crafting soft actuators based on digital machine embroidery**
Bruna Goveia da Rocha, MSc, Eindhoven University of Technology, Future Everyday cluster of the Industrial Design Department, Eindhoven, NL.
- 13.30** ● **Development of the SitApp - A journey**
An Stevens, PhD, Maastricht University, Department of Research Engineering, Maastricht, NL; Steven Palmaers, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Innovation in Care, Hasselt, B.
- 14.00** ● **Break**
- 14.15** ● **Invited lecture: eHealth in mixed reality to monitor, train, and assist patients with gait limitations**
Melvyn Roerdink, PhD, Associate professor Technology in Motion, Free University Amsterdam, Department of Human Movement Sciences, Amsterdam, NL.
- 14.45** ● **Technical aids to assist training of complex (bimanual task oriented) skills in rehabilitation**
Eugene Rameckers, PhD, Adelante Zorggroep, Hoensbroek, NL; Cyriel Dreissen, MSc, Maastricht University, Faculty of Health, Medicine and Life Sciences, Maastricht, NL; Els Knippenberg, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Innovation in Care, Hasselt, B.
- 15.15** ● **Development of an innovative hand orthosis to boost neurophysiological recovery of the hand post stroke**
Sarah Meyer, PhD, Jessa Hospital, Rehabilitation centre, Campus Sint-Ursula, Herk-de-Stad, B.
- 15.30** ● **Down the kinematic chain: protocol to quantify effects of wearing a hand orthosis on upper extremity performance**
Hans Essers, PhD, Maastricht University, Department of Nutrition and Movement Sciences, NUTRIM, Maastricht, NL.
- 15.45** ● **Wrap-up**

PARALLEL SESSION A:

i2-CoRT Clinical test centres: 11:30 – 16:00 hours

09.15 SEE MAIN SESSION: Opening online platform

09.30 SEE MAIN SESSION: Invited speaker

11.30 **i2-CoRT portal: Gateway and Accelerator for Complex Rehabilitation Technology implementation**
Barbara Piskur, PhD, Zuyd University of Applied Sciences, Expertise centre for Innovative Care & Technology, Heerlen, NL; Ruud Bongers, MSc, Zuyd University of Applied Sciences, Engineering Academy, Heerlen, NL; Henk Seelen, PhD, Adelante Zorggroep, Hoensbroek, NL.

12.00 SEE MAIN SESSION: Invited speaker

12.30 Break

13.00 **Demonstration of test centre at Centre Hospitalier Universitaire in Esneux**
Lara Marquet, MSc, David Servais, MSc, Université de Liège, KAPLAB - Department of Motricity Sciences & Physical Therapy and Rehabilitation, Esneux, B.

13.30 **Test centre at Jessa Ziekenhuis, rehabilitation centre campus Sint-Ursula**
Sarah Meyer, PhD, Luc Claes, MSc, Jessa Hospital, Rehabilitation centre, Campus Sint-Ursula, Herk-de-Stad, B.

14.00 Break

14.15 **Demonstration of test centre at Adelante rehabilitation centre**

1. *Demonstration ReHab-TOAT;*
2. *Designing and development of a robot-assisted rehabilitation software*
- *Putting the ReHab-TOAT into practice;*
3. *Co-creation concept regarding SME projects and student projects.*

Richard Geers, MSc, Jule Elmanowski, MSc, Henk Seelen PhD, Adelante Zorggroep, Hoensbroek NL; Gustavo Rovelo-Ruiz, PhD, Eva Geurts, MSc, Hasselt University, Expertise Centre for Digital Media, Hasselt, B; Barbara Piskur, PhD, Zuyd University of Applied Sciences, Expertise centre for Innovative Care & Technology, Heerlen, NL.

15.15 **Valorization of rehabilitation technology and knowledge: How to decide what to do?**
Lara Vigneron, PhD, Wallonia e-health Living Lab, Seraing, B.

15.45 Wrap-up

PARALLEL SESSION B:

i2-CoRT other partners: 11:00 – 16:00 hours

09.15 **SEE MAIN SESSION: Opening online platform**

09.30 **SEE MAIN SESSION: Invited speaker**

11.00 **Wearable Healthcare**

Jos Aarts, MSc, Maastricht University, Departement of Research Engineering, Maastricht, NL.

11.15 **SmartGlass implementation in Corona-times**

Jeanne Heijkers, MSc, Ramon Daniels, PhD, Zuyd University of Applied Sciences, Expertise centre for Innovative Care & Technology, Heerlen, NL.

11.30 **Implications of a familiarization phase with a robot-assisted rehabilitation system on motor performance during simulated daily activities**

Sybele E. Williams, PhD, RWTH Aachen University, Department of Rehabilitation and Prevention Engineering, Institute of Applied Medical Engineering, Aachen, D.

11.45 **A Method to Autonomously Monitor the Performance of Rehabilitation Exercises**

Asaad Sellmann, MSc, RWTH Aachen University, Department of Rehabilitation and Prevention Engineering, Institute of Applied Medical Engineering, Aachen, D.

12.00 **Medical Innovation Centers: The key elements to define to get started**

Lara Vigneron, PhD, Wallonia e-health Living Lab, Seraing, B.

12.30 **Break**

13.00 **Digital support for a personalised journey in cardiac rehabilitation**

Prof. Dr. Karin Coninx, Hasselt University, Expertise Centre for Digital Media, Hasselt, B.

13.15 **WalkWithMe: Personalized goal setting and coaching for walking in people with Multiple Sclerosis**

Eva Geurts, MSc, Hasselt University, Expertise Centre for Digital Media, Hasselt, B.

13.30 **The long-term functional effects of tDCS in acute stroke patients**

Stephen Bornheim, PhD, Université de Liège, Department of Motricity Sciences & Physical Therapy and Rehabilitation, Liège, B.

13.45 **Shoulder injury prevention in sports: assessment tools for risk factors evaluation**

Prof dr. B. Forthomme, University Hospital of Liège, Department of Physical Medicine and Rehabilitation, Liège, B.

14.00 **Break**

14.15 **Rehabilitation and health-technology in co-creation: challenges and opportunities**

Prof. Dr. Annemie Spooren, PXL University of Applied Sciences and Arts, Centre of Expertise – Innovation in Care, Hasselt B; Steven Palmaers, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Smart-ICT, Hasselt, B.

14.45 **Using design to turn 'the best care' into 'the right care'**

Daniel Tettersoo, PhD, Eindhoven University of Technology, Future Everyday cluster of the Industrial Design Department, Eindhoven, NL.

15.00 **Embroidered Inflatables: Sample Making in Research Through Design**

Bruna Goveia da Rocha, MSc, Eindhoven University of Technology, Future Everyday cluster of the Industrial Design Department, Eindhoven, NL.

15.15 **Challenges in the services delivery of assistive technology for the upper extremity**

Loek vd Heide, PhD, Zuyd University of Applied Sciences, Expertise Centre for Innovative Care & Technology, Heerlen, NL.

15.30 **Patient Centered Telerehabilitation (PACT): The role of traditional and digital mirror therapy in the treatment of phantom limb pain following amputation**

Andreas Rothgangel, PhD, Zuyd University of Applied Sciences, Research Center for Nutrition, Lifestyle and Exercise / Healthcare Living Lab Düsseldorf, Heerlen, NL / Düsseldorf, D.

15.45 **Wrap-up**

PARALLEL SESSION C:

Posters & demo-videos: 11:00 – 16:00 hours

09.15 SEE MAIN SESSION: Opening online platform

09.30 SEE MAIN SESSION: Invited speaker

11.00 Innovation and Implementation accelerator for Complex Rehabilitation Technology

Henk Seelen, PhD, Adelante Zorggroep, Hoensbroek, NL.

Meaningful use of activity trackers in healthcare. Towards a personalised use in people with a chronic disease and older adults

Darcy Ummels, MSc, Zuyd University of Applied Sciences, Expertise Centre for Innovative Care & Technology, Heerlen, NL.

Different Explanation, less frustration? making explicit whether implicit motor learning strategies are feasible and effective in neurological rehabilitation

Li-Juan Jie, MSc, Maastricht University, Department of Nutrition and Movement Sciences, NUTRIM, Maastricht, NL.

Risk Management for the DexterTM Robot

Sean Steven Cooper, MSc, RWTH Aachen University, Department of Rehabilitation and Prevention Engineering, Institute of Applied Medical Engineering, Aachen, D.

Lento - motorized hand orthosis for video-game based rehabilitation training

Gerben Koopmans, Noelle Schuijtvlot, Timon de Groot, Britt Joosten, Eindhoven University of Technology, Department of Industrial Design, Eindhoven, NL.

Wearable technology to encourage children with cerebral palsy to use their affected hand more

Luca van Breda, Eindhoven University of Technology, Department of Industrial Design, Eindhoven, NL.

Efficacy and use of a technology-based client-centred training system in neurological rehabilitation

Els Knippenberg, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Innovation in Care, Hasselt, B.

User-centered development of the Sit-app, challenges, results and lessons learned

Steven Palmaers, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Smart-ICT, Hasselt, B.

An intelligent Activity-based Client-centred Training system for rehabilitation

Els Knippenberg, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Innovation in Care, Hasselt, B; Steven Palmaers, MSc, PXL University of Applied Sciences and Arts, Centre of Expertise – Smart-ICT, Hasselt, B.

Handigaming 2.0

Geoffrey Veldman, Tiara van Casand, Gerrie Claessens, Zuyd University of Applied Sciences, Expertise centre for Innovative Care & Technology, Heerlen, NL; Lara Marquet, MSc, Université de Liège, KAPLAB - Department of Motricity Sciences & Physical Therapy and Rehabilitation, Esneux, B.

Smart measurement in clinical practice: Validation of an application and algorithm for measuring the single-leg hop test for distance with an iPhone X

Ruud Bongers, MSc, Zuyd University of Applied Sciences, Engineering Academy, Heerlen, NL.

Gamification in Rehabilitation

Gernot Sümmerrmann, CEO, Cynteract GmbH, Aachen, D.

ADL-TTD aid during daily activities for clients with Cerebral Palsy

Jasper den Boer, MSc, UMACO BV, Groningen, NL.

Implementation of a 3D workflow at the point of care for the production of orthoses focusing on rehabilitation processes

Cédric Gilissen, SPENTYS, Brussels, B.

Virtual Reality (VR) in rehabilitation for people with spinal cord injury

Mark Eberson, Zuyd University of Applied Sciences, Engineering Academy, Healthcare Engineering, Heerlen, NL.

HS-20 e-health tool: a self-monitoring and diagnostics procedures for in skin and muscle disease

Luca Houben, BSc, Zuyd University of Applied Sciences, Engineering Academy, Healthcare Engineering, Heerlen, NL.

An added value of 3D-printing for occupational therapy

Lucas Boumans, Zuyd University of Applied Sciences, Engineering Academy, Industrial/Mechanical Engineering, Heerlen, NL.

Innovation on a Blackbelt 3d printing platform

Rik Theunissen, BSc, BlackBelt 3D BV, Belfeld, NL.

The Cyberith Virtualizer as a potential addition to the Rehabilitation program for patients with a partial spinal cord injury

Jana Boumans and Nikki Haane, Zuyd University of Applied Sciences, Physiotherapy Academy, Heerlen, NL; Jos Wetzels, member of the Zuyd i2-CoRT team, Zuyd University of Applied Sciences, Heerlen, NL.

15.45 Wrap-up

