



# Empowerment for Health & Wellbeing

2024 INFO MEETING for 24-25



Coordinator:

Victor Donker (Industrial Design)

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# agenda

- Introduction Victor
- Introduction YOU
- What is this track about?
- Potential projects
- Track setup
- Apply info

# VICTOR DONKER

- BSc, Msc, EngD
- 34 year
- Married, 2 kids
- Sport
- Music
- Innovation
- Health & Wellbeing
- Co-founder and CEO of Usono (3 days)
- Lecturer ID TU/e (2 days)







▲ Harrie der Kinderen en Mandy Lampe aan het werk met de nieuwe sliktherapie. Foto Kees Martens/fotomeulenhof

## Nieuwe sliktherapie bij Vitalis Eindhoven helpt patiënten na beroerte weer normaal te eten

**EINDHOVEN** - Een nieuwe sliktherapie helpt patiënten van Vitalis Zorggroep na een beroerte om sneller weer gewoon te eten. Harrie der Kinderen (82) wilde het apparaat wel demonstreren.





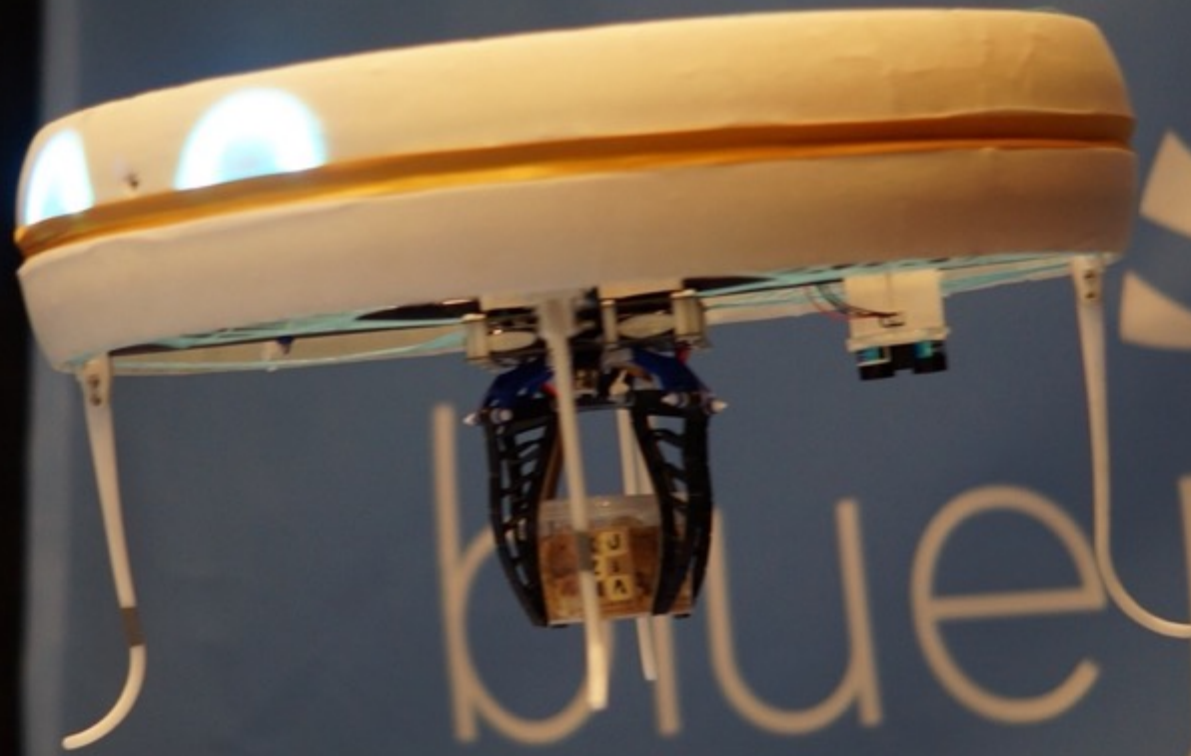








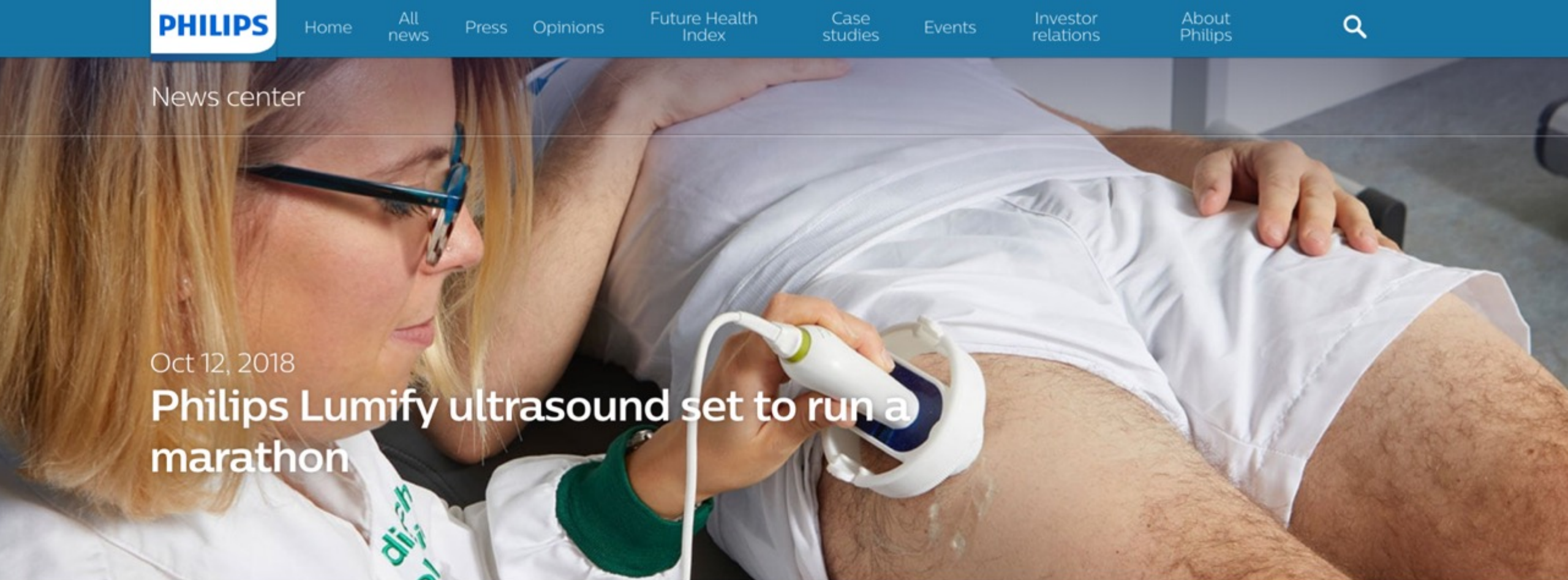




bluejay







News center

Oct 12, 2018

## Philips Lumify ultrasound set to run a marathon

Philips, start-up company Usono, and Eindhoven University of Technology use Lumify mobile ultrasound to investigate muscle response to prolonged physical exercise

Weighing no more than the average smartphone, Philips' [Lumify](#) mobile ultrasound is turning out to be a perfectly wearable device, and a powerful tool in sports science, helping researchers to investigate the effects of prolonged and intense physical exercise on the human body. In collaboration with Eindhoven-based start-up [Usono](#), which designs and develops ergonomic solutions for attaching ultrasound probes, and the Eindhoven University of



Estimated reading time: 2-4 minutes

Share on social media







HIGH TECH CAMPUS  
EINDHOVEN





▲ Eindhoven ED2020-6801 "Victor Donker", marketingmanager van de campus, die mee een platform heeft ontwikkeld om medewerkers van brainportbedrijven vitaal te houden © Kees Martens/DCI Media

## Werk je fit met PSV: bedrijven dagen 55.000 werknemers uit

EINDHOVEN - 'Hoe blijf je fit in deze coronatijd?' Door doelen stellen zegt Boudewijn Zenden, of te ontspannen aldus Björn van der Doelen en 'nee' te leren zeggen vindt Toon Gerbrands. Vandaag lanceren Brainport Eindhoven en PSV een vitaliteitsplatform. Specialisten en (oud)PSV'ers vertellen er online over hun ervaringen. 55.000 werknemers moeten aan de bak.







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# YOU

- Name
- Study
- Why



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How do we design intelligent systems that empower people to take care of their own health and wellbeing?"

What is health and wellbeing?

WHO:  
Health is a state of  
complete physical,  
mental and social  
well-being  
and not merely the  
absence of disease or  
infirmity

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So, if you eat  
healthy, practice  
sports  
and don't smoke,  
drink alcohol?

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- + • What do you need design for,
    - when you can **just raise the taxes** on sugar, alcohol and smoking?







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Design is not here to punish you. It should **empower** you.

How can technology assist people in managing their health and wellbeing?

How do we research behavior, routines and experiences to create effective, personalized and appropriate systems?

Health is complex, multi-faceted and situated in a socio-cultural context.



# Situation

1. People lack knowledge about how to live a healthy life.
2. People need educating about health.
3. People will act in their own best interests once educated.

# Knowledge sharing and education



The vitality model, Robert Jan Wissink & Nina de Rooij

<https://brainporteindhoven.com/psv/en/vital>





# Challenges

- Adherence
- Retention
- Satisfaction
- Insight in the body
- Clinical relevance
- Business case

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The most profound technologies are  
those that disappear.

They weave themselves in the fabric of  
everyday life until they are  
indistinguishable from it.

- Mark Weiser

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**Victor  
Donker**

*Track coordinator &  
Usono*

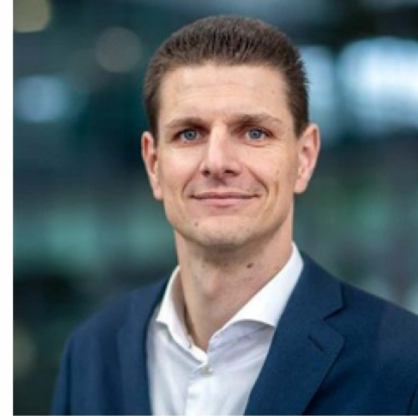


**Melanie  
Swallow -  
Zijlstra**

*Secretary*



**J. (Rong-Hao) Liang**  
Coach of Sensing for  
Preventive Healthcare



**Maarten Paulides**  
Coach of Glycogen sensor project



**Kemal Sumser**  
Coach of Glycogen sensor project



**Astrid Kappers**  
Coach of NaviSense





# PROJECTS

4 projects, 22 Students

- Usono: Wearable Ultrasound
- MoLab: Glycogen Sensor
- NaviSense: Indoor navigation
- Sensing For Preventive Healthcare
- Own project?



## Project 23-24

# Wearable ultrasound

*Make muscles and tendons visible in any active situation to better understand and even prevent injuries*

1. Research clinical applications in injuries
2. Research sports medicine markets
3. Develop hardware and software concepts to make ultrasound wearable considering available and future technologies (level of development to be determined)
4. Develop business case for elite and recreational sports
5. Stakeholder management with client and other involved companies

Client: [Usono](https://www.sono.com)





## Project 23-24

# Glycogen Sensor

*Make muscles and tendons visible in any active situation to better understand and even prevent injuries*

1. Body measuring instruments increasingly vital for enhancing athletes' performance
2. Key metric: glycogen levels in muscles crucial for tailored nutrition and performance improvement
3. Current measuring methods lack practicality; muscle biopsies invasive, painful, and complex
4. Collaborating with Molab to develop a wearable, non-invasive device
5. Device aims to provide real-time glycogen level measurements for endurance athletes at all levels

Client: [MoLab](#)



## Project 23-24

# NaviSense

*Indoor navigation for blind people in hospital settings*

1. Navigating large buildings poses challenges for blind individuals
2. Conventional solutions like hiring extra personnel are costly and frustrating
3. NaviSense project aims to provide a solution for independent navigation
4. Goal: Develop a Minimum Viable Product (MVP) for blind users
5. Handheld device uses spatial vibration and auditory instructions
6. Device locates itself using a local positioning system
7. Guides users through buildings, considering obstacles like stairs and doors
8. Potential future feature: Real-time communication with personnel for additional assistance
9. Benefits include enhancing satisfaction for blind visitors and optimizing employee allocation for organizations





Project 23-24

# Sensing For Preventive Healthcare

*Sensing blood glucose noninvasively*

1. Research clinical applications in injuries
2. Research sports medicine markets
3. Develop hardware and software concepts to make ultrasound wearable considering available and future technologies (level of development to be determined)
4. Develop business case for elite and recreational sports
5. Stakeholder management with client and other involved companies



## Project 22-23

# Artificial Heart

*Prototype evaluation from a practical patient perspective*

A-life student team (approximately 10 students) works on different projects regarding current and future Hybrid Heart prototypes.

1. Dimensions of the Hybrid Heart prototype.
2. Technical evaluation and characterization
3. User-device interaction
4. Societal awareness
5. Research and development (3D printing)
6. Experimental protocols
7. Patient studies (e.g. with Hartstichting)
8. Documentation

Client: Team A-life, in collaboration with [HybridHeart](#)





## Project 22-23

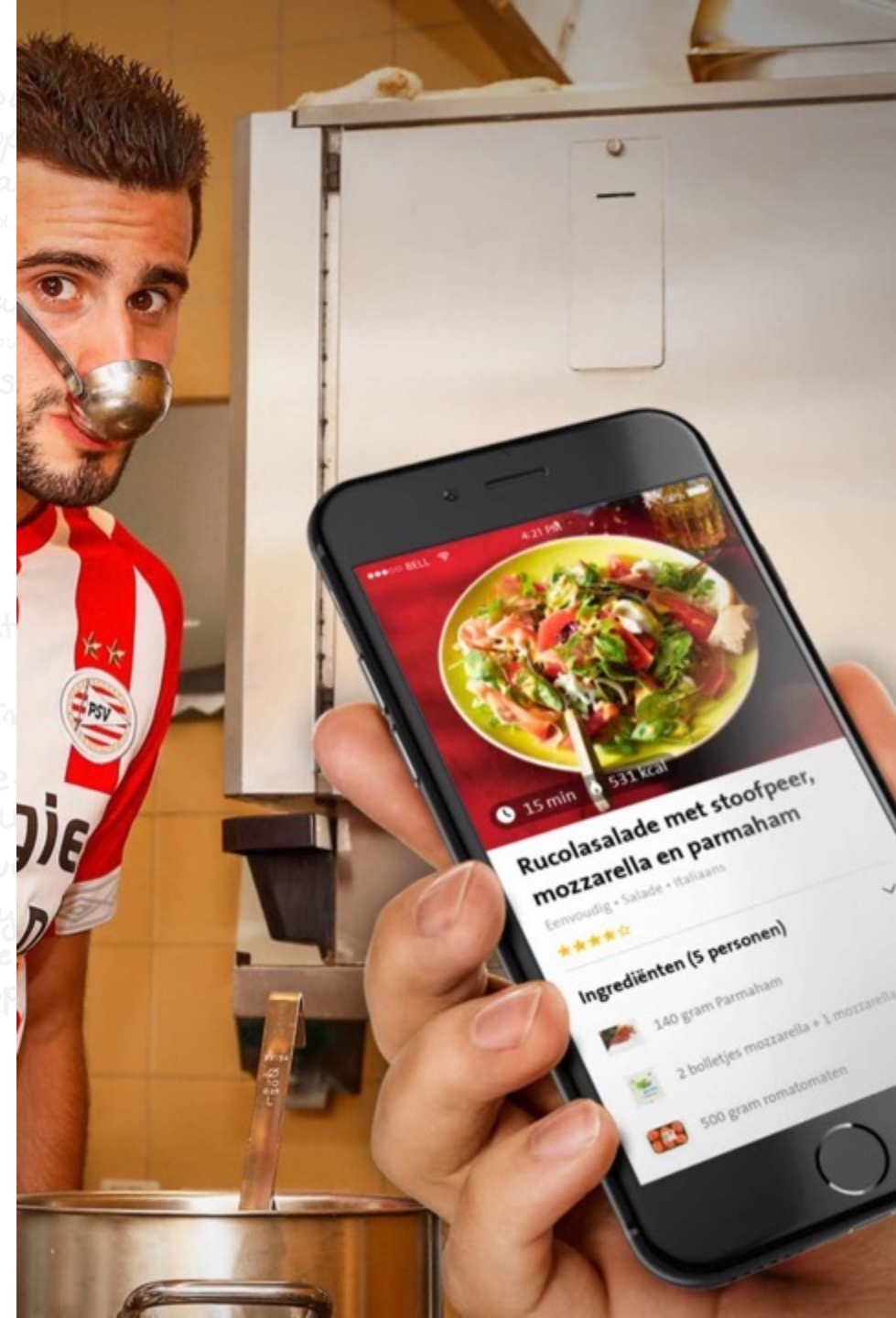
# Food choices

*What determines our food choices and eating habits?*

Project goals & deliverables

1. Literature research/aggregation for preliminary identification of some potentially significant factors
2. In depth user-research, stakeholder management and benchmarking to understanding the significant factors underlying food habits and food choices
3. Experiments to verify the potential factors and their intensity
4. Extensive statistical analysis for significance and degree of importance of the identified factors
5. Development of a model that could predict one's food choices and possibly attempt to change them by providing an intervention in advance have a great potential and multiple possible applications

Potential client: [Jumbo Foodcoach](#)



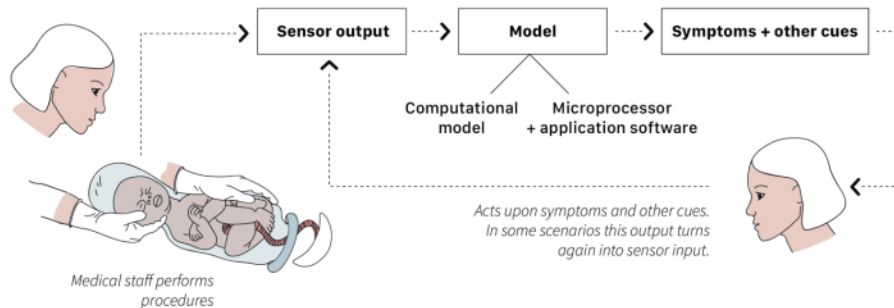
## Project Pre 22

# Artificial Womb

Perinatal Life Support – Development of an artificial preterm fetal blood circulation

Engineer the physical components of a neonatal blood circulation simulator.

1. Research existing systems and use literature to understand the project background.
2. Use Rapid Prototyping to develop ideas on both hardware and software development.
3. Setup experiments and evaluation methods.





## ***Project Pre 22***

# **Autonomous Walking**

Develop a concept for a holistic and wearable, non-stigmatizing solution which helps visually impaired people travel independently in unfamiliar environments

1. Research existing systems and use literature to understand the project background.
2. Develop a detailed customer journey for people with a visual impairment. Identify the painpoints.
3. Evaluate current technologies and work with stakeholders to develop integrated concepts.
4. Develop a Minimal Viable Product

This project is a collaboration with:  
Envision, Bartomeus, Ayes.ai, TU/e, 5G Hub Eindhoven



# **#040Beweegt**

Transform Eindhoven into a testbed for technologies that stimulate physical activity.

1. Research existing sports and physical activity promoting systems and initiatives.
2. Develop insights through sensor technologies and qualitative research approaches
3. Design new probes that stimulate activity and sports

This project is a collaboration with:  
Gemeente Eindhoven, Fontys Sporthogeschool,  
Innosportlab, TU/e





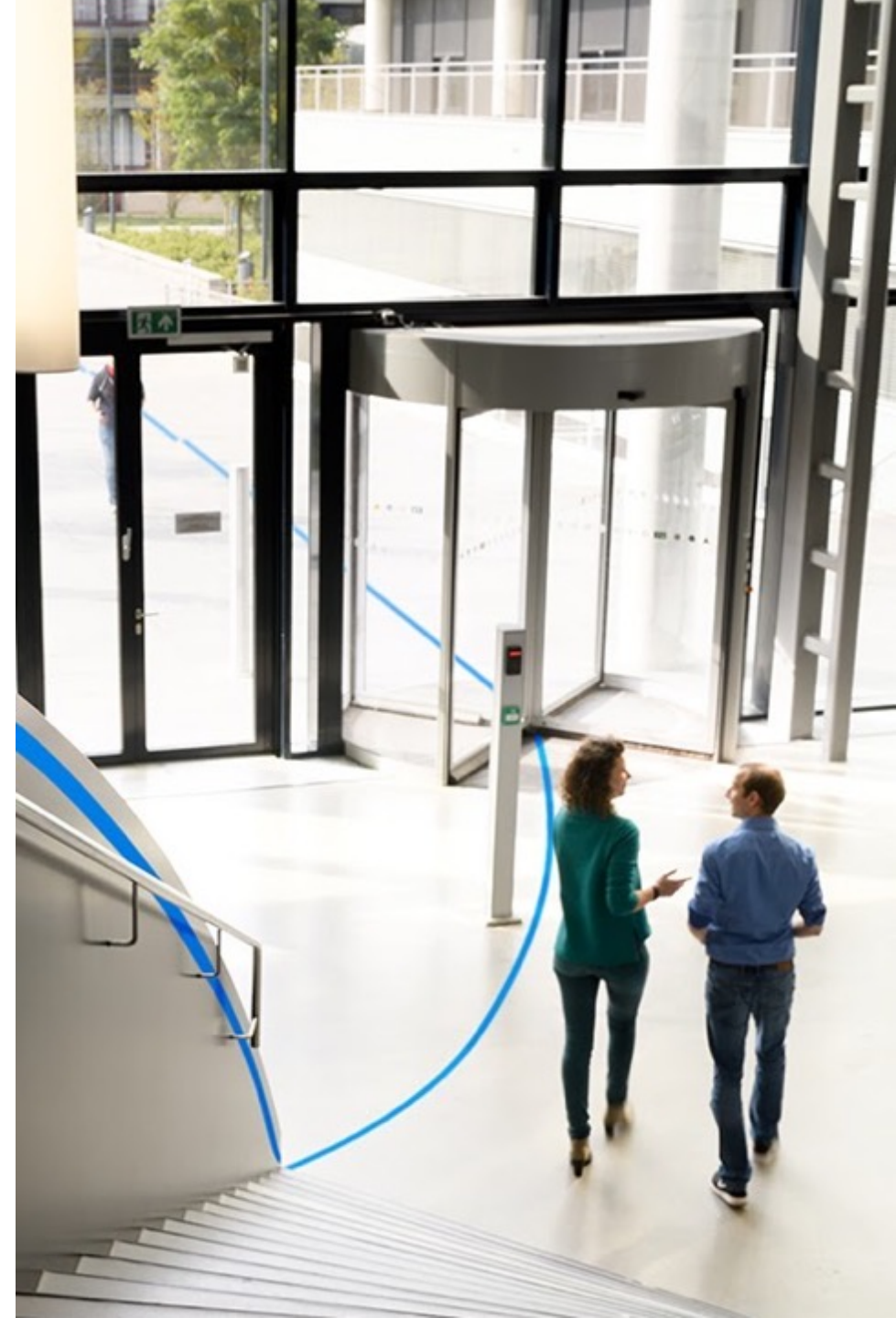
## *Project Pre 22*

# WorkPlace Vitality

Stimulate workers to stay active during a workday

1. Research behavior of employees in and around office buildings
2. Develop workplace interventions aim to help workers to implement healthy habits and opportunities in their work.
3. develop new ideas, research new applications, visualize results or work on developing existing concepts further

This project is a collaboration with:  
High Tech Campus, Workplace Vitality Hub, Fontys  
Sporthogeschool, TU/e



*Industry suggested, never active project*

# Interactive robots for rehabilitation

*Co-created social and autonomous care robots to provide support in long-term care*

**Goal:** proposal for improved UX of the Sara Robot based on extensive research

## **Activities**

1. Research wishes and needs for elderly
2. Benchmark of other applications and robots on the market
3. Develop software and UX concepts to create better interaction for elderly

Client: [Sara Robotics](#)





*Industry suggested, never active project*

# Solutions for high-precision surgical robots

*Better user experience and stabilization solutions for spine surgery with innovative robot*

Eindhoven Medical Robotics develops several innovative robots for surgical purposes.

Challenges:

1. Better UX for surgeons:
2. Better stabilization of tools and robots for high-precision surgery

Client: [Eindhoven Medical Robotics](#)



# Your own project

Do you have a project idea you want to share?





# Practical info

- PDP Coaching
- Project Coaching
- Planning
- Deadlines
- Deliverables
- Expectations

# Project Coaching

Share your expectations, goals, wishes, favorite football club and workstyle.

You'll be collaborating for a year. Set it up right.



# Last things

- Social Activities Committee
- Facilities
- Budget & Expenses
- Take responsibilities you like
- Track act like a startup

# Apply

- Motivation letter: 12 May
- Interviews: 27-31 May
- Info admission: June 17

2425 Application Track  
Empowerment for Health and  
Wellbeing





# Thanks



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