

# HUMAN TECHNOLOGY RELATIONS

MASTERTRACK



work Alex has an appointment with Dr. Li for an e-consult. With the data provided by the Google H



# HUMAN TECHNOLOGY RELATIONS

## INDUSTRIAL DESIGN ENGINEERING MASTER TRACK

---

Mastertrack IDE

Trackcoördinator: Wouter Eggink

[w.eggink@utwente.nl](mailto:w.eggink@utwente.nl)

Horst room w239



UNIVERSITEIT TWENTE.

*"Amplified walking project"*  
*Create the Future 2010*



# HUMAN TECHNOLOGY RELATIONS

## INDUSTRIAL DESIGN ENGINEERING MASTER TRACK

---



Mastertrack IDE

Trackcoördinator: Wouter Eggink

[w.eggink@utwente.nl](mailto:w.eggink@utwente.nl)

Horst room w239



UNIVERSITEIT TWENTE.

*“Amplified walking project”  
Create the Future 2010*



# HUMAN TECHNOLOGY RELATIONS

## MASTERTRACK

---

“Catering peoples needs and wishes  
through making technology available for  
users”

Keyword: the people oriented designer

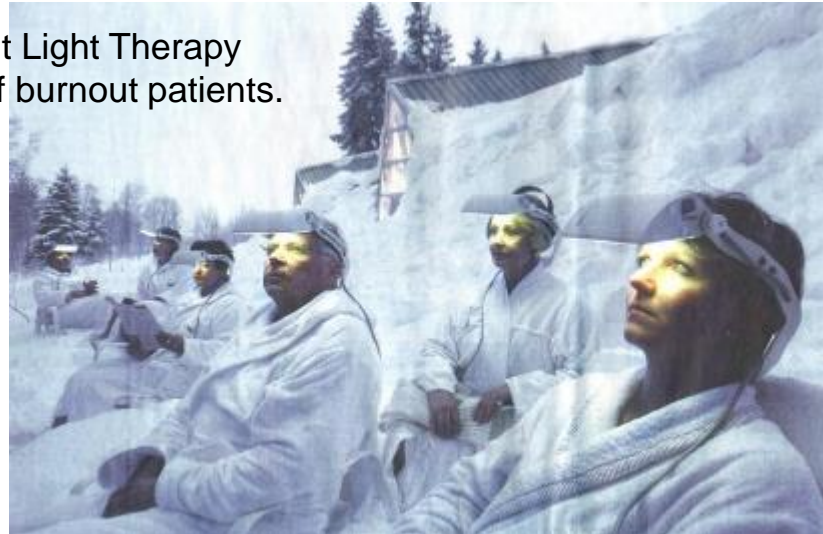
## MASTER THESIS EXAMPLE

ANIKA SIEPEL – PHILIPS RESEARCH

---

### **“Bright Light Therapy for burnout”**

The research and design of a Bright Light Therapy application for in-home treatment of burnout patients.



## MASTER THESIS EXAMPLE

ANIKA SIEPEL – PHILIPS RESEARCH

---

- Motivation to use: implement in design
- Contact with therapist + measure wellbeing: design supporting application
- Measure effect: evaluative user study with prototypes
- Research project under development building on results
- Presentation of results at HealthbyTech conference.







# HUMAN TECHNOLOGY RELATIONS

## INDUSTRIAL DESIGN ENGINEERING MASTER TRACK

**Industrial Design Engineering = making technology available for users.**

This means a perspective on design that takes both technology developments and human characteristics into account on an individual, social and societal level.

### CONCEPT TWO

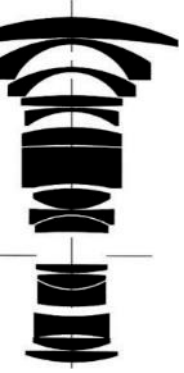
- › Wearable tree
- › Absorb CO<sub>2</sub>
- › Release O<sub>2</sub>



UNIVERSITEIT TWENTE.



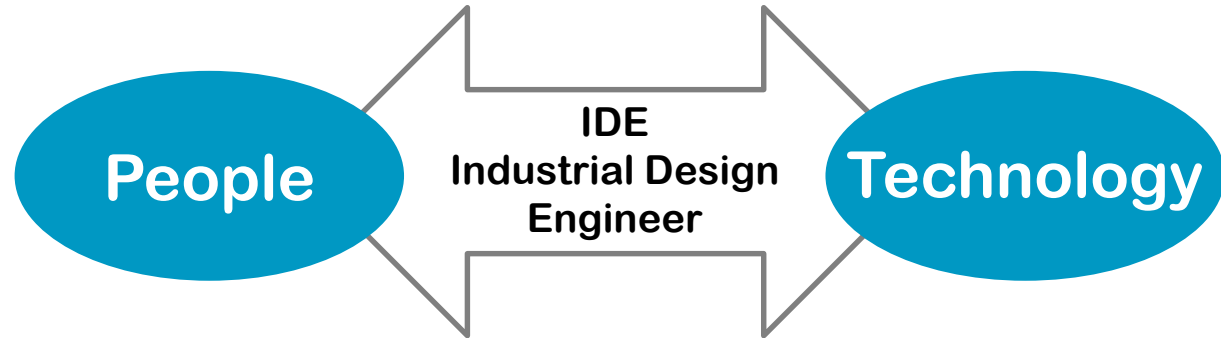
*"The Wearable Tree project"*  
*Create the Future 2017*



# MAKING TECHNOLOGY AVAILABLE FOR USERS

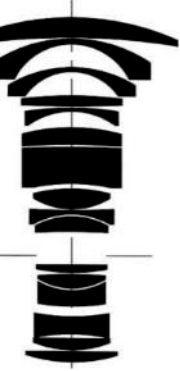
## INDUSTRIAL DESIGN ENGINEERING

---



High Tech – Human Touch

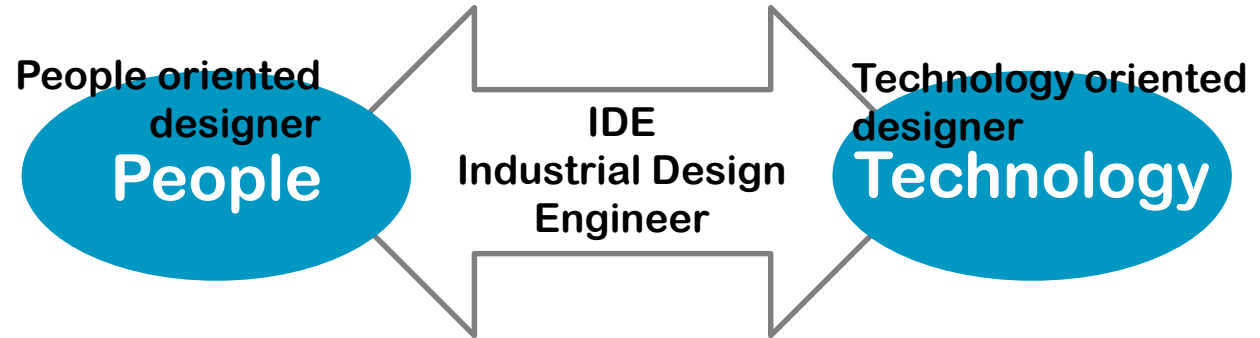




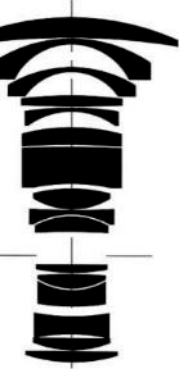
# MAKING TECHNOLOGY AVAILABLE FOR USERS

INDUSTRIAL DESIGN ENGINEERING

---

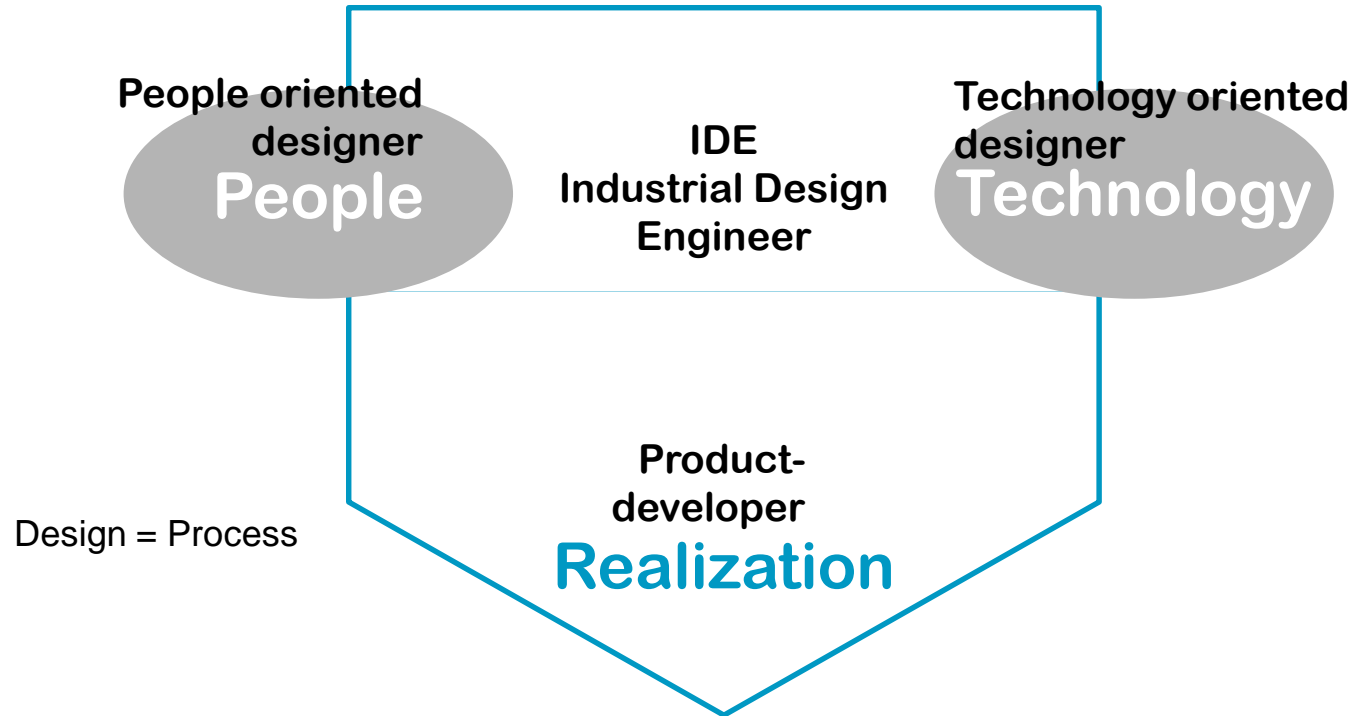


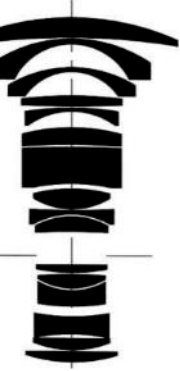
High Tech – Human Touch



# MAKING TECHNOLOGY AVAILABLE FOR USERS

INDUSTRIAL DESIGN ENGINEERING





# MAKING TECHNOLOGY AVAILABLE FOR USERS

INDUSTRIAL DESIGN ENGINEERING

---

**People oriented  
designer**

**HTR**

**IDE  
Industrial Design  
Engineer**

**Technology oriented  
designer**

**ETD**

**Product-  
developer**

**MoPD**



# MASTERTRACK

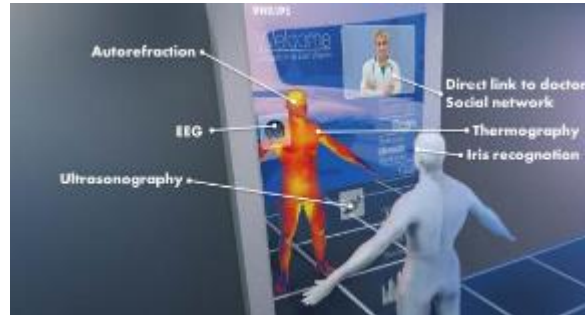
THE PEOPLE ORIENTED DESIGNER

---

“attractive things really do work better” Donald Norman (2004)

&

The people oriented designer knows the ***problems, aims, concerns and aspirations*** of individuals, collectives and societies, and he or she is able to translate these into ***feasible product design solutions***.





# MASTERTRACK

## OVERVIEW (2018-2019)

---

1st Quartile

Science & Technology studies

Elective  
Elective

2nd Quartile

Multi Sensory Design

Elective  
Elective

3rd Quartile

Design Histories  
Scenario Based  
Product Design  
Elective

4th Quartile

Design for Behavior Change  
Elective  
Elective

1st Quartile

Create the Future  
(10EC)  
Elective

2nd Quartile

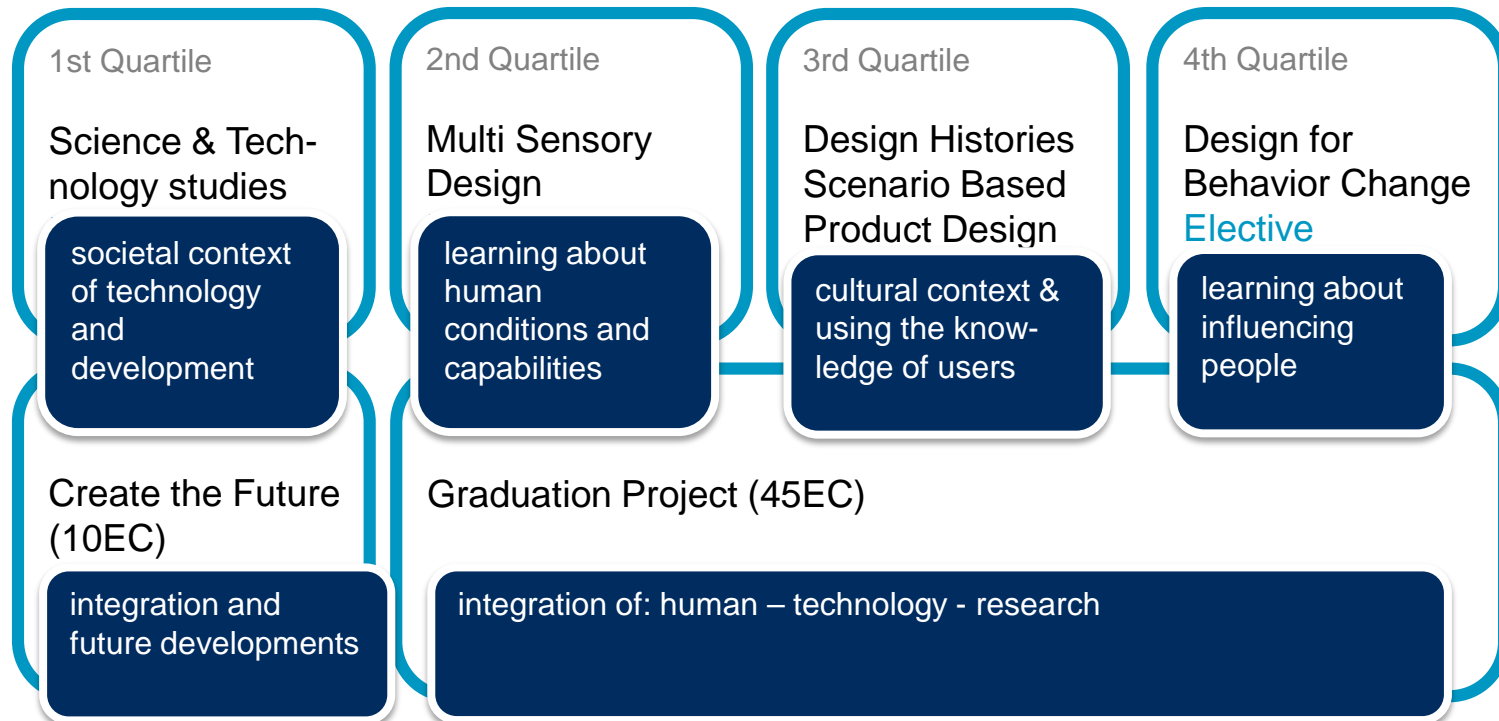
Graduation Project (45EC)



# MASTERTRACK

## OVERVIEW (2018-2019)

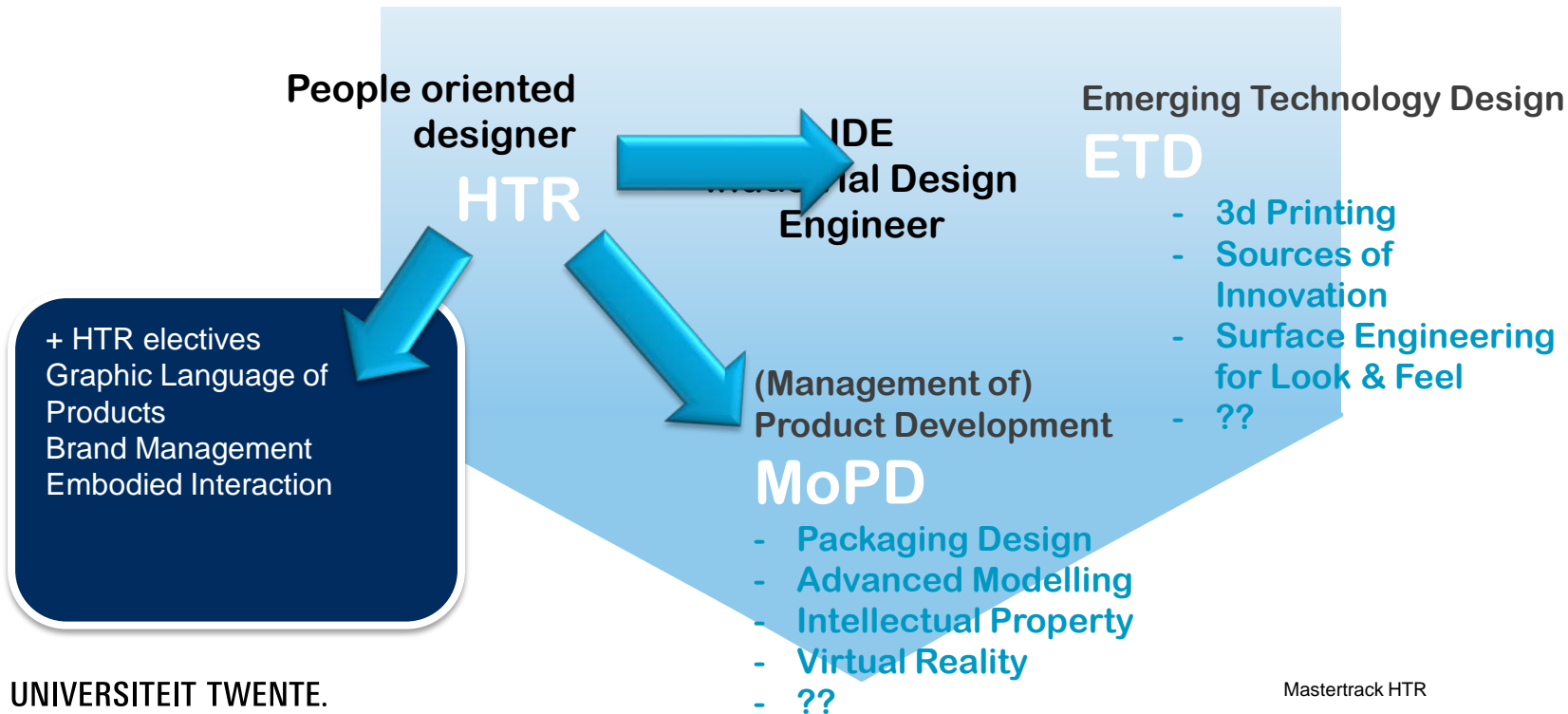
[Knowledge of technology and product realization as a basis]





# MASTERTRACK

INDIVIDUAL DEVELOPMENT







# MASTERTRACK

INDIVIDUAL DEVELOPMENT

---

HTR (+ Brand Management +  
Graphic Language of Products)  
+ Communication Studies

HTR (+ Embodied Interaction +  
Design for behaviour change)  
+ Philosophy of Science (PSTS)

HTR (+ Embodied Interaction +  
Design for behaviour change)  
+ Interaction Technology (iTech)

UNIVERSITEIT TWENTE.





# MASTER THESIS

## HUMAN TECHNOLOGY RELATIONS

---

45EC

- internal (Design Research assignment)
- external (at/with/for a Company that acts as a Client)

integration of human – technology - research



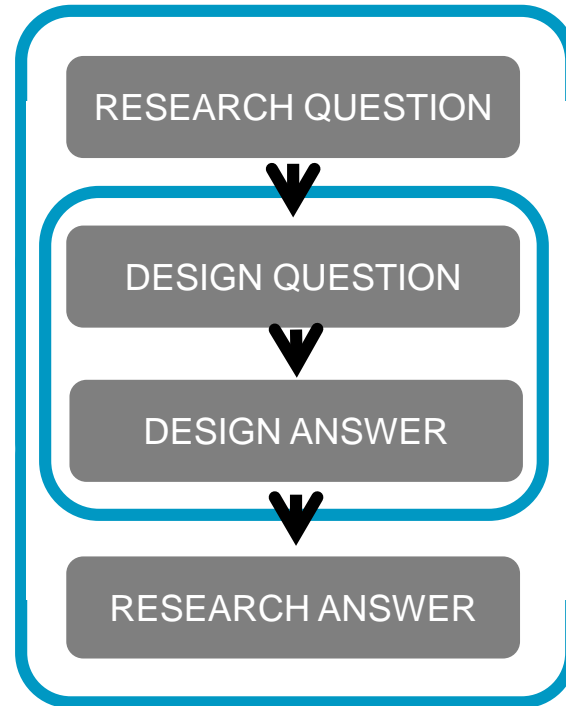
# MASTER THESIS

HUMAN TECHNOLOGY RELATIONS

45EC

- internal (Design Research assignment)
- external (at/with/for a Company that acts

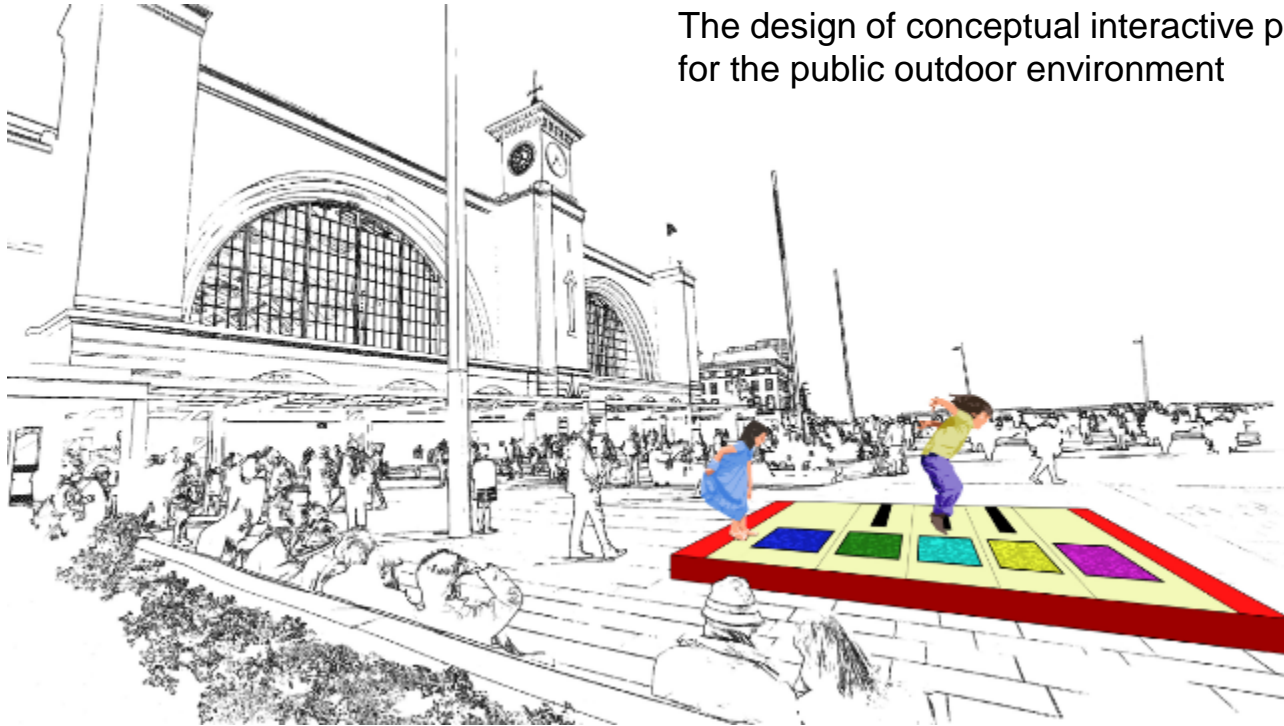
integration of human – technology - research



# MASTER THESIS EXAMPLE

ROBERT JAN DEN HAAN - PLAYNETIC

The design of conceptual interactive play sets  
for the public outdoor environment



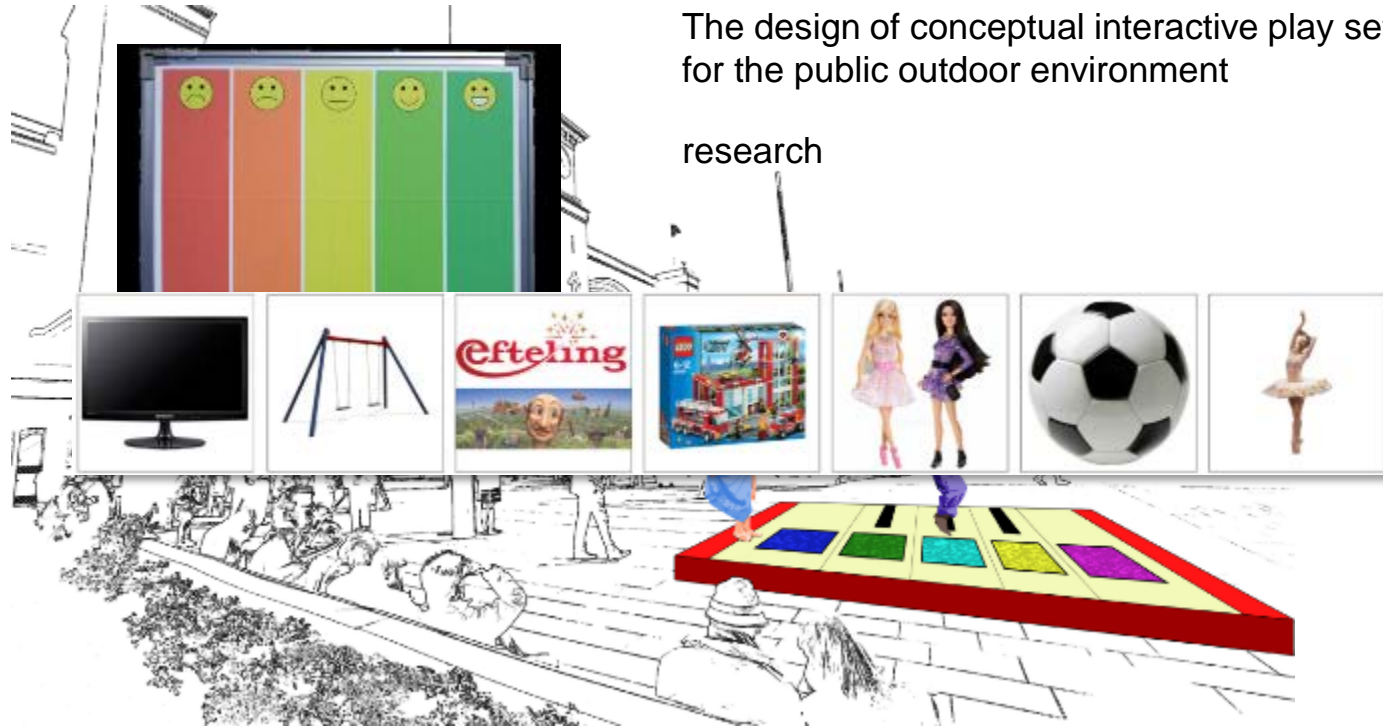
UNIVERSITEIT TWENTE.

# MASTER THESIS EXAMPLE

ROBERT JAN DEN HAAN - PLAYNETIC

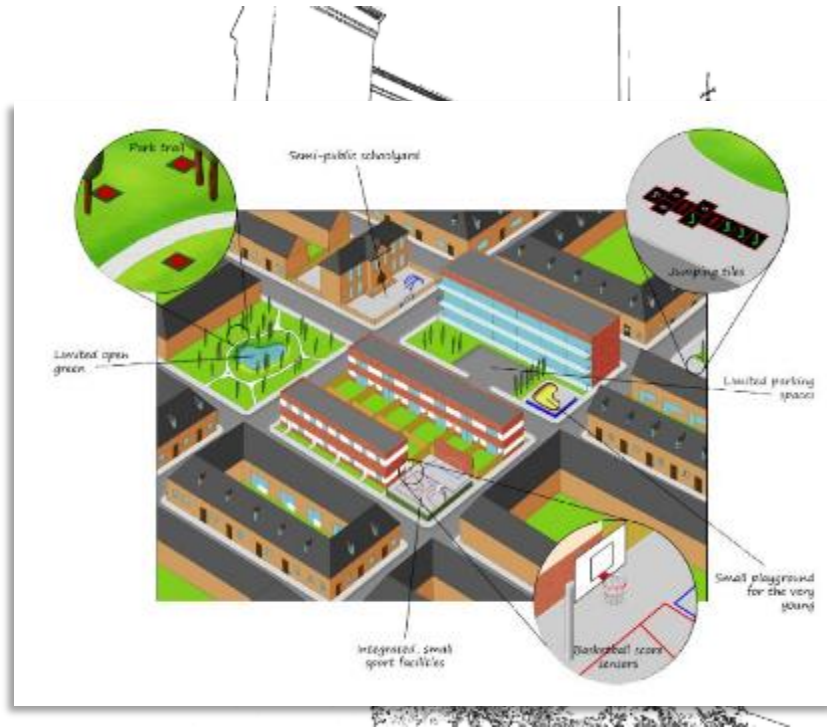
The design of conceptual interactive play sets  
for the public outdoor environment

research



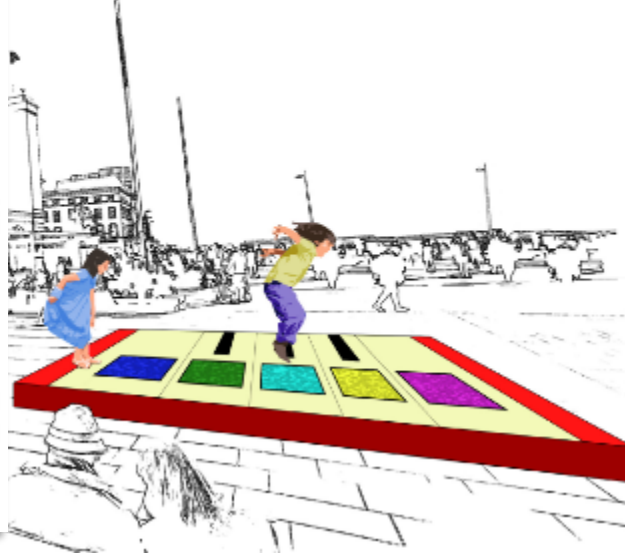
# MASTER THESIS EXAMPLE

ROBERT JAN DEN HAAN - PLAYNETIC



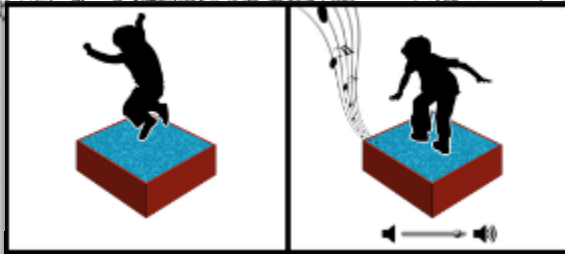
The design of conceptual interactive play sets  
for the public outdoor environment

Future exploration of neighbourhoods (context)



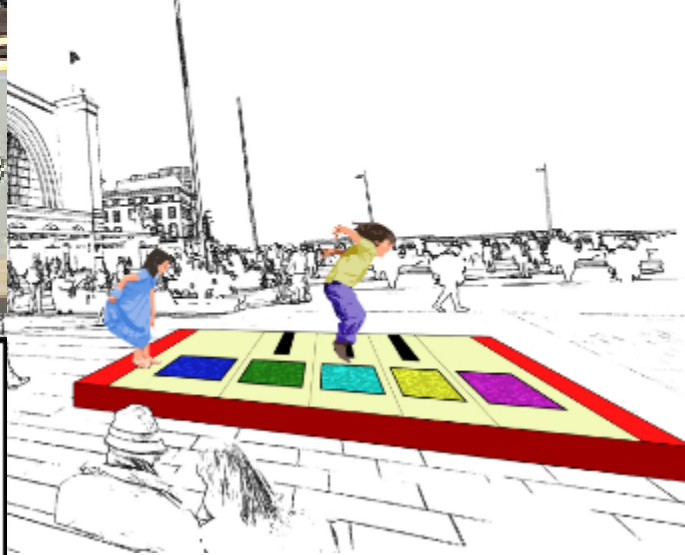
## MASTER THESIS EXAMPLE

ROBERT JAN DEN HAAN - PLAYNETIC



The design of conceptual interactive play sets  
for the public outdoor environment

Prototype of a single “Jump Stone”







# MASTER THESIS

## EXAMPLES OF OTHER HTR PROJECTS

---

Vincent Ubbens (2019) [A study and design on sustainable technologies for houses and social interaction.](#)

Viktor Klassen (2019) [How to design for Access : How experience and attachment affect product design for access-based consumption.](#)

Youetta Kunneman (2019) [Data science for service design : an exploration of the opportunities, challenges and methods for data mining to support the service design process.](#)

Marlin Bloemberg (2019) [Enhancing brand storytelling by creating a design intervention via an end-to-end process.](#)

Iris Borgman (2018) [The influence of packaging design features on consumers' purchasing & recycling behaviour.](#)

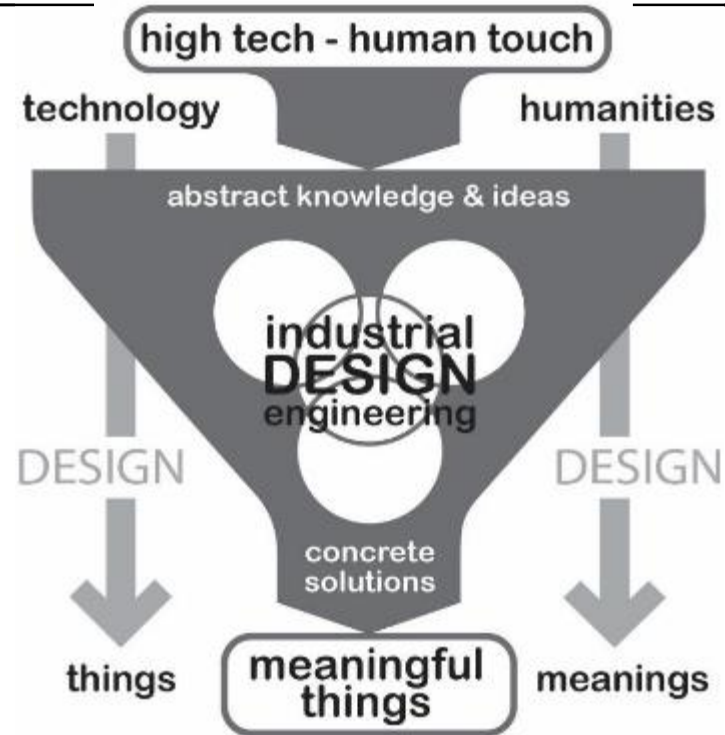
Tom Simons (2018) [Interaction design for professional virtual reality training applications.](#)

Canxuan Li (2018) [Design framework for integrating Internet of Things and Wearable Augmented Reality.](#)



# PEOPLE ORIENTED DESIGNER

INDUSTRIAL DESIGN ENGINEERING



Positioning in  
the University



**DES  
IGN  
LAB**  
UNIVERSITY  
OF TWENTE.

# High Tech Human Touch

UT's central place  
for 'doing design'





**DES  
IGN  
LAB**  
UNIVERSITY  
OF TWENTE.

# High Tech Human Touch





# HUMAN TECHNOLOGY RELATIONS

## RECAP

---

- People oriented designer = Strengthening the link between humans and technology  
[Knowledge of technology and product realization as a basis]
- Learning about human conditions, capabilities and emotions
- Cultural and society context, history and future
- Improving products and situations, using the knowledge of users
- Research
- Design !





# HUMAN TECHNOLOGY RELATIONS

COURSES & RESEARCH

---

Some (short) course descriptions for reference:

- Design and Behaviour Change (mandatory)
- Scenario Based Product Design (mandatory)
- Multisensory Design (mandatory)
- Embodied Interaction (elective)
- Intelligent Transport Systems Design & Evaluation (elective)
- Graphic Language of Products (elective)



# Design and Behavior Change



UNIVERSITY OF TWENTE.



# Course Description

---



This course focuses on the role of design at various levels of behavior change.

It consists of **theory lectures** and a **design project**.

Throughout the course, you will iteratively develop **interventions** by following the provided **strategies for behavior change**.

At the end, you make a final presentation of the project

Coordinator: Armagan Karahanoglu

## A behaviour changing intervention for unhealthy snacking

J.S. van Belle | s1297104  
L.C. Starmann | s1480774

E.M. Knijn | s12301659  
K.L. Versluis | s1352687

### ABSTRACT

Unhealthy snacking is linked to be a cause for several chronic diseases and obesity. People tend to snack unconsciously, and regret this behaviour afterwards. This paper introduces an intervention that can help people to get more conscious about their unhealthy snacking behaviour and help them to change it. The intervention consists of a habit building booklet in combination with motivational stickers to put on snacks, so that users are confronted with their unnecessary snacking out of hedonic hunger or boredom. To validate the effectiveness of the intervention a test plan using a short- and long-term evaluation is proposed.

### Author Keywords

Nutrition, design for behaviour change, snacking.

### Author Contributions:

All authors contributed to the research, the development of the intervention and to the evaluation plan. J.S.B. contributed to the sections of unhealthy snacking behaviour and the discussion, and functioned as final editor. E.M.K. contributed to the intervention section and the visuals. L.C.S. contributed to the following sections: questionnaire, state of the art and evaluation. K.L.V. contributed to the abstract, introduction, and further studies section and functioned as final editor.

intervention that has been developed focuses on changing the behaviour of unhealthy snacking.

First, the problem behaviour has been described, both by literature studies as well as by an executed questionnaire. Also, research on the state of the art has been conducted. In the following sections, the developed intervention has been explained and a method to evaluate the intervention has been described. A discussion on the developed intervention was implemented in the report, followed by the mentioning of possibilities for further studies.

### UNHEALTHY SNACKING BEHAVIOUR

With the design of this intervention, the behaviour of unhealthy snacking in the home environment against the users' own intentions is targeted. Unhealthy snacking, in this case, refers to the eating of sugary, salty and fatty foods that are not needed to fulfil a nutritional need. This craving for food appears to be driven by pleasure and can be referred to as 'hedonic hunger' [9]. While nutritional hunger is a biological state in which the body 'needs' food, hedonic hunger is a psychological state that affects the physical state to 'want' or 'like' food [9].

In the past decades the amount of hedonic hunger in Western society has increased [9]. The main reasons for this increase are the increasing availability and depictions of unhealthy foods, and changing social norms and customs around these types of food, such as to eat popcorn in the

# Interventions

---



(Figure C7) The stickers can remind the user to break the habit of snacking in several ways. They could contain pictures of healthy snacks, prewritten motivational messages or motivational messages that are written by the users themselves.



# SCENARIO BASED PRODUCT DESIGN

DEGER OZKARAMANLI (HUMAN CENTRED DESIGN)

---





# SCENARIO BASED PRODUCT DESIGN

DEGER OZKARAMANLI (HUMAN CENTRED DESIGN)

---



UNIVERSITEIT TWENTE.





# Understanding design requirements

## Design probes

---

Diary and probes to analyse a specific experience



# Understanding design requirements

## Miniature roleplaying

---

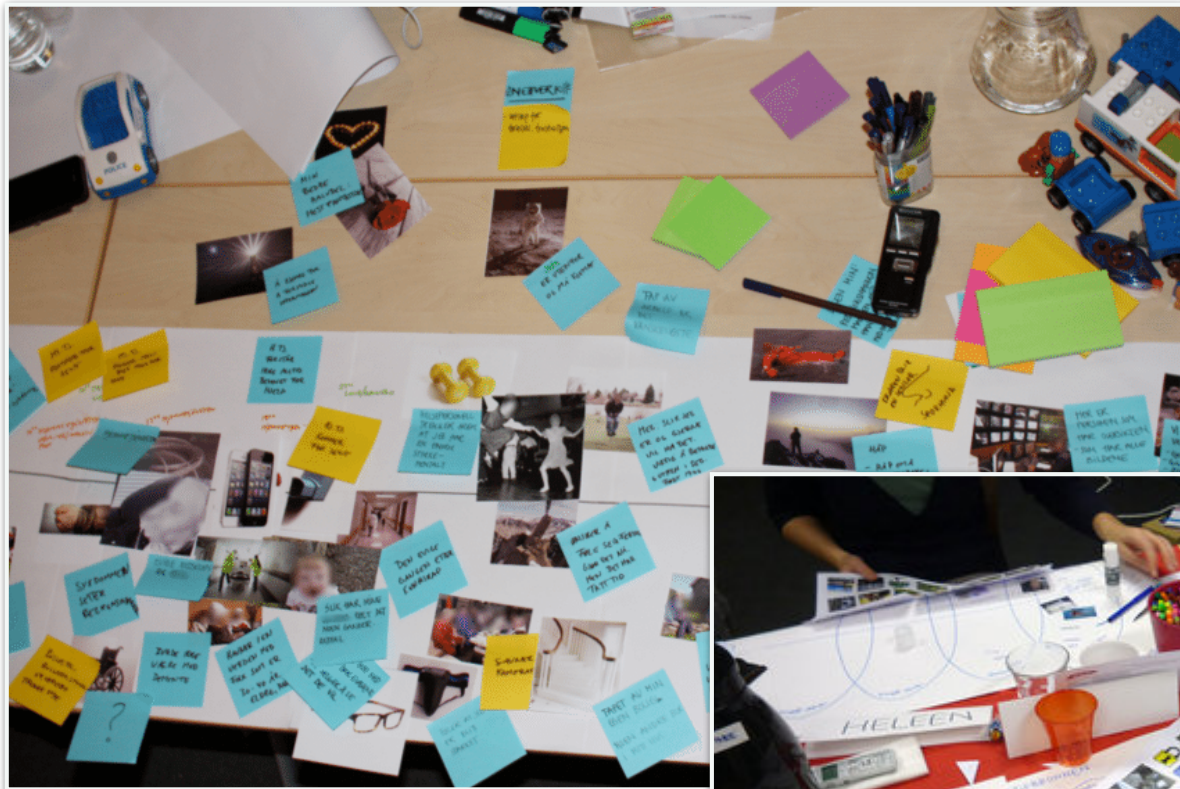




# Understanding design requirements

## Generative sessions

---





# MULTI SENSORY DESIGN

GEKE LUDDEN (INTERACTION DESIGN)





# MULTI SENSORY DESIGN

GEKE LUDDEN (INTERACTION DESIGN)

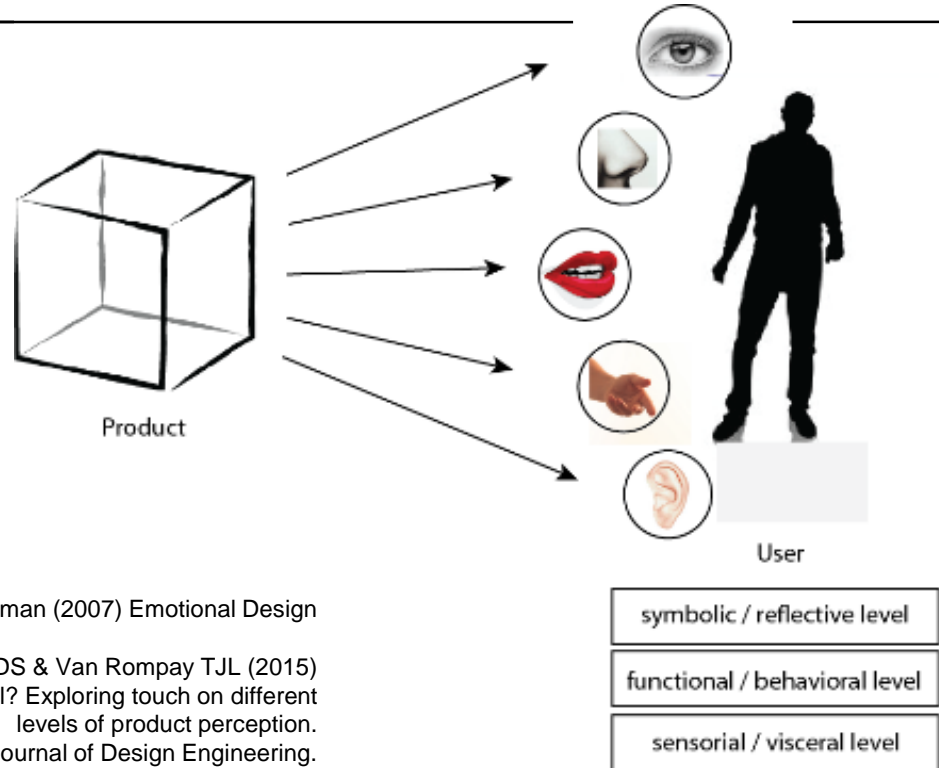


UNIVERSITEIT TWENTE.



# MULTISENSORY DESIGN

## *Role of modalities in human-product interaction*



Norman (2007) Emotional Design

Ludden GDS & Van Rompay TJL (2015)  
How does it feel? Exploring touch on different  
levels of product perception.  
Journal of Design Engineering.

# DESIGN, HEALTH & BEHAVIOUR

Products and services that influence people's behaviour and motivation to support making changes that affect their physical or mental health.

## Prevention

lifestyle change  
stages of change  
wellbeing  
healthy aging



## Cure at home

e (mental)- health  
therapy at home  
monitoring



## Care at home

design 4 dementia  
living with diabetes  
wellbeing in care





## LIGHT IN THERAPY

## Design of connected lighting system to support people with severe disabilities





# EMBODIED INTERACTION (ELECTIVE)

JELLE VAN DIJK (HUMAN CENTERED DESIGN)

---





# EMBODIED INTERACTION (ELECTIVE)

JELLE VAN DIJK (HUMAN CENTERED DESIGN)

---







Exploring  
embodied interaction  
through your own body









Exploring  
embodied interaction  
through your own body



**Research**  
human practices  
(ethnography,  
workshops, expert  
interview,  
literature)

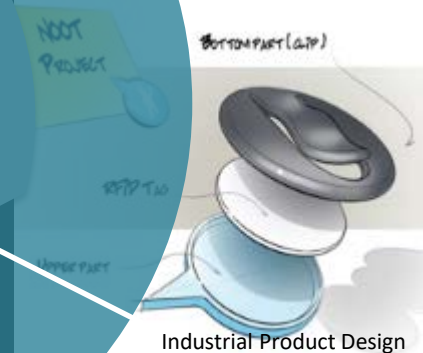
## Research Through Design

**Reflect**, relating to concepts in  
Phenomenology  
Embodied Cognition theory  
Situated Cognition theory

## Design

Smart, Tangible.  
Contextual-,  
Wearable, Ubiquitous  
Augmented... Assistive  
Technology

Interactive tech/ HCI



Industrial Product Design





# INTELLIGENT TRANSPORT SYSTEMS DESIGN & EVALUATION (ELECTIVE)

ARIE-PAUL VAN DEN BEUKEL (HUMAN CENTRED DESIGN)

---





# INTELLIGENT TRANSPORT SYSTEMS DESIGN & EVALUATION (ELECTIVE)

ARIE-PAUL VAN DEN BEUKEL (HUMAN CENTRED DESIGN)



UNIVERSITEIT TWENTE.







# INTELLIGENT TRANSPORT SYSTEMS DESIGN & EVALUATION (ELECTIVE)

ARIE-PAUL VAN DEN BEUKEL (HUMAN CENTRED DESIGN)

- Apply knowledge of technology and human capabilities for design and evaluation of ITS
- Simulation based prototyping
- Lectures from Engineering & Behavioural Sciences
- Stakeholder involvement
- Cooperation with TNO Automotive and Witteveen+Bos
- Access to driving simulator facilities



# Grand Cooperative Driving Challenge

TNO  
Helmond  
proving ground

Permanente road side units (RSU's) met camera's en wifi-antennes sturen beelden en actuele, draadloos ontvangen voertuiginformatie (zoals snelheid, versnelling, richting, positie, enz.) naar de controlekamer.

Voertuigen ontvangen via wifi-antennes actuele informatie van de RSU's (zoals de resterende tijd totdat verkeerslichten op groen springen, maximaal toegestane snelheid, enz.) van andere voertuigen (zoals snelheid, versnelling, richting, positie, enz.).

Rode en groene lichten geven aan of het voertuig autonoom of manueel rijdt (veiligheidsmaatregel).

GPS.

Voertuigen van negen verschillende teams uit Canada, Duitsland, Letland, Nederland, Zweden, Spanje, Turkije en de VS.

Lidar (optische remote sensing).

Radar.

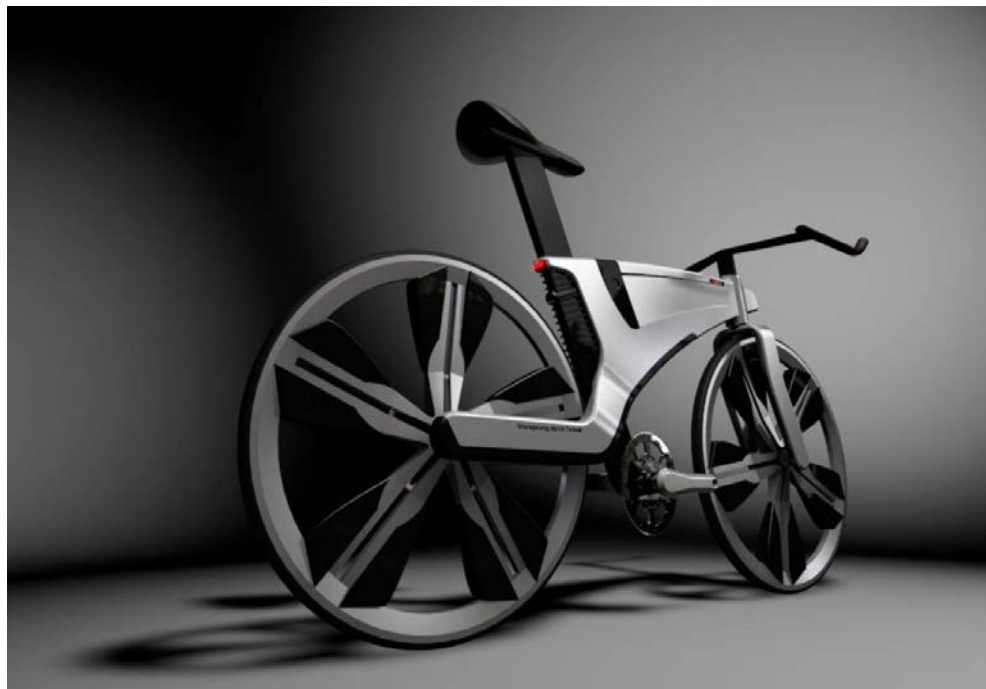
Lead-voertuig van TNO, dat op de snelweg automatisch voor gecontroleerde rem- en acceleratie-acties zorgt. De daarachter rijdende voertuigen moeten hierop zo goed mogelijk en veilig reageren. Dat moet leiden tot maximale doorstroming en minimale verstoring van het verkeer.



# GRAPHIC LANGUAGE OF PRODUCTS (ELECTIVE)

MAAIKE MULDER-NIJKAMP (PRODUCT-MARKET RELATIONS)

---





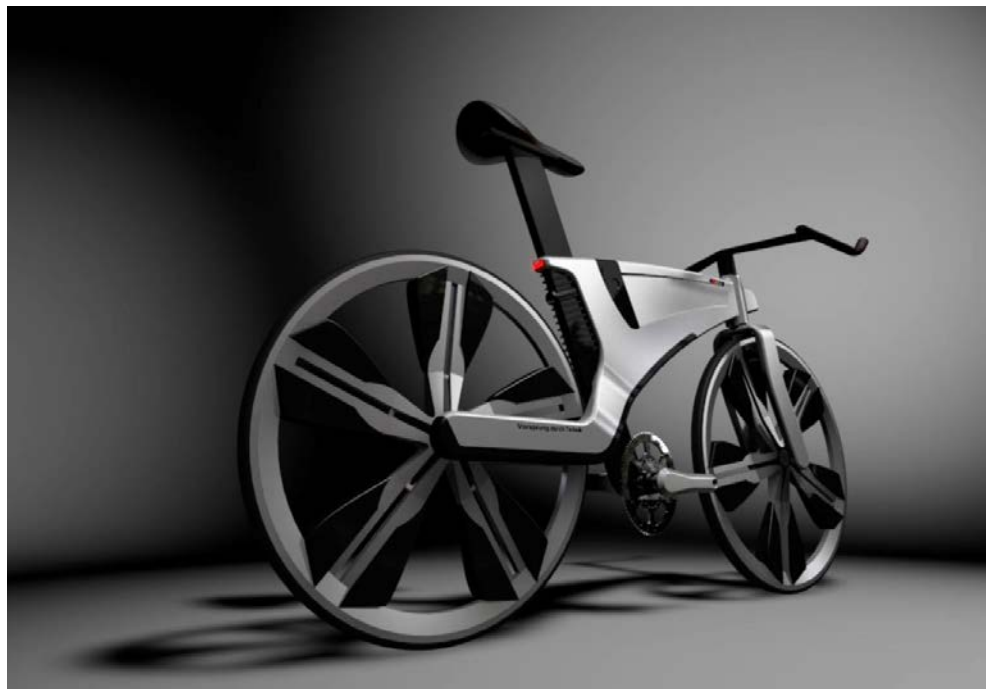
# GRAPHIC LANGUAGE OF PRODUCTS (ELECTIVE)

MAAIKE MULDER-NIJKAMP (PRODUCT-MARKET RELATIONS)

---



UNIVERSITEIT TWENTE.

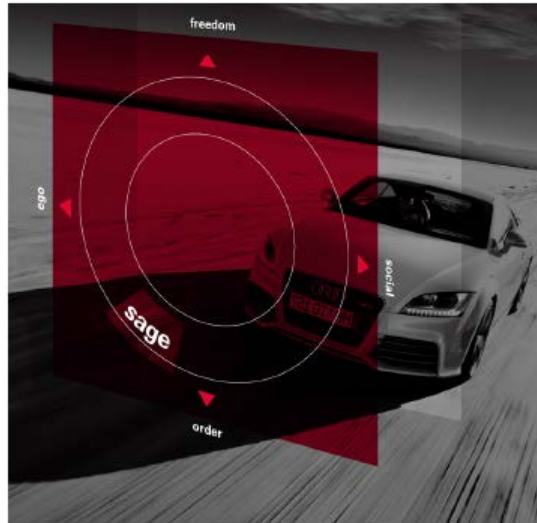




# GRAPHIC LANGUAGE OF PRODUCTS

## BRAND ANALYSIS

### Several theories



05

**Brand Archetypes**  
The placement of Audi  
within brand archetypes.

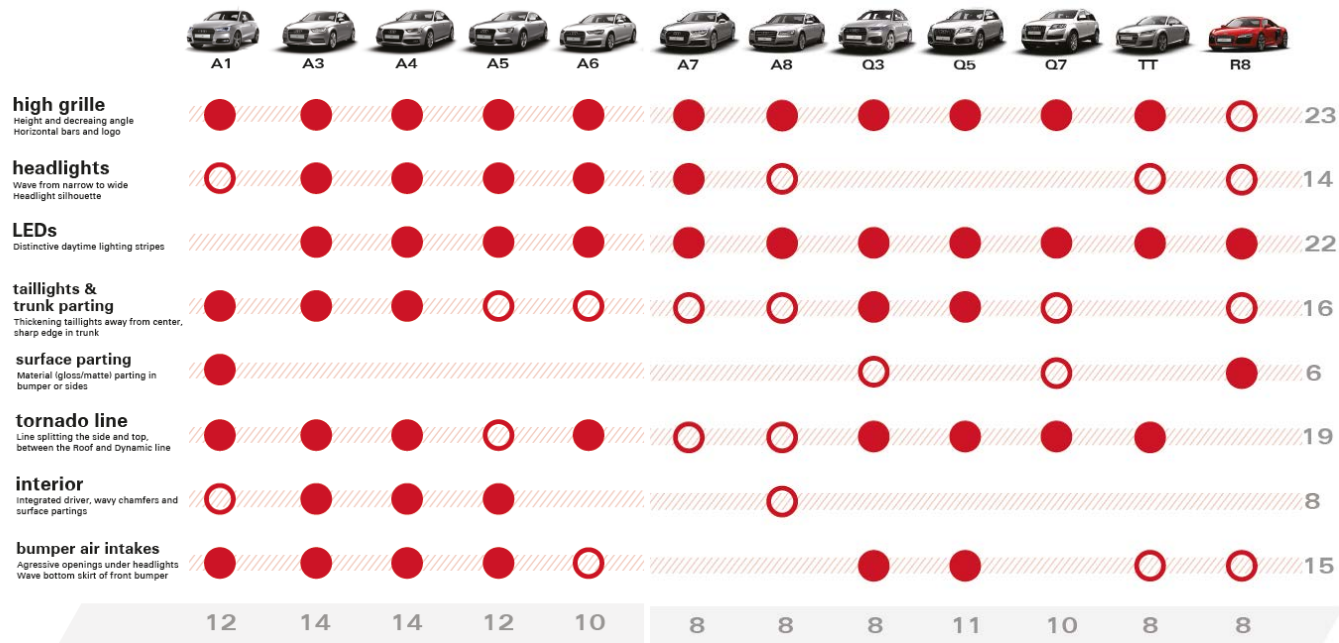


06

**Explicit design cues**  
The design cues are  
highlighted with red lining.

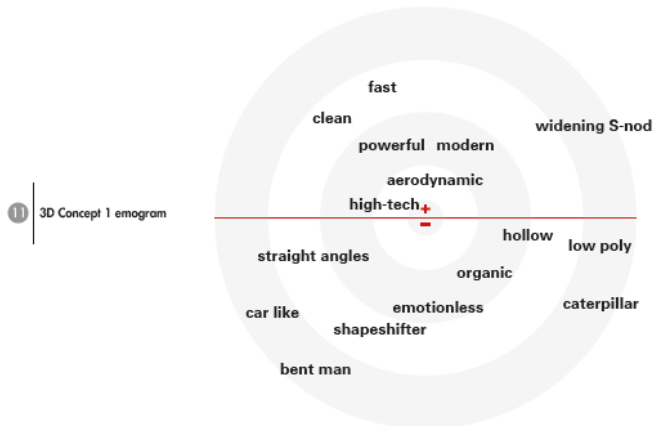
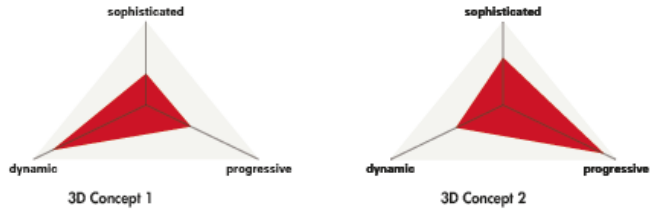
# GRAPHIC LANGUAGE OF PRODUCTS

## STRUCTURED ANALYSIS OF PORTFOLIO



# GRAPHIC LANGUAGE OF PRODUCTS

## EVALUATION



UNIVERSITEIT TWENTE.







# HUMAN TECHNOLOGY RELATIONS

## RECAP

---

- People oriented designer = Strengthening the link between humans and technology



# HUMAN TECHNOLOGY RELATIONS

## RECAP

---

- People oriented designer = Strengthening the link between humans and technology





# HUMAN TECHNOLOGY RELATIONS

## RECAP

---

- People oriented designer = Strengthening the link between humans and technology  
[Knowledge of technology and product realization as a basis]
- Learning about human conditions, capabilities and emotions
- Cultural and society context, history and future
- Improving products and situations, using the knowledge of users
- Research
- Design !





# HUMAN TECHNOLOGY RELATIONS

RECAP

[w.eggink@utwente.nl](mailto:w.eggink@utwente.nl)



- People oriented designer = Strengthening the link between humans and technology  
[Knowledge of technology and product realization as a basis]
- Learning about human conditions, capabilities and emotions
- Cultural and society context, history and future
- Improving products and situations, using the knowledge of users
- Research
- Design !

