



# Driving Global Change: Turning Technology into Healthcare Success Stories

Arie Paul van den Beukel, Holland Hybrid Heart

# Turning Technology into Healthcare Success

Saxion University of Applied Sciences

dr.ir. Arie Paul van den Beukel



## Holland Hybrid Heart

Research group Industrial Design Engineering  
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- ~ **64 million HF patients**



**ESC**

European Society  
of Cardiology

Cardiovascular Research (2022) **118**, 3272–3287

<https://doi.org/10.1093/cvr/cvac013>

**INVITED REVIEW**

## Global burden of heart failure: a comprehensive and updated review of epidemiology

**Gianluigi Savarese** <sup>1,2†</sup>, **Peter Moritz Becher**<sup>1,3†</sup>, **Lars H. Lund**<sup>1,2</sup>, **Petar Seferovic**<sup>4,5</sup>, **Giuseppe M.C. Rosano**<sup>6</sup>, and **Andrew J.S. Coats**<sup>7\*</sup>

<sup>1</sup>Division of Cardiology, Department of Medicine, Karolinska Institutet, Stockholm, Sweden; <sup>2</sup>Heart and Vascular Theme, Karolinska University Hospital, Stockholm, Sweden; <sup>3</sup>Department of Cardiology, University Heart and Vascular Centre Hamburg, Hamburg, Germany; <sup>4</sup>Faculty of Medicine, University of Belgrade, Belgrade, Serbia; <sup>5</sup>Serbian Academy of Sciences and Arts, Belgrade, Serbia; <sup>6</sup>IRCCS San Raffaele Roma, Rome, Italy; and <sup>7</sup>Faculty of Medicine, University of Warwick, Coventry, UK

### Abstract

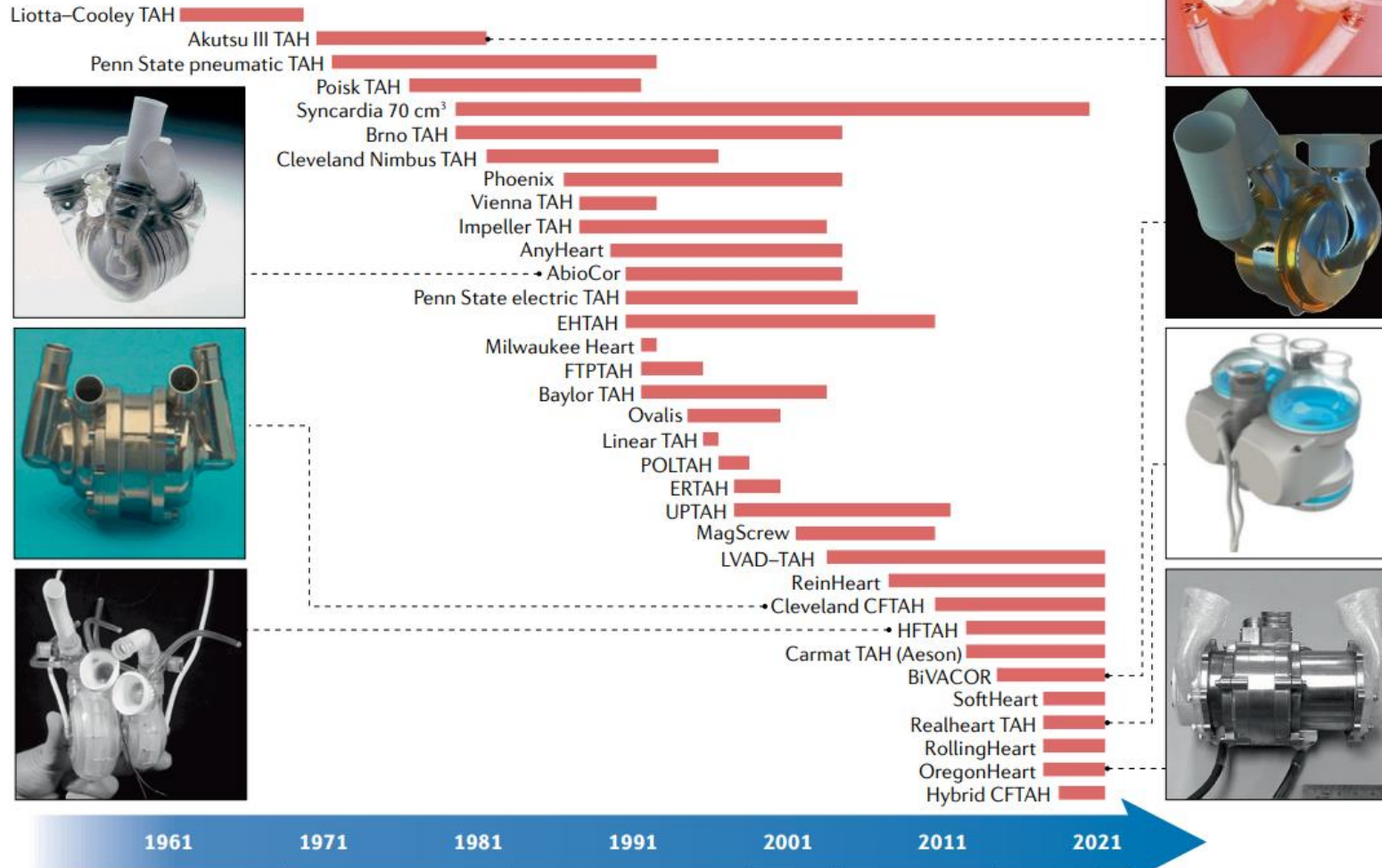
Heart Failure (HF) is a multi-faceted and life-threatening syndrome characterized by significant morbidity and mortality, poor functional capacity and quality of life, and high costs. HF affects more than 64 million people worldwide.

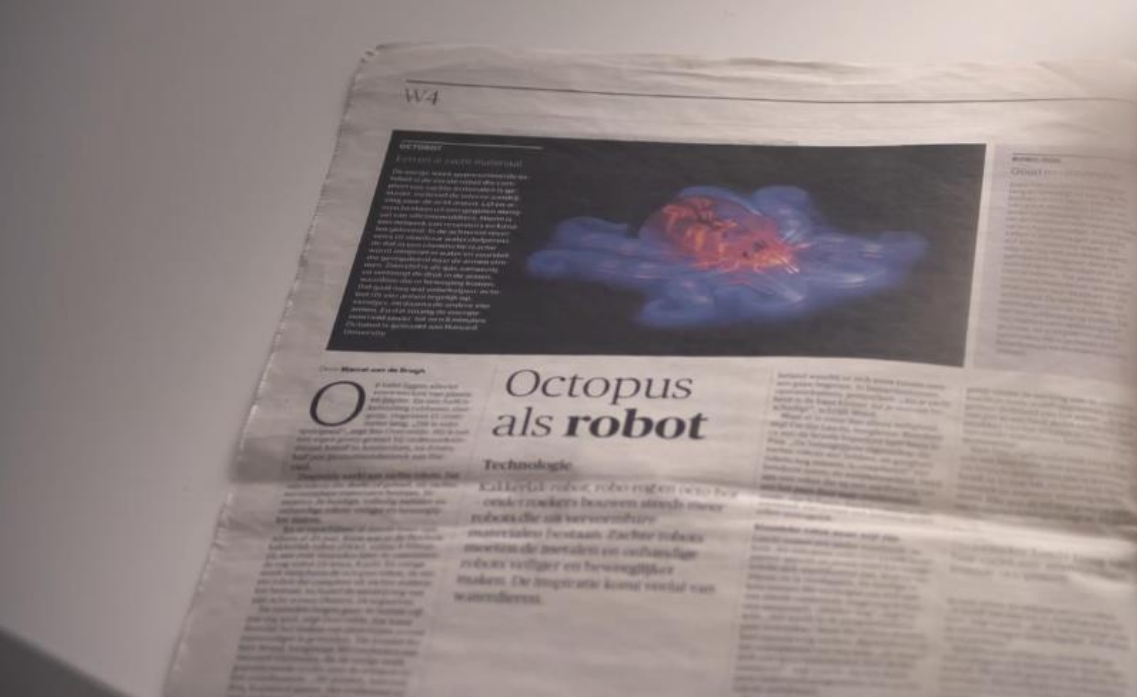


## The ongoing quest for the first total artificial heart as destination therapy

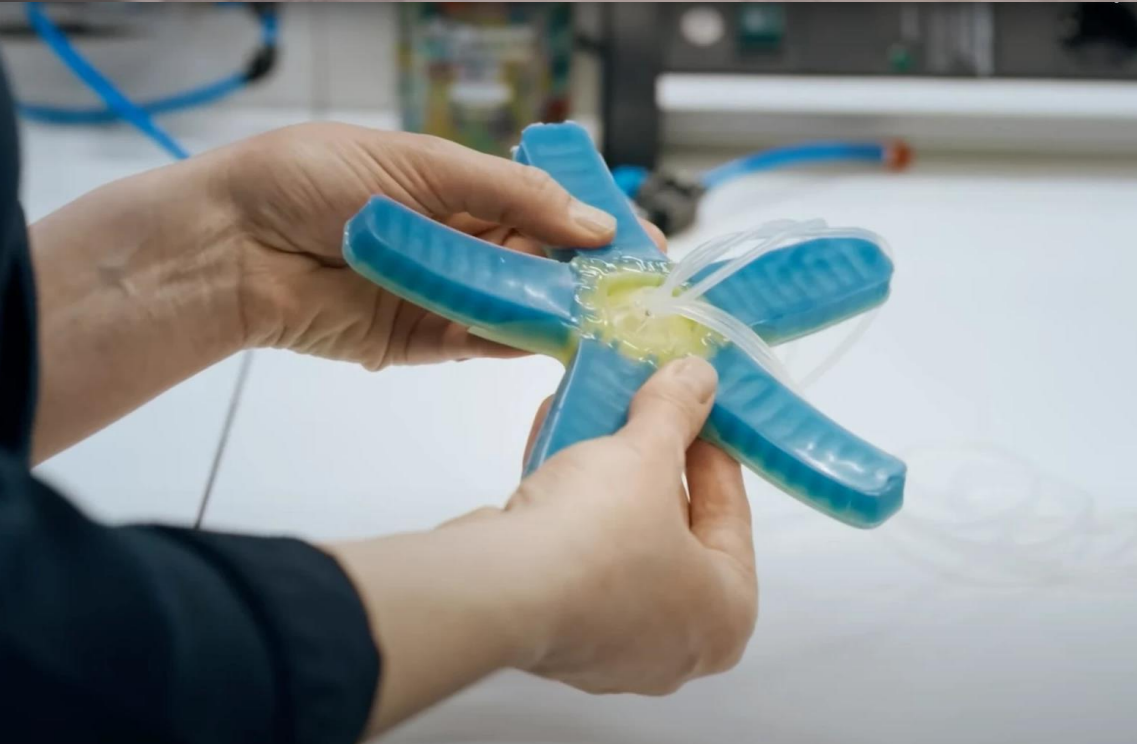
Annemijn Vis<sup>1,2</sup>, Maziar Arfaee<sup>1,2</sup>, Husain Khambati<sup>1,2</sup>, Mark S. Slaughter<sup>3</sup>,  
Jan F. Gummert<sup>4</sup>, Johannes T. B. Overvelde<sup>1,5,6</sup> and Jolanda Kluin<sup>1,2</sup>✉

NATURE REVIEWS | CARDIOLOGY





Jolanda Kluin  
Cardiac Surgeon







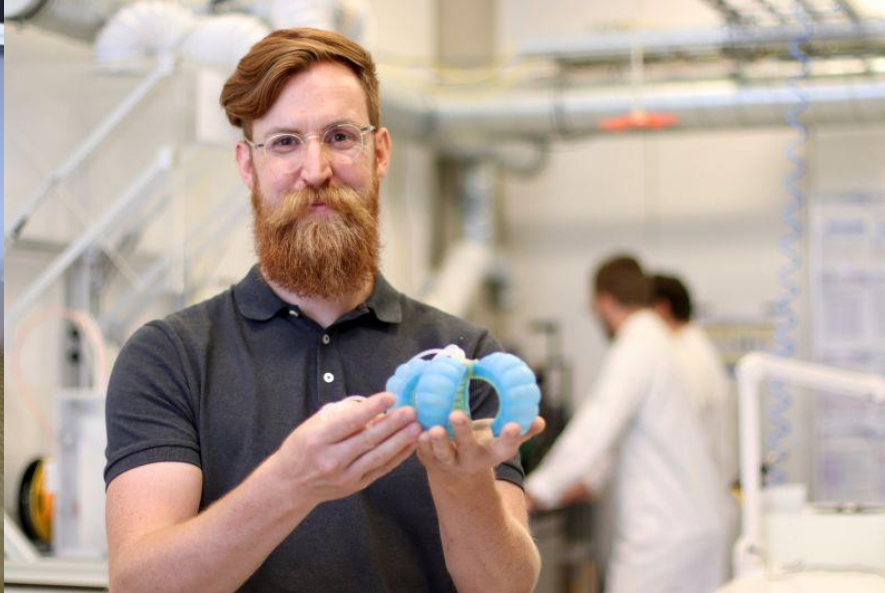
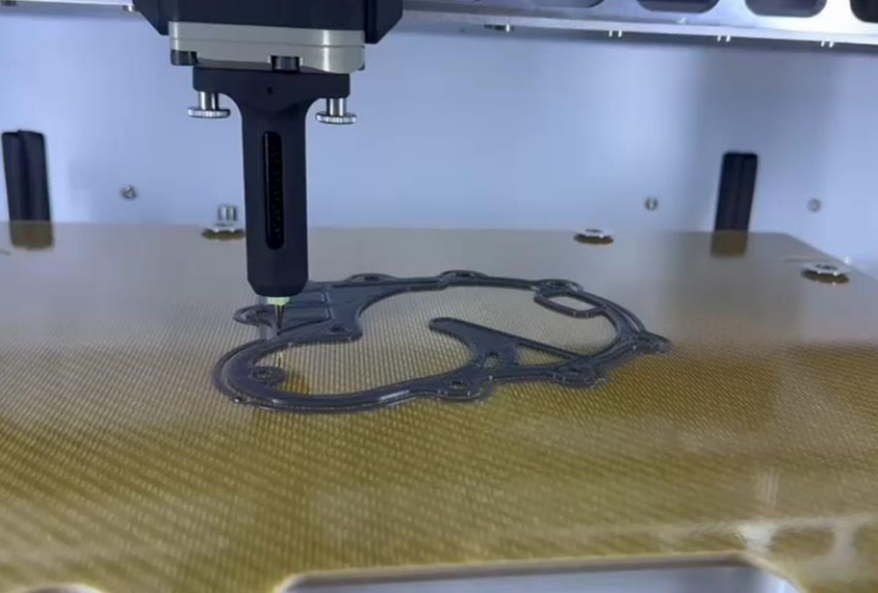
**HOEK TOT HELDER**

**€ 700.000**  
voor Holland Hybrid Heart

Actie Hoek tot Helder  
Datum 18 december 2023

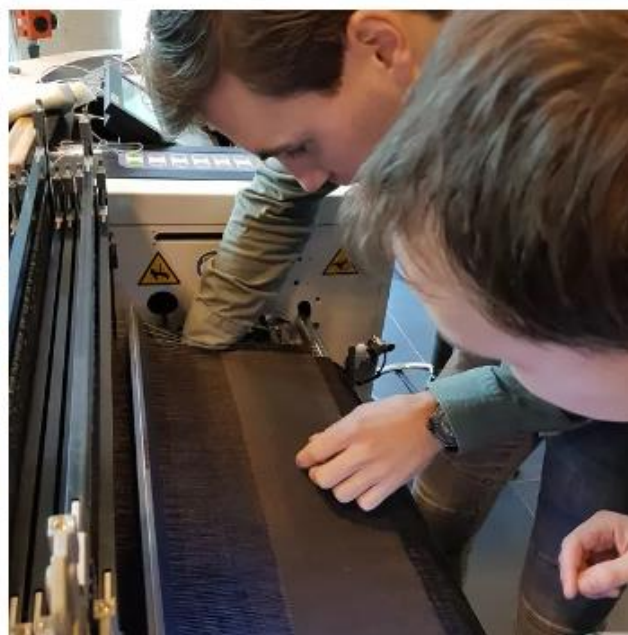
**Hartstichting**



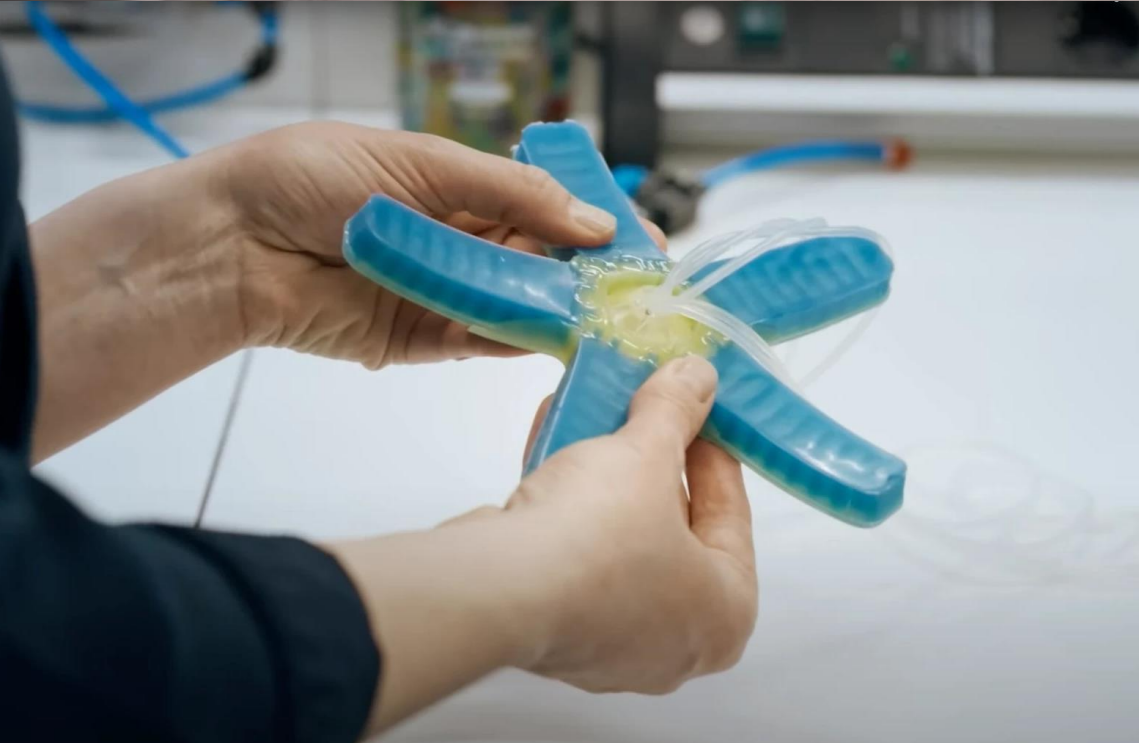
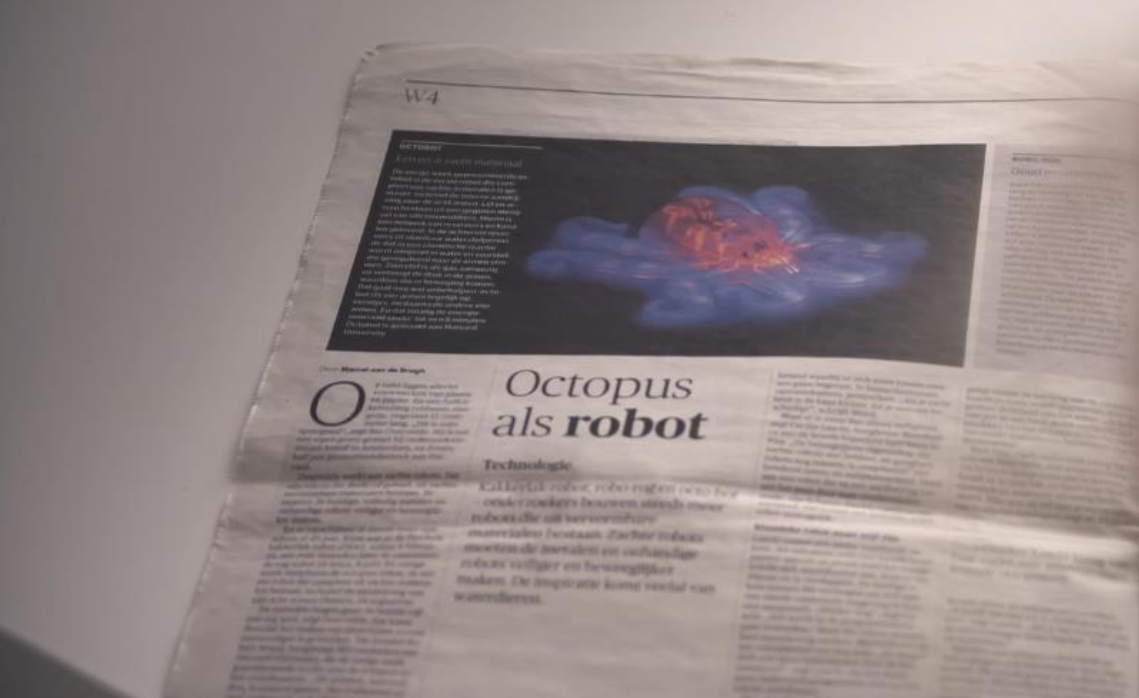




# Saxion research group Sustainable Functional Textiles







Lectoraat | Research Group

# Industrial Design



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Holland Hybrid Heart



# Research approach

## Interviews



**Participants:** Medical professionals, patients and their loved ones  
**Research goal:** Getting insight in the (previous), current and desired future living/working situation- & environment

## Focus groups

**Participants:** Groups of Medical professionals, patients and their loved ones  
**Research goal:** Gathering different perspectives in values, goals, meaning of well-being and vision on the HHH



## Contextual Inquiry + Diary studies



**Participants:** Patients and their loved ones  
**Research goal:** Getting a deeper insight in the (daily) life of the patients, their loved ones including their challenges, needs and values

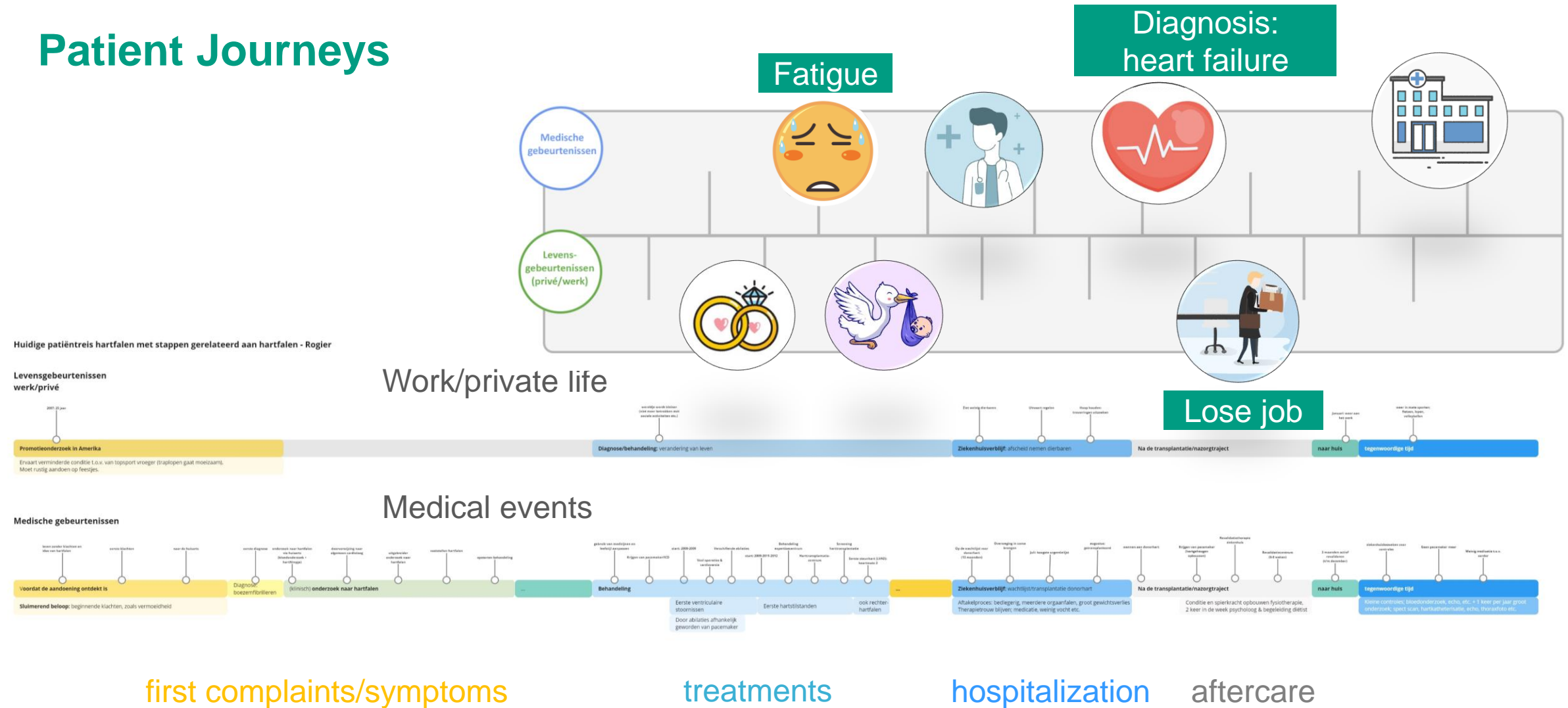
# Stakeholder Map (Medical professionals)

- Cardiologist
- Nurse Practitioner
- Pulmonologist (in case of pulmonary hypertension)
- Cardiac surgeon
- ICU doctors/nurses
- Social worker/psychologist
- Physiotherapist
- Dietitian

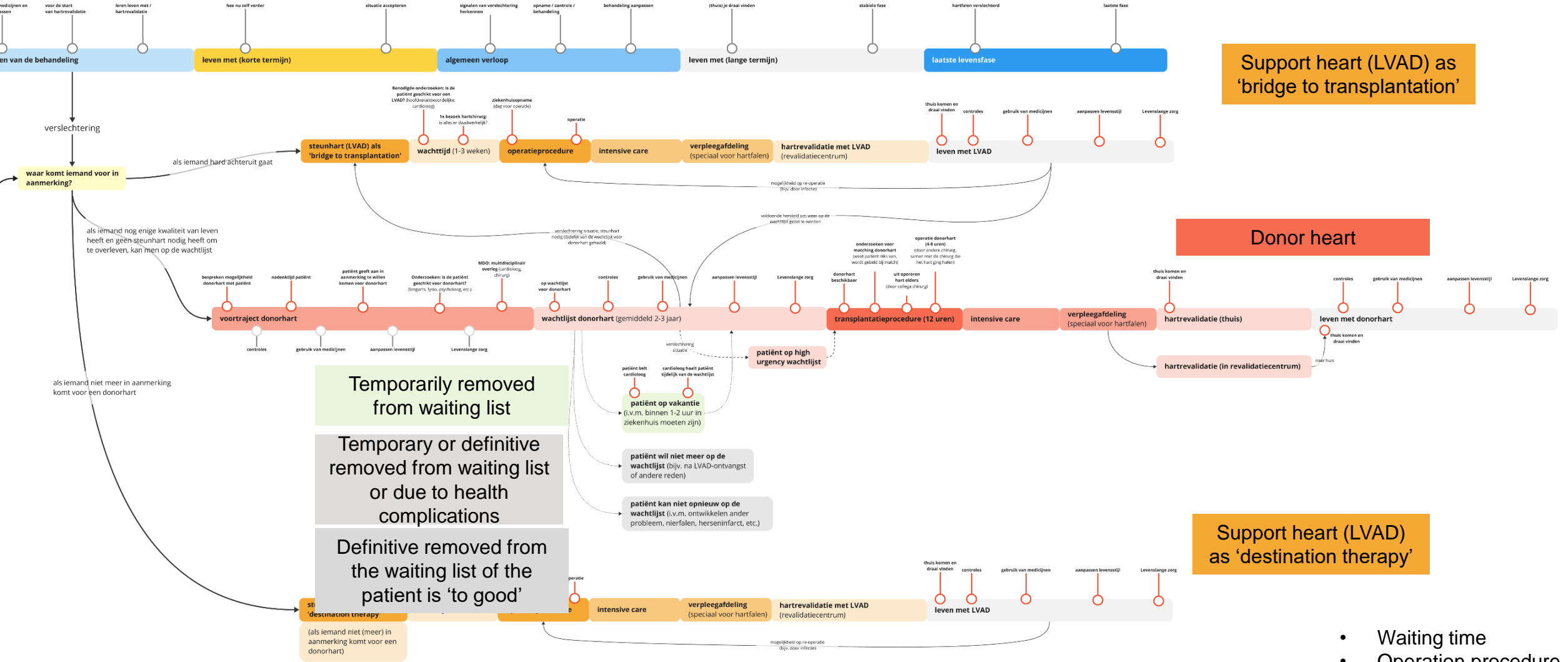




## Patient Journeys



# Workflow Medical Professionals (Medical Care Journey)



Support heart (LVAD) as 'bridge to transplantation'

Donor heart

Support heart (LVAD) as 'destination therapy'

- Waiting time
- Operation procedure
- Stay in intensive care
- Going home, etc.



## Contextual inquiry, Patient journey

*"You're actually more focused on saying goodbye and prolonging the farewell than thinking about what my future will look like."*

*"It is heavy. You are on your own, so from a quality point of view it is simply better to do it during the day."*

*"Eventually, the world was just the same room. I experienced the seasons based on how someone came in: in shorts or with snow on the shoes."*

*"I actually think surgery is the least important. It is convenient if it is not too difficult technically to implant it.  
It is not intended to make it easier for us, and I don't think it will do that."*

*"The better the robot heart is adapted to a patient's needs, the better it works."*

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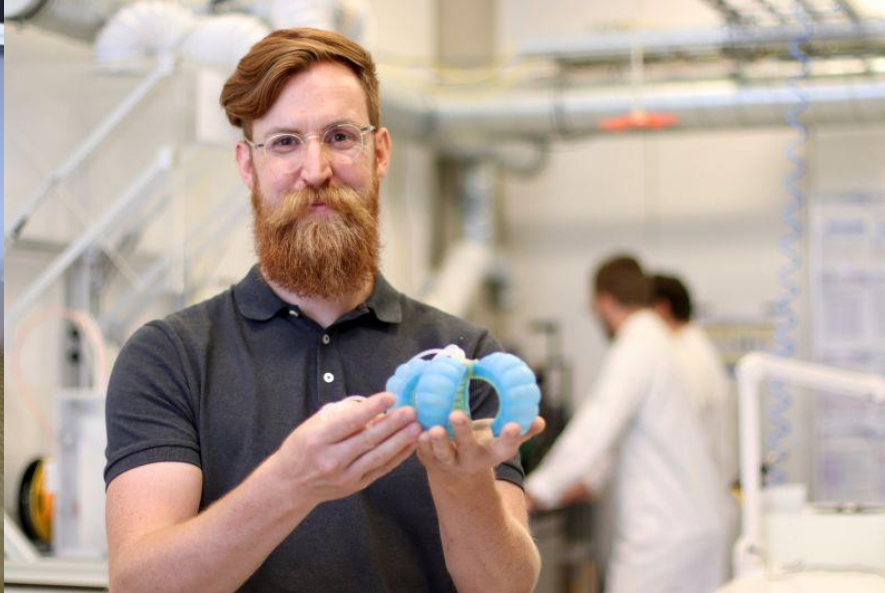
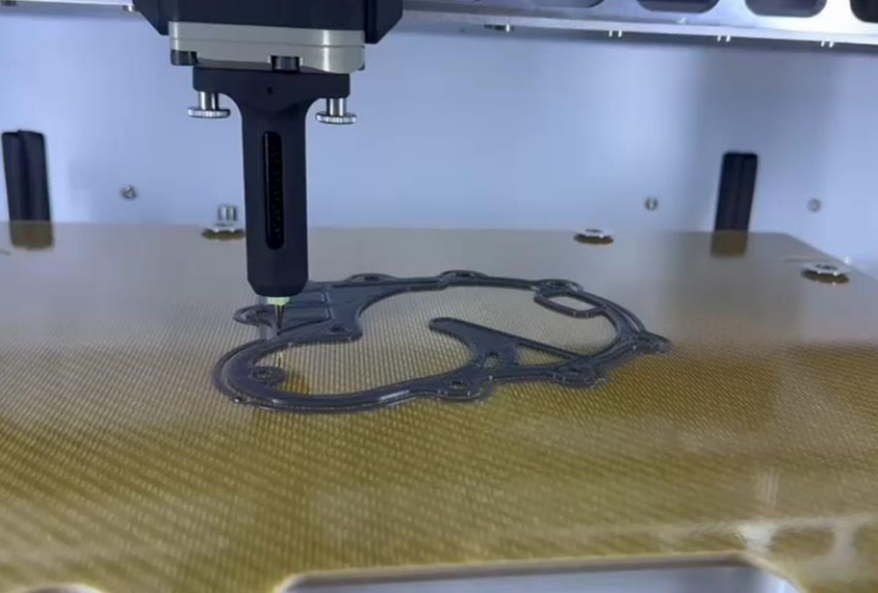
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