



Design for Personalized Health & Vitality

RESEARCH AND EDUCATION IN THIS FIELD AT INDUSTRIAL DESIGN EINDHOVEN

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The challenge: can Design help preventing this?



Photo: Antonio_Diaz/iStockphoto

Technology vs. Privacy

Technology

- What is possible?
- At what added value?
- Against what costs?

Privacy

- What is acceptable?
- In what situation?
- Quis custodiet ipsos custodes?

What can we do as TU/e-ID-SC?

Technology and “personal data”



"Being physically active
in an era of low-cost technology
generating massive amounts of
personal and contextual data"

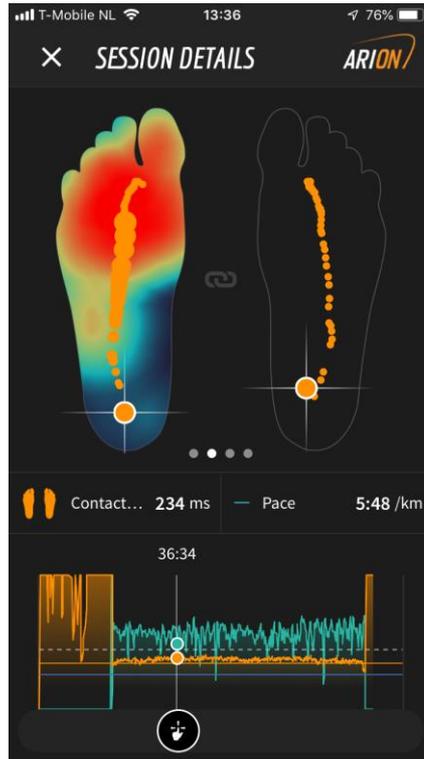
The important role of data

Data can be acquired and used

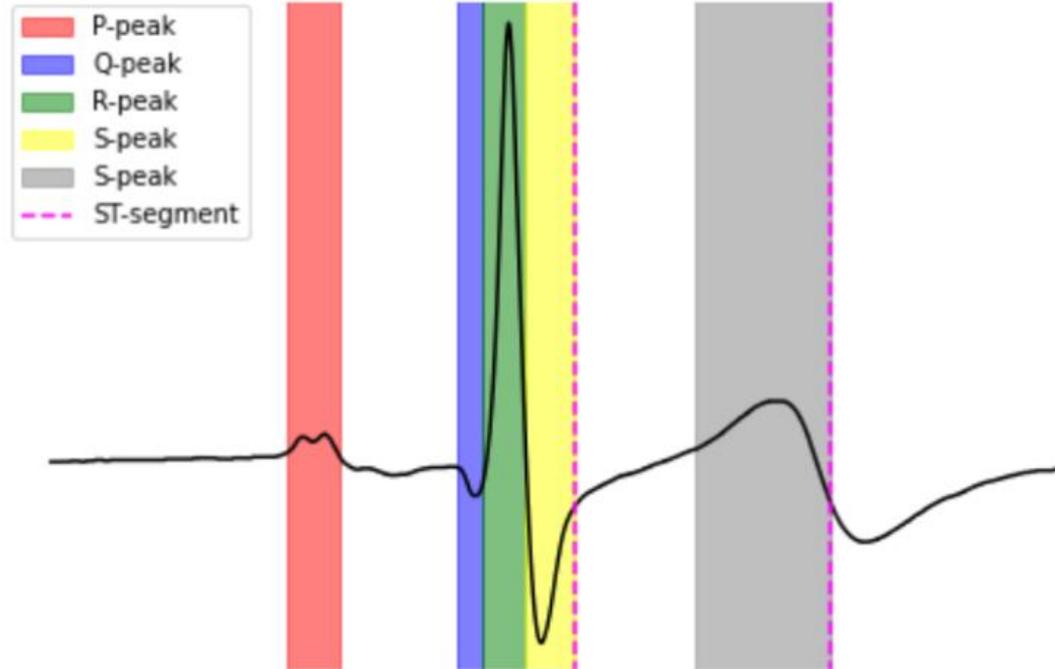
- To understand the behaviour of individuals in a real-life context
- To understand the behaviour of (social) groups in a real-life context
- To design, together with stakeholders, propositions to influence/positively affect this behaviour towards a “healthy lifestyle”
- To design, together with stakeholders, propositions to capture early warning signals in case of (potential) trauma’s
- To capture and analyze the (expected and unexpected) effects of this intervention

Thus generating knowledge that can be used in future research/design cycles

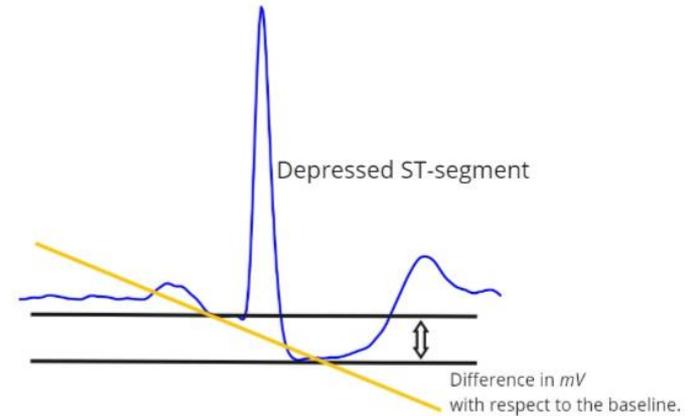
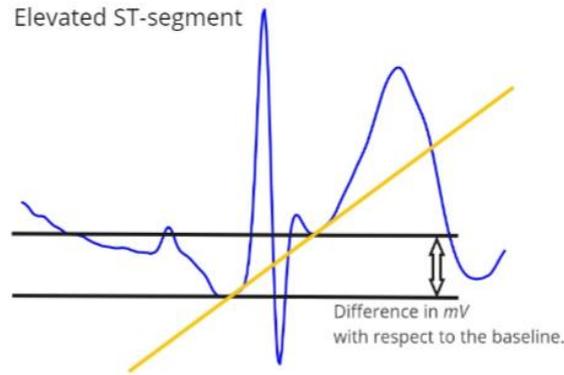
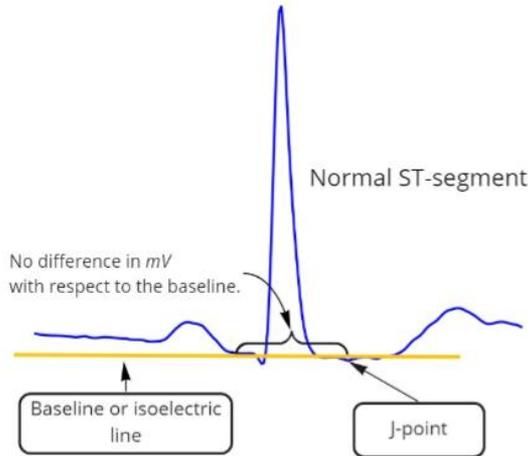
Technology - example



Example: 24/7 ECG monitoring



Example: 24/7 ECG monitoring (cont)



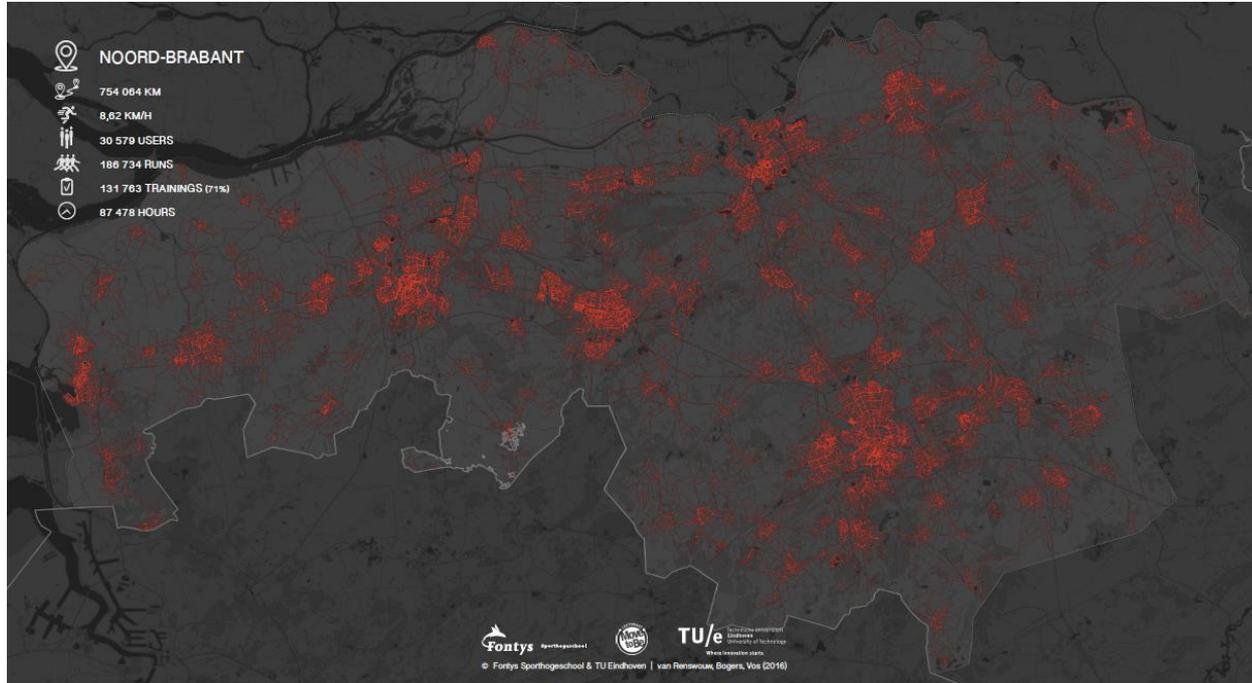
Examples “behavior in context”



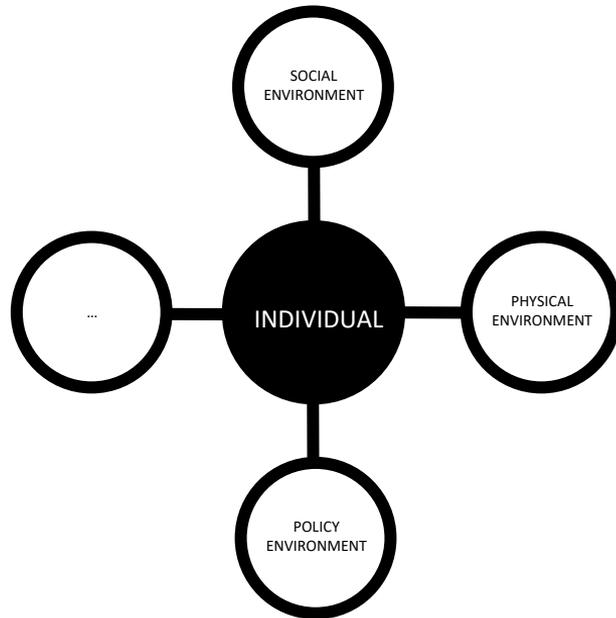
Contextual information



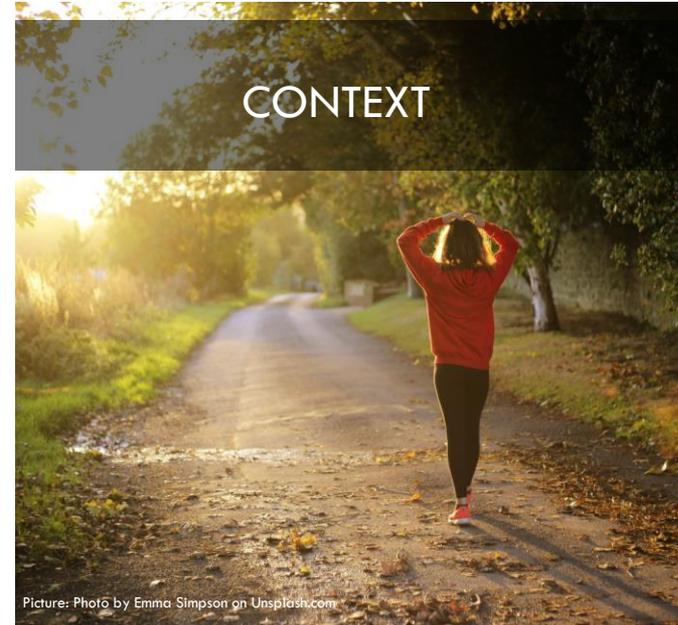
Extending into the living environment



Multi stakeholder challenge



Courtesy prof.dr. S.B. Vos, TU/e & Fontys



Key research questions (I)

- Can we create new concepts/propositions where technology creates added value for the people involved?
 - (self) insight
 - motivation
 - adapting lifestyle
- Can we use data to understand mechanisms underlying (in)activity patterns during daily life (interaction UU-UMCU, Fontys)?
- Can we do this in manners that meet all contemporary ethical and legal constraints?

Key research questions (II)

Focussing on for groups where “sports”/being physically active does not come naturally (e.g. the physically challenged/ socially challenged)

- Can we use data to understand mechanisms underlying (in)activity patterns during daily life (interaction UU-UMCU, Fontys)?
- Can we use data to create, especially for these groups, new concepts/propositions that make physical activities an attractive part of everyday life (interaction UU-UMCU, Fontys)?

Needed: specific support for specific profiles / user groups

- What groups (see work of prof. Steven Vos) would require what type of support
 - Motivation
 - Context specific guidance and support
 - Person specific guidance and support
- How can we design suitable systems/products/services for this?
- How can we measure the results?
- How do we interpret the data?

DATA- ENABLED RUNNING



But: can Design help preventing this?



Photo: Antonio_Diaz/iStockphoto

Risk analysis: Medical/Ethical/Legal challenges

The problem with modern data acquisition and modern data analytics is that we know so much more than people realize even when they sign a very explicit



GDPR/AVG: Careful on NWA data

- We do not need them, we can derive them anyhow

Ethical/legal problems (II)

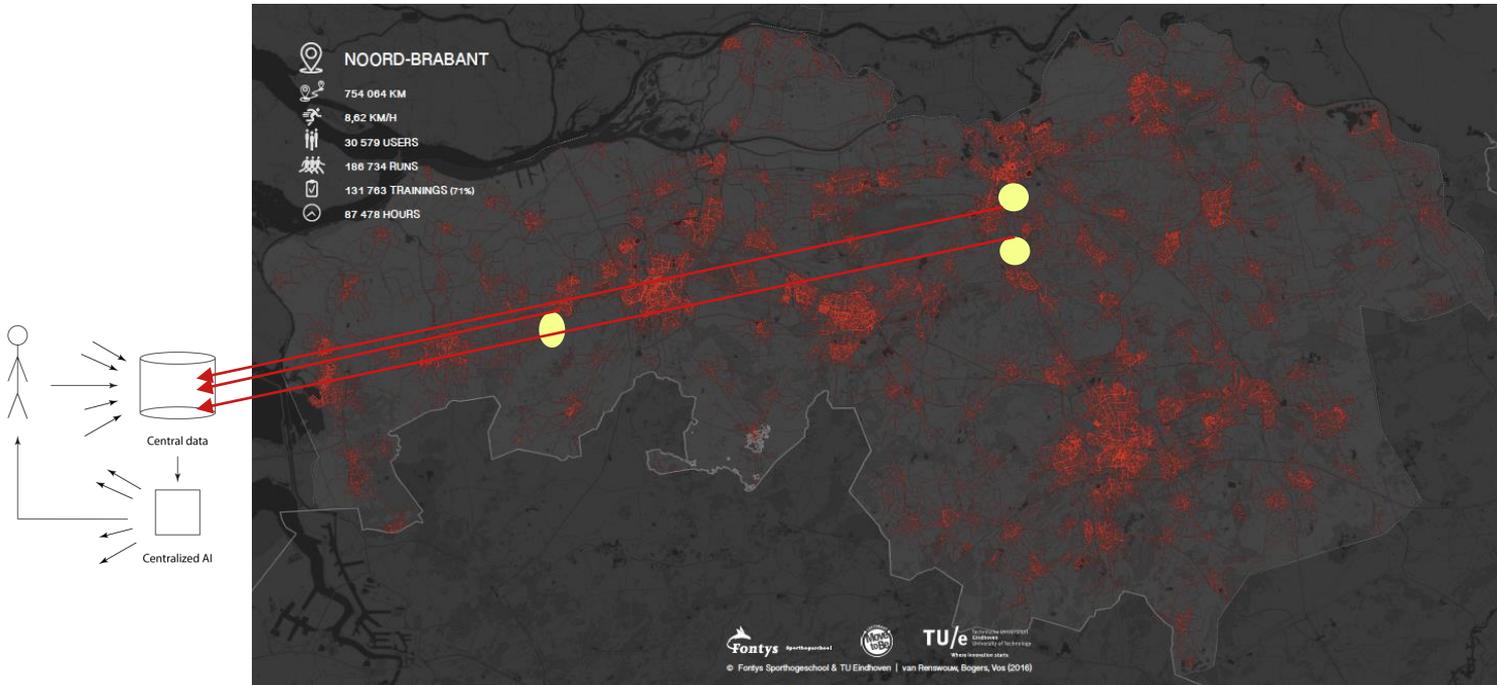


This test probably went through an METC



But often we have the same data, no METC

Major challenge with future AI systems: data ownership and privacy



Health, data and AI



I did not order
an ambulance!

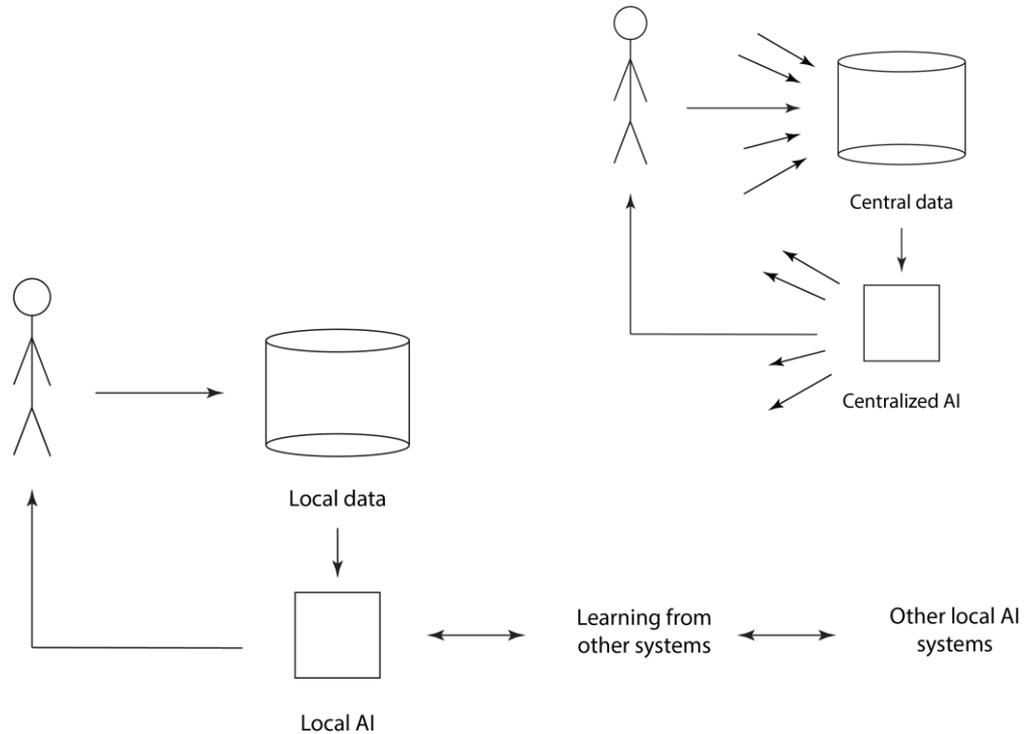


I'm here to help you!

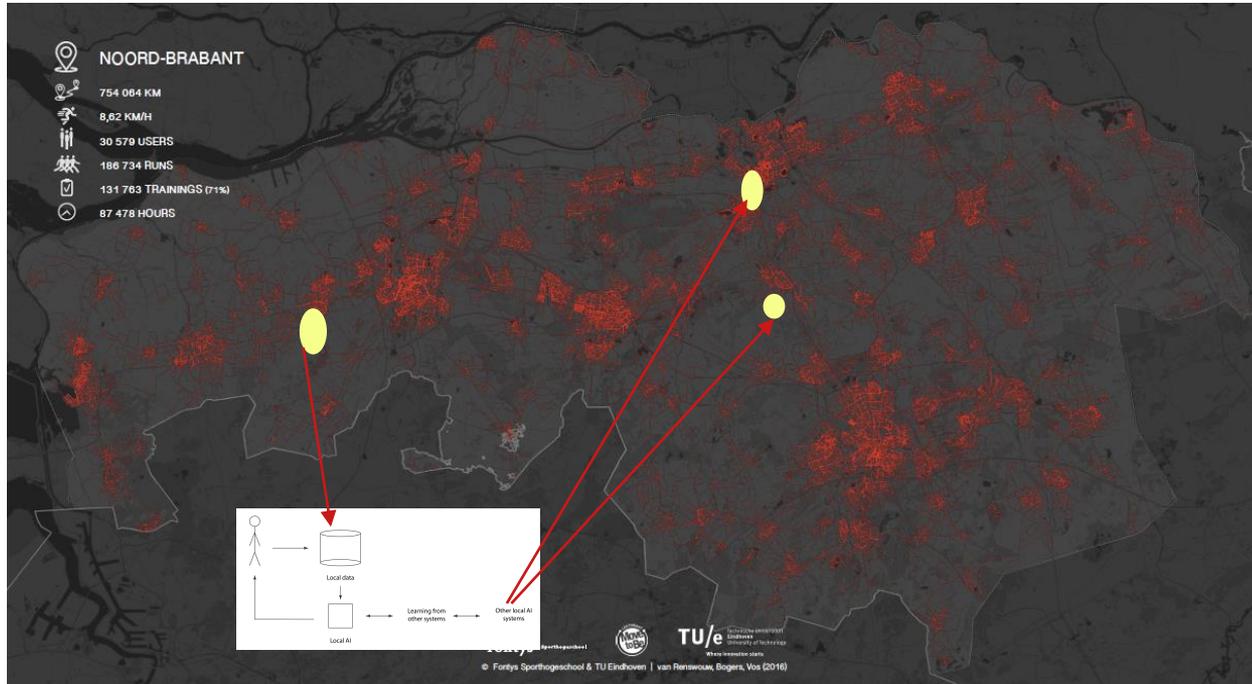


But you will
need one in five
minutes!

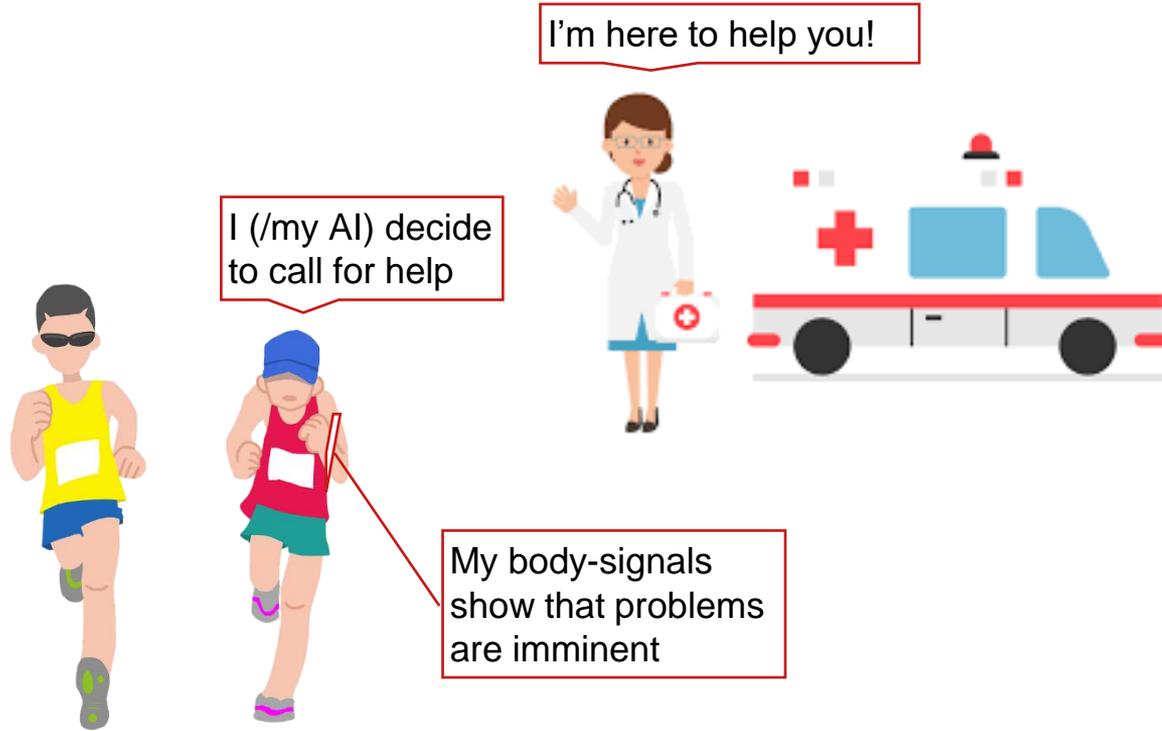
Future: moving towards “localized AI”



Example Centralized vs Localized



Health, data and localized AI



The future

- AI systems will, increasingly, be able to analyze complex patterns in society relating to, for example, major challenges in public health
- In spite of legislation such as the GDPR, privacy and ethics will remain an, increasingly important, factor regarding AI in a societal context
- Developments in technology (sensors, reasoning and data representation) will enable the development of a new class of AI systems; systems that communicate “findings” in stead of data: localized AI
- There is, and will remain, a strong need for “trusted partners”
 - Quis custodiet ipsos custodes
- TU/e can take a leading role in this