CAREWEAR:
IMPLEMENTATION OF WEARABLE TECHNOLOGY IN MENTAL HEALTHCARE

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Background

- WHO states that stress-related problems and depression are currently the most important challenges in mental healthcare.
- Technological innovations provide novel means for ambulatory monitoring and raising awareness for these mental illnesses.
- Wearables collect continuous & ecologically valid physiological data that can inform on both risk factors and the process of recovery in mental disorders (Haberer et al. 2013).
- **The Carewear project aims to validate an online platform that will allow health care professionals to use wearable data in their clinical practice.**

Figure 1. Empatica E4 (left) and imec Chill+ (right) wearables

Components of Carewear

- Wristbands for continuous monitoring (Figure 1)
- Algorithms to transform raw data into clinically relevant indicators
- Computer-based software platform (Figure 2) with:
  - Physical activity (step count and activity)
  - Stress situations
  - Subjective state
  - Heart rate variability
- Clinical guidelines allowing professionals to use physiological data in evidence-based practice

Method

- The added value of wearable technology will be investigated in 2 use cases
  1) Treatment of depressive symptoms
  2) Employee assistance programs
- Procedure of the use cases

Questionnaires: DASS, UTAUT, UBOS, BAT, VOB, UCL → Regular treatment + Carewear → DASS, UTAUT, UBOS, BAT, VOB, UCL

Notes: Depression and Anxiety Stress Scales, DASS; Unified Theory of Acceptance and Use of Technology questionnaire, UTAUT; Utrechtse Burnout Schaal (based on Maslach Burnout Inventory), UBOS; Burnout Assessment tool, Vragenlijst Overspanning en Burnout (Burnout questionnaire), VOB; Utrechtse Coping Lijst, UCL.

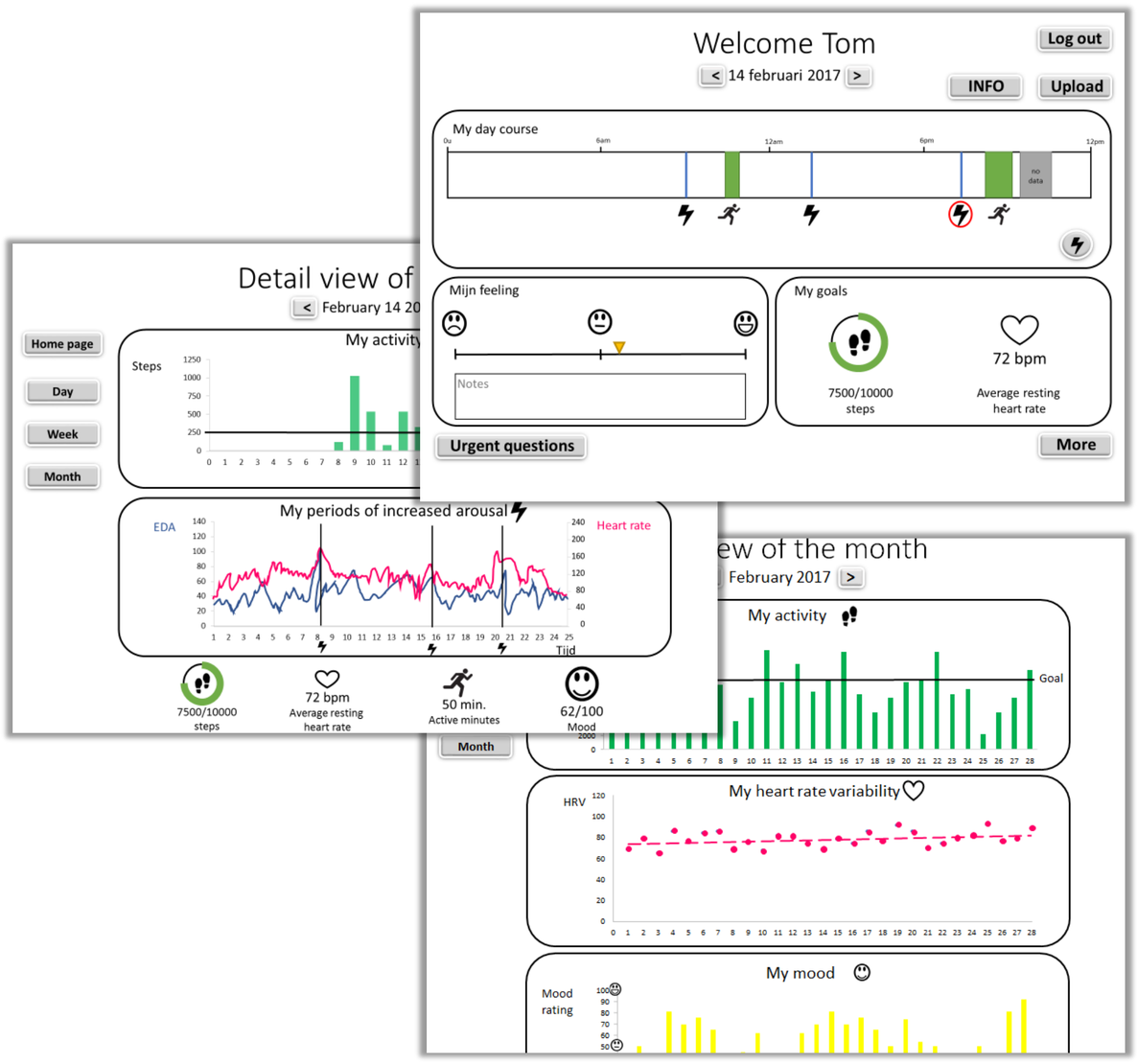

Figure 2. Wireframes of the online platform.

Discussion

- Carewear aims to implement wearables as a useful addition to current best practice in the context of depression and burn-out.
- First experiences:
  - Large interest from mental health care professionals to apply Carewear.
  - End-user involvement ensures that the platform and guidelines meet the current clinical needs.
  - Still some technical challenges, but first proof of concept is ready for the use cases.
- The implementation study is starting now and will run until the end of the year.

References

Haberer, J. E., Trabin, T., & Klinkman, M. (2013). Furthering the reliable and valid measurement of mental health screening, diagnoses, treatment and outcomes through health information technology. General hospital psychiatry,35(4), 349-353.

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