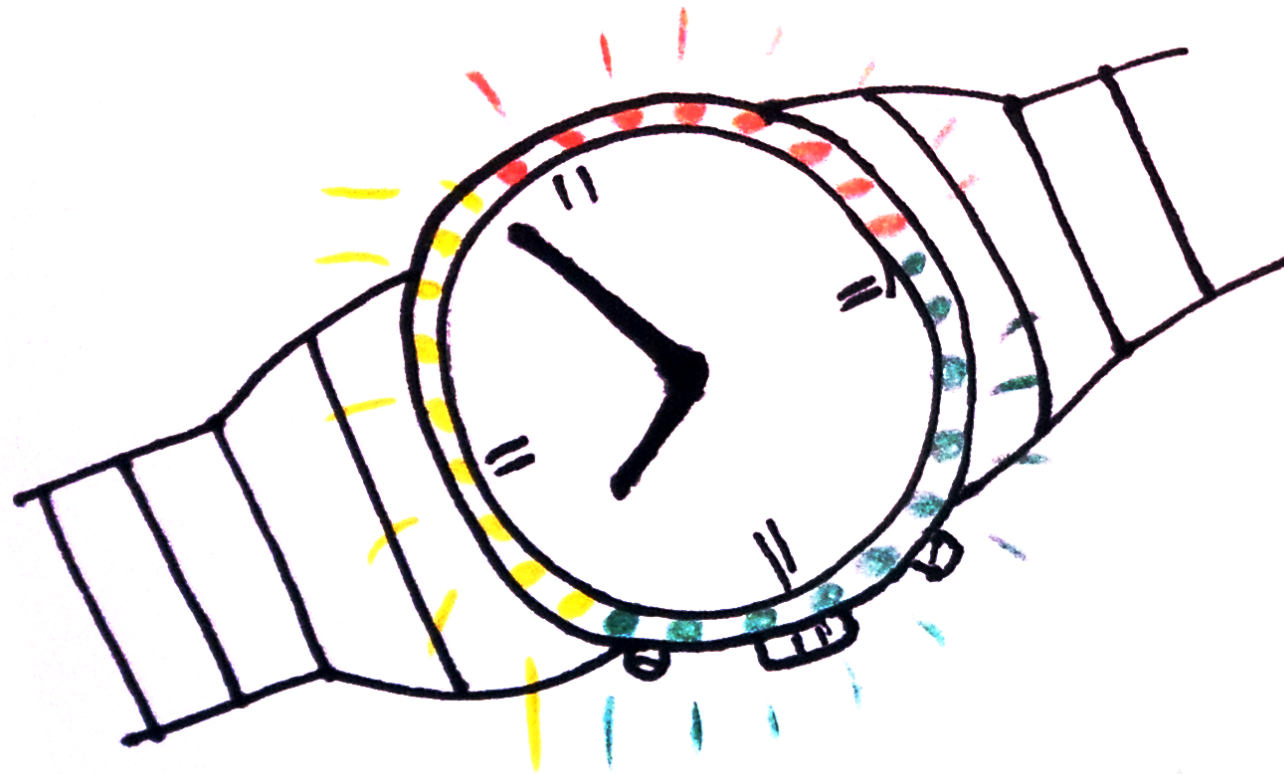404 — Bengt Lüers, Marius Wybrands
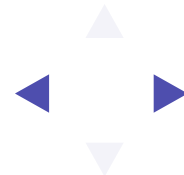
LightWatch

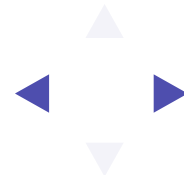A wearable light display for body stress.

Task

- extend a watch to an interactive light display
- derive stress level from sensor data
- correct stress level via user input
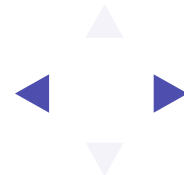- visualize stress level using RGB LED ring

Progress

- done: explore feasibility
- done: evaluate user input modalities
- **now: explore sensor input modalities**
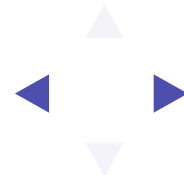- next: build actual prototype

Evaluation: Pulssensor (1/2)

- Method: Compare to blood pressure monitor.
- Result: Very similar average.
- Verdict: Seems usable.

Evaluation: Pulssensor (2/2)

- Method: Experiment with different positions on arm & hand.
- Result: Flaky results on arm, reliable readings on fingers.
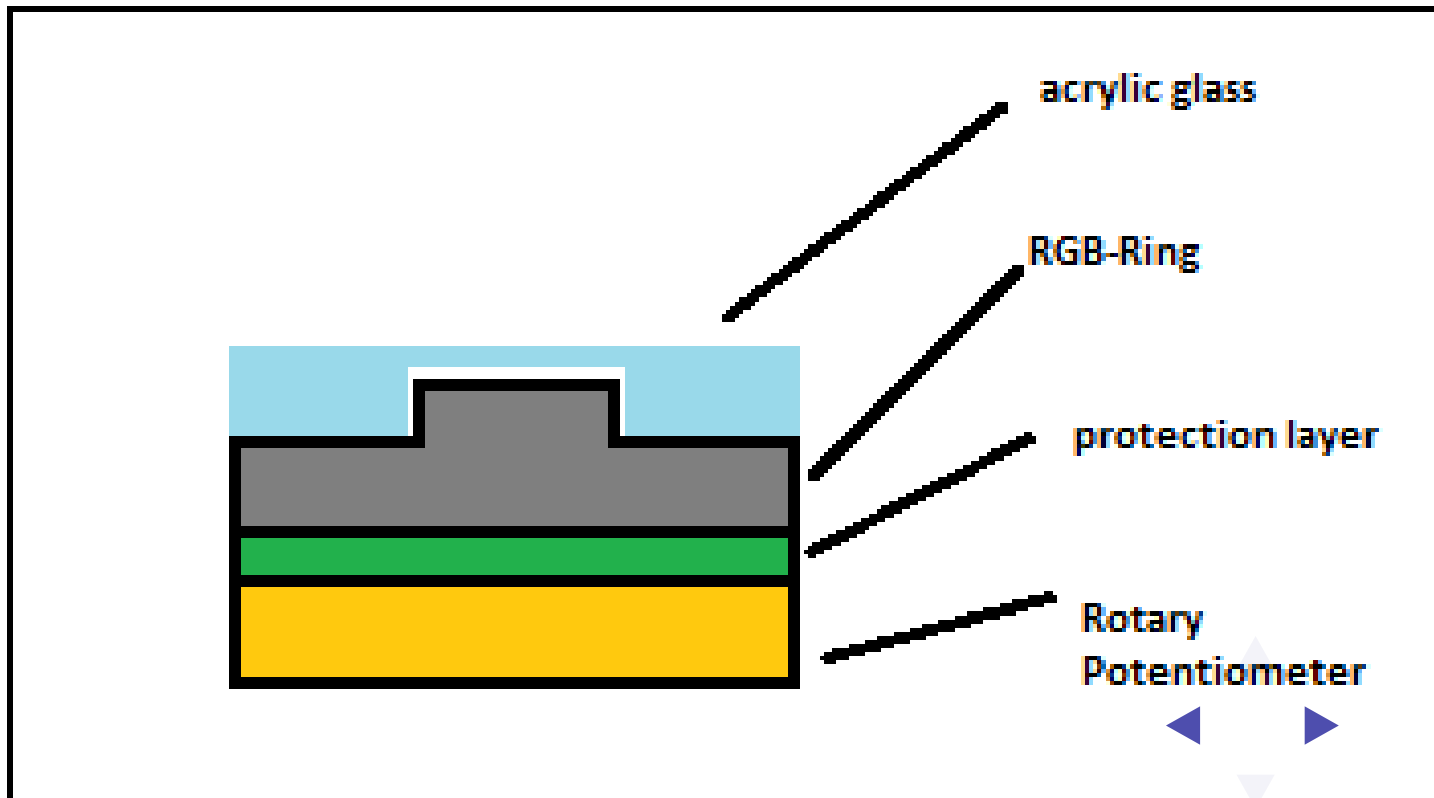- Verdict: Pulssensor needs to be mounted on the finger.

Evaluation: Potentiometer

- method: internet research
- feasibility: unknown, needs to be tested with actual hardware
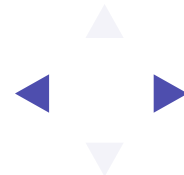- verdict: worth trying, waiting for order to arrive
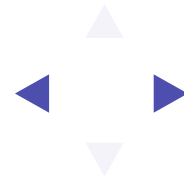
Potentiometer: Layering

- potentiometer beneath the rgb ring
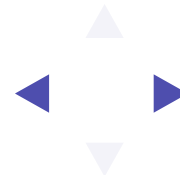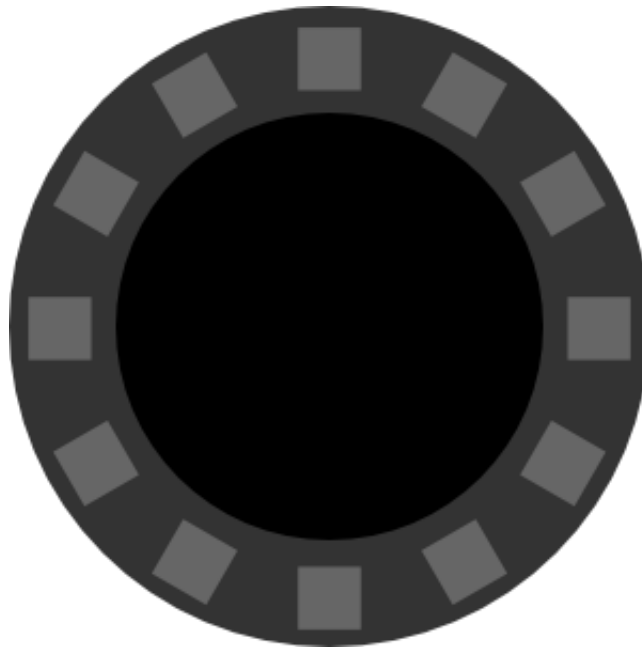- flexible layer enables applying pressure

RGB-Ring

- incident: attempted to fit plexiglas into ring
- effect: ring is broken
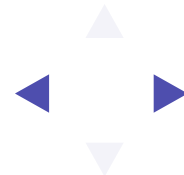- verdict: rings needs protection against force

Ring Protector

- purpose: distribute force across ring
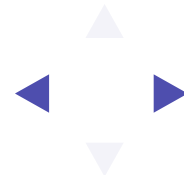- method: fit acrylic glas using laser cutter

Evaluation: Arduino Minimizing

- problem: the arduino needs to fit into the watchcase
- method: internet research, breadboard prototype
- idea: use a ATtiny as a small Arduino replacement
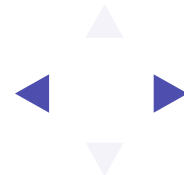- verdict: the circuitry will fit into the watch

Hardware Concept

- 1000 mA LiPo
- ATtiny85
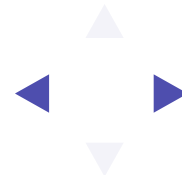- Pulse Sensor
- Potentiometer
- RGB-Ring

Interaction Concept

- output: system measures pulse, displays guessed stress
- interaction: user corrects to felt stress using potentiometer

Outlook

- combine component prototypes into initial system prototype
- comprehensive software prototpe

The End