



# Consumerisation of healthcare

Born in the cloud - The new generation of integrated hybrid medical monitoring



Deal of the Year Winner 2016



Winner Red Herring Top 100 Europe 2016



Most innovative Medical Device Company 2015



Preview of the future of digital health 2015



Best medical Wearable Award Winner 2015



Nokia Sensing XChallenge Award Winner 2014

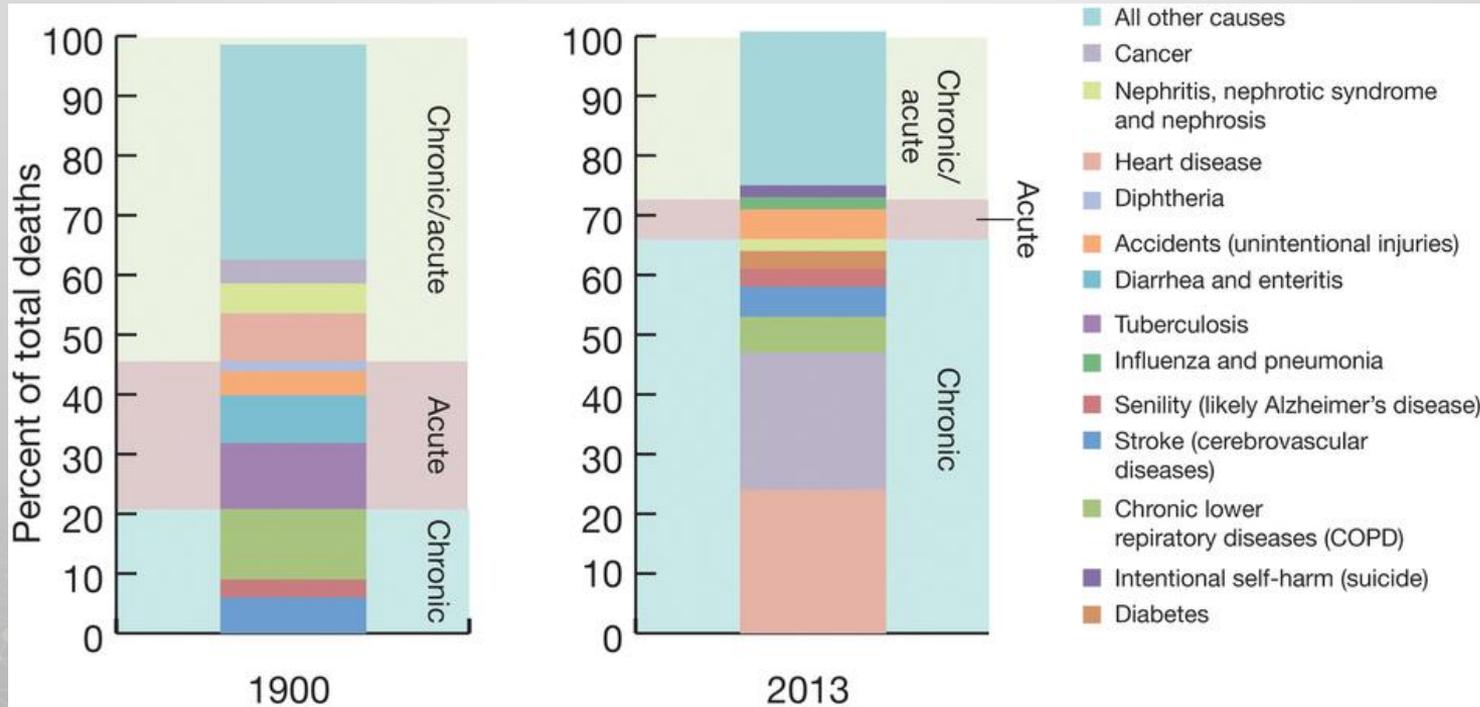


Awarded EU's 'Best eHealth SMEs' 2013

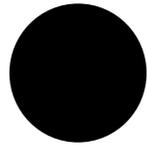
# The idea is to die young as late as possible

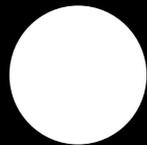
*Ashley Montagu, British Anthropologist*

# From acute to chronic conditions



Nature Biotechnology, 34, 239-246, (2016)





**99.8% of our lives  
take place outside the  
hospital or physician's office**

# The medical reality

14'000 diseases

6'000 drugs

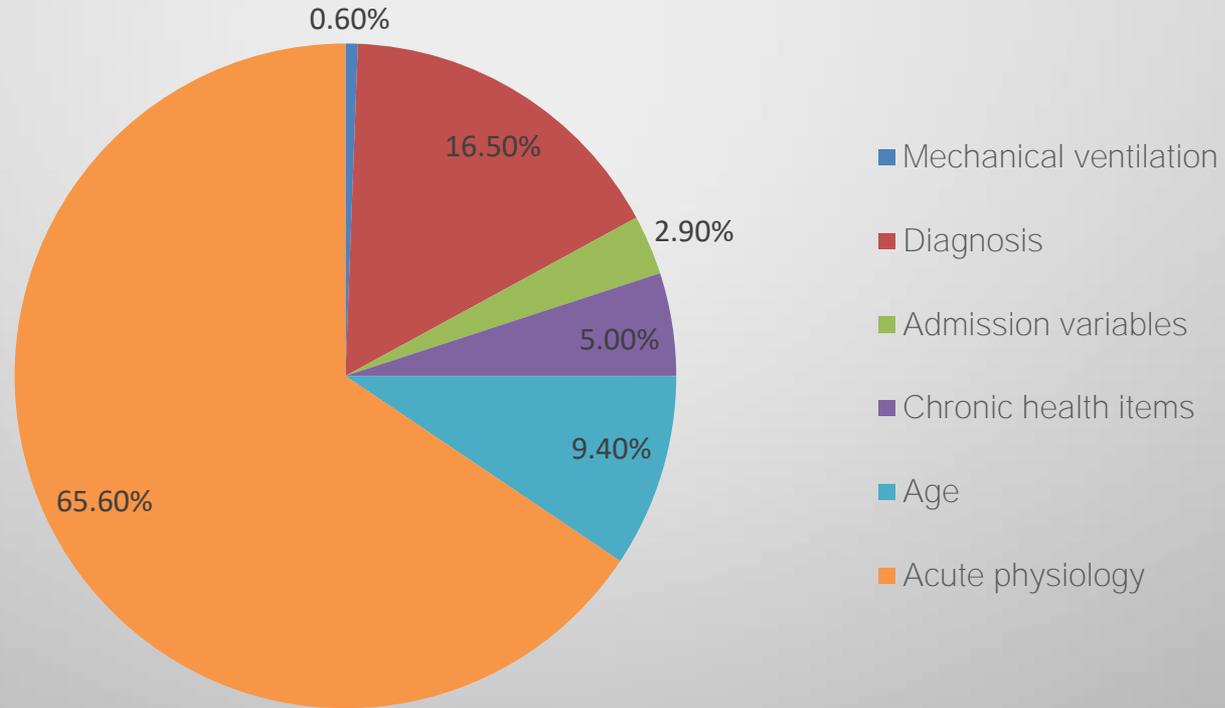
4'000 medical procedures

There is no other industry that deals with so many 'production lines' – **digitalisation** to further scale or even maintain is needed.

# How are you?

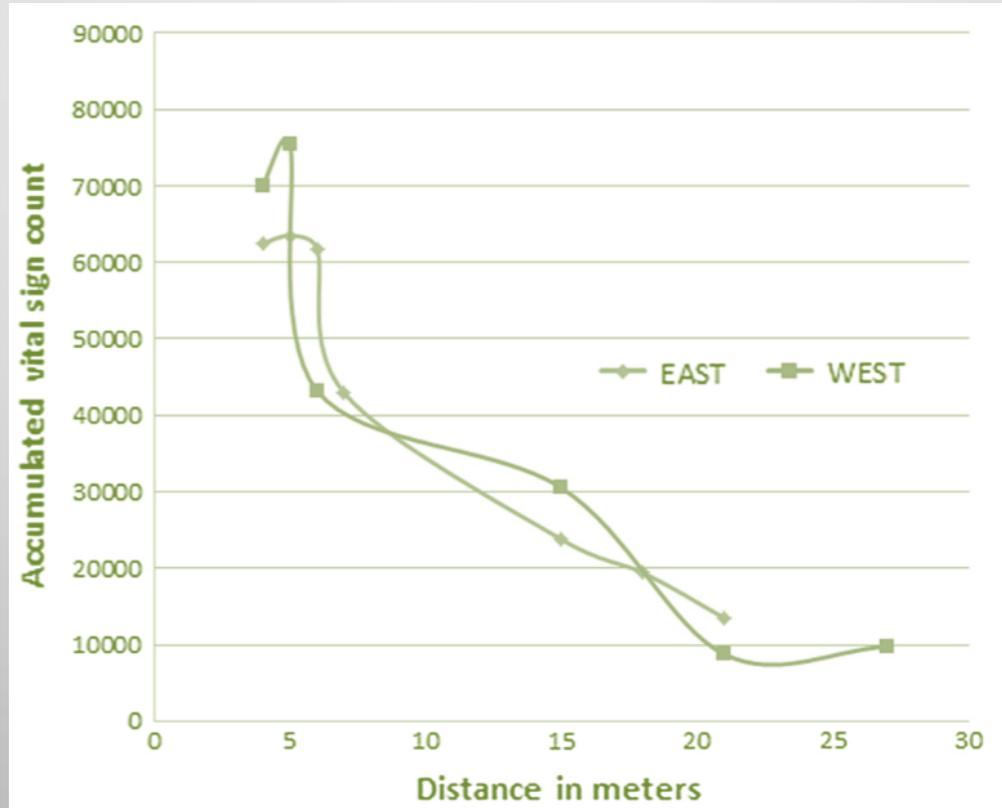
**A simple question and yet so difficult to answer objectively**

# Vital parameters – best predictors in ICU



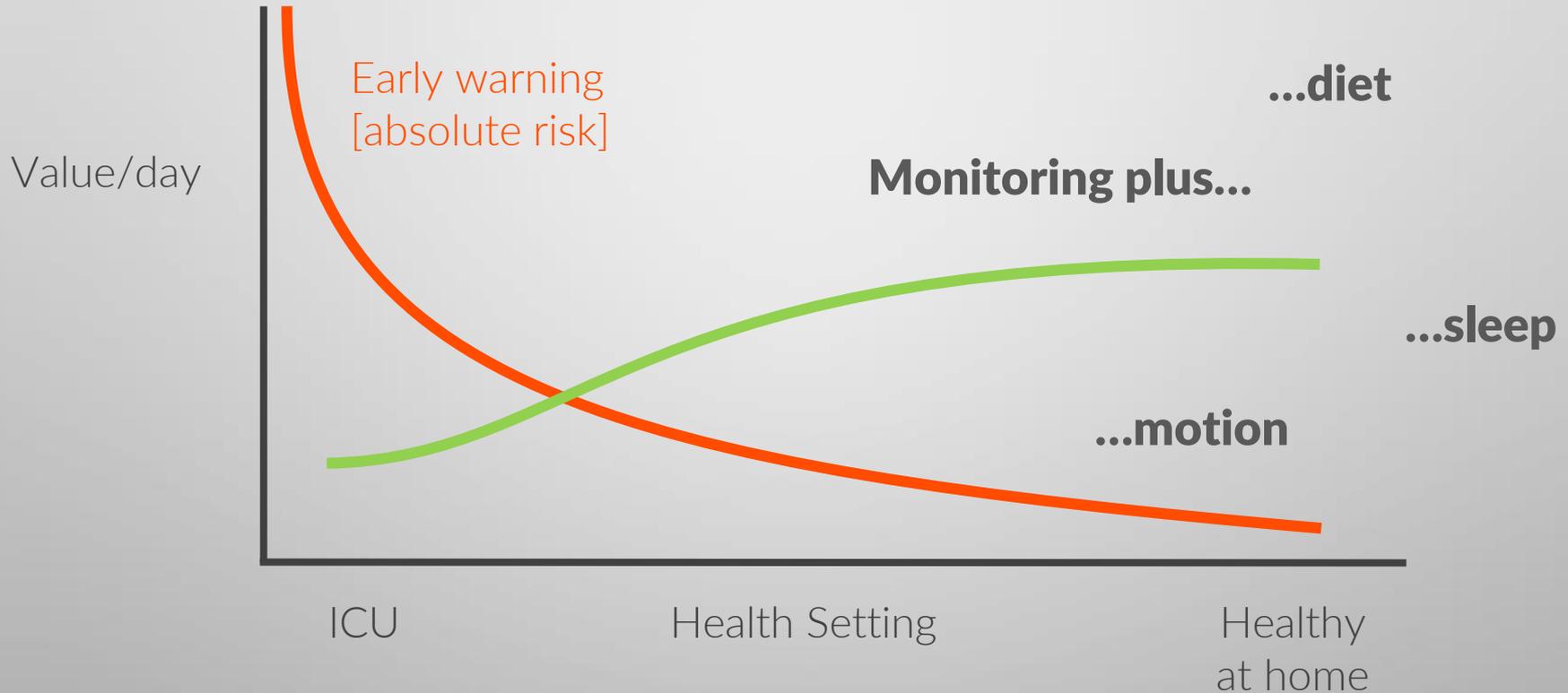
Source: Apache IV trial

# Monitoring intensity and distance to ward - Automate



Source: Schmidt & Kock (2015)

# Relative and absolute warning go hand in hand



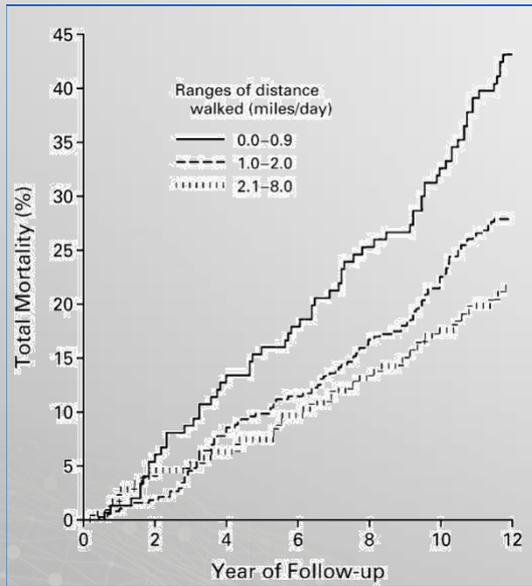
The background features a complex network of interconnected nodes and lines, resembling a molecular structure or a data network. The nodes are colored in shades of red, orange, and white, while the connecting lines are primarily blue and white. The overall aesthetic is futuristic and scientific, with a bokeh effect of out-of-focus light spots in the background.

# RWWE

**Motion tolerant,  
high resolution &  
long term use**

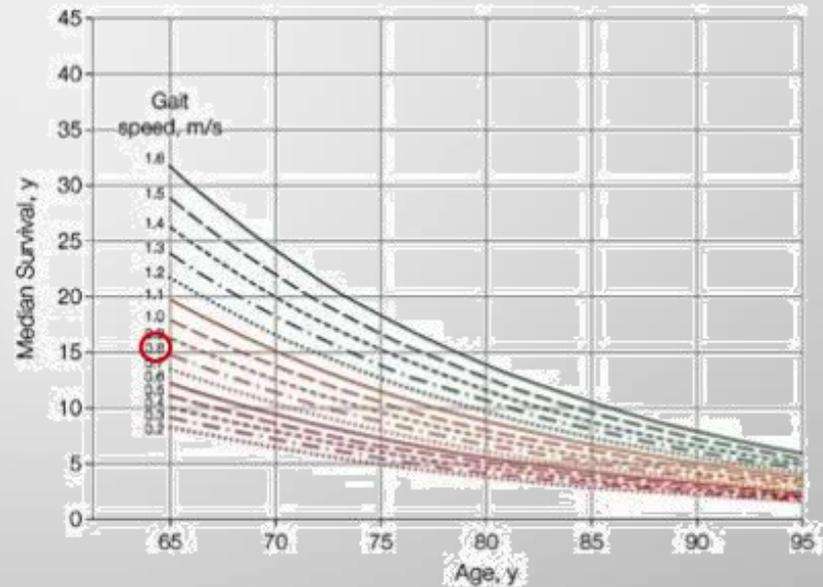
# Facts don't age

The longer you walk the longer you live



Hakim AA et al. NEJM 1998;338:94

Gait speed predicts mortality (>65)



Studenski S et al. JAMA 2011;305[1]:50-58

# Impulse response function or speed of HR recovery - Sit→Stand protocol is predictive

- Longitudinal study in  $\geq 50$ y,  $n=4475$ , mean follow up 4.3y
- B2B HR response to 2min standing. HRR by age group, CVD, mortality status
- Speed of HRR is a strong predictor of mortality
  - A 1 bpm slower HRR from 10 and 20s after standing increased the hazard of mortality by 6%
  - 69 in slowest HRR quartile died during observation compared with 14 in fastest → Slowest recovery → 2.3× more likely to die

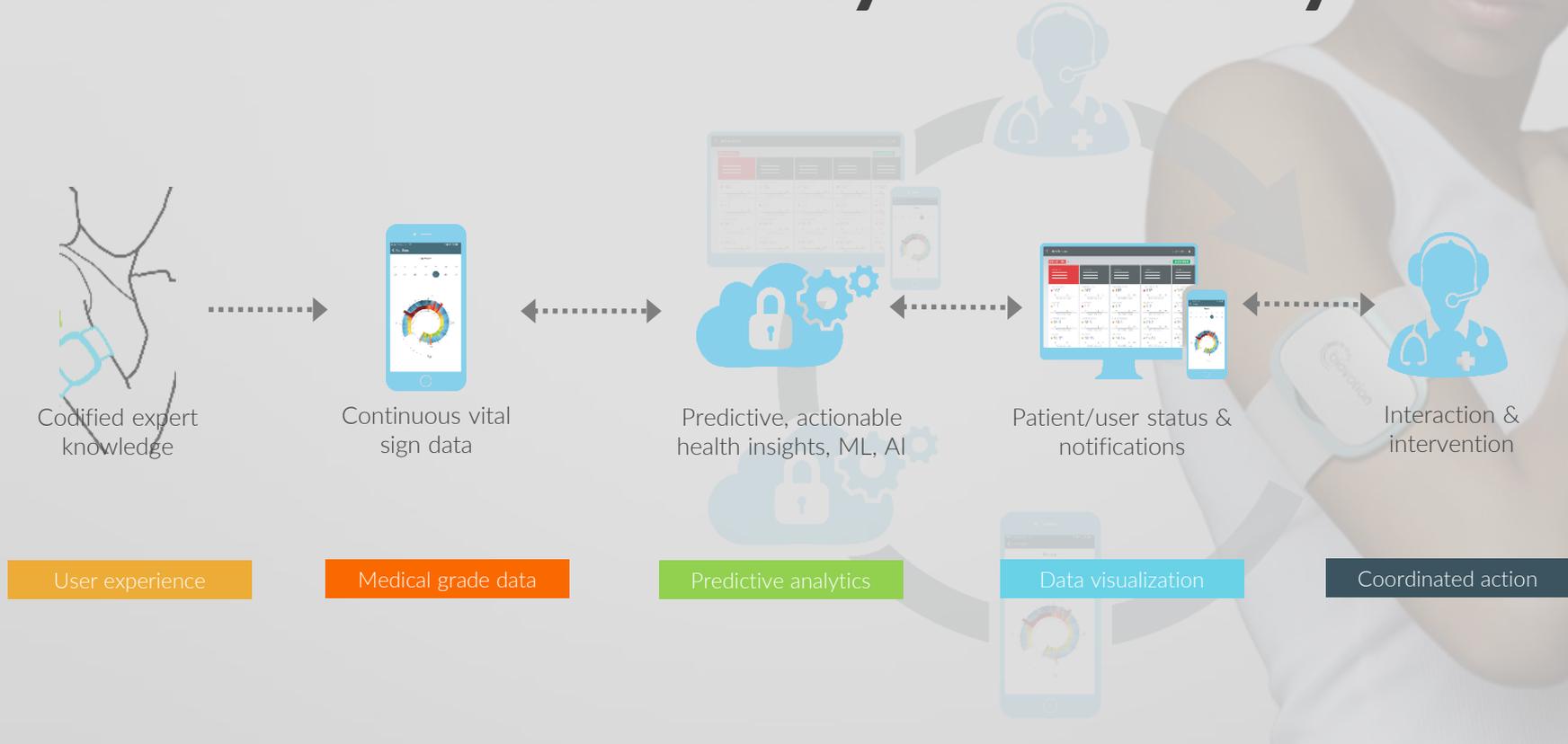
McCorry et al. (2016). Speed of Heart Rate Recovery in Response to Orthostatic Challenge. *Circulation Research*, 119(5), 666-675.



# Everion

No buttons, no calibration, no tape, no cables  
Ultimate ease of use - robust, accurate, versatile

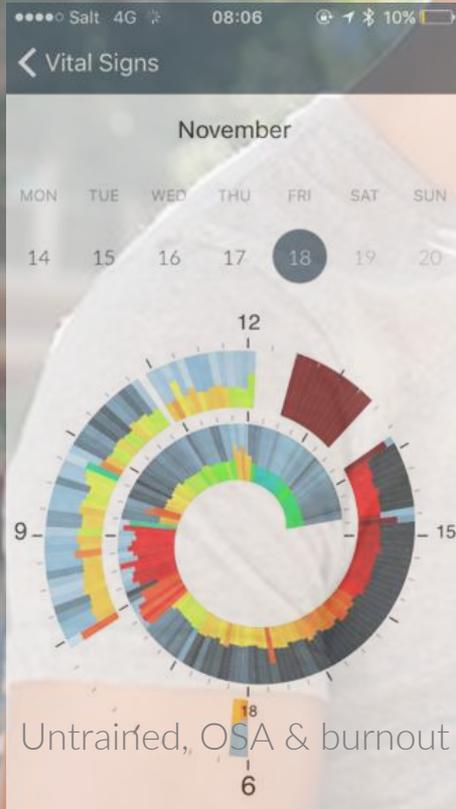
# Born in the cloud - Ecosystem & analytics



# Prevention

how to prevent change

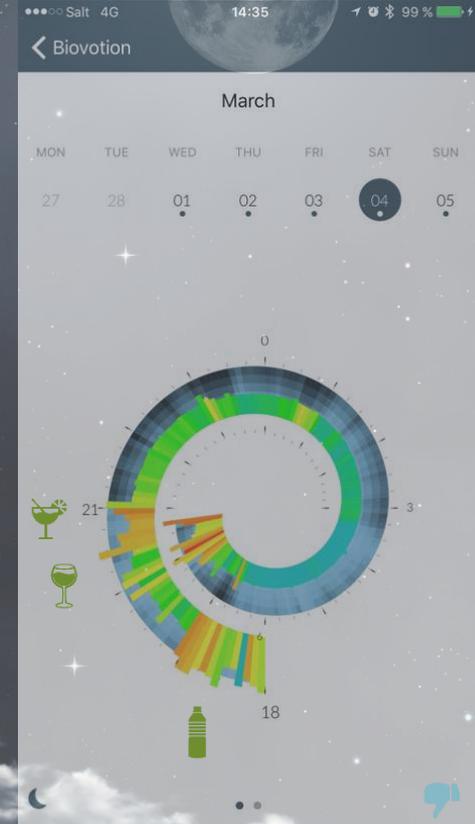
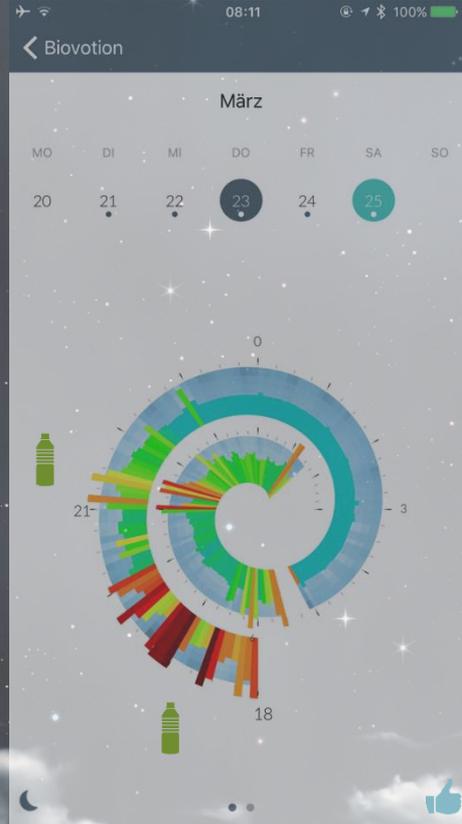
# Recovery after exercise – a marker for burnout



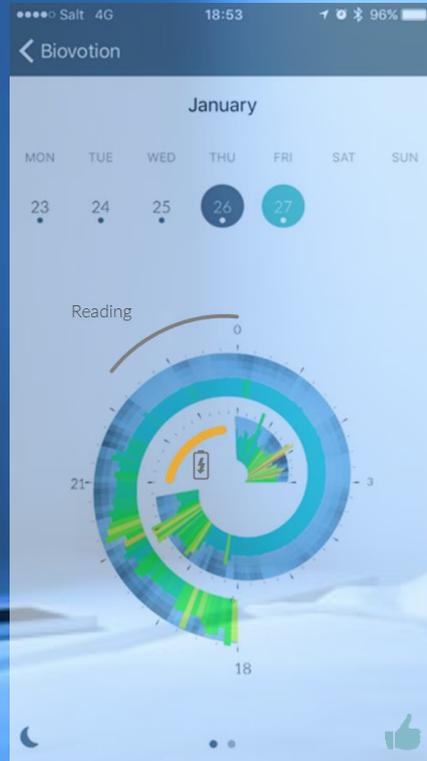
# Does it matter what you do prior sleep?

**18:00** Intensive business day  
**18:30** Consume water during day  
**22:00** Lying down, consume water  
**22:15** Falling a sleep, rapid drop in HR  
**05:00** Recovered & ready for new day

**18:00** Regular business day  
**19:30** Enjoying wine and drinks  
**21:00** Lying down  
**23:30** Falling asleep, HR/BPw phase out  
**06:40** Unrecovered for a new day



# Does it matter what you do prior sleep?



# Why do smart people make dumb decisions

# How to get a six pack

**70% diet & 30% exercise**

**There are more millionaires  
than people with a six pack**

# 4 types of health action influence health state

	<b>Be active</b>	Shuffle Walk Exercise
	<b>Relax</b>	Don't be active Rest , meditate Sleep
	<b>Nurture</b>	Eat , drink Socialise Hygiene (Bowels)
	<b>Medicate</b>	Take medication Measure something Alert clinician
	<b>Genetics</b>	Genetic predisposition Environmental effect

**Avoid chronic  
sedentariness,  
stress and  
inappropriate  
eating & diet**

# Augment

**A step towards objectifying  
the answer to 'how are you'**

# Elements of solutions and the B2B2C dogma



**Accurate and motion tolerant**



**Easy to use and empowering**



**Allows day and night use**



**Connected, cybersecured, GDPR**



**CEK, ML & AI**



Perfection is attained when there  
is nothing more to be taken away

Antoine de Saint Exupéry



# Fragen

- **Frage 1: Denken Sie, dass die Verfügbarkeit von körperbezogenen Daten und deren Vernetzung das Gesundheitswesen als Ganzes weiter bringen kann?**
  - Am besten werden die Daten durch eine Fachperson erhoben, dort kann dann auch gleich die Beurteilung vor Ort erfolgen
  - Ja, hier liegt viel Potential das die Gesundheitsversorgung im Interesse aller effizienter und besser machen kann
  - Nein, das Risiko von Fehlmanipulationen der Daten ist höher als der zu erwartende Nutzen
- **Frage 2: Welches sind Ihrer Meinung nach die wichtigsten Bausteine um Daten effizient und nutzvoll einsetzen zu können? Wählen Sie 2 Elemente aus**
  - Smartphones und Apps mit einem Gameelement
  - Sichere Datenkommunikation, Speicherung und definierbare Zugangsregelung
  - Eine neue Generation von Gesundheitsfachpersonal und die Kodifizierung von fundiertem Expertenwissen
  - Neuartige Sensorik und Datenerfassung
- **Frage 3: Warum hat die Schweiz auffallend Mühe sich in diesem digitalen Feld mit ihrer doch eindrücklichen medizinischen Verpflegung radikaler aufzustellen?**
  - Ideologie - Wir begreifen's einfach nicht!
  - Sozial - Gerechtfertigte Bedenken
  - Politik - Ein undurchdringbares Politsystem mitsamt seiner Lobbyisten, den verschiedenen Partikularinteressen
  - Technik - Es gibt keine entsprechende Datenspeicherung in der Schweiz sowie ein standardisiertes Vorgehe