

EMFIT®

QS  
+CARE™



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Health Monitor  
that improves  
senior care outcome



# Improving senior care outcome

QS+CARE™ is a real-time bed occupancy and movement activity monitor with health data tracking. It can improve senior care outcome and reduce costs.

Many challenges are faced in senior care today. One out of five falls can cause serious injury such as a fractured hip or head trauma. QS+CARE provides real-time bed occupancy data and alerts to help reduce falls.

It is often difficult to detect changes in the health of a resident, especially those with memory problems. Tracking of resting heart and breathing rates and movement activity

in sleep, as well as amount of bed-exits, can help notice these changes and allow for early intervention.

Night-time nursing staff often have a tremendous workload which may contribute to stress, an endemic problem that can lead to work-related sick leave, health problems, and a decrease in efficiency.

*"QS+CARE™ is new digital health solution that tackles many of the today's problems in senior care".*



**Heikki Räisänen**  
CEO & Co-founder





# How does it work?

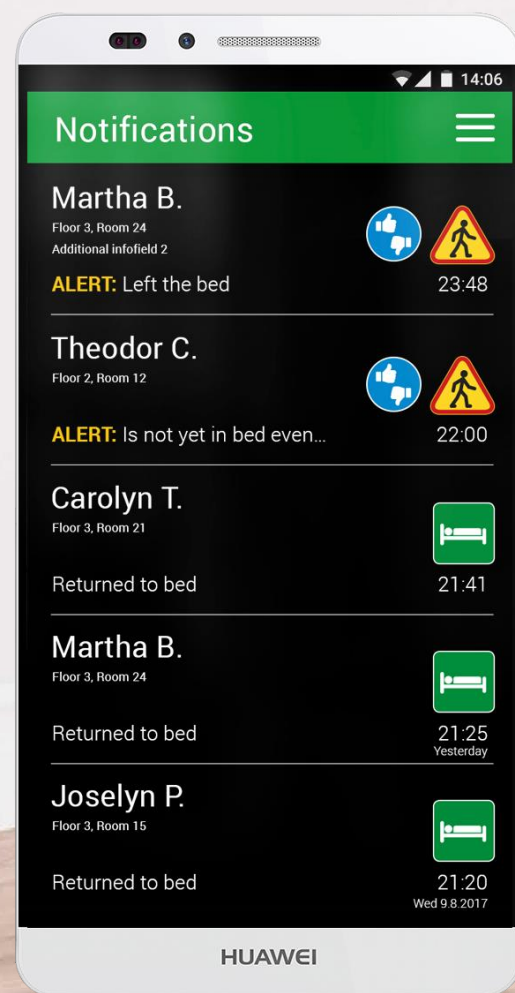
QS+CARE™ is a ballistocardiography\* sensor and over the Internet operating software solution. It records heart contractions, breathing and body movement bio-signals.

Emfit's own proprietary sensor technology is super sensitive and thus allows placement even under thick mattress.

Self-biased electro-active material does not generate any capacitive field that might disturb sleep.

Under-mattress placement ensures longevity without need to regular replacement.

*\* Ballistocardiography, a technique for sensing the sudden ejection of blood into the great vessels with each heart beat, and breathing movement analysis.*



Automatic and autonomous measuring. Device has its own processor and memory - no phone is needed! No batteries required to be changed or charged.

Under-mattress placement ensures longevity without need to regularly replace. There is nothing to turn on or off, or attach to body.



# Smarter care reduces costs and stress

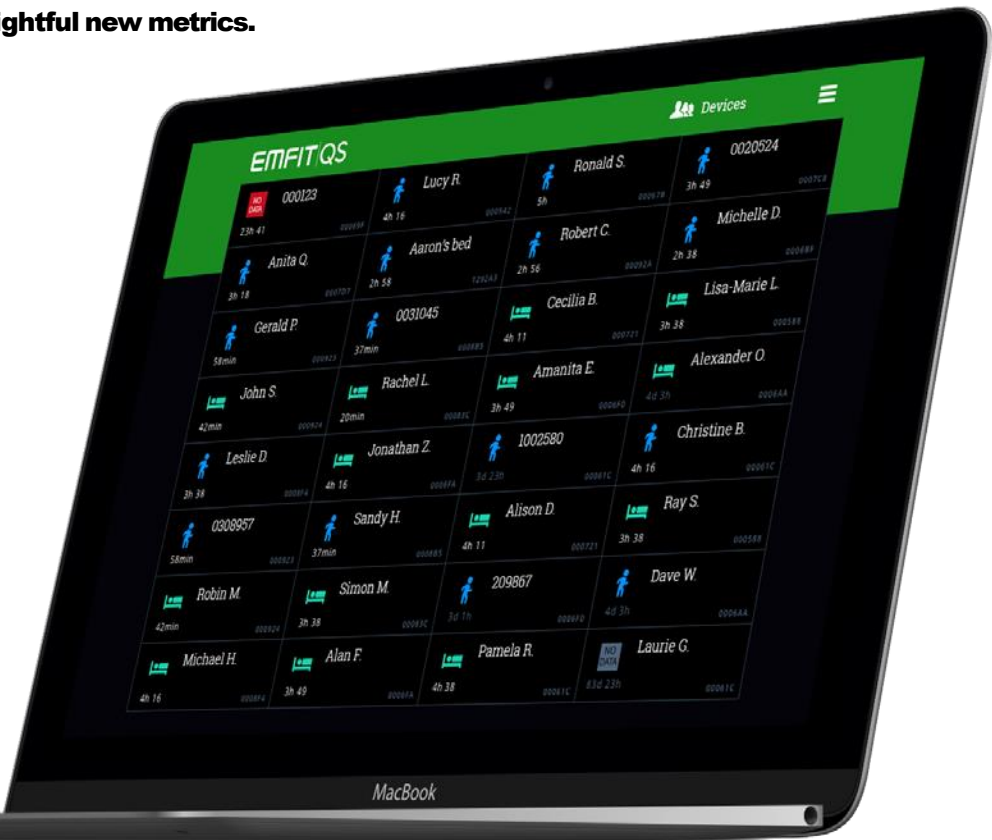
- Smart night round is more efficient and can decrease nurses's stress.
- Assistive night care can be performed when resident is awake.
- Controlling bed exits can help prevent falls and wandering.
- Tracking of heart and breathing rates\* and movement activity in sleep can help detect changes in health and allow for early intervention.
- Measuring outcomes and impacts of treatments like physiotherapy and outdoor activity in general can be difficult, but their affect on sleep can generate insightful new metrics.



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- Real-time bed occupancy viewer for a group**

  - Residents on move and duration
  - Residents in bed and duration
  - Devices without data-connection



\* The data is not intended to be used for diagnosis or monitoring of disease or other conditions.

"QS+CARE's dynamic and real-time listing of residents gives our nursing staff better control of the situation. QS+CARE can reduce stress and allow a quick response where help is most needed."

- 
- Push notifications via app:**

  - Immediately at bed exit
  - Not returned to bed in preset delay
  - Decreased/increased movement activity (coming soon)

"Indispensable aid during the nightshift, because it's possible for a nurse to more easily monitor the residents of two wards at the same time."

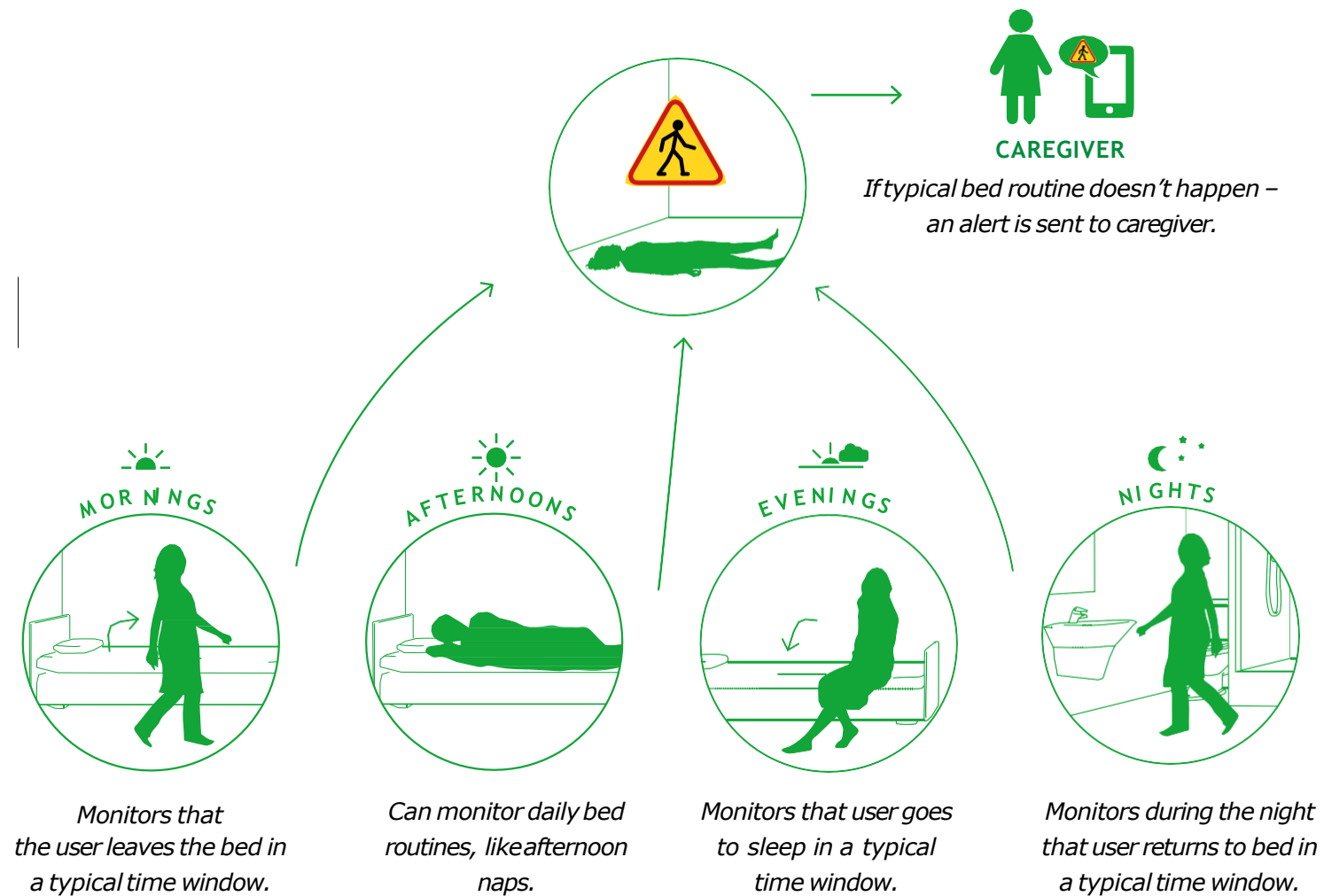


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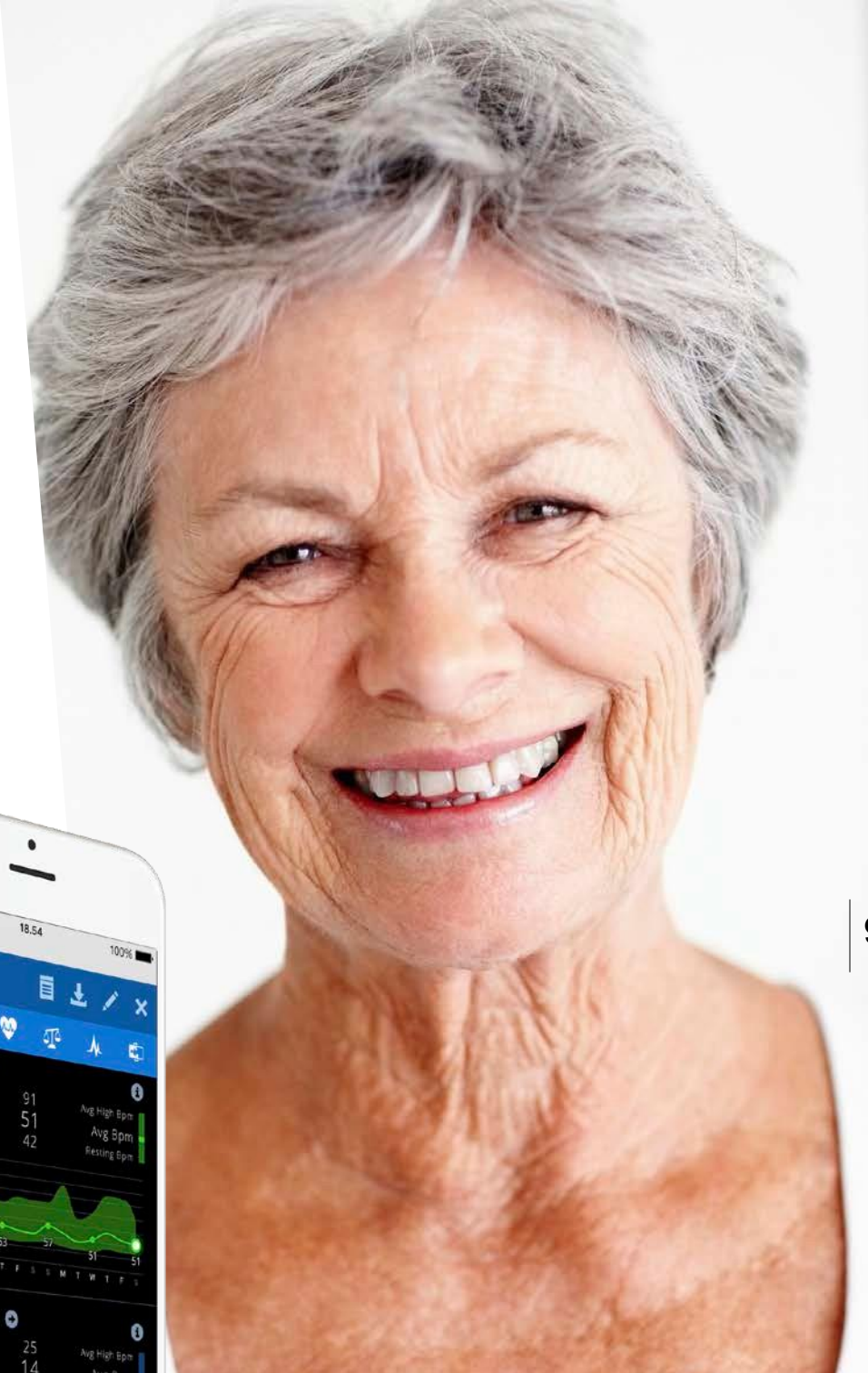


# Better safety by discreet tracking of sleep routines

- Enabling caregivers to track the bed routines and sleep habits of the elderly is especially useful when the individual is living independently or unsupervised.
- Tracking sleep quantity and sleep quality, heart and breathing rates\*, and movement activity can allow for early intervention.



\* The data is not intended to be used for diagnosis or monitoring of disease or other conditions.

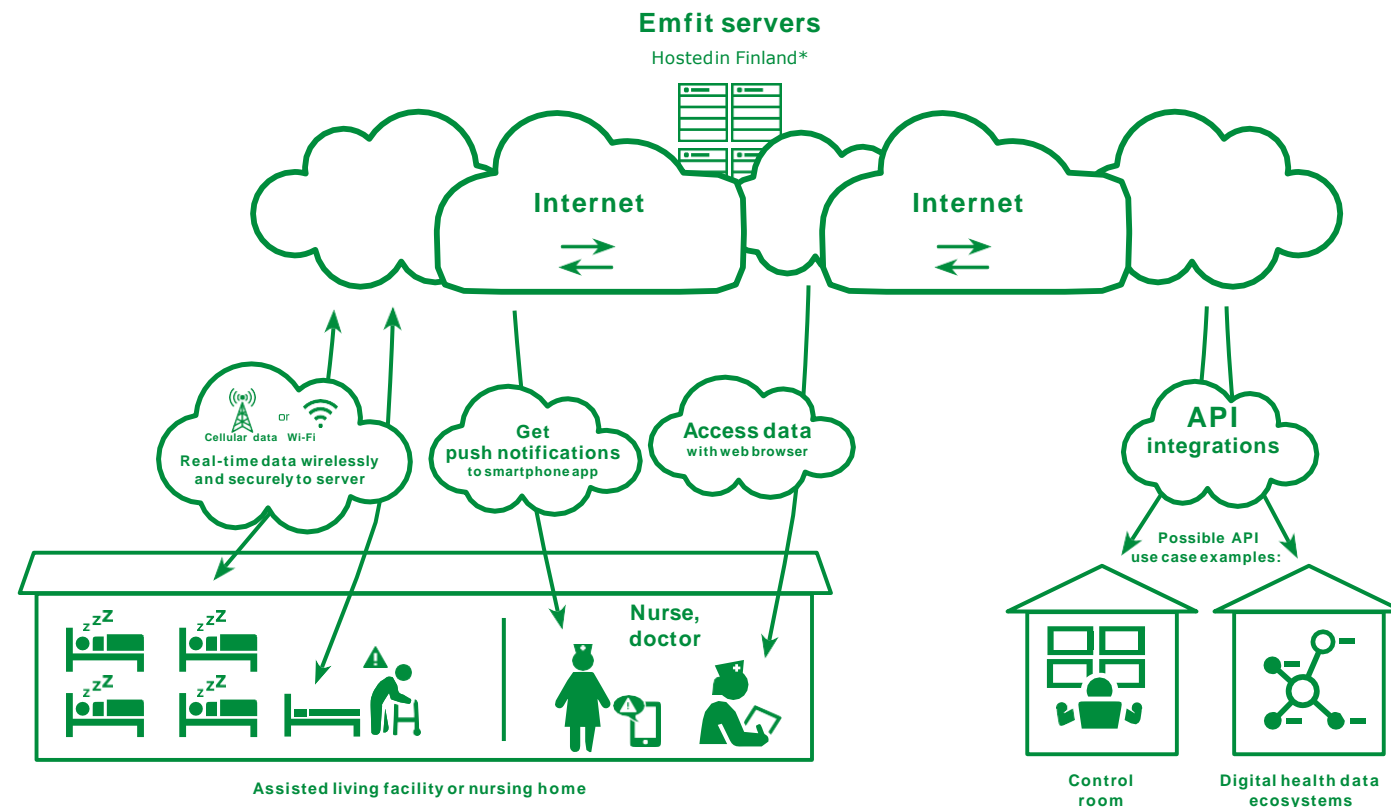


"I go to bed every night between 9 and 11pm. I'm afraid of falling and not being able to call for help. I have set up EMFIT to alert my children if I'm not in bed by then."

"My elderly mother's daily routine is to get up by 8am so if the sensor doesn't detect movement by then, I get an alert on my phone so I know to check in on her."

# Whole solution overview

## QS+ CARE™ for Assisted Living and Nursing homes



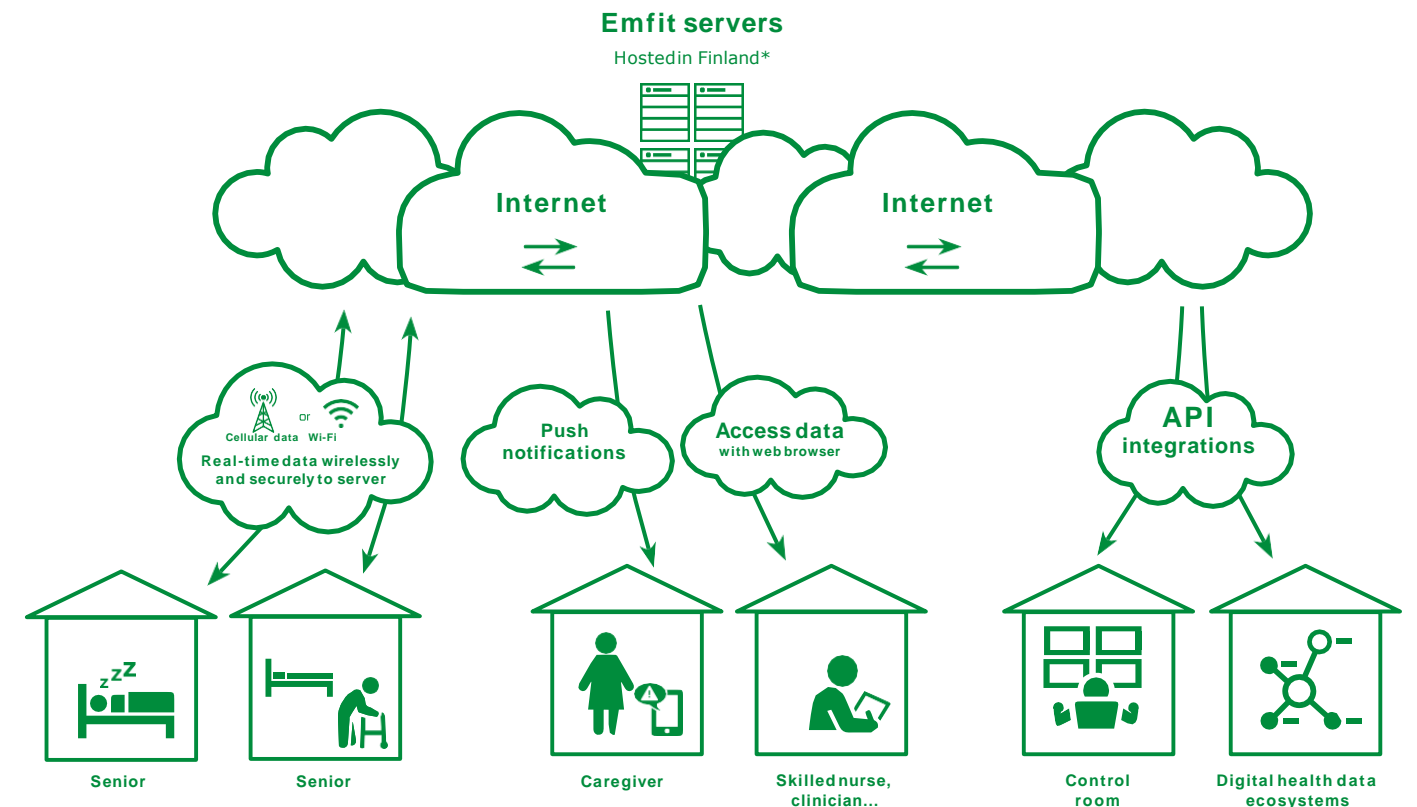
### Customer owns the data

We at Emfit are passionate about data ownership. We do not claim data ownership and we guarantee that data is never handed over to any third party.

### INTENDED USE

The QS+ CARE is for the purpose of evaluating daytime activities' impact on recovery and sleep quality, and in tracking bed exit and occupancy for fall and wandering prevention. In this intended use it is not a medical device and the data is not intended to be used for diagnosis or monitoring of disease or other conditions.

## QS+ CARE™ for Independent Living



### Wi-Fi or Cellular/Mobile Data

(no phone needed)

QS+ CARE™ has embedded data acquisition and Wi-Fi or cellular mobile data connectivity. The transceiver component is connected by a long, durable cable and can be placed far from bed to avoid disturbing user's sleep. Electronics include its own processor and memory for totally autonomous and automatic operation.

### DATA PRIVACY

Emfit global offices maintains servers in Finland and therefore the right to privacy is protected in the Constitution of Finland (731/1999). This right is enforced through a number of statutes, including the Personal Data Act (523/1999) (henkilötietolaki) (PDA). The PDA implements Directive 95/46/EC on data protection (Data Protection Directive) and applies to all types of processing of personal data.

## Basic service features:

### Health reporting

Our dashboard is said to be the most detailed and users love it. It gives detailed insight into last night in a visually compelling way. It also shows data for short-term trends, from one week up to four weeks; the user decides which is preferred.



#### Heart & breathing rate

QS+CARE™ calculates heart and breathing rate by each 4 seconds. The calculated resting heart rate, which is lowest 3 minute average as bigger heart rate during sleep period, can tell about general health. For example, a couple of days before getting actual flu symptoms, resting heart rate usually rises.



#### Movement activity, tossing & turning

This data is based on small movements as well as bigger tossing&turning events during sleep. It can tell how restless or restful sleep is.



#### Amount of bed exits per day

This data can be very important. Behavioural change is easily noticed and can allow early intervention.



#### HeartRate Variability (HRV)

Heart rate variability, or the change in time intervals between heart beats, is a broad indicator of overall health and fitness.



#### Sleep Score

This is a single number indicating the quality of sleep for the night. Number consists of total length between each pulse, HRV is low. If heart of sleep for the night. Number consists of total beats with widely varying lengths between sleep time, amount of REM and DEEP sleep, each pulse, HRV is high. For example Irregular and number of times awakened. heart beat increases HRV significantly.



#### Sleep Time

QS+CARE™ shows both time spent in bed and amount of sleep\*.



#### All three sleep stages

QS+CARE™ can estimate how much light, deep, and REM sleep\* user gets each night.

**NOTE!** The included data features are not intended to be used for diagnosis or monitoring of disease or other conditions.

*\*When user is in bed only for sleeping at night and not for resting during day time.*



#### Trends up to one year

Long term trends help to recognize and notice any changes in health.

## Optional feature for research\*

### Sensor Signal Waveform

Emfit's sensors have been widely used in scientific research of ballistocardiography. Many tens scientific publications support using the signal waveform for finding signs of obstructive sleep apnea or atrial fibrillation. The QS+CARE hardware makes it possible to conduct investigation easily and conveniently, and collect data remotely over the Internet.

*\*Availability may vary.*

## Software as a Service includes:

QS+CARE solution software is centrally hosted and is licensed and delivered as a service on a subscription basis (=SaaS).



#### Web application

No software download, works on any computing device with browser. For us, the user is always first rather than reducing the cost to develop. It is far easier for users to access data on any computing device simply with a browser, assuring compatibility over the years to come when phones, tablets and computers change frequently. These are the reasons for our strategy to develop autonomously and automatically over the Internet operating platform and application.

(iOS application coming), phone or tablet. For example when user leaves the bed at night, is away over preset delay, does not go to sleep in the evening or does not leave the bed in the morning.



#### API integrations

We have API\* integrations as an example web with health data integrators and safety phone operators.

*What is API? It stands for Application Programming Interface (API) and is roughly defined as the allowance and processes to give programs access to connect and essentially, communicate with other programs. It's a software-to-software interface that allows for separate parties to talk to each other without any previous user knowledge or intervention. It runs the processes behind the scenes.*



#### Push notifications

Bed occupancy and exit related alerts are delivered in real-time to any Android device

## Warranty



#### 2 year full warranty

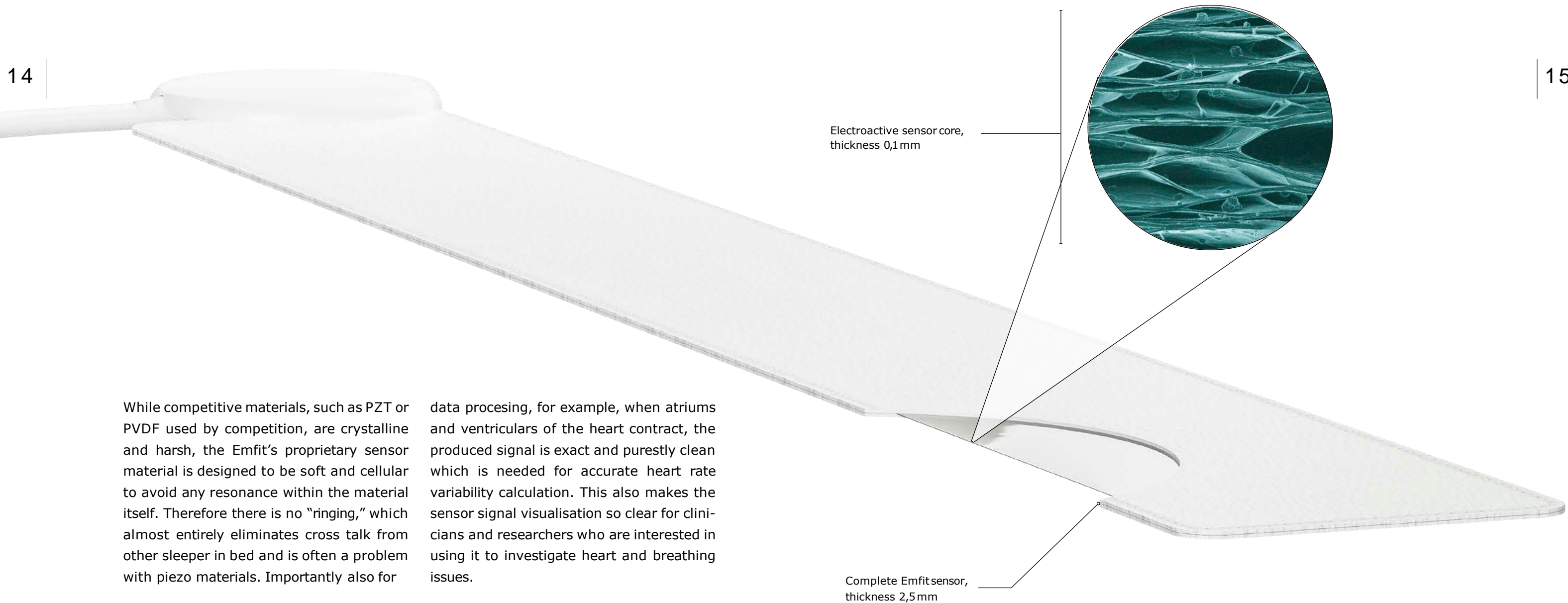
After manufacturing sleep sensors for over 25 years we have learned how to make our high-quality, durable products for both consumer and professional use. Therefore we are confident to give the best warranty\* on the market.

*\* Non-transferable*



# What makes Emfit's sensor so superior?

The core of the company's patented sensor technology is also the key to its ability to produce such a clean minuscule biosignal without any alterations caused by the electroactive material used.







[www.emfitqs.com](http://www.emfitqs.com)

**EMFIT™**  
SENSING WHAT MATTERS™

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