



**Fraunhofer**  
IIS

FRAUNHOFER INSTITUTE FOR  
INTEGRATED CIRCUITS IIS

## INTEGRATED VITAL SENSORS





## Individual development services for wearables

Adapted to the requirements of our customers and their application areas we offer tailor-made solutions. Our applications deliver reliable medical data even under difficult conditions, such as movement.

### Application models

#### Integration of ECG at the steering wheel/in the vehicle

- Recording of the ECG with up to 3 channels (RR interval detection, diagnosis of cardiac arrhythmia)
- Calculation of HR and HRV
- Interpretation of psycho-physiological stress situations (stress detection, fatigue)

#### Measurement of the breathing rate in seating area

- Stress detection, including analysis of breathing with a multi-channel breathing band

#### Pulse wave at gear shifter (for stress detection)

- Analysis of the pulse wave using photoplethysmography

#### Sensor technology in the seating (motion analysis)

- Inertial sensors to detect movement and activity:
  - Seating position
  - Movement profile



- Therapy support
- Analysis and reconstruction of movement profile

### **Sensor technology in the seating (vital data analysis)**

- Ambient Assisted Living: Monitoring at home for the analysis of the heart rate, blood pressure and blood oxygen level
- Biofeedback applications (electrodes for measurement of EMG and EDA)

### **Sensor technology in the bed (Project INSYDE)**

- Pressure ulcer prevention
- Sleep analysis (detection of biosignals while sleeping – at home or in the sleep laboratory)

### **Sensor Technology in the helmet**

- Integration of biosignal measuring modules (ECG, pressure sensors, photoplethysmography) in a helmet for athletes, for use in extreme environments and for worker safety

### **Textile-integrated sensor integration possible for other scenarios (compression shirt, holster, fitness band)**

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### **Your advantage – everything from a single source!**

Fraunhofer IIS, your competent R&D partner for individual problems. Contact us!

**[www.iis.fraunhofer.de/vital-sensors](http://www.iis.fraunhofer.de/vital-sensors)**

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