

## HIGHLIGHTS

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TELEMEDICINE

BIOSIGNAL PROCESSING

MOTION ANALYSIS

MEDICAL COMMUNICATION

SPORTS, FITNESS AND RECREATION

REHABILITATION

Already during the development phases of new solutions we attach great importance to a high level of robustness and suitability for daily use. Our solutions are developed with regard to approval and certification and come with the required documentation, which allows us to address a broad spectrum of application fields

**[WWW.IIS.FRAUNHOFER.DE/SSE](http://WWW.IIS.FRAUNHOFER.DE/SSE)**

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**MEDICAL COMMUNICATION AND  
BIOSIGNAL PROCESSING**



## WHO WE ARE

As part of the business field medical technology at Fraunhofer Institute for Integrated Circuits IIS, the Medical Communication and Biosignal Processing group develops and implements standardized medical communication protocols and algorithms for biosignal processing and motion analysis.

Due to our variety of topics we can address a broad spectrum of applications and support our customers during the development of their products.

### Possible applications:

- Care of high-risk patients
- Danger detection
- Support of performance diagnostics
- Sports, fitness and recreation
- Rehabilitation
- Telemedicine

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### Medical communication standards

Communication between medical devices and applications by means of standardized protocols to ensure interoperability is a challenge for telemedicine. By taking care of interoperability standards we are offering customer-specific implementation and test environments for various platforms.

Our competencies in the area medical communication:

- HL7
- POCT1-A, POCT1-A2
- ISO/IEEE 11073 (CEN VITAL)
- CONTINUA

In order to establish a system of connected healthcare solutions the goal of Continua Health Alliance is to promote delivery of healthcare in the home environment. Fraunhofer IIS is part of the Fraunhofer AAL Alliance, a member of Continua Health Alliance. We support our customers from the implementation to the certification and testing process.



### Biosignal processing

A further field of research is the reliable algorithmic evaluation of biosignals captured by medical sensor systems. Main focus is given to the best signal processing possible under everyday conditions (e. g. motion artifact suppression) as well as the calculation of so-called secondary parameters (e. g. heart rate variability from the ECG). We offer custom-implemented specific libraries for embedded systems, mobile devices and PC-based platforms.

### Motion analysis

In addition to classic biosignal processing, we focus on human motion analysis and reconstruction based on acceleration sensor data. Our solutions include: algorithms for the automatic recognition of elementary movements like e. g. walking, running, cycling with one single sensor; the transmission of these algorithms onto mobile devices (e. g. Android smartphone, iPhone, etc.), which are already provided with integrated accelerator sensors; the reconstruction of complex motions by means of networks of various sensors. Possible applications are evident in all areas of rehabilitation.