

## 19 - Embedded Sensor Systems for Health Plus (ESS-H+) An overview of scientific areas and interdisciplinary target

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ESS-H+ will continue the work in the KKS research profile Embedded Sensor Systems for Health (ESS-H) at Mälardalen University. ESS-H has during six years provided important collaboration between researchers, industrial partners and healthcare organizations within three focus areas (Health monitoring at home, Health monitoring at work, and Infrastructure and communication).

The focus of the new research profile ESS-H+ is that monitoring of humans should be able to be performed anytime, anywhere. Our research challenges are focused to the areas of Reliable acquisition and management of physiological data, and Reliable distributed data analysis. Reliable acquisition and management of physiological data is a fundamental prerequisite for advancing anytime, anywhere health monitoring, towards enabling remote monitoring of more serious health conditions than what is safely possible today. Reliable distributed data analysis is a fundamental prerequisite for enabling large-scale deployment of anytime, anywhere health monitoring. Both research challenges are complex and require multi-disciplinary research.

The following important research goals will be addressed within ESS-H+:

- Reliable data acquisition, and design of suitable sensor systems for achieving this.
- Development of analysis and classification algorithms for physiological parameters.
- Achieve efficient distributed data fusion and decision support.
- Better utilization of the compute power of sensor nodes, and increased communication reliability: safety as well as security.
- Efficient integration of scientific results, from different scientific areas, to an efficient and user-friendly embedded sensor system.

The research in ESS-H+ will include research within the scientific areas (Biomedical sensor technology, Biomedical signal processing, Intelligent decision support, and Reliable and secure data communication) but also a strong integration between these areas, our collaborating companies, and the end users. Our main challenge within ESS-H+ will be this interdisciplinary integration that aims towards fully operating systems, thus providing efficient integration of scientific results, from different scientific areas, to an efficient and user-friendly embedded sensor system.