**OP12 - Embedded Sensor Systems for Health – experiences from over nine years research in collaboration with industry and healthcare**

4. Vård på distans

**Maria Lindén**[1]
Annica Kristoffersson[1], Mats Björkman[1]
[1] Mälardalens universitet

**Text\*:** The research profile Embedded Sensor Systems for Health (ESS-H) started in 2013 with financial support from the Swedish Knowledge Foundation and has since then conducted research in collaboration with a total of 20 different companies, and in addition also with healthcare regions and municipalities. The research environment has significantly grown and developed during this period, including the recruitment of five international Guest Professors and two Adjunct Professors, which together with the two Full Professors give the research environment access to nine professors in health technology (compared to zero back in 2013). In addition, one associate senior lecturer and ten postdocs have been recruited, of which seven have received permanent positions (five as senior lecturers, one as professor, and one as associate senior lecturer). In addition, three of these have also become associate professors (docent).

The focus of ESS-H has been to develop technologies for health monitoring. Such technology is important, both related to demographic challenges with a higher incidence of chronic diseases, and as a tool to perform health promoting interventions. Smart sensor systems provide such solutions based on interdisciplinary research (including measurements, signal processing, decision support, and reliable data communication), with clinical aspects and needs as a starting point, and with clinicians and patients requiring intuitive user interfaces for adoption. Systems-oriented research of cross-disciplinary nature is performed, spanning from biomedical engineering and physiology, physics, data communication, over electrical and computer engineering to artificial intelligence and human-system interaction. The integration of these competences enables solutions to multi-disciplinary research challenges. Research conducted includes microwave measurements for tumor detection, EEG-based neurofeedback systems for stroke rehabilitation, systems for fall prevention, driver sleepiness detection, long-term ECG monitoring, and techniques to reduce risk of security network traffic attacks, a necessity for this domain.