

Press Release

Intelligent T-Shirt

Visualization software for space travel, medicine and sports

Zürich, September 29, 2009 – *The Swiss Center for Electronics and Microtechnology (CSEM) has been commissioned by the European Space Agency (ESA) to conduct research on mobile sensors for the measurement of important bodily functions such as heart frequency or blood oxygen levels. The software that CSEM uses to visualize and monitor the recorded data is developed by the Zurich-based IT company AdNovum. The sensor system will be endurance tested next year in Antarctica.*

The Zurich-based software house AdNovum has received an exceptional contract from the Swiss Center for Electronics and Microtechnology (CSEM) in Neuchâtel in the area of medical technology and astronautics. Since 1996, CSEM has been developing wearable monitoring systems that track important bodily functions. The systems' sensors can monitor more than 10 vital parameters, such as heart-rate frequency, blood oxygen levels, and core body temperature. In the field of medical technology, this is considered groundbreaking. CSEM has a successful track record in this field, having already developed a t-shirt with integrated sensors for the EU research project MyHeart. The t-shirt captures the bearer's data and creates a long-term electro-cardio diagram (LT- ECG) that can be used to identify risk factors potentially leading to cardio-vascular diseases (the most common cause of death in the western world).

For ESA, CSEM has developed prototypes of sensors for monitoring human beings in space-analog situations. It is envisioned to use this type of sensors for future human space missions. A first version was successfully tested in 2008 in the Antarctic research station Concordia. For this long-term ESA project, dubbed the Long-Term Medical Survey System (LTMS), the sensors are currently in their 2nd generation (ESA Contract Number 22148/08/NL/JC).

AdNovum's role is to provide software for CSEM that verifies the positioning of the sensors, while reading and analyzing the data collected and creating a graphical display in a rich client application. Doctors can then use the data to identify medical problems. Until the go-live date scheduled for late summer of 2010, AdNovum will implement the software and intensively test it together with CSEM. The software will then be subject to further endurance tests as part of the testing of LTMS in Antarctica with mean winter temperatures of 60 degrees below zero (Celsius) at 3,200m above sea level and online time windows for data access of about 15 minutes per day.

Textiles with embedded sensors capable of delivering highly accurate physiological data have massive future potential. In combination with sophisticated software, intelligent shirts enable real-time remote diagnosis, permitting early identification and treatment of illnesses. The sporting world has also shown interest. Both football and Formula 1 teams, among others, could use the sensor system to monitor blood oxygen saturation levels and observe the performance curve of their athletes during competition. Trainers could use the data and prescribe techniques for peak performance training, including optimized rest, recovery, and nutrition programs.

AdNovum Informatik AG

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AdNovum has been nominated "Champion" for the Swiss ICT Award 2009:
<http://www.swissitmagazine.ch/index.cfm?pid=7786&cid=2103>

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