

Workshop on Personalized Health and Intelligent Workplaces Transforming Ergonomics

Mario VEGA-BARBAS^a and Fernando SEOANE^{b,c,d}

^a *Institute of Environmental Medicine, Karolinska Institutet, 171 65 Stockholm, Sweden*

^b *CLINTEC, Karolinska Institutet, Hälsovägen 7, 141 57 Stockholm, Sweden*

^c *Department of Biomedical Engineering, Karolinska University Hospital, 171 76 Solna, Sweden*

^d *Department of Textile Engineering, University of Borås, 501 90 Borås, Sweden.*

Life expectancy is increasing and population is aging significantly, which to keep the current social system sustainable pushes retirement age up. The fact, than more than 95% of world population has one or more conditions or health disorders makes the target of keeping people healthy and fit for work longer a difficult challenge. Especially considering the role that working plays in such matter. Work hazards and un-healthy working lifestyles are often the underlying caused of Muscle-skeletal disorders and burnout depression.

The most common approach to avoid reduce risks, reduce exposure and avoid a harmful working lifestyle is prevention by design, *i.e. designing the work environment for a healthy and safe job execution*. In this context, use of pervasive technology, ubiquitous computing and p-health monitoring provide a key toolset to transform a common working scenario into a healthy intelligent workplace.

Smart textiles and microelectronics integrated in wearables device, have enabled intelligent biomedical clothing and the recent proliferation of Internet of Things systems have facilitated the integration of pervasive sensitive services into the environment. These, together with ambient intelligence technologies techniques and Big Data analytics, foster the proliferation of p-Health monitoring solutions.

Advances in development of inertial measurement units, activity and heart-rate sensing health watches, HR sensing garments and their wide presence in the consumer electronics market have opened a new arena for monitoring the physical workload and posture of different limbs. These Wearable and IoT sensors combined with ergonomic assessments facilitate the gathering of epidemiologic data for further big data analysis and even provide the opportunity for a prompt feedback and even for coaching through deploying the adequate personalized m-healthcare tools.

Transformation of a work environment into a careful, even healthy, intelligent workplace as deployment platform for p-Health services may support not just ergonomists, employee and employers but also society in general. Enabling the workplace as intelligent environment might be the seek solution to ensure the sustainability of the current social welfare systems. This workshop aims to bring together experts in all areas related to this transformation to create a discussion forum to discuss the challenges, progress and future work in this area.