WEARIT @WORK

Intelligent Clothing

Empowering the Mobile Worker by Wearable Computing

Edited by,

Rachel Pezzlo
with Elana Fein

Dr. Edna Pasher
Dr. Michael Lawo

AKA IOS Press

Intelligent Clothing: Empowering the Mobile Worker by Wearable Computing

Wearable computing facilitates a new form of human-computer interaction comprising a small body-worn computer (e.g. user-programmable device) that is always on and always ready and accessible to the mobile worker – the worker of the future.

Wearable technologies can change your organization's way of working:

- Improved worker productivity and flexibility
- Increased number of tasks performed simultaneously
- Less time performing each task

WearIT@work was set up by the European Commission as an Integrated Project to investigate wearable computing as a technology dealing with computer systems integrated into clothing.

The effectiveness and applicability of the wearable solutions developed during the lifetime of the project have been tested in four pilot applications – Aircraft Maintenance, Car Production, Healthcare, and Emergency Response – that drive the work in a bottom-up, user-centered approach.

Each pilot includes a large application partner: the European Aeronautic Defense and Space Company (EADS), Volkswagen's Skoda Auto division, an Austrian hospital operator (GESPAG), and the Paris Fire Brigade, respectively.

We included core industrial players relevant to the deployment of wearable systems in the chosen domains. Thus, the consortium contains major international IT companies (Microsoft, Hewlett-Packard, SAP, Siemens, and NTT DoCoMo), manufacturers such as Zeiss, Rosenbauer, and Thales, as well as scores of small and medium-size companies involved in the respective value chains.

In this book, you will:

- Read about the wearIT@work project
- Discover the benefits that wearables can provide your business
- Discover how you can participate in the adoption process of wearIT@work technologies

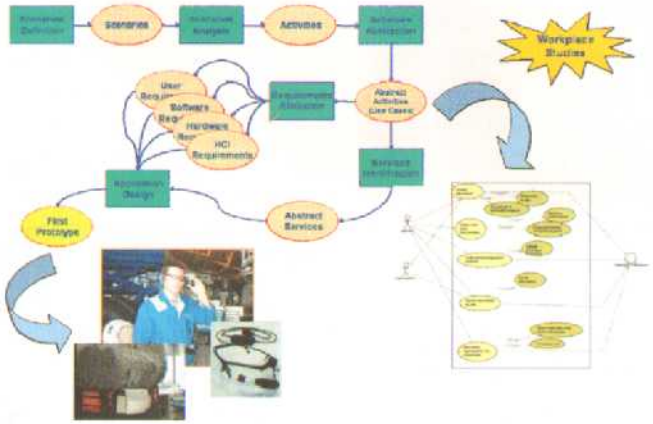
The wearIT@work project has 42 partners with a project volume of about €23.7 million and a funding of about €14.6 million. It is the largest project worldwide in wearable computing.

http://www.wearitatwork.com

9 783898 386128

ISBN 978-3-89838-612-8 (AKA) www.aka-verlag.com
ISBN 978-1-58603-971-4 (IOS Press) www.iospress.com

- *Abstraction of activities and definition of use cases, to be collected in UML (Unified Modelling Language) use case diagrams*
- *Elicitation of user hardware, software and interaction requirements. The requirements have been classified into sub-categories, according to an adapted version of a robust and widely accepted methodology: the "Volere" approach*



Design and development of a first prototype

- *Identification of abstract services (Service Oriented Architecture) to be implemented and integrated into the software application*
- *Deployment of several prototypes for evaluation and assessment by lab test sessions, or by actual users*
- *Refinement of the prototypes*

The First Prototype

The inspection scenario, was selected as the basis for analysis for designing and implementing the first wearable maintenance prototype. It is relatively easy and fast to set up the inspection scenario for testing the prototype, and operators can then easily evaluate the prototype and give feedback that will be used for designing the next generation of wearable maintenance support tools.

The main aspects of maintenance work that were expected to be improved by the introduction of the wearable maintenance support integrated application included:

- *Mobility of maintenance operators: Nowadays the operators are normally overloaded with the large amount of information support (usually in paper form), tools and materials that are needed for their work, thereby limiting their mobility*
- *Communication with experts and other team members*
- *Reporting system*
- *Advanced field training and life-long learning in a rapidly evolving and complex environment*

The development and assessment of the first prototype informed future research and directions of the project.

Several issues to consider included:

Frequency of occurrence: inspection in a maintenance centre is a daily operation. This task can be either easy and fast, or more complex and time-consuming for troubleshooting and repair tasks.

Pedagogical and organisational value: introducing new technology and a new way to work on a common maintenance task is a good starting point for end users and stakeholders to smoothly implement the proposed solution.

Wearable computing platform: technically speaking, the integrated solution improves the mobility of workers by offering the possibility to access technical databases, to file and send reports, and to communicate with team members through a non-obtrusive device.

Access to task-relevant information: research on information management and on the design of multimedia contents is needed in order to adapt content to devices, to facilitate the user interaction, and to find new metaphors for information presentation.