AMI-4-SME provides Systemic Innovation to Benefit from AmI Technology Potential

Ambient Intelligence (AMI) is oriented to surround people with electronic environments, sensitive and responsive to their wishes. AMI-4-SME will enable manufacturing SMEs to effectively deploy these revolutionary potentials, collecting industrial experience in Germany, Ireland, Poland and Spain.

At A Glance: AMI-4-SME

Revolution in Industrial Environment: Ambient Intelligence Technology for Systemic Innovation in Manufacturing SMEs

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Total Cost: *€ 2.4 m*

Further Information

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- **The IMS Programme – Intelligent Manufacturing Systems**
  http://www.ims.org/

The next revolutionary step in process innovation in industry is to radically innovate the whole industrial working environment, by focusing it upon the main actor in industry: the human actor, and by applying emerging systemic innovation approaches. The application of Ambient Intelligence (AmI) Technology can be considered as a key enabler to achieve such advances in the working environment. But especially SMEs need to be systematically enabled to actively take part in this revolution.

Therefore, AMI-4-SME aims at proposing a new scheme for systemic innovation of industrial working environments in SMEs by deploying AmI potentials in daily operation. The RTD activities will consist in the development and validation of new models of business processes for flexible manufacturing, specifically tailored to the needs of SMEs, based on "Ambient Intelligence philosophy" – Asking the question: What can be achieved by AmI Technology in SME reality?

To ensure practical relevance of project results and creating real industrial experiences, 2 paradigmatic and typical scenarios were selected for application of AmI technology and systemic innovation in order to assure high reusability and adaptability of the envisaged solutions for SMEs:

- Advanced manufacturing control, using wireless multi-modal services and speech recognition systems (SRS) for dynamic reconfiguration of (geographically) distributed assembly and manufacturing processes and lines;

- Innovative approaches for maintenance via mobile wireless devices and/or smart tags in combination with multi-modal services and SRS facilitating multi-stakeholder involvement.

Based on these scenarios, basic reusable prototype solutions will be developed, facilitating the AmI implementation in manufacturing environments for the SME type customers as well as preparing the market for AmI vendors. To enable and coach SMEs in how to realise "technology enabled systemic innovation of industrial environments and organisation of work", a methodology will be developed, delivering guidelines and easy applicable tools appropriate for SMEs.

Moreover, the focus on the human actor requires to consider heterogeneous cultural behaviour and environments. Therefore, partners from Germany, Ireland, Poland and Spain are involved in the project. Presenting required competencies from RTD, ICT development and industrial SMEs.

Preliminary investigations on SMEs' needs in the considered scenarios have indicated that harmonised innovations are needed in 3 technology domains. Therefore, the project will focus on radical innovations in key AmI technology:

- New mobile multi-modal services (especially wireless) applicable in manufacturing SME environment (simple to customise and use) addressing liability, cost, security and trust aspects, assuring compatibility and workflow support in extended SMEs, by applying agent technology and semantic web to effectively provide access to different systems.

- Innovative smart tags (e.g. action activated tags) combined with agent technology to enable intelligent autonomous interaction and distributed systems functionality.

- A speech recognition system (SRS) radically enhanced w.r.t. robustness and interoperability, to be applicable in shop floor environment and on mobile devices.

AmI as Enabler for Improvement

The basic assumption of AMI-4-SME is that the realisation of new AmI based environments will allow to create new needs and potentials to radically re-organise the work in industry, bringing considerable benefits regarding motivation of employees, flexibility, productivity, cost efficiency, performance and robustness, and, therefore, providing a breakthrough in the competitiveness of European SMEs.

5 Business Cases for Test and Validation

AMI-4-SME incorporates 5 Business Cases (BC), where AmI will be used in SME environments (i.e. mobile devices, smart tags and speech recognition). The BC1 and BC5 are application of the new Reference model concept for advanced control, while BC2 and BC4 are focusing on Maintenance. BC3 is a combination of both models:

- BC 1: Dynamic reconfiguration of Build to Order driven assembly processes with high product diversity in an Extended Enterprise environment.

- BC 2: Improvement of maintenance services for control systems.

- BC 3: Dynamic re-configurability of highly precise measuring systems at the end-user site to facilitate product multi-applicability & enriched maintenance services.

- BC 4: Optimal design for maintenance and logistics services.

- BC 5: Design driven dynamic reconfiguration of manufacturing lines.

Project Rational – The Work Plan

Based on the technology potentials and refined AmI reference models, the business cases will be analysed in detail and will serve as key references to derive SME innovation needs (i.e. which technology and AmI functionality is most promising for SME environments).

Moreover, AMI-4-SME applies an incremental prototyping approach, starting with concept prototypes as key reference for the specification and development of the innovation methodology and AmI solutions (building blocks). Subsequently the implemented early and full prototypes will be tested and assessed in the described business cases (i.e. real shop floor environments). Finally, 3 business cases will serve as demonstrators, open for public interest facilitating the understanding of both technology as well as reengineered processes – "a new organisation of work", enabled by applying the methodology for systemic innovation in SMEs.

AmI Products & Services for the SME Market

ICT vendors of AMI-4-SME are especially keen on an answer to the question: "How to penetrate the SME marketplace with innovative AmI solutions?" Since nowadays it's fairly clear, that technology is only an enabler which has to be coupled with new organisation of work, hence translating AmI features in terms of benefit and profit.

Therefore, ProDV, Softronica and Telefónica envisage strategic potentials on the one hand with respect to the AmI building blocks to facilitate the reuse of know how when enhancing their products and services. On the other, they want to support a strengthening of innovation culture in European SMEs by a light-weight innovation methodology, as a pathfinder for exploiting technology potentials hence generating a demand for their expertise.

The envisaged RTD Cluster

The project will provide cross-sectorial industrial participation, aiming at knowledge communities of SME users, RTD and ICT vendors leading to development of long-term visions on the future of manufacturing. Therefore, first contacts are established with other projects, while AMI-4-SME is continuously searching for potential cooperation and experience exchange.

International Cooperation – IMS Dimension

Manufacturing has to incorporate both global competition as well as global cooperation, to find new markets and to learn from the best. Therefore, in the scope of the IMS Programme, AMI-4-SME, in cooperation with the InAmI project, aims at a global cooperation with partners from Australia, Korea, Japan and US.