



# Standardization in research and innovation projects

Success story: factories of the future

## MSEE:

MSEE (Manufacturing Service Ecosystem) is a 3 year FP7 (7<sup>th</sup> European Research Framework Programme) project running from October 2011- to September 2014 aiming to create new Virtual Factory Industrial Models, where service orientation and collaborative innovation will support a new renaissance of Europe in the global manufacturing context.

The MSEE vision is that service-oriented management methodologies and the Future Internet business infrastructure will enable European virtual factories/enterprises to self-organize in distributed, autonomous, interoperable innovation ecosystems of tangible and intangible manufacturing assets, to be virtually described, on-the-fly composed and dynamically delivered as a service, end-to-end along the globalised value chain.

[www.msee-ip.eu](http://www.msee-ip.eu)

## THE PROJECT

European manufacturing enterprise will progressively migrate from traditional product-centric business to product-based service-oriented virtual enterprises and ecosystems.

An evolution from an economy of products towards an economy of services around the products becomes increasingly important in manufacturing, an evolution that is called servitization. Servitization involves the design, use and standardization of innovative services in the manufacturing domain. The MSEE (Manufacturing Service Ecosystem) project develops a framework for modelling the service system which is supported by languages to build such models and by a service (system) modelling language to support service system engineering in Virtual Manufacturing Enterprise (VME) environments. These models will guide production innovation and reduce the costs arising from miscommunications and misconceptions in cooperating organisations with proprietary solutions for their information systems. Such problems can best be resolved by using international standards, since they ensure mutual consensus and system interoperability.

## STANDARDS: A SOLUTION FOR MARKET UPTAKE

Usually standardization follows research after several years. This situation leads to the availability of many incompatible products and resulting problems in interoperability. To ensure early availability of standards supporting interoperability, standardization efforts in MSEE were started in parallel with the research phase leading to product development. In service engineering there is currently no language standard in CEN or in ISO for the modelling of the service system.

To date, the service (system) modelling language (SML) has been validated in four sector specific ICT applications at SME industrial pilots with a flexible tool box developed in the project to realize the modelling of manufacturing services. The pilots prepare the opening of new markets to software providers. At present the market potential can be estimated to be high due to the trend towards servitization and ecosystems; the high market potential is fostered by the strong representation of industry partners in the MSEE project.

□□ The standardized Service Modelling Language (SML) will facilitate not just the modelling of Services and Service Systems, but will also support and engineer the development of interoperable software among cooperating organisations currently adopting proprietary solutions. A pre-standard such as a CEN Technical Specification allows to deliver such standardized SML within a reasonably short time. □□

## HOW WAS THE STANDARDIZATION WORK DEVELOPED?

“Access and Contribution to Standards” is a dedicated work package in the project. In this work package, project partners are developing a pre-standard for the service modelling language (SML).

Towards this end, the project has created an expert group highly experienced in enterprise modelling within CEN/TC 310/WG1 ‘Advanced Manufacturing Technology - Systems Architecture’. The development of a CEN Technical Specification (TS) titled ‘Service Modelling Language’ was selected as a realistic outcome. The TS proposal has been distributed for comments and is being registered at the British Standards Institution (BSI). After the project ends, the partners plan to continue the work in CEN/TC 310/WG1 (in liaison with ISO/TC 184, SC5/WG1).

Project partners, as well as representatives from a wider community of manufacturers, users and researchers active in CEN/TC310 provided inputs to the content of the future SML Technical Specification.

## BENEFITS OF LINKING WITH STANDARDIZATION

Due to the close links between standardization and research, the service modelling language (SML) as developed by the project and proposed for standardization has demonstrated clear benefits in the four SME industry pilots, in sectors such as textile (product design services), white goods (after sales services) and TV consumer (online services).

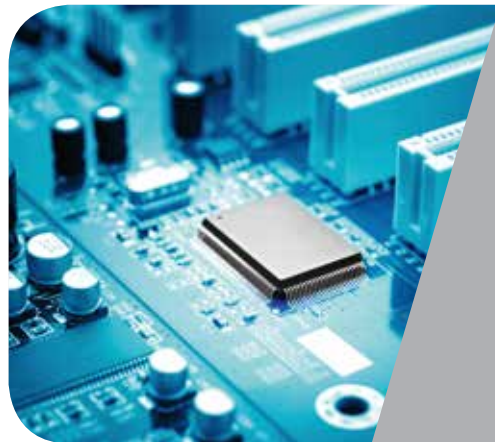
Standardization has been a major dissemination activity in the MSEE project, and is considered very important for the future use and impact of project results.

Further, MSEE has analyzed the state-of-the-art in manufacturing service modelling and proposed topics for potential standardization in service life cycle and asset management. In addition, knowledge has been disseminated via specific standardization workshops at international conferences.

## LONG-TERM EXPECTED IMPACT

The SML is expected to foster the development of more compatible products in enterprise service modelling and hence reduce problems in the interoperation of such ICT products as demonstrated in the industrial pilots.

SML will have a positive impact on improving interoperation of model based, service-oriented products, enabling European virtual factories/enterprises to adapt to the Future Internet business infrastructure.



The standardization process for the Service Modelling Language was developed in parallel with the research activities and coupled with dissemination and validation in industrial pilots to prepare for upcoming market opportunities. Collaboration between research and standardization proved to be very beneficial for the mutual understanding of the challenges and the overall progress.

Professor Guy Doumeingts, MSEE Scientific coordinator

[www.cencenelec.eu/research](http://www.cencenelec.eu/research)



Every project is different. The CEN-CENELEC Research Helpdesk can provide you with advice on how to include standardization in your project. Please feel free to contact us!

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