

First

Virtual Factories:
Interoperation Supporting Business Innovation



A Research Project of the European Union

Questions & Answers



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How is the project financed?

This project has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No. 734599.

What is the aim of the project?

The aim of the FIRST project is to provide new technologies and methodologies to describe manufacturing assets, to compose and integrate the existing services into collaborative virtual manufacturing processes and to deal with the evolution of changes.

What are the main research topics within the project?

The main research topics are virtual factories, digital factories, data interoperability, service oriented computing and business process management.

What is the expected result and outcome?

The expected result is to define a framework to explain the virtual factories' assets by means of a description language, the interoperability among data, services and processes, the discovery and the composition of services.

What is new and innovative about the project?

The project is innovative, because of its global approach to the life cycle of the manufacturing products and because it enables interoperability among the processes inside companies, as well as among partners of a value chain.

How does the project define virtual factories?

Virtual factories are abstractions of real factories. They provide a multi-layered integration of the information related to various activities along the factory and the product lifecycle. Creating virtual factories requires the integration of product design processes, manufacturing processes, and general collaborative business processes across factories and enterprises.

If virtual factories are only a virtual network of different enterprises, is this really a new concept? Do digital supply chains not already exist, e.g. in the automotive industry? What is the difference?

The difference is that the virtual factory is not only a network, but also an abstraction enabling the product lifecycle stakeholders to collaborate using software solutions.

What does this mean to business?

For business, this signifies an improved control over the production process, a more flexible management of new business opportunities and unpredicted situations, improved prediction of failures, etc.

How does the interaction between the virtual and physical production work?

The physical equipment of a factory is represented in the virtual factory, connected to the physical equipment of the other companies and can receive data and instructions.

Does the project also work on pure virtual factories without physical products and production?

The focus of the project is on manufacturing companies, so with physical products and production, but the concepts can be applied to companies that provide services or intangible products, as well.

What is the difference between smart factories and virtual factories?

They are two similar concepts. In both, digital technologies are used to enable communication and interconnection between equipment. The idea of an abstraction of the physical factory is the main difference between a virtual factory and a smart factory.

One aim of the project is to develop an interoperability framework in order to facilitate interoperability on data/information, services and process levels respectively. What does this mean in short way?

The framework will enable the communication among heterogeneous software components of the virtual factory, as well as the exploitation of services and data according to business process objectives.

Does this exist already? What is new with FIRST?

The existing approaches focus on specific problems and lack a general framework. Moreover, one benefit of the project is to address the evolution of change challenge, thus providing dynamic solutions to interoperability.

Another aim of the project is to enhance manufacturing integration through the application of advanced IT solutions. How can this be described in a short way?

Most of the companies currently do not adopt open standards, data fusion, service discovery and composition, which are advanced IT solutions.