

General Information

The Aim of FIRST

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.

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.



The Main Research Topics

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

Virtual Factories & Definitions

Definition

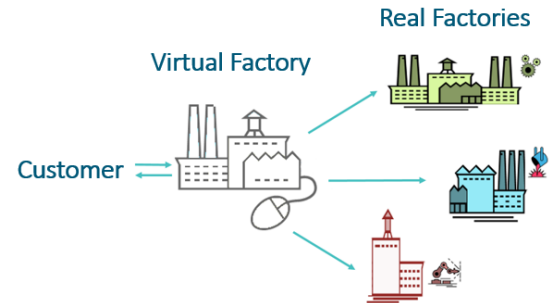
Virtual Factories represent an abstraction of real world factories. They provide a multi-layered integration of the information related to various activities along the factory and product lifecycle. Creating virtual factories requires the integration of product design processes, manufacturing processes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

Interaction between Virtual and Physical Production

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

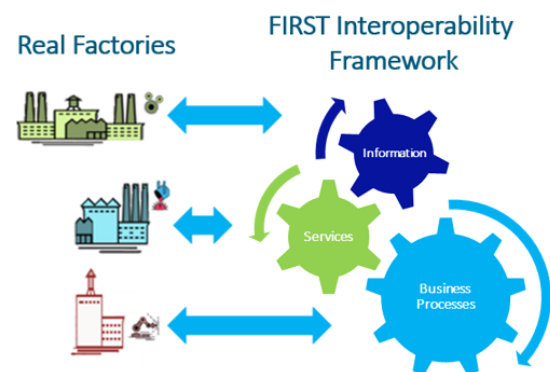
Graphic Depiction of Virtual Factories

This is a simple Picture of Virtual Factories.



Source: <https://www.der-wirtschaftsingenieur.de/index.php/virtuelle-fabrik/>

FIRST adds an interoperability framework to this approach.



Source: <https://www.der-wirtschaftsingenieur.de/index.php/virtuelle-fabrik/>

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

Innovation within the Project

The innovation is characterized by a global approach to the life cycle of the manufacturing products and in enabling interoperability among the processes inside companies as well as among partners of a value chain.

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

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