

# ADaptive Virtual ENTerprise manufacTURING Environment

Information Sheet, Oct. 1<sup>st</sup> 2013



**European Commission**  
Virtual Factories  
and Enterprises

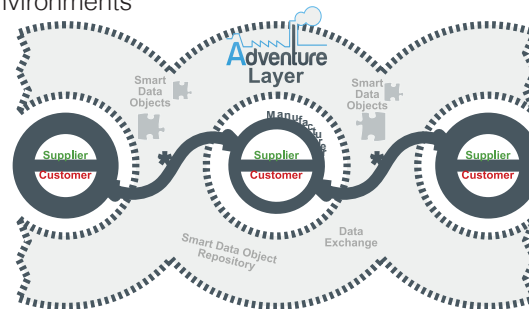


[www.fp7-adventure.eu](http://www.fp7-adventure.eu)

## Connecting Companies

The goal of ADVENTURE is the creation of a framework that provides the tools to combine factories in a pluggable way to manufacture a particular product. This includes the creation of manufacturing processes, finding partners as well as real-time monitoring of the processes that are put into play.

The concept of combining the power of several independent factories to achieve complex manufacturing processes as so-called virtual factories is not new and has been addressed by several research projects in recent years. However, most of them are limited to create virtual factories at a business level and in many cases they concentrate on the partner-finding and factory-building processes. Still, no proven tools and technologies exist in the market to provide valuable end-to-end integrated Information and Communication Technology (ICT) in such environments



ADVENTURE will help virtual factories and enterprises move beyond existing operational limitations by providing concrete tools and approaches for leveraging the information exchange between factories. Factory process optimization will be enabled by the integration of runtime factory selection, forecasting, monitoring, and on-the-fly collaboration.

ADVENTURE aims at simplifying the establishment, management, adaptation, and monitoring of dynamic manufacturing processes in virtual factories by building on concepts and methods from the field of Service-oriented Computing and therefore benefiting from the progress that has been made in this domain over the last few years. Technologies from the field of Ubiquitous Computing and the Internet of Things, e.g., wireless sensors, will be adopted in order to support the monitoring and governance of processes, i.e., give information about the current status of manufacturing and delivery, as seen above.



# Consortium

## Technology



## Science



UNIVERSITY of VAASA

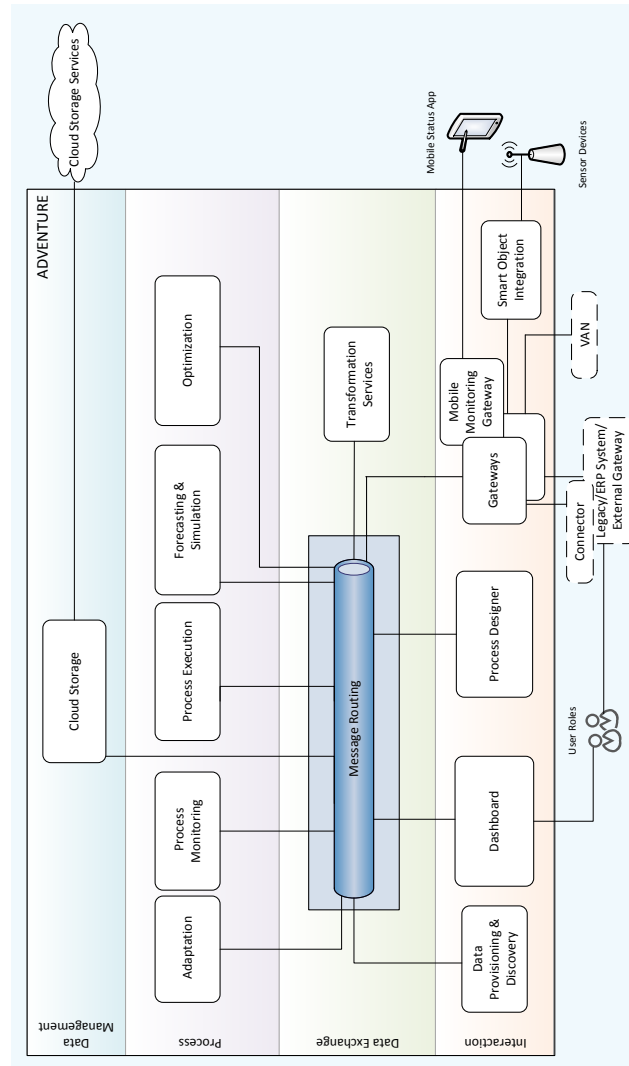


## Users



[www.fp7-adventure.eu](http://www.fp7-adventure.eu)

# Overview of Components



## Data Provisioning and Discovery & Cloud-based Data Storage

This Framework supports the (semantic) description, annotation and handling of manufacturing-related data according to the patterns, standards, and/or description schemata, that will be designed. This data as well as sensor data, product status information and Virtual Factory data will be stored in a cloud-based solution.

## Message Routing, Transformation Services & Smart Object Integration

The Message Routing offers the connection between all components of the ADVENTURE architecture and enables the exchange of messages between them, the Transformation Services converting them between formats if necessary. Smart Objects enables the delivery of information from attached partners and the corresponding processes by providing sensing, processing, and communication capabilities.

## Dashboard & Process Designer

The Dashboard is a Graphical User Interface that integrates all components into a complete virtual factory management utility. Besides other components, the Process Designer is also accessible from the Dashboard. It allows the definition and orchestration of manufacturing product processes in a visual editor and creates a BPMN process model.

## Process Forecasting and Simulation & Process Optimization & Adaptation

Designed processes can be simulated and results can be precalculated. Based on this data, the actual processes can be optimized before or even during runtime, as Adaptation can change running processes.

## Process Execution & Monitoring

The Process layer contains the core process execution engine, covering the live-execution, live-adaptation and real-time-monitoring of the production processes.