

# VISTRA



## Key Innovation

The information gap between virtual product and manufacturing engineering and the physical start of production is a fundamental problem for European manufacturers. Knowledge about products and processes, which is currently distributed over heterogeneous systems, is rich of information, but a platform for presenting this knowledge according to the different user roles (e.g., manufacturing system engineer or operator) is missing. Enterprise data must be captured, updated, enriched and transferred into an interoperable platform, which enables cross-disciplinary knowledge sharing throughout the product life cycle.

Up to now, the complexity and incompatibility of digital data are the main reasons why planning and training of manual manufacturing processes, e.g. in automotive and aerospace, are still carried out in physical stages. This training method is expensive and often ineffective. In order to reduce the need for physical prototypes and to speed up time-to-market, virtual training must overcome the problems of former approaches, such as inadequate authoring times, cost-prohibitive hardware and insufficient user integration.

VISTRA aims at the development of a comprehensive platform for simulation and training of manual assembly processes based on advanced ICT-technologies and concepts, such as auto-generation and re-use of data, realistic physical behaviour, game-based learning, advanced user-interaction and cross-disciplinary information sharing.

## Technical Approach

The VISTRA platform consists of three main modules:

The **VISTRA Knowledge Platform** acts as the central data and information hub. It captures and stores relevant knowledge (e.g. about assembly processes, operations, products, parts and tools) and geometry data using semantically rich representations. It works as a linking element between existing data sources and new applications, such as the *VISTRA Training Simulator* or the *VISTRA Knowledge Sharing Centre*.

The **VISTRA Training Simulator** represents an interactive and virtual assembly simulation that is used to train and test manual assembly processes. Its aim is to provide a realistic manufacturing environment, which allows replacing physical prototypes. It integrates a game-based user-interface and innovative interaction devices in order to create an engaging user experience.

The **VISTRA Knowledge Sharing Centre** provides a general overview about manufacturing and training knowledge stored in the VISTRA Knowledge

### Contract number

285176

### Project coordinator

DFKI

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### Project website

[www.vistra-project.eu](http://www.vistra-project.eu)

### Community contribution to the project

3.63 Mio Euro

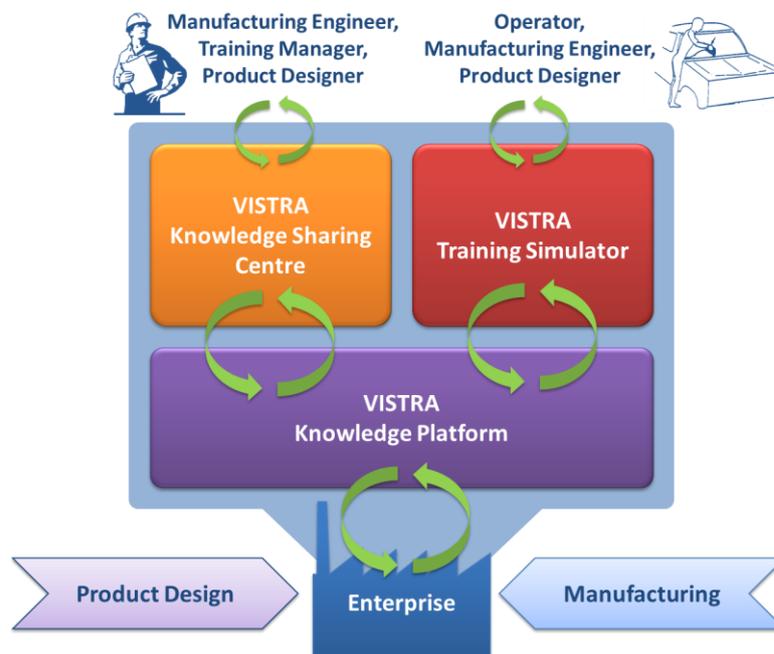
### Project start date

01 September 2011

### Duration

36 months

Platform. It acts as a platform for cross-disciplinary collaboration between manufacturing system engineers, training managers and product designer: Training statistics can be evaluated; process and workflow data can be analysed and edited via the user interface.



Project partners	Country
DFKI	DE
Fraunhofer	DE
Fraunhofer	SE
Chalmers Center	
University of Nottingham	UK
Serious Games Interactive	DK
VOLVO	SE
OPEL	DE

## Demonstration and Use

The applicability of the VISTRA system will be demonstrated and validated in close collaboration between the industrial end-users and the technology providers. The VISTRA platform will be implemented and evaluated in extensive user test at one *OPEL* site in Germany and one *VOLVO* site in Sweden. Moreover, the demonstration and dissemination activities are planned in cooperation with the associated living lab *SmartFactory<sup>KL</sup>* and the *Tecnológico de Monterrey*.

## Scientific, Economic and Societal Impact

The VISTRA project is highly industry-driven, addressing specific needs of OEM manufacturers in Europe. The two industry partners, *OPEL* and *VOLVO*, are facing the same main issues when it gets to the simulation and training of future assembly processes for a new product. At the moment the training is realized using hardware components in the form of complex physical prototypes.

VISTRA will **enable manufacturers to use already existing product and process data to generate automatically virtual simulation and training setups** of manual assembly processes. In this way, VISTRA will accelerate product design and manufacturing by enabling **new and complex products to be ramped up significantly faster**.

The early training in an interactive and virtual environment will allow to gain valuable feedback and suggestions for improvements in full complex product design and manufacturing processes. The VISTRA solution will **permit to make decisions in the early design phases, leading to higher availability of the assembly lines and better quality rates during the series production**.