

VRPLM: COORDINATE AND CONTROL OF PRODUCT DEVELOPMENT PROCESSES WITH VIRTUAL REALITY

Ideas on utilisation

Modern product development is characterized by the collaboration of development teams and the use of heterogeneous virtual prototypes. The management of product-describing data is done by means of Product Lifecycle Management (PLM) to support a consistent product development process.



Fig 1: Photorealistic illustration of a commercial vehicle design by VR.

The complex project and product structures are often difficult to capture and control. While carrying out evaluation processes on the virtual prototype, the goal is to experience it as real as possible (see Fig 1). Modern VR tools provide the representation of large, heterogeneous, virtual prototypes and allow the integration of users of the future product. However, in practical application, VR is seen as an elitist and costly tool that is used in isolation at the end of development steps to validate the results. This results from the insufficient integration of the VR tools in the PLM.

The VRplm integration platform is a VR-based work environment that is understood as part of PLM's enterprise-wide information and process model. Distributed heterogeneous virtual prototypes can ad hoc in the VR system under Consideration of metadata as well as person-specific access

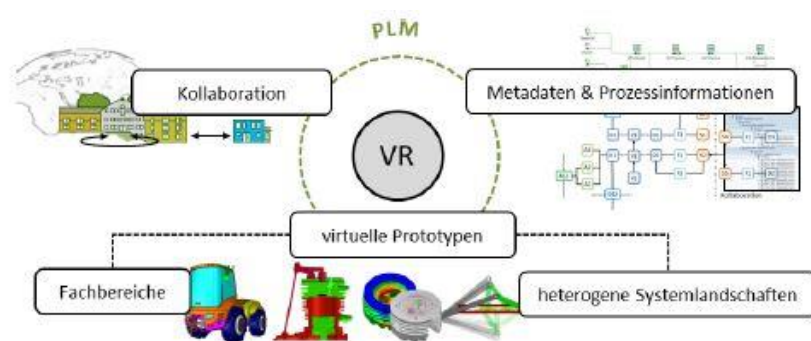


Fig 2: Integration platform VRplm as project controlling instance.

rights and roles. The use of the integration platform VRplm changes the position of VR in the development process. In addition to the pure visualization of virtual prototypes, development work can be coordinated, controlled and organized. The VR system becomes the project controlling instance (see Fig 2).



VRplm allows the flexible linking of several CAX and VR systems with the same data (session). The central component is the VRplm Manager, which realizes the synchronization of the respective CAX and VR applications. The communication within the integration platform as well as the provision of the required product data takes place via domain-specific VRplm clients (Figure 3). The integration of other applications, e.g. of another CAD system, requires only the development of a program-specific plug-ins.

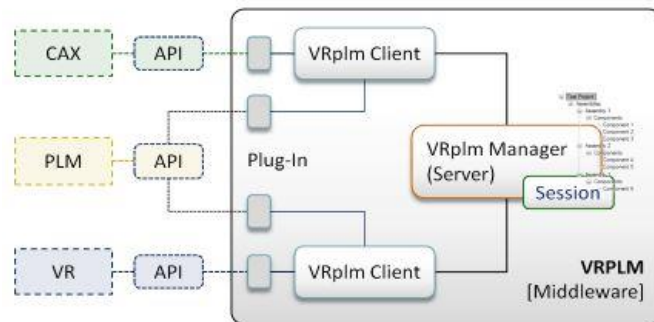


Fig 3: VRplm system architecture.

Potential adopters of technology

Mechanical engineering companies with distributed development sites, cross-company development projects and closely cooperating suppliers. VRplm supports the protection of development statuses by means of virtual prototypes in the areas:

- Construction, product design
- Production
- Service, Sales and Marketing

Advantages of technology

- full integration of VR into the product development process; Better consideration of ergonomic and emotional evaluation aspects
- Provision of a communication platform in a heterogeneous system landscape; Support the collaboration
- holistic, intuitive and permanent access to the product model; Integration of all information of the product life cycle
- central project control

Market and context of technology

- Reduction of the effort for the creation of VR models from the data of the CAX methods
- Replacing system-specific, stand-alone commercial solutions for CAD-VR-PLM data integration with a system-independent approach to VR integration
- VRplm is a stable and flexibly extensible architecture