



## Virtual Reality finds its way into the normal course of business: BSH implements solutions for digital product creation.

Products for cooking and baking, laundry care, dish washing, cooling and freezing as well as numerous small home appliances make daily life more pleasant and comfortable. BSH Bosch und Siemens Hausgeräte GmbH (BSH) is the market leader in the home appliances industry in Europe, the products stand for highest quality and distinguished design. With its strategic innovation management, BSH develops the technology for tomorrow's world of home appliances.

Thereby, nothing is left to chance. Already in the very early stages of the product creation process (PCP) function and styling are examined carefully. Styling plays a decisive role for each appliance of BSH. Consequently, the work with prototypes is essential in all phases of product development. Physical prototypes are costly and time consuming to produce. Marketing and sales rely on external resources for photo shootings and catalog productions. For the required international coordination, employees travel around the world with prototypes. Adding to the aspects of cost and time, there is currently no interdivisional visualization process in place.



Themed "solutions for the digital product creation" BSH is breaking new ground by expanding its range of prototypes to include virtual styling models and digital prototypes.

Therefore, BSH launched a virtual reality project (VR-project). Virtual reality needed to be integrated into the workflows of the product creation process and the IT-infrastructure. In addition, the collaboration between the involved divisions was to be simplified and fostered. From the very beginning, consequent process integration was a key aspect.

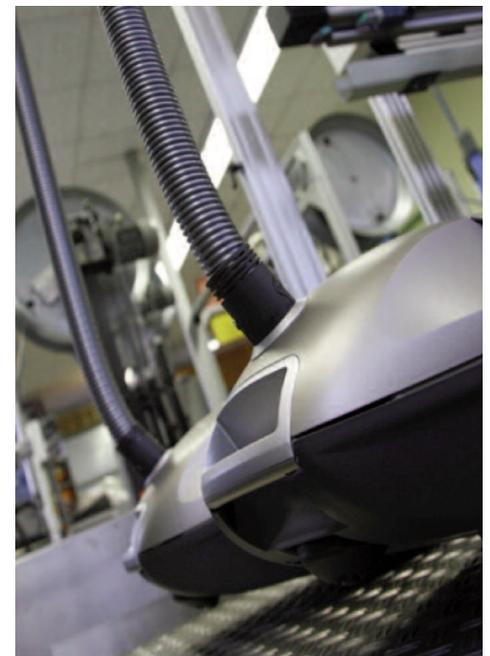
The challenge was to tie up digital prototypes from the VR-software Autodesk® VRED™ Professional 2014 with the existing PLM-System Teamcenter of Siemens PLM Software.

Such an extensive and innovative project calls for solid and well-structured planning; after all, existing processes need to be adapted and complemented with new methods. Partners in this project: ComputerKomplett ASCAD – PDM/PLM specialists, nVIZ – experts for digital product creation and software vendor Autodesk; all of them companies with excellent know-how and long-standing experience.

ComputerKomplett ASCAD, an expert for CAD-, PDM- and PLM-solutions puts an emphasis on the implementation of seamless enterprise solutions. For the project VirtualReality@BSH ComputerKomplett ASCAD is accountable as general contractor. As PLM-specialist, the system integrator takes care of integrating existing data into the PLM-System Teamcenter as well as the interface VRED-Teamcenter, to ensure that the visualization software does not remain isolated in the company.

For the VR@BSH project nVIZ gathered the requirements from all BSH business units, developed the methods and wrote the specifications. After extensive benchmarking, nVIZ selected and proposed the software tools and development partners, set up the project consortium and took over the overall contractors project management.

The software deployed is Autodesk's 3D visualization suite VRED™ Professional 2014 (formerly by PI-VR). Autodesk® VRED™ Professional 2014 is used for creating high-end product visualizations and virtual prototypes for the product creation process as well as digital media.



The technical implementation concept proposed by ComputerKomplett ASCAD together with the partners nVIZ and Autodesk, convinced through the identified capabilities and strengths, an interface implies on the consequent process integration.



“Efficient media creation is an important building block for the successful marketing of our high-value products. The interface TCeasy VR@PLM is a critical contribution to an end-to-end visualization throughout the product creation process and beyond”.

Markus Halbritter, IT-Project leader VirtualReality@BSH

“Putting it in simple terms, the challenge was to hook up the VR-software VRED to the PLM-system Teamcenter. “Practically, the implementation of this complex project took place in three phases” summarizes Volker Wallbott, Head of the business unit Siemens PLM services at ComputerKomplett ASCAD, the complexity of the project.

- First milestone was loading the CAD-data from Teamcenter into VRED, to make use of the engineering data for appropriate 3D visualization and thus to enable first VR-projects with the resulting savings.
- After the second milestone, in addition, it was possible to save VR-objects from VRED to Teamcenter, such as VRED-projects, shaders, scenes, cameras or lights.
- These were the essential prerequisites and preparations for the third and most relevant step: the complete data management in order to automatically create VR-scenes with all relevant components, workflow-driven from Teamcenter. Any changes to the CAD data are identified by the interface TCeasy VR@PLM and accounted for by the visualization software.

Markus Halbritter, IT-Project leader of VirtualReality@BSH summarizes the advantages for the innovation and development process of the BSH corporation: “With the interface TCeasy VR@PLM, JT-assemblies can be loaded directly from Teamcenter for visualization in the VRED-software. Moreover, items like cameras, light setups and material shaders, required for photorealistic visualization can be stored and managed in Teamcenter. This is the technical foundation for an end-to-end visualization process, starting from styling and all the way to service and marketing”.

The targeted teamwork of the three project partners was a major contribution to the achievement and success of this project, equally the positive and close coordination with the customer. BSH is pleased with the functionality of the solution. The project VR@BSH is already achieving significant savings with the use of digital prototypes in the styling divisions. Roll-outs to other divisions and locations worldwide are planned. Here, the gathered experience will be incorporated to continuously improve and optimize the solution.

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#### Business Activity

BSH Bosch und Siemens Hausgeräte GmbH is the largest manufacturer of home appliances in Europe and one of the leading companies in the sector worldwide. The Group's product portfolio spans the entire spectrum of modern household appliances. It extends from stoves, ovens and extractor hoods to dishwashers, washers and dryers, from refrigerators and freezers to small appliances (Consumer Products) such as vacuum cleaners, coffee machines, electric kettles, irons and hairdryers.

#### Company Profile

The group was founded in 1967 as a joint venture between Robert Bosch GmbH (Stuttgart) and Siemens AG (Munich). In 2012 it posted annual revenue of about 9.8 billion Euros. Today, BSH operates 40 factories in 13 countries in Europe, the US, Latin America and Asia. Together with a global network of sales and customer service subsidiaries, the BSH family is today made up of about 70 companies in 50 countries, with a total workforce of over 46,000 people, of which more than 70 percent are employed in Europe.