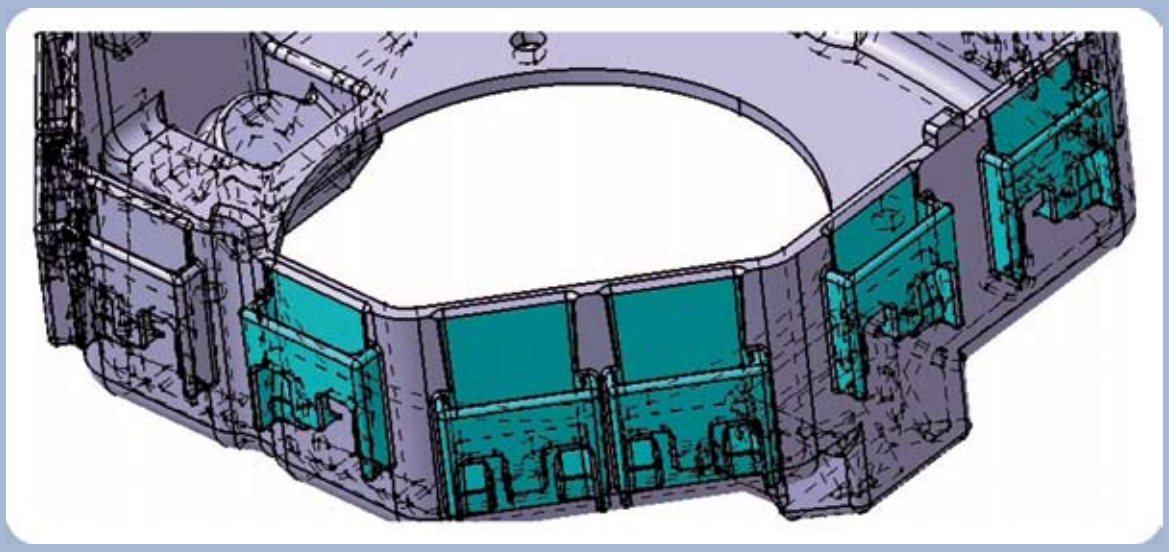


90% LESS EXPENSES FOR DEVELOPMENT, REVISION AND CONSTRUCTION

The migration from CATIA V4 to V5 is more than a normal release update. The automotive supplier Key Safety Systems Deutschland GmbH thus decided to carry out a method project with CENIT before the actual migration. It was a complete success – and confirmed the fundamental advantages of the new version, particularly with regards to the ease of revisions.

► KEY SAFETY SYSTEMS DEUTSCHLAND

Implemented properly, the new system can reduce development and modification expenses by up to 90 percent. Key Safety Systems is now exceptionally well prepared for when the first automobile manufacturer carries out a project with CATIA V5.

Key Safety Systems Deutschland is an international automotive supplier for restraint systems, such as airbags, belt systems, gas generators and steering wheels. The designers and product developers are thus dependent on innovative IT tools: the demands on the complexity of restraint systems continue to climb.

► AREAS OF APPLICATION FOR CATIA V5

"We really struggle over every gram here," says Burkhard Stich, Group Leader Design CATIA at Key Safety Systems. The threshold is less than two kilograms for a passenger airbag. An airbag borders on 10 to 30 other components that directly influence its development. Another factor that makes things more difficult is that, due to the greater variety of manufacturer models and short development times, the changes and adjustments in the development process have increased significantly. "Nowadays, it is not rare for us to have to modify a component several times before it goes into production," says Senior Design Engineer Markus Richter.

► CATIA V5 PILOT PROJECT

However, there are no compulsory parameters: the designer is completely free to decide when, where and how to set them. "In this respect, a migration to CATIA V5 is far more than just a normal release update. It is an entry into a new design world and design philosophy," explains Safety Designer Stich.

Those responsible in this area at Key Safety Systems want to optimally prepare this change – and therefore decided to carry out a methods project together with CENIT and postpone the actual migration. "The aim was to discover how we would have to handle the new tool and whether the advantages promised would actually work in practice," says Stich.

"In this respect, a migration to CATIA V5 is an entry into a new design world and design philosophy."

Burkhard Stich
Safety Designer

The most CAD/CAM systems used today do not offer optimal assistance here. Having been made aware of the new possibilities with CATIA V5 by CENIT, Burkhard Stich and Markus Richter decided to take a closer look. CATIA V4 and Unigraphics had previously been used, with IDEAS as a complimentary system.

With its full parameterisation of all surfaces and objects, CATIA V5 offers a completely new approach to construction, and thus the decisive advantage of being able to map variants within a model and to create further modifications automatically by making changes to the corresponding parameters.

The V5 Pilot Project, which was carried out within only three months, consisted of the following aspects:

- Data viewing
- Interoperability of CATIA V4 / V5
- Process description of interoperability migration
- Airbag component creation methods (3D)
- General creation and modification methods (3D)

KEY SAFETY SYSTEMS: MIGRATION TO CATIA V5

► DATA VIEWING

In the first step of the project, the responsible parties at Key Safety Systems, Stich and Richter, together with the responsible CENIT consultant, determined which components were to be recreated with CATIA V5: an airbag fastening clip with 3D head airbag as well as the housing and cover for a driver airbag (steering wheel surface). Furthermore, the tasks and design goals were described.

► INTEROPERABILITY OF CATIA V4 / V5

After these preparatory considerations, the task in the second stage of the project was to test how well CATIA V4 and V5 worked together: a very important criterion for Key Safety Systems Deutschland. "A complete migration is not necessary," explains Burkhard Stich: "No running projects will be migrated from V4 to V5." Both CATIA versions will continue to be used in parallel for some years. The designers tested in detail conversion, component conversion and integration between CATIA V4 and V5, as well as conversion in neutral interface formats such as IGES, STEP or DXF. The individual process steps were precisely documented, such as "Open an empty part. Move the mouse over a body. Right-click to open menu and select 'Insert special'."
The conclusion: interoperability between CATIA V5, the previous system and foreign products is completely operational and does not create any hurdles for daily use.

► AIRBAG CREATION METHODS

The central project stage followed the initial experiences with CATIA V5: rebuilding an existing airbag component, driver airbag housing and cover for an Aston Martin, as well as an airbag fastening clip with a 3D head airbag.
In order to test out CATIA V5's features as extensively as possible, different design goals were set for the components. The task for the airbag was thus to make all clips on the component dependent on each other through parameterisation and to ensure that design modifications could be carried out quickly. The data volumes were to be kept as low as possible through the logical organisation of the model and other designers should be able to acquaint themselves with it quickly.
For the fastening clip, the task was to create differing, mutually dependent versions from a single model (open and closed state). Guided by the CENIT consultant, the experienced designers Stich and Richter went to work – and very quickly experienced their first „revelations".

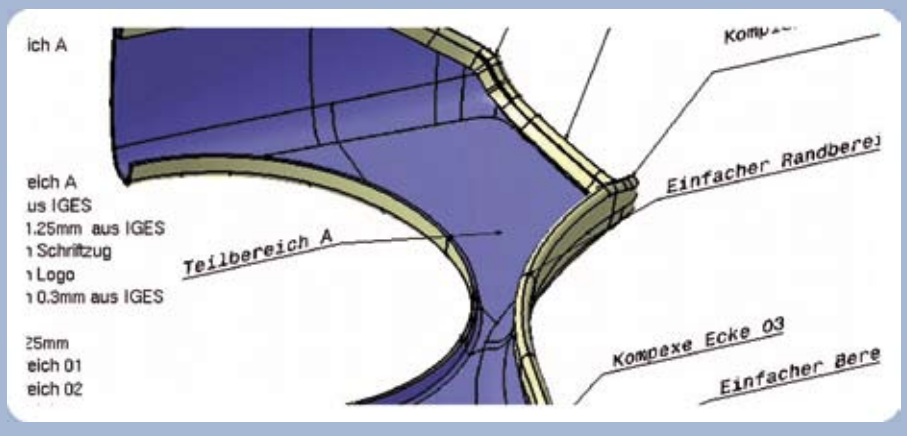
"The V5 pilot project was considered very wise, as extensive skills were covered and acquired during the project thanks to specialist consultation."

Burkhard Stich
Safety-Designer

The main realisation: V5 requires designers to work in a different way. According to Burkhard Stich, "Anyone who wants to fully exploit the advantages of parameterising full association in V5 must be clear about the dependencies and relationships within the component before actually beginning the design." This sometimes requires more work at the beginning of the design and greater discipline. "Simply jumping in and designing, as with other tools, does not achieve anything at all," comments Markus Richter.
Richter and Stich appreciate the fact that for a methodically correctly built component, a total of up to 90% of input for changes can be avoided: "Some changes can be completed per mouse-click," says Stich. Creating derivatives from a basic model also proved to be significantly simpler and more efficient. Whereas two separate models had to be constructed before, a new component variant can be created with very little instruction using CATIA V5.

► CREATION METHODS

In addition to the results of the fourth project stage, the functions and creation methods of CATIA V5 that are relevant for Key Safety were examined in detail, such as the methods for the variant technique, power copy, body or CATIA V5 product modules. The procedures for Key Safety Systems Deutschland were fixed in the method project. This is particularly important because after completing the project, only the power users Richter and Stich were well acquainted with V5, and further training and introduction would soon be required.
This much is clear: now that CATIA V5 has been available as a product for some time, it is time for migration on a larger scale. Automobile manufacturers are beginning to carry out their first projects using V5. "We are well prepared for this urgency," says Burkhard Stich, Group Leader Design CATIA, concluding with unbounded optimism: "All project objectives were accomplished in their full scope. The V5 pilot project was considered very wise, as extensive skills were covered and acquired during the project thanks to specialist consultation."



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