CADfix Opens Doors to Legacy Data at ArvinMeritor

Design and engineering departments at tier-one automotive suppliers must be able to accept and deliver CAD data in the same format as their customers. In practice, this usually means that each supplier maintains licenses of those CAD systems used by each of the OEMs that it supplies or would like to supply.

Suppliers like ArvinMeritor would prefer to carry out their work in whatever CAD/CAM/CAE systems they choose. While the OEM's focus is on the end result, the reality is that transferring data from an OEM's native CAD system to that of the supplier is never simple. Attempts to use an intermediary file format like IGES seldom go smoothly. Effective transfer of data between systems has proved so elusive that some OEMs have set in place policies that insist on using the same CAD system throughout the engineering supply chain.

But while such policies are beneficial to the OEM and the chosen CAD vendors, they do not suit those who want to choose the best tool for an individual job. Like an increasing number of automotive suppliers, ArvinMeritor has addressed this problem in one situation by implementing CADfix, the leading engineering data interoperability solution from ITI. In addition to providing freedom and flexibility, CADfix also proves invaluable in addressing the need to access legacy data.

ArvinMeritor

ArvinMeritor is an international tier-one supplier, designing and manufacturing automotive sub-assemblies for an impressive customer list. Its business groups specialize in automotive components and assemblies for a wide range of parts. With headquarters in Troy, Michigan, ArvinMeritor employs approximately 32,000 people in 27 countries and has revenue of $7 billion.

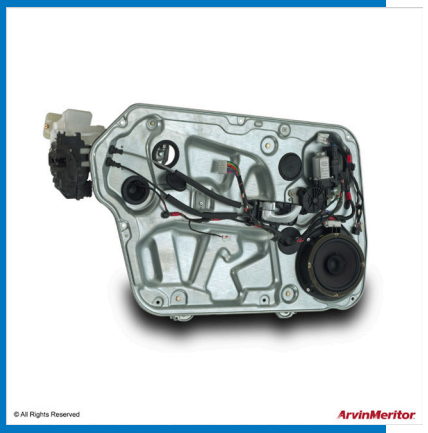
ArvinMeritor UK's Access Control Systems business is responsible for the systems that allow legal entry into automobiles and prevent illegal access when parked. The company manufactures latch and actuator systems for the doors of passenger vehicles for many of the world's leading OEMs. "Our designs must be unobtrusive – essentially invisible – while at the same time extremely secure," explained John Osman, an application engineer at Access Control Systems. "Most modern access control systems still rely on some form of mechanical latch (albeit controlled by increasingly sophisticated actuators), and this is a potential point of weakness if someone is determined to try to break in to a car. Our job is to build in as much security as possible within a necessarily constrained environment."

CAD systems

The company's business groups fall into two primary businesses: manufacturers of parts and assemblies for heavy commercial vehicles and others that concentrate on light vehicles. When it was time to review its corporate CAD policy, the Access Control group chose CATIA as its core CAD/CAM solution. Due to interoperability challenges, the group would need to use mutliple CAD systems.

"For our requirements at the time, we were convinced that CATIA could provide us with the best overall mix of functionality and that it would do a great job as our standard modeling platform," said Osman. "But we could not ignore the pressure from the OEMs for direct interoperability so we have ended up with a mix of systems including CATIA 4 and 5, I-DEAS and, of course, our existing seats of CADDS 5. So in effect we have gone from a single CAD system two years ago to using at least four now, more if you take into account our CAM and CAE tools."

Before CADfix, each assembly component required a half hour of preparation before going into CATIA; now parts can be transferred from CADDS 5 to CATIA in around five minutes.



CADfix

CADfix removes barriers preventing the reuse of solid models. By providing an extensive set of geometry manipulation tools for importing, repairing and exporting data, CADfix maximizes the reuse of CAD data in downstream applications.

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Legacy data

One of the biggest challenges in this multi-CAD environment was to reuse the legacy data from CADDS 5. It quickly became clear that using IGES for this posed more problems than it solved. “It is vital for us to be able to access our legacy data,” explained Osman. “This is the only way we could ensure that the work we have undertaken in the past on both historical and ongoing long-term projects would not be wasted. But using IGES to move the data from CADDS 5 to CATIA turned out to be a long and drawn-out process.”

The problems stemmed from the fact that CATIA treats IGES as collections of surfaces rather than as true solid geometry. This means that data transfer must begin with extensive preparatory work in CADDS 5, up to 30 minutes per part, and with up to 40 parts in a typical latch/actuator assembly, this caused a significant bottleneck.

To tackle this issue, ArvinMeritor invested in CADfix from ITI, deployed on a floating license system to make it available to all CAD/CAM/CAE users. “We knew that CADfix provided a reliable intermediary for transferring data, particularly via the IGES route,” explained Osman. “So we initially took it on board to import and export IGES in such a way that the preparation work in CADDS 5 would no longer be needed. We have since invested in the native CATIA translators, but even via the IGES route we have seen massive improvements with CADfix.”

Productivity gains

Before CADfix, each assembly component required a half hour of preparation before going into CATIA; now parts can be transferred from CADDS 5 to CATIA in around five minutes. This alone has provided a clear business benefit, as a full assembly takes no more than a couple of hours instead of days.

The introduction of CADfix has meant more than just quick and reliable access to legacy data. It has also meant that live engineering data can be readily shared among departments using different CAD/CAM/CAE systems. STL files, for instance, can be exported directly from CADfix for use in ArvinMeritor’s dynamic analysis software (Adams). And the FEA team regularly uses CADfix’s defeaturing functionality to remove small details the designer has included that will cause disproportionate problems when it comes to meshing for analysis. In all, some 70 percent of components are processed in CADfix at some point in the design cycle.

The benefits that ArvinMeritor has experienced through its adoption of CADfix are typical and illustrate the importance of meeting the challenge of engineering data interoperability head-on. ITI’s own research suggests that up to 80 percent of a typical engineering design project is wasted on reworking data. More and more manufacturers are turning to CADfix as a more efficient tool for data transfer and enhanced interoperability between CAD systems.

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- John Osman
Application Engineer at
Access Control Systems

About ITI

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www.iti-global.com
info@iti-global.com
1-800-783-9199 US
+44-1954-234-300 UK

European Headquarters:
4 Carisbrooke Court, Anderson Road
Buckingway Business Park, Swavesey
Cambridge, CB24 4UQ, England

World Headquarters:
5303 DuPont Circle
Milford, OH 45150 USA

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International TechneGroup