



## THE WIDE ANGLE ON CAD DATA EXCHANGE



The migration of CAD data from one system to another within the same family is not new but the challenges of migration between two apparently closely related products clearly remain. However, product data exchange specialist Theorem Solutions believes CAD users should also consider the wider picture.

The problems of CAD interoperability first surfaced in the early days of CAD/CAM and over the years designers have been introduced to a multitude of approaches to interoperability – from neutral file formats of IGES through to STEP, and including Theorem's acknowledged area of expertise, direct translation between different CAD systems. With the advent of globalisation, collaborative working and PLM, interoperability brings ever-increasing challenges to the daily lives of CAD users working between different CAD systems. These challenges can be found wherever and whenever different CAD systems are being used.

### Trends

Today's product development pressures mean that designers are tasked with quickly and flawlessly designing and producing quality products. More often than not, each new generation of products incorporates design elements from previous generations and this process benefits from the use of legacy data. However, CAD formats, even within the same product do not always remain the same. From time to time a CAD vendor may introduce new formats to enable strategic long term enhancements and the further development of the CAD environment in question. Migration between different systems presents designers with a particular dilemma because different architectures prevent them from simply working with the previous generation file format. The CATIA V4 to CATIA V5 evolution includes a radical change in data formats.

While this change is taking place within the CATIA family, it is interesting to look at the wider picture and see other migration influences amongst the CAD systems. A surprisingly strong influencer is CADD5, which in the UK and Europe is still very widely used in some major design projects, and a considerable amount of data originally defined in CADD5 format will be utilised in newer product designs.

## Long life cycle projects

In the early days of sophisticated Aero and Auto product evolution, when CAD was in its infancy, the consequences of data migration were not too evident. There was less data in CAD format and CAD was not used for the development of long life cycle projects. Long life cycle projects not only rely on the evolution of a new variant from its predecessor, but they also continue doing so for many years.

As design and manufacture using CAD has become the norm rather than the exception over the past years, and particularly since the Automotive and Aerospace sectors have been working in 3D, massive amounts of data have built up in long term projects. In the UK and Europe, the two main systems used for this purpose were CADDSS and CATIA V4. In aerospace, a project life can be very long, for example there were recent design changes made to Concorde in 2001, some 30 years after its first flight, A380 is still largely a CADDSS project. It sometimes surprise people to realise just how much long life cycle CAD data is still maintained in CADDSS format and how much regular exchange of data there is between what might be considered current generation CAD systems and CADDSS.

For example, a uk midlands world leading aero engine manufacturer is a major supplier to the A380 project. In the beginning, because the A380 engine projects were done in CADDSS, and the preliminary design work for the A380 project at Airbus was undertaken in CADDSS, exchange of CAD data was very straightforward. However, recently there has been a move by Airbus to put the visualisation aspect of the A380 into digital mock-up via CATIA V5, and this has meant some changes.

The aero engine manufacturer has elected to use Theorem's direct CADDSS to CATIA V5 CADverter and their early trial results suggest that this new Theorem product is "**a typically good Theorem product**" and that it will solve this short and mid term challenge.

The longer term question may well be one about the longevity of CADDSS. As time goes on, more of the new generation of long term design projects will be started on new generation CAD systems. This means that more OEMs and their suppliers will be faced with new CAD data translation challenges. Not only will they need to translate legacy data from long term projects, but they will also need to translate between the new generation of CAD systems themselves. The transfer of data from legacy systems is self limiting, in that sooner or later, enough data will have been migrated for the process to be no longer necessary. However, as the different needs of different organisations in the world of collaborative design each install the CAD system that best meets their needs, the need for exchange of CAD data on current design projects will increase.

### What are the implications?

Viewed from a wide angle, the challenges of CAD data migration, and ongoing CAD data translation can be seen to extend beyond the bounds of a single CAD system family and beyond the bounds of single business enterprises,

### Theorem has a role to play

With more than 10 years experience supplying solutions to meet these translation needs, not only can Theorem provide the user with translators between CATIA V5 and other current systems - such as UGNX, I-DEAS, Pro/E and ICEM - but also the company can satisfy the user who has long life cycle projects invested in CADDSS. Theorem's family of translators complements the products and services that have been developed to help the CATIA V4 community migrate to V5 by enabling other translation requirements to be met. At the same time, Theorem can provide solutions for the next generation of projects already being started in CATIA V5. Flexible payment methods including "a pay by use" basis, enable the cost effective application of CADverter to legacy migration, translation of a project, or for just a one-off translation.

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For further information please call **John Wedrychowski** at Theorem Solutions on:

**+44 (0)1543 445620** (email: [john@theorem.co.uk](mailto:john@theorem.co.uk))

Editorial contact: **Rob Bloom** at PR Plus Ltd on: **+44 (0)24 76 590721**;

or e-mail: [rob.bloom@prplus.co.uk](mailto:rob.bloom@prplus.co.uk)

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