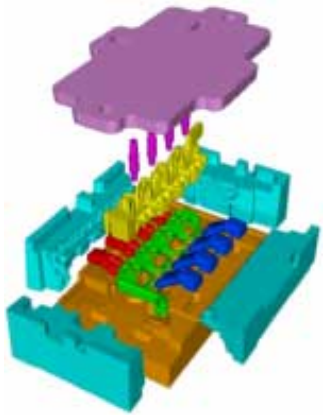
Newsletter

WINTER 2005

CONTENTS

Knowledgeware Seminar "given the thumbs up by respected journalists"

Intrinsys recently hosted a one-day seminar on the application of knowledgeware to engineering.



The main aims of the seminar were to showcase the use of the knowledge-based tools in CATIA V5, and to provide an opportunity for the Aerospace and Automotive community to come together and share experience and ideas. The event was well attended with senior representatives from all key customer sectors including F1 motorsport, Aerospace manufacturers and tier-1s and the Automotive OEMs. Several respected journalists from general engineering and CAE publications also attended.

The event was enthusiastically received and it was encouraging to see how, increasingly, companies are backing engineering excellence as a major element of their business strategy towards improving quality and productivity in the face of low-cost overseas competition.

In addition to the presentation sessions we hope those attending found the relaxed atmosphere during breaks and at lunch a good opportunity to network and discuss solutions to current and longer-term future issues in this important emerging area.

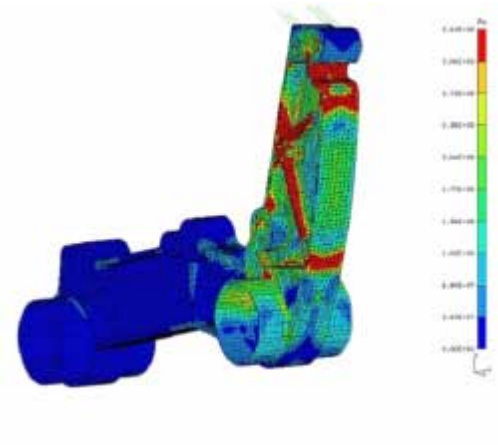
Intrinsys plans to run a similar day in the New Year, for more information please email info@intrinsys.co.uk. Alternatively, those interested can take a look at this technology at the Intrinsys website: **www.intrinsys.co.uk**

Intrinsys move to new Engineering Centre

Intrinsys has now opened its new engineering centre, located in Milton Keynes. As well as improving our facilities, the design of the building properly reflects the company's reputation for advanced engineering.

The new facility covers 11,500 sq ft gross internal area over 2 floors. There are 2 main engineering offices, two smaller offices, reception, two conference rooms and an 8-place dedicated training facility; all fully air-conditioned.

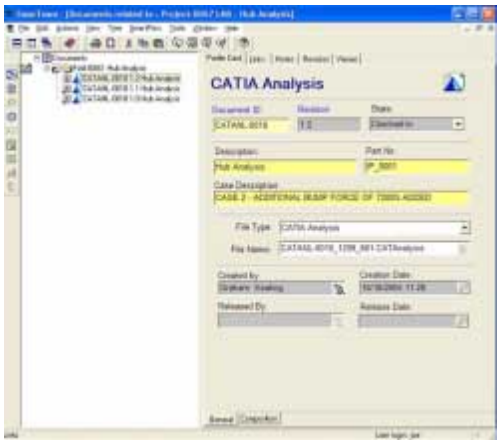
Managing Analysis Data Using SMARTEAM



Intrinsys support a number of customers who encounter major problems with managing structural analysis data. In many cases validation within the analysis department is run in parallel with the design activity and whilst the CAD data is managed within a PDM system, the analysis department often operates without a PDM solution with data passed between the departments, without any control.

Intrinsys has developed a methodology with techniques to manage all analysis data within SMARTEAM, including de-featured models, analysis files, bulk data files and analysis results along with associated report files such as load cases, component reports and recommendations.

Validated within its own engineering business, Integral Powertrain, SMARTEAM offers a relatively low cost product which is easily configurable and customisable and which can be bolted onto a pre existing PDM solution.



SMARTEAM manages any type of file with an ability to deliver the PDM requirements of an analysis department including issue control, release process, workflow.
www.intrinsys.co.uk/plmsoftware.aspx

Intrinsys Launch New Website

Intrinsys have launched an update of the website to reflect the business more accurately and hopefully inform our customers of the areas of business that we are engaged in.

The site includes sections on software configurations for CATIA V5, ENOVIA and SMARTEAM, the services that we offer and a section showing all the latest news and events.

A customer login area will be added shortly which will enable customers to log help desk requests. The login area will also provide a secure upload/download area.

The site can be accessed at www.intrinsys.co.uk

5. How to justify process investment

… Investigating the economics of improved process development …

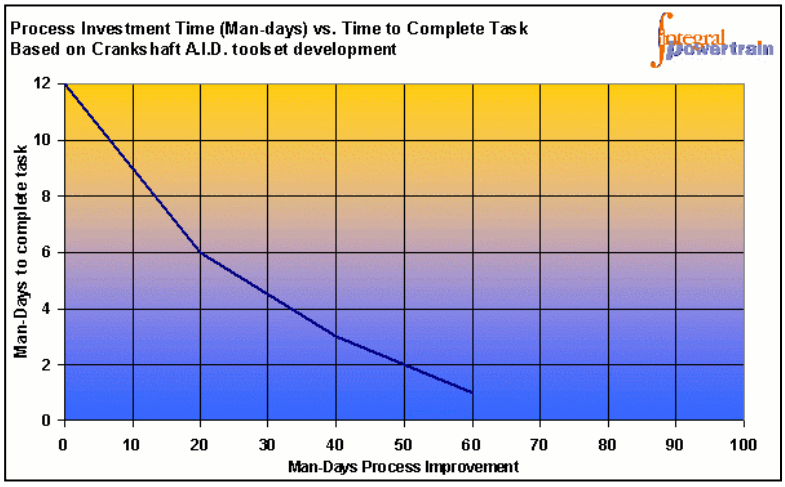
How to justify process investment

As engineers it is easy to appreciate qualitatively that by investing in process we can create more responsive organisations and improved products. Producing a quantified business case however can be more of a challenge. Even when the opportunity is great it can be difficult to generate the confidence needed to make the required commitment.

In order to help address this issue we have developed a model to forecast benefits, calibrated by our own experience with A.I.D. (Automated Intelligent Design).

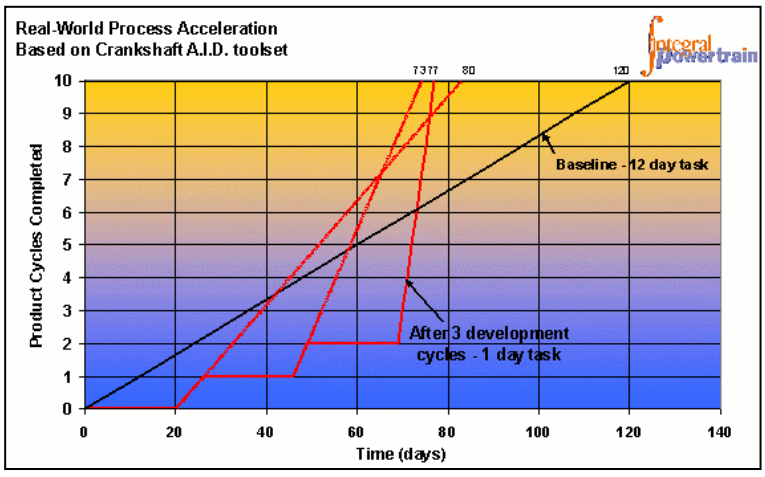
The model considers the trade-off between investment and cycle time reduction based on typical improvement trajectories and includes the improvements for subsequent cycles. As well as evaluating the benefits of automation it can be used for managing incremental improvements of interfaces between functions and software systems.

Through this investment modelling we have found substantial improvements in speed of delivery and quality can be achieved through investing relatively modest resources, and that through this approach a team applying these strategies can typically slash development times within only a few product cycles. The model can be used to not only determine benefits but also the level of investment beyond which productivity gains are out-weighed by the development cost.



In the case of crankshaft design with Integral Powertrain, the high fraction of repetitive elements within the design cycle (i.e. Crank balancing operations, analysis iterations, etc) and the high frequency of usage within the business justified a high level of process acceleration and investment. Although not all tasks can be accelerated to this extent by using A.I.D. methods, most have repetitive or iterative elements in which investment can yield useful benefits.

Finally this analysis shows that achieving a fast break-even point is not the whole story. Most importantly the enhanced speed of delivery remains long after the investment has been made, forming a platform for future process improvements and long term competitiveness.

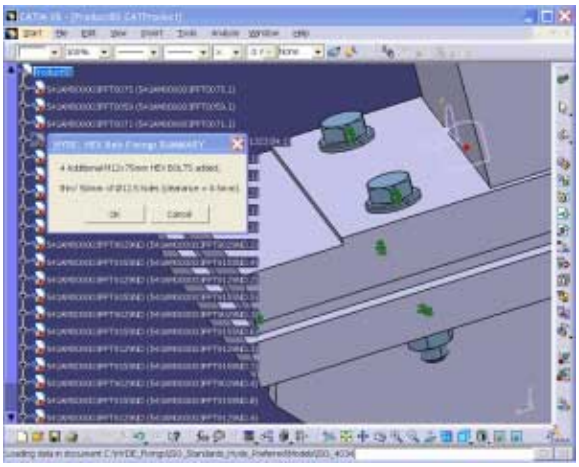


intrinsys Newsletter

Productivity savings through process automation

A UK-based aerospace company is now benefiting from a suite of CATIA V5 macros to automate a number of time-consuming design and draughting tasks. Following a one-day consultancy session with Intrinsys, four key areas of work were singled out as being suitable for automation. CATIA V5 macros were written by Intrinsys to streamline these processes. The macros in question are available to all CATIA V5 users on a custom toolbar and range from the automatic selection and insertion of multiple fixings into 3D assembly models to the processing of 3D 'laser target points' into a drawing table and text file for the alignment of large tooling assemblies on installation.

In most cases the macros automate processes that the aircraft manufacturer has specified e.g. showing an isolated representation of an aircraft part in a tooling drawing, with red chain-dotted lines. The macros typically turn an existing 20-minute task into a simple 1-minute task. As well as saving time, there are numerous quality benefits in being able to guarantee a process is carried out in the approved manner, which means the investment has paid for itself on the first project.



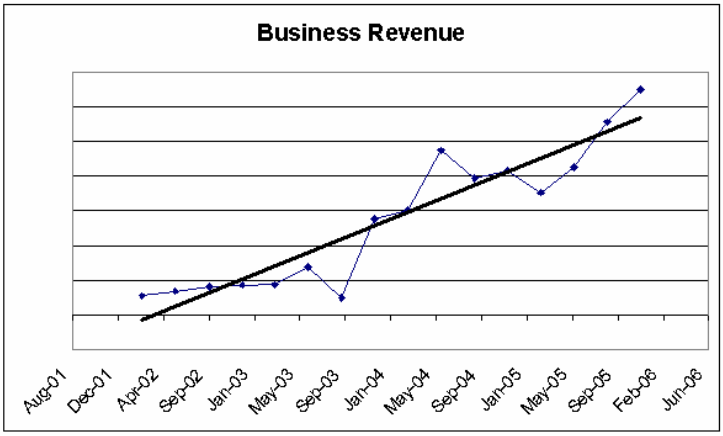
Intrinsys are currently working with another aerospace customer, developing an interactive end-to-end process to automate the design and draughting of an aerospace product. This automation is expected to reduce the time to market from 16 to 4 man weeks with the return on investment (ROI) study suggesting that the automation will pay for itself in the first few applications.

Find out more about the opportunity for automation in your business. 1 day consultancy session to identify your needs.

Contact info@intrinsys.co.uk

Intrinsys exceeds all targets!

2005 has been a good year for Intrinsys and is a reward for the enormous efforts of the engineering team. As we move towards the end of the year, recent Dassault results have shown that we have now become the second largest Business Partner in the UK, with the business growing very strongly over the last year.



In conjunction with this, the recent acquisition of skills in the PDM arena also means that we are now leaders in the deployment of both SMARTEAM and ENOVIA.

8. Intrinsys now part of new Dassault CMP organisation

… So what does this mean and what effect does it have on customers? …

Intrinsys now part of the new Dassault CMP organisation

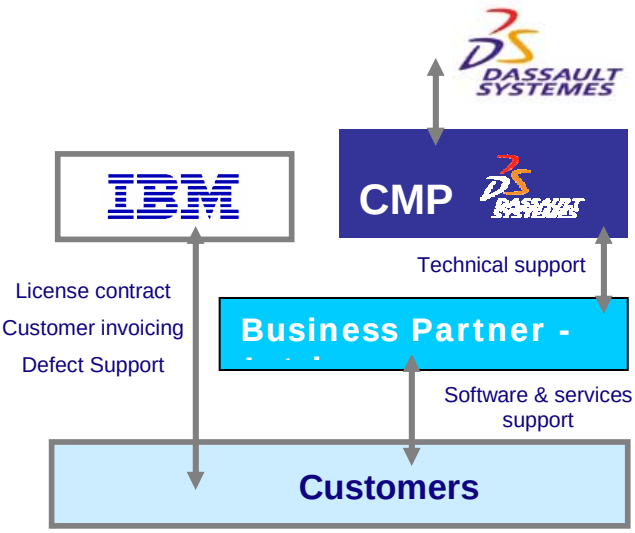
Dassault Systèmes have continued the roll out of their new channel management organisation with the creation of Dassault CMP (Channel Management Provider) organisation in Coventry.

So what does this mean and what effect does it have on customers?

Software media and licenses will continue to be provided by IBM along with invoicing and defect reporting. CMP have taken over channel management of the Business Partners, which includes providing technical support.

This change took effect from the 1st July 2005 and whilst it is early days we are pleased with the changes and are confident that it will provide a more direct line into Dassault with access to technical specialist where required.

The CMP organisation consists of an administration team looking after customer issues, a competency centre with access to DS in France, a team of business development managers that are assigned to each Business Partner and a marketing team.



9. New employees

… Business welcomes 4 new employees …

New Employees

The growth of Intrinsys continues and the business welcomes 4 new employees with a wide range of experience.

Mike Russell – Account Executive, "I have worked with Pro-Engineer in the PTC world as a pre-sales applications engineer, before that I worked as a design engineer. I joined Intrinsys to move into a full time account management role"

Huw James – Application Engineer, "I had previously been a CATIA and VPM specialist at McLaren and I joined Intrinsys in order to work on the new ENOVIA products of LCA and VPM Navigator"

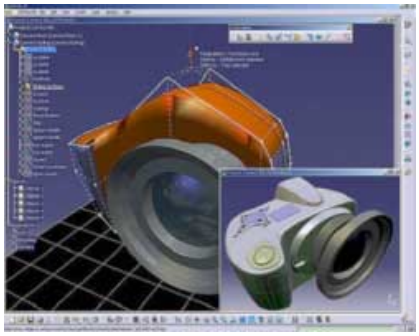
Graham Keating – PLM Consultant, "I joined from UGS where I was a Teamcenter specialist, prior to this I spent 8 years working with SMARTEAM responsible for over 30 successful SMARTEAM customers. I will be supporting our SMARTEAM customers as well as developing SMARTEAM to manage FEA and N/C data. "

Chaminga Chandratillake – Applications Engineer, "I joined Intrinsys as a graduate from Imperial College, London, where I completed a Masters in Mechanical Engineering. I am joining the team to work in the area of collaborative working in PDM and the integration of SMARTEAM and ENOVIA."

Featured Product

CATIA Imagine & Shape - IMA

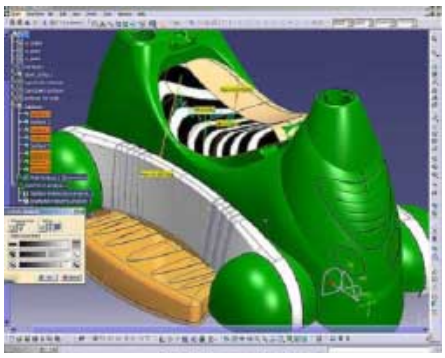
Product overview



Imagine & Shape breaks the traditional approach of surface modelling by introducing a revolutionary way to design products by enabling users to quickly, and simply, transform a shape idea into a 3D exact geometric model. This new approach uses technology already extensively used in the entertainment industry but for the first time adapted into a CAD system, which fosters innovation and can be done directly in CATIA V5 without sketching or prototyping.

- The technology enables users to define, and control, a shape via a meshing, enabling users to easily deform shapes locally and globally.
- The surfaces created are exact, can be opened or closed, support sharp edges and are compliant with any CATIA V5 application.
- The technology requires very light data management, and uses a construction methodology that is easy to understand.

The design process



Using Imagine & Shape (IMA), users can start to shape a new idea from nothing, or from sketches, and then continue with the detailed design stage. Alternatively users carry out the detail design in other existing CATIA V5 applications, including CATIA Freestyle Shaper (FSS) and Generative Shape Design (GSD). Imagine & Shape (IMA) also benefits from the ability to interface with knowledge-based templates through the CATIA V5 knowledgeware applications, allowing users to start from a pre-shaped product and define a family of parts.

- A user can from an idea, directly shape high quality surfaces
- Users can drive and refine surfaces through curves.
- Provides users with an easy access to styling.

One solution from styling to manufacturing

Imagine & Shape (IMA) is natively integrated with all the others CATIA V5 applications, from style surface engineering to manufacturing, removing the need for data conversion between the styling and the engineering design departments. The native integration thereby supports full associatively between the styling and all the downstream applications, meaning that a styling modification can be quickly propagated.

- Leverage the collaboration between different teams, and especially between designers and engineers,
- Accelerate the early stages of the conceptual design process by iterating sooner, quicker and with a more refined design.

11. Engineering conundrum

… Concept for completely balancing the piston engine …

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Newsletter

An Engineering Conundrum!

An interesting discussion from within Integral Powertrain, the Automotive Engineering Consultancy and sister company to Intrinsys.

All torque and no re-action? *(Luke Barker, Director of Integral Powertrain)*

One of our new starter graduates, fascinated by weird and wonderful engine configurations, recently asked me what was the best configuration from a balancing perspective. The stock answer is that I6, V8 and V12 configurations all give perfect balancing of inertia forces and moments. But we all know that even 6 cylinder cars still grumble at low engine speed, so is there a better candidate for “best balanced engine”.

When considering the likely refinement characteristics of an engine it is usual to start with the state of balance. Residual out of balance causes displacements at the engine mounts and hence structure borne noise and vibration. For example an I4 engine has a large residual force at twice engine speed and an I6 engine has no residual forces.

But engine mount displacements can also be caused by ***torque reactions*** at the fundamental firing frequency and, to a lesser extent, its harmonics. All conventional automotive engines suffer to some extent from this torque reaction and at low speed it generally dominates any out of balance. Adding more cylinders greatly reduces this effect and clever engine mounting systems can mitigate the effects but there is another way.

In theory the 4-cylinder configuration below gives no out-of-balance force and, if contra-rotating inertias are equal and connected to the transmission via a low stiffness coupling such as a twin mass flywheel, ***no torque reaction harmonics*** due to the cranktrain. Despite the promise of NVH excellence however the configuration has, as far as we are aware, only been used once in a 1930’s motorcycle. Perhaps others have been scared off by the gear design!
Interesting link: http://jeffdean2.home.att.net/brough.htm