



## MAKINGITREAL



### MD NASTRAN DESKTOP

#### Packaged Solutions for Smaller Organisations

MSC has introduced MD Nastran Desktop, a new solution offering that allows the broader market easier access to MD Nastran and Adams. MD Nastran Desktop are pre-defined bundles of software designed to fit a variety of customer requirements for structures, motion, and multidiscipline analysis.

Each package delivers all the power, benefits and accuracy of Nastran and Adams through modular, application focused, easy to use simulation solutions. Designed specifically for suppliers and medium-sized manufacturers, MD Nastran Desktop provides flexible, low cost access to Nastran's extensive, powerful solution capabilities through a scalable, common, and integrated system.

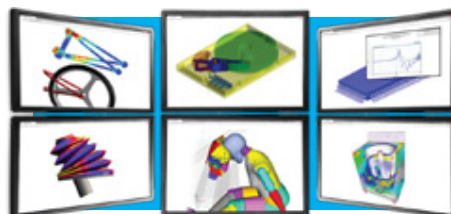
The modular nature of MD Nastran Desktop allows the user to select only the analysis options they need including:

- Linear Statics
- Dynamics
- Modal
- Buckling
- Connectors
- Linear Contact
- Multibody Dynamics
- Acoustics
- Advanced Nonlinear
- Thermal
- Thermal-mechanical coupling
- Advanced Dynamics
- Motion-Structures Flex Body Integration
- Random Vibration
- Super-elements
- Pre/post processing (SimXpert or Patran)
- Template automation (SimXpert)

MD Nastran Desktop allows the end user a choice of either SimXpert or Patran as their pre and post processor and provides a single nodelocked license that may float between two machines. MD Nastran Desktop is the most flexible and affordable packaging of MD Nastran capabilities yet.

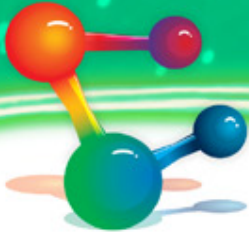
### INSIDE THIS ISSUE

- 02 Welcome  
Compumod's New Website Goes Live!
- 03 ZW3D  
Affordable CAD/CAM Software
- 05 FR-1  
A Compumod User Story
- 06 Phoenix AnalysisLibrary  
Avalon Airshow 2011
- 07 What's new in  
Patran 2010.2.3
- 09 VI-Rail
- 11 MSC Products License Server  
Patran General Tips



For more information on MD Nastran Desktop contact Compumod on 1300 965 690

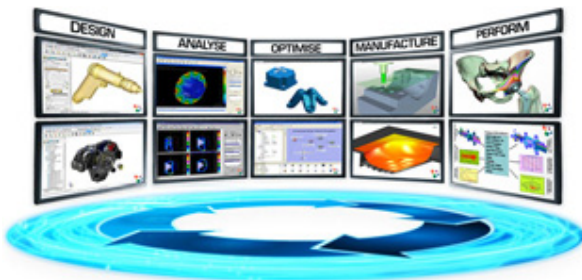




**Welcome** to Issue 2 of the Compumod - Making it Real Newsletter. I trust you will again find many articles of interest across a wide range of topics.

Since our last newsletter, Compumod has continued to expand its product offer and we are proud to announce Compumod's appointment as agent for ZW3D CAD/CAM software.

With the addition of CAD/CAM capability, Compumod now has a complete family of software to facilitate product design, performance analysis, performance/cost optimisation through to manufacturing and in service analysis. This "cradle to the grave" approach means that Compumod is positioned to assist you, no matter where you are in your product's lifecycle.



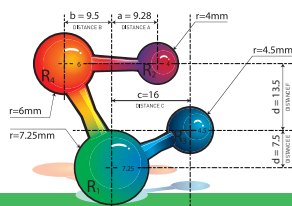
Compumod is also pleased to launch our new upgraded website. Not only does this website include details on our new product range - it has also been redesigned to enable users to easily navigate to their area of interest via Industry segment or application discipline.

On another note Compumod is proud to be supporting a number of University Formula SAE teams in both Australia and New Zealand. Upon application, each team has received a 5 user pack of MSC software products including Patran, Nastran, Marc and ADAMS and we look forward to seeing what these engineers of the future will achieve.

Finally don't forget to enter the Compumod Logo Simulation Competition. With a \$500 Adrenaline voucher up for grabs this is a great opportunity to have some fun with your simulation software and show your colleagues what you can do!

*Warwick Marx*

**Warwick Marx**  
Managing Director



To obtain your 3D copy of the logo geometry contact [peter@compumod.com.au](mailto:peter@compumod.com.au)

## COMPUMOD'S NEW WEBSITE GOES LIVE

As of the release of this newsletter the brand new Compumod website has gone live. The new design provides even more information on Compumod's solutions, services and training options in an easy to access format. For the latest Compumod news, product and training offerings and competition details visit [www.compumod.com.au](http://www.compumod.com.au) today.

## LEARN WITH ONLINE WEBINARS

Don't miss out on MSC Software's on-demand webcasts available for immediate viewing today!

MSC recently rolled out three webinar series focused on techniques for solving Motion, Nonlinear and Multidiscipline simulation problems. Check out the on-demand webinars today at [www.mscsoftware.com](http://www.mscsoftware.com) to learn new methods for using simulation on a variety of applications. Discover innovative ways simulation technology is applied to product design.

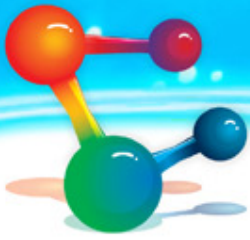
MSC also introduced a SimAcademy webinar series specifically for MSC end users. This webinar series teaches users how to apply tips and tricks inside MSC Software products to help them in their day-to-day jobs. All webcasts are delivered by CAE experts within the MSC support team. Check out the archive of these instructive and educational SimAcademy webinars by logging onto SimCompanion or visiting [www.mscsoftware.com](http://www.mscsoftware.com) Start applying these tips to your design projects today.

## COMPETITION

As detailed in the last newsletter, Compumod is running a competition. Provide the best simulation of the Compumod Logo using MSC Software. You can drop it, smash it, stress it, heat it, whatever you like. Run your simulation and then send us your input deck, some cool pictures along with a brief description of your model.

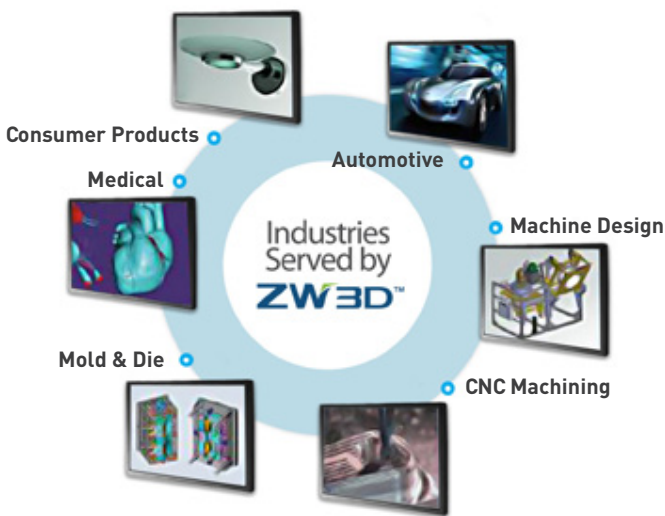
The winner of the competition will receive a voucher from [www.adrenaline.com.au](http://www.adrenaline.com.au) to the value of \$500 to undertake an experience of your choice.

Due to popular demand, the closing date for entries is 31 August 2011 and the winner will be announced in the following issue of the Compumod Making it Real Newsletter.



## ZW3D ALL IN ONE, AFFORDABLE CAD/CAM EASIER, SMARTER, FASTER

Compumod is pleased to announce that it has recently been appointed Australian Reseller for ZW3D CAD/CAM software.



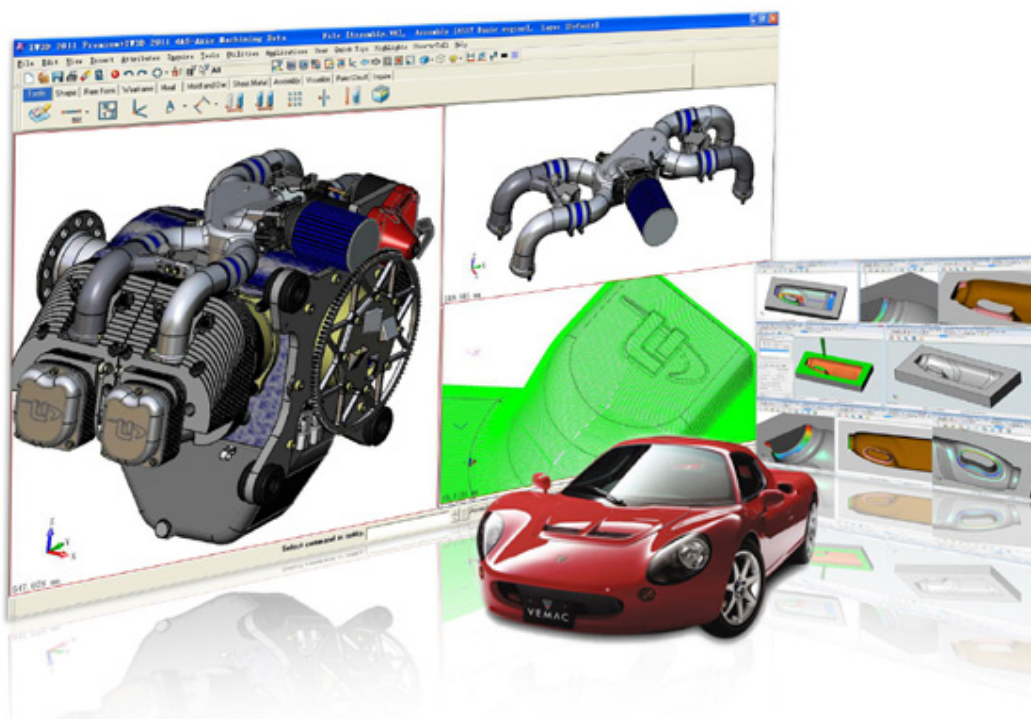
**Figure 1** ZW3D services a number of Industries

ZW3D is a complete 3D CAD/CAM suite that provides ease-of-use, performance, and super-fast modeling functionality. ZW3D has advanced modules for 3D part and assembly modeling, 2D production drawing, Mold & Die design, Reverse Engineering, Sheet Metal, motion simulation, and optimized 2 through 5-axis high-speed machining.

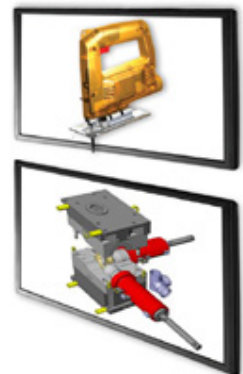
ZW3D enables designers to work seamlessly with solids, surfaces, and manufacturing data in a completely integrated environment. Since the ZW3D Overdrive™ kernel is truly hybrid, healing or repairing models is not necessary, so designers can speed production by effortlessly mixing solids and surfaces. With ZW3D freeform Class-A surface modeling you can almost feel the smooth surface.

Reverse Engineering and Mold & Die Design are built into ZW3D so designers can generate and modify complex 3D models and molds on-the-fly from existing physical parts.

With this much power, there's no need to purchase expensive 3rd party add-ons. What's more, ZW3D radically simplifies Rapid Prototyping with its powerful manipulation, optimization and validation of surfaces, solids, STL, and scan data. Fully-integrated CAM means all models, even STL and Point Clouds are fully associative with manufacturing, which is just one-click away.

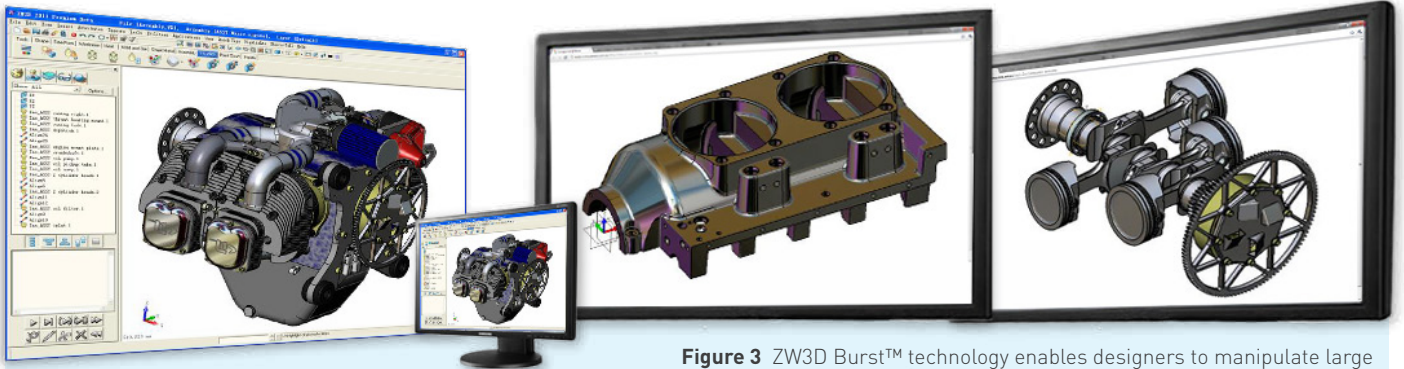


**Figure 2** Reverse Engineering and Mold & Die Design are in-built features that allow on-the-fly 3D model generation and modification from existing parts.



**ZW3D**

ZW3D ALL IN ONE AFFORDABLE CAD / CAM SOFTWARE



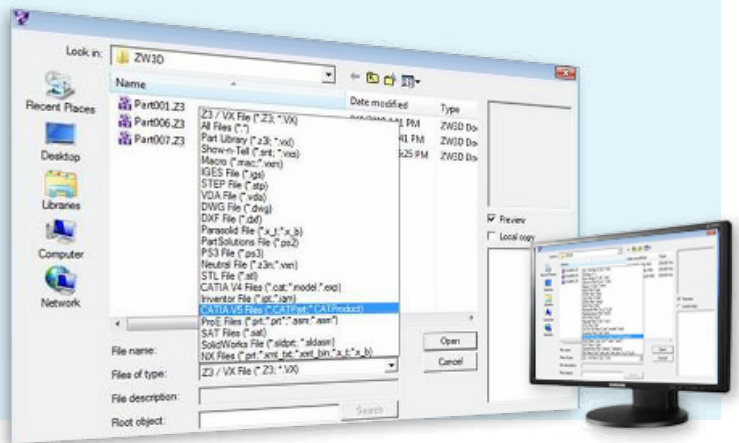
**Figure 3** ZW3D Burst™ technology enables designers to manipulate large assemblies at high speed without memory constraints.

## Assembly

Lightweight ZW3D Burst™ technology enables very large assemblies to be manipulated at high speed without computer memory constraints. These can then be stored in the most appropriate way for each project. The tree structure for an assembly allows individual components to be graphically highlighted for easy modification.

## Data Exchange

Read and work with CATIA, NX, Pro/E, Inventor, SolidWorks, Parasolid, STE, IGES, STL, DWG, etc. to promote collaboration throughout the supply chain.



**Figure 4** Collaborate throughout the supply chain.

There are 3 versions of ZW3D:

### Standard includes

core 3D features, including Wire Frame, Solids, Free Form Class-A Surfaces, Sheet Metal and Translators.

### Professional includes

all of the features of the Standard version, plus Mold and Cavity, Reverse Engineering and Integrated PartSolutions Library

### Premium includes

all of the features of the Standard and Professional versions, plus 2 and 3 axis machining, Post Processors and CNC Output Manager

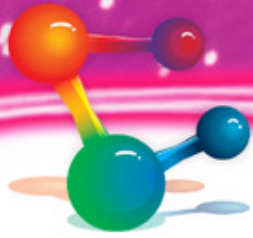
**“We are extremely excited about our agreement with ZWSOFT as it means Compumod is now able to service a much wider range of clients with our premium software offerings”**

said **Warwick Marx** - Managing Director of Compumod. “As ZW3D is fully featured out of the box and affordably priced we believe ZW3D will take the market by storm and are excited to be chosen as a pivotal part of their growth plans.”

ZW3D is released by ZWSOFT. ZWSOFT (ZWCAD Software Co., Ltd.) is a world renowned CAD/CAM solutions provider, with over 180,000 clients across 80+ countries. Founded in 1998, ZWSOFT has created an international network of highly skilled partners, distributors, and resellers. Headquartered in Guangzhou, China, ZWSOFT and its operating subsidiaries currently employ more than 400 staff worldwide with branch offices in Beijing, Shanghai, Wuhan, and Florida, USA.

For more information on ZW3D contact us at [info@compumod.com.au](mailto:info@compumod.com.au) or visit [www.compumod.com.au](http://www.compumod.com.au)



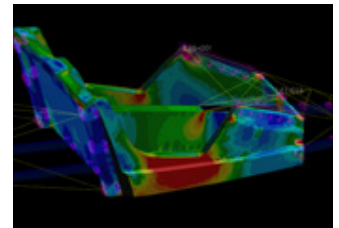
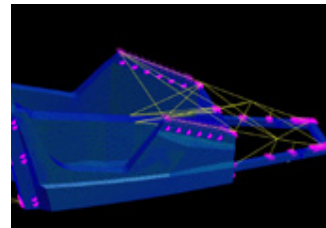


## FR-1 – A COMPUMOD USER STORY

WRITTEN BY  
RUSSELL GALLAGHER FR-1 CHIEF

For the past three years, MSC Software Australia and now Compumod, have been supporting the charitable foundation 'Autohorizon' with the design, simulation, build and testing of the FR-1 (Fund Raiser 1) concept vehicle.

Adams was used extensively in the design of the suspension. Adams ease of use enabled suspension geometry to be modelled quickly, and promptly provided simulations of dynamic performance, which allowed



**From Left** (clockwise)  
2009 Melbourne Motorshow  
Unveiling with Build Team  
Nastran / Patran Analysis of FR-1  
Composite Chassis  
FR-1 Workshop Docklands

FR-1 is a one-off, hand built, high performance vehicle, built to demonstrate, locally and internationally, the design and manufacturing expertise available in Australia. FR-1 is also being used to develop design related study programs for secondary, TAFE and tertiary students. FR-1 will be auctioned, with all proceeds being donated to four children's charities. The project has over 90 sponsors, including the Victorian State Government, VCAMM, Holden and Boeing, and is being built at the Automotive Centre of Excellence (ACE) in Docklands, Melbourne.

tuning and optimisation of the suspension design. Adams software was also used to determine chassis input load cases for chassis simulation and analysis.

Nastran and Patran with accompanying laminate material modelling package, were used in the development of the carbon monocoque chassis and supporting structures. The laminate material modelling package was found to be very efficient for reducing complexity when modelling multiple ply laminates on complex geometry. Optimising



Rolling Chassis



Carbon Fibre Monocoque Passenger Cell



Rear Suspension Designed with ADAMS

FR-1 is powered by a Holden 6.0L V8, mated to a Ferrari 355 transmission. Chromoly front and rear subframes are mounted to Australia's first carbon fibre monocoque passenger car chassis. Unequal length, double wishbone rear suspension and a unique hydraulically actuated front in-wheel hub suspension ensure the lightweight chassis stays on the road.

ply thickness, placement, and orientation was enhanced with the use of this package. Comparison with real-world test data has shown excellent correlation.

For more information on the FR-1 project please visit: [www.conceptfr1.com](http://www.conceptfr1.com)



## PHOENIX ANALYSIS LIBRARY

AnalysisLibrary from Phoenix Integration is a highly intelligent, out-of-the-box simulation data management solution particularly well suited the budgets and resources of small to medium sized companies but with the features required by larger companies.



AnalysisLibrary is completely data agnostic - it does not care what program generated your data, it simply works with your data and your process and publishes to any corporate-mandated environment to handle final data.

In the last year alone, AnalysisLibrary technology has been successfully implemented in the US by Boeing, John Deere, U.S. Air Force, U.S. Army, Honeywell, COM DEV International, Idaho National Laboratory and the Department of Defense's Missile Defense Agency.

Analysis library's desktop client has the look and feel of windows explorer for ease of use. Simply drag and drop files to check them in and out with full automated revision and version control.

Analysis library will store any type of file but an interface to create graphical previews of many common file types such as MS Office files and many simulation and CAD input and output file formats is also available to aid file identification. As can be seen below the preview function will even allow the viewing of simulation results from files such as \*.op2 format or the dynamic viewing of input decks such as bdf files. Just some of the file formats supported for viewing include: Nastran, LS-Dyna, Marc, Fluent, Abaqus, Ansys, StarCCM, Ensight, Pro/Mechancia, Pamcrash, STL.

Users can also add their own meta data to files for content description and even set up notifications for when files are checked out or revised. AnalysisLibrary's "Google-like" online search capabilities enable users to find any content instantly. AnalysisLibrary is a simple to install and config system that is fully featured to meet your requirements.

If you are interested in finding out more about using AnalysisLibrary to organise, maintain and secure your CAE data contact us on 1300 965 690.

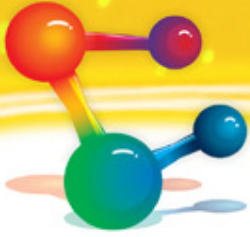
## AVALON AIRSHOW 2011

Compumod was pleased to be able to host our colleagues from MSC Software: Alias Isa and Winston Vigil at the recent Avalon Airshow. It was a great opportunity to visit the stands of many Compumod customers and discuss their ongoing projects

### From Left

Alias Isa, Warwick Marx, Zigi Barrett, Hongzhi Dong, Winston Vigil  
Alias and Warwick "dream" about trading in the car for a personal jet!





## WHAT'S NEW IN PATRAN 2010.2.3

In this newsletter we would like to show you some of the new and improved features in Patran 2010.2.3, which was released a few months ago.

MSC is very much committed to continuing to roll out improvements in Patran and as such, Patran 2011 has also just been released as an alpha version. The official version of Patran 2011 will come out later this year with amongst other improvements, additional geometry clean up and meshing functionality. However, for now, let's review what's new in Patran 2010.2.3.

What the customers are saying about this release:

“The 64-bit version has made a big leap in terms of generating large size models and visualization”

“I have seen many new pre-processing software in the past and none match Patran's ease-of-use”

“It is very easy to teach new users to use this software. The icons are logically located, and the methodology to generate a full working mode is relatively easy”

### Some of the new or improved features in Patran 2010.2.3:

- ▶ Modernized User Interface for Increased Productivity
  - ▶ Skinnable with multiple skins provided
  - ▶ Ribbon interface reducing mouse travel and clicks

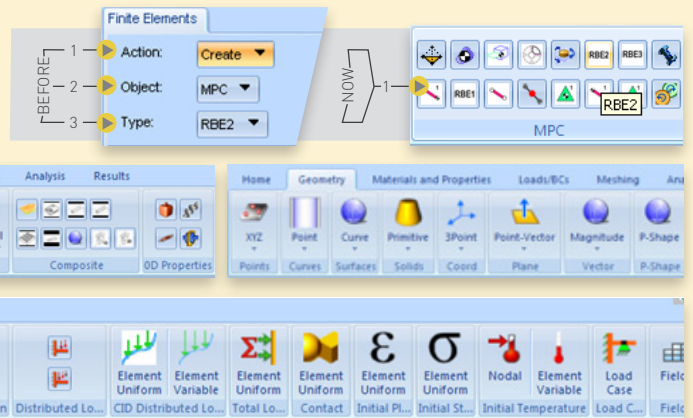


Figure 1 New modernized interface with different ribbon options (office2007, xptunes, vista, xpluna and xproyal)

- ▶ More Mouse Control for Interactive Viewport
  - ▶ New Middle and Right Mouse Button for Greater Usability in Viewport
- ▶ Standard toolbar has been replaced by an easily-customizable Quick Access Bar (QAB)

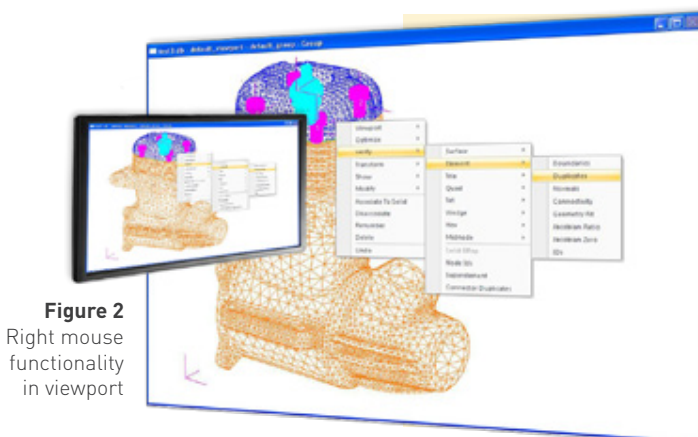


Figure 2 Right mouse functionality in viewport

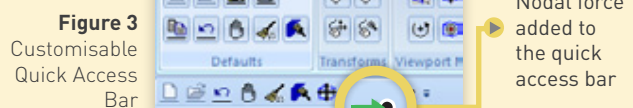
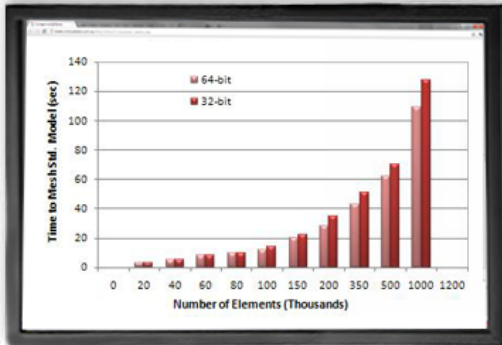
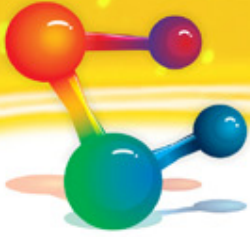


Figure 3 Customisable Quick Access Bar



▶ Performance Improvements

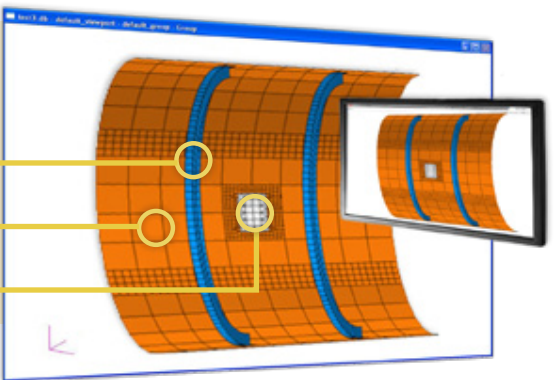
- ▶ True 64 Bit Support on Windows and Linux
  - ▶ Access more memory while working with Very Large Models;
  - ▶ Capable of generating >25M elements/nodes.
- ▶ Improved Meshing (f.i. an updated Tetmesher with improved performance and higher quality meshes), Group Operations, Image Rendering, Import, Memory Usage

Figure 4 Ability to handle very large models with 64-bit version

- ▶ New and Improved Features
  - ▶ SimManager Integration
  - ▶ Enhanced Feature Recognition
- ▶ Enhance Solver Support
  - ▶ Marc Preference and Sol 400 Enhancements
  - ▶ Glued Contact for Complex Geometry

Figure 5

Support for 3D contact in solver



- ▶ 2D RIBS
- ▶ COARSE
- ▶ FINE

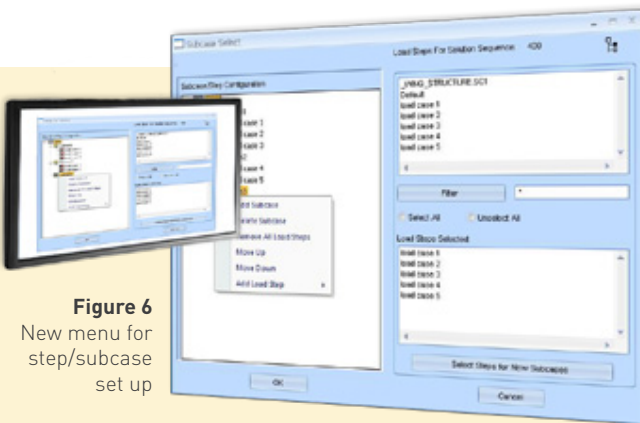


Figure 6  
New menu for step/subcase set up

- ▶ Support of Pardiso and MUMPS solvers in Marc
- ▶ Support of MDN Axi-symmetric Shells
- ▶ Student Version

- ▶ Improved Composite Support including 3D
- ▶ Enhanced Post Processing (Campbell Diagrams)
- ▶ Enhanced Optimization Support
- ▶ Coordinated with Nastran 2010 release
- ▶ DRA Merge - Solves Many MD Issues
- ▶ Rigid Body Support on Post Processing
- ▶ Support of Bolt option in SOL 400
- ▶ Support of NL STEP in SOL 400
- ▶ Support of MDN Solid-Shell element
- ▶ Critical defect corrections in MSC Fatigue
- ▶ Critical defect corrections in Patran



Figure 7  
Patran Student Version  
Limited to 5000 nodes, 1000 curves  
& 500 surfaces and 100 solids

If you would like to know more about this release of Patran, please contact [peter@compumod.com.au](mailto:peter@compumod.com.au)!







## VI-RAIL

In this newsletter we would like to introduce you to VI-Rail, the specialized railcar simulation software from VI-Grade (Compumod's partner specializing in multi-body simulation).



With VI-Rail you can quickly build a complete, parameterized model of a new railway vehicle, easily define its suspension, wheelset, wheel-rail contact, and other vital characteristics. Running through a battery of simulations it is possible to determine the vehicle's stability, derailment safety clearance, track load, passenger comfort, and more. The performance of a railcar design can be optimized virtually in the computer, before cutting a single piece of metal or running a single physical test.

### Applications for VI-Rail:

- ▶ Dynamic simulation of wheel-rail contact
- ▶ Suspension design
- ▶ Wear prediction
- ▶ Creep analysis
- ▶ Coupler design
- ▶ Bogie analysis
- ▶ Track loads prediction
- ▶ Simulation of cargo tie-down effectiveness
- ▶ Design of material handling equipment
- ▶ Design and simulation of auxiliary equipment
- ▶ Event reconstruction

**Figure 1** Examples of VI-Rail applications:

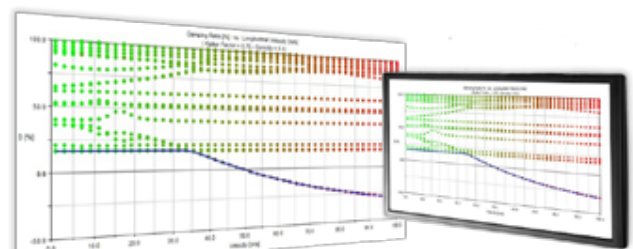
- ▶ Very detailed wheel / rail contact mechanics
- ▶ Advanced bogie modeling and optimization (non linear components, airsprings, transmission, active devices)
- ▶ System-level vehicle dynamics
- ▶ Interaction of vehicle with rails including optimization of rail layout

VI-Rail is built upon the MSC.Software product MSC.Adams, widely recognized as the world's leading mechanical system simulation tool.

### VI-Rail extends users' ability to:

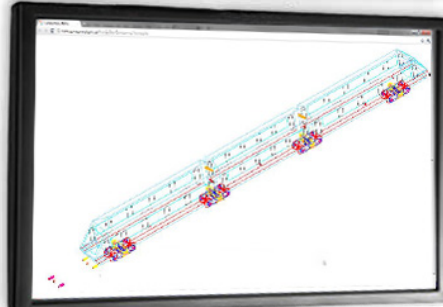
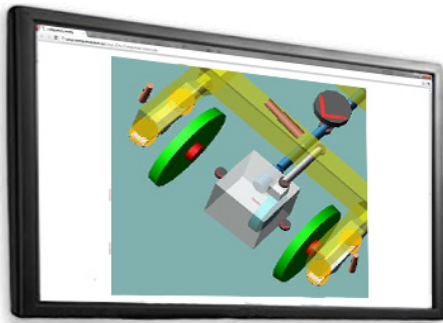
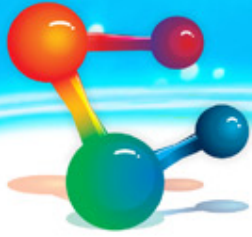
- ▶ Quickly build, test, and refine railcar designs, exploring many "what-if" alternatives. A user can, for example, change springs with only a few mouse clicks, instead of having to wait for a mechanic to install new springs, as required with physical testing.
- ▶ Easily vary the kinds of analyses being performed. With simulation, there's no need to modify physical instrumentation, test fixtures, and test procedures.
- ▶ Work in a secure testing environment, without fear of losing critical data to instrument failure or falling behind schedule due to poor weather condition for testing.

VI-Rail users can instantly see the effects of design changes on railcar performance in high-speed animation. They can easily detect component interferences, excessive wear, instability, and performance limitations. Users can also plot key parameters in graphs to compare results from different designs.



**Figure 2** Stability map: a complete DOE tool that investigates stability in frequency domain as function of

- ▶ Speed
- ▶ Linear contact parameters
- ▶ Kalker factors
- ▶ Minimum damping threshold



**Figure 2**  
Examples

- ▶ Transmission
- ▶ Impact
- ▶ Clearance



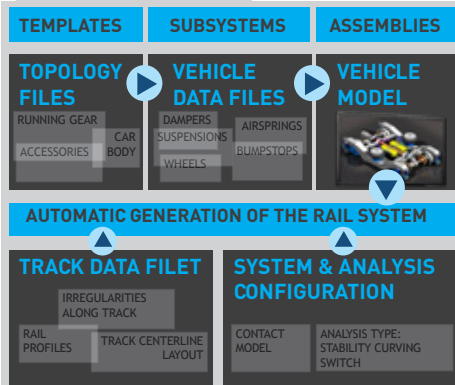
## More detailed examples of problems solved by VI-Rail:

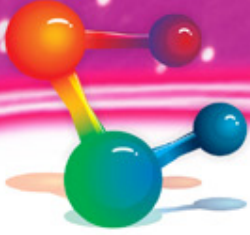
- ▶ Linear analysis: Eigenvalues, eigenvectors, damping factor. Coupling between modes or with body frame frequencies
- ▶ Stability analysis: linear and dynamic with lateral impulse
- ▶ Comfort analysis: Wz and Nmv indexes
- ▶ Curve analysis: derailment ratio (Y/Q), wheel unloading, steering forces, wear index, EN 14363 statistical homologation
- ▶ Security of the vehicle over track twist: straight track and curve EN 14363 (150m)
- ▶ Impact analysis against dead-end track
  - ▶ Buffers calculation, force in the car body frame
- ▶ Dynamic circulability of vehicles / multiple units:
  - ▶ Clearance verification between vehicle components (gangway, coupling bars...)
  - ▶ Force between buffers and in the coupling bars
- ▶ Transmission analysis
  - ▶ Force in the cardan shaft
  - ▶ Wheel slipping
  - ▶ Traction/Braking
- ▶ Interaction train/track/ballast
- ▶ Detailed Wear Simulation
- ▶ Powered wheel-rail contact visualization
- ▶ Redesigned stability map generation
- ▶ Possibility to describe track using measured data (spatial X-Y-Z rail coordinates)
- ▶ Toolkits
  - ▶ Wheel and rail wear prediction
  - ▶ Clearance analysis
  - ▶ Detailed flexible track simulation

VI-Rail templates are parameterized models in which you define the topology of railway components. Building a template means defining parts, how they connect to each other, and how the template communicates information to other templates and the test rig. A template could represent a single set of components or a complex collection of components.

Once you have built a template, it is very easy to set up a subsystem by changing model parameters and hardpoints. Then you can simply create an assembly by connecting the different subsystems.

If you would like to know more about this exciting product please contact [peter@compumod.com.au](mailto:peter@compumod.com.au)





## TIPS AND TRICKS!

### TECHNICAL TIP INSTALLATION OF MSC PRODUCTS LICENSE SERVER

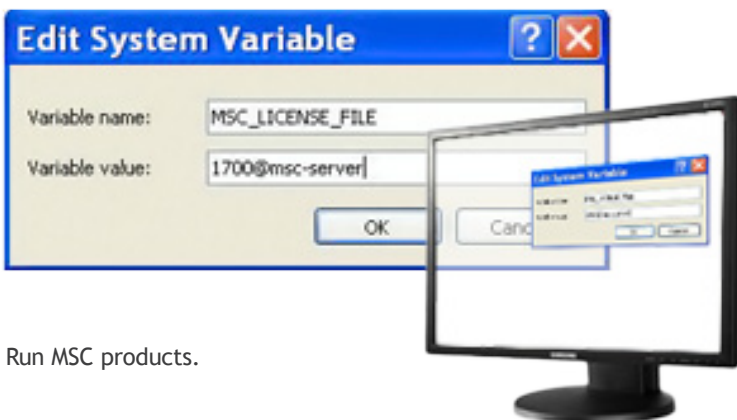
We have recently received some customer enquiries about how to install MSC products license server. An introduction of such installation is provided below,

- 1 Download and install **FLEXlm 11.6** on Windows using the install wizard (ignore this step if you have it on the computer);
- 2 Copy the license received from Compumod to "**C:/MSC.Software/MSC.Licensing/11.6**" or the custom path where MSC.Licensing is installed;
- 3 Open the above license file and search "**DAEMON MSC /your\_path/msc**";
- 4 Change "**DAEMON**" to the following format,  
**DAEMON MSC C:/MSC.Software/MSC.Licensing/11.6/msc**  
 Or the custom path where MSC.Licensing is installed.  
 Make sure the full path is correct;
- 5 Run **lmtools.exe** in the directory "**C:/MSC.Software/MSC.Licensing/11.6**";
- 6 In the **lmtools** dialog box, go to tab "**Config Services**", make sure "**Path to the license file**" points to the right location, e.g., **C:\MSC.Software\MSC.Licensing\11.6\license.dat**;
- 7 Go to tab, "**Start/Stop/Reread**" in **lmtools** dialog box. press "**Stop Server**" and after that, **wait for a few seconds**. Then, press "**Start Server**" to activate license server;
- 8 Make sure you have set up a system environment variable on the license server;

Variable name: **MSC\_LICENSE\_FILE**

Variable value: **1700@license server name**

The below is an example. You need the administrative right to set up this variable.



- 9 Run MSC products.

### GENERAL PATRAN TIPS

- ▶ **Problem**  
Sometimes Patran reacts very slowly when you select a results file (Nastran xdb or Marc t16) as file attachment.  
  
**Tip**  
At the moment that the Select file menu appears, click on the top blue area and Patran responds without delay! You can select the file straight away.
- ▶ **Problem**  
Patran suddenly fits the viewport while you are working on a small section of the model.  
  
**Tip**  
Preferences > Graphics > Unselect: Auto Extend
- ▶ **Problem**  
You created a group of elements or surfaces but the nodes on the elements or points in the geometry are not in the group.  
  
**Tip**  
Utilities > Group > Group reorganize > Apply (this adds nodes, points etc to the group based on associativity)
- ▶ **Problem**  
Some nodes should all lie in the x=0 plane but numerically some nodes coordinates are negative (-1e-16 etc). (for instance: requirements for plain strain or axisymmetric analysis).  
  
**Tip**  
Utilities > Fem-Nodes > Modify Node Coordinates
- ▶ **Problem**  
Does the curvature in the geometry not look smooth enough?  
  
**Tip**  
Display > Geometry > Change the Chordal