



MAKINGITREAL



COMPUMOD IS BACK!

Welcome to the first edition of the new Compumod Newsletter - "Making it Real". We are aiming to release four Making it Real Newsletters a year which will contain a variety of articles, tech tips, competitions, product updates and user stories.

As you may know Compumod was first established in 1982 and quickly became the name to trust for the supply and support of advanced computer aided engineering simulation tools. As a former Compumod and MSC Software employee, I was thrilled to be able to relaunch Compumod back into the Australian and New Zealand market last August. The new look Compumod is backed with the expertise and experience of a number of ex-MSK Software staff and as such you will be continuing to deal with the same people with which you have built up relationships.

I am pleased to welcome aboard the following key Compumod personnel:

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PETER BRAND
TECHNICAL DIRECTOR



Peter Brand as Technical Director based in the Sydney Office, Peter had worked for MSC Software in Australia and Europe for over 17 years and was originally a Dytran Developer in Holland. Peter has an in depth knowledge of all of the MSC product range and a wealth of Professional Services experience. Peter will be leading Compumod's Professional Services Department which is responsible for Services, Support and Training.

ZIGI BARRETT
REGIONAL ACCOUNT MANAGER



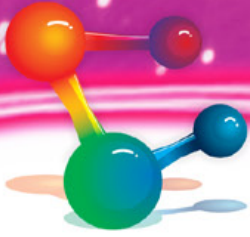
Zigi Barrett has been appointed **Regional Account Manager**. Based in Melbourne Zigi is your first point of call for all things sales, licencing and codes related. Zigi has worked with MSC software for over 5 years in a variety of roles and his will be working with you to make sure you are all happy with the service and support Compumod are providing.

HONGZHI DONG
SENIOR TECHNICAL CONSULTANT



Hongzhi Dong has joined Compumod as **Senior Technical Consultant**, with a PhD in Mechanical Engineering, Hongzhi has a wealth of experience with a speciality in Automotive Engineering. Based in Melbourne, Hongzhi will be undertaking professional services and also handling pre-sales and your support enquiries.

COMPUMOD PERSONNEL



WARWICK MARX
MANAGING DIRECTOR

Personally, I have over 20 years' experience as a professional engineer and business manager having worked in engineering functions at organisations such as Holden, Autoliv, RTA as well as senior management positions in some of Australia's largest and fastest growing companies.

I therefore know what is technically and operationally required for you to meet your goals. Compumod's mission statement reflects the technical and commercial realities of the modern engineering environment and Compumod will strive.

"To deliver state of the art Computer Simulation tools and services to Australian and New Zealand businesses to help them achieve a competitive advantage and sustainable return on investment."

I hope you enjoy the Newsletter and please feel free to contact me regarding Newsletter content or how Compumod can help you [Make it Real!](#)

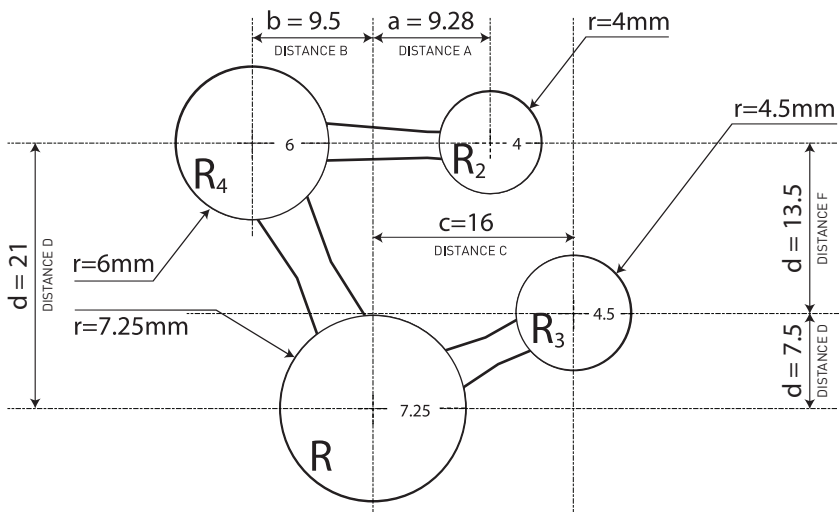
Kind regards

Warwick Marx
Managing Director
warwick@compumod.com.au

COMPUMOD USER COMPETITION

To help launch Compumod we are running a competition for you to 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, or motion model, some cool pictures and animations along with a brief description of your model.

The winner of the competition will receive a voucher from www.adrenaline.com.au to the value of \$500 to undertake an experience of your choice.



DISTANCE			RADIUS	
A = 9.28mm	C = 16mm	C = 16mm	R1 = 7.25mm	R3 = 4.5mm
B = 9.5mm	D = 21mm	D = 21mm	R2 = 4mm	R4 = 6mm

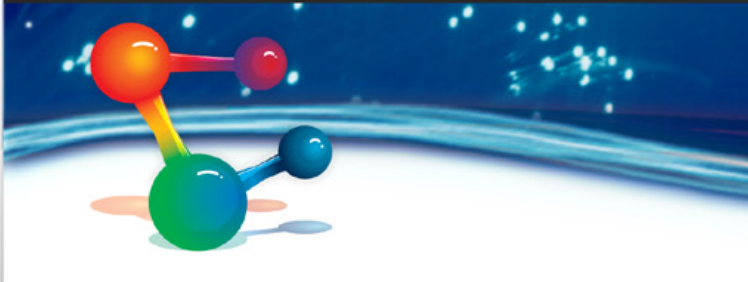
Entries close 30 June 2011 and the winner will be announced in the following issue of the Compumod *Making it Real* Newsletter.

Contact **Peter Brand** on peter@compumod.com.au to obtain your 3D electronic copy of the logo geometry.



COMPUMOD
MAKING IT REAL

COMPUMOD USER COMPETITION



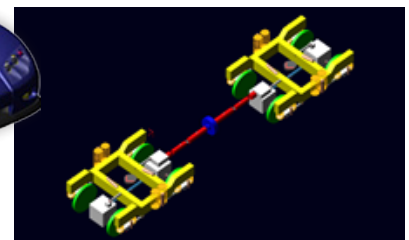
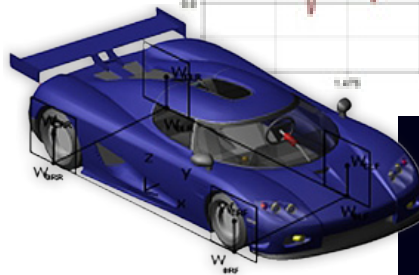
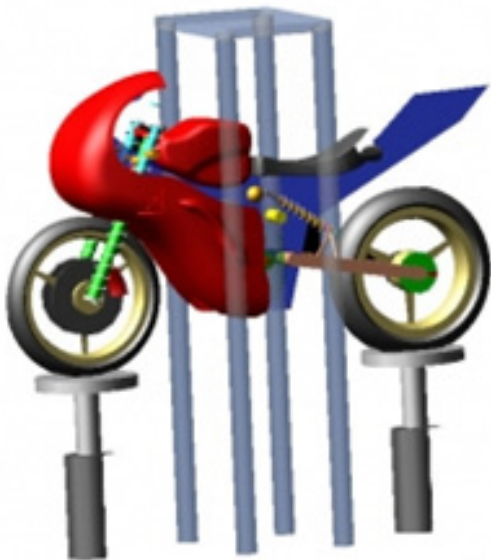
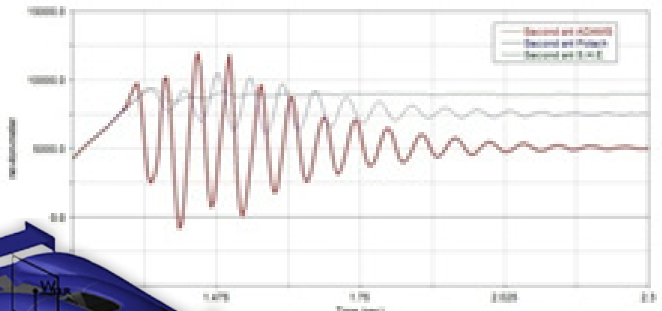
COMPUMOD PARTNERS WITH VI-GRADE IN AUSTRALIA AND NZ.

VI-grade GmbH, the leading provider of best-in-class products and services to bridge the gap between real world testing and technical simulation, announced on September 20, 2010, that a new business partnership has been signed with Compumod in Australia. According to this partnership, Compumod will join the existing team of 16 worldwide channels for localized distribution and technical support of the solutions developed by VI-grade.

“VI-grade is proud to partner with the leading competence in Australia and New Zealand for system-level engineering solutions, to further consolidate our state-of-the-art simulation technology in their local market,” said Guido Bairati, International Sales Director, VI-grade. “Their dedicated professionals have the right technical expertise aligned with client objectives to maximize the power of our virtual prototyping solutions, integrating them into the customers’ development process in a more efficient manner.”
 “We are excited about the partnership with VI-grade,” said Warwick Marx, Managing Director of Compumod.

MSC.ADAMS™ Plugins

- VI-SportsCar
- VI-AirCraFt
- VI-MotorCycle
- VI-Rail
- VI-AutoFlex

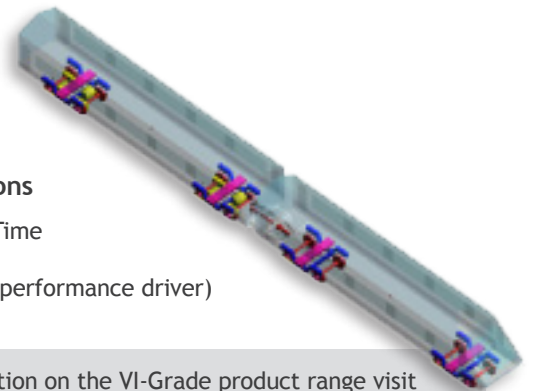


“Thanks to this agreement, we will widen the scope of the engineering simulation software, professional services and trainings Compumod already offers throughout Australia and New Zealand. This will enable our clients to eliminate slow and costly physical testing by creating and testing “virtual prototypes” that can be quickly evaluated for performance in any environment or conditions to achieve lasting competitive advantage.”

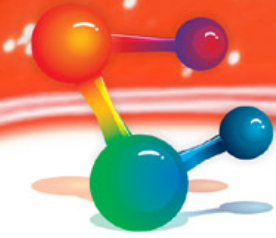
VI-Grades product set includes a number of MSC.ADAMS plugins along with a variety of standalone solutions:

Software Solutions

- VI-CarRealTime
- VI-DriverR
(maximum performance driver)
- VI-Road



For more information on the VI-Grade product range visit http://www.compumod.com.au/products_VI-Grade.html or call 1300 965 690



MSC SOFTWARE - ENTERPRISE ADVANTAGE LICENSE SYSTEM

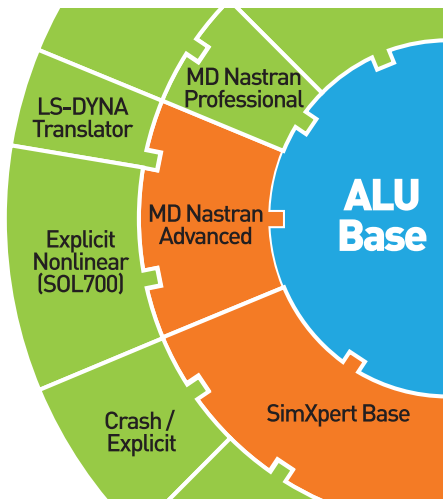
What is Enterprise Advantage?

MSC's Enterprise Advantage (EA) is a flexible licensing system that enables users to gain access to over 170 solutions across MSC Software's broad product portfolio. Enterprise Advantage is made possible through an innovative "license unit" approach, pioneered by MSC Software.

Enterprise Advantage's License Units

Instead of requiring individual software licenses, a pool of software license units is used to facilitate user access to MSC's software solutions. Using the appropriately sized license unit pool, any EA product may be accessed - **unrestricted by the number of seats or combination of solutions**. While a product is in use, the appropriate number of license units is checked out. When finished, those same license units are returned to the pool for other use. Access is limited only by the number of license units available in the pool.

As an example, here are three ways that one pool of tokens can be utilized



Enterprise Advantage Base Products

At Enterprise Advantage's core is MD Nastran, but it also includes access to other engineering products such as Patran, Adams, Marc and Dytran. In total, there are over 130 'base' products available in Enterprise Advantage.

Optional Products

Optionally, Enterprise Advantage users may decide to add other state of the art solutions from MSC Software such as SimXpert, SimManager, and other MD solutions, such as MD Adams to their base Enterprise Advantage configuration, for an enabling fee. Once an optional product is enabled in Enterprise Advantage, access is limited only by the number of license units available in the pool.

For more information on the Enterprise Advantage License System please contact Compumod on [1300 965 690](tel:1300965690)



MSC SOFTWARE: ENTERPRISE ADVANTAGE SYSTEM

NEW COMPUMOD OFFICES

Along with the re-launch of Compumod, we have now moved into new premises in both Sydney (complete with pool table) and Melbourne. Our locations are:

Compumod - Sydney
Level 2, 793-795 Pacific Highway
Gordon NSW 2072

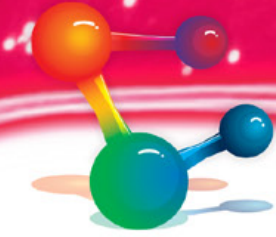
Compumod - Melbourne
Level 1, 165 Cremorne St
Richmond VIC 3121

Feel free to call us and drop by for a coffee, chat or game of pool!
You can contact anyone at Compumod on [1300 965 690](tel:1300965690)
or firstname@compumod.com.au

Compumod Sydney Office



NEW COMPUMOD OFFICES



TRAINING COURSE (MELBOURNE) INTRODUCTION TO NASTRAN AND PATRAN (NAS120)

Compumod will be running the 'Introduction to Nastran and Patran (NAS120)' training course on the 22nd-25th of March in the Compumod Melbourne office in Richmond.



Past Training Course conducted in Sydney

Compumod will be running the 'Introduction to Nastran and Patran (NAS120)' training course on the 22nd-25th of March in the Compumod Melbourne office in Richmond.

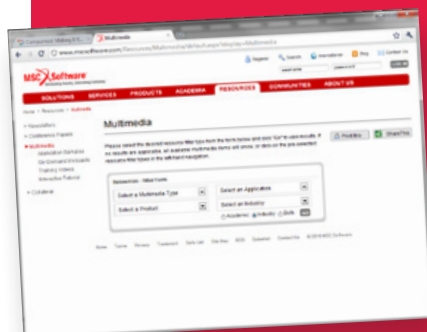
This course introduces basic finite element analysis techniques for linear static, normal modes, and buckling analysis of structures using MSC.Nastran and MSC.Patran. MSC.Nastran data structure, the element library, modelling practices, model validation, and guidelines for efficient solutions are discussed and illustrated with examples and workshops.

For more information on the topics covered in this course please visit: http://www.compumod.com.au/training_Patran-Nastran.html

Places are limited so if you are interested in participating in this course please contact Zigi Barrett at zigi@compumod.com.au

Alternatively, if you have a particular need for training in another discipline or product please [contact Zigi at Compumod on 1300 965 690](#) to discuss your requirements.

WEBCASTS

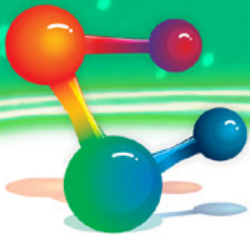


The web has a wide variety of excellent resources and MSC's website is no exception with a wide range of on demand webcasts available that may interest you. Simply select your application, product or industry sector and you can easily filter down to webcasts that meet your needs. These are a great way to get a quick multimedia update or training session at a time that suits you.

Go to www.mscsoftware.com and click resources - multimedia or follow the link: <http://www.mscsoftware.com/Resources/Multimedia/default.aspx?display=Multimedia>

TRAINING COURSE : INTRODUCTION TO NASTRAN & PATRAN

WEBCASTS



COMPUMOD REPRESENTS PHOENIX INTERNATIONAL IN AUSTRALIA AND NEW ZEALAND

Compumod is pleased to announce that it will be representing Phoenix Integration's products throughout Australia and New Zealand.

Phoenix Integration, a leading provider of software for engineering automation, integration, and design optimization. Phoenix's flagship product PHX ModelCenter®, is a graphical environment for process integration and design automation that enables engineers to perform powerful design exploration during product development and verification.

PHX ModelCenter's next-generation product design and modelling & simulation framework empowers product development teams to find the best designs that meet targets on quality, cost and delivery schedule.

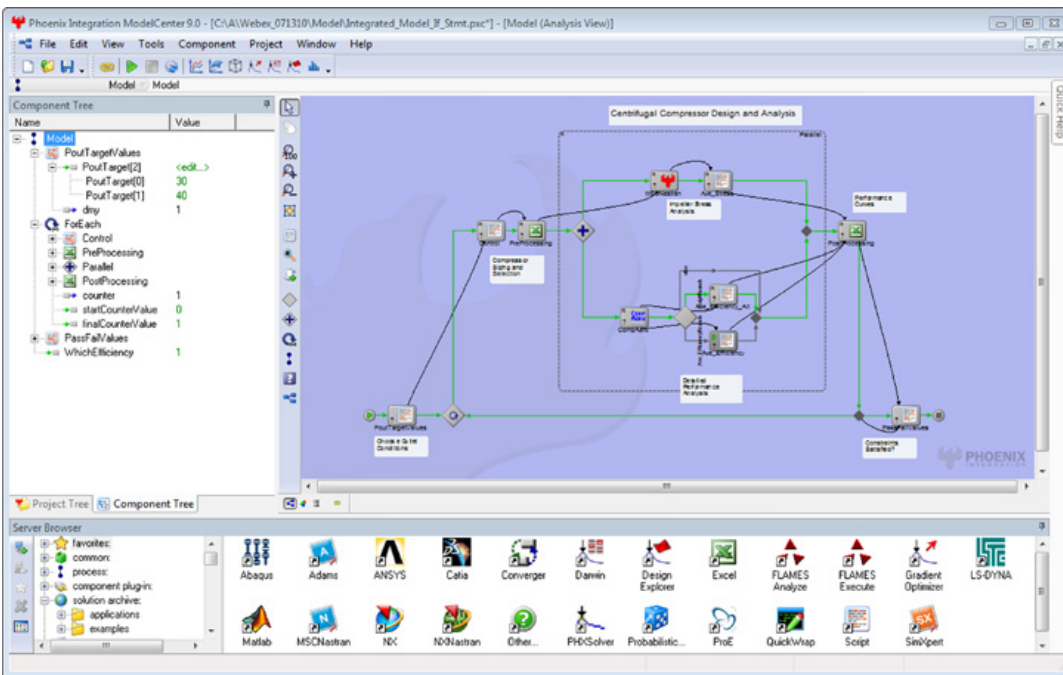
In this case, ModelCenter acts as the glue to bind all these analysis together. It will launch each analysis, run them through the design variables (passing parameters between analysis types) and find the optimum mix of parameters to meet your design objectives. There may be hundreds (or even thousands) of separate analysis launched by ModelCenter which are all run and the results read back in and presented to the user in a coherent format (textual and graphical) so that design decisions can be made.

In addition to ModelCenter, Compumod will also be supporting

Phoenix Integrations AnalysisLibrary® product line. PHX AnalysisLibrary replaces your shared drive and intelligently organizes and stores your engineering data for search and reuse.

Unlike traditional enterprise-level data management solutions, PHX AnalysisLibrary is a lightweight solution that builds on the tools and techniques your team already uses to collaborate: files and folders. In contrast to a traditional shared drive though, PHX AnalysisLibrary also adds file content searching, version control, along with rich, searchable metadata that can be attached to any file

or folder, automatic metadata indexers that run when files are uploaded, access from Web browsers, e-mail notification of changed files, extensive API support, and more.

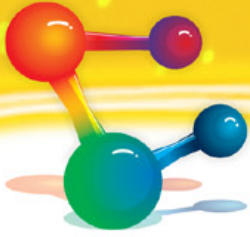


An example of where ModelCenter could be used may be in automotive brake design. Imagine you are designing a brake system and you have a number of variables such as brake pad material, brake rotor diameter, brake pressure, brake pad thickness, and so on. You may have design objectives such as maximising: brake pad life and first natural vibration mode, along with minimising: rotor diameter; braking distance; brake pressure; heat dissipation and cost. To do this you may need to run a number of different types of analysis such as heat transfer, normal modes, non-linear structural analysis and also perhaps a cost analysis via a spreadsheet finance model.

For more information on any Phoenix Integration products please contact Compumod by phone **1300 965 690** or email info@compumod.com.au or visit www.compumod.com.au/products_Phoenix-Integration.html



COMPUMOD REPRESENTS PHOENIX INTERNATIONAL



TIPS AND TRICKS! PATRAN HYBRID SURFACE MESHER

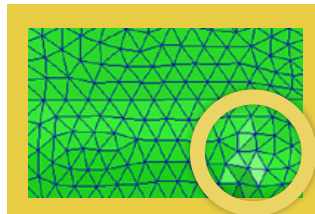
Most users would be fairly familiar with the two surface meshers in Patran - the iso-mesher and the paver mesher. There is also a third surface mesher in Patran which can be activated by setting a special environment variable. This hybrid mesher produces a mesh that lies somewhere between the iso and paver meshers. In some cases it produces a better mesh quality than the other two.

ISO-MESHER

The iso (or mapped) mesher can be used to mesh parametric (green) surfaces. It calculates the number of elements to be placed in each direction, based on the element size and the size of the surface and then places nodes along each edge. It will keep the same number of elements on opposite edges of the surface. It will then mesh the surface placing internal nodes along lines of equal parametric value. For rectangular surfaces with similar opposing edge lengths, the iso-mesher produces a very high quality mesh. On the other hand, it doesn't always produce the best quality mesh on irregular shapes or triangular surfaces, and it also only works on simple (green) surfaces.

PAVER MESHER

The paver mesher can be used on all surface types - simple (green) or complex (magenta). The mesher starts in one corner of a surface and then works around the edge placing nodes at the specified mesh size. It then creates a layer of elements along the inside edge of the surface and then continues creating elements, "spiralling" inwards until it meshes the entire surface. The paver mesh can work on all types of surfaces but sometimes it doesn't create the best quality mesh.



The Paver Mesh

Sometimes the Paver Mesh doesn't create the best quality mesh.

HYBRID MESHER

In the cases where the paver mesher doesn't work so well you can try the hybrid surface mesher. The hybrid mesher works in a similar fashion to the paver mesher but uses a different algorithm which uses triangular elements in areas where the paver mesher would create poor quality quads. It also tries to create a mesh similar to an iso-mesh in areas away from the edges.

To activate the hybrid surface mesher you need to set an environment variable. This can be done by adding the following line to your site_setup file:

```
SETENV('PATRAN_USE_HYBRID_SURFACE_MESHER', TRUE);
```

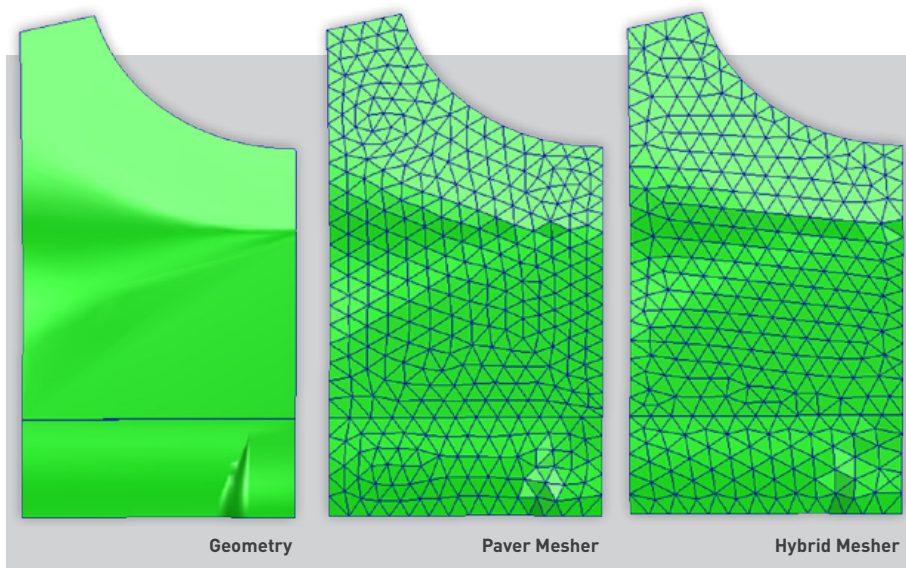
The site_setup file is located in the Patran installation directory and its extension is pm.

You can also set this environment variable from Start -> My Computer -> Properties -> Advanced -> environment variable -> system variables. The variable name is

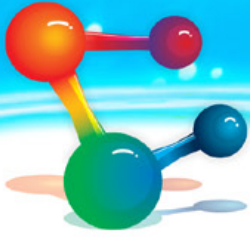
PATRAN_USE_HYBRID_SURFACE_MESHER and its value is **TRUE**

After you've set the new environment variable and restarted Patran, you should find a third "Mesher" option in the "Create > Mesh > Surface" tool.

Here are images that show examples of the paver and hybrid mesher.



If you have any questions or would like some additional information contact [Hongzhi Dong](mailto:hongzhi@compumod.com.au) on 1300 965 690 or email hongzhi@compumod.com.au

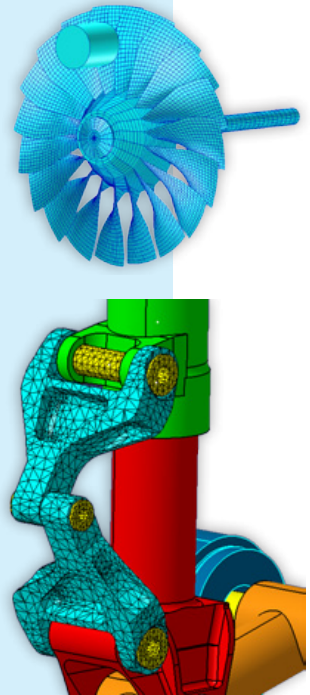


YOUR QUESTIONS - ANSWERED! MD NASTRAN VS MSC NASTRAN

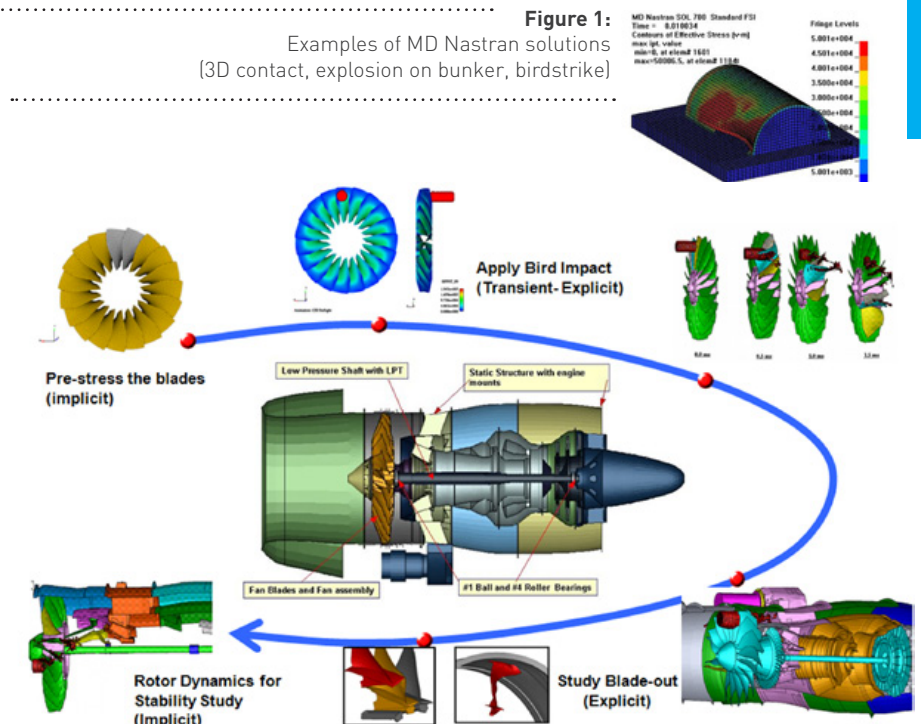
In response to the request of many users, this article will provide an overview of the main differences between MD Nastran and MSC Nastran. Basically, MSC Nastran is a subset of MD Nastran. An important observation is that all MSC Nastran input files run on MD Nastran exactly how they would run on MSC Nastran! The opposite is not true. Not all MD Nastran models will run on MSC Nastran; MD models using specific features will not execute on MSC Nastran.

Leading manufacturers around the globe have relied on MSC Nastran's core technology to bring new products to market for over four decades. MD Nastran is an integrated simulation system with a broad set of multidiscipline analysis capabilities. MD Nastran includes MSC Nastran, but also adds many new components operating in an integrated way, such as:

- 3D Contact in linear solutions (Full 3D Contact in Linear Static and Glued 3D Contact in All Linear Solutions)
- New nonlinear solution (SOL 400)
 - Full Nonlinear 3D Contact
 - Advanced Nonlinear Elements
 - New Material Models
 - Analysis Chaining
 - Local Adaptive Meshing
 - Coupled Heat Transfer
- Increased Composite Capabilities
 - VCCT, PFA, CZM
- Nonlinear Connector Elements
- Integrated Explicit Capabilities
 - LS-Dyna & Dytran Components
 - Crash Analysis, Drop Test, Impact
 - Parallel FSI
 - More Acoustic Options



Users can sometimes be confused by the number of nonlinear solutions that Nastran offers. Let's look at the evolution of nonlinear solutions in MSC and MD Nastran. The traditional Nastran solution SOL 106 has been around for many years but has many limitations in contact, plasticity and stepping algorithms. On the other hand MSC Marc is the industry leader in nonlinear solutions. As such, MSC has tried to bring the Marc components into Nastran. The first attempt was SOL 600, which spawns the Marc solver in a Nastran environment. The nonlinear solution is superb, but you are effectively still running MSC Marc. The next attempt (MD only) was to bring the Marc components into a new native Nastran nonlinear solution, SOL 400. It took some time to make SOL 400 as good as Marc but in the current version the SOL 400 contact is identical to the Marc contact, the stepping algorithms are similar and the material and geometric nonlinear solutions are as robust as the Marc ones. In addition SOL 400 includes independent subcases (like SOL 101), analysis chaining and perturbation analysis.



YOUR QUESTIONS - ANSWERED!



In Summary:

SOL 106 (implicit nonlinear): Traditional MSC Nastran nonlinear solution (limitations in contact, plasticity and stepping algorithms);

SOL 600 (implicit nonlinear): Translation of Nastran input deck into Marc input & execution;

SOL 400 (implicit nonlinear) - MD only: Native Nastran solution that includes contact technology and elements from Marc + analysis chaining;

SOL 700 (explicit nonlinear) - MD only: Translation of Nastran input deck to the LS-DYNA/Dytran solver.

Additionally, in MD Nastran the general 3D contact can also be used in a linear static environment (SOL 101) or as glued contact in a normal mode analysis (SOL 103 and 107), linear buckling (SOL 105), optimization (SOL 200) or transient and frequency response analysis (SOL 108-111) and of course also in SOL 101.

Finally, a quick summary about SOL 700 which is an explicit solver in MD Nastran that combines the best of LS-Dyna and MSC Dytran. The idea behind SOL 700 is that the Nastran input deck that was used for a linear static or frequency response analysis (as an example) can be easily enhanced to be used for crash or impact analysis. The SOL 700 solver works with the Nastran input deck but spawns the LS-Dyna/Dytran solver. The result files can be postprocessed with Patran, SimXpert or the free download LS-Post software from LSTC

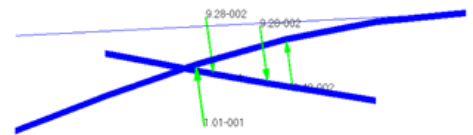
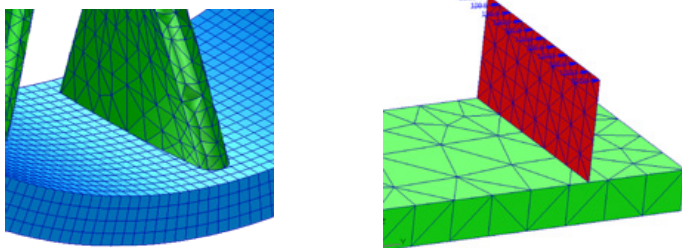


Figure 4: Examples of 3D contact in MD Nastran (glued contact including moment transfer from shell to solid + beam to beam contact)

MD Nastran SOL 700

	APPLICATION
• Fluid modelled using Finite Volume (Eulerian) mesh	- Airbag and Occupant Safety
• Structure modelled with Lagrangian elements	- Bird Strike
• Coupling algorithm computes interaction between the two sets of elements	- Shaped Charge
• Parallel FSI	- Hot filling for plastic bottles
• Functionality	- Sloshing
- Single material hydrodynamics	- Fluid-filled bottle drop test
- Multi-material hydrodynamics	- Blasts and Explosives
- Multiple Eulerian domains	- Fuel Pumps, Fuel Jets
- Multiple adaptive Euler	- HRAM
- Multiple solvers	- Hydroplaning
• Standard Euler, Roe, Riemann	- Crashworthiness on Water
- Hot filling for plastic bottles	- UNDEX (Underwater Shock Explosion)
- Skin friction	

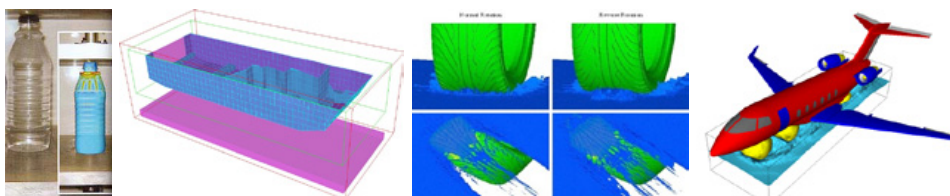
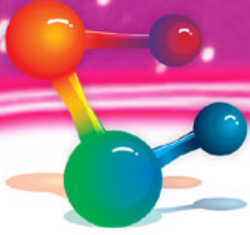


Figure 5: Examples of explicit nonlinear analyses with MD Nastran SOL 700

If you have any questions or would like some further information please contact Peter 1300 965 690 or email peter@compumod.com.au

YOUR QUESTIONS - ANSWERED!



FORMULA SAE

Did you know that Compumod and MSC Software are active supporters of the University based Formula SAE competition?



By simply registering with Compumod, approved Universities can obtain their FSAE cars. This means that University Students can now use the same technology as the “big boys” when designing their entries. This program also enables students to leave university “job ready” with commercial engineering software experience. The FSAE software suite includes: Patran, MD Nastran, AdamsDAMS, Dytran, Marc and more.

For more information on obtaining your free Formula SAE software please contact **Zigi Barrett** on zigi@compumod.com.au or call **1300 965 690**

COMPUMOD LAUNCH PARTY

Thanks to everyone who were available to attend the *Compumod* launch parties in Sydney and Melbourne last September. It was a great opportunity to catch up with past colleagues, make some new friends, have a bit of fun and a very fitting way to re-introduce Compumod to the Australian and New Zealand Market. We hope you enjoyed the events as much as we did!

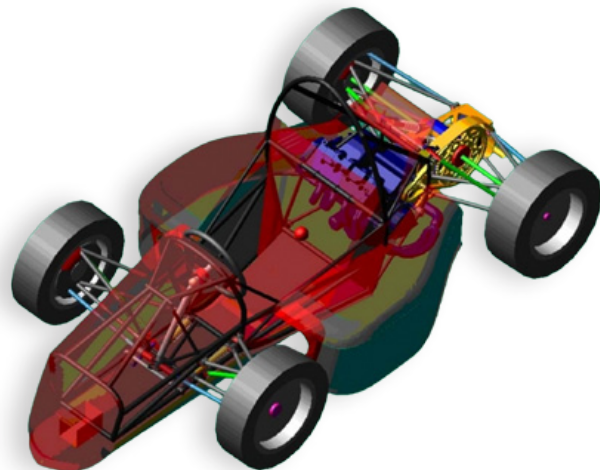


VI-GRADE VIRTUAL FORMULA COMPETITION FOR UNIVERSITIES

Compumod are pleased to announce their association with the VI-grade Virtual Formula 2011, a competition.

This competition is built upon the rules and regulations of the Formula SAE and Formula Student competitions. In 2010, globally more than 60 teams registered to take part in this competition.

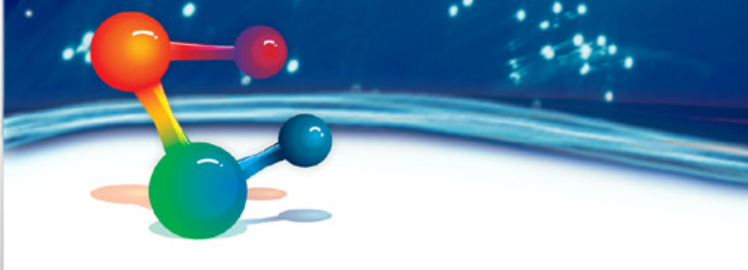
All teams who enter the Virtual Formula Competition get to use VI-Grade’s state-of-the-art simulation software to optimize the performance of a virtual race car, minimizing the lap time on a given autocross track. The competition will be won by the team that will drive the vehicle with the shortest lap time on the given circuit. This year teams will also have to deal with multi-objective optimization. As such teams will also be granted a licence of modeFrontier (a multidisciplinary and multi-objective optimization and design software system) during the competition.



Globally the winning team will win a VI-Grade automotive University license and modeFrontier for two years. ModeFrontier will be provided with 20 university licenses with a total value of over A\$20,000. In addition to the global prize Compumod and VI-Grade are pleased to also offer a prize for the best Australian entry who will receive \$500 cash.

Details are still being finalised, but at this stage the competition (limited to University students) will begin in Mid March, 2011 and will last 2-3 months.

Email virtualformula@compumod.com.au to register your interest or call **1300 965 690** for more details.



MSC SOFTWARE UNIVERSITY BUNDLES

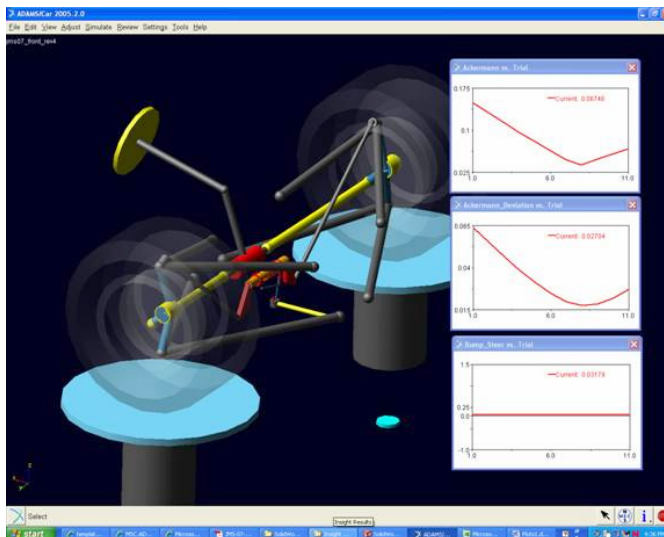
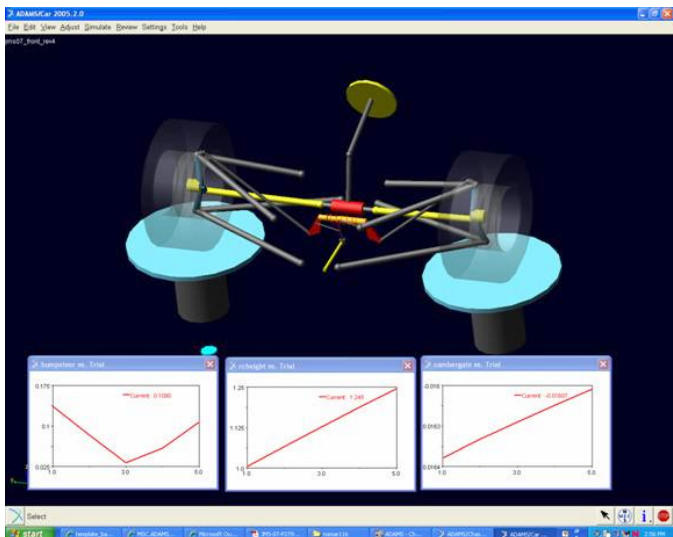
The mission of the MSC University Program is to meet the needs of three distinct groups: students, teachers and industry. The primary goal is to help university students obtain desirable jobs with MSC's best-in-class customer-companies who continually seek to hire talented engineers proficient with MSC's industrial-strength, simulation software.

By enabling teachers to include MSC software in their engineering curricula, our objective is to help them make the principles and theory they teach more understandable, enjoyable, and relevant for their students. Simulation enables engineers to go beyond static design (CAD) for form and fit - to rapidly develop high-quality, innovative products in the virtual world so they function as intended in the real world.

The following packages are available for universities in bundles for 1, 5, 50 or 150 users.

- University FEA Bundle includes MD Nastran, Patran, Marc, Dytran, FlightLoads & Sinda
- University Motion Bundle includes MD Adams, MD Adams/Car + Easy3

In addition to the above software bundles, MSC is also offering Formula SAE teams (in Australia and New Zealand) access to a 5-user VPD bundle (both FEA and Motion) for free (for a 12 month period). The team can use Adams/Car for suspension or full vehicle dynamic analysis and MD Nastran for structural analysis. This is a great opportunity for your team to enhance the design capability and obtain a competitive advantage. Many of the winning FSAE teams have been taking advantage of MSC's free software since the competition started in 2000.



From Left to Right

A team was able to quickly see the impact of several design ideas on Bump Steer and Camber Gain. DOE results from Adams enabled one team to tune its vehicle's Ackermann by better understanding the impact of various input parameters.

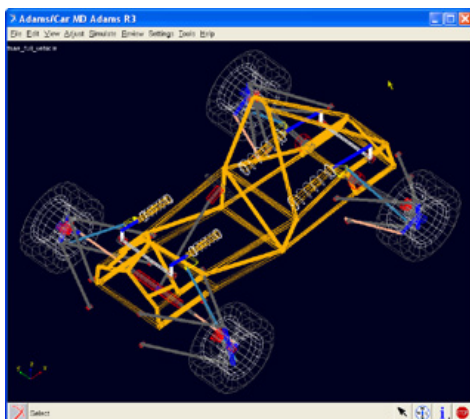


Image
A full vehicle model of a Formula SAE car

In addition, a special Adams/Car database is now available for you to download that makes it easier to build and simulate Formula SAE vehicles. Some examples of FSAE Adams models are shown below.

If your team or university is interested in the MSC University Program, please contact Zigi Barrett on zigi@compumod.com.au or call 1300 965 690