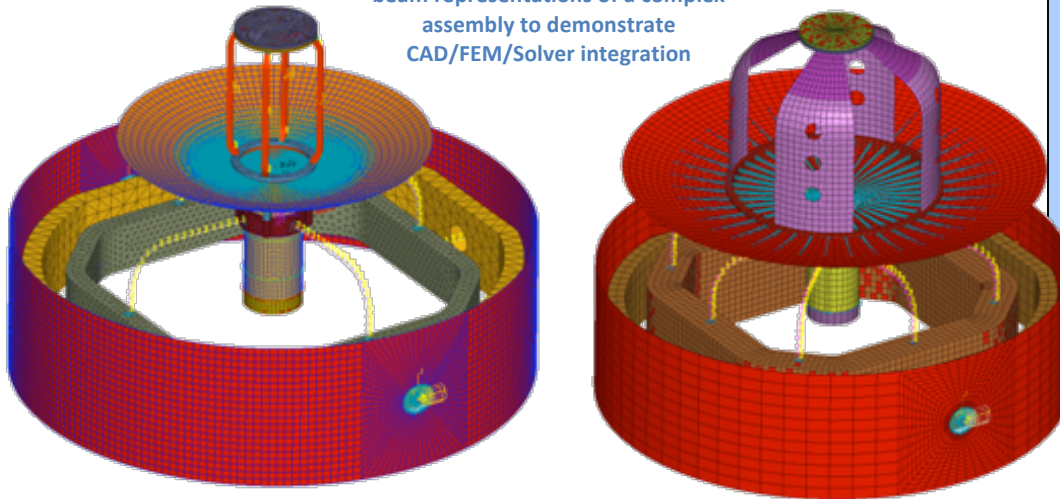


Figure 1: Creating shell, solid, and beam representations of a complex assembly to demonstrate CAD/FEM/Solver integration



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## President's Address

The New Year brings with it many exciting developments. We have just released v14.0.1 of both ANSA and  $\mu$ ETA. We have also revised our upcoming training offerings. After feedback from our Users, we decided to migrate to a more discipline-specific syllabus. These changes are designed to enhance the training experience by aligning the material with the engineering work Users typically face on a daily basis, thus reducing the time it takes for them to become productive with the software. For a full list of the courses and their content, please visit the Training section of our website.

I'd like to make mention of our upcoming conferences for the year. June marks the holding of the 5<sup>th</sup> ANSA &  $\mu$ ETA International Conference in Thessaloniki, Greece. The call for abstract submissions has been extended to March 22<sup>nd</sup>. Also, our annual North American Open Meeting will be held on October 2<sup>nd</sup>, once again in Plymouth, Michigan.

Finally, in this issue you will find an article reflecting on the benchmark that was won by BETA CAE Systems in becoming the complete tool for pre/post-processing for structural analysis at Lockheed Martin Missiles & Fire Control (LM M&FC). The article provides a good overview of the selection process, and highlights some of the support efforts that have been completed since selection in order to ensure a smooth transition for LM M&FC.

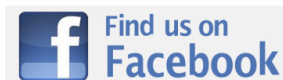
John Skarakis  
*President & Technical Director*

Conferences	Dates	Venue
11 <sup>th</sup> International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE)	Apr 3-6	Salt Lake City, UT
MSC Software 2013 Users Conference	May 7-8	Irvine, CA
SAE 2013 Noise & Vibration Conference and Exhibition	May 20-23	Grand Rapids, MI

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## Lockheed Martin Missiles & Fire Control selects ANSA & μETA for complete structural pre- and post-processing

In early 2010 Lockheed Martin Missiles & Fire Control (LM M&FC) initiated a benchmark to evaluate all modern pre- and post-processors for structural analysis. Their current portfolio involved numerous tools across many aspects of the structural CAE domain. This benchmark was an effort to find a tool to consolidate all the CAE tasks into a single environment within a 2-3 year timeframe, which would significantly increase efficiency and productivity. The benchmark was led by Prof. Richard Zarda, Manager – Engineering Methods Group in Orlando and Steve Vacca, Engineering Manager in Dallas, and involved many members of the M&FC team at both sites.

Initially, 11 major CAE vendors were invited to participate in the benchmark including BETA CAE Systems. To evaluate these tools, the benchmark contained 3 gates (Gates 0, 1 & 2). All vendors participated in the initial Gate 0, with each involved giving a 2-hour supplier presentation via teleconference based on their ability to meet 7 key criteria.

Each supplier's presentation was scored on how well they met the initial requirements. Advancement to the next phase (Gate 1) was then determined via a jury vote by panel members assembled of key Lockheed Martin decision makers. The top 3 suppliers would proceed to Gate 1, and BETA CAE Systems was selected as one of the 3.

The 3 remaining suppliers were provided with documentation of requirements and models for Gate 1, which consisted of 10 separate benchmark problems. Due to the various activities of the group, the Gate 1 phase dictated that the 'single' environment had to include capabilities which measured core functionality and spec compliance as follows:

- Dirty geometry clean-up

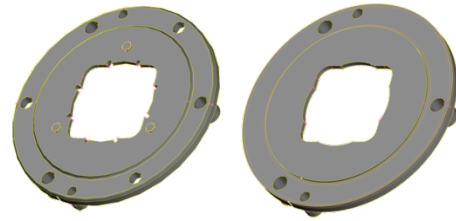


Figure 2: Fillet and tube recognition and removal with general feature treatments of dirty geometry

- Mid-surface modeling
- CAD construction
- Support of NASTRAN
- Support of ABAQUS

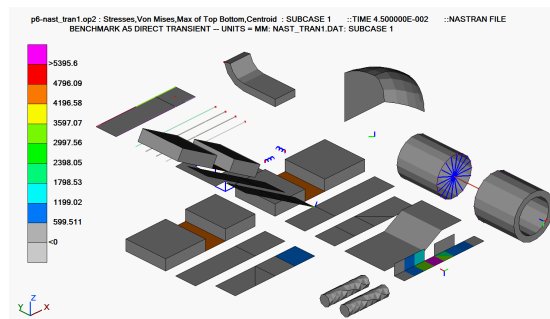


Figure 3: NASTRAN & ABAQUS loop test with keyword support in ANSA & μETA

- Complex shell/solid meshing

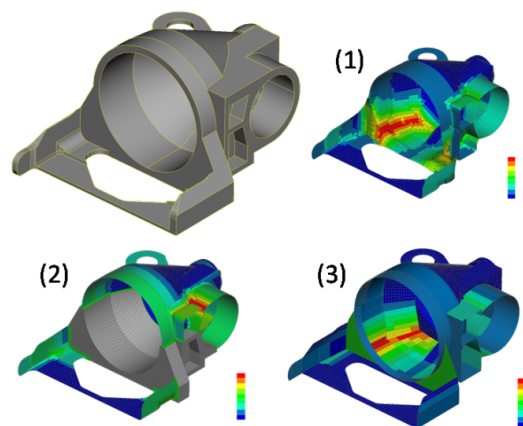


Figure 4: Complex shell-solid modeling via (1) automatic mid-surface, (2) hybrid solid & mid-surface, (3) mid-surface

- Field support
- Integrated CAD/FEM/Solver
- Pro/E import features
- Requirements specification compliance

Results were given in the form of a teleconference presentation. Each benchmark problem was awarded a score out of 10 by the jury, after which the jury voted to move all three suppliers forward to Gate 2.

Gate 2 consisted of 8 benchmark problems, which focused on measuring key but less used functionality. These were as follows:

- Modeling of composites
- Assembly modeling

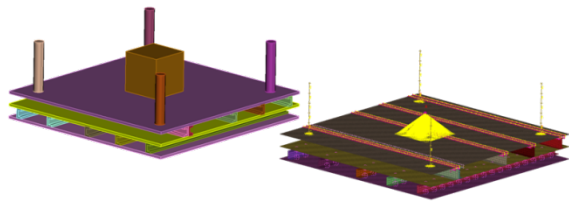


Figure 5: Assembly modeling featuring mid-surface of parts, assembly using connections, and representation of components changed to lumped mass

- Signal processing
- Contact analysis
- Thermal CTE
- Superelements
- Post-processing large FE models
- Lockheed Martin aero problem

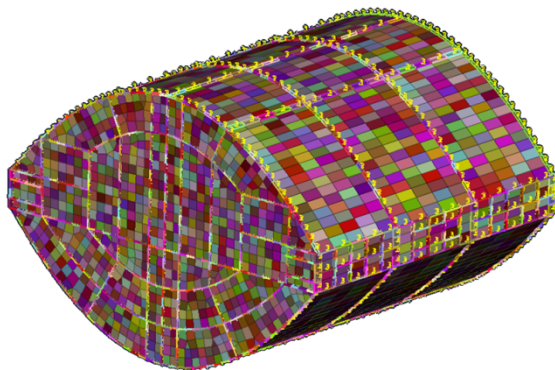


Figure 6: Lockheed Martin Aero problem featuring composites modeling, includes management and renumbering

Once again each benchmark problem was awarded a score out of 10. At the completion of the gates, BETA CAE Systems placed first for the combined technical score.

In order to determine a Technical Winner, Lockheed Martin also had a general score category which would be considered along with the technical score. This related to criteria such as the overall impressions of the software, training and ease of use, integrity of the supplier and support, and the future vision of the software/company in regards to development/growth and how this would align with the ongoing requirements of LM M&FC.

The results of tallying placed BETA CAE Systems first in the general score voting. When combined with the technical score, this led to ANSA &  $\mu$ ETA being selected as the Technical Winner. However in order to select a Final Winner, the financial aspects of LM M&FC's decision also needed to be taken into account using supplier cost data and critical development metrics.

Comparing Technical Scores, Cost Models and General Scores, a Final Winner was determined. After an intensive 8-month selection process, the ANSA &  $\mu$ ETA software suite of BETA CAE Systems was selected as the Final Winner due to not only winning the Technical aspects of the benchmark, but also providing the best Cost Model for LM M&FC. This reaffirms our view and what many of our existing clients have known, that we not only provide best in class software and service, but that this yields the best value to the client.

Following implementation of the software in 2011, it has been shown that utilizing the ANSA &  $\mu$ ETA software packages at LM M&FC has led to productivity increases. Users that have been trained and invested adequate time with ANSA are showing, in general, productivity gains of over 50%, meaning they have now become significantly faster in performing robust FE modeling when compared to their previous toolsets.

In order to meet all the requirements specified, ongoing development meetings took place between LM M&FC, BETA CAE Systems S.A., and BETA CAE Systems USA. In terms of

support, BETA CAE Systems USA has kept a visible presence with LM M&FC throughout the whole transition. All engineers have been trained over a 2-year period. This training has predominantly occurred on-site at LM M&FC's facilities, with a few engineers visiting our training classes in Farmington Hills, MI. LM M&FC is still on plan to migrate most of their users to ANSA & μETA as the preferred pre- and post-processing environment, with approximately 80% of engineers now using the software.

The LM M&FC benchmark and subsequent transition to ANSA and μETA highlight the capabilities of BETA CAE Systems to support all your CAE needs. The majority of the functionality requested by LM M&FC (approx. 90%) was delivered within the timeframe specified. Further requirements were then implemented in the newest versions of the software, ANSA and μETA v14.0.1, just released this month in the US. Delivering upon all the requests of LM M&FC is an ongoing development process, one that is seen as a long-term partnership.

The benchmark process also emphasized our ability to transition a large group of engineers from using legacy software to being productive with ANSA & μETA within a reasonable timeframe. The commitment that is shown to us by clients such as LM M&FC reaffirms the direction we are heading in as a company. As more engineers look to migrate to ANSA and μETA, we are confident in our ability to provide the same level of best-in-class support that complement and promote synergy with clients' existing operations. We partner with our customers to solve the bottlenecks introduced by modeling complexity in the industry. Our customers enjoy the increased return on investment (ROI) through performance, which allows them to maximize the benefits from CAE at both a technological and financial level.

More information on the benchmark process at LM M&FC is available upon request.

## ANSA & μETA v14.0.1 released to Americas and Oceania regions

We are proud to release the new version v14.0.1 of our ANSA & μETA pre- and post-processing suite, with outstanding new software features and tools that enhance the user experience and increase the simulation process performance.

Driven by our customers' requests and inspired by the Industry's requirement for further simulation process improvement, we deliver a wide range of innovative new tools that bring CAE pre- and post-processing to a higher level.

Notably in this version, the synchronized release of the components of our suite is introduced. A unified installer, that automates the process and makes it much more streamlined, now drives the installation of the software.

These are major releases that include numerous noteworthy feature enhancements. A more comprehensive description can be found by navigating to the release notes from our website.

## New Training Courses

Please see below for our new courses and training schedule. Further information relating to course content and pricing can be found on our website. Additional 1-day courses including ANSA for NVH Console and ANSA & μETA for Scripting are available upon request.

Dates		Course
Mar	5-6	ANSA for Structures & Durability
	7	μETA for Structures & Durability
	14	ANSA for Morphing & Optimization
	19-20	ANSA for CFD
Apr	21	μETA for CFD
	9-11	ANSA & μETA for Crash & Safety
	23-24	ANSA for NVH
	25	μETA for NVH
May	30	ANSA for Morphing & Optimization
	1-2	ANSA for Modeling
	7-8	ANSA for Structures & Durability
	9	μETA for Structures & Durability
	21-22	ANSA for CFD
	23	μETA for CFD