**BAIC Chairman Xu Heyi
at the Auto China 2014 in Beijing**

**Optionally Piloted Black Hawk
Demonstrator Helicopter**
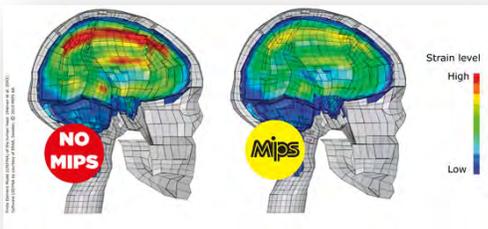
**MIPS Helmets – New Generation**
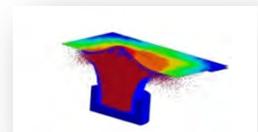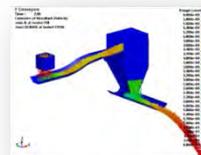
**DES (Discrete Element Sphere)**

**Ford Reveals All-New Focus Sedan**

**v14.2.5 of ANSA / μETA**

**FEA Information** Inc. is a publishing company founded April 2000, incorporated in the State of California July 2000, and first published October 2000. The initial publication, FEA Information News continues today as FEA Information Engineering Solutions. The publication's aim and scope is to continue publishing technical solutions and information, for the engineering community.

**FEA Information Inc. Publishes:**

> FEA Information Engineering Solutions
> FEA Information Engineering Journal
> FEA Information China Engineering Solutions

**FEA Information Engineering Solutions**:

> A monthly publication in pdf format sent via e-mail, additionally archived on the website FEA Publications. www.feapublications.com

**FEA Information China Engineering Solutions**

> The first edition was published February 2012. It is published in Simplified and Traditional Chinese in pdf format. Published : February, April, June, August, October, December. The China Solutions is archived on the website FEA Publications. www.feapublications.com
> To sign up for the Traditional, or Simplified edition write to yanhua@feainformation.com

**FEA Information Engineering Journal: ISSN #2167-1273, first published February, 2012**

> Available on www.feaiej.com

## Platinum Participants    Participant Logo Courtesy of  Lancemore Co. Japan

βBETA CAE Systems SA

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**LANCEMORE Co.**

GOMPUTE A GRIDCORE COMPANY

JSOL

LSTC Livermore Software Technology Corp.

Oasys The Software House of Arup

KAIZENAT Keep Improving

Comet The performance engineering workspace

PENGUIN COMPUTING®

TERRABYTE Co.,Ltd

DFETECH

LS-DYNA Online Training

## Table of Contents

**Welcome to Penquin Computing  - Platinum Participant**

**FEA Information Inc. and D3View will be hosting the Reception and exhibiting at**
   **The 13<sup>th</sup> LS-DYNA Conference**
   June 08-10, 2014

**FEA Platinum Participants that will be exhibiting at The 13<sup>th</sup> LS-DYNA Conference:**

| ETA | BETA CAE Systems | Datapoint Labs | ESI Group |
|-----|------------------|----------------|-----------|
| Oasys | GOMPUTE | JSOL | D3VIEW |
| LSTC | CRAY | PENGUIN Computing | |

**The 13<sup>th</sup> LS-DYNA Conference: Pre- Conference Seminar**
   Using LS-DYNA for Heat Transfer Analysis & Coupled Thermal-Stress
      Sunday, June 8, 2014   9am - 5pm
      Location:  Adoba Hotel

For participation in FEA Information Engineering Solutions, contact Anthony Giaccana agiac99@aol.com

I read a quote I found honorable and I would like to share it.  It is by Dominick Gallello, President & CEO of MSC Software who states,  …"We welcome vigorous competition in the market.  Every company has a right to innovate, but no company should be allowed to misappropriate a competitor's intellectual property."

I feel all involved who write articles for magazines or internet, papers for conferences, source code, applications, or anything involving copyright and/or intellectual property would agree that there is fair competition, and that is what we should all abide by -  unfortunately there are those who have no business or personal honor.

Marsha J. Victory, President, FEA Information Inc.

Sincerely,  Marsha Victory,  Trent Eggleston  - FEA Information Inc. USA edition

- http://mipshelmet.com/home
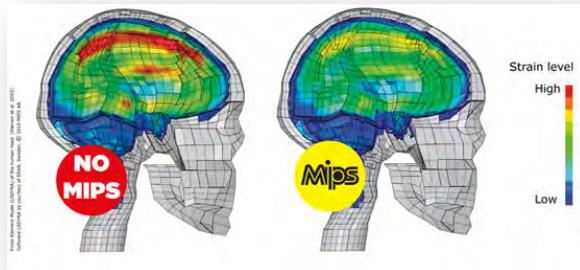


**Finite Finite Element model (LS-DYNA) of the human head showing the maximum principal strain in the sagittal plane (Kleiven et al. 2003).**

Software: LS-DYNA by courtesy of ERAB, Sweden, now DYNAmore Sweden.

There are now two types of helmet to choose from. The old style and the new generation, equipped with the Multi-directional Impact Protection System. This is a revolutionary technology, ensuring that a helmet with MIPS provides much better protection than any other helmet on the market. To identify the new generation of helmets, always look out for the little yellow MIPS logo. Risk is a part of life.

**Test results that speak for themselves**
   http://mipshelmet.com/how-it-works/test_results

In normal regulation tests used to certify motorcycle, equestrian, bicycle or ski helmets, an aluminium dummy head is placed inside the helmet and the helmet is dropped vertically onto a surface. The vertical impact results in a radial force to the head.
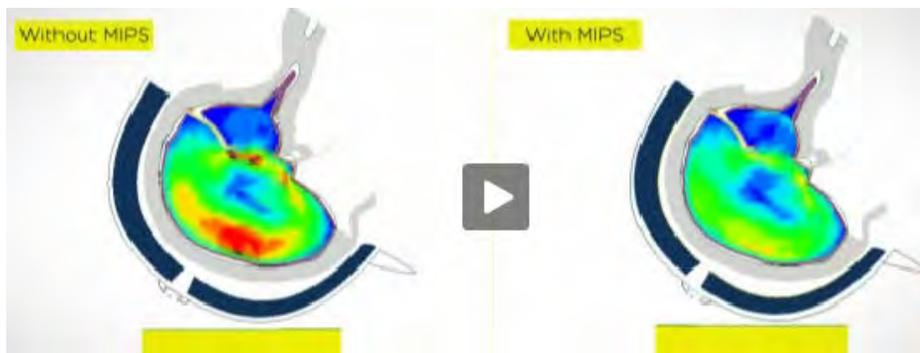


**Video available on site**

Deformation of the brain from an oblique impact when the user is wearing a conventional helmet and a helmet with MIPS technology. Finite element model (LS-DYNA) of the human head showing the maximum principal strain in the sagittal plane (Kleiven et al. 2003). Software: LS-DYNA by courtesy of ERAB, Sweden.

.

A helmet with the MIPS technology is much safer than the conventional helmets used on the market. 15 years of development and experimental tests have been performed to compare the helmet with MIPS technology to a con¬ventional helmet. The results showed that it was possible to reduce the forces to the brain by up to 40% at an impact angle of 45 degrees by adding the MIPS technology

It has also been shown that helmets with MIPS technology perform well in the standard regulation test used to¬day. The combination of the brain's own design and the groundbreaking MIPS technology ensures maximum protection. Very simple and very effective.
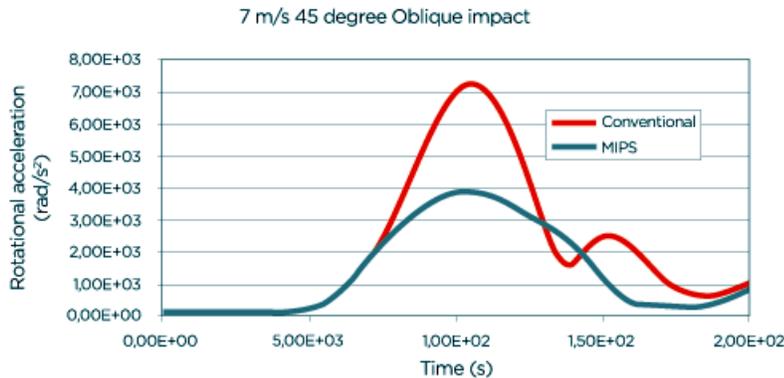


**Oblique impact test**

A Hybrid III dummy head (specially designed to measure the complex forces that occur in the head) is fixed in a helmet, which is placed on a frame. The frame is attached to two pillars and can travel almost without friction in a vertical direction. The hel¬met strikes a plate, which is moving horizontally on two PTF-covered rails. The plate is accelerated by a pneumatic cylinder. A system of nine accelerometers is mounted inside the head. With this method it is possible to measure both linear accelerations in all directions and rotational accelerations around all axes. Both plastic and glass fibre full-face MC helmets as well as other sports helmets have been tested in the oblique test rig. The linear acceleration is also reduced with the MIPS technology.  A more detailed description of the test rig is given in the doctoral thesises by Halldin 2001 and Aare 2003.
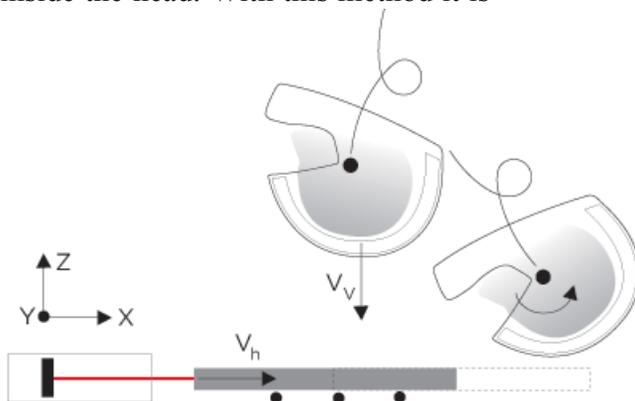
**Movie clips – visit http://mipshelmet.com/how-it-works/test_results**

The following films (mpeg, wma, avi) show the oblique test in our specially constructed test rig. And two clips where a ball illustrates the difference of a headon and an oblique impact.

- Film showing a 45 degree (7m/s) oblique impact test.

- High speed movie from oblique impact test of a mc helmet with the MIPS-technology.

- High speed movie from oblique impact test 1 of an equestrian helmet including the MIPS-technology.

- High speed movie from oblique impact test 2 of an equestrian helmet including the MIPS-technology.

- High speed movie from oblique impact test 2 of a conventional, glued equestrian helmet.

**Follow on YouTube**
**http://www.youtube.com/user/getmips**

http://ls-dyna.jsol.co.jp/en/hycrash/index.html
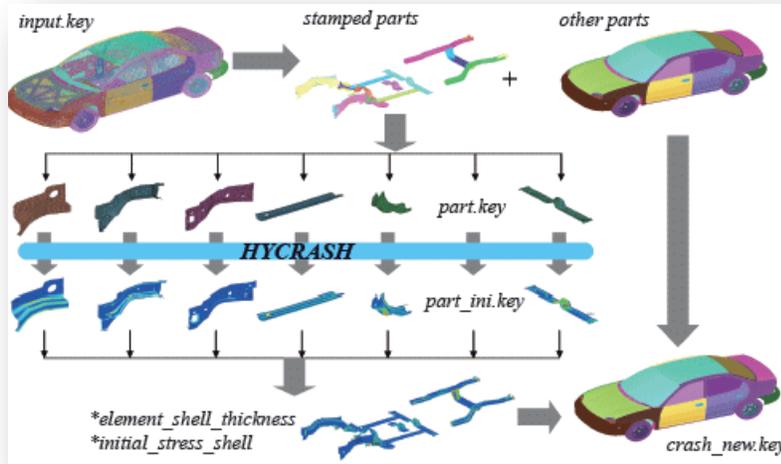


**HYCRASH Execution process**

"HYCRASH", easy-to-use one step solver.

HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary.

The effect of residual strain distribution and non-uniform thickness due to sheet metal forming - the manufacture process for most of the automotive parts for crash energy absorption - is well known as one of the most affecting factors for correlations between analysis and tests. So that some tries are carried out to calculate the initial strain and thickness before the crash/strength analysis.

Usually, the element size for crash analysis and metal forming analysis are different due to their difference in geometrical information (R size etc.), so after forming analysis, stress, strains, and thickness are mapped to the structural analysis.

However, this process costs pretty much and not very effective. Moreover, the information of die geometry is required for the forming analysis, which usually doesn't exist in structural analysis phase.

To overcome this, JSOL Corp. has developed "HYCRASH", easy-to-use one step solver. HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary. Additionally, as this is target to usage of crash/strength analysis, even forming analysis data is not needed. If only crash/strength analysis data exists and panel ids is defined. HYCRASH extract panels to calculate it's strain, thickness, and map them to the original data.

The good points of HYCRASH are,

- Only part geometry is required; die geometry, holder force are not needed.
- Special skill for forming analysis I not required. Only crash data is needed.
- Very quick calculation time; a few minutes to a few ten minutes in Windows desktop computer

For examples please visit http://ls-dyna.jsol.co.jp/en/hycrash/index.html

Cincinnati, OH and Albuquerque, NM — April 7, 2014

http://cometsolutions.com/2014/04/07/press-release-comet-solutions-provides-software-automated-driveline-analysis-american-axle-manufacturing/

**Press Release: Comet Solutions® Provides Software for Automated Driveline Analysis to AAM**

## Comet® Strengthens Its Suite Of SimApps™ with Automotive Focus

Comet Solutions, Inc., the provider of SimApps™ for simulation driven-design, is excited to announce initial results from the successful implementation of its NVH Driveline SimApp at American Axle & Manufacturing, Inc. (AAM). In a few months time, AAM has shown productivity gains and cost savings.

**Fully Automatic Analysis Process Results in Tremendous Benefits for NVH Engineering**

AAM, a leading global Tier-One automotive supplier of driveline and drivetrain systems and related components, has a long history of successfully using FEA to master the many NVH (noise, vibration, and harshness) challenges. To enhance their FEA processes, Comet provided AAM with its NVH Driveline SimApp, a new software application that lets customers set up a single environment for driveline NVH analysis, with quick and easy

.

Contact: Dan Meyer, President and CEO
Comet Solutions, Inc.
(513) 588-2773
dan.meyer@cometsolutions.com

evaluation of any architecture. And to-date, AAM has realized impressive results.

Ora Research has produced an in-depth report detailing how AAM achieved benefits with Comet software in the areas of time savings per analysis iteration, cost savings, and improved quality. According to Bruce Jenkins, Principal Analyst with Ora, "Comet is at the forefront of advances in the arena of design space exploration. The results at AAM validate Comet has something very powerful to offer automotive companies, whether they do drivelines or other automotive systems." The Ora Research paper titled "AAM Sees Dramatic Productivity Gains, Cost Savings from Automating NVH Analysis Process with New Comet NVH Driveline SimApp" is available free of charge and can be downloaded from the Comet Solutions website at www.cometsolutions.com

And this is just the start of the cost savings and productivity improvements. Glen Steyer, AAM's Executive Director of Product Engineering, sees great strategic benefit in the Comet SimApps' power to drive simulation to the earliest stages of product development. Steyer explained, "Being a global company, the SimApp lets us take decades' worth of knowledge and expertise, put it into the simulation tool, and forward-deploy that to our engineers around the world. Not only that, but by using a tool like this and forward-deploying it, you can move much more deeply into innovating product architectural dynamics upfront in the design process."

**Solidifying Its Commitment To The Automotive Industry**

Over the past year, Comet Solutions has been building the company's engineering, marketing, and sales competence in the resilient automotive industry. In mid-2013, the company hired Tim Keer as Vice President of Technical Service and Customer Success. Keer spent 25 years at Arup, the global engineering design firm. He opened Arup's Detroit office, where he led all technical project work for automotive companies, especially in the areas of crash and structural analysis. Comet Solutions has recently announced distribution agreements with JSOL 2 Engineering in Japan and Arup in China. Both partners have decades of experience in the automotive industry and are the largest distributor of LS-DYNA software in their respective geographic markets.

Commented Dan Meyer, Comet Solutions President and CEO, *"We have the expertise on our team to understand the challenges and opportunities facing automotive customers. We are in a great position to develop and implement innovative solutions for these customers, as evidenced by our collaboration with AAM. Our company will offer a suite of SimApps focused around the product systems developed by automotive customers and their related simulation workflows."*

**About Comet Solutions, Inc.**

Comet Solutions® provides software and services that simplify the complex process of engineering product systems. Comet has developed a suite of powerful and web-deployable SimApps™, which embed expert knowledge and methods, but remove the complexity of general purpose Computer Aided Engineering (CAE) tools. SimApps make design-driven simulation suitable for use by everyone from CAE experts to design engineers. With Comet SimApps, companies exploit the full potential of their existing CAD/CAE/PLM tools and resources by exploring more design alternatives, enabling product innovation and the rapid development of higher quality and more cost-effective products. For more information about Comet Solutions and Comet SimApps, please visit www.cometsolutions.com.

**BETA CAE System S.A.**

**Release Announcement**

**v14.2.5 of ANSA / μETA
pre- and post- processing suite.**

**About this release**

This maintenance release focuses on the correction of identified issues for the ANSA / μETA 14.2x branch and is addressed to those who wish to continue to use the v14.2x branch -and not to upgrade to v15x-, with its issues resolved.

Those corrections have been also propagated to the following releases of the v15x branch.

**Understanding the Software Release Schedule**

**The plan:**  We are committed in delivering improved and enhanced software releases, the soonest possible, in order to meet the requirement of our customers for the continuous improvement of their experience and work. Therefore, we are working in releasing new software versions with code

corrections, new software features and enhancements, in regular, frequent intervals.

- A major software version is released every year.
- First point releases, such as v14.1.0, v14.2.0 and so on, with code corrections but also with additional software features and enhancements are released every three months.
- Second point releases, such as v14.2.1, v14.2.2, v14.2.3 mainly with code corrections only upon their parent first point release, are scheduled on a monthly basis.

Each software release is accompanied by a detailed description of the introduced corrections and/or additions so that our customers can decide whether it is critical to implement this release in their environment.

**This release**

This release of v14.2.5 implements code corrections, to the v14.2.4 release. It belongs to the v14x branch and is not compatible to v15x branch.

The corrections introduced in v14.2.5 were also implemented to the following release of the v15x branch, which will be 15.0.2..

**Known issues resolved in ANSA**

**General:**  The "Coordinate Systems" options in the F11 window would not be saved in the ANSA defaults file.

**Mesh:**  Spacing [Auto CFD]: With certain settings, the perimeter nodes spacing would be applied incorrectly.

**Decks:**  LS-DYNA: When exporting to .key file from versions 14.1.0 to 14.2.4 - from ANSA files created with versions prior to 14.1.0 -, a wrong SFA value on *DEFINE_TABLE keyword would be set.

When applying BOLD with 'Body' options KJOIN R/C or JOINT R/C, it was not possible to select a 2nd hole.

**For Download and complete information visit**
http://www.beta-cae.gr/news/20140414_announcement_ansa_meta_v14.2.5.htm

For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

**Known issues resolved in µETA**

**Loading Results:**   The performance issue when loading a second model has been fixed.

**Decks:**   LS-DYNA: Strain values would be wrong when the value of NEIPH was other than zero.

For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

**Compatibility**

ANSA files saved by all the first and second point releases of a major version are compatible to each other. New major versions can read files saved by previous ones but not vice versa.

The .metadb files saved with µETA version 14.2.5 are compatible and can be opened by earlier versions of µETA.

For information contact sales@lstc.com

**LS-DYNA**

**DES (Discrete Element Sphere)**

The DES (Discrete Element Sphere) is a particle-based solver that implements the Discrete Element Method (DEM), a widely used technique for modeling processes involving large deformations, granular flow, mixing processes, storage and discharge in silos or transportation on belts.

Courtesy of Kirk A. Fraser Roche, Canada
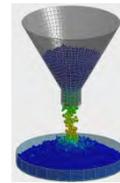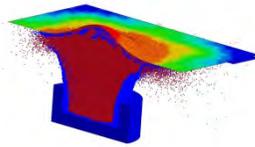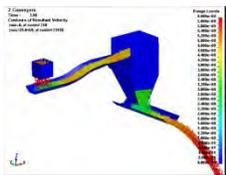
In LS-DYNA, each DE particle is a FEM node, making it easy to couple with other rigid or deformable structures by using penalty-based contact algorithms. The DE is highly parallelized and is capable of simulating systems containing over several hundred-million particles.



A bond model has been developed to bond particles and form "continuum" materials. The behavior and stiffness of these bonded particles match those of the solid mechanics of the same material, such as Bulk and Shear Moduli and deformation energy. The fractural energy is captured over all broken bond for crack initialization, propagation and fragmentation during dynamic and impact analysis. This bond model bridges the continuum mechanics and the DEM, and enables seamless transition

crossing multi-physics analyses. Here are some distinct features of the bond model:

1) The stiffness of the bond between particles is determined automatically from Young's Modulus and Poisson's Ratio.
2) The crack criteria are directly computed from the fracture energy release rate.
3) The behavior of bond particles is particle-size independent.



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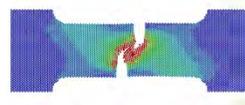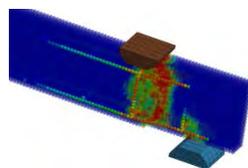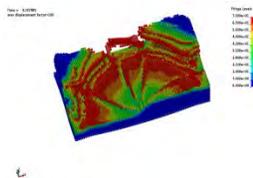
SEATTLE, WA -- (Marketwired) -- 04/08/14

http://investors.cray.com/phoenix.zhtml?c=98390&p=irol-newsArticle_print&ID=1916919&highlight=
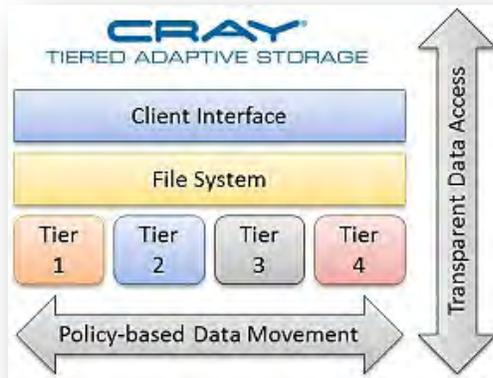
**Cray awarded a contract to deliver a Cray®
Tiered Adaptive Storage (TAS)
To
North German Supercomputing Alliance (HLRN)**

-- Global supercomputer leader Cray Inc. (NASDAQ: CRAY) today announced the Company has been awarded a contract to deliver a Cray® Tiered Adaptive Storage (TAS) solution to the North German Supercomputing Alliance (HLRN). Cray TAS is an open storage and archiving solution for big data and high performance computing environments, and gives HLRN a long-term data management solution for its High Performance Computing Center (RRZN) located at Leibniz University in Hannover, Germany.

The Cray TAS solution will provide RRZN's users with a large-scale archiving system to actively access, manage and preserve important data resulting from the Center's scientific research in the fields of environmental research, climate and ocean modeling, physics, chemistry, bioinformatics, engineering, and fluid dynamics. This Cray TAS installation consists of more than one petabyte of data storage and is upgradeable to more than 75 petabytes within the delivered architecture. For RRZN, Cray TAS provided a fast path to move from its existing Oracle SAM-QFS installation to Cray TAS without a lengthy data migration period.

"It is important that our supercomputing infrastructure includes a flexible, scalable and simple storage archiving solution that supports the massive demand for supercomputing resources from across the northern states of Germany," said PD Dr. Steffen Schulze-Kremer, head of HPC department at RRZN. "Cray's Tiered Adaptive Storage solution seamlessly integrates with our existing supercomputing systems, and is expected to fulfill our storage needs now and into the future."

Cray TAS features the Versity® Storage Manager, includes all software and hardware, and eliminates complexities associated with planning, designing, and building large-scale archives. Cray TAS provides for data protection and accessibility at scale, and can be provisioned as a primary file storage system with tiers, as well as a persistent storage archive. It provides transparent data migration across storage tiers -- from fast scratch to primary and archive storage, and features up to four flexible storage tiers mixing media, solid state drive, disk or tape.

"The supercomputing facilities at RRZN support a wide array of complex scientific research, and we are pleased to provide the Center with an end-to-end data management solution that can meet and grow with the big data needs of their scientists and researchers," said Barry Bolding, Cray's vice president of storage and data management. "Cray TAS allows for a seamless upgrade from RRZN's existing archiving solution, including the ability to continue to use their current policy engines. With the explosion of big data, we believe that Cray TAS fills a gap in the marketplace for customers who need enterprise-class data management solutions with high performance and low total-cost-of-ownership. Cray is providing a compelling solution for customers like RRZN that need active access to big data for their scientific workflow and a strong roadmap for their future data-tiering needs."

The Cray TAS solution is the latest addition to Cray's portfolio of storage and data management offerings. Cray also offers a storage appliance solution using Cray Sonexion® -- a scale out Lustre® storage system that vastly reduces deployment time and simplifies storage management for high performance data. Cray Sonexion addresses a broad range of customers as it provides performance scalability from gigabytes to terabytes per-second in a single file system and performs optimally at scale.

The Company recently introduced Cray Cluster Connect™, a Lustre storage solution for x86 Linux® clusters. Cray Cluster Connect is a compute agnostic storage and data management

offering that allows customers to utilize their Linux compute environment of choice -- providing customers with a complete, end-to-end, Lustre solution consisting of hardware, networking, software, architecture and support. Cray is also an original founder and board member of OpenSFS -- a consortium focused on advancing Lustre capabilities and keeping Lustre open -- and is following the OpenSFS roadmap for Lustre.

Additional information on the Cray Tiered Adaptive Storage and Cray's scalable storage solutions can be found on the Cray website.

**Complete Information "About HLRN" "About Cray" and "Safe Harbor Statement"** [www.cray.com](www.cray.com) **.**

**About HLRN**:  The North-German Supercomputing Alliance (Norddeutscher Verbund fu¿r Hoch- und Ho¿chstleistungsrechnen -- HLRN) is a joint project of the seven North-German states of Berlin, Brandenburg, Bremen, Hamburg, Mecklenburg-Vorpommern, Niedersachsen, and Schleswig-Holstein, and was established in 2001.

**About Cray Inc.:**  Global supercomputing leader Cray Inc. (NASDAQ: CRAY) provides innovative systems and solutions enabling scientists and engineers in industry, academia and government to meet existing and future simulation and analytics challenges.

**Safe Harbor Statement:**  This press release contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934 and Section 27A of the Securities Act of 1933, including, but not limited to, statements related to Cray's ability to deliver the solution required by HLRN when required and that meets HLRN's needs.

Cray and Sonexion are registered trademarks of Cray Inc. in the United States and other countries, and Cray Cluster Connect is a trademark of Cray Inc. Other product and service names mentioned herein are the trademarks of their respective owners.

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Cray Investors:  P. Hiemstra  206/701-2044 ir@cray.com

NEWPORT BEACH, CA. - Business Wire - (April 14, 2014)  http://www.mscsoftware.com/node/3345

**Altair Engineering Found To Have Misappropriated MSC Adams Trade Secrets**
Jury Awards $26.5M to MSC

"The jury has spoken," stated Dominic Gallello, President & CEO of MSC Software.   "We welcome vigorous competition in the market. Every company has a right to innovate, but no company should be allowed to misappropriate a competitor's intellectual property. We continue to make significant investments in the Adams technology to serve our customers and maintain our market leading position."

MSC Software Corporation, a global leader in helping product manufacturers to advance their engineering methods with simulation software and services, today announced that a jury in the United States District Court for the Eastern District of Michigan found that Altair Engineering willfully and maliciously took MSC Software trade secrets to use in its MotionSolve® product. The jury awarded MSC Software $26.1M for misappropriation of trade secrets and breach of confidentiality agreements by Altair and two former MSC employees who currently hold executive positions at Altair. The jury also found that two former MSC Software employees breached non-solicitation restrictions contained in agreements they had with MSC and that Altair tortiously interfered with the MSC non-solicitation restrictions with these individuals, and awarded MSC an additional $425,000.

"The jury has spoken," stated Dominic Gallello, President & CEO of MSC Software. "We welcome vigorous competition in the market. Every company has a right to innovate, but no company should be allowed to misappropriate a competitor's intellectual property. We continue to make significant investments in the Adams technology to serve our customers and maintain our market leading position."

For Complete "About" information visit:
www.mscsoftware.com

 MSC Software is one of the ten original software companies and a global leader in helping product manufacturers to advance their engineering methods with simulation software and services…

The MSC Software corporate logo, Simulating Reality, MSC Nastran, Adams, Actran, Digimat, Dytran, Easy5, Marc, Patran, MSC, MasterKey, MasterKey Plus, MaterialCenter, SimDesigner, SimManager, and SimXpert are trademarks or registered trademarks of MSC Software Corporation and/or its subsidiaries in the United States and/or other countries. Nastran is a registered trademark of NASA. MotionSolve is a registered trademark of Altair Engineering Inc. All other trademarks belong to their respective owners.

**Press Contact regarding the above article:   Doug Campbell, General Counsel  legal@mscsoftware.com**

**Complete Information will be posted in May Edition**

**POD (Penguin Computing on Demand offers software including LSTC's LS-DYNA**
www.penguincomputing.com/services/hpc-cloud

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- Detailed billing reports for user groups and projects

**Self Registration Portal – featuring rich--documentation, wiki, FAQ, pricing and more**.

https://pod.penguincomputing.com/

**Join us at the following Events**

Complete Event Calendar - http://www.penguincomputing.com/resources/events

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  March 17-19, 2014
  http://www.star-global-conference.com /.

GPU Technology Conference
  March 24-27, 2014
  http://www.gputechconf.com/page/home.html

Interop Las Vegas
  March 31-April 4, 2014
  http://www.interop.com/lasvegas/ .

HPC on Wall Street
  April 7-8, 2014
  http://www.flaggmgmt.com/linux/ .

2014 Bio-IT World Conference & Expo
  April 29-May 1, 2014 at 2014
  http://www.bio-itworldexpo.com

EMC World 2014
  May 5-May 8,
  http://www.emcworld.com/index.htm

Michael Waltrip Racing Webinar - May
  May 20th, 2014

LS-DYNA® International Conference
  June 8- 10, 2014
  http://www.ls-dynaconferences.com

The LS-DYNA® Aerospace Working Group (AWG) is a partnership of federal agencies, corporations, and universities working together to develop and publish aerospace test cases and modeling guidelines for finite element analyses with LS-DYNA®.



**Optionally Piloted Black Hawk Demonstrator Helicopter Takes Successful First Flight**

 (Source: Sikorsky Aircraft Corp.; issued April 21, 2014)
WEST PALM BEACH, Florida --- In cooperation with the U.S. Army, Sikorsky Aircraft Corp. has successfully demonstrated optionally piloted flight of a Black Hawk helicopter, a significant step toward providing autonomous cargo delivery functionality to the U.S. Army. Sikorsky Aircraft is a subsidiary of United Technologies Corp.   The Optionally Piloted Black Hawk (OPBH) Demonstrator, known as Sikorsky's Manned/Unmanned Resupply Aerial Lifter (MURAL) Program, conducted the successful first flight demonstration on March 11 at Sikorsky's Development Flight Center.

The demonstration was conducted through the use of Sikorsky's Matrix™ Technologies and advanced Ground Control Station (GCS) Technologies.

 The OPBH demonstrated autonomous hover and flight operations while under the control of a man-portable GCS, demonstrating the capability for expeditionary operations and critical cargo resupply.

"The autonomous Black Hawk helicopter provides the commander with the flexibility to determine crewed or un-crewed operations, increasing sorties while maintaining crew rest requirements. This allows the crew to focus on the more 'sensitive' operations, and leaves the critical resupply missions for autonomous operations without increasing fleet size or mix," said Mark Miller, Sikorsky Vice President of Research & Engineering.

 The MURAL Program is a cooperative effort between the U.S. Army Aviation Development Directorate (ADD), the U.S. Army Utility Helicopters Project Office (UH PO) and Sikorsky. The UH PO is providing access to two UH-60MU Black Hawk helicopters and Sikorsky is applying the technology it has developed with Internal Research and Development funding.

Sikorsky has been developing the technology since 2007, and signed a Cooperative Research & Development Agreement (CRADA) with the U.S. Army in 2013 to advance the program to a formal effort to demonstrate the full flexibility and value of a full authority flight control system. The effort includes demonstration of expeditionary ground control systems and precision control.

"The ADD's mission is to focus on developing, demonstrating and applying critical technologies that enhance the capability, affordability, readiness and safety of Department of Defense aviation systems," said Dr. William Lewis, Director, ADD. "The optionally piloted Black Hawk helicopter functionality stands to bring added value to DoD aviation systems, through the innovations being tested on the Black Hawk helicopter in the MURAL program."

According to COL Thomas Todd, the Utility Helicopters Project Manager, "MURAL technology will advance material solutions related to Degraded Visual Environment operations. These solutions will provide critical flight control and flight handling quality improvements."

Sikorsky introduced its Matrix Technology, a major research program, in July 2013 to develop, test and field systems and software that will improve significantly the capability, reliability and safety of flight for autonomous, optionally piloted, and piloted vertical take-off and landing (VTOL) aircraft. The Sikorsky Autonomy Research Aircraft (SARA) flew its first flight on July 26, 2013 and continues to explore new functionality in that portion of the program.

The application of Matrix Technology to the OPBH is an initial step toward demonstrating the flexibility, adaptability and capability to a range of aircraft systems. "Applying Matrix Technology to an already robust, reliable, and safe platform leverages these capabilities while expanding the system's effectiveness," Miller added.

Matrix aims to give rotary and fixed wing VTOL aircraft a high level of system intelligence needed to complete complex missions with minimal human oversight and at low altitudes where obstacles abound.

Sikorsky Aircraft Corp., based in Stratford, Conn., is a world leader in aircraft design, manufacture and service. United Technologies Corp., based in Hartford, Conn., provides a broad range of high-technology products and support services to the aerospace and building systems industries.

**Gompute User Meeting is an event that gathers all aspects related to Simulation and Technical Computing.**

**At Gompute User Meeting 2014 you can:**

- Discover the latest simulation and HPC software developments.
- Learn about how the Gompute software delivers comprehensive HPC and where it is used
  - Meet experienced analysts.
  - Learn about the state of the art on commercially available computing services.
  - Meet colleagues active in the field of technical computing and simulation.
  - Attend workshops on latest techniques in HPC and simulation tools.

At the 2014 Gompute User Meeting, Engineers, Scientific Users, Designers, contractors, Analysts, Academics, Managers and Executives will meet up to share best practices and tips from their simulation experience.

This convention of Comprehensive Technical Computing is free of charge for attendees, and here you can meet engineers and experts of several related fields in order to  improve your engineering and simulation skills.

**Topics:**
- Simulation Tools,
- Simulation techniques,
- Computing hardware,
- Linux for High Performance Computing,
- HPC Cloud,
- Remote Visulization

May 6-7, 2014  -  Elite Park Avenue Hotel
Kungsportsavenyen 36-38
,Gothenburg, Sweden

**Contact organizers:**
Maria Dahlquist  Phone: +46 31 757 04 54
Mail: mimi@ gridcore.se

Anne-Marie Ohlsson  Phone: +46 31 757 04 50
Mail: amo@ gridcore.se

**For sponsorship packages or exhibiting in our event, please contact Maria Dahlquist: mimi@gridcore.se**

**June 4 – 6, 2014**

**32$^{nd}$  CADFEM USERS' MEETING 2014 - June 4 – 6, 2014; NCC Ost, Nuremberg, Germany**
**For Full Information please visit the website - www.usersmeeting.com**

**The Numerical Simulation Conference**

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**Language**:  Lectures can be held in English or German.
Documents for presentation should be – if at all possible – in English.
Please submit the title of your lecture in the language in which you will hold it.

**Lecture submission and deadlines:**  Duration of lecture should be 25 minutes.
Please submit by January 31st, 2014:
- Title of lecture
- Short summary stating subject and contents and the software used (at least 2000 signs)
- technical information
- The field/industry you are working in
- By February 14th, 2014: you will receive information about acceptance.
- by March 14th, 2014: you will receive information about session/time of your lecture.
- by May 16st, 2014: please provide us with your lecture and a short CV.

For templates and further information on lecture submission please refer to: ACUM2014-Presenters [1.5 MB].
Submissions can be sent in:
- using the fax form: Registration - online at: Registration - email to: acum2014@cadfem.de

**Remuneration:**  Please visit the website for information.

**Publication:**  By submitting your lecture you agree toyour presentation being published in the conference media and used by CADFEM and ANSYS for marketing purposes after the conference.
If you do not agree to this, please let us know.

**Registration for lecturers:**  You must register for the conference even if you are a lecturer.
If you have chosen a free day of participation as remuneration for your user report, the respective day (presumably Thursday, June 5th, 2014) will not be charged.

**ACUM Best Paper Award:**  A committee is going to award in each discipline (Structural Mechanics, Fluid Dynamics, Electronic-Mechanics and Systems & Multi-physics) the best presentation. Only papers submitted on time can be considered. Winners will receive a terrific surprise.

The main language is German. However, lectures in English are welcome! If you plan to attend, please note that selected sessions and workshops will be held entirely in English and the slides in all sessions will mostly be in English

**June 03, 2014**

**Invitation to LS-DYNA Information Day (free of charge)**
  **LS-DYNA – The Numerical Simulation Program for Numerous Applications**
  Venue:      DYNAmore GmbH, Stralauer Platz 34, 10243 Berlin, Germany

DYNAmore invites you to participate at the free-of-charge information day on 3 June 2014 in Berlin, Germany. The aim behind this event is to inform you about the general-purpose computational software LS-DYNA and its associated optimization program LS-OPT.

With LS-DYNA, the Livermore Software Technology Corporation (LSTC) offers a well-equipped toolbox that includes explicit and implicit time integration schemes which can be combined with spatial discretization methods such as FEM, BEM and ALE as well as meshfree methods like EFG, SPH and DEM. The primary focus of the developers at LSTC lies on a one-code-strategy to integrate different solution algorithms within a single software environment which includes coupling abilities of the structural solver with the solvers for incompressible and compressible fluids, temperature and electromagnetism. This allows different simulation stages to be joined together within LS-DYNA without the need to define a time-consuming transition to other software packages. And this in turn means that LS-DYNA can be used to efficiently perform simulations across multiple processes.

To give you a better understanding of the computation capabilities of LS-DYNA and LS-OPT, we have prepared an interesting agenda:

June 03 – Language:  German

| | |
|---|---|
| 13:30 | Welcome |
| | D. Keßler (DYNAmore) |
| 13:45 | LS-DYNA Intro. & Application Overview |
| | T. Münz (DYNAmore) |
| 14:00 | Meshfree Methods and Multiphysics Applications |
| | .Karajan (DYNAmore) |
| 14:45 | Glues, Welds, Bolts: Connection Techniques in LS-DYNA |
| | G. Pietsch (DYNAmore) |

| | |
|---|---|
| 15:15 | Coffee Break |
| 15:45 | Advanced Material Description for Polymers and Metals in LS-DYNA |
| | F. Andrade (DYNAmore) |
| 16:30 | Optimization using LS-OPT V5 and Applications |
| | K. Witowski (DYNAmore) |
| 17:00 | Oasys PRIMER – Overview & Intro to the Preprocessor for LS-DYNA |
| | D. Keßler (DYNAmore) |
| 17:30 | Discussion with Beverages and Snacks |

Download Flyer PDF (German)          More information          **Online registration**

**Pre- Conference Seminar**
**Using LS-DYNA for Heat Transfer Analysis & Coupled**
**Thermal-Stress**
 **Sunday, June 8, 2014  9am - 5pm**
 **Location:  Adoba Hotel**

**LSTC 1 Day Seminar**

**Instructor:** **Dr. Arthur Shapiro**

**Registration:  $ 50.00  Students $ 30.00**

**Contact:** vic@lstc.com
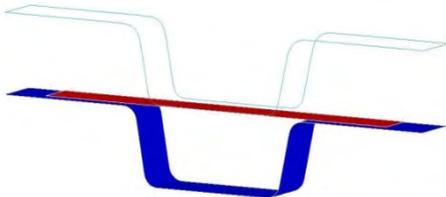
**Hot Stamping Process**

**fringes of temperature**
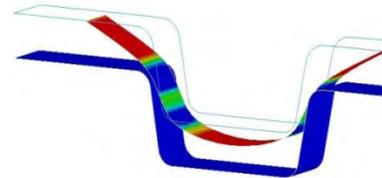
**Description:**  This class provides guidelines in using the heat transfer capabilities in LS-DYNA to model coupled thermal-stress problems with a focus on hot stamping manufacturing operations.  It is intended for people with a background in using LS-DYNA for computational mechanics, but who are not familiar with modeling heat transfer or coupled thermal-stress.

**Class Material:  Class notes will be provided.  Although the class presentation is all lecture without workshops, a 30-day demo LS-DYNA license will be authorized for practice in solving the problem set provided in the notes. You can request a demo license starting May 25th.  demo@lstc.com  subject pre conference seminar**

**Sections covered during the course**
- Getting Started – Learn to create a KEYWORD input file to solve for the thermal expansion of an aluminum block. Learn how to interpret LS-PrePost temperature fringe plots to gain knowledge of the physical process.
- Equation Solvers & Nonlinear Solution Method - Learn the advantages and disadvantages between the Gauss direct solvers & conjugate gradient iterative solvers in LS-DYNA. Learn the nonlinear heat transfer keyword parameters and how Newton's nonlinear method works.
- Time Step Control – Learn how to select a thermal and mechanical time step size, and understand the difference between explicit and implicit solution methods.
- Initial and Boundary Conditions – Learn how to define temperature, flux, convection, and radiation boundary conditions. Learn how to hand calculate a convection heat transfer coefficient, which is the parameter with the greatest uncertainty in your model.
- Thermal-Mechanical Contact – Learn thermal-mechanical contact modeling issues with sheet metal forming applications.
- Thermal-stress coupling – An introduction to coupled thermal stress modeling. Topics include conversion of plastic work to heat, conversion of sliding friction to heat, and calculation of thermal expansion. Thermal-mechanical material constitutive models are also presented.

Modeling Hot Stamping - The Numisheet 2008 B-pillar hot stamping benchmark problem BM03 is presented and solved.

**BETA CAE Systems S.A.**                    **www.beta-cae.gr**

**BETA CAE Systems S.A.– ANSA**

**BETA CAE Systems S.A.– μETA**

Is an advanced multidisciplinary CAE pre-processing tool that provides all the necessary functionality for full-model build up, from CAD data to ready-to-run solver input file, in a single integrated environment. ANSA is a full product modeler for LS-DYNA, with integrated Data Management and Process Automation. ANSA can also be directly coupled with LS-OPT of LSTC to provide an integrated solution in the field of optimization.

Is a multi-purpose post-processor meeting diverging needs from various CAE disciplines. It owes its success to its impressive performance, innovative features and capabilities of interaction between animations, plots, videos, reports and other objects. It offers extensive support and handling of LS-DYNA 2D and 3D results, including those compressed with SCAI's FEMZIP software

**CRAY**        www.cray.com

**Cray CS300-AC Cluster Supercomputer**

§    The Cray CS300-AC cluster supercomputer features an air-cooled architecture based on blade server or rackmount server building block platforms. The system is built for capacity and data-intensive workloads. It delivers turnkey high performance computing with a broad range of flexible system configuration options.

§   The CS300-AC system features two new preconfigured ready-to-go solutions, the CS300 shared memory parallel and the CS300 large memory systems.

**Cray CS300-LC Cluster Supercomputer**

§   The Cray CS300-LC cluster solution features a direct liquid-cooled architecture using warm water heat exchangers instead of chillers. It delivers a turnkey, energy-efficient solution that reduces datacenter power and cooling operation costs for faster

ROI while addressing capacity and data-intensive workloads.

**Cray XC30 Supercomputer Series**

§   The Cray XC30 family delivers on Cray's commitment to an adaptive supercomputing architecture that provides both extreme scalability and sustained performance. The flexibility of the Cray XC30 platform ensures that users can configure the exact machine to meet their specific requirements today, and also remain confident they can upgrade and enhance their system to address the demands of the future.

**Cray Sonexion Scale-out Lustre Storage System**

§   Brought to you by Cray, the world's leading experts in parallel storage solutions for HPC and the technical enterprise, the Cray Sonexion is a fully integrated, modular and compact scale-out storage system for Lustre.

**DatapointLabs**

**www.datapointlabs.com**

Testing over 1000 materials per year for a wide range of physical properties, DatapointLabs is a center of excellence providing global support to industries engaged in new product development and R&D.

The compary meets the material property needs of CAE/FEA analysts, with a specialized product line, TestPaks®, which allow CAE analysts to easily order material testing for the calibration of over 100 different material models.

DatapointLabs maintains a world-class testing facility with expertise in physical properties of plastics, rubber, food, ceramics, and metals.

Core competencies include mechanical, thermal and flow properties of materials with a focus on precision properties for use in product development and R&D.

Engineering Design Data including material model calibrations for CAE Research Support Services, your personal expert testing laboratory Lab Facilities gives you a glimpse of our extensive test facilities Test Catalog gets you instant quotes for over 200 physical properties.

**ETA – Engineering Technology Associates**          **www.eta.com**
etainfo@eta.com

**Inventium Suite™**

Inventium Suite™ is an enterprise-level CAE software solution, enabling concept to product. Inventium's first set of tools will be released soon, in the form of an advanced Pre & Post processor, called PreSys.

Inventium's unified and streamlined product architecture will provide users access to all of the suite's software tools. By design, its products will offer a high performance modeling and post-processing system, while providing a robust path for the integration of new tools and third party applications.

**PreSys**

Inventium's core FE modeling toolset. It is the successor to ETA's VPG/PrePost and FEMB products. PreSys offers an easy to use interface,

with drop-down menus and toolbars, increased graphics speed and detailed graphics capabilities. These types of capabilities are combined with powerful, robust and accurate modeling functions.

**VPG**

Advanced systems analysis package. VPG delivers a unique set of tools which allow engineers to create and visualize, through its modules--structure, safety, drop test, and blast analyses.

**DYNAFORM**

Complete Die System Simulation Solution. The most accurate die analysis solution available today. Its formability simulation creates a "virtual tryout", predicting forming problems such as cracking, wrinkling, thinning and spring-back before any physical tooling is produced

**ESI Group**                                           www.esi-group.com

**Visual-Environment:** Visual-Environment is an integrated suite of solutions which operate either concurrently or standalone within a common environment. It aims at delivering an open collaborative engineering framework. As such, it is constantly evolving to address various disciplines and available solvers.

**Visual-Crash is a dedicated environment for crash simulation:** It helps engineers get their job done in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support.

For LS-DYNA users, Visual-Crash DYNA allows to focus and rely on high quality digital models, from start to finish as it addresses the coupling with competitive finite element or rigid body based software. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing.

Further tools are integrated in Visual-Environment enhancing CAE engineers work tasks most efficiently.

**Visual-Mesh** generates 1D, 2D and 3D elements for any kind of simulation.
Visual-Mesh provides automatic and guided surfaces clean up, application specific mesh generation and intuitive post mesh editing features..

**Visual-Viewer** is a complete, productive and innovative post-processing environment for CAE applications.

Visual-Viewer delivers a dedicated plotting and animation control solution. It offers a multi page, multi plot environment, allowing to group data into pages and plots. It is designed with a Windows GUI based on an intuitive and sleek user interface.

**Visual-Process** Executive is an advanced CAE environment for process customization and automation.

**VisualDSS** is an End-to-End Decision Support System for CAE. Manufacturers widely resort to Simulation-Based Design to gain a competitive edge in product development.

**Gompute on demand®/ Gridcore AB Sweden**
www.gompute.com          www.gridcore.se

Gompute is owned, developed and operated by Gridcore AB in Sweden. Founded in 2002, Gridcore is active in three areas: Systems Integration, Research & Development and HPC as a service.

Gridcore has wide experience of different industries and applications, developed a stable product portfolio to simplify an engineer/scientist's use of computers, and has established a large network of partners and collaborations, where we together solve the most demanding computing tasks for our customers. Gridcore has offices in Gothenburg

.

(Sweden), Stuttgart (Germany), Durham NC (USA) and sales operations in The Netherlands and Norway.

The Gridcore developed E-Gompute software for internal HPC resources gives end users (the engineers) an easy-to-use and complete environment when using HPC resources in their daily work, and enables collaboration, advanced application integrations, remote pre/post, accounting/billing of multiple teams, license tracking, and more, accelerating our customers usage of virtual prototyping

**JSOL Corporation**

www.jsol.co.jp/english/cae/

**HYCRASH**

Easy-to-use one step solver, for Stamping-Crash Coupled Analysis. HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary. Additionally, as this is target to usage of crash/strength analysis, even forming analysis data is not needed. If only crash/strength analysis data exists and panel ids is defined. HYCRASH extract panels to calculate it's strain, thickness, and map them to the original data.

**JSTAMP/NV**

As an integrated press forming simulation system for virtual tool shop

the JSTAMP/NV meets the various industrial needs from the areas of automobile, electronics, iron and steel, etc. The JSTAMP/NV gives satisfaction to engineers, reliability to products, and robustness to tool shop via the advanced technology of the JSOL Corporation.

**JMAG**

JMAG uses the latest techniques to accurately model complex geometries, material properties, and thermal and structural phenomena associated with electromagnetic fields. With its excellent analysis capabilities, JMAG assists your manufacturing process

**Livermore Software Technology Corp.** www.lstc.com

**LS-DYNA**

A general-purpose finite element program capable of simulating complex real world problems. It is used by the automobile, aerospace, construction, military, manufacturing, and bioengineering industries. LS-DYNA is optimized for shared and distributed memory Unix, Linux, and Windows based, platforms, and it is fully QA'd by LSTC. The code's origins lie in highly nonlinear, transient dynamic finite element analysis using explicit time integration.

**LS-PrePost**

An advanced pre and post-processor that is delivered free with LS-DYNA. The user interface is designed to be both efficient and intuitive. LS-PrePost runs on Windows, Linux, and Macs utilizing OpenGL graphics to achieve fast rendering and XY plotting.

**LS-OPT**

LS-OPT is a standalone Design Optimization and Probabilistic Analysis package with an interface to LS-DYNA.

The graphical preprocessor LS-OPTui facilitates definition of the design input and the creation of a command file while the postprocessor provides output such as approximation accuracy, optimization convergence, tradeoff curves, anthill plots and the relative importance of design variables.

**LS-TaSC**

A Topology and Shape Computation tool. Developed for engineering analysts who need to optimize structures, LS-TaSC works with both the implicit and explicit solvers of LS-DYNA. LS-TaSC handles topology optimization of large non-linear problems, involving dynamic loads and contact conditions.

**LSTC Dummy Models**

Anthropomorphic Test Devices (ATDs), as known as "crash test dummies", are life-size mannequins equipped with sensors that measure forces, moments, displacements, and accelerations.

**LSTC Barrier Models**

LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) model.

**Oasys, Ltd**                    www.oasys-software.com/dyna

**Oasys LS-DYNA® Environment**

The Oasys Suite of software, exclusively written for LS-DYNA®, is at the leading edge of the market and is used worldwide by many of the largest LS-DYNA® customers.

**Oasys PRIMER** is a model preparation tool that is fully compatible with the latest version of LS-DYNA®, eliminating the risk of data loss or corruption when a file is manipulated, no matter what operations are performed on it:

  **Key benefits:**

- Maintains data integrity
- Finds and fixes model errors (currently over 5000 checks)
- Specialist tools for dummy positioning, seatbelt fitting, mechanisms, interior head impact etc.
- Connection manager for spotwelds, bolts, adhesive etc.
- Intelligent editing, deletion and merging of data
- Customisable with macros and JavaScript.

**Oasys D3PLOT** is a powerful 3D visualization package for post-processing LS-DYNA® analyses

  **Key benefits:**

- Fast, high quality graphics
- Easy, in-depth access to all LS-DYNA® results.
- User defined data components
- Customisable with JavaScript.

**Oasys T/HIS** is an X-Y graph plotting package for LS-DYNA®

  **Key benefits:**

1. Automatically reads all LS-DYNA® results.
2. Wide range of functions and injury criteria.
3. Easy handling of data from multiple models
4. Scriptable for automatic post-processing

**Oasys REPORTER** is an automatic report generation tool, for use with LS-DYNA®. which allows fast automatic report creation for analyses.

**Shanghai Hengstar**                                         **www.hengstar.com**

**Center of Excellence**

Hengstar Technology is the first LS-DYNA training center of excellence in China. As part of its expanding commitment to helping CAE Engineers, Hengstar Technology will continue to organize high level training courses and seminars in 2012.

The lectures/training are taught by senior engineers and experts mainly from LSTC, Carhs, OEMs, and other consulting groups.

**On Site Training**

Hengstar also provides customer customized training programs on-site at the company facility.

Training is tailored for company needs using LS-DYNA or the additional software products by LSTC.

**Distribution & Support**

Hengstar Distributes and supports LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software.

Hongsheng travels to LSTC often to keep current on the latest software features and support to continue to grow Hengstar as a CAE consulting group.

**Comet Solutions**

Comet enables rapid and robust design space exploration from concept discovery and selection through concept validation using a model-based engineering approach. We empower our customers to discover an array of possible design concepts, evaluate which ones are feasible, then select the best.

Comet software is a tool-open, extensible, vendor-neutral performance engineering workspace that lets engineers and engineering project teams readily carry out multi-fidelity, multi-physics modeling and simulation.

In the Comet workspace, companies can better leverage all of their simulation assets – "best practices" expertise, COTS as well as in-house engineering tools, and product performance data.

| | | | |
|---|---|---|---|
| **Canada** | **Metal Forming Analysis Corp MFAC** | galb@mfac.com | |
| | www.mfac.com | | |
| | LS-DYNA | LS-OPT | LS-PrePost    LS-TaSC |
| | LSTC Dummy Models | LSTC Barrier Models | eta/VPG |
| | eta/DYNAFORM | INVENTIUM/PreSys | |
| **United States** | **CAE Associates Inc.**  www.caeai.com | info@caeai.com | |
| | ANSYS Products | CivilFem | Consulting ANSYS  Consulting LS-DYNA |
| **United States** | **DYNAMAX**  www.dynamax-inc.com | sales@dynamax-inc.com | |
| | LS-DYNA          LS-OPT | LS-PrePost | LS-TaSC |
| | LSTC Dummy Models | LSTC Barrier Models | |

| United States | **ESI-Group N.A** | | | |
|---|---|---|---|---|
| | www.esi-group.com | | | |
| | QuikCAST | SYSWELD | PAM-RTM | PAM-CEM |
| | VA One | CFD-ACE+ | ProCAST Process | Visual- |
| | VisualDSS | Weld Planner | Visual-Environment | IC.IDO |

| United States | **Engineering Technology Associates – ETA** www.eta.com | etainfo@eta.com | | |
|---|---|---|---|---|
| | INVENTIUM/PreSy | NISA | VPG | LS-DYNA |
| | LS-OPT | DYNAform | | |

| United States | **Gompute** | | info@gompute.com | |
|---|---|---|---|---|
| | www.gompute.com | | | |
| | LS-DYNA Cloud Service | | Additional software | |
| | Additional Services | | | |

| United States | **Comet Solutions** | steve.brown@cometsolutions.com | |
|---|---|---|---|
| | Comet Software | | |

**United States**

**Livermore Software Technology Corp**          sales@lstc.com

**LSTC**      www.lstc.com

LS-DYNA              LS-OPT              LS-PrePost      LS-TaSC

LSTC Dummy Models      LSTC Barrier Models      TOYOTA THUMS

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**United States**

**Predictive Engineering**          george.laird@predictiveengineering.com
www.predictiveengineering.com

FEMAP              NX Nastran    LS-DYNA              LS-OPT

LS-PrePost          LS-TaSC        LSTC Dummy Models

LSTC Barrier Models

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| Distribution & Consulting | Europe | Distribution & Consulting | |
|---|---|---|---|

**France**

**DynaS+**

[v.lapoujade@dynasplus.com](mailto:v.lapoujade@dynasplus.com)

[www.dynasplus.com](http://www.dynasplus.com)

Oasys Suite

| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
|---|---|---|---|
| DYNAFORM | VPG | MEDINA | |
| LSTC Dummy Models | | LSTC Barrier Models | |

**Germany**

**CADFEM GmbH**

[lsdyna@cadfem.de](mailto:lsdyna@cadfem.de)

[www.cadfem.de](http://www.cadfem.de)

| ANSYS | LS-DYNA | optiSLang |
|---|---|---|
| ESAComp | AnyBody | |
| FTI FormingSuite | | |

| Distribution & Consulting | | Europe | Distribution & Consulting | |
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**Germany** **DYNAmore GmbH** uli.franz@dynamore.de

www.dynamore.de

| PRIMER | LS-DYNA | FTSS | VisualDoc |
| --- | --- | --- | --- |
| LS-OPT | LS-PrePost | LS-TaSC | DYNAFORM |
| Primer | FEMZIP | GENESIS | Oasys Suite |
| TOYOTA THUMS | | LSTC Dummy & Barrier Models | |

**Germany** **GNS** mbox@gns-mbh.com

www.gns-mbh.com

| Animator | Generator | Indeed | OpenForm |
| --- | --- | --- | --- |

**The Netherlands** **Infinite Simulation Systems B.V** j.mathijssen@infinite.nl

www.infinite.nl

| ANSYS Products | CivilFem | CFX | Fluent |
| --- | --- | --- | --- |
| LS-DYNA | LS-PrePost | LS-OPT | LS-TaSC |

| Distribution & Consulting | | Europe | | Distribution & Consulting |
|---|---|---|---|---|

**Italy**   **EnginSoft SpA**   info@enginsoft.it

www.enginsoft.it

| ANSYS | MAGMA | Flowmaster | FORGE |
|---|---|---|---|
| CADfix | LS-DYNA | Dynaform | Sculptor |
| ESAComp | AnyBody | FTI Software | |
| AdvantEdge | Straus7 | LMS Virtual.Lab | ModeFRONTIER |

**Russia**   **STRELA**   info@dynarussia.com

| LS-DYNA | LS-TaSC | LS-OPT | LS-PrePost |
|---|---|---|---|
| LSTC Dummy Models | | LSTC Barrier Models | |

**Sweden**   **DYNAmore Nordic**   marcus.redhe@dynamore.se

www.dynamore.se   Oasys Suite

| ANSA | µETA | LS-DYNA | LS-OPT |
|---|---|---|---|
| LS-PrePost | LS-TaSC | FastFORM | DYNAform |
| FormingSuite | | LSTC Dummy Models | |
| | | LSTC Barrier Models | |

**Sweden**   **GOMPUTE**   info@gridcore.com

www.gridcore.se   www.gompute.com

LS-DYNA Cloud Service   Additional software

| Distribution & Consulting | Europe | Distribution & Consulting |
|---|---|---|

**Switzerland**   **DYNAmoreSwiss GmbH**   info@dynamore.ch

www.dynamore.ch

| LS-DYNA | LS-OPT | LS-PrePost |
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| LS-TaSC | LSTC Dummy Models | |
| | LSTC Barrier Models | |

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**UK**   **Ove Arup & Partners**   dyna.sales@arup.com

www.oasys-software.com/dyna   TOYOTA THUMS

| LS-DYNA | | LS-OPT | LS-PrePost |
|---|---|---|---|
| LS-TaSC | PRIMER | D3PLOT | T/HIS |
| REPORTER | SHELL | FEMZIP | HYCRASH |
| DIGIMAT | Simpleware | LSTC Dummy Models | |
| | | LSTC Barrier Models | |

**Australia**     **LEAP**

www.leapaust.com.au

| ANSYS Mechanical | ANSYS CFD | ANSYS EKM | Recurdyn |
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| ANSYS DesignXplorer | ANSYS HPC | FlowMaster | Ensigh |
| LS DYNA | DYNAform | Moldex 3D | FE-Safe |

**China**     **ETA – China**          lma@eta.com.cn

www.eta.com/cn

| Inventium | VPG | DYNAFORM | NISA |
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| | | LSTC Barrier Models | LS-TaSC |

**China**     **Oasys Ltd. China**          Stephen.zhao@arup.com

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| DIGIMAT | FEMZIP | LSTC Barrier Models | | LS-TaSC |

**China**     **Shanghai Hengstar Technology**          info@hengstar.com

www.hengstar.com

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**India**          **Oasys Ltd. India**                    lavendra.singh@arup.com

www.oasys-software.com/dyna

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                        LS-OPT          LSTC Dummy Models     LS-PrePost

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**India**          **CADFEM Eng. Svce**                    info@cadfem.in

www.cadfem.in

ANSYS                   VPS            ESAComp              optiSLang

LS-DYNA                 LS-OPT         LS-PrePost

**India**          **Kaizenat Technologies Pvt. Ltd**          support@kaizenat.com

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LS-DYNA                 LS-OPT         LSTC Dummy Models     LS-PrePost

Complete LS-DYNA suite of products     LSTC Barrier Models     LS-TaSC

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|---|---|---|---|
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| www.engineering-eye.com | | | |
| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
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| **Japan** **JSOL** | | | |
| www.jsol.co.jp/english/cae | | Oasys Suite | |
| JSTAMP | HYCRASH | JMAG | |
| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
| LSTC Dummy Models | LSTC Barrier Models | TOYOTA THUMS | |
| **Japan** **FUJITSU** | | | |
| http://jp.fujitsu.com/solutions/hpc/app/lsdyna | | | |
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| LSTC Dummy Models | LSTC Barrier Models | CLOUD Services | |
| **Japan** **LANCEMORE** | info@lancemore.jp | | |
| www.lancemore.jp/index_en.html | | | |
| **Consulting** | | | |
| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
| LSTC Dummy Models | LSTC Barrier Models | | |
| **Japan** **Terrabyte** www.terrabyte.co.jp **Consulting** | **English:** www.terrabyte.co.jp/english/index.htm | | |
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| LSTC Dummy Models | LSTC Barrier Models | AnyBody | |

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**Korea**     **THEME**        wschung@kornet.com

www.lsdyna.co.kr                            Oasys Suite

| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
|---|---|---|---|
| LSTC Dummy Models | LSTC Barrier Models | eta/VPG | Planets |
| eta/DYNAFORM | FormingSuite | Simblow | TrueGRID |
| JSTAMP/NV | Scan IP | Scan FE | Scan CAD |
| FEMZIP | | | |

**Korea**     **KOSTECH**        young@kostech.co.kr

www.kostech.co.kr

| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
|---|---|---|---|
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| eta/DYNAFORM | DIGIMAT | Simuform | Simpack |
| AxStream | TrueGrid | FEMZIP | |

| Distribution & Consulting | Asia Pacific | Distribution & Consulting | |
|---|---|---|---|

**Taiwan**  **Flotrend**  gary@flotrend.tw

www.flotrend.com.tw

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|---|---|---|---|
| LSTC Dummy Models | LSTC Barrier Models | eta/VPG | FCM |

**Taiwan**  **APIC**

www.apic.com.tw

| LS-DYNA | LS-OPT | LS-PrePost | LS-TaSC |
|---|---|---|---|
| LSTC Dummy Models | LSTC Barrier Models | eta/VPG | FCM |

**Gompute**

www.gompute.com

**Penguin Computing**

www.penguincomputing.com/services/hpc-cloud

| **Training Classes** | **Germany  CADFEM GmbH** | **Training Classes** |
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The Complete Courses Offered Can Be Found At:  www.cadfem.de

| **Training Classes** | **Germany DYNAmore** | **Training Classes** |
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The Complete Courses Offered Can Be Found At:  www.dynamore.de/en

| **Training Classes** | **United States LSTC** | **Training Classes** |
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The Complete Courses Offered Can Be Found At:  www.lstc.com

| **Training Classes** | **Sweden DYNAmore Nordic** | **Training Classes** |
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The Complete Courses Offered Can Be Found At:  www.dynamore.se

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Complete Courses offered can be found at:  **http://www.dfe-tech.com/training.html**

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The Complete Courses Offered Can Be Found At:  www.eta.com   etainfo@eta.com

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For course location visit www.alyotech.fr

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For course location visit  www.oasys-software.com/dyna/en/training

The training classes are held at our Bangalore and Pune locations

Details  about the trainings offered are given below

LS- DYNA Basic Training                    LS- DYNA Basic Training
   May 7-9                                     Jun 11-13

Airbag Deployment Application              Advanced Material Forming Analysis
   May 15-16                                   Jun 19-20

LS- DYNA Basic Training                    LS- DYNA Basic Training
   May 21-23                                   Jun 25-27

Information and Agenda

Classes generally start at 9:30 a.m. and end at 5:00 p.m. Access to computer for workshop exercises and lunch each day are included with the registration.For any queries/clarification please contact us @ support@kaizenat.com

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https://pod.penguincomputing.com/

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**FEA, CFD and FDTD Modeling**

- **LS-DYNA** / LS-PrePost    LS-DYNA is an advanced general-purpose multiphysics simulation software package. Its core-competency lie in highly nonlinear transient dynamic finite element analysis (FEA) using explicit time integration. LS-PrePost is an advanced pre and post-processor that is delivered free with LS-DYNA.
- **OpenFoam:**    OpenFOAM (Open source Field Operation And Manipulation) is a C++ toolbox for the development of customized numerical solvers, and pre-/post-processing utilities for the solution of continuum mechanics problems, including computational fluid dynamics (CFD).
- **ANSYS HFSS:**    ANSYS HFSS software is the industry standard for simulating 3-D full-wave electromagnetic fields. Its gold-standard accuracy, advanced solver and compute technology have made it an essential tool for engineers designing high-frequency and high-speed electronic components.
- **ANSYS Fluent**    ANSYS Fluent software contains the broad physical modeling capabilities needed to model flow, turbulence, heat transfer, and reactions for industrial applications.
- **Star-CD** and **Star-CCM+:**    STAR-CCM+ is CD-adapco´s newest CFD software product. It uses the well established CFD solver technologies available in STAR-CD, and it employs a new client-server architecture and object oriented user interface to provide a highly integrated and powerful CFD analysis environment to users.
- **Convergent:**    CONVERGE is a Computational Fluid Dynamics (CFD) code that completely eliminates the user time needed to generate a mesh through an innovative run-time mesh generation technique.
- **Lumerical:**    Simulation tools that implement FDTD algorithms.

For the complete list of ATD Models developed and/or offered by DYNAmore visit
http://www.dynamore.de/en/products/models/side

### PDB WorldSID-50

DYNAmore has developed a model of the WorldSID 50%. The model is validated with material, component and sled tests. The model was developed with a consortium of the German OEMs (PDB: Audi, BMW, Daimler, Porsche, and VW). The methods applied are the same as in the previous projects with the FAT for the ES-2, ES-2re, USSID, and BIORID model. The table below provides some general information about the release 2.0.1 of the WorldSID 50th percentile male model:

### FTSS SID-IIs Model

The dummy represents a small female body and is used in an IIHS side impact load case, in the FMVSS214 and the US-NCAP load cases. The table below provides some general information about the release 3.1a of the SID-IIs model. A version for Build Level C (BLC) and Level D (BLD) is available.

### FAT EuroSID Model

The dummy is used in the legal authorization in South Korea, Australia, China and India. The

### FAT ES-2 and ES-2re Dummy Model

The dummy is used in US-NCAP- and Euro-NCAP side impact assessment, the ES-2re will be used in the new FMVSS214. The dummy is also used for the legal authorization in Europe, Japan and the United States. The table below provides some general information about the release v5.01 of FAT ES-2 model. The version v5.01 of the ES-2re, a variation of the ES-2 for the authorization and the evaluation in the United States, is also available with a comparable number of entities.

table below provides some general information about the actual release 3.6 of the model.

### FAT US-SID and SIDHIII Model

The latest model of the FAT US-SID is version v5.0. The dummy is used in the subsiding FMVSS214 regulation and in the SINCAP load case. The modified version, the SIDHIII v5.1 is used in lateral impact to a pole. For both dummies a detailed model is available. The table below provides some general information about the actual multiple validated model of the US-SID.

# Total Human Model for Safety - THUMS
## LSTC is the US distributor for THUMS

**About**

The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons, and internal organs. Therefore, THUMS can be used in automotive crash simulations to identify safety problems and find their solutions.

THUMS is limited to civilian use and may under no circumstances be used in military applications.
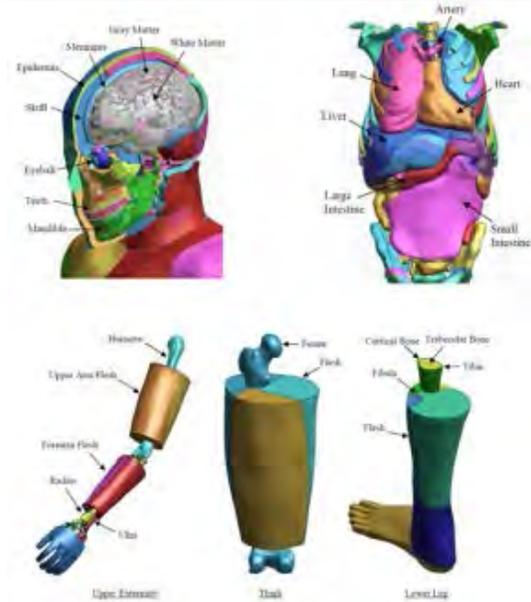


**Model Details:** Each of the different sized models is available as sitting model to represent vehicle occupants and as standing model to represent pedestrians.

The internal organs were modeled based on high resolution CT-scans.

**LSTC is the US distributor for THUMS.** Commercial and academic licenses are available.
For more information please contact us at THUMS@lstc.com .
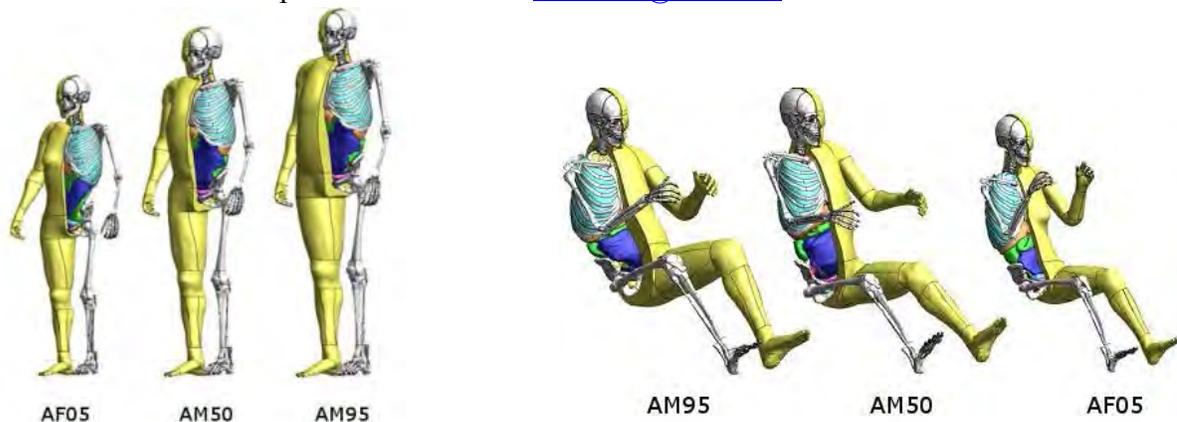


THUMS®, is a registered trademark of Toyota Central R&D Labs.

**Owned and Operated by Dr. Al Tabiei**

**www.LSDYNA-ONLINE.com** using GO TO MEETING.

- **Course Notes with Class, or by separate purchase**
- **Tutorials and Movies can be purchased**
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- Register and pay for the training.
- You will receive the course notes few days prior to the class date in PDF format.
- You will be sent the "go-to-meeting "invitation 2 days before the course date.
- You login to go to meeting few minutes before the class time.
- The class starts and you attend the interactive lectures.

**Customer Location**

Courses can be presented at the customer location.  We offer several preset courses similar to the ones on line and/or we can custom design courses for your engineering needs.

For courses at your location preset, or special customization contact:
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**Course Titles**
- Material Models in LS-DYNA (new course)
- Intro LS-DYNALS-DYNA
- ImplicitFluid Structure Interaction in LS-DYNA
- Advance Fluid Structure Interaction in LS-DYNA
- Blast using LS-DYNA
- Penetration using LS-DYNA
- Composite Materials in LS-DYNA
- Contact in LS-DYNALS-DYNA
- DummiesAdvance Impact Simulations Using LS-DYNA
- Material Modeling Using User Defined Material
- Intro LS-PREPOST
- Advance LS-PREPOST
- Multi-Physics LS-DYNA

Dr. Al Tabiei has been a consultant on the use of LS-DYNA for more than 20 years to more than 60 companies.

He has been teaching different courses on LS-DYNA for more than 18 years nationally and internationally.

His primary work focus is in the area of multi-physics simulations, crash simulation, impact simulation, and material model development for isotropic and composite materials..

**Len Schwer**

http://www.duboisschwertraining.com/future

Paul Du Bois and I are pleased to announce or 2014 schedule of classes to be presented in Troy Michigan and hosted by our ETA partners (www.eta.com)

A registration form with the class price list is available on our web page.
http://www.duboisschwertraining.com/classes/Registration%20Details%20Troy%20MI

Completed registration forms are required prior to 13 May 2014 to establish class size. Class size minimum is four attendees.    Once a class is confirmed, an invoice with payment instructions will be emailed.

**2014 Schedule of Classes**

**ETA, Troy, Michigan**

Hosted by our ETA Partners   www.eta.com

  27-28 May 2014 - Concrete and Geomaterial Modeling with LS-DYNA

  29-30 May 2014 - Methods and Modeling Techniques: Prerequsite for Blast and Penetration

  2-3   June 2014 - Penetration Modeling with LS-DYNA

  4-5   June 2014 - Blast Modeling with LS-DYNA

   6   June 2014 - Explosives Modeling for Engineers

**DYNAmore, Stuttgart, Germany**

  9-10 October 2014 - Concrete and Geomaterial Modeling (Len)

  13-14 October 2014 - Blast Modeling with LS-DYNA

  15-16 October 2014 - Penetration Modeling with LS-DYNA

**ARUP, Solihull, United Kingdom**

  20-21 October 2014 - Concrete and Geomaterial Modeling (Len)

  20-21 October 2014 - Polymer Modeling (Paul)

   22 October 2014 - Explosives Modeling for Engineers

design properties for CAE
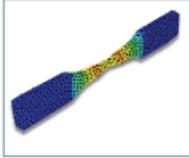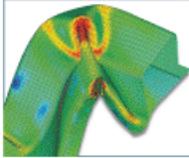
forming  hyperelastic  crash  fatigue  molding  extrusion

**See you at the following events**:

- International LS-DYNA Users' Conference:
  June 8-10, 2014; Dearborn, MI, USA
- ANSYS Conf. & CADFEM Users' Mtg:
  June 4-6, 2014; Nuremburg, Germany
- SIMULIA Community Conference:
  May 19-22, 2014; Providence, RI, USA
- CARHS Automotive CAE Grand Challenge:
  April 15-16, 2014; Hanau, Germany

testpaks.com is the side of DatapointLabs focused on the material modeling needs of the CAE (Computer-Aided Engineering) community.

With widespread use of modern materials there is the growing need to understand material behavior for the proper utilization of virtual product development tools. testpaks.com is the first web site to feed the "material" needs of the CAE (computer aided engineering) user. It seeks to concentrate the current knowledge base of materials modeling for virtual product design, drawing from the extensive experience of DatapointLabs materials specialists, CAE vendors, and expert users. testpaks.com is important in view of the widespread difficulty experienced by the CAE community and the subsequent limitations it places upon the use of CAE products.

As CAE use has evolved in the past decade, DatapointLabs products for CAE, TestPaks®, have offered CAE users with the most convenient way to get material data inputs specific to their material and simulation programs. For good material models, it is important that the testing and modeling be done by people who understand material behavior, as well as CAE programs. To better understand the needs of CAE, DatapointLabs maintains an active and extensive Alliance Program with all major CAE vendors, and has been serving its client base with not just material data, but "ready-to-load" models that can be exported in digital format as CAE-input decks via MaterealityDDS.

testpaks.com is info-mercial in nature. While it serves as a convenient online catalog for purchase of material testing for CAE, it also serves as a place for CAE community to submit content, opinions and experiences on the modeling of materials. We actively solicit this input and post it subject to review. We have in-house facilities to take relevant papers, presentations, web-links and movies and make them ready for the web. These facilities are at your disposal and you can work interactively with our team to get the desired interconnectivity and results.\

The new online job market is designed for CAE-engineers from industry, research & development and education. The portal has been initially developed in cooperation with the German NAFEMS Online-Magazine, the magazine for numerical simulation methods and related fields (FEM, CFD, MBS, VR, etc.).

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**Call for Papers**

**LS-DYNA Forum 2014**

**6 – 8 October 2014, Bamberg, Germany**

www.dynamore.de/forum2014-e

DYNAmore invites you to attend 13th LS-DYNA Forum which will take place from 6 - 8 October in Bamberg, Germany. This year, the conference is extended by half a day with the successful Developer Forum, which will take place before the main two-day User Forum.

You are warmly welcome to participate at the event as well as to actively contribute to the conference agenda by submitting an abstract. In your presentation you may report about your experience with LS-DYNA or LS-OPT as well as exchange your knowledge and discuss your problems with other users.

Additionally, there will be selected keynote lectures of renowned speakers from industry and universities. Software developers from LSTC and DYNAmore will present the latest features in LS-DYNA and the associated new application possibilities. In the accompanying exhibition, numerous hardware and software manufacturers will offer an

insight into the latest news and trends around LS-DYNA.

Moreover, we are pleased to offer you several English spoken seminars in the week before, during and after the Forum, which will be either held by LS-DYNA developers or experienced consulting engineers

**Presentation topics are:**
Crashworthiness, passenger and pedestrian safety, metal forming, optimization and robustness, materials (composites, polymers, ...), joining techniques, implicit, impact, droptest, ballistics and penetration, fluid-structure interaction, computational fluid dynamics (CFD), heat transfer, electromagnetics, multiphysics, manufacturing processes, CAE process integration,…

**from the industry areas:**

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- aerospace,
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- shipbuilding/offshore,
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**Seminars**

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- Meshless Methods in LS-DYNA - EFG
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- NVH & Frequency Domain Analysis
- ALE und Fluid-Structure Interaction
- Concrete and Geomaterial Modeling
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- Explosives Modeling for Engineers

We hope that we have stimulated your interest and are looking forward to receiving your abstract and to seeing you in Bamberg.

**International CAE Conference 2014**

**October 27-28, Turin – Italy**

**Your opportunity
to be part of the future!**

The International CAE Conference is the main event in Italy and one of the most important ones in Europe regarding numerical simulation and its role in shaping the future of industrial R&D. It is a key platform for engineers, analysts, designers, IT managers, professors, researchers and students. Those who wish to share their knowledge and ideas or are interested in learning more about computer simulation tools and related technologies will benefit hugely from attending the 2-day program.

This year's Conference will take place in Turin, Northern Italy. The program will feature multiple parallel sessions on a variety of industrial verticals including: Aerospace & Defence, Automotive and Transportation, Naval, Oil & Gas and Energy, Processing and

Production, Consumer goods, and more. The International CAE Conference is also an annual appointment for dedicated users' meetings on specific and emerging technologies.

Moreover, opinion leaders and experts will explore topics in Civil Engineering & Construction, Biomechanics and High Performance Computing. Several CAE-oriented complementary sessions and workshops will complete the diverse and exciting agenda.

In the frame of the International CAE Conference, the 3rd edition of the "Poster Award" will be presented. The Award honours the most outstanding and innovative research work by students and researchers in the year 2014.

For further information about the conference, to submit a presentation and/or become an exhibitor and sponsor, please contact :

info@caeconference.com   -   Tel. +39 0461 979 474

**Stay tuned to: www.caeconference.com**

**AUTHORS**
**Olek C Zienkiewicz (Author), Robert L Taylor (Author), J.Z. Zhu J.Z. Zhu (Author)**

## The Finite Element Method for Fluid Dynamics, Seventh Edition

**Book Description**
**Publication Date: November 28, 2013 | ISBN-10: 1856176355 | ISBN-13: 978-1856176354 | Edition: 7**

The seventh edition of these seminal books delivers the most up to date and comprehensive reference yet on the finite element method for engineers and mathematicians. Renowned for their scope, range and authority, the new editions have been significantly revised and developed. Each book is now complete in its own right and provides self-contained reference, while together they provide a formidable resource covering the theory and the application of the universally used FEM.

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* A proven standard in the library of any engineer concerned with finite elements
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The Finite Element Method for Solid and Structural Mechanics is the key text and reference for engineers, researchers and senior students dealing with the analysis and modeling of structures, from large civil engineering projects such as dams to aircraft structures and small engineered components.

## The Finite Element Method: Its Basis and Fundamentals, Seventh Edition

**Book Description**
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The Finite Element Method: Its Basis and Fundamentals offers a complete introduction to the basis of the finite element method, covering fundamental theory and worked examples in the detail required for readers to apply the knowledge to their own engineering problems and understand more advanced applications.

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| [Finite Element Analysis: A Primer (Engineering)](#) | *Anand V. Kulkarni - V.K. Havanur* |
| [Finite Element Methods for Engineers](#) | Roger T. Fenner |
| July 2013 [Finite Element Mesh Generation](#) | *Daniel Lo* |
| January 2013 [The Finite Element Method: Theory, Implementation, and Applications (Texts in Computational Science and Engineering)](#) | *Mats G. Larson -, Fredrik Bengzon* |
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| Finite Element Analysis Theory and Application with ANSYS (3rd Edition) | Practical Stress Analysis with Finite Element | A First Course in the Finite Element Method |
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| **Saeed Moaveni** | **Bryan J Mac Donald** | **Daryl L. Logan** |
| Finite Element Modelling Techniques in MSC.NASTRAN and LS/DYNA | Finite Element Analysis/formulation & verification | Introduction to Theoretical and Computational Fluid Dynamics |
| **Sreejit Raghu** | **B. A. Szabo** | **C. Pozrikidis** |

| **Finite Elements in Fracture Mechanics** **Prof. Dr. Meinhard Kuna** | | **CAE design and sheet metal forming…** **Li Fei Zhou Deng** | **Applied Metal Forming** |
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| **Micro Metal Forming (Lecture Notes in Production Engineering)** | **The Finite Element Method: Theory, Implementation, and Applications (Texts in Computational Science and Engineering) [Hardcover]** | |
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| Viskoplastische Stoffgesetze für Thermoplaste in LS-DYNA: Theorie und Aspekte der Programmierung<br>**Matthias Vogler** | Meshless Methods in Solid Mechanics<br><br>**Youping Chen** | Geotechnical Earthquake Engineering<br><br>**Steven Lawrence Kramer** |
| Fundamentals of Earthquake Engineering<br>**Amr S. Elnashai** | Computational Fluid Dynamics<br>**John David Anderson** | Computational Fluid Dynamics: A Practical Approach [Paperback]<br>**Guan Heng Yeoh** |
| Biomechanical Systems Technology: Computational Methods<br>**Cornelius T. Leondes** | Numerical response of steel reinforced concrete slab subjected to blast and pressure loadings in LS-DYNA.<br>**Vivek Reddy** | Formulas for Mechanical and Structural Shock and Impact<br>**Gregory Szuladziniski** |

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| The Finite Element Method<br><br>**Thomas J. R. Hughes** | Computational Fluid Dynamics<br><br>**T. J. Chung** | |

News Center - Dearborn, MI., April 09, 2014

**Ford Reveals All-New Focus Sedan, Retains World's Best-Selling Nameplate Title for 2013**



- Ford Focus ranks as the best-selling vehicle nameplate in the world, based on just-released Polk new vehicle registration data for the 2013 calendar year
- Focus gains momentum with 50 percent sales growth in Chinese market
- New Focus four-door sedan globally unveiled, featuring leading combination of technology, fuel economy and power

DEARBORN, Mich., April 09, 2014 - Ford Focus retains its title as world's best-selling vehicle nameplate for 2013, according to Ford analysis of the just-released full-year Polk new vehicle registration data from IHS Automotive. The news comes as a new Focus four-door sedan prepares to make its debut at next week's 2014 New York International Auto Show.

Registrations of the compact Focus were up 8.1 percent with 1,097,618 cars sold worldwide last year. That compares with global Focus sales of 1,014,965 in 2012.

Market gains for Focus continue to be driven by consumer demand in China. China registrations were up 50 percent in 2013 to 403,219 vehicles, up from 268,354 vehicles in 2012. China now is responsible for just more than one out of three Focus vehicles sold globally, based on Polk data.

The debut of the new Focus four-door sedan and the Focus Electric in New York follows the Geneva Motor Show debut in March of the Focus three- and five-door hatchback and wagon. A new version of the performance Focus ST will be shown later this year.



The redesigned Ford Focus offers a bolder exterior design, a more intuitive and upscale interior, a host of technologies uncommon for a compact car and the additional powertrain option of Ford's award-winning 1.0-liter EcoBoost® engine with a new six-speed manual transmission in the U.S.-spec Focus.

While U.S. EPA fuel economy ratings are not yet available, Ford expects the 1.0-liter EcoBoost Focus to raise the bar in fuel efficiency among non-hybrid compact vehicles.

For 2015, Focus adds an SE Sport Package, which includes new body treatments, paddle shifters (requires automatic transmission), a revised touring suspension, 17-inch black gloss aluminum wheels and P215/50 HR-17 tires.

The paddle shift feature provides drivers an additional element of control by allowing them to simulate the manual gear selection aspects of a manual transmission and extract more power from their engines.

Also notable for 2015, Ford's popular MyKey® feature will be standard on all trim levels. An all-new heated steering wheel will be available as well as 10 different wheels as factory options.

"It is remarkable to see Focus again lead the industry as the No. 1-selling vehicle nameplate on the planet," said Jim Farley, Ford executive vice president, Ford Motor Company Global Marketing, Sales and Service and Lincoln. "With the new car, we've raised the bar again, showcasing Ford's commitment to continuous improvement – adding better technology for drivers and a sleeker, more modern exterior across the entire Focus family."

While the latest Focus is essentially the same worldwide, color preference varies. In the U.S. market, Sterling Gray is the most popular at 21 percent of sales, with Tuxedo Black second at 15 percent. In China, Crystal Solid White is overwhelmingly the most popular with just more than 50 percent of sales. Candy Red is second at 17 percent.

**Fiesta World's Best-Selling Subcompact**

Ford's analysis of Polk new vehicle registrations also confirms Ford Fiesta earned the top spot as the best-selling subcompact car globally, with 735,299 registrations for 2013.

Together, registrations of Ford's small cars – Fiesta and Focus – totaled 1,832,917 vehicles last year, which is a 4.3 percent increase from 2012.

**Award-Winning 1.0-Liter EcoBoost**

In addition to a host of styling and technology advances, the new Focus will offer the efficient, fun-to-drive 1.0-liter EcoBoost engine with a six-speed manual transmission. Automotive journalists globally named it International Engine of the Year for 2012 and 2013.

"The 1.0-liter EcoBoost engine is proof that excellent fuel economy and performance can come in one package," said Raj Nair, group vice president, Ford Global Product Development. "Focus is already known for bringing together efficiency and fun, and our latest offering will bring consumers a whole new level of enjoyment – on the road and in what they'll save at the pump."

The smallest engine in Ford's growing EcoBoost family – already available in Fiesta - will come standard in Focus with an Auto Start-Stop feature that automatically shuts down the engine at stops and instantly turns it back on at takeoff.

EcoBoost technology combines smaller-displacement engines with turbocharging, direct injection, variable valve timing and proprietary Ford software to bring customers outstanding performance and fuel economy. Ford EcoBoost engines can deliver significantly better fuel economy than larger-displacement gasoline engines.

New Focus customers also will enjoy a quieter ride, achieved by thicker carpets and side window glass and improved engine-bay insulation.

**Stylish New Focus**

The new Focus arrives with a bolder look. It features a restyled hood and grille, signature LED lighting for headlamps and taillamps, new rear lamp clusters and a restyled trunk lid. Four-door and five-door versions will be available in the United States.

Inside, colors and materials have a clean, modern look, with satin chrome detailing, new seat trims and switches, and an available heated steering wheel. A new center console incorporating adjustable cupholders improves storage capacity.

**Advanced Technologies**

A package of sensors brings a new level of convenience for compact car customers by adding driver-assist technologies, including a rear view camera, available Blind Spot Information System and a lane-keeping system.

Standard on Focus for the first time, the rearview camera will appear on either a 4.2-inch screen or the 8-inch screen that comes with MyFord Touch®-equipped cars.

BLIS® uses two advanced multiple-beam radar modules, the same used with cross-traffic alert, which are packaged in both rear quarter panels. The radar identifies when a vehicle enters the defined blind spot zone and illuminates an indicator light on the corresponding sideview mirror, providing a warning that a vehicle is approaching.

Should a Focus driver start to drift out of the current lane without a turn signal activated, the lane-keeping system provides a warning through a series of steering wheel vibrations that mimic a rumble strip. If the unintended lane departure is not corrected by the driver, the aid function of the system actively applies steering to help the driver direct the car back toward the center of the current lane.

The new Focus benefits from advancements in exterior styling, interior design, powertrain and technology, as well as suspension and chassis upgrades.

These include a new shock absorber valve design providing improved interior quietness, and a change to the rear suspension to give drivers a more connected feel to the road. The electric power-assisted steering has been retuned to make the driver feel even more connected to the road.

**Enhanced SYNC AppLink**

Focus drivers will have access to powerful new capabilities thanks to a host of functions developers can integrate as they modify their apps to communicate with enhanced SYNC® AppLink™.

Android and iOS smartphone users can download more than 60 AppLink-enabled apps from the Apple App Store and Android market.

**New functions include:**

- Connected apps can access a variety of real-time vehicle data such as speed, acceleration, odometer and location

information that can be used by the app to further customize and personalize the owner experience. For example, access to the in-vehicle GPS signal can enable more precise and accurate location-based services than phone sensors

- More consistent user experience thanks to voice pass-through capability. This enables developers to use on-device or cloud-based voice-recognition systems to evaluate driver commands, meaning drivers can use the same set of voice commands to control an app when connected to the vehicle as they would use when not connected

- Notifications read aloud as a driver enters the car, with no need to touch the phone. Best of all, alerts are available any time a mobile device is connected to SYNC AppLink, even if the app is not currently active. This means a driver could get an alert about a traffic jam ahead while listening to the radio or using another app

Ford builds the Focus in eight manufacturing plants on four continents. Facilities in Germany, the United States, Russia, China, Vietnam, Thailand, Taiwan and Argentina have a combined capacity to build more than 1.5 million Focus cars annually at a rate of more than two per second.

Since the launch of Focus in 1998, the best-selling vehicle nameplate in the world for two years running has sold more than 12 million vehicles globally.

**Mercedes-Benz at Auto China 2014: galloping ahead in the year of the horse**



**BAIC Chairman Xu Heyi
at the Auto China 2014 in Beijing**

**Two world premieres with the three-pointed star – eight new models for the Chinese market**

Following a sales increase of 47 percent in the first quarter, Mercedes-Benz is setting out its stall at "Auto China 2014" for further growth in the Middle Kingdom. Two world premieres see the star shine particularly brightly at Asia's most important auto show – the phenomenally sporty Concept Coupé SUV is in keeping with the long tradition of large Mercedes coupés. The fascinating study combines on-road performance with the typical off-road competence of a Mercedes SUV. The dynamic gallop through the year of the horse is being reinforced by the locally produced long-wheelbase version of the new C-Class, developed specifically for China. In the rear, it offers the most legroom in the segment, while the premium interior is the perfect expression of modern Mercedes luxury. With eight more new models for the local market, as well as the expansion of the distribution network by 100 dealerships in 40 cities, Mercedes-Benz is laying the groundwork for increasing its sales to 300,000 units by 2015.

"The Chinese word for Benz is 'ben-chi' and also means 'gallop'. And that is exactly what we have been doing here in China – in keeping with the 'year of the horse' – since the start of the first quarter, which we have completed very successfully with a sales increase of 47 percent. Today, we are presenting a very special car; our Concept Coupé SUV demonstrates that Mercedes is still galloping in the fast lane," said Dr. Dieter Zetsche, Chairman of the Board of Management of Daimler AG and Head of Mercedes-Benz Cars, at Auto China in Beijing.

**Concept Coupé SUV – sporty coupé of the very highest order**

The four-door, all-wheel drive coupé study extends elegantly to a length of almost five meters and, with broad shoulders and flared wheel arches, stands a good two meters wide. The low roofline, the power domes on the hood, the unmistakable design of the rear windshield and the finned grille with its centrally positioned star embody the typical character of a Mercedes sport coupé. Conversely, its muscular fenders, substantial wheel arches, mighty 22-inch wheels, high waistline and generous ground clearance emphasize the SUV side of this innovative concept car.



Zetsche: "There are, of course, already a number of SUV crossovers on the market. But we have opted for a different, more distinctive approach: Our starting point was a thoroughly sporty coupé, to which we have added our comprehensive off-road expertise."

Examples include the standard-fit air suspension and the intelligent networking of the drivetrain, chassis and interior. This combination delivers a highly exclusive driving experience both on and off the road. Propulsion is provided by a powerful and efficient V6 biturbo engine, coupled to the new Mercedes-Benz nine-speed automatic transmission. With four different handling programs and an individually programmable setup, the "Dynamic Select Control" system provides the best configuration for every driving situation.

**The new long-wheelbase C-Class – from China, for China**

The long-wheelbase version of the new C-Class was conceived specifically for the Chinese market and is likewise celebrating its premiere at Auto China. "The capital letter 'C' on the C-Class stands very much for China. We developed the long version specifically for our discerning customers in China. It is built exclusively for the Chinese market and is also produced here in China, in collaboration with our long-standing cooperation partner BAIC," said Hubertus Troska, Member of the Board of Management of Daimler AG, responsible for activities in Greater China. With more than 150,000 units sold, the predecessor to the new C-Class is one of the most important pillars of Mercedes-Benz's business in China. The new model will be one of the most important growth factors for Mercedes-Benz in the Middle Kingdom. At 4,766 millimeters long and with a wheelbase of 2,920 millimeters, the long-wheelbase version exceeds the standard version by 80 millimeters. All of this additional space benefits passengers riding in the rear – where they enjoy the greatest legroom in the entire segment.

Because the C-Class is used largely as a chauffeured limousine, the front passenger seat can also be adjusted electrically from the rear.

The increased footwell space also makes it easier for passengers to enter and exit. The premium equipment and appointments ensure a prestigious and comfortable ambience and include privacy glass in the rear and a rear bench extended by 25 millimeters. With new, highly efficient engines ranging from 115 kW (156 hp) to 270 kW (367 hp) and innovative driver assistance systems, the newest iteration of the successful business sedan combines efficient driving fun and active safety of the highest order. And, of course, the innovative touchpad also recognizes Chinese characters.

**Two faces, two characters**

The long-wheelbase version of the C-Class is offered with two different design characters – as the Sedan and Sport Sedan. The Sedan bears the classic sedan grille with the Mercedes star on the hood. The Sport Sedan has the grille with the central star and AMG styling, consisting of an AMG front skirt with distinctively sporty air intakes, AMG sill panels and an AMG diffuser-style rear skirt with body-color trim.

## S 63 AMG Coupé – breathtaking and irresistible

Celebrating its Asia premiere at the very top of the product portfolio is the S 63 AMG Coupé. "The new AMG coupé is the most beautiful S-Class ever, in its most dynamic form. We are driving forward the Mercedes-Benz offensive in the luxury class with this high-performance model," said Prof. Thomas Weber, Member of the Board of Management of Daimler AG, responsible for Group Research and Mercedes-Benz Cars Development.

The new S-Class has built impressively on last year's global success, with 25,000 customers opting for the luxury sedan in the first quarter of 2014 – marking a 50 percent increase compared with the same period the previous year. One in four S-Classes is now being sold in China. "I am certain that the S-Class Coupé will carry on the amazing success of the sedan," said Prof. Weber.

With its stunning combination of fascinating lines, amazing performance, ambitious lightweight design and groundbreaking efficiency, the S 63 AMG Coupé sets new benchmarks in the segment of dynamic, premium luxury coupés. Marking a world first is the active curve tilting function of the MAGIC BODY CONTROL. Said Prof. Weber:

"The S 63 AMG Coupé leans into the curve in a similar way to a motorcycle rider, thus reducing the lateral acceleration exerted on the occupants. On country roads in particular, this means more driving fun and comfort for our customers."

As the most powerful member of the BlueDIRECT engine family, the AMG 5.5-liter V8 biturbo engine delivers supreme refinement. With 430 kW (585 hp) and 900 Newton meters of torque, the S 63 AMG Coupé offers 30 kW (41 hp) and 100 Newton meters more than the preceding model. For the first time, the performance-oriented AMG 4MATIC all-wheel drive is available as an option – for even more traction and driving pleasure in all road conditions.

## Eight new models for the world's third-largest car market

With a total of eight new models, including the CLA 260 4MATIC, the CLA 45 AMG, the new S-Class Coupé and the S 600 Sedan, Mercedes-Benz is continuing apace with its product offensive in China. A total of around 20 new or extensively redesigned vehicles will have been launched by 2015 – the highlights being the new GLA, which will also commence production in China in 2015.
100 new dealerships in 40 cities

At the same time, the distribution network in China is growing faster than ever. In 2014 alone, 100 new dealerships will open in 40 cities. And quantity, of course, goes hand-in-hand with quality: June will see the largest training center outside of Germany open in Shanghai. Hubertus Troska: "All activities are guided by the principle – the best products, the best services and the best for the customer."

**Dynamic growth thanks to strong partners**

On its dynamic growth path, Mercedes-Benz depends very much on its long-standing, strong Chinese partners. The successful collaboration with Beijing Automotive Industry Corporation (BAIC) has been operating for a decade, and the expansion of joint production company Beijing Benz Automotive Co., Ltd. (BBAC) is continuing rapidly. Daimler AG recently signed an agreement to invest one billion euros by 2015 in the expansion of local production of vehicles and engines alone. This brings the joint investment by BBAC to four billion euros. Troska: "The new products, rapidly growing distribution network and increasing proportion of local production give us confidence that we will achieve our goal of 300,000 unit sales by 2015."

**BOOTH 404 With Chrisite Industries**
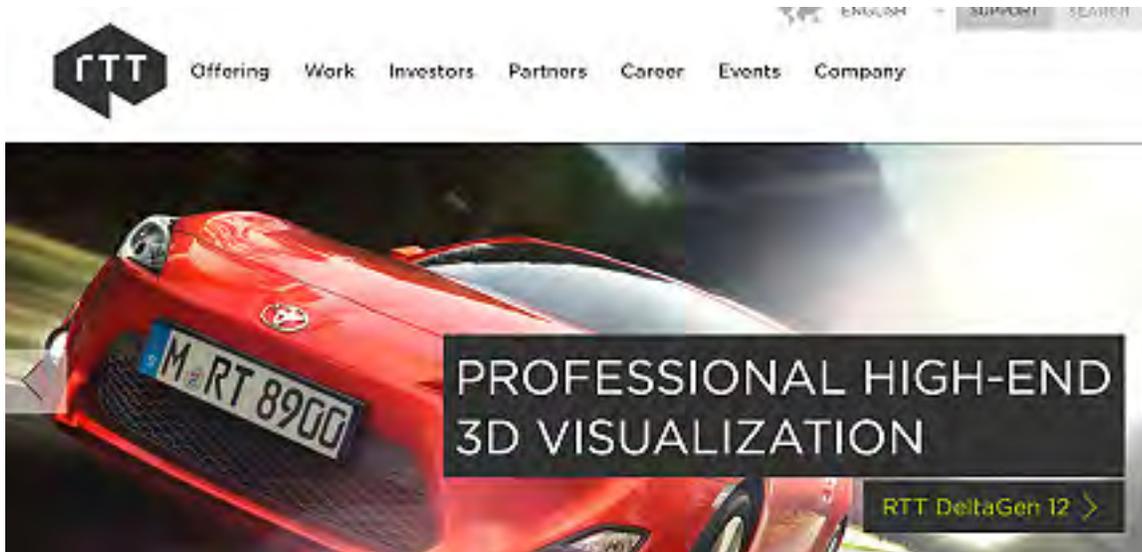


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**MAY 15-16, 2014, MUNICH**

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| Aerospace | Introduction of Rotor Dynamics Using Implicit Method in LS-DYNA |
| Aerospace | Simulating the Impact Response of Composite Airframe Components |
| Aerospace | Development of Dynamic Punch test with DIC for Verification of Simulations with MAT224 |
| Aerospace | New Representation of Bearings in LS-DYNA |
| Aerospace | LS-DYNA® HYBRID Studies using the LS-DYNA® Aerospace Working Group Generic Fan Rig Model |
| Aerospace | Composite Bolted Joint Failure Analysis using LS-DYNA/MAT162 |
| Aerospace | Simulating the Impact Response of Full-Scale Composite Airframe Structures |
| Aerospace | Validation and Verification of a Three-Dimensional Generalized Composites Model |
| Aerospace | Theoretical Development of an Orthotropic Three-Dimensional Elasto-Plastic Generalized Composite Material |
| Automotive | CAE Applications for Balanced Curtain Airbag Design Meeting FMVSS226 and System/Component Performance |
| Automotive | Simulation-Based Airbag Folding System JFOLD Version 2 -New Capabilities and Folding Examples |
| Automotive | LS-DYNA Performance in Side-Impact Simulations with 100M-Element Models |
| Automotive | Meso-Scale FEA modeling to Simulate Crack Initiation and Propagation in Boron |
| Automotive | Fracture Prediction and Correlation of AlSi Hot Stamped Steels with Different Models in LS-DYNA |
| Automotive | Methodologies and Examples for Efficient Short- and Long-Duration Integrated Occupant-vehicle Crash Simulation |
| Automotive | Development of Researched Moving Deformable Barrier (RMDB) FE model for Oblique Crash test |
| Automotive | Advances in Simulating Corrugated Beam Barriers Under Vehicular Impact |
| Automotive | On Rollover Simulations of a Full-sized Sedan |
| Automotive | Crash Simulation of KTM "X-BOW" Car Front Impact Structure |
| Automotive | Development & Validation of a Finite Element Model of a Mid-size Passenger Sedan |
| Automotive | Crash Test and Sim. Comparisons of a Pickup Truck and a Small Car Oblique Impacts into a Concrete Median Barrier |
| Automotive | Performance Evaluation of Bus Seat Structure as per AIS023 using Validated Numerical Simulation |
| Blast | Particle Based Method for the Simulation of Blast Loading |
| Blast | Three Dimensional Analysis of Induced Detonation of Cased Explosive |
| Blast | A Blast Event Sim. Process for Assessing the Response of a Vehicle and Its Occupants from an Explosive Threat |
| Blast | LS-DYNA Simulation of Blast Load Reduction on Walls with Foamed Concrete Insulation Boards |
| Blast | Validation of the Simulation Methodology for a Mobile Explosive Containment Vessel |
| Blast | Key Parameters in Blast Modeling Using 2D to 3D ALE Mapping Technique |
| Blast | Response of a Large Span Stay Cable Bridge to a Blast Loading |
| Blast | Comparison  Head Response to Blast Exposure Between  Human Head Model & Anatomical Headform Using FEM |
| Blast | PC3: Crash And Blast Analysis Post-Processor For Simulations And Live Tests |

| Papers 13th LS-DYNA® International Conference | Papers |
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| **Subject to change Session – Some Titles shortened for space** | |

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| Comp Tech | LS-DYNA Scalability Analysis on Cray Supercomputers |
| Comp Tech | JS Designer - Introduction of Integrated Seat Design System for LS-DYNA |
| Comp Tech | Optimized SPH Neighbor Search Algorithm for Large Plastic Deformation Computational Solid Mechanics |
| Comp Tech | Advanced MPP Decomposition of a SPH Model |
| Comp Tech | Accelerating Implicit LS-DYNA with GPU |
| Comp Tech | Increasing LS-DYNA Productivity on SGI Systems: A Step-by-Step Approach |
| Comp Tech | Scalability of Implicit LS-DYNA® Simulations Using the Panasas Parallel File System |
| Comp Tech | HPC on Demand POD Penquin |
| Comp Tech | Improving the Precision of Discrete Element Simulations through Calibration Models |
| Comp Tech | New Features of DynaX (3D Engineering Editor) |
| Comp Tech | Maximizing Cluster Utilization for LS-DYNA® ,Using 100Gb/s InfiniBand |
| Comp Tech | Improving Performance of LS-DYNA Crash Simulation with Large Deformation by Modifying Domain Decomposition |
| Comp Tech | Modal Dynamics in LS-DYNA |
| Comp Tech | New Ordering Method for Implicit Mechanics and What It means for Large Implicit Simulations |
| Comp Tech | LS-DYNA Big Data Processing, Mining and Visualization in d3VIEW |
| Comp Tech | On the Numerical Integration of Trimmed Isogeometric Elements |
| Comp Tech | AutoMesher for LS-DYNA Vehicle Modeling |
| Comp Tech | New Physics-Based Pre-processing Tools for LS-DYNA Safety Simulation Set-up |
| Comp Tech | AutoMesher for LS-DYNA Vehicle Modeling |
| Constitutive | Simulation of Compressive 'Cone-Shaped' Ice Specimen Experiments using LS-DYNA |
| Constitutive | Verification of Concrete Material Models for MM-ALE Simulations |
| Constitutive | Modeling Rebar: The Other Half of Reinforced Concrete Modeling |
| Constitutive | NEED_Shor |
| Constitutive | A New Way for the Adaptation of Inverse-Identified GTN Parameters to Bending Processes |
| Constitutive | An Enhanced Bond Model for Discrete Element Method for Heterogeneous Materials |
| Constitutive | Soil Modeling for Mine Blast Simulation |
| Constitutive | Investigation of Delamination Modeling Capabilities for Thin Composite Structures in LS-DYNA |
| Constitutive | A New Continuum Damage Mechanics Model for Crash Simulation of Composites |
| Constitutive | Use of Anisotropic Plasticity Laws for Extruded Aluminum in Crash Simulations Involving Failure |
| Constitutive | Comparative Study of Material Laws Available in LS-DYNA to Improve the Modeling of Balsa Wood |
| Constitutive | Software for Creating LS-DYNA® Material Model Parameters from Test Data |
| Constitutive | Using LS-DYNA to Simulate the Thermoforming of Woven-Fabric Reinforced Composites |
| Constitutive | Spring-back Predictions Utilizing Complex Material Models Calibrated with Comprehensive Measured Data-sets |
| Constitutive | Nesting Effect on the Mechanical Properties of Braided Composite |
| Constitutive | Thermal part of LS-DYNA |
| Constitutive | Calibration of Material Models for the Numerical Simulation of Aluminum Foams - Results |
| Constitutive | Rate Dependent Progressive Composite Damage Modeling Using MAT162 in LS-DYNA |

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| Constitutive | On the Prediction of Material Failure in LS-DYNA: A Comparison Between GISSMO and DIEM |
| Constitutive | Nonlinear Viscoelastic Modeling of Foams |
| Constitutive | On the Parameter Estimation for the Discrete Element Method in LS-DYNA |
| Constitutive | Determining the Material Constants for Mullins Effect in Rubber |
| Constitutive | Inelastic Transversely Isotropic Constitutive Model for High Performance Polymer Fibers |
| Constitutive | A Study on Preparation of Failure Parameters for Ductile Polymers |
| Constitutive | How to Validate a Concrete Constitutive Model |
| Elecromag. | Parallel Wires Carrying Current:Simple Test  the Electro.-Thermal-Structural Coupled Field Capabilities of LS-DYNA |
| Elecromag. | LS-DYNA R7: Recent Developments In The Electromagnetism Module (EM) |
| Elecromag. | Further Advances in Simulating the Processing of Materials by Electromagnetic Induction |
| Elecromag. | Num. Sim.  Investigate the Efficiency Joint Designs for  Electro-Magnetic Welding the Ring-Shaft Assembly |
| Elecromag. | Mild Traumatic Brain Injury Mitigating Football Helmet Design Evaluation |
| FSI | CAE Method for Car Wash Roof Noise Simulation using ALE/FSI Method in LS-DYNA |
| FSI | New Features of CESE Compressible Fluid Solver in LS-DYNA |
| FSI | Modeling of Automotive Airbag Inflators using the Chemistry Solver in LS-DYNA |
| FSI | Comparison of Particle Methods : SPH and MPS |
| FSI | Advanced CFD Post-processing and Visualizing for LS-DYNA Results |
| FSI | Analysis of Unsteady Aerodynamics of a Car Model in Dynamic Pitching Motion Using LS-DYNA R7 |
| FSI | Evaluation of LS-DYNA Corpuscular Particle Method for Side Impact Airbag Deployment Applications |
| FSI | Adv. Sim. of Polymer Composite Structural Molding Compound Compression Molding using FSI in LS-Dyna |
| FSI | Partial Membrane Opening in a Shock tube: A Fluid-Structural Analysis using ALE |
| FSI | LS-DYNA ALE/FSI : Recent Developments |
| FSI | Interaction Methods for the SPH Parts (Multiphase Flows, Solid Bodies, and so on) in LS-DYNA |
| FSI | A New Heat Transfer Capability Between CPM Gas and Its Surroundings |
| FSI | An Introduction to the LS-DYNA® Smoothed Particle Galerkin Method for Severe Deformation Analysis in Solids |
| FSI | Adaptive Meshfree Galerkin Method Three-Dimensional Thermo-Mechanical Flow Sim. of Friction Stir Welding Process |
| FSI | LS-DYNA R7 : Free Surface and Multi-phase Analysis for Incompressible Flows |
| FSI | LS-DYNA R7 : The ICFD Solver for Conjugate Heating Applications |
| Metal Forming | Study of the Roll Forming Process Simulation |
| Metal Forming | Performance of LS-DYNA Implicit on Intel Xeon Phi |

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| Metal Forming | Simulation of High-Voltage Discharge Channel in Water at Electro-Hydraulic Forming Using LS-DYNA |
| Metal Forming | CAE Method for Oil Canning Simulation of Vehicle Outer Panel using Implicit Solver in LS-DYNA |
| Metal Forming | Introduction of Die System Module in LS-PrePost |
| Metal Forming | Modeling of the Vaporizing Foil Actuator Process for Applications in Forming and Impact Welding |
| Metal Forming | Advancement in LS-DYNA Metal Forming (I) |
| Metal Forming | Advancement in LS-DYNA Metal Forming (II) |
| Metal Forming | CAE Workflow Coupling Stamping and Impact Simulations |
| Metal Forming | Coupled Simulation of the Fluid Flow and Conjugate Heat Transfer in Press Hardening Processes |
| Metal Forming | Manufacturing the Olympic Torch |
| Occupant Safety | A Finite Element Model of THOR Mod Kit Dummy For Aerospace Impact Application |
| Occupant Safety | Simulation of Various LSTC Dummy Models to Correlate Drop Test Results |
| Occupant Safety | H-Point Machine and Head Restraint Measurement Device Positioning Tools and Validation |
| Occupant Safety | Evaluation of ATD Models for Simulating Occupant Responses under Vertical Impact |
| Occupant Safety | Development of Pedestrian Protection for the Qoros 3 Sedan |
| Occupant Safety | Development of World Side Impact Dummy (WorldSID) Finite Element Model |
| Occupant Safety | Update in Dummy Model Enhancements and Effective Pre-processing |
| Occupant Safety | Usage of LSTC_NCAC Hybrid III 50th Dummy in Frontal Occupant Simulation |
| Optimization | Optimization Design of Bonnet Inner Based on Pedestrian Head Protection and Stiffness Requirements |
| Optimization | The Optimization of Servo Press Motion Control for Sheet Metal Forming |
| Optimization | Car Body Optimization Considering Crashworthiness, NVH and Static Responses |

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| Optimization | Optimization of Protective Plates for Blast Mitigation of Leg Injuries |
| Optimization | LS-OPT: New Developments and Outlook |
| Optimization | LS-TaSC Product Status |
| Optimization | Topology and Topometry Optimization of Crash Applications with the Equivalent Static Load Method |
| Simulation | Progress in Modeling Softball and Baseball Impacts |
| Simulation | Designing a Radioactive Material Storage Cask Against Airplane Crashes With LS-DYNA |
| Simulation | Sound Radiation Analysis of a Tire on a Reflecting Surface With LS-DYNA |
| Simulation | Seismic Response Simulation of U.S. and Japanese Type Steel Moment-Resisting Frame Structures |
| Simulation | Correct Modeling of Sliding at Contact Interfaces |
| Simulation | Benchmark of LS-DYNA for Off-shore Applications According to DNV Recommended Practice C208 |
| Simulation | ATV and MATV Techniques for BEM Acoustics in LS-DYNA |
| Simulation | Application of LS-DYNA for Auto NVH problems |
| Simulation | Modeling Landslide Mobility and Flexible Barrier with LS-DYNA |
| Simulation | Benchmark of Frequency Domain Methods for Composite Materials with Damage using LS-DYNA |
| Simulation | Validation of a Hydraulic Gas Damper Coupler in LS-DYNA and Crash Simulation of a Large Rolling Stock Model |
| Simulation | Preload Release in Steel Bands Under Dynamic Loading as Function of the Coefficient of Friction |
| Simulation | Simulation of Residual Deformation from a Forming and Welding Process Using LS-DYNA |
| Simulation | Current Status of Subcycling and Multiscale Simulations in LS-DYNA |
| Simulation | Modeling of Armor-piercing Projectile Perforation of Thick Aluminum Plates |
| Simulation | Development of a New Post Section for High Tension Cable Median Barrier |
| Simulation | Using LS-DYNA to Model the Performance of a Softball Bat as a Function of Ball Type |
| Simulation | Breaking Bad(ly) – Investigation of the Durability of Wood Bats in Major League Baseball using LS-DYNA |
| Simulation | Crash and Impact Simulation of Composite Structures by Using CAE Process Chain |
| Simulation | Nuclear Fuel Rod Drop Test Simulation – A Study of Its Mechanical Behaviors |
| Simulation | Discrete Element Application and Validation Examples |
| Simulation | Assessing Options for Improving Roadside Barrier Crashworthiness Using Finite Element Models and Crash Simulation |
| Simulation | Springback Calculation of Automotive Sheet Metal Sub-assemblies |
| Simulation | Comparison of Five Mine Modeling Strategies in LS-DYNA |
| Simulation | Analysis and Design of a Unique Security Bollard Installment Using LS-DYNA for a K12 Vehicle Impact |
| Simulation | Sim. of a Dynamic Response of a Structure Under the Harmonic or Random Vibration Using Explicit Method of Solution |
| Simulation | Prediction of the Drop Impact Performance of a Glass Reinforced Nylon Oil Pan |
| Simulation | Application and CAE Simulation of Over Molded Short and Continuous Fiber Thermoplastic Composite |

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| 103 | DataPoint | 203 | MSCSoftware | 303 | Mellanox | 403 | Cyber Café |
| 104 | Gompute | 204 | SGI | 304 | Rescale | 404 & 405 | RTTUSA & Christie Industries |
| 105 | CEI | 205 | e-Xstream | 305 | ESI NA | | |
| 107 | JSOL | 206 | Total CAE | 306 | EDAG | | |
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