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ANNIVERSARY ISSUE

Comet Solution- Space-Borne EO Sensors
LSTC AE-MDB Model
Cray Cluster Supercomputer at Mississippi
ESI Group Acquisition of CyDesign Labs. Inc.

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Comet
The performance engineering workspace
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Papers are now being accepted - Among the accepted papers:

- *LS-DYNA Scalability Analysis on Cray Supercomputers* - Ting-Ting Zhu, Cray Inc. - Jason Wang, LSTC
- *Verification of Concrete Material Models for MM-ALE Simulations* - Jiing Koon POON, Roger CHAN, Swee Hong TAN and David CHNG - Ministry of Home Affairs, Singapore
- *Simulation of Various LSTC Dummy Models to Correlate Drop Test Results* - Kiran Irde and David Bosen - ShockRide, Chandler, Arizona - Ken-An Lou - ArmorWorks, Chandler, Arizona
- *Title: Simulation of Compressive 'Cone-Shaped' Ice Specimen Experiments using LS-DYNA* - Author: Hyunwook Kim (Ph.D candidate) - Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St.John's Canada
- *CAE Applications for Balanced Curtain Airbag Design Meeting FMVSS226 and System/Component Performance* - Bill Feng - Safety Components & Body CAE - Jaguar Land Rover
- *H-Point Machine and Head Restraint Measurement Device Positioning Tools and Validation* - Brian Walker, Liliana Cowlam, Jamie Dennis – Arup; Simon Albery, Nicolas Leblanc - Futuris

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

1st LS-DYNA Users Conference Dalian, China

FEA Information Engineering Solutions China Edition

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- Comet Solutions - Workspace
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Towards More Effective Design of Space-Borne EO Sensors
Integrated STOP analyses in hours rather than weeks!

Malcolm Panthaki, Founder & CTO, Comet Solutions, Inc. (www.cometsolutions.com)

Space-Borne EO sensors are highly sensitive instruments that must survive the harsh environments of launch and of space. Product teams design and deliver the hardware, *ensuring success the first time around.* As failures are costly and often highly visible, a great deal of care and effort goes into the design, analysis and T-VAC testing of these instruments before launch.

As physical testing is extremely expensive and limited, design teams use simulation to help explore the design space and provide a first level of validation, testing the evolving designs under a large number of environmental conditions and what-if trades. These simulations require teams of subject matter experts (SMEs) – experts in space systems engineering, CAD, controls, and optical, thermal, structural and electromagnetic analysis. Working in today's hierarchical/"silo'ed" organizations, and using a number of highly-fragmented analysis tools, each iteration takes an unacceptably long time to complete - it is not unusual that an integrated STOP (structural, thermal, optics performance) analysis can take 3-6 weeks of wall-clock time to complete! These simulations, which assess the performance of the sensor in the field, generate large amounts of fragmented data, forcing the SMEs to manually transmit data between them and to manually collate key results required to make design decisions. Managing the rapidly evolving design and the associated analysis data is at best difficult and often may not happen. This approach does not foster collaborative systems thinking and significantly reduces the impact that simulation could have on creating a working design, on time and within budget. Fewer scenarios than desired get analyzed and, often, projects are over budget and schedule by factors of 2-5, and worse, result in on-orbit failures[1].

The Comet Performance Engineering Workspace has been used for STOP analysis[2]. Using this integrated simulation environment, engineers at The Aerospace Corp[3-4], NASA Langley, NASA Goddard (on-going flight project), Air Force Research Labs (AFRL)[5], and other optical institutes and organizations outside the US are seeing significant improvement to their design process and simulation throughput.

Figure 1 is a Process Schematic that captures the data flow and execution flow of a typical STOP analysis process. The Process takes a CAD model and the associated optical prescription as inputs. Each rectangular box represents a Task in the simulation Process. For example, there are Tasks that perform meshing operations (the thermal and structural meshes are often quite different), thermal analysis, structural analysis and optics analysis. The data flow between these Tasks is quite complex, but is handled seamlessly, automatically dealing with unit and coordinate system transformations, often a source of errors and inefficiency. Within each Task, the SMEs codify the appropriate set of rules for running the underlying tool - these rules are encoded graphically, largely eliminating the need for scripting and programming when creating the templates.

Once the templates have been set up, the various analyses are automated, *allowing any of the engineers, regardless of their expertise, to run the entire STOP process from start to finish in a few hours.* Changes can be made to the design geometry and any other aspect of the design, and also to the environment, and the updated design can be reanalyzed rapidly without further user input. The Comet workspace fosters "systems thinking" and collaboration amongst the engineers, in stark contrast to the rigidly “silo'ed” approach in current simulation environments, and, most importantly, facilitates concurrent engineering of the optical system[3-4]. A flier on a case study related to how the Comet STOP template works, is available via the Web[5].

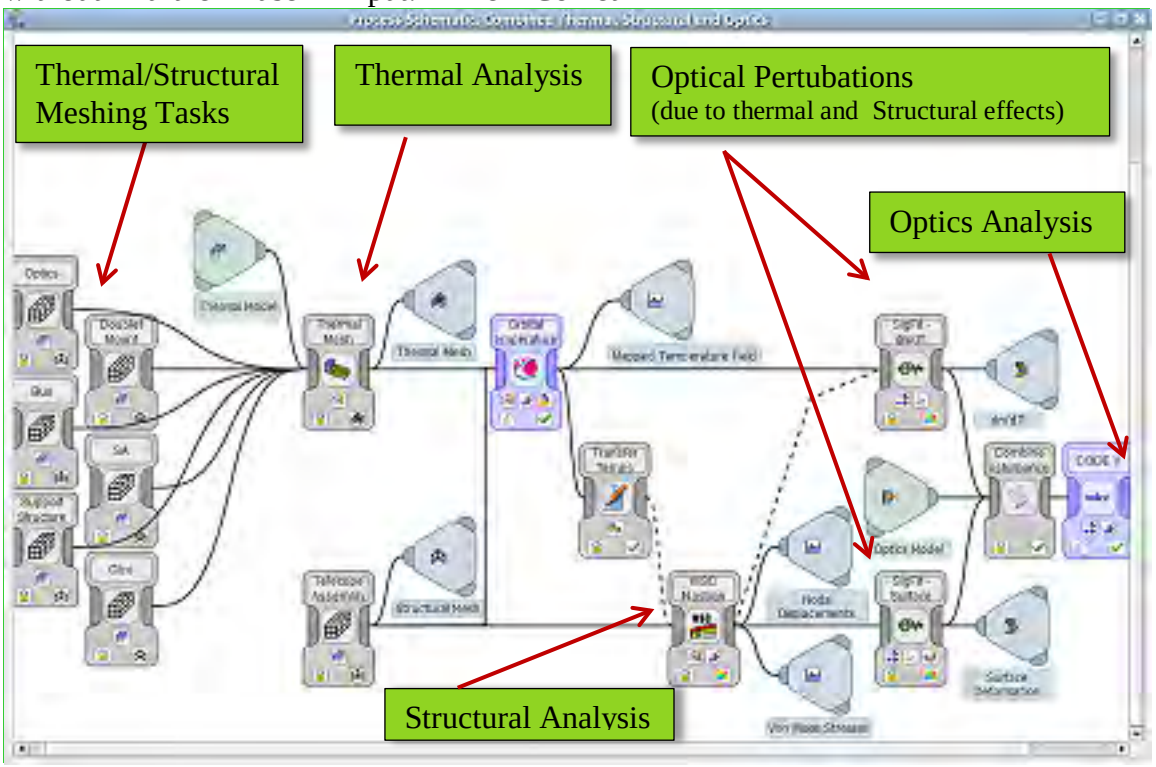

Figure 1: Automated STOP Process in Comet – meshing, thermal, structural, and optics Tasks.

Customer Use Cases

The Aerospace Corp: A multidisciplinary EO Sensor Payload Team at the Aerospace Corp, led by Dr. David Thomas, has been using Comet as the integrated workspace that facilitates their concurrent engineering process, for a number of years3-4,7. The projects have ranged from early conceptual design to final design validation. Dr. Thomas has concluded that the concurrent engineering process, anchored by the Comet workspace, has provided numerous benefits over the prior process – significant efficiency gains and improvements in simulation throughput, enhanced "systems thinking" amongst the SMEs, and the ability to introduce higher-fidelity simulation in the earliest conceptual design stages resulting in higher quality designs faster

STOP Project Results (on one of the flight hardware programs that used Comet)

- The Aerospace team implemented a new collaborative systems engineering approach on an actual flight hardware program reducing overall design evaluation cycle time by over 50%. After the STOP template was fully developed and validated against T-VAC tests, each new STOP iteration was fully performed and evaluated within a single day.
- The team conducted real-time design reviews with program management and the customer directly within the integrated workspace. All the key performance data and full 3-D models and results were available for these discussions on the system-level characteristics impacting the sensor behavior and performance.
- The team accomplished more during a 3-day concurrent design review session than they could typically accomplish in several weeks or months working in the traditional "silo" model. Dr. David Thomas: "The savings in cost and schedule required to perform this independent assessment due to the dramatic reduction in design cycle time were substantial."
- The integrated analysis approach provided superior physical insight into how the thermal control approach works and hence, how to further improve the small residual focus errors that remain4.
- The team eliminated most of the manual rework that usually accompanies changes to the 3-D CAD geometry which saved significant time and eliminated human errors.
- The SME's received instant feedback on how accurately the STOP model was predicting the system design performance and quickly adjusted individual domain models to increase the accuracy of subsequent design iterations.
- The integrated environment and concurrent engineering approach enabled each team member to develop a deeper understanding of the multi-disciplinary behavior of the overall system, promoting "systems thinking" – this was a fun working environment for the team.
- The project was a successful assessment of concurrent engineering practices where engineers used existing analysis tools - making the transition to a new approach easier.

NASA Langley: At NASA Langley, the Comet workspace has been used by a thermal engineer to run the entire STOP process for validating the design of an HSRL (Lidar) optical system. Using the expertise of structural and optics experts, he was able to create the STOP template and then execute the entire process by himself. The template allowed him to rapidly explore various what-if trades over a short period of time

.

This use case demonstrates how SMEs and systems engineers, who traditionally only run calculations in their physics domain, can now safely run simulations using tools outside their domain, enhancing the ability of all the engineers in a team to consider the system as a whole. This reverses the current trend which has been creating experts with a very narrow tool-centric focus, to the detriment of designing and delivering complex systems.

AFRL Directed Energy Program

At the AFRL, teams of engineers have been designing and testing complex, cutting edge technologies for laser weapons. Recently, the Comet simulation workspace has been used to demonstrate the ability to perform mixed-fidelity systems evaluations of complex laser systems6. Comet's integrated data model can capture and manage multiple representations of components, each utilized by different analysis programs, across multiple physics domains and multiple levels of model fidelity7. This capability allowed the engineers to "zoom in" on certain subsystems, from a fidelity perspective – the subsystems were suspected of causing beam-spread issues. Hence, the engineers were able to retain a low-fidelity systems representation for the vast majority of the system, while performing high fidelity thermal and structural calculations on selected subsystems. This mixed-fidelity approach provided higher fidelity results that matched the system anomalies that were detected in physical tests, without the human and computational expense that would be incurred if the entire system were analyzed using high fidelity representations.

Conclusion

The current STOP workflow is sequentially-executed, fragmented and inefficient, executed by teams of SMEs in multiple, "silo'ed" organizations. In the AFRL example, and in many other use cases at the Aerospace Corp., NASA and elsewhere, the Comet approach to analysis knowledge capture and reuse has demonstrated significant improvements. Comet templates have allowed product teams to deal rapidly with design variations, while ensuring analysis accuracy and collaborating effectively across multidisciplinary groups to make design decisions. Product teams deliver better designs in time and on budget, when each full design iteration is completed in a few days rather than in 4-6 weeks. Currently, Comet Solutions is working with AFRL to enhance Comet's ability to manage systems-level and mixed-fidelity models, and with Aerospace Corp and others to enhance its ability to deal with dynamics (jitter analysis) and composite materials.

References:

1. D. Thomas, Causes of catastrophic failure in complex systems, **Proc. SPIE 7796**, 77960K, 2010.

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3. J. Geis, J. Lang, L. Peterson, F. Roybal, J. Tanzillo, D. Thomas, and D. Warren, Concurrent engineering of an infrared telescope system, Proc. SPIE 8127, 2011.

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6. Panthaki and S. Coy, Model-Based Engineering for Laser Weapons Systems, Proc. **SPIE 8127**, 2011.

7. M. Panthaki, Concurrent Engineering to the Rescue: Do We Have the Software Tools to Support It? **Proc. SPIE 7071**, 2008.

2013 1st China LS-DYNA Users' Conference successfully held

The 1st China LS-DYNA Users Conference was successfully held in Dalian on 16-18 October, 2013. The conference was organized by:

- Livermore Software Technology Corporation, (LSTC) US
- Dalian FuKun Technology Corporation of China.

The conference was sponsored by:

- LS-DYNA Distributor ETA China;
- LS-DYNA Distributor ARUP China,
- LS-DYNA Distributor Shanghai Hengstar China
- Publisher - FEA Information., Inc US

The conference received 77 technical papers and presentations. There were 197 participants from seven countries and regions. On behalf of the organizers, Heartfelt thanks to all the sponsors and participants

Dr. John O. Hallquist who is the member of American Academy of Engineering, founder and president of Livermore Software Technology Corporation, gave the opening remarks, expressed his thanks and appreciation to the LS-DYNA China users. He introduced the LSTC software products:

- LS-DYNA,
- LS-PrePost,
- LS-OPT,
- LS-TASC.
- the Finite Element ATD's
- Barrier models,

Additionally, he addressed the overall LSTC's software development strategy and recent developments projects and features.

The organizer of the conference invited:

Professor Zhong-Qin Lin, who is the member of China Academy of Engineering, Shanghai Jiaotong University vice president;

Professor Zhou Qing from Tsinghua University;

Dr. Wu Shenrong, chief engineer from Chery Automobile Engineering Research Institute;

Mr. Uli Franz, co-founder and managing director of DYNAmore Germany.

Respectively, they presented Metal Forming Application in LS-DYNA; Characterization and Modeling of Lightweight Materials for Vehicle Crash Safety Analysis; Progresses in Crash Simulation Methods; Twenty Years of Finite Element Dummy Model Development together with the German Automotive Industry.

There were 15 LSTC developers from USA attended the conference, they have introduced a full range of LS-DYNA latest research, applications and development progress and trends. Besides that, there were 77 technical presentations divided into 8 parallel sessions. Also, the LSTC software development team organized a number of technical question and answer sessions to provide the latest solution to the users.

Before and after the conference, the organizer arranged five technical training classes. A total of 67 people participated in the technical training class and has been issued technical training certificate by the respective instructors.

LSTC AE-MDB model is a Shell element version that was released in July 2013. This version is based on the specifications released by EURO NCAP in February 2013.

This model supersedes an earlier version that was based on development version 3.9

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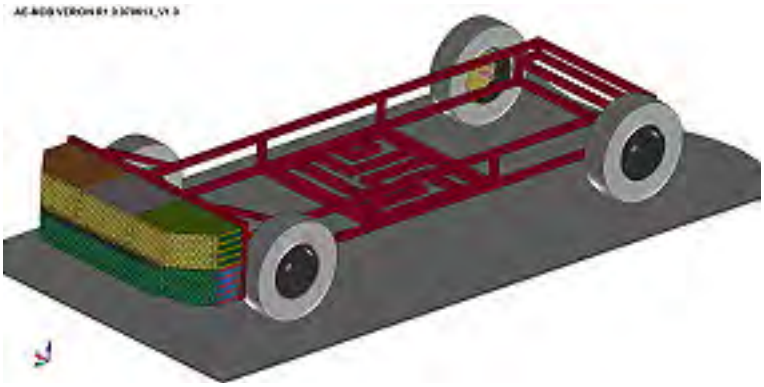
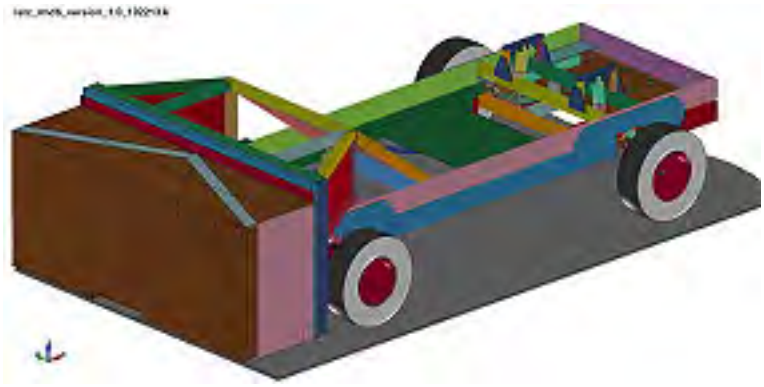


LSTC RMDB Model

LSTC RMDB model version 1.0 was released in October 2013.

This barrier is intended to evaluate small overlap/oblique impact crashes. The left side of the honeycomb is modeled using shell elements and the right side using solid elements. In typical oblique impact crashes, only the left half of the barrier face is deformed, while the right side is not deformed at all



Both new models are available for download through LSTC's website at:

http://www.lstc.com/download/dummy_and_barrier_models

For help accessing the models, please contact:

atds@lstc.com

"Kaizenat and Xinfinity Inc Announces Strategic Partnership Distribution Agreement"

"Partnership to include D3View Software Sales, Consulting, Training in India."

Kaizenat and Xinfitnity Inc announced that they have forged a strategic partnership for the welfare of the CAE industry in India. As part of the partnership, Kaizenat is authorized to distribute, support, train, consult and have conferences on d3VIEW software, for all companies, organizations, government entities and educational institutions located in India.

About Kaizenat:

•KAIZENAT Technologies Private Limited (KTPL) is founded to sell & support LSTC products with high quality LS-DYNA support for Indian Industry.

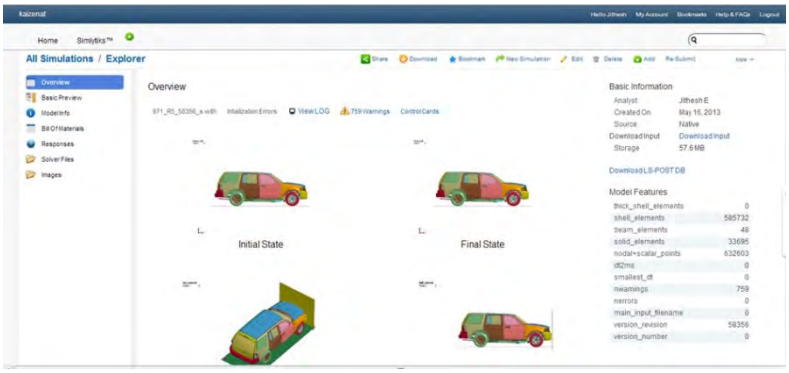
•Nice blend of key persons with strong LS-DYNA support experience & strong project delivery experience from Indian top OEMs & leading CAE software/service providers.

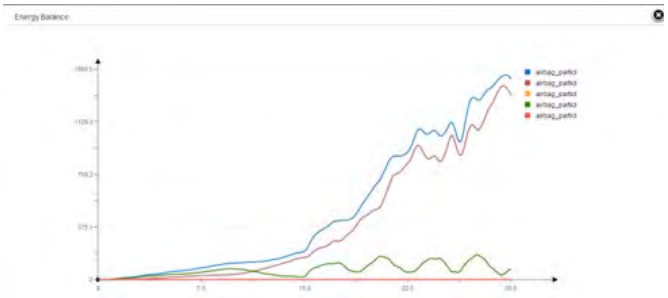
•Help customers to use LS-DYNA effective & efficiently to maximize the benefits from the software.

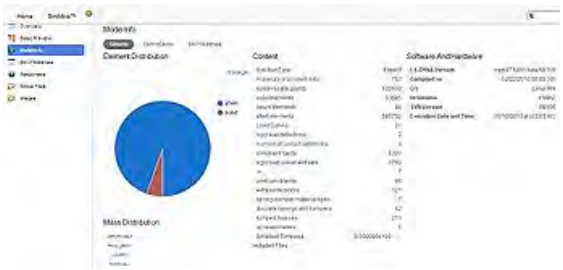
•Help our customers with corporate trainings in various CAE Domains

About d3VIEW:

d3VIEW's Simulation data and life-cycle management (SimDLM) software provides a user friendly framework for storage, management, retrieval and visualization of performance-related data. d3VIEW's breakthrough technologies can now help companies better understand their product performance and save time, reduce development costs, and improve time-to-market.







For more details, contact: support@kaizenat.com

http://pressroom.toyota.com/releases/2014+tioyota+prius+dominate+hybrid+oct2013.htm

- An EPA estimated 50 MPG Combined Fuel Economy Rating
- Midsize-class interior room
- Three selectable driving modes, including EV

TORRANCE, Calif., October 16, 2013 – The Toyota Prius, the brand's first production gas-electric hybrid model, remains the world's best-selling hybrid with more than three million sold worldwide since its introduction. The Prius also continues to dominate the hybrid category in the United States, where more than 1.5 million Prius vehicles have been sold since 2000.

Beyond its tremendous sales success, the Prius also focused attention on the potential for hybrid vehicles to help reduce cars' environmental impact. The third-generation Prius model became the foundation of a family of hybrid models, offering a Prius for every lifestyle, the family includes the larger Prius v, the city-friendly Priusc and the Prius Plug-in Hybrid. In addition, Toyota also offers hybrid versions of its Camry and Avalon sedans and the Highlander crossover SUV. Prius is a hybrid vehicle market leader that accounts for over 40% of total hybrid vehicle sales volume.

In terms of number of models offered and sales volume, Toyota is the world leader in hybrid vehicles.

50 MPG Combined Fuel Economy Estimates in a Midsize Package

Because of its interior roominess, Prius is classified as a midsize car by the EPA, thus making it the most fuel-efficient car without a plug in that segment. With ratings of 51 MPG city / 48 MPG highway / 50 MPG combined. Reflecting the advanced state of Toyota hybrid technology, the combined figure is nearly 25-percent higher estimate than for the smaller first-generation Prius.

Toyota offers the 2014 Prius in four model grades, known as Prius Two, Three, Four and Five. The Three and Four models offer as an option the world's first sliding glass moonroof packaged with solar panels, located over the rear seating area

.

These power a ventilation system that helps reduce the interior air temperature when the car is parked in the sun. The available remote air conditioning system allows remote operation, enabling the driver to lower the interior temperature for comfort before getting into the car.

Prius PLUS Performance accessory package
Hybrid drivers like to have fun, too, and so Toyota offers the dealer-installed PLUS Performance accessory package to give the Prius a sporty look and sharper handling. Engineered by Toyota Racing Development (TRD), the package starts with a seven-piece aerodynamic ground effects kit for a lower-profile stance. It's functional, too, as the custom body kit was designed to reduce the vehicle's coefficient of drag and therefore help maintain high fuel efficiency.

The package equips the Prius with 17-inch forged alloy wheels with a custom offset to increase track width while also maintaining low rolling resistance. The lighter wheels, which have low-profile 215/45R17 tires, reduce unsprung weight to aid agility. The TRD track-tuned springs lower the vehicle 1.1 inches in the front and 1.3 inches in the rear to enhance steering response and cornering performance, and a rear stabilizer bar helps reduce body lean for flatter cornering.

Hybrid Synergy Drive: Introduced with the second-generation Prius 10 years ago and significantly enhanced with lighter, more efficient components for the third-generation model, Toyota's Hybrid Synergy Drive combines the output of a 1.8-liter Atkinson-cycle, four-cylinder engine with and electric motor. The combined 134 net system horsepower feels even stronger to the driver due to the unique way the system combines the power of the gasoline engine and electric motor.

A full hybrid, the Prius can run on the gasoline engine alone, battery alone, or a combination of both. The driver can select from among four driving modes, "Normal," "POWER," ECO" and "EV." The EV Mode allows driving on battery power alone at low speeds for about a mile, if conditions permit. POWER Mode increases sensitivity to throttle input for a sportier feel; ECO Mode helps drivers enhance fuel economy by adjusting throttle input and climate control. A standard Multi-information Display panel monitors the vehicle's fuel and battery energy, and includes a display that helps the driver adopt economical driving habits.

Prius uses an electric water pump and electric power steering and uses no accessory drive belts. As a result, efficiency is enhanced and maintenance costs are potentially reduced. Regenerative braking helps to recapture electrical energy under deceleration, which helps to reduce fuel consumption.

The 2014 Prius is certified as a Super Ultra Low Emission Vehicle (SULEV) and an Advanced Technology Partial Zero Emissions Vehicle (AT-PZEV) in California and in states applying California emission standards. The AT-PZEV certification requires the SULEV exhaust standard linked with the ability to meet a zero-fuel-evaporative standard, a 150,000-mile durability demonstration, extended emissions system warranty, and technology deemed by the California Air Resources Board (CARB) to advance future fuel cell vehicles. In the rest of the country, Prius is certified as Tier 2, Bin 3.

Futuristic Design, Outside and Inside: A 106.3-inch wheelbase helps to give the Prius a smooth ride and the interior room of a midsize sedan. The third-generation Prius' 0.25 coefficient of drag (Cd) is one of the lowest for any production car, contributing to its outstanding fuel economy. LEDs (light emitting diodes), optional in low beam headlamps and standard in DRLs and tail lamp clusters, help reduce the vehicle's power consumption. An exhaust heat recirculation system reduces heat waste by warming engine coolant during cold startup, enhancing performance and delivering heat to the cabin more efficiently.

Vehicle weight is kept low through use of aluminum for the hood, rear hatch, front stabilizer bar and brake calipers and by using super high-tensile strength steel in the inner rocker panel, center pillar and roof reinforcement.

While also conveying a futuristic look and feel, the cockpit offers outstanding roominess and comfort. Controls are easy to reach and easy to use. The Touch Tracer Display features touch sensors on the steering wheel switches that are designed to reduce driver eye movement for better concentration on the road. When the driver touches the steering wheel controls, a duplicate image is displayed on the instrument panel, directly in line of sight.

Advanced Multi-Media Systems: Onboard information and connectivity features live up to the promise of the Prius' advanced design. The Prius Two grade features a standard Display Audio touch-screen system with a 6.1-inch screen. The AM/FM CD player unit offers MP3/WMA playback capability with six speakers, a USB port for iPod® connectivity, auxiliary input jack, Bluetooth® hands-free phone capability and audio streaming. The display also provides vehicle information and allows the driver to customize vehicle settings.

The Prius Three adds navigation and Entune® App Suite, plus an integrated backup camera display, SiriusXM Satellite Radio capability, HD Radio™ with iTunes® Tagging, and advanced voice recognition. The Toyota Entune® App Suite is a collection of popular mobile applications and subscription-free data services

.

Once a smartphone is paired to the vehicle using Bluetooth wireless technology or a USB cable, Entune® apps are operated using the vehicle's controls or, for some services, by voice recognition. Entune® offers apps for Bing™, iHeartRadio, MovieTickets.com, OpenTable®, and Pandora®. Entune® data services include a fuel price guide, sports scores, stocks, traffic and weather.

Prius Four and Five include that system plus eight JBL® GreenEdge™ speakers and an eight-channel JBL amplifier. GreenEdge technology reduces electric draw on the vehicle, which can help enhance fuel economy. When the Deluxe Solar Roof Package is ordered for the Prius Four, or the Advanced Technology Package on Prius Five, that system is further upgraded with a Head-Up Display and Premium HDD Navigation System, which uses a seven-inch touch-screen with split-screen capability.

Safety: An IIHS Top Safety Pick, the Prius is equipped with front and rear side curtain airbags, driver and passenger front seat-mounted side airbags and a driver's knee airbag.

Active headrests are used in both front seats to help reduce the possibility of whiplash injury in certain types of rear collisions. An Anti-lock Brake System (ABS), Electronic Brake-force Distribution (EBD), Brake Assist (BA), Traction Control (TRAC), enhanced Vehicle Stability Control (VSC) and the Smart Stop Technology brake-override system make up Toyota's standard Star Safety System™. A Dynamic Radar Cruise Control system, using advanced millimeter wave radar, is an available option. Also available, the Safety Connect telematics system includes automatic collision notification, stolen vehicle locator, emergency assistance button (SOS) and roadside assistance (1-year trial subscription included).

The top-of-line Prius Five model's Advanced Technology Package includes the Premium HDD Navigation System, plus the Head-Up Display, Dynamic Radar Cruise Control, Pre-Collision System, Lane Keep Assist and Safety Connect. The Pre-Collision System is designed to help reduce crash speed and damage in certain frontal collisions only. It retracts the front seatbelts and applies the brakes in certain conditions when it determines that a frontal crash is unavoidable. Lane Keep Assist is designed to help the driver stay within the center of the lane.

Sustainability: The Prius is built using processes that reduce emissions in every stage of the vehicle lifecycle, from production and driving, through to eventual disposal and dismantling years down the road. Plant-derived, carbon-neutral plastics are used in the seat cushion foam, cowl side trim, inner and outer scuff plates and deck trim cover. Ecological plastic emits less CO2 during the production process than conventional plastic, and it also helps reduce petroleum use

.

Warranty

Toyota's 36-month/36,000 mile basic new-vehicle warranty applies to all components other than normal wear and maintenance items. Additional 60-month warranties cover the powertrain for 60,000 miles and against corrosion with no mileage limitation. The hybrid-related components, including the HV battery, battery control module, hybrid control module and inverter with converter, are covered for eight years/100,000 miles. In applicable states hybrid-related component coverage is 15 years/150,000 miles with the exception of the hybrid battery, which is covered for 10 years/150,000 miles.

The Prius also comes standard with Toyota Care, a complimentary plan covering normal factory-scheduled maintenance and 24-hour roadside assistance for two years or 25,000 miles, whichever comes first.

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Cray to Install a Liquid-Cooled Cray CS300 Cluster Supercomputer at Mississippi State University

SEATTLE, WA -- (Marketwired) -- 10/02/13 -

http://investors.cray.com/phoenix.zhtml?c=98390&p=irol-news&nyo=0

Global supercomputer leader Cray Inc. (NASDAQ: CRAY) today announced it has been awarded a contract to provide Mississippi State University with a Cray® CS300-LC™ system -- a liquid-cooled version of the Cray CS300 cluster supercomputer. The new Cray system, nicknamed "Shadow," will be located at the University's High Performance Computing Collaboratory (HPC²), and will serve as the primary high performance computing system for shared research.

The HPC² at Mississippi State University supports a coalition of member centers and groups that are focused on multidisciplinary, team-research activities, and share a common core objective of advancing the state-of-the-art in computational science and engineering using high performance computing. This effort spans a wide range of application disciplines, and several of the member centers have extensive physical and experimental modeling and analysis capabilities to complement their computational efforts. The HPC² member centers and institutes include:

- Center for Advanced Vehicular Systems
- Center for Battlefield Innovation
- Center for Computational Sciences
- Geosystems Research Institute
- Institute for Genomics, Biocomputing and Biotechnology
- Northern Gulf Institute

"Our mission is to serve the University, State and Nation through excellence in computational science and engineering, and we are pleased to have the resources of a Cray supercomputer to support our efforts," said Trey Breckenridge, director of high performance computing at Mississippi State. "With the Cray CS300 system and its advanced liquid-cooling architecture, we will provide our vast user community with a cost-effective and energy-efficient high performance computing system that is also a powerful and technologically-advanced tool for scientific research."

The Cray CS300-LC system features an innovative, liquid-cooled design that uses warm water heat exchangers instead of chillers to directly cool the compute processors and memory, allowing for a more efficient removal of system heat. Designed for three times the energy savings per-rack over air-cooled systems, the Cray CS300-LC uses less energy, features a lower total-cost-of-ownership, and gives customers the ability to realize a faster return-on-investment.

"The HPC² at Mississippi State University is a diverse coalition of members with a wide array of high performance computing needs and applications, and we are honored that a Cray CS300-LC cluster supercomputer is the solution they selected to conduct their scientific research," said Daniel Kim, senior vice president and general manager of cluster solutions at Cray.

Mississippi State University's 322-teraflop Cray CS300-LC cluster supercomputer will include new Intel® Xeon® E5-2600 v2 processors (formerly code named "Ivy Bridge") and Intel® Xeon Phi™ coprocessors. The system is expected to be delivered later this year.

The Cray CS300 series of cluster supercomputers are scalable, cluster solutions that group optimized, industry-standard building block server platforms into a unified, fully-integrated system. Available with air or liquid-cooled architectures, Cray CS300 systems provide superior price/performance, energy efficiency and configuration flexibility. The systems are integrated with Cray's HPC software stack and include software tools compatible with most open source and commercial compilers, schedulers, and libraries. Cray CS300 systems also feature the Cray Advanced Cluster Engine, an essential management software suite designed to provide network, server, cluster and storage management capabilities that are necessary to run large, complex technical applications.

For more information on Cray CS300 cluster supercomputers, please visit www.cray.com/CS300 .

About Mississippi State University

Among the nation's leading major research universities, Mississippi State has been designated by the Carnegie Foundation for the Advancement of Teaching as "a very high research activity university," which represents the highest level of research activity for doctorate-granting universities in the U.S. Mississippi State is the only school in the state with the distinction, and one of only 108 nationwide. MSU's research expenditures totaled $233 million in 2012. Discover more at www.msstate.edu.

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. Leveraging 40 years of experience in developing and servicing the world's most advanced supercomputers, Cray offers a comprehensive portfolio of supercomputers and Big Data storage and analytics solutions delivering unrivaled performance, efficiency and scalability. Cray's Adaptive Supercomputing vision is focused on delivering innovative next-generation products that integrate diverse processing technologies into a unified architecture, allowing customers to meet the market's continued demand for realized performance. Go to www.cray.com for more information.

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 system required by Mississippi State University when required and that meets Mississippi State University's needs. These statements involve current expectations, forecasts of future events and other statements that are not historical facts. Inaccurate assumptions and known and unknown risks and uncertainties can affect the accuracy of forward-looking statements and cause actual results to differ materially from those anticipated by these forward-looking statements. Factors that could affect actual future events or results include, but are not limited to, the risk that the system required by Mississippi State University is not delivered in a timely fashion or does not perform as expected and such other risks as identified in the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2013, and from time to time in other reports filed by Cray with the U.S. Securities and Exchange Commission. You should not rely unduly on these forward-looking statements, which apply only as of the date of this release. Cray undertakes no duty to publicly announce or report revisions to these statements as new information becomes available that may change the Company's expectations.

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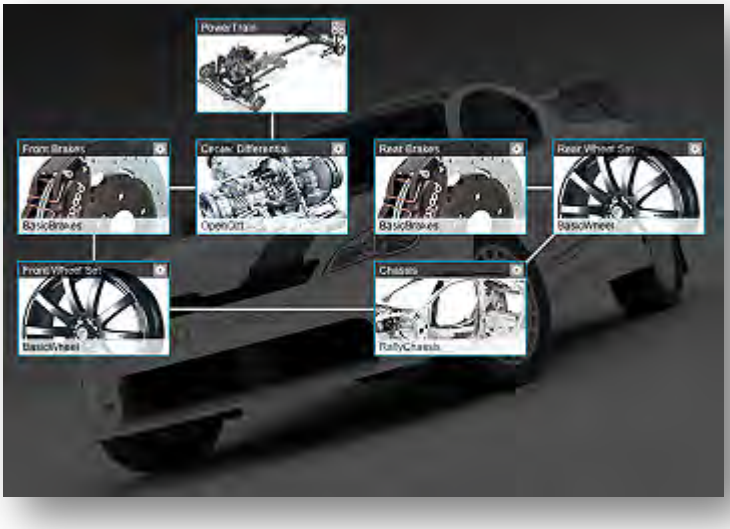
206/701-2044 ir@cray.com
Source: Cray Inc.

http://www.esi-group.com/company/press/news-releases/acquisition-cydesign-labs-inc-lead-innovator-systems-modeling

A strategic step in the advent of End-to-End Virtual Prototyping

- A disruptive technology and software solution to bridge product inception ('0D-1D' system modeling) and product validation ('3D' component modeling)
- Extension of ESI Computer Aided Engineering (CAE) solutions to designers to frontload product and process innovation
- Opening to 'crowd-sourced ' and open source 'Modelica' based system modeling
- Access to ESI solutions in the Cloud and SaaS



Coventry Design

ESI Group, pioneer and world-leading provider of Virtual Engineering solutions, today announces the acquisition of CyDesign Labs, a US company based in the Silicon Valley that owns a disruptive proprietary technology for advanced product design. Aligned with ESI Group's proven strategy that fosters the gradual elimination of physical prototypes, this acquisition brings a major technology leap to accelerate industrial product and process development.

Founded in 2011, CyDesign, a start-up company, was awarded a significant contract in early 2012 by the United States Defense Advanced Research Projects Agency (DARPA) to support the Fast, Adaptable, Next-Generation Ground (FANG) Challenge. The FANG program undertakes a novel approach to the design and manufacturing of complex defense systems through a series of prize-based design competitions leveraging novel tools developed under the DARPA META program. Earlier this year, CyDesign successfully delivered a cloud-based system modeling platform for use by FANG Challenge registrants. Please visit vehicleforge.org for more information about the FANG program.

Alain de Rouvray, ESI Group's Chairman and CEO, says: "This acquisition is poised to allow ESI Group to expand its user base to all players involved in creating industrial products – adding a seamless collaborative environment between specifiers, inception designers, and validation engineers. CyDesign Labs' collaboration with DARPA has proven the relevance of combining 0D-1D simple design tools with traditional advanced 3D simulation. This operation represents a unique opportunity for ESI to leapfrog and actively contribute to the grand challenge of the 4th industrial revolution."

Dr. Serdar Uckun, founder and CEO of CyDesign Labs, adds: "We are very proud to be joining ESI Group, a world class leader with whom we share a passion for innovation and technological excellence. This new technology we recently created within a ca. 40 man year concentrated effort will benefit from extensions, industrialization and commercialization by ESI, to which we could not aspire while we remained independent. Together, we will now develop the next generation of virtual engineering software to improve the creation process of innovative industrial products."

ESI Group is now positioned right from the product inception phase

CyDesign Labs core capabilities enable an organization to address a series of design challenges of increasing complexity, while leveraging fab-less design, foundry-style manufacturing, and crowd-sourced innovation models to control in real time manufactured products from their very first digital models. This provides designers using simple 0D-1D models with the possibility of validating collaboratively on line the compliance of a product, as a system or as one of its components, with respect to environmental, safety, comfort, and other multiple performance requirements as well as technical standards, right from the beginning of design. Furthermore, the solution from CyDesign Labs combined with ESI solutions makes it possible for designers to connect 'live' with the 3D models of CAE engineers.

This evolution will allow ESI Group to provide its customers with a more comprehensive offering that covers the entire value chain of a product: from inception to verification, validation and certification. This extension of ESI Group's past focus on validation does position the company higher in the product value chain and it is expected to stimulate the interest of players who are either seeking to or are currently migrating towards End-to-End Virtual Prototyping.

Crowd-sourced and 'Modelica' based models

By intensifying the use of 'open source' models, CyDesign Labs smartly meets the expectations of industrialists who wish to carry out product development in an open and collaborative mode that can be more easily adapted to the evolution of their multiple and interacting requirements. For example 'Modelica', a modern modeling and simulation language standard supported by CyDesign Labs, already brings together a sizeable industrial community of users and developers without the impediment of proprietary formats.

A solution accessible via the Cloud and in SaaS

CyDesign Labs' future solutions will be marketed in the form of user licenses. They will provide substantial flexibility in terms of IT resources with access via internal or external Cloud mode, thus enabling workgroups of up to hundreds of users to be brought together within a single virtual environment. The acquisition of CyDesign Labs is a logical next step following the technology investments already undertaken by ESI Group that are aimed at developing access to ESI's solutions in Cloud mode. Indeed, the Group's ambition is to accompany its customers towards a Software-as-a-Service (SaaS) marketing model and to eventually deploy all of its solutions on the Cloud.

Worldwide industrialization and commercialization

ESI Group is convinced of the major benefits that the integration of CyDesign disruptive technology into ESI solutions will provide for its customers and partners. This will also enable CyDesign to benefit from ESI's complementary technologies and its distribution network around the world. Every sector of industry will be concerned but we expect particular growth in the automotive, aeronautical and defense sectors where advanced numerical technologies are already deployed and have proven their unique worth.

Terms of the operation

With this operation, ESI will hold 75% of CyDesign Labs's equity and will proceed to integrate the present team of high level experts in the USA and UK. In 2017 ESI Group will have the possibility to acquire the balance of equity.

About CyDesign Labs, Inc.

CyDesign Studio is the only model-based design optimization software platform with integrated requirements management that enables organizations to design complex systems with better and faster results. The CyDesign platform helps engineers gather requirements, link them to system designs, explore the trade space of design alternatives, assess the viability of these alternatives, and provide objective guidance resulting in a much better final product. CyDesign Labs is headquartered in Palo Alto, CA, USA and has offices in Coventry, UK. The company was founded in 2011. For further information, go to www.cydesign.com.

About ESI Group

ESI is a pioneer and world-leading provider in Virtual Prototyping that takes into account the physics of materials.

ESI boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications. Addressing manufacturing industries, Virtual Product Engineering aims to replace physical prototypes by realistically simulating a product's behavior during testing, to fine-tune fabrication and assembly processes in accordance with desired product performance, and to evaluate the impact of product use under normal or accidental conditions.

ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping. These solutions are delivered using the latest technologies, including immersive Virtual Reality, to bring products to life in 3D; helping customers make the right decisions throughout product development.

The company employs about 1000 high-level specialists worldwide covering more than 40 countries.

ESI Group is listed in compartment C of NYSE Euronext Paris.

Ford Focus Extends Streak - Best-Selling Vehicle Nameplate Worldwide

http://corporate.ford.com/news-center/press-releases-detail/ford-focus-extends-streak-as-best-selling-vehicle-nameplate

Ford Focus Extends Streak - Best-Selling Vehicle Nameplate Worldwide through First Half of 2013

DEARBORN, Mich., Oct. 23, 2013 - Ford Focus, the best-selling vehicle nameplate in the world in 2012, retains the title for the first half of 2013.

In addition, Ford Fiesta ranks as the fourth best-selling vehicle – making Ford the only brand to have two nameplates among the global top five best-sellers, according to Ford analysis

Ford Focus grew 20 percent in the first half of 2013 from the same period last year, to 589,709 vehicle registrations, driven primarily by increasing demand from customers in China and other Asian countries. Focus in China is up 137 percent from 2012, to a total of 202,380 vehicles, making China the single biggest global market for the car with one-third of Focus sales.

Xiao Bing, a 31-year-old sales manager for an IT company in Beijing, is one such new Focus customer.

"The new Focus looks high-tech and meets my aesthetic expectations," Bing says. "It has significantly changed from the previous model. The car's handling is great. When I test-drove it, the new Focus cornered smoothly. Overall, it's the best combination of looks, performance, value and fuel economy."

Customers are responding enthusiastically to Focus in other Asian countries, as well. Through September, Ford reports Focus sales are up 193 percent in Indonesia, 72 percent in both the Philippines and Vietnam, and 42 percent in Thailand.

Ford Focus Extends Streak - Best-Selling Vehicle Nameplate Worldwide

Fiesta Also a Best-Seller

Ford Fiesta joins Focus among the five global best-sellers, and earns the top spot as the best-selling subcompact car globally, with 356,434 units registered in the first half of 2013.

"Fiesta is off to a terrific start, and Focus just keeps getting better – especially in China," said Jim Farley, Ford executive vice president, global marketing, sales and service and Lincoln. "This is One Ford at its best: great-looking vehicles with great fuel economy, leading quality, technology and fun-to-drive personalities."

Combined, global registrations of Ford's small cars – Fiesta and Focus – total 946,143 vehicles for the first six months of the year, representing an 8 percent increase.

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Chevrolet Previews Performance-Oriented SEMA Concepts

Sonic, Impala and Spark EV get aftermarket makeovers 2013-10-25

http://media.gm.com/content/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2013/Oct/1025-sema-preview.html

DETROIT – Chevrolet today previewed several performance-oriented concepts of some of the brand's most popular passenger cars, including the Sonic and all-new Impala. The cars will debut at the SEMA Show, Nov. 5-8, in Las Vegas. It's the world's largest convention of automotive aftermarket parts and accessories.

The performance-oriented Sonic RS concept features a 1.4L turbo engine with performance, suspension/brakes and appearance upgrades developed by Chevrolet Performance engineers and designed to be installed by Chevrolet dealers for easy, seamless personalization.

Chevrolet also showed a personalized version of the Malibu, which features new and enhanced technologies for 2014 that improve efficiency and personal connectivity. Stop/start engine technology contributes to 14-percent greater estimated city fuel economy (25 mpg), and new Siri with Eyes Free Mode and Text-to-Voice features allow hands-free texting via the available MyLink system.

"Chevrolet's 2014 passenger car lineup is the strongest and most competitive in the brand's history, offering customers a wide range of great-looking, great-driving and well-connected choices," said Chris Perry, vice president, Chevrolet Marketing. "A five-year plan to completely remake Chevy's car lineup is resonating with customers, who are finding value in the performance, quality and technologies that complement their lifestyles."

The SEMA concepts feature accessories designed to allow personalization while maintaining excellent refinement and ride characteristics. General Motors' engineers developed most of the accessories shown on the concept vehicles. Some of the accessories are available from Chevrolet dealers. Others are being evaluated for production.

The enhancements are designed, engineered, tested and backed by Chevrolet to be installed by a Chevrolet dealer, which maintains the vehicle warranty – a claim aftermarket manufacturers cannot make.

Chevrolet Previews Performance-Oriented SEMA Concepts

A pair of "super" Sonics leads the charge into SEMA, each packing enhancements for their respective 1.4L turbo engines, along with suspension, exterior and interior accessories – and distinctive color-and-graphic packages.

Chevrolet Performance Sonic RS concept

This performance-oriented Sonic RS concept draws on the legacy of Chevrolet's high-performance vehicles yet reimagined for a new generation. It features engine performance, suspension/brakes and appearance upgrades developed by Chevrolet Performance engineers and designed to be installed by Chevrolet dealers.

- A Stage Kit, cold-air induction and a high-flow exhaust system allow the 1.4L turbo engine to produce more power for a more exciting driving experience
- The engine enhancements are complemented by a track-tuned suspension system and higher-performance brake upgrade kit, featuring Wilwood front calipers
- The suspension kit lowers the ride height for a sportier stance
- Chevrolet Performance 18-inch, split-five-spoke wheels complement the lowered look with aggressive style
- Lemon Peel Yellow exterior with blue graphics; tinted headlamps and fog lamps; blue-accented window moldings and rear hatch trim
- Additional exterior accessories, including color-tinted grille trim, headlamp rings and mirror caps are available from Chevrolet dealers and complement custom graphics and other accents that can be easily duplicated by creative owners
- Re-trimmed seats in black leather, with Lark Yellow contrast stitching.

Ricky Carmichael All-Activity Sonic concept

The All-Activity Sonic concept returns for the 2013 SEMA Show – this time, it adds something the American Motorcycle Association champion, X-Games gold medalist and NASCAR racer Ricky Carmichael can truly appreciate: An all-new performance package with parts from Chevrolet Performance. Highlights include:

- Chevrolet Performance 1.4L Turbo Stage Kit with high-flow exhaust
- Chevrolet Performance cold-air induction
- Chevrolet Performance suspension kit with lowered ride height
- Chevrolet Performance brake package with Wilwood front calipers
- Chevrolet Performance 18-inch wheel-and-tire package featuring custom gloss black with green lip

Chevrolet Previews Performance-Oriented SEMA Concepts

The exterior is painted satin black that is pearlized with blue, along with custom graphics. The Sonic's body is accented with a concept rear wing spoiler, smoked lamp housings, ground effects package and a unique grille. It also wears a THULE roof rack.

Inside, FOX Racing boardshort material is used on the seat inserts, which complements dark green and black leather instrument panel trim and door trim with lime green piping. A matching, green/black-trimmed flat-bottom steering wheel continues the theme. Additional interior features include an upgraded sound system, a Chevrolet Accessories pedal kit and a custom aluminum shift knob.

Personalization Sonic concept

Equipped with several performance enhancements, this Victory Red concept represents an undeniably fun take on Sonic – with a larger emphasis on personalization. Highlights include:

- Body-color door handles with chrome stripe
- Chrome liftgate and mirror cap trim
- Chevrolet Accessory exterior graphics package

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- Chevrolet Accessory door sill plates and all-weather floor mats
- Chevrolet Accessory footwell lighting package and pedal covers
- Kicker® 200-Watt DSP amp with 200-Watt powered subwoofer (also available with Chevrolet MyLink).

Some exterior details will be changed during the SEMA Show, giving the car a different appearance throughout the weeklong convention. It also features:

- Borla performance exhaust
- Chevrolet Performance suspension kit (with lowered ride height)
- Chevrolet Performance brake package with Wilwood front calipers
- Chevrolet Performance 18-inch wheel-and-tire package.

Spark EV Tech Performance concept

A pure-electric urban mini-car designed for fun driving, easy ownership and head-turning style, the Spark EV uses no gasoline, but its GM-built motor and drive unit deliver 400 lb-ft of instant torque – more than the classic 1969 Camaro SS muscle car with a 350 V-8 – for exhilarating acceleration. It can go from 0 to 60 mph in 7.5 seconds

Chevrolet Previews Performance-Oriented SEMA Concepts

The Tech Performance concept builds on Spark EV's performance with a unique power-delivery algorithm that enhances acceleration. Stronger axles support the greater power – helping transform this electric mini car into a mini-muscle car. Additional features:

- Custom exterior color and graphics, a unique backlit Chevrolet "bowtie" emblem in the grille and performance billet aluminum wheels
- Chevrolet Accessory sill plates, floor mats and pedal covers
- Body-color trim plates and green stitching on the shifter boot and steering wheel
- A military-style flip-up "activation switch" on the instrument panel adds a fun, high-performance-oriented touch of style to this plug-in performer
- Lightweight features that enhance performance

Urban Cool Impala concept

All-new for 2014, the Impala's aggressive good looks contributed to a 64-percent rise in retail sales in September. The Urban Cool concept builds on the Impala LTZ with custom-painted grille accents, Chevrolet Accessories concept ground effects and Chevrolet Accessories concept 20-inch wheels painted to match the grille accents.

A lowered stance further accents the sporty style while the LTZ's high-intensity discharge headlamps and light-emitting diode, or LED, daytime running lamps lend a more sophisticated appearance. Inside, the trim is painted high-gloss piano black and anodized low-gloss black, contrasting with Sky Cool Gray leather-trimmed seats that also feature perforated leather inserts and orange stitching.

The Urban Cool concept rocks with the Impala's available 11-speaker Bose® Centerpoint® Surround Sound System, which connects to the Chevrolet MyLink system via an eight-inch-diagonal color touch screen.

Malibu LTZ concept

With a raft of technology, comfort and refinement enhancements, as well as a new front-end design, the 2014 Malibu takes on one of the industry's most competitive segments with greater roominess, greater efficiency and greater connectivity. The Malibu LTZ SEMA concept delivers greater style, too, with performance-style ground effects and Chevrolet Accessories 19-inch wheels with a Sterling Silver finish. A Borla exhaust system lends a throatier note to the 259-hp, 2.0L turbocharged engine. A concept Stage Kit and cold-air induction system support greater performance, too, from an engine that already delivers 295 lb-ft of torque, the most in its class.

Chevrolet Previews Performance-Oriented SEMA Concepts

Personalization Cruze Diesel concept

A distinctive ground effects package by 3dCarbon, as well as an updated front fascia and chin spoiler give this Cruze Diesel concept a fresh, athletic aesthetic that supports its 258 lb-ft of torque (350 Nm) – and 0-60 capability of 8.6 seconds. Inside, the sound system is upgraded with Kicker® Audio components and an ambient lighting package has been added. With its 2.0L clean turbo-diesel engine, the Cruze Diesel offers EPA-estimated 46 mpg on the highway – better than any non-hybrid or gasoline-powered passenger car in America. It can travel 717 miles on a single tank, or about 10 hours of highway driving.

About Chevrolet

Founded in 1911 in Detroit, **Chevrolet** is now one of the world's largest car brands, doing business in more than 140 countries and selling more than 4.5 million cars and trucks a year. Chevrolet provides customers with fuel-efficient vehicles that feature spirited performance, expressive design, and high quality. More information on Chevrolet models can be found at www.chevrolet.com.

Vendor/Submitter: CRAY Inc./Cray Inc.

Computer/Interconnect: CRAY XC30/Aries Interconnect

Processor: Intel Xeon E5-2690 v2 3.0 GHZ

#Nodes x #Processors per Node x #Cores Per Processor = Total #CPU	Time (Sec)	Benchmark Problem	Submission Date
200 x 2 x 10 = **4000**	1222	car2car	10/16/2013
100 x 2 x 10 = **2000**	1476	car2car	10/15/2013

http://www.xitadel.com/unique-learning-experience-dr-paul-dubois

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Pune - December 5, 6 and 7, 2013

Hotel Courtyard Marriot |
City Center Near Jahangir Hospital| Pune

Paul DuBois is an internationally known expert Consultant in the field of large scale numerical simulations with emphasis on automotive safety and explicit methods since 1987.

As a leading Consultant he has also worked in methodology development covering impact, crashworthiness and occupant safety. Clients include Daimler, GM, Ford, Opel, Fiat, Porsche, Volvo, PSA, Renault, Toyota, Nissan, Honda, Hyundai, NASA and others.

Paul DuBois has published 50+ technical papers at International conferences. He is LS-DYNA Trainer on impact and Crashworthiness with LSDYNA in USA, France, Germany, Japan and Scandinavia (LSTC, Dynamore, CADFEM, ERAB, JRI and Crill)

Crash simulation has emerged as main-stream production technology. The time is ripe for the industry to shift focus from the software itself to the application of the software. The LS-DYNA community is now receptive to new insights and state-of-the-art approaches used worldwide in applying this technology to solve increasingly complex problems.

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To register for this event, please contact ppathe@xitadel.com or call Pravin Pathe at +91 90 110 90092.

All participants will be awarded with a certificate by Paul DuBois.

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Who should attend: This seminar will be benefit CAE Crash engineers and Technical specialists that are seeking to expand their knowledge and understand the latest industry practices in impact and crash simulation.

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Call For papers LS-DYNA® Conference Call For papers

13th International LS-DYNA® Users Conference - June 08-10th, 2014

Call For Papers - papers@lstc.com

Livermore Software Technology Corporation (LSTC) is pleased to bring engineers, professors, students, consultants, industry leaders and interested parties together at the 13th International LS-DYNA® Users Conference to be held at the Adoba Hotel (formerly the Hyatt Regency) Dearborn, MI.

Abstract Deadline: 11/11/2013	**email your abstract to:** papers@lstc.com	**Notification:** No later than 12/15/2013
Paper Deadline: March 05, 2014	The presenter of each accepted paper will receive free admission to the conference, provided that the presenter registers for a room at the Adoba Hotel under LSTC Conference registration.	

Application Areas Being Accepted for Paper Submission:

Approximately 300 words; please include figures, if possible

• Aerospace	• Heat Transfer	• Seismic Engineering
• Automotive Crashworthiness	• Impact and Drop Testing	• Ship Building
• Ballistic and Penetration	• Manufacturing Processes	• Transportation
• Biomechanics	• Metal Forming	• Virtual Proving Ground
• Civil Engineering	• Modeling Techniques	
• Compressible Fluid Dynamics	• Nuclear Applications	
• Electromagnetics	• Occupant Safety	

Paper Length: Maximum of 3000 words, single-spaced, on 8-1/2" x 11" paper

Format: A MS Word template will be provided

Contact: papers@lstc.com

Livermore Software Technology Corporation

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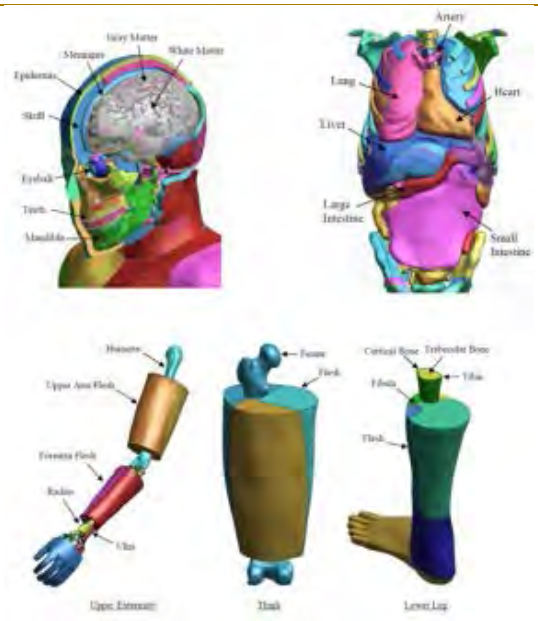
Webinar	**Date**	**Location**
Sheet metal forming, DYNAform/LS-DYNA	15 October, 13-15	WEB
Sheet metal forming, FTI Software	22 October, 10-12	WEB
Composite modeling in LS-DYNA, #1	TBD – more info later	WEB
Composite modeling in LS-DYNA, #2	TBD – more info later	WEB
Composite modeling in LS-DYNA, #3	TBD – more info later	WEB
ANSA #1, basic geometry handling	5 November, 10-12	WEB
ANSA #2, Model set-up in LS-DYNA	20 November, 13-15	WEB
mETApost #1, basic post processing	5 December, 10-12	WEB
Courses	**Date**	**Location**
ALE and FSI	26 September	Stuttgart
LS-DYNA Implicit Analysis	1 October	Göteborg
LS-DYNA, Simulation of sheet metal forming processes	8 October	Linköping
Contacts in LS-DYNA,	15 October	Göteborg
Introduction to ANSA & mETA	22 October	Linköping
Crash Analysis	5 November	Linköping
Introduction to Composite Modeling	12 November	Linköping
Material Failure	19 November	Linköping
Introduction to LS-PrePost	25 November	Linköping
Introduction to LS-DYNA	26 November	Linköping
Concrete and Geomaterial Modeling	5 December	Ulm
Explosives Modeling for Engineers	9 December	Stuttgart
Blast Modeling	10 December	Stuttgart
Penetration Modeling	12 December	Stuttgart
Crash Analysis	17 December	Stuttgart

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.

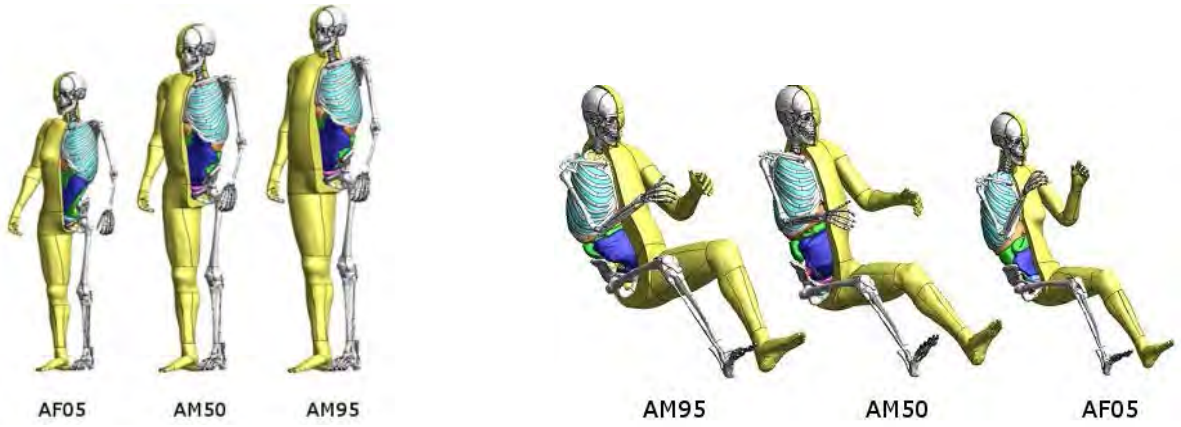


THUMS is limited to civilian use and may under no circumstances be used in military applications.

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.

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

BETA CAE Systems S.A.– ANSA

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.

BETA CAE Systems S.A.– μETA

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

http://www.cray.com/Products/Products.aspx

The Cray XK6

The Cray XK6 supercomputer combines Cray's proven Gemini interconnect, AMD's leading multi-core scalar processors and NVIDIA's powerful many-core GPU processors to create a true, productive, hybrid supercomputer

Cray XE6™ and Cray XE6m™ Supercomputers

The Cray XE6 scalable supercomputer is engineered to meet the demanding needs of capability-class HPC applications. The Cray XE6m is optimized to support scalable workloads in the midrange market.

Cray XMT™ System YarcData uRiKA™ Graph Appliance

The YarcData uRiKA graph appliance is a purpose built solution for Big Data relationship analytics. uRiKA enables enterprises to discover unknown and hidden relationships in Big Data, perform real-time analytics on Big Data graph problems, and realize rapid time to value on Big Data solutions.

The uRiKA graph appliance complements an existing data warehouse or Hadoop cluster.

Cray Sonexion 1300™ Storage System

The Cray Sonexion 1300 system is an integrated, high performance storage system that features next-generation modular technology to maximize the performance and capacity scaling capabilities of the Lustre file system.

Cray also offers custom and third-party storage and data management solutions

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.

GNS - Gesellschaft für Numerische Simulation mbH

www.gns-mbh.com

Animator4

A general finite element post-processor and holds a leading position in its field. Animator4 is used worldwide by almost all automotive companies, a great number of aerospace companies, and within the chemical industry.

Generator2.

A specialized pre-processor for crashworthiness applications and has become very successful in the field of passenger safety and pedestrian protection. It is mainly used as a positioning tool for finite element component models by a great number of automobile companies throughout the world.

Indeed

An easy-to-use, highly accurate virtual manufacturing software that specializes in the simulation of sheet metal forming processes. Indeed is part of the GNS software suite and works concurrently with all other GNS software products.

OpenForm

A pre- and post-processor independently of a particular finite element forming simulation package. The software is extremely easy to handle and can be used as was designed to enable those who are not finite element experts to carry out multi-stage forming simulations with even complex multi purpose finite element codes.

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 www.cometsolutions.com

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.** info@caeai.com www.caeai.com			
	ANSYS Products	CivilFem	Consulting ANSYS Consulting LS-DYNA	
United States	**DYNAMAX** sales@dynamax-inc.com www.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	Visual-Process
	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** www.gompute.com		info@gompute.com	
	LS-DYNA Cloud Service		Additional software	
	Additional Services			
United States	**Comet Solutions** Comet Software		steve.brown@cometsolutions.com	

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	

United States	**Predictive Engineering** www.predictiveengineering.com		george.laird@predictiveengineering.com	
	FEMAP	NX Nastran	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	LSTC Dummy Models	
			LSTC Barrier Models	

France	**DynaS+**		v.lapoujade@dynasplus.com	
	www.dynasplus.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	DYNAFORM	VPG	MEDINA	
	LSTC Dummy Models		LSTC Barrier Models	

Germany	**CADFEM GmbH**		lsdyna@cadfem.de	
	www.cadfem.de			
	ANSYS	LS-DYNA	optiSLang	
	ESAComp	AnyBody		
	FTI FormingSuite			

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	
	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

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			
	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	

Switzerland	**DYNAmoreSwiss GmbH**		info@dynamore.ch	
	www.dynamore.ch			
	LS-DYNA		LS-OPT	LS-PrePost
	LS-TaSC		LSTC Dummy Models	
			LSTC Barrier Models	
UK	**Ove Arup & Partners**		dyna.sales@arup.com	
	www.oasys-software.com/dyna			
	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
	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
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
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China	**Oasys Ltd. China**		Stephen.zhao@arup.com	
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	PRIMER D3PLOT	HYCRASH	T/HIS REPORTER	SHELL
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China	**Shanghai Hengstar Technology**		info@hengstar.com	
	www.hengstar.com			
	LS-DYNA	LS-TaSC	LSTC Barrier Models	
	LS-DYNA Courses	LS-OPT	LSTC Dummy Models	LS-PrePost

India	**Oasys Ltd. India**		lavendra.singh@arup.com	
	www.oasys-software.com/dyna			
	PRIMER	D3PLOT	T/HIS	
			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	
	http://kaizenat.com /			
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
	Complete LS-DYNA suite of products		LSTC Barrier Models	LS-TaSC

Japan **CTC** LS-dyna@ctc-g.co.jp

www.engineering-eye.com

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

LSTC Dummy Models | LSTC Barrier Models | CmWAVE

Japan **JSOL**

www.jsol.co.jp/english/cae

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

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

LSTC Dummy Models | LSTC Barrier Models | CLOUD Services

Japan **LANCEMORE** info@lancemore.jp

www.lancemore.jp/index_en.html

Consulting LS-DYNA

Japan **Terrabyte Co.**

http://www.terrabyte.co.jp

Consulting LS-DYNA

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	www.lsdyna.co.kr			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
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	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
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM
	eta/DYNAFORM	DIGIMAT	Simuform	Simpack
	AxStream	TrueGrid	FEMZIP	

Taiwan	**Flotrend**	gary@flotrend.tw		
	www.flotrend.com.tw			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Taiwan	**APIC**			
	www.apic.com.tw			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
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The Complete Courses Offered Can Be Found At: www.lstc.com

Training Classes — Sweden DYNAmore Nordic — Training Classes

The Complete Courses Offered Can Be Found At: www.dynamore.se

Training Classes — France DynAS+ — Training Classes

The complete Training Courses offered can be found at www.dynasplus.com

Training Classes	Thailand	Training Classes

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

Training Classes	United States ETA	Training Classes

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

Training Classes	United States CAE Associates	Training Classes

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Training Classes	France Alyotech Technologies	Training Classes

For course location visit www.alyotech.fr

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http://www.facebook.com/pages/BETA-CAE-Systems-SA/193472524006194

Cray Inc.
http://www.facebook.com/crayinc

ESI Group
http://www.esi-group.com/corporate/facebook/

 **TWITTER**

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 **LINKEDIN**

BETA CAE SYSTEMS SA

http://www.linkedin.com/company/beta-cae-systems-s.a.?trk=fc_badg

Cray Inc.

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ETA

http://www.linkedin.com/groupRegistration?gid=1960361

Oasys

http://www.linkedin.com/groups/Oasys-LSDYNA-Environment-Software-4429580?gid=4429580&trk=hb_side_g

 **YOUTUBE**

BETA CAE SYSTEMS SA

http://www.youtube.com/user/betacae

Cray Inc. http://www.youtube.com/user/crayvideo

ESI Group http://www.youtube.com/ESIgroup

ETA http://www.youtube.com/user/etainfo1

Lancemore http://www.youtube.com/user/LancemoreJP?feature=watch

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