FEBRUARY
2007

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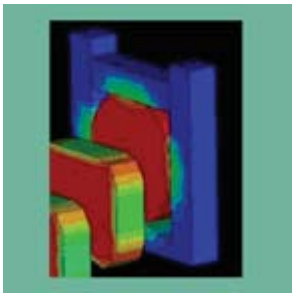
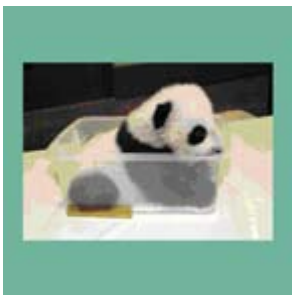
FUTURE CARS

U.S. Department of Energy and General Motors Challenge X: Crossover to Sustainable Mobility

AVI LIBRARY



CHINA NEWS



FEA Information Worldwide Participants

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FEA Information Announcements

FEA Information Inc

Updated or New websites

CAE Analysis
Computer Aided Engineering
LS-DYNA Consulting

EnginSoft

The LS-DYNA Distributor for Italy
Updated site dedicated to LS-DYNA
EnginSoft Sales and Information for LS-DYNA

Engineering Research Nordic AB – ERAB

The LS-DYNA Distributor for the Nordic and Baltic States
Updated site dedicated to LS-DYNA
ERAB Sales and Information for LS-DYNA

The 6'nd European LS-DYNA Users' Conference will be held
May 29-30, 2007, at Quality Hotel 11, Gothenburg, Sweden
http://www.erab.se/conference2007

Sincerely,

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Marsha J. Victory
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TopCrunch Benchmarks For Complete Information

Vendor/Submitter – SGI/Application Engineering
02/06/2007 - 02/14/2007

Computer/Interconnect	Processor	#Nodes x #Processors per Node x #Cores Per Processor = Total #CPU	Time (Sec)	Benchmark Problem
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	16 x 2 x 2 = **64**	353	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	8 x 2 x 2 = **32**	452	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	6 x 2 x 2 = **24**	587	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	4 x 2 x 2 = **16**	779	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	2 x 2 x 2 = **8**	1436	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	2 x 2 x 1 = **4**	2075	neon_refined

Continued on Next Page

TopCrunch Benchmarks For Complete Information

Vendor/Submitter – SGI/Application Engineering
02/06/2007 - 02/14/2007

Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 2 x 1 = **2**	3916	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 2 x 2 = **4**	2803	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	2 x 1 x 1 = **2**	3916	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 1 x 1 = **1**	4200	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 2 x 1 = **2**	4200	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 1 x 2 = **2**	5405	neon_refined
Altix XE1200 Compute Cluster/Voltaire IB 410 HCA PCIe card with firmware v1.2.0 Voltaire ISR9024 SDR 24 port IB switch	Intel 5160 Woodcrest DC 3.0GHz	1 x 1 x 1 = **1**	7884	neon_refined

LS-DYNA Publication - Abstract

Updated information and/or facts may be available. Contact the paper author.
Chosen from the 9th International LS-DYNA Users Conference 2006 –

The Complete Paper is found on FEA Publications Side Bar Link: "Featured"

The Performance of Large Car Model by MPP Version of LS-DYNA on Fujitsu PrimePower

Mitsuhiro Makino –
Fujitsu Limited
9-3 Nakase 1 Chome Mihama-ku, Chiba 261-8588
Japan

Abstract

In order to get the accurate results, the car models become large and the computational time becomes long. I developed 1.2million elements car models based on NCAC Caravan model, for studying the performance of large number of elements models and large number of CPUs on MPP version of LS-DYNA.

1., The selection of parts of surface to surface contact is sensitive for the large number of CPUs.
2. Soft=2 contact is good performance compared with Soft=1 contact for large number of CPUs

Introduction

Many efforts have been doing to get the good accuracy in crash analysis by LS-DYNA. As well as the full integrated shell elements(TYPE=16), the modeling by the fine mesh is very popular[1], because of

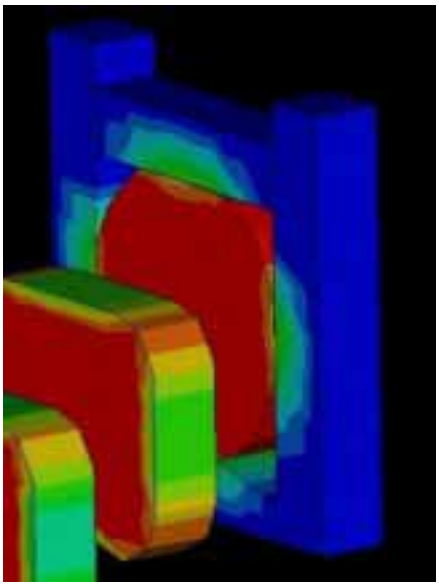
1. to represent the car geometry more accurate,
2. to reduce the development cost and time by using the batch mesh generator,
3. to reduce the noise when slave nodes moves the edge of master segment, and
4. to reduce the mesh size effects.

On the other hand, these efforts increase the computational times. Type 16 shell elements are 3 times expensive than default Type2 shell elements. For explicit analysis, fine mesh needs more computational time than the increase of number of mesh number, for example, when the edge size of shell element reduces to half, number of elements becomes 4 times, but computational times becomes 8 times because the time step size also becomes half by Courant condition.

In order to execute these models, MPP, which parallel processing for distributed memory system, is introduced in LS-DYNA. The large car model is developed and the performance of large number of CPUs is reported in this page

LS-DYNA Featured AVI
Multi Forging

Complete AVI's are located at:
www.feainformation.com top bar link "AVI Lib"



AVI Library 71a Multi Forging

Forging #71: A non-isothermal forging is modeled. A hot workpiece is placed in a cold die. Note the contact locations between the workpiece and the punch and die. The workpiece is seen to cool down at these contact locations as heat is transferred to the cold punch and die.

Information From The Website Heat Transfer Analysis

VAUC 2007 – Vibro-Acoustic User Conference

June 12-13 2007 - Cologne, Germany

ESI Group's user conference on noise and vibration simulation. This event will take place on June 12-13, 2007 at the Hilton Hotel in Cologne, Germany. It represents a unique opportunity in Europe for technical exchange between experts of vibro-acoustic simulation.

During this 2-day event, attendees will have the opportunity to hear papers from major industry users and in-depth product presentations in acoustics and vibration.

The VAUC 2007 will be your chance to see how virtual prototyping solutions:

- reduce the need for costly laboratory testing
- speed up the product development process
- minimize the production cost of noise and vibration control materials

Registration fees

The Conference will be free of charge. Participants only pay for the travel and lodging.

Important dates

- Deadline for Abstracts: 28th February 2007
- Author notification of acceptance: 15th March 2007
- Deadline for the receipt of the presentation: 15th May 2007

Contact:

Isabelle Girard
igi@esi-group.com

More information can be found at http://www.esi-group.com/VAUC2007/index_html

Global Reaching Review

HP Labs is opening its seventh site in St. Petersburg, Russia

January 2007

HP Labs is opening its seventh site in St. Petersburg, Russia, to pursue advanced technologies for extracting and organizing useful information from the explosion of vast, unstructured aggregations of data brought about by the advent of the Worldwide Web.

The Russia facility is HP Labs' seventh worldwide and third since 2002.

HP has operated in Russia for four decades, and is the No. 1 IT vendor in that nation. The new lab aims to tap Russia' rich pool of technical talent.

"A globally distributed R&D network allows HP to access research talent anywhere and collaborate around the world to create new technologies for our customers," said Shane Robison, executive vice president and chief strategy and technology officer, HP.

To learn more about plans for the new site, we talked with Beth Keer, who is leading creation of the lab and is its acting director. Keer is also director of HP Labs' Information Services and Process Innovation Lab.

What led HP to select Russia as the site of the newest HP Labs?

Keer: Russia is full of promise for HP. We've been doing businnss there for 40 years, and already have a large customer base. More than that, Russia has a thriving economy with a lot of brainpower and entrepreneurial talent – and the intellectual resources to support HP's research and development needs. Within the research field, we see a lot of creative people with strong mathematics and computer science backgrounds. And that is ideal for HP Labs

And Why St. Petersburg?

Keer: St. Petersburg has a long history of education and, of course, it is Russia 's second largest city. It has a wealth of universities and research institutes. What we are noticing is that St Petersburg is becoming a rapidly growing IT hub – in the U.S, we would say it has the beginnings of a Silicon Valley.

Our relationships in Russia won't be confined to St. Petersburg, however. We will be working with research partners in Moscow and other cities within Russia.

In addition to work begun with Moscow's Kurchatov Institute, we have established early research collaborations with other universities and research institutes, including the Institute for System Programming of the Russian Academy of Sciences, Moscow State University, St

Petersburg State Polytechnic University, University of St. Petersburg, and PSI RAS Pereslavl-Zalessky. As we find other research partners working in information management areas, we will consider adding collaborations

What kind of people are you recruiting in Russia?

Keer: The philosophy of our founders, Bill Hewlett and Dave Packard, was simple – just hire the best talent and let them focus on what they love doing. Within HP Labs, we have the same philosophy.

But we do require something more than talent and imagination in our researchers. We also expect them to have insights about how innovations can be linked to HP products and services so that their breakthroughs will have the maximum impact on our business. Now that our intentions for the lab have been made public, we are going into full hiring mode

Why has HP chosen to have the new HP Labs in Russia focus on information management?

Keer: Information management is a vital research area for the coming decade. It is a very high priority for both our enterprise and our consumer customers. I also expect that as HP Labs Russia grows we will develop other research areas; one of the key roles that HP labs is to stay ahead of new technical challenges that our customers face. Because those challenges vary over time, our research portfolio changes as well.

Why is information management so important?

Keer: You could argue that information management is a Next Big Thing. Applying algorithms and analytics to data to make better use of it and to improve business processes is one of the hottest areas in computer research.

Digital information is growing at a clip that most businesses and individuals can't cope with. Some experts like IDC say digital data is growing at a rate of over 50 percent a year. This creates tremendous strain on both IT environments and the human beings trying to make sense of the data.

There are many advanced IT needs in this field. Besides just coping with the sheer scale of the information management problem – storing the data, managing the systems, there is also the need to remove duplicates, compress data so it takes up less space, manage it based on corporate policies, preserve it for the long term.

Our enterprise customers also need better information management to cope with government regulation and to deal with risks to their information security and their customers' privacy.

There is a wealth of opportunities for extracting useful information from today's glut of raw data and allowing businesses to offer better services to their customers.

In its internal operations, HP is using better information management to create innovative business processes: whether it is machine learning techniques applied to analysis of customer support call records, supply chain management, reduction of product SKUs or currency hedging

What sorts of applications might come out of HP Labs Russia?Keer: I can't foresee all the applications researchers at HP Labs Russia will create. After all, it is their job to come up with things that haven't been invented yet. But I will stress that our approach is to create research prototypes that solve real customer information management problems.One of the things we are committed to at HP Labs Russia is joint research with some of HP's leading customers in Russia in the private and public sector. Many of our important innovations have come from collaborating actively with leading-edge customers and helping them solve their most difficult problems.**How closely is this research linked to HP's corporate strategy?**Keer: We try to tie all of HP Labs' research to either today's HP business strategies or tomorrow's strategic intent. HPL-Russia will be a full fledged member of the global HP research community. We're not just outsourcing software development or support. We are developing a magnet research organization that will help HP build more innovative products in the future.

Press Release

Intel Research Chip Advances 'Era Of Tera'

SANTA CLARA, Calif., February 11, 2007 -- Intel Corporation researchers have developed the world's first programmable processor that delivers supercomputer-like performance from a single, 80-core chip not much larger than the size of a finger nail while using less electricity than most of today's home appliances. This is the result of the company's innovative 'Tera-scale computing' research aimed at delivering Teraflop -- or trillions of calculations per second -- performance for future PCs and servers. Technical details of the Teraflop research chip will be presented at the annual Integrated Solid State Circuits Conference (ISSCC) this week in San Francisco.

Tera-scale performance, and the ability to move terabytes of data, will play a pivotal role in future computers with ubiquitous access to the Internet by powering new applications for education and collaboration, as well as enabling the rise of high-definition entertainment on PCs, servers and handheld devices. For example, artificial intelligence, instant video communications, photo-realistic games, multimedia data mining and real-time speech recognition - once deemed as science fiction in Star Trek shows - could become everyday realities.

Intel has no plans to bring this exact chip designed with floating point cores to market. However, the company's Tera-scale research is instrumental in investigating new innovations in individual or specialized processor or core functions, the types of chip-to-chip and chip-to-computer interconnects required to best move data and most importantly, how software will need to be designed to best leverage multiple processor cores. This Teraflop research chip offered specific insights in new silicon design methodologies, high-bandwidth interconnects and energy management approaches.

"Our researchers have achieved a wonderful and key milestone in terms of being able to drive multi-core and parallel computing performance forward," said Justin R. Rattner, Intel's chief technology officer. "It points the way to the near future when Teraflop-capable designs will be commonplace and will reshape what we can all expect from our computers and the Internet at home and in the office."

The first time Teraflop performance was achieved was in 1996, on the ASCI Red Supercomputer built by Intel for the Sandia National Laboratory. That computer took up more than 2000 square feet, was powered by nearly 10,000 Pentium Pro processors, and consumed over 500 kilowatts of electricity. Intel's research chip achieves this same performance on a multi-core chip that could rest on the tip of a finger.

Also remarkable is that this 80-core research chip achieves a teraflop of performance while consuming only 62 watts - less than many single-core processors today.

The chip features an innovative tile design in which smaller cores are replicated as "tiles," making it easier to design a chip with many cores. With Intel's discovery of new and robust materials to build future transistors and no immediate end in sight for Moore's Law, this lays a path to manufacture multi-core processors with billions of transistors more efficiently in the future.

The Teraflop chip also features a mesh-like "network-on-a-chip" architecture allowing super high bandwidth communications between the cores, and capable of moving Terabits of data per second inside the chip. The research also investigated methods to power cores on and off independently, so only the ones needed to complete a task are used, providing more energy efficiency.

Further Tera-scale research will focus on the addition of 3-D stacked memory to the chip as well as developing more sophisticated research prototypes with many general-purpose Intel Architecture-based cores. Today, the Intel Tera-scale Computing Research Program has over 100 projects underway that explore other architectural, software and system design challenges.

Intel is presenting eight other papers at ISSCC, including one which will cover the Intel Core micro-architecture and its use in dual and quad core processors spanning laptops to desktop PCs and servers, using both 65nm and revolutionary 45nm process technologies. Other papers cover such topics as a Radio Frequency Identification (RFID) reader transceiver chip, a low power cache for mobile applications, a reconfigurable Viterbi accelerator, as well as novel circuits for on-die supply resonance suppression, on-chip phase-noise measurement and adaptive techniques for variations and aging.

U.S. Department of Energy and General Motors Challenge X: Crossover to Sustainable Mobility

QUICK FACTS AND BACKGROUND

Background

Over the past decade, as American consumers have tended to purchase family-sized vehicles that offer more utility, there has been a simultaneous demand to reduce energy consumption and vehicle emissions. During this time, the automotive industry, U.S. government, and academia have been working together through a series of special competition programs to develop and explore advanced technologies to address these important energy and environmental issues, and lead to sustainable vehicle solutions.

Previous competition programs have challenged thousands of engineering students across the United States and Canada to achieve better fuel economy and lower emissions while maintaining the safety, performance, utility and consumer appeal of a variety of vehicles. The U.S. Department of Energy (DOE) and key industry sponsors led by General Motors Corporation (GM) have expanded that concept and developed a new competition series that launched in 2004. The new competition series differs from previous programs by following a vehicle development process that is used in industry, teaching students the real-world process and better equipping them with the tools they need to fully realize their vehicle designs.

Challenge X: Crossover to Sustainable Mobility

The U.S. Department of Energy and General Motors have teamed up with other sponsors to challenge the best and brightest engineering students from universities throughout North America in the competition series, **Challenge X: Crossover to Sustainable Mobility**. The 2006-2007 academic year is the third year of the program, and is the final year students will be working on their vehicles, though a fourth promotional year is planned for 2007-2008.

Seventeen university teams from the United States and Canada are following a hands-on, real-world engineering process, based on GM's Global Vehicle Design Process, at each phase of the three-year competition. By applying proven methods for engineering successful prototype vehicles, the program aims to teach real-world engineering skills to students that will make them highly valuable to the automotive community.

Students are working on a 2005 Chevrolet Equinox – a GM crossover sport utility vehicle platform –integrating cutting-edge advanced automotive technologies and alternative fuels, such as hydrogen, ethanol, and biodiesel, to minimize total environmental impact and build a sustainable transportation future.

Competition Details

Year One of Challenge X emphasized vehicle simulation, powertrain testing, and engineering trade-offs that occur in the early stages of vehicle design. The students were challenged to do intensive modeling, simulation and testing to guide their hardware development – a key phase of the GM Vehicle Development Process. At the end of Year One each team received an identical stock 2005 Chevrolet Equinox. The powertrain designs developed in the first year were installed into vehicles in the second year of competition, giving the teams a head start on the vehicle integration process as they bring their designs to life.

Years Two and Three of Challenge X focus on the second and third key phases of the vehicle development process – vehicle integration and full vehicle development. In Years Two and Three, each university team will integrate and refine their advanced powertrain and other vehicle subsystems into their Equinox. Year Two focused on powertrain development and demonstration of the energy use and emissions goals of the competition. Team vehicles were judged extensively in categories such as towing capacity, acceleration, off-road performance, greenhouse gas impact, total well-to-wheels fuel economy, emissions, and consumer acceptability. Teams also were required to give technical oral presentations and submit an SAE-style technical paper.

The current year, Year Three, will require further refinement of the vehicle with the goal of delivering a "showroom" vehicle that addresses the requirements of consumers. At the conclusion of each competition year, teams will be judged on their execution, progress toward meeting the Challenge X goals and ability to predict their performance using math-based tools.

Based on the success of the program, GM and the Department of Energy have announced that they will extend the Challenge X program one more year following the third year competition. The fourth year will give students the opportunity to implement additional innovative technologies in their vehicles, such as telematics, that will help meet consumer demands for safety, security and convenience.

Participants & Sponsors

A selection process open to all accredited engineering schools in the United States and Canada began in September 2003, and 17 teams were selected in February 2004. Challenge X participants were announced in the spring of 2004.

The U.S. Department of Energy and General Motors are the headline sponsors for the Challenge X competition; Argonne National Laboratory, a Department of Energy R&D facility, will provide competition management, team evaluation and technical and logistical support. More than 30 industry sponsors provide participating teams with leading-edge math simulation software, automotive propulsion systems, fuels, emissions-control technologies, fuel cells and other tools and technologies to compete in the program; they also provide mentoring support to the students.

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Competition - Steve Gurski
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February Participants Websites

AUSTRALIA

Leading Engineering Analysis Providers (LEAP) stands for Leading Engineering Application Providers. Our area of expertise is the application of technology to enable efficient product development, manufacturing, and management of the whole process throughout the entire lifecycle. At LEAP we have the experience and desire to solve engineering problems that no-one else can.

Germany

CAD-FEM GmbH as a software and engineering house - has been one of the first addresses for companies, research institutes and Universities in the field of the Finite-Element-Method (FEM) and Knowledge-based Engineering (KBE). CAD-FEM's field of activities ranges from distribution of worldwide leading best-in-class software like ANSYS and LS-DYNA to training, support, consultancy, and distribution of hardware.

USA

QLogic Corporation (Nasdaq:QLGC) simplifies the process of networking storage for OEMs, resellers and system integrators. With the vision of a SAN in every business, QLogic produces the controller chips, host bus adapters (HBAs) and fabric switches that are the backbone of storage networks for most Global 2000 corporations.

USA

ETA is a company whose engineering services, software and personnel, have impacted the design and development of the products that we use each day - autos, trains, aircraft, household appliances and consumer electronics. By enabling engineers to simulate the behavior of these products during manufacture or during their use, ETA has been involved in making your products safer, more durable, lighter weight, and less expensive to develop.

China News

Pictures from China Foto Press ©

SICHUAN, China -- The Sichuan Wolong Panda Protection and Breed Center: 16 pandas have been born since July, 2006. The heaviest tips the scale at just over 24 pounds, while the lightest weighs about 11 pounds.

Internet Excerpts from China Tech News

Microsoft Opens Technology Center In Yunnan Province
February 15, 2007
Yunnan Provincial Government and Microsoft (MSFT) China have signed a memorandum of understanding for opening a Yunnan Microsoft Technology Center to better develop the informationization of Yunnan Province. Read More >

IBM Unveils New Strategies For China Market
February 12, 2007
IBM (IBM) China has released its achievements made in the China market in 2006 and the company's new strategic focus in the country for 2007. Read More >

AMD Inks Strategic Chinese Partnership With TCL Computer
January 26, 2007
AMD (AMD) says that TCL Computer, one of China's fastest-growing PC manufacturers, will offer customers a range of commercial notebooks and desktops based on high-performing, energy-efficient AMD64 processors. Read More >

Intel Joins Hands With Partners For Franchised Netcafes
January 26, 2007
Intel (INTC) China has signed a memorandum of understanding with TCL Computer and Langtaosha Chain Netcafe in Nanjing to construct a chain of netcafes. Read More >

LS-PrePost® Online Documentation News Update

www.lstc.com/lspp © Copyright LSTC

LS-PrePost is 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 Unix utilizing OpenGL graphics to achieve fast rendering and XY plotting. The latest builds can be downloaded from LSTC's ftp site. (Link1, Link2 *for older web browsers*)

Key Pre-Processing Features:

- Importing and combining multiple models
- Improved renumbering of model entities
- Model Manipulation
  Translate, Rotate, Scale, Project, Offset, Reflect
- LS-DYNA Entity Creation
  Coordinate Systems, Sets, Parts, Masses, CNRBs, Boxes, Spotwelds, SPCs, Rigidwalls, Rivets, Initial Velocity, Accelerometers, Cross Sections
- Special Applications
  Airbag Folding, Dummy Positioning, Seatbelt Fitting, Initial Penetration Check, Spotweld Generation using MAT_100
- Mesh Generation
  2Dmesh Sketchboard, nLine Meshing, Tet-Meshing, Automatic surface meshing of IGES and VDA data, Meshing of simple geometric objects (Plate, Sphere, Cylinder)

LS-PrePost For Complete FAQ

Question: How can I scale an entire model or a portion of a model?

1. With a keyword file loaded, go to the Page2 Scale Interface
2. Choose the appropriate local or global Scale Direction (ex: Global XYZ)
3. Enter the desired Scale Factor (ex: 25.4)
4. Choose scaling origin by *Pick node* or *NodeID* or *XYZ* coordinate (ex: 0,0,0)
5. Use the bottom panel Gen Select Interface to select the portion of the model to scale
6. Click *Scale Up* or *Scale Down*
7. Click *Apply* or Done to commit the operation

What's New in LS-PrePost

11-Feb - Added support for the *SENSOR keyword

10-Feb - Removed obsolete functions from Page 2 (*Clipp*)
and Page 7 (*IcemHex* and *IGES*)

Yahoo LS-DYNA Group Yammerings

Note: LS-DYNA Yahoo Group is neither owned nor operated by LSTC.
LSTC has no control over the content.

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The LS-DYNA Yahoo Group archives contains a wealth of information that can be helpful to any LS-DYNA user. You can subscribe to the group by sending an email request to LS-DYNA-subscribe@yahoogroups.com or by visiting the Yahoo Groups web site http://groups.yahoo.com

We suggest you review the archives when you are seeking help on any topic related to LS-DYNA.

This installment of "Yahoo Yammerings" features several questions, with responses, from the past month of postings to the LS-DYNA Yahoo Group.

1. **Material Failure in Compression and Tension?**
2. **Visualizing EFG/SPH Particles?**
3. **Modeling a Compressed Spring?**
4. **How to View Composite Material Axes in LS-PrePost?**
5. **Announcement: ASME Guide for Verification & Validation.**

NOTE: Questions and responses may have been edited for clarity & brevity.

Question: Material Failure in Compression and Tension?

In a bending simulation of a simple part with solids -in this case implicit- I see that the inner layer of the part is compressed and the outer one is stretched. Until now normal behavior.

When I setup a failure parameter like EPSFAIL, at say 30%, the elements are deleted but not on the right side, it should be outer and the elements deleted are in the inner layer.

Why? Because the EPS does not care about compression or tension. Does any one have an idea how to setup a failure only in tension but not in compression, or better compression failure at higher strains?

Answer by Len Schwer

Among the problems with using the LS-DYNA effective plastic strain measure as a failure criterion is the fact that it is insensitive to the sign of the plastic strains, viz.

EPS = Integral [EPSILON^p_ij : EPSILON^p_ij] dt

Where EPSILON^p_ij is the plastic component of the increment in the effective strain tensor.

I suggest you try using the maximum (EPS1) and minimum (MNPEPS) principal strain criteria available in LS-DYNA Version 971 under the keyword *MAT_ADD_EROSION.

Question: Visualizing EFG/SPH Particles?

I am performing water impact simulation using EFG, searching for some information I found that EFG simulation can be displayed similar to SPH showing the model's nodes as spheres. LS-PrePost manual mentions the command "sphere" in the "appearance" section that is supposed to "display solid part nodes as spheres - for EFG Analysis" but using this command the visual result is pretty much the same as using the "grid" hot-key because the spheres are too small.

I wonder if someone knows how to modify the sphere radius?

Answer by Akram Abu-Odeh

After you set the appearance as SPH, click the Setting button on Page1. Select the SPH nodes. Then, you will see fields for SPH Radius Scale and style type (point, smooth, ...etc). You should get very nice rendering by adjusting these fields and the radius.

Question: Modeling a Compressed Spring?

I have a 3D (4-node tetrahedron element) spring. Its original length is 50mm. After compression, its current length is 45 mm and I put it into my model which is very complicated. I want to simulate the processing after releasing the compressing and find the impact of the releasing spring on the other parts.

Could anybody tell me how to set up the compressed spring or give me the example?

Answer by Jim Kennedy

The implicit solver and dynamic relaxation offer two different approaches to obtain initial stresses. My first choice would probably be the dynamic relaxation approach.

To follow up dynamic analysis after achieving the initial stress with the implicit solver feature, you can use the switch option, IMFLAG option, offered on the *CONTROL_IMPLICIT_GENERAL data entry.

For pre-stressing your structure, using the dynamic relaxation (implicit or explicit solvers are both available), you need to employ an IDRFLG option in the *CONTROL_DYNAMIC_RELAXATION data entry.

To follow up dynamic analysis after achieving the initial stress with dynamic relaxation feature, I believe you also need to set the proper SIDR option on the *DEFINE_CURVE entry.

Question: How to View Composite Material Axes in LS-PrePost?

I want to orient composite fibers by some angle, say 45 deg. In the input file I gave beta as 45 deg. But how to check this by viewing in LS-PrePost?

Answer by David Andrieu

It is possible to see the material direction, but you will have to use the new version of LS-PrePost, released after October 2006. In this version, go to Menu2>ElEdit>Element>Direction : there you will be able to see, and also modify, the material direction.

However, from my understanding (and I'm a beginner user), you only see the material direction of the first layer of your laminate so you should align your material direction with the direction of the fiber of the first layer, i.e. to have the first Beta angle equal to 0. For the other layers, you just input your Beta angles, which are the angles between the direction of the fibers in each layer and the material direction previously defined. With that kind of procedure, you will be able to visualize the direction of the fiber for the first layers, then it will be easy to “imagine” the others. I am almost sure there is no way to see the orientation of the fibers of 8 layers (for example) of the shell element, but as I said I'm a beginner user.

Announcement: ASME Guide for Verification & Validation

As computational mechanics has matured, a growing interest in how credible (believable) the results from sophisticated models and codes are for important response predictions has received increasing attention. The areas of accuracy and credibility of numerical simulations are generally called Verification and Validation (V&V). The ASME standards committee on Verification and Validation in Computational Solid Mechanics has recently completed a Guide to V&V and this document is now available through ASME:

V&V 10 - 2006 Guide for Verification and Validation in Computational Solid Mechanics
http://catalog.asme.org/Codes/PrintBook/VV_10_2006_Guide_Verification.cfm

LSTC Training Classes: 2007 Classes

The training center in California accommodates 23 students. The training center in Michigan accomodates 12 students.

Classes are scheduled throughout the year at both locations. For the most current schedule visit: www.lstc.com.

Onsite training is also available.

Training Classes	US $	California	Michigan
Advanced LS-DYNA for Impact Analysis	$950	June 26-29 Sept 18-21	
Advanced Options in LS-DYNA	$750	March 20-21	Sept 06-07
ALE/Eulerian & Fluid/Structure Interaction in LS-DYNA	$750	Feb 14-16	
Composite Materials	$750	June 14-15	
Concrete and Geomaterial Modeling with LS-DYNA	$1,000	Nov 01-02	
Contact in LS-DYNA	$750	Jan 15-16 June 12-13	Dec 10-11
Heat Transfer & Thermal-Stress Problems	$500		
Implicit	$750	March 22-23	Dec 12-13
Introduction to LS-DYNA	$750	Feb 06-09 May 01-04 July 30-Aug 02	March 13-16 June 05-08 Sept 11-14

Classes are continued on Next Page

LSTC Training Classes: 2007 Classes Continued

Introduction to LS-OPT	$750	Nov 13-16	Apr 10-13
LS-DYNA Implicit	$750	March 22-23	Dec 12-13
LS-DYNA for Heat Transfer & Thermal-Stress Problems	$500		
Material Modeling Using LS-DYNA User Defined Options	$750	June 18-19	
MESH Free Methods in LS-DYNA (SPH and EFG)	$750		

EVENTS – 2007

If you want your event listed please send the information to: mv@feainformation.com

LS-DYNA Events 2007

April 26-27	**2007 Korea LS-DYNA Conference (KOSTECH) Ducsan Castle - Korea.**
May 29-30	**6th European, Sweden**
Oct 11-12	**LS-DYNA Users Meeting - Germany - hosted by DYNAmore**
Oct 30-31	**Japan LS-DYNA Users Conference 2007 - hosted by JRI**
2008 June 8-10	**8th International Users Conference, Dearborn, MI, US**

Other Events

2007	
June 01-08	**International Conference on Computational Ballistics** Held at Ashurst Lodge, which is the home of the Wessex Institute, Rachel Swinburn - Conference Manager -rswinburn@wessex.ac.uk
July 02-04	**Computational Methods and Experimental Measurements**, at the Corinthia Towers Hotel, Prague
July 23-26	**Ninth US National Congress on Computational Mechanics**, San Francisco, CA
Sept. 17-19	Annual Technical Conference of the American Society for Composites (ASC)

LS-DYNA Resource Page

Interface - Hardware - OS And General Information

Participant Hardware/OS that run LS-DYNA (alphabetical order).

LS-DYNA has been fully QA'd by Livermore Software Technology Corporation for All Hardware and OS listed below.

TABLE 1: SMP - Fully QA'd by LSTC	
AMD Opteron	Linux
FUJITSU Prime Power	SUN OS 5.8
FUJITSU VPP	Unix_System_V
HP PA-8x00	HP-UX 11.11 and above
HP IA-64	HP-UX 11.22 and above
HP Opteron	Linux CP4000/XC
HP Alpha	True 64
IBM Power 4/5	AIX 5.1, 5.2, 5.3
IBM Power 5	SUSE 9.0
INTEL IA32	Linux, Windows
INTEL IA64	Linux
INTEL Xeon EMT64	Linux
NEC SX6	Super-UX
SGI Mips	IRIX 6.5 X
SGI IA64	SUSE 9 with ProPack 4 Red Hat 3 with ProPack 3

LS-DYNA Resource Page

MPP Interconnect and MPI

FEA Information Inc. Participant's (alphabetical order)

Fully QA'd by Livermore Software Technology Corporation

TABLE 1: SMP - Fully QA'd by LSTC	
AMD Opteron	Linux
FUJITSU Prime Power	SUN OS 5.8
FUJITSU VPP	Unix_System_V
HP PA-8x00	HP-UX 11.11 and above
HP IA-64	HP-UX 11.22 and above
HP Opteron	Linux CP4000/XC
HP Alpha	True 64
IBM Power 4/5	AIX 5.1, 5.2, 5.3
IBM Power 5	SUSE 9.0
INTEL IA32	Linux, Windows
INTEL IA64	Linux
INTEL Xeon EMT64	Linux
NEC SX6	Super-UX
SGI Mips	IRIX 6.5 X
SGI IA64	SUSE 9 with ProPack 4 Red Hat 3 with ProPack 3

TABLE 2: MPP Interconnect and MPI			
Vendor	**O/S**	**HPC Intereconnect**	**MPI Software**
AMD Opteron	Linux	InfiniBand (SilverStorm), MyriCom, QLogic InfiniPath	LAM/MPI, MPICH, HP MPI, SCALI
FUJITSU Prime Power	SUN OS 5.8		
FUJITSU VPP	Unix_System_V		
HP PA8000	HPUX		
HPIA64	HPUX		
HP Alpha	True 64		
IBM Power 4/5	AIX 5.1, 5.2, 5.3		
IBM Power 5	SUSE 9.0		LAM/MPI
INTEL IA32	Linux, Windows	InfiniBand (Voltaire), MyriCom	LAM/MPI, MPICH, HP MPI, SCALI
INTEL IA64	Linux		LAM/MPI, MPICH, HP MPI
INTEL Xeon EMT64	Linux	InfiniBand (Topspin, Voltaire), MyriCom, QLogic InfiniPath	LAM/MPI, MPICH, HP MPI, INTEL MPI, SCALI
NEC SX6	Super-UX		
SGI Mips	IRIX 6.5	NUMAlink	MPT
SGI IA64	SUSE 9 w/ProPack 4 RedHat 3 w/ProPack 3	NUMAlink, InfiniBand, (Voltaire)	MPT, Intel MPI, MPICH

LS-DYNA Resource Page - Participant Software Interfacing or Embedding LS-DYNA

Each software program can interface to all, or a very specific and limited segment of the other software program. The following list are software programs interfacing to or having the LS-DYNA solver embedded within their product. For complete information on the software products visit the corporate website.

ANSYS - ANSYS/LS-DYNA

ANSYS/LS-DYNA - Built upon the successful ANSYS interface, ANSYS/LS-DYNA is an integrated pre and postprocessor for the worlds most respected explicit dynamics solver, LS-DYNA. The combination makes it possible to solve combined explicit/implicit simulations in a very efficient manner, as well as perform extensive coupled simulations in Robust Design by using mature structural, thermal, electromagnetic and CFD technologies.

AI*Environment: A high end pre and post processor for LS-DYNA, AI*Environment is a powerful tool for advanced modeling of complex structures found in automotive, aerospace, electronic and medical fields. Solid, Shell, Beam, Fluid and Electromagnetic meshing and mesh editing tools are included under a single interface, making AI*Environement highly capable, yet easy to use for advanced modeling needs.

ETA – DYNAFORM

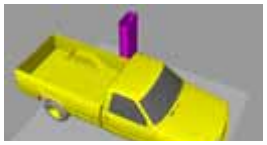
Includes a complete CAD interface capable of importing, modeling and analyzing, any die design. Available for PC, LINUX and UNIX, DYNAFORM couples affordable software with today's high-end, low-cost hardware for a complete and affordable metal forming solution.

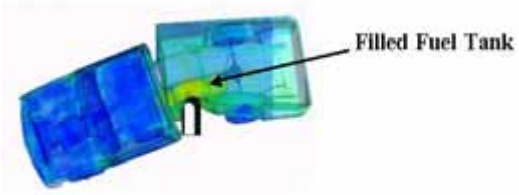
ETA – VPG

Streamlined CAE software package provides an event-based simulation solution of nonlinear, dynamic problems. eta/VPG's single software package overcomes the limitations of existing CAE analysis methods. It is designed to analyze the behavior of mechanical and structural systems as simple as linkages, and as complex as full vehicles

MSC.Software - MSC.Dytran LS-DYNA

Tightly-integrated solution that combines MSC.Dytran's advanced fluid-structure interaction capabilities with LS-DYNA's high-performance structural DMP within a common simulation environment. Innovative explicit nonlinear technology enables extreme, short-duration dynamic events to be simulated for a variety of industrial and commercial applications on UNIX, Linux, and Windows platforms. Joint solution can also be used in conjunction with a full suite of Virtual Product Development tools via a flexible, cost-effective MSC.MasterKey License System.





Side Impact With Fuel Oil Inside

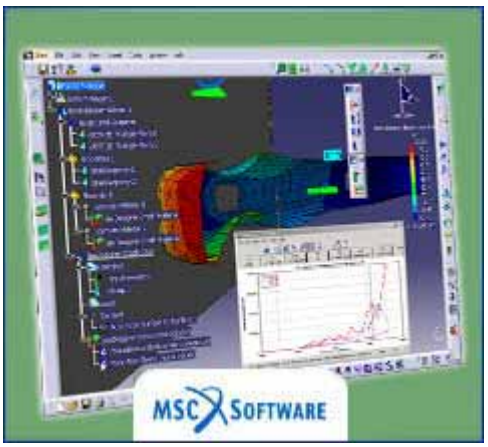
MSC.Software - MSC.Nastran / SOL 700

The MSC.Nastran™ Explicit Nonlinear product module (SOL 700) provides MSC.Nastran users the ability access the explicit nonlinear structural simulation capabilities of the MSC.Dytran LS-DYNA solver using the MSC.Nastran Bulk Data input format. This product module offers unprecedented capabilities to analyze a variety of problems involving short duration, highly dynamic events with severe geometric and material nonlinearities.

MSC.Nastran Explicit Nonlinear will allow users to work within one common modeling environment using the same Bulk Data interface. NVH, linear, and nonlinear models can be used for explicit applications such as crash, crush, and drop test simulations. This reduces the time required to build additional models for another analysis programs, lowers risk due to information transfer or translation issues, and eliminates the need for additional software training.

MSC.Software – Gateway for LS-DYNA

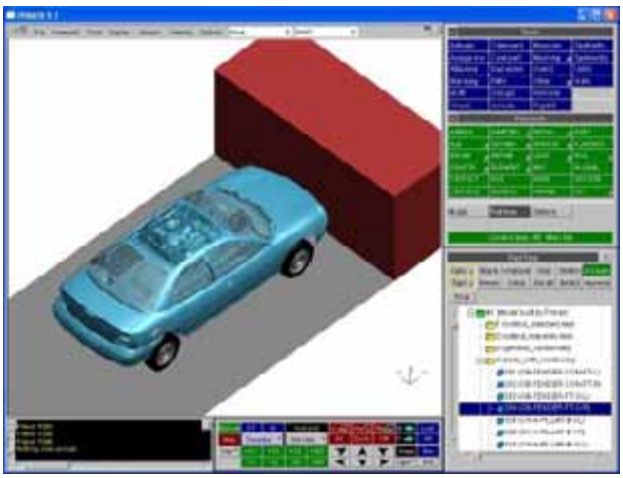
Gateway for LS-DYNA provides you with the ability to access basic LS-DYNA simulation capabilities in a fully integrated and generative way. Accessed via a specific Crash workbench on the GPS workspace, the application enhances CATIA V5 to allow finite element analysis models to be output to LS-DYNA and then results to be displayed back in CATIA. Gateway for LS-DYNA supports explicit nonlinear analysis such as crash, drop test, and rigid wall analysis.



Gateway products provide CATIA V5 users with the ability to directly interface with their existing corporate simulation resources, and exchange and archive associated simulation data.

Oasys software for LS-DYNA

Oasys software is custom-written for 100% compatibility with LS-DYNA. Oasys PRIMER offers model creation, editing and error removal, together with many specialist functions for rapid generation of error-free models. Oasys also offers post-processing software for in-depth analysis of results and automatic report generation.



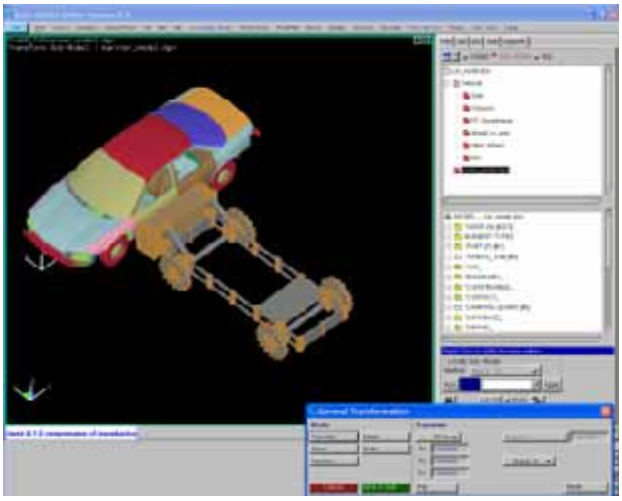
EASi-CRASH DYNA

EASi-CRASH DYNA is the first fully integrated environment for crashworthiness and occupant safety simulations with LS-DYNA, and covers the complete CAE-process from model building and dataset preparation to result evaluation and design comparisons.

EASi-CRASH DYNA can be used for concept crash, FE crash and coupled rigid body/FE crash simulations in conjunction with MADYMO.

EASi-CRASH DYNA's main features include:

- Support of all keywords of LS-DYNA 970/971
- Powerful mesh editing features, such as automesh and remesh
- LS-DYNA/MADYMO coupling capabilities for pre- and post processing
- Model Assembler for organizing the model through sub assembly/sub models and included files
- Enhanced Weld tools for manipulation of connections and Weld comparison
- Simple dummy positing and seat belt routing
- Pre and Post processing in same environment
- Superpose and merge multiple models
- Animation and plotting
- Process compatible
- Full capability to handle IGES, CATIA V4, CATIA V5, UG and NASTRAN files



Previous Month – Weekly News Page Highlights Review

Complete Product/Service Information can be found on the respective company websites.

LS-DYNA Information Sites

LSTC Website

LS-PrePost

Hardware/OS running LS-DYNA

DYNALOOK - Papers On Line to Download

FEA Information AVI Library - LS-DYNA AVI's

BETA CAE Systems S.A., headquartered in Thessaloniki, Greece, is a private engineering software company specialized in the development of state of the art CAE pre- and post-processing software systems. The company, focusing on meeting customers requirements, is committed to its mission.

Sales - Training - Consulting - Benchmarks

	**Predictive Engineering**
	**Structure Incorporated**
	**SE&CS:**
	**CAD-FEM GmbH**
	**Leading Engineering Analysis Providers**
	**Korean Simulation Technologies**
	**EnginSoft SpA**

Hardware - Computing - Communication Products

Logo's hyperlink to company's website

Software Distributors

Alphabetical order by Country

Australia	**Leading Engineering Analysis Providers**
Canada	**Metal Forming Analysis Corporation**
China	**ANSYS China**
China	**Arup**
China	**MSC. Software – China**
Germany	**CAD-FEM**
Germany	**Dyna*More***
India	**Altair Engineering India**
Italy	**EnginSoft Spa**
Japan	**Fujitsu Limited**
Japan	**The Japan Research Institute**
Japan	**ITOCHU Techno-Solutions Corporation**
Korea	**Korean Simulation Technologies**
Korea	**Theme Engineering**

Software Distributors (cont.)

Alphabetical order by Country

Netherlands	Infinite Simulations Systems B.V.
Russia	State Unitary Enterprise - STRELA
Sweden	Engineering Research AB
Taiwan	Flotrend Corporation
USA	Engineering Technology Associates, Inc.
USA	Dynamax
USA	Livermore Software Technology Corp.
UK	ARUP

Consulting and Engineering Services

Alphabetical Order By Country

(direct links will be completed October)

Australia Manly, NSW	**Leading Engineering Analysis Providers** (LEAP) Greg Horner info@leapaust.com.au 02 8966 7888
Canada Kingston, Ontario	**Metal Forming Analysis Corp.** Chris Galbraith galb@mfac.com (613) 547-5395
India Bangalore	**Altair Engineering India** Nelson Dias info-in@altair.com 91 (0)80 2658-8540
Italy Firenze	**EnginSoft Spa** info@enginsoft.it 39 055 432010
UK Solihull, West Midlands	**ARUP** Brian Walker brian.walker@arup.com 44 (0) 121 213 3317
USA Austin, TX	**KBEC L.C** Khanh Bui kdbui@sbcglobal.net (512) 363-2739
USA Windsor, CA	**SE&CS** Len Schwer len@schwer.net (707) 837-0559
USA Corvallis, OR	**Predictive Engineering** George Laird (1-800) 345-4671 george.laird@predictiveengineering.com
USA Neenah, WI www.structuretechnology.com	**Structure Incorporated** Todd L. Peters (920) 722 7060 info@structuretechnology.com

Educational & Contributing Participants

Alphabetical Order By Country

China	Dr. Qing Zhou	Tsinghua University
India	Dr. Anindya Deb	Indian Institute of Science
Italy	Professor Gennaro Monacelli	Prode – Elasis & Univ. of Napoli, Frederico II
Russia	Dr. Alexey I. Borovkov	St. Petersburg State Tech. University
USA	Dr. Ted Belytschko	Northwestern University
USA	Dr. David Benson	University of California – San Diego
USA	Dr. Bhavin V. Mehta	Ohio University
USA	Dr. Taylan Altan	The Ohio State U – ERC/NSM
USA	Dr. Ala Tabiei	University of Cincinnati

FEA Information China Participants

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Engineering Technology Associates (China) Inc.	Martin Ma Tel: + 86-21-64385725 Contact: support@eta.com.cn

China Company Listings

Ansys-China, Inc.	Tel: 86-10-84085558 Website: www.ansys.com.cn Contact: China@ansys.com.cn
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IBM China	Ms. Ling WANG - Tel: +86-10-6539-1188 x4463 (T/L:901-4463) Website: http://www.ibm.com/cn/ Contact: wangling@cn.ibm.com
MSC. Software Corp.	Tel: +86-10-6849-2777 Website: www.mscsoftware.com.cn Contact: mscprc.contact@mscsoftware.com
SGI China	Carl Zhang Tel: +86 -10 - 65228868 Ext. 3362 Contact: carl@sgi.com
Zhong Guo ESI Co., Ltd	Yang Xiaojum Phone: +86 (020) 8235 6272 Contact : Yang Xiaojun

Informational Websites

The LSTC LS-DYNA Support site: www.dynasupport.com

LSTC LS-DYNA Support Site	**www.dynasupport.com**
FEA Informationwebsites	**www.feainformation.com**
TopCrunch – Benchmarks	**www.topcrunch.org**
LS-DYNA Examples (more than 100 Examples)	**www.dynaexamples.com**
LS-DYNA Conference Site	**www.ls-dynaconferences.com**
LS-DYNA Publications to Download On Line	**www.dynalook.com**
LS-DYNA Publications	**www.feapublications.com**