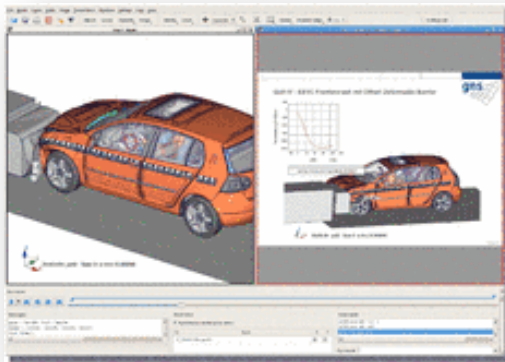**Implicit LS-DYNA Part IV**

DatapointLabs
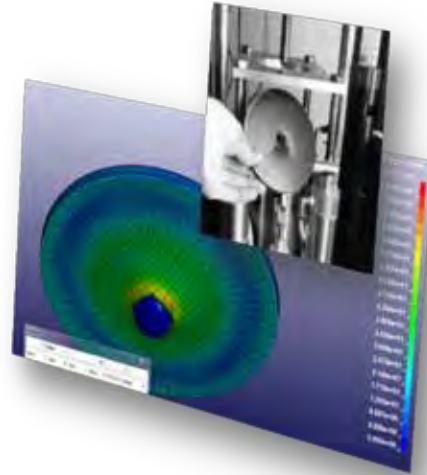
GNS Animator

Lenovo

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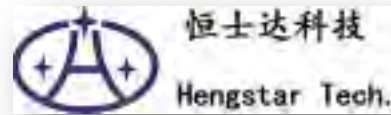
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European LS-DYNA Conference - 10th European LS-DYNA Conference

        June 15 - 17 2015, Würzburg, Germany

        The deadline for abstract submission for the European LS-DYNA Conference will be extended

        to 6 March.

Class Availability for Getting Started With LS-DYNA IMPLICIT - April 9-10

   For further information contact: lsdynacourses@aol.com or 513-3319139

         Excerpt: ",,,Getting Started With LS-DYNA IMPLICIT.   This course will allow LS-DYNA

        users to get started with the IMPLICIT solver with minimal effort. The most important

        elements to start using LS-DYNA Implicit successfully will be presented in the 8 hours. There

        is an optional one day (8 hours) of workshop.."

Book Review: pg 34

         Quantum Computation and Quantum Information –

             Michael A. Nielsen   and   Isaac L. Chuang

Trivia Box: Hedy Lamarr received a patent in 1941 - first implemented on naval ships

Austrian actress Hedy Lamarr (born Hedwig Eva Maria Kiesler) also became a pioneer in the field of wireless communications following her emigration to the United States. The international beauty icon, along with co-inventor George Anthiel, developed a "Secret Communications System".   By manipulating radio frequencies at irregular intervals between transmission and reception, the invention formed an unbreakable code to prevent classified messages from being intercepted by enemy personnel.

Lamarr and Anthiel received a patent in 1941, but the enormous significance of their invention was not realized until decades later. It was first implemented on naval ships during the Cuban Missile Crisis and subsequently emerged in numerous military applications. But most importantly, the "spread spectrum" technology that Lamarr helped to invent would galvanize the digital communications boom, forming the technical backbone that makes cellular phones, fax machines and other wireless operations possible.

Sincerely, Marsha Victory – Trent Eggleston – Suri Bala
  FEA Information Engineering Solutions US Edition

Fatigue solvers

(Implicit Part 4 by Yun Huang –
For part 1-3 contact huang@lstc.com – Subject Line "Part 1-3"

Fatigue failure is very common for metal structures. How to prevent fatigue failure of structures has become a hot topic of research in many fields, like aircraft building, ship building and car manufacturing etc.

Fatigue failure usually occurs when a material is subjected to cyclic loading and unloading. The nominal maximum stress is still small, comparing to the strength of the material (e.g. the ultimate tensile stress limit, or the yield stress limit). However, after sufficient number of stress cycles, the material may still fail. As a result, cracks can initiate and even propagate, which may result in facture of the structure.

In LS-DYNA, two frequency domain fatigue analysis methods have been developed to study the fatigue behavior of structures. One is based on random vibration and the other is based on SSD (steady state dynamics):

- · *FREQUENCY_DOMAIN_RANDOM_VIBRATION_FATIGUE
- · *FREQUENCY_DOMAIN_SSD_FATIGUE

To define material's S-N fatigue curve, a new keyword is added:

- · *MAT_ADD_FATIGUE

This article provides a brief introduction of these fatigue solvers.

Material's S-N fatigue curve

Material's fatigue property is featured by an S-N (E-N) fatigue curve, which depicts the fatigue life (no. of cycles) for a given cyclic stress (strain) level. The plots are usually given in logarithmic scale. For high cycle, low stress level fatigue, it is more appropriate to use stress index. The S-N fatigue curve is obtained by a large amount of fatigue testing under different stress levels. A typical S-N curve can be found in Figure 1.
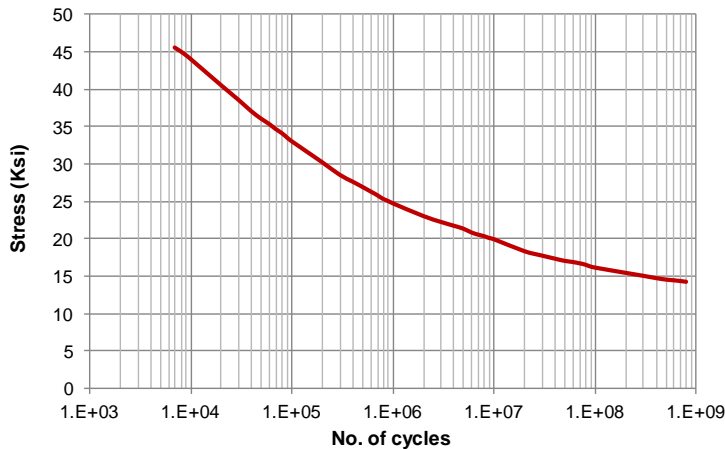
Figure 1. A sample S-N fatigue curve

The S-N fatigue curve can also be defined in the form of analytical equations

$$N \times S^m = a \tag{1}$$

or

$$\log(S) = a - m \times \log(N) \tag{2}$$

where N is the number of cycles for fatigue failure and S is the stress amplitude, and a and m are material parameters determined by experiments. Particularly m is the slope of the S-N curve. S-N curve with multiple slopes can also be defined in *MAT_ADD_FATIGUE.

Palmgren-Miner's rule

Palmgren-Miner's rule is a widely used model for fatigue analysis. It assumes that the total damage ratio is summation of the damage ratio from each stress level. In other words, the fatigue damage is a linear process, and the total damage ratio is not dependent on the sequence of loading.

So the cumulative damage ratio R can be expressed as

$$R = \sum_i R_i = \sum_i \frac{n_i}{N_i} \qquad (3)$$

Where R_i is the damage ratio due to stress level i, n_i is the actual number of cycles for stress level i, and N_i is the number of cycles for fatigue failure for stress level i (obtained from material's S-N curve). R is a real number larger than 0. If R is equal to or larger than 1, it means that the material has failed due to fatigue.

Random vibration fatigue

The random vibration analysis is a type of dynamic analysis with PSD (Power Spectral Density) loading. It is widely used in the analysis of automotives, aircrafts and electronic devices. It can simulate realistic vibration conditions that many devices and structures experience. The random vibration analysis provides PSD and RMS values of stress response, and also provides valuable information on probability distribution of stresses. Thus one can run fatigue analysis based on the results from random vibration simulation.

A series of random vibration fatigue analysis methods have been implemented in LS-DYNA. They include

1. Steinberg's three-band method
2. Dirlik method
3. Narrow band method
4. Wirsching method
5. Chaudhury and Dover method
6. Tunna method
7. Hancock method

For more details on each of the methods, please refer to paper [1].

The following results can be obtained in an random vibration fatigue analysis:

1. Cumulative damage ratio
2. Expected fatigue life
3. Zero-crossing frequency with positive slope
4. Peak-crossing frequency
5. Irregularity factor

The irregularity factor g is an indicator about if the random stress response is closer to a broad band signal (g approaches 0) or a narrow band signal (g approaches 1).

The results are saved in a binary plot database D3FTG (activated by keyword *DATABASE_FREQUENCY_BINARY_D3FTG), which is accessible to LS-PrePost.

A parameter INFTG is provided in the keyword so that the initial damage ratio, from the previous loading cases, can be considered. The stress state for a real 3D structure is a tensor, thus a scalar stress index is needed to perform fatigue analysis. One can use one of the stress components (normal and shear stresses), or Von-Mises stress to run the fatigue analysis.

In the following example, a metal bracket is constrained to a shaker table, and subjected to base acceleration PSD loading. The white noise acceleration PSD is 0.1 G^2/Hz for the frequency range 1-1000 Hz. The S-N curve of the material is given in Table 1.

N	S (stress range, MPa)
1×10^5	434.3
5×10^6	117.9
1×10^8	64.8

Table 1. S-N fatigue curve

The problem is first solved by Steinberg's three-band method. The cumulative damage ratio distribution is plotted in Figure 2. The maximum cumulative damage ratio is 2.321, at one element near a corner of a hole, which means that fatigue failure has taken place, at the corner of the hole.
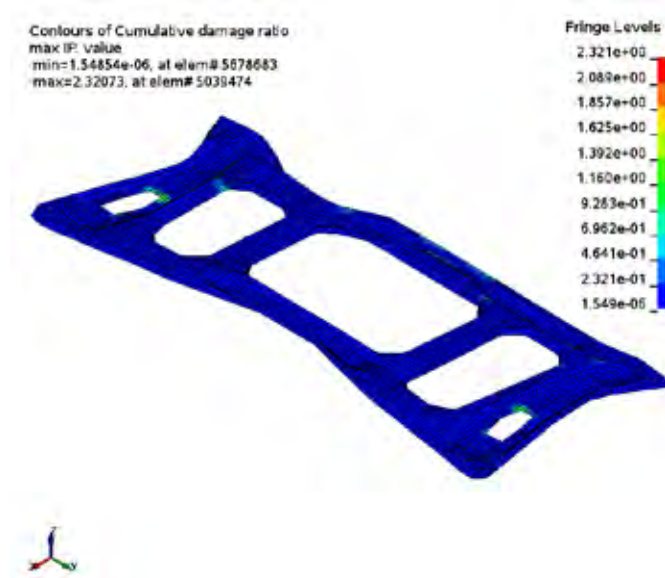
Figure 2. Cumulative damage ratio (by Steinberg's three band method)

The problem is also solved using Dirlik method, Chaudhury and Dover method and Hancock method. The results by the 4 different methods are compared in Table 2.

Fatigue analysis Method	Cumulative damage ratio	Expected fatigue life (seconds)
Steinberg's 3-band method	2.321	3102
Dirlik method	1.905	3780
Chaudhury & Dover method	2.525	2852
Hancock method	2.181	3302

Table 2. fatigue analysis results by different methods

In LS-PrePost 4.2, a new function "Safe/Failed Zone" is provided, so that user can locate the failed zone (elements) quickly. As shown in Figure 3, all the failed zones (elements) are colored by red, and they have cumulative damage ratio > 1.
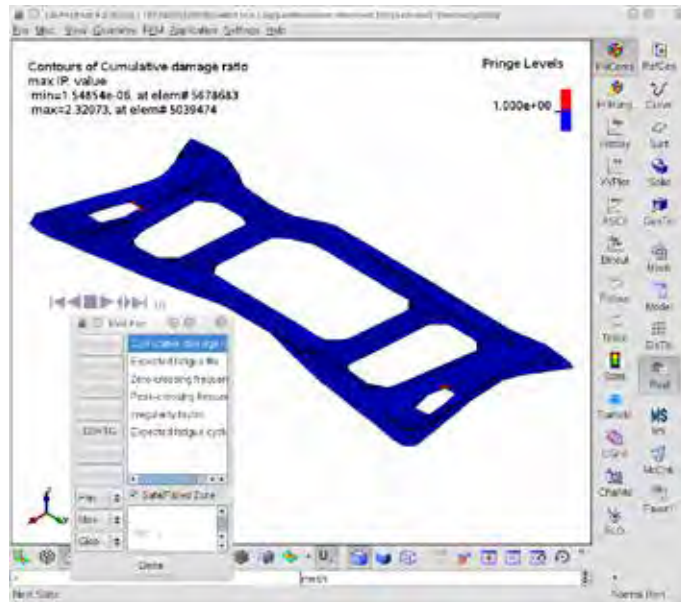
Figure 3. Failed zone of the bracket model

The expected fatigue life gives the expected time for the structure to withstand the current PSD load without failure. It is also the time point when the cumulative damage ratio reaches 1. If the expected fatigue life is longer than the actual loading time, the structure is safe; otherwise, the structure will fail due to fatigue.
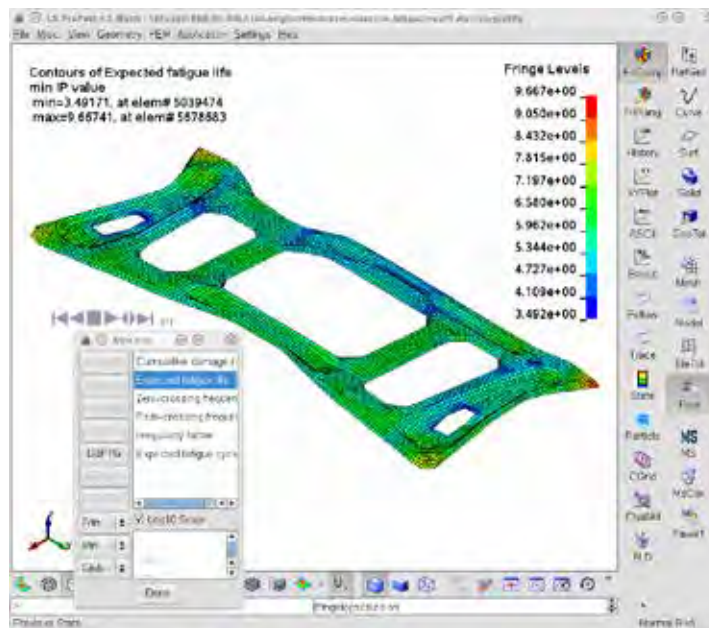
Figure 4. Expected fatigue life (with log10 scale)

In Figure 4, the expected fatigue life is plotted with Log10 scale. The Log10 scale is used since the

expected fatigue life may vary significantly from element to element. For those elements with 0 damage ratio, the expected fatigue life may go to infinity (a huge number 9.0×10^{18} is used instead of infinity in that case).

SSD fatigue:
Fatigue failure under harmonic or steady state vibration condition is also very common in industries, e.g. in a sine sweep test. Another example is the suspension system of vehicles running on rough road --- the metal parts are subjected to periodic excitation, and may break due to fatigue.
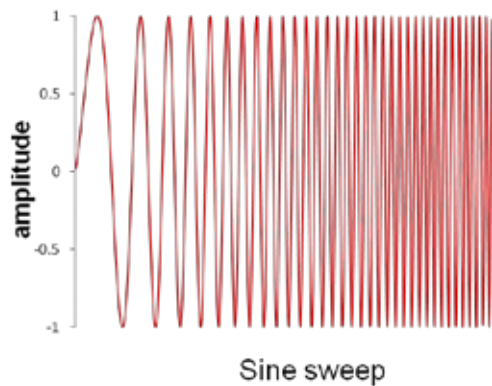
Figure 5. A sample sine sweep test load curve

To run SSD fatigue, one can use the keyword *FREQUENCY_DOMAIN_SSD_FATIGUE. This feature is based on the rainflow counting algorithm as well as the material's S-N fatigue curve. The rainflow counting algorithm is used to get the number of cycles for each stress level. The stress index can be one of the stress components, or invariants like Von-Mises stress, maximum principal stress or maximum shear stress. According to Palmgren-Miner's rule, the cumulative damage ratio is obtained as the superposition of the damage ratio from different stress levels.

For a model shown in Figure 6, the loading condition is given as base acceleration spectrum, see Table 3.

Frequency (Hz)	Acceleration (g)	Duration (minutes)
16	0.5	12
20	0.5	12
25	0.5	12
31.5	0.5	12
...	...	...
2000	0.5	12

Table 3. Loading condition

The material's S-N curve is given as Table 4:

N	S (stress range, MPa)
8×10^4	100.
8×10^5	10.
8×10^6	1.
8×10^7	0.1
8×10^8	0.01

Table 4. S-N fatigue curve

The cumulative damage ratio is plotted in Figure 6, for two cases. In Case 1, Von-Mises stress is used in the fatigue analysis. In Case 2, Maximum principal stress is used in the fatigue analysis. The maximum cumulative damage ratios, by using Von-Mises stress, or Maximum principal stress, or Maximum shear stress as stress index in the fatigue analysis, are listed in Table 5 (next page).
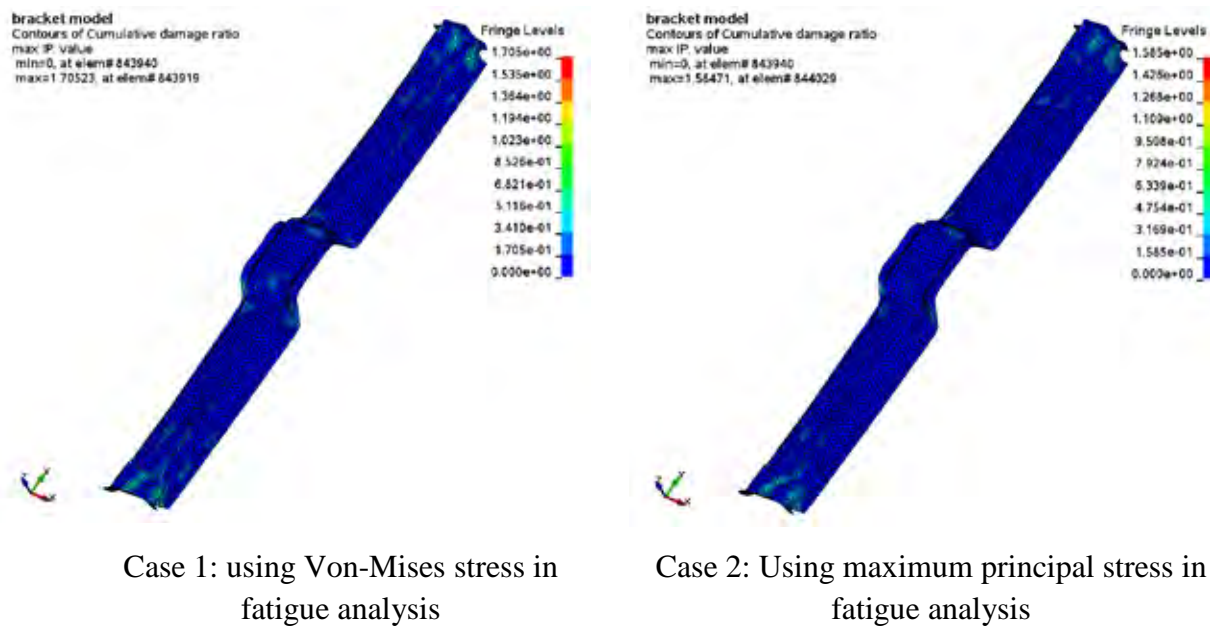

Case 1: using Von-Mises stress in
fatigue analysis

Case 2: Using maximum principal stress in
fatigue analysis

Figure 6. Cumulative damage ratio

Stress index	Cumulative damage ratio
Von-Mises stress	1.705
Maximum principal stress	1.585
Maximum shear stress	1.518

Table 5. Cumulative damage ratios by using different stress index

References

Ringeval A., Huang Y., Random Vibration Fatigue Analysis with LS-DYNA[®], *Proceedings of the 12th International LS-DYNA[®] Users' Conference*, June 3-5, 2012, Michigan, USA.

Yun Huang, LSTC, will be teaching a course at the 10th European LS-DYNA Conference.

Lecturer: Dr. Yun Huang (LSTC)   -   Language: English
NVH & Frequency Domain Analysis with LS-DYNA - 11 - 12 June

The objective of the training course is to introduce the frequency domain vibration and acoustic features of LS-DYNA to users, and give a detailed look at the application of these features in vehicleNVH simulation. This course is recommended for engineers who want to run NVH or other frequency domain vibration and acoustic simulation problems with LS-DYNA. This course is useful for engineers and researchers who are working in the area of vehicle NVH, aircraft/spacecraft vibro-acoustics, engine noise simulation, machine vibration testing and simulation, etc.

Material Parameters & Validation for Crash/Safety CAE Simulation

Obtaining precise material parameters for CAE is a multi-step process. Proper knowledge in many areas is necessary:
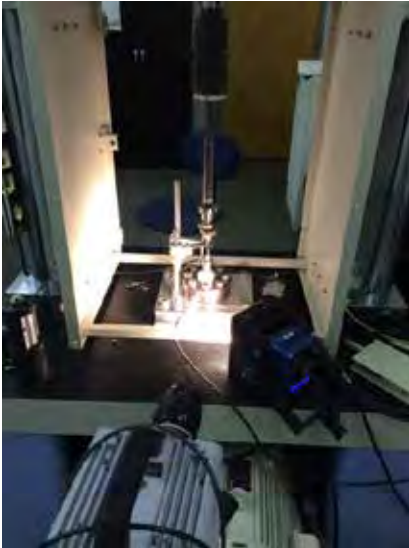

Figure 1. 1000/s high strain-rate tensile experiment

· Appropriate test samples must be used. Factors such as environmental conditioning must be considered.
· Range of application temperatures: -40ºC to 80ºC
· Measurements must be made over many decades of strain rate
· Complex models require shear and biaxial test modes
· All required properties must be correctly measured with scientifically designed procedures.
· Strict quality control, ideally to the ISO17025 norm is needed for traceability and risk management.
· Data must be fit to the best-suited model using visual and quantitative measures, requiring extensive knowledge of non-linear modeling.
· Error-free input files must be provided for the CAE software.
· Because of the large number of uncertainties, many analysts will conduct a verification and validation (V&V) step to confirm that the material model is performing correctly.
· Figure 1. 1000/s high strain-rate tensile experiment.

Material Model Validation

Most material models used in crash simulation are based on high strain rate tensile experiments. Real life situations require the material model to perform in multi-axial stress states. The reliability of a material model to perform in such a situation can be gauged by a validation process where simulation is performed on a tightly controlled multi-axial experiment. By comparing the outcomes, a

quantitative assessment of the material model quality can be obtained before it is used in a full crash simulation.

One simple multi-axial experiment is the falling dart impact test (Figure 2 next page), commonly used for plastics. Because the experiment load conditions are well defined, it is possible to quantitatively compare simulation to experiment (Figure 3 next page).
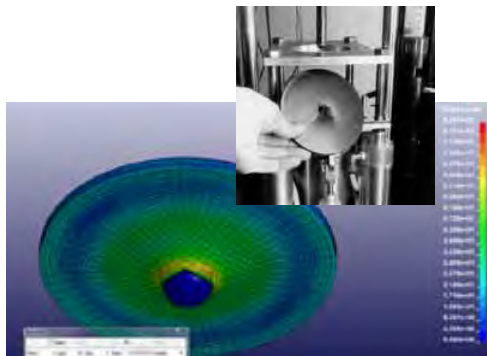
Figure 2. Validation of multi-axial impact experiment.

Figure 3. Quantitative comparison of simulation v. experiment.

Table 1. Testing Requirements and Modeling for Common Crash Simulation Scenarios

Table continued on next page

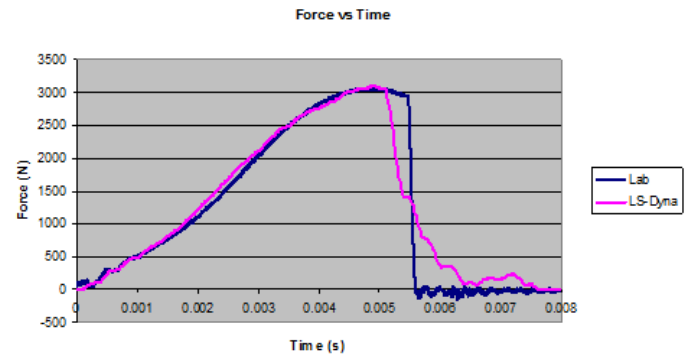| Simulation Scenario	Applicable Material	LS-DYNA Material Models	Required Tests
Crash / dynamic loading: Impact simulations of car body	Metals, plastics, composite	MAT024	Tensile stress-strain at 0.01, 0.1, 1, 10, 100/s, density and Poisson's ratio; capture and modeling of post-yield behavior
Crash / dynamic loading: Impact simulations of car instrument panel- fiber filled plastics; high stiffness, brittle failure	Fiber filled plastics	MAT019	Tensile stress-strain at 0.01, 0.1, 1, 10, 100/s, density and Poisson's ratio. Directional properties also needed for DIGIMAT
Crash / dynamic loading: Impact simulations of car interiors and bumpers- plastics subject to ductile failure	Ductile plastics	MAT089, MAT024	Tensile stress-strain strain at 0.01, 0.1, 1, 10, 100/s, density and Poisson's ratio; capture and modeling of post-yield behavior

Table 1. Testing Requirements and Modeling for Common Crash Simulation Scenarios

Crash / dynamic loading with interest in non-Von Mises failure envelopes and detailed post-yield modeling	Ductile plastics	SAMP-1, MAT183	Rate dependent tensile testing, compression, shear, post yield Poisson's ratio and unloading damage curves
Crash / dynamic loading: Impact of foam seats,	Soft foams, viscoelastic foam.	MAT083, MAT057	Compression tests at strain at 0.01, 0.1, 1, 10, 100/s with unloading for damage
Crash / dynamic loading: Impact of foam bumpers, energy absorbers	Crushable foams	MAT063, MAT163	Compression tests at strain at 0.01, 0.1, 1, 10, 100/s with unloading for damage
Crash / dynamic loading of rubber components: Impact of bushings, rubber bumpers, shock absorbers	Rubbers	MAT 181, MAT 183	Rate dependent tensile of compression tests with unloading damage curves

DatapointLabs offers *TestPaks*® for LS-DYNA to generate all of the material properties required for a particular simulation scenario.

View our Test Catalog

Software for Material Parameter Conversion

Matereality's CAE Modeler software apps convert material properties data into CAE-ready material cards. CAE Modeler software can automate complex conversions, including rate-dependent models for crash simulations.

Features:

- Converts material data to material model parameters
- Single-point and curve/multi-curve data conversion
- Graphical user interface for model parameter tuning and modification
- Outputs for latest and older CAE software versions

Figure 4. CAE Modeler for LS-DYNA is used to create a MAT024 material card.

The CAE Modeler for LS-DYNA supports the following material models: MAT024 – CP / LCSR / LCSS.

Software for Storing and Managing Material Cards

Material cards created using the CAE Modeler software, or those created by other means and uploaded to Matereality, are stored in the subscriber's CAE Models Library. Material cards in this library can be selected for export, download, refit, update (using CAE Modeler software), or sharing with colleagues.

Figure 5. The CAE Models Library for storing and managing material cards.
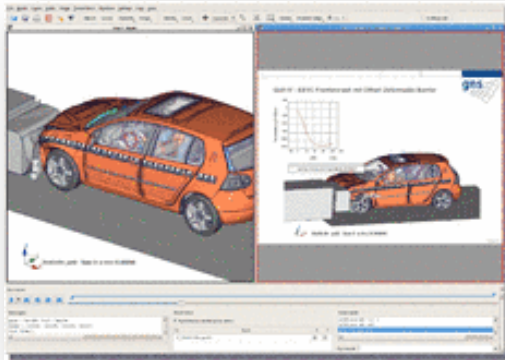
Much of the success of GNS is due to the software product Animator4. Animator4 is a general finite element post-processor and holds a leading position in its field.

The development of Animator4 began in the early 1990s.

The first commercial version was released by GNS in October 1996 under the name Animator3. Animator3 was succeeded by Animator4 in 2009. Animator4 is used worldwide by almost all automotive companies, a great number of aerospace companies, and within the chemical industry. With more than 2000 licences Animator4 is probably one of the most successful software products in the field of Finite Element Analysis (FEA).

Basic Features

Animator4 is a high performance and resource efficient FEA post-processor for animating and analyzing extremely large finite element models.

Animator4 can be controlled using the command language inherited from Animator3. Thus, it is still possible to script large portions of recurring tasks. Animator4 additionally offers a TCL scripting interface allowing for even more automation.

The reading and displaying of solver results is simple and quick. After the initial loading of the sequences, it is not necessary to reload anything.

One of the most requested features is the overlaying of crash-test videos with simulated models. Animator4 can even calculate missing camera parameters using reference points selected by the user.

http://gns-mbh.com/138.html

The reading of more than 10 different formats is supported. This includes LS-Dyna, Pamcrash, Radioss, Nastran, Abaqus, Madymo and even pre-processor formats like Medina bif/bof or Pamcrash pc/inc.

Animator4 offers a database format for saving and sharing results. These databases can be examined with the freely available Animator Viewer. GNS offers a free ActiveX control for embedding a viewer in a Powerpoint Presentation.

You can show animated cutting planes and clipped views, and you can toggle back to a complete model.

Much thought has been spent on designing an interface that satisfies both the hands-on-keyboard user and those more visually oriented. It is possible to strip down Animator4 to a minimalistic Animator3-style interface or to spread docks and windows to wherever they are needed.

The redesign of the interface is based on Qt. This allows for a common look and feel on all supported platforms.

It is possible to assign scripts to keyboard shortcuts or user defined buttons.

Curves can easily be extracted for nodes and elements. The import of plot files or time history files is supported for many formats. Curves can be exported as well.

Animator4 includes the powerful Evaluator calculator. From basic math via filters and standard analysis functions and filters (SAE, CFC) to complex safety analysis algorithms (HIC, VCC, etc.), there is little left to be desired.

You can get a printable prospectus in pdf format listing all the features of Animator4 here. (2.2 MB)

http://gns-mbh.com/fileadmin/user_upload/Dokumente/animator4/gns_db_animator4.pdf

At Lenovo, our vision is that Lenovo will create personal devices more people are inspired to own, a culture more people aspire to join and an enduring, trusted business that is well respected around the world. This vision guides us in pursuit of our mission to become one of the world's great personal technology companies.

We will accomplish this through:
- **Personal Computers:** Lead in PCs and be respected for our product innovation and quality.
- **Convergence:** Lead the industry with an ecosystem of devices, services, applications and content for people to seamlessly connect to people and web content.
- **Culture:** Become recognized as one of the best, most trusted and most well-respected companies to work for and do business with.

Our Culture

Our culture defines us … it's our DNA. We call it the Lenovo Way and it's the values we share and the business practices we deploy. It's how we address our day-to-day commitments. The Lenovo Way is embodied in the statement: We do what we say and we own what we do.

That culture also drives how we work every day, utilizing what we call the 5 P's:
- We **PLAN** before we pledge.
- We **PERFORM** as we promise.
- We **PRIORITIZE** the company first.
- We **PRACTICE** improving every day.
- We **PIONEER** new ideas.

Our culture is what has enabled us to consistently raise the bar on delivering break-through innovations, award-winning designs and strong financial performance.

Our People

At Lenovo, our people share a common aspiration to be the very best. Whether serving our customers, working together as a team or contributing to the community, we are working to build a unique company delivering unparalleled products created and supported by people who represent a wealth of cultures and experiences. Our strength lies in this diversity. And every day, on every project, we are creating a new language for inclusion and respect for others. We are dedicated to fostering an environment that encourages entrepreneurism and ownership. A workplace where people's talents can be challenged and their efforts recognized and rewarded.

Already a landmark event in the calendar of CAE professionals, our International conference celebrates this summer its 10th year. Being grateful to the contributors, the participants, and the CAE community that embraced the event, we are, once again, delighted to invite you to the 6th BETA CAE International Conference which will be held from June 10th to June 12th 2015, at the MET Hotel, Thessaloniki, Greece.

Every two years our event brings the CAE Community together and promotes an international exchange of the latest concepts, knowledge, and development requirements on our software products.

During the event, technical papers outlining the latest advances in CAE Strategy, methodology, techniques and applications related to our products are presented.
This stage offers a unique opportunity for the presenters to lead and inspire by presenting their ideas, demonstrating their achievements, and sharing new development requirements. Moreover, the participants will be informed about the latest software trends, implementation concepts and deployment methods.

The closer technical communication with the software developers' team of our products, within the framework of a technical forum, features this three-day conference.

Further discussions, sessions, meetings and events will allow the interaction between participants and organizers. Senior executives of our company, the engineers from the development and services teams and our business agents from around the world will be glad to meet with customers and users, to discuss the applications, the existing functionality, latest enhancements and future development plans of our software products. We expect that this will be a unique opportunity for you to share your success and for us to share our vision.

The attire of the event is business casual.

The language of the event is English.

There is no participation fee.

Speakers will receive free accommodation.

Professor M. Zahid Hasan
Professor of Physics.

Field: Quantum Condensed Matter Physics
Princeton University - 321 Jadwin Hall.
Princeton NJ 08544 ·

I am interested in the fundamental physics of exotic quantum matter, interacting electron systems (correlated matter) and quantum nature of emergent phenomena in these systems. Traditionally spectroscopic methods have been used to characterize electronic or spin behavior in quantum matter whereas initial discoveries originated from non-spectroscopic methods. My work focuses on the theme which I often like to call spectroscopy for discovering new states of quantum matter. I am currently interested in quantum spin-textures & Berry phases of matter, Topological Insulator, topological Hall phases, topological superconductors and quantum phase transitions leading to these topological phases; Emergence of superconductivity in strongly correlated triangular lattice materials (correlated superconductors) and spin-liquid-like behavior in frustrated magnets in search of direct/unambiguous signatures of electron fractionalization or new fractional phases in higher dimensions.

Excerpts: "…Three dimensional topological insulators (3D-TI) (originally called "Topological Insulators" to dinstinguish them from 2D quantum Hall type effects and insulators) are the first example of topological order in the bulk solids (there is no genuine quantum Hall effect in three dimensions). They feature a "protected" metallic Dirac-like surface state (2DEG or planar "topological metal") where electron's spin and momentum are locked to each other and possess half the degrees of freedom present in an ordinary electron Fermi gas.

"…**Non-quantum-Hall-like   topological matter:**   All of the 2D topological insulator examples (IQH, FQH, QSH or the QAH) including the fractional one (FQH) involving Coulomb interaction are understood in the standard picture of quantized electron orbits in a spin-independent or spin-dependent magnetic field, the 3D topological insulator defies such description and is a novel type of topological order which cannot be reduced to multiple copies of quantum-Hall-like states.

"…**Why Topological Surface States (TIs) are so exciting?**   Topological Insulators (3DTI) is new and unprecendented and cannot be reduced to multiple copies of quantum Hall or spin Hall like states. Most topological states of matter are realized in two or lower dimensions (quantum Hall states, quantum spin Hall effect, non-Fermi liquid chains and wires, quantum spin-liquids etc.).

Oasys LS-DYNA 8th Annual Update Meetings in India

Pune	**Bangalore**
Tuesday, 21st April 2015	**Thursday, 23rd April 2015**
Hyatt Regency Pune,	**The Zuri Whitefield,**
Weikfield IT Park,	**ITPL Road,**
Pune Nagar Road , Pune- 411014	**Whitefield, Bangalore- 560 048.**

Oasys Ltd. and Arup India Pvt. Ltd. are pleased to announce the 8th Oasys LS-DYNA Update meetings in India for the year 2015. First meeting shall be held at Pune on Tuesday 21st April 2015 at Hyatt Regency Hotel and second meeting shall be held at Bangalore on Thursday 23rd April 2015 at The The Zuri Whitefield.

Each of these is a full day free of charge event covering both LS-DYNA and Oasys software and is a perfect opportunity to find out about current and future developments and how the software are being used in the engineering community.

The presentations will mainly cover LS-DYNA updates from LSTC, Oasys suite updates from Arup & technical lectures from Arup & LSTC.

Detailed agenda is available on our website http://www.oasys-software.com/dyna/en/events/ .

Registration
Please send your registration to this event by email to india.support@arup.com with your name, company/affiliation, telephone number and your choice for event. Last date for registration is 10th April,2015.

Venue Pune: Hyatt Regency Hotel
Weikfield IT Park, Pune Nagar Road
Pune - 411014, India
Tel: +91-20- 6645 1234

If you plan to stay over before or after the event, we are pleased to confirm that we have negotiated a special rate for attendees of the Oasys LS-DYNA Update meeting. Please contact us for assistance.

Venue Bangalore: The Zuri Whitefield
ITPL Road, Whitefield
Bangalore - 560 048
India - Tel: +91-806-665-7272

Contact Details
Mr. Asif Ali - Arup India Pvt Ltd - Plot No. 39, Ananth Info Park, HiTec City-Phase 2 Madhapur, Hyderabad-500081,India
Tel: +91 (0) 40 44369797/8
Email: india.support@arup.com

Nov. 9th -11th , 2015 Shanghai, China

LSTC proudly announces - 2nd China User's Conference

Shanghai, China

2015 2nd China LS-DYNA User's conference

The 2nd conference will echo the success of the well-participated 1st China User's Conference , 2013.

Accompanied by the rapid growth of CAE applications in China, LS-DYNA is highly recognized as one of the most widely used finite element analysis software by Chinese users.   China is gaining momentum and recognition in Finite Element Analysis. In the past years, the continuing expansion of application areas has been gaining in automotive, die and mold, aerospace and aeronautics industries in China.

In China LS-DYNA is fast becoming the software of choice, by all engineering users, students, professors and consulting companies. It is recognized that LS-DYNA, LS-PREPOST, LS-OPT and the LSTC ATD and Barrier Models, developed by LSTC, are setting standards for the finite element simulation industry. At the conference LSTC software new features will be introduced and helpful techniques will be shared.

The conference will be attended by experienced users from different industries, LSTC technical support engineers and LSTC software developers. Additionally it will be attended by academic researchers, hardware vendors and software vendors.

With the popularity and attendance of the 1st conference and demand from users the conference will be held regularly. One of the goals is to serve as a convenient platform for people in this field to exchange their ideas, share their findings and explore new software functions.

The conference aims to prompt the interaction and communication between developers and end users.

Hosts:
Livermore Software Technology Corp.
Dalian Fukun Technology Development Corp.

Date: Nov. 9th -11th , 2015
Training: Nov. 12th -13th , 2015

Location:
InterContinental Shanghai Pudong,
Shanghai, China

The conference organizers wholeheartedly welcome your paper submission and attendance.

Paper submission:
Please send your one to two page abstract or full paper to chinaconf@lstc.com .

· Submission can be in Chinese or English.
· Submission of both Chinese and English versions are greatly appreciated but not mandatory.
· Include email address.

Abstract submission deadline:
Aug.10th , 2015
Notice of acceptance deadline:
Sept. 10th , 2015
Full paper submission deadline:
Oct. 10th , 2015
Conference website: http://www.lsdyna.cn
Contact us: chinaconf@lstc.com

In association with:
· ETA, Shanghai, China
· ARUP, Shanghai, China
· Hengstar Technology, Shanghai, China

2nd China LS-DYNA Users' Conference

Nov. 9th-11th, 2015 Shanghai, China

Sponsorships - Exhibitor Booths

Reserve your participation at the 2nd China LS-DYNA Users' Conference.
Contact: chinaconf@lstc.com

Sponsorships include the exhibitor booth and sponsors will be highly visible through the conference date in both FEA Information Engineering Solutions and the Chinese Edition published in China.

Join our Hosts, Sponsors, and Exhibitors
·   ETA, Shanghai, China
·   ARUP, Shanghai, China
·   Hengstar Technology, Shanghai, China
·   FEA Information Solutions
·   LSTC
·   D3View

Reserve your Sponsorship and/or booth now in the Atrium   -   chinaconf@lstc.com

Exhibitor Atrium Conference Area

The Numerical Simulation Conference
33rd CADFEM Users' Meeting
June 24th and 26th, 2015.

When it comes to numerical simulation in product development, the place to be is the city of Bremen, Germany.

CADFEM GmbH & ANSYS Germany GmbH would like to invite you to the Numerical Simulation Conference between June 24th and 26th, 2015. As a simulation expert, beginner or simply an interested party, you can experience the complete range of simulation technology as a tool for quality, innovation and time-saving in product developments of today and the future.

You can expect a packed and varied agenda at our ANSYS Conference & 33rd CADFEM Users' Meeting – from ANSYS, from CADFEM and from the world of simulation: Technology updates, contributions from users from various sectors and fields of simulation, as well as compact seminars on topical subjects. You can also look forward to the big CAE exhibition, the intensive exchange and dialog with like-minded people and as always an attractive supporting program. Let the conference inspire you to new ideas. Or why not inspire others by making your own contribution to one of the biggest conferences on numerical simulation in Europe. We would like to invite you to send us your papers on the named topics for Thursday, June 25th. If you register before February 2nd, 2015, you will profit from an early-bird discount of 10% either as a speaker or participant. We are looking forward to some great papers, curious trade visitors and exhibitors with some interesting special offers.

Find out everything you need to know about the event at www.usersmeeting.com/en

Gompute User

Gompute User Meeting 2015

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

- Discover the latest simulation and HPC software developments.

- Learn about how the Gompute software delivers comprehensive HPC and where it is used.

- Meet experienced analysts.

- Learn about the state of the art on commercially available computing services.

- Meet colleagues active in the field of technical computing and simulation.

- Attend workshops on latest techniques in HPC and simulation tools.

At the 2015 Gompute User Meeting, Engineers, Scientific Users, Designers, contractors, Analysts, Academics, Managers and Executives will meet up to share best practices and tips from their simulation experience.

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

Topics:

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

Venue:
Elite Park Avenue Hotel
Kungsportsavenyen 36-38
Gothenburg, Sweden

10th European LS-DYNA Conference

June 15 - 17 2015, Würzburg, Germany

We kindly invite all users of LS-DYNA, LS-OPT, LS-PrePost and LS-TaSC to take advantage of this fantastic opportunity to showcase their work. The Conference is your chance to talk with industry experts, catch up with colleagues and enjoy time exploring new ideas. In addition, attendees can meet with exhibitors to learn about the latest hardware and software trends, as well as additional services relating to the finite element solver LS-DYNA, the optimization codes LS-OPT and LS-TaSC, and the pre- and postprocessor LS-PrePost. Make sure that you will be part of the conference by submitting your abstract soon!

Conference website:
   www.dynamore.de/ls-dyna2015-e
Abstract online submission:
   www.dynamore.de/eu-ls-dyna-abstract-e
Flyer (pdf):
   www.dynamore.de/c4p-ls-dyna2015-e

Abstract submission
  Please submit an abstract (300 words) by
  E-Mail to forum@dynamore.de or online at

http://www.dynamore.de/ls-dyna2015

Important dates
   Abstract submission: March 6th   2015
   Final Paper Deadline   April 20ᵗʰ   2015

Contact and registration
  DYNAmore GmbH
  Industriestr. 2, D-70565 Stuttgart, Germany
    Tel.   +49 (0) 7 11 - 45 96 00 – 0
    Fax.   +49 (0) 7 11 - 45 96 00 – 29
    E-Mail: forum@dynamore.de
    http://www.dynamore.de/ls-dyna2015

Venue:
  Würzburg is a beautiful historical city and a UNESCO World Cultural Heritage site, which is easily accessible from Frankfurt International Airport by train or by car. The Congress Centrum at the Maritim Hotel Würzburg is centrally located directly on the banks of the river Main, offering a splendid view of the Marienberg fortress. Visitors can comfortably explore the baroque inner city with its numerous sights by foot.
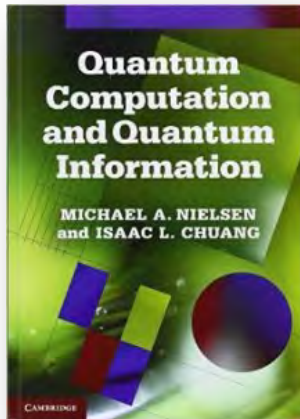
http://www.cadfem-us.com/

http://www.dynamore.se/en

Quantum Computation and Quantum Information

Michael A. Nielsen
and
Isaac L. Chuang

One of the most cited books in physics of all time, Quantum Computation and Quantum Information remains the best textbook in this exciting field of science.

This 10th anniversary edition includes an introduction from the authors setting the work in context. This comprehensive textbook describes such remarkable effects as fast quantum algorithms, quantum teleportation, quantum cryptography and quantum error-correction. Quantum mechanics and computer science are introduced before moving on to describe what a quantum computer is, how it can be used to solve problems faster than 'classical' computers and its real-world implementation.

It concludes with an in-depth treatment of quantum information. Containing a wealth of figures and exercises, this well-known textbook is ideal for courses on the subject, and will interest beginning graduate students and researchers in physics, computer science, mathematics, and electrical engineering.

Hardcover: 702 pages
Publisher: Cambridge University Press; 10 Anv edition (January 31, 2011)
Language: English
ISBN-10: 1107002176
ISBN-13: 978-1107002173
Product Dimensions: 6.8 x 1.3 x 9.7 inches

www.dynasupport.com/ **LS-DYNA Support**	Answers to basic and advanced questions that might occur while using LS-DYNA. New releases/ongoing developments.
www.dynalook.com/ **Papers**	Papers from LS-DYNA User Conferences with search option.
www.lsoptsupport.com/ **LS-OPT**	LS-OPT, developed by LSTC to interface with LS-DYNA
www.dummymodels.com/ **Dummy Models**	Detailed information on dummy models for LS-DYNA
www.topcrunch.org/ **Benchmarks**	Track the aggregate performance trends of high performance computer systems, with real data
www.dynaexamples.com/keyword-search **LS-DYNA Examples**	Examples for specific LS-DYNA keywords, with search option

BETA CAE Systems S.A.

BETA CAE Systems S.A.– ANSA

BETA CAE Systems S.A.– μETA

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

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

Solutions for:

Process Automation - Data Management – Meshing – Durability - Crash & Safety NVH   - CFD   -   Thermal analysis   -   Optimization   -   Powertrain   Products made of composite materials   -   Analysis Tools   -

Maritime and Offshore Design   -   Aerospace engineering   -   Biomechanics

CRAY   **www.cray.com**

THE CRAY® XC™ SERIES: ADAPTIVE SUPERCOMPUTING ARCHITECTURE

The Cray® XC™ series delivers on Cray's commitment to an adaptive supercomputing architecture that provides both extreme scalability and sustained performance. The flexibility of the Cray XC platform ensures that users can precisely configure the machines that will meet their specific requirements today, and remain confident they can upgrade and enhance their systems to address the demands of the future.

Cray® XC40™ and XC40-AC™ supercomputers are enabled by a robust Intel® Xeon® processor road map, Aries high performance interconnect and flexible Dragonfly network topology, providing low latency and scalable global bandwidth to satisfy the most challenging multi-petaflops applications.

While the extreme-scaling Cray XC40 supercomputer is a transverse air-flow liquid-cooled architecture, the Cray XC40-AC air-cooled model provides slightly smaller and less dense supercomputing cabinets with no requirement for liquid coolants or extra blower cabinets. A reduced network topology lowers costs, and the system is compatible with the compute technology, OS, ISV and software stack support of high-end XC40 systems.

MAXIMIZE PRODUCTIVITY WITH CRAY CS SERIES SUPERCOMPUTERS

Understanding the need for nimble, reliable and cost-effective high performance computing (HPC), we developed the Cray® CS™ cluster supercomputer series. These systems are industry-standards-based, highly customizable, and expressly designed to handle the broadest range of medium- to large-scale simulation and data analytics workloads.

All CS components have been carefully selected, optimized and integrated to create a powerful HPC environment. Flexible node configurations featuring the latest processor and interconnect technologies mean you can tailor a system to your specific need — from an all-purpose cluster to one suited for shared memory, large memory or accelerator-based tasks.

Innovations in packaging, power, cooling and density translate to superior energy efficiency and compelling price/performance. Expertly engineered system management software instantly boosts your productivity by simplifying system administration and maintenance.

Maximize your productivity with flexible, high-performing Cray CS series cluster supercomputers.

CRAY® SONEXION® SCALE-OUT LUSTRE®STORAGE SYSTEM

Brought to you by Cray, the world's leading experts in parallel storage solutions for HPC and technical enterprise, the Cray® Sonexion® 2000 system provides a Lustre®-ready solution for popular x86 Linux® clusters and supercomputers through Cray Cluster Connect™. As a leader in open systems and parallel file systems, Cray builds on open source Lustre to unlock any industry-standard x86 Linux compute cluster using InfiniBand™ or 10/40 GbE utilizing proven Cray storage architectures.

The Cray Sonexion 2000 system provides 50 percent more performance and capacity than the Sonexion 1600 system in the same footprint.

Simplify

- Through its fully-integrated and pre-configured design, Cray Sonexion storage gets customers deployed faster and reduces the total number of components to manage.
- The Sonexion system's compact design reduces the total hardware footprint of petascale systems by 50 percent over component-based solutions.

Scale

- Performance scales from 7.5 GB/s to 1.7 TB/s in a single file system.
- Capacity scales in modular increments; the Sonexion 2000 system stores over two usable petabytes in a single rack. Fewer drives and components reduce capital costs as capacity grows.

Protect

- New software-based GridRAID offers higher levels of data protection and up to 3.5 times faster rebuild times than traditional RAID6 and MD-RAID storage.
- Cray ensures quality, reliability and stability at scale through exhaustive thermal and real-world stress testing, system hardening and availability, and tight hardware and software integration.

OPEN ARCHIVE AND TIERED STORAGE SYSTEM FOR BIG DATA AND SUPERCOMPUTING

Cray Tiered Adaptive Storage (TAS), powered by Versity, is designed to meet the expansive data preservation and access needs driven by big data, where data needs to migrate fluidly from high performance storage to deep tape archives, while always being accessible to users.

With Cray TAS you can:

· Deploy tiered storage and archives faster
· Feel confident preserving and protecting data into the future, using Linux®
· Simplify managing data using familiar tools for years to come

CRAY® URIKA-XA™ EXTREME ANALYTICS PLATFORM

Pre-integrated, open platform for high performance analytics delivers valuable business insights now and into the future

The flexible, multi-use Cray® Urika-XA™ extreme analytics platform addresses perhaps the most critical obstacle in data analytics today — limitation. Analytics problems are getting more varied and complex but the available solution technologies have significant constraints. Traditional analytics appliances lock you into a single approach and building a custom solution in-house is so difficult and time consuming that the business value derived from analytics fails to materialize.

In contrast, the Urika-XA platform is open, high performing and cost effective, serving a wide range of analytics tools with varying computing demands in a single environment. Pre-integrated with the Apache Hadoop® and Apache Spark™ frameworks, the Urika-XA system combines the benefits of a turnkey analytics appliance with a flexible, open platform that you can modify for future analytics workloads. This single-platform consolidation of workloads reduces your analytics footprint and total cost of ownership.

Based on pioneering work combining high-performance analytics and supercomputing technologies, the Urika-XA platform features next-generation capabilities. Optimized for compute-heavy, memory-centric analytics, it incorporates innovative use of memory-storage hierarchies and fast interconnects, which translates to excellent performance at scale on current as well as emerging analytics applications.

Additionally, the enterprise-ready Urika-XA platform eases the system management burden with a single point of support, standards-based software stack and compliance with enterprise standards so you can focus on extracting valuable business insights, not on managing your environment.

CRAY   **www.cray.com**

THE URIKA-GD™ GRAPH DISCOVERY APPLIANCE IS A PURPOSE-BUILT SOLUTION FOR BIG DATA RELATIONSHIP ANALYTICS.

The Urika-GD™ appliance enables enterprises to:

· Discover unknown and hidden relationships and patterns in big data
· Build a relationship warehouse, supporting inferencing/deduction, pattern-based queries and intuitive visualization
· Perform real-time analytics on the largest and most complex graph problems

The Urika-GD system is a high performance graph appliance with a large shared memory and massively multithreaded custom processor designed for graph processing and scalable I/O.

With its industry-standard, open-source software stack enabling reuse of existing skill sets and no lock in, the Urika-GD appliance is easy to adopt.

The Urika-GD appliance complements an existing data warehouse or Hadoop® cluster by offloading graph workloads and interoperating within the existing enterprise analytics workflow.

Realize rapid time to powerful new insights.

CRAY   **www.cray.com**

DatapointLabs

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

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

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

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

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

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

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

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

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

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

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

www.gridcore.se

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

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

.

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

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

JSOL

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. LS-DYNA Environment

www.oasys-software.com/dyna

The Oasys Suite of software is exclusively written for LS-DYNA® and is used worldwide by many of the largest LS-DYNA® customers. The suite comprises of:

Oasys PRIMER

Key benefits:

- Pre-Processor created specifically for LS-DYNA®
- Compatible with the latest version of LS-DYNA®
- Maintains the integrity of data
- Over 6000 checks and warnings – many auto-fixable
- Specialist tools for occupant positioning, seatbelt fitting and seat squashing (including setting up pre-simulations)
- Many features for model modification, such as part replace
- Ability to position and depenetrate impactors at multiple locations and produce many input decks

automatically (e.g. pedestrian impact, interior head impact)
- Contact penetration checking and fixing
- Connection feature for creation and management of connection entities.
- Support for Volume III keywords and large format/long labels
- Powerful scripting capabilities allowing the user to create custom features and processes

www.oasys-software.com/dyna

Oasys D3PLOT

Key benefits:

- Powerful 3D visualization post-processor created specifically for LS-DYNA®
- Fast, high quality graphics
- Easy, in-depth access to LS-DYNA® results
- Scripting capabilities allowing the user to speed up post-processing, as well as creating user defined data components

Oasys T/HIS

Key benefits:

- Graphical post-processor created specifically for LS-DYNA®
- Automatically reads all LS-DYNA® results
- Wide range of functions and injury criteria
- Easy handling of data from multiple models
- Scripting capabilities for fast post-processing

Oasys REPORTER

Key benefits:

- Automatic report generation tool created specifically for LS-DYNA®
- Automatically post-process and summarize multiple analyses
- Built-in report templates for easy automatic post-processing of many standard impact tests

Shanghai Hengstar

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 in China, Hengstar Technology will continue to organize high level training courses, seminars, workshops, forums etc., and will also continue to support CAE events such as: China CAE Annual Conference; China Conference of Automotive Safety Technology; International Forum of Automotive Traffic Safety in China; LS-DYNA China users conference etc.

On Site Training: Hengstar Technology also provides customer customized training programs on-site at the company facility. Training is tailored for customer needs using LS-DYNA such as material test and input keyword preparing; CAE process automation with customized script program; Simulation result correlation with the test result; Special topics with new LS-DYNA features etc..

www.hengstar.com

Distribution & Support: Hengstar distributes and supports LS-DYNA, LS-OPT, LS-Prepost, LS-TaSC, LSTC FEA Models; Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software. Hongsheng visits LSTC often to keep update on the latest software features.

Hengstar also distributes and supports d3View; Genesis, Visual DOC, ELSDYNA; Visual-Crash Dyna, Visual-Process, Visual-Environment; EnkiBonnet; and DynaX & MadyX etc.

Consulting

As a consulting company, Hengstar focus on LS-DYNA applications such as crash and safety, durability, bird strike, stamping, forging, concrete structures, drop analysis, blast response, penetration etc with using LS-DYNA's advanced methods: FEA, ALE, SPH, EFG, DEM, ICFD, EM, CSEC..

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 Process	Visual-
VisualDSS	Weld Planner	Visual-Environment	IC.IDO

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

INVENTIUM/PreSy	NISA	VPG	LS-DYNA
LS-OPT	DYNAform		

United States   **Gompute**   info@gompute.com

www.gompute.com

LS-DYNA Cloud Service	Additional software
Additional Services	

United States   **Comet Solutions**   steve.brown@cometsolutions.com

Comet Software

United States	**Livermore Software Technology Corp**	sales@lstc.com
	LSTC www.lstc.com	

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

LSTC Dummy Models   LSTC Barrier Models   TOYOTA THUMS

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   Oasys Suite

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

DYNAFORM   VPG   MEDINA

LSTC Dummy Models   LSTC Barrier Models

Germany   **CADFEM GmbH**   lsdyna@cadfem.de

www.cadfem.de

ANSYS   LS-DYNA   optiSLang

ESAComp   AnyBody

ANSYS/LS-DYNA

Germany

DYNAmore GmbH   uli.franz@dynamore.de

www.dynamore.de

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

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

Sweden	**GOMPUTE**	info@gridcore.com
	www.gridcore.se	www.gompute.com
	LS-DYNA Cloud Service	Additional software

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   TOYOTA THUMS

LS-DYNA   LS-OPT   LS-PrePost

LS-TaSC   PRIMER   D3PLOT   T/HIS

REPORTER   SHELL   FEMZIP   HYCRASH

DIGIMAT   Simpleware   LSTC Dummy Models

LSTC Barrier Models

Australia   **LEAP**

www.leapaust.com.au

ANSYS Mechanical	ANSYS CFD	ANSYS EKM	Recurdyn
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
		LSTC Barrier Models	LS-TaSC

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

www.oasys-software.com/dyna

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

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

www.hengstar.com

LS-DYNA	LS-TaSC	LSTC Barrier Models	D3VIEW
LS-PrePOST	LS-OPT	LSTC Dummy Models	
Genesis	VisualDoc		ELSDYNA
Visual-Crahs DYNA	Visual-Proeces		DynaX & MadyX
Enki Bonnet	Visual Environement		

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

www.oasys-software.com/dyna

PRIMER D3PLOT T/HIS

LS-OPT LSTC Dummy Models LS-PrePost

LS-DYNA LSTC Barrier Models LS-TaSC

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

Distribution/Consulting	Asia Pacific	Distribution/Consulting	
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		Oasys Suite	
JSTAMP	HYCRASH	JMAG	
LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	
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	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models		
Japan **Terrabyte**	**English:**		
www.terrabyte.co.jp	www.terrabyte.co.jp/english/index.htm		
Consulting			
LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
LSTC Dummy Models	LSTC Barrier Models	AnyBody	

Distribution/Consulting	Asia Pacific	Distribution/Consulting	

Korea **THEME** wschung@kornet.com

www.lsdyna.co.kr Oasys Suite

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

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

www.kostech.co.kr

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

**HPC on-demand for academic users**

**Run your LS-DYNA simulations and pay for what you use
on a turn-key environment**

- · For LSTC academic customers.
- · Run your simulations from 0.05 €/CCH without reservation
- · Remote visualization using LS-PrePost
- · Avoid installation and maintenance costs
- · Other simulation applications also ready to use
- · Global connectivity, remote graphics and collaborative environment
- · Large number of cores available

For more information please visit: www.gompute.com

Price for computing-core/hour (CCH). Licenses and account set up are not included. Pricing valid only for universities, academic centers and research institutes. The following are trademarks or registered trademarks of Livermore Software Technology Corporation in the United States and/or other countries: LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Gompute is owned and operated by Gridcore AB, 2012 All rights reserved.
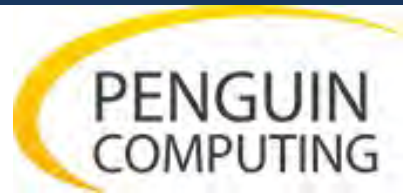
POD (Penguin Computing on Demand) offers software including LSTC's LS-DYNA
www.penguincomputing.com/services/hpc-cloud

Penguin HPC clusters are optimized for engineering workloads and offer:
- Instant access to an HPC Cloud Cluster
- High performance InfiniBand bare-metal compute
- Free support from HPC experts
- No charges for network transfers
- Cost-effective, pay-per-use billing model
- Secure environment for private data
- Detailed billing reports for user groups and projects

Self Registration Portal – featuring rich--documentation, wiki, FAQ, pricing and more.
https://pod.penguincomputing.com/

POD Software Applications and Libraries (visit site for complete listing)
FEA, CFD and FDTD Modeling
- **LS-DYNA** / LS-PrePost   LS-DYNA is an advanced general-purpose multiphysics simulation software package. Its core-competency lie in highly nonlinear transient dynamic finite element analysis (FEA) using explicit time integration. LS-PrePost is an advanced pre and post-processor that is delivered free with LS-DYNA.
- **OpenFoam:**   OpenFOAM (Open source Field Operation And Manipulation) is a C++ toolbox for the development of customized numerical solvers, and pre-/post-processing utilities for the solution of continuum mechanics problems, including computational fluid dynamics (CFD).

- **ANSYS HFSS:** ANSYS HFSS software is the industry standard for simulating 3-D full-wave electromagnetic fields. Its gold-standard accuracy, advanced solver and compute technology have made it an essential tool for engineers designing high-frequency and high-speed electronic components.
- **ANSYS Fluent** ANSYS Fluent software contains the broad physical modeling capabilities needed to model flow, turbulence, heat transfer, and reactions for industrial applications.
- **Star-CD** and **Star-CCM+:** STAR-CCM+ is CD-adapco´s newest CFD software product. It uses the well established CFD solver technologies available in STAR-CD, and it employs a new client-server architecture and object oriented user interface to provide a highly integrated and powerful CFD analysis environment to users.
- **Convergent:** CONVERGE is a Computational Fluid Dynamics (CFD) code that completely eliminates the user time needed to generate a mesh through an innovative run-time mesh generation technique.
- **Lumerical:** Simulation tools that implement FDTD algorithms.

**Cloud computing services
for
JSOL Corporation LS-DYNA users in Japan**

**JSOL Corporation is cooperating with chosen
cloud computing services**

JSOL Corporation, a Japanese LS-DYNA distributor for Japanese LS-DYNA customers.

LS-DYNA customers in industries / academia / consultancies are facing to the increase use of LS-DYNA more and more in recent years.

In calculations of optimization, robustness, statistical analysis, larger amount of LS-DYNA license in short term are required.

JSOL Corporation is cooperating with some cloud computing services for JSOL's LS-DYNA users and willing to provide large in short term license.

This service is offered to the customers by the additional price to existence on-premises license, which is relatively inexpensive than purchasing yearly license.

The following services are available

(only in Japanese).

HPC OnLine

NEC Solution Innovators, Ltd.
http://jpn.nec.com/manufacture/machinery/hpc_online/

Focus
Foundation for Computational Science
http://www.j-focus.or.jp

Platform Computation Cloud
CreDist.Inc.
http://www.credist.co.jp /

PLEXUS CAE
Information Services International-Dentsu, Ltd. (ISID) https://portal.plexusplm.com/plexus-cae/

SCSK Corporation
http://www.scsk.jp/product/keyword/keyword07.html

**Contact; JSOL Corporation Engineering Technology Division cae-info@sci.jsol.co.jp**

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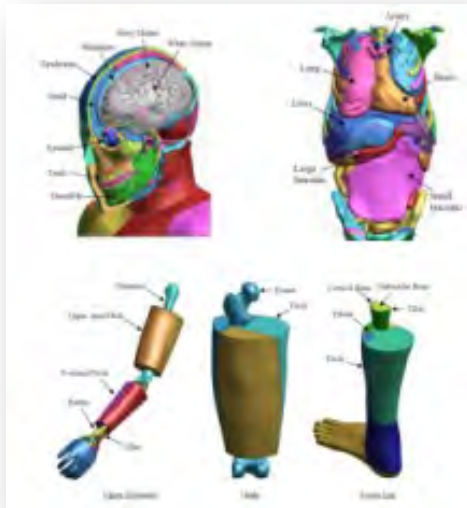
The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons,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

Each of the different sized models is available as sitting model to represent vehicle occupants
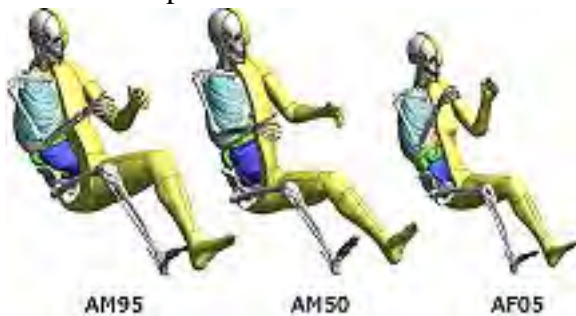
and as standing model to represent pedestrians.
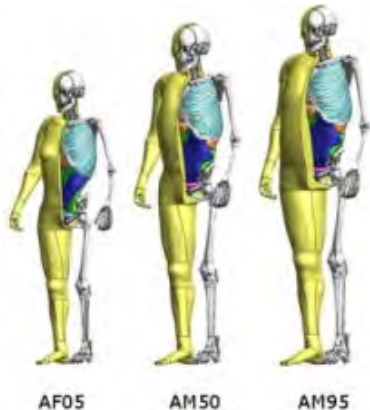
The internal organs were modeled based on high resolution CT-scans.

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

LSTC is the US distributor for THUMS. Commercial and academic licenses are available.

For information please contact:
THUMS@lstc.com

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

LSTC – Dummy Models

LSTC Crash Test Dummies (ATD)

Meeting the need of their LS-DYNA users for an affordable crash test dummy (ATD), LSTC offers the LSTC developed dummies at no cost to LS-DYNA users.

LSTC continues development on the LSTC Dummy models with the help and support of their customers. Some of the models are joint developments with their partners.

e-mail to: atds@lstc.com

Models completed and available (in at least an alpha version)
- Hybrid III Rigid-FE Adults
- Hybrid III 50th percentile FAST
- Hybrid III 5th percentile detailed
- Hybrid III 50th percentile detailed
- Hybrid III 50th percentile standing
- EuroSID 2
- EuroSID 2re
- SID-IIs Revision D
- USSID
- Free Motion Headform
- Pedestrian Legform Impactors

Models In Development
- Hybrid III 95th percentile detailed
- Hybrid III 3-year-old
- Hybrid II
- WorldSID 50th percentile
- THOR NT FAST
- Ejection Mitigation Headform

Planned Models
- FAA Hybrid III
- FAST version of THOR NT
- FAST version of EuroSID 2
- FAST version of EuroSID 2re
- Pedestrian Headforms
- Q-Series Child Dummies
- FLEX-PLI

LSTC – Barrier Models

Meeting the need of their LS-DYNA users for affordable barrier models, LSTC offers the LSTC developed barrier models at no cost to LS-DYNA users.

LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) models:

•ODB modeled with shell elements
•ODB modeled with solid elements
•ODB modeled with a combination of shell and solid elements

•MDB according to FMVSS 214 modeled with shell elements
•MDB according to FMVSS 214 modeled with solid elements

•MDB according to ECE R-95 modeled with shell elements
•AE-MDB modeled with shell elements

•IIHS MDB modeled with shell elements
•IIHS MDB modeled with solid elements
•RCAR bumper barrier

•RMDB modeled with shell and solid elements

e-mail to: atds@lstc.com.

FACEBOOK

BETA CAE SYSTEMS SA	CADFEM	Cray Inc.
ESI Group	Lenovo	

TWITTER

BETA CAE SYSTEMS SA	Cray Inc.	ESI Group
ETA	CADFEM	**Lenovo**

LINKEDIN

BETA CAE SYSTEMS SA	CADFEM	Cray Inc.
DYNAmore Nordic	ETA	Oasys

NEWS FEEDS   ETA:

YOUTUBE

YOUTUBE Channel	WebSite URL
BETA CAE SYSTEMS SA	www.beta-cae.gr
CADFEM	www.cadfem.de
Cray Inc.	www.cray.com
ESI Group	www.esi-group.com
ETA	www.eta.com
Lancemore	www.lancemore.jp/index_en.html
Lenovo	

Presented by Dr. Al Tabiei.   contact: courses@lsdyna-online.com   or   513-3319139

Fracture, Damage and Failure Using LS-DYNA - NEW COURSE OFFERING

This course will allow LS-DYNA users to model Fracture, Damage, and Failure. The different methodology to model failure and fracture in LS-DYNA will be presented and discussed. All formulation in LS-DYNA including Lagrangian, Eulerian, SPH, SPG, XFEM, EFG, and the DEM methods etc. will be discussed. Various examples will be presented.

Course Outline

- Chapter-1
  Introduction & Historical Review
    – Brittle Failure
    – Ductile Failure
- Chapter-2
  Fundamental Theoretical Concepts
    – Failure Theories
    – Damage Models
    – Fracture Mechanics
- Chapter-3
  Material Models with Failure & Damage
- Chapter-4
  Fracture & Computational Methods
- Chapter-5 Element Erosion; Advantages & Short Comings

- Chapter-6
  Current Capabilities to Model Failure & Damage
    – Lagrangian
    – Eulerian & ALE
    – SPH
    – SPG
    – XFEM
    – EFG
    – DEM
- Chapter-7
  Current Capabilities to Model Fracture
- Chapter-8
  Damage Verification Examples
- Chapter-9
  Fracture Verification Examples

- Chapter-10
  Other Capabilities
- Chapter-11
  Modeling Delamination and Debonding
  - – Cohesive Elements
  - – Tied Contact with Failure
- Chapter-12
  Summary and Concluding Remark
- Chapter-13
  References and Other Courses
- Chapter-Appendix-1
  - – Failure Strain Versus Tri-axiality for Some Material (will not be discussed)
- Chapter-Appendix-2
  - – Finite Element in Fracture Mechanics (will not be discussed)

Workshop

There will be several examples, which are designed to understand and reinforce the lectures and the concepts presented in the course.

Additional Courses Offered On-Line

- Advance Impact Using LS-DYNA
- Blast and Penetration In LS-DYNA
- Fluid Structure Interaction In LS-DYNA
- Implicit In LS-DYNA
- Material Models In LS-DYNA
- User Defined Material In LS-DYNA

Tutorials On the Website

- LS-PRE Tutorial
- LS-POST Tutorial
- Running LS-DYNA Tutorial

> **Kaizenat is glad to announce 2015 schedule of LS-DYNA classes presented in Bangalore and Pune.**

The details about the trainings offered are given below

LS-DYNA Training Schedule	
Topic	**Date**
LS-DYNA Software Training	**Apr 15-17**
Advanced Crash Analysis	**Apr 23-24**
LS-DYNA Software Training	**May 13-15**
Airbag Deployment Application	**May 21-22**
LS-DYNA Software Training	**Jun 10-12**
Advanced Material Forming Analysis	**Jun 18-19**

Information & Agenda:

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

Contact LS-DYNA MI
    April 16-17 Thur-Fri

Advanced Impact Options in LS-DYNA MI
    April 21-22 Tue-Wed

Composite LS-DYNA MI
    April 23-24 Thur-Fri

Intro to LS-PrePost CA
    April 27 Monday

Intro to LS-DYNA CA
    April 28-May 1 Tue-Fri

Advanced ALE Applications
    MI April 29-30 Wed-Thur

CAE Associates Announces Online ANSYS Training Courses

As the leader in ANSYS training and ANSYS tutorials, CAE Associates is now offering specialized ANSYS FEA topics in an accessible online format!

With online ANSYS training from CAE Associates, gain the advantage of learning ANSYS from recognized experts without leaving your desk. Our instructors use ANSYS every day to solve practical engineering challenges and will guide you through the most efficient modeling practices to solve your real-world problems.

Introduction to ANSYS Mechanical APDL Part I (Traditional GUI)   Middlebury, CT
  Apr 13, 2015   3 Days

FEA Meshing Tips and Tricks   Online Training
  Apr 14, 2015   Day 1
 Lecture 10AM - 12PM ET, Day 2 - Workshops 10AM-12 PM ET

Introduction to ANSYS Mechanical APDL Part II (Traditional GUI)   Middlebury, CT
  Apr 16, 2015   2 Days

ANSYS DesignModeler for CFD
Middlebury, CT
  Apr 20, 2015   1 Day

ANSYS Workbench Meshing for CFD
Middlebury, CT
  Apr 21, 2015   1 Day

Introduction to CFX   Middlebury, CT
  Apr 22, 2015   2 Days

ANSYS Customization & Programming (ACT)
       Middlebury, CT
  Apr 27, 2015   1 Day

FEA Best Practices   Middlebury, CT
  May 7, 2015   2 Days

Drop Test Modeling with ANSYS Workbench/ LS-Dyna   Online Training
  May 7, 2015   Day 1 - Lecture 10AM - 12PM ET, Day 2 - Workshops 10AM-12 PM ET

Introduction to ANSYS FLUENT
Middlebury, CT
  May 11, 2015   2 Days

ANSYS Dynamics (Traditional GUI)
Middlebury, CT
  May 14, 2015

Germany	**CADFEM GmbH**	www.cadfem.de
Germany	**DYNAmore**	www.dynamore.de/en
US	**LSTC**	www.lstc.com
US	**ETA**	www.eta.com
US	**Cae Associates**	www.caeai.com
Sweden	**DYNAMORE Nordic**	www.dynamore.se
France	**DynAS+**	www.dynasplus.com
Thailand	**DFE-Tech**	www.dfe-tech.com/training.html
UK	**ARUP**	www.oasys-software.com/dyna/en/training

Lenovo CEO Yang Yuanqing to join fight against cancer in China

Shanghai, China, March 22, 2015 – Lenovo (HK: 992) (ADR: LNVGY) today announced that Chairman and CEO Yang Yuanqing will join the CEO Roundtable on Cancer, an international non-profit organization focused on preventing cancer and advancing research that promotes improved patient outcomes to encourage health initiatives in China.

The CEO Roundtable on Cancer is known for its CEO Cancer Gold Standard, a workplace wellness program with three major goals: risk reduction, early detection, and quality care. To achieve these goals, the program focuses on five key areas: prevention (which includes tobacco use, nutrition, physical activity, healthy weight and vaccines), screening, clinical trials, quality treatment and survivorship as well as health education and health promotion. The CEO Cancer Gold Standard program has already been adopted by nearly 200 of the world's leading companies and more than 4.5 million lives are covered under this life-lengthening and life-celebrating initiative.

"I am honored to join this prestigious organization and support important cause as a founding member in China," said Yuanqing Yang, Chairman and CEO, Lenovo. "As a global company, it is our goal to provide our employees around the world with the best quality experience at work. I believe that creating a healthier workplace can directly benefit our people, their families and our company. Lenovo is proud to join this effort and the fight against cancer."

"Thousands of people are being diagnosed with cancer on daily basis in China. However, about 60 percent of cancer deaths can be prevented through improved awareness and wellness prevention programs," said Dr. Martin J. Murphy, CEO of the CEO Roundtable on Cancer. "We truly value Mr. Yuanqing Yang's leadership in our fight against cancer in China."

For more information on the CEO Roundtable on Cancer-China, visit: www.CancerGoldStandard.org.cn

About The CEO Roundtable on Cancer
The CEO Roundtable on Cancer was founded in 2001, when former President George H.W. Bush challenged a group of executives to "do something bold and venturesome about cancer within your own corporate families." The CEOs responded by creating and encouraging the widespread adoption of the CEO Cancer Gold Standard™ which calls for organizations to evaluate their health benefits and workplace culture and take extensive, concrete actions in five key areas of health and wellness to address cancer in the workplace. For more information on the CEO Cancer Gold Standard and the free web-based accreditation process, please visit www.CancerGoldStandard.org.