Conference Agenda

12th EUROPEAN LS-DYNA CONFERENCE

14 - 16 May 2019 – Koblenz, Germany

Dear LS-DYNA user,

We would like to cordially welcome you to the 12th European LS-DYNA Conference in Koblenz, Germany.

Also this year our sessions run 8 times parallel. We owe this to nearly 200 submitted presentations and 8 workshops, which reflect the high popularity of LS-DYNA and LS-OPT. In addition to the wide range of topics covered by the technical presentations, we are particularly pleased this year about the large number of keynote presentations by renowned speakers from all over the world. We have scheduled an additional keynote session on Wednesday and hope that the presentations will arouse your interest.

Besides the presentations also the mutual professional exchange with other users enjoys a high value. There will be room for stimulating discussions on Tuesday evening at our get-together in the exhibition. In addition to musical accompaniment, you can win an attractive prize at our racecourse.

On Wednesday evening, the official conference gala dinner will take place in the Great Hall. You will have the opportunity to enjoy an entertaining programme, exchange professional ideas and make new contacts in a relaxed atmosphere.

We would like to take this opportunity to express our special thanks to our sponsors. Without their commitment it would hardly be possible to organize an event of this size.
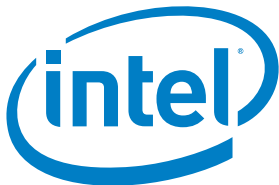
We hope that you enjoy the 12th European LS-DYNA Conference and wish you a pleasant stay.

Sincerely yours

SPONSORS

Platinum

Gold

Silver

Tuesday, 14 May

Plenary P

| Exhibition | 12:45 | Welcome/Keynote Presentations | | | | | | | |

		Room A	Room B	Room C	Room D	Room F	Room G	Room E	Room H
	15:15	Vehicle Development I	Dummy Models	Optimization I	Forming I		Thermoplastic Materials I		
	17:05	Vehicle Development II	Human Models Math. Models	Metallic Materials I	Forming II	Aerospace	Thermoplastic Materials II	Sim. Data Management I	Workshop Oasys

19:30   Get together: Food, drinks and live music in the exhibition hall

Wednesday, 15 May

06:45   Running LS-DYNA (45 min. jogging)

		Room A	Room B	Room C	Room D	Room F	Room G	Room E	Room H
Exhibition	08:05	Railway & Comm. Vehicle	Restraint Systems	Fluid-Struct. Interaction	Forming III	High Speed Impact I	Thermoplastic Materials III	Sim. Data Management II	Workshop LS-OPT
	09:40	Model Reduction & Analysis	Airbags	Particle Method	Spotweld & Thermal I	High Speed Impact II	Fiber Reinf. Polymers I	LS-DYNA on Demand	Workshop BetaCAE

Plenary P

| 11:20 | Keynote Presentations |

12:40   Lunch

| 13:30 | Keynote Presentations |

		Room A	Room B	Room C	Room D	Room F	Room G	Room E	Room H
	15:40	Electric Vehicle I	Impactors/ Barriers	Material Character. I	Isogeometric I	High Speed Impact III	Fiber Reinf. Polymers II	HPC I	Workshop LS-PrePost
	17:25	Electric Vehicle II	Manufacturing I	WS: Phase Transformation	Isogeometric II	High Speed Impact IV	Wood & Foams	HPC II	Workshop SDM

19:00   Reception in the exhibition hall

20:00   Gala dinner in **Plenary P**

Thursday, 16 May

		Room A	Room B	Room C	Room D	Room F	Room G	Room E	Room H
Exhibition	08:30	Connections	Manufacturing II	Metallic Materials II	Optimization II	High Speed Impact V	Fiber Reinf. Polymers III	Civil Engineering	Workshop GISSMO
	10:40	Adhesive/ Rivets	Thermal II	Material Character. II	Optimization III	High Speed Impact VI	Fiber Reinf. Polymers IV	Implicit	Workshop LS-FORM

12:20   Lunch

Plenary P

| 13:30 | Keynote Presentations / Closing Remarks |

15:45   End of conference

AGENDA – TUESDAY, 14 MAY 2019

Plenary P

WELCOME – KEYNOTE PRESENTATIONS

12:45	**Welcome** U. Franz (DYNAmore)
13:00	**Recent Developments in LS-DYNA – Part I** J. Wang (LSTC)
13:30	**In Expectation of Reduced Model for Car Crash Simulation** T. Yasuki (Toyota)
14:00	**Safety CAE for Real World Occupant Protection** J. Jergeus, P.-A. Eggertsen, L. Jakobsson, L. Wågström, J. Östh, J. Hinder, E. Sandborg (Volvo Cars)
14:30	**Sponsor Presentation: Fujitsu/Intel**

T. Yasuki
Toyota

J. Jergeus
Volvo Cars

14:45	Break

	Room A	**Room B**	**Room C**	**Room D**
	VEHICLE DEVELOPMENT I	DUMMY MODELS	OPTIMIZATION I	FORMING I
15:15	**A Study on Shell Element Sensitivity and Shell to Solid Modeling Transition** J. He (Forming Simulation Technology); P. Du Bois (Consultant)	**Sled Tests and Simulation Results with Q10 Update Kit Euro NCAP 2020** H. Ipek (Daimler)	**Load Case Preference Patterns based on Parameterized Pareto-Optimal Vehicle Design Concept Optimization** S. Ramnath (Ohio State University); N. Aulig, M. Bujny, S. Menzel (Honda Research Institute Europe); I. Gandikota (LSTC); K. Horner (Honda R&D Americas)	**The Benefit of True Fracture Strain on Material Model Parametrization** M. Schneider, M. Teschner, S. Westhäuser (Salzgitter Mannesmann Forschung)
15:40	**Development of Carbon Fibre Floor Structure for Premium Electric SUV** P. Bristo (NIO)	**Q10 Euro NCAP 2020 LS-DYNA Model Development** B. Been, K. Waagmeester, M. Burleigh, A. Lakshminarayana (Humanetics Europe); R. Jagadish (Humanetics)	**Structural Optimization of a Vehicle's Sill Subjected to Side Pole and Small Overlap Frontal Crash Load Cases** K. Alexandros, A. Kaloudis (BETA CAE Systems)	**Development New MAT Applied Yoshida 6th Order Yield Function and its Verification** H. Fukiharu, T. Amaishi (JSOL)
16:05	**Roof-Crush Analysis of the Volvo XC40 using the Implicit Solver in LS-DYNA** A. Jonsson (DYNAmore Nordic); M. Carlberg (ÅF/Volvo Cars Consultant); T. Eriksson (Volvo Cars)	**Crash Test Dummies for Automated Vehicle Development** I. Maatouki, C. Kleessen, Z. Zhou, J. Wang (Humanetics)	**Expert Rules as a Powerful Support of the Topology Optimization Procedures of Crash Structures** Prof. A. Schumacher (University of Wuppertal)	**Evaluation of Simulation Results using Augmented Reality** M. Lechner, R. Schulte, M. Merlein (University of Erlangen-Nürnberg)

16:30	Break

	VEHICLE DEVELOPMENT II	HUMAN MODELS & MATH. MODELS	METALLIC MATERIALS I	FORMING II
17:05	**Crash Simulation of Cast Iron Alloys with Nodular Graphite using Different Material Models** D.-Z. Sun, F. Andrieux (Fraunhofer IWM)	**Multi Objective Optimization Approach for Biomedical Stent using Parametric Optimization** M. Seulin (DynaS+); P. Balu (DEP)	**Calibration and Application of GISSMO and *MAT_258 for Shell Element Simulations of High-Strength Steel** J. Johnsen, J. K. Holmen, D. Morin, M. Langseth (NTNU)	**Simulation of Sheet Metal Forming using Elastic Dies** M. Schill (DYNAmore Nordic); J. Pilthammar, M. Sigvant (Volvo Cars); V. Sjöblom, M. Lind (Blekinge Institute of Technology)
17:30	**A Comparative Study of the Hexahedral Elements in LS-DYNA for Crashworthiness Simulation** S. E. Hoque, S. Scheiblhofer, S. Ucsnik (LKR Leichtmetallkompetenzzentrum Ranshofen)	**Musculoskeletal System Simulation in LS-DYNA using Continuum-Mechanical Approach** O. Avci (Fraunhofer IPA); Prof. O. Röhrle (University of Stuttgart)	***MAT_258: A Through-Thickness Regularization Scheme for Shell Element Analyses – Application to Aluminium Components** D. Morin, T. Berstad, M. Costas, O. S. Hopperstad, M. Langseth (NTNU)	**Shell Models with Enhanced Kinematics for Finite Elements in Sheet Metal Forming Simulations** T. Willmann, M. Bischoff (University of Stuttgart)
17:55	**Application of Vehicle Impact Simulation to Protective Barrier** D. Aggromito, J. Farley, M. Walden (Arup)	**The Effect of Element Formulation on FSI Heart Valve Simulations** G. Luraghi, F. Migliavacca, J. F. R. Matas (Politecnico di Milano)	**A Hosford-Based Orthotropic Plasticity Model in LS-DYNA** F. Andrade (DYNAmore); T. Borrvall (DYNAmore Nordic); P. Du Bois (Consultant); M. Feucht (Daimler)	**Numerical Simulation of Electrohydraulic Forming using Coupling of ALE and Lagrangian Elements** M. Woo, J. Kim (Pusan National University)
18:20	**On the Setup and Simulation of Large Scale LEGO Models Build with LS-DYNA and LoCo** T. Gerlinger, D. Koch, A. Haufe (DYNAmore); N. Karajan (DYNAmore Ohio); M. Thiele, A. Sahurnean (SCALE)	**Research Regarding the Mathematical Modelling of Cyclist Rear Collisions** O. A. Condrea (Transilvania University)	**Modelling of Thermo-Viscoplastic Material Behavior Coupled with Nonlocal Ductile Damage** M. Nahrmann, Prof. A. Matzenmiller (University of Kassel)	**Modern Formability Simulation for Advanced High Strength Steel** C. Chen (eta)
18:45	**FE Approach to Evaluate the Dynamic Friction Coefficient for the Transient Phase of Rubber-Ice Sliding Interaction** A. Scattina, (Politecnico di Torino); R. Leonardi, S. Scalera (DYNAmore Italia)	**Effect of Side Incubator Padding on Unrestrained Child Crash Dummy under Deceleration Force** A. Rabiee (Cranfield University)		**The Use of LS-DYNA for the Development of a Topology-Optimized Thin-Walled Shell Structure Manufactured by Die-Less-Hydroforming** A. Metzger, T. Ummenhofer (KIT)

19:10	End of presentations

GET TOGETHER – FOOD, DRINKS AND LIVE MUSIC IN THE EXHIBITION HALL

19:30	

Room F	Room G	Room E	Room H	
	THERMOPLASTIC MATERIALS I			
	Approach for Modelling Thermoplastic Generative Designed Parts F. Althammer (Daimler/University of Stuttgart); D. Moncayo (Daimler); Prof. P. Middendorf (University of Stuttgart)			15:15
	A New Modelling for Damage Initiation and Propagation of Randomly-Oriented Thermoplastic Composites K. Saito, M. Nishi (JSOL); S. Hayashi, M. Kan (Honda R&D)			15:40
	A Viscoelastic-Viscoplastic Time-Temperature Equivalence for Thermoplastics V. Dorléans, E. Michau (Faurecia Interior System); R. Delille, F. Lauro, D. Notta-Cuvier, B. Bourel, G. Haugou, H. Morvan (University Polytechnique Hauts de France)			16:05
				16:30
AEROSPACE	**THERMOPLASTIC MATERIALS II**	**SIMULATION DATA MANAGEMENT I**	**WORKSHOP**	
Design Qualification of the Jupiter Icy Moons Explorer JENI Instrument using the LS-DYNA Frequency Domain Suite M. Shanaman, S. Cooper, S. Jaskulek, C. Schlemm, P. Brandt, D. Mitchell, E. Rollend (Johns Hopkins University)	**Strength Assessment of an Electronic Plastic Component considering Local Fiber Orientation and Weld Lines** N. Schafet, M. Kuczynska (Robert Bosch); S. Pazour, W. Korte, M. Stojek (PART Engineering)	**Implementation of a Method for the Generation of Representative Models of Polycrystalline Microstructures in LS-PrePost** S. Falco (Imperial College London); N. Bombace, N. Petrinic (University of Oxford); P. Brown (DSTL)	**Oasys PRIMER Workshop – Introduction and Demonstration of Automotive Tools** G. Newland (Arup/Oasys) Oasys PRIMER is used worldwide to pre-process LS-DYNA models. As well as the core tools for model creation and checking. PRIMER contains many tools to make it easier to setup automotive models/loadcases. This workshop will introduce these tools and demonstrate how to use them. Examples include:	17:05
Undamped Extension of a Nose Landing Gear H. Frey (Liebherr Aerospace); W. Lietz, U. Stelzmann (Cadfem)	**Failure Prediction for Polymer Products with Short Fiber** J. Takahashi, Y. Fujita (Asahi Kasei)	**Automated Evaluation and Reporting of Simulation and Test Result Data integrated with CAE Process Workflow** A. Kumar, G. Geißler (SCALE)		17:30
Methodological Approach to the Modelling of Tire/Ground Interaction A. Al-Tayawe, H. Abhyankar, J. Brighton, V. Marchante-Rodriguez, G. Gent (Cranfield University)	**Modelling of Polypropylene Subjected to Impact Loading at Low Temperatures** E. Schwenke (NTNU)	**Development of a Customized Beam-to-Shell Element Model Mapping Tool** M. Duhovic, P. Patil, D. Scheliga, D. Schommer, L. Münch, J. Hausmann (Institut für Verbundwerkstoffe)	- Barrier positioning. - Pedestrian protection. - Interior head impact. - Seatbelt anchorage. - Occupant setup. - Automation.	17:55
		Batch Meshing of Complex CAE Parts using Machine Learning P. Krishnaswamy, U. Mallikarjuniah (Xitadel)	Members of the Oasys team will also be on hand to answer any questions you have on PRIMER or any of the Oasys LS-DYNA products.	18:20
				18:45
				19:10
		GET TOGETHER – FOOD, DRINKS AND LIVE MUSIC IN THE EXHIBITION HALL		19:30

Program subject to alterations.

AGENDA – WEDNESDAY, 15 MAY 2019

06:45 Running LS-DYNA (45 min. jogging)

MORNING SESSIONS

Room A	**Room B**	**Room C**	**Room D**
RAILWAY AND COMMERCIAL VEHICLE	**RESTRAINT SYSTEM**	**FLUID-STRUCTURE INTERACTION**	**FORMING III**

08:05

| | Virtual Testing of Curved Vehicle Restraint Systems
B. Fröhlich (Bundesanstalt für Straßenwesen) | Modelling of the Overcasting Reinforcement Process using the LS-DYNA ICFD Solver
J. Burt, O. Tomlin (GRM Consulting); D. Howson, T. Fleet (Alvant) | Virtual Modeling of Forming Processes in Metal Packaging Industry
I. Moldovan, M. Linnepe, L. Keßler (thyssenkrupp Steel Europe); M. Köhl (thyssenkrupp Packaging Steel) |

08:30

| LS-DYNA Simulations of the Impacts of a 38-Ton Heavy Goods Vehicle into a Road Cable Barrier
K. Wilde, D. Bruski, S. Burzyński, J. Chróścielewski, Ł. Pachocki, W. Witkowski (Gdańsk University of Technology) | Vehicle Restraint System Optimization and Robustness Assessment using the Coupling between LS-DYNA, LS-OPT and DEP MeshWorks Software
C. Goubel (DynaS+) | Recent and Future Developments for the ICFD Solver in LS-DYNA
F. Del Pin, I. Caldichoury, R. R. Paz, C. Huang (LSTC) | Setting up a Hot Stamping Simulation considering Tool Heating with OpenForm
K. Kassem, D. Sihling (GNS) |

08:55

| Transient Dynamic Implicit Analysis for Durability Testing of Bus Seats
A. Jensen, G. Laird (Predictive Engineering) | Numerical Simulations in Vehicle Restraint System Development
M. Šebík, M. Popovič (SVS FEM); M. Drdlová (Research Institute for Building Materials) | Parachute Deployment Simulations using LS-DYNA ICFD Solver and Strong FSI Coupling
M. Le Garrec, A. Poncet, V. Lapoujade (DynaS+) | Springback in Assembly of Mirror Panels with Stamped Supports for Concentrating Solar Power Applications
J. Pottas, J. Coventry (The Australian National University) |

09:20 Break

MODEL REDUCTION & ANALYSIS	**AIRBAGS**	**PARTICLE METHOD**	**SPOTWELD & THERMAL I**

09:40

| Dimensionality Reduction of Crash and Impact Simulations using LS-DYNA
C. Bach (BMW/Technical University of Munich); L. Song (BMW); T. Erhart (DYNAmore); Prof. F. Duddeck (Technical University of Munich/ Queen Mary University of London) | Increasing CAE Productivity – Airbag Model Verification using Visual-Environment
A. Lerch, N. Möwe (iSi Automotive); M. Seshadri, A. Gittens, M. Sommer (ESI) | Implicit SPH in LS-DYNA for Automotive Water Wading Simulations
E. Yreux (LSTC) | Prediction of Spot Weld Failure for Automotive Steels
J. Lim, J. Ha (Posco) |

10:05

| Implementation of LS-DYNA / QUASAR Coupling for Model Reduction
K. Kayvantash (CADLM); M. Takeda (JSOL); J. Wang (LSTC) | Airbag Folding for LS-DYNA using Generator4
L. Benito Cia (GNS) | Numerical Simulations of Vacuum Packed Particles using LS-DYNA
P. Bartkowski, R. Zalewski (Warsaw University of Technology) | Recent LS-DYNA Developments in the Structural Conjugate Heat Transfer Solver
T. Klöppel (DYNAmore) |

10:30

| Comparison of Laser-Scanned Test Results and Stochastic Simulation Results in Scatter Mode Space
M. Okamura, H. Oda (JSOL); D. Borsotto (Sidact) | Comparison of LS-DYNA Version 7, 9 and 11 – A View of an Airbag Supplier
A. Seeger (iSi Automotive Berlin); S. Stahlschmidt (DYNAmore) | Investigation on Parameter Identification and Coarse Graining Models using Discrete Element Capability in LS-DYNA
S. Tokura (Tokura Simulation Research) | Tool Cooling Simulation for Hot Forming II. Experiments and Simulations
T. Kuroiwa (JSOL) |

10:55 Break

Plenary P

KEYNOTE PRESENTATIONS

11:20 **A Fly Landed on my Bumper and my Results Changed?**
K. Pydimarry (Honda R&D); A. Gromer (DYNAmore Ohio)

11:50 **Towards a Virtual Laboratory for Aluminium Structures**
Prof. O. S. Hopperstad (NTNU)

12:20 **Sponsor Presentation: Oracle**

K. Pydimarry
Honda

Prof. O. S. Hopperstad
NTNU

12:30 Lunch Break

Room F	Room G	Room E	Room H	
HIGH SPEED IMPACT I	**THERMOPLASTIC MATERIALS III**	**SIMULATION DATA MANAGEMENT II**	**WORKSHOP**	
	Failure Modeling of Unreinforced and Fiberreinforced Thermoplastics P. Reithofer, B. Hirschmann, T. Schaffranek (4a engineering)	Postprocessing of the 2020 EU-NCAP Frontal Impact Test in META N. Tzolas, D. Siskos (BETA CAE Systems)	Material Parameter Identification with LS-OPT K. Witowski (DYNAmore) In this workshop a short introduction to LS-OPT will be given, and the application of LS-OPT for calibration of material parameters will be presented. The new LS-OPT version 6.0 features for the usage of digital image correlation data for calibration of material parameters will be discussed by means of an application example.	08:05
Determination of Impact Loads for a Tracked Military Vehicle during a Crash Scenario B. Balaban (FNSS Savunma Sistemleri)	Constitutive Model of Filled Elastomers Capable of Capturing Mullins Effect, Hysteresis, Induced Anisotropy and Permanent Set – Part I: Model Theory & Implementation R. Chandrasekaran, M. Hillgärtner, M. Itskov (RWTH Aachen University); M. Müller, F. Burbulla (Dr. Ing. h.c. F. Porsche)	Animator4: Extended Representation of LS-DYNA Properties in Postprocessing C. Kaulich, S. Hanson (GNS)		08:30
Armor Steel Impacted by Projectiles with Different Nose Shapes – Numerical Modelling T. Fras, N. Faderl, L. Blanc (ISL); C. C. Roth, D. Mohr (ETH Zurich)	Cont.: – Part II: Experiments & Validation M. Hillgärtner, R. Chandrasekaran, M. Itskov (RWTH Aachen University); M. Müller, F. Burbulla (Dr. Ing. h.c. F. Porsche)	Multi Material Modeling with ANSA: An Application in the Automated Assembly Process in FORD T. Fokylidis, V. Karatsis (BETA CAE Systems); U. Tunc, H. Wuestner (Ford-Werke); N. Pasligh (Ford Forschungszentrum Aachen); C. Ping, M. Ng (Ford Australia)		08:55
				09:20
HIGH SPEED IMPACT II	**FIBER REINFORCED POLYMERS I**	**LS-DYNA ON DEMAND**	**WORKSHOP**	
Simulation of Concurrent Detonation of Multiple High Explosive Charges L. Schwer (Schwer Engineering & Consulting Services); S. Stojko, H. Bornstein (Defence Science and Technology Group)	Simulation Software Transversal Development of a TP Based Fiber Reinforced Composite Material Law B. Eck (Faurecia Clean Mobility); J. Lacambre (DYNAmore France); Prof. P. Rozycki (Ecole Centrale de Nantes); M. Mbacke, T. Peret (IRT Jules Verne)	LS-DYNA on Demand License U. Göhner (DYNAmore)	ANSA and META: Crash and Safety at its Best BETA CAE Systems ANSA and META offer a complete suite for Crash and Safety applications. Seats are moved easily to the desired position and dummies are positioned on them, achieving a penetration free and restrained, by seatbelts, system. Occupant Injury criteria for simulation and laboratory tests can be easily evaluated in META. Pedestrian analysts have at their disposal a complete tool for marking, bulk positioning and load-case creation for all desired targets and post processing capabilities for the evaluation of the corresponding results. All interior safety regulations available in the market are applicable in ANSA and META through automated tools for the safety of the driver and passengers.	09:40
Blast Detonated by Impact Simulation M. Büyük (Sabanci University); H. Balaban, U. Penekli (FE-Tech)	Design and Material Characterization of Reinforced Plastics for Secondary Structural Load Paths in an Early Development Phase D. Moncayo (Daimler); M. Cyperling (Mercedes-Benz Werk); G. Dumitru, T. Graf (DYNAmore); D. Coutellier, H. Naceur (Université Polytechnique Hauts-de-France)	Leveraging Rescale's Cloud HPC Simulation Platform to Run LS-DYNA Models and Accelerate Design Exploration: Examples and Case Studies F. Treheux (Rescale)		10:05
Mesh Sensitivity of Blast Wave Propagation using 2D to 3D Mapping D. A. Powell, D. Bogosian (Baker Engineering and Risk Consultants); L. Schwer (Schwer Engineering & Consulting Services)	Prediction of Load-Bearing Capacity of Composite Cylinders with Impact Damage A. Cherniaev (University of Windsor); V. Komarov, S. Pavlova, A. Pavlov (Samara University)	High Performance Computing in Life Science T. Newill, W. Dreyer (Oracle Cloud Infrastructure)		10:30
				10:55

AFTERNOON SESSIONS

Plenary P

KEYNOTE PRESENTATIONS

13:40	**Machine Learning as a Tool for Engineers** S. Peters (Daimler)
14:10	**Virtual Vehicle Development at NIO** N. Brännberg (NIO)
14:40	**Challenges in Occupant CAE: From Sled Test Simulation to Full Vehicle Crash** R. Tejero de la Piedra (Opel Automobile)

S. Peters
Daimler

N. Brännberg
NIO

R. Tejero de la
Piedra, Opel

15:10 Break

	Room A	Room B	Room C	Room D
	ELECTRIC VEHICLE I	**IMPACTORS/BARRIERS**	**MATERIAL CHARACTERIZATION I**	**ISOGEOMETRIC I**
15:40	Numerical Modeling and Prognosis of the Dynamic Response of High Voltage Components in Electric Cars M. S. Ridene (Daimler)	The 3rd Generation Crash Barrier Modeling Method and Application on MDPB Y. Wang (VAYU-TECH)	Development of a New Method for Strain Field Optimized Material Characterization M. Benz, J. Irslinger, M. Feucht (Daimler); P. Du Bois (Consultant); M. Bischoff (University of Stuttgart)	Enabling the Analysis of Topologically Connected Multi-Patch Trimmed NURBS Shells in LS-DYNA S. Hartmann (DYNAmore); L. Leidinger (BMW); L. Li , A. Nagy, M. Pigazzini, D. Benson (LSTC)
16:05	Lithium-Ion Battery Models and Thermal Management in LS-DYNA K.-S. Im, Z.-C. Zhang, G. Cook Jr. (LSTC)	Development of Pedestrian Headform Finite Element (FE)Model using LS-DYNA and its Validation as per AIS 100/GTR 9 N. A. Kulkarni, S. R. Deshpande, R. S. Mahajan (The Automotive Research Association of India)	Efficient Characteristic Identification of Plastic Materials for Crash Analysis with 3-Point Bending Machine O. Ito, Y. Nakagawa, K. Kaneda, N. Matsuura, Y. Ueda (Honda R&D)	Explicit Isogeometric B-Rep Analysis on Trimmed NURBS-Based Multi-Patch CAD Models in LS-DYNA L. Leidinger (BMW)
16:30	BatMac: A Battery Macro Model to Simulate a Full Battery in an Electric or Hybrid Car Crash P. L'Eplattenier, I. Caldichoury (LSTC)		Automated Kinetic and Strain Field Based Calibration for a Thermoplastic Material Model using High-Speed Tensile Tests S. Schilling, P. Suppinger, P. Blome (Autoliv)	The ANSA / LS-DYNA Approach for IGA Simulations L. Rorris, I. Chalkidis, A. Vafeidis (BETA CAE Systems); A. Nagy (LSTC); S. Hartmann (DYNAmore)

16:55 Break

	ELECTRIC VEHICLE II	MANUFACTURING I	WORKSHOP	ISOGEOMETRIC II
17:25	Measurement of Electromagnetic Launcher Muzzle Velocity with Induced Voltage of B-Dot Probe H.-K. Kim, M.-A. Woo, J. Kim (Pusan National University)	Impact Analysis of Polymeric Additive Manufactured Lattice Structures G. Laird (Predictive Engineering); P. Du Bois (Consultant)	Phase Transformation of Metallic Materials M. Merten, T. Klöppel (DYNAmore) Several phase change models in LS-DYNA provide the possibility to numerically predict the distribution of process dependent material properties. The workshop gives a brief overview on existing models and discusses the recently developed material *MAT_254 in some detail. Possible approaches to calibrate this complex material model based on given experimental results are shown. In a first example, an isothermal TTT-Diagram is used to define a material card for the press hardening steel 22MnB5. A second show case demonstrates the potential application of the material model to the 'bake hardening' effect of 6xxx aluminium alloys.	Isogeometric Analysis using the *IGA_INCLUDE_BEZIER Keyword in LS-DYNA M. Sederberg (Coreform); M. Scott (Brigham Young University/Coreform)
17:50	Battery Cooling Simulation using STAR-CCM+ D. Grimmeisen, M. S. Schneider (Cascate)	Development of a Process Simulation Model of a Pultrusion Line M. Duhovic, P. Aswale, D. Schommer, J. Hausmann (Institut für Verbundwerkstoffe)		Comparative Evaluation of Isogeometric Analysis and Classical FEM with Regard to Contact Analysis Z. Naveed, A. Kühhorn, M. Kober (BTU Cottbus-Senftenberg)
18:15		Coupling of a Foaming Process and Material Modeling with LS-DYNA T. Schäfer, C. Hinse (SimpaTec)		

18:40 End of presentations

RECEPTION IN THE EXHIBITION HALL
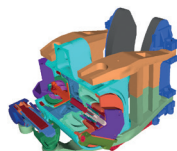19:00

GALA DINNER IN PLENARY ROOM
20:00
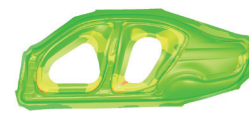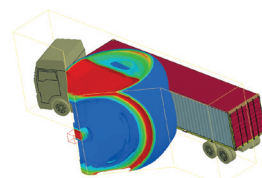
Courtesy of
Daimler AG

Courtesy of
Husqvarna AB

Courtesy of
Knorr-Bremse Systeme für
Schienenfahrzeuge GmbH

Courtesy of
Jaguar Land Rover Limited

Courtesy of
BMW Group

Courtesy of
Thiot Ingenierie

Room F	Room G	Room E	Room H	
HIGH SPEED IMPACT III	**FIBER REINFORCED POLYMERS II**	**HPC I**	**WORKSHOP**	
Numerical Methods for the Analysis of Behind Armor Ballistic Trauma P. Zochowski (Military Institute of Armament Technology)	Development of a User-Defined Material Model for Sheet Molding Compounds D. Schommer, M. Duhovic, J. Hausmann (Institut für Verbundwerkstoffe); H. Andrae, K. Steiner (Fraunhofer ITWM); M. Schneider (KIT)	Dynamic Load Balancing B. Wainscott (LSTC)	Solution Explorer in LS-PrePost – a GUI for Nonlinear Implicit FE T. Borrvall (DYNAmore Nordic) The evolvement of multiphysics capabilities in LS-DYNA has made it a very powerful, albeit somewhat complicated, simulation product. To this end, the Solution Explorer was introduced to simplify modeling setup in fluid mechanics, and this has now been complemented with a framework for nonlinear implicit mechanics. The vision of the Solution Explorer is to combine simplicity and power in an integrated pre- and post-environment, and this workshop presents its current state. We cover pre- and post-processing for single and multiple cases, in hope that it will provide a clear picture of its future potential.	15:40
Fluid-Composite Structure-Interaction in Underwater Shock Simulations B. Özarmut, A. Rühl, B. Hennings, O. Nommensen, A. Paul (thyssenkrupp Marine Systems)	Adaptive Mesh Segmentation for Modelling Dynamic Delamination Initiation and Propagation in Thick Composite Laminates J. Selvaraj, L. Kawashita, G. Allegri, S. Hallett (University of Bristol)	LS-DYNA Automatic Re-Decomposition E. Yreux, C. Tsay, J. Wang (LSTC)		16:05
Bolted Joint Connections of FRP-Components in Submarines Subjected to Underwater Shock A. Rühl, B. Özarmut, B. Hennings, O. Nommensen, A. Paul (thyssenkrupp Marine Systems)	Numerical Investigation of Parameters Affecting Crush Mode of Triggered FRP Tube R. Akita (Itochu Techno-Solutions Corporation); A. Koike (Isuzu Advanced Engineering Center); A. Yokoyama (Kyoto Institute of Technology)	Leveraging LS-DYNA Explicit and Implicit on Latest Intel Technologies N. Meng (Intel); J. Wang, R. Lucas (LSTC)		16:30
				16:55
HIGH SPEED IMPACT IV	**WOOD & FOAMS**	**HPC II**	**WORKSHOP**	
Numerical and Experimental Investigation of SPH, SPG and FEM for High Velocity Impact Applications M. Becker, M. Seidl (ISL); M. Mehl (University of Stuttgart); M. Souli (University of Lille)	Comparison of Different Material Models in LS-DYNA (58, 143) for Modelling Solid Birch Wood G. Baumann, F. Feist (Graz University of Technology); S. Hartmann (DYNAmore); U. Müller (University of Natural Resources and Applied Life Sciences); C. Kurzböck (ViF)	The Effect of HDR InfiniBand on LS-DYNA Simulations G. Cisneros-Stoianowski, O. Maor, G. Shainer, Y. Qin, D. Cho (HPC-AI Advisory Council)	Simulation Data Management with SCALE products M. Thiele (SCALE) The workshop gives an overview of the SCALE SDM products such as LoCo, CAViT and Status.E. There will be a discussion on how to benefit from SCALE solutions as a user or project manager. The application of selected uses cases will be presented within live demos. Examples of typical CAE workflows and process automation using SCALE SDM applications are introduced. A lively discussion at the end of the workshop is very welcome to investigate a potential integration of SDM software in your environment.	17:25
Improvement of Satellites Shielding under High Velocity Impact using Advanced SPH Method T. Legaud, M. Le Garrec, N. Van Dorsselaer, V. Lapoujade (DynaS+)	Modeling the Energy Absorption Characteristics of Wood Crash Elements E. F. Akbulut Irmak (Paderborn University)	Mainframe Computer Connector Wear Correlation and Prediction Analysis S. Canfield, B. Notohardjono, R. Ecker, S. Khambati (IBM)		17:50
Random Vibration Analysis for a Gunner Platform Frame using Experimental Data S. E. Yılmaz (FNSS Savunma Sistemleri)	Modeling and Validation of Static and Dynamic Seat Cushion Characteristics D. V. Dorugade (Concordia University); P.-E. Boileau (McGill University)			18:15
				18:40
			RECEPTION IN THE EXHIBITION HALL	19:00
			GALA DINNER IN PLENARY ROOM	20:00

Courtesy of
Ford Forschungszentrum
Aachen GmbH

Courtesy of
Dr. Ing. h.c. F. Porsche AG

Courtesy of
Autoliv & Volvo Cars

Courtesy of
Opel Automobile GmbH

Courtesy of
Honda R&D

Courtesy of
Volvo Car Corporation

Program subject to alterations.

AGENDA – THURSDAY, 16 MAY 2019

	Room A	Room B	Room C	Room D
	CONNECTIONS	**MANUFACTURING II**	**METALLIC MATERIALS II**	**OPTIMIZATION II**
08:30	Development of Simple Connection Model for Plastic Parts in Low-Speed Crash Simulation N. Matsuura, Y. Nakagawa, O. Ito, K. Kaneda, Y. Ueda (Honda R&D)	Simulation of Process-Dependent Properties with MAT_254 Demonstrated for the ‚Bake-Hardening' of an 6xxx Aluminum Alloy M. Merten, T. Klöppel (DYNAmore); S. Jurendic, Z. Liang (Novelis)	Numerical Simulation of Low Velocity Impact on Sandwich Structures with Steel Skins and Polymer Foam Cores T. Berstad, A. Reyes, T. Børvik (NTNU)	Compact Lightweight Steel Hood Design and Development using ACP OpDesign J. Stanik (Hyundai America Technical Center); A. Shrawan, D. Mittal, A. Farahani (ETA)
08:55	Modeling of Bolts using the GISSMO Model for Crash Analysis F. Schauwecker (Daimler/University of Stuttgart); M. Feucht, M. Beck, D. Moncayo (Daimler); F. Andrade (DYNAmore); Prof. P. Middendorf (University of Stuttgart)	Simulating Time and Temperature dependent Artificial Ageing Process of an AA6xxx-T4 Aluminium Sheet Material using Mat 254 S. Jurendic, Z. Liang (Novelis); M. Merten, T. Klöppel (DYNAmore)	High-Strength Alloyed Steel: Modelling Dynamic and Multiaxial Loading Conditions A. Trippel (Institut für nachhaltige technische Systeme); W. Harwick (Fraunhofer EMI)	Adaptive Sampling using LS-OPT A. Basudhar (LSTC)
09:20	Multi-Scale Numerical Simulations of Structural Joints with Flow-Drill Screws using a Virtual Material Calibration M. Costas, D. Morin, M. Langseth (NTNU)	Bake-Hardening Effects, Arbitrary Image Data and Finite Point-Set Analysis Results made Accessible with envyo C. Liebold (DYNAmore); J. Zerbst (Daimler); S. Hagmann, M. Hedwig (Porsche)	Influence of Strain Rate on Deformation and Failure Behavior of Sheet Metals under Shear Loading S. Klitschke, A. Trondl, F. Huberth (Fraunhofer IWM)	Parameter Estimation with LS-OPT: Addressing Noise, Hysteresis and Spurious Data in DIC and other Applications S. Du Bois (DYNAmore); N. Stander, A. Basudhar (LSTC)
09:45	Estimation of Spot Weld Design Parameters using Deep Learning A. Pillai, Prof. U. Reuter (TU Dresden); M. Thiele (SCALE)	Considering Manufacturing Induced Inhomogeneity in Structural Material Models (VMAP) B. Jilka, P. Reithofer (4a engineering)	MAT_291: A New Micromechanics-Inspired Model for Shape Memory Alloys J. Karlsson (DYNAmore Nordic); S. Kari, R. Dhume, S. Kashyap (Medtronic)	First Steps Towards Machine-Learning Supported Material Parameter Determination D. Koch, A. Haufe (DYNAmore)
10:10	Break			
	ADHESIVE/RIVETS	**THERMAL II**	**MATERIAL CHARACTERIZATION II**	**OPTIMIZATION III**
10:40	Simulation of Self-Piercing Riveting Process and Joint Failure with Focus on Material Damage and Failure Modelling A. Rusia (Daimler/University of Stuttgart); M. Beck (Daimler); Prof. S. Weihe (University of Stuttgart)	Validation of a Thermal Radiation Problem using *BOUNDARY_RADIATION_ENCLOSURE G. Blankenhorn, R. Grimes, F.-H. Rouet, I. Gandikota (LSTC); S. Malcom, B. Gyesi (Honda R&D)	New Testing in Support of LS-DYNA MAT 224 Material Model Prof. A. Gilat, J. Seidt, N. Spulak, J. Smith (Ohio State University)	LS-TaSC 4: Designing for the Combination of Impact, Statics and NVH K. Witowski (DYNAmore)
11:05	Modelling of Steel-Aluminium Components using Structural Adhesive and Self-Piercing Rivets D. Morin, M. Reil, T. Berstad, M. Costas, M. Langseth (NTNU)	Validation of a Newly Developed Cross-Flow High Temperature Heat Exchanger (HT-HE) using Multiphysics Simulation M. Rübsam, Prof. R. Altensen, Prof. M. Pitzer (THM)	A Full-Field Calibration Approach to Identify Failure Parameters of a HS-Steel S. Cavariani, A. Scattina (Politecnico di Torino); S. Scalera (DYNAmore Italia); D. De Caro, M. M. Tedesco, F. D'Aiuto, S. Bianco, A. Luera, D. Ghisleri (C.R.F.); C. Ilg (DYNAmore)	Topology Optimization of a U-Bend Tool using LS-TaSC D. Aspenberg (DYNAmore Nordic); N. Asnafi (School of Science & Technology)
11:30	A Cohesive Model for Ice and its Verification with Tensile Splitting Tests H. Herrnring, L. Kellner, J. M. Kubiczek, S. Ehlers (TUHH)	Using a Rolls-Royce Dummy Engine Model to Evaluate Scalability of LS-DYNA Thermal Solvers G. Blankenhorn, J. Wang, R. Grimes, F.-H. Rouet (LSTC); J. Ong (Rolls-Royce)	Estimation of Stress Triaxiality from Optically Measured Strain Fields S. Conde, F. Andrade, M. Helbig, A. Haufe (DYNAmore); M. Feucht (Daimler)	Design Optimisation of a Side Impact Beam Made out of High Strength Aluminium Alloys using Barlat YLD2000 and GISSMO Failure Model for the "Extended Hotforming Process" J. M. Schlosser, S. Mouchtar, W. Rimkus, R. Schneider (Hochschule Aalen)
11:55	Modelling of Bonded Component Tests, Comparing MAT_240 to State of the Art Models J. F. Berntsen, D. Morin, A. Holm Clausen, M. Langseth (NTNU)	Simulation of the Temperature Distribution in Ship Structures for the Determination of Temperature-Dependent Material Properties J. M. Kubiczek, H. Herrnring, L. Kellner, S. Ehlers (TUHH); R. Diewald (TÜV NORD EnSys)	New Developments in Material Testing at Very High Strain Rates R. Grams, X. F. Fang (University of Siegen)	
12:20	Lunch break			

Plenary P

KEYNOTE PRESENTATIONS – FAREWELL

13:30	Fusion of Composite Simulation with Enhanced Data Acquisition and Data Science: Opportunities and First Approaches Prof. P. Middendorf (University of Stuttgart)
14:00	Drop and Impact Simulation of Handheld Outdoor Products with LS-DYNA and Digimat M. Palm (Husqvarna Group)
14:30	Recent Advances in Finite Element and Meshfree Methods for Material Failure Analysis Y. Wu (LSTC)
15:00	Recent Developments in LS-DYNA – Part II T. Erhart (DYNAmore); T. Borrvall (DYNAmore Nordic)
15:30	Farewell T. Münz (DYNAmore)

Prof. P. Middendorf
University of Stuttgart

M. Palm
Husqvarna Group

15:45	End of conference

Room F	Room G	Room E	Room H	
HIGH SPEED IMPACT V	**FIBER REINFORCED POLYMERS III**	**CIVIL ENGINEERING**	**WORKSHOP**	
Blast Loading of Concrete: Simulations of Tubular Structures Subjected to Internal Detonations M. Kristoffersen, T. Børvik (NTNU); K. O. Hauge (Norwegian Defence Estates Agency); A. Minoretti (Norwegian Public Roads Administration)	Composites in High Voltage Applications C. Weinberger, M. Rollant (4a engineering)	Drag Force Simulation on Blast Loaded Fabric Roof M. Hadjioannou, E. Sammarco, M. Barsotti (Protection Engineering Consultants)	**Failure Prediction in Crash Simulations with the GISSMO Model** F. Andrade (DYNAmore) This workshop is indicated to all LS-DYNA users who want to take their first steps regarding failure modeling in crash simulations. The subject will be addressed during the workshop where relevant aspects concerning failure prediction will be reviewed and the application of the GISSMO model for such simulations will be demonstrated.	08:30
Study on Blast and Ballistic Loading of Auxetic Composite Sandwich Panels with LS-DYNA N. Novak, L. Starčevič, M. Vesenjak, Prof. Z. Ren (University of Maribor)	Polypropylene Composites under Impact: Anisotropy, Mapping and Failure Criteria in Simulations, and Validation on a Part for Building and Construction Industry M. Nutini, M. Vitali (Basell Poliolefine Italia, a LyondellBasell Company); M. Benanti, S. Formolo (Polytech)	LS-DYNA on the West White Rose Project J. Fisk (Arup)		08:55
Ballistic Behaviour of UHMWPE Composite Material: Experimental Characterization and Numerical Simulation H. Abdulhamid, P. Deconinck, P.-L. Héreil, J. Mespoulet (Thiot-Ingenierie)	A Simple Material Model for Composite Based on Elements with Realistic Stiffness T. Tryland (Sintef Manufacturing)	Use of LS-DYNA for Structural Fire Engineering E. Rackauskaite, G. Flint, A. Maani, A. Temple, P. Kotsovinos (Arup)		09:20
Modelling Back Face Deformation of Woven Layered Composite Targets under Oblique Impact M. Seidl, N. Faderl, M. Becker (ISL)	Design Right at the First Time Automotive Components by using Advanced Multiscale Approach with Digimat H. Skhiri (e-Xstream)	Low-Velocity Impact Behaviour of Plain Concrete Beam D. Memon (Ghent University); D. Lecompte (Royal Military Academy of Brussels)		09:45
				10:10
HIGH SPEED IMPACT VI	**FIBER REINFORCED POLYMERS IV**	**IMPLICIT**	**WORKSHOP**	
Experimental and Numerical Study of Submillimeter-Sized Hypervelocity Impacts on Honeycomb Sandwich Structures F. Plassard (Thiot-Ingenierie); H. Abdul-hamid, P Deconinck, P-L Héreil, J. Mes-poulet (Thiot-Ingenierie); C. Puillet (CNES)	Composite Forming Simulation with Introduction to J-Composites/Form Modeler Version 2.0 M. Nishi, S. Wang, S. Dougherty (JSOL); X. Zhu (LSTC)	DDAM Analysis with LS-DYNA Y. Huang, Z. Cui (LSTC)	LS-DYNA with LS-FORM X. Zhu, J. He (LSTC) The workshops feature both informative and how-to knowledge with demonstrations of the latest features from experts. The aim is to provide the attendees with insights, limits and merits of the topic. It facilitates the understanding by showcasing simple examples that explain the methods. Besides the presentation there will be time for interactions between the presenters and the audience.	10:40
Numerical Modeling of Honeycomb Structure Subjected to Blast Loading M. Stanczak, T. Fras, L. Blanc (ISL); P. Pawlowski (Polish Academy of Sciences, Warsaw/ISL); A. Rusinek (Lorraine University)	New Methods for Compression Molding Simulation and Component Strength Validation for Long Carbon Fiber Reinforced Thermoplastics S. Hayashi (JSOL); C.T. Wu, W. Hu, Y. Wu, X. Pan, H. Chen (LSTC)	FEM-BEM Coupling with Ferromagnetic Materials T. Rüberg, L. Kielhorn, J. Zechner (Tailsit)		11:05
High Velocity Impact Response of High Strength Aluminum using LS DYNA G. Başaran, E. Özbayramoğlu, O. Bütün, E. Öney (FNSS Savunma Sistemleri); Prof. E. Gürses (Orta Doğu Teknik Üniversitesi)	Modeling of Microcellular Short Fiber Reinforced Plastics for Pedestrian Safety Analysis M. Landervik (DYNAmore Nordic); U. Westberg (Volvo Cars); S. Gastl (Borealis Polyolefine)	New Options in Frequency Domain Analysis and Fatigue Analysis with LS-DYNA Y. Huang (LSTC)		11:30
IRIS 3 Program: Study of the Vibrations Induced by a Missile Impact on a Reinforced Concrete Structure N. Van Dorsselaer, T. Legaud, V. Lapoujade (DynaS+); B. Richard (Institut de Radioprotection et de Sûreté Nucléaire)		Running Jet Engine Models on Thousands of Processors with LS-DYNA Implicit C. Ashcraft, R. Grimes, R. Lucas, F.-H. Rouet (LSTC); J. Dawson, T.-T. Zhu (Cray); E. Guleryuz, S. Koric (NCSA); J. Ong, T. Simons (Rolls-Royce)		11:55
				12:20

Program subject to alterations.

EXHIBITORS

32	4a engineering	01	DynaS+ / DEP	07	Intel/Fujitsu	03	Rescale
28	ARUP/Oasys	05	DynaWeld	10	JSOL	31	SCALE
27	BIAS	06	e-Xstream engineering	26	Lasso/BETA CAE Systems	30	SIDACT
26	BETA CAE Systems/Lasso	07	Fujitsu/Intel	25	Magna Powertrain Engineering Center Steyr	12	Shanghai Enhu
22	CADLM	15	Forming Technologies	14	newgentechs	11	Shanghai Fangkun
04	CASCATE	23	GNS	09	NEC	17	T-Systems
21	DatapointLabs	24	GNS Systems	08	Nordmetall	18	Univ. Erlangen-Nürnberg
02/34	DYNAmore/LSTC/ETA	16	GOM	33	Oracle	35	extreme project
29	DYNAmore Laboratory	20	Inprosim	13	Predictive Engineering	19	Xitadel
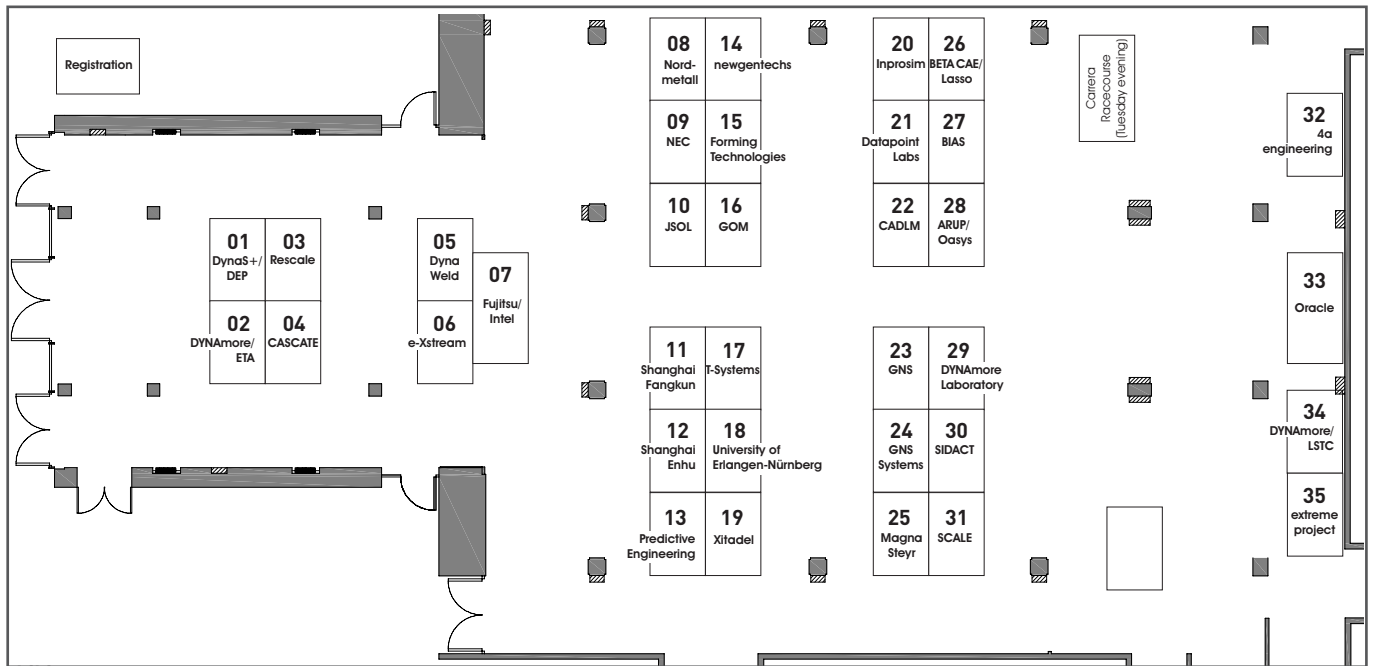
CONFERENCE ORGANIZERS

The conference will be organized by

LSTC Livermore Software Technology Corp.

DYNAMORE

In association with

DYNAMORE FRANCE   **DYNAMORE NORDIC**   **DynaS+**   **Oasys** LS-DYNA ENVIRONMENT The Software House of Arup