LMS Virtual.Lab

Using an integrated simulation environment to enhance functional performance engineering

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Simulating 3D performance accurately

LMS Virtual.Lab™ software features an integrated computer-aided engineering (CAE) suite for accurate simulation and optimization of mechanical system performance for structural integrity, noise and vibration, system dynamics and durability. The software allows you to define processes covering several attributes simultaneously, including parametric analysis. This enables fast assessment of multiple design alternatives and optimization prior to physical prototype construction. Embedded in a computer-aided design (CAD) platform and interfacing very well with various CAE solvers and testing software, LMS Virtual.Lab holds a central position in every step of the development process.

LMS Virtual.Lab is part of the LMS™ solutions portfolio of product lifecycle management (PLM) specialist Siemens PLM Software, which also features a high-end finite element (FE) solver suite, LMS Samtech™ software; a multi-domain system simulation platform, LMS Imagine.Lab™ software for testing; LMS Test.Lab™ software and data acquisition frontends from the renowned LMS SCADA™ hardware family. These software and hardware solutions are complemented by LMS Engineering services, offering consultancy services ranging from troubleshooting to technology transfer projects, co-development and full program management.
In a competitive environment, customers set high requirements for comfort and performance. With LMS Virtual.Lab Acoustics software and LMS Virtual.Lab Noise and Vibration software you can predict the noise and vibration performance of the new design at an early stage.

The product design analysis helps you avoid noise or vibration problems, optimize sound for branding or performance and check the design to make sure it adheres to regulations or prescriptions.

Acoustic simulation
Do your customers expect quieter products? Are your competitors gaining ground using sound quality as a differentiator? Will tighter noise emission legislation impact your product sales? Would you like to decrease the time spent on basics, such as predicting sound fields or a more complex job such as engine run up? In the past, parametric analysis and design refinement was not feasible because of cost and time constraints. The only option was to apply expensive techniques late in the development stage at the expense of design flexibility. Now you can use LMS Virtual.Lab Acoustics tools to deal with these challenges.
Noise and vibration analysis
Although it is relatively easy to predict performance at the component level, most noise and vibration issues are only discovered at the full-system level. Making extensive prediction models is a tedious and difficult process, one that does not necessarily produce results that match reality. How can you quickly and reliably synthesize system-level models? How can you accurately predict the most critical noise and vibration contributors and identify the best design modifications?

Correlation analysis
To guarantee realistic high-fidelity simulations, it is essential that simulation models meet stringent accuracy standards. Ensuring reliable simulation results requires comparing component, subsystem and full-system models with experimental data or validated models of similar structures.

Building and validating system models from the bottom up is the only way to prevent accumulated inaccuracies. In addition to more reliable what-if analyses, validated models provide a better understanding of assumptions regarding material properties, connections, joints and boundary conditions.

Optimization
LMS Virtual.Lab Optimization offers integrated performance optimization technology across all LMS Virtual.Lab applications. It provides more insight into each design through design exploration, enabling you to improve, optimize and assess overall quality. LMS Virtual.Lab Optimization enables you to easily identify the key parameters that have the most influence on design specifications, and optimizes the functional performance of products with parametric modification.
Acoustic simulation via LMS Virtual.Lab Acoustics helps you perform acoustic meshing and remodel design changes within an hour and analyze the acoustic response within a day. You will be able to make informed decisions during early design stages and systematically refine and optimize your product’s acoustic performance.

By integrating LMS Sysnoise solver technologies into LMS Virtual.Lab Acoustics simulation, we have created the first end-to-end environment for acoustic performance engineering using virtual models. LMS Virtual.Lab acoustic simulation solutions can be applied to routine applications, such as structural noise radiation and cavity field simulations, and address specific acoustic engineering issues, including engine run-ups, flow-induced noise and random acoustic loading.
Finite element acoustics
LMS Virtual.Lab Finite Element Acoustics offers a method for acoustic simulation, helping you predict and improve sound and noise performances of systems. LMS Virtual.Lab Finite Element Acoustics can be used to create a weak and fully coupled vibro-acoustic simulation to determine how acoustic sources affect the structure.

- Perfectly matched layer (PML) and automatically matched layer (AML) for radiation
- FEM adaptive order (FEMAO)
- Weak and full vibro-acoustic coupling
- Function displays and 3D imaging: sound pressure level (SPL), International Organization for Standardization (ISO) 3744 Sound Power, root mean square (RMS), decibel (dB) weighting, (1/3) octave, transmission loss (TL)
- Multifrontal massively parallel direct solver (MUMPS), iterative Krylov solver, parallelization (to achieve optimum solver speeds)
- Temperature fields, volume absorbers, flow effects

Boundary element acoustics
LMS Virtual.Lab Boundary Element Acoustics is an acoustic simulation tool used to predict and improve sound and noise performance of a broad range of systems. The acoustics solution addresses internal and external radiation problems and provides a strong focus on radiation problems.

- Indirect and direct boundary element methods
- Weakly and fully coupled vibro-acoustic coupling
- Function displays and 3D imaging: sound pressure maps, SPL, ISO 3744 Sound Power, RMS, dB weighting, (1/3) octave
- Surface-absorbing panels
- Boundary conditions, including surface vibrations and pressures and acoustic sources
- Efficient mapping between incompatible structural and acoustical meshes

Multipole boundary element acoustics
LMS Virtual.Lab Fast Multipole Boundary Element Acoustics uses high-speed iterative techniques to solve boundary element method (BEM) equations with sophisticated algorithms based on multipole expansion and multilevel hierarchical cell substructuring.

- Acoustic sources, vibrating boundary conditions and impedance boundary conditions
- Iterative solver with multipole expansion and efficient preconditioner
- Fully scalable on parallel systems
**Time-domain boundary element method**
The LMS Virtual.Lab Time-Domain Boundary Element Method solver is particularly suited for problems with short-term impulse excitation signals. Excitations can be defined in the time domain in terms of acoustic sources or by imposed vibration on the boundary.

- Indirect boundary element formulation in the time domain
- Acoustic sources, vibrating boundary conditions (with startup smoothing factor if required) and impedance boundary conditions
- Fast solver technology includes matrix assembly and solution with in-core and out-of-core solver, and multithreading
- Field point postprocessing at any position in the field
- Both structural as acoustic time-domain response calculation

**FEM vibro-acoustics**
LMS Virtual Lab FEM Vibro-Acoustic Structural Solver allows you to compute structural modes, structural responses and vibro-acoustic responses. You can select from a wide range of modal and direct solutions according to your need for accuracy, solver speed and desired insight when postprocessing.

- Modal and direct solvers
- Extensive structural element library for 1D, 2D and 3D finite elements
- Extensive range of options for materials and properties, including composites and frequency-dependent viscoelastic
- Any desired physical and function type for responses
Ray acoustics
LMS Virtual.Lab Ray Acoustics is a 3D acoustic simulation tool that allows you to efficiently and accurately perform various audio and in-vehicle acoustic comfort simulations, covering the entire hearing frequency range.

- Perfectly matched layer and automatically matched layer for radiation
- Absorbent panels with diffuse/specular reflection and complex impedance/admittance
- Coherent/incoherent sources
- Sound directivity pattern
- Diffraction from sources and image sources
- Radiation from vibrating structures based on acoustic transfer vector (ATV) techniques
- Narrow band analysis due to coherent sources
- Extensive list of monaural and binaural sound quality indices
- Binaural synthesis based on head-related transfer function (HRTF) library

Aero-acoustic modeling
LMS Virtual.Lab Aero-Acoustic modeling coupled with the BEM or FEM technology helps you accurately predict and solve flow-induced noise problems ranging from cooling-fan noise in electrical appliances to turbulence-based noise in aircraft, trains, and cars.

- A direct interface to commercial computational fluid dynamics (CFD) software using generic CFD general notation system (CGNS) format (Fluent, CFX, Powerflow, StarCCM, Skryu/Tetra, CFD++ and more)
- Conservative mapping techniques to reduce computation time and maintain accuracy
- Aero-acoustic sources, including surface-distributed dipoles, fan sources and volume-distributed quadrupoles
LMS Virtual.Lab Noise and Vibration offers a unique hybrid noise and vibration analysis approach that intelligently combines finite element modeling with test-derived models. In addition to the link to testing, LMS Virtual.Lab Noise and Vibration uses simulated data from multibody and flexible body simulations created in our multibody modeling software. In this way, you define realistic load cases according to actual model dimensions to determine the optimal time-domain performance. LMS Virtual.Lab Noise and Vibration analysis also generates data for more in-depth acoustic analysis using acoustic simulation.

LMS Virtual.Lab Noise and Vibration provides all the tools to create system-level noise, vibration and harshness (NVH) models based on subsystems and components. Throughout development you can insert modifications to individual FE or test-derived components and assembly connections to improve the system-level NVH performance. With its unique capability to incorporate both test-based and FE-based models in an assembly, the LMS Virtual.Lab Noise and Vibration hybrid solution offers the accuracy and design flexibility you need to produce reliable simulation results.
**NVH response analysis**
LMS Virtual.Lab NVH Response Analysis is an easy-to-use, entry-level simulation tool for predicting the noise and vibration behavior of a component, subsystem or complete model under operational loading conditions.

- Universal access to test and FE data for model and excitation data
- Path and modal contribution analysis to determine the root cause of noise and vibration problems
- Fast modal and frequency response function-based forced response solvers

**System-level NVH**
LMS Virtual.Lab System-level NVH offers tools to assemble components into hybrid system-level models and analyze noise and vibration performance under operating conditions. You can build a model from one or more components, including FE, test-based or CAD components. The NVH solution enables you to compute noise and vibration responses using the internal modal or FRF-based forced response solvers.

- Fast modal and FRF-based assembly solvers to determine system-level dynamics
- Switching between component representations: full FE, modal and direct matrix input on grid (DMIG)
- Multilevel path and modal contribution analysis tools for efficient root-cause analysis

**Transfer path analysis**
LMS Virtual.Lab Transfer Path Analysis allows you to predict and assess system noise and vibration response under operational loading as well as determine acting loads from physical prototype testing data. You can perform path- or modal-contribution analysis to determine root causes of noise issues and optimize noise and vibration behavior.

- Load identification from test or simulation data based on mount stiffness or inverse methods
- Path- and modal-contribution analysis to determine the root cause of noise and vibration problems
To guarantee realistic high-fidelity simulations, simulation models need to meet stringent accuracy standards. To ensure reliable simulation results, you must compare component, subsystem and full-system models with experimental data or validated models of similar structures. Building and validating system models from the bottom up is the only way to prevent accumulating inaccuracies. In addition to more reliable what-if analysis, validated models provide a better understanding of assumptions regarding material properties, connections, joints and boundary conditions.

Although static physical tests serve many design purposes, models used for vibro-acoustic simulations usually require systematic test-based validation of dynamic properties. LMS Virtual.Lab Correlation helps correlate physical test results and prepare structural tests. A comprehensive tool set significantly facilitates simulated and measured mode shape comparison and operational deflection shapes and response functions. You can use the original finite element model as a basis to provide optimal comparison positions and the required number of excitation and response points to avoid testing errors and redundancy.

Deducing model improvements using validation output is not always obvious. To facilitate model updating driven by validations, LMS Virtual.Lab Correlation offers specialized features to identify specific locations that need improvement. For example, it can be used to run sensitivity analyses that efficiently retain the most influential specified parameters. You can also automatically update models using internal and external algorithms, such as Nastran Solution 200 (Sol200), which focuses on tuning modal frequencies and response functions.
Structural correlation and pretest analysis

When preparing measurements for physical structures, using modal information of preliminary finite element models to define the optimal measurement setup is called pretest analysis. When good test data for the physical model is available, structural correlation analysis allows you to quantify the geometrical and dynamic resemblance, such as FRF and modal, between the test model and its equivalent FE model.

- Universal access to test and FE data for models, modes and frequency spectra
- Modal assurance criterion (MAC) and MAC contribution (MACco) support error localization
- Mode pair table
- Visual shape correlation for side-by-side FE or test model animation
- Transfer function comparison between two models using frequency response assurance criterion (FRAC)
- Orthogonality check for better dynamic correlation
- Driving point residue (DPR) for shaker location identification
- Data export to LMS Test.Lab or a universal file format

Model updating

After dynamic correlation, LMS Virtual.Lab allows you to easily set up and drive Nastran Sol200 to obtain the sensitivity of FE dynamic properties. You can use those properties for a set of design parameters to decide which parameters to change for better structural correlation results. You can use Sol200 sensitivities to derive modal assurance criterion and frequency difference sensitivities for modal updating.

- Input design parameters for material and element properties
- Dedicated Nastran SOL200 driver
- Targets for mass, modal frequencies, MAC and vibration levels
- Frequency difference sensitivity and MAC sensitivity
- Design of experiments (DOE), response surface modeling and several optimization algorithms
LMS Virtual.Lab Optimization offers integrated optimization technology across all LMS Virtual.Lab applications to enable you to assess and optimize the overall quality of the product design. It allows you to identify key parameters that have the most influence on the design specifications. You can optimize the functional performance of products with parametric modification of geometry, material or other design variables. And you can compute product robustness and reliability.

LMS Virtual.Lab Optimization helps design and analysis engineers increase their knowledge and gain insight about the product design. With a few mouse clicks, you can easily understand the relationship between input parameters, such as dimensions and inertia properties, or how the maximum stress of a component or system changes in relation to its dimensions. You can easily specify design objectives and constraints. LMS Virtual.Lab Optimization will automatically determine the optimal settings for the design to meet the targeted constraints and objectives.

LMS Virtual.Lab Optimization enables you to define and execute design space exploration, optimization and robust design studies in LMS Virtual.Lab.
Standard optimization
LMS Virtual.Lab Optimization improves the efficiency of LMS Virtual.Lab-based engineering processes by enabling you to accelerate exploration of design alternatives, find the optimal solution to design problems and model uncertainty to manage risk. Typically used with response surface modeling, design space exploration allows you to automatically visualize the design space through DOE techniques.

- Design space exploration
- Response surface modeling
- Sensitivity-based algorithms

Advanced optimization
LMS Virtual.Lab Advanced Optimization incorporates additional optimization methods as well as multi-objective optimization and robust design techniques. Global optimization solves general constrained optimization problems. The Multi-objective Optimization module helps optimize designs with two or more competing objectives. You can study the result variation and build higher-quality products by making the design more robust and reliable.

- Global optimization
- Multi-objective optimization
- Robust design
Mechanisms analysis

In a competitive environment, there is no time for trial-and-error. A design has to be right the first time. Investigating and validating the functional performance of a new mechanical or mechatronic design with simulation is critical. LMS Mechanisms software allows you to investigate the kinematic behavior of systems – including flexible components and controllers – and design for optimal durability performance.
**Motion analysis**
Manufacturers are pressured to deliver more complex products with increased quality in shorter development cycles. Engineering the performance of mechanical designs with traditional test-based development processes is no longer an option. The only valid alternative is evaluating functional performance attributes on a virtual prototype. LMS Virtual.Lab Motion enables engineers to effectively analyze and optimize real-life performance of mechanical and mechatronic systems long before physical testing.

**Durability analysis**
Undoubtedly, the most challenging task for durability engineers is designing fail-safe components and systems in the most efficient manner. System parts with insufficient fatigue strength may cause permanent structural damage and potentially life-threatening situations. Mistakes can cause product recalls that negatively influence the overall brand image. Additionally, short design cycles, more design variants and increased usage of new lightweight materials increase the complexity of the durability engineering process.
Manufacturers are pressured to deliver more complex products with increased quality in shorter development times. Engineering the performance of mechanical designs with traditional test-based development processes is no longer an option; the only valid alternative is evaluating functional performance attributes on a virtual prototype. Using multibody modeling software, LMS Virtual. Lab Motion enables effective analysis and real-life performance optimization of mechanical and mechatronic systems prior to physical testing. Furthermore, motion simulation results can be seamlessly re-used to drive subsequent analysis in LMS Virtual. Lab, allowing you to perform concurrent cross-attribute optimization.

LMS Virtual. Lab Motion is specifically designed to enable you to assess real-life behavior of complex mechatronic systems. It allows you to quickly create and analyze multibody models from any existing CAD and finite element analysis (FEA) models. You can predict realistic motion and mechanical system loads. And you can optimize mechanical system performance prior to prototype testing.
Multibody dynamic motion
LMS Virtual.Lab Motion is an integrated multibody solution that enables you to model, simulate and analyze realistic dynamic motion of any mechanical system. The multibody modeling software helps you analyze and optimize the real-world mechanical design behavior in order to guarantee optimal performance before committing to physical prototype testing.

- CAD integration for geometry-based modeling and simulation
- Advanced multibody solver capabilities, including offline and real-time co-simulations with 1D subsystems
- Support for linear and nonlinear flexible bodies
- Process automation and customization through Microsoft® Visual Basic® macros

Nonlinear flexible bodies
The LMS Virtual.Lab Nonlinear Flex Body Solver, powered by LMS Samcef Nonlinear Motion, can be used to accurately predict the nonlinear behavior of flexible bodies, such as large deformations, by integrating the equations of motion of a multibody model with nonlinear flexible body analysis.

- Nonlinear meshes generated and/or imported with LMS Virtual. Lab traditional methods
- Nonlinear flexible body case defined using LMS Virtual.Lab or LMS Samcef Gateway
- Automatic input/output point recognition for multibody models

Real-time solver
The LMS Virtual.Lab Motion Real-time Solver enables real-time simulation of detailed, high-fidelity multibody models for more reliable hardware-in-the-loop (HiL) tests and driving/flight simulator applications.

- Deterministic implicit solver with parallel solution approach for multicore solving
- Mode link element for automatic model splitting
- Automatic export of the model as a C-code executable
- Support for most common HiL platforms
Motion for driving dynamics
LMS Virtual Lab Driving Dynamics is a dedicated tool for template-based modeling and simulation of suspension and full-vehicle assemblies, specifically designed for fast evaluation of suspension elasto-kinematics and vehicle ride and handling performance.

- Parametric template models of most common types of car subsystems
- Variant manager to easily create, derive and manage variants of a vehicle platform without data duplication
- Solution manager to easily manage all combinations of events and vehicle variants
- Dedicated postprocessing functionalities for suspension elasto-kinematics and vehicle ride comfort and handling

Motion composer
One of the current challenges in the CAE process is to maximize productivity with easy-to-learn and intuitive interfaces. LMS Virtual Lab Composer helps you create verticals or dedicated applications to capture your simulation processes and practices.

- Dedicated applications with customer-tailored characteristics
- Seamless connection to multiple LMS Virtual Lab Motion template models
- Advanced programming mode for better performance with large applications
- Automatic graphical user interface (GUI) creation with ribbon-style look and feel
- Variant manager to create, derive and manage variants of a vehicle platform without data duplication
- Solution manager to manage all combinations of events and vehicle variants
- Automatic storage of simulation results in dedicated subdirectories, including user-defined postprocessing data
Motion TWR
LMS Virtual.Lab Motion TWR allows you to apply any set of measured signals, such as wheel forces or accelerations, as input to multibody models for durability analysis in an early development phase.

- Direct import of multiple test format types
- FRF in iterative control for back-calculation of appropriate multibody model drive signals
- Automatic compensation for nonlinear multibody modeling behavior
- Automatic creation of actuators and sensors in unconstrained vehicle models
- Automatic link to durability analysis
- System identification with time-signal processing
- Automatic calculation based on linearization of nonlinear multibody model system equations

Powertrain motion
LMS Virtual.Lab Powertrain Motion is a complete, integrated solution to simulate complex dynamic engine behavior for accurate performance assessment. With dedicated powertrain modeling templates, you can quickly build detailed multibody models of full powertrain assemblies or specific subsystems.

- Specific modeling elements for powertrain
- Combustion tacho elements to easily apply measured gas forces to pistons and cylinder head
- Cam profile synthesis tool
- Automatic setup of valve train parts, gas forces and firing order
- Integrated engine speed controls for simulation of stationary speeds, speed sweeps and transient run ups
- Dynamic stress computation and animations
- Topological hot spot detection for most stressed regions
Years of customer and research institute experience have gone into LMS Virtual.Lab Durability, which tightly integrates virtual prototyping aspects, including finite element, modal analysis, multibody simulation and fatigue-life prediction. You can quickly explore and optimize the structural strength and fatigue life on component and system assembly levels in time and frequency domains.

LMS Virtual.Lab Durability enables you to execute fast and accurate durability analysis predictions. Dedicated postprocessing capabilities provide immediate feedback for all critical durability areas, loads and events so you can validate more design variants for fatigue life within shorter development cycles. You can use durability analysis to simulate performance of large and complex systems, and to optimize durability performance with lightweight and eco-friendly materials.
Component fatigue
LMS Virtual.Lab Component Fatigue is a complete solution to accurately assess the fatigue performance of individual components in a single integrated simulation environment. By combining component loads derived from prototype measurements or multibody simulations, FE-based stress results and cyclic fatigue material parameters, you can predict fatigue hotspots and fatigue life as well as optimize the component design.

- Accurate seam-weld and spot-weld modeling
- Direct component-load import from prototype measurements or multibody simulation
- Industry standard fatigue life solver with proven accuracy and speed

- Dedicated durability visualization and postprocessing tools

System-level fatigue
LMS Virtual.Lab System-level Fatigue enables you to optimize and analyze subsystem and assembly strength and fatigue. You can calculate component loads from prescribed system motion with multibody simulation. The component loads are combined with structural stresses. You can apply material fatigue parameters to predict the component fatigue hotspots and corresponding fatigue life.

- Easy creation of multibody models for system-load prediction and cascading of system loads to component loading
- Automatic transfer of component loads for detailed component durability analysis
- Parallel optimization of motion, loading and fatigue

- Full-load prediction and transfer for hybrid road approach and virtual test track

Vibration fatigue
LMS Virtual.Lab Vibration Fatigue provides methodological tools for durability assessment, a simple and consistent setup and highly efficient analysis methods, including random and deterministic loads in the frequency domain. The solver also combines well-known methodologies with technology breakthroughs as well as seam- and spot-weld capabilities for highly accurate results.

- Uni-axial and multi-axial load input such as power spectral density (PSD)/cross-PSD input for load correlation
- Deterministic sine and random loads

- High performance for large models and multiple-load conditions (including storage requirements)
- Multi-axial local stress states
Based on seamless integration with Dassault Systèmes CATIA V5 and the open Simulia platform, LMS Virtual.Lab Process integration for automotive offers a fully integrated or standalone preprocessing and postprocessing environment for linear, nonlinear and crash analysis for component, subsystem and full vehicle modeling and assembly in all stages of the development cycle.

As a result, you can conveniently analyze components and assembly characteristics and behaviors from concept to detailed engineering in the same environment while remaining fully associative with the original CAD models.
Structures

LMS Virtual.Lab Structures software offers a scalable solution for structural modeling and analysis, integrating advanced model creation and manipulation tools to generate component, subsystem and full-system models in a far more efficient way. Its versatility is the result of specifically being designed to save time and costs.

The software offers an integrated solution for component-, subsystem- and full vehicle-level analysis by integrating model creation elements into a single platform, enabling you to efficiently create simulation models.

LMS Virtual.Lab Structures contains some dedicated options that allow you to make assemblies and connect LMS Virtual.Lab documents to CAD geometry as well as to specific solvers, including Abaqus, crash software and smart Nastran solutions. Besides these process-oriented options, LMS Virtual.Lab Structures also contains functionality for morphing orphan finite element models. Even without CAD available, some small geometrical modifications can be made.
Being an open environment, LMS Virtual. Lab Structures perfectly fits into any existing architecture. It smoothly interfaces with automotive industry standard solvers such as Nastran, Abaqus, LS-DYNA, Radioss® and MADYMO, eliminating time-consuming and error-prone file conversions and data translations.

Generic vehicle assembly and unified modeling, full process associativity, end-to-end integration and the support of CAD and/or mesh-based scenarios enable great insight into the quality of the assembly, and fast correction of connection issues, especially weldings. The model creation process ensures consistent use of design specifications for calculations across multiple attributes while still being able to introduce attribute-specific properties and mesh definitions. Capabilities to automate processes can speed up the model creation so more value-added engineering time becomes available.
FEA pre/post
LMS Virtual.Lab FEA Pre/Post is the standard configuration for simulation engineers performing linear, nonlinear and crash finite element analysis using industry standard solvers. The preprocessing and postprocessing configuration lets you import models or meshes from industry-standard solver formats, check and fix quality aspects, perform additional mesh modeling, set up load and boundary conditions and drive the preferred solver and postprocessing results.

- Comprehensive preprocessing (for example, mesh quality, model verification, nodes and elements, properties and materials, connections)
- Wide range of general and solver-specific analysis setups
- Multisolver preprocessing features for property, materials and connections
- Associative and nonassociative modeling tools
- Comprehensive 2D and 3D postprocessing, results processing and reporting
- Geometry and analysis associativity
- Fully featured for Nastran, Abaqus, LS-DYNA and RADIOSS

Meshing
LMS Virtual.Lab Meshing is a complete configuration for geometry healing, meshing and performing linear, nonlinear and crash finite element analysis using industry standard solvers. The meshing engine combines a basic and advanced mesher for automatic and associative generation of a finite element model on wireframe, surface or solid geometries.

- Geometry-healing engine corrects poor geometry
- Parametric mesher with automatic geometry simplification
- Dedicated beam, surface and solid meshing engines
- Flexible and customizable quality analysis
About Siemens PLM Software
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