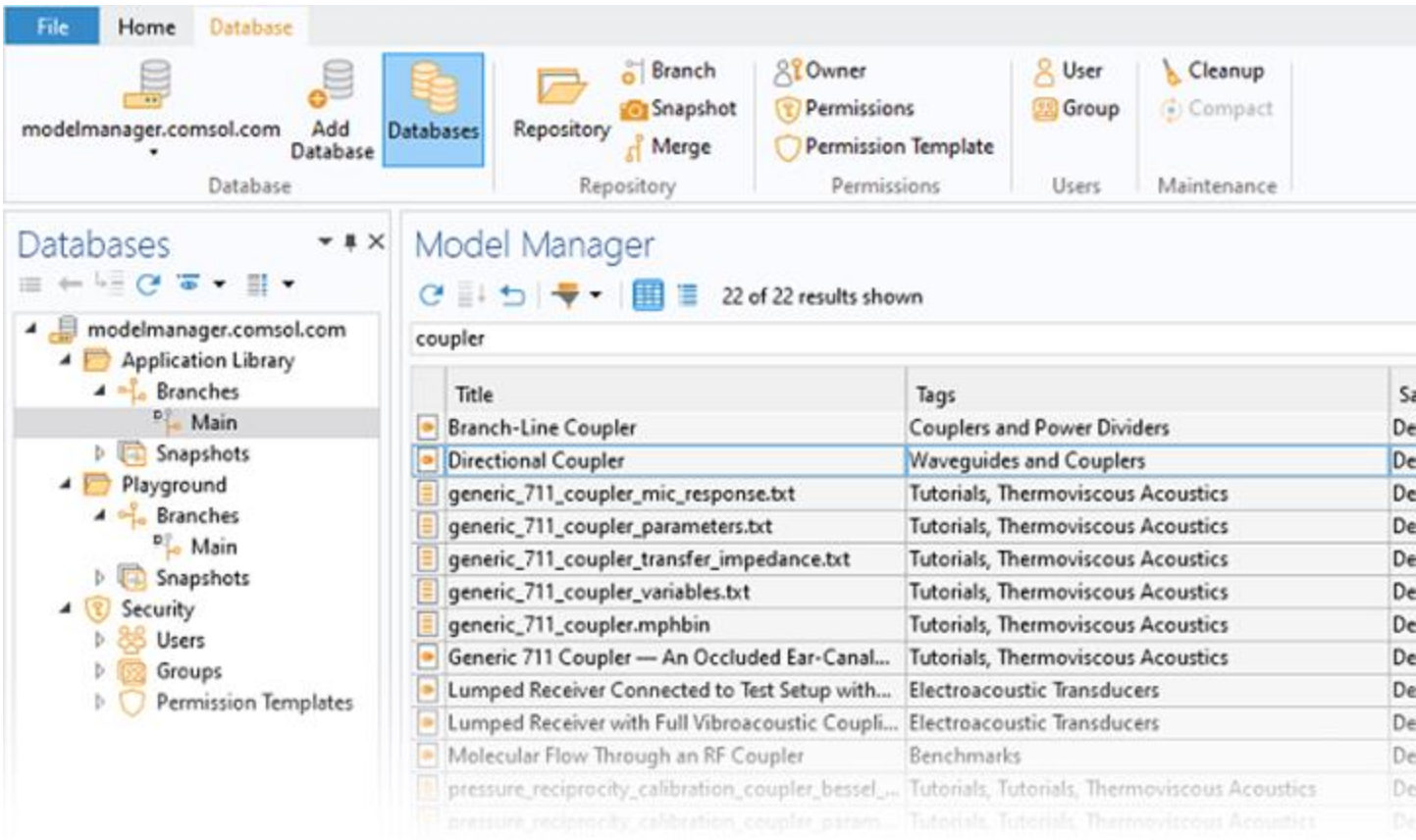
COMSOL Releases Version 6.0 and Introduces Model Manager and Uncertainty Quantification Module

Leading multiphysics simulation software introduces platform feature for model management, adds module for uncertainty quantification analysis, and includes important updates and performance enhancements.

BURLINGTON, MA (December 14, 2021) — COMSOL, the leading provider of software solutions for multiphysics modeling has released version 6.0 of the COMSOL Multiphysics® software. The release introduces the Model Manager, a new workspace in COMSOL Multiphysics that enables efficient simulation data management and collaboration. Also introduced with version 6.0 is the Uncertainty Quantification Module. This is a new add-on product to COMSOL Multiphysics that uses probabilistic design methods to quantify uncertainty in analyses and predetermined safety margins. Version 6.0 further brings major improvements to the solvers with performance speedup by a factor of 10 in engineering areas such as heat radiation and models subjected to nonlinear structural material behavior. With version 6.0, COMSOL promises to boost the productivity of engineers, their teams, and their enterprises in the areas of product design, process development, and manufacturing.

The Model Manager Provides Structure, Version Control, and Effective Collaboration

The Model Manager is fully integrated in the COMSOL Multiphysics user interface and is designed for simulation data management, version control, tracking changes, and advanced search functionality within models, CAD data, and other related external files. It provides a structured workspace where colleagues and teams can collaborate within their organizations and even with external parties, putting the focus on effective product design and innovation. Efficient data storage that keeps only changes made to previous versions and the easy setup of branches and merging them for parallel model development, also contribute to an organization’s efficient modeling and simulation workflow.



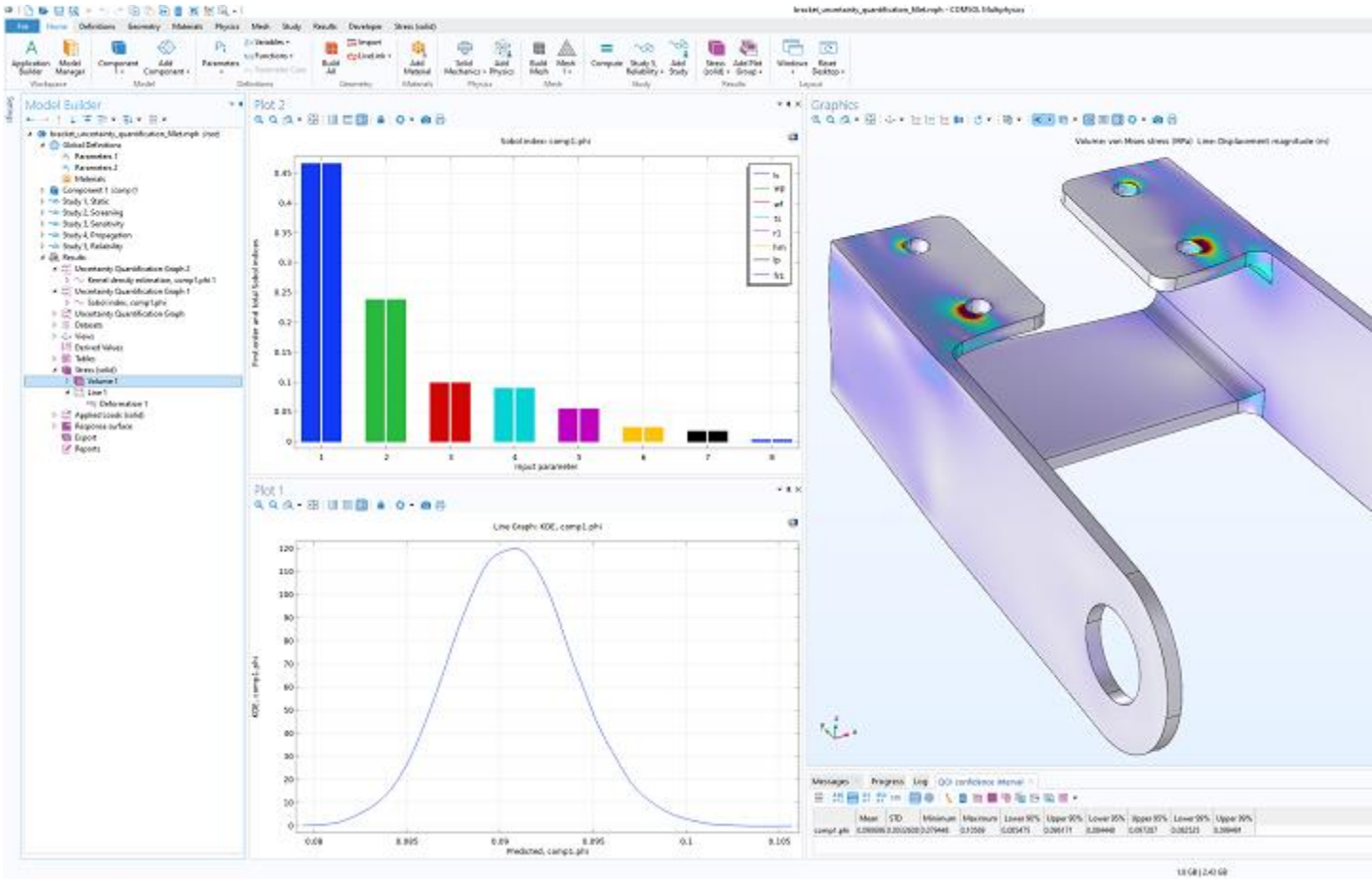
The COMSOL Model Manager provides version control and common storage for efficient collaboration in simulation projects.

"The Model Manager expands on COMSOL's cutting-edge multiphysics modeling capabilities and our fast-paced strategy of placing COMSOL Multiphysics as the primary tool for democratizing simulation in the CAE market," says Svante Littmarck, CEO and president of COMSOL. "We now complement our revolutionary Model Builder and Application Builder, for developing multiphysics models and simulation apps, with the Model Manager for model development and simulation data management. Together, this functionality will facilitate collaboration within engineering groups, across departments and enterprises, and even between countries. This will inevitably lead to better process and manufacturing designs as all competencies of an organization are harnessed effectively."

To allow full collaboration across enterprises, COMSOL's floating network license type allows users from anywhere within and outside of the license holder's organization to access a centralized Model Manager installation. This also includes collaborators across geographical and territorial borders. Additionally, a local Model Manager installation is included with all licenses — even those that are not floating-network based — to provide a platform for building an individual user's file storage structure, while updating versions and tracking changes of their modeling projects.

Sensitivity and Reliability Analyses Are Enhanced Through the Uncertainty Quantification Module

While the Model Manager expands COMSOL's footprint within the world of engineering design and development, the Uncertainty Quantification Module makes it possible to produce more complete, accurate, and useful multiphysics models. Based on probabilistic design methods, users can, with reliability analysis, look at questions such as how manufacturing tolerances affect the intended performance of the final product, to prevent over- and under-designs of devices and processes. Screening and sensitivity analyses reveal which parameters are more important than others, which can be used to efficiently test the validity of basic model assumptions, for example, and uncertainty propagation is used to assign probability distributions to the output quantities of interest.



High-resolution

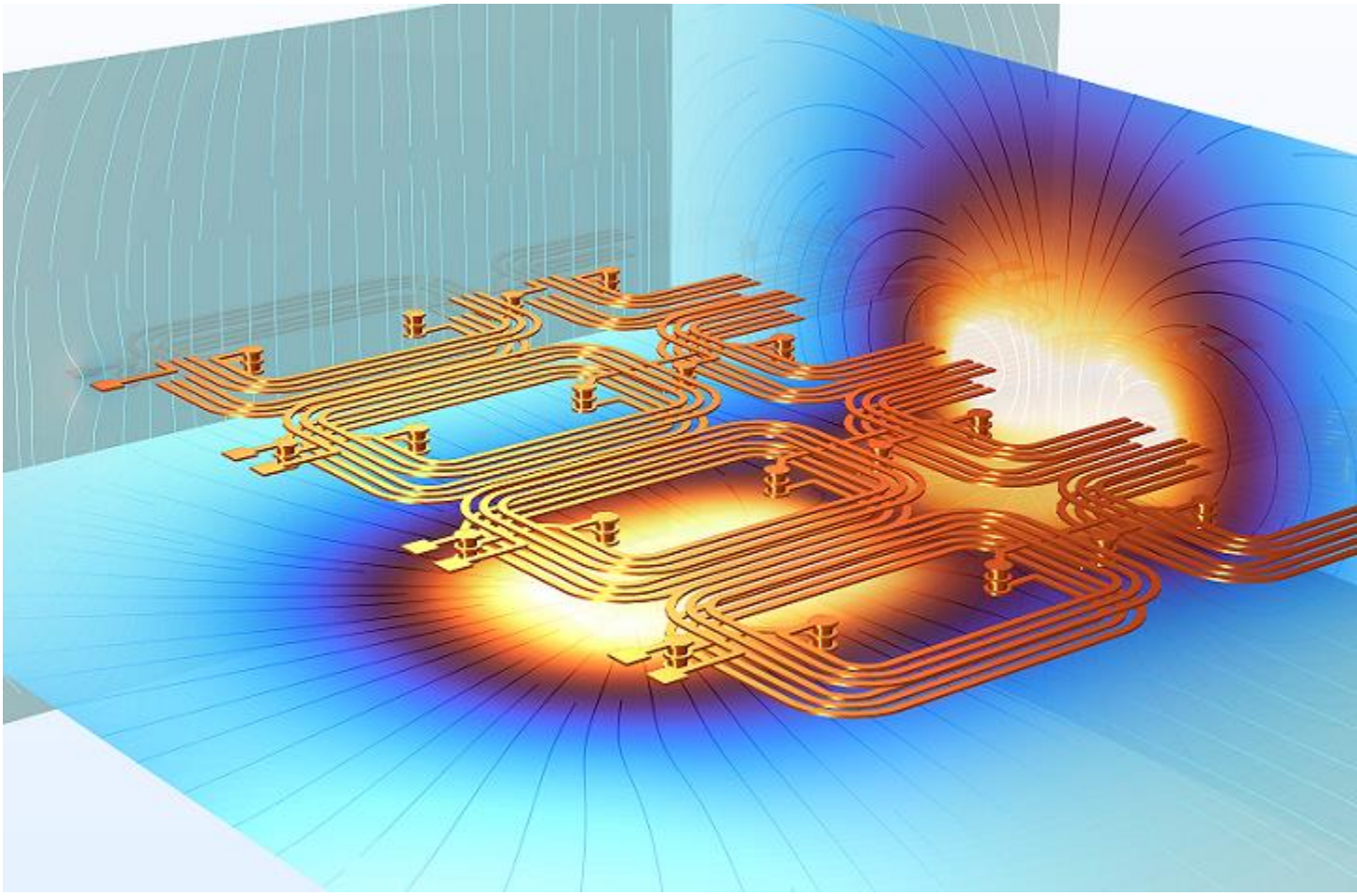
The Uncertainty Quantification Module reveals how variability of input parameters affects the simulation results.

"A strength of the Uncertainty Quantification Module is that it can be applied to any physical simulation covered by COMSOL Multiphysics," says Jacob Yström, technology

director of numerical analysis at COMSOL. “You are not limited to a certain field or application area, such as structural analysis, but can perform the same types of uncertainty analyses on applications based on acoustics, fluid flow, electromagnetics, and so on, and even when these phenomena are coupled. This makes this product wide-ranging and very powerful.”

COMSOL Multiphysics Version 6.0 Improves Performance and Expands Modeling Capabilities

COMSOL Multiphysics version 6.0 includes important updates to the software platform and add-on products. This includes performance improvements through speedup and memory consumption by a factor of 10 for certain engineering applications. Feature enhancements include more efficient electromagnetic simulation of PCB designs and a new realm for acoustics modeling: flow-induced noise.



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COMSOL version 6.0 delivers performance improvements and simplifies simulation of many important applications, such as printed circuit board (PCB) design (pictured).

Details about new features and improvements across the entire product suite are available in the COMSOL Multiphysics Version 6.0 Release Highlights.

Availability COMSOL Multiphysics®, COMSOL Server™, and COMSOL Compiler™ software products are supported on the following operating systems: Windows®, Linux®, and macOS, including the macOS M1 processor.

Download COMSOL version 6.0

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About COMSOL

COMSOL is a global provider of simulation software for product design and research to technical enterprises, research labs and universities. Its COMSOL Multiphysics® product is an integrated software environment for creating physics-based models and simulation apps. A particular strength is its ability to account for coupled or multiphysics phenomena. Add-on products expand the simulation platform for electromagnetics, structural, acoustics, fluid flow, heat transfer and chemical applications. Interfacing tools enable the integration of COMSOL Multiphysics® simulations with all major technical computing and CAD tools on the CAE market. Simulation experts rely on COMSOL Compiler™ and COMSOL Server™ to deploy applications to their design teams, manufacturing departments, test laboratories and customers throughout the world. Founded in 1986, COMSOL has 17 offices worldwide and extends its reach with a network of distributors.