# ATA news
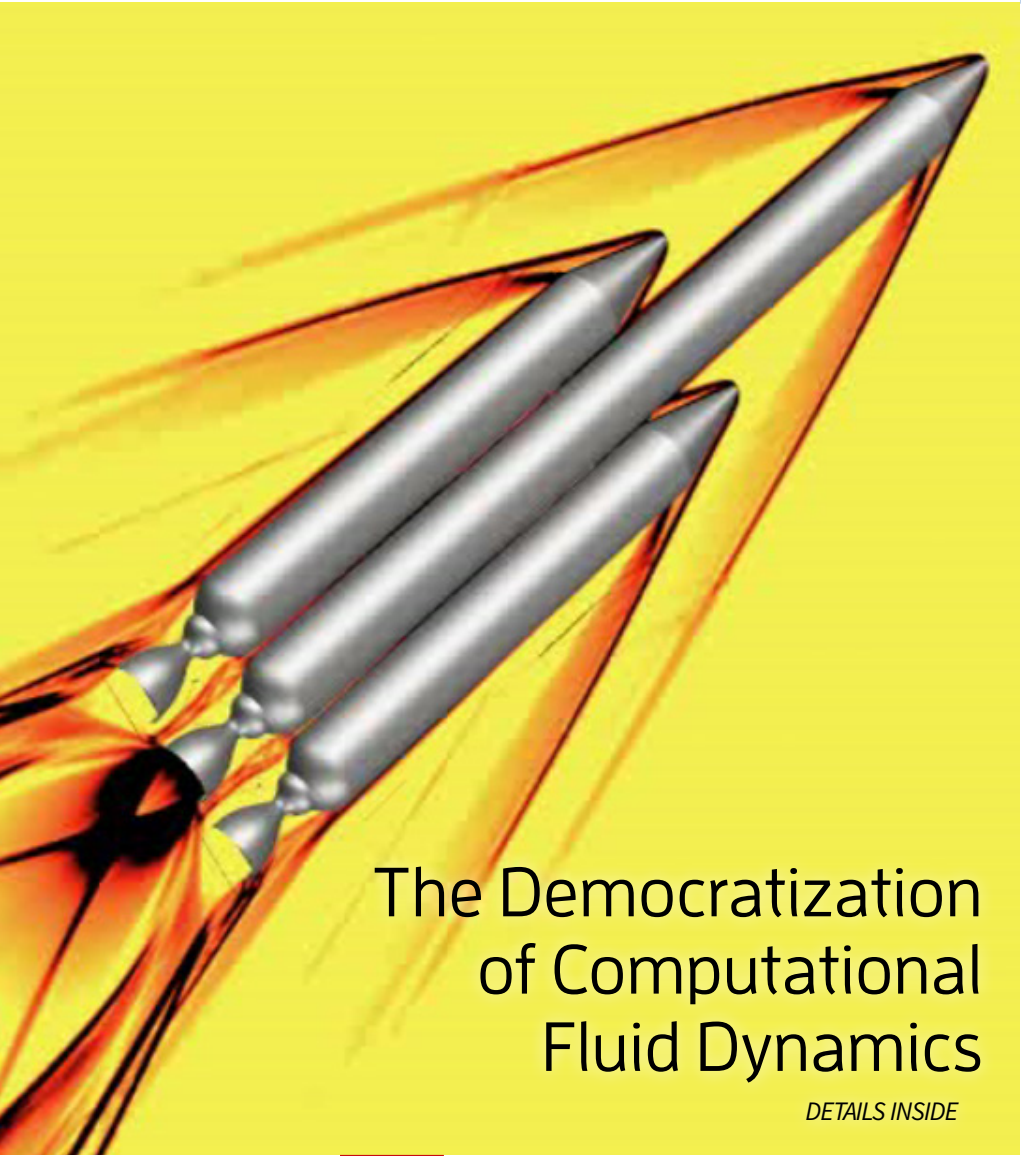
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## The Democratization of Computational Fluid Dynamics

*DETAILS INSIDE*

## Incredible Innovations Engineered with Simcenter

The Simcenter software portfolio from Siemens Digital Industries Software combines system simulation, 3D CAE, and test solutions that offer insights throughout the entire product lifecycle. Companies around the world are using tools like Amesim, Femap, Simcenter Nastran, and STAR-CCM+ to develop amazing new products with greater confidence and shorter design cycles.

Earlier this summer, the Simcenter blog took a closer look at ten of their favorite Simcenter customer success stories. From analyzing giant street machines with Femap and Simcenter Nastran and optimizing the design of river taxis with STAR-CCM+ to supporting the development of the James Webb Space Telescope, the highlights are as impressive as they are varied. See how Simcenter helped these teams deliver better designs faster.

**Read the article here**.

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# The Democratization of Computational Fluid Dynamics

Today, even early startups are able to prove out and refine their product designs digitally using modern software that is practical, accurate, and scalable. This is especially true for STAR-CCM+, which offers a sophisticated CAD-to-mesh process combined with workflow automation and advanced physics models that make generating and running models practical for any engineer.

Adaptive mesh refinement in STAR-CCM+ reduces model sizes and run times, while cloud computing allows even the largest and most sophisticated models to be run by small engineering teams. Flexible licensing options keep costs down, so even the smallest teams can afford the very best engineering software available.

ATA Engineering invites you to watch this on-demand webinar to see how CFD and multiphysics simulation in STAR-CCM+ can advance your product development. It features real-world examples including hypersonic projectiles and vehicles, distributed electric propulsion aircraft, motor vehicles, and marine applications.

Watch the webinar here.

# Calendar of Events

## UPCOMING TRAINING CLASSES

ATA provides comprehensive training in the use of Femap, Simcenter 3D (formerly NX CAE), and Simcenter Nastran (formerly NX Nastran). Upcoming training classes are shown below. Please visit our website to sign up for these classes or request a custom class.

**UNTIL FURTHER NOTICE, ALL UPCOMING CLASSES WILL BE HELD VIRTUALLY THROUGH LIVE ONLINE SESSIONS.**

### FEMAP

**NOV 03**   **Introduction to Femap**

**TBA**   **Advanced Femap**

### SIMCENTER NASTRAN WITH FEMAP

**TBA**   **Introduction to Dynamic Analysis**

**TBA**   **Advanced Dynamic Analysis**

**TBA**   **Introduction to Finite Element Analysis**

**TBA**   **Design Sensitivity and Optimization**

**TBA**   **Aeroelastic Analysis**

### SIMCENTER NASTRAN WITH SIMCENTER 3D

**TBA**   **Introduction to Dynamic Analysis**

**TBA**   **Advanced Dynamic Analysis**

**TBA**   **Introduction to Finite Element Analysis**

**TBA**   **Superelement Analysis**

**TBA**   **Coupled Structure/Acoustic Analysis**

ALL CLASSES CAN BE SCHEDULED ON REQUEST.

**WATCH THIS SPACE – THE CLASS SCHEDULE FOR 2021 IS COMING SOON!**

ATA also provides a host of free training resources including tutorials, videos, and whitepapers.

# Tips and Tricks

## NX: SYNCHRONOUS MODELING REVIEW

The powerful Synchronous Modeling commands in NX allow users to manipulate geometry in a variety of ways regardless of its origin. Whether working with current NX parts or legacy parts built in a prior software release, or bringing in geometry from an external source by importing a Parasolid model or directly opening native CAD files from other programs like SolidWorks, users will be able to quickly and easily modify features without knowing feature relationships or dependencies. This video from the Siemens NX Design Blog demonstrates how synchronous modeling tools integrate easily with the current design and downstream processes to save time and effort.

## FEMAP: CREATE AUTOMATIC GROUPS

Analysts can create automatic groups with the Group → Operations → Generate series of commands to help organize large models. For instance, if different parts in an assembly use different properties or materials, the Generate Property and Generate Material commands offer a simple way to create groups of separate components. These groups can be especially helpful for uses like controlling which parts of a model are shown or hidden.

## STAR-CCM+: SAVE TIME WITH QUERY-BASED SELECTION

When selecting a large number of parts or surfaces during the setup of something like a region, a mesh operation, or a report, analysts can save time through the use of query-based selection. Query-based selection, accessible via the filter button in the selection field, applies dynamic queries that use filter criteria to define which objects are included in the selection. STAR-CCM+ automatically evaluates the selection when objects are added, removed, or modified. For example, the surface mesh of an automobile body imported into an external aerodynamics simulation may include hundreds of parts, such as "auto hood," "auto headlamp," and so on. A query-based selection can be formed to filter on the word "auto" such that all part names including that word are included in the selection. If the analyst is assessing the effect of aerodynamic features and adds a part, such as "auto spoiler," the selection automatically updates to include that new part, reducing setup time and sources of error.

# New Resources

## On-Demand Webinar: Going Beyond Calm-Water Resistance Curves

Advanced CFD capabilities and design optimization within STAR-CCM+ empower your team to design superior watercraft in less time. This webinar showcases what's possible for designing ships, boats, personal watercraft, and all manner of vessels with state-of-the-art CFD technology, including accurate simulations of maneuvering and seakeeping scenarios, dynamic models for power packages, automated workflows, and optimization.
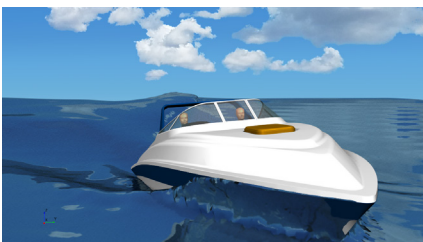


## On-Demand Webinar: Design Sensitivity and Optimization with Simcenter Nastran

This webinar introduces fundamentals of design sensitivity and discusses the traditional design optimization and topology optimization capabilities available in Simcenter Nastran with SOL 200. Along the way, it features three demonstration problems of increasing complexity, using Femap for preprocessing.

## On-Demand Webinar: What's New in Femap 2020.2

Femap 2020.2 was released early this summer, offering users a number of new features and impressive performance improvements across the simulation workflow that should allow users to improve their productivity, especially with large models. This webinar dives into the details with a closer look at what's new, as well as live demonstrations.

# Recent News

## ATA Recognized with Sierra Nevada Corporation's Small Business Excellence Award

In addition to receiving the Small Business Excellence award, ATA was announced as SNC's 2019 Small Business Service Provider of the Year for our support of the Dream Chaser® program throughout its development. Read more here.

## Siemens Releases STAR-CCM+ 2020.2

Among this release's many enhancements, adaptive mesh refinement is extended to reacting flows, enabling faster and more accurate combustion modeling. Visit the Simcenter blog to learn more and see all the other great new features, including bubble plots, field function grouping, and more.

## Introducing the New NX 1926 Series with Improved Sketching

This release is highlighted by an overhauled sketcher that can apply geometric relationships based on surrounding geometry as needed and work with any data regardless of source. Discover additional ways that this series release simplifies workflows and removes barriers to innovation in the NX Design blog.

## Simcenter 3D 2020.2 Makes Its Debut

Leverage the new Materials Engineering product for virtual material characterization, and take advantage of more simulation capabilities for rotating machinery with the latest version of Simcenter 3D. Read more here.

# Why choose **ATA?**

ATA Engineering is a nationwide provider of innovative, high-value, test- and analysis-driven mechanical engineering design solutions.

With more than four decades of experience working with our customers to solve the most challenging design, test, and analysis problems, we have gained a reputation for excellence in the engineering community.

Our work on a wide range of products across a broad spread of industries has been recognized with numerous technical and service awards for excellence. This expertise and support is a key part of the added value we offer to all customers who purchase Siemens products from us, whether you are an independent contractor or a large engineering team. To provide best-in-class support to our VAR software customers, we have established a formal hotline system that provides on-demand support to resolve technical issues encountered by our customers in their implementation of the tools.

The hotline is staffed by experienced engineers, all of whom use these applications on a regular basis. ATA is also the Siemens PLM Software-preferred training provider and official developer of courseware for all Simcenter Nastran training.

## ATA Technical Support

Need technical assistance? Call our hotline staffed by engineers at **877-282-4223**, or visit us online. Even if you're not a current ATA customer, try us out for free.

## Free Software Trials

Contact us for more information about free trials/demos of Femap and Simcenter Nastran, NX CAD and CAM, Simcenter 3D, Simcenter STAR-CCM+, Teamcenter, and Solid Edge.

## Featured Instructor

John Morelli



John Morelli is a project engineer in ATA's Herndon, Virginia office. John's expertise is in dynamic analysis, including vibroacoustic analysis, and he is also experienced in design optimization, including topology optimization. John's most commonly used tools include Simcenter 3D, Simcenter Nastran, Femap, MATLAB, and Vibrata. He also uses ANSYS, Abaqus, and Wave6 to support customer projects. In addition to project work, he assists with ATA's CAE technical support hotline.

John's project work has largely focused on the design and analysis of aerospace structures, including liquid and solid propellant rocket motors and satellites. Examples of John's project contributions include the generation of random vibration test specifications for components mounted within satellites, and the use of Simcenter Nastran design optimization for the preliminary design of a launch vehicle adapter.

John earned his Bachelor of Science degree in Aerospace Engineering from Penn State University and his Structures-Focused Master of Science in Aerospace Engineering from Virginia Tech.



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ATA Engineering, Inc., is recognized as a Smart Expert Partner with validated expertise in Femap, Simcenter 3D, and STAR-CCM+.

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