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NEWS RELEASE

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ANSYS TAMES PRODUCT COMPLEXITY AND SPURS PRODUCTIVITY WITH RELEASE 19

The next generation of ANSYS Pervasive Engineering Simulation solutions enables engineers to solve complex challenges across every industry

PITTSBURGH, Jan. 30, 2018 – The next generation of [ANSYS](#) (NASDAQ: ANSS) industry-leading engineering simulation simplifies workflows and ensures accurate results, enabling users to deliver revolutionary products while reducing costs and time to market. ANSYS® 19 empowers engineers to develop groundbreaking products, from autonomous vehicles to smarter devices to more electric aircraft, at an unprecedented pace.

Products are becoming more complicated as the digital and physical worlds continue to merge. Companies are faced with unrelenting pressure to drive innovation and increase product quality while reducing cycle times, costs and risk. ANSYS 19 helps engineers manage complexity and enhance productivity, empowering users to provide even more accurate answers across the broadest range of applications – making simulation even more pervasive.

“With the digital revolution accelerating the pace of disruption and product innovation, engineers must overcome extraordinarily sophisticated design and engineering challenges to deliver breakthrough products faster than ever,” said Eric Bantegnie, vice president and general manager, systems business unit, ANSYS. “With ANSYS 19, engineers can use simulation pervasively to tame complexity and spur innovation at every level, resulting in the next generation of smarter, more cutting-edge products.”

Highlights of the release include:

Taming Complexity. ANSYS 19 tames complexity by supporting and empowering engineers with tools that improve reliability, performance, speed and ease of use.

From support for Architecture Analysis and Design Language (AADL) to Human Machine Interfaces (HMIs) to radar cross section (RCS) calculations, ANSYS 19 simplifies user experience across every discipline.

In the embedded suite, ANSYS 19 includes new support for AADL-compatible avionics systems modeling. AADL-based modeling empowers organizations to understand and control their system costs, but also

maximizes critical performance characteristics such as system reliability, integration, security and availability. By modeling systems in AADL, companies can more effectively integrate subsystems and components that have been procured from many subcontractors – enabling users to more quickly identify and address interoperability issues. Capable of modeling software and hardware components, ANSYS 19 provides the broadest and most proven toolset to support the design of avionics systems for military applications that are compliant and conform to the FACE technical standard.

Advancements in autonomous technology across industries demand increased functionality and testing within applications. With ANSYS 19, engineers can design and implement complex and state-of-the-art embedded HMIs. From designing cockpit displays for aircraft to infotainment and dashboard displays for automobiles, to control room displays for industrial applications, ANSYS 19 accelerates the development, deployment and testing of safety-critical HMIs.

In the electromagnetics suite, ANSYS introduces RCS analysis using HFSS SBR+. This technology is ideal for engineers designing autonomous vehicles, advanced detection systems and stealth technology, these capabilities enable users to digitally explore and optimize more design iterations in less time.

"At AirLoom Energy, our goal of revolutionizing wind energy capture depended on an impossible task: developing a transverse flux permanent magnet linear generator. After two leading experts in machine design told us that an intrinsically 3-D machine requiring finite element analysis would be impossible to implement practically, ANSYS provided the solution we needed," Robert Lumley, founder, AirLoom Energy. "With ANSYS tools, we characterized dozens of topologies and tens of thousands of geometries, optimizing our generator and achieving patent success."

Predicting the impact of temperature in electronics products has become paramount to delivering reliable, high-performance, electronics. Thermal impact on the design is a key driver for material selection, cooling strategy and form factor decisions that ultimately determine the size, weight and cost of the final product. ANSYS 19 delivers a robust, integrated electromagnetic-thermal workflow that predicts crucial thermal effects within electronics designs.

"To design the highest performance connectors, interconnect systems, packages, optical engines and cables, Samtec requires design software that is accurate, predictable and fast," said Scott McMorrow, chief technology officer, Signal Integrity Group, Samtec, Inc. "The work ANSYS is doing to create a seamless integrated electro-thermal design flow combined with 3-D component technology delivers capability that will help us continue to revolutionize the electronic connector industry."

New to the systems suite, ANSYS® medini™ analyze is now available for functional safety analysis in applications for automotive, aerospace and defense, rail, nuclear and other safety-critical industries. By implementing step-by-step modeling, analysis and verification processes that conform to applicable safety standards, this update simplifies and automates the analysis of failure modes and their coverage by safety mechanisms under a wide range of operating scenarios.

Next-generation automotive, mobile and high-performance computing applications require advanced systems on chips that are bigger, faster and more complex. ANSYS 19 for semiconductors provides comprehensive simulation solutions that simultaneously solve for various design attributes such as power noise, thermal properties, reliability and performance across the spectrum of chip, package and system. The big data simulation platform in ANSYS 19 enables rapid design iterations across multiple operating conditions and its actionable analytics can be used to prioritize design fixes to accelerate time to market.

Spurring Productivity: ANSYS 19 delivers solutions that greatly enhance productivity and create a more seamless workflow at every stage — empowering engineers to accomplish more in shorter timelines. From improvements at the solver and technology level that result in even faster, more powerful product performance to updates that ease time-to-certification, ANSYS 19 improves time to market and engineers' productivity.

In the fluids suite, ANSYS 19 empowers engineers to produce better results in less time and with less effort. New functionalities significantly reduce the computational effort needed for spray nozzle designers to optimize product performance. ANSYS 19 uses the volume of fluid model to directly track interface instabilities and surface tension effects that give rise to ligament and droplet formation — resulting in fast, accurate spray breakup and droplet distribution with minimal effort. While it was previously computationally impractical to calculate droplet size distribution using conventional methods, the new functionality reduces the computational effort significantly.

In the structures suite, breakthrough updates to the ANSYS separating, morphing, adaptive and re-meshing technology fracture method enhance speeds and automate the remeshing approach. The industry-first material force fracture parameter enables the user to go beyond the traditional linear elastic fracture mechanics assumptions. Advances to the non-linear adaptivity capability in ANSYS 19 empower engineers to conquer non-linear problems in applications like sealing and forming materials.

“Ansys simulation software has been the key enabling tool to allow us to design highly integrated RF structures for 3-D printing that are 10x smaller and 90 percent lighter than traditional fabrication processes allow,” said Michael Hollenbeck, chief technology officer, OPTISYS. “Ansys simulation software's powerful optimization capabilities have allowed us to shorten our design cycles by 30 to 50 percent, and effectively move all prototyping from hardware into simulation.”

In the mechanical and electromagnetic suites, ANSYS 19 increases the number of built-in high-performance computing (HPC) cores from two to four. Combined with faster and more scalable solvers, the additional HPC cores deliver significant computational power and result in additional capacity. To increase flexibility, customers can also use the same ANSYS HPC license to enable all ANSYS products. These changes make licensing more consistent and easier for customers to deploy across their organizations.

“ANSYS' open-cloud approach is perfectly aligned with our hybrid HPC strategy,” said Bill Mannel, vice president and general manager of HPC and AI, Hewlett Packard Enterprise (HPE). “Powered by HPE's high-

performance computing solutions, ANSYS 19 enables the enterprise to run more jobs, faster — allowing engineers to spend less time prototyping and more time focusing on customer needs.”

As aerospace and automotive vehicles become more autonomous, the applications used in these industries become more complex, requiring multirate capabilities. Multirate applications are common in embedded software but come with challenges that must be performed manually, including data handling between functions at different rates and scheduling these functions for execution. With ANSYS 19, the multirate application support in the embedded suite provides a seamless flow to capture and verify multirate application architecture in an application code that is portable, qualifiable and certified — enabling faster times to certification and qualification.

In the 3-D design suite, ANSYS 19 empowers engineers at every level to explore new design spaces with simulation, regardless of their experience level. With ANSYS 19, engineers can produce lighter-weight, stronger designs in a shorter amount of time through enhancements in topology optimization. ANSYS now provides shape optimization updates while solving — providing engineers additional control over the final design in a shorter amount of time. Printing enhancements also enable users to more quickly smooth, repair and optimize topology optimized shapes for downstream use.

"Reducing vehicle fuel consumption and emissions are top priorities for the automotive industry, and reducing vehicle weight is one of the most effective ways to achieve those goals," said Sachin Hardikar, computer aided engineering engineer at KSR International. "KSR International engineers used the ANSYS topology optimization solution to largely automate the process of redesigning a brake pedal to reduce its weight. Using ANSYS, we reduced structural optimization time from seven to two days, while achieving a 21 percent weight savings, which is considerably more than could have been accomplished using conventional methods. ANSYS 19 will help us continue to achieve substantial weight savings without having to invest significant engineering resources."

For more information about the features and enhancements available in ANSYS 19, visit [ANSYS.com/19](https://www.ansys.com/19).

About ANSYS, Inc.

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge, or put on wearable technology, chances are you've used a product where ANSYS software played a critical role in its creation. ANSYS is the global leader in Pervasive Engineering Simulation. We help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and create products limited only by imagination. Founded in 1970, ANSYS employs thousands of professionals, many of whom are expert M.S. and Ph.D.-level engineers in finite element analysis, computational fluid dynamics, electronics, semiconductors, embedded software and design optimization. Headquartered south of Pittsburgh, Pennsylvania, U.S.A., ANSYS has more than 75 strategic sales locations throughout the world with a network of channel partners in 40+ countries. Visit www.ansys.com for more information.

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