ANSYS Unveils release 17.0

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PITTSBURGH, Jan. 27, 2016 /PRNewswire/ -- Engineers across disciplines – from structures to fluids to electromagnetics to systems – will realize step-change improvements in the way they develop products using the newly released ANSYS® 17.0. This next generation of ANSYS (NASDAQ: ANSS) industry-leading engineering simulation solutions set the scene for the next quantum leaps in product development, enabling unprecedented advancements across an array of industry initiatives from smart devices to autonomous vehicles to more energy-efficient machines. The most feature-rich release in the company's 45-year history, available today, delivers 10x improvements to product development productivity, insight and performance.

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Simulation has been identified as one of the key pillars of the next industrial revolution, known as Industry 4.0. With the advent of the Internet of Things all products are getting smarter, new advanced materials are enabling lighter, stronger and more sustainable designs, and additive manufacturing enables users to 3-D print anything they can imagine. Unlocking the power of these trends is impossible without simulation tools' ability to virtually explore these vastly increased options to arrive at the winning designs of tomorrow.

"Companies are under relentless pressure to create top-line growth and increase savings," said Jim Cashman, president and CEO of ANSYS. "Innovation, time to market, operational efficiency and product quality are key factors that contribute to this business success. ANSYS is focused on helping customers improve their critical business metrics and leapfrog the competition by improving their product development process through engineering simulation. When we set out to develop the next release of our simulation platform, we challenged ourselves to improve our customers' product development process by a full order of magnitude, or 10x."

"Hyperloop Technology is accomplishing safe and reliable ground transportation at close to the speed of sound," said Josh Giegel, vice president of design and analysis, Hyperloop Technologies. "ANSYS 17.0 technology offers deeper insight into our designs and enables us to make the necessary improvement to our development process, which in turn will help us realize the Hyperloop concept."

"ANSYS has been an acknowledged leader in enabling simulation-driven design over the past several decades, and ANSYS 17.0 release is a major step forward in terms of bringing together all of the ANSYS modeling and simulation capabilities required to achieve the vision of an integrated yet open enterprise product innovation platform driven by behavior modeling and simulation," said Peter Bilello, president of CIMdata. "As industry moves ahead over the next decade to realize the vision and promised benefits of Model-Based Systems Engineering in the context of mega-trends such as the Internet of Things (IoT), Industry 4.0 and the Circular Economy, ANSYS' product portfolio and M&S platform is well positioned to meet the multi-domain requirements for developing complex cyber-physical systems with ever increasing levels of software and electronics content."

Highlights of the release include:

10x Improvements to Productivity. ANSYS 17.0 delivers solutions faster so engineers and designers can make more informed decisions sooner in the product development cycle. That enables organizations to rapidly innovate and bring products to market faster, while getting more productivity from their existing engineering assets.

Through tighter integration of semiconductor and electronics simulation solutions, ANSYS 17.0 delivers a comprehensive chip-package-system design workflow. New capabilities for automated thermal analysis and integrated structural analysis deliver an unequalled chip-aware and system-aware simulation solution, enabling customers to deliver smaller, higher-power density devices to market faster. With the advent of the Internet of Things, more products and engineers will rely on these capabilities.

In the fluids suite, ANSYS continues its technology leadership with breakthrough advancements in physics modeling and introduces new innovations across the entire workflow and user environment design to accelerate time to results by up to 85 percent without compromising accuracy. Improvements to workflow and meshing enable novice users to quickly become productive while new tools and options expand the application reach for experienced users.

"ANSYS has broken through by truly integrating multi-domain 3-D meshed solutions," said Brad Kramer, director of engineering at HUSCO International. "By closely integrating the fluid and the mechanical interfaces, we are now able to simulate and gain insight into the real physics of the problem without having to set up artificial boundary conditions."

Preprocessing – or the act of setting up simulations – with ANSYS 17.0 has also improved by an order of magnitude. Using the direct modeling tools in ANSYS 17.0, users can prepare their geometry for analysis faster than traditional computer-aided design (CAD). Save and load times for complex models, as well as the performance for common geometry editing functions has increased by up to 100 times. ANSYS 17.0 geometry tools also boast tighter integration to ANSYS Workbench and offer many productivity advancements for modeling fabricated and composite structures. Fluids pre-processing for complex systems has also improved dramatically. The process of preparing and meshing models with hundreds of parts has been reduced from days to hours with ANSYS 17.0.

ANSYS 17.0 enables software engineers to be more productive with developing, testing and certifying embedded software. New industry-specific vertical solutions take full benefit from the openness and flexibility of the platform to facilitate interactions with original equipment manufacturers and suppliers while adhering to such industry standards as ARINC 661/664, FACE and AUTOSAR.

10x Improvements for Deeper Insight. ANSYS 17.0 delivers deeper insight into real-world product performance through such enhancements as higher fidelity simulations and better post processing. For example, with printed circuit boards, engineers can now quickly import ECAD geometry and

perform coupled thermal-structural analysis with power integrity and electronics cooling analyses to accurately predict stress, deformation and fatigue. These capabilities enable engineers to design board layouts and thermal management strategies for more reliable electronic components. As a result, complex board and packages can be set up and solved in minutes, not hours or days.

As products become more complex, the ability to simulate entire systems provides a significant advantage to manufacturers. Using a single simulation platform at ANSYS 17.0, engineers can not only simulate physical models but can also consider embedded systems design and embedded software models. This enables virtual systems simulation, testing and prototyping, reducing product development time and cost. In this release, ANSYS introduces native support for the industry-standard system modeling language, Modelica, which enables access to hundreds of additional mechanical and fluid component models in addition to its rich model library for power electronics. At the same time, advancements in the platform provide more insight to real world system performance by enabling high-fidelity 3-D results to be incorporated into system-level models.

ANSYS 17.0 greatly expands turbomachinery simulation capabilities across a broad spectrum to produce highly accurate results, across a wider array of operating conditions and with shorter turnaround time. Engineers can solve considerably more transient blade row configurations by calculating as few as one blade per row instead of the full wheel to speed time to solution by over 10x and drastically reducing the required computing resources. These advances are critical given that turbines produce 99 percent of the world's electricity.

10x Improvements to Performance. ANSYS 17.0 delivers performance improvements for all of its product lines, particularly in the realm of high-performance computing (HPC). ANSYS 17.0 introduces the most modern HPC solver architectures that leverages the latest processor technologies. Organizations can leverage this power on most IT configurations – from desktops to cloud environments – to obtain their simulation results sooner.

There is a clear global demand to develop more power efficient machines, but progress has been hindered due to the huge computational resources required to simulate an electric machine. Complete transient electromagnetic field analysis of an electric machine can require two weeks or more to complete. HPC advances in the ANSYS 17.0 electromagnetics suite deliver unprecedented computational speed for full transient electromagnetic field simulation for electric motor design. Simulations of critical transient behaviors that previously required weeks of computational time can now be completed in hours during early design stages, reducing the risk of project delays and late-stage design changes.

"This is amazing technology," said Briam Cavalca Bork, product engineer at WEG. "ANSYS 17.0 allows us to fully utilize our HPC hardware. Simulation time has improved by a factor of 20x, but more importantly we have gained more in-depth and timely design insight that will allow us to deliver industry leading, innovative machine designs. The new ANSYS technology delivers the capability to do more complex analyses on a greater variety of scenarios."

As previously announced, ANSYS fluids solutions have smashed the previous simulation world record by scaling to 129,000 compute cores running at 90 percent efficiency – a 10x improvement over the past two years. HPC performance of the structures suite has also improved significantly and now demonstrates scaling up to 1000 cores. Structural simulations which required running overnight, can now be completed in an hour, enabling engineers to explore 10x more variations and find the best design faster.

"Organizations across a wide variety of industries are struggling to keep pace with the growing need for data-intensive modeling and large-scale simulations to accelerate business innovation," said Scott Misage, vice president and general manager, High Performance Computing, Hewlett Packard Enterprise. "By bringing together all high-performance computing (HPC) advances made in the new ANSYS 17 release with our industry-leading HPE Apollo compute platform for HPC and big data workloads, our customers can now transform their product development processes, reduce engineering costs and accelerate time-to-market."

"Our partnership with ANSYS has always equipped us with exceptional simulation capabilities, which have allowed us to design and develop our cars more quickly, efficiently and intelligently," said Nathan Sykes, head of numerical tools and technologies, Red Bull Racing and Technology. "The ANSYS 17.0 fluids suite has been used extensively in the design of our 2016 challenger, the RB12, allowing us to conduct critical CFD analysis and make design decisions faster than ever before."

For more information on ANSYS 17.0, click ansys.com/17.

About ANSYS, Inc.
ANSYS is the global leader in engineering simulation. We bring clarity and insight to our customer's most complex design challenges through the broadest portfolio of fast, accurate and reliable simulation tools. Our technology enables organizations in all industries to imagine high-quality, innovative product designs that are sustainable and have an accelerated time to market. Founded in 1970, ANSYS employs almost 3000 professionals, more than 700 of them with PhDs in engineering fields such as finite element analysis, computational fluid dynamics, electronics and electromagnetics, embedded software, system simulation and design optimization. Headquartered south of Pittsburgh, U.S.A., ANSYS has more than 75 strategic sales and development locations throughout the world with a network of channel partners in 40+ countries. Visit www.ansys.com for more information.

ANSYS also has a strong presence on the major social channels. To join the simulation conversation, please visit: www.ansys.com/Social@ANSYS

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What are customers saying about ANSYS 17.0?

With more than 45,000 customers– and hundreds of top-tier partners - around the world, the impact of ANSYS 17.0 will be felt in nearly every industry. Here are just a few quotes from some organizations that have already seen the improvements that ANSYS is delivering in the newest generation of its product.

"The new ANSYS Maxwell with the distributed transient electromagnetic solver together with the appropriate computer hardware demonstrated a significant speed increase in our tests. 3-D transient simulation traditionally has been very time consuming. This new technology opens up interesting possibilities for motor design and analysis to deliver efficient designs. It was a pleasure and positive experience to run the new technology in ANSYS Maxwell R17."

Robert Chin, Global Research Area Manager – Electromagnetics
ABB Corporate Research

"ANSYS' new technology to solve transient electromagnetic field simulations combined with SGI's shared memory computing platform demonstrated a 30x speed improvement over the baseline simulation benchmark. SGI is pleased to work with ANSYS to perform these ground breaking benchmarks and excited about the results. The power of ANSYS Maxwell time decomposition method combined with the SGI® UV™ 3000 solution maximizes computational throughput and enhances the engineer's understanding of the effects of various design changes with the highest fidelity for simulations."

Gabriel Broner, Vice President and General Manager of High Performance Computing
SGI

"ANSYS HFSS 3-D layout flow provides unprecedented accuracy, and that is the only tool you can trust for the signal integrity flow."

Giuseppe Selli, Senior Signal Integrity Engineer
CISCO

"At Cornell University, we use ANSYS software for teaching and research. The continued evolution of ANSYS technology has advanced both ease-of-use necessary for teaching and cutting-edge features necessary for research. This has enabled us to use the same product for teaching fundamentals and modeling complex problems for research. I have no doubt that Release 17 will continue that trend."

Rajesh Bhaskaran
Swanson Director of Engineering Simulation, Cornell University

"Our research is trying to accomplish what was impossible in the area of wireless power transfer technology. Using the power of ANSYS simulation we hope to achieve optimized solution to achieve the best efficiency while achieving the lowest cost and ensure safety"

Chris Mi
Professor and Chair of Electrical and Computer Engineering, San Diego State University

"The Multi-Scale Cardiovascular Bioengineering Laboratory is trying to shed new light on valvular heart disease by elucidating the impact of the mechanical environment on disease initiation and progression. ANSYS fluid-structure interaction simulations enable the mechanical characterization of heart valves at a depth never before attained."

Philippe Sucosky
Professor of Mechanical and Materials Engineering, Wright State University

"At the wind energy department (SWE) of the University of Stuttgart, Germany we work on advanced offshore wind energy technology, which requires the most advanced numerical tools for the representation of not only aerodynamics but also ocean wave modeling and structural dynamics in a coupled multi-physics environment. ANSYS provides very important simulators, which we combine with other software for the system design and optimization of sustainable and cost-efficient energy systems."

Po Wen Cheng
Chair of Stuttgart Wind and Energy, University of Stuttgart, Germany

"The incorporation of ANSYS engineering simulation solutions at Florida International University has enabled us to perform transformative research, such as origami reconfigurable antennas and wearable wireless power transfer technologies, innovative teaching that integrates theory with simulation analysis and state-of-the art training of our students that meets the needs of the workplace. More than 60% of FIU's students are of Hispanic origin, so the use of ANSYS solutions will help increase the diversity of individuals who pursue careers in engineering and the sciences."

Stavros Georgakopoulos
Associate Professor, Electrical and Computer Engineering, Florida International University

"At Eindhoven University of Technology and at Leuven University, we have been using engineering simulation and CFD extensively for both urban physics and sports aerodynamics. We are very enthusiastic about the new capabilities of ANSYS 17 that allow us to continue to perform ground-breaking research in urban physics and sports aerodynamics. For many sports, including cycling, skating and running, it is essential to very accurately predict the drag on athletes to save a fraction of a second that could make a difference. The new advances in turbulence models as well as the improved performance in solver speed and HPC capabilities seems very promising to help us in our research."

Bert Blocken
Professor, Building Physics and Urban Physics, Eindhoven University of Technology (TU/e), Netherlands and Professor, Civil Engineering, Katholieke Universiteit (KU) Leuven, Belgium

"Using ANSYS engineering simulation solutions, we can virtually test the physical and thermal properties of a variety of materials prior to selecting those to be used in manufactured parts, saving us time and money. With ANSYS 17.0, we'll be able to gain further insight and optimize the supportive product structure."

Sophia Berman
CEO and Co-Founder of Trusst Lingerie

"Our simulation development has been focused on complex physics modelling and Scale-Resolved-Simulation to understand the fundamental physics involved in key parts of our diesel fuel injection equipment. In order to meet the demands of increasingly strict emission regulations, we are now moving on to full CAE integration, simulation process automation, multi-physics and multi-scale simulation so that we can achieve a systematic understanding on their performance as components and in the total fuel injection equipment system covering all engine operation conditions. ANSYS 17.0 provides an excellent platform for this purpose. "

John Fuerst
Vice President Engineering, Powertrain Systems, Delphi

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