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ANSYS AND KRONO-SAFE DELIVER INTEGRATED SOFTWARE PLATFORM FOR CRITICAL AEROSPACE APPLICATIONS
New platform enables aerospace industry to develop safety-critical aerospace applications running on multicore systems

PITTSBURGH, June 21, 2017 – Aerospace customers can design and develop safety-critical software for the latest generation of aerospace computers thanks to a new integrated solution available from KRONO-SAFE and ANSYS (NASDAQ: ANSS). This first-to-market solution ensures criticality, safety and security certifiability for high-dependability applications for the aerospace and defense industry.

To build safer airplanes, while optimizing fleet maintenance and cost, new aerospace computers must be built to handle both traditional safety critical control and command applications, as well as modern maintenance and monitoring capabilities. KRONO-SAFE's integrated real-time operating system platform, ASTERIOS®, with ANSYS' embedded software, ANSYS® SCADE Suite®, provides aerospace customers a real-time integration flow suitable for safety-critical avionics multi-rate applications on single or multi-core platforms. This avionic automated design flow combines SCADE Suite for safe and automated development of application software and ASTERIOS for safe and automated real-time integration, extended to multi-core platforms.

The combined solution was developed within the Smart, Safe and Secure Platform (S3P) research and development project. The S3P project aims at developing a safe, secure and smart software development and execution platform to facilitate the development, deployment and exploitation of IoT devices, gateway and applications quickly and economically.

Safran Electronics and Defense selected this innovative solution to dramatically accelerate the software development processes for critical avionics computers, while guaranteeing the same level of safety and reliability. Safran will apply these new research and technology capacities to command-and-control computers for aerospace engine and brake control.

"Dependability is the keystone to real-time system development in the avionics domain," said Jean-Christophe Jammes, research and technology program manager at Safran Electronics and Defense. "Ensuring a high-level of safety during the real-time integration phase of a multi-rate application today is very long and tedious work, involving tens of people over many months. The work achieved so far by KRONO-SAFE and ANSYS, and used by Safran engineers in the scope of the S3P program, proves that it is possible to significantly reduce this effort with the automation of new activities such as the scheduling and partitioning, while ensuring a high-level of safety by construction. This automated flow also paves a path for the usage and future certification on multi-core platforms, which is still a problematic turn for avionics safety-critical applications today."

"The work so far has established the robustness of our approach on complex safety-critical applications," said Didier Roux, CEO of KRONO-SAFE. "Our goal with ANSYS is now to tightly propose a seamless development flow to our customers. The DO-178C certification of this solution is also undergoing with the help of Safran."

SCADE Suite automates and reduces the development and certification costs of critical embedded applications, such as control, algorithms and graphical interfaces, and includes unique capabilities for automatic code generation and certification under the DO-178C aeronautics safety standard. The integration between ANSYS and KRONO-SAFE brings an optimal integration of the code generated on KRONO-SAFE's critical real-time execution platform. SCADE Suite models are integrated unchanged in ASTERIOS, with high-level real-time specifications, to automatically produce an optimal multi-rate scheduling while ensuring by construction the partitioning, data synchronization and determinism of the system.

"With SCADE Suite, our customers routinely develop safety-critical applications and take full advantage of its certified automatic code generation capability," said Paolo Colombo, global industry director for aerospace and defense, ANSYS. "The automatic real-time integration provided with ASTERIOS is a natural extension for SCADE Suite to complement this automatic process one step further onto the execution platform."

During the International Paris Air Show, KRONO-SAFE will showcase the automated design flow, which dramatically accelerates the software development process for critical avionics computers, while guaranteeing the same level of safety and reliability. To see a demonstration of KRONO-SAFE and ANSYS's integrated platform solution at the International Paris Air Show, June 20 - 23, please visit booth ILOT S02 in the Concorde Hall.

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 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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About KRONO-SAFE

KRONO-SAFE is a privately-owned company founded in 2011 to commercialize software technologies originally developed with the French atomic energy commission (CEA).
KRONO-SAFE develops and markets ASTERIOS®, a software tool-suite including an innovative real-time kernel (RTK) for safety-critical real-time embedded systems and providing an integrated development environment (IDE) to simulate exhaustively and integrate automatically the application on the single- or multi-core hardware target platform.
KRONO-SAFE serves markets in need for a safer and more efficient solution to develop complex real-time embedded applications. These extend to both well-established markets such as aerospace, defense, automotive, industrial automation, transportation, energy, medical and new markets springing up where safety and security converge like the Industrial Internet of Things.
With a forty-strong team of experts and a management staff of seasoned professionals, KRONO-SAFE is firmly focused on software development as a way of efficiently serving its customers. The company holds a portfolio of patents securing all its breakthrough solutions developed so far and is actively pursuing its innovation and patenting activities.
KRONO-SAFE is currently based in France and Germany, and has plans for expanding to Europe and the USA.

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