ANSYS SCADE® Model-Based Development Solutions for Industrial Equipment and Energy
Production-Proven International and IEC 61508 Certified Success

Today’s industrial systems and software developers must rapidly create flexible, agile, safe and maintainable systems and applications that meet stringent certification requirements while reducing program risks and costs. To efficiently achieve these objectives, ANSYS provides production-proven tools that integrate in existing development flow.

Heavy Duty Industrial Equipment Applications

- Mechatronics Controls and User Machine Interfaces
- Offshore, Mobile, Crawler & Harbor Cranes
- Excavators
- Tractors
- Earth Moving Machines
- Container Handlers
- Construction equipment, Bulldozers
- Mining machines
- Elevators
- Robotics systems

Conventional Energy Applications

- Wind Turbines
- Gas Turbines
- Electric Drives Controls
- Electric Engine Controls
- Turbo-compressors
- Energy Storage Controls (UPS)
- Undersea Robots Controls

A Success Story - SCADE @ LIEBHERR

Liebherr chose SCADE Suite as the standard software development environment for all design centers for earth moving machines.

Liebherr composes software applications from pre-validated SCADE components.

Liebherr tailors, maintains and parameterizes SCADE-based applications directly in the field.

Liebherr’s application was certified up to IEC 61508 SIL 3

“The code is automatically generated, so no human time wasted or errors. Saved time, at least 400 hours in testing (33%).”

Luca AVEGNO
General Manager,
TEREX Port Solutions

“SCADE Suite provides the industry standard means of implementing advanced functional safety according to IEC 62061/61508.”

David STEELE
Specialist in Functional Safety Software & Software Analysis,
VESTAS®
The ANSYS Systems & Embedded Software Product Family

ANSYS SCADE® is a formal, comprehensive, industry-proven solution for developing critical systems and software, supporting the entire development workflow, from requirements analysis and design through verification, implementation, and deployment. ANSYS SCADE solutions easily integrate, allowing for development optimization and increased communication among team members.

SCADE System

Embedded System Design

SCADE System® empowers users with a systems design environment for use on systems with high dependability requirements, providing full support of industrial systems engineering processes. This product features functional and architectural system modeling and verification in a SysML-based environment. SCADE System provides a strong foundation to deploy Model-Based Systems Engineering (MBSE) processes and best practices. By using SCADE System in conjunction with ANSYS SCADE®, system and software engineers can work within the same framework.

SCADE Suite

Control Software Design

SCADE Suite® empowers users with a model-based development environment for critical embedded software. With native integration of the Scade language and its formal notation, SCADE Suite is the only integrated design environment for critical applications spanning requirements management, model-based design, simulation, verification, qualifiable/certified code generation, and interoperability with other development tools and platforms. SCADE Suite code generators produce C and Ada.

SCADE Test

Testing Environment

SCADE Test provides test engineers with a complete testing environment for creating and managing test cases, measuring coverage, managing test results, and automating execution of test cases for SCADE® applications on host and on target. Test creation and maintenance, together with test execution and coverage analysis, are very time-consuming activities. Test engineers using SCADE Test for Verification and Validation (V&V) activities can now benefit from best-in-class technology in both a model-based approach and a cost-effective testing environment, allowing them to significantly reduce testing efforts.

SCADE Display

HMI Software Design

SCADE Display® empowers users with a versatile graphics design and development environment for embedded Human Machine Interfaces (HMI). With a native support for the OpenGL® SC (Safety Critical) and ES (Embedded System) standards, SCADE Display represents a new generation of graphics software development tools, spanning prototyping, display design, simulation, verification and validation, and certified code generation supporting several safety standards in a certifiable environment.

SCADE LifeCycle

System & Software Lifecycle Management

SCADE LifeCycle® includes modules combining a unique support for application lifecycle management. This product line features requirements traceability management, configuration and change management, automatic documentation generation, and project monitoring. SCADE LifeCycle enhances the functionalities of SCADE System®, SCADE Suite®, SCADE Display®, and SCADE Test with add-on modules that embed architecture and design activities within your whole Product/Application Lifecycle Management framework.

SIMPLORER

System Modeling & Simulation

Simplorer® is a powerful platform for modeling, simulating, and analyzing virtual system prototypes. Simplorer enables product development teams to verify and optimize performance of their software-controlled, multi-domain systems designs. With flexible modeling capabilities and tight integrations with ANSYS solutions for 3-D multiphysics simulation and ANSYS SCADE products for embedded software design, Simplorer provides broad support for assembling system-level physical models and helping product development organizations connect conceptual design, detailed analysis, and system verification.
ANSYS Systems & Embedded Software family Products Users in The Industry Include:


A Complete Solution

As a solution provider in the critical systems and software industry, ANSYS offers professional services expertise, providing ANSYS SCADE-usage ramp-up services, including product training, over-the-shoulder support, ANSYS SCADE modeling optimization, methodology guidelines and training videos. Project support services like tool integration, customization and qualification services, and test strategy optimization services are also available, along with process training and certification expertise services.

IEC 61508 Certified Code Generators

The SCADE Suite and SCADE Display KCG Code Generators have been certified by TÜV SÜD for the development of SIL 3 industrial applications, thus guaranteeing that the generated code is a correct implementation of the SCADE Suite and SCADE Display models.

In addition to the code generators, the SCADE Test Model Coverage and the SCADE Test Environment for Host can be used, thus providing a unique environment for the efficient development of certified industrial applications. This certification flow can also be used with other standards such as IEC 13849 (safety of machinery) that are part of the IEC 61508 family of standards.

ANSYS SCADE Delivers Value

• Improves communication among system/software teams, customers, suppliers, and certification authorities
• Improves long-term maintainability of applications
• Ensures documentation quality and accuracy
• Enables early detection of design flaws
• Reduces development and verification costs
• Enables Product Line development
• Reduces risk, time, and cost of IEC 61508 Certification

ANSYS SCADE Solutions Benefits

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<th>Product Development Process Improvements</th>
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<td>Safety and Surveillance Unit for Next generation Elevator</td>
<td>Model-Based Systems Engineering</td>
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<td>SCADE Suite</td>
<td>Integrated Multi-physics and Software Simulation</td>
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<td>Embedded Controls Development</td>
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50% Development Costs Reduction

2X Time-to-Market Speed up

A Success Story - ANSYS SCADE and Simpler @ CAPSTONE Turbine

SCADE has been used to develop micro-turbine generator system:

Customer
CAPSTONE Turbine
Application
Micro-turbine generator system
SCADE Usage
SCADE System
ANSYS Simpler
SCADE LifeCycle

A Success Story - ANSYS SCADE @ SCHINDLER Elevators

SCADE has been used for Safety and Surveillance Unit:

Customer
SCHINDLER Elevators
Application
Safety and Surveillance Unit for Next generation Elevator
SCADE Usage
SCADE Suite
Contact Information
scade-sales@esterel-technologies.com
Direct general questions about Esterel Technologies to
scade-info@esterel-technologies.com
Discover the latest news on our products and technology at
http://www.esterel-technologies.com/products/

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