

CUSTOMER SUCCESS STORY

HIGH-TECH US DEFENSE CONTRACTOR ITT CORPORATION, SYSTEMS DIVISION SWITCHES TO ALTIUM DESIGNER FOR ITS COMPLEX RE-ENGINEERING PROJECTS.



The Need

Based in Colorado Springs, USA, the Systems Division of ITT Corporation is a prime contractor on the US defense program employed to sustain the service of operational systems through progressive re-engineering. Named the System Engineering and Sustainment Integrator (SENSOR), this extended engineering program covers the Air Force Space Command's worldwide network of Missile Warning, Missile Defense and Space Surveillance systems. For ITT Systems Division, this currently includes the re-engineering of signal processing systems in the AN/FPS-85 phased-array radar system based at Eglin Air Force Base in Florida.

Unlike traditional radar systems that use a focused moveable antenna dish, phased array radars utilize an antenna system based on a multitude of small, fixed antennas arranged in a large array. The antenna elements are electronically interconnected with variable phase relationships to behave as a large antenna with the desired directional properties, thereby creating an extremely versatile 'steered' antenna system with no moving parts. The Eglin facility was constructed in the 1960s as the world's first large phased-array radar and remains as a prime space surveillance facility – even while undergoing systematic upgrading through the SENSOR program. For their part in the upgrade process, ITT Systems Division has selected Altium Designer for re-engineering the signal processing electronics in this advanced space surveillance system.

“ Unlike our previous design software, Altium Designer provides us with new design possibilities and offers all of the features we need in a productive, unified system that's well supported and easy to use. ”

Ted Walford, Engineering Services Manager, ITT Systems Division

The Challenge

At the time of commission in the late 1960s the Eglin phased array radar used cutting-edge technology and consequently offered unprecedented tracking capabilities and performance. Continuing this uncompromising approach, the current re-engineering process will implement the very latest technology and techniques to create signal processing electronics that will similarly be at the cutting-edge when the system is commissioned in 2010.

Such a forward-thinking development process places high demands on the ITT development team and the tools they use to create the new signal processing subsystems and operational software. As such, the engineering team at ITT is typically applying the latest real-time Java embedded programming techniques to high-performance programmable devices, which are in turn incorporated on high-reliability three to five layer circuit boards. During this development process, where national defense requirements dictate a rigorous sequential development-approval cycle, the accuracy, reliability and productivity of the development systems is paramount – in practice, production delays or the propagation of undetected errors is simply unacceptable.

The Solution

During the early stages of the SENSOR project the engineers at ITT Systems Division quickly realized that in order to create next-generation radar technology to carry the military into the future they needed a design system that allowed them to make effective use of the latest electronic devices and design paradigms.

Altium Designer was clearly the system of choice because of its comprehensive capabilities, intuitive operation and ease of learning. Also, its unified design environment provided ITT Systems Division with the perfect platform to support the innovation that would be needed to successfully complete this challenging project.

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The Results

Altium Designer has now been deployed through the engineering facilities at ITT Systems Division. Division management reports that engineers new to Altium Designer can typically be working with the system within half a day and the intuitive, unified design flow is allowing development engineers to contribute more to the design while increasing their productivity. The project team is similarly impressed with the response and expertise of Altium support services, which has invariably provided the correct solution to setup and operational issues on the first call. With Altium Designer, ITT Systems Division is now moving forward with the demanding Eglin radar re-engineering project without the restrictions and barriers imposed by previous generation electronic development systems.

Product Information

The AN/FPS-85 space surveillance radar can simultaneously track a large number of earth-orbiting targets and scan large areas of space using its sophisticated phased array antenna system composed of almost 6,000 transmitter antennas and 20,000 receiver antennas. With an operating power of up to 30 megawatts at a frequency of around 400 megahertz, the radar system can reportedly detect, track and identify objects the size of a softball moving in a near-earth orbit of 300 miles. The SENSOR re-engineering program seeks to increase the radar's range, accuracy and overall performance while increasing its reliability and lowering maintenance costs through the implementation of the latest electronic technology and software systems.

About ITT Corporation

ITT Corporation, Systems Division provides select government, commercial and international customers with value-added, total worldwide systems solutions for their defense, communications, command and control, range, spacelift, surveillance and force protection needs, as well as full logistics support services for facilities and equipment. ITT Systems Division is an ISO 9001:2000-certified business with more than 7,000 employees operating at 99 locations in the United States and 23 countries. As part of its SENSOR contract responsibilities, ITT Systems Division provides depot-level support and software maintenance, and performs Service Life Extension Programs (SLEP) for the US Air Force Space Command's worldwide network of space surveillance systems.

ABOUT ALTIUM

Altium Limited (ASX:ALU) creates electronics design software. Altium's unified electronics design environment links all aspects of electronics product design in a single application that is priced as affordable as possible. This enables electronics designers to innovate, harness the latest devices and technologies, manage their projects across broad design 'ecosystems', and create connected, intelligent designs.

Founded in 1985, Altium has offices in San Diego, Sydney, Karlsruhe, Shanghai, Tokyo, Kiev, with value added resellers worldwide. For more information, visit www.altium.com. You can also follow and engage with Altium via [Facebook](#), [Twitter](#) and [YouTube](#).