

CLIENT AdaCore
PROJECT Case Study: SEAKR Engineering
OBJECTIVE Describe how the customer benefitted from using my client's software development tools on their satellite data recorder projects

COPY EXCERPT

How to Develop Reliable Spacecraft Systems at Lower Cost with the Ada Programming Language

When SEAKR Engineering decided to upgrade its mission-critical data recorder applications to a new hardware platform, they kept their software in Ada. To improve their Ada code's efficiency and reliability, they upgraded their development environment to GNAT Pro.



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A leader in spacecraft-based data collection and processing

SEAKR Engineering is a leading supplier of state-of-the-art spacecraft electronics. They specialize in the design and manufacture of highly customized systems, including solid state data recorders, modular command and data handling systems, high-performance payload processors, and more.

They were a pioneer in the on-board data recorder field, replacing the magnetic tape recorders used on early weather and surveillance satellites with modern solid-state recorders and support systems that supply data more efficiently to users on the ground.

Today, SEAKR's products are on the International Space Station, on satellites orbiting the earth, and on probes that have traveled to Jupiter. They help explore Earth's atmosphere and relay climate and operational weather data critical to global climate science. They fortify U.S. intelligence and contribute to improving the U.S. battle network by advancing its space-based capabilities.

Transferring older software baselines to new embedded platforms

SEAKR has been using Ada on its data recorders since the late 1980s. Previously, most of their systems had used a Tartan Ada toolset on a MIL-STD-1750 platform—a hardware configuration which by that time was thirty years old. When they decided to upgrade to a new LEON3 processor a few years ago to take advantage of its radiation tolerance, they were presented with some challenges.

First, they needed to port over their Ada code from the previous platform, and they wanted to restructure it using more object-based and object-oriented concepts. They also needed a new integrated development environment (IDE), Ada compiler, and toolset to help them do that restructuring with greater efficiency.

The benefits of Ada

Ada was chosen because SEAKR's baseline recorder application was already written in Ada. And Ada code is highly portable and reusable when moving from one platform to another. At the same time, SEAKR's principal software engineer suggested moving development to AdaCore's GNAT Pro tools...