

Case Study: Sencore

Ensuring High-Reliability Video Transmission with Static Analysis



WEBSITE: WWW.SENCORE.COM
INDUSTRY: [SIGNAL TRANSMISSION SOLUTIONS](#)

Broadcast video software development is complex due to the sheer variety of methods used to encode video data. Writing software that decodes the data for high-quality streaming and broadcast transmission can be like creating a new software product for each application. Developers must also work with many third-party code bases, each presenting a number of edge cases in the way they approach the task.

For a company like Sencore – which engineers signal transmission solutions for TV stations, satellite TV companies, IPTV and other markets – performing static analysis on its software is one important part of a larger program designed to catch software defects before bugs impact customers' video quality. "We take an incoming data stream, perform a transformation on it, such as decoding video data, and then output it to downstream equipment," explains Joshua Iverson, Principal Software Engineer at Sencore. "Our products are used in 24/7 operational environments, so defects like memory leaks are critical to the reliability of our products."

"Sencore recently replaced its incumbent static analysis solution, Coverity, with Klocwork Insight."

A long-time user of automated source code analysis, Sencore recently replaced its incumbent static analysis solution, Coverity, with Klocwork Insight. Klocwork Insight, along with Sencore's other checker tools, runs on a dedicated server, analyzing software builds on a nightly basis. In addition to memory leaks, Sencore uses Klocwork Insight to target other critical defects such as NULL pointer dereferences, and concurrency issues – anything that might compromise the quality of the video stream that Sencore's solutions deliver.

» Key Evaluation Criteria: Product Performance and Licensing Model

About 25 software developers at Sencore work on multiple products. Each product typically represents hundreds of thousands of lines of native C/C++ and integrated third-party code. "We're not a software company with two or three main applications that we keep doing new versions of," Iverson explains, "we are always developing new products and each has its own code base, but may also share significant amounts of code with other products. Many of these products also incorporate third-party components. We need to be able to analyze any of that code at any time."

Klocwork

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Klocwork's licensing model is ideal for this scenario. With so many products, many including significant amounts of shared code and third-party code, it is an expensive distraction for Sencore to count lines of code to ensure licensing compliance. Klocwork's license includes unlimited lines of code with no project restrictions, a model that fits with Sencore's development and which provides cost certainty for future renewal expenses.

Other factors that led to the decision to switch tools include interoperability, usability and support. "Klocwork's web user interface is faster so we can do our work faster," Iverson states. "It also integrates well with our build infrastructure and some of the other code quality tools that we use." And, he reports, the transition was seamless: "We literally just dropped Klocwork in with very little effort. We did the pre-analysis build monitoring, which drives Klocwork's analysis, and we were in business."

"We have also had a really positive, 'can-do' partnering experience with Klocwork," Iverson adds. "Having access to people who we feel know us and we can talk to gives us a lot of confidence that if something comes up with the tool, we'll get the support we need."

» Controlling Reliability of Third-Party Code

A common challenge for today's software teams is the volume of commercial and open source third party code used in projects. While Sencore has no direct control over the reliability of the outside code it integrates, Klocwork Insight enables the company to find and fix any important issues in the code. Sencore can analyze all the code that comprises a product and immediately fix critical bugs, and report the fixes back to the open source community or the third party vendor for incorporation in their next release. This allows Sencore to speed its time-to-market through the use of third party code where appropriate, while still ensuring it meets the company's stringent security and reliability standards.

"Software that decodes video is quite complicated and there can be many unusual edge cases depending on how the video was encoded. Running Klocwork Insight on all the third-party code we use helps us to mitigate the risks inherent in using third-party code."

- Joshua Iverson, Principal Software Engineer at Sencore

» Continuous Improvement

Iverson also sees Klocwork Insight as a key tool to aid in the process of quality improvement and new-developer ramp-up. "At Sencore, we have well-trained, experienced developers who typically don't make obvious mistakes. When they do create bugs, it's normally because they weren't aware of some subtle behaviour of the language," he notes. "Static analysis tools are ideal for finding these kinds of issues and then educating developers so that those kinds of bugs don't keep happening."

"We can give the Klocwork reports and feedback to the developers and we notice that they stop making the same mistakes. By analysing Klocwork results we can, over time, make improvements in our processes."

» Future Benefits with Klocwork

In the future, Sencore intends to integrate Klocwork Insight into its continuous integration environment so that whenever changes are made to the code, static analysis is automatically triggered.

In addition, once the Klocwork tool has helped Sencore to eliminate its key target defects, Sencore can go deeper into the checker library to open up its static analysis to continue to improve its software security and reliability.

» About Klocwork

Klocwork® offers a portfolio of software development productivity tools designed to ensure the security, reliability and maintainability of complex code bases. Using proven static analysis technology, Klocwork's tools identify critical security vulnerabilities and quality defects, optimize peer code review, and help developers create more maintainable code. Klocwork's tools are an integral part of the development process for over 850 customers in the consumer electronics, mobile devices, medical technologies, telecom, military and aerospace sectors.

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