



CASE STUDY



Rockwell Collins

Rockwell Collins is widely recognized for the reliability and innovation of its aviation electronics and communications products. Rockwell Collins Passenger Systems (RCPS) extends that reputation beyond the flight deck to cabin systems, where the company is a leading provider of cabin management and in-flight entertainment systems now flown on more than 100 airlines around the world.

Reasoning delivers significant savings and insight into code quality for Rockwell Collins Passenger Systems' enhanced Total Entertainment System

The enhanced Total Entertainment System (eTES™) offers an on-demand audio/video digital system built on Rockwell Collins' TES system that was first installed in 1998. The eTES system provides a modular design featuring enhanced entertainment functions and new high-speed connectivity options for the airline passenger. Passenger entertainment options include digital and/or analog video and audio, interactive menus, PC-quality games, intranet pages for

shopping and airline information, live Internet browsing (on-ground provider needed) and telephone communications. The look-and-feel of the passenger interface is customized to match individual airline branding.

The Pilot Project

RCPS was looking for a way to reduce code inspection costs and improve code quality prior to entering systems integration. The code segments selected for the project included several TES modules that had been frequently modified to add functionality, as well as system maintenance modules that had been subject to mandatory formal review processes during development.

“ We established four criteria for success in this project – two relating to target numbers of defects that needed to be found, one relating to the likelihood of the defects becoming apparent in the field, and one relating to return on investment. Reasoning's automated inspection service met or exceeded our expectations in all four areas. ”

Bob Ellis

Engineering Director, Passenger Systems



Why Reasoning?

In evaluating the options available to them for improving the reliability and quality of the eTES code, the development team came up with a short list of three choices:

- More extensive manual code reviews
- Adopting configurable code analysis tools
- Outsourcing code inspection to Reasoning

Extending the time spent on manual code reviews was likely to take more time and engineering resources than would generally be available within the development schedule.

Adopting code analysis tools would require significant expenditure of labor to establish the configuration and to analyze the output in order to distinguish the real defects from the false alarms.

The team therefore determined that Reasoning's automated inspection service offered the right combination of appropriate use of scarce labor resources – allowing defect repair to be outsourced to the company's offshore labor force – and identification of real defects that needed to be fixed.

“ The Reasoning automated inspection service is clearly a good value for products that require high availability and/or are in active development, particularly those involving multiple development teams. Since the code can be inspected on a modular basis, it enables us to assess the quality of code delivered by subcontractors before that code is incorporated into an official build. Using Reasoning also gives us a competitive edge that marketing can use to show how RCPS is working to improve software quality. ”

Laurel Rudzik

Systems and Software Engineering
Manager

The Results

For the system maintenance module, Reasoning found the number of defects expected by the team. But in the frequently modified code, Reasoning found almost five times the number of defects set as the base criterion for acceptance of the service – some in extensively used areas of the code.

Because the team was able to use the Reasoning defect reports to drill down and analyze individual defects in individual files, it was a simple task to determine which defects were in active paths and therefore needed to be fixed prior to the next release.

Conclusion

The team is making use of the pilot project results to educate developers in defect avoidance and to evaluate the inspected code on a component-by-component basis, taking action based on a risk analysis of each found defect.

The project was judged a success by the team, and RCPS expects to incorporate the Reasoning automated inspection services into their new product development cycles moving forward.

About Reasoning

Reasoning Inc. is the leading provider of automated software inspection services that help development organizations reduce the time and cost involved in finding software defects. The company's business is focused on organizations that develop Java, C, and C++ applications.



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