

**SECTOR** Industrial Automation  
**STANDARD** IEC 61508

# Case Study



**G4S**  
(Formerly Securicor)

## CERTIFICATION

Cantata has been classified a **Class T2 Tool**, as usable in development of safety related software up to the highest safety integrity level (**SIL 4**) as defined by the **IEC 61508** standard



For information on tool certification, please visit:

[www.qa-systems.com/cantata](http://www.qa-systems.com/cantata)

## ABOUT THE COMPANY

G4S is the leading global integrated security company specialising in the provision of security products, services and solutions.



## Background

Software bugs had proved responsible for a large proportion of field faults. As such, G4S decided to explore ways of introducing a more rigorous approach to testing in order to improve product reliability.

## Cantata Evaluation

The main conclusion of the Cantata Evaluation was that the effort required to produce tests was 30%-40% less than by hand coding tests. The team also liked the uniformity of style encouraged by Cantata and the fact that test output provided evidence of the work carried out. Satisfied with the tool, a full Cantata licence was purchased and testing began in earnest.

## Work Begins

Testing effort was focused where it was most effective. This meant concentrating on the Alarm Generation Subsystem, the heart of the system, consisting of 8 tasks. Unit testing of modules in the tasks was carried out (to an average level of 95% decision coverage) in order to minimise coding errors. Cantata's static analysis functions were used to eliminate the use of C constructs known to cause problems. Task testing was carried out to discover if there were any design errors in the tasks.

## The Gains

Looking back over a busy ten months with Cantata, Special Projects Manager, John Duckett, remarked, *"The productivity gains of 30-40% stayed with us, especially when we were able to take advantage of reusing old tests. That was good. However, the real power made itself felt through enforcing the coverage standard to ensure that units were properly tested. It became very apparent that units and tasks which had received the full Cantata treatment were much easier to integrate than those which, for various reasons, had not. We gained considerable confidence in the reliability of each other's software by knowing it had been properly tested."*

Asked to express an opinion on the 'value for money' aspect of Cantata, Duckett said, *"Speaking conservatively this product has probably paid for itself twice over already. Initially we were a bit reluctant to consider spending what for us represented a large part of the development budget, but I am glad to say the decision was a good one."*

## Conclusion

Duckett had one major comment to make about what he would do differently if he could go back a year and start again. *"More and earlier testing is what I would do! As an activity there is no doubt it pays for itself if done properly."*

All case study text has been approved by the relevant customer.

QA Systems acquired the Cantata business taking over all development, support and sales from IPL in March 2012. Cantata is the extension of the Cantata++ tool.