Case Story: Quality and productivity through static code analysis

"If static analysis is performed on code, bugs are detected immediately and you don't have to spend your own time searching for them."

Planmeca

Planmeca Oy is one of the world's leading manufacturers of dental care equipment and digital solutions. In Finland, it is the biggest operator in its field. The company designs and manufactures dental equipment, maxillo-facial imaging devices, CAD/CAM solutions and supporting software. Planmeca Oy is the parent company of the Planmeca Group, which operates in the health technology sector. The Group's turnover in 2014 was EUR 740 million and it employed nearly 2,700 people worldwide.

PLANMECA

CodeSonar®

The automatic, static analysis tool CodeSonar®, the flagship product of the US company Grammatech, detects bugs in source code, acting like a proof-reader for code. CodeSonar is stand-alone software that helps eliminate the most costly and hard-to-find bugs early in software development cycle. The software can also be used to analyse binary files.

GRAMMATECH

Delivering quality to software development through static analysis

Planmeca eliminates software bugs

Planmeca Oy's dental equipment unit deployed the CodeSonar® software in order to eliminate coding errors caused by carelessness and to further ensure the quality of its software products. Now, the experiences received with the static analysis tool have been so positive that Planmeca is looking to use the software more widely throughout the company.

Planmeca Oy, based in Helsinki, is one of the world's leading manufacturers of dental equipment. The company's product range covers dental equipment, versatile 2D and 3D imaging devices and CAD/CAM products, and supporting software solutions.

Development of embedded systems is an important part of the company's business. Health care professionals control Planmeca's equipment with the aid of computer programs and make patient diagnoses or surgical decisions based on them.

According to Olli Kattelus, Software Design Manager of the dental equipment unit, every year there are a number of software development projects in the unit. The projects generate hundreds of thousands of lines of code, and sometimes bugs arise in them due to human error.

"Rarely occurring, pure coding errors are sometimes very hard to identify

"CodeSonar® filtered out false-positive results more effectively than other programs."

visually, and at worst finding them can take weeks. Some bugs are not identified at all and they only become evident later, when the product is in the client's hands," explains Kattelus.

"If static analysis is performed on the code, bugs are detected at the earliest possible stage and you don't have to spend your own time searching for them. The latest IEC standards guiding the software development of medical equipment also require that static analysis be carried out," he continues.

CodeSonar® fulfilled all the requirements

Planmeca's dental equipment unit initially introduced the stand-alone CodeSonar® analysis tool on a trial basis with the support of Nohau Solutions AB's experts. According to Kattelus, the unit wanted to evaluate how the software suited its needs and how it worked compared with other, similar tools.

The unit had many requirements for the analysis tool. The first objective was to find out how different systems communicated with the software and whether error messages were transferred efficiently to the correct database.

"A static analysis tool must give a clear description of the type of error and how the situation was arrived at as well as a message stating how the error can be corrected. A record of serious errors must be made in a bug database as well as information on who has corrected the error, when it was corrected and how," says Kattelus, describing the requirements.

According to Kattelus, on the basis of the company's own evaluation, CodeSonar® fulfilled all of these requirements. In addition, it was able to filter out false-positive results more efficiently than other programs. "Free tools often generated false alerts that took a lot of time to investigate," he says.

As a result of good experiences, the CodeSonar® software has now been more widely introduced within the unit and it is currently being fined tuned in cooperation with different development environments. "In the future, the goal is also to deploy the software in other Planmeca Group units," concludes Kattelus.