Static Analysis Report and Source Code Quality Services

Silver Atena’s analysis report is a powerful tool for software project managers, helping them to keep track of project progress. The report also contributes to improving source code quality.

Creating transparency on projects
Complex software developments, especially in the safety critical domain, demand a constant attention from project managers. Knowing the status of each baseline and tracking their progress along the lifecycle are fundamental for an efficient decision making.

The analysis performed by Silver Atena helps client’s organizations in this task, increasing the transparency on the state of the software development.

Enhancing software quality
Silver Atena’s report facilitates the surveillance of the structural properties of the source code, aiming to enhance desirable features such as reusability, robustness, testability and maintainability.

The control of these characteristics, by means of static analysis methods, is beneficial to keep the project on time and on budget. With a relatively low effort comparing to other verification and testing activities, static analysis also contributes to the identification of potentially hazardous defects at an early stage of the development.

Static Analysis tool
Silver Atena, counting on a solid background on this area, uses its own analysis tool and commercial solutions to produce relevant reports which add value to the customer’s projects and contribute to their success.

Quality Model
Every commercial tool for static analysis provides hundreds of measurements, such as cyclomatic complexity, Halstead metrics, fan-in, fan-out, decision density, comments ratio, etc.

A pragmatic approach to process all this information is by building a quality model, which gathers a selection of measurements in order to cal-
calculate some high-level metrics or quality factors.

Silver Atena assesses the overall quality of the code using three customized high level metrics: Maintainability, Readability and Testability. Thanks to these factors, we obtain a big picture of the structural properties of the code, which helps us to easily identify areas of improvement, compare different baselines and follow the evolution of the subsequent builds.

**Supported programming languages**

Silver Atena provides analysis services for Ada, C and C++ source code. The metrics and the model are tailored to the particularities of each programming language.

For instance, as regards C++, apart from the basic code metrics, exclusive information on some of the object-oriented metrics is examined, which may account up to 31 metrics, comprising functional, class-related, build-related, graphical and project metrics.

**MISRA compliance**

Whenever the programming language is C or C++, we recommend extending the static analysis, by checking the MISRA rules.

The source code is examined with respect to the latest versions of the standard, MISRA C 2012 and MISRA C++ 2008.

**EN 50128 compliance**

Concerning safety-related software applications in the railway domain, the standard EN 50128:2011 specifies that static analysis is a highly recommended technique for every SIL. Metrics are also recommended. Moreover, the standard includes some requirements regarding the size, complexity and clarity of the source code.

The analysis performed by Silver Atena helps to meet all these requirements and may also be attached to the Software Source Code Verification Report, thus facilitating the adherence to the standard.

**Comparison between baselines**

Whenever different baselines or versions of the source code are available, the report may also include a comparative analysis between them. Some special metrics, like the Software Maturity Index (SMI) are provided and the evolution of the quality model is captured. This way, project managers obtain a useful representation of how the software product has evolved over a period of time and how stable and mature is.

For further details, please send us an email to: info@silver-atena.es