

SLX for ADAPTIVE AUTOSAR Development

■ SLX – Analyzing and Optimizing Adaptive AUTOSAR Applications

Silexica's programming technology SLX enables the analysis and optimization of Adaptive AUTOSAR applications to give you a deep insight into their behaviour running on heterogeneous multicore platforms.

Adaptive AUTOSAR is a new standardization to enable new types of automotive applications. The object-oriented approach of the AUTOSAR Adaptive Platform provides an optimal foundation for computing-intensive tasks with large amounts of data, e.g. algorithms for automated driving. While such software can be developed faster than before through reuse of existing IP, understanding the behaviour on a multicore system is becoming harder than ever before.

This is where SLX offers unique advantages: It understands your application combining a deep and precise analysis of the source code and how it is executed. This is augmented with your multicore target's timing and resource usage through the appropriate use of comprehensive abstract models and on-target tracing.

ANALYZE

Analyze your software to fully understand your code by using semantic and dynamic execution analysis.

OPTIMIZE

Distribute your application driven by timing and energy constraints and explore your system's behaviour on heterogeneous multicore.

INTEGRATE

Follow target-specific, easy-to-use recipes, find bugs automatically and generated code for your ecosystem.

✔ Absolute code understanding

✔ Meet challenging requirements

✔ Faster time to market

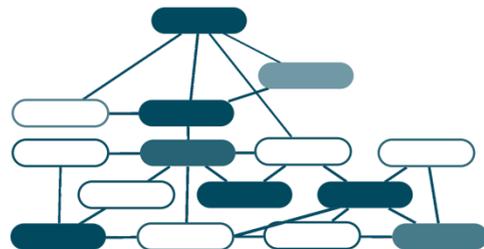
■ FEATURES AND CAPABILITIES

ANALYZE

ANALYZE CODE

SLX builds a complete application model from industry-leading compiler technology utilizing both static, semantic and dynamic analysis. This identifies and describes data- and control- dependencies and interaction between threads and applications. The model includes the application call graph, read and write accesses to local, heap and global variables and a complete understanding of memory accesses within the memory hierarchy. For parallel applications or multi-application scenarios, the model also includes the application's communication and synchronization patterns.

In addition, a pattern-based framework identifies potential opportunities to partition your application further to expose more parallelism. SLX balances the costs and benefits of implementing the potential partitioning, to fully exploit the target's resources.



Static and Dynamic
Source Code
Analysis



Data and
Control
Dependencies



Cross-Target
Performance
Estimation



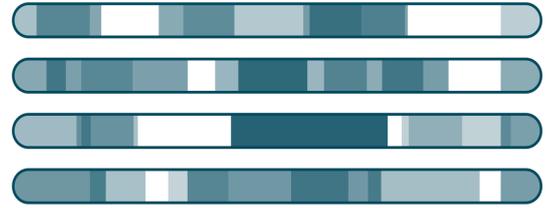
Semantic Source
Code Analysis

OPTIMIZE

AUTOMATIC DISTRIBUTION AND EXECUTION ANALYSIS

SLX finds optimal distributions of applications and enables early performance prediction and power estimation of your software without the need to purchase, install, and evaluate different available or envisioned multicore target platforms.

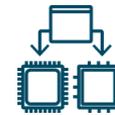
It works in different optimization scenarios (Performance, Memory, Power) and fully exploits complex on-chip and off-chip interconnect fabric and memory subsystems. Throughout the process the user can interact with the mapping flow and bring in expert knowledge. Additionally, further timing and resource constraints can be taken into account by the tooling.



Power, performance, and memory-driven SW distribution



Optimized task schedules under tight timing constraints



Target Platform Awareness

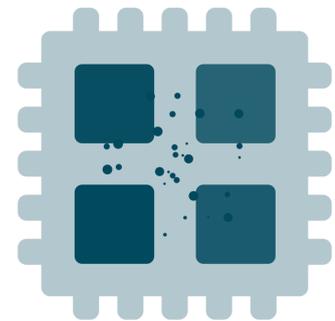
INTEGRATE

GUIDE, REWRITE AND GENERATE

Silexica's unique compiler know-how allows a developer to significantly increase the turnaround time for software changes and enhance productivity.

Tying results to source code lines and variables during the Analyze and Optimize phases enables source-to-source automatic rewriting and ensures the feedback to users is accurate and comprehensive.

SLX further helps by offering powerful hints on how to rewrite code and parallelize it further. Additionally, it can optimize an application by applying target-specific transformations, by an automatic bug identification or the update of applications manifests.



THE SILEXICA SOLUTION

SLX gives you absolute code understanding and precise analysis to deliver the most challenging automotive project.



Clear suggestions to spend less time during multicore migration



Target dependent code generation for multicores



Automatic insertion of pragmas (OpenMP, HLS, etc.)



AUTOSAR
Adaptive Platform