



HIGH PERFORMANCE CONSTRAINT-PROGRAMMING

Increasingly more complex variant configurations (VC) require ever faster algorithms to be able to account for high performance, in-memory platforms like SAP S/4HANA. In a project we are offering C++ consultancy and develop cutting edge constraint solving technology and novel algorithms for SAP.

The variant configuration integrated into SAP S/4HANA offers efficient variant configuration for any kind of product lines. It does not matter if the company produces cars or pizzas or aims at merging isolated software products: All kinds of variants are described with a variant model which eventually delivers a product that fits your use case. All variants are supported cross all enterprise processes.

Constraint Solving Backend

To account for the increasing performance and scalability demands the VC Backend is ported to a leading-edge, C++-based Constraint Solving technology. This technology allows the rule-based pruning of variable domains according to the constraint model. For the definition of such models and rules we developed interfaces to be able to specify valid variable domains via variant tables and complex Boolean expressions. Further, we added new types of variables for the processing of strings and highly accurate floating-point numbers.

Challenges

The SAP Variant Configurator is used by many international customers in critical enterprise workflows. We set the highest development standards regarding new algorithms (optimization of memory usage, compute intensity and runtime, correctness) as well as code quality (test driven development, 100% test coverage, code-reviews, continues integration on multiple platforms and compiler combinations, fuzzy testing) to be able to guarantee scalability and robustness of our solutions.