VisualApplets Expert
Using Advanced Functions in VisualApplets

VisualApplets is the graphical development environment for individual FPGA programming. The current version 3 offers with the new extension Expert a broad range of advanced functions for experienced users. The Extension Expert contains three new function focuses: the Custom library, offering the possibility to create own operators in order to use them in the VisualApplets design, and the Debugging and Parameters libraries.

VISUAL APPLETS

EXPERT

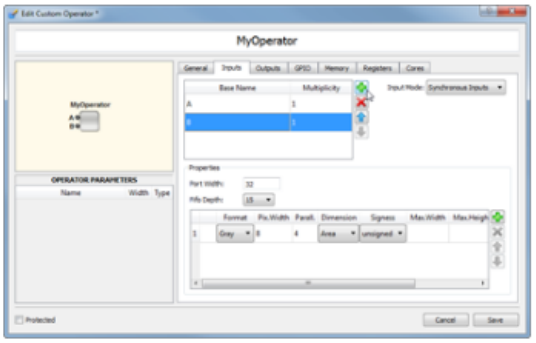
With the multitude of operators implemented in the libraries, the developer gets new possibilities for designing and testing of the created image processing application. Thus, it is possible to take over existing hardware code (VHDL and Verilog), to debug the design under runtime condition and to set paths to parameters in hierarchical structures.

The Main New Features

Custom Operator Functionality

With the **Custom Operator** functionality users are able to make further use in VisualApplets of their existing image processing modules (VHDL libraries) programmed in VHDL or Verilog as operators and by this save their existing work. The modules are incorporated as pre-synthesized IP core netlists. Each IP core builds exactly one operator. After a GUI driven integration procedure, these operators work like generic VisualApplets operators and use all advantages of the VisualApplets workflow like high-level simulation, resource consumption and bandwidth calculation.

You can import and export individual custom operators by importing/exporting the XML definition of the operator.

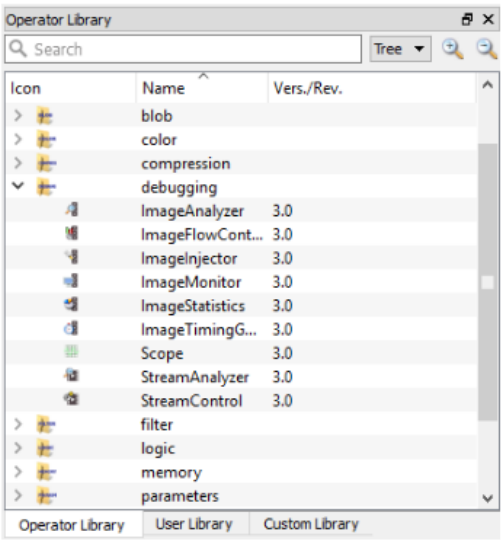


Creating a custom operator in a new library

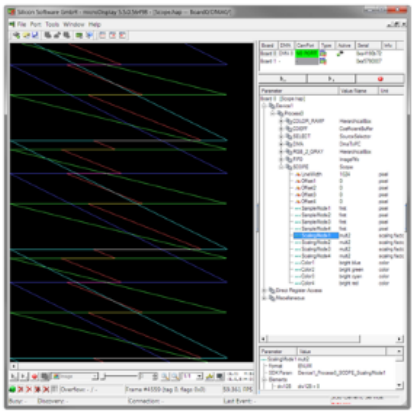
Users use their know-how and reuse existing hardware code and apply it to the programming of FPGAs, for example to integrate an existing IP core into new applications only with a few steps. This reduces the time-to-market of their products considerably.

Debugging Library

The **Debugging Library** offers a variety of operators with enhanced debugging capabilities to detect program errors, deadlocks and bandwidth problems and to increase the stability of the design. Included are among other things the image analysis, image statistic, stream analysis, image flow control and monitoring. They can be used for debugging VisualApplets designs in the real runtime as well as custom operators which are still under development. In the latter case, the debugging library allows to analyze how new custom operators affect the designs.



Overview of operators in the Debugging library



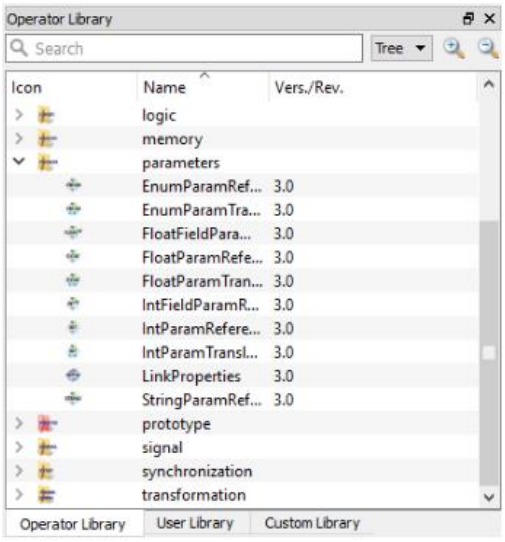
The Scope operator provides options for analyzing gray-scale pictures

Parameters Library

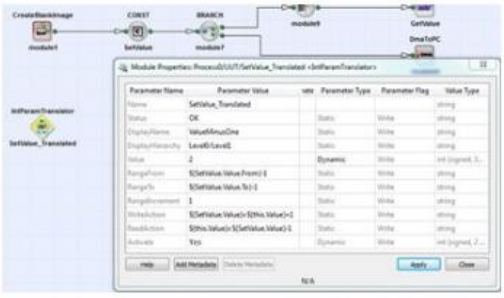
The **Library Parameters** is a new module library which provides the programmers with several operators, which enable them to change parameters easily, which may be deeply embedded in hierarchical structures of the design. Parameter changes in a VisualApplets design by users are automatically updated consistently during runtime, also in protected hierarchical boxes. A time-consuming and error-prone manual change of parameters in the whole design and the use of additional software can be omitted.

With operators of the type Translator, new values can be calculated from different parameter values and be transferred to other parameters in the design. The calculation only occurs according to the specifications of the programmer. The syntax of the calculations corresponds to the GenICam standard (GenICam API version 2.0).

The created connections between parameters by the operators do not affect the design of the represented image processing process.



Overview of operators in the Parameters library



Setting parameter paths in deep hierarchical structures