



SILICONSOFTWARE

SILICONSOFTWARE

Dr. Ralf Lay

Conference

Center of Excellence for HyperTransport Technology

16. February 2007



SILICONSOFTWARE

- Manufacturer of hardware with reprogrammable technology
- Manufacturer of FPGA programming tools
- Provider for programming services
- > 15 years experience in FPGA coprocessing

- Current focus on Machine Vision market
=> High-performance Image processing
- Solutions in Quality Inspection, Robot Vision and more

SILICONSOFTWARE

- Headquarter in Mannheim
- Founded 1997
- Employees: 16





Hardware Platforms

Support of generic Image Acquisition Boards, Coprocessor Modules and Embedded Devices (Intelligent Camera)

Reprogrammable Technology

- Xilinx FPGA series from Spartan 2 up to Virtex 4
- Multi-FPGA boards



Intelligent PC-Camera "eneo"



FPGA coprocessor board "PixelPlant"
by SILICON**SOFTWARE** 2007

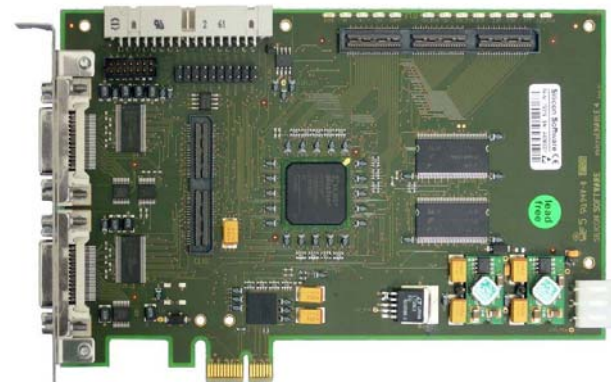


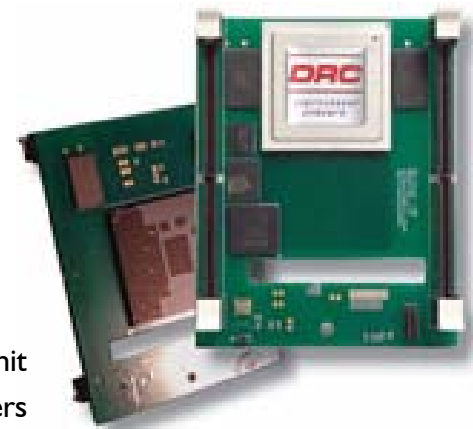
Image acquisition board "microEnable IV"
by SILICON**SOFTWARE** 2007



Need of FPGA coprocessing

- Need of FPGA hardware processing besides standard CPU applications
- Need of high performance interfaces between CPU and FPGA
- Need of integrated programming environment
- **Need of easy-to-use programming interface for application engineers**

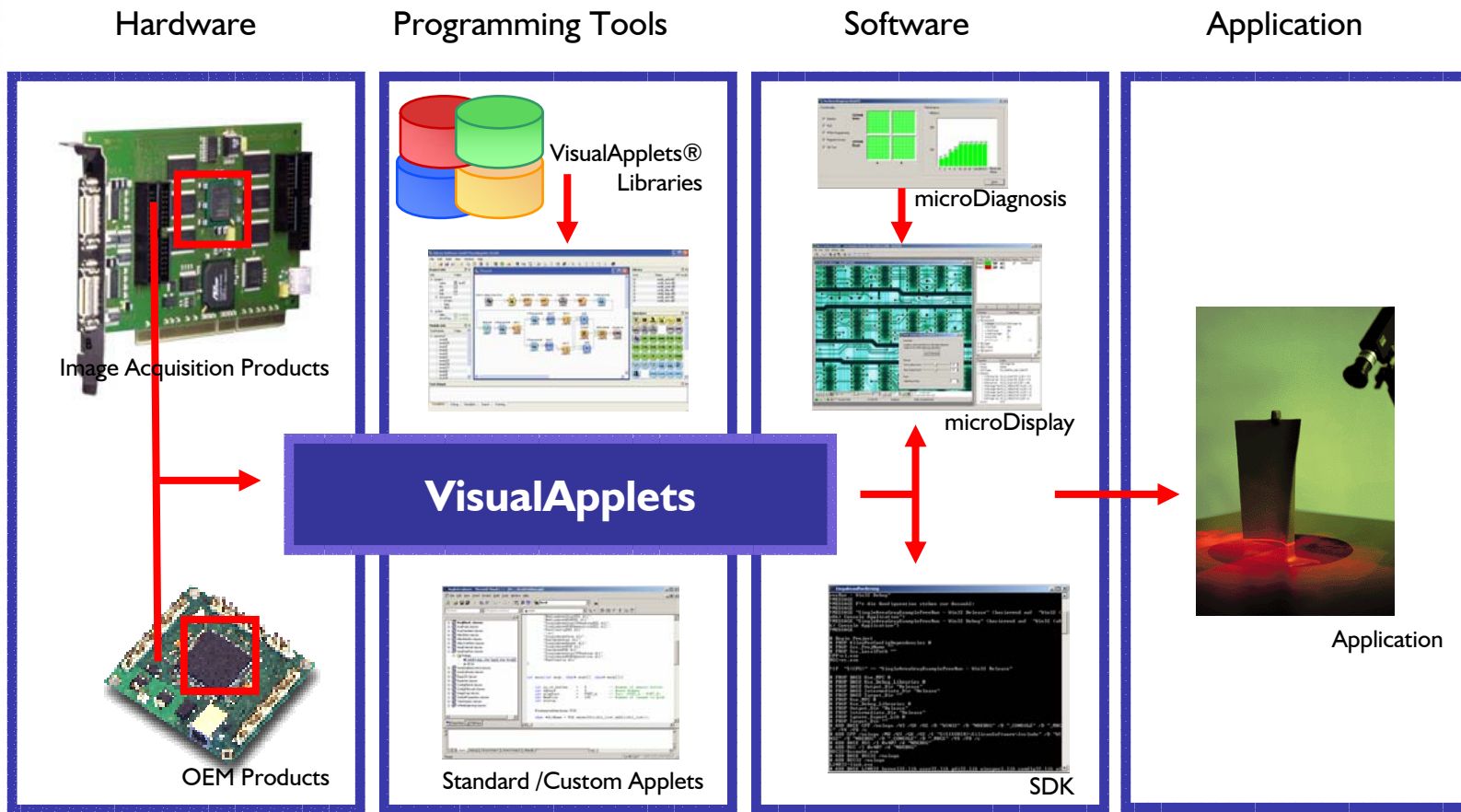
= > Higher acceptance of FPGA coprocessors



Reconfigurable Processor Unit
of DRC Computers



SILICON SOFTWARE – VisualApplets





VisualApplets - the next generation FPGA programming software

VisualApplets is a graphical software to program FPGAs by data flow designs

- Closes the gap between off-the-shelf and individual hardware programming
 - No knowledge required in circuitry, timing and FPGA programming
 - Abstractly working with image operators
 - High-level simulation included
-
- VisualApplets is used by
 - hardware programmer
 - software programmers
 - application engineers

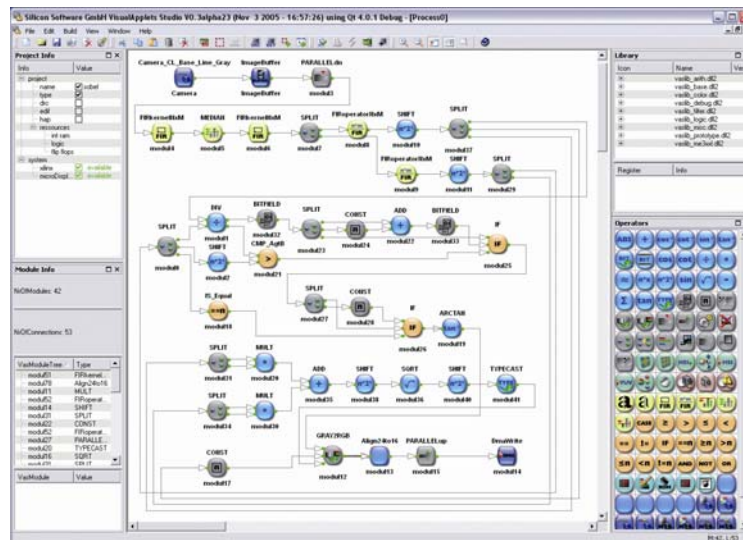


FPGA Programming Tool "VisualApplets", project window view



Visual Applets – Main Features

- Graphical Interface to program FPGA hardware
- Extensive modules and operator library almost 200 entries
- Availability of hardware and software implementations of each module
- Support of various 3rd party hardware platforms
- High-Level Simulation
- “One button” synthesis
- VHDL import support by EDIF cores
- Direct control of hardware functions by SDK/API interface



Design flow in “VisualApplets”



Visual Applets - Architecture

- Highly hardware independent
 - Operational with various Xilinx Spartan types
 - Prepared for Xilinx FPGA up to Virtex types
 - Prepared for Altera FPGA types
 - Easy integration of additional peripherals (RAM, data interface)
-
- Scalable architecture to support new FPGA types
 - Scalable architecture to support DSP and CPU cores



Image Acquisition board "microEnable IV! With Xilinx FPGA



Visual Applets - Summary

- Independent of industry- or market-specific applications
- Extension of functionality by additional libraries
- Open “third party” concept
- Usable for specific hardware as well as general purpose coprocessor
- Highly accepted approach to FPGA technology by software programmers and engineers
- Increase of acceptance of FPGA technology besides CPU-based application



VISION Award 2006 for VisualApplets
- The next generation FPGA programming standard