

Impulse CoDeveloper™ Video Development Solutions

C-to-FPGA Tools for High-Throughput Video Processing

Key product features

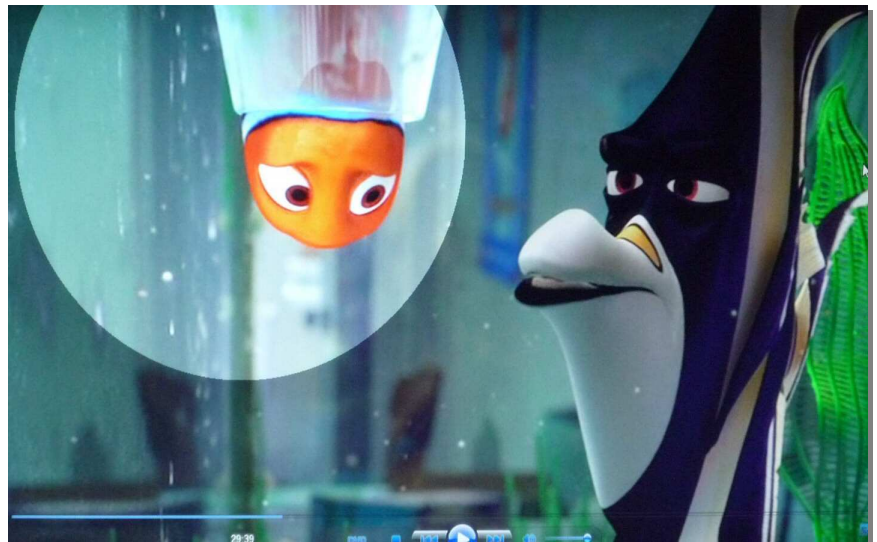
- Describe complex, highly parallel FPGA algorithms for video processing using C-language programming methods.
- Debug your algorithms using standard C tools including Visual Studio™, Eclipse™ and GCC/GDB.
- Enable real-time video processing by unrolling loops and generating loop pipelines.
- Automatically generate low-level hardware and software interfaces, including video interfaces.
- Combine C-language with other design methods and tools including Xilinx® System Generator™.
- Export easily to Xilinx® ISE Design Suite™ for FPGA implementation.

CES Demonstration Project: *Finding Nemo*

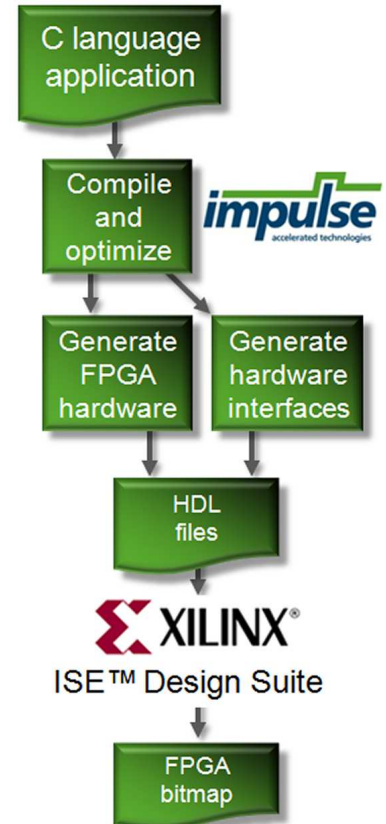
Impulse CoDeveloper allows high performance video filtering algorithms to be developed and debugged using standard C-language programming methods. In this FPGA-enabled video processing demonstration, HD video is processed in real-time to identify and track a specific object. In this case, a Xilinx® Spartan®-3A 3400 FPGA is used to identify and highlight Nemo in real-time as he moves through the scenes of Pixar's *Finding Nemo*:

A streaming video image filter, described using Impulse C, detects the distinctive white-black-orange stripe pattern.

The filter uses the location information in later frames to calculate the spotlight diameter and lighten or darken each pixel in the video stream.



CoDeveloper is ideal for high-throughput streaming video applications. Enhanced instruction scheduling and loop pipelining can dramatically accelerate critical code loops. Extensive examples and tutorials make your first projects quick and easy.



Hardware IP blocks from C code

Support for module generation allows hardware IP blocks to be generated from C-language, using named ports and streaming API functions to integrate these blocks with the overall design. Impulse C IP blocks can be easily mixed with Verilog or VHDL, or with IP created using Xilinx® System Generator™.

Rapid prototyping

By working at a higher level of abstraction, you can more quickly generate working prototypes for system testing. This allows you to try dramatically different algorithmic approaches with only minimal changes to the C source code. Experiments that can take hours to accomplish in HDL can take just minutes using Impulse C.

Export directly to Xilinx FPGA tools

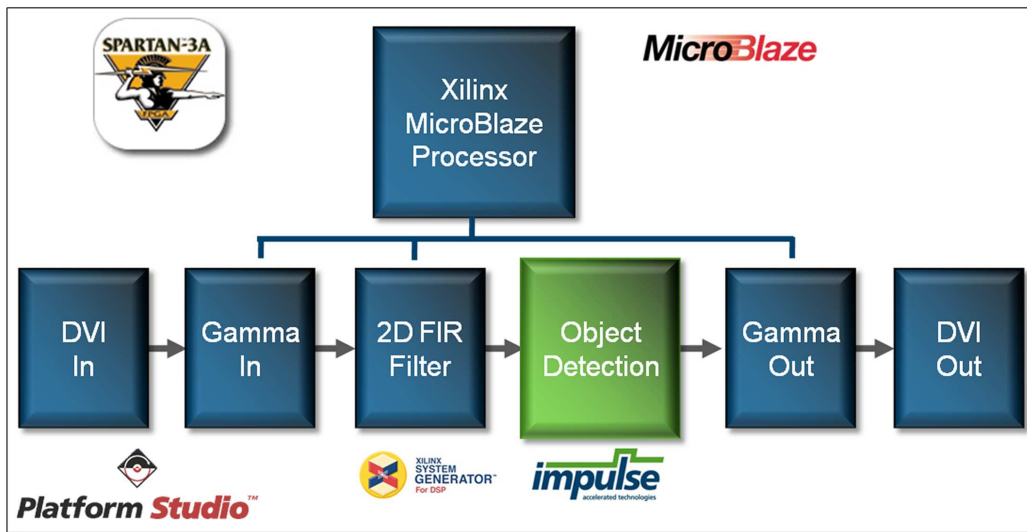
CoDeveloper produces HDL outputs that are ready for processing by Xilinx development tools including ISE Design Suite™ and Platform Studio™. Impulse C generated modules can also be combined with IP generated by third-party tools to create complete hardware/software systems.

Works with the Xilinx Video Starter Kit

Get started fast! CoDeveloper is fully compatible with the Xilinx® Video Starter Kit (VSK). Video reference designs and ready-to-run examples are available now. Optional video processing libraries will also be available soon. For more information, visit www.ImpulseAccelerated.com/Xilinx.

For more information about the Xilinx® Video Starter Kit, visit www.xilinx.com/vsk_s3.

Combining C-Language Programming with the Flexibility of Xilinx FPGA Solutions



The Impulse C objection detection algorithm is combined with filters generated using System Generator and an embedded MicroBlaze processor. The complete system is assembled and built using Xilinx Platform Studio.

The Impulse *Finding Nemo* demonstration represents a moderate (20 hour from concept to implementation) effort by a software engineer with little prior experience in video processing. This application showcases the ability of the FPGA to provide a flexible, single-chip solution for high-throughput video processing. The Impulse C-to-FPGA tools, used in combination with Xilinx® FPGA tools and reference examples, enable video application developers to rapidly develop video processing solutions using software programming methods.

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