

Customer

European manufacturer of optical systems.

Objective

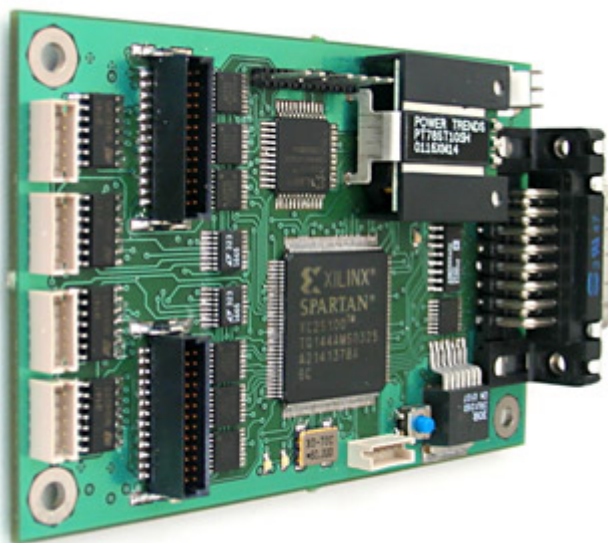
The objective was to develop a hardware and software platform for a system of two controlled high-resolution video cameras and controlled light sources. Video data are further submitted to the user PC where the images are analyzed depending on the parameters of light sources.

Solution

A video system was developed: video camera board with a digital SXGA CMOS sensor, light sources and video cameras switch board, image capture, storage and transfer (via the ISA bus to the operator's PC) board. Data transfer from the switch board to the video capture board was implemented through a high-speed protocol LVDS (80 Mbps). Image capture and recording are performed in real time at the speed of 12 frames per second.

For an FPGA chip, a set of IP cores was prepared:

- ISA bus controller;
- DMA channel controller;
- SRAM controller;
- CMOS sensor controller.





An ISA device driver under Windows 2000 was developed to transfer data to a PC. System setup, image display, control of video cameras and light sources parameters is done via an especially implemented client application.

Benefits and features

- High-resolution video capture (1280x1024);
- Simultaneous capture of up to 6 frames within 1/2 second at most;
- Control of 16 programmable light sources;
- ISA interface.

Design tools	Xilinx ISE foundation, ModelSim
Technologies	VHDL
Hardware and interfaces	ISA, DMA, LVDS, SRAM
Programming languages	Visual C++, MS Windows DDK, Win32 API
Project management tools	dotProject, MSProject, CVS
Efforts	520 man-days
Duration	18 months