

VISIONARY

Interview with Dr. Klaus-Henning Noffz, Executive Manager Silicon Software

INSPECT: Dr. Noffz, you and your partner have founded Silicon Software 12 years ago as producer of frame grabber technology. What was back then the idea behind?

Dr. Noffz: My colleague Dr. Lay and I, both came from long-termed research fields, where we looked into the hardware and software aspects of FPGA technology. The focus of our research back then was already the recognition of pattern, which directed us quickly to the Machine Vision industry. Therefore we didn't trace the market back to technology but vice versa. The original business idea was "how can Machine Vision benefit from FPGA technology?" Even the very first generation of our products has been a frame grabber with included pre-processing capabilities.

Did your initial vision change during the following years of the company's development?

Dr. Noffz: Certainly the idea was modified over the years, but not needed to be basically changed. While an intelligent image acquisition board was exotic in the very beginning, today a hardware based image processing is used very often. In the course of the years it became more important for us, to complete the



product family to cover a broader application focus. Nowadays different performance classes of our product lines range from pure image acquisition frame grabbers to demanded preprocessing boards.

In addition to a whole portfolio of frame grabbers, Silicon Software today offers the software product VisualApplets to the market. What is this about?

Dr. Noffz: The product VisualApplets is a graphical tool to program the FPGA very easily. The software unburdens users of complex decisions concerning synchronicity and timing or management of resources, and allows them to focus on the algorithmic processing of the imaging application. VisualApplets comes with a high level simulation, which shows the current visual result on each link of the imaging data flow in bit accuracy. Hereby the software is especial-

ly suited for software programmers and application engineers. VisualApplets looks back on a long development history. During research, there were already first ideas how to program larger and more complex FPGA and even multi FPGA systems in the future in a more efficient way.

With the foundation of Silicon Software we started to develop an own hardware description language (HDL), which works noticeably faster and more efficient for image processing applications on the FPGA.

In addition to the functionality of the frame grabber we delivered, more services were asked of us increasingly often to add or modify processing features. At the same time, the interest of the customers in programming hardware by themselves grows, for "time to market" reasons, as well as the need not to disclose their algorithmic know-how. For us, this was the starting point to finalize partly existing internal developments for marketabil-

ity. VisualApplets became the central product of our company. New hardware developments always regard compatibility to VisualApplets in concept and realization.

Compared to traditional programming methods like VHDL/Verilog, VisualApplets enables a realization of applications in a tenth of the development time in average at similar code efficiency. More than 200 operators of the image processing libraries cover with basic up to complex functionality most requirements in pre-processing. With the availability of blob analysis and pattern matching, we enter parts of segmentation and classification. Other libraries cover functions of complex signal processing, i.e. to realize customized triggers. The wish list of our customers and our own roadmap include more and very interesting features for the future.

VisualApplets is not considered a closed system. The partnership to other companies and products is important for us. We don't see VisualApplets as a competition to imaging software but as a logical completion to avoid performance bottlenecks in the processing. Interfaces to libraries will allow third party companies to integrate and offer their own FPGA libraries.

Two years ago, we adapted VisualApplets onto intelligent camera hardware manually. With a new product line, we will ease the interface for the integration of VisualApplets on third party hardware. It enables manufacturers of imaging components to use the advantages of VisualApplets even on their own hardware platform.

What is your vision for the development of frame grabbers and machine vision cameras respectively for the next 10 years?

Dr. Noffz: In our opinion, frame grabbers are still needed in the next years. The evolution

of sensors is still going on and hardware is required to support. But a frame grabber will not be easily recognized as such in the future. Even today, it is hidden as chip in a smart camera, but still recognized with its acquisition and processing functionality. The same is also effective for cameras. Cameras will have their importance from high-end applications to miniature cameras. But intelligent and application specific sensors will increase their market shares. Industrial image processing will be omnipresent, but not necessarily obvious. That will happen especially in applications, which are not directly concerned to industrial production.

The last 12 years of Silicon Software are a success story. What is your recipe for success and how would you advise young engineers or scientists who intend to set up a vision company today?

Dr. Noffz: Stamina in our branch is very important. That is mainly concerned with requirements of a long-termed availability of products. Therefore a business idea is required, which is and will remain sustainable at least mid-term.

The international network is a further important component, which helps to win broader experiences in projects, applications and partnerships.

Dr. Noffz, thank you very much for this interesting discussion.

Contact

**Dr. Klaus-Henning Noffz,
Executive Manager**

Silicon Software GmbH, Mannheim, Germany

Tel.: +49 621 789507 0

Fax: +49 621 789507 10

info@silicon-software.de

www.silicon-software.de

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