

FRAUNHOFER INSTITUTE FOR INTEGRATED CIRCUITS IIS
DESIGN AUTOMATION DIVISION EAS



ISSUE 2.15

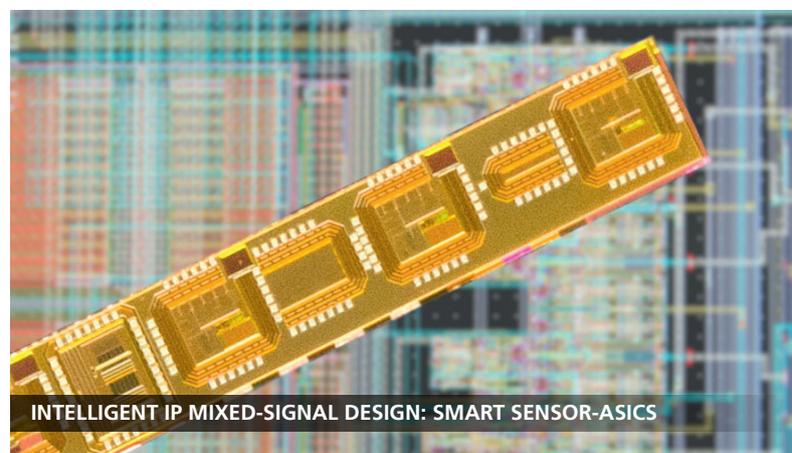
FIRST-TIME-RIGHT DESIGNS WITH MUCH SHORTER DEVELOPMENT TIMES

The »Intelligent IP Mixed-Signal Design Flow« developed at the Design Automation Division EAS offers a unique degree of automation, especially for otherwise very time-consuming and error-prone analog designs. All this while saving lots of time and offering increased design reliability as well.

Integrated circuits with digital and analog components, known as mixed-signal ICs, are predominant in countless microelectronic products today. The analog portion generally takes up no more than 20 percent of the chip area, although development of this portion is generally very expensive, time-consuming and error-prone due to a low level of design automation. This problem only becomes more pronounced as further advancements are made in the miniaturization of semiconductor technologies. The »Intelligent IP Mixed-Signal Design Flow« now offers a unique level of automation for the relevant design process.

In a number of development projects, the design engineers of Fraunhofer IIS and the EAS Division have been able to demonstrate a significant increase in efficiency with the help of the Intelligent IP Mixed-Signal Design Flow. For example, 40 percent cost and time savings were achieved in the design of a multi-physical SMART sensor ASIC. Various ASICs were created for different requirements based on only a single design process. In the future, the efficiency will be improved still further through automatic architecture selection in the system design. In addition, the new design flow was successfully employed for, among other things, industrial designs for high-resolution A/D converters and the design of an extremely

fast image processor. Johann Hauer, Head of Mixed-Signal ASIC Development at IIS, is enthusiastic about the development: »Automation in analog design processes is something we have wanted for years, but this complete design flow delivers for the first time on the promised advantages for everyday design tasks. For us, the significant time savings and high design reliability mean that we can finally offer first-time-right designs with much shorter development times. Another critical factor is the good acceptance among our design engineers thanks to the intuitive user experience.« Fraunhofer customers can already profit from the design flow today, and it will be directly utilizable by customers starting in 2016.



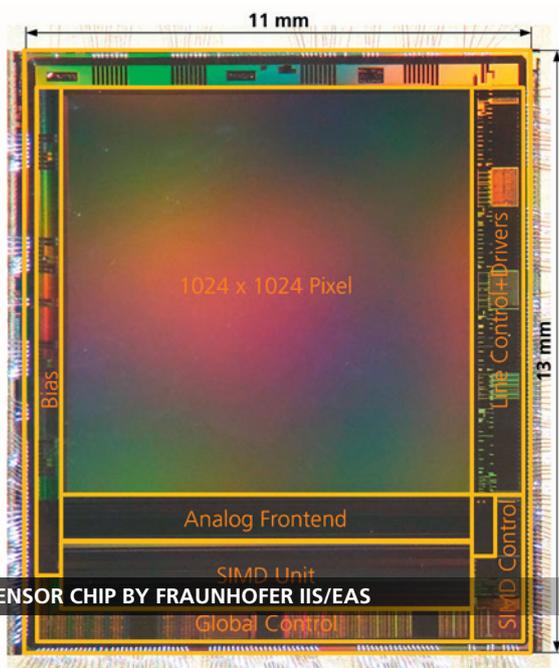
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VISION SENSOR FOR THE CAMERA MODULE OF TOMORROW

Image processing systems for industrial applications must satisfy ever increasing requirements. To ensure a broad range of possible applications, the researchers at Fraunhofer IIS/EAS have developed a universal and flexibly programmable image sensor chip with integrated data processing. This vision-system-on-chip was presented to an international audience of experts for the first time at the 2015 INTERNATIONAL IMAGE SENSOR WORKSHOP. The researchers are now taking the next step forward with their successful approach. They are in discussions with companies regarding joint work on an especially high-performance development platform for industrial cameras of the next generation. The project is open for the participation of other companies.

have the opportunity to contribute their individual requirements to a unique project with Fraunhofer. Together with the researchers, they can help design the »Smart HighProCAM module«, securing a considerable innovation advantage for their company. The participating companies receive access to an exclusive design platform and a flexible demonstration system for their new generation of cameras. These cameras will be able to demonstrate their significant advantages over classic image processing systems particularly in applications in which minimal wait times, high image repetition rates or large dynamic ranges are required.

Two Fraunhofer institutes are combining their know-how for the ultra-compact camera module of the Smart HighProCAM in order to develop a particularly high-performance solution. It is based on an innovative integration technology at the panel level, which was developed at Fraunhofer IZM. This approach makes it possible to reliably and inexpensively manufacture and evaluate highly integrated camera modules. The vision-system-on-chip is used for the image processing because it permits highly parallel data processing and integrated pattern extraction. Computationally intensive processing steps are carried out directly in the sensor, allowing the amount of data output to be reduced to a minimum. This makes it possible for the first time to achieve a high speed in the processing of complex algorithms while also ensuring high sensitivity and a high dynamic range. By adapting the software executed on the vision-system-on-chip, parameters such as precision, resolution and scanning rate can be individually configured in addition to the image processing algorithms. This previously unachieved combination of factors has opened up numerous new areas of application for the image sensor SoC and the Smart HighProCAM module.



Camera manufacturers who are searching for a development platform for specialized high-performance camera modules currently

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News

Fraunhofer IIS/EAS Technology Day on September 29th, 2015

Fraunhofer IIS/EAS invites representatives of manufacturing industries to the Technology Day »Innovation Potential for Production«. The focus lies on current developments in the areas of »Data analysis for quality assurance and maintenance“ and »Wirelessly networked automation«. Interested parties can send a non-binding registration email to pr@eas.iis.fraunhofer.de.

www.eas.iis.fraunhofer.de/technologyday15

Modelica basics course on October 6th, 2015, in Dresden

Our experts will be teaching the basics of the Modelica modeling

language. Applications in modeling, the use of typical simulators and analysis will also be discussed in addition to fundamental concepts. The one-day course in German is an ideal way to get started with Modelica.

www.eas.iis.fraunhofer.de/modelicakurs

SPS IPC Drives from November 24th to 26th, 2015

At Europe's leading trade fair for electrical automation, we will be presenting our offerings for self-learning condition monitoring as well as »dual radio analysis«, which we developed for industrial automation processes.

MODELISAX: USER GROUP WITH A MODEL FOR SUCCESS

After two years of the Modelica user group »Modelisax«, the verdict is entirely positive: almost 50 members now regularly use this platform to communicate about the modeling language used around the world. Here they can discuss current trends and, in particular, find tips to help them in their work. The topics under discussion range from engineering tasks to the simulation of chemical or biological processes. Unique in eastern Germany: the discussion platform is open and free for representatives of industry as well as for users from academic circles. Interested persons can register for meetings without obligation.

The freely available formal language Modelica is used around the world by an increasing number of users for depicting natural and technical processes in computer models. In April 2013, employees of the Dresden University of Technology, Leipzig University of Applied Sciences, ITI GmbH and Fraunhofer-Gesellschaft inaugurated the Modelisax user group. Its goal is to promote the modeling language in Saxony and beyond as well as to improve it and support users in their work.

Two years on, the group already has 48 members from multiple German states. They meet four times per year to discuss various topics relating to Modelica. »With us, both experts and newcomers can find the right people to talk to,« affirms Kristin Majetta from Fraunhofer IIS/EAS as spokesperson for Modelisax. Not only industry-related topics such as mechanical engineering

or automation are discussed but also academic applications. »If some issue cannot be clarified in one meeting, we are happy to



find someone who can help or organize tutorials,« says Majetta. »Interested persons who have never worked with Modelica before are also very welcome to profit from the knowledge of experienced users.«

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INTELLIGENT IP MIXED-SIGNAL DESIGN FLOW

VISION SENSOR

MODELISAX

Publisher:

Fraunhofer IIS, Division EAS
Zeunerstraße 38, 01069 Dresden, Germany
www.eas.iis.fraunhofer.de/en.html
Director: Dr. Peter Schneider

Editor:

Corporate Communications, pr@eas.iis.fraunhofer.de
Photos: Cover - MEV Verlag