



**Ideas change the world - if they get implemented**

*unknown*

**CEO's Note**

Dear Readers,

TOF camera development is a multi-disciplinary topic. As already elaborated a couple of times in this publication, it's not just «normal» imaging. «Normal» imaging is just one part of many other aspects which have to be mastered by doing TOF. E.g. illumination, receiver lens, calibration and compensation, dynamic range, noise, ambient light, high power and high speed electronics, algorithms, filtering, mechanical design, thermal management, eye safety, etc. If just one of these parts fail or have limited performance, the whole camera fails or does not perform as expected. Our TOF Developer Conferences are designed to close the gap for engi-

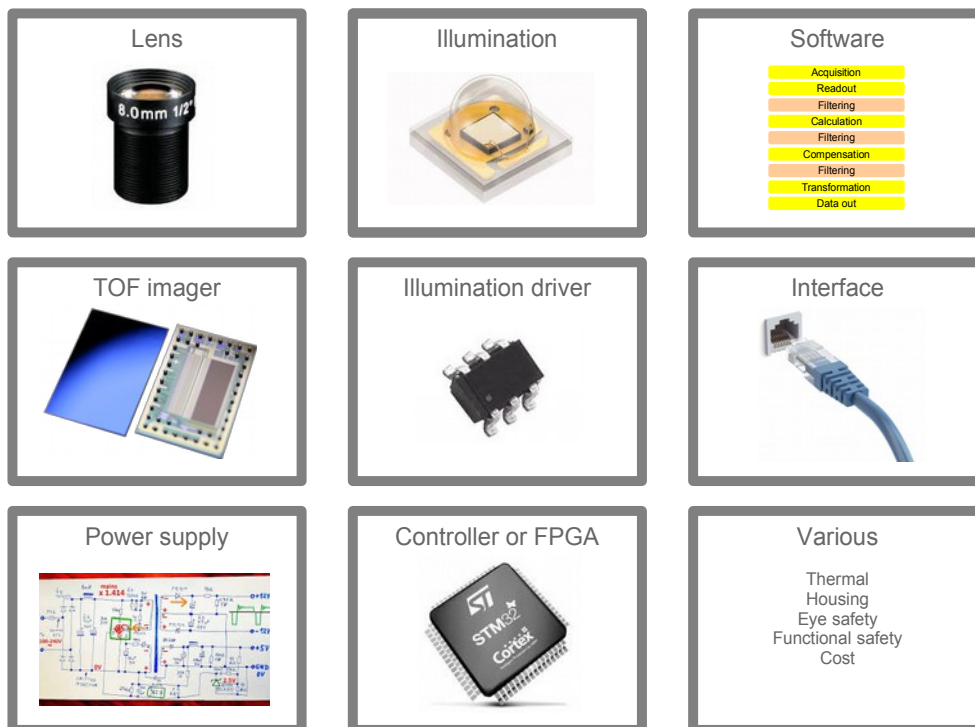
neers which have their major in a standard engineering faculty like electronics, microelectronics, applied physics, mechanics, information science, image processing, etc. TOF system engineers are really a missing species in the world. And TOF will be a dominating technology in the future. Like it was decades before for control technology, drive systems, or, classical solid state imaging. I would like to recommend all engineers with a background mentioned above to learn more about TOF and becoming specialists in TOF sensor design. It's a cool technology with a bright future. For the world and for the engineer.

*Beat De Coi*

**The importance of a TOF Ecosystem**

Since the implementation of TOF cameras is not just the application of a 3D TOF imager chip. A complete system consists of at least nine areas which need excellent engineering expertise. The picture below show nicely the various fields which have to be mastered. For example, the wrong imager lens can lead to huge image artifacts and distance errors. An unstable power supply can also be the source of distance errors. Thus, an effective

and high quality TOF ecosystem has to be built up. Since ESPROS is also designing 3D TOF cameras, excellent relationships to important suppliers has been established. We are happy to support your 3D TOF camera design by connecting you with great system component suppliers. Ask your sales representative for related support or email to [sales@espros.com](mailto:sales@espros.com).



*A complete TOF ecosystem consists of at least nine different engineering majors*

## 3<sup>rd</sup> and 4<sup>th</sup> TOF Developer Conference in China

It was the 3<sup>rd</sup> and 4<sup>th</sup> TOF Developer Conference held by ESPROS. After the conference in Zurich and San Francisco, ESPROS' TOF Developer Conference stopped by in China.

One Conference in two different locations. From April 2-4, the conference was in Shanghai and one week later in Shenzhen. With both conferences we had over 80 attendees from the Asia Pacific area.



*TOF Developer Conference in Shenzhen*

The conference showed, how important it is to have a deep understanding of the underlying optical physics, the behavioral model of the used imager, and an excellent understanding of the artifacts of a TOF camera.



*TOF Developer Conference in Shenzhen*



*TOF Developer Conference in Shanghai*



*ESPROS team members with 3D TOF pictures taken with an epc660 Evaluation Kit at the TOF Developer Conference in Shanghai*

With a mix of theoretical background, guidelines to working implementations based on examples, and practical work with our TOF cameras TOF>cam 660, TOF>cam 635, TOF>frame 611, and TOF>range 611, the course gave a very good overview of how to improve knowledge of to implement challenging TOF systems.

Future TOF Developer Conferences are in preparation. Stay tuned. We will announce the next dates and locations soon.

## Save the date: ESPROS Photonics at AutoSens Detroit

From May 14<sup>th</sup> till 16<sup>th</sup>, ESPROS exhibiting at AutoSens Detroit, MI USA.

ESPROS already exhibits at AutoSens in Brussels and this year for the first time, also in Detroit. AutoSens features high quality technical presentations, discussed in the context of the rapidly evolving ADAS.

The side exhibition is a great opportunity to meet customers and discuss the projects with them. We are looking forward to meeting you at our booth.



14-16 May, Michigan Science Center, Detroit USA

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