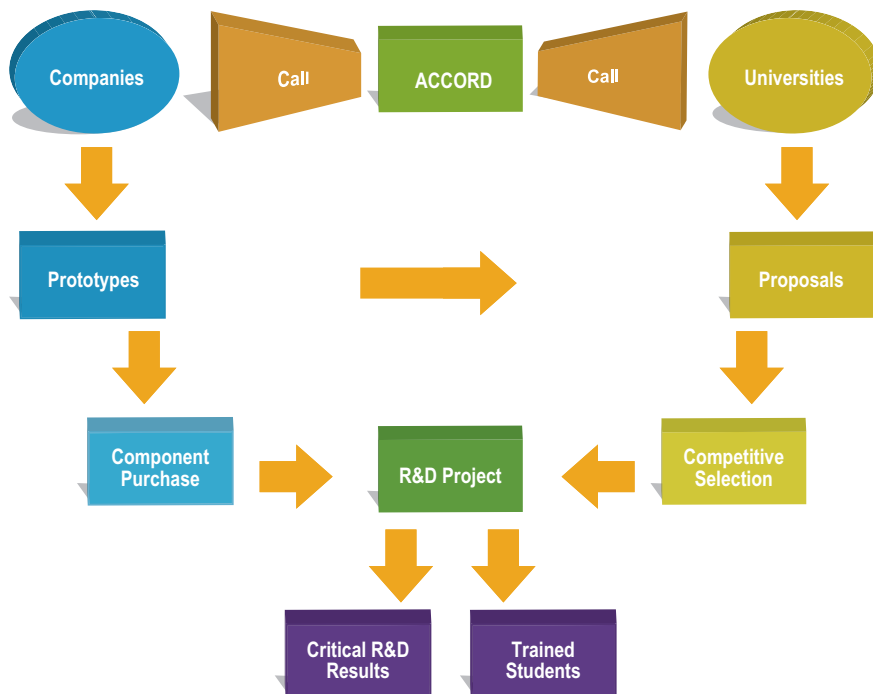




# Europe's **ACCORD** bridges gap between R&D and product launch

**THE ACCORD NETWORKING INITIATIVE** represents an action of direct outreach to the European photonics community. Two principal actors in this group are manufacturing industries and universities. There is clearly synergy to be gained by creating a programme that will bring these two groups together.

As illustrated in this schematic diagramme, ACCORD puts out a call to industry to compile an inventory of eligible prototype components and needs for R&D. Universities respond with proposals based on a prototype and need. The resulting R&D project speeds the time to market and trains students for industry.



BY CHRIS GRACIE, SCOTTISH OPTOELECTRONICS ASSOCIATION, UK; TOM PEARSALE, EPIC, FRANCE; PETER VAN DAELE, UNIVERSITY OF GHENT, BELGIUM; DOMENICO GIANNONE, MULTITEL, BELGIUM; DENIS TRÉGOAT, PERFOS, FRANCE; MIGUEL LLERA, HAUTE ECOLE ARC, SWITZERLAND; STÉPHANE DEMIGUEL, SAGEM, FRANCE; AND SERGIUSZ PATELA, WROCLAW UNIVERSITY OF TECHNOLOGY, POLAND.

Photonics, a field of constant innovation, produces revolutionary products and instigates capabilities based on investment in research and development (R&D). The European Commission is supporting such investments through a number of its programmes and, in particular, through the work of the Photonics unit of the Information and Communication Technologies (ICT) directorate.

However, this investment is largely limited to precompetitive research. Bringing advanced technology to the product stage requires an equally significant investment, but resources to fund the investment are scarce. Banks will lend money based on customer orders, but if the product is still in the prototype stage, there will be no current customers.

This critical gap of photonic product development – between research and development and product launch – has been dubbed the “Valley of Death” by US Rep. Vernon J. Ehlers (R-Mich.), who is also a scientist. Bridging the gap for European photonics companies is the aim of ACCORD (Advanced Components Cooperation for Optoelectronics Research and Development), an initiative funded within the Sixth Framework Programme (FP6) of the European Union.

#### Placing prototypes into users’ hands

ACCORD’s goal is to purchase precompetitive photonic devices from innovative European companies at marginal cost and to place them into the hands of European researchers and students at no net cost. It also aims to facilitate transfer of device evaluation results to potential end users, assisting companies to access new markets and applications.

As a result, students are trained in the next generation of emerging technologies and products tackled by European industries, orienting them toward advanced technology jobs and helping to develop a highly educated and productive European work force.

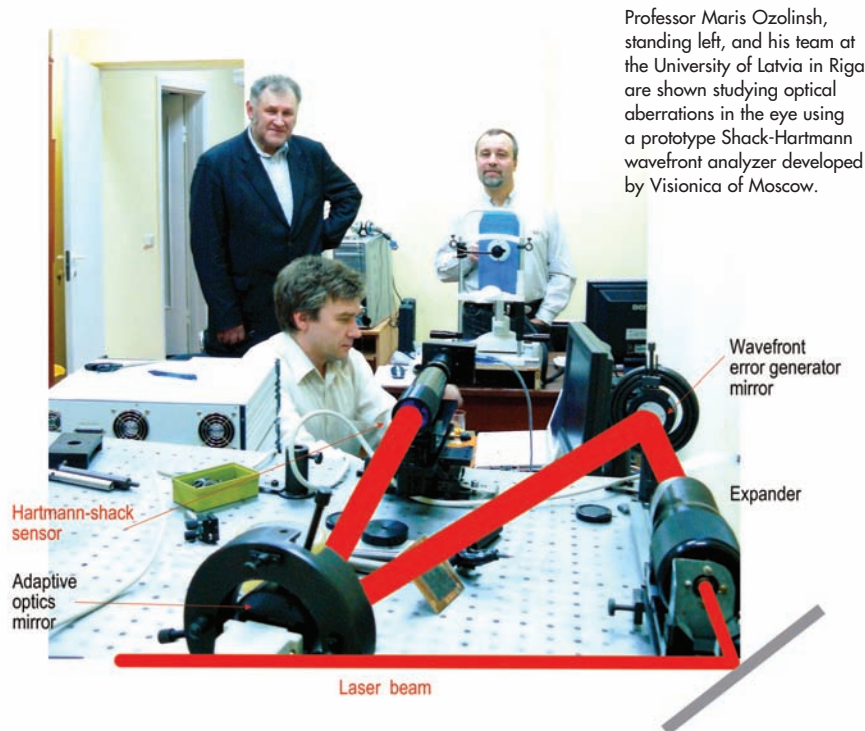
Each company participating in the programme – particularly small and medium enterprises (SMEs) – has a new and valuable resource not only for implementing research and development at a reduced cost but also for focusing on products and issues most relevant to continued growth and success.

ACCORD also enhances professional mobility, particularly for students and researchers originating in new-member countries of the European Union. These professionals can apply for an R&D agreement with a company located anywhere in Europe, helping to integrate additional talented resources into the European economy. In a wider sense, it is an additional resource for recruiting skilled photonics personnel. Again, this will be particularly helpful for SMEs that need highly skilled engineers and scientists but that cannot afford maintaining a large human resources network.

#### International background

ACCORD takes its inspiration from similar optoelectronic components and exchange programmes demonstrated in Japan and the US. The European adaptation was made possible through cooperation with the International Optoelectronic Association (IOA), an organization of proactive photonics industry associations composed of the following:

Australian Industry Group; EPIC (Euro-



pean Packaging Institutes Consortium – Pan-European); HKOEA (Hong Kong Optoelectronics Association); KAPID (Korea Association for Photonics Industry Development); OIDA (Optoelectronics Industry Development Association – US); OITDA (Optoelectronic Industry & Technology Development Association – Japan); OpTech-Net (Optical and Optoelectronic Technologies and Systems – Germany); PIDA (Photonics Industry and Technology Development Association – Taiwan); SOA (Scottish Optoelectronics Association – UK); and Swiss Laser Net.

The IOA is a “community of practice,” as opposed to a “community of interest,” such as Photonics-21 in Europe. Its members meet regularly to discuss and exchange international production and marketing developments, and to plan projects.

### How it works

The ACCORD project cycle begins with a broad call to manufacturers of components and systems to submit not only a list of available prototype products but also a list of requests for R&D activities that could be performed. During the project to date, manufacturers have proposed products including innovative semiconductor substrates, nonlinear optical crystals, highly integrated photonic circuits, adaptive optics systems, optical wavefront shaping systems and fibre laser systems.

The second step is a call for proposals from universities for short-term R&D

projects using these components and responding to the needs of manufacturers. The proposals are judged by a panel of independent experts using the following criteria: scientific value, potential for new applications, possible involvement of end users, training opportunities, cost for value, and resources and expertise.

The ACCORD project team works with the highest-ranking proposals to match universities with companies. An introduction and negotiation phase enables an understanding of what is desired by both parties. An important factor is mutual agreement on how to treat intellectual property during the project.

ACCORD then purchases the prototype and arranges for shipment to the university. The selection process – from the first call for prototypes to the start of the research project – takes less than six months. One participant, professor Maris Ozolinsh of the University of Latvia in Riga, noted, “The ACCORD programme allowed us to begin research in a new direction with much higher start speed.”

After the work has begun, the progress is periodically tracked for milestones and objectives. If objectives are not being met, ACCORD can recover the prototype, which is on loan during the project phase. During the project, the university and the company are expected to participate in joint public presentations of selected results and, following the successful completion of a project, ACCORD may transfer

ownership of the prototype to the university with the consent of the manufacturer.

### Results and reactions

Participating companies value the two-way interaction with users, especially when it comes to exploring component performance in a new application area. This “beta stage” evaluation can provide manufacturers with advance warning about a product that must be improved or can give the “green light” to exploit a profitable new market sector.

As an example, Paris-based Fastlite is designing and manufacturing some of the most advanced ultrafast pulse-shaping equipment available for femtosecond lasers. Pascal Tournois, the company’s marketing manager, likes the way that ACCORD fills a critical gap between product development and customer acceptance. “Scientific instrumentation is a domain in which the scientist customer is naturally a contributor to progress and innovation. It is beneficial for industry and customers to engage in collaboration. We have found the ACCORD program to be a very welcome efficient tool to stimulate collaborations on precise specific topics.”

Philippe Méthivier, CEO of Eolite Systems of Pessac, France, sees similar advantages. “For a young start-up ... where we are developing new fibre laser designs, it’s very important to get fast and informed feedback from users about applications potential for this new technology. The ACCORD programme allowed us to implement such a collaboration with a leading European laboratory in a way that is extremely flexible and reactive.”

### The way forward

The ACCORD project has proved to be a force in the reorientation of academic training toward technologies that have near-term commercial potential. These directions are determined by the participating photonics companies.

Participating researchers are studying and training on the next generation of photonic components rather than on the previous generation of devices, leading to reorientation of university research programmes toward components and technologies that have a realistic commercial future in Europe. This means that university researchers are working on new component technology before it is available elsewhere in the world. It also opens up a new route for placing highly educated students in high-tech jobs in Europe.

However, there are two important things

to note about ACCORD: It does *not* distort the market for photonic devices; prototypes exist because companies have already decided that this particular technology will meet a market opportunity. It works with these prototypes, but there is no encouragement for a company to develop a custom product for the programme. Also, it does *not* represent a commercial subsidy; i.e., the components are not commercially available. Companies are reimbursed for their marginal cost of producing a few additional components for research purposes.

ACCORD's FP6 project is a success, but it is only an experiment. Feedback from participants provides critical information on how the programme can be improved. Ozolinsh suggests that "there are still hard problems with financing, at least

### MEET ACCORD AT MUNICH

Learn more about ACCORD at the Laser-World of Photonics Convention at the Munich Fair on 16 June 2009. Partners in the initiative will explain how the programme works and discuss future opportunities. Project participants, from both industry and academe, will present real results and outcomes, with insights on further enhancements to the programme that could make it even more attractive and effective. The event, scheduled from 12 to 12:30, will be in the Photonics Forum area of Exhibition Hall C1.

in our country. Some support to organize meetings between both partners for discussions and exchange of results would be an improvement."

The costs of the programme currently are funded by a grant from the European Commission. The project is generating evidence of the need for and the value of a long-term exchange programme. The challenge is to find a self-sustaining model for developing this platform among manufacturers, universities and end users.

The stakeholders' group could be very broad and could include regional development authorities; national representatives for research, education or industry; and beneficiaries of the exchange-and-evaluation programme, such as universities, manufacturers and end users.

[pearsall@epic-assoc.com](mailto:pearsall@epic-assoc.com).