

EUROPE'S Photonics Investment

The EC, Photonics21, and other entities are backing R&D for small photonics companies in Europe

By **Tim Hayes**

As Europe emerges from recession and manufacturing capacity shows a timid increase, the continent's small- and medium-sized photonics companies are dusting themselves off and looking at what happens next. As they do so, the network of incentives available to assist them will have a big influence on the pace of recovery.

Eyes turn in particular to the European Commission and its programs of targeted financial assistance and research funding, which effectively set the course for Europe's photonics sector.

"Our daily business is selecting and launching research programs," says Ronan Burgess of the EC's Photonics Unit, speaking at SPIE Photonics Europe in April in Brussels. "There are 27 new projects on the horizon with €100 million of funding being contributed by the European Commission. The key is matching technology focus with application drive."

Funding for SMEs

The 5000 small- and medium-sized enterprises (SMEs) in the European photonics sector are the key to economic growth, and the Commission aims to strengthen their capacity for innovation," says Jonathan Todd, spokesman for the EC Digital Agenda.

Backing up this intention is the €1336 million allocated to support SMEs' research efforts during the 7th Research Framework Programme (FP7), the EC's seven-year and €50-billion umbrella for European innovation which runs until 2013.

The nature of FP7 fundings shows the Commission's wish to influence the character of SME research across Europe. Support goes not to individual companies, but to collaborative groups of institutions formed in response to competitive calls for proposals made by the Commission. A group unable to demonstrate elements of cross-border cooperation, efficient project management, and real impact on the topic at hand will probably go away disappointed.

Funding schemes encourage collaboration and can be found wherever photonics plays a key enabling role.

Hence there are initiatives in place encouraging SMEs to cooperate on research and tackle socio-economic issues. Also under way is the EuroStars program (www.eurostars-eureka.eu/), which specifically backs market-oriented R&D.

And SMEs are key ingredients in the Information and Communication Technologies Work Programme which provides major opportunities for photonics SMEs to finance R&D, build strategic partnerships, and operate in wider markets.

SMEs can receive advance warning of calls related to photonics through the EC's newsletter, available by emailing info-photonics@ec.europa.eu. See cordis.europa.eu/fp7/dc/index.cfm for a list of open calls.

Continued on page 10 ►

Why SMEs are important

The typical European firm is a micro firm.

Photonics21 estimates 5000 photonics companies operate in Europe and most of them are SMEs.

Photonics companies employ 290,000 people in Europe, with sub-contractors employing many more.

Excluding the financial sector, there are more than 20 million private enterprises across the EU, according to the EC. Virtually all (more than 99%) were SMEs, and the vast majority are firms with less than 10 employees.

Across the 27 countries of the EU, almost 88 million people are employed by SMEs.

The accumulated added-value of European SMEs (the closest available statistic to their productivity) was €3,453,000 million in 2007.



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◀ *Continued from page 9*

"More than 20% of project participants are high technology SMEs, and we are exploring ways to further increase their participation," says Todd. "In the future we will finance 'access actions,' giving SMEs access to technologies, design expertise, and manufacturing capabilities which they would not normally have. We have also introduced specific training actions to help SMEs enhance their development skills and stay at the forefront of innovation."

Funding opportunities can also exist outside the Photonics Unit, in areas such as the Nanosciences Nanotechnologies Materials and New Production Technologies (NMP) program.

The moral, as Todd notes, is that "Photonics is a pervasive technology, so funding may be found wherever it plays a key enabling role."

Photonics21 role

Deciding which topics should be tackled by these nested incentives is an exercise in consensus building. A major voice in that discussion belongs to Photonics21 (photonics21.org), founded in 2005 to unite the European photonics community and align public

financing with the key topics identified by the industry.

"Photonics21 has over 1400 member organizations from all levels of the photonics sector," says Mike Wale of Oclaro, who serves as one of Photonics21's seven Working Group chairs. "I encourage all photonics SMEs to join, get involved and speak up."

A concrete result of that consensus is Photonics21's Strategic Research Agenda in Photonics, now on its second iteration, which sets out a framework for public policy and offers a vision for the role of photonics in society.

Or as Photonics21 Vice President Giorgio Anania noted at SPIE Photonics Europe, "The real aim for the Strategic Agenda is sellable products on the market, turning science into jobs and company profits."

The Agenda is a key influence on the EC when the Commission sits down to determine the research areas worthy of public funding.

"The EC has been very responsive to the priorities we have set," says Wale. "If there is any frustration, it is that there is inevitably far more good work to be done than the budget can support. The EC's calls for photonics submissions have been seriously oversubscribed, resulting in the rejection of some excellent proposals despite their high marks in the evaluation procedure."

Nothing less than a doubling of EC funding in photonics is called for in the Strategic Research Agenda, along with a wish for EU states to increase investment in their own national funding programs. Such issues are completely recognized by the EC's Photonics Unit, according to Wale.

Other funding models

Not all schemes operate on such a large scale. The more modest ACCORD program (www.ist-accord.org) encouraged smaller SMEs to hand their prototype components over to some of the brightest researchers in Europe.

"ACCORD, or Advanced Components Cooperation for Optoelectronics Research and Development, used EC money to buy precompetitive components from suppliers and gave them to R&D groups at universities, bridging the gap between SMEs and academics," explains project coordinator Peter Van Daele, an SPIE member, Ghent University (Belgium) professor, and staff member of IMEC, Europe's largest independent research center in nanoelectronics and nanotechnology.

Letting Europe's best students loose on these devices was a huge success, according to Van Daele. "Nearly all the projects started under ACCORD are going to continue, as formal collaborations or informal cooperation."

ACCORD's initial three-year lifespan has come to an end, but the principle lives on as NEXPRESSO (Network for EXchange and PRototype Evaluation of photonicS componentS and Optical systems). Announced at SPIE Photonics Europe 2010, NEXPRESSO will promote knowledge transfer in the same manner, while addressing some issues which arose during ACCORD.

"We need to see whether this mechanism can run without EC support," says Van Daele. "The Commission is enthusiastic but cannot fund something like this indefinitely."

Alternative funding models include bringing national agencies into the picture. Opticsvalley, the network of suppliers and researchers centered on Paris, has come on board as one of two new partners in NEXPRESSO, a step towards establishing this kind of regional funding.



Robotics, laser, and other photonics projects in Switzerland are receiving funding through the launch of eight new National Centres of Competence for Research. The centres have been allocated CHF 30 million per year through 2013. See spie.org/2010-swiss

The other new partner is OIDA, which is the administrator of the Photonics Technology Access Program (PTAP), a successful U.S. project funded by the National Science Foundation and the Defense Advanced Research Projects Agency. Programs like PTAP can make a real difference to SMEs lacking large-scale R&D resources.

The real aim is to turn science into jobs and company profits.

Photonics future

By common consent, the array of incentives open to photonics SMEs can be daunting to navigate.

“Inevitably we must balance different concerns,” says the EC’s Todd. “Many SMEs would prefer that access to funds involved less administration. But there is an obligation on public bodies to ensure that money is being spent appropriately.”

Todd notes that a considerable reduction of the administrative burden was achieved in FP7, with more to come as the EC moves towards the 8th Framework Programme due to start in 2014.

There is no question that photonics will play a preeminent role as FP8 takes shape, but the trend for public funding to stay focused on areas related directly to the quality of life of European citizens will grow. Naturally these areas are also where the biggest markets for photonics SMEs lie.

“The available resources are never as great as the photonics community might like them to be, but the reception from the EC and the existence of the Photonics Unit is evidence that SMEs are heard,” says Photonics21’s Wale. “There is a lot to play for.” ■



–Tim Hayes is a freelance writer based in the UK. He was previously industry editor of *optics.org* and *Optics & Laser Europe* magazine.

Thinking local

European SMEs should not ignore the support available in their own back yards.

National agencies, regional initiatives and transnational programs are often overshadowed by the scale of FP7, but can provide substantial incentives.

The EC agrees that regional clusters and national technology platforms play a catalytic role. It has held workshops bringing together representatives of more than 30 regional photonics clusters, to exchange experiences and foster cooperation. Expect such activities to increase in the future.

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