Project No.:	687961
Project acronym:	RespiceSME
Project title:	Regional, National and European Support for Photonics Innovation Clusters enhancing SMEs Innovative Potential
Instrument:	Coordination and Support Action
Programme:	ICT-27-2015: Photonics KET
Start date of project:	01.01.2016
Duration:	24 Months

Deliverable 3.4

Report on the workshop with students and SMEs on best practises and case studies on the constellation and content of courses and programmes

Deliverable Name	Report on the workshop with students and SMEs on best practises and case studies on the constellation and content of courses and programmes (on PhD and Master level)
Deliverable Number	D 3.4
Work Package	WP 3
Associated Task	T 3.2
Covered Period	2016-04-01 to 2017-10-31
Due Date	M 10 (October 2016)
Completion Date	M 22 (October 2017)
Submission Date	M 23 (November 2017)
Deliverable Lead Partner	Partner EaPS
Deliverable Author	Petra Bindig (EaPS)

Dissemination Level		
PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Table of contents

1. Introduction

In the framework of the task 3.2 „Aligning education with innovation“, partner PhotonicSweden is in charge of organising a workshop to trigger cooperation/collaboration between the different players in the fields of education, innovation and entrepreneurship. The focus is on the **reinforcement of innovative capacity of photonics through education**. To this end, representatives of universities, institutes, SMEs, students were invited to attend.

This workshop showed examples on how to exchange knowledge in various forms of university/institute-industry interactions and analyse challenges for improving the curricula and therewith, the education of photonics (and related subjects) students. Furthermore, it was discussed and shown what tools and measures can be used for establishing/improving the interaction between university/institute/industry in order to improve the curricula (practical part) of photonics courses.

The goal was to share best practices in order to better scope the requirements for improving and updating the curricula of physics / photonics and entrepreneurship courses according to the needs originating outside of academia.

2. Workshop concept

As already mentioned, the workshop aimed at gathering best practices on the question *what should be done by the different players* (universities/institutes, organisations, SMEs, Clusters, etc.) *to increase the quality of the workforce in the fields of photonics and optics*. In order to stimulate a lively discussion, representatives of different organisations with alternative perspectives were invited to speak about their ideas and their concepts (universities, RTOs, SMEs, large companies, clusters, other initiatives). To enhance the cooperation between the participants and gather students with SMEs' representatives together, a matchmaking event with a job fair was organised at the end of the workshop. The consortium decided to organise the workshop during the international flagship event, Laser World of Photonics in Munich in June 2017 in order to strongly attract the photonics community. The matchmaking event took place at the Photonics21 booth to trigger cooperation with the EU project Europho21 and the PPP Photonics21, to create a networking atmosphere and to have more space to display the job offers.

In charge of the overall organisation, agenda and the coordination, PhotonicSweden handled with the congress administrators to include the workshop in the official programme of the congress and the fair. All photonics companies involved in the congress programme were contacted and asked for cooperation. This approach yielded positive responses from all players. Furthermore, PhotonicSweden was responsible for coordinating the speakers and invitations, the cooperation with the Photonics21 secretariat and the collection of job offers with the support of the consortium partners.

In the framework of this workshop, RespiceSME collaborated with other CSA projects (Europho21 (Photonics21 secretariat), Pics4all, Phablabs4.0) to broaden the range of participants and speakers.

3. Workshop programme

After a general introduction to the RespiceSME's project, the list of European offers of photonics trainings and courses was presented by Samantha Michaux, Steinbeis 2i GmbH and the evaluation results of the survey on the expectations of the industry towards the skills and knowledge of their (future) employees were presented by Petra Bindig, PhotonicsSweden. This presentation received good feedback from the other speakers who referred ad hoc to the survey (see workshop results) in their own presentations.

There were five speakers from universities/institutes and clusters who talked about **models on how to integrate entrepreneurs into the university environment to trigger innovation**. Their presentations also provided insight on how to keep successful students in the region after they graduate and on how to foster innovation and entrepreneurship at the university.

Three presentations came from industry representatives who talked about **what they would like to see in university curricula**. One SME representative explained what they have to teach to their clients/employees in order to enable them to use optical equipment properly. A young entrepreneur shared about his journey, from incorporating a start-up to growing to a solid SME, highlighting what they would have liked to have been taught before embarking on this adventure.

Two presentations came from other EU projects (Pics4all and Phablabs4.0) which showed how Fablabs can contribute to increase the awareness of photonics and the knowledge about photonics' manifold application fields.

All presentations can be downloaded here: http://www.respice-sme.eu/news-events/news/news/best-practices-of-academic-innovation-support-programmes-presented-at-the-respicesme-workshop-on-al/


Session at the workshop"Aligning education with innovation"

After the presentations, a matchmaking event for all participants, students and company representatives was organised at the Photonics21 booth. Refreshments and snacks provided for a casual atmosphere, in which the networking took place.

Matchmaking event at the Photonics21 booth at the Laser World of Photonics in Munich

28 job offers were displayed on pin-boards at the booth which attracted students not only at the matchmaking event, but all day long.

4. Workshop results

The workshop provided a good exchange of best practices regarding how universities/institutes, clusters and the industry work together in order to innovate the

a. curricula of universities,
b. potential of start-ups, SMEs and even big companies,
c. instruments and means of working together to improve knowledge and skills of students/employees.

Participant's statement:

"*I got so many new ideas and inputs what can be done and what we can do at Mycronic, it was surely a very good investment to join this workshop*." Tord Karlin, Director Technology Development, Mycronic AB, Sweden

The RespiceSME's tools (such as the lists and brochures of courses for the education field, the evaluation results of the survey on the expectations of the industry towards the skills and knowledge of their (future) employees, the initiative to display job offers) were appreciated by the participants. This was clearly shown from the references which were made during the workshop. As well as the positive interest towards the job offers displayed at the Photonics21 booth.

Most of the people attending the workshop (**Total: 67 participants**) met for the first time and some agreed on a collaboration/further meetings regarding the different subjects discussed and presented at the workshop.

The RespiceSME consortium was asked when the next workshop of this kind would take place, which will allow assessing, if and how the alignment of education with innovation has developed. Unfortunately, a second session is not planned in the project work plan. However, this type of format will be further exploited in other projects and as part of the RespiceSME's toolbox.

Industry expectations:

In preparation of the workshop, a **survey on the expectations of the industry towards the skills and knowledge of their (future) employees** was conducted. The results were presented at the workshop and were well received by the attendees, which referred to the survey and brought the results into discussion during the workshop.

19 SMEs answered the survey containing the following questions:

1. Which type of education do the employees in your company have / is needed in your company?

1 is low importance 5 is high importance → give a rating

- Engineers (Degree in engineering sciences, Degree in electrical engineering, Degree in computer engineering)
- technical
- research (Degree in physics)
- Skilled operator
- …

2. Which kind of knowledge do you think is important?

1 is low importance 5 is high importance → give a rating

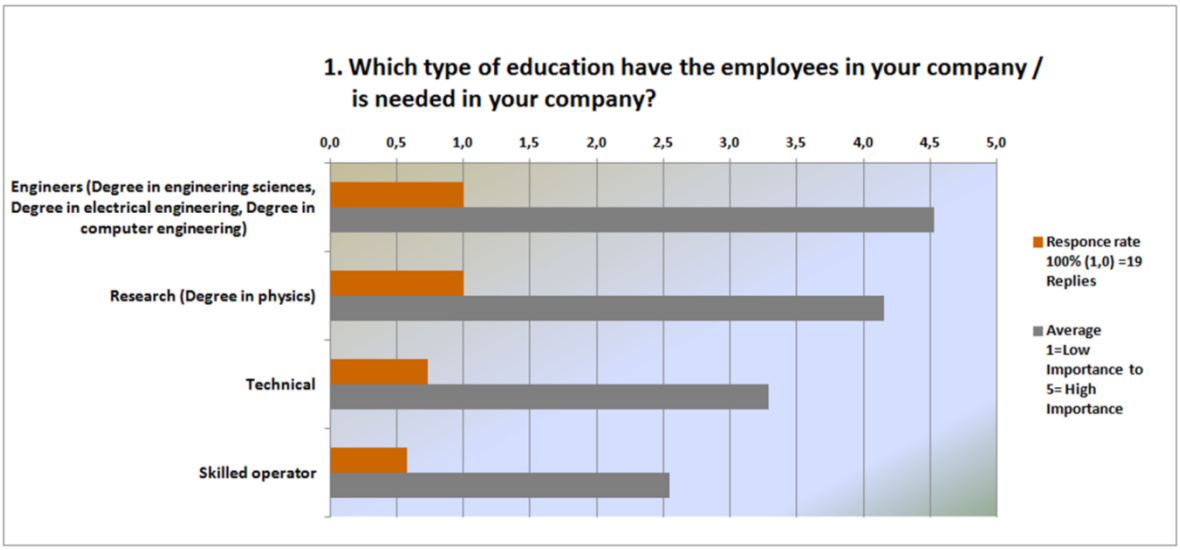
- Fundamentals in Photonics/Atomic Physics
- Optical metrology
- Product development
- Material sciences
- Electro optics
- Lens design
- Non-linear optics
- Thin-film technology
- Biomedical optics
- Legislative/regulatory knowledge (safety/labour/environmental/contracting)
- Fundamentals in higher mathematics
- Optical waveguides and fibre optics
- Spectroscopy
- Diffractive and Fourier optics
- Laser technology
- Ultra-fast photonics (laser and metrology)

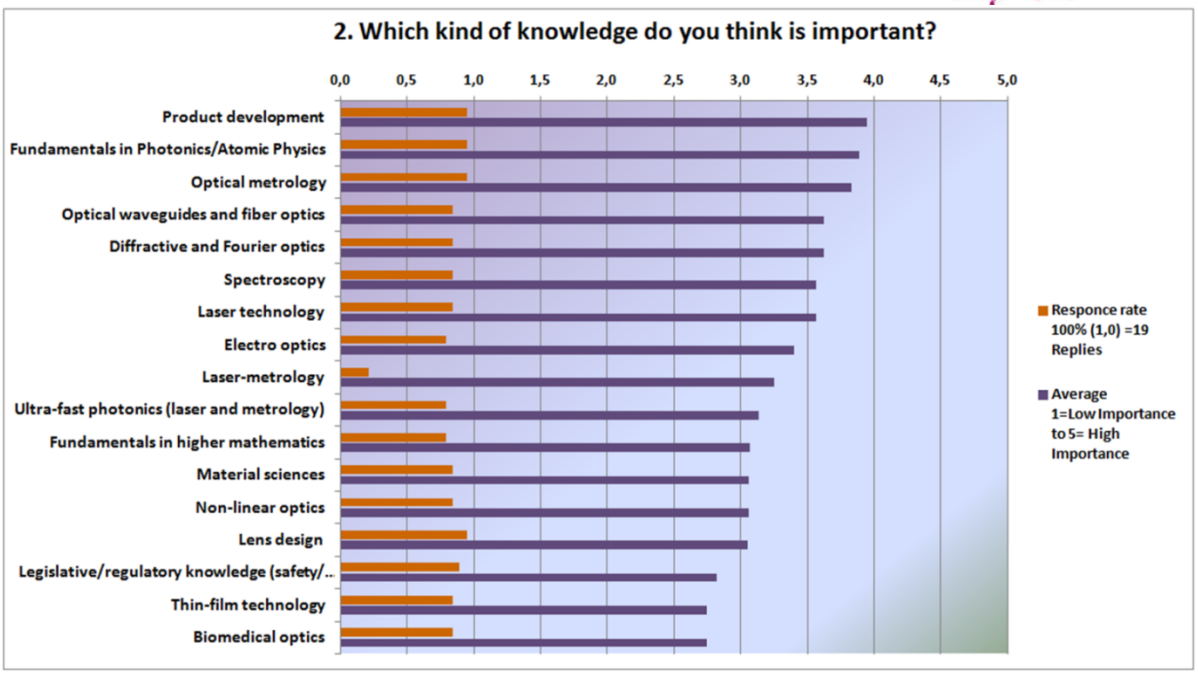
3. What skills do you think are important?

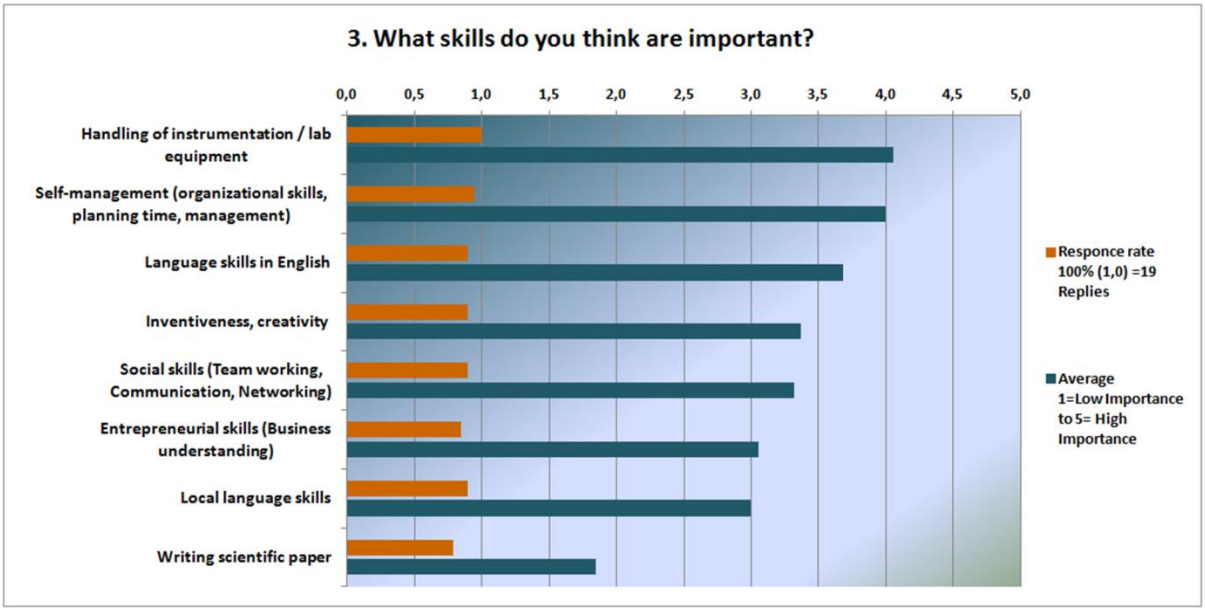
1 is low importance 5 is high importance → give a rating

- Handling of instrumentation / lab equipment
- Language skills in English
- Local language skills
- Self-management (organizational skills, planning time, management)
- Social skills (team working, communication, networking)
- Writing scientific papers
- Entrepreneurial skills (Business understanding)
- Inventiveness, creativity

Results:



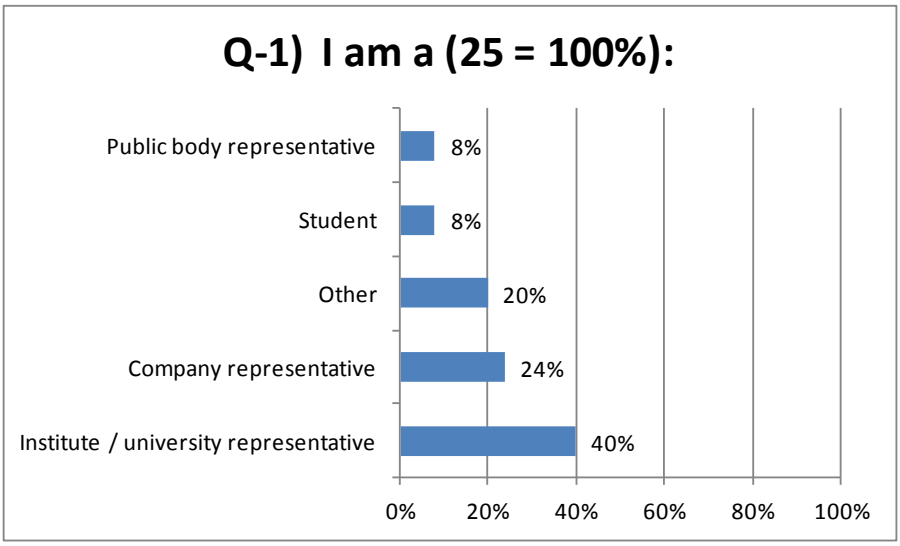

2. Which kind of knowledge do you think is important?
0,0
0,5
1,0
1,5
2,0
2,5
3,0
3,5
4,0
4,5
5,0
Product development
Fundamentals in Photonics/Atomic Physics
Optical metrology
Optical waveguides and fiber optics
Diffractive and Fourier optics
Spectroscopy
Laser technology
Electro optics
Laser-metrology
Ultra-fast photonics (laser and metrology)
Fundamentals in higher mathematics
Material sciences
Non-linear optics
Lens design
Legislative/regulatory knowledge (safety/..
Thin-film technology
Biomedical optics
Responce rate 100% (1,0) =19 Replies
Average 1=Low Importance to 5= High Importance

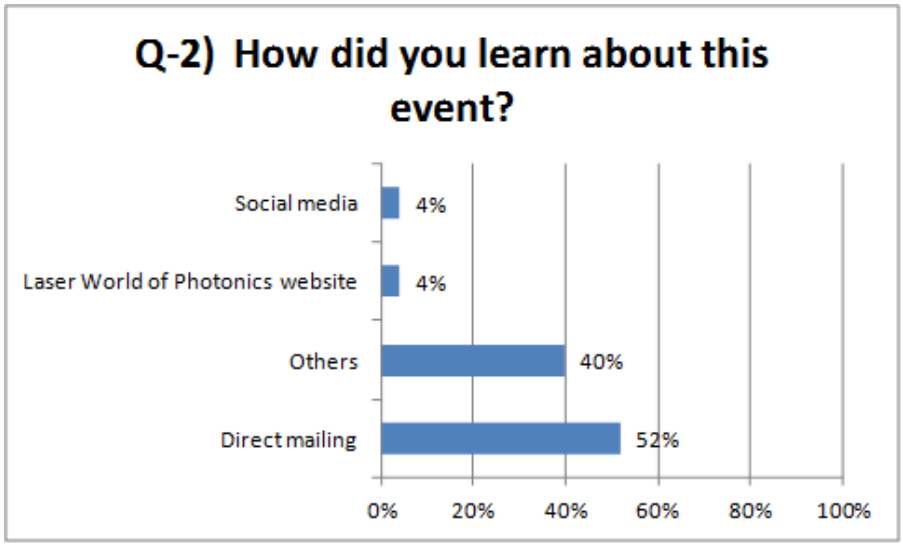

3. What skills do you think are important?
0,0
0,5
1,0
1,5
2,0
2,5
3,0
3,5
4,0
4,5
5,0
Handling of instrumentation / lab equipment
Self-management (organizational skills, planning time, management)
Language skills in English
Inventiveness, creativity
Social skills (Team working, Communication, Networking)
Entrepreneurial skills (Business understanding)
Local language skills
Writing scientific paper
Responce rate 100% (1,0) =19 Replies
Average 1=Low Importance to 5= High Importance

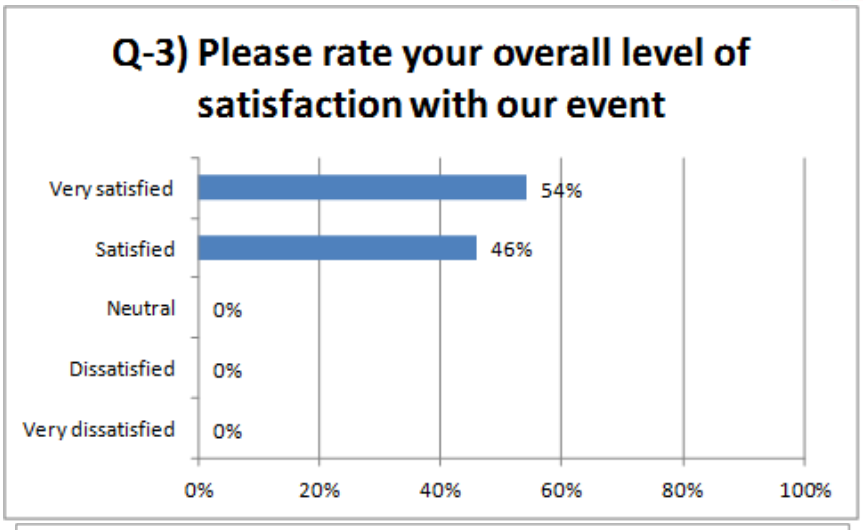
Feedback of the participants:

At the end of the workshop the participants were asked to fill in a feedback form in order to evaluate the workshop. **25 of 67 feedback forms** were filled in.

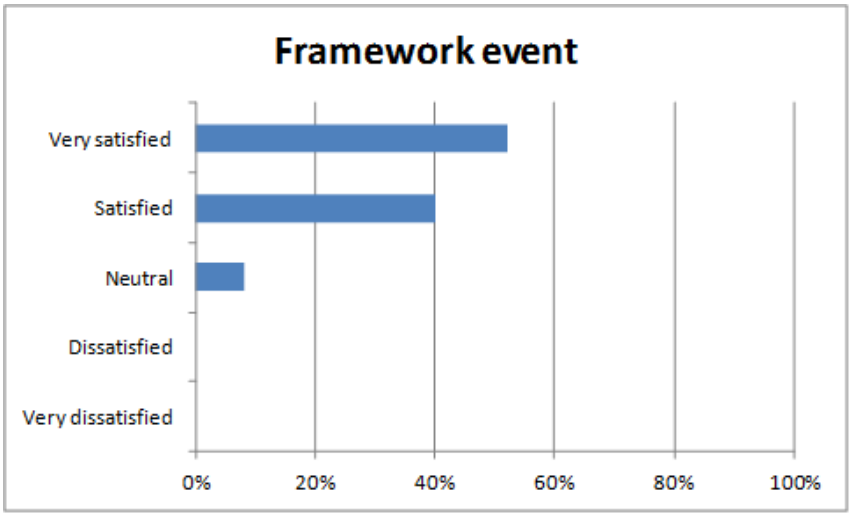
The results were the following:

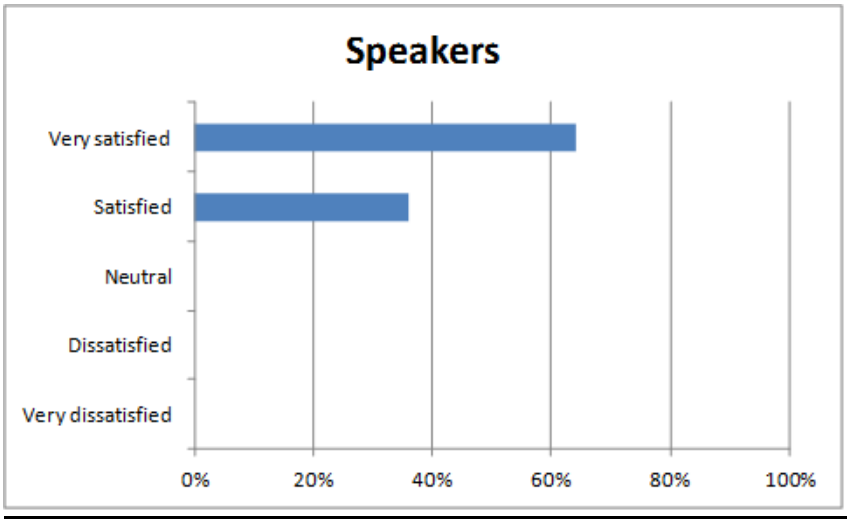


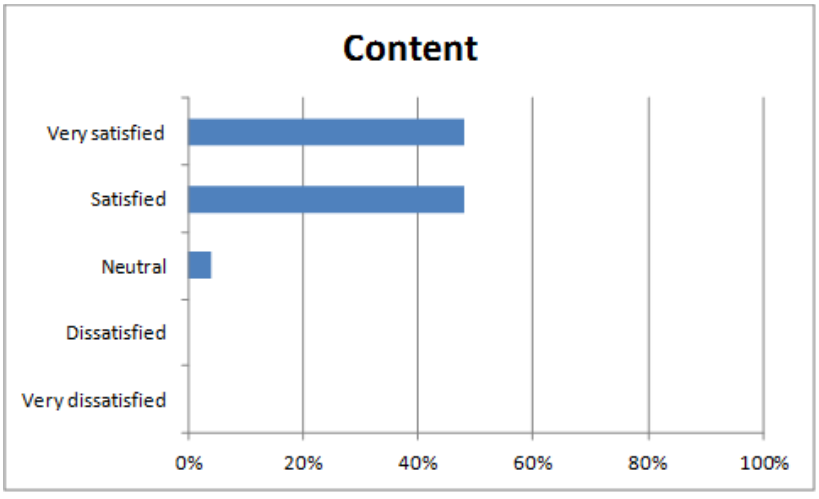


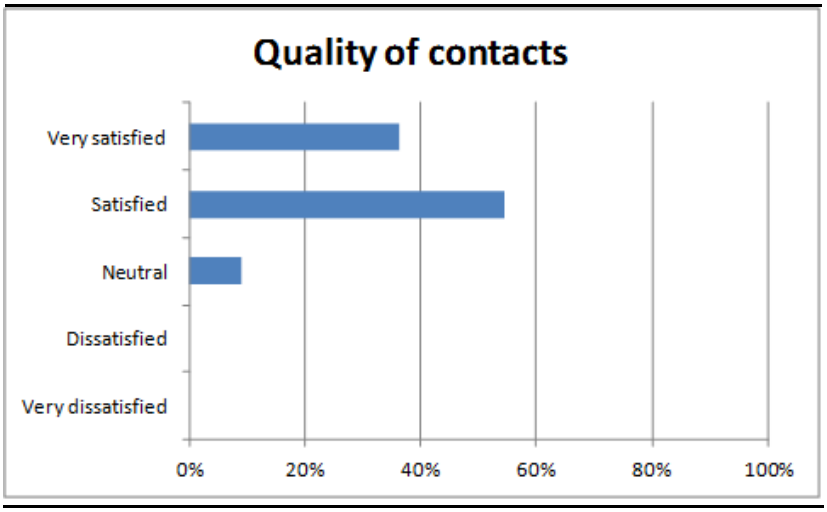


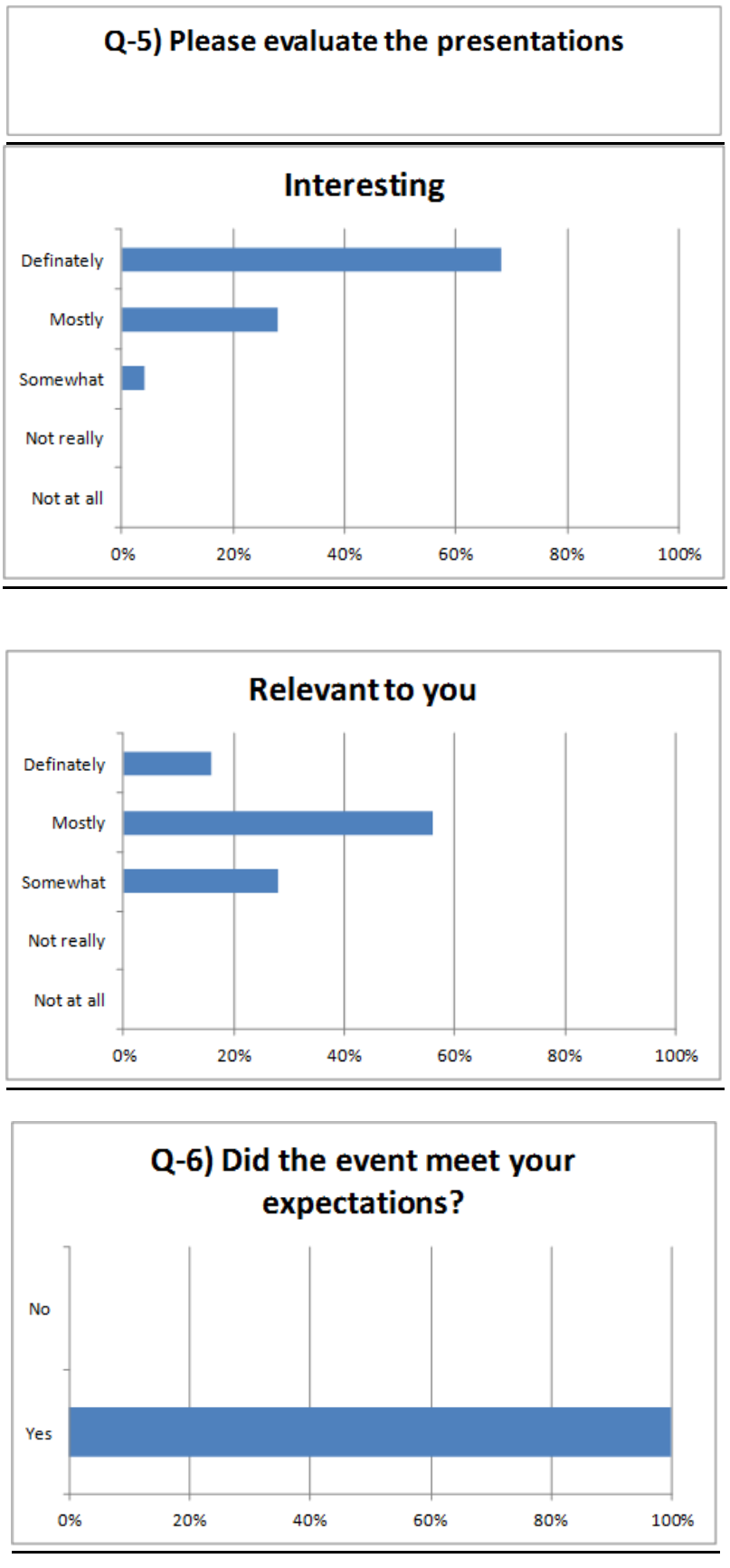
Q-4) Please rate your overall level of satisfaction with the following aspects of our event:

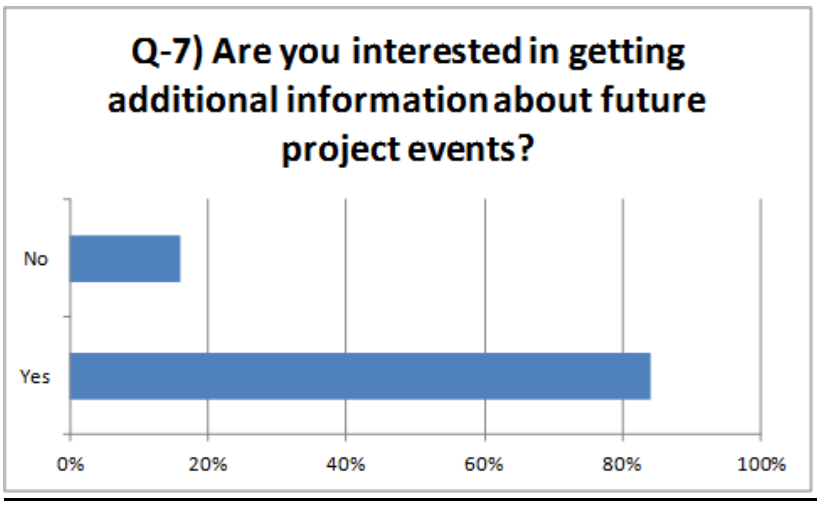



Speakers
Very satisfied
Satisfied
Neutral
Dissatisfied
Very dissatisfied
0%
20%
40%
60%
80%
100%


Content
Very satisfied
Satisfied
Neutral
Dissatisfied
Very dissatisfied
0%
20%
40%
60%
80%
100%


Quality of contacts
Very satisfied
Satisfied
Neutral
Dissatisfied
Very dissatisfied
0%
20%
40%
60%
80%
100%


Q-5) Please evaluate the presentations
Interesting
Definately
Mostly
Somewhat
Not really
Not at all
0%
20%
40%
60%
80%
100%
Relevant to you
Definately
Mostly
Somewhat
Not really
Not at all
0%
20%
40%
60%
80%
100%
Q-6) Did the event meet your expectations?
No
Yes
0%
20%
40%
60%
80%
100%



5. RespiceSME's jobs fair

PhotonicSweden followed up 6 weeks after the workshop by sending a mail with a questionnaire to the companies who sent job offers for the matchmaking session following the workshop.

11 of the companies who sent the 28 job offers answered the following questions in order to measure the impact of this action:

1. We were contacted / got an application with reference to the fair, Laser World of Photonics /Photonics21/RespiceSME

☐ yes ☐ no

We had an interview/personal contacts with interested students / potential employees as a result of the event at the fair, Laser World of Photonics /Photonics21/RespiceSME

☐ yes ☐ no

We could fill the position as a result of the event at the fair, Laser World of Photonics /Photonics21/RespiceSME

☐ yes ☐ no (not yet)

Results:

- **1 company** was directly contacted by a student with reference to the RespiceSME event;
- **11 companies** had not yet an interview/personal contacts with interested students as a result of the event at the fair, and could fill the position as a result of the event at the fair, Laser World of Photonics /Photonics21/RespiceSME"

- **The interest on site** was big and created a lot of traffic at the Photonics21 booth during the whole day.

6. Lessons learned

The participants of the workshop asked the organisers when the next edition of such a workshop should take place. That shows a real need and interest of bringing together different players being active in the field of education and innovation. This workshop helped to establish new collaborations of people who otherwise would not have met.

The presentations during the workshop showed that some initiatives of spreading the knowledge of innovation at university level as well as in companies are already ongoing. The workshop showed also that those actions could be further expanded and the role of clusters can be determinant in a successful process of technology transfer.

A further conclusion – coming from the evaluation of the survey on the expectations of the industry towards the skills and knowledge of their (future) employees and the reactions of the workshop participants - was that the technical knowledge of the students is strong, but their spirit of entrepreneurship still needs to be enhanced.

APPENDIX

a. Workshop programme
b. Participants list