Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Periodic activity report
Publishable Executive Summary

Period covered: from month 24 to month 37 Date of preparation: 30.04.2007

Start date of project: 01.04.2005 Duration: 37 month

Project coordinator name: Markus Wilkens
Project coordinator organisation name: VDI Technologiezentrum GmbH

Publishable Executive Summary

Summary description of project objectives

The general objectives are as described in the DoW:

- Increase the efficiency and impact of European IST-Research in the field of Optics and Photonics (OP) by stimulating coordination, interaction and cooperation at European level
- Make IST-relevant structure for OP such as funding programmes, schemes and activities at the regional, national and European level more visible and thus encourage interaction and well-planned networking with the aim to multiply the benefits of public research funding
- Support the development of a European "long-term shared vision" for Optics and Photonics in the area of IST
- Pave the way for Optics and Photonics in the European Research Area
- Make relevant stakeholders in IST aware of a common OP- identity in order to pursue their interests jointly
- Contribute to the preparation of the 7. Framework Programme

OPERA2015 participants

Partic. Role*	**Partic. No.**	**Participant name**	**Participant short name**
CO	P01	VDI Technologiezentrum GmbH	VDI-TZ
CR	P02	Enterprise Ireland	EI
CR	P03	Interuniversity Microelectronics Center -	IMEC
CR	P04	The Netherlands Organisation for Applied Scientific Research	TNO-TPD
CR	P05	Ministry of Higher Education, Science and Technology	MHEST
CR	P06	Innovacion, Desarrollo y Transferencia de Tecnologia, SA	iDeTra
CR	P07	Opticsvalley – Association promouvoir la vallée de lóptique	Opticsvalley
CR	P08	UK Consortium for Photonics and Optics - University of Salford	UKCPO
CR	P09	European Photonics Industry Consortium	EPIC
CR	P10	European Optical Society	EOS

Co-ordinator contact details

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Project logo:

Major achievements during the reporting period

OPERA2015 Final Summit alongside the Photonics Europe Congress in Strasbourg in April 2008

One of the major achievements of this last period of OPERA2015 was the planning, preparation and realisation of the OPERA2015 final summit.

The Opera2015 summit had as main aims:

- to disseminate and discuss the results of the OPERA2015 project, especially the outcome and analysis of the inventory on Photonics companies and research to the Photonics community
- give information on key strategic issues of Photonics in Europe

To reach a broad public is was decided to hold the summit alongside the Photonics Europe Congress in Strasbourg. This Conference took place from 7th - 11th of April 2008. In order to attract a large audience OPERA2015 engaged some outstanding experts and scientists, which reported about specific problems and themes regarding the Photonics industry in Europe.
On many websites and in lots of newsletters was an announcement of the summit. Posters and flyers were produced and disseminated to OPERA2015 collaborators and other partners in Europe. The summit was well received by the publicity. Finally nearly 100 visitors attended the summit.

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International experts on Photonics reported about future developments

Furthermore, other activities have been used for disseminate OPERA2015 results, as for example: conferences, website, OLE magazine, EOS newsletters and fairs where brochures and posters were delivered.

Inventory and report on European Photonics industry

OPERA2015 made a broad inventory of the European photonics companies, and gathered information of the main company characteristics, in terms of photonics product groups, market areas, market scope and company size. This is the first time ever comprehensive information in Photonics on company level has been compiled and made public.

This inventory was quite successful: more than 2000 photonics companies were identified, which means more than a doubling of the original target of about 850 companies. The gathered information of identified photonics companies has been processed and analyzed.

Furthermore, the range of companies was extended with new EU member states, EU candidate countries and associated countries, and the basic information was made available for public access via the OPERA2015 website. The inventory now includes 1,925 companies in the 27 EU member states, 94 companies in 2 EU candidate countries and 5 associated countries.

During the inventory the following items per company were made publicly available on the OPERA2015 website:

- contact information: address, website, email;
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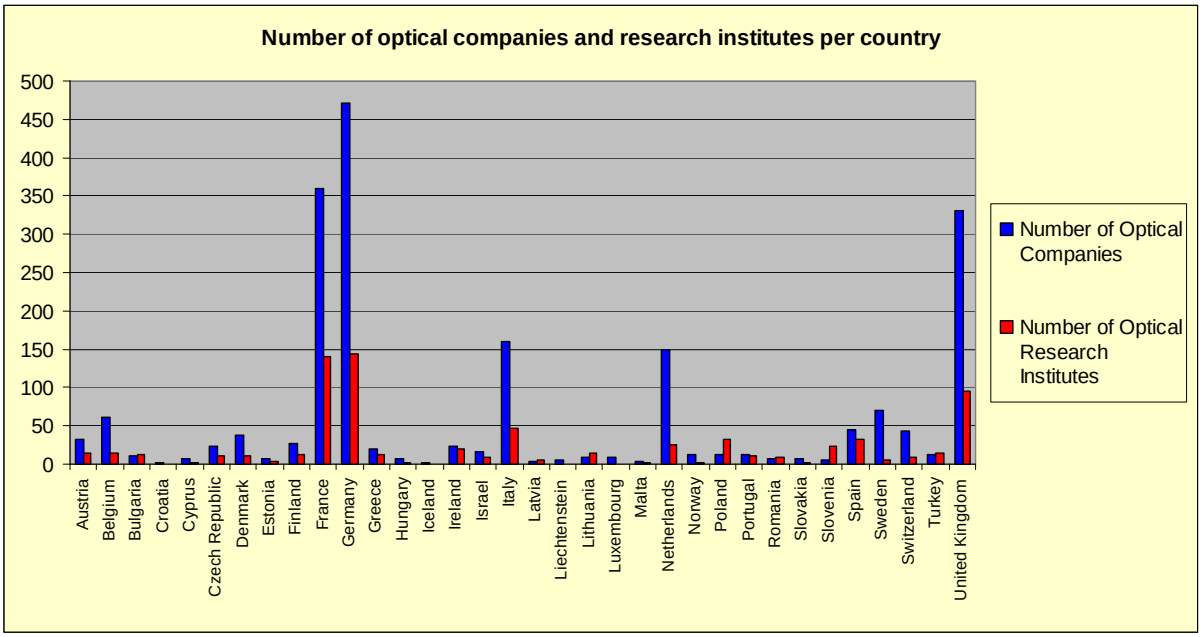
- company size.

The geographical distribution of photonics companies and research institutes which were compiled previously into the OPERA2015 database is presented in the following graph:



As can be concluded from the figure the five countries with the highest number of Photonics companies are France, Germany, Italy, Netherlands and United Kingdom.

At the end of the project OPERA2015 is meanwhile in possession of a substantial and detailed data base of the European photonics industry. This is a more than helpful instrument to all partner, it improves the networking and enforces the importance of this special industry branch. The results of the whole inventory are published in a substantial final report that is added to this report as Deliverable 3.3.

OPERA2015 significant increase of collaborators within the 3rd year period

One of the main aspects of OPERA2015 is a network of mutual collaboration among EC projects, clusters, companies, universities and associations. This collaboration is understood as a mutual link agreement. At the beginning of this last reporting period there were only a few collaborators joining OPERA2015, so it was one of the major objectives of this 3rd and last period to increase their number significantly.

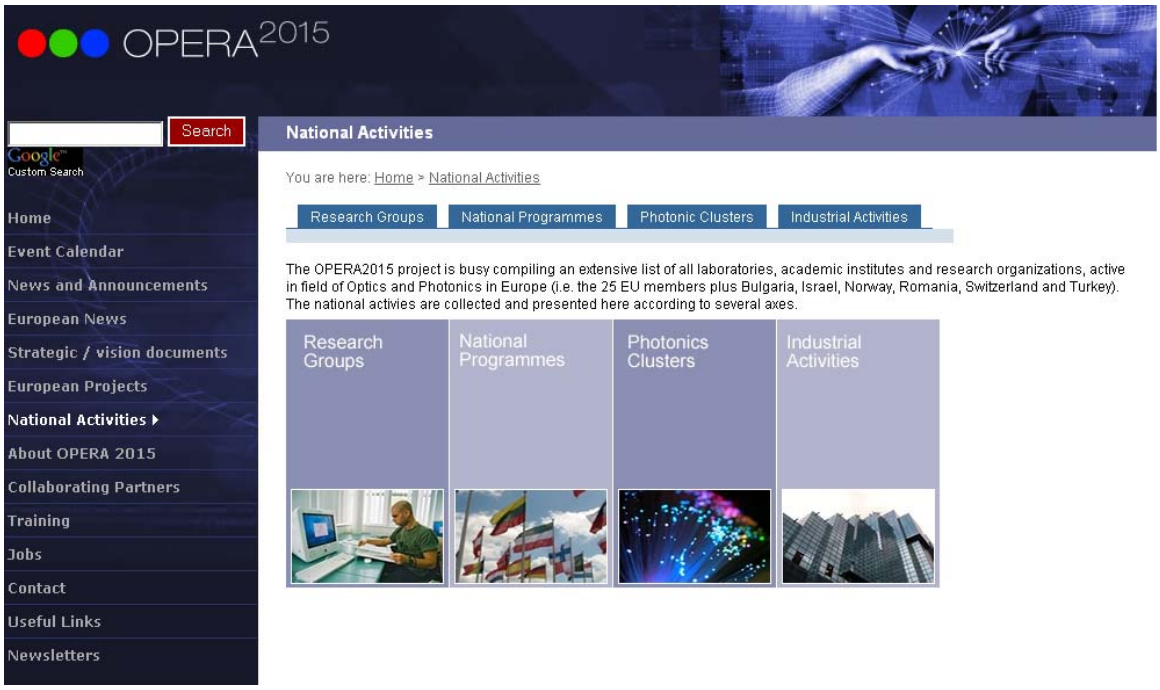
To reduce the administrative barriers the line of action was optimized and reorganised. Instead of waiting for a positive reaction after sending the information letter, the information letter and the letter of understanding (which was also modified) were sent simultaneously and followed up by phone calls. The easier and for our prospective partners more comfortable way was successful. OPERA 2015 now counts among its collaborators 21 projects, 2 companies and 7 research centres, associations and clusters.

Updating and optimizing the OPERA2015 website

The OPERA2015 website is a major item in the coordination activities of the OPERA2015 project. It is build into an information exchange platform for optics and photonics players in Europe and outside. It has been set up at the beginning of the project and continuously updated with new features.

Besides the permanent improvement and updating of the content, the last period was characterized by providing more information for researchers and students as well as job seekers. The section Training now lists specific issues and events aimed at training of this target group.

There were finally installed more links from the co-operating partners to the OPERA2015 website.



The OPERA2015 website has been implemented successfully and is known as a valuable information platform on optics and photonics by most of the European companies, EC projects, clusters, universities and associations.

Inventory of published roadmaps of photonic activities and national photonics funding priorities

These activities were focussed on preparing an inventory of published roadmaps of photonic activities and national photonics funding priorities. Objective of this project was to point out the various national and international sources of information on photonics and optics and to provide a pointer to published data that may be of assistance to European researchers and policy makers and give a flavour of the activity around the world in recent years.

As a result of this search more than 50 data sources were identified which were either publicly available free access (compiled by national governments or industry associations) or commercially compiled restricted access reports.

The search for national photonics funding priorities outside the commitee member states figured out that there are some interesting activities going on at a national level within the EU that could be usefully studied in more detail. There were found 5 funding programmes in Austria, 2 in Switzerland, 1 in Hungary, 1 in the Czech Republic and 1 in Poland.

End results

Meanwhile OPERA2015 has made a major contribution to let the European Research Area in Optics and Photonics become reality. Nevertheless there is still a need for information about research capabilities for both, industry and science in European countries. Through the installation of a database providing comprehensive information on Optics and Photonics industrial and scientific infrastructure throughout Europe the level of cooperation and coordination has already been increased but still can be significantly increased.

The central OPERA2015 website provides all relevant information for any cooperation efforts in Photonics. In view of the general need for stronger links between the different levels of publicly funded research, the need for encompassing national programmes and stakeholders from research and industry is even stronger and essential for the successful realisation of a European Research Area for Optics and Photonics.

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Chapter 1: Project objectives and major achievements during the reporting period

General objectives of the project

The main objectives of OPERA2015 are to compile an inventory of existing European Optics and Photonics research and industry infrastructure and support the development of a mid to long term strategic vision of European Photonics industry and research.
Therewith OPERA2015 will support the creation of the European Research Area through the stimulation of interaction of EU and national initiatives and projects. This will lead to improved transparency and cooperation of research activities and will deliver a clear view of future directions of European research in OP. OPERA2015 will furthermore foster the link between industry and research in order to strengthen Europe's competitiveness by providing strategic opportunities for European industries.

The general objectives are as described in the DoW:

- Increase the efficiency and impact of European IST-Research in the field of Optics and Photonics (OP) by stimulating coordination, interaction and cooperation at European level
- Make IST-relevant structure for OP such as funding programmes, schemes and activities at the regional, national and European level more visible and thus encourage interaction and well-planned networking with the aim to multiply the benefits of public research funding
- Support the development of a European "long-term shared vision" for Optics and Photonics in the area of IST
- Pave the way for Optics and Photonics in the European Research Area
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The measurable objectives and methods of work are:

- Setting up an Optics and Photonics (OP) information exchange and coordination platform (central OPERA2015-website) for publicly funded research and for organisations dealing with research policies in OP covering:

- IST-projects within FP5 and FP6 and other European projects with relevance for Optics and Photonics (other thematic priorities within the Framework Programmes, EUREKA, COST, etc.)
- National and regional funding programmes covering Optics and Photonics in IST
- European, national and regional clusters, networks and initiatives as well as organisations working at the supranational level (EPIC, EOS, EUROM, SPIE etc.)

- Supporting the development of a European Strategic Research Agenda in Optics and Photonics by research and industry reflecting and the development and implementation of a joint strategy including future visions for this key technology.
- Compiling an inventory of European O&P capabilities for both, industry and scientific research in order to improve transparency and increase cooperation and coordination on European level.

Objectives and deliverables during the reporting period

A short description of the third year report period objectives and the list of deliverables is given for each work package:

The work plan for the third year is characterized by the following elements:

- Further develop the OPERA2015 website to the central information exchange site for Photonics in Europe; providing a final report on website statistics; final integration of dynamo database (WP1)
- Objectives of WP2 have already been reached in period 2
- Collection of full company data, contact and product group information, on more than 2000 data sets; Statistical analysis of the data (WP3).
- Objectives of WP4 have already been reached in period 2
- Inventory of published roadmaps of photonic activities and national photonics funding priorities (WP5)
- Publishing OPERA2015 Newsletter and foster networking with Photonics Cluster and projects (WP6) on European level;
- Preparation and Realisation of the final OPERA2015 summit (WP6)

Reporting period deliverables list

Deliverable No	Deliverable name	Delivery date	Status
D 0.5	Final Project Report	36	✓
D 1.6	Interim report on website statistics	28	✓
D 1.7	Final report on website statistics	36	✓
D 3.3	Inventory on European OP industry, applications and markets (final draft)	36	✓
D 5.3	Roadmap inventory	36	✓
D. 6.3	Publishing OPERA2015 Newsletter in Supplement OPTO Laser	36	✓
D 6.4	Report on the event "OPERA2015 summit"	36	✓

Reporting period milestones list

Workpackage 1

Milestone no.	Milestone name	Delivery date	Status
M 1.1	Final integration of the Dynamo database	30	✓
M 1.2	Further improved website: Grouping EC projects, implement cooperating partners, announcement of training courses	30	✓

Workpackage 3

Milestone no.	Milestone name	Delivery date	Status
M 3.5	Collection of full company data, contact and product group information, on more than 1,500 data sets completed	31	✓
M 3.6	Statistical analysis of the data completed	34	✓

Workpackage 5

Milestone no.	Milestone name	Delivery date	Status
M.51	Compilation of roadmaps completed	34	✓

Workpackage 6

Milestone no.	Milestone name	Delivery date	Status
M 6.1	OPERA2015 Summit Agenda: (final draft) completed	30	✓
M 6.2	OPERA2015 Summit: Invitations sent out and speakers confirmed	33	✓
M 6.3	European OPERA Summit	36	✓

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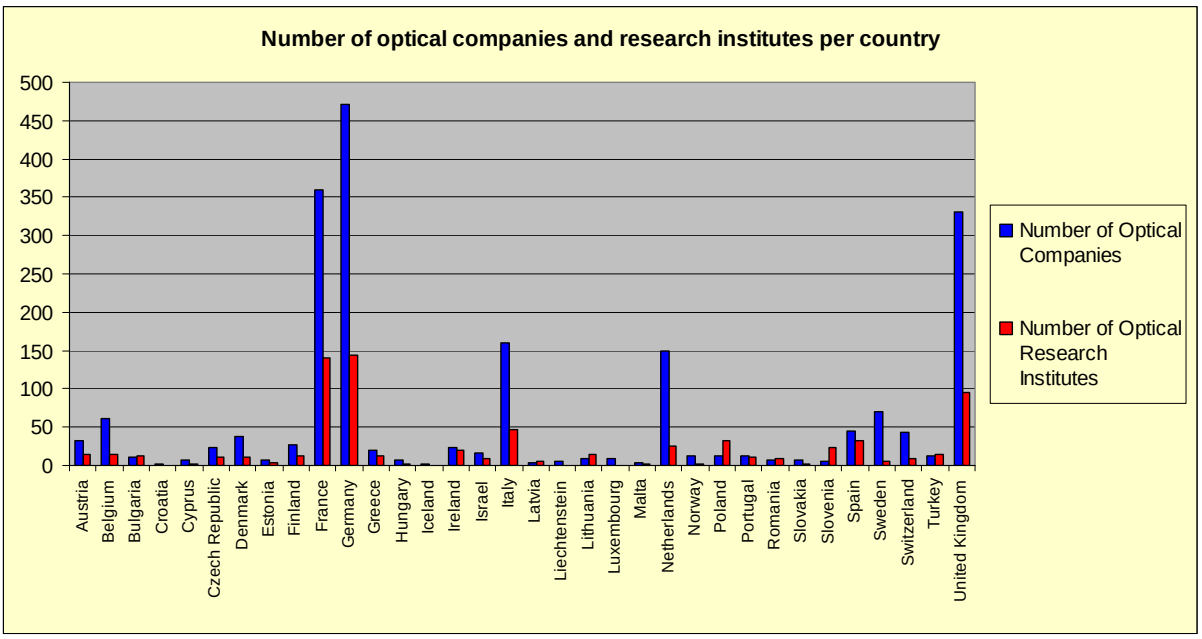

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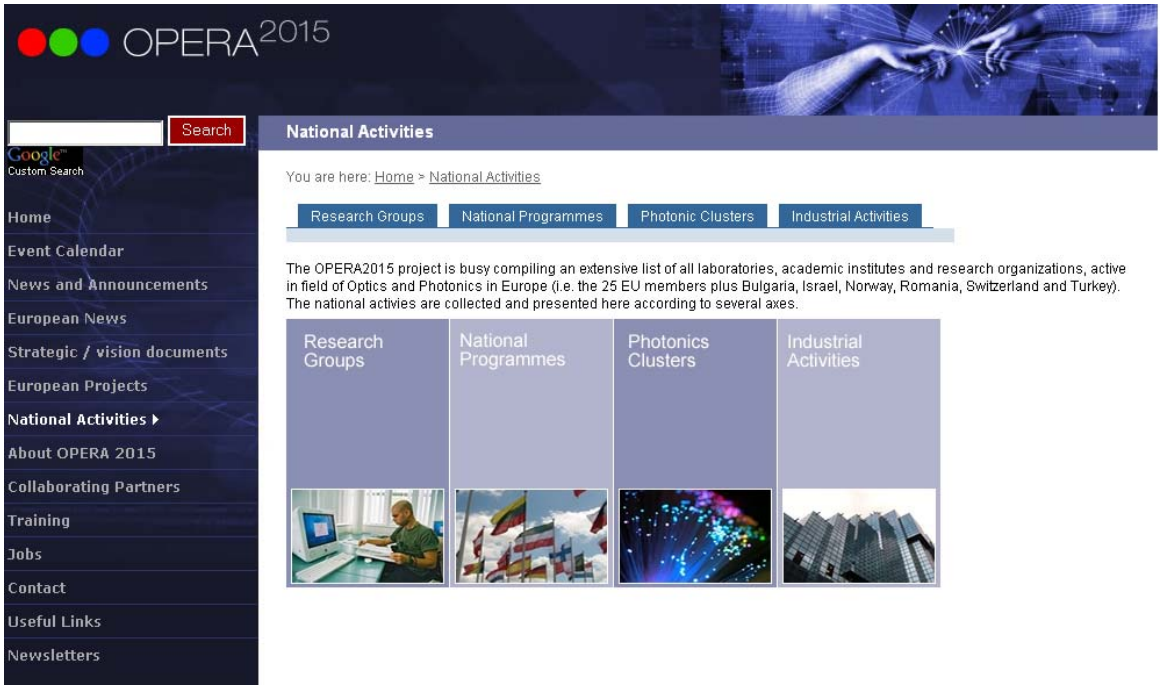

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Recommendations 2nd year reporting period and actions taken by the consortium

Recommendation 1:

Prepare a detailed plan showing the Year 3 activities and their interdependencies, accommodating the delays encountered in WP3. Include revised contract deliverable listings and additional monitoring points. The consortium could also include an update of the previously issued dissemination plan.

Actions taken by the consortium: A detailed work plan and list of deliverables and milestones has been prepared and agreed with the European Commission. Both is included as annex in the Description of Work (DoW).

Recommendation 2:

Provide an interim report on web site use statistics based on the material presented at the review meeting. Provide a interim report on web site use statistics at the end of the project. Include a discussion of possible approaches to offer improved identification of visitors.

Actions taken by the consortium: Interim report has been provided to the European Commission. The website has been improved with the aim to make it easier for users to access information.

Recommendation 3:

The OPERA web site can be further improved by including:

- On-line access of the TNO databases to permit full search capability;
- Dated 'work in progress' indicators;
- Re-launched forums to include Q&A functions;
- Improved visibility of training events in News;
- Expand the list of events to include more strategic topics, rather than staying limited to purely scientific events;
- Correcting dead links and relocate misplaced links.

Actions taken by the consortium: TNO database with full search capabilities has been integrated[1]. Information on training and job opportunities are now available. The website now contains

[1] Please note that the TNO database integrated in the OPERA2015 website has been tackled by Spam robots to automatically extracting address information. For security reasons the database has been shut down until the problem is fixed.

information on more than 500 events and news, information on strategic topics are included . Dead links have been erased.

Recommendation 4:

Ensure limitations of source data are clearly indicated when disseminating analysis reports from WP2 & 3. Moreover, the consortium should discuss how best to disseminate to a wider audience the results of D2.2 without loosing right of ownership.

Actions taken by the consortium: Disclaimer has been included in report D2.2. Regarding report D3.3 the consortium first would like to get the opinion of the reviewers before including a disclaimer.

Recommendation 5:

Start discussing the options for maintaining the databases and OPERA web site beyond the formal end of the project.

Actions taken by the consortium: Core activities of the platform will be continued in a follow on project called Phorce21 which aims at providing support to the Photonics21 secretariat.

Recommendation 5:

Provide an additional deliverable to mark the final integration of the Dynamo databases into the web site.

Actions taken by the consortium: Updated list of deliverables have been provided to the European Commission and is included in the DoW.

Chapter 2: Work package progress of the period

WP1: Platform creation - Optics and Photonics Information Exchange and Communication platform

Work package objectives

The main objectives of WP1 are, as defined in the DOW:

- Install and manage an Optics and Photonics information exchange and coordination platform
- Establish awareness, interaction and cooperation with other organisations, programmes, initiatives and projects in the relevant areas beyond the IST community at large
- Build up stable communication and information structures between the various OP- players
- Ensure optimal exploitation of publicly funded research and disseminate OPERA2015 results and views at large

To obtain these objectives, the following steps have been taken:

- Identify, contact and link relevant structures (programmes, projects and initiatives at the European, national and regional level)
- Create and maintain an interactive, user friendly OPERA2015 website.

At the beginning of this reporting period, the OPERA2015 website was active and a significant amount of information was already on-line.

The following points were identified as required improvement:

- Increase visibility of OPERA2015 database
- Improve links and listing of Photonics projects
- Improve the search engine on the website

Progress towards objectives

The website has been set up at the beginning of the project but since then has been adapted and now contains the following features:

2.1 Home Page

Fig. 1 Screen-dump of the WWW.OPERA2015.ORG homepage

This homepage has been updated and now lists a menu to the underlying pages to the left, but shows 8 active fields in the centre with:

- OPERA-hot news
- list of documents (selection of document page)
- upcoming events (selection of event-calendar)
- News-items (most recent selection of news-database)
- EU-News items (most recent selection of EU news-database)
- call for providing information
- direct link to OPERA2015 database
- info on the OPERA2015-project

2.2 Event Calendar:

No changes were implemented in the event-calendar section.

This event-calendar now contains 184 items and is continuously updated.

2.3. News & Announcements

No changes were implemented in the news-section.

This news-overview now contains 317 items and is continuously updated.

2.4. EU-News & Announcements

No changes were implemented in the EU-news-section.

This news-overview now contains 53 items and is continuously updated.

2.5. Strategic Documents

No changes were implemented in the documents-section.

This section groups information in different sections:

- Strategic Documents from Associations
- Strategic Documents published by Research Companies
- Strategic Documents published by National Organisations
- Reports
- Articles from SPIE News Room
- Presentations at SPIE TV
- Conference Proceedings
- Books

2.6. European Projects

Fig. 1 Screen-dump of the WWW.OPERA2015.ORG European Projects page which lists the projects activities in Europe on Photonics as made available through the WP?-work

This section has been updated and modified in layout. The information is generated from a database which eases the modification and addition of information. This section needs further improvement regarding updating the information, but problems are encountered in tracing the correct information regarding the different projects.

2.7. National Activities

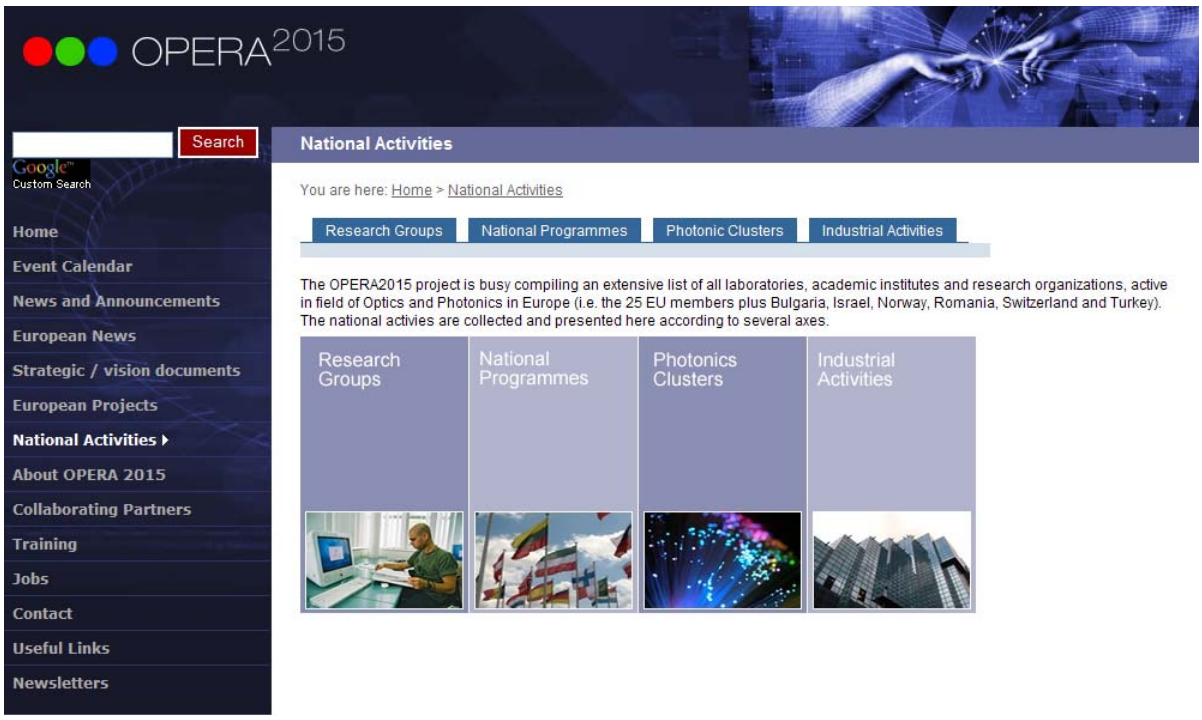


Fig. 3 Screen-dump of the WWW.OPERA2015.ORG National Activities page which lists the projects activities in Europe on Photonics as made available through the WP?-work

This section directly links to the database for both Research groups and industrial activities. The section also contains a list of "Photonic Clusters" and "National Programmes" which could be identified during the course of the project.

2.8. About OPERA2015

Fig. 4 Screen-dump of the WWW.OPERA2015.ORG About OPERA2015 page

This section now groups all the information on the OPERA2015-project into a single heading to free area on the home-page for additional menu-items.
No changes have been made with respect to the underlying content.

2.9. Collaborating Partners

Fig. 5 Screen-dump of the WWW.OPERA2015.ORG Collaborating Partners page

This section now lists the collaborating partners. These are projects and organisations which have clearly identified the wish to create a link with OPERA2015. This information is also generated out of a database which eases the modification and addition of information.

2.10. Training

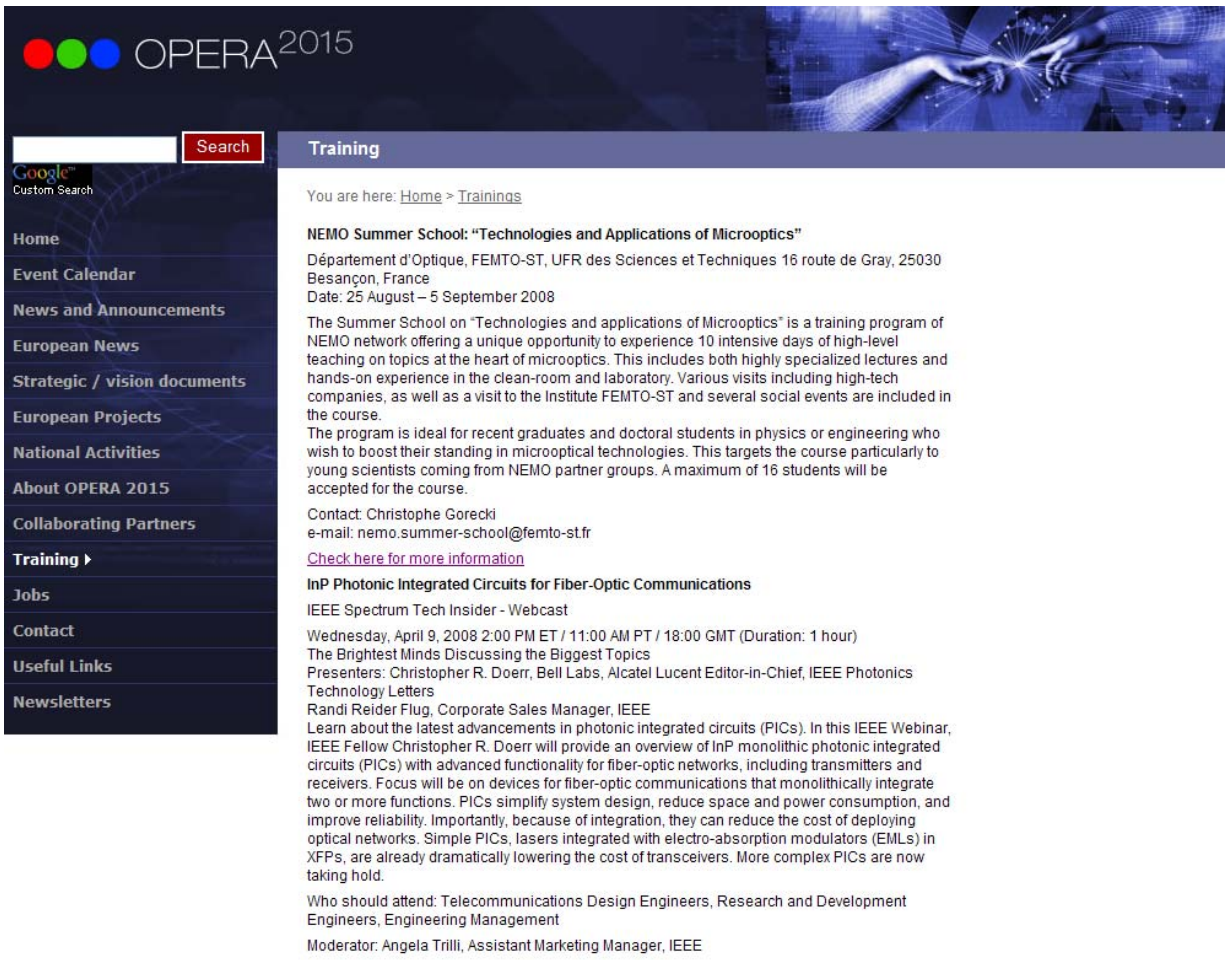


Fig. 6 Screen-dump of the WWW.OPERA2015.ORG Training page

This section now lists specific issues and events aimed at training of researchers and students.

2.11. Training

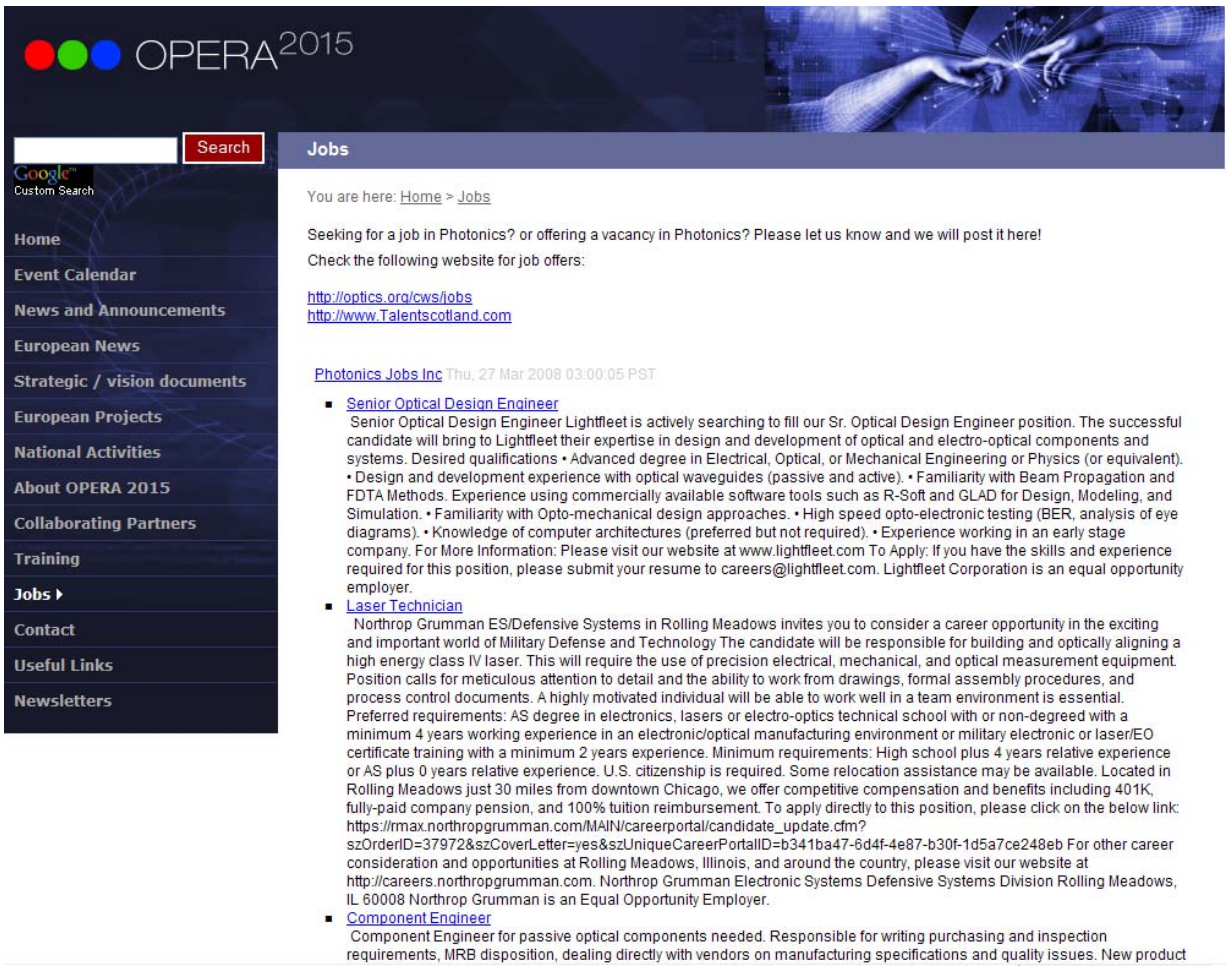


Fig.7 Screen-dump of the WWW.OPERA2015.ORG Jobs page

This section lists specific job advertisements, but as it is considered to be on the edge of the goals of the OPERA2015-project, it will be suggested to delete this section form the website. It is also very difficult to track possible offers and whether they are still open.

2.12 Contact:
No changes were implemented to this section.

2.13. Useful links
No changes, except updates were implemented to this section.

2.14. Newsletters
No changes, except updates were implemented to this section.

2.15 Search Function.
The website now has an updated search engine implemented.

2.16 Discussion Forum:
This section has been eliminated.

Deviations from the project work plan

No deviations with respect to the work programme as defined at the end of Y1.

Deliverables and Milestones

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/Fore-cast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contrac tor
D 1.1	Set-up of the OPERA2015 web site (status report within D 0.2 at month 6)	WP1	M06	M03	5	3	P03
D 1.2	Operational website (month 12)	WP1	M12	M15	0	1	P03
D 1.3	Implementation of a discussion forum	WP1	M20	M19	0	2	P03
D 1.4	Implementation of the search engine	WP1	M23	M22	0	1	P03
D 1.5	Further developed website with information from WP 2 and WP3 (month 24)	WP1	M24	M24	0	1	P03
D 1.6	Update on the OPERA2015 website including statistical information	WP1	M36	M36 (ongoing)	0	1	P03

***) if available**

Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
M 1.1	Final integration of the Dynamo database	WP 1	M30		P03
M 1.2	Further improved website: Grouping EC projects, implement cooperating partners	WP 1	M30		P03

WP2: Compilation of European research R&D

Work package objectives

The work package 2 objective was to compile and update the state-of-art of research for Optics and Photonics as an input for the long term strategic vision of Optics and Photonics in the European Research Area (27 EU member states + Israel, Norway, Switzerland and Turkey).
These objectives are related to the main goal of the WP2, namely, a clear view of state and direction on European research in the area of OP.

Concerning the activity purely linked to WP2, most of it had been performed during period 2 of the project, leading to the requested deliverable in due time (D2.2 Report on State-of-the-art of research in Optics and Photonics).

Therefore in period 3, Opticsvalley dedicated most of its work to :

- Completion of information for French companies requested by WP3, to be integrated into the Dynamo database (more than 800 companies treated)
- Preparation of the OPERA 2015 summit in Strasbourg (presentation of WP2 results)

Progress towards objectives

Objectives of WP2 reached in period 2.

Deviations from the project work plan

No deviations to be noted.

Deliverables and Milestones

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
D2.2	Report on State-of-the-art of research in Optics and Photonics	WP2	April 15, 2007	April 15, 2007			OV

***) if available**

Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor

WP:. Analysis on industries and markets

Work package objectives

The objectives of WP 3 are formulated in the "Description of Work" as follows:

- Elaborate an information base with special focus on the Optics and Photonics (OP) industrial landscape in Europe (trends, products and markets)
- Input for the implementation of an Optics and Photonics European Strategic Research Agenda.

Starting point of work in WP 3 at the beginning of this reporting period are the results achieved in the second year of the OPERA2015 project, as reported in deliverable D 3.2 "Inventory on European OP industry, applications and markets (WP 3 second year report)", dated May 2007.

The main activities in the third year period of WP3 involved: completion of the inventory of OP companies and company data in the Dynamo Database, analysis of the company information and compilation of the final report on Photonics industry in Europe.

Progress towards objectives

Completion of the inventory of OP companies and company data

The inventory of OP companies and company data was further completed in co-operation with other OPERA team members.

As a result of this activity the basic information of 2019 Optics / Photonics companies across Europe has been imported into the Dynamo Database (status January 1st, 2008):

- 1925 companies in the 27 EU member states
- 94 companies in 2 EU candidate countries and 5 associated countries.

The original target for the number of OP companies to be identified and imported into the Dynamo database was about 850.

The geographical division of identified and imported companies across the different countries is presented in the WP 3 Final report D3.3.

The five countries with the highest number of OP companies are: Germany (472), France (359), United Kingdom (331), Italy (160) and Netherlands (150).

The following items per company were stored into the Dynamo Database:

- contact information: address, website, email;
- optical market information: product groups, market fields, geographical market scope;
- company size.

Optical market information items and company size have been classified into the categories specified in the WP 3 Final report.

Basic information of the OP companies in Dynamo (contact info and product groups) has also been made publicly available via the OPERA2015 website http://www.opera2015.org

Methodology for selection of OP companies

For the identification of OP companies in Europe different sources of information were used, such as internet search, databases of (inter)national OP research programs and networks, company databases, and OP conferences. A general criterium for selection is that the company must have a significant activity in the optics / photonics field. A broad spectrum of companies is collected in the database. Companies / retail outlets which only sell consumer products such as spectacles and video equipment are not included.

The methodology used for selecting OP companies in Europe is described in more detail in the WP 3 Final report D3.3.

Combination with inventory of OP research groups in WP 2

The Dynamo database was also used for the inventory and classification of optics / photonics research institutes, as carried out in OPERA WP 2 by Optics Valley. As a result the basic information of 746 European OP research institutes has been incorporated in the Dynamo database. This information has been made publicly available via the OPERA2015 website http://www.opera2015.org

Analysis of OP company information

The analysis of OP companies data in the third year of the project was performed by TNO using this final dataset of 2019 companies.

The analysis involved the following main activities, using the facilities in the Dynamo Database:

- A fact sheet was composed including the accumulated OP company information in Europe as a whole. This fact sheet includes diagrams of the product groups, market fields, market scope and company size.
- Fact sheets per country were composed including the gathered OP company information for countries with ≥ 20 companies in Dynamo. These fact sheets include per country diagrams of the product groups, market fields, market scope and company size.

- From the company data per country a comparison was made of the product groups of OP companies in different European countries, i.e. the geographical distribution of product groups.
- From the company data per country a comparison was made of the OP industry market fields in different European countries.
- The innovation in OP industry per country was analyzed. For this purpose the relatively new product groups fiber optics, micro optics and nano photonics were used as indicators for the degree of innovation. Also within this context the relation between the total R&D investments per country and the number of OP companies was analyzed.
- From the company data per country a comparison was made of the geographical market scopes of OP industry in different European countries.
- The relation between market fields and company size of European OP industry was analyzed.
- The degree of correspondence between OP Research application fields and OP Industry market fields for Europe as a whole was analyzed, using WP 2 data on European research institutes, WP 3 data on European OP industries, and data of 229 European OP research projects in the EU FP 6 and the EUREKA Program.
- A preliminary comparison was made of the correspondence between this OPERA WP 3 analysis and the study "Photonics in Europe – Economic Impact", which was recently published by the Photonics 21 technology platform together with the European Commission (source: website www.photonics21.org).

The presence of information from European OP companies as well as from OP research institutes in the Dynamo database provides possibilities for analyzing the interrelation between industrial activities and research concerning optics and photonics in Europe. In the fact sheets mentioned above information of optical research areas and application areas of the OP research institutes was also included.

The results and conclusions of the analysis activities are reported in the WP 3 Final report D3.3.

Other activities

Furthermore, the activities in the third year period included:

- Participation, and presentations, in project reviews and project meetings.
- Participation, and presentation in the OPERA2015 Summit during the Photonics Europe Congress, April 2008, Strasbourg.
- Contributions to the OPERA2015 newsletter.

Summary of Achievements

- Inventory of European Optics / Photonics (OP) companies further completed: basic information of 2019 companies across Europe has been imported into the Dynamo Database (from the 27 EU member states, 2 candidate countries and 5 associated countries).
- Analysis of the OP company data carried out. This analysis includes the items product groups, market fields, geographical market scope and company size of OP companies in Europe. Results were presented in diagrams and conclusions were drawn. Also information of OP research institutes was included in this analysis.
- The WP 3 Final report D 3.3 was compiled in which the results and conclusions of the analysis of optics / photonics industry in Europe are presented.
- Basic information of 2019 OP companies and 746 OP research institutes in Europe, as collected in the Dynamo database, has been made publicly accessible on the OPERA2015 website.

Deviations from the project work plan

In the third year period of WP 3 there were no deviations from the project work programme.

Deliverables and Milestones

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
3.1	Inventory on European OP industry, applications and markets (first interim draft)	3	12	12			P04
3.2	Inventory on European OP industry, applications and markets (second year report)	3	24	24			P04
3.3	Inventory on European OP industry, applications and markets (Final report WP 3)	3	37	37			P04

***) if available**

Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
3.5	Collection of full company data, contact and product group information on more than 1500 data sets completed	3	31	31	P04
3.6	Statistical analysis of data completed	3	34	34	P04

WP4: Organisation of Workshops

As stated in the 2nd Year review report, the successful hosting of the final OPERA workshop in Poland in October 2006 and the publication of the workshop report marked the end of the planned activities for this work package. The workshops have been judged to have been very successful, the attendance and technical scope of the Wroclaw event in particular being noteworthy. The role of each partner in this work package was justified and found to be in accordance with the work plan. The effort levels expended were judged to be in line with reported achievements.

With completed Deliverables and Milestones, no further activities took place in Period 3 of the OPERA-2015 project except the continuous effort that EPIC made during the 3rd year to promote the Photonics21 Technology Platform. EPIC encouraged its membership and partners to register and become a member of the platform as well as play an active role in the working group of their respective activity area.

WP5: Strategic vision development

Work package objectives

The original objective of this work package was to prepare a strategic vision document for photonics and optics in Europe. The strategic vision was to be based on the state of European optics and photonics as determined by the other work packages in the programme, (WP2) research, (WP3) industry and (WP4) the exploitation of the different topical workshops. However the strategic vision for European photonics is now contained in the Strategic Research Agenda (SRA) in Photonics developed by the European Technology Platform in Photonics (Photonics21). Photonics21 which was established subsequent to the launch of the OPERA2015 has become the focus of European industry and the effort embodied by WP5 had been redirected to support of the ETP instead of operating in conflict to it. The starting point of the WP5 has been moved back from the original month 16 to the current month 9 to facilitate this activity

Progress towards objectives

Significant effort has been expended by the group in support of the SRA specifically in the provision of a secretariat and drafting and proofing of the SRA. This resulted in the presentation of the first draft of the SRA to Commissioner Reding in Strasbourg in April 06. In the period of this report OPERA2015 continues to provide secretariat facilities and support for Photonics21.

OPERA2015 provided backup to the Annual Photonics21 conference held in Brussels on 5th – 6th December 2007.

Deviations from the project work plan

The establishment of the Photonics21 ETP so early on in the lifetime of OPERA2015 has meant that the need to provide an OPERA2015 strategic vision for European photonics is of limited value at this point. As a result the activity in this work package has been redirected to support of the ETP.

As a consequence of the interim evaluation which took place in Brussels on 30 May 2007 an additional 2 part activity was proposed. This activity focussed on preparing an inventory of

- published roadmaps of photonic activities (Task 5.3a)
- national photonics funding priorities (Task 5.3b)

In the road map study work was undertaken in 4 phases

1. An initial keyword search using search engines such as Google, Accoona and Yahoo followed by a more focussed trawl based on these results.
2. Enterprise Ireland's international offices forwarded various data reflecting their respective territorial responsibilities
3. Enterprise Ireland's information services based in Dublin performed a further search based on the output of 1 & 2 above.
4. Data was obtained from the European Photonics Industry Consortium website www.epic-assoc.com

The resultant document was submitted in February 2008 for publication on the website.
In the national funding priority study it was decided that it would be useful to have a feel for the range of national funding initiatives targeting photonics. It was intended to provide a pointer to the various systems of technology funding and to try and identify the extent to which photonics development is targeted by national agencies. This task was carried out by making contact with the Enterprise Ireland staff in the overseas offices charged with each country and asking them to make a general enquiry as to whether specific funding existed or not. The results are contained in a table contained in the deliverable D5.3b

Deliverables and Milestones

Table 1: Deliverables List

Del. no.	Deliverable name	Work package no.	Date due	Actual/Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
5.3a	Roadmap inventory	5	March 08	February 08	1	1	02
5.3b	National funding priority inventory	5	March 08	February 08	0.5	0.5	02

***) if available**

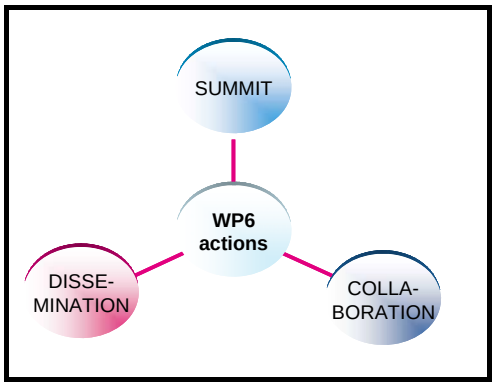
Table 2: Milestones List

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
5.3a	Roadmap inventory	5	March 08	February 08	02
5.3b	Funding priority table	5	March 08	February 08	02

WP6: Dissemination and public awareness

Work package objectives

The main objectives of work package 6 are depicted in the figure below:

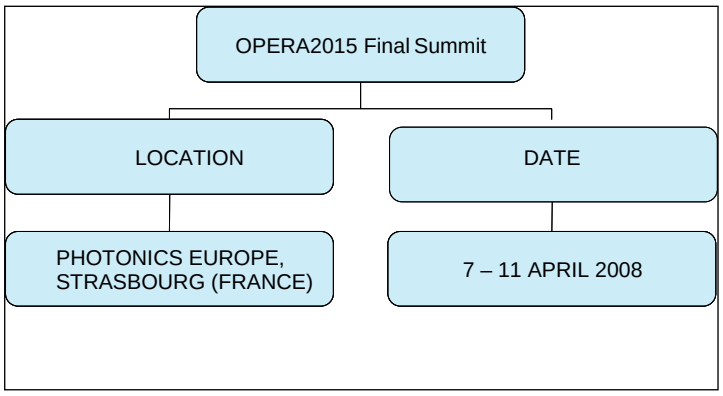


At the beginning of the last reporting period, the status of these three objectives was as follows:

1. **Dissemination** of OPERA2015 results among the scientific and industrial community. Every year, OPERA news had to be published in the EOS newsletter and OLE magazine, so this activity was to be continued in the last year of the project.
2. **Collaboration** with European optics and photonics stakeholders (EC projects, clusters...). At the beginning of this last reporting period, there were only a few collaborators, but during the last period, the OPERA consortium managed to significantly increase the number of collaborators. OPERA2015 has now 31 collaboration partners (see page 46).
3. Preparation of the final **OPERA2015 summit**. The starting point of this activity at the beginning of the reporting period was to determine the location for this summit. Finally, it was decided to hold the OPERA summit in Strasbourg, France, alongside the Photonics Europe Congress which took place from 7th – 11th April 2008.

   Some practical issues of the summit were evaluated and a study on the convenience of organizing an independent event was completed which revealed the advantages of organizing the summit in the context of an established conference. The evaluation of potential conferences took into account the following two constraints:

1. Since OPERA2015 aims at reaching a broad public, a conference with a wide audience is needed. The conference should not focus on a specific application field, but should cover a wide-range of optics and photonics application fields.
2. The conference must be held at the end of the 3rd reporting period.



Progress towards objectives

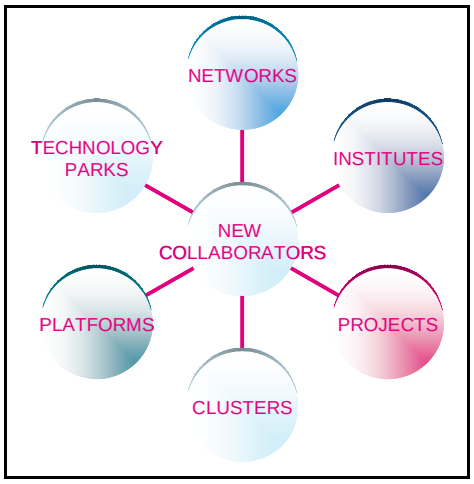
1. **Dissemination** of OPERA2015 results among the scientific and industrial community. Five newsletters had to be written and were published according to the schedule below:

2007 EOS newsletters	
Optics and Laser Europe	Electronic EOS Newsletter
Jun 07	May 07
Sep 07	Sep 07
Dez 07	
2008 EOS newsletters	
Optics and Laser Europe	Electronic EOS Newsletter
	Jan 08
Feb 08	
	Apr 08

This activity has mainly been carried out by the project partner EOS, but every partner has helped with information obtained from the results of their work packages.

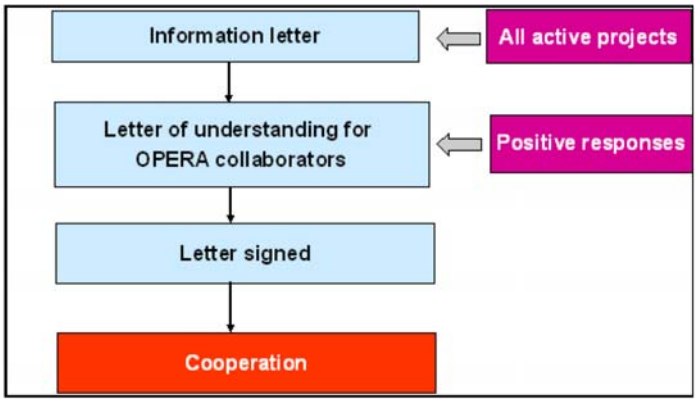
2. **Collaboration w**ith European optics and photonics stakeholders (EC projects, clusters...). Great progress was made in this field, because of the number of collaborators was increased significantly.

At the beginning, the goal was to find collaborators from different sectors, such as EC projects, clusters, companies, universities and associations.



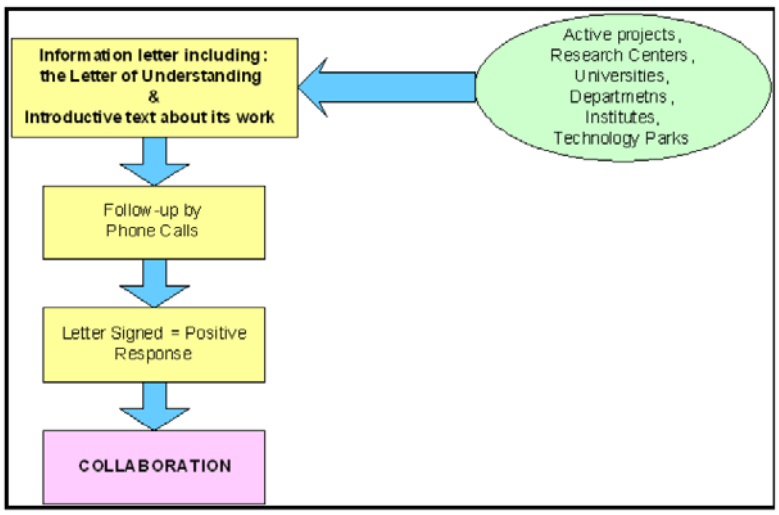
However, it turned out to be very difficult to attract collaborators from that many different sectors, and thus the OPERA consortium decided to focus on European projects funded by the EC.

At the beginning, OPERA followed the below depicted line of action that had been proposed in the previous reporting period:



Previous line of action

In order to reduce the number of steps and thus to shorten the period of time for interested projects to become collaborators, a new line of action was designed:



New line of action

A letter of understanding for collaborators has been sent out to European researchers in order to promote OPERA2015 and to foster mutual collaboration. This collaboration is understood as a mutual link agreement which had already been signed with a short list of collaborators. It was intended to enlarge this list.

The Letter of Understanding was modified, too, to make it easier for project leaders to formalise the collaboration with Opera2015.

The new version of the Letter of Understanding is shown below:

"LETTER OF UNDERSTANDING FOR OPERA COLLABORATORS"

To:

Coordination Action

From:
Mr. _____
Project Name/ Cluster Name
Address
Country

Country, date

Dear Mr. ,

As the President/ Project Leader of __cluster/project name __, I would like to express the interest about participating in the project:

"OPTICS AND PHOTONICS IN THE EUROPEAN RESEARCH AREA"
- OPERA2015 -

a FP6 Co-ordination Action

__project name and all partners involved /cluster name__ will provide the link to OPERA2015 website as part of this collaboration. In return, OPERA2015 will allow publishing through the News and Announcement Section in OPERA2015 website the progress of their projects, results, events, and so on. Furthermore, a new section will be added to the website for holding collaborators logos and links.

Looking forward to our collaboration, yours sincerely,

Mr. _____
Project Name/ Cluster Name
Address
Country

To ensure that information about OPERA2015 reached the target group and to increase the number of researchers interested in the proposed collaboration, direct phone contact was made with the researchers previously identified.

Opera2015 counts among its collaborators several projects (21), companies (2), research centres, associations and clusters (7):

Partner Contact	Project Name
Peter Van Daele	ACCORD project
Michel Krakowsky	BRIGHTER project
Giulio Cerullo	HIBISCUS project
Andreas Stöhr	IPHOBAC project
Blas Garrido	LANCER Project
Ulf Södervall	MC2ACCESS
Laurent Fulbert	MONA project
Peter Andersen	NANO UB-SOURCES project
Natalie Debaes	NEMO project
Peter Visser	OLLA project
Javier Martí	PHOLOGIC project
Clivia Sotomayor	PHOREMOST project
Anatoly Zayats	PLASMOCOM project
Roberto Gaudino	POF-ALL project
Guglielmo Lanzani	POLYCOM project
Daniel Hill	SABIO project
Moshe Ran	UROOF Project
Arnaud Grisard	VILLAGE project
Carmen Gonzalez	ZODIAC project
Eric Tournié	DOMINO project
Dimitris Svridis	PICASSO project
Sebastian Krug	ERA-SPOT project

Partner Contact	Organization Name
Manuel López-Amo	Department of Electrics and Electronics Engineering - Navarra University
Sebastián Pantoja	Fotónica21 (The Spanish Platform)
Silvia Carrasco	ICFO. The Institute of Photonics Sciences
Manuel López-Amo	Optoelectronics Committee
Juan Ignacio Garcés	Photonics Technologies Group
Mikhail Vasilevsky	Physics Department. Do Minho University
Guus Taminiau	Photonics Cluster in Netherlands

Partner Contact	Company Name
Sarah Marshall	CIP
Sebastian Pantoja	Das Photonics

The total number of collaborators is 30.

The search was exhaustive. In order to get more collaborators, more than four e-mails were sent per collaborator, including several phone calls.

Below is the list of additional projects that were contacted but did not reply to OPERA's invitation for collaboration.

Projects	Projects
PIEMAN	NEWTON
WISDOM	NANDOS
OPTICON	MEPHISTO
ENOS	EPIXNET
OLAS	TERANOVA
CIRCLES OF LIGHT	SEMOFS
PICCO	HETEROMOLMAT
RAMBOQ	GIBON
PI-OXIDE	EU-FIRE
PLEAS	FIDELIO
FASCINATION OF LIGHT	VERTIGO
OMNI-NET	OPTOLABCARD

MOT-TEST	MOON
NESLIE	IOLOS
SA-NANO	MOSEL
NATAL	MEGAFRAME
FINAQS	NOBEL
FUNFACS	NATCO
ISIS	OFSETH
HECTO	OLAQUI
TRIUMPH	PHODYE
SPLASH	QPHOTON

3. **Organisation of the Concertation meeting on Photonic integrated circuits"** on 25 and 26 September 2007 in the Holiday Inn Hotel, Brussels, Belgium.

The organisation of the meeting includes:

- Create webpage information
- Determine payment terms (credit card debit, different forms of payment for attendees from home and abroad, advance payment, cancellation fee)
- Rental agreements for conference room and equipment
- Reduced room rates for attendees in conference hotel
- Coffee and lunch break catering
- Meet & Greet event for first time attendees
- Reception / dinner for attendees
- Charging registered persons as per the terms of payment agreed
- Prepare tickets / name tags (different name tags for authors and attendees) and on-site registration procedure (cash or credit card)

FINAL AGENDA

CONCERTATION MEETING *PHOTONIC INTEGRATED CIRCUITS / INTEGRATION OF PHOTONIC TECHNOLOGIES*

Holiday Inn Brussels
38 Chaussée de Charleroi
1060 BRUXELLES
BELGIQUE
Tel : +32 (0)2 533 66 66
Fax : +32 (0)2 538 90 14

TUESDAY 25TH SEPTEMBER 2007

19:00 CONFERENCE DINNER

WEDNESDAY 26TH SEPTEMBER 2007

8:30	**Welcome coffee**	
9:00	Introduction & Welcome Planning of WP09-10	Rosalie Zobel (tbc) European Commission, Director Components & Systems
9:30	Welcome by the organizer OPERA 2015, PHOTONICS 21 ETP	Markus Wilkens, OPERA 2015
9:40	Objectives of the Concertation Event	Dr. Gustav Kalbe, European Commission, Photonics Head of Sector
9:50	European Network of Excellence on Photonic Integrated Components and Circuits	Dr. Roel Baets ePIXnet
10:10	Hybrid integration of SOI waveguide components, laser diodes and ICs : Challenges and novel device structures	Timo Aalto MEPHISTO
10:30	**Coffee break**	
10:50	Photonic Integrated Devices in Activated Amorphous and Crystalline Oxides	Kerstin Wörhoff PI-OXIDE
11:10	Photonic Integrated Circuits for Chaos Encoded Secure Optical Communications Links	Prof. Dimitris Syvridis PICASSO
11:30	Photonic Millimetre-Wave Components	Dr. Andreas Stöhr IPHOBAC
11:50	UROOF – Photonics components for ultrawideband radio over optical fibre	Dr. Moshe Ran UROOF
12:10	- New photonics systems on a chip based on dyes for sensor applications	Dr. Angel Barranco PHODYE
12:30	**Lunch Break**	
14:00	HIBISCUS - Hybrid integrated biophotonic sensors created by ultrafast laser systems	Prof. Giulio Cerullo HIBISCUS
14:20	Plasmonic nano-guides and circuits	Prof. S. I. Bozhevolnyi PLASMOCOM
14:40	Silicon Nanophotonic Logic Gates	Javier Marti PHOLOGIC
15:00	Multi-functional integrated arrays of interferometric switches	Prof. Hercules Avramopoulos MUFINS
15:20	Micro-scale semiconductor ring lasers for digital photonic functions: Progress and challenges	Dr. Siyuan Yu IOLOS
15:40	**Coffee break**	
16:00	Discussion forum	Prof. Giancarlo Righini
17:00	Meeting ends	

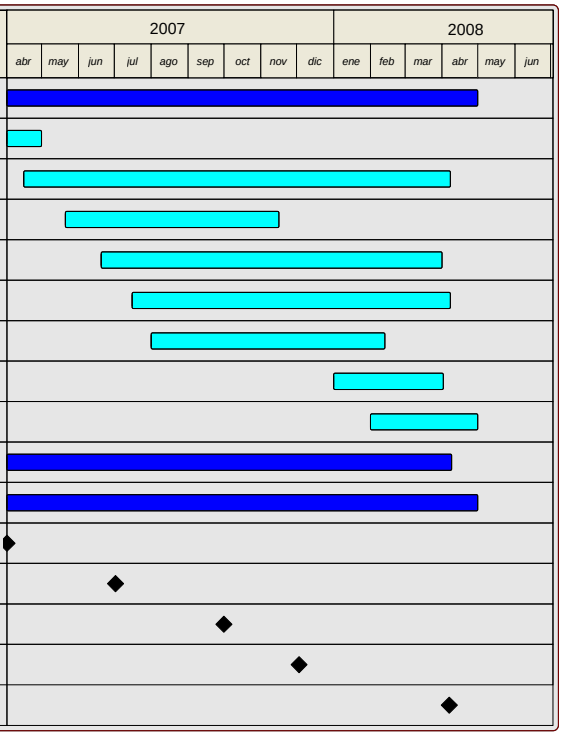
Commission européenne, B-1049 Bruxelles / Europese Commissie, B-1049 Brussel - Belgium. Telephone: (32-2) 299 11 11.
Office: BU 29 7/76. Telephone: direct line (32-2) 29+32.(0)2.296.34.63. Fax: (32-2) 29+32.(0)2.296.83.90.

E-mail: gustav.kalbe@ec.europa.eu

4. **Preparation of the final OPERA2015 summit.** The starting point of this activity **at** the beginning of this reporting period was to determine the location for this summit. Finally, it was decided to hold the OPERA summit in Strasbourg, France, alongside the Photonics Europe Congress which took place from 7th – 11th April 2008.

As the organization of such a big and important summit requires a lot of work and a great number of tasks, a Gantt chart was created to visualize the tasks and timelines. All tasks listed in the Gantt chart were fulfilled on time.

Id	Task	Start date	Due date	Duration
1	PREPARATION OF THE SUMMIT	02/04/2007	30/04/2008	283d
2	Selection of an adequate conference	02/04/2007	30/04/2007	21d
3	Agreement with and contact to the organizers	16/04/2007	07/04/2008	256d
4	Preparation of the agenda and identification of the speakers	21/05/2007	15/11/2007	129d
5	Announcement of the summit on the OPERA website	20/06/2007	31/03/2008	204d
6	Announcement through other channels	16/07/2007	07/04/2008	191d
7	Preparation of flyers, posters, USB	01/08/2007	12/02/2008	140d
8	Travel arrangements / catering	01 01 2008	01/04/2008	66d
9	Preparation of D 6 4	01/02/2008	30/04/2008	64d
10	SEARCH COLLABORATION PARTNERS	02/04/2007	08/04/2008	267d
11	DISSEMINATION / NEWSLETTERS	02/04/2007	30/04/2008	283d
12	OLE Issue	02/04/2007	02/04/2007	0d
13	OLE Issue	02/07/2007	02/07/2007	0d
14	OLE Issue	01/10/2007	01/10/2007	0d
15	OLE Issue	03/12/2007	03/12/2007	0d
16	OLE Issue	07/04/2008	07/04/2008	0d



Description of the tasks:

- Agreement with and contact to the organisers. In this period, continuous contact had to be maintained with the organizers, not only in order to confirm our interest to participate in the Photonics Europe Congress, but also to agree upon the date and the programme Opera2105 wanted to participate in.

  In addition, the capacity of the room, the catering and the programme had to be determined.

- Preparation of the agenda and identification of the speakers. This activity was crucial for the success of the Summit. In order to attract a large audience Opera2015 had to offer additional incentives besides the presentation of the project results. For this reason, Opera2015 divided the event in two parts.

The first part was performed by some of its partners. Here, the OPERA2015 project was presented to the attendees by explaining the aims, the results, the website as well as an analysis of the current situation in the industrial, research and business landscape of European optics and photonics.

In the second part, some of the most outstanding experts and scientists such as Eugene Arthurs (Executive Director of SPIE), David Pointer (Managing Director at Point Source), Mike Wale (Bookham) and Gustav Kalbe (Photonics Unit of the Directorate General Information Society and Media) spoke about the future of the European research and development in optics and photonics.

Final version of the agenda:

OPERA2015 PROGRAMME	
PHOTONICS EUROPE CONGRESS (STRASBOURG, 9TH APRIL 2008)	
13:30	**Introduction. Optics and Photonics in the 7th FP** Gustav Kalbe (Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)
13:45	**OPERA2015 Presentation. Aims, Results and the link with Photonics21** Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21)
14:00	**Industry Landscape** Bart Snijders (TNO Science and Industry)
14:20	**Research Landscape** Marie-Joëlle Antoine (Opticsvalley)
14:40	**Information Resource: The Website www.opera2015.org** Peter Van Daele (INTEC, Ghent University - IMEC)
15:00	**BREAK**
15:15	**Towards the future on Optics and Photonics Research** Dr. Eugene Arthurs (SPIE and Photonics21)
15:35	**Strategic Opportunities for R&D in Europe** Mike Wale (Bookham UK) Hugo Thienpont (Vrije Universiteit)
16:15	**A sustanaible business model in the optics and photonics field** David Pointer (Point Source)
16:45	**Final Open Discussion** (chairman: Gustav Kalbe, Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)

- Announcement of the Summit on the Opera2015 website. Once the last version of the agenda was approved, the Opera2015 Summit was published on the website.

- Announcement of the Summit through other channels. Several additional channels were chosen to promote the Summit:
    a. Important websites of the photonics sector that were chosen to promote the Summit:
        i. Nexus
        ii. Cordis Wire
        iii. Optics.org
        iv. Fibresystems.org
        v. Symposia 24
    b. Electronic mailings to the contacts of EPIC
    c. Announcements in the EOS newsletter in the Optics and Laser Europe Magazine as well as in the EOS newsletter to its members

d. Brochures were delivered to:

i. UK Clusters

ii. Congresses

iii. Partners

- Preparation of brochures, posters and USB sticks. For the EC meeting that was held in September 2007, the first version of the brochures and posters was prepared. The aim was to promote the collaboration of the European projects with Opera2015. The last version promoted the opera2015 Summit incl. the programme. In total, 1,150 brochures and 31 posters were printed and delivered.


OPERA 2015
OPTICS AND PHOTONICS
IN THE EUROPEAN RESEARCH AREA
www.opera2015.org
OPERA 2015 is a co-ordinated action (CA) funded within the 6th Framework Programme of the EU and is dedicated to developing a joint strategy for Optics and Photonics in Europe.
The main objective of OPERA 2015 is to provide a platform for interaction of European IST-research in Optics and Photonics and to provide an information resource that will foster integration and co-ordination within the EU.
Why visit opera2015.org?
Opera2015.org provides:
The most complete and extensive database on Optics and Photonics in Europe
An up to date analysis of industries and markets such as:
Information, Communication and Imaging
Lighting and Displays
Manufacturing and Quality
Life Sciences and Health Care
Safety and Security
A vibrant and current Optics and Photonics Information Exchange Platform:
Innovative projects
News
Events
Trainings
Jobs
Laboratories
Companies, etc.
9TH OF APRIL 2008
OPERA 2015 AT PHOTONICS
EUROPE CONGRESS
During the Photonics Europe Congress (7th - 11th of April 2008) in Strasbourg, OPERA 2015 will present the results of extensive research into the industrial and academic research infrastructure throughout Europe.
Programme
13.30 Introduction. Optics and Photonics in the 7th FP
Gustav Kalbe (Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)
13.45 OPERA 2015 Introduction. Aims, Results and the link with Photonics21
Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21)
14.00 Industry landscape
Bart Snijders (TNO Science and Industry)
14.20 Research landscape
Marie-Joëlle Antoine (Opticsvalley)
14.40 Resource for photonics: website
Peter Van Daele (INTEC, Ghent University – IMEC)
15.00 Break
15.15 Towards the future on Optics and Photonics Research
Dr. Eugene Arthurs (SPIE and Photonics21)
15.35 Strategic Opportunities for R&D in Europe
Mike Wale (Bookham UK)
Hugo Thienpont (Vrije Universiteit)
16.15 A sustainable business model in the Optics and Photonics field
David Pointer (Point Source)
16.45 Final open discussion
Chairman: Gustav Kalbe (Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)
OPERA 2015 is playing an important role in making the European Research Area in Optics and Photonics a reality. Join us in Strasbourg and see for yourself!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CONSORTIUM
VDI Technologiezentrum
ENTERPRISE IRELAND
imec
TNO
iDeTra
EPIC
EDS
OPERA 2015
The most complete information resource on Optics and Photonics in Europe
European Commission
Information Society Technologies

In order to thank the attendees for their participation in the Summit 175 USB sticks with the presentation files of the speakers were delivered to the attendees.

- Travel arrangements and catering. As the Summit's duration was several hours catering had to be organized for the attendees. The OPERA partner Idetra supported the speakers in their travel arrangements and arranged for the coverage of travel costs for some speakers.
- The summit took place on April 9th from 13:30-17:00 and attracted almost 100 participants which can be seen as a great success.

Concerning to the quality of the attendees, that is to say their positions, type of entity they came from and country; some graphics have been added. From this information it could be abridged the following conclusions:

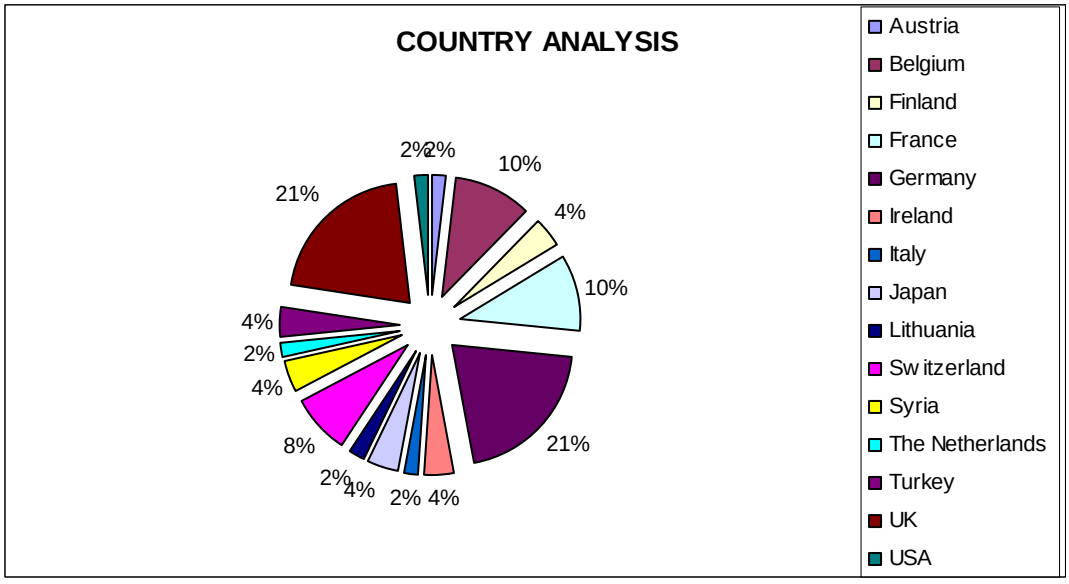
a. A majority of attendees are from UK and Germany, followed by Belgium and France.

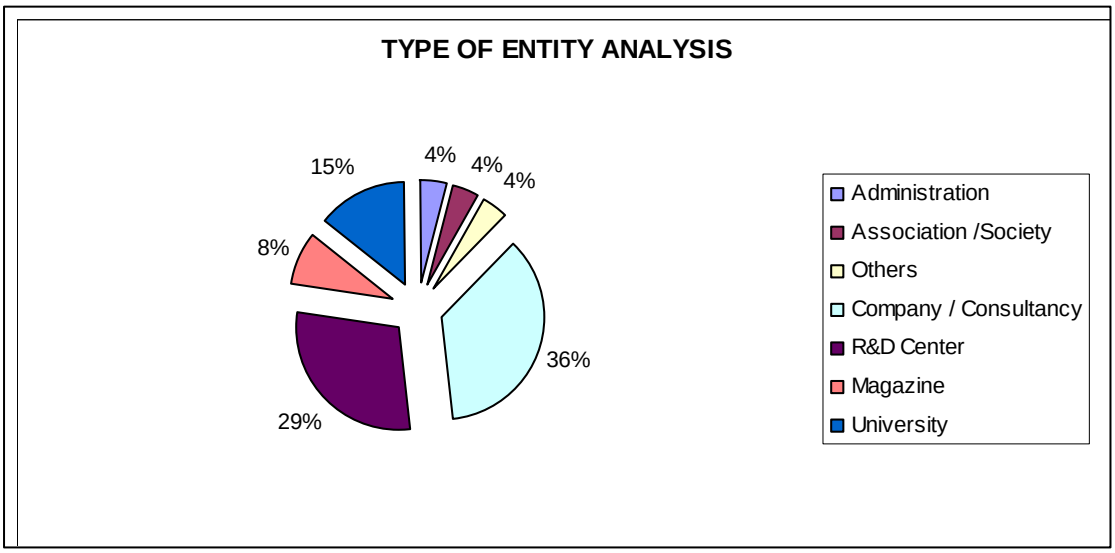
b. The majority of attendees work for Companies, in Research Centers and Universities.

From these results we could have the following conclusions:

The diffusion in those countries have been better than in the rest of them, fact that has been ruled out due to the diffusion of the event was carried out through international websites, international events, and from the European Photonics Consortium.

The interest and therefore the research and business in the optics and photonics sector in these two (four) countries are better and more developed along Europe.





Deviations from the project work plan

A minor deviation from the project work programme in relation to WP6 occurred during this period. The collaboration with other projects, companies, research centres, associations and clusters resulted in a total number of 31 instead of 70 agreements.

Deliverables and Milestones

Table 1: Deliverables list

Del. no.	Deliverable name	Work package no.	Date due	Actual/Forecast delivery date	Estimated indicative person-months *)	Used indicative person-months *)	Lead contractor
D 6.3	Publication of the OPERA Newsletter in a supplement to the OPTO & Laser Europe magazine (five per year)	WP6	M36	,M36			P06
D 6.4	Report on the "OPERA summit"	WP6	M36	M36			P06

***) if available**

Table 2: Milestones list

Milestone no.	Milestone name	Work package no.	Date due	Actual/Forecast delivery date	Lead contractor
M 6.1	Opera2015 Summit agenda (final draft)	WP6	M30	M30	P06
M 6.2	Opera2015 Summit: Invitations sent out and speakers confirmed	WP6	M33	M33	P06
M 6.2	European OPERA Summit	WP6	M36	M36	P06

Chapter 3: Consortium Management

General coordination issues

For proper management of the project and in order to define the overall process of collaboration among OPERA2015 participants a Consortium Agreement has been established at the very beginning of the project.

Reallocations of resources in the third project year

During the third project year some reallocations of resources between project partners were necessary to deal with action items and deliverables of this reporting period.

Reallocations were necessary for following reasons:

- Due to the high number of companies compiled (more than twice the number expected at the beginning of the project), more efforts needed to be taken by WP3 leader and some project participants
- An additional task was conducted by OPERA2015 following a proposal of the European Commission, organisation of a concertation meeting on Photonic integrated circuits
- PR and marketing efforts for the OPERA2015 final summit have been increased in order to attract a significant audience to the OPERA2015 final summit.

Reallocations year 3	**PM cost payer**	**PM cost payee**	**equivalent in PM recipient**	**Task**
PM /budget transferred from EI				
1 PM transferred to TNO	7000	9.500	0,73	WP3: D 3.3 report
1 PM transferred to EPIC	7000	9610	0,72	WP3: data collection
0,5 PM transferred to EPIC	3500	9610	0,36	PR and marketing for final summit
from VDITZ (subcontracts)				
transferred to UKCPO	3500	6500	0,53	WP3: data collection
transferred to EOS	7000	7500	0,93	Organisation of EC concertation meeting Sept. 07
MHEST				
2 PM transferred to EOS	2*3500=7000	7500	0,93	Organisation of EC concertation meeting Sept. 07

As budget has been reallocated between project participants, all reallocations conducted were cost neural for the overall project budget. All reallocations have been decided and agreed by the whole consortium.

Project meetings

Continuous flow of information and coordination among the consortium members is mandatory for the overall success of the project. Thus, three OPERA2015 consortium meetings took place in the second year of the project:

Appendix 1: Plan for using and disseminating the knowledge

Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable D1.6:
Update on the OPERA2015 website including statistical information

Due date of deliverable: **31 July 2007**
(new deliverable defined at 2nd review)

Actual submission date: **21 July 2007**

Start date of project: 01.04.2006 Duration: 36 month

Organisation name of lead contractor for this deliverable: IMEC

Version 2.0

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)

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)	

OPERA 2015

Disclaimer

The information, documentation and figures available in this deliverable, is written by the OPERA2015 ("Optics and Photonics in the European Research Area" – project consortium under EC co-financing contract IST-015734 and does not necessarily reflect the views of the European Commission

Table of Contents

1 Abstract

This deliverables presents an update on the design, operation and statistical information of the OPERA2015 website. This report builds on the information presented in Deliverable D1.1 and at the occasion of the 2nd Year Review.

The OPERA2015 website is a major item in the coordination activities of the OPERA2015 project. It is build into an information exchange platform for optics and photonics players in Europe and outside. This deliverables describes some of the features of the website and shows some screen-dumps as examples of the pages and interfaces being used.

The website itself is built on a database-structure in which items can be placed and categorized. The items are then placed and listed under the appropriate headings and in the corresponding sections.

This report also presents information on the website statistics after 2 years of operation and tries to analyse and interpret these data.

2 Website features

The website has been set up at the beginning of the project with the following features:

- Information about OPERA2015
- News section to be updated on a monthly basis or on-demand for specific events and news
- Listing of planned activities, such as workshops, dissemination activities, discussion sessions
- Reports and related information (presentation, abstracts, papers, roadmaps, white books,..) on issues related to the OPERA2015 field
- Newsletters
- Subscription tools for potential users
- Information on ongoing European Research Projects and on activities within different national bodies.

During the course of the project, it was felt that some extra features needed to be added. At the time of the 2nd review (June 2007), the following features had been implemented:

- Information on the OPERA2015 project in the sections "About OPERA 2015", "OPERA 2015 Deliverables", "Contact", OPERA2015 Partners" & partly in the section "Newsletters"
- News section where items are split between general news items (section "News and Announcements") and specific EU-related news items (section "European News").
- Listing of events in the photonics field in the section "Event Calendar"
- Reports and strategic documents listed in the section "Strategic / vision documents"
- Information on ongoing European Research Projects (section "European Projects") and on activities within different national bodies (section "National Activities"), the latter split up in links to the "Research Groups", "National Programmes", "Photonic Clusters". "Industrial Activities" and "List by Country".
- Information and links to newsletters from other, related organisations (section "Newsletter"
- A discussion forum (section "Forum")
- A set of useful links ("Useful Links")
- A search engine
- A HOME-page listing the latest information in a categorized way.

The amount of content has been gradually improved and is constantly updated. Out of the analysis of the information obtained from the statistics, it comes clear that further pro-active gathering of information is required to further improve the content and attractiveness of the website.

3 Implementation

The OPERA 2015 website (www.opera2015.org), of which a screen-dump of the homepage is given in Figure 1, has become one of the keystones for the operation of the project. The website acts as a portal for information on what's happening in Photonics and Optics in Europe. It brings information on the OPERA 2015 project, its progress, functioning and results such as deliverables and reports, but also collects information on ongoing projects in Europe (FP6, national projects, research projects,...) or makes reference to websites where they are available. WWW.OPERA2015.ORG is also a source of information on upcoming events in the area of Photonics and Optics and links to reports and websites of these and past events.

Furthermore the website is also a tool in the operation of the project by offering a forum to exchange information on national programmes, European programmes and research initiatives of industry and research institutes.

Figure 1: Screen-dump of the WWW.OPERA2015.ORG homepage.

4 Functionalities of the Website

The website itself is based on a proven concept (www.ist-bread.org) in which information can be added and managed in a very flexible way. The website is automatically fed with information out of a database in which items can be entered at different sections and in specified formats (Figure 2).

The flexible interface allows management of the content without any knowledge of website programming.

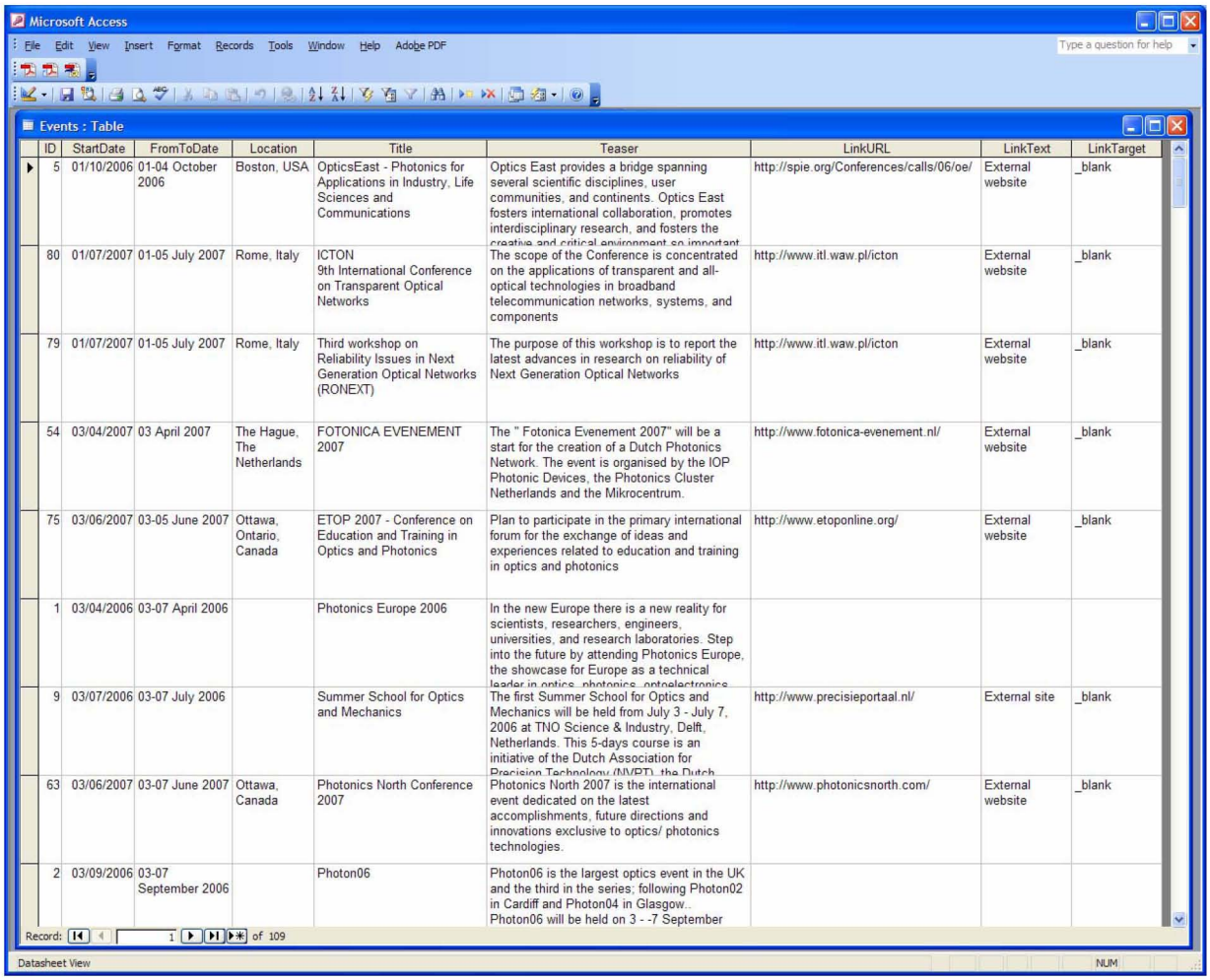


Figure 2: Screen-dump of the ACCESS-interface for the creation of the event calendar.

5 Statistical information.

Statistical information on the OPERA2015 website is obtained through the facilities at "Google Analytics" that keeps tracks of the information on the website. The information obtained via this tool is being discussed below.

5.1 Number of visits

The tool records the number of visits to the www.opera2015.org and this graph is represented below since the start of the project (01/09/05) until 30/06/07. As the website has only become operational after a few months, the first months show zero hits.

The graph in Figure 3 shows the monthly total of visits (blue curve) and the number of pageviews (orange curve).

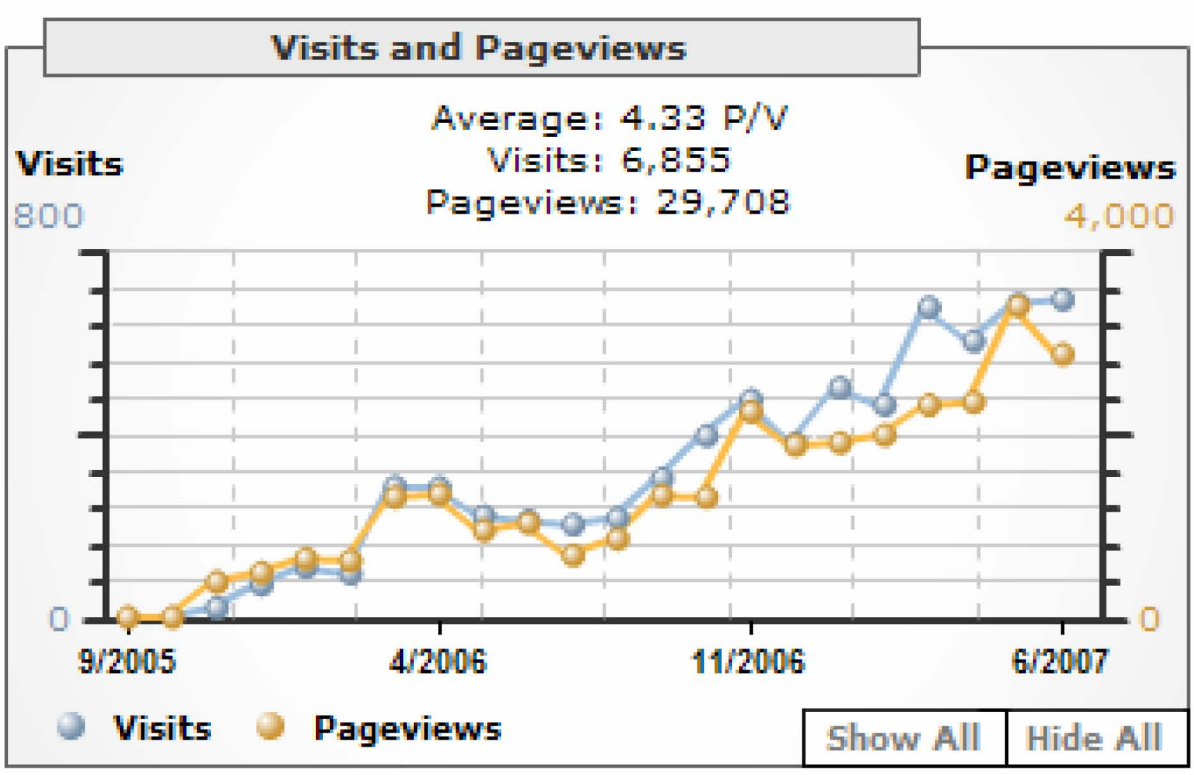


Figure 3: Number of visits and pageviews (monthly totals) for 01/09/05 – 30/06/07

From this graph the steady increase in hits and pageviews is clearly observed. Two distinctive features can be observed on this graph and they are indicated in Figure 4.

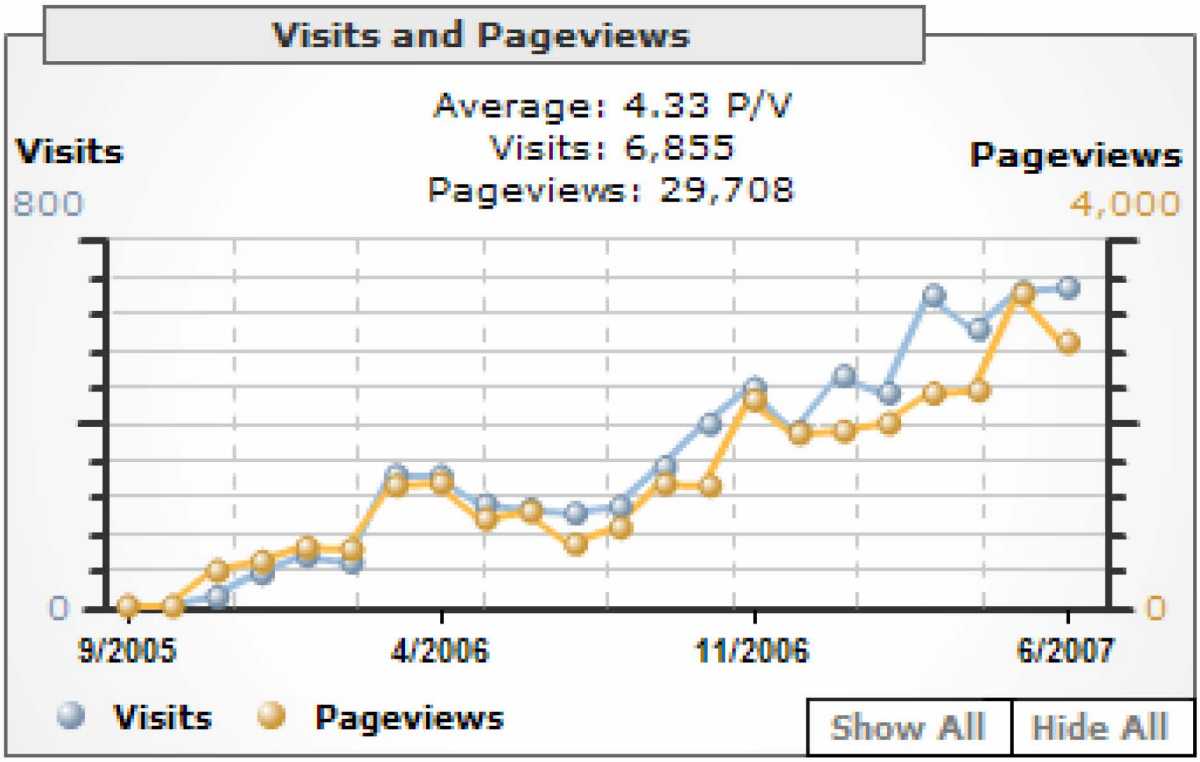


Figure 4: Distinctive features in the number of visits on www.opera2015.org

- In this graph the red arrow indicates the OPERA2015 workshop at Photonics Europe 2006 (April 2006). It is clear that just prior to the event (March 2006) and immediately after the event (April 2006), a significant increase in hits can be observed.
- In this graph the green arrow indicates the OPERA2015 workshop in Wroclaw, Poland (mid October 2006). It is clear that again a peak is observed in October and especially November, immediately after the event.

At the time of writing, the www.opera2015.org website gets over 700 visits per month with approaching 4000 pageviews a month.

5.2 Geographical information on visitors

The tool also allows checking geographical origin of the visitors. This is shown on the map in Figure 5 with a more detailed view in Figure 6.

Figure 5: Geographical distribution of the visitors to www.OPERA2015.org. The darker green continents indicate higher number of visits.

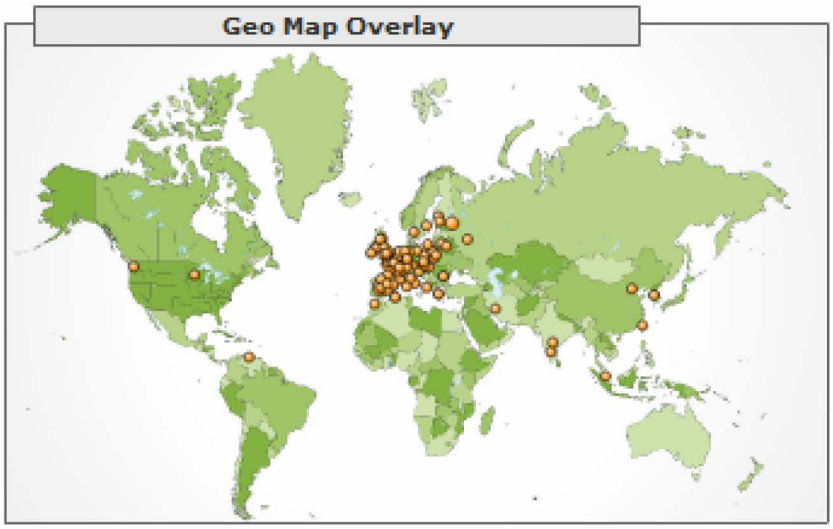


Figure 6: Geographical distribution of the visitors to www.OPERA2015.org The darker green countries indicate higher number of visits.

Site Usage | Goal Conversion | Views:

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
6,855	4.33	00:02:52	72.87%	53.01%
% of Site Total: 100.00%	Site Avg: 4.33 (0.00%)	Site Avg: 00:02:52 (0.00%)	Site Avg: 72.85% (0.02%)	Site Avg: 53.01% (0.00%)

	Continent	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	Europe	5,056	5.01	00:03:08	67.96%	48.18%
2.	Americas	757	2.02	00:01:17	88.77%	70.01%
3.	Asia	705	2.96	00:02:43	84.11%	61.99%
4.	Africa	284	2.25	00:02:57	87.68%	69.72%
5.	Oceania	51	2.25	00:00:35	84.31%	62.75%
6.	(not set)	2	1.50	00:00:31	100.00%	50.00%

Find Continent: containing | Go | Show rows: 10 | 1 - 6 of 6

Table 1: Geographical distribution of the visitors to www.OPERA2015.org divided by continent

From Table 1 it is clear that the highest number of hits originates from Europe. In this table one can also see the average time spent on the website which is clearly different for visitors from Europe and Asia compared to visitors from the Americas. The table also shows the "bounce Rate" this is the part of the visitors that just hit our website on a single page and leave without looking at a second page of our website. As the OPERA2015 website contains many direct links (e.g. on news, events,…) it is however not an indication that these visitors are not interested in the OPERA2015 website or did not find useful information.

From this table it appears that European visitors spend more time and look at more pages than other visitors.

A more detailed analysis of the geographical distribution of the European visitors can be found in Figure 7 and Table 2. The high rates of hits from France and Germany are most probably due to the presence of OPERA2015 partners there, the size of the country and the involvement of industrial and research groups in the field. The numbers are absolute and not relative to the size or population of the country.

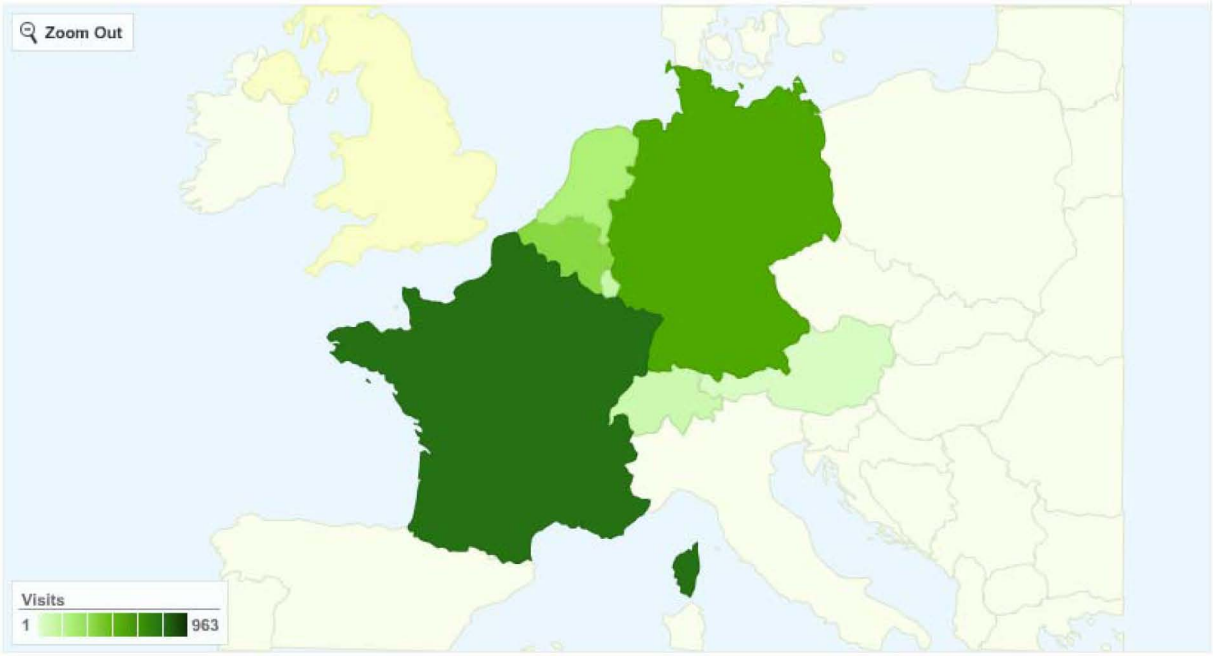


Figure 7: More detailed geographical distribution of the European visitors to www.OPERA2015.org. The darker green countries indicate higher number of visits.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
5,056	**5.01**	**00:03:08**	**67.96%**	**48.18%**
% of Site Total: 73.76%	Site Avg: 4.33 (15.63%)	Site Avg: 00:02:52 (9.30%)	Site Avg: 72.85% (-6.72%)	Site Avg: 53.01% (-9.11%)

	Country	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	France	963	3.42	00:01:52	81.52%	66.67%
2.	Germany	652	5.35	00:03:39	66.56%	39.57%
3.	United Kingdom	543	4.93	00:03:20	72.93%	47.33%
4.	Belgium	426	6.37	00:03:48	57.98%	46.01%
5.	Spain	389	6.93	00:03:42	69.67%	35.48%
6.	Poland	338	3.72	00:01:43	62.72%	48.22%
7.	Netherlands	265	5.02	00:03:05	50.19%	32.45%
8.	Italy	217	4.52	00:02:44	79.26%	51.61%
9.	Russia	137	2.46	00:02:32	27.74%	81.02%
10.	Luxembourg	132	6.07	00:04:23	36.36%	31.06%

Find Country: containing Go Show rows: 10 1 - 10 of 37

Table 2: Geographical distribution of the European visitors to www.OPERA2015.org divided by country

5.3 Network information origin

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
6,855	4.33	00:02:52	72.87%	53.01%
% of Site Total: 100.00%	Site Avg: 4.33 (0.00%)	Site Avg: 00:02:52 (0.00%)	Site Avg: 72.85% (0.02%)	Site Avg: 53.01% (0.00%)

	Network Location	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	France Telecom	202	2.79	00:01:44	90.10%	69.31%
2.	Commission Europeenne	106	5.83	00:04:34	32.08%	31.13%
3.	VDI Technologiezentrum GmbH	98	9.78	00:06:00	12.24%	19.39%
4.	Russian Space Science Internet	89	2.53	00:03:03	2.25%	91.01%
5.	Deutsche Telekom AG	85	4.58	00:03:26	72.94%	43.53%
6.	Dutch organization for applied scientific res...	84	5.31	00:02:16	15.48%	16.67%
7.	the network covers whole Wroclaw area	84	4.43	00:01:36	54.76%	47.62%
8.	Proxad / Free SAS	78	1.90	00:00:56	93.59%	85.90%
9.	(not set)	77	2.30	00:01:18	70.13%	75.32%
10.	Skynet Belgium	74	5.04	00:02:14	66.22%	55.41%

Find Network Location: containing Go Show rows: 10 1 - 10 of 2,416

Table 3: Network operator from which the visitors originate

Table 3 shows the network from which the visitors of the OPERA2015 website originate. It is difficult to analyse the origin of the users (industrial, academic,..), but some of these data are worth noting. The time spent by users of the EU Commission network and the VDI-network spend more time of the OPERA2015 website and also show a much lower bounce rate, which means they look much deeper into the website or look at more pages.

5.4 Loyalty of the visitors

The analytical tool also allows looking into the loyalty of the visitors. Table 4 shows the length of the visits in time. It is clear that the major part of the visitors spent very limited time on the website. As will become clearer further below, this is mainly due to the fact that the main points of interest is the calendar where people get a direct link to an event, outside our OPERA2015 website. This is also clear from Table 5 which shows the number of pages visited.

In Table 4, a second peak can be observed with people spending 1 to 5 minutes on the website, which indicates that they are reading information or surfing the website.

Length of Visit	Visits	Percentage of all visitors
0-10 seconds	3,928	57.30%
11-30 seconds	470	6.86%
31-60 seconds	420	6.13%
61-180 seconds	760	11.09%
181-600 seconds	718	10.47%
601-1,800 seconds	436	6.36%
1,801+ seconds	123	1.79%

Table 4: Length of the visits on the OPERA2015 website.

Depth of Visit	Visits	Percentage of all visitors
1 pages	3,634	53.01%
2 pages	824	12.02%
3 pages	505	7.37%
4 pages	331	4.83%
5 pages	244	3.56%
6 pages	167	2.44%
7 pages	163	2.38%
8 pages	97	1.42%
9 pages	89	1.30%
10 pages	97	1.42%
11 pages	94	1.37%
12 pages	58	0.85%
13 pages	61	0.89%
14 pages	57	0.83%
15 pages	42	0.61%
16 pages	38	0.55%
17 pages	35	0.51%
18 pages	37	0.54%
19 pages	23	0.34%
20+ pages	259	3.78%

Table 5: Number of pages visited on the OPERA2015 website

The “Bounce Rate” is presented in Figure 8. This “Bounce Rate” indicates which percentage of visitors just quit the website after only viewing a single page. In a first glance this “Bounce Rate” of 53% is quite high, which would be a negative indication for the website, however regarding the content of the website with many direct links to events and news items, this is

not a bad sign. Many portal sites show high "Bounce Rates" as these direct links directly bring the visitor to the external website with all the required information. That this is the case for OPERA2015, becomes clear from the top pages presented below.

Looking over a shorter period and more in detail day per day (Figure 9), it is clear that the highest "Bounce Rates" occur during the weekends. These numbers then also include "internet surfers" who may not be directly involved and interested in the activities of OPERA2015.

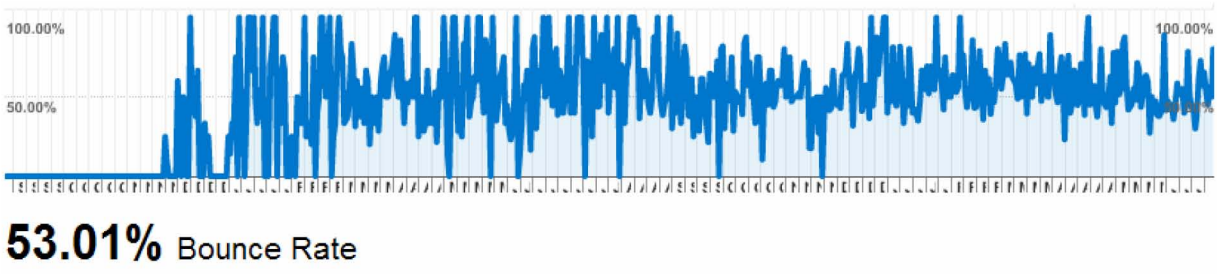


Figure 8: "Bounce Rate" for the OPERA2015 website indicating the percentage of visitors viewing only a single page.

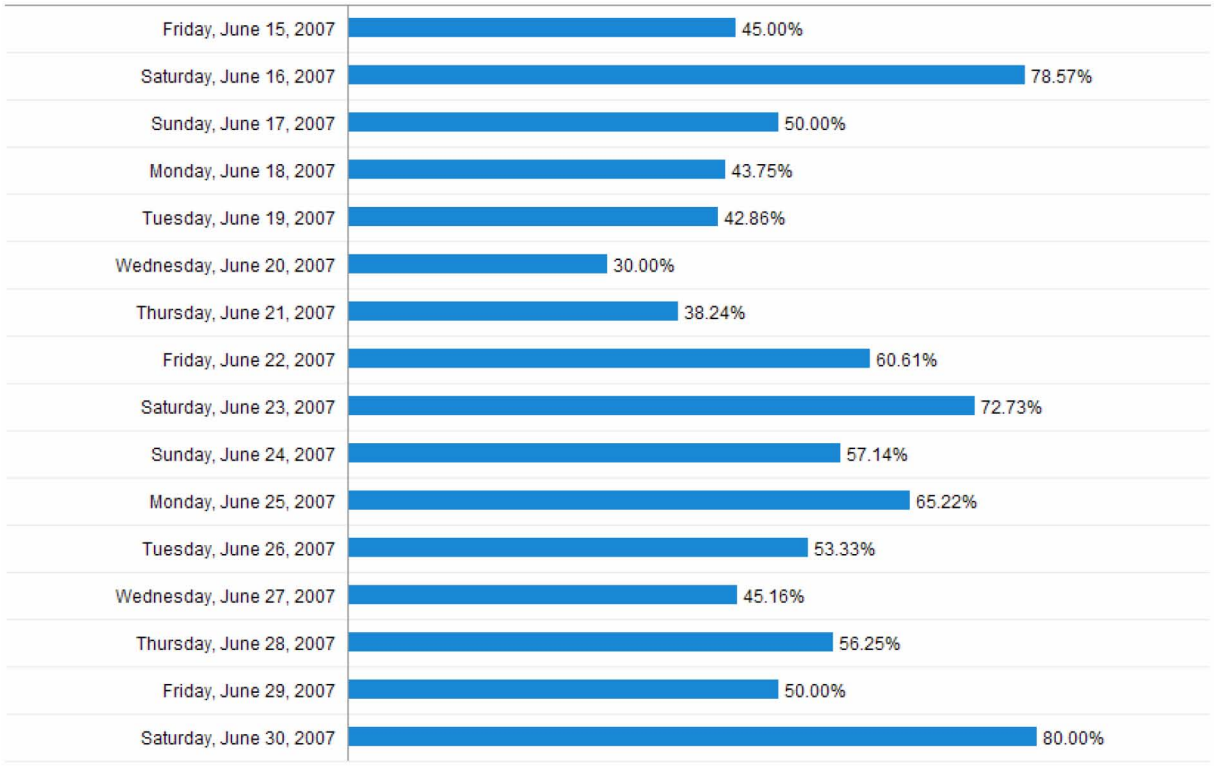


Figure 9: "Bounce Rate" for the OPERA2015 website per day

5.5 How do visitors get to OPERA2015?

Table 6 lists the origin which is used by the visitors to find OPERA2015. Top score is "Google", but the 2nd in the list is direct hits. The latter indicates people that type in www.opera2015.org and clearly indicates the high percentage of visits on the website that are clearly visits with the intention to look on the OPERA2015 website for information. Also the high scoring of the referrals is interesting. This indicates that the OPERA2015 website is found by reference on other websites. Figure 10 shows this in a pie-chart.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
6,855	**4.33**	**00:02:52**	**72.87%**	**53.01%**
% of Site Total: 100.00%	Site Avg: 4.33 (0.00%)	Site Avg: 00:02:52 (0.00%)	Site Avg: 72.85% (0.02%)	Site Avg: 53.01% (0.00%)

	Source/Medium	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	google / organic	4,223	3.01	00:02:04	77.34%	65.36%
2.	(direct) / (none)	2,267	6.93	00:04:26	63.30%	28.85%
3.	yahoo / organic	70	2.61	00:02:12	72.86%	61.43%
4.	cordis.europa.eu / referral	46	9.15	00:04:13	47.83%	36.96%
5.	msn / organic	29	2.72	00:01:05	100.00%	62.07%
6.	google.com / referral	22	4.32	00:09:01	54.55%	50.00%
7.	misc.skynet.be / referral	14	1.43	00:00:37	100.00%	78.57%
8.	search / organic	11	5.09	00:02:24	63.64%	45.45%
9.	images.google.com / referral	11	1.18	00:00:04	100.00%	90.91%
10.	optecnet.de / referral	9	3.00	00:01:07	88.89%	77.78%

Find Source/Medium: containing Go Show rows: 10 1 - 10 of 99

Table 6: Origin of the visits on OPERA2015.

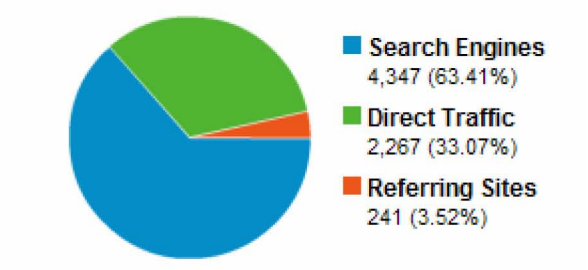


Figure 10: Distribution of the tools used to find OPERA2015.

5.6 What are people looking for at OPERA2015?

If we try to analyse what kind of information visitors are looking for on the OPERA2015 website, we can do this through the tool by selecting the statistics on the keywords that have been typed in into the search engines. These are listed in Table 7. The first line is a keyword with a very high bounce rate, so most probably this is a keyword used to find a specific project or a specific news items, however it can also indicate that these visitors did not find what they were looking for.

An interesting fact is the Nr. 7 which indicates that people. Looking for specific research groups get there via OPERA2015 and not via the group website. This is also illustrated by the screen dump in Figure 11 which shows the search results in Google on this laboratory. Due to the portal function and the many links, the OPERA2015 website scores higher than the website of the group itself.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
4,347	3.01	00:02:03	77.41%	65.19%
% of Site Total: 63.41%	Site Avg: 4.33 (-30.55%)	Site Avg: 00:02:52 (-28.49%)	Site Avg: 72.85% (6.26%)	Site Avg: 53.01% (22.98%)

	Keyword	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	"nanoplasmonic" project	88	2.55	00:03:05	1.14%	90.91%
2.	nextgenpcf	68	3.24	00:02:26	77.94%	55.88%
3.	idetra	55	3.13	00:01:51	72.73%	52.73%
4.	opera2015 wroclaw	40	5.70	00:03:32	2.50%	32.50%
5.	eu fp6 more moore	37	5.30	00:02:06	0.00%	2.70%
6.	opera2015	35	8.29	00:06:50	25.71%	17.14%
7.	laboratorio di fotolitografia ottica	30	7.90	00:07:06	0.00%	23.33%
8.	photonics in switching 2007	26	7.50	00:04:46	38.46%	50.00%
9.	phodye	22	4.41	00:02:06	59.09%	54.55%
10.	uroof	22	3.41	00:03:31	90.91%	68.18%

Find Keyword: containing Go Show rows: 10 1 - 10 of 3,258

Table 7: Keywords used by visitors in search for information and ending up on the OPERA29015 website

The top content, so the pages which are mostly visited by the users are listed in Table 8. From this table we learn the high importance of the event calendar and the information on projects. The former illustrates the fact that many visitors will only stay for a limited amount of time and a single page on the OPERA2015 website as they will be re-directed to the event website itself.

On the other hand, these results show the importance of keeping the event calendar updated and also shows the importance of the information on the projects.

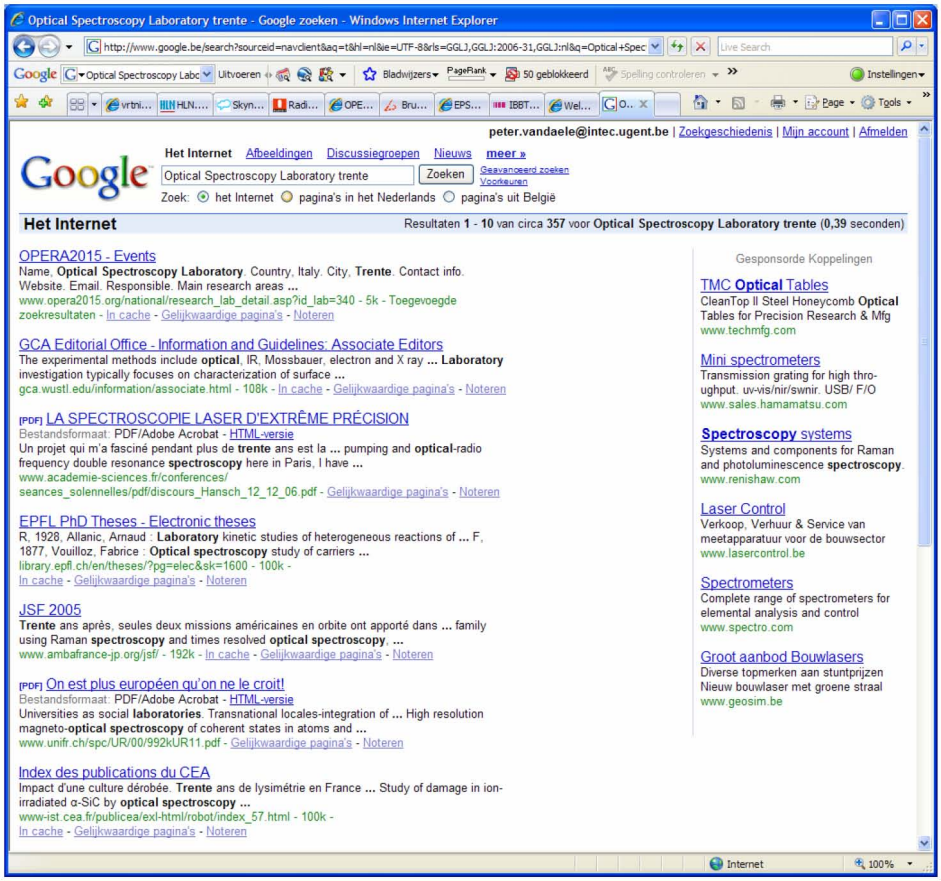


Figure 11: Screen dump of the Google search results on "Optical Spectroscopy Laboratory Trente"

Pageviews	Unique Pageviews	Time on Page	Bounce Rate	% Exit	$ Index
29,708	**20,560**	**00:00:51**	**53.01%**	**23.07%**	**$0.00**
% of Site Total: 100.00%	% of Site Total: 100.00%	Site Avg: 00:00:51 (0.00%)	Site Avg: 53.01% (0.00%)	Site Avg: 23.07% (0.00%)	Site Avg: $0.00 (0.00%)

	Page Title	Pageviews ↓	Unique Pageviews	Time on Page	Bounce Rate	% Exit	$ Index
1.	OPERA2015 - Events	**10,742**	7,616	00:00:42	60.25%	26.28%	$0.00
2.	OPERA2015 - European Projects	**6,681**	4,455	00:00:59	49.21%	21.10%	$0.00
3.	OPERA2015 - DOCUMENTS	**1,908**	1,381	00:01:08	30.44%	18.92%	$0.00
4.	OPERA2015 - Partners	**1,708**	1,282	00:00:51	50.86%	27.11%	$0.00
5.	OPERA2015 - NEWS	**1,410**	1,081	00:00:58	66.28%	31.91%	$0.00
6.	About OPERA2015 - Key Enabling Technol...	**934**	525	00:00:26	25.68%	11.56%	$0.00
7.	OPERA2015 - Usefull Links	**872**	624	00:00:52	49.57%	20.87%	$0.00
8.	OPERA2015 - About - 6th Framework	**723**	526	00:00:41	31.40%	17.15%	$0.00
9.	OPERA2015 - Contact	**690**	501	00:00:36	24.64%	13.19%	$0.00
10.	OPERA2015 - Research Groups	**612**	233	00:00:39	32.08%	7.68%	$0.00

Find Page Title: containing Go Show rows: 10 1 - 10 of 35

Table 8: The top pages which are mostly visited by the users

5.7 Scoring in Google

The website of OPERA2015 also improved its scoring in search engines as Google. It was already shown that when looking for specific laboratories, the OPERA2015 website might score higher than the website of the group itself. Another example is the scoring on "Optics Photonics Europe" (Figure 12) where the OPERA-website scores No. 9 after the MONA-project (No. 7) but before the VDI-website and the website of e.g. the NEMO Network of Excellence.

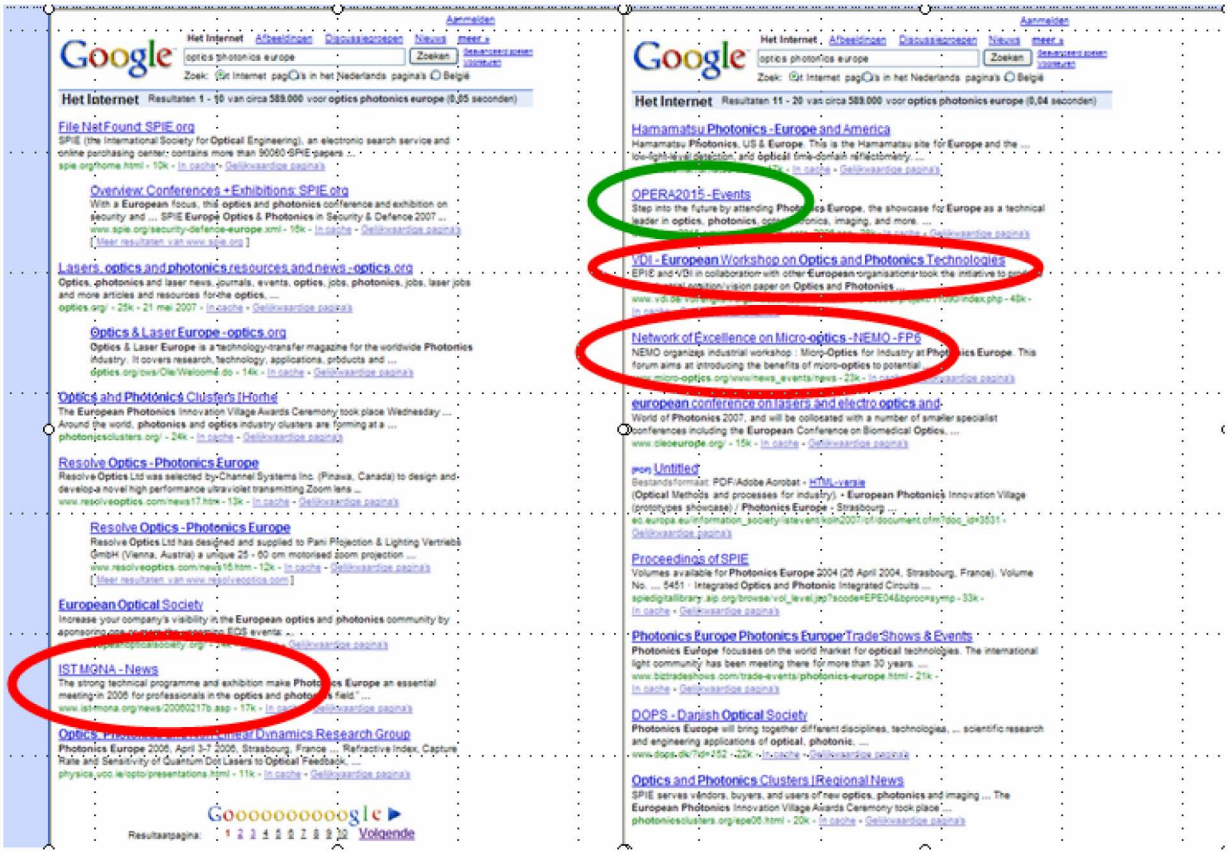


Figure 12: Screen dump from Google for search on "Optics Photonics Europe" …

6 Conclusions.

The OPERA2015 website has been set up and active during nearly 2 years. This report describes some of the functionalities of the website and also presents statistical information on the visits and hits on the website. This information is made available through a Google tool on which the website is logged.

The results show a high interest from visitors for information in the event calendar and the project-section. The scoring in search engines like Google is also very good and shows the growing importance of the website as a portal in the field of Optics and Photonics in Europe.

Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable D1.7:
Final report on website statistics

Due date of deliverable: **31 March 2008**

Actual submission date: **31 March 2008**

Start date of project: 01.04.2006 Duration: 37 month

Organisation name of lead contractor for this deliverable: IMEC

Version 2.0

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
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)	

OPERA 2015

Disclaimer

The information, documentation and figures available in this deliverable, is written by the OPERA2015 ("Optics and Photonics in the European Research Area" – project consortium under EC co-financing contract IST-015734 and does not necessarily reflect the views of the European Commission

Table of Contents

1 Abstract

This deliverable presents an update on the design, operation and statistical information of the OPERA2015 website. This report builds on the information presented in Deliverable D1.1 and Deliverable D1.6

The OPERA2015 website is a major item in the coordination activities of the OPERA2015 project. It is build into an information exchange platform for optics and photonics players in Europe and outside. This deliverables describes some of the features of the website and shows some screen-dumps as examples of the pages and interfaces being used.

The website itself is built on a database-structure in which items can be placed and categorized. The items are then placed and listed under the appropriate headings and in the corresponding sections.

This report also presents information on the website statistics after 3 years of operation and tries to analyse and interpret these data.

2 Website features

The website has been set up at the beginning of the project and continuously updated with new features. The website now contains sections on the following topics:

- Home
- Event Calendar
- News and Announcements
- European News
- Strategic / vision documents
- European Projects
- National Activities
- About OPERA 2015
- Collaborating Partners
- Training
- Jobs
- Contact
- Useful Links
- Newsletters.

During the course of the project, it was felt that some extra features needed to be added.

- A discussion forum (this was however deleted as it was not used by visitors)
- A search engine
- A HOME-page with direct links to the OPERA2015 database.

The amount of content has been gradually improved and is constantly updated. Out of the analysis of the information obtained from the statistics, it comes clear that a website like OPERA2015 only has value when pro-active gathering of information is carried out.

3 Statistical information.

Statistical information on the OPERA2015 website is obtained through the facilities at "Google Analytics" that keeps tracks of the information on the website. The information obtained via this tool is being discussed below. Comparing these updated results over the whole period f the project learns that these statistics have not changed very much with respect to the previous report deliverable D1.6. This comparison shows that the website has reached a steady-state.

3.1 Number of visits

The tool records the number of visits to the www.opera2015.org and this graph is represented below since the start of the project (01/09/05) until 27/03/08. As the website has only become operational after a few months, the first months show zero hits.

The graph in Figure 1 shows the daily number of visits (blue curve, left scale) and the number of pageviews (orange curve, right scale). Total number of visits is above 12 000, total number of pageviews is above 50 000.

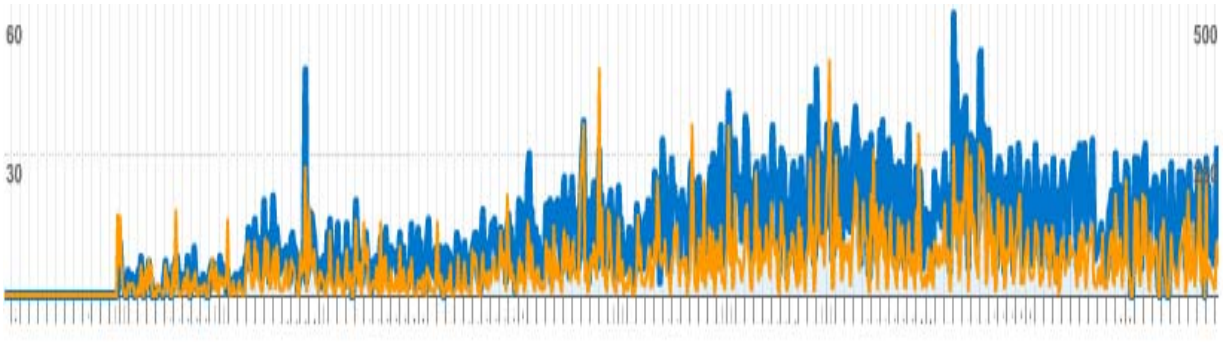


Figure 1: Number of visits and pageviews (monthly totals) for 01/09/05 – 27/03/08

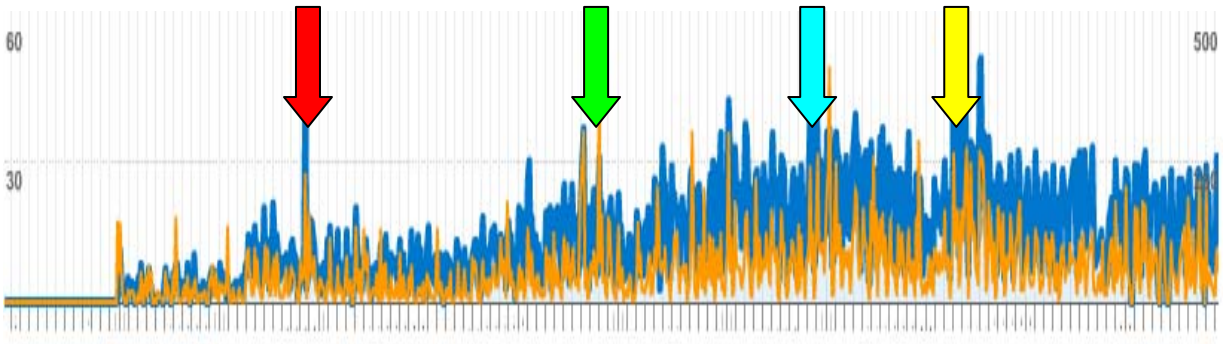


Figure 2: Distinctive features in the number of visits on www.opera2015.org

From the graph in Figure 1 the steady increase in hits and pageviews is clearly observed in the first 18 months of the project flattening out during the following period. Several distinctive features can be observed on this graph and they are indicated in Figure 2.

- In this graph the red arrow indicates the OPERA2015 workshop at Photonics Europe 2006 (April 2006). It is clear that just prior to the event (March 2006) and immediately after the event (April 2006), a significant increase in hits can be observed.
- In this graph the green arrow indicates the OPERA2015 workshop in Wroclaw, Poland (mid October 2006). It is clear that again a peak is observed in October and especially November, immediately after the event.
- In this graph the blue arrow indicates the period around OFC (USA) and the FP7 Information days. At OFC, IMEC briefly mentioned OPERA2015 in some talks and also at the InformationDays, OPERA2015 was mentioned.
- In this graph the yellow arrow indicates the Photonics Concertation Meeting in Brussels, Belgium (26 September 2007). It is clear that many attendees looked for information before and after the event on the OPERA2015-website.

3.2 Geographical information on visitors

The tool also allows checking geographical origin of the visitors. This is shown on the map in Figure 3 with a more detailed view in Figure .

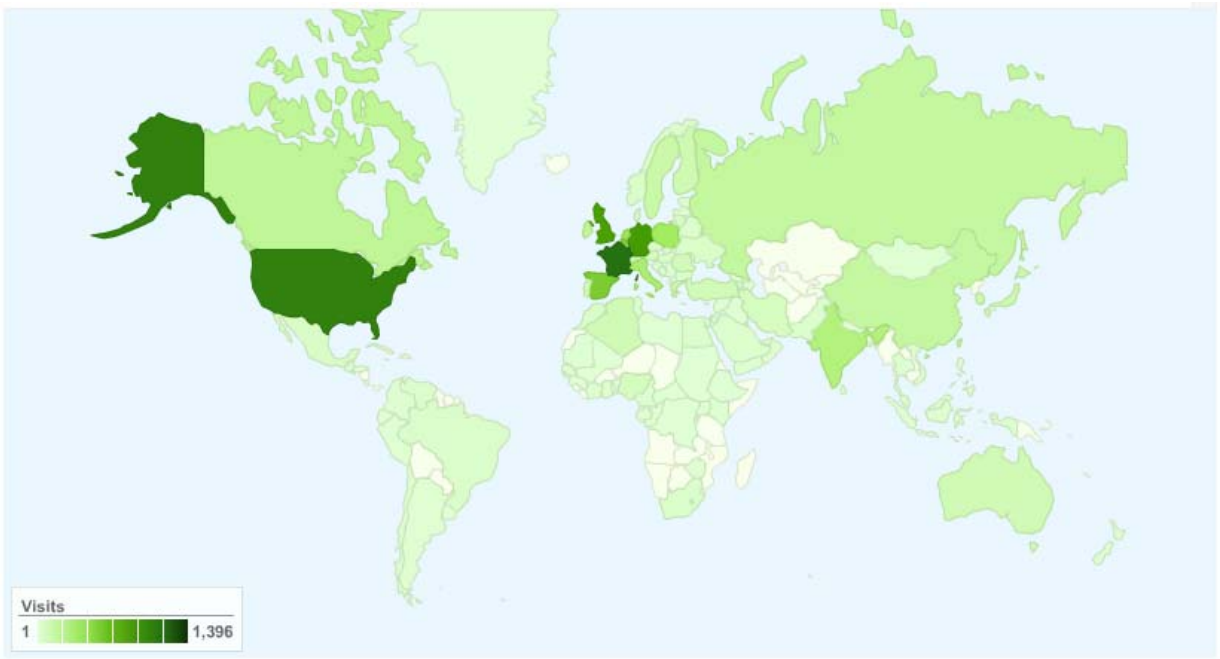


Figure 3: Geographical distribution of the visitors to www.OPERA2015.org. The darker green continents indicate higher number of visits.

Figure 4: Geographical distribution of the visitors to www.OPERA2015.org . The dots represent cities from where the website was visited.

Site Usage | Goal Conversion | Views:

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
12,058	4.21	00:02:44	73.41%	53.21%
% of Site Total: 100.00%	Site Avg: 4.21 (0.00%)	Site Avg: 00:02:44 (0.00%)	Site Avg: 73.36% (0.07%)	Site Avg: 53.21% (0.00%)

	Continent	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	Europe	8,254	5.04	00:03:08	67.02%	46.89%
2.	Americas	1,681	2.04	00:01:07	88.64%	70.08%
3.	Asia	1,556	2.89	00:02:36	85.73%	62.28%
4.	Africa	438	2.11	00:02:33	86.99%	71.00%
5.	Oceania	125	2.02	00:00:49	88.80%	69.60%
6.	(not set)	4	2.00	00:02:34	100.00%	25.00%

Find Continent: containing | Go | Go to: 1 | Show rows: 10 | 1 - 6 of 6

Table 1: Geographical distribution of the visitors to www.OPERA2015.org divided by continent

From Table 1 it is clear that the highest number of hits originates from Europe. In this table one can also see the average time spent on the website which is clearly different for visitors from Europe and Asia compared to visitors from the Americas. The table also shows the "bounce rate" this is the part of the visitors that just hit our website on a single page and leave without looking at a second page of our website. As the OPERA2015 website contains many

direct links (e.g. on news, events,…) it is however not an indication that these visitors are not interested in the OPERA2015 website or did not find useful information.

From this table it appears that European visitors spend more time and look at more pages than other visitors.

A more detailed analysis of the geographical distribution of the European visitors can be found in Figure 5 and Table 2. The high rates of hits from France and Germany are most probably due to the presence of OPERA2015 partners there, the size of the country and the involvement of industrial and research groups in the field. The numbers are absolute and not relative to the size or population of the country.

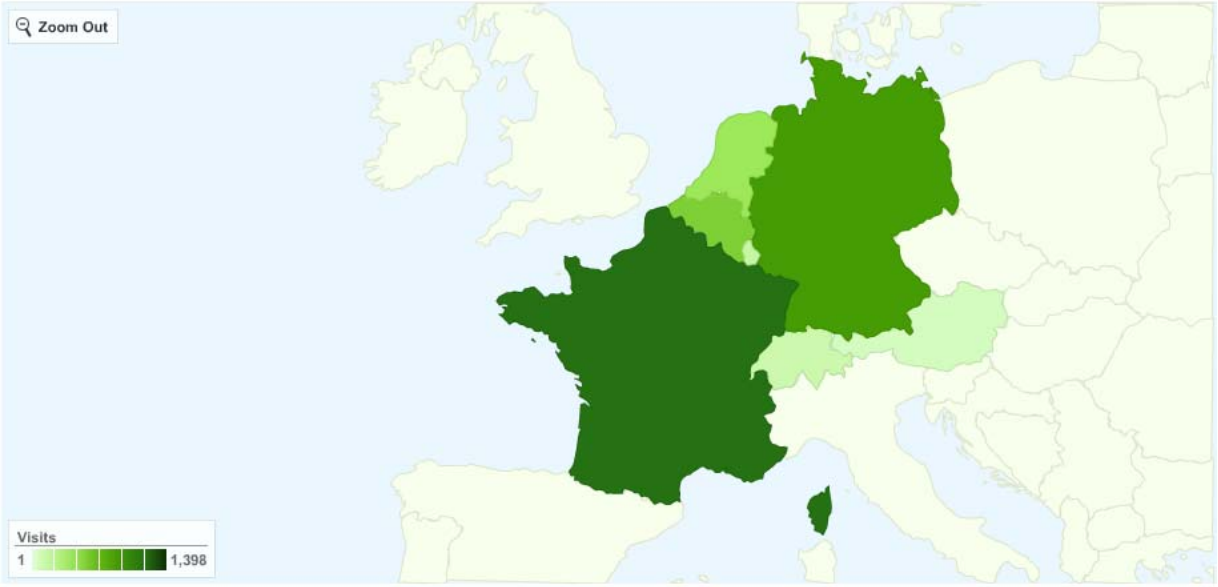


Figure 5: More detailed geographical distribution of the West-European visitors to www.OPERA2015.org. The darker green countries indicate higher number of visits.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
4,062 % of Site Total: 33.61%	5.05 Site Avg: 4.21 (20.16%)	00:03:10 Site Avg: 00:02:45 (15.45%)	65.71% Site Avg: 73.36% (-10.44%)	45.72% Site Avg: 53.20% (-14.06%)

	Country/Territory	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	France	1,398	4.11	00:02:14	78.33%	60.01%
2.	Germany	1,043	5.41	00:03:24	65.77%	39.60%
3.	Belgium	670	6.35	00:04:36	57.46%	45.07%
4.	Netherlands	507	4.93	00:02:56	49.90%	28.21%
5.	Luxembourg	206	6.14	00:04:15	32.04%	28.16%
6.	Switzerland	154	4.58	00:02:54	85.06%	44.81%
7.	Austria	82	4.94	00:02:59	62.20%	40.24%
8.	Liechtenstein	1	7.00	00:48:47	100.00%	0.00%
9.	Monaco	1	11.00	00:07:34	100.00%	0.00%

Find Country/Territory: containing Go Go to: 1 Show rows: 10 1 - 9 of 9

Table 2: Geographical distribution of the European visitors to www.OPERA2015.org divided by country

3.3 Loyalty of the visitors

The analytical tool also allows looking into the loyalty of the visitors. Table 3 shows the length of the visits in time. It is clear that the major part of the visitors spent very limited time on the website. As will become clearer further below, this is mainly due to the fact that the main points of interest are items where people get a direct link to an event, news, project…. outside our OPERA2015 website. This is also clear from Table which shows the number of pages visited.

In Table 3, a second peak can be observed with people spending 1 to 5 minutes on the website, which indicates that they are reading information or surfing the website.

Length of Visit	Visits	Percentage of all visitors
0-10 seconds	6,969	57.67%
11-30 seconds	792	6.55%
31-60 seconds	726	6.01%
61-180 seconds	1,358	11.24%
181-600 seconds	1,282	10.61%
601-1,800 seconds	764	6.32%
1,801+ seconds	194	1.61%

Table 3: Length of the visits on the OPERA2015 website.

Depth of Visit	Visits	Percentage of all visitors
1 pages	6,429	53.20%
2 pages	1,450	12.00%
3 pages	969	8.02%
4 pages	544	4.50%
5 pages	420	3.48%
6 pages	298	2.47%
7 pages	291	2.41%
8 pages	177	1.46%
9 pages	168	1.39%
10 pages	155	1.28%
11 pages	141	1.17%
12 pages	118	0.98%
13 pages	101	0.84%
14 pages	88	0.73%
15 pages	69	0.57%
16 pages	72	0.60%
17 pages	64	0.53%
18 pages	58	0.48%
19 pages	45	0.37%
20+ pages	428	3.54%

Table 4: Number of pages visited on the OPERA2015 website

The "Bounce Rate" is presented in Figure 6. This "Bounce Rate" indicates which percentage of visitors just quit the website after only viewing a single page. In a first glance this "Bounce Rate" of 53% is quite high, which would be a negative indication for the website, however regarding the content of the website with many direct links to events and news items, this is not a bad sign. Many portal sites show high "Bounce Rates" as these direct links directly bring the visitor to the external website with all the required information. That this is the case for OPERA2015, becomes clear from the top pages presented below.

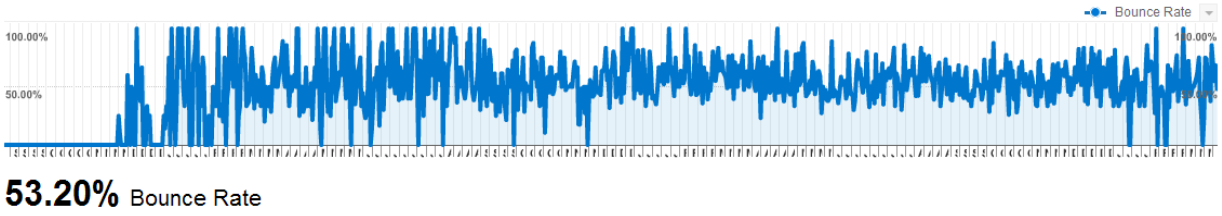


Figure 6: "Bounce Rate" for the OPERA2015 website indicating the percentage of visitors viewing only a single page.

3.4 How do visitors get to OPERA2015?

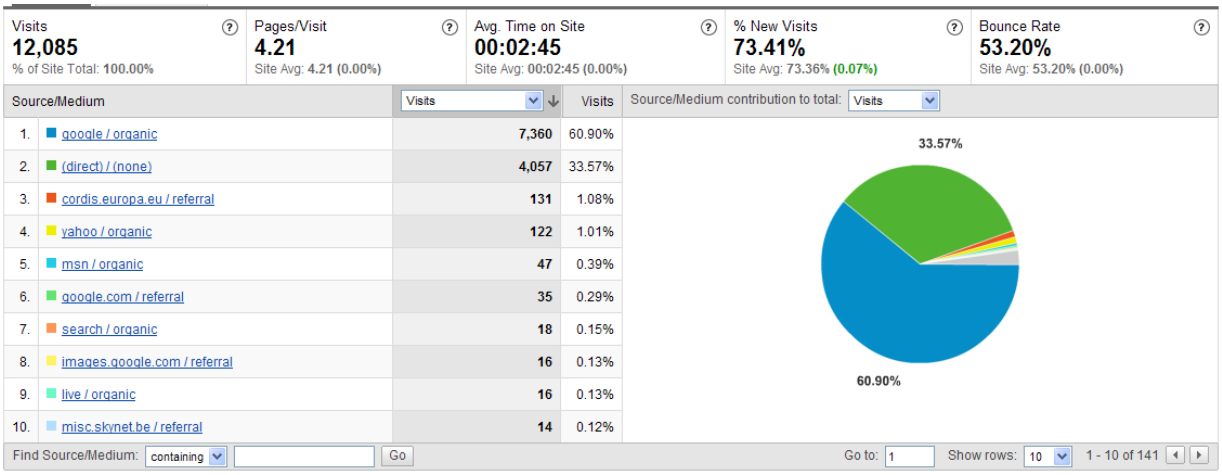
Table 5 lists the origin which is used by the visitors to find OPERA2015. Top score is "Google", but the 2nd in the list is direct hits. The latter indicates people that type in www.opera2015.org and clearly indicates the high percentage of visits on the website that are clearly visits with the intention to look on the OPERA2015 website for information. Also the high scoring of the referrals is interesting. This indicates that the OPERA2015 website is found by reference on other websites. Figure 7 shows this in a pie-chart.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
12,085 % of Site Total: 100.00%	4.21 Site Avg: 4.21 (0.00%)	00:02:45 Site Avg: 00:02:45 (0.00%)	73.41% Site Avg: 73.36% (0.07%)	53.20% Site Avg: 53.20% (0.00%)

	Source/Medium	Visits ↓	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	google / organic	7,360	2.96	00:01:52	78.68%	65.71%
2.	(direct) / (none)	4,057	6.54	00:04:21	63.27%	29.85%
3.	cordis.europa.eu / referral	131	7.31	00:04:30	48.85%	34.35%
4.	yahoo / organic	122	2.60	00:02:02	73.77%	63.93%
5.	msn / organic	47	2.47	00:01:01	97.87%	68.09%
6.	google.com / referral	35	3.60	00:06:02	62.86%	57.14%
7.	search / organic	18	4.28	00:02:06	66.67%	50.00%
8.	images.google.com / referral	16	1.38	00:00:07	100.00%	87.50%
9.	live / organic	16	2.12	00:00:48	100.00%	50.00%
10.	misc.skynet.be / referral	14	1.43	00:00:38	100.00%	78.57%

Find Source/Medium: containing Go Go to: 1 Show rows: 10 1 - 10 of 141

Table 5: Origin of the visits on OPERA2015.



Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
12,085	4.21	00:02:45	73.41%	53.20%
% of Site Total: 100.00%	Site Avg: 4.21 (0.00%)	Site Avg: 00:02:45 (0.00%)	Site Avg: 73.36% (0.07%)	Site Avg: 53.20% (0.00%)

	Source/Medium	Visits	
1.	google / organic	7,360	60.90%
2.	(direct) / (none)	4,057	33.57%
3.	cordis.europa.eu / referral	131	1.08%
4.	yahoo / organic	122	1.01%
5.	msn / organic	47	0.39%
6.	google.com / referral	35	0.29%
7.	search / organic	18	0.15%
8.	images.google.com / referral	16	0.13%
9.	live / organic	16	0.13%
10.	misc.skynet.be / referral	14	0.12%

Find Source/Medium: containing Go Go to: 1 Show rows: 10 1 - 10 of 141

Figure 7: Distribution of the tools used to find OPERA2015.

3.5 What are people looking for at OPERA2015?

If we try to analyse what kind of information visitors are looking for on the OPERA2015 website, we can do this through the tool by selecting the statistics on the keywords that have been typed in into the search engines. These are listed in Table 6. The 2nd and 3rd lines are keywords with a very high bounce rate, so most probably this is a keyword used to find a specific project or a specific news items, however it can also indicate that these visitors did not find what they were looking for.

An interesting fact are the No. 4 and No. 5 which indicate that people looking for specific research groups or even partners get there via OPERA2015 and not via the group website.

Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
7,590	2.95	00:01:52	78.79%	65.59%
% of Site Total: 62.81%	Site Avg: 4.21 (-29.84%)	Site Avg: 00:02:45 (-32.08%)	Site Avg: 73.36% (7.39%)	Site Avg: 53.20% (23.29%)

	Keyword	Visits	Pages/Visit	Avg. Time on Site	% New Visits	Bounce Rate
1.	nextgenpcf	91	3.12	00:02:21	78.02%	58.24%
2.	"nanoplasmonic" project	88	2.55	00:03:06	1.14%	90.91%
3.	thermovision + artworks	65	1.05	00:00:05	1.54%	98.46%
4.	laboratorio di fotolitografia ottica	62	9.03	00:08:04	0.00%	16.13%
5.	idetra	61	2.92	00:01:40	73.77%	57.38%
6.	eu fp6 more moore	51	4.80	00:01:48	0.00%	3.92%
7.	opera2015	43	8.81	00:06:49	25.58%	16.28%
8.	opera2015 wroclaw	40	5.70	00:03:32	2.50%	32.50%
9.	uroof	39	3.00	00:02:53	82.05%	74.36%
10.	photonics in switching 2007	26	7.50	00:04:47	38.46%	50.00%

Find Keyword: containing Go Go to: 1 Show rows: 10 1 - 10 of 5,905

Table 6: Keywords used by visitors in search for information and ending up on the OPERA29015 website

Also interesting is No. 10 indicating that also the event-calendar is used often to find information and links to event webpages.

The top content, so the pages which are mostly visited by the users are listed in Table 7. From this table we learn the high importance of the event calendar and the information on projects. The former illustrates the fact that many visitors will only stay for a limited amount of time and a single page on the OPERA2015 website as they will be re-directed to the event website itself.

On the other hand, these results show the importance of keeping the event calendar updated and also shows the importance of the information on the projects.

Content Performance

Views:

Pageviews	Unique Pageviews	Time on Page	Bounce Rate	% Exit	$ Index
50,841	36,256	00:00:51	53.20%	23.77%	$0.00
% of Site Total: 100.00%	% of Site Total: 100.00%	Site Avg: 00:00:51 (0.00%)	Site Avg: 53.20% (0.00%)	Site Avg: 23.77% (0.00%)	Site Avg: $0.00 (0.00%)

	Page Title	Pageviews	Pageviews
1.	OPERA2015 - Events	19,679	38.71%
2.	OPERA2015 - European Projects	11,128	21.89%
3.	OPERA2015 - DOCUMENTS	2,971	5.84%
4.	OPERA2015 - NEWS	2,332	4.59%
5.	OPERA2015 - Deliverables	2,006	3.95%
6.	OPERA2015 - Partners	1,999	3.93%
7.	OPERA2015 - Research Groups	1,199	2.36%
8.	OPERA2015 - Usefull Links	1,180	2.32%
9.	OPERA2015 - Contact	980	1.93%
10.	About OPERA2015 - Key Enabling Technologie	947	1.86%

Page Title contribution to total: Pageviews

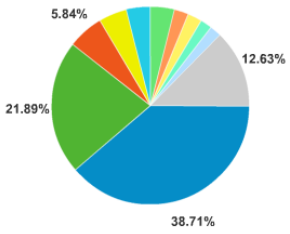


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Table 7: The top pages which are mostly visited by the users

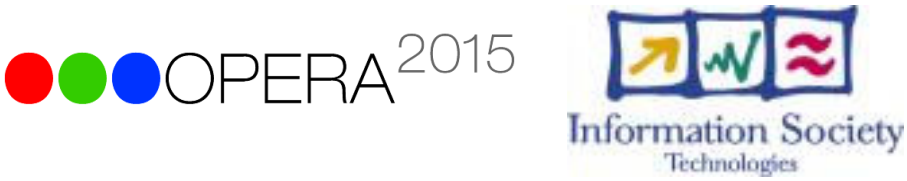
3.6 Scoring in Google

The website of OPERA2015 however has not improved its scoring in search engines as Google. While a year ago, OPERA2015 came up before own websites of specific laboratories, the OPERA2015 and scored high when searching for “Optics Photonics Europe” it does not show up anymore within the Top50. It is not clear why this drastic change has happened.

4 Conclusions.

The OPERA2015 website has been set up and active during nearly 3 years. This report describes some of the functionalities of the website and also presents statistical information on the visits and hits on the website. This information is made available through a Google tool on which the website is logged.

The results show a high interest from visitors for information in the event calendar and the project-section. The statistical information shows that the website has come into a steady-0state situation regarding visits and content search. The scoring in search engines like Google has however not been improved.



Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable: D 3.3

Inventory on European OP industry, applications and markets

(WP 3 Final report)

Due date of deliverable: 30.04.2008
Actual submission date: 30.04.2008

Start date of project: 01.04.2005 Duration: 37 month

Organisation name of lead contractor for this deliverable: TNO Science & Industry, The Netherlands

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Delft, The Netherlands

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	PU
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)	

Contents **Page**

1. Introduction

The aim of this final report is to give an overview of the inventory and analysis on European Optics and Photonics (OP) industry, resulting from the activities in WP3 of the OPERA2015 project.
This inventory was quite successful: more than 2000 OP companies were identified, which means more than a doubling of the original target of about 850 companies. The gathered information of identified OP companies has been processed and analyzed. The results of the analysis are presented in this report.

2. Inventory of OP industries and markets in WP3

2.1 Target and focus

As described in the first year report, for the inventory the Dynamo Database of TNO is used, which is available as a website (password - protected). A geographical distribution of WP 3 inventory activities among the OPERA team members was agreed in the first year of the project, including the targets for the number of companies per EU country to be selected.
The original target for the number of OP companies in Europe to be identified and imported into the Dynamo Database was set at about 850.

During the second year period the OPERA-team, supported by recommendations from the evaluation of the 1st year progress report, changed the focus of the work of WP3: originally the main subject was determination of the innovation strategies of OP companies for the future. The strategies however have already been evaluated quite well in the preparation and production of the Strategic Research Agenda (SRA) on Photonics. Therefore the focus of the WP3 work in the second and third year of the project was shifted to making a broad inventory of the European OP companies, and gathering information of the main company characteristics, in terms of OP product groups, market areas, market scope and company size.

Furthermore, the range of companies was extended with new EU member states, EU candidate countries and associated countries, and the basic information was made available for public access via the OPERA2015 website.
The inventory now includes the 27 EU member states, 2 EU candidate countries and 5 associated countries.

2.2. Methodology for selection of OP companies

The methodology used for selecting OP companies in Europe is as follows.

<u>Sources of information for identification of companies:</u>

- Internet search using search terms like optics, photonics, lasers, detectors etc. in combination with industry and EU country.
- Consulting professional experts in the optics / photonics field and experts of national agencies initiating research programs (like SenterNovem in the Netherlands).
- Databases of (inter)national Research programs and Networks, by selecting information on OP industrial participants; e.g.:
  - EU Sixth Framework Program (FP6) and EUREKA Program; identification of OP research projects and industrial participants (via CORDIS website and EUREKA website respectively),
  - National research programs in the different EU countries, e.g. IOP-Photonic Devices,
  - European Networks and Clusters in the optics / photonics field, like OPTICON, Photonic Net, Photonics 21, Photonics Cluster UK.
- Company databases such as Photonics Directory (www.photonics.com/directory), Kompass (www.kompass.com) and Thomas Global (www.thomasglobal.com).

- Conferences in the optics / photonics field: e.g. SPIE, EOS.
- Magazines: e.g. Optics & Laser Europe, Photonics Spectra, Europhotonics.

Selection criteria and classification of companies

A general criterium for selection is that the company must have a significant activity in the optics / photonics field. A broad spectrum of companies is collected in the database. Companies / retail outlets which only sell consumer products such as spectacles and video equipment are not included.

Verification of data

Verification of the data of companies imported into the Dynamo Database can be done by making the Database information available to all companies, with a request to the companies to comment / correct the data concerning their company.

2.3 Gathered OP company data

During the inventory the following items per company were stored into the Dynamo database:

- contact information: address, website, email;
- optical market information: product groups, market fields, geographical market scope.
- company size.

Optical market information items and company size have been classified in the categories specified below.

Product groups:

The product group list used has been derived from the International Patent Classification (IPC) of the World Intellectual Property Organization (WIPO).

- ☐ Active Optical Devices
- ☐ Cameras
- ☐ Coatings
- ☐ Detectors
- ☐ Displays
- ☐ Fiber Optics
- ☐ Glass & Other Optical Materials
- ☐ Information Storage
- ☐ Lasers
- ☐ Light Sources
- ☐ Lighting
- ☐ Micro Optics
- ☐ Nano Photonics
- ☐ Optical Components
- ☐ Optical Manufacturing Equipment
- ☐ Spectacles
- ☐ Test & Measurement Systems

Market fields:

- ☐ Agriculture
- ☐ Manufacturing
- ☐ Energy
- ☐ Construction
- ☐ Transport
- ☐ Defence
- ☐ Education
- ☐ Health
- ☐ Science
- ☐ ICT

Market scope :

- ☐ National
- ☐ EU 15
- ☐ Europe
- ☐ USA
- ☐ China
- ☐ Japan
- ☐ Worldwide

Company size:

- ☐ 1-24 employees
- ☐ 25-249 employees
- ☐ 250-499 employees
- ☐ 500+ employees

The WP3 inventory and classification activities were carried out by different OPERA team members according to an agreed geographical distribution. Naturally, for each country the same categories in the classification process of OP company information (as specified above) were used, but inevitably interpretations may differ somewhat. To achieve maximum uniformity the classified company information of all countries was checked and, if necessary, adjusted by TNO.
During the analysis it proved to be appropriate to summarize the Market scope information into three categories: National, Europe or Worldwide. These categories are inclusive: market scope European naturally includes also National, and market scope Worldwide naturally includes also National and European. For a specific company market scope Worldwide means that at least one country outside Europe has been selected.

2.4 Results of inventory of OP companies

At January 1st, 2008, basic information of 2019 Optics / Photonics companies across Europe has been imported into the Dynamo Database:

- 1925 companies in the 27 EU member states
- 94 companies in 2 EU candidate countries and 5 associated countries.

The geographical division of identified and imported companies across the different countries is presented in the following table.

Table 1. Countries (EU member states, candidate countries, associated countries) (alphabetically)	**Number of OP companies per country, imported into Dynamo Database**
Austria	32
Belgium	62
Bulgaria	10
Croatia	2
Cyprus	7
Czech Republic	24
Denmark	37
Estonia	7
Finland	27
France	359
Germany	472
Greece	20

Table 1. Countries (EU member states, candidate countries, associated countries) (alphabetically)	**Number of OP companies per country, imported into Dynamo Database**
Hungary	8
Iceland	1
Ireland	24
Israel	17
Italy	160
Latvia	5
Liechtenstein	5
Lithuania	9
Luxembourg	9
Malta	3
Netherlands	150
Norway	13
Poland	23
Portugal	12
Romania	7
Slovakia	7
Slovenia	5
Spain	45
Sweden	70
Switzerland	44
Turkey	12
United Kingdom	331
	Total number 2019

The geographical distribution of OP companies and OP research institutes imported into the Dynamo Database is presented also in the following graph:

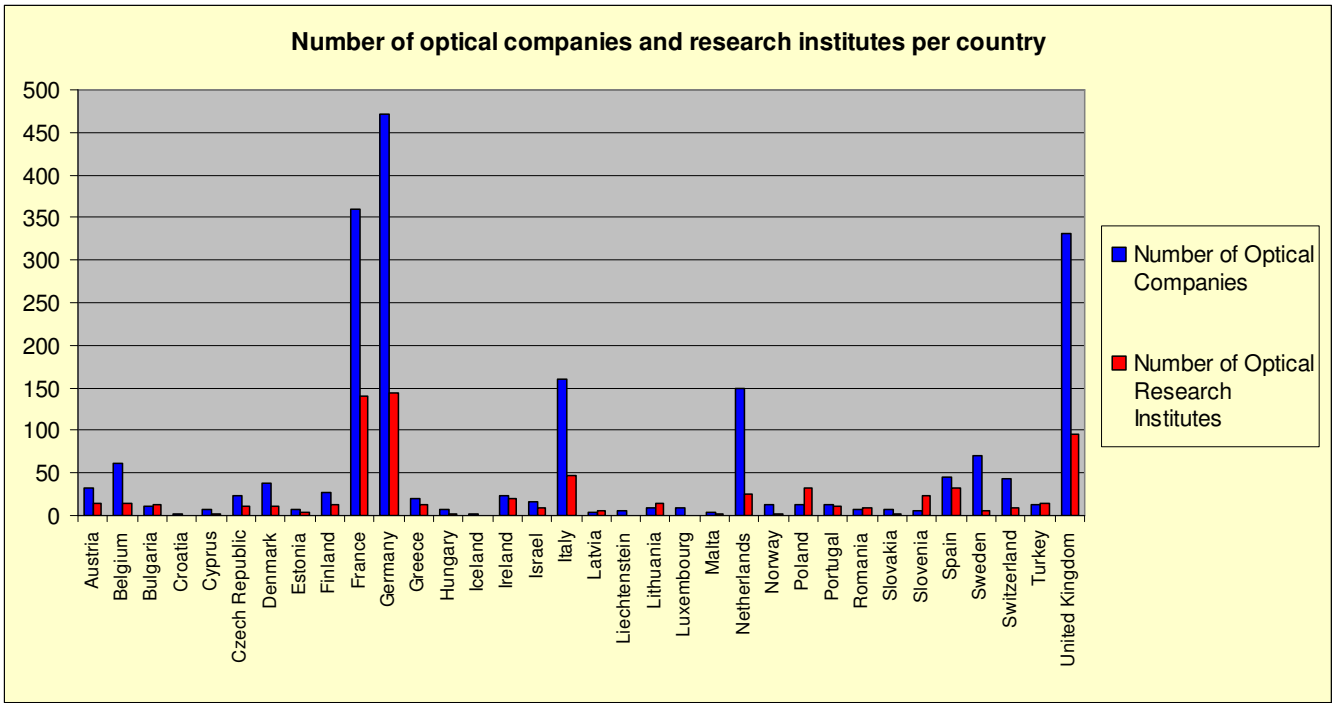


Figure 1. Distribution of OP companies and research institutes.

An appropriate indicator of photonics industry density in Europe could be the SPIE corporate membership (source: SPIE website www.photonicsclusters.org/inddensity.html). Based on the SPIE corporate membership density in the different European countries the number of OP companies in Germany in Dynamo is relatively lower than expected compared to number of companies in France and in the United Kingdom.

In the next figure the number of OP companies has been adjusted for the size of the population per country.

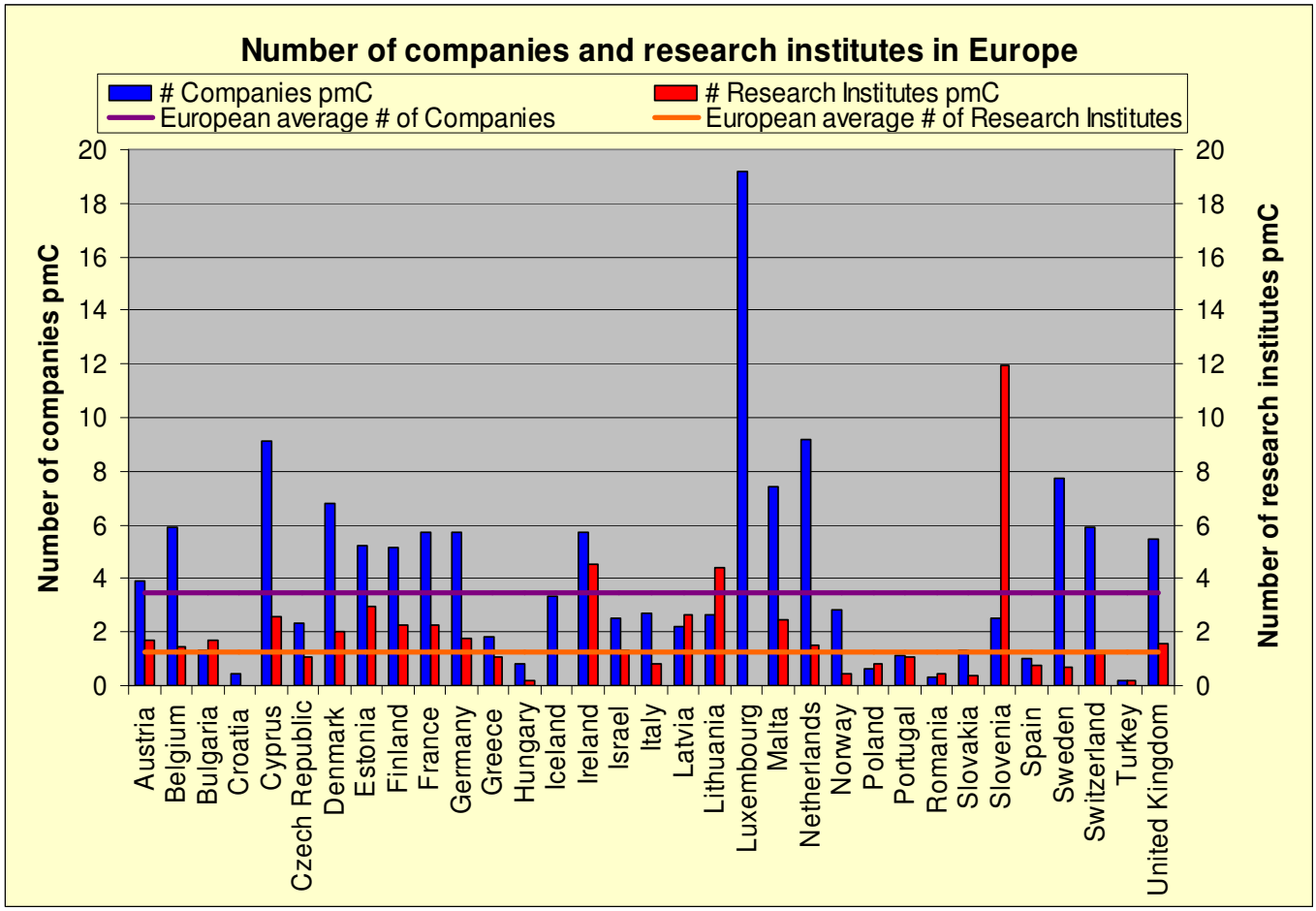


Figure 2. The number of optical companies and optical research institutes per million capita (pmC) per country. (Source for population: Eurostat 2008)

In the above figure it seems that some small countries have high performance figures. It should be noted that for most of these countries there are less than 10 companies and/or research institutes present in the country, but due to the small population of these countries they have a high value for the number of companies and research institutes per million capita.

The figure below (next page) presents the number of optical companies and research institutes per million capita per country for countries with more than 20 optical companies and more than 20 optical research institutes (Source for population: Eurostat 2008). By leaving out the countries with a relatively low number of companies and research institutes a more reliable comparison can be made between the different countries.
As can be concluded from the figure the five countries with the highest number of OP companies per million capita are Netherlands, Germany, France, United Kingdom and Italy.

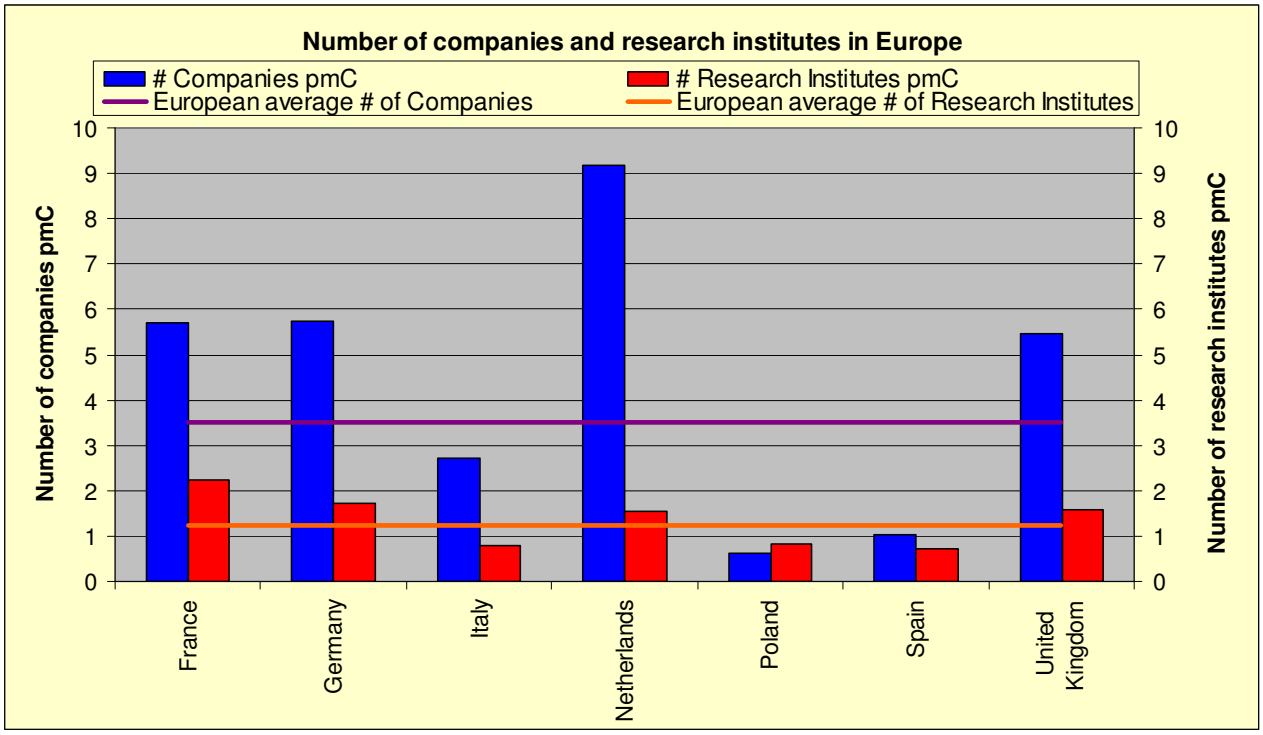


Figure 3. The number of optical companies and research institutes per million capita (pmC) per country for countries with more than 20 optical companies and more than 20 optical research institutes..

The original target for the number of OP companies to be identified and imported into the Dynamo system was about 850. The achieved number of imported companies is 2019 (status January 1st, 2008).

A rough estimate of the total number of OP companies in Europe has been deduced based on the following considerations:

- The SPIE corporate membership could be an appropriate indicator of photonics industry density. The number of SPIE corporate members in Europe amounts about 1780 (source: SPIE website www.photonicsclusters.org/inddensity.html). Assuming that roughly half of the relevant OP companies is SPIE member results in a total number of about 3600 OP companies in Europe. The Dynamo database includes 2019 OP companies, which would represent roughly half of the total number of OP companies in Europe.
- On the website www.photonics-network.com an estimation of the optics and photonics field in France reports about 800 OP companies in 2005. The Dynamo database includes 359 OP companies in France, which would represent 45 % of the total number of French OP companies.

From these considerations it is estimated that the Dynamo database includes about half of the total number of OP companies in Europe (Dynamo database status January 1st , 2008).

In the study "Photonics in Europe – Economic Impact", recently published by the "Photonics 21" technology platform together with the European Commission, also an estimation of the total number of OP companies in Europe is given (source: website www.photonics21.org): in the Summary of this study the number of companies in Photonics manufacturing in Europe is estimated to well exceed 5000.

2.5 OP companies information on OPERA 2015 website

In the OPERA2015 project it was decided to put specific information of European Optics / Photonics companies publicly available. For that purpose a publicly available website was designed and realized in WP3 with the address http://www.dynamo.tno.nl/opera/opera46.asp
This website extracts company information directly from the Dynamo Database. The publicly available company information on this website includes contact information and product groups.
This new website has been connected directly to the OPERA2015 website http://www.opera2015.org
Via the selection items 'National activities' and 'Industrial activities' on the OPERA2015 website the company information can be accessed.

3. Combination with inventory of OP research groups in WP2

3.1 Research institutes in Dynamo database

As already noted in the second year report the Dynamo Database is also used for the inventory of optics / photonics research institutes, as carried out in OPERA WP2. The classification of optical research and application areas was defined in cooperation between Optics Valley and TNO, and incorporated into the Dynamo system. The classification includes the following main areas:

- General Optics
- Instrumentation
- Optical devices
- Optical technologies
- Optical materials
- Optical applications

Each area itself is subdivided into a series of more detailed subjects. These subdivisions are given in the Appendix to this report. All main areas and subdivisions are incorporated as selection menus in the Dynamo database.

The files with lists of Optics / Photonics research institutes, provided by Optics Valley, were converted by TNO and imported into the Dynamo Database. At 1st of January 2008 the basic information of 746 European OP research institutes has been incorporated in the Dynamo database.

3.2 OP research institutes information on OPERA 2015 website

As already noted in the second year report in the OPERA2015 project it was also decided to put specific information of European Optics / Photonics research institutes publicly available, similar to this activity for companies. For that purpose a publicly available website was designed and realized with the address http://www.dynamo.tno.nl/opera/opera48.asp .
This website extracts research institute information directly from the Dynamo Database. The publicly available information includes contact information and main research areas of the research institutes. This information is synchronized with Optics Valley database.
This new website has been connected directly to the OPERA2015 website http://www.opera2015.org
Via the selection items 'National activities' and 'Research groups' on the OPERA2015 website the research institutes information can be accessed.

4. Analysis and Results

4.1 Methodology for analysis of OP companies information

The methodology for the analysis of European OP companies information includes the following main activities, using the facilities in the Dynamo database:

a. Composing fact sheets of the accumulated company information in Europe as a whole.
b. Composing fact sheets of the gathered company information per country for countries with ≥ 20 companies in Dynamo.
c. Analyzing relationships and correspondence between different company items, and comparison of relevant OP industry facts between different countries.
d. Analyzing relationships between OP research applications areas (from WP2) and OP industry market areas (WP3).

Furthermore, a preliminary comparison has been made of the correspondence between this OPERA WP3 analysis and the study "Photonics in Europe – Economic Impact", which was recently published by the "Photonics 21" technology platform together with the European Commission (source: website http://www.photonics21.org).

The presence in the Dynamo Database of information from European OP companies as well as from OP research institutes provides possibilities for analyzing relationships between industrial activities and research concerning optics and photonics in Europe. In the fact sheets mentioned above information of OP research institutes is also included.

Explanation of the fact sheets presented in sections 4.2.1 and 4.2.2
Each fact sheet per country consists of the abbreviation of the name of the country and the total number of optical companies and optical research institutes that was on 1st of January 2008 in the Dynamo database. A map with the country coloured on basis of the number of optical companies per million capita compared to the European average is given. In the case there are more then 20 optical companies in the database, the fact sheet contains four diagrams about the optical industry.
The diagram "Product group" shows the distribution of the product groups over the optical industry for that country. The percentage does not equal the percentage of the total number of companies contributing to that product group, but it shows the distribution of the product groups over the total optical industry. If all companies in a country contribute to two different product groups, than both product groups have 50 % share in the total optical industry, while in both product groups 100 % of the companies are contributing to each of those two product groups. For a total list of product groups see section 2.3. Only information for the companies that have been profiled on product groups is taken into account.

A second diagram shows the Market scope of the optical industry in the country which has been divided into the categories National, European or Worldwide. These categories are inclusive: market scope European includes also National, and market scope Worldwide includes also National and European. Only information for the companies that have been profiled on market scope is taken into account.

A third diagram shows Market field in which the optical companies in that country operate in. This diagram shows the distribution of the different market fields for the total optical industry. Only information for the companies that have been profiled on market field is taken into account.

A fourth diagram shows the distribution of the Company size of the optical companies in that country. The percentages represent the share of optical companies of that size in that country.

If there are more than 20 optical research institutes in the Dynamo database for the specific country, two additional diagrams are presented for the optical research infrastructure for that country.
The first diagram presents the share of the optical applications for the research institutes in that country.

A second diagram presents the distribution of General Optics, Instrumentation, Optical devices, Optical technologies, Optical materials per research institute, at aggregate level for the whole country. This diagram shows the distribution of the different characterisations of the research institutes for the country.

The fact sheet of Europe as a whole has a similar layout. This fact sheet includes the information of all considered European countries (EU member states, candidate countries and associated countries).

In the analysis per country naturally all the companies are included that have been profiled on product groups, market field, market scope and company size. The number of profiled companies per country for each of these four items is sufficiently high to be able to do statistical analysis.

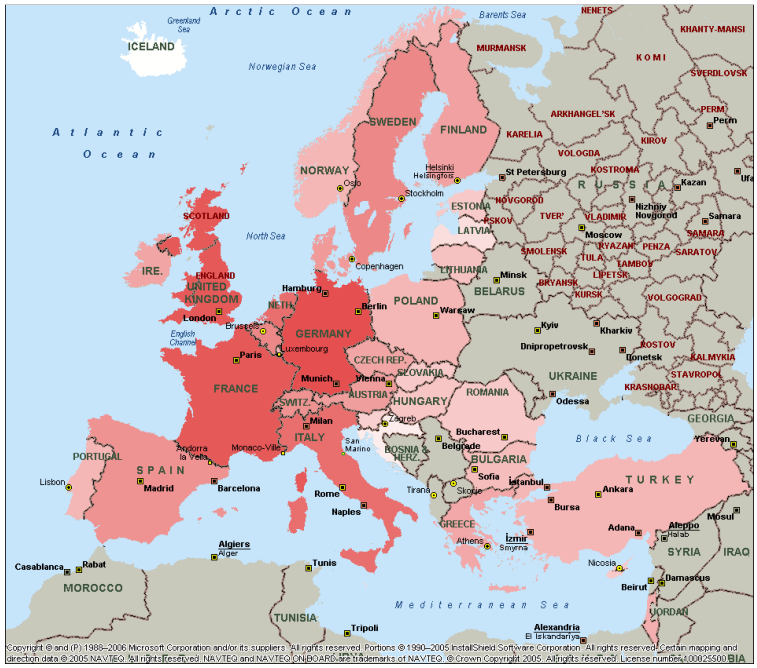
4.2 Results of analysis

4.2.1 Fact sheets of OP companies in Europe as a whole

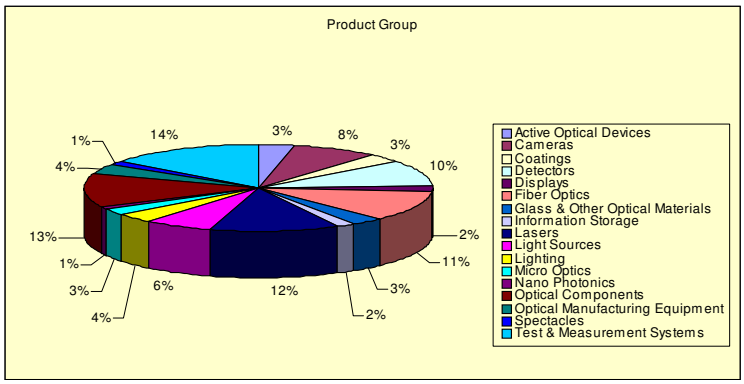
The accumulated OP company information in Europe as a whole is presented in the fact sheet on the next page. Product groups, market fields, market scope and company size of 2019 European companies are given. Furthermore, optical research and application areas of 746 European research institutes are given.

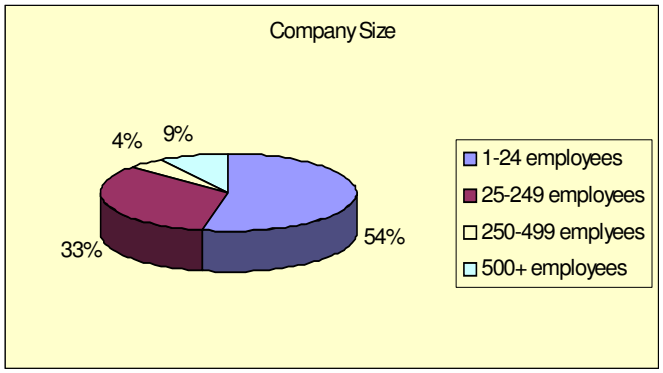
Europe

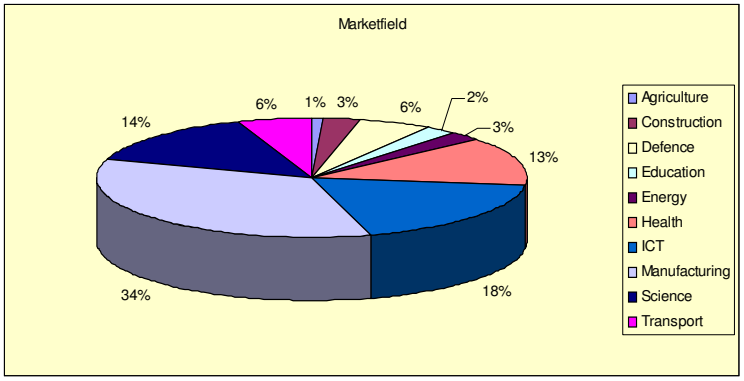
Number of optical companies: 2019
Number of optical research institutes: 746

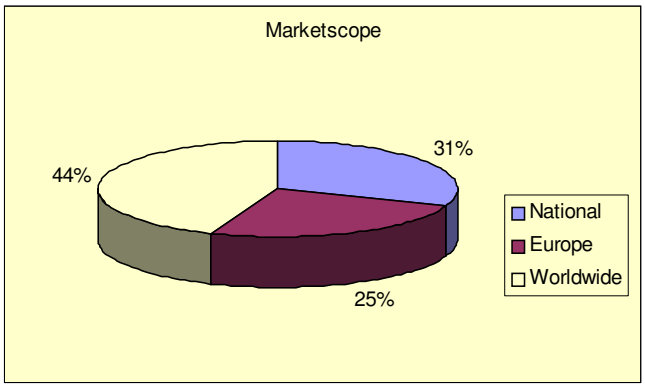


Optical Companies

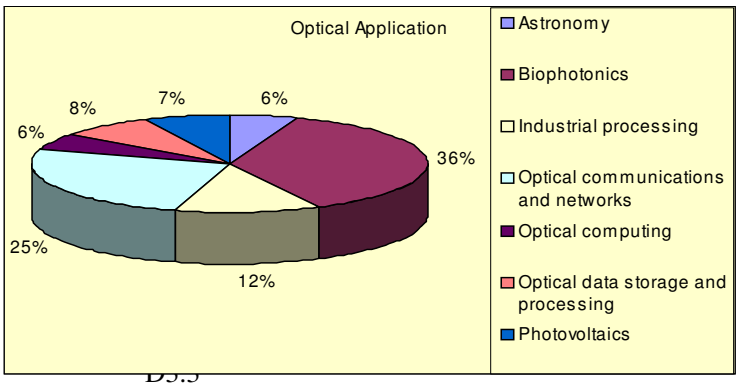


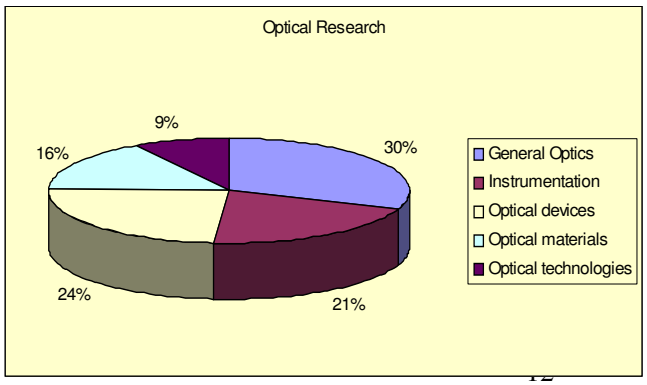






Optical Research Institutes





4.2.2 Fact sheets of OP companies per country

For countries which have more than twenty OP companies in the Dynamo database fact sheets are presented on the following pages. Diagrams of product groups, market fields, market scope and company size per country are given. If there are more than twenty optical research institutes in the Dynamo database for the specific country, two additional diagrams are presented for the optical research infrastructure for that country. The countries with more than twenty OP companies in Dynamo are listed also in the table below.

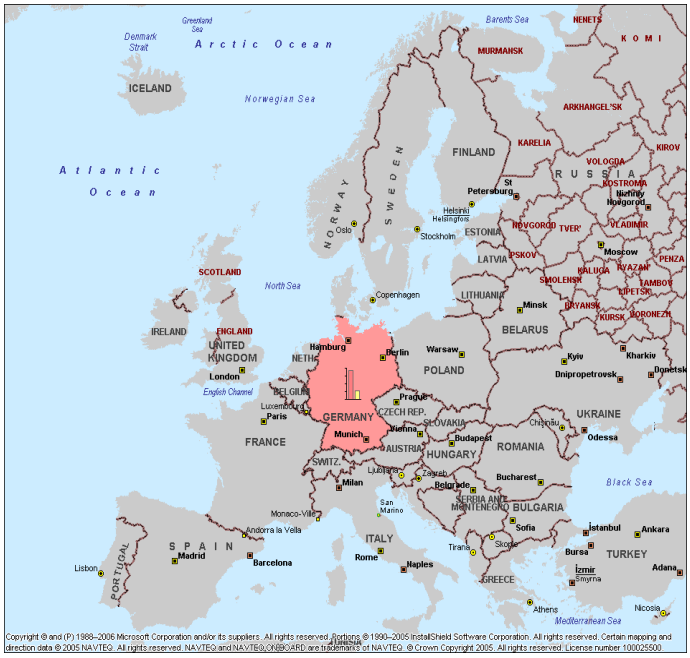
Table 2. Countries	**Number of OP companies in Dynamo**	**Number of OP research institutes in Dynamo**
France	359	141
Germany	472	143
Italy	160	47
Netherlands	150	25
United Kingdom	331	95
Austria	32	14
Belgium	62	15
Czech Republic	24	11
Denmark	37	11
Finland	27	12
Greece	20	12
Ireland	24	18
Poland	23	32
Spain	45	32
Sweden	70	6
Switzerland	44	10

If a country has less than twenty OP companies in the Dynamo database, this number has been considered too low to do statistical analysis. The following countries all have less than 20 optical companies.

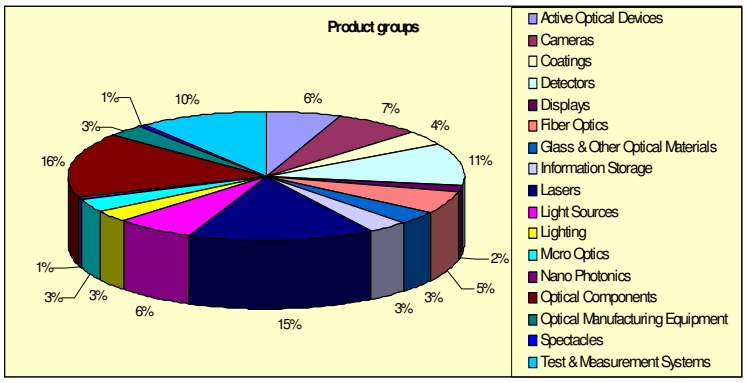
Table 3. Countries	**Number of OP companies in Dynamo**	**Number of OP research institutes in Dynamo**
Bulgaria	10	13
Croatia	2	0
Cyprus	7	2
Estonia	7	4
Hungary	8	2
Iceland	1	0
Israel	17	9
Latvia	5	6
Liechtenstein	5	0
Lithuania	9	15
Luxembourg	9	8
Malta	3	1
Norway	13	2
Portugal	12	11
Romania	7	9
Slovakia	7	2
Slovenia	5	24
Turkey	12	14

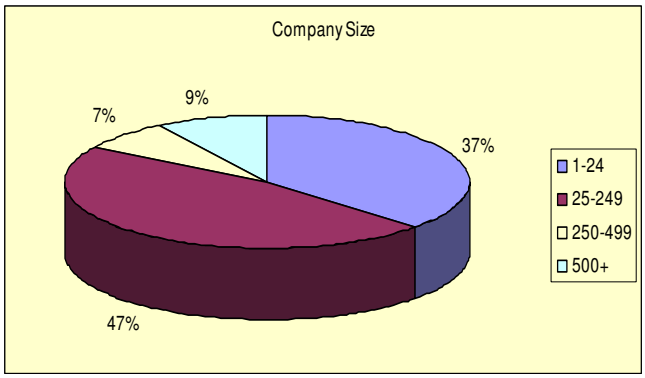
DE

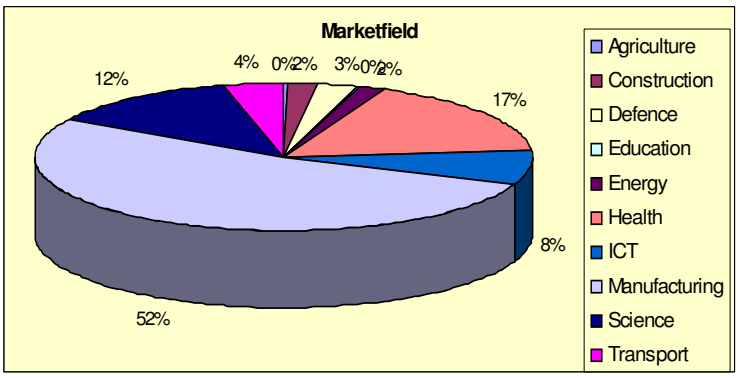
Number of optical companies: 472
Number of optical research institutes:143

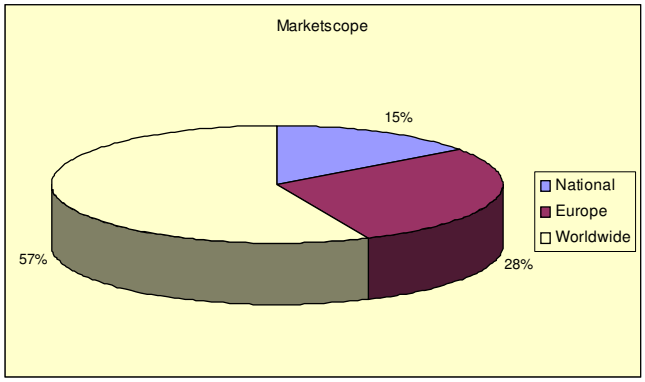


Optical Companies



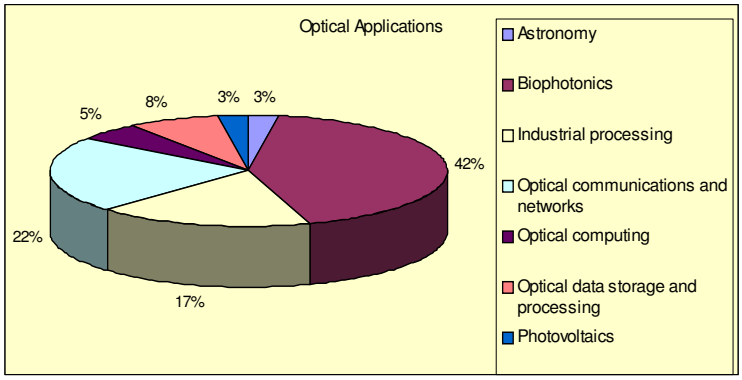


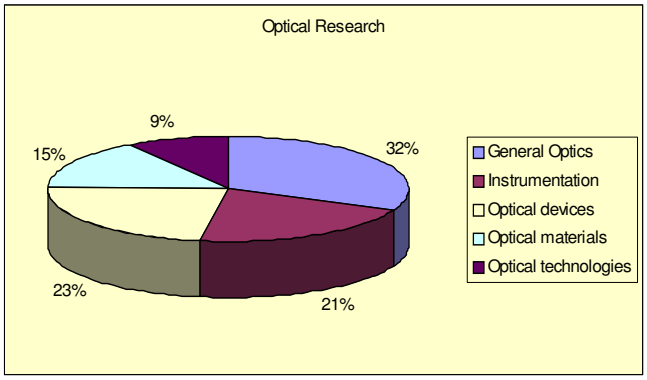




In the graph about the distribution of the productgroups in Germany it can be seen that Lasers, Optical Components, Detectors and Test & Measurement Systems are the most often mentioned product groups for optical companies in Germany. Furthemore, it is noticeable that 84 % of the optical companies in Germany are SME (less than 250 employees). The most important marketfield for optical companies in Germany is Manufacturing, followed by Health and Science. The marketscope of German optical companies is most often world wide.

Optical Research Institutes



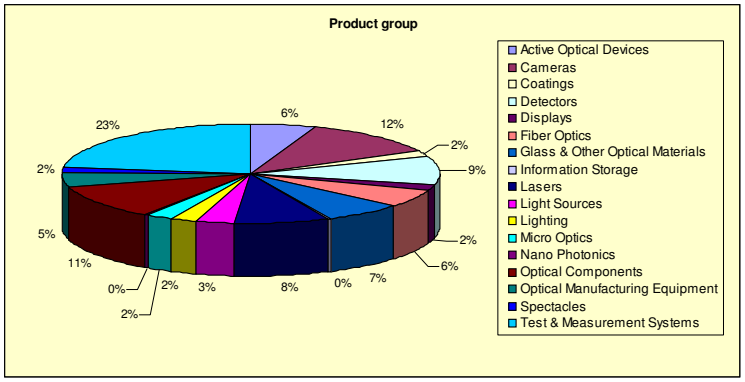


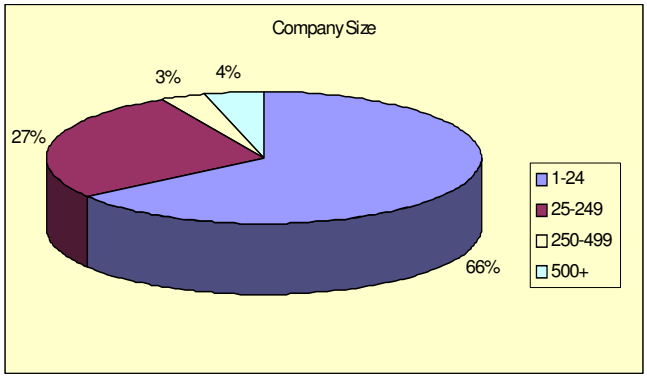
The optical application Biophotonics is the most important application for German Optical research institutes, followed by Optical communications and networks. General optics, Optical devices and Optical instrumentation are important research fields.

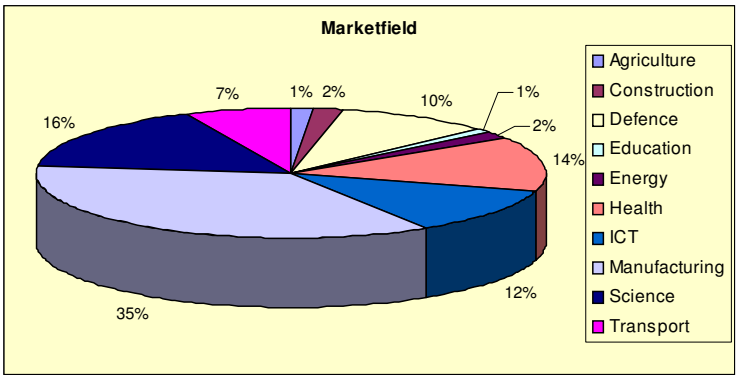
FR

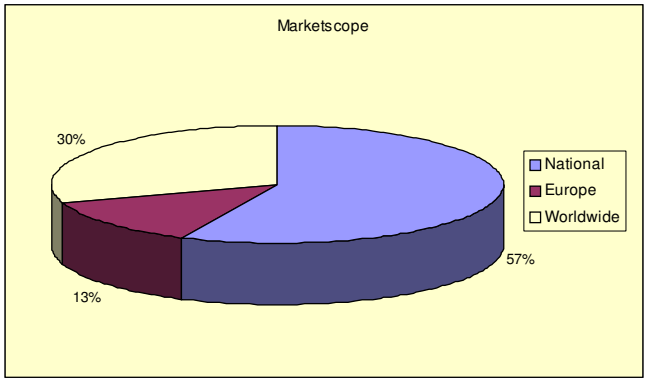
Number of optical companies: 359
Number of optical research institutes: 141

Optical Companies



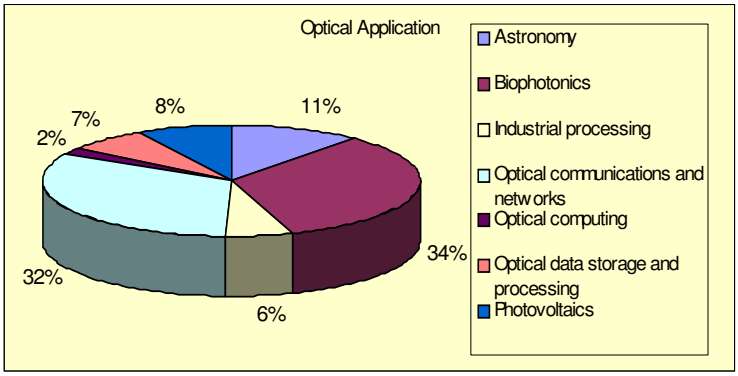


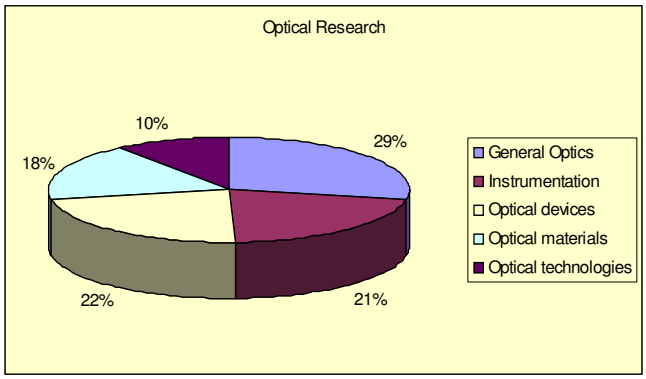




The Test & Measurement Systems is in France the most important product group, followed by Cameras and Optical Components. Furthermore two third of the optical companies have less than 25 employees, and 93 % of the companies are SME (less than 250 employees). The marketscope of optical companies in France is in majority national, and secondly worldwide. The most important marketfields after Manufacturing are Science, Health, ICT and Defence.

Optical Research Institutes



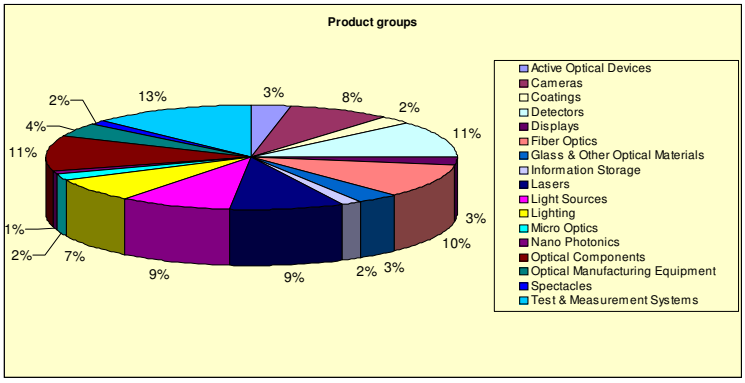


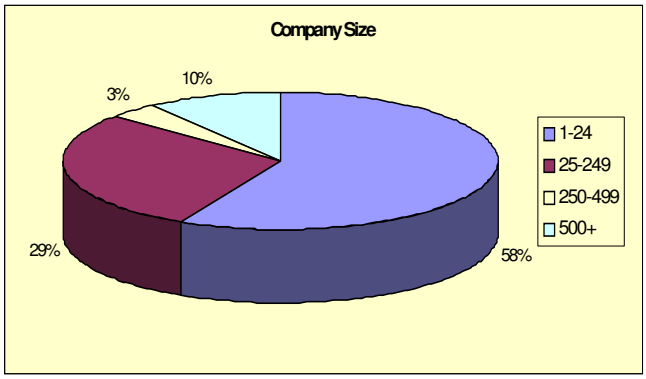
The most important optical application for optical research institutes in France are Biophotonics and Optical communications and networks.

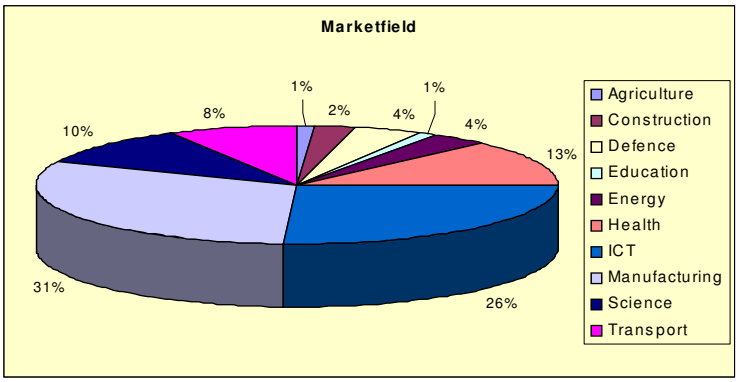
IT

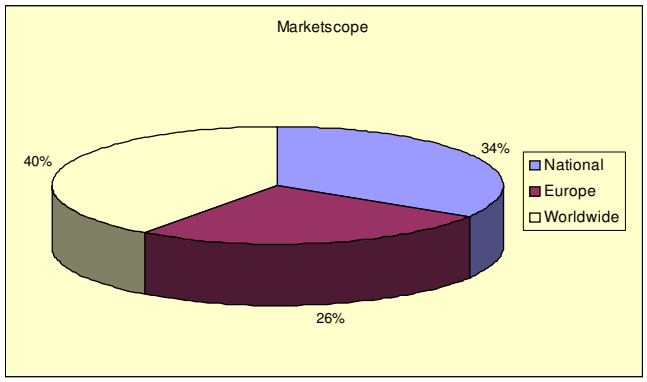
Number of optical companies: 160
Number of optical research institutes: 47

Optical Companies









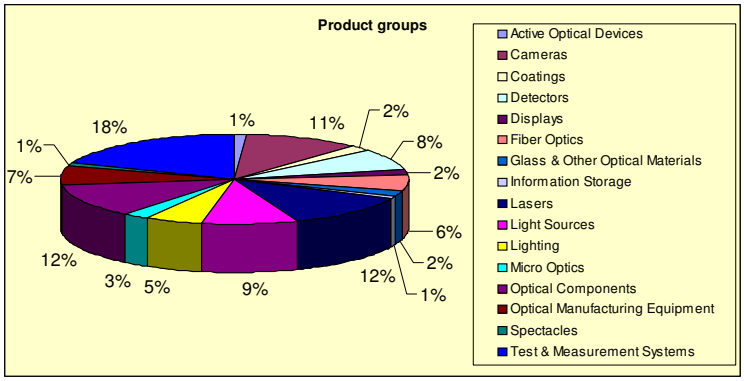
Italian optical companies have a very diverse pattern of product groups. Over half of the Italian optical companies have less than 25 employees. The most important marketfields are Manufacturing and ICT, followed by Health and Science. The different marketscopes national, Europe and world-wide are all more or less equally important for the Italian optical companies

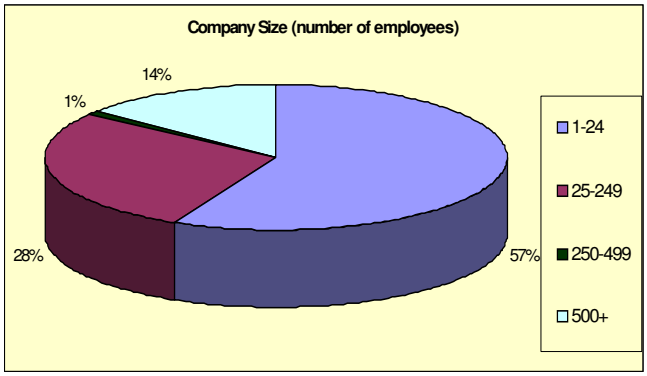
Note: Because too few optical research institutes are profiled on optical application and optical research, for Italy no diagrams for the optical research institutes could be made.

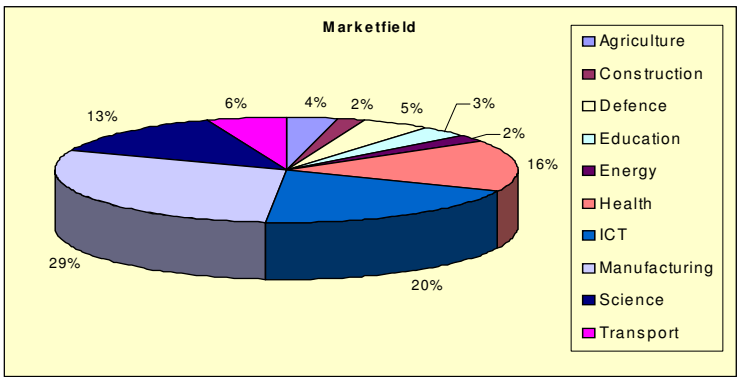
NL

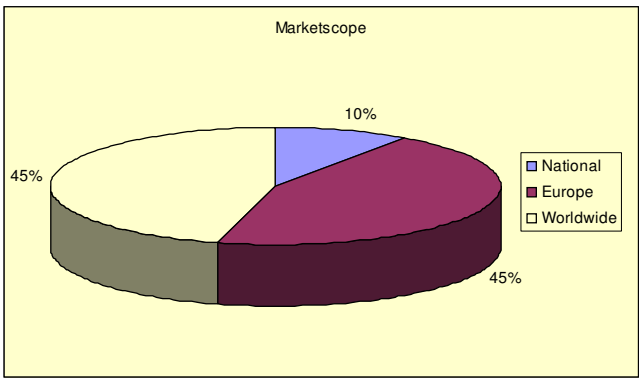
Number of optical companies: 150
Number of optical research institutes: 25

Optical Companies



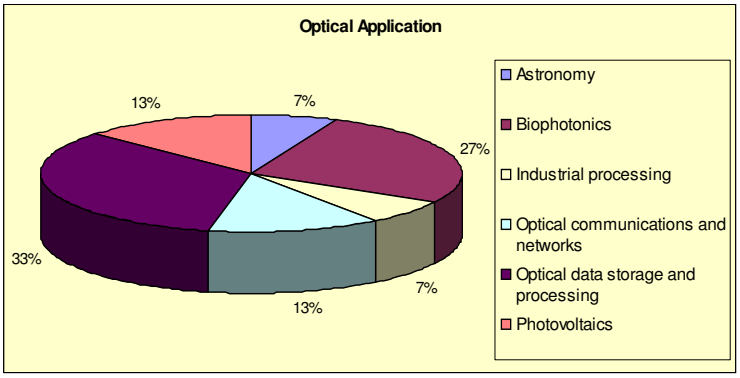


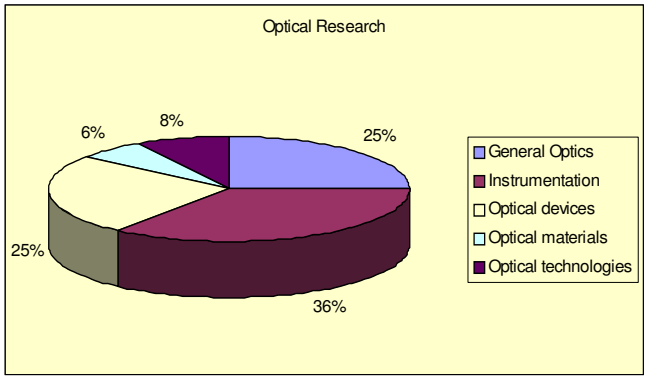




The most important product groups are Test & Measurement systems, followed by Cameras, Optical Components and Lasers. 85% of the optical companies have less than 250 employees, while more than half of them have less than 25 employees. The most important marketfields for Dutch optical companies are Manufacturing, ICT, Health and Science. The marketscope of the Dutch optical companies is in 90 % of the companies international, equally shared between Europe and world-wide.

Optical Research Institutes



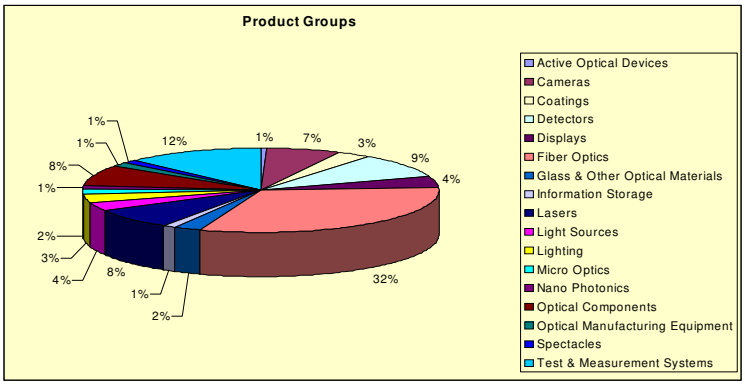


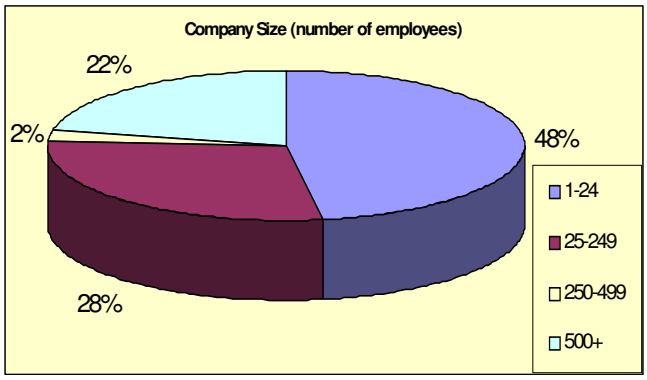
The most important optical applications in Dutch optical research institutes are Optical data storage and processing, and Biophotonics. Optical instrumentation is the most important optical research field, followed by Optical devices and General Optics.

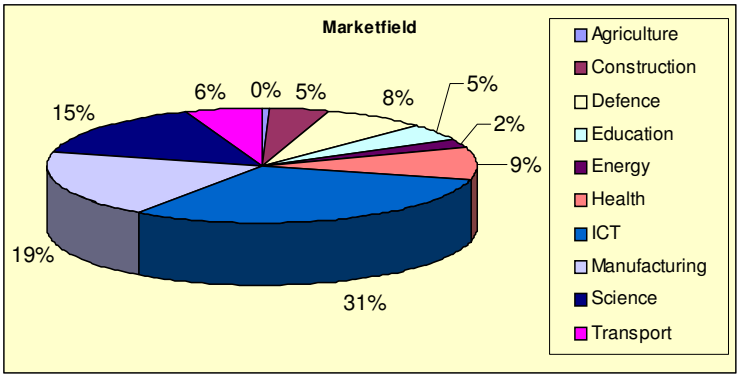
UK

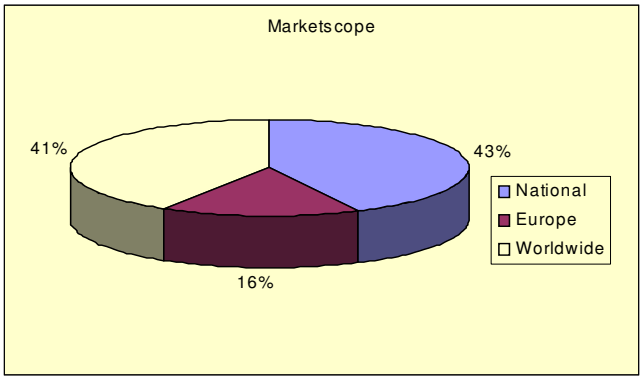
Number of optical companies: 331
Number of optical research institutes: 95

Optical Companies



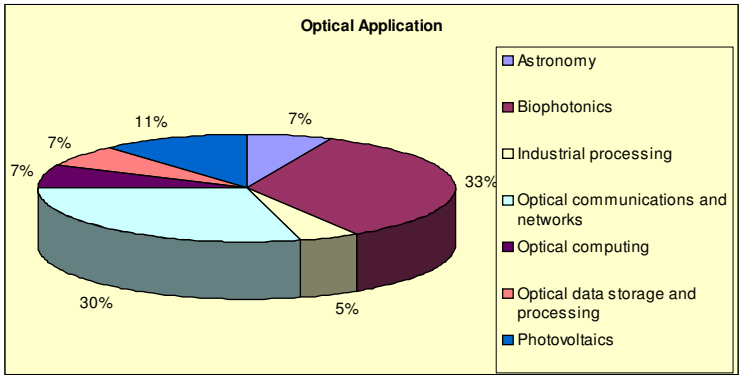


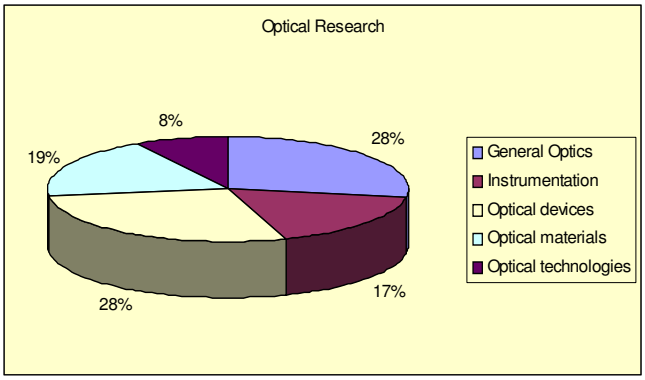




In the United Kingdom, the most important product group for optical industry is Fiber Optics. Slightly less than half of the optical companies have less than 25 employees, while over one fifth of the companies has more than 500 employees. ICT is an important marketfield as it is the highest sector within the companies, followed by Manufacturing and Science. The marketscope of optical companies in the United Kingdom is mainly on either national or world-wide level.

Optical Research Institutes



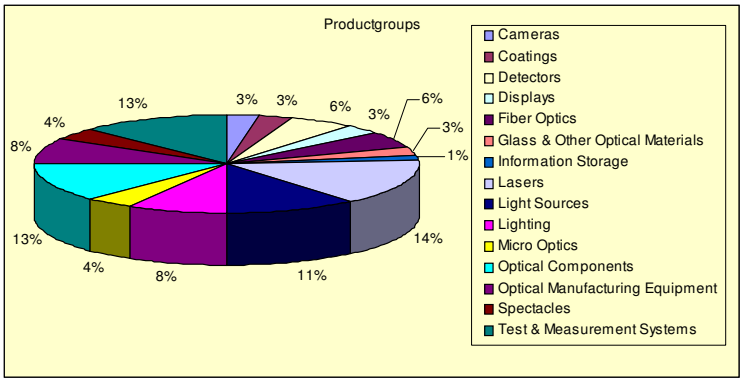


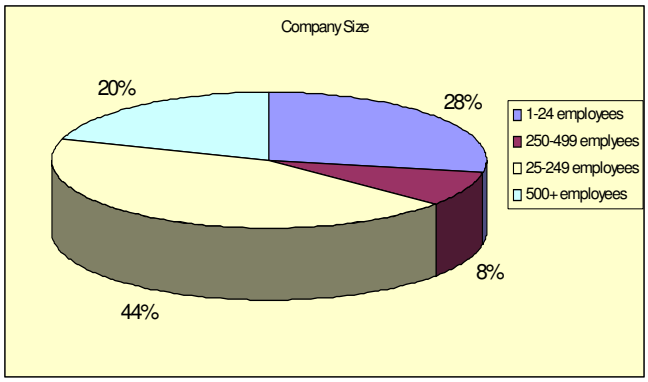
For optical research institutes in the United Kingdom the most important optical applications are Biophotonics and Optical communications and networks. Optical devices and General optics are important optical research fields.

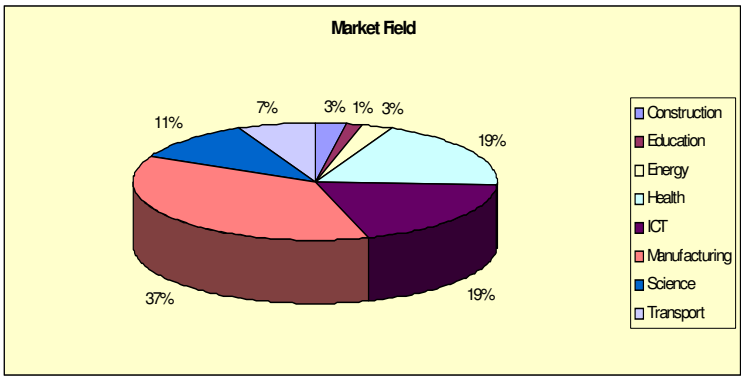
AT

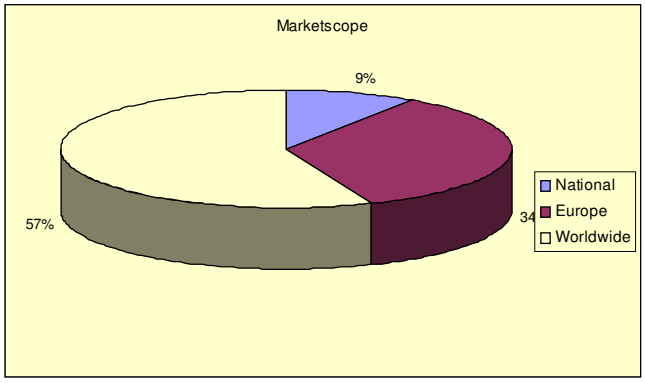
Number of optical companies: 32
Number of optical research institutes: 14

Optical Companies







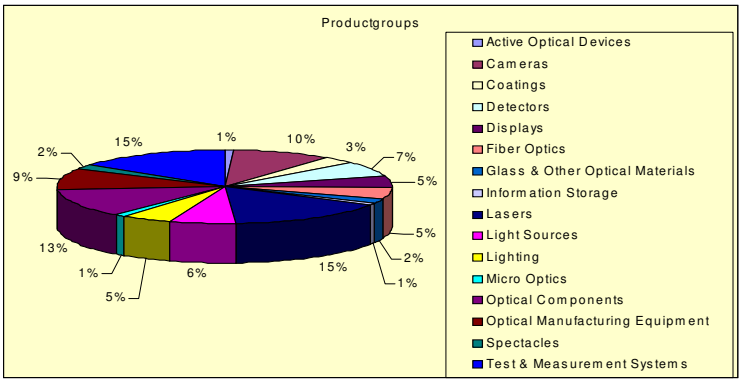


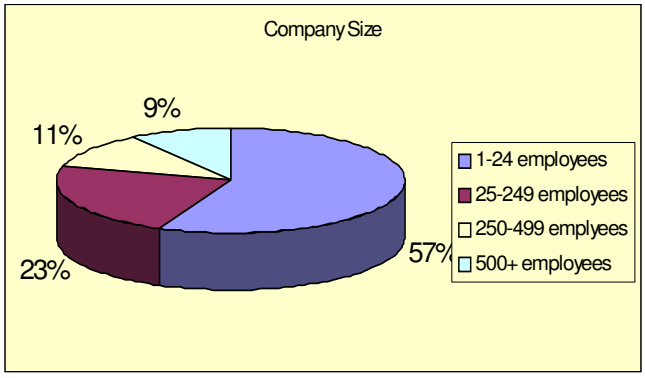
Optical companies in Austria have a higher focus on Lasers, Optical components and Test & Measurement systems. Almost three quarter of the optical companies have less than 250 employees, while over 40 percent of the optical companies have between 25 and 500 employees. The Manufacturing marketfield is the most frequently characterised marketfield for the optical industry in Austria, followed by ICT and Health. The marketscope of the optical companies is in almost 90 percent of the cases international, with a tendency for world-wide over Europe

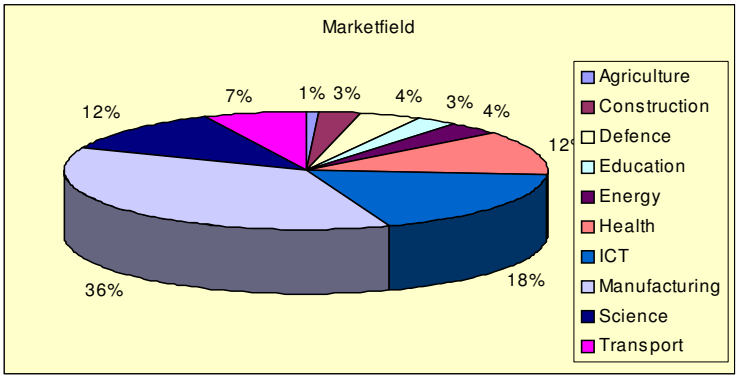
BE

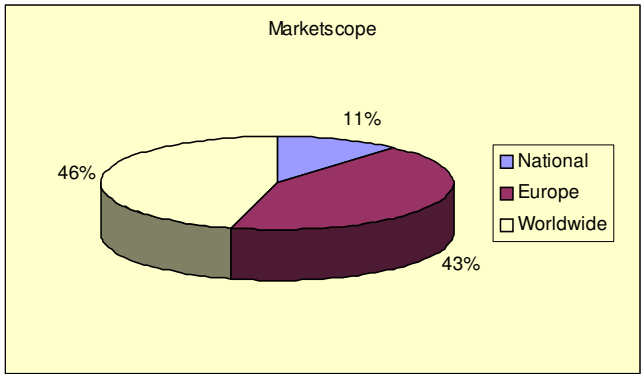
Number of optical companies: 62
Number of optical research institutes: 15

Optical Companies







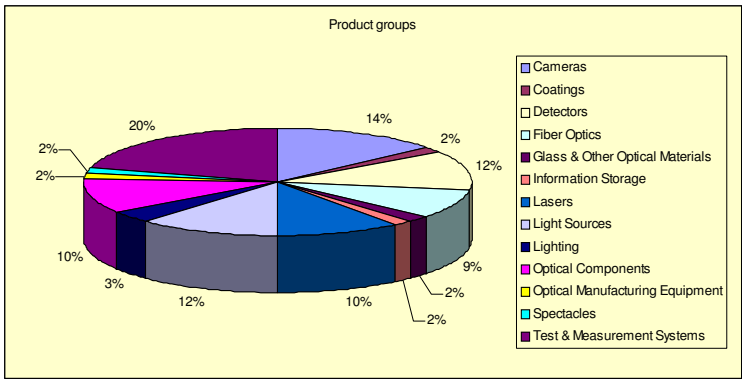


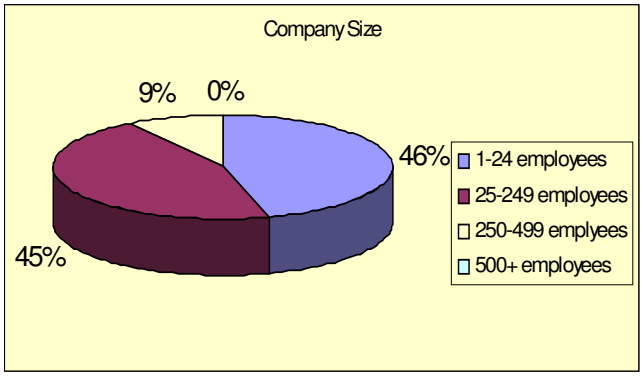
For Belgium optical companies the largest product groups are Lasers and Test & Measurement Systems. Four out of five companies have less than 250 employees. Manufacturing is the most often linked marketfield, followed by ICT, Science and Health. The marketscope is in almost 90 percent of the companies international, equally distributed between Europe and world-wide.

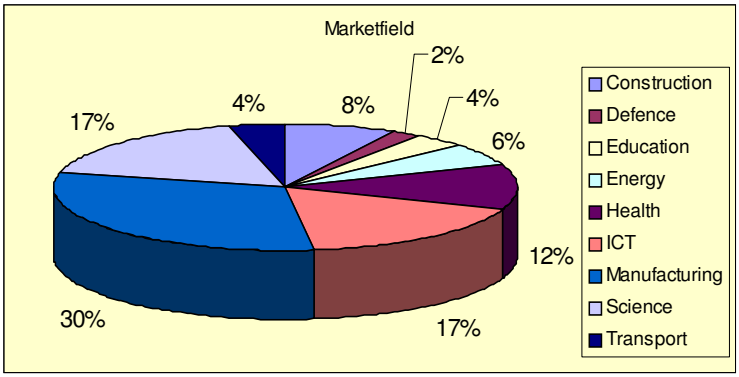
CZ

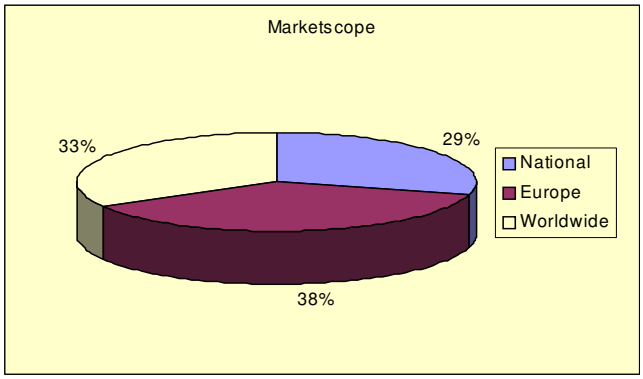
Number of optical companies: 24
Number of optical research institutes: 11

Optical Companies







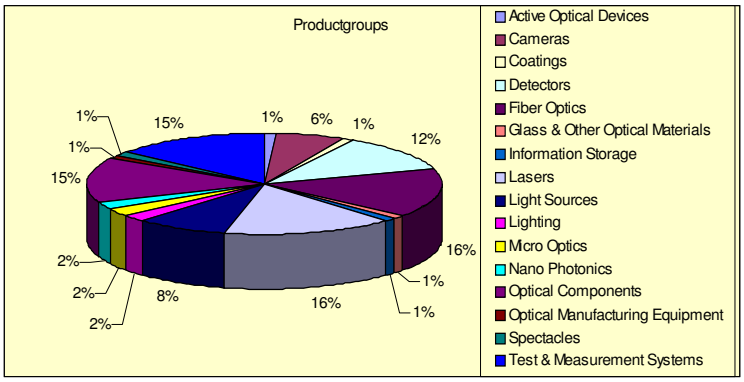


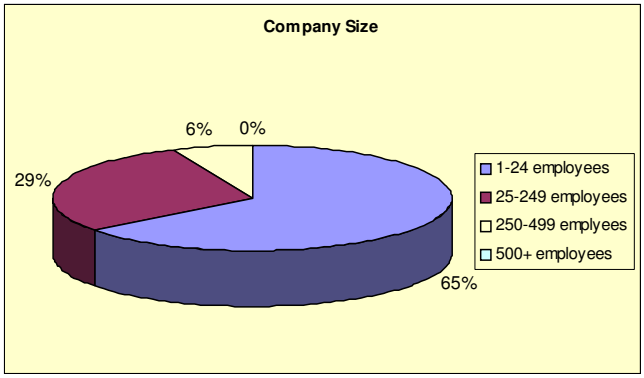
The product groups with that are most often linked with the optical companies in Czech Republic are Test & Measurement Systems, followed by Cameras, Light Sources and Detectors. There are no optical companies found with more than 500 employees, while more than 90 percent of the optical companies have less than 250 employees. Manufacturing is the most often linked marketfield to the optical companies, followed by ICT and Science. The share of national, European and world-wide marketscope is around the same level.

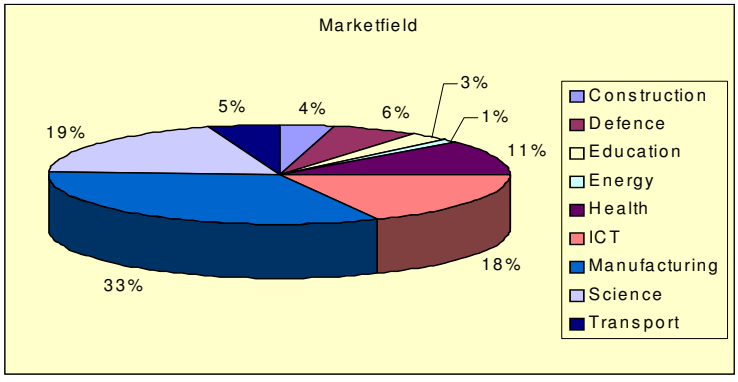
DK

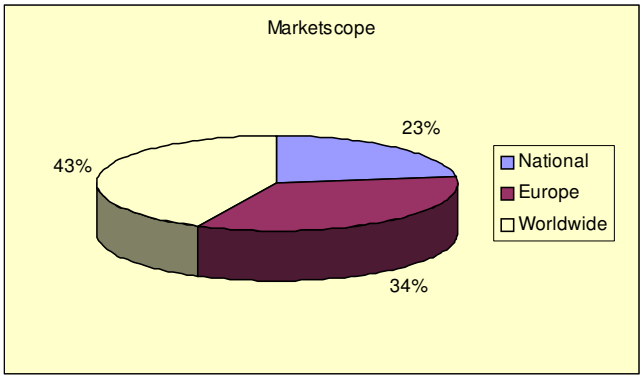
Number of optical companies: 37
Number of optical research institutes: 11

Optical Companies







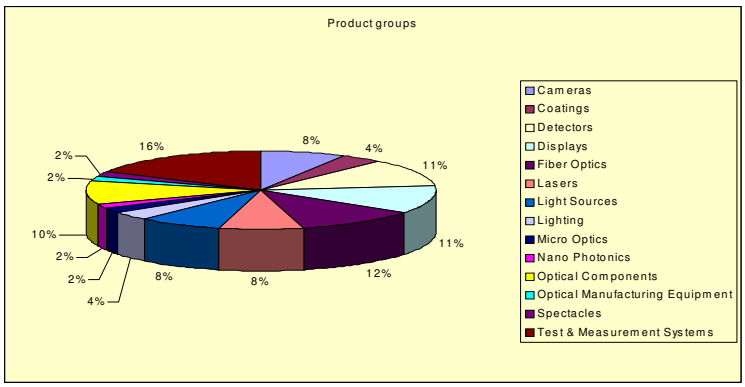


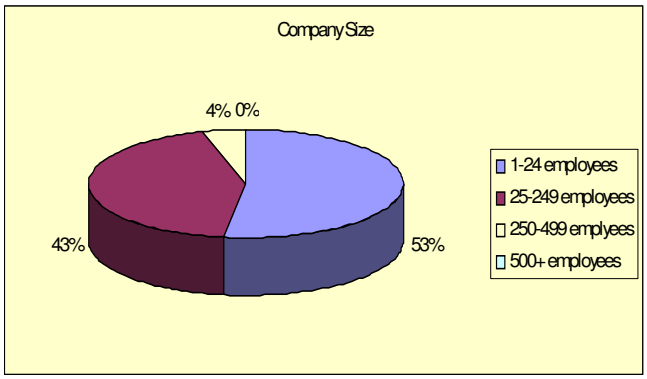
Lasers and Test & Measurement systems have the highest frequency of links with the optical industry in Denmark. Around the 95 percent of the companies have less than 250 employees, while nearly two-third of the companies have less than 25 employees. Manufacturing is the most linked marketfield, followed by ICT and Science. The marketscope of the optical companies in Denmark is more often international or European than national.

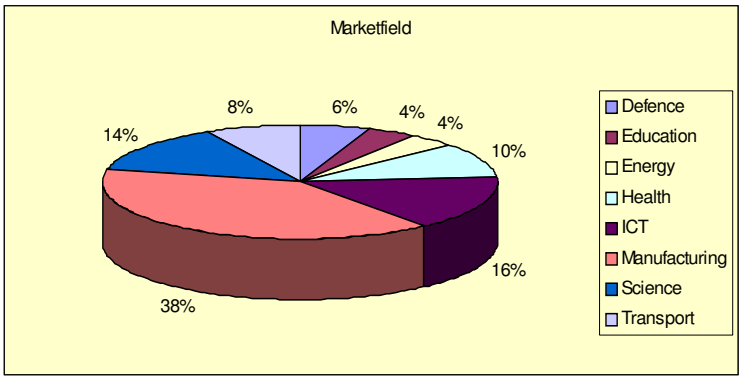
FI

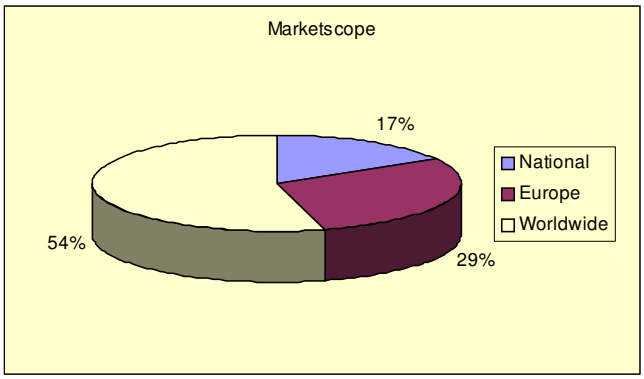
Number of optical companies: 27
Number of optical research institutes: 12

Optical Companies







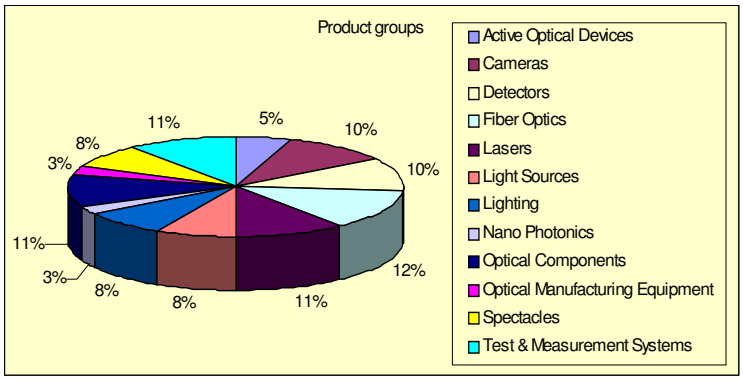


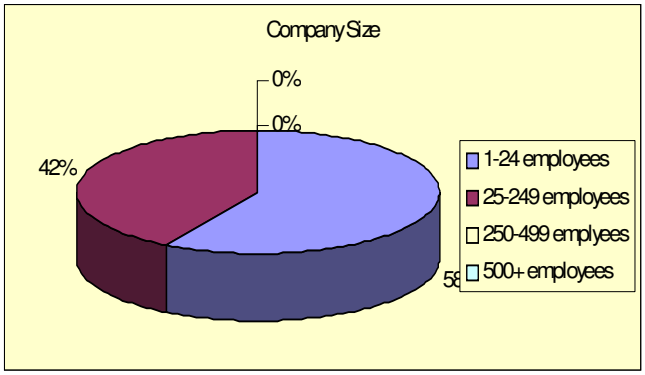
In Finland, optical companies have a higher focus on Test & Measurement System, followed by Fiber Optics. None of the found optical companies have more than 500 employees, while only four of the optical companies have moth than 250 employees. More than half of the optical companies have less than 25 employees. The optical companies in Finland focus on the manufacturing marketfield, followed by ICT and Science. The marketscope is in more than half of the companies worldwide and for close to 30 percent European.

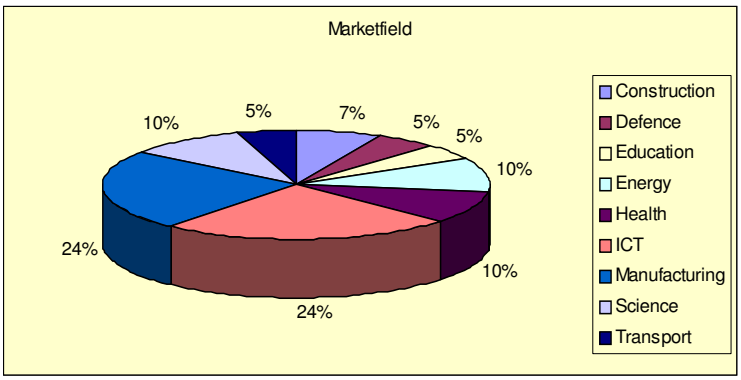
GR

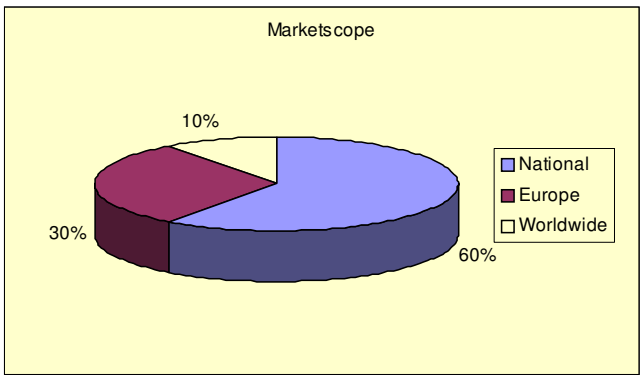
Number of optical companies: 20
Number of optical research institutes: 12

Optical Companies







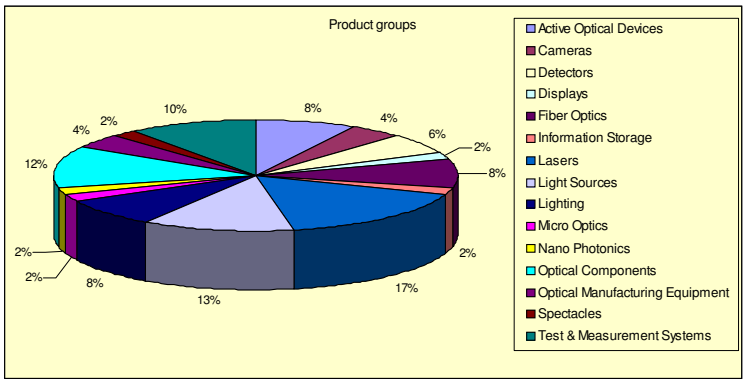


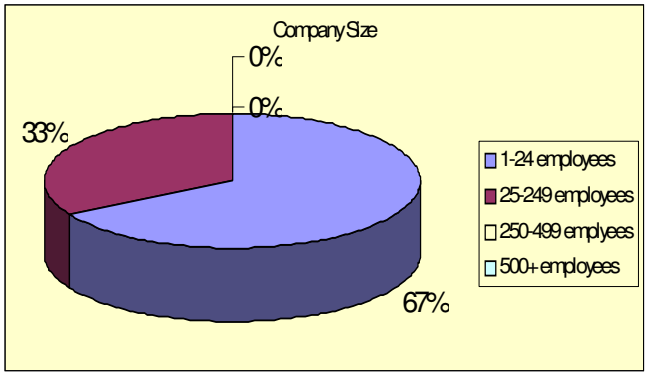
In Greece the optical companies have a focus on many different product groups. All the optical companies found in Greece have less than 250 employees, with over half of them have less than 25 employees. The most important marketfields for Greek optical companies are ICT and Manufacturing. The marketscope of the optical companies is in 60 percent of the companies at the national level, and only 10 percent of the optical companies have a world-wide marketscope

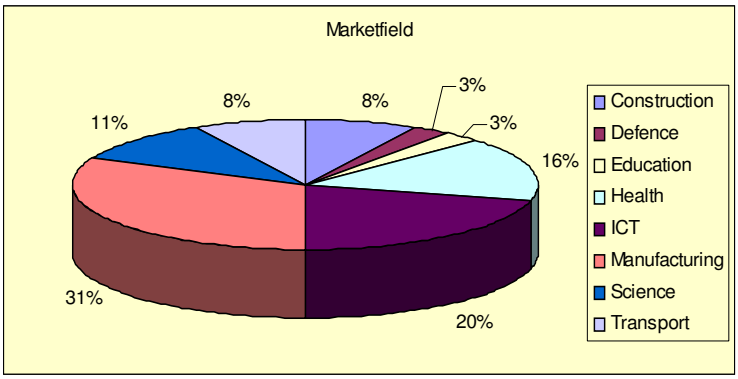
IE

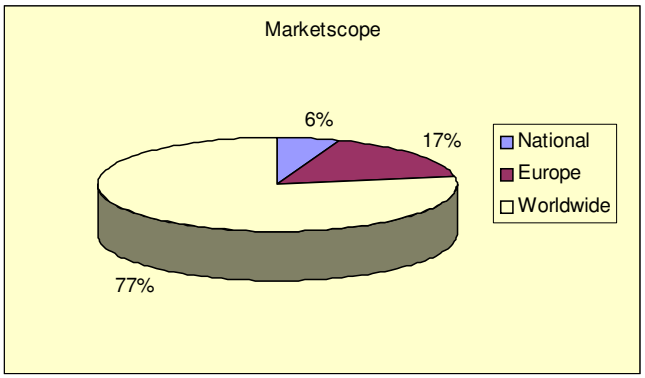
Number of optical companies: 24
Number of optical research institutes: 18

Optical Companies









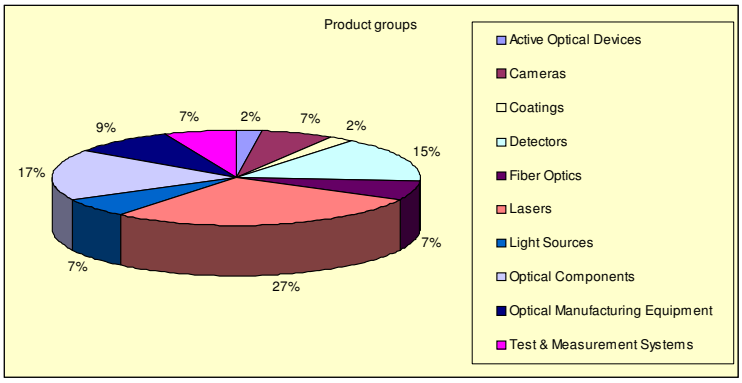
Lasers are the most important product group for Irish companies, followed by Light Sources, Optical components and Test & Measurement Systems. Two third of the optical companies have less than 25 employees, while one third has between the 25 and 250 employees. The marketfields Manufacturing and ICT are most often linked to the optical companies in Ireland. The marketscope of the optical industry in Ireland is in close to 80 percent of the cases world-wide.

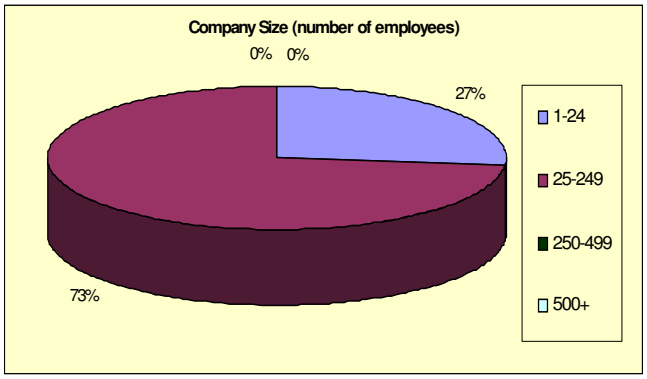
Poland

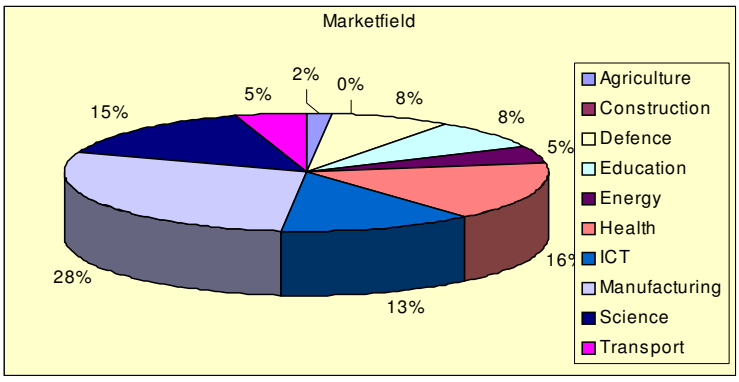
PL

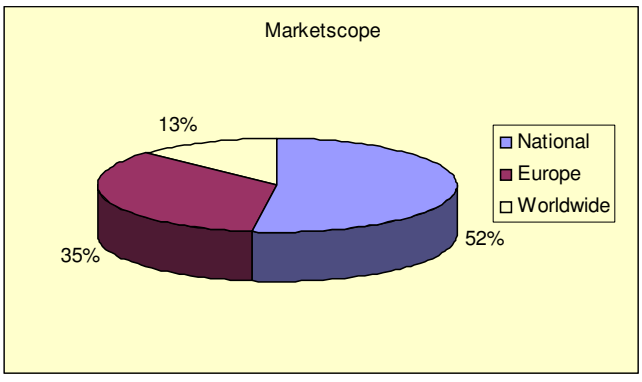
Number of optical companies: 23
Number of optical research institutes: 32

Optical Companies



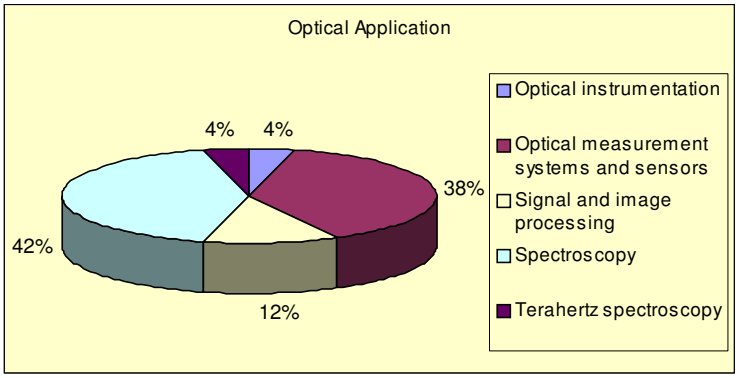


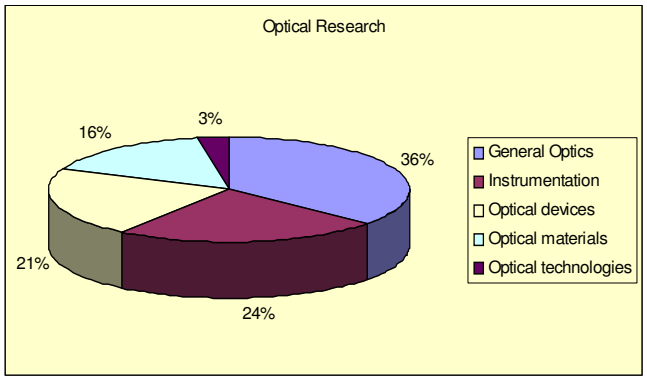




Lasers are the most important product group for Polish companies, followed by Optical components and Detectors. All the optical companies found in Poland have less than 250 employees. The most important market fields for Polish optical companies are Manufacturing, Health, Science and ICT. The market scope of optical companies in Poland is for about half of the companies National and for 35 % European.

Optical Research Institutes



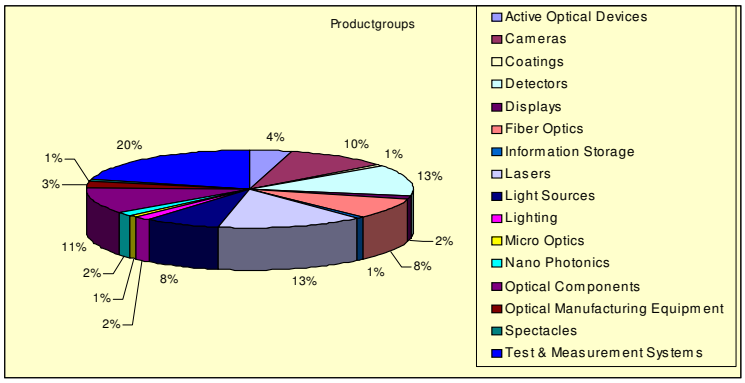


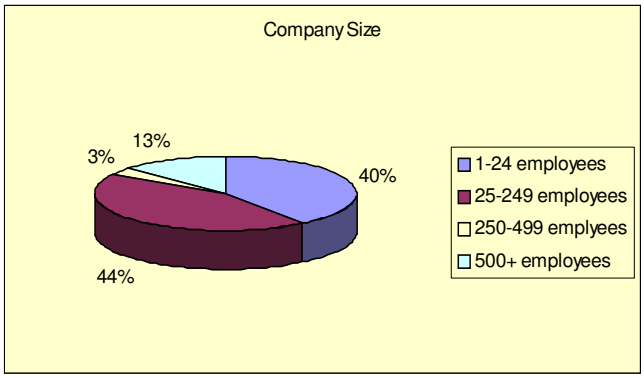
Optical research institutes in Ireland are focusing on Signal and image processing and Optical measurement systems and sensors. The most important optical research fields are General optics, followed by Instrumentation and Optical devices.

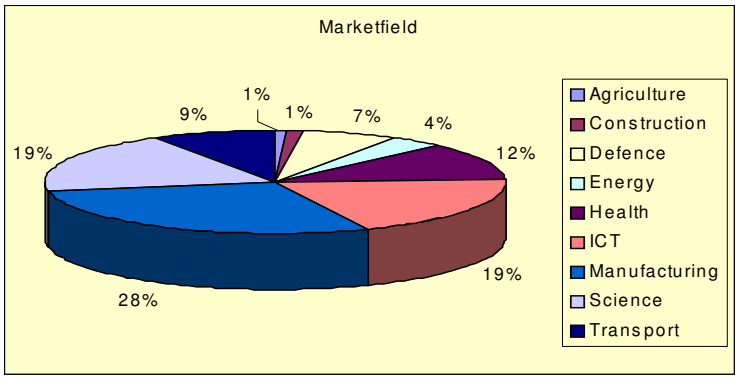
ES

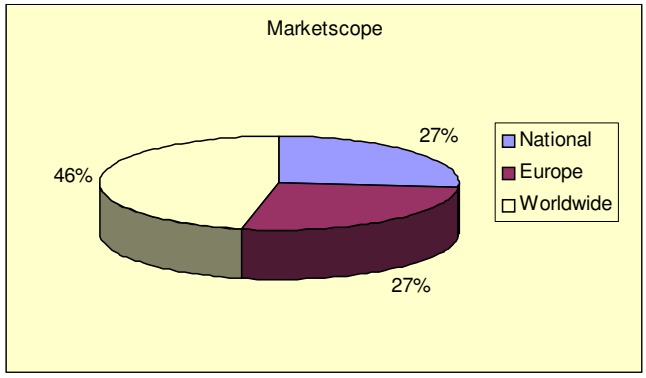
Number of optical companies: 45
Number of optical research institutes: 32

Optical Companies



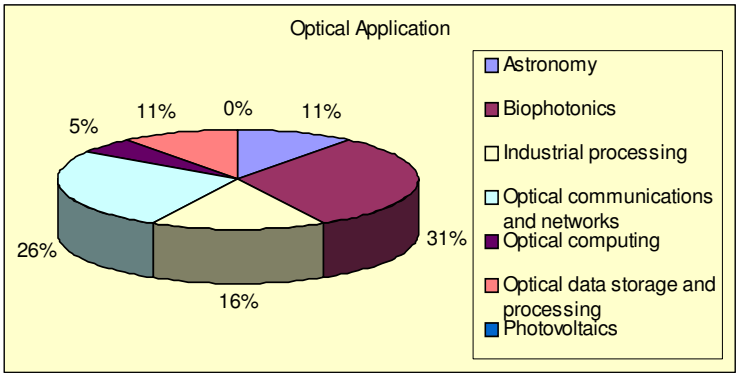


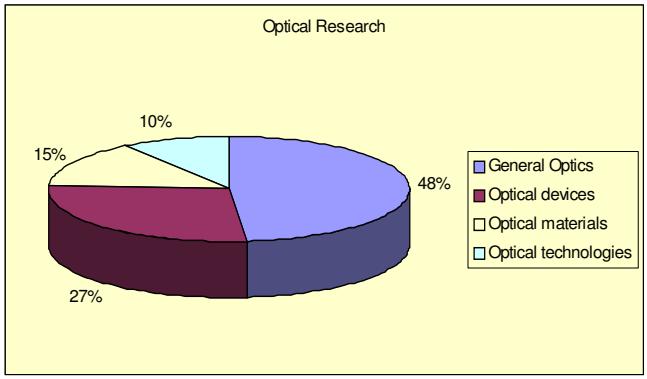




In Spain, the optical industry has a focus on the product groups Test & Measurement Systems, Lasers and Detectors. Around the 84 percent of the optical companies in Spain have less than 250 employees. The most important marketfields are Manufacturing, followed by Science and ICT. The marketscope of the Spanish optical companies is in almost half of the cases on world-wide.

Optical Research Institutes



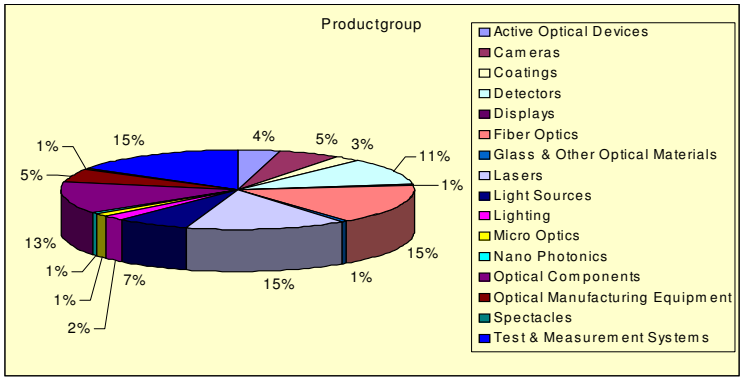


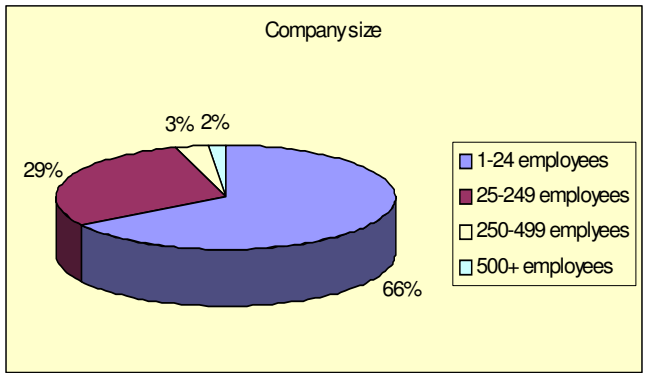
The optical research institutes in Spain have a focus on Optical computing and Optical communications and networks. General optics is the most important optical research field for the optical research institutes in Spain.

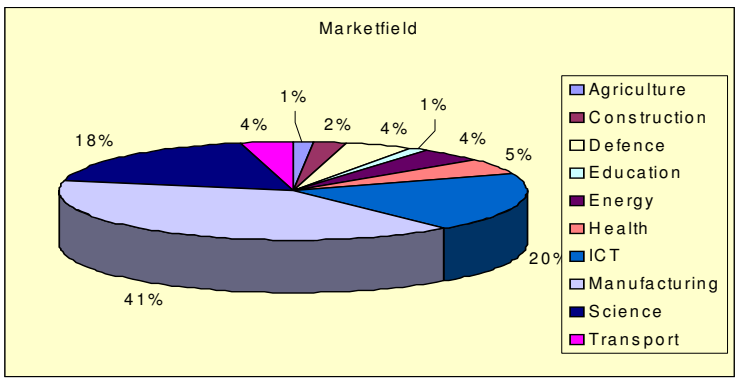
SE

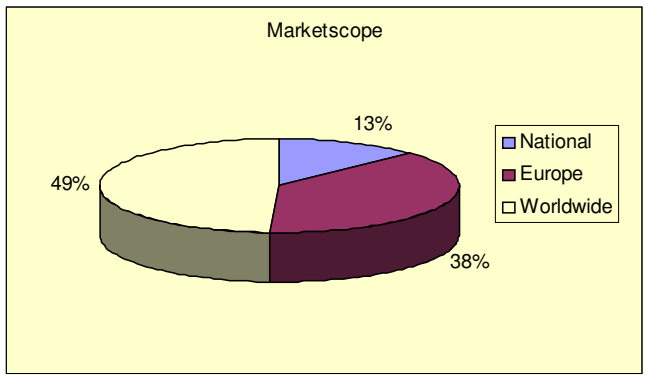
Number of optical companies: 70
Number of optical research institutes: 6

Optical Companies







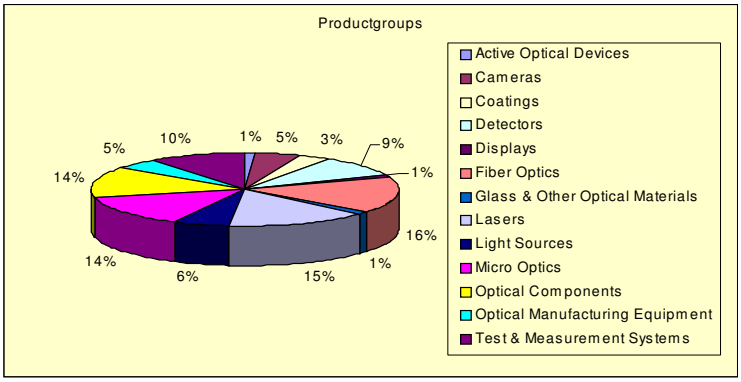


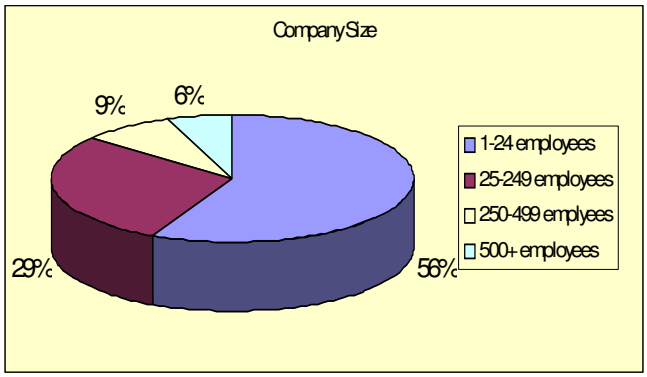
In Sweden, the most important product groups are Fiber optics, Lasers and Test & Measurement systems. Two-third of the companies have less than 25 employees. The marketfield that is most often linked to the optical companies in Sweden is Manufacturing, followed by ICT and Science. The marketscope is in most cases world-wide or European.

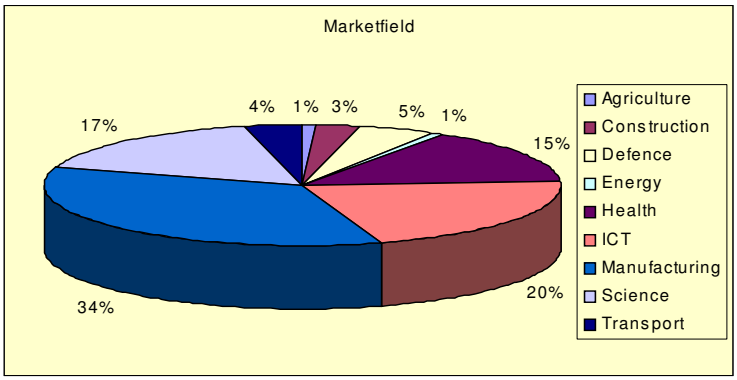
CH

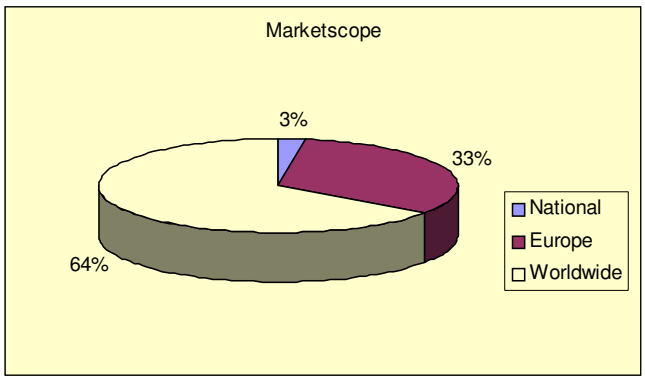
Number of optical companies: 44
Number of optical research institutes: 10

Optical Companies









The productgroups that the highest number of Swiss optical companies have been linked to are Fiber Optics, Lasers, Micro Optics and Optical components. More than half of the optical companies in Switzerland have less than 25 employees.. By far the most important marketfields are Manufacturing, followed by ICT, Science and Heath. The marketscope of optical companies in Switzerland is in close two-third of the cases worldwide, an one third of the cases European. Only a very small percentage of companies have only a national marketscope.

The short conclusions based on the fact sheets of OP companies per country are summarized below, for the items OP product group, market field, market scope and company size:

Germany:
- Product groups: All considered product groups are addressed by German optical companies. Focal areas are Lasers, Optical components, Test & Measurement systems and Detectors.
- Market fields: Manufacturing is the very dominant market field of German optical companies. Health and Science also have a considerable share in the market fields of these companies.
- Market scope: Most often Worldwide.
- Company size: More than 80 % of the optical companies are SME (less than 250 employees).

France:
- Product groups: Nearly all product groups are addressed by French optical companies. Focal areas are Test & Measurement systems, Cameras and Optical components.
- Market fields: Manufacturing is the dominant market field for French optical companies. Health, Science, ICT and Defence also have a considerable share in the market fields of French optical companies.
- Market scope: in majority National, and secondly Worldwide.
- Company size: More than 90 % of the optical companies are SME (less than 250 employees), and two third of the optical companies have less than 25 employees.

United Kingdom:
- Products groups: All product groups are addressed by UK optical companies. Fiber Optics is the most important product group. Also Test & Measurement systems has a considerable share.
- Market fields: ICT is the dominant market field for UK optical companies. Manufacturing and Science also have a considerable share in the market fields of these companies.
- Market scope : For roughly 80 % either National or Worldwide.
- Company size: Slightly less than half of the optical companies have less than 25 employees, while over one fifth of the companies has more than 500 employees.

Italy:
- Product groups: All product groups are addressed by Italian optical companies. Focal areas are Detectors, Fiber optics, Optical components and Test & Measurement systems.
- Market fields: Manufacturing and ICT are the dominant market fields of Italian optical companies. Health and Science also have a considerable share in the market fields of these companies.
- Market scope: The different marketscopes national, Europe and world-wide are all more or less equally important for the Italian optical companies
- Company size: Over half of the optical companies have less than 25 employees.

Netherlands:
- Product groups: Nearly all product groups are addressed by Dutch optical companies. Focal areas are Test & Measurement systems, Cameras, Lasers and Optical components.
- Market fields: Manufacturing and ICT are the dominant market fields of Dutch optical companies. Health and Science also have a considerable share in the market fields of these companies.
- Market scope: For 90 % of the optical companies international, equally shared between Europe and Worldwide.
- Company size: 85 % of the optical companies have less than 250 employees, while more than half of them have less than 25 employees.

Austria:
- Product groups: Nearly all product groups are addressed by Austrian optical companies. Focal areas are Lasers, Light sources, Optical components and Test & Measurement systems.
- Market fields: Manufacturing is the dominant market field for Austrian optical companies. Health, ICT and Science also have a considerable share in the market fields of these companies.

- Market scope: For 90 % of the optical companies international, with a tendency for worldwide over Europe.
- Company size: Almost three quarter of the optical companies have less than 250 employees.

Belgium:
- Product groups: Nearly all product groups are addressed by Belgian optical companies. Focal areas are Cameras, Lasers, Optical components and Test & Measurement systems.
- Market fields: Manufacturing is the dominant market field for Belgian optical companies. ICT, Health and Science also have a considerable share in the market fields of these companies.
- Market scope: For almost 90 % of the optical companies international, equally distributed between worldwide and Europe.
- Company size: Four out of five companies have less than 25 employees.

Czech Republic:
- Product groups: Most product groups are addressed by Czech optical companies. Focal areas are Test & Measurement systems, Cameras, Detectors and Light sources.
- Market fields: Manufacturing is the dominant market field for Czech optical companies. ICT, Science and Health have also a considerable share in the market fields of these companies.
- Market scope: The share of national, Europe and worldwide is around the same level.
- Company size: More than 90 % of the optical companies have les than 250 employees.

Denmark:
- Product groups: Nearly all product groups are addressed by Danish optical companies. Focal areas are Fiber optics, Lasers, Optical components, Test & Measurement systems and Detectors.
- Market fields: Manufacturing is the dominant market field for Danish optical companies. ICT, Science and Health also have a considerable share in the market fields of these companies.
- Market scope: More often worldwide or Europe than national.
- Company size: Around 95 % of the optical companies have less than 250 employees, while nearly two-third of the companies shave less than 25 employees..

Finland:
- Product groups: Most product groups are addressed by Finnish optical companies. Focal areas are Test & Measurement systems, Fiber optics, Displays, Detectors and Optical components.
- Market fields: Manufacturing is the dominant market field for Finnish optical companies. ICT, Science and Health also have a considerable share in the market fields of these companies.
- Market scope: The marketscope is in more than half of the companies worldwide and for close to 30 percent European.
- Company size: More than half of the optical companies have less than 25 employees.

Greece:
- Product groups: Most product groups are addressed by Greece optical companies. Focal areas are Fiber optics, Lasers, Optical components, Test & Measurement systems, Cameras and Detectors.
- Market fields: ICT and Manufacturing are the main market fields for Greece optical companies. Energy, Health and Science also have a considerable share in the market fields of these companies.
- Market scope: The marketscope of the optical companies is in 60 percent of the companies at the national level, and only 10 percent of the optical companies have a world-wide marketscope.
- Company size: All the optical companies found in Greece have less than 250 employees, with over half of them have less than 25 employees.

Ireland:
- Product groups: Nearly all product groups are addressed by Irish optical companies. Focal areas are Lasers, Light sources, Optical components and Test & Measurement systems.
- Market fields: Manufacturing and ICT are the main market fields for Irish optical companies. Health and Science also have a considerable share in the market fields of these companies.

- Market scope: The marketscope of the optical industry in Ireland is in close to 80 percent of the cases world-wide.
- Company size: Two third of the optical companies have less than 25 employees, while one third has between the 25 and 250 employees.

Poland:
- Product groups: Roughly half of the considered product groups are addressed by Polish optical companies. Lasers are the most important product group, followed by Optical components and Detectors.
- Market fields: Main market fields of Polish optical companies are Manufacturing, Health, Science and ICT.
- Market scope: The market scope of optical companies in Poland is for about half of the companies National and for 35 % European.
- Company size: All the optical companies found in Poland have less than 250 employees.

Spain:
- Product groups: Nearly all product groups are addressed by Spanish optical companies. Focal areas are Test & Measurement systems, Detectors, Lasers, Optical components and Cameras.
- Market fields: Main market fields of these companies are Manufacturing, ICT and Science. Health has also a considerable share.
- Market scope: The marketscope of the Spanish optical companies is in almost half of the cases on world-wide.
- Company size: Around the 84 percent of the optical companies in Spain have less than 250 employees.

Sweden:
- Product groups: Nearly all product groups aer addressed by Swedish optical companies. Focal areas are Fiber Optics, Lasers, Test & Measurement systems, Optical components and Detectors.
- Market fields: The dominant market field of Swedish optical companies is Manufacturing. Other main market fields are ICT and Science.
- Market scope: The marketscope is in most cases world-wide or European.
- Company size: Two-third of the companies have less than 25 employees.

Switzerland:
- Product groups: Most of the considered product groups are addressed by Swiss optical companies. Focal areas are Fiber optics, Lasers, Micro optics, Optical components and Test & Measurement systems.
- Market fields: The dominant market field of Swiss optical companies is Manufacturing. Other main market fields are ICT, Science and Health.
- Market scope: The market scope of optical companies in Switzerland is in close two-third of the cases worldwide, an one third of the cases European. Only a very small percentage of companies have only a national market scope.
- Company size: More than half of the optical companies in Switzerland have less than 25 employees.

4.2.3 Comparison of OP Product groups in European countries

From the OP company data per country a comparison can be made of the product groups of companies in different European countries, i.e. the geographical distribution of product groups. The results are shown in the table and the diagram on the next two pages:

Table 4. *Distribution of the product groups for all European countries for the optical companies. The percentage of companies that have been characterized as active in the specific product group*

	Active Optical Devices	Cameras	Coatings	Detectors	Displays	Fiber Optics	Glass & Other Optical Materials	Information Storage	Lasers	Light Sources	Lighting	Micro Optics	Nano Photonics	Optical Components	Optical Manufacturing Equipment	Spectacles	Test & Measurement Systems
Austria	0%	6%	6%	13%	6%	13%	6%	3%	34%	25%	19%	9%	0%	28%	19%	9%	28%
Belgium	2%	23%	6%	16%	11%	11%	5%	2%	35%	15%	11%	2%	0%	29%	21%	5%	34%
Bulgaria	10%	20%	40%	10%	10%	0%	0%	0%	40%	20%	10%	10%	0%	80%	10%	10%	0%
Croatia	0%	50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%
Cyprus	0%	0%	0%	29%	0%	57%	0%	0%	14%	14%	14%	0%	0%	0%	14%	0%	0%
Czech Republic	0%	33%	4%	29%	0%	21%	4%	4%	25%	29%	8%	0%	0%	25%	4%	4%	50%
Denmark	3%	14%	3%	27%	0%	35%	3%	3%	35%	19%	5%	5%	5%	32%	3%	3%	32%
Estonia	0%	0%	0%	0%	0%	0%	0%	14%	57%	14%	0%	0%	0%	71%	14%	43%	43%
Finland	0%	15%	7%	22%	22%	22%	0%	0%	15%	15%	7%	4%	4%	19%	4%	4%	33%
France	9%	19%	3%	15%	3%	10%	11%	1%	13%	5%	3%	4%	0%	18%	8%	3%	38%
Germany	16%	17%	9%	26%	4%	14%	9%	8%	38%	16%	8%	9%	1%	40%	8%	2%	26%
Greece	10%	20%	0%	20%	0%	25%	0%	0%	20%	15%	15%	0%	5%	20%	5%	15%	20%
Hungary	0%	13%	13%	0%	13%	0%	0%	0%	38%	13%	0%	13%	0%	50%	0%	13%	13%
Iceland	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Ireland	17%	9%	0%	13%	4%	17%	0%	4%	35%	26%	17%	4%	4%	26%	9%	4%	22%
Israel	18%	24%	0%	29%	12%	24%	6%	0%	47%	12%	0%	0%	6%	35%	6%	0%	53%
Italy	9%	24%	7%	33%	8%	30%	9%	5%	26%	26%	21%	6%	4%	31%	12%	4%	37%
Latvia	0%	0%	0%	20%	20%	40%	0%	0%	0%	20%	0%	0%	0%	40%	0%	20%	20%
Liechtenstein	0%	0%	80%	20%	0%	20%	40%	0%	0%	0%	0%	0%	0%	40%	0%	0%	0%
Lithuania	11%	0%	56%	11%	0%	0%	33%	11%	67%	11%	0%	0%	0%	67%	22%	0%	11%
Luxembourg	0%	33%	0%	0%	22%	11%	11%	33%	11%	11%	11%	0%	0%	33%	22%	11%	44%
Malta	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	67%	0%	67%	33%
Netherlands	3%	26%	5%	18%	4%	14%	5%	3%	29%	21%	13%	6%	0%	29%	17%	3%	46%
Norway	0%	38%	0%	15%	0%	38%	0%	0%	31%	15%	15%	0%	0%	15%	15%	0%	38%
Poland	4%	13%	4%	30%	0%	13%	0%	0%	57%	13%	0%	0%	0%	35%	17%	0%	13%
Portugal	8%	25%	0%	25%	0%	42%	0%	0%	33%	8%	0%	8%	0%	42%	8%	17%	25%
Romania	14%	43%	29%	43%	0%	14%	0%	0%	57%	29%	14%	0%	0%	43%	14%	0%	57%
Slovakia	0%	14%	0%	14%	14%	43%	0%	0%	14%	0%	0%	0%	0%	14%	14%	0%	29%
Slovenia	20%	0%	20%	0%	0%	0%	20%	0%	60%	20%	0%	0%	0%	20%	0%	20%	40%
Spain	11%	27%	2%	33%	4%	22%	0%	2%	38%	20%	4%	2%	4%	29%	7%	2%	56%
Sweden	9%	11%	6%	23%	1%	34%	1%	0%	31%	14%	4%	3%	1%	27%	11%	1%	34%
Switzerland	2%	9%	7%	18%	2%	32%	2%	0%	30%	11%	0%	27%	0%	27%	9%	0%	20%
Turkey	0%	8%	17%	17%	8%	25%	8%	0%	33%	42%	25%	0%	0%	17%	8%	0%	33%
United Kingdom	1%	14%	7%	19%	9%	66%	5%	3%	16%	7%	6%	5%	2%	17%	3%	3%	26%
Europe	8%	18%	7%	22%	5%	25%	7%	4%	27%	14%	8%	6%	1%	28%	9%	3%	32%

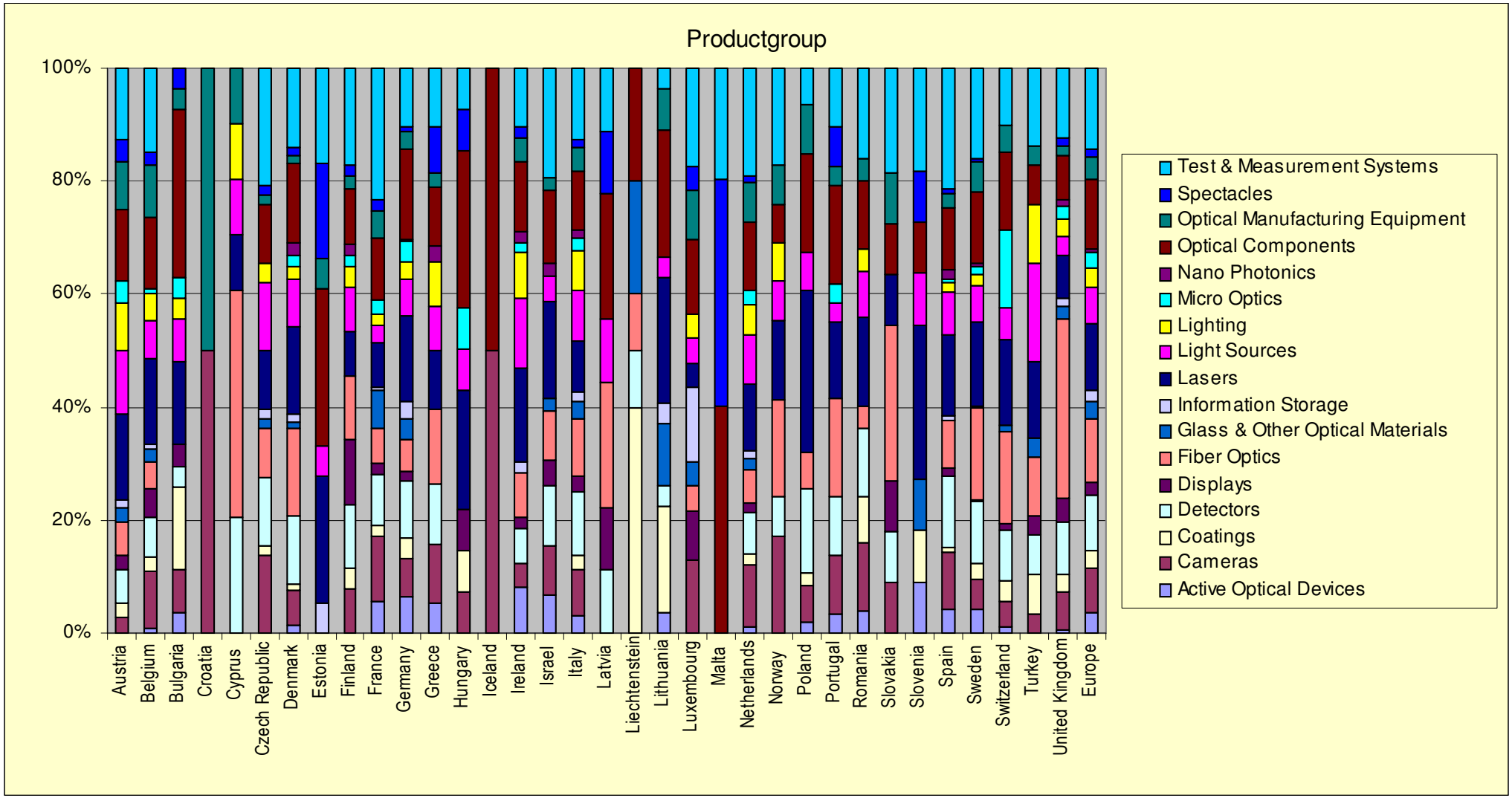


Figure 4. Distribution of product groups per country.

From this table and diagram the following conclusions can be drawn:

- In overall Europe the following product groups are addressed by more than a quarter of all the companies (of all the companies that have been profiled): Test & Measurement Systems, Optical Components, Lasers and Fiber Optics. An explanation for the high number of companies producing these product groups could be the enabling character of the product groups, which find their way in many different end-products.
- The product groups Nano-Photonics, Spectacles and Information Storage is addressed by less than 5 % of the companies in Europe. This could be explained by the size of the market (information storage and Spectacles) or the early stage of the product group (nano-photonics).
- The higher specialisation rate in some small countries (Bulgaria, Estonia, Iceland, Lithuania, Malta and Hungary in Optical Components; Cyprus in Fiber Optics; Estonia, Romania and Slovenia in Laser; Lithuania in Coatings; Malta in Spectacles; Romania in Test& Measurement Systems) could be explained by the low number of companies in these countries (for all countries 10 or less optical companies have been profiled on product groups).
- The high percentage of UK optical companies that are active in Fiber Optics is worth noticing (66 %).
- Also the percentage of Spanish optical companies active in Test & Measurement Systems (56 %) and the percentage of Polish optical companies active in Lasers (57 %) are much higher than the European average.
- Of all European countries Switzerland has the highest percentage of companies active in the relatively new product group Micro Optics (27 %).

4.2.4 Comparison of OP Industry market fields in European countries

From the data of OP companies per country a comparison can be made of the market fields of OP companies in different European countries. The results are shown in the table and the diagram on the following two pages:

Table 5. *Distribution of the market fields for all European countries for the optical companies. The percentage of companies that have been characterized as active in the market field*

Name	Agriculture	Construction	Defence	Education	Energy	Health	ICT	Manufacturing	Science	Transport
Austria	0%	6%	0%	3%	6%	44%	44%	84%	25%	16%
Belgium	2%	6%	10%	6%	8%	27%	42%	84%	27%	16%
Bulgaria	0%	0%	20%	10%	0%	50%	60%	90%	50%	0%
Croatia	0%	0%	0%	50%	0%	0%	100%	100%	50%	0%
Cyprus	0%	0%	0%	0%	33%	0%	67%	17%	0%	0%
Czech Republic	0%	17%	4%	8%	13%	25%	38%	67%	38%	8%
Denmark	0%	9%	14%	6%	3%	26%	40%	74%	43%	11%
Estonia	0%	0%	0%	0%	0%	71%	14%	57%	43%	0%
Finland	0%	0%	11%	7%	7%	19%	30%	74%	26%	15%
France	2%	4%	18%	2%	3%	25%	21%	65%	30%	12%
Germany	0%	3%	4%	0%	3%	30%	13%	93%	22%	7%
Greece	0%	15%	10%	10%	20%	20%	50%	50%	20%	10%
Hungary	0%	0%	0%	13%	0%	50%	38%	63%	38%	13%
Iceland	0%	0%	0%	100%	0%	0%	100%	0%	0%	0%
Ireland	0%	14%	5%	5%	0%	27%	36%	55%	18%	14%
Israel	0%	0%	29%	0%	6%	35%	47%	59%	41%	18%
Italy	3%	5%	9%	3%	8%	27%	56%	67%	23%	18%
Latvia	0%	0%	0%	0%	0%	40%	40%	80%	20%	0%
Liechtenstein	0%	0%	0%	20%	20%	40%	20%	100%	40%	0%
Lithuania	0%	0%	0%	22%	0%	11%	33%	89%	78%	0%
Luxembourg	0%	0%	0%	22%	0%	22%	67%	67%	11%	0%
Malta	0%	0%	0%	0%	0%	67%	33%	0%	0%	0%
Netherlands	9%	5%	13%	9%	6%	42%	53%	80%	36%	15%
Norway	8%	8%	31%	0%	8%	15%	54%	85%	23%	23%
Poland	4%	0%	22%	22%	13%	43%	35%	78%	39%	13%
Portugal	0%	8%	17%	8%	8%	42%	25%	67%	33%	8%
Romania	0%	29%	29%	14%	14%	57%	71%	71%	29%	14%
Slovakia	0%	14%	0%	14%	14%	14%	43%	57%	43%	0%
Slovenia	0%	0%	0%	20%	0%	100%	0%	20%	20%	0%
Spain	2%	2%	16%	0%	9%	27%	44%	67%	44%	20%
Sweden	3%	4%	9%	3%	9%	10%	38%	77%	35%	7%
Switzerland	2%	7%	11%	0%	2%	36%	52%	86%	41%	9%
Turkey	8%	0%	8%	17%	8%	8%	75%	75%	8%	42%
United Kingdom	1%	10%	17%	10%	5%	19%	66%	41%	33%	12%
Europe	2%	5%	11%	5%	5%	27%	38%	71%	29%	12%

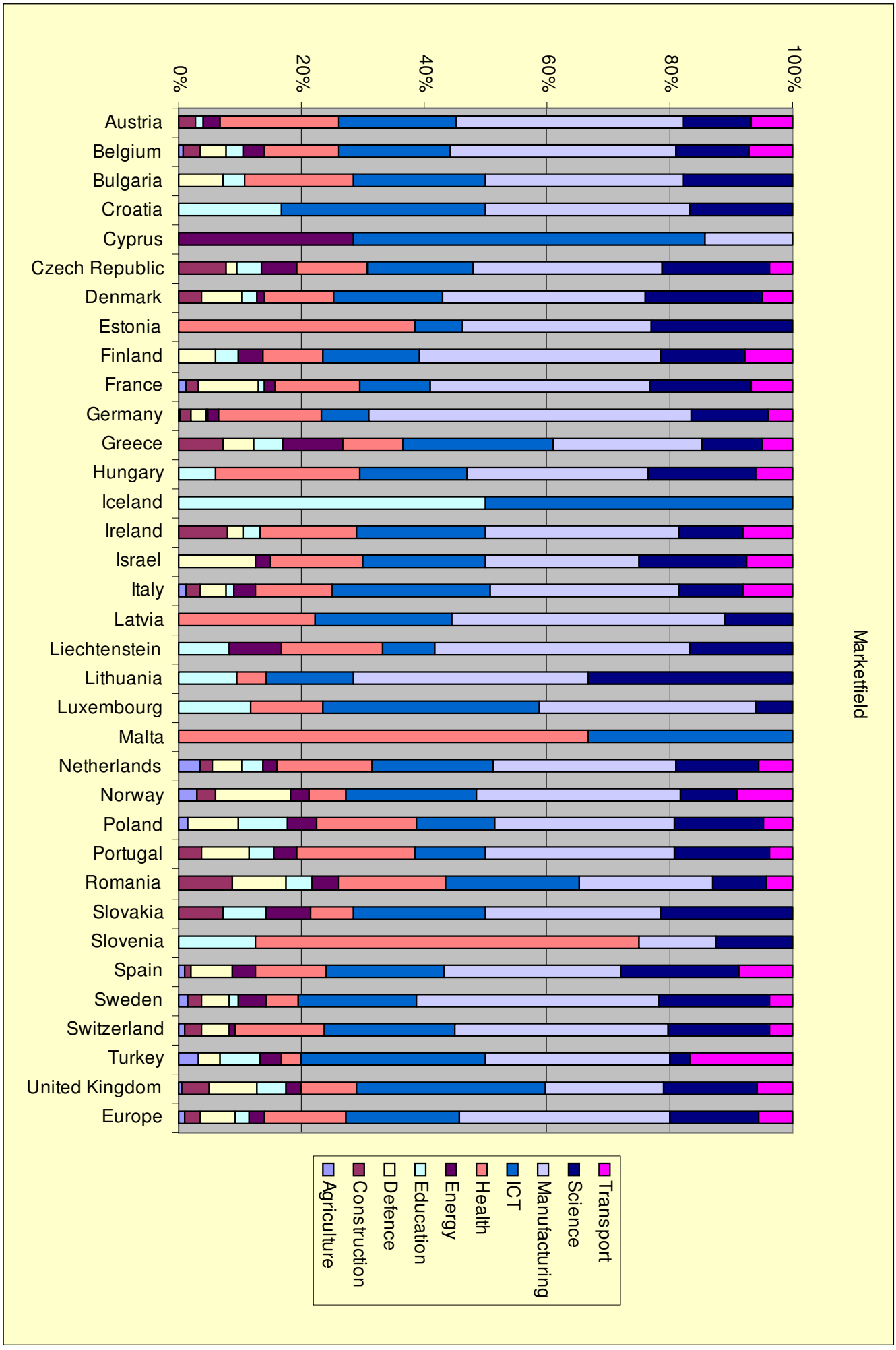


Figure 5. Distribution of the market fields for all European countries for the optical companies.

From this table and diagram the following conclusions can be drawn:

- The most noticeable is that 71 % of all European optical companies are classified as being active in the market field Manufacturing. An explanation could be that many of the products made by the optical industry are used in the manufacturing industry. Furthermore, the market field Manufacturing is a very broad field including component supplier companies and producers of complete products / final equipment.
- Furthermore it can be seen in the table that optical companies in Europe tend to serve the Science, Health and ICT sector more than other sectors.
- The optical companies in Germany are almost all classified into the manufacturing market, while other markets, besides Health, are all below European average.
- The United Kingdom has a much lower percentage of companies classified in manufacturing compared to the average in Europe, and a larger share of companies classified in the ICT sector.
- France has for most market fields a similar distribution of the optical companies over the different markets as the European average, with a higher share in the market field Defence and a lower share in ICT.
- The Netherlands have a higher share of companies in the market fields Health and ICT compared to European average.
- The optical companies in Italy are similar to the European average, with a higher share of companies classified in the ICT market.

4.2.5 Innovation in OP Industry per country

As indicators for the degree of innovation in optics and photonics the activities of OP companies in the relatively new product groups Fiber Optics, Micro Optics and Nano Photonics may be considered. The following table gives per country the share (percentage) of companies that have been characterized as active in these "new" product groups.

Table 7.	*Fiber Optics*	*Micro Optics*	*Nano Photonics*
Austria	13%	9%	0%
Belgium	11%	2%	0%
Bulgaria	0%	10%	0%
Croatia	0%	0%	0%
Cyprus	57%	0%	0%
Czech Republic	21%	0%	0%
Denmark	35%	5%	5%
Estonia	0%	0%	0%
Finland	22%	4%	4%
France	10%	4%	0%
Germany	14%	9%	1%
Greece	25%	0%	5%
Hungary	0%	13%	0%
Iceland	0%	0%	0%
Ireland	17%	4%	4%
Israel	24%	0%	6%
Italy	30%	6%	4%
Latvia	40%	0%	0%
Liechtenstein	20%	0%	0%
Lithuania	0%	0%	0%
Luxembourg	11%	0%	0%
Malta	0%	0%	0%
Netherlands	14%	6%	0%
Norway	38%	0%	0%
Poland	13%	0%	0%
Portugal	42%	8%	0%
Romania	14%	0%	0%
Slovakia	43%	0%	0%
Slovenia	0%	0%	0%
Spain	22%	2%	4%
Sweden	34%	3%	1%
Switzerland	32%	27%	0%
Turkey	25%	0%	0%
United Kingdom	66%	5%	2%
Europe	25%	6%	1%

As can be seen, in Europe as a whole optical companies working in the product group Fiber Optics have already a considerable share (25 % on average), probably stimulated by an effective EU research policy in this field. In general the product group Fibre Optics shows a diversified picture. Several countries (smaller and larger countries) have a significant percentage of companies working on products in Fibre Optics, with a highest share of 66 % of the companies in the United Kingdom. Several smaller countries have no optical companies who work on Fibre Optical products (Bulgaria, Croatia, Estonia, Hungary, Iceland, Lithuania, Malta and Slovenia).

In the countries Switzerland, Hungary and Bulgaria more than 10 % of the optical companies are working in the product group Micro Optics (note: Bulgaria and Hungary have less than 10 optical companies classified for product groups). For all countries less than 6 % of the companies are working on products in the product group Nano optics.

The share of new product groups Nano Photonics and Micro Optics of the total amount of products per country is given also in the diagram below. From this diagram it can be read that only in Switzerland and Hungary the share of the innovative product groups Nano Photonics and Micro Optics is larger than 10 %, with Switzerland having a share of almost 30 % in Micro Optics.

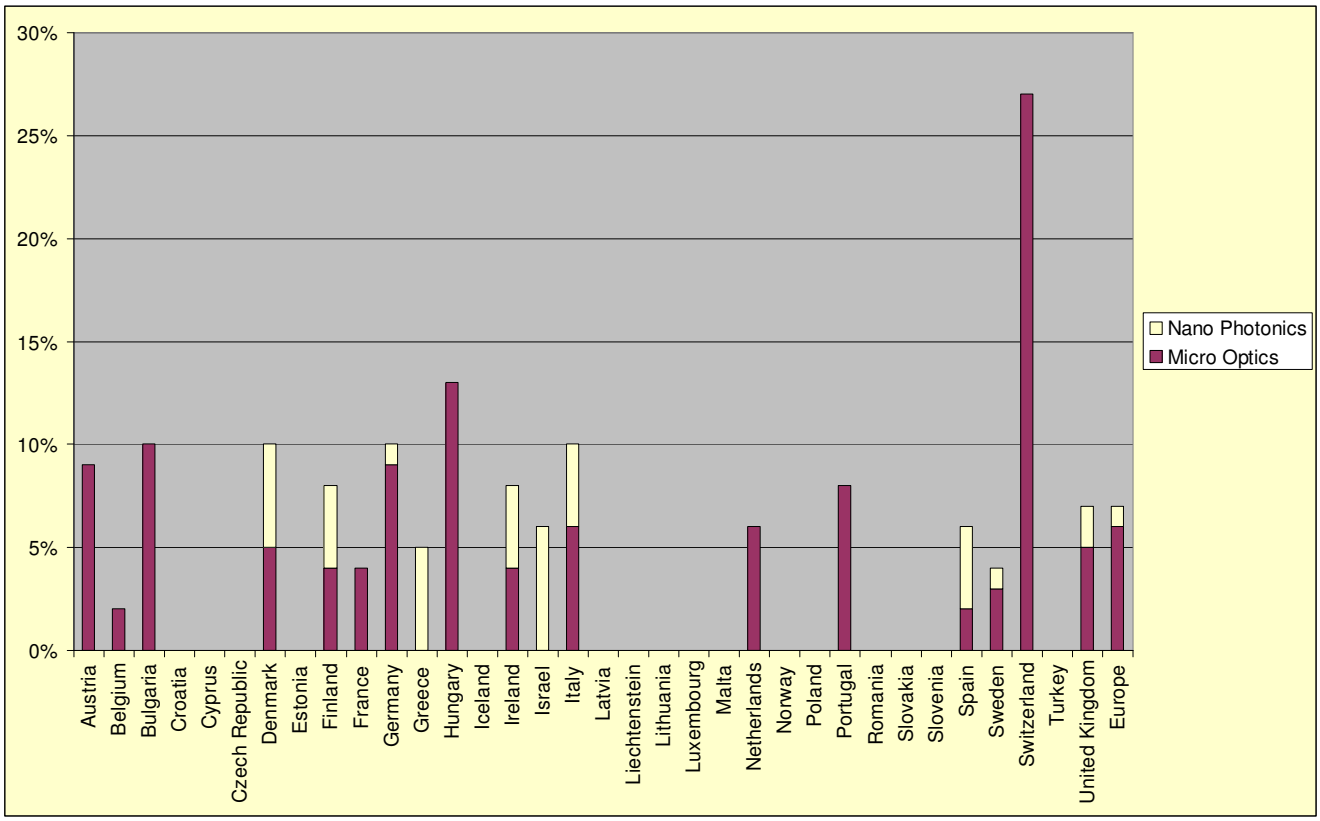


Figure 6. Share of new product groups. (Source: Opera Research 2008)

The number of OP companies compared with the R&D investments per country can also give an indication for the innovation in optics and photonics per country. The total R&D investments per country and the relation between the number of OP companies and R&D investments are given in the following diagrams.

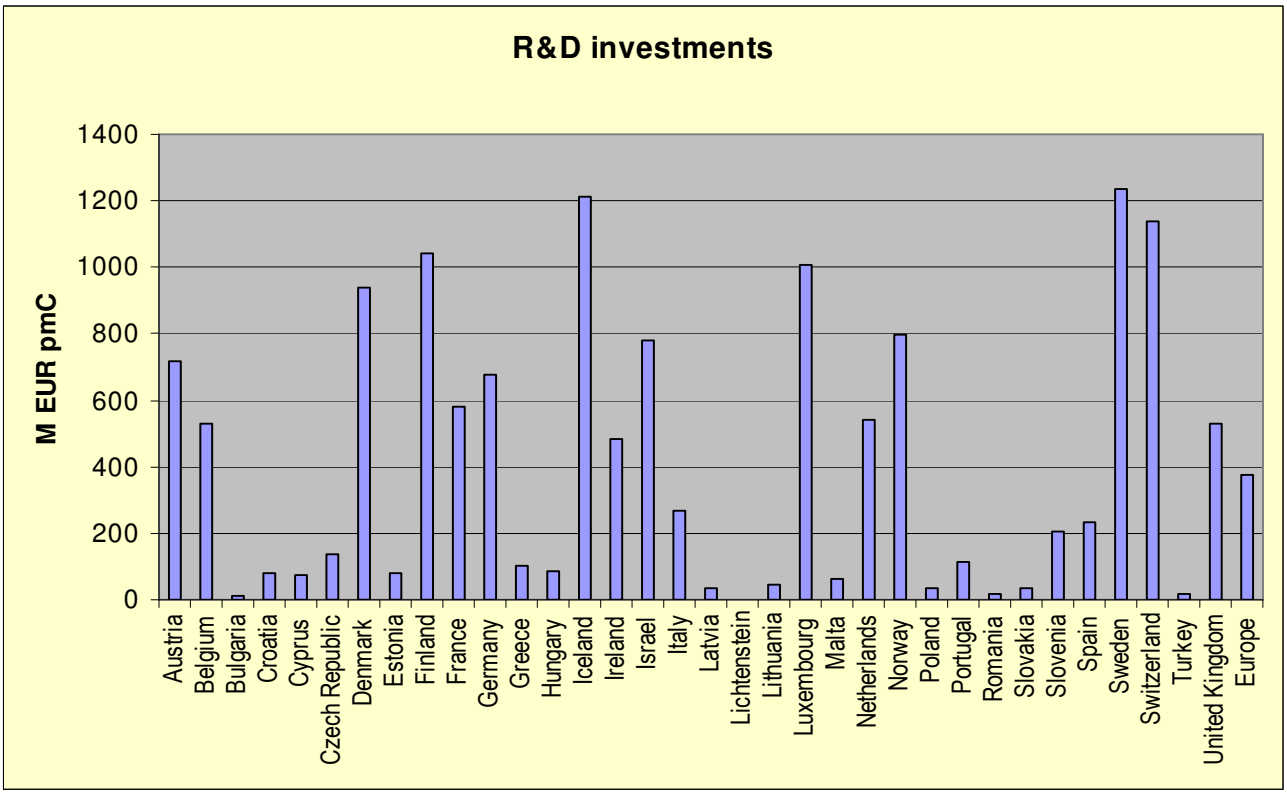


Figure 7. The Gross Expenditures on R&D per million Capita per country. Source Eurostat 2008, Eurostat 2007 and European Commision 2003.

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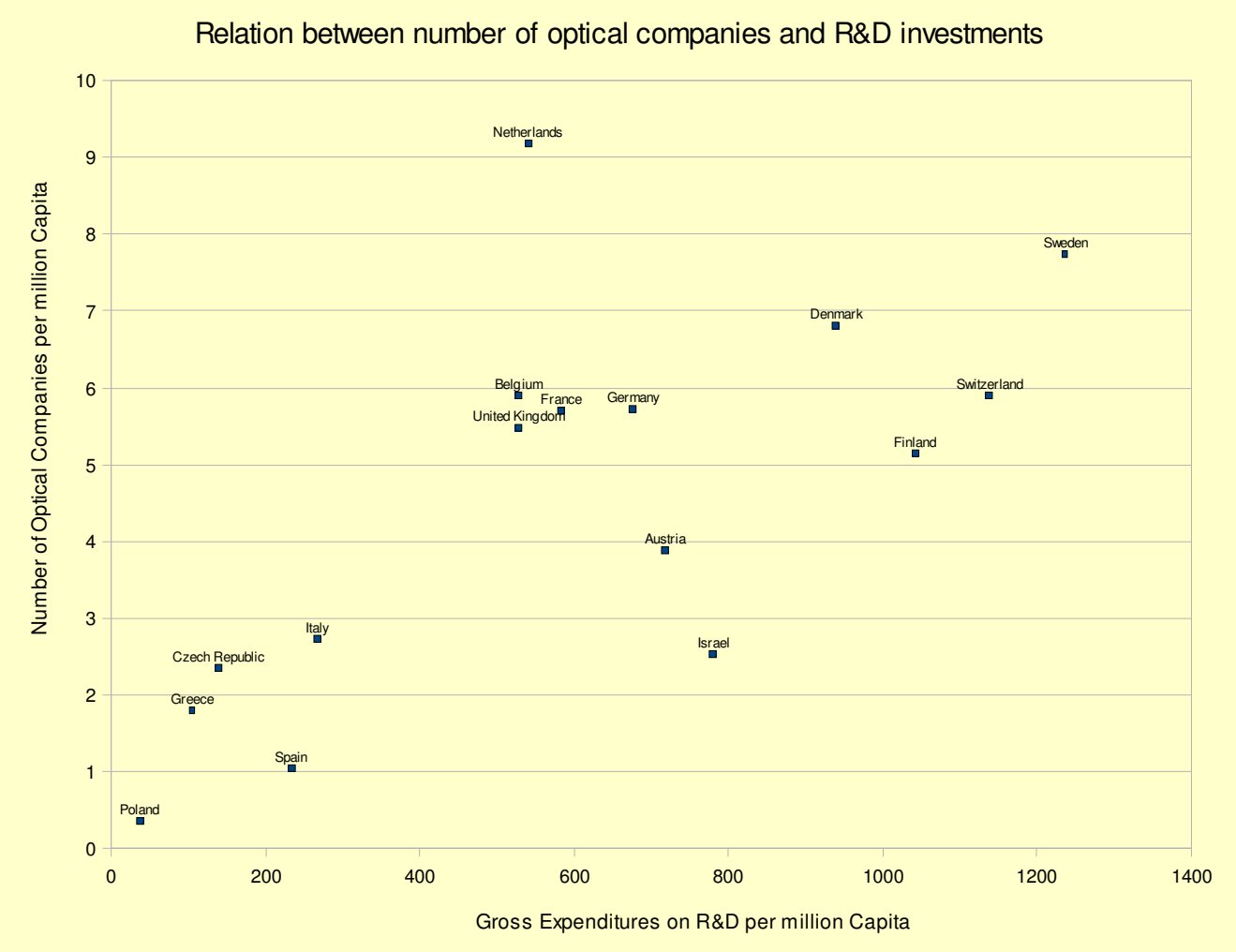

Figure 8. Total number of optical companies per million capita plotted against the gross expenditures on R&D per million capita. (Source: Opera Research 2008, Eurostat 2008, Eurostat 2007 and European Commision 2003).

Countries with less than 20 optical companies have been omitted from the graph, because of the too low number of optical companies.

In general it seems that the higher the gross expenditures on R&D in a country, the higher the number of optical companies. The Netherlands is a country with a relatively high number of optical companies compared to the gross expenditures on R&D. An explanation for the high number of optical companies in the Netherlands can be that a higher percentage of the total number of optical companies has been identified in the Netherlands compared to other countries, due to the knowledge and expertise of the WP leader. It should be noted that the size of the optical companies or the turnover of the optical industries for all optical companies per country was not known and could therefore not be taken into account.
In general it can be concluded that a considerable correlation exists between the number of OP companies and the R&D investments per country, giving an indication for the innovation in optics and photonics per country.

4.2.6 Market scopes of OP Industry per country

From the data of OP companies per country a comparison can be made of the market scope of companies in different European countries. The results are shown in the following diagram.

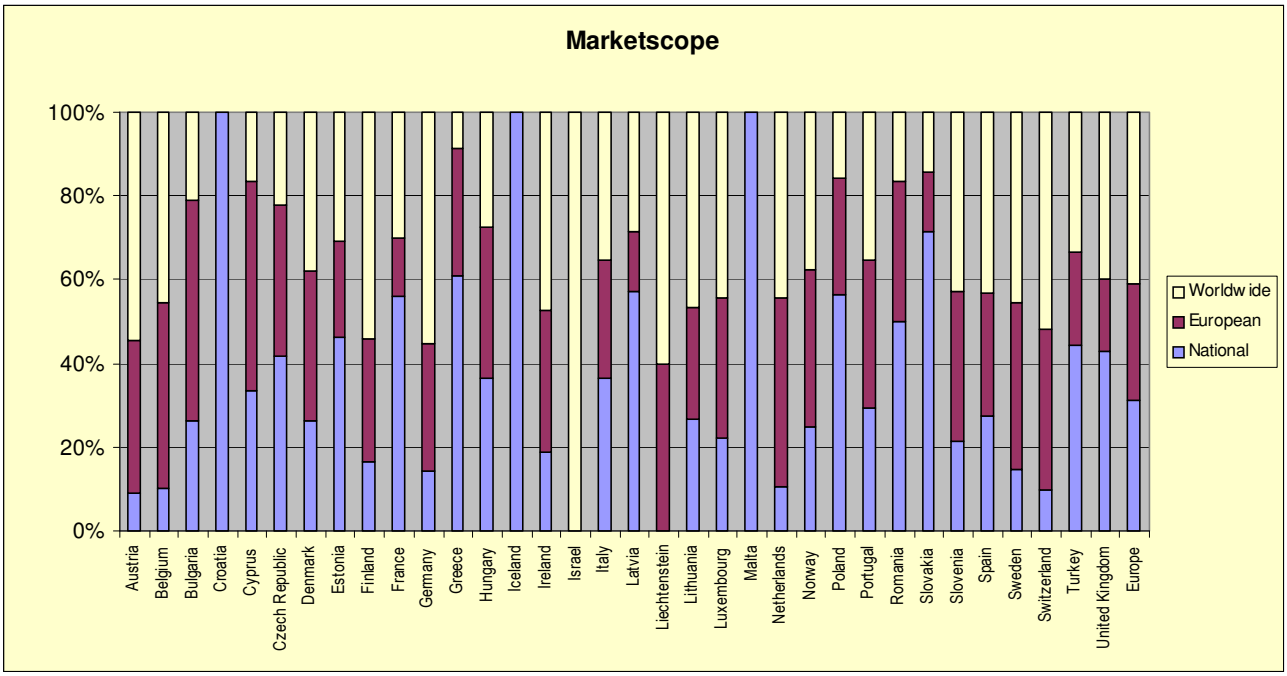

Figure 9. Market scope of European optical companies. Source Opera Research 2008

From this diagram the following conclusion can be drawn:
Of the five large countries (France, Germany, United Kingdom, Italy and the Netherlands), France has a higher share of companies oriented at the national level, while Germany and the Netherlands have a much stronger focus on Europe and the world. The optical companies in the United Kingdom have less focus on Europe and more on the national and global market. The market scope of optical companies in Italy shows considerable shares in the national market as well as in Europe and worldwide.

4.2.7 Market fields versus Company size

The relation between market fields and OP company size is presented in the following diagram.

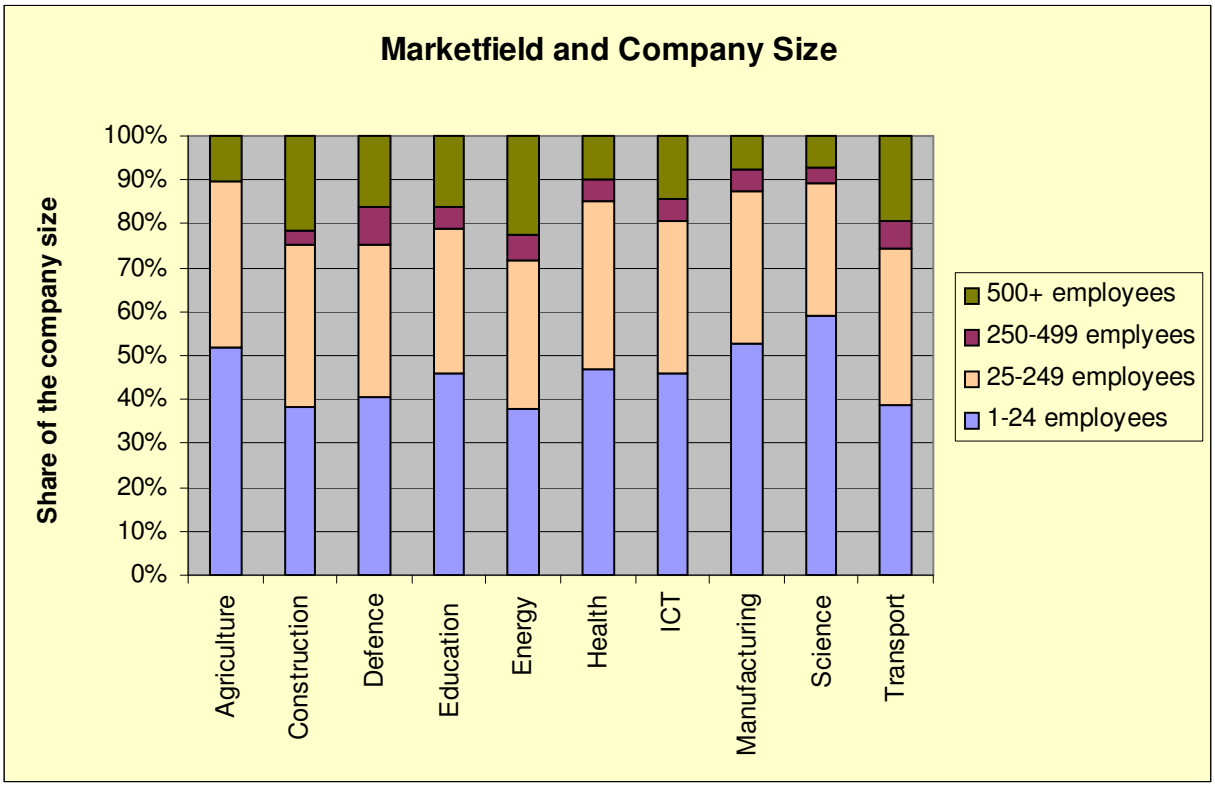

Figure 10. Relation between market fields and company size. Source: Opera Research 2008

From this diagram the following conclusions can be drawn:
The share of large companies (> 500 employees) is larger for Construction, Energy and Transport, and smaller for the market fields Science, Manufacturing and Health. Furthermore it is noticeable that the share of companies with between 250 and 499 employees is very low.

4.2.8 OP Research application fields and OP Industry market fields in Europe as a whole

The degree of correspondence between OP Research Application fields and OP Industry Market fields for Europe as a whole was studied using:

- WP2 data on European OP research institutes,
- WP3 data on European OP industries, and
- data of 229 European OP research projects in the EU Sixth Framework Program (FP 6) and the EUREKA Program, gathered in the first year of the OPERA2015 project.

The inventory of European optics and photonics research projects in WP3 resulted in 2006 in two overviews: 173 optics / photonics research projects in EU FP 6, and 56 optics / photonics research projects in EUREKA (status January 2006, Source.: OPERA 2015 D3.1 report). For analysis purposes key data of these research projects were imported into the Dynamo database.

Each of these 229 research projects was classified according to the OP Industry market fields addressed and the OP Research application fields addressed. The results were processed and are presented in the following table. Along the horizontal axis the OP Industry Market fields are given; on the vertical axis the OP Research Application fields.
From the number of projects in each cell in this diagram (according to the classification) percentages were calculated as follows: $\sqrt{((A_{ij}/A_{0j}) * (A_{ij}/A_{i0}))}$,
where

A_{ij} = the absolute number of projects that address Optical Industry Market field j and Optical Research application field i,
A_{0j} = the total number of projects in the Optical Industry Market field j, and
A_{i0} = the total number of projects in the Optical Research application field i.

For example: There are 22 projects in the Optical Industry Market Field "Energy", and there are 93 projects in the Optical Research Application Field "Industrial Processing". A total of 12 projects addressed both "Energy" and "Industrial Processing". This will result in $\sqrt{((12/22)*(12/93))} = 27$ %.

Industry Market Field >> **Table 7.** Research Application Field	Agriculture *	Manufacturing	Energy	Construction *	Transport	Defence *	Education *	Health	Science	ICT
Astronomy *	20%	4%	9%	24%	10%	20%	14%	6%	34%	5%
Biophotonics	14%	10%	9%	8%	3%	21%	10%	95%	28%	7%
Industrial processing	16%	99%	27%	18%	30%	10%	4%	9%	17%	20%
Optical communications and networks	7%	20%	6%	9%	18%	7%	5%	9%	4%	84%
Optical computing *	20%	4%	9%	24%	10%	20%	14%	6%	11%	31%
Optical data storage and processing	10%	6%	4%	11%	5%	10%	14%	3%	16%	64%
Photovoltaics	14%	17%	77%	32%	7%	14%	10%	8%	4%	3%

Note: The fields marked with an (*) have in total less than 10 projects in that field..

Cells with a percentage $\sqrt{((A_{ij}/A_{0j}) * (A_{ij}/A_{i0}))} \geq 50$ % (and hence exhibit a strong correlation between funded research and market fields) are marked with **X** in the next table. Along the horizontal axis also the percentage of OP companies in Europe that have been characterized as active in the specific market field are given (from the table in section 4.2.4). Furthermore, along the vertical axis the percentage of OP research institutes in Europe that are active in the specific application field are given (from the diagram in section 4.2.1).

Table 8. **OP Industry Market fields**

OP Research Application fields		Agriculture	Manufacturing	Energy	Construction	Transport	Defence	Education	Health	Science	ICT
		2%	71%	5%	5%	12%	11%	5%	27%	29%	38%
Astronomy	6%										
Bio-photonics	37%								X		
Industrial Processing	12%		X								
Optical Communication & Networks	25%										X
Optical Computing	6%										
Optical Data-storage& Processing	8%										X
Photovoltaics	7%			X							

From these tables the following conclusions can be drawn:

- A relatively large percentage of European research projects address both the Research application field Bio-photonics and the Industry market field Health. This in accordance with the considerable number of OP companies and OP research institutes active in these fields: 27% of European OP companies are active in Health and 37% of European OP research institutes are active in Bio-photonics.
- A relatively large percentage of European research projects address both the Research application field Industrial Processing and the Industry market field Manufacturing. Manufacturing is a very important market field for the European OP industry: 71% of European OP companies are active in Manufacturing. However, only 12% of European OP research institutes are active in Industrial Processing.
- A relatively large percentage of European research projects address both the Research application field Optical communications & networks, and the Industry market field ICT. This in accordance with the considerable number of OP companies and OP research institutes active in these fields: 38% of European OP companies are active in ICT, whereas 25% of European OP research institutes are active in Optical Communications & networks. Only 8 % of the OP research institutes address Optical data storage & processing.
- Finally, the Research application field Photovoltaics and the Industry market field Energy are commonly addressed by a considerable percentage of research projects.
- In general in this diagram some linkages between the optical research fields and the optical industry market fields can be drawn. From this it can be noted that although a large percentage of the OP industry is active in the Manufacturing and ICT market fields, only a small percentage of the optical research institutes is involved in the linked research fields Industrial Processing and Optical Data-storage & Processing. This could indicate a mismatch between European Optical Research Institutes and Optical Industry, but also other explanations are possible.

The 229 European OP projects, denoted in the beginning of this section, were also analyzed with respect to the participation of the different countries. The results are given in the following table.
For each country the table gives the number of European OP projects in the FP 6 and EUREKA programs in which one or more companies and / or research institutes in that country participate (status January 2006).

Table 9. Countries (EU member states, candidate countries, associated countries)	**Number of FP 6 OP projects per country, out of 173 FP 6 projects**	**Number of EUREKA OP projects per country, out of 56 EUREKA projects**	**Total number of European OP Projects per country, out of 229 projects**
Austria	34	9	43
Belgium	41	7	48
Bulgaria	2	1	3
Croatia	1	2	3
Cyprus	1	1	2
Czech Republic	13	8	21
Denmark	21	1	22
Estonia	2	1	3
Finland	18	3	21
France	86	10	96
Germany	104	15	119
Greece	22	4	26
Hungary	16	2	18
Iceland	--	2	2
Ireland	19	--	19
Israel	13	7	20
Italy	69	15	84

Table 9. Countries (EU member states, candidate countries, associated countries)	**Number of FP 6 OP projects per country, out of 173 FP 6 projects**	**Number of EUREKA OP projects per country, out of 56 EUREKA projects**	**Total number of European OP Projects per country, out of 229 projects**
Latvia	2	2	4
Liechtenstein	--	--	--
Lithuania	6	3	9
Luxembourg	1	--	1
Malta	2	--	2
Netherlands	45	8	53
Norway	6	4	10
Poland	25	7	32
Portugal	14	2	16
Romania	5	7	12
Slovakia	--	4	4
Slovenia	4	7	11
Spain	50	16	66
Sweden	38	4	42
Switzerland	35	5	40
Turkey	8	2	10
United Kingdom	56	8	64

From this table the following conclusions can be drawn:

- All countries, except Liechtenstein, participate in the considered European OP research projects.
- Countries which participate in more than 50 European projects (out of 229) are: Germany (119), France (96), Italy 84), Spain (66), United Kingdom (64) and Netherlands (53).
- Countries with a large number of OP companies (> 100), namely Germany, France, United Kingdom, Italy and Netherlands, also participate in a relatively large number of European OP projects.
- Spain shows a relatively large participation in European OP projects, despite the limited number of OP companies.

4.2.9 Preliminary comparison with the study "Photonics in Europe – Economic Impact"

The Photonics in Europe – Economic Impact report [1] assesses the market value of the optical industry in European countries. The report states that in 2005 European photonics industry had revenues of 43.5 billion Euro, compared to a worldwide market of 228 billion Euro, which corresponds to a market share of 19 %. Asia, and notably Japan, Korea and Taiwan dominate the global photonics industry.

The share of production volume in the optical industry by country is according to the report the largest in Germany (39 %), UK (12 %), France (12 %), Italy (8 %) and The Netherlands (10 %). According to the data in the OPERA research these countries have the highest amount of optical companies, the most in Germany (472), followed by France (359), United Kingdom (331) and Italy (160) and the Netherlands (150). The five countries with the highest amount of optical companies in Europe according to Opera2015 Research have according to the Photonics in Europe report also the highest market share in photonics industry in Europe. See the table below.

[1] Photonics in Europe. Economic Impact. Study published by the European Technology Platform Photonics 21. December 2007. http://www.photonics21.org

Table 10. **EU countries**	**Share of production volume photonics industry, according to Photonics in Europe report**	**Number of OP companies in Dynamo database, according to OPERA research**
Germany	39 %	472
France	12 %	359
United Kingdom	12 %	331
Italy	8 %	160
Netherlands	10 %	150

The Photonics in Europe report and the OPERA analysis use different taxonomies for market fields and product groups of the OP industry in Europe. Nevertheless some preliminary comparisons can be made.

In the Photonics in Europe report photonics is subdivided into ten sectors, see table below.

Table 11. **Photonics in Europe – Economic Impact report**	
Sectors	**Share of photonics production volume**
Production Technology	13 %
Measurement & Automated Vision	14 %
Medical Technology & Life Science	13 %
Optical Communications	7 %
Information Technology & Printing	5 %
Lighting	15 %
Flat Panel Displays	3 %
Solar Energy	7 %
Defence Photonics	12 %
Optical Components & Systems	11 %

The OPERA research discerns ten market fields for the European photonics industry, see table below. For the distribution (shares) of market fields see the diagram in section 4.2.1. Note that this distribution is based on absolute numbers of photonics companies and not on production volume.

Table 12. **OPERA research of photonics industry in Europe**	
Market fields	**Share of photonics market fields**
Agriculture	1 %
Manufacturing	34 %
Energy	3 %
Construction	3 %
Transport	6 %
Defence	6 %
Education	2 %
Health	13 %
Science	14 %
ICT	18 %

For further comparison between the two studies we want to consider "true" market fields. For that purpose we re-arrange the ten sectors in the Photonics in Europe report as follows:

- The two sectors Measurement & Automated Vision and Optical Components & Systems can be considered as enabling technologies for the different market fields. The share in production volume of total 25 % of these two sectors is added to the other sectors by multiplying the shares of the other sectors with 100 / 75.
- The sectors Optical Communications, Information Technology & Printing, Lighting and Flat Panel Displays can be combined into the overall market field ICT.

In this way the ten sectors in the Photonics in Europe report can be summarized into the following five market fields: Production Technology, Medical Technology & Life Science, ICT, Solar Energy and Defence Photonics. These five market fields are more or less comparable with the market fields Manufacturing, Health, ICT, Energy and Defence from the OPERA research.

The results of the comparison are given in the table below.

Table 13. **Market fields**	**Photonics in Europe report: Corrected Share of photonics production volume per market field *)**	**OPERA research of photonics industry in Europe: Share of photonic market fields**
Production Technology / Manufacturing	17,3 %	34 %
Medical Technology & Life Science / Health	17,3 %	13 %
ICT	40,0 %	18 %
Solar Energy	9,3 %	3 %
Defence Photonics	16,0 %	6 %
Agriculture, Construction, Transport, Education, Science	--	26 %

*) Share corrected for adding the sectors Measurement & Automated Vision and Optical Components & Systems as enabling technologies to the other sectors.

As can be seen the shares (percentages) of the market fields show considerable differences between the two studies. This will at least partially be caused by the following:

- The shares in the Photonics in Europe report are based on production volumes (in EUR Billion); the shares in the OPERA research are based on the absolute number of photonics companies and not on their production volume.
- The OPERA research also considers other photonic market fields: Agriculture, Construction, Transport, Education and Science. These market fields have a considerable share: totally 26 %.

A further aspect for comparison between the OPERA research and the Photonics in Europe report that has been considered is the market field share per country for the different market fields.
Within this OPERA study, based on the market field data in section 4.2.4 and the number of identified OP companies per country the market field share per country was analyzed for the market fields Manufacturing, Health, ICT, Energy and Defence. The results are given in the diagrams on the next pages. (It should be noted that these market field shares are based on absolute number of optical companies).
In the Photonics in Europe report for the different sectors diagrams are given with information on the production volume by country (in EUR billion).

Comparison:

Production Technology / Manufacturing

- *OPERA research*: Germany has the largest market field share, followed by France, United Kingdom, Netherlands and Italy.
- *Photonics in Europe report:* Germany and Netherlands have the largest production volume. Switzerland has the next largest production volume, followed by Italy, United Kingdom and France.

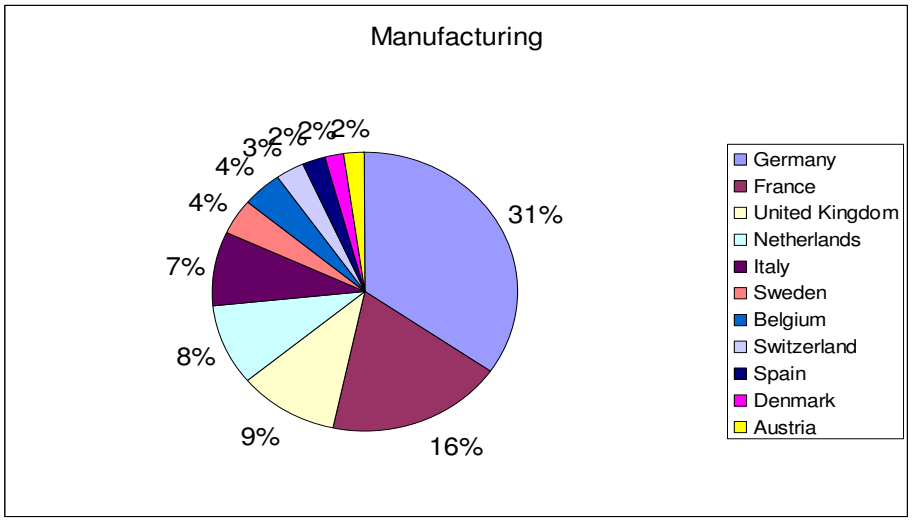

Figure 11. Share in market field manufacturing per country. (OPERA results)

Medical Technology & Life Science / Health

- *OPERA research:* Germany has the largest market field share, followed by France, Netherlands, United Kingdom and Italy.
- *Photonics in Europe report:* Germany has the largest production volume. France and United Kingdom have the next largest production volume, followed by Italy and the Netherlands.

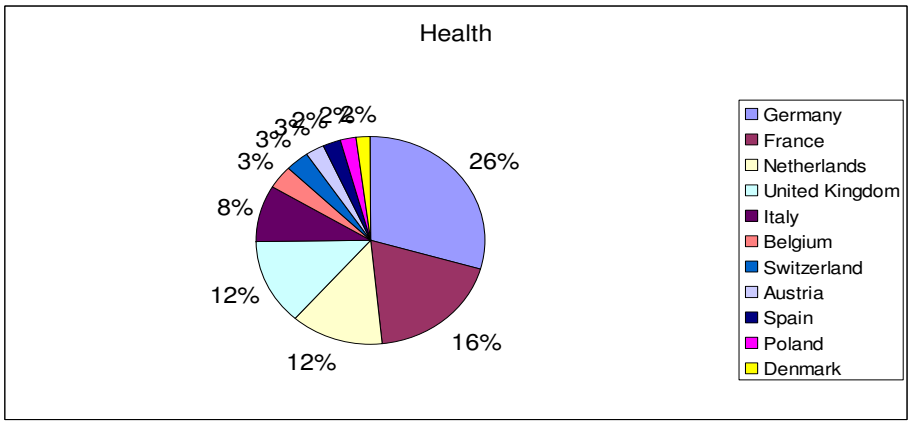

Figure 12. Share in market field health per country. (OPERA results)

ICT

- *OPERA research:* United Kingdom has the largest market share, followed by Italy, Netherlands, France and Germany.
- *Photonics in Europe report:* ICT is covered by four sectors; a diagram with figures of production volumes by country for the combination of four sectors is not available.

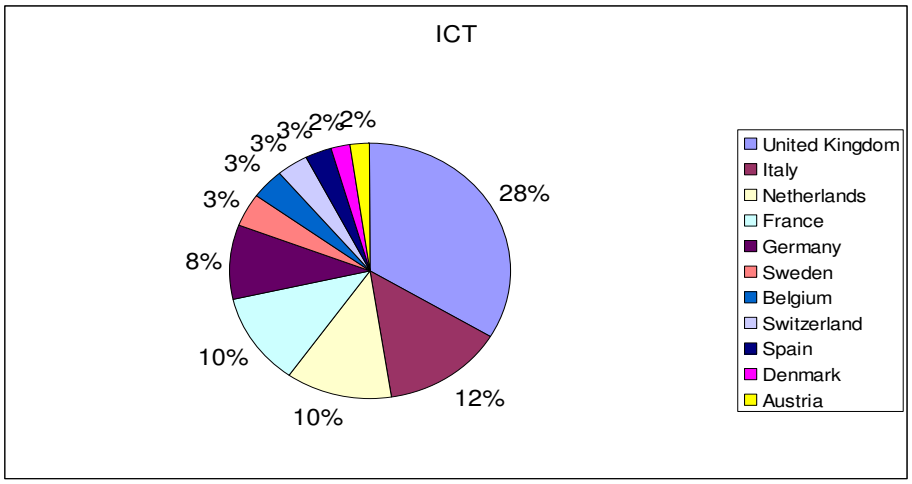

Figure 13. Share in market field ICT per country. (OPERA results)

Solar Energy

- *OPERA research:* United Kingdom and Germany have the largest market share, followed by Italy, France and Netherlands.
- *Photonics in Europe report:* Germany has the largest production volume, followed by France, Italy, Netherlands, United Kingdom.

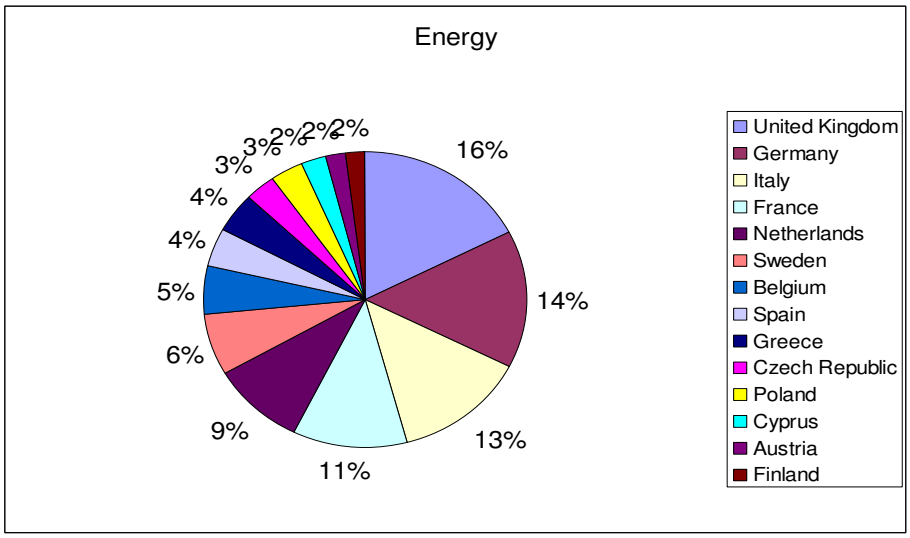

Figure 14. Share in market field energy per country. (OPERA results)

Defence Photonics

- *OPERA research:* France and the United Kingdom have the largest market share, followed by Netherlands, Germany and Italy.
- *Photonics in Europe report:* United Kingdom and France have the largest production volume, followed by Italy, Germany and Netherlands.

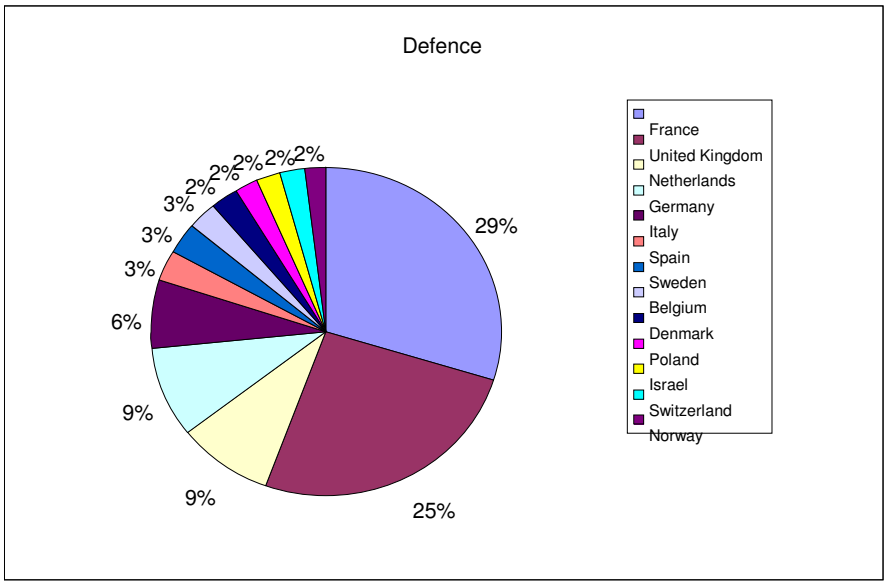

Figure 15. Share in market field defence per country. (OPERA results)

5. Conclusions

A total of 2019 European Optics / Photonics (OP) companies and 746 Optics / Photonics research institutes have been collected in a database that is now accessible on the internet on the website of Opera2015 [2]. Basic information, including website, and e-mail address was collected. Additionally information about product groups, market fields, market scope and company size has been collected for the OP companies. Information about the application field and optical research field has been collected for the OP research institutes (this was done in WP 2).
This report gives an analysis of the optics / photonics industry in Europe (EU-27, 2 candidate countries and 5 associated countries), resulting from the activities in WP 3 of the OPERA2015 project. From the analysis the following main conclusions can be drawn:

- Product groups. The countries with a high number (> 100) of optical companies (Germany, France, United Kingdom, Netherlands and Italy) have no clear specialization in product groups. France has a higher share in the product group Test & Measurement systems (23 %), and the United Kingdom has a stronger focus on Fiber Optics (32 %). Netherlands, Germany and Italy have no product group with higher share than 20 %.
  In overall Europe the following product groups are addressed by more than a quarter of all the companies (of all the companies that have been profiled): Test & Measurement Systems, Optical Components, Lasers and Fiber Optics. An explanation for the high number of companies producing these product groups could be the enabling character of the product groups, which find their way in many different end-products.
- Market fields. The European market fields Manufacturing (34 %), ICT (18 %), Science (14 %) and Health (13%) have the highest share of the market among the optical companies. For Germany manufacturing has a much higher share (52 %), while the United Kingdom has a higher share of ICT (31 %). Italy and the Netherlands have a roughly similar distribution of the market fields as Europe.
  A noticeable conclusion is that 71 % of all European optical companies are classified as being active in the market field Manufacturing. An explanation could be that many of the products made by the optical industry are used in the manufacturing industry. Furthermore, the market field Manufacturing is a very broad field including component supplier companies and producers of complete products / final equipment.
- Market scope. The market scope for European optical companies is for roughly one third at the national level, one third at European level and one third at worldwide scope. For French optical companies the main scope is at the national level (57 %). UK optical companies concentrate on the national level and worldwide, and less on the European market (16 %). German and Dutch optical companies focus on European and worldwide market, and less on national market (Germany 15 % and Netherlands 10 %). For Italian optical companies the market scopes national, Europe and worldwide are more or less equally important.
- Company size. Whereas in Germany just over half of the optical companies are medium large size (between 25 and 500 employees), in France, Italy, the Netherlands and the United Kingdom the percentage of medium large size optical companies is about 30 %. In Germany slightly less than 40 % of the optical companies are micro-enterprises (1-24 employees). In Italy and the Netherlands just over half of the optical companies are micro-enterprises. In France two third of the optical companies are micro-enterprises. In the United Kingdom slightly less than half of the optical companies are micro-enterprises. In Europe just over half of the optical companies are micro-enterprises and almost 90% of the optical companies are SME (less than 250 employees). In Europe in general it is noticeable that the share of companies with size 250-499 employees is smaller (4 %) than the share of companies with 500 employees or more (9 %).
- Research institutes. For the European Optical Research Institutes as a whole the most important applications fields are Bio-Photonics (36 %) and Optical Communications and Networks (25 %). These application fields are also the most important fields for optical research institutes in Germany, France and the United Kingdom. For the Netherlands Biophotonics and Optical data storage and processing are the most important fields.
- Innovation. One of the conclusions about the innovative product groups fiber optics, micro-optics and nano-optics that can be drawn is that in Europe as a whole optical companies working in the product group fiber optics have already a considerable share (25 % on average), stimulated by an effective EU research policy in this field.

[2] Website Opera 2015: http://www.opera2015.org

Nano-optics and micro-optics are earlier in the development phase, and the share of companies working in these two product groups is small. Only Switzerland has many companies active in micro-optics.
Furthermore, a considerable correlation exists between the number of optical companies and the R&D investments per country, giving an indication for the innovation in optics and photonics per country.

- EU research participation. All countries, except Liechtenstein, participate in the considered European OP research projects. Countries with a large number of OP companies (> 100), namely Germany, France, United Kingdom, Italy and Netherlands, also participate in a relatively large number of European OP projects. Spain shows a relatively large participation in European OP projects, despite the limited number of OP companies.
- Comparision with Photonics in Europe report. A comparison between the OPERA2015 research and the Photonics in Europe report shows that the two studies use different taxonomies for market fields and product groups of the OP industry in Europe. Nevertheless some comparisons could be made.
  The five countries with the highest amount of optical companies in Europe according to the OPERA2015 Research (namely Germany, France, United Kingdom, Italy and the Netherlands) have according to the Photonics in Europe report also the highest market share in photonics industry in Europe.
  The market field share per country for the different market fields shows similar geographical distributions in both studies. The OPERA study considered in larger range of end-user markets, whereas the Photonics in Europe study added e.g. Optical Components & Systems as a sector.
- Conclusions concerning the situation in the individual European countries have been added to the Fact Sheets in paragraph 4.2.

Suggestions for additional research:

During the collection and analysis of the European OP company information various interesting questions have arisen, while the available information allows for further analysis to answer some of these questions. In case of continuation of these activities in the near future the following topics could be addressed:

- More specific information
  - Financial: turnover of companies.
  - Strategic: For more information about new innovative developments a more in-depth analysis of the companies is needed to screen their innovative strategy, R&D investments and innovation product groups.
  - Company R&D capabilities and budgets. This will help identify correlations between input (R&D spent) and output (market share).

- Increase coverage (the percentage of the total number of European OP companies represented in the Database).

- Keep information up to date.

- Analysis:
  For a comparison with USA, Japan, Taiwan and Korea, data about the OP industry in these countries first need to be collected in a similar format. Also a comparison with other EU-industries could be done (economic figures, employment, R&D investments, innovativeness, outsourcing, off-shoring).

- Evaluation of links between R&D – Innovations – Products – Markets

- Feed SRA update with relevant data.

Further combination of the results of different studies in this field would be useful. The quality of the combined information can be optimised by adopting a common taxonomy: when a common set of items for e.g. market fields and product groups will be applied, the results of different studies can be compared in more detail and more accurate.

Sources:

European Commission (2004), *Key Figures 2003-2004. Towards a European Research Area. Science, Technology and Innovation,* Directorate-General for Research of the European Commision, online at http://ec.europa.eu/research/era/pdf/indicators/benchmarking2003_en.pdf

Eurostat (2007) *Eurostat News Release 12 January 2007*, online at: http://epp.eurostat.ec.europa.eu/pls/portal/docs/PAGE/PGP_PRD_CAT_PREREL/PGE_CAT_PREREL_YEAR_2007/PGE_CAT_PREREL_YEAR_2007_MONTH_01/9-12012007-EN-AP2.PDF

Eurostat (2008) The Eurostat database, online at, http://epp.eurostat.ec.europa.eu

Photonics in Europe. Economic Impact. Study published by the European Technology Platform Photonics 21. December 2007. http://www.photonics21.org

Appendix

Classification of Optical research areas and Optical applications in OP research institutes

General Optics
- Coherent optics
- Colorimetry
- Diffractive optics
- Holography
- Lasers
- Lasers applications
- Light-matter interaction
- Nanophotonics
- Nonlinear optics
- Optical engineering
- Optical scientific computation and modeling
- Optical solitons
- Photodynamic processes and research
- Photo-induced processes
- Photoionisation
- Photoluminescence and fluorescence
- Photorefractive effects, devices and research
- Plasma research and applications
- Plasmonics
- Quantum optics, devices and research
- Short-pulses generation and characterization
- Theoretical optics and photonics
- Ultrafast optics

Instrumentation
- Optical instrumentation
- Optical measurement systems and sensors
- Signal and image processing
- Spectroscopy
- Terahertz spectroscopy

Optical devices
- Active optical devices
- Adaptive optics
- Optical components and devices
- Optical design
- Optical diodes
- Optical fibre devices and research
- Optical imaging
- Optical interconnects
- Optical microscopy
- Optical parametric processes and devices
- Optical sensors
- Passive optical components
- Photonic crystals
- Optical diagnostic and control
- Photonic hybrid architectures
- Photonic integration

- Photonic lightwave circuits
- Polarization related optical devices and research
- Rare earth-based devices and research
- Semiconductors materials, processes, devices

Optical technologies
- Optical sources in infrared, visible, UV, X optical wavelenghts
- Optoelectronics
- Packaging of optical components
- Sol-gel optics and technologies
- Sources of X-radiation by plasmas

Optical materials
- III-V and II-VI materials
- Liquid crystals
- Polymers and organic materials
- Other materials for optics and photonics
- Thin films and layers

Optical applications
- Astronomy
- Biophotonics
- Industrial processing
- Optical communications and networks
- Optical computing
- Optical data storage and processing
- Photovoltaics

Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable 5.3

Roadmap Inventory

Due date of deliverable: **31 March 2008**

Actual submission date: **31 March 2008**

Start date of project: 01.04.2006 Duration: 37 month

Organisation name of lead contractor for this deliverable: EI

Version 1.0

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
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)	

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1. PHOTONICS AND OPTOELECTRONICS - REPORTS

1.1 Introduction

Following submission of the 2nd year OPERA2015 report and discussions thereon it was decided to add a section to the site that would point to the various national and international sources of information on photonics and optics. It was intended to provide a pointer to published data that may be of assistance to European researchers and give a flavour of the activity around the world in recent years.

Work was undertaken in 4 phases

1. An initial keyword search using search engines such as Google, Accoona and Yahoo followed by a more focussed trawl based on these results.
2. Enterprise Ireland's international offices forwarded various data reflecting their respective territorial responsibilities
3. Enterprise Ireland's information services based in Dublin performed a further search based on the output of 1 & 2 above.
4. Data was obtained from the European Photonics Industry Consortium website www.epic-assoc.com

As a result of this search several data sources were identified which were either publically available free access (compiled by national governments or industry associations) or commercially compiled restricted access reports. For the purpose of this deliverable and for presentation on the site the references have been broken into

- EU roadmap reports
- Industry Association reports
- Research Company compiled reports (reference only the report has not been made available for the site only the reference and a short synopsis)
- National government reports

The information identified has been outlined below.

1.2 EU Roadmap Reports

MONA (Merging Optics and Nanotechnologies)

The European Commission (EC) has launched a project within the 6th Framework Programme that will contribute to the coordination of research in photonics and nanotechnologies. The goal of the MONA project (Merging Optics and Nanotechnologies) is to leverage synergies in photonics and nanotechnologies, seeking to increase the impact and efficiency of investment on European research.

The MONA Roadmap (http://www.ist-mona.org/pdf/MONA_v15_190308.pdf) is published free of charge on the MONA site and identifies potential synergies between photonics/nanophotonics and nanomaterials/nanotechnologies.

Photonics21 Strategic Research Agenda

Photonics21 is a voluntary association of industrial enterprises and other stakeholders in the field of photonics in Europe. It unites the majority of the leading Photonics industries and relevant R&D stakeholders along the whole economic value chain throughout Europe. Presently, Photonics21 can count as members more than 900 stakeholders who come from 32 countries.

The Photonics21 Strategic Research Agenda may be downloaded free of charge at (http://www.photonics21.org/index.php?option=com_content&task=view&id=5&Itemid=6)

e-Safety

The *e*Safety initiative brings together the European Commission, public authorities, industry and other stakeholders in a drive to accelerate the development, deployment and use of *e*Safety systems. The main aim is to contribute to the European Commission's 2001 goal of halving the number of fatalities on Europe's roads by 2010.

The eSafety roadmap contains a significant amount of information on photonics and its application to the automotive industry and current versions may be downloaded from
http://www.esafetysupport.org/en/esafety_activities/esafety_working_groups/implementation_road_map.htm

1.3 Reports from Associations

Website of ISA Swedish Agency (photonic roadmaps in the link below)
http://www.isa.se/templates/Normal____59393.aspx
Swedish roadmap 2005 -2010 focussing on ICT

OIDTA - Japan, displays in their website a small report from 2004 entitled *Future Vision of the Optoelectronics Industry*
http://www.oitda.or.jp/index-e.html
Vision for the optoelectronics industry looking at market trends pub Mar 2005
OITDA Presentation on Production Trends in Optoelectronics in Japan (June 21, 2007)
OITDA Report on Future Growth Areas in Optoelectronics / Technology Roadmap Activities

PIDA – Taiwan – Photonics Industry and Technology Development Association
(small report) Global Photonics Market and the Photonics Industry in Taiwan:
http://www.pida.org.tw/newversion/homepage/2001new/english/overview.htm
Segmented market predictions published in 2004

Reports from OIDA – Optoelectronics Industry Development Association, in Washington
Global Optoelectronics Industry Market Report and Forecast
(October 2006, 425 pages)
OIDA **2007 Market Update in Optoelectronics** presented by Michael LEBBY, President and CEO of OIDA on June 21, 2007
Other reports and articles to be found at
http://www.oida.org/store

Report from NIST USA – National Institute of Standards and Technology **Trends and Opportunities in Photonics Technologies: Solid-State Lighting and Healthcare – 2006**
http://www.atp.nist.gov/eao/ir7305/contents.htm

(other reports from NIST at the link below)
http://search.nist.gov/search?q=photonics&btnG=Google+Search&entqr=0&ud=1&sort=date%3AD%3AL%3Ad1&output=xml_no_dtd&site=default_collection&ie=UTF-8&oe=UTF-8&client=default_frontend&proxystylesheet=default_frontend

Optics and Photonics in Singapore (report) - 2002
Report on the mission carried out by the General Directorate for Industry, Information Technologies and Posts, the Ministry of the Economy, Finance and Industry and by Opticsvalley
www.industrie.gouv.fr/biblioth/docu/dossiers/sect/pdf/optic_en.pdf

1.4 Reports published by Research Companies:

Photonic Integrated Circuits: New Directions
By: *BCC Research* 2005
The report contains: A comparative overview of PICs and their historical development; Forecasts for growth of PICs deployed in fiber- optic telecommunications systems; Product market forecasts, broken down by subsystems, PICs and components, integrated optical (…)

Nanotechnology for Photonics
By: *BCC Research* 2005
The report includes the following major elements: Definitions of nanophotonics terminology; Milestones in the development of nanophotonics; Current and potential nanophotonics applications; Applications and end users with the greatest commercial potential through 2009; Global nanophotonics

Biophotonics: A Strategic Assessment of Photonics Technologies for Biomedical Applications
By: *Kalorama Information* 2006
Collectively, the techniques of photon-based experimental manipulation and advanced optical imaging define the field of biophotonics. There are several key areas that are associated with biophotonics. All of these center on microscopy and (…)

Lasers and Photonics in Germany: A Strategic Reference, 2007
By: *Icon Group International, Inc* By: *Icon Group International, Inc.*
The primary audience for this report is managers involved with the highest levels of the strategic planning process and consultants who help their clients with this task.

NanoPhotonics
By: *Global Industry Analysts* 2006
This report analyzes the worldwide markets for Nanophotonics in US$ Million. The major devices analyzed include Light Emitting Diodes, Near-Field Optics, and Photovoltaic Cells. The report also analyzes the Nanophotonics market by end use applications.

Nanotechnology Developments in Europe (Technical Insights)
Frost & Sullivan, 2005
This study examines innovative technologies in European countries that are fast making their way towards commercialisation. The research service defines key markets and applications and reports on technology drivers as well as obstacles in the way of commercial success.

Strategic Assessment of Asian Photonics Markets
Frost & Sullivan, 2005
This research examines the key areas of focus in the photonics industry of various Asian countries. The key photonics clusters in Asia have been analyzed in detail. The study discusses the health of Asian photonics industry based on SWOT analysis and assessment based on application segment.

World Commercial Aerospace Photonics and Fibre Optics Market
Frost & Sullivan, 2006

Photonics Technology in India
CYGNUS Business Consulting & Research, Nov 2006, Pages: 27
This unique report, the first of its kind provides a deep understanding of Photonics technology in India in terms of industrial applications differentiated as telecommunications and non-telecommunications, Education, Research activities, Patents filed in the country, Major industry forums, profiles of major R&D centers & Investments.

List of Reports from *Strategies Unlimited* - Market Research and Strategic Planning
Providing market research reports, analysis, and custom studies to world leaders in:

- Optoelectronics: LEDs, image sensors, nanophotonics, and other non-communications devices.
- Compound Semiconductors: GaN, InP, and other materials
- Optical Networks: Optical components for communications
- Photovoltaics
- RF/Wireless
- on the Future of Photonics
- Diagram that Strategies Unlimited published on the future market of **packaged LEDs**
- September 2006: "Photonic Components for Broadband Communication" published by Strategies Unlimited

http://su.pennnet.com/area_of_concentration.cfm?piid=22

Reports on Laser and Communications by CIR

- http://www.cir-inc.com/products/prod_detail.cfm?prod=1&id=218
- CIR report on **"The Transition to 40Gbps"**
- CIR report on **FTTx**
- CIR report called **"The Potential for Silicon Photonics"** published in January 2007

Report by i-Suppli ltd on OLEDs
August, 2005: "Building European OLED Infrastructure" published by i-Suppli
http://www.isuppli.com/catalog/L3_edts.asp?sr=EDTS&se=72

Report by Yole Developpment ltd on automotive photonics
March 2005: "Photonics in the Automobile" published
http://www.yole.fr/pagesAn/products/reports.asp

Reports available on the European Photonics Industry Consortium (EPIC) website

- Display Bank report on **OLEDs**
- Report on the Information Society in Germany in 2006
- Report on Diode Lasers published by Laser Focus in 2005
- April 2006: "Laser Applications in Europe" published by Kienbaum Management Consultants

Bitkom report called **"Daten zur Informationsgesellschaft"** (in German)

Report by Asian Technology Information Programme

- ATIP report on **OLEDs in Korea**
- ATIP report on **Nanotechnologies in Korea** published in 2006
- Updated report that ATIP published in February 2007 on **Quantum Information Science & Technology research & Development in Korea**

In 2007, OP-TECH Consulting published a **report on Optical Technologies** for the BMBF, the German Ministry of Education and Research **(only available in German)**

1.5 Reports published by National Governments

OECD

Capturing Nanothecnologie's Current Satat of Development via Analysis of Patents. OECD April 2007 http://www.oecd.org/dataoecd/6/9/38780655.pdf
(18 refs to Optoelectronics, none to Photonics)

Canada

Canada - IT Policies OECD 2000 and 2002. See link to documents which has 5 refs to photonics in Canada
http://www.oecd.org/searchResult/0,3400,en_2649_201185_1_1_1_1_1,00.html

The Canadian Institute for Photonics Innovations. See CIPI Annual Report 06/07
http://www.cipi.ulaval.ca/nc/home/

Australia

IT Policy Profile: Australia (2002) on OECD website. Ref to Australian photonics research (brief) http://www.oecd.org/dataoecd/9/7/1952416.pdf

Department of Industry, Tourism and Resources, Commonwealth of Australia (2002) **"Photonics in Australia: an illuminating future"**, Canberra Have not been able to track this down yet, but see updated roadmap link below.

Australian Photonics Technology Roadmap 2005 (last reviewed 19/6/2007)
http://www.industry.gov.au/content/itrinternet/cmscontent.cfm?objectid=D6182261-E3A6-7BBB-B9E8005E2E55246E&searchID=362178

See Full pdf here…
http://www.industry.gov.au/assets/documents/itrinternet/AustralianPhotonicsTechnologyRoadmapNov200520060615150933.pdf (81 pages)

UK

Photonics Strategy Highlights and Recommendations.
http://www.berr.gov.uk/files/file32500.ppt#257,1,Photonics%20strategy%20highlights%20and%20recommendations

Link to number of documents in Dept of Business, Enterprise and Regulatory Reform
http://search.berr.gov.uk/kbroker/berr/berr/search.lsim?sr=0&nh=10&cs=utf-8&sc=dti2&sm=0&mt=1&to=0&ha=667&qt=photonics

USA

National Science Foundation. Technological Challenges in Organic Electronics, Photonics and Magnetics http://www.nsf.gov/pubs/2004/nsf04554/nsf04554.htm (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13379)

2. National Photonics funding programmes

2.1. Introduction

Following submission of the 2nd year OPERA2015 report and discussions thereon it was decided that it would be useful to have a feel for the range of national funding initiatives targeting photonics. It was intended to provide a pointer to the various systems of technology funding and to try and identify the extent to which photonics development is targeted by national agencies.

Enterprise Ireland surveyed a number of countries' photonics funding strategies in order to inform the committee about significant directed national research activities outside the committee member states. This was carried out by making contact with the Enterprise Ireland staff in the overseas offices charged with each country and asking them to make a general enquiry as to whether specific funding existed or not. The timescale and resources dedicated to this task were insufficient to do a comprehensive study but it is clear that there are several states with dedicated photonics investment not represented on the OPERA2015 committee. This activity was intended to be a short survey of national activities however it has identified that there may be some interesting activity going on at a national level within the EU that could be usefully studied in more detail.

Countries may be broken down into 4 groups depending on the quality of information available from each as follows

- Identified photonics funding mechanisms from a confirmed source and the information on the OPERA2015 website
    - France, Germany, Netherlands, Slovenia, Spain, UK
- Identified funding mechanisms where photonics is mentioned although no specific mechanism identified
    - Austria, Belgium Czech R., Hungary, Ireland, Slovakia, Switzerland, Greece, Malta, Turkey, Israel
- Contact made but identified mechanisms
    - Denmark, Sweden, Norway, Finland, Italy, Portugal, Poland
- Contact made but no reply obtained
    - Bulgaria, Estonia, Latvia, Lithuania

The information obtained is summarised on the following table.

2.2 Results

Identified photonics funding mechanisms from a confirmed source and the information on the OPERA2015 website

Country	Contact	Information
France	OPERA team	http://www.opera2015.org/national/fr.asp
Germany	OPERA team	http://www.opera2015.org/national/de.asp
Netherlands	OPERA team	http://www.opera2015.org/national/nl.asp
Slovenia	OPERA team	http://www.opera2015.org/national/sl.asp
Spain	OPERA team	http://www.opera2015.org/national/es.asp
UK	OPERA team	http://www.opera2015.org/national/uk.asp

Identified funding mechanisms where photonics is mentioned although no specific mechanism identified

Country	EI Contact	Funding structure	Information
Austria	Mark Gillett	Funding for photonics	"NANO Initiative", a multi-annual funding programme for Nanoscale Sciences. http://www.nanoinitiative.at/evo/web/nano/1223_EN.pdf http://www.ffg.at/content.php - Österreichische Forschungsförderungsgesellschaft (FFG) - The Austrian Research Advancement Organisation German website, This section is particular to photonics (http://rp7.ffg.at/RP7.aspx?target=113796&l=2&SetLanguage=1) Photonics funding in Austria, in German: http://www.ffg.at/content.php?cid=40 http://www.era-spot.eu/ Contact - Dr Margit Haas Tel +43 (0)5 7755 - 5080 margit.haas@ffg.at

Czech Republic	Ladislav Muller	No specific funding programme in the Czech Republic and Slovakia. The studies and researches are financed by grants from relevant ministries.	Joint Laboratory for Optic's studies, Czech Republic, Head of the laboratory, Prof. Hrabovsky. Contact details: Czech Name: Společná laboratoř optiky UP a FzÚ AV ČR Address: třída 17. listopadu 50, 772 07 Olomouc, Czech Republic Tel: +420 585 631 501 e-mail:hrabovsky@jointlab.upol.cz Web: http://jointlab.upol.cz/slo/
Hungary	David Butler	No specific funding identified	National office for research and technology NKTH www.nkth.gov.hu Hungary academy of sciences, research centres with one on photonics
Ireland	Kevin Donnelly	No specific funding available	Research funding is available on a non themed basis for the whole spectrum of activity broken into **Company research** (Enterprise Ireland) http://www.enterprise-ireland.com/ResearchInnovate/R+and+D+in+your+Enterprise/ **Applied College research** (Enterprise Ireland) http://www.enterprise-ireland.com/ResearchInnovate/Research+Commercialisation/ **Basic College research** (Science Foundation Ireland) http://www.sfi.ie/ **College research infrastructure** funding (higher education authority) http://www.hea.ie/en/funding
Slovakia	Giles O'Neill	No specific funding	As Czech Republic
Switzerland	Mark Gillett	Funding for photonics	Professor George Guekos, lecturer on photonics at the ETH Zürich The Swiss National Science Foundation, http://www.snf.ch/E/funding/Seiten/default.aspx The SNF concentrates on funding basic research projects in photonics. The CTI agency also provides funding for research in this area. This organisation concentrates predominantly on support for the transfer of laboratory findings to the marketplace, http://www.bbt.admin.ch/kti/index.html?lang=en

			The contact in CTI concerned with photonics is Annina Lietha (Phone - +41 313240719) annina.lietha@bbt.admin.ch
Greece	Conor Fahy	No specific funding identified	Greek Foundation for Research and Technology (FORTH) www.forth.gr http://cordis.europa.eu/greece/spotlight10.htm
Malta	Conor Fahy EI & Dr. Brian Warrington, National Co-Coordinator MCST	No specific funding identified	Malta Council for Science and Technology (MCST) www.mcst.org.mt
Turkey	Conor Fahy EI & Bobby Smyth, Third Secretary, Irish Embassy to Turkey	No specific funding identified	The Scientific and Technological Research Council of Turkey (TUBITAK) www.tubitak.gov.tr TUBITAK…The official government research body, responsible for coordination of FP7 programming.
Israel	Conor Fahy EI & Maeve Clery, Deputy Head of Mission, Irish Embassy to Israel	No specific funding identified	Israel does not have a specific funding programme for photonics / optical technologies. Projects / companies in this field, however, may apply for support from more general funds run by the Ministry of Industry, Trade and Labour well as the Ministry of Science, Culture and Sport. The Chief Scientist's Office in the Ministry of Industry, Trade and Labour has a significant budget and is the main source of Government support for industrial R&D. It runs a variety of different programmes. Several Israeli Ministries have a chief scientist but the position in the Industry Ministry is the most important. http://www.moital.gov.il/NR/exeres/B3F78073-454A-48D5-A8BA-6D088DDECCD5.htm

			The Ministry of Science has a much smaller budget and is focussed more on basic science. The Chief Scientist in the Ministry, Professor Mendelovic, comes from an optics academic background and has said that the Ministry maps all projects and research in this area and has an impressive database. http://www.most.gov.il/NR/exeres/CC884187-7908-4F7D-B9BC-4A158B5C3E87.htm"

Contact made but identified mechanisms

Country	EI Contact	Funding structure	Information
Denmark	Fergus McMahon	No information available	
Sweden	Fergus McMahon	No information available	
Norway	Fergus McMahon	No information available	
Finland	Fergus McMahon	No information available	
Italy	Kevin Buckley	No information available	
Portugal	OPERA committee	No information available	
Poland	Karen Cohalan	No specific funding identified	PNO Consultants http://pno.com.pl/en/ information about available grants in Poland

Contact made with local agency(ies) but no reply obtained

Country	EI Contact	Funding structure	Information
Bulgaria	Philip Singleton		
Estonia	Philip Singleton		
Latvia	Philip Singleton		
Lithuania	Philip Singleton		

Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable D 6.3
Publishing OPERA2015 newsletter in Supplement Optics and Laser Europe, EOS Newsletter

Due date of deliverable: **31 March 2008**

Actual submission date: **31 March 2008**

Start date of project: 01.04.2006 Duration: 37 month

Organisation name of lead contractor for this deliverable: EOS

Version 1.0

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
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CO	Confidential, only for members of the consortium (including the Commission Services)	

EOS European Optical Society — Coherence for Europe ®

EOS Member Newsletter May 2007

Topics in this issue

EOS_services

New EOS website offers various new features

The new EOS website was launched on 11 April. Visit www.myeos.org and take advantage of the new functions and features.

Every member has received his/her user login on 11 April. If you have lost your login data, please send an email to info@myeos.org.
Log on to www.myeos.org and:

- Update your address
- Enter your fields of interest
- Search for other members in your field of interest
- Join a Focus Group and meet your colleagues
- Propose a Focus Group
- Submit an abstract for an EOS event
- ...

Log on to http://www.myeos.and update your profile, join a Focus Group, search for other members in your field of interest or submit an abstract for an EOS event

NEW EOS Focus Group on Photonic Atoms
Chair: Ali Serpengüzel (Koc University, Turkey)
http://www.myeos.org/members/focus_groups

COMING SOON

- EOS Abstract Library
- Present your research group at myeos.org

Send your suggestions for new functions to info@myeos.org!

EOS_events

Presentation of the MONA nanophotonics roadmap on 17 June

The MONA nanophotonics roadmap will be presented at the EOS Conference on Trends in Optoelectronics on 17 June from 3 – 6 pm (ICM Munich, room 21).

The MONA project is building a European Roadmap for photonics and nanotechnologies. The background of the process and the people involved will presented in this session. It will give an overview of the highlights of the roadmap, with time set aside for discussion of the next steps.
The MONA roadmaps cover the following areas:

- Semiconductor quantum dot & wires
- Plasmonics / metallic nanostructures including colloidal nanostructures (metal)
- Photonic crystals / High index contrast nanostructures
- Organic nanostructures
- Carbon nanotubes (CNT)
- Integration nanophotonic materials / structures with electronic ICS / Silicon photonics
- Nanoparticles in glass or polymer
- Left-handed metamaterials

This session is open to every attendee of the EOS Conferences on Trends in Optoelectronics and Frontiers in Electronic Imaging as well as to the attendees of any other conference held under the umbrella of the World of Photonics Congress 2007 (WoP 2007).

MONA Merging Optics & Nanotechnologies

Read more about MONA at www.ist-mona.org

More information
Email: munich@myeos.org
http://www.myeos.org/oe2007

EOS_events

AGM 2007 & EOS Conferences 2007

This year's Annual General Meeting of the EOS will be held on Wednesday, 20th June 2007 from 17.30 to 19.00 hrs (location: ICM Munich, room 22).

At the AGM 2007 the membership will hold a vote on the proposed changes to the EOS constitution: http://www.myeos.org/files/eos_resolutions2007.pdf.
The AGM is co-located with the EOS Conferences in Munich.
Register today for the EOS Conferences on Trends in Optoelectronics (17-19 June) & Frontiers in Electronic Imaging (18-19 June) !
http://www.myeos.org/munich

EOS Annual General Meeting
Petra Bindig
bindig@myeos.org

EOS Conferences
Silke Kramprich
kramprich@myeos.org
www.myeos.org/munich

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European Optical Society
Hollerithallee 8
D - 30419 Hannover
Tel.: +49 (0) 511-2788-115
Fax: +49 (0) 511-2788-119
E-Mail: info@myeos.org
www.myeos.org

new_members

German WLT becomes an EOS Affiliated Society

The Wissenschaftliche Gesellschaft Lasertechnik e.V. - WLT (German Scientific Laser Society) was founded in 1997.

Wolfgang Sandner (Executive Director of the Max-Born-Institute in Berlin, Germany) is the acting President of the WLT.

On 2nd May, the EOS Executive Committee accepted the membership application from WLT.

In addition to the first German national optical society , the DGaO (the German Branch of the EOS), the WLT was now accepted as an Affiliated Society of the EOS, making the WLT members associate members of the EOS. With this decision the Execom followed the recommendation from the DGaO.
After Belgium, Germany is the second European country that is represented in the EOS by two national optical societies.

Who is the WLT?
The German Scientific Laser Society (WLT) emerged from the former Scientific Working Group Of Laser Technology.
WLT members are heading large scientific institutions which mainly deal with laser research and laser technology such as laser basics, source development, production engineering, material science, metrology, opto-electronics, and laser medicine.
These institutions include university and off-university institutes, institutes of the Fraunhofer and Max Planck societies as well as Leibniz and Helmholtz associations. The about 40 institutions run by WLT members employ a total of more than 1500 scientists.

Reinhard Poprawe is going to represent the WLT in the EOS Advisory Committee.

The goals of WLT are:
- supporting of the scientific interests of laser technology and optical technologies.
- identifying and eliminating knowledge deficits
- supporting training and education
- supporting scientific exchange and technology transfer.
- representing the interests of laser technology and the optical technologies in public.

WLT Homepage
www.wlt.de

new_members

New Corporate Member: OWIS GmbH

Contact
OWIS GmbH
Im Gaisgraben 7
79219 Staufen
Germany

Phone +49 (0)7633 / 9504-0
Fax +49 (0)7633 / 9504-44
http://www.owis.eu
info@owis.eu

The OWIS GmbH from Staufen in Germany, recently joined the EOS as a Corporate Member.

OWIS GmbH was founded in 1980 and is headquartered in Staufen, in South-Western Germany.
OWIS develops, produces, distributes and services optical beam handling as well as highly precise positioning systems – still according to the maxim »Made in Germany«. Information technology, mechanical engineering, biotechnology, medicine, image processing and printing industry are some of their product application areas. An own development and an ultramodern manufacturing make OWIS to your perfect system partner in connecting macro, micro and nano worlds.

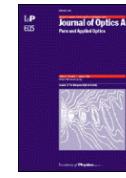
EOS_publications

Cornelia Denz joins the Editorial Board of the Journal of Optics A

In March 2007, Cornelia Denz was appointed to the Editorial Board of JOA.

Cornelia Denz will now serve as the EOS liaison on the Editorial Board of the EOS Journal of Optics A - Pure and Applied Optics that is published by the Institute of Physics (IOP).
The newly created position of the deputy editor will be taken on by Nikolay Zheludev from the University of Southampton, United Kingdom, in June 2007.

About JOA
The Journal of Optics A covers all aspects of modern and classical optics: experimental and theoretical studies, applications and instrumentation. The acting Editor-in-Chief is Colin Sheppard from the National University of Singapore. The publication frequency is six issues per year.



EOS Board Member Cornelia Denz from the Westfälische Wilhelms-Universität in Münster, Germany

EOS members are entitled to a reduced subscription rate.

More information
jopa@iop.org
www.iop.org/EJ/journal/1464-4258
Request a sample copy
www.iop.org/EJ/samplecopy/1464-4258/1

EOS_events

Open Calls-for-Papers for upcoming EOS Topical Meetings in 2007

EOS Topical Meeting on Advanced Imaging Techniques
12 - 14 September 2007; Lille, France

Topics
- Advanced techniques in microscopic and lithographic imaging
- Advanced imaging in astronomy
- Phase contrast imaging
- Quantum imaging
- Optical coherence and diffraction tomography
- Adaptive optics
- Optical data storage
- Biomedical imaging
- Imaging with metamaterials
- Use of phase singularities in imaging
- Instrumentation
- New technologies

Submission deadline
31 May 2007 (extended)

Contact and more information
lille@myeos.org
www.myeos.org/lille

2nd EOS Topical Meeting on Optical Microsystems
30 Sept. - 3 Oct. 2007; Capri, Italy

Topics
- Optical microsystems and microsensors
- Optofluidic microsystems and devices
- Photonic crystals and metamaterials
- Nonlinear optic devices
- New characterisation methods for materials and devices
- Application of optical systems in:
- Information society technology
- Automotive, avionics and aerospace
- Environment, geophysics and microgravity
- Genomics and proteonis
- ...

Submission deadline
End of May 2007

Contact and more information
Email: ivo.rendina@na.imm.cnr.it
www.myeos.org/capri

6th EOS Topical Meeting on Diffractive Optics
20 - 23 Nov. 2007; Barcelona, Spain

Topics
- Modeling of DOEs by rigorous and approximate techniques
- DOE design theory and techniques
- Fabrication of DOEs
- Characterization of DOEs
- System integration
- Modeling of optical systems that include DOEs
- Programmable DOEs
- Sub-wavelength structures
- Photonic crystals
- Novel materials
- Metamaterials
- …

Submission deadline
11 May 2007 (extended)

Contact and more information
barcelona@myeos.org
www.myeos.org/barcelona

EOS_co-sponsored events

Upcoming co-sponsored events

EOS members are entitled to reduced registration fees for the following EOS co-sponsored events.

Photonics Innovation Forum and Kaiser -Friedrich Research Award 2007
PhotonicNet Kompetenznetz Optische Technologien
15 May 2007, Goslar, Germany
www.photonicnet.de

Adaptive Optics for Industry and Medicine [more]
12 - 15 Jun. 2007, Galway, Ireland
http://optics.nuigalway.ie/aoim2007/index.html

European Conferences on Biomedical Optics 2007 (ECBO)
17 21 June 2007, Munich, Germany
www.spie.org/biomedical-optics-europe.xml

SPIE Europe Optical Metrology 2007
18 – 21 June 2007, Munich, Germany
www.spie.org/optical-metrology-europe.xml

4th International Summer School on New Frontiers in Optical Technologies
13 - 17 August 2007, Tampere, Finland
www.orc.tut.fi/school2007.html

8th International Conference on Correlation Optics
11 - 14 September 2007, Chernivtsi, Ukraine
www.myeos.org/node/165

SPIE Europe Remote Sensing 2007
17 - 21 September 2007, Florence, Italy
www.spie.org/remote-sensing-europe.xml

LANE 2007 September 25-28 Erlangen, Germany
5th International Conference on Laser Assisted Net Shape Engineering

RIAO / OPTILAS 2007
21 - 26 October 2007, Campinas-SP, Brazil
www.myeos.org/node/192

EOS co-sponsorship application form
Click here to download the co-sponsorship application as pdf-file (393 kb):
http://www.myeos.org/files/ApplicationforEOSCo-Sponsorship.pdf

The MS-Word file (116 kb) is available at:
http://www.myeos.org/files/ApplicationforEOSCo-Sponsorship.DOC

EOS_events

3rd EOS Short Course on OFT postponed

The 3rd EOS Short Course on Optical Fabrication Technology (OFT) was postponed to 11 - 12 October 2007.

Main topics
1. Optical shop optimization techniques (mass- production versus state-of-the-art single piece production)
2. Polishing research (FJP: a novel finishing method for high end optics)
3. On machine monitoring of surface roughness during polishing and grinding

Location and timetable
FISBA Optik AG, St .Gallen, Switzerland
11 - 12 October 2007, 9.00 - 17 hrs

Registration
Early-bird deadline: 15 September 2007
Regular attendees: 300 Euro
Students: 200 Euro

Organized in cooperation with
FISBA OPTIK

Contact
Petra Bindig
bindig@myeos.org
www.myeos.org/stgallen

Hungarian Optical Society (HOS)

Affiliated Societies

Comité Belge d'Optique CBO - BCO Belgisch Comite voor Optica

Czech and Slovak Society for Photonics (CSSF)

FINNISH OPTICAL SOCIETY (FOS)

ROMANIAN OPTOELECTRONICS SOCIETY (ROS)

SOCIEDAD ESPAGNOLA DE OPTICA (SEDO)

JEOS:RP_publications

New publications in JEOS:RP

Several new papers were published in JEOS:RP, the electronic Journal of the European Optical Society Rapid Publications at www.jeos.org.

JEOS:RP is an open-access journal. To read the full papers, please click on the links:

Enhanced transmission through arrays of subwavelength holes in gold films coated by a finite dielectric layer [07009]
S. Xiao, N. A. Mortensen, M. Qiu
www.jeos.org/index.php/jeos_rp/article/view/07009

Active microcavity and coupled cavities in one-dimensional photonic crystal [07010]
D. Biallo, A. D'Orazio, V. Petruzzelli
www.jeos.org/index.php/jeos_rp/article/view/07010

JOURNAL OF THE EUROPEAN OPTICAL SOCIETY RAPID PUBLICATIONS
EOS European Optical Society www.jeos.org

High-NA aberration retrieval with the extended Nijboer-Zernike vector diffraction theory - Erratum [07011e]
S. van Haver, J.J.M. Braat, P. Dirksen, A. J.E.M. Janssen
www.jeos.org/index.php/jeos_rp/article/view/07011e

Computing Zernike polynomials of arbitrary degree using the discrete Fourier transform [07012]
A. J.E.M. Janssen, P. Dirksen
www.jeos.org/index.php/jeos_rp/article/view/07012

Terahertz imaging: a new non-destructive technique for the quality control of plastic weld joints [07013]
S. Wietzke, C. Jördens, N. Krumbholz, B. Baudrit, M. Bastian, M. Koch
www.jeos.org/index.php/jeos_rp/article/view/07013

Probing canonical geometrical objects by digital spiral imaging [07014]
G. Molina-Terriza, L. Rebane, J. P. Torres, L. Torner, S. Carrasco
www.jeos.org/index.php/jeos_rp/article/view/07014

Publication rates
EOS Member rate: 350 €
Non-member rate: 400 €

Author information
Click here to read the JEOS:RP author guidelines.

Contact
Peter Török
(Deputy Editor)
torok@myeos.org
www.jeos.org

spotlight_europe

Spanish optics and photonics are advancing fast

Optics and photonics research in Spain are growing rapidly: The national and regional funds for research, development and innovation have noticeably increased.

Besides the grants from regular national open calls, four thematic networks are funded by the Spanish Ministry of Education and Science:

- Image and multidimensional signal processing
- Visual Optics
- Color Science and Technology
- Quantum and Non-Linear Optics

The program CONSOLIDER-INGENIO 2010 of the Spanish Ministry of Education and Science was initiated in 2005 to support research "on the frontier". 17 projects from all areas were funded within the scope of the first call (4M€/5-year project) with one on optics: "Quantum Optical Information Technologies".

European integration

Additionally, Fotónica21, the Spanish equivalent of the European Technology Platform Photonics21, has recently been launched and is funded by the Spanish Ministry of Industry, Tourism and Trade.

Concepción Domingo, President of SEDOPTICA and representative of the Affiliated Societies in the EOS Board

Also, Spain plays an active role in EU Networks of Excellence , such as *NEMO*, *Phoremost*, *Metamorphose*, *SPP* and *Plasmon Nano Devices*.

Spin-off companies

Various spin-off companies from university research groups, such as (*DASPhotonics*, Polytechnical Univ. of Valencia; *Chylas*, Univ. of Valencia), and other research institutes (*Radiantis*, ICFO, Barcelona) are another growth indicator.

SEDOPTICA

The Spanish Optical Society (SEDOPTICA, the newly established acronym) will celebrate their 40th anniversary in 2008. SEDOPTICA's six committees (color, visual sciences, optoelectronics, image techniques, spectroscopy and education) practically represent all Spanish universities and institutions from the field of optics and the related industries. (www.sedoptica.es)

Authors:
Concepción Domingo *is Senior Researcher at the Institute of Structure of Matter of the Spanish Research Council (CSIC), and President of the Spanish Optical Society (SEDOPTICA).*
Santiago Mar *is Full professor of Theoretical Physics, Atomic Physics and Optics of the University of Valladolid, and past President of SEDOPTICA.*

spotlight_europe

Inventory of European optics and photonics companies European Commission is looking for photonics experts

OPERA 2015 provides inventory of European optics and photonics companies at www.opera2015.org.

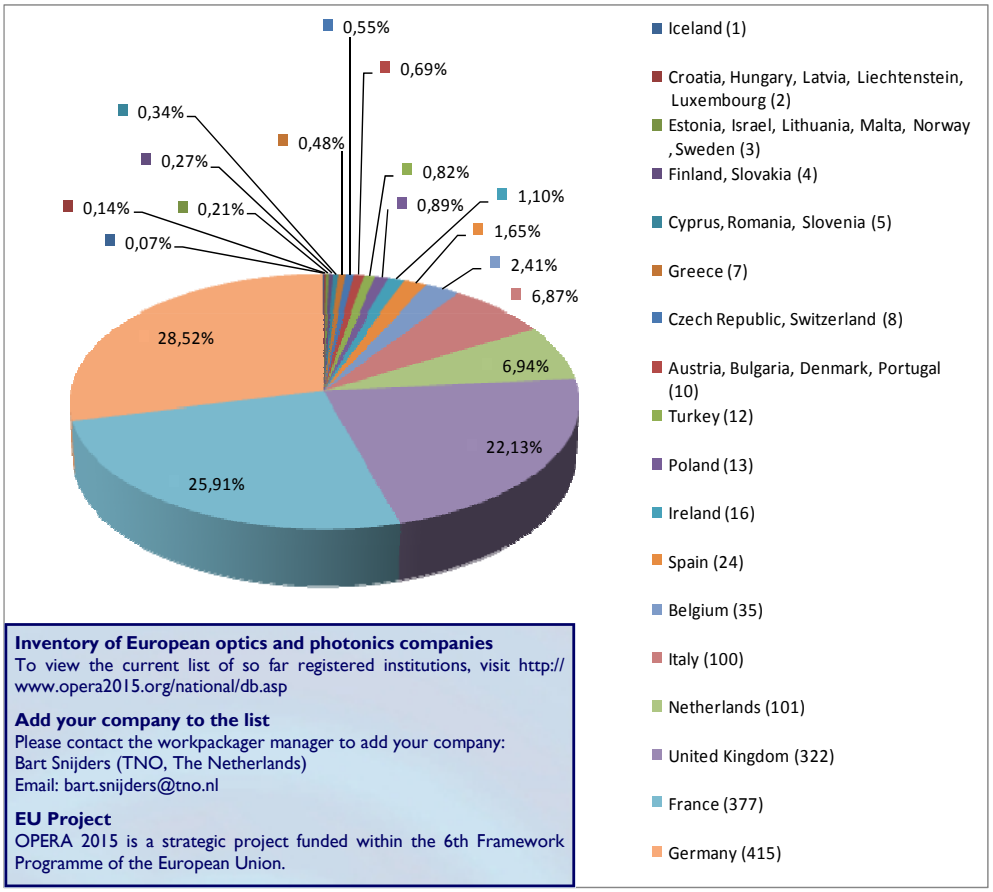
A list with basic information about these companies is available on the OPERA website at: http://www.opera2015.org/national/db.asp and http://www.opera2015.org/national/industrial_activities.asp.
This inventory covers the 27 EU Member States as well as Israel, Norway, Switzerland and Turkey.
If your company is not yet listed in the OPERA inventory, please contact Bart Snijders (workpackage manager) at bart.snijders@tno.nl.
At present, 647 European laboratories working in the field of optics and photonics have been indentified.
www.opera2015.org

FP7 photonics experts

The European Commission is looking for FP7 photonics experts for the evaluation of proposals submitted to the "Photonic Components & Systems" objective of the ICT (Information Communication Technologies) Programme, and for the assessment of current projects related to Photonic Components. In particular, members with industry background are encouraged to apply.
Prospective independent experts are expected to have a high level of professional experience in the public or private sector in one or more of the following areas of activities:

- research in the relevant scientific and technological fields
- administration, management or evaluation of RTD projects
- use of the results of RTD projects
- technology transfer
- innovation, and business cooperation, particularly with regard to SMEs
- issues at the interface of science and society
- international cooperation in science and technology.

If you are interested in becoming an evaluator or reviewer for FP7 Photonics projects, please register in the Commission's FP7 database at https://cordis.europa.eu/emmfp7/ and then send an email with your areas of expertise to Dr. Gustav Kalbe (gustav.kalbe@ec.europa.eu) or Markus Korn (markus.korn@ec.europa.eu) in the EU Photonics Unit.



Inventory of European optics and photonics companies
To view the current list of so far registered institutions, visit http://www.opera2015.org/national/db.asp

Add your company to the list
Please contact the workpackager manager to add your company:
Bart Snijders (TNO, The Netherlands)
Email: bart.snijders@tno.nl

EU Project
OPERA 2015 is a strategic project funded within the 6th Framework Programme of the European Union.

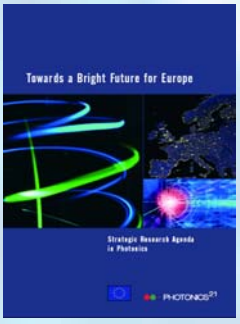
EU activities

OPERA 2015

... is a strategic project funded within the 6th Framework Programme of the EU and is dedicated to developing a joint strategy for optics and photonics in Europe.

The EOS is a member of the OPERA2015 consortium.
www.opera2015.org

The first Photonics Strategic Research Agenda "Towards a Bright Future for Europe" was finalised in April 2006.



Download: Photonics SRA (pdf-file; 4.55 MB)

PHOTONICS 21

… is a Technology Platform for all stakeholders in photonics and has more than 400 members from all over Europe and beyond.

The EOS is a member of Photonics21 and is represented in the Executive Board by the former EOS President Chris Dainty (National University of Galway, Ireland).

EOS EU Representative Peter Seitz is a member of the Board of Stakeholders of Photonics 21.

www.photonics21.org

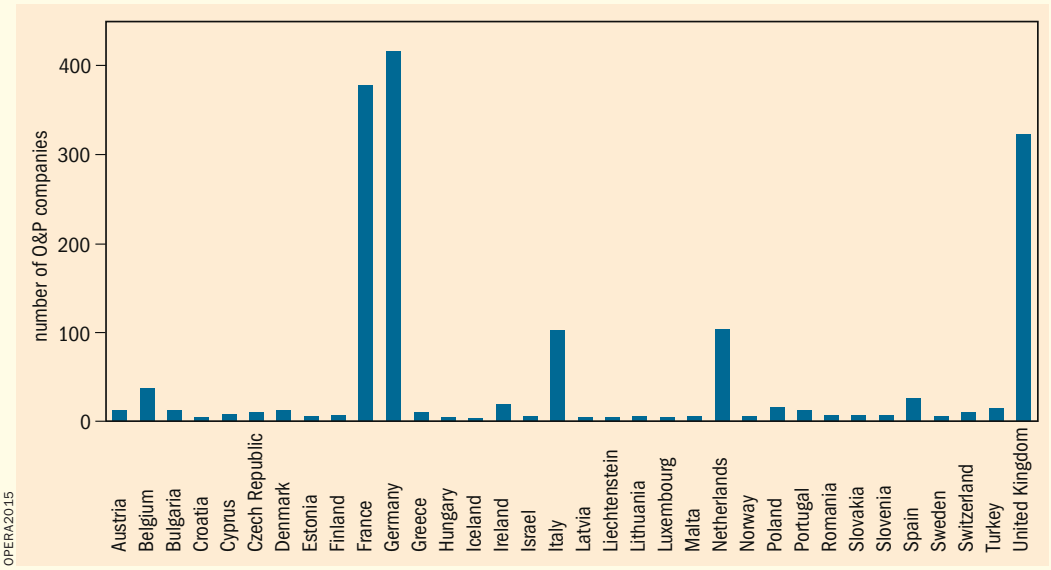
JUNE 2007

EOS NEWSLETTER

THE OFFICIAL PUBLICATION OF THE EUROPEAN OPTICAL SOCIETY

OPERA2015 compiles broad database

OPERA updates its website and calls for additions to its photonics database.



This graph shows the geographical distribution of optics and photonics companies included in the OPERA2015 database.

OPERA2015 is continuing to compile an inventory of European optics and photonics companies. The general selection criterion for inclusion is that a company must be engaged in significant activity in the optics and photonics field. The geographical distribution of the number of companies found so far is given in the graph above. The inventory covers the 27 European Community (EC) member states, including the four applicant countries of Israel, Norway, Switzerland and Turkey.

Interested parties can access information about the listed companies via the OPERA2015 website. Simply visit www.opera2015.org and select "National activities" from the menu followed by "Industrial activities" in the diagram.

More than 1500 companies have been added in the last year – a result that is well above our expectations. We estimate that the total number of companies active throughout Europe ranges between 1000 and 3000. We have also identified 647 European laboratories working in the field of optics and photonics.

We encourage all optics and photonics companies to present and maintain the most up-to-date information in their inventory listing. We would like you to review the basic information held about your company and e-mail any additions or comments to the database manager (bart.snijders@tno.nl) or to the contacts detailed on the OPERA2015 website. If your company is not yet in the inventory it can be added by contacting the database manager.

OPERA2015 website

Extra features have now been added to the website (www.opera2015.org), which is one of the cornerstones of the project. Links to databases containing information on all of the industrial and academic activities across Europe in the optics and photonics field are some of the major new features. These databases are a key aspect of the OPERA2015 project and search functions have been added. To our knowledge, it is the most complete and extensive database on optics and photonics in Europe.

The events calendar is constantly updated as are the news and reports sections. We have also added a section specifically aimed at news from European research projects. The website is gradually acquiring the status of being the portal for information on what's happening in optics and photonics throughout Europe. As well as information on the OPERA2015 project, its progress, functioning and results such as deliverables, reports and presentations at workshops, the website contains information about ongoing projects and refers to relevant websites where appropriate.

The project welcomes, and will evaluate, all suggestions, links and input for publication on

its website. To keep up to date with the progress and activities related to optics and photonics in Europe, bookmark www.opera2015.org and check regularly for updates and new information.

EC seeks photonics experts for FP7

The EC is looking for qualified experts to evaluate proposals submitted to the "Photonic Components & Systems" objective of the Information Communication Technologies (ICT) Thematic Programme of FP7, or to assess the progress of existing projects related to photonic components. In particular, individuals with an industry background are encouraged to apply.

Prospective independent experts are expected to have a high level of professional experience in the public or private sector. Applicants should also have experience in research in the relevant scientific and technological fields, administration, management or evaluation of RTD projects. An understanding of the use of the results of RTD projects, technology transfer, innovation and business co-operation (particularly with regard to SMEs), issues at the interface of science and society (such as education, communication, expertise, risk and ethics) and international co-operation in science and technology would be desirable.

If you are interested in becoming an evaluator or a reviewer for FP7 photonics projects, please register your name in the commission's FP7 database at https://cordis.europa.eu/emmfp7/. Once you have registered e-mail gustav.kalbe@ec.europa.eu or markus.korn@ec.europa.eu indicating your area of expertise.

It is likely that the commission will introduce remote reading to evaluate proposals submitted to Call-2 of the Photonic Components & Systems objective of the ICT Thematic Programme. This is a change to the evaluation process in FP6. Evaluators will receive the proposals before coming to Brussels giving them the time to individually assess the proposals at their premises. Compared with FP6, this is likely to reduce the time spent in Brussels.

OPERA supports Photonics 2007 in Moscow

Despite the short period of time between the first and second photonics exhibitions in Moscow, the Photonics 2007 International Trade Fair for Optical, Laser and Optoelectronic Technologies, Completing Units and Components, proved to be a success. See www.photonics-expo.ru/en/ for more information.

The Photonics Trade Fair made its debut in July 2006. Moscow Expocentr together with Laser Association established the fair to assist the growth of the number of laser and optic technology users, demonstrate the high effectiveness and availability of laser equipment and trigger demands.

There are more than 800 research laboratories and companies involved in the development, manufacture and sales of laser equipment in Russia and a further 2000 companies dealing with electronic-component parts.

The laser and optoelectronic markets continue to grow steadily alongside the micro-electronics, automotive and consumable industries. Russia, a country with strong and long traditions in creating, developing and manufacturing laser and optical technologies, cannot afford to be left behind.

Photonics 2007 was held in Moscow's Expocentr on 13–16 March and attracted about 120 companies and 3500 visitors. The majority of the exhibitors came from the "Lasers and Laser Systems" sector and represented 10 countries.

Companies of all sizes were represented from small enterprises to major corporations. Exhibitors from Russia included companies such as Astrophysica, Polus, IRE – Polus, RMT, ELS – 94 and Laser Complexes. Germany was represented by Jenoptik Laser Diode, LIMO, Laser Zentrum Hannover, Raylase AG and Scansonic. Solar LS, Solar TII and Lotis TII came from Belarus while Hamamatsu Photonics Norden AB came from Sweden amongst many others. There were 20 Chinese exhibitors from the Hubei province. The event included application-oriented industry seminars, which discussed how to bridge the gap between theory and practice. Users from the industrial sector reported on their experiences with the latest laser-based manufacturing techniques. Special attention was paid to the use of laser technologies in the agriculture and railway sectors.

Next year, Photonics will take place in March 2008 at the Expocentr Fair Grounds in Moscow and we look forward to seeing you there. The Photonics Trade Fair is the direct route to the photonics market in Russia and CIS countries.

EOS 2007 annual meeting schedule.

The EOS annual meeting

The 2007 EOS annual meeting (EOSAM 2007) will take place during the World of Photonics Congress, which is being held in Munich in June. The schedule of the meeting is as follows:

Monday 18 June

- 16.00 – 18.00: advisory committee (AC) meeting (for AC members only).

Tuesday 19 June

- 14.00 – 15.00: industrial committee meeting (for corporate members only).
- 16.00 – 17.30: Execom meeting (for Execom members only).
- 17.30 – 20.00: board meeting (for board members only).

Wednesday 20 June

- 16.30 – 17.30: Execom meeting (for Execom members only).
- 17.30 – 19.00: annual general meeting (open to all EOS members).

For more information on any aspect of EOSAM 2007, please contact Petra Bindig (e-mail bindig@myeos.org).

The Netherlands expands its know-how

The Netherlands has launched several initiatives to promote optics and photonics.

Optics and photonics are becoming increasingly important in modern society. The Netherlands has always been, and continues to be, an important manufacturer of optical products that are pushing the boundaries of optical research.

For example, optical products such as laser systems, optical data storage, medical systems (made by Philips and OlDelft) and lithography equipment (developed by ASML) are all produced in the Netherlands.

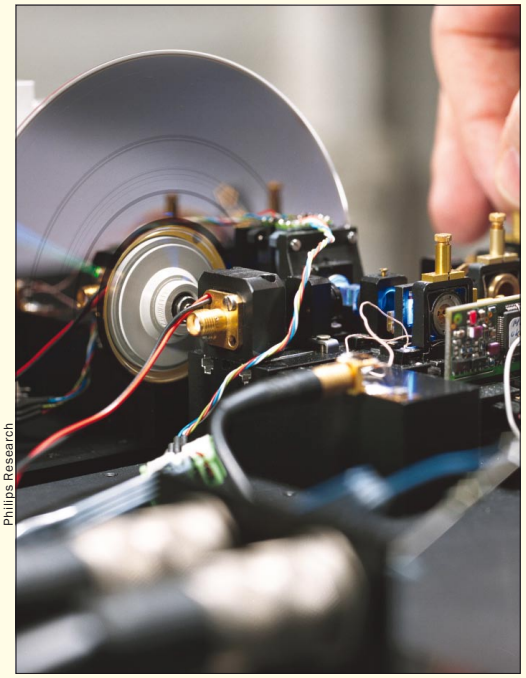
The Netherlands also has a rich history in optical research. One of our Nobel prize winners, Frits Zernike, was the inventor of phase-contrast microscopy and made fundamental contributions to optical coherence theory and the theory of geometrical aberrations. These traditions have continued to this day and we now have a large research effort in the optical sciences departments of our universities. This research spans applications as diverse as fundamental quantum optical research to the fundamentals and practice of lens design.

Recently, the Dutch government launched a research programme aimed at bringing industry and universities closer together to jointly develop optical products like those mentioned above. The programme, called IOP Photonic Devices, is already proving to be successful and is strengthening Dutch efforts to become a major player in the optics and photonics market.

Two years ago, an effort was launched to promote the education and broadening of the knowledge of optical sciences within the Dutch industry. The Dutch Society for Optics and Photonics (NVvF) founded the Photonic Cluster Netherlands (PCN) with the goal of concentrating all of the Dutch efforts in the optics and photonics area. This aim should be achieved by transferring knowledge from universities and polytechnics to the small- and medium-size companies in the Netherlands which comprise 80% of our economy.

PCN also supports the teaching and research of the optical sciences in its broadest context. This support consists of organizing courses and bringing together university researchers and students within the optical industry. All of these efforts are aimed at establishing an organization similar to the Photonic Cluster in the UK, which is already acting as an intermediary and initiator of activities for all players involved or interested in optics and photonics research, development and the industry in general.

With respect to all of the activities outlined above, the EOS is represented by both the members of the NVvF and the members of the optics section of the Dutch Society for Physics.



Philips Research

Philips Research Laboratories is working on Blu-ray Disc (above) and next-generation optical-data storage options at its facility in Eindhoven, the Netherlands.

EOS launches new website.

www.myeos.org

The EOS has launched a new website and we encourage you to take a look and to update your information. Every member of the EOS will have received their login and password by e-mail. Here is an overview of some of the new features that you will see the next time you log on to the website:

- complete your member profile by uploading a picture, enter your scientific/technical interests, update your address and change your password;
- search for and contact other EOS members in your field of interest;
- submit news items and events for review and publication (if you are authorized to do so by your EOS branch or affiliated society);
- view the list of members registered through your branch or affiliated society (if so authorized);
- submit an abstract for an EOS event;
- view and rate submissions for an EOS event (if you are a programme committee member);
- redirect abstracts to the author for improvement (if you are a programme chair);
- join one or more focus groups, discuss with other group members or present your research group;
- accept joining applications for your focus group (if you are a focus group chair);
- start member surveys (if so authorized).

Even more features and information for EOS members only will soon be available in the member area at www.myeos.org. If you have any questions, comments or suggestions, please contact us at info@myeos.org. We look forward to receiving your feedback.

Calendar

DATE	EVENT	LOCATION
3–8 June	Optical Interference Coatings (OIC 2007)	Tucson, USA
12–15 June	Adaptive Optics for Industry and Medicine	Galway, Ireland
17–19 June	EOS Conference on Trends in Optoelectronics	Munich, Germany
18–20 June	EOS Conference on Frontiers in Electronic Imaging	Munich, Germany
11–14 September	8th International Conference on Correlation Optics	Chernivtsi, Ukraine
12–14 September	3rd EOS Topical Meeting on Advanced Optical Imaging Techniques	Lille, France
30 September – 3 October	Topical Meeting on Optical Microsystems	Capri, Italy
11–12 October	3rd EOS short course on Optical Fabrication Technology	St Gallen, Switzerland
21–23 November	6th EOS Topical Meeting on Diffractive Optics (DO 2007)	Barcelona, Spain

For more information on any of these events, please visit **www.myeos.org**.

Are you a member of the EOS?

Look at the benefits

Individual members are eligible for:

- reduced fees for *JEOS:RP* at www.jeos.org;
- a regular *EOS Newsletter* e-mail;
- reduced conference fees;
- reduced prices for EOS journals;
- free subscription to *Optics & Laser Europe*;
- and, for those living outside Germany, a 50% discount on a subscription to the German-language journal *Photonik*, published by AT-Fachverlag.

Additional benefits for corporate members:

- a company profile in the EOS directory;
- a presence on the EOS website;
- free advertisements for jobs in the EOS market;
- reduced conference fees for all employees.

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Students (who do not belong to a branch or affiliated society of the EOS): **€10**
Corporate members (regardless of the number of employees of the company or members of the institute): **€200**

Individual members of the branches SFO (France), DgaO (Germany), HOS (Hungary), SIOF (Italy), LAS (Russia), SOS (Sweden), SSOM (Switzerland) and the Optical Group IOP (UK) are automatically full individual members of the EOS. Individual members of the affiliated societies Promoptica and CBO-BCO (Belgium), CSSF (Czech and Slovak Republic), DOPS (Denmark), FOS (Finland), the Optics Division of the Norwegian Physical Society (Norway), the Optics Division of the Polish Physical Society (Poland), ROS (Romania) and SEDO (Spain) are automatically associate members of the EOS.

Membership information

To find out more about joining the EOS, contact Klaus Nowitzki, executive director, Hollerithallee 8, D-30419 Hanover, Germany (tel +49 (0)511 2788 115; e-mail info@myeos.org; web **www.myeos.org**).

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SEPTEMBER 2007

EOS NEWSLETTER

THE OFFICIAL PUBLICATION OF THE EUROPEAN OPTICAL SOCIETY

EOS announces new fellows at 2007 AGM

New fellows of the EOS receive their awards at the 2007 Annual General Meeting.

Joseph Braat, the past president and chairman of the Fellowship Committee, announced the 2007 EOS fellows at this year's AGM. All members of the EOS are invited to nominate Fellowship candidates and the honour is conferred upon distinguished members of the society.

Fellowship is the highest category of membership of the EOS and up to 2% of the membership may be elected to this level. Fellows are expected to play a leading role in guiding and advising the society. A candidate for Fellowship must be a member of the EOS and successful nominees will have one or more of the following qualities:

- have made outstanding research contributions to optics and photonics, through published papers, books, conference presentations, patents or other published material;
- have served the optics and photonics community by teaching or training; industrial leadership; service as an editor, conference organiser or other professional service;
- have made a special contribution to the EOS.

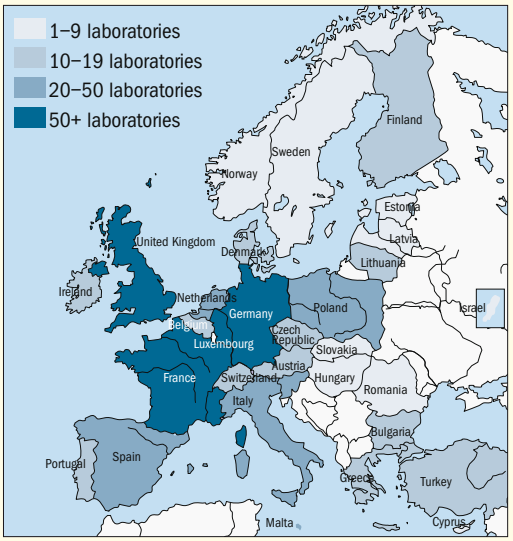
Top: Anna Consortini receives her Fellowship from Joseph Braat. Bottom: the EOS 2007 prize was also awarded at the AGM. The winners are M Lassen, V Delaubert, C C Harb, P K Lam, N Trebs and H-A Bachor for their paper "Generation of squeezing in higher order Hermite-Gaussian modes with an optical parametric amplifier", as published in the Journal of the European Optical Society – Rapid Publications Vol 1, 06003 (2006).

The EOS fellows for 2007

- **Klaus Biedermann** – for his work to establish the EOS and the Swedish Optical Society; contributions to holography and visual optics; and a life-long effort to promote collaboration in optical science between industry and academia.
- **Magnus Breidne** – for his work and effort for the EOS; his leadership in optics and photonics; and his efforts to initiate collaboration on the international and national level.
- **David Briers**– for his many important contributions to optics teaching and research; and his highly valued services, past and ongoing, to the EOS.
- **Pierre Chavel** – for his outstanding contributions to the field of optical information processing; his leading and constant actions to promote international collaborations, advanced research and teaching in optical sciences.
- **Anna Consortini** – for her important contributions to basic diffraction theory and light propagation in random media; for the crucial role she played in the founding of the EOS itself; and in the worldwide organization and recognition of optical science, among others, as the ICO president from 1993 to 1997.
- **Chris Dainty** – for his highly influential contribution to optics teaching and research; and for his committed leadership of the optics community in general and the EOS in particular.
- **Peter Knight** – for his countless seminal contributions to quantum optics and quantum information research; his outstanding leadership of the international optics community; and for his unique combination of educational, organizational and personal talents.
- **Stefan Kröll**– for his research achievements in high-resolution spectroscopy and quantum optics; his service to the optics community; and for his teaching of advanced optical physics.
- **Ad Lagendijk** – for his research achievements in light propagation in structured and disordered media; his challenging way of coaching many young scientists; and for his original views on the scientific world, as published in numerous newspaper columns.
- **Anders Larsson** – for his contribution to semiconductor lasers and diffractive optics; and for his teaching and leadership in optics.
- **Gerd Leuchs** – for his important contribution to optical science, through countless seminal contributions to fundamental problems in quantum optics and quantum information.
- **Miroslav Miler** – for his lifelong contribution to diffractive optics and holography and the development of these disciplines in the Czech Republic.
- **Wolfgang Schleich** – for his numerous pioneering and seminal contributions to theoretical quantum optics and new perspectives for the understanding of the quantum nature of light and its interaction with matter.
- **Jakob Stamnes** – for his seminal contributions to optical diffraction theory and its applications in other fields of physics; and for his outstanding contribution to science education via his book *Waves in the focal region*.
- **Wilson Sibbett** – for his numerous pioneering contributions to ultrashort-pulse laser science and technology, including the development of Kerr-lens modelocked lasers; and for his promotion of optical science on the national and international stage.
- **Hugo Thienpont** – for his incessant promotion of the sciences of optics and photonics in his own university, in Belgium and Europe with a particular emphasis on modern and original teaching projects for young people.
- **Han Woerdrnan** – for his original theoretical and experimental work in classical and quantum optics with a particular interest in translating open theoretical questions into simple and fundamental experiments.

OPERA2015 compiles European research list

A comprehensive list of research groups active in optics throughout Europe is now available on the OPERA2015 website.



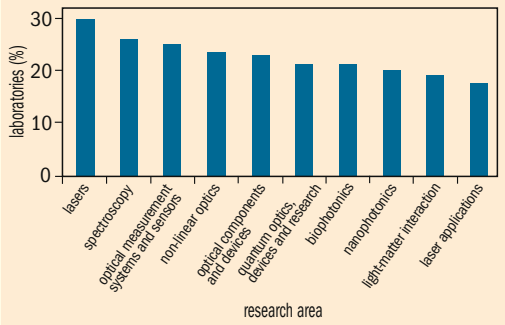
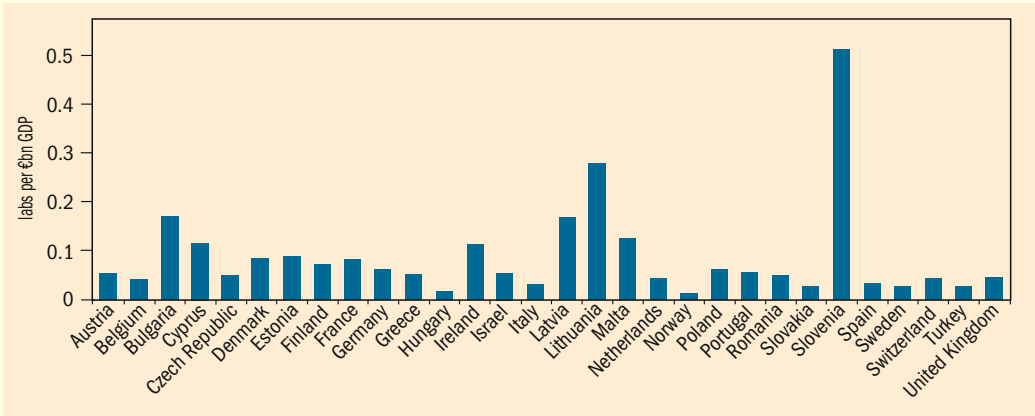


Fig. 1 (left): the geographical distribution of research laboratories found to be active in the field of optics and photonics in Europe. Fig. 2 (bottom): the number of photonics and optics research laboratories in each of the 31 countries, examined as a function of GDP per capita purchasing power. Fig. 3 (top right): the 10 most cited research areas and the percentage of laboratories throughout Europe working in each.



OPERA2015 has compiled a list of 726 research groups across Europe that are active in the field of optics and photonics. This activity is running parallel to the compilation of an inventory of European companies in this field. Both sets of information, which are readily available and searchable by country and keyword, can be found on the OPERA2015 website at www.opera2015.org through the "National Activities" section.

The research group information was compiled using a number of sources including: national and agency databases held by the governments of the OPERA2015 committee members; national laser and optics associations; university and research centre association websites; photonics cluster websites; EU project partner lists; and attendees at conferences in optics and photonics.

To be included in the list the general criterion is that an identifiable research group must be engaged in activity in the optics and photonics area. There is currently no information on the level of this activity.

To date, information has been collected for the 27 EU member states as well as Turkey, Israel, Norway and Switzerland. Our findings, presented in figure 1, show that three countries (Germany, France and the UK) account for over 50% of the laboratories in the survey, which is not surprising as these are large, rich countries.

However, when the data is scaled for gross domestic product (GDP) per capita purchasing power, there are typically 0.05 labs per billion euros (see figure 2). The larger number of laboratories in some countries may be an indication of fragmentation of effort in these countries, but this has not yet been verified.

We have also analysed the main activities undertaken in each laboratory. From the list of 67 research areas mentioned more than once, the 10 most popular are presented in figure 3. Lasers and their applications is the most important with one in three groups working in the field. Spectroscopy and measurement systems also represent important areas, and biophotonics is an important applied research topic. Nanophotonics and quantum optics also stand out as basic research topics.

Visit www.opera2015.org and take a look at the "National Activities" section for a full list of laboratories. Research groups are encouraged to verify their entry in the list and the accuracy of their data. Please contact the project leader (a.b@opticsvalley.org) if you have any problems.

Spanish optics talks about its success

The optics and photonics industry in Spain is flourishing.

There are many positive signals indicating that optics and photonics research in Spain is growing at a significant pace. The last report relating to Spanish optics appeared in this newsletter in September 2004. Here we provide a summary of recent activities.

The public funds devoted to research, development and innovation – both by the Spanish and regional governments – have noticeably increased in the period since the last report and our field has certainly profited from them.

As well as the grants obtained by research groups under regular national open calls, four new thematic networks related to optics have been created. These are funded by the Spanish Ministry of Education and Science and are in the following categories: image and multidimensional signal processing; visual optics; colour science and technology; and quantum and non-linear optics. The final goal is to consolidate groups of internationally acknowledged Spanish research laboratories in these four topic areas.

A number of activities will help us to achieve this aim. For example, the four networks will organize meetings, support the exchange of researchers among the groups of the network, promote the development of joint research projects at the Spanish and international levels, and support any initiatives that increase the visibility of Spanish optics in the stated branches.

A technology platform, called Fotónica21, has recently been launched. Funded by the Spanish Ministry of Industry, Tourism and Trade, it is the Spanish equivalent of the European Photonics21.

In 2005, a strategic programme entitled Consolider-Ingenio 2010 was launched by the Spanish Ministry of Education and Science. The idea behind the programme is to support high-quality research "in the frontier", which is to be carried out by Spanish groups with an established track record.

Only 17 projects were funded in the first call, with an average award of €4 m per project over a five-year period. One of these projects was in the field of quantum optical information technology. The results of the second call were published in July 2007.

We are also seeing Spanish optical research groups increasing their participation in EU Networks of Excellence, for example NEMO, Phoremost, Metamorphose, SPP and Plasmon Nano Devices.

A number of spin-offs from university research groups have been formed. These include DAS-Photonics from the Polytechnical University of Valencia; Chylas, a company devoted to fibre-optic components and advanced optical-fibre lasers, from the University of Valencia and research institutes; and Radiantis, a specialist developer of optical frequency-conversion systems from The Institute of Photonic Sciences, Barcelona.

We also recognize the efforts of individuals. Susana Marcos received one of the 2005 EURYI Awards for her research into "Physical and technological approaches to the understanding and correction of myopia and presbyopia". Maria J Yzuel was elected 2006 SPIE vice-president. Both Marcos and Yzuel were elected as EOS fellows in 2006. Maria Luisa Calvo has been re-elected as the secretary of the International Commission for Optics for 2005–2008.

Turning to education and the structural remodelling of the higher education landscape to satisfy the Bologna Treaty, there have been some difficulties in adequately integrating optics as a discipline at the higher education level in physics in Spain. As a result of the remodelling, the eight public and two private optics and optometry university schools will have a new and improved status.

Last but not least, we will summarize the activities of the Spanish Optical Society (SEDOPTICA). The acronym SEDOPTICA (replacing the previous acronym, SEDO) has been endorsed by the Spanish Research Council. The society has six committees: colour, visual sciences, optoelectronics, image techniques, spectroscopy and education in optics. Nearly all of the Spanish universities and institutions with research groups involved in optics, as well as related industries, are represented within these committees.

SEDOPTICA organizes the Spanish Optical Meeting, which is held every three years. The last meeting was held in Alicante in September 2006 and attracted more than 250 participants. There was a similar number of contributions from all fields of optics.

The committees also organize regular national (OPTOEL05, RNE06, OPTOEL07, CNC07) and international (AIC Colour05, HRMS05) scientific conferences, workshops and summer schools (Jaca06, Jaca07). They each concentrate on a specific topic.

SEDOPTICA will be celebrating its 40th anniversary in 2008. Visit www.sedoptica.es for further information.

The peer-reviewed journal *Óptica Pura y Aplicada*, edited by SEDOPTICA, is published three or four times per year. Seven of the last 11 issues have been special issues. Such issues contain monographies proposed by the committees or collections of invited lectures and selected contributions to conferences, summer schools and workshops organized by the committees.

Concepción Domingo is senior researcher at the Institute of the Structure of Matter of the Spanish Research Council as well as president of SEDOPTICA. **Santiago Mar** is full professor of theoretical physics, atomic physics and optics at the University of Valladolid and is also a past-president of SEDOPTICA.

Calendar

DATE	EVENT	LOCATION
11–14 September	8th International Conference on Correlation Optics	Chernivtsi, Ukraine
12–14 September	3rd EOS Topical Meeting on Advanced Optical Imaging Techniques	Lille, France
26 September	Concertation Meeting: Photonic Integrated Circuits/ Integration of Photonic Technologies	Brussels, Belgium
30 September – 3 October	Topical Meeting on Optical Microsystems	Capri, Italy
8–10 October	International Symposium on Optomechatronic Technologies (ISOT 2007)	Lausanne, Switzerland
11–12 October	3rd EOS short course on Optical Fabrication Technology	St Gallen, Switzerland
21–23 November	6th EOS Topical Meeting on Diffractive Optics (DO 2007)	Barcelona, Spain
31 March – 2 April 2008	EOS Topical Meeting on Photonic Devices and their Application in Health and Medicine	Utrecht, the Netherlands

For more information on any of these events, please visit **www.myeos.org**.

Are you a member of the EOS?

Look at the benefits

Individual members are eligible for:

- reduced fees for *JEOS:RP* at www.jeos.org;
- a regular *EOS Newsletter* e-mail;
- reduced conference fees;
- reduced prices for EOS journals;
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Membership information

To find out more about joining the EOS, contact Klaus Nowitzki, executive director, Hollerithallee 8, D-30419 Hanover, Germany (tel +49 (0)511 2788 115; e-mail info@myeos.org; web **www.myeos.org**).

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EOS IOP

DECEMBER 2007

EOS NEWSLETTER

THE OFFICIAL PUBLICATION OF THE EUROPEAN OPTICAL SOCIETY

EOS seeks board nominations

The EOS is looking for candidates to fill the five vacant seats on its board.

2008 is an election year and the EOS invites all of its members to nominate eligible candidates to fill the five vacant seats on the EOS board. Why not take advantage of this opportunity?

Every EOS member can suggest up to three candidates for election to the board. Please note that three EOS members must support the nomination of each candidate and that nominations may be submitted by letter or by e-mail.

When nominating by post, the three EOS members that are supporting the candidate must sign a letter, but not the nominee. A letter from the candidate accepting the nomination should be included at this time, although it can be sent separately if required.

In the case of nomination by e-mail, each of the three EOS members supporting the candidate must send in a separate e-mail including the name of the nominated person. This is important as each e-mail is accepted instead of a signature. In addition, the candidate must also send an e-mail accepting the nomination. Please note that all four people involved (the candidate and the three supporters) must be either full or associate members of the EOS. The closing date for nominations is 31 March 2008.

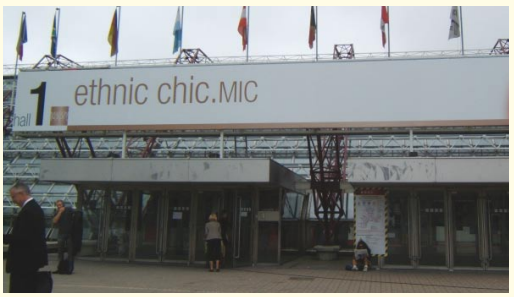
EOS annual meeting alongside OPTO 2008

Join us in Paris for the 2008 EOS annual meeting.

The 2008 EOS annual meeting will again be held alongside the OPTO exhibition in Paris, France. The EOS meeting will be held between 29 September and 2 October 2008.

This arrangement was a great success in 2006 when it was tried for the first time. OPTO 2008 will take place in Paris-Nord Villepinte, Parc d'Expositions et Centre de Conventions, a modern location that is less than two miles from Charles de Gaulle airport.

There will be seven topical meetings and a workshop: TOM 1: Biophotonics – chairs: Gert v Bally, Ivo Rendina and Paul French; TOM 2: Terahertz science and technology – chair: Paul Planken; TOM 3: Nanophotonics, photonic crystals and metamaterials – chairs: Concita Sibilia and Richard De La Rue; TOM 4: Micro- and nanoscale photonic systems – chairs: Juergen Jahns, Hugo Thienpont and Erez Hasman; TOM 5: Organic photonics – chair: Guglielmo Lanzani; TOM 6: Nonlinear optics: from sources to guided waves – chairs: Cornelia Denz, Gilles Pauliat and Robert Kuszelewicz; TOM 7: Dynamical optics – chairs: Gordon Love, Michael Totzeck and Chris Dainty; Workshop: Education: the 4th level education in photonics. Masters and PhD training issues – chair: Chris Dainty.



The Paris-Nord Villepinte exhibition centre in Paris.

More details will be available soon at: www.myeos.org/events.

Brussels is the venue for Photonics21's annual meeting.

Photonics21 annual meeting

Representing 900 members from industry and research, the Photonics21 annual meeting has become a major event in the European photonics community's calendar. This year, the event will take place at the Radisson SAS Royal Hotel in Brussels, Belgium on 5–6 December. Starting with an evening reception in the conference hotel on 5 December, all participants will have the opportunity to discuss and network with other members of the platform in a relaxed atmosphere. On 6 December there will be presentations covering topics such as: Photonics21 research strategy recommendations and an analysis of the photonic proposals submitted and supported in the first calls of FP7. Strategic planning for 2008 will be also discussed. For more information visit www.photonics21.org.

OPERA2015 presents results

OPERA2015 invites you to its meeting at Photonics Europe in April 2008.

OPERA2015 will present the results that it has achieved over the last few years on 9 April 2008 at Photonics Europe. The OPERA2015 summit meeting will be divided into two parts.

The first part will include a general introduction as well as a presentation of the aims, results and future goals of OPERA2015. This will be followed by an analysis of the current state of the European optics and photonics market, and finally, a demonstration of the OPERA2015 website, the most extensive forum for optics and photonics in Europe.

The second part of the meeting will include a discussion regarding the future of research and development in optics and photonics across Europe. This will be led by renowned experts and scientists who will present strategic opportunities and sustainable business models that take competition with Asian and North American countries into account.

OPERA2015 plays an important role in European research into optics and photonics. Why not attend the event and convince yourself? For more information see www.opera2015.org. Photonics Europe will held in Strasbourg, France, between 7 and 11 April 2008.

Alexander von Witzleben, Photonics21 president (and managing director of Jenoptik) and Viviane Reding, the european commissioner for information society and media, attending Photonics Europe in 2006.

OPERA2015 website promotes interaction

OPERA2015 website increases the number of collaborating partners.

The OPERA2015 website is the ideal platform for European researchers in optics and photonics to interact.

Thanks to a joint strategy involving both research and industry, an increasing number of organizations, companies and projects are joining OPERA2015 and benefiting from the platform's advantages. Some collaborating partners are outlined below:

- PHOLOGIC (Nanophotonic logic gates) explores the mass-manufacturing compatibility of nonlinear photonic materials and their associated CMOS fabrication processes using a highly scalable photonic logic gate structure as a functional validation device.
- SABIO (Ultrahigh sensitivity slot-waveguide biosensor on a highly integrated chip for simultaneous diagnosis of multiple diseases) involves the emerging fields of micro- and nano-technology, photonics, fluidics and bio-chemistry, and is aiming to develop intelligent diagnosis equipment for healthcare.
- MONA (Merging optics and nanotechnologies) bridges the gap between photonics and nanotechnology and seeks to increase the impact and efficiency of investment on European research. The aim is to produce a European roadmap for photonics and nanotechnologies.
- PhOREMOST (Nanophotonics to realise molecular scale technologies) aims to enhance European research into nanophotonics by involving both students and scientific researchers. The goal is to understand the underpinning science and engineering for molecular-based optical components.
- HIBISCUS (Hybrid integrated bio-sensor created by ultrafast laser sources) proposes to use high-intensity femtosecond laser pulses to provide an integrated platform for the fabrication of biochips with photonic functionalities.
- POF-ALL (Paving the optical future with affordable lightning-fast links) deals with the development of a low-cost broadband solution based on plastic optical fibre.
- NANO-UB-SOURCES (Ultrabroad bandwidth light sources based on nano-structuring devices) is aiming to develop a new generation of broad bandwidth, compact, cost-effective and user-friendly lasers based on photonic device technology. Such sources would enable significant improvement in early cancer diagnosis and monitoring of retinal diseases.

For further information on any of the projects please contact irenesanchez@idetra.com or wilkens@vdi.de. To keep up to date with the OPERA2015 project or to add your research group or company details to its database, please visit http://www.opera2015.org.

Kista: Sweden's Silicon Valley

The KPRC is Sweden's largest photonics research centre.

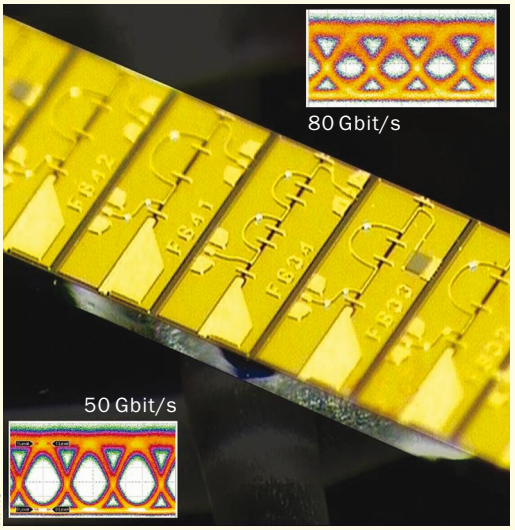
Kista Photonics Research Center (KPRC), formed in 2002, is known as a joint research unit. KPRC is an umbrella organization that facilitates the collaboration between the Royal Institute of Technology (KTH) and the private research institute Acreo AB in the field of photonics.

Kista is a northern suburb of Stockholm and is sometimes known as the Swedish Silicon Valley. Close to 20 000 people work in this area for ICT-related companies, most of them with R&D activities. It is easy to see why the founders of KPRC chose to base in Kista, but in addition there are around 40 KTH optics researchers in Stockholm, and a large number of companies benefit from the centre.

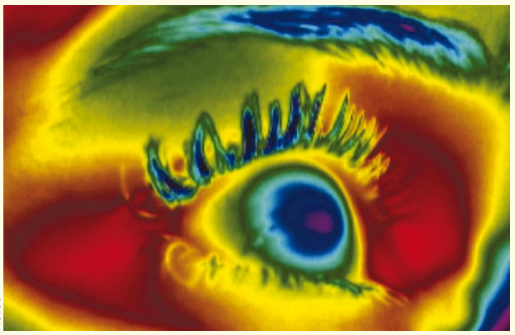
With about 120 researchers, PhD students and supporting personnel, KPRC is the largest research centre in photonics in Sweden and a major player in Europe in the field of optical communications. The majority of the research at KPRC is related to semiconductor- and glass-based materials and components. In addition, there is an element of more basic research into topics such as quantum optics and quantum cryptography. When researchers from Ericsson joined KPRC in 2002, this added a competence in high-capacity transmission, optical networking and service-related technologies.

In 2004, KPRC successfully organized the 30th European Conference on Optical Communication in Stockholm with the support of Ericsson and Telia. From 2005, KPRC has been heavily involved in the highly successful Photonics21 technology platform.

KPRC is a member of the executive board of Photonics21 and leads one of its seven working groups, dealing with photonic components and sub-systems. KPRC actively works for better coordination of research resources both internally and at the European level to increase the competitiveness of the European photonics industry.



KPRC


Acreo

KPRC is a major player in optical communications (top). Acreo has commercialized QWIP research (bottom).

About Acreo (www.acreo.se)

Headquartered in Kista, Acreo offers contract R&D and production services in areas ranging from microelectronics and optics to communication technology. Its activities range from basic R&D through to the final stage of production. Bridging the gap between academic research and commercial products, Acreo provides innovative technology solutions that contribute to growth and profitability.

Acreo specializes in semiconductor technology, organic electronics, fibre optics, optical networking and nanotechnology. One example of research that was commercialized successfully is work regarding quantum-well infrared photodetectors (QWIPs). Academic research into QWIPs began 10–15 years ago and today Acreo has spun-out these activities into a company called IRnova AB.

Acreo also provides solutions for future broadband technology including all aspects from networking to transmission technology and services. Specifically, Acreo develops the open network concept that makes it possible for any service provider to reach, or be reached, by any end user. Acreo's National Broadband Testbed provides an open forum for system vendors, operators, service providers and academia. New products, services and solutions, which include real end users or test pilots, can be evaluated in the test bed.

About KTH (www.kth.se)

KTH is Sweden's leading technical university and provides undergraduate and postgraduate courses in architecture, engineering and technology, and a broad range of masters programmes in English. KTH is a technical university with a strong international character. A steadily increasing number of overseas students and researchers are contributing to its success.

Pierre-Yves Fonyallaz is director of Kista Photonics Research Center.

Calendar

DATE	EVENT	LOCATION
31 March – 2 April 2008	EOS Topical Meeting on Photonic Devices and their Application in Health and Medicine	Utrecht, the Netherlands
7–11 April	Photonics Europe 2008	Strasbourg, France
16–18 April	3rd Pacific International Conference on Applications of Lasers and Optics – PICALO 2008	Beijing, China
12–15 May	2nd International Topical Meeting on Optical Sensing and Artificial Vision – OSAV 2008	St Petersburg, Russia
25–28 June	1st Mediterranean Photonics Conference	Ischia, Italy
2–4 July	Advanced Imaging Techniques 2008	Jena, Germany
29 September – 2 October	EOS Annual Meeting 2008	Paris, France

For more information on any of these events, please visit **www.myeos.org**.

Are you a member of the EOS?

Look at the benefits

Individual members are eligible for:

- reduced fees for *JEOS:RP* at www.jeos.org;
- a regular *EOS Newsletter* e-mail;
- reduced conference fees;
- reduced prices for EOS journals;
- free subscription to *Optics & Laser Europe*;
- and, for those living outside Germany, a 50% discount on a subscription to the German-language journal *Photonik*, published by AT-Fachverlag.

Additional benefits for corporate members:

- a company profile in the EOS directory;
- a presence on the EOS website;
- free advertisements for jobs in the EOS market;
- reduced conference fees for all employees.

EOS 2008 membership fees

Individual members (who do not belong to a branch or affiliated society of the EOS): **€40**
Students (who do not belong to a branch or affiliated society of the EOS): **€10**
Corporate members (regardless of the number of employees of the company or members of the institute): **€200**

Individual members of the branches SFO (France), DgaO (Germany), HOS (Hungary), SIOF (Italy), LAS (Russia), SOS (Sweden), SSOM (Switzerland) and the Optical Group IOP (UK) are automatically full individual members of the EOS. Individual members of the affiliated societies Promoptica and CBO-BCO (Belgium), CSSF (Czech and Slovak Republic), DOPS (Denmark), FOS (Finland), the Optics Division of the Norwegian Physical Society (Norway), the Optics Division of the Polish Physical Society (Poland), ROS (Romania) and SEDO (Spain) are automatically associate members of the EOS.

Membership information

To find out more about joining the EOS, contact Klaus Nowitzki, executive director, Hollerithallee 8, D-30419 Hanover, Germany (tel +49 (0)511 2788 115; e-mail info@myeos.org; web **www.myeos.org**).

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***EOS Newsletter* is produced for the European Optical Society by Institute of Physics Publishing.**

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EOS IOP

MONTH 2007

EOS NEWSLETTER

THE OFFICIAL PUBLICATION OF THE EUROPEAN OPTICAL SOCIETY

European Optical Society — Coherence for Europe ®

EOS Member Newsletter

January 2008

Topics in this issue:

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www.myeos.org

EOS_events

EOS Annual Meeting 2008

The Annual Meeting 2008 will be held in Paris, France, from 29 September to 02 October 2008.

In 2006, the conjunction of the OPTO exhibition and the first Scientific EOS Annual Meeting proved to be a great success: More than 600 experts in the field of optics and photonics from 32 countries worldwide attended the EOS event representing its international and high scientific character. Due to this success, the EOS Annual Meeting will be held for a second time as an accompanying programme alongside the OPTO exhibition Paris.
This year's Meeting will feature seven topical meetings as well as an education workshop and will be held in a new location: Paris-Nord Villepinte, Parc d'expositions et Centre de Conventions, Paris, France. For the EOS Annual Meeting 2008, even more attendees are expected than in 2006.

The general chair of the Annual Meeting is Roberta Ramponi, the acting President of the EOS.

The Topics of the Annual Meeting 2008 are:

Biophotonics
Chairs:
- G. von Bally, Westfaelische Wilhelms-Universitaet, DE
- I. Rendina, Consiglio Nazionale delle Ricerche, IT
- M. Neil, Imperial College London, UK

Terahertz - Science and Technology
Chairs:
- P.Planken, Delft University of Technology, NL
- M. Koch, Techn. Universitaet Braunschweig, DE

Nanophotonics, Photonic Crystals and Metamaterials
Chairs:
- R. De La Rue, University of Glasgow, UK
- C. Sibilia, Università di Roma I, IT

Micro- and Nanoscale Photonic Systems
Chairs:
- J. Jahns, FernUniversitaet in Hagen, DE
- E. Hasman, Technion, IL
- H. Thienpont, Vrije Universiteit Brussel, BE

Organic Photonics
Chair:
- G. Lanzani, Politecnico di Milano, IT

Nonlinear Optics - Materials, Devices and Spatio-Temporal Effects
Chairs:
- C. Denz, Westfaelische Wilhelms-Universitaet, DE
- G. Pauliat, Institut d'Optique - Graduate School, FR
- R. Kuszelewics, CNRS-LPN, FR

Dynamical Optics
Chairs:
- G. Love, University of Durham, UK
- C. Dainty, National University of Ireland, IR
- M. Totzeck, Carl Zeiss SMT AG, DE

Workshop: Masters & PhD Education in Photonics
Chairs:
- C. Dainty, National University of Ireland, IR
- P. Chavel, Institut d'Optique - Graduate School, FR

In cooperation with: SPIE OPTO

Deadline for submission of abstracts: 06 June 2008

Further information at: www.myeos.org; Contact: paris@myeos.org

inside_EOS

EOS membership cards

The EOS will launch its membership card system with the beginning of 2008.

In the first quarter of 2008, every EOS member – individual, student or associate – will receive our new membership card by postal mailing.
The card contains the member's name as well as further information on the member status, organization/company, member ID as well as the contact data of the EOS.

Please note that individual or student membership will not be renewed automatically. Should you wish to become a member of the EOS for the year 2008, we kindly ask you to renew your membership at www.myeos.org/shop.

Members through National Societies are asked to contact their National Society for further information.

The membership fees for 2008 are as follows:
40,00 € for individual members
10,00 € for student members

Draft of a member ID card:

EOS_elections

EOS Board Elections: Call for nominations

The EOS invites all members to nominate candidates for the EOS Board of Directors.

2008 is an election year! All EOS members are invited to suggest up to three candidates for the five vacant seats in the EOS Board of Directors. All individual members of the EOS are eligible (individual entities). Please note that the nomination of each candidate must be supported by three EOS members (full or associate).

Nominations may be submitted either by letter or by e-mail.

In the first case, the letter must be signed by the three EOS members supporting the candidate (not including the person nominated), enclosing a letter from the candidate accepting the nomination (can also be sent in separately).

In the case of nomination by e-mail, each of the three EOS members supporting the candidate must send in a separate e-mail including the name of the nominated person. This is important as each e-mail replaces one signature. In addition, the candidate must also send an e-mail accepting the nomination.

Nominations can be submitted until: 31 March 2008.
Contact details for nominations:
By letter:
David Briers, Cwm Gorllwyn, Tegryn, Llanfyrnach, SA35 0DN, UK
By e-mail:
davidbriers@btopenworld.com

Background information

Composition of the EOS Board:
The Board of Directors is composed of elected, nominated and ex officio members. There are 11 elective seats, up to 5 nominated seats, and 3 ex officio seats.

The seats of the 11 elected members are divided as follows: 10 seats elected by all the members of the Society and 1 seat elected by the Advisory Committee representing those national learned societies that are not integrated as EOS Branches.

The current EOS Board of Directors

Elected for the term 2004 – 2008:
Prof. Roberta Ramponi (EOS President),
Prof. Joseph Braat,
Dr. Daniel Dolfi,
Prof. Hans Peter Herzig,
Dr. Karl Lenhardt,
Prof. Gilles Pauliat,
Dr. Peter Török,
Prof. Theo Tschudi.

Elected for the term 2006 – 2010:
Prof. Cornelia Denz,
Dr. Pierre Yvez Fonjallaz,
Dr. Hervé Lefevre,
Dr. Gordon Love,
Prof. Concita Sibilia

More information on the EOS organization is available at: www.myeos.org/about

EOS_events

Call for papers: Photonic Devices and their application in health & medicine

Utrecht, The Netherlands, 31 March - 02 April 2008

Photonic devices play an omnipresent role in our society and personal life. This EOS meeting is organized partly in parallel with the Dutch annual Photonics Event (02 - 03 April 2008) of the 'Photonic Devices' initiative led by the Dutch Ministry of Economic Affairs in the Hague. The EOS Topical Meeting will devote special room to the running projects within the Dutch initiative.
Here, typical subjects will be tunable light sources for broadband medical imaging, miniaturized photonic sensors for Raman spectroscopy, special purpose detectors for radio-imaging, etc.

More in general, the EOS Topical Meeting will cover the following topics:

- Novel light sources,
- Energy saving methods in lighting,
- Novel applications of diffractive and micro-optics in lighting and displays,
- Solar energy conversion using semiconductor or other novel materials,
- Nano-structured materials for enhanced detection sensitivity,
- Spectral sensing for atmosphere and environmental monitoring,
- Micron- and nanometrology and profiling using photonic devices,
- Optical sensors,
- Photonic devices in manufacturing, machine vision,
- New cameras developments in manufacturing,
- Photonic devices and photonic methods in security,
- THz-technology,
- Photonic devices enabling non-invasive methods in medicine,
- Non-invasive medical sensors based on light scattering, light absorption,
- Tissue analysis in medicine using photonic techniques.

Topical Meeting Chair:
- Jean-Pierre Huignard, Thales Research & Technology, Palaiseau, France

Invited Speakers:
- George Craford, Philips Lumileds, USA
- Johannes de Boer, Harvard Medical School, USA
- Frederique De Fornel, University of Bourgogne, France
- Richard De La Rue, University of Glasgow, United Kingdom
- Daniel Dolfi, Thales Research and Technology, France
- Tijmen Euser, University of Erlangen, Germany
- David Faye, Thales Research, France
- Tobias Kippenberg, Max Planck Institut, Germany
- Manijeh Razeghi, University of Northwestern, USA
- Marie-Claire Schanne-Klein, Ecole Polytechnique , France
- Henrik Schiøtt Sørensen, RISOE, Denmark
- Valentin Vlad, National Institute for Laser, Plasma and Radiation Physics, Rumania

Abstract submission
Please submit your abstract online at:
www.myeos.org/utrecht2008

Deadline for abstract submission: prolonged until 31 January
Contact: Petra Bindig | bindig@myeos.org

EOS_events

Topical Meetings on Diffractive Optics and on Optical Microsystems: a great success

The Topical Meeting on Diffractive Optics, fully organized by the EOS for the first time, as well as the Topical Meeting on Optical Microsystems revealed to be a great success. A renewal is planned for both events.

For the second time the Topical Meeting on Optical Microsystems was held on Capri, Italy. The EOS meeting was again organized by SIOF, the Italian Optics and Photonics Society.

More than 80 persons - scientists, scholars, students, company representatives, professionals - attended the event, which offered a great number of oral and poster presentations as well as workshop on *Advances on Photonic Crystals* to the attendees.

Optical Microsystems: Poster Session

The Meeting on Diffractive Optics, which was held at the University of Barcelona, Spain, was quite successful as well. It attracted more than 120 persons, who had the opportunity to exchange over 46 oral presentations held by international experts, a workshop on *Optics Modeling* and a large poster area of almost 60 posters.

The feedback on the scientific content of the topical meetings was very good. Due to great response, a renewal is planned for both events.

Diffractive Optics: Poster Session

The next meeting on Optical Microsystems will take place on Capri in 2009.

The next Diffractive Optics meeting will be organized as complete EOS event again for 2010 (February) and will be held in Koli, Finland, embedded in an overwhelming landscape in the mountains of the Koli national park. Additionally to the scientific sessions there will be certainly enough time to enjoy the beautiful landscape and take part in one of the many leisure activities accompanying the meeting, which will certainly be a highlight among the series of previous Diffractive Optics events.

We thank all authors for their contribution and all attendees for coming to the Topical Meetings on Optical Microsystems and on Diffractive Optics look forward to welcoming you again on the next edition of the events.

EOS_events

Student Prize for the best oral presentation

The 3rd EOS Topical Meeting on Advanced Imaging Techniques took place from 12th to 14th September, 2007, in Lille, France

The Topical Meeting was a great success with about 90 participants out of 16 countries and will be continued.

The Student Prize for the best presentation within the 3rd EOS Topical Meeting on Advanced Imaging Techniques went to:

Matthew Foreman (Imperial College London) for his presentation on *Polarisation structured illumination and information transmission through a polarisation microscope* within the session *Polarimetry 2.*

Sami Ben Hatit (Ecole Polytechnique, Palaiseau, France) for his presentation on *Angle-resolved Mueller polarimeter using a microscope objective* within the session *Polarimetry 2.*

Chen Qian (University of Nottingham) for his presentation on *Surface plasmon assisted nonlinear widefield imaging* within the session *Novel imaging modes.*

EOS_events

Up-coming EOS events

First Mediterranean Photonics Conference

Ischia, Itlay 25-28 June 2008

An EOS Topical Meeting organized by the Italian Optics and Photonics Society

Topics:

- Materials and technologies
- Semiconductors, silicon and post silicon materials
- Polymers, carbon nanotubes, organic and metamaterials for photonics, devices and technology
- Micro and nanophotonic devices, photonic crystals
- Optical fibers, guided and integrated optics, integrated laser sources
- ...

General chair: Antonello Cutolo;

Co-chairs: Mario Armenise, Roberta Ramponi

Deadline for submission of abstracts: 20th March 2008

Contact and more information:

paola.ambrosino@unisannio.it , www.myeos.org/ischia2008

EOS_co-sponsored events

Upcoming EOS co-sponsored events

Photonics Europe [more]
7-11April 2008,
Strasbourg, France

PICALO Conference [more]
16-18 April 2008, Bejing, China

OSAV'2008 [more]
12-15 May 2008, Saint Petersburg, Russia

Laser-surface interactions for new materials production: tailoring structure and properties [more]
July 13-20, 2008 , Venice, Italy

and more....

See also: EOS event calendar

JEOS:RP_publications

New publications in JEOS:RP

ONLINE JOURNAL OF THE EUROPEAN OPTICAL SOCIETY
RAPID PUBLICATIONS

EOS European Optical Society
www.jeos.org

Several new papers were recently published in JEOS:RP, the electronic Journal of the European Optical Society: Rapid Publications.

JEOS:RP is an open-access journal. To read the full papers, please click on the links:

Numerical analysis of a slit-groove diffraction problem [07022]
P. Lalanne, M. Besbes, J.P. Hugonin, S. van Haver, O.T.A. Janssen, A.M. Nugrowati, M. Xu, S.F. Pereira, HP Urbach, A.S. van de Nes, P. Bienstman, G. Granet, A Moreau, S. Helfert, M. Sukharev, T Seideman, F. Baida, B. Guizal, D. van Labeke
https://www.jeos.org/index.php/jeos_rp/article/view/07022

Mode suppression in a microcavity solid-state dye laser [07023]
S. Popov, S. Ricciardi, A. T. Friberg, S. Sergeyev
https://www.jeos.org/index.php/jeos_rp/article/view/07023

High-efficiency wide-band metal-dielectric resonant grating for 20fs pulse compression [07024]
M. Flury, S. Tonchev, R. Fechner, A. Schindler, O. Parriaux
https://www.jeos.org/index.php/jeos_rp/article/view/07024

A Stokes-based spectro-polarimetric analysis of the amplified spontaneous emission in a semiconductor optical amplifier[07025]
M. Tariaki, F. Boulvert, F. F.L. Bentivegna, M. Guégan, J. Topomondzo, A. Sharaiha, F. Pellen, B. Le Jeune
https://www.jeos.org/index.php/jeos_rp/article/view/07025

Technology and performances of silicon oxynitride waveguides for optomechanical sensors fabricated by plasma-enhanced chemical vapour deposition [07026]
A. Sabac, C. Gorecki, M. Jozwik, L. Nieradko, C. Meunier, K. Gut
https://www.jeos.org/index.php/jeos_rp/article/view/07026

Excitation back transfer in a statistical model for upconversion in Er-doped fibres [07027]
S. Sergeyev, S. Popov
https://www.jeos.org/index.php/jeos_rp/article/view/07027

More articles are available at: www.jeos.org

Contact
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(Deputy Editor)
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JEOS: RP

JEOS:RP - news and innovations

JEOS:RP has been selected for coverage in the Elsevier Bibliographic Databases and has relaunched its website offering new features to authors and readers.

As of the first quarter of 2008, JEOS:RP will be covered by Scopus, one of the largest abstract and citation databases of peer-reviewed articles. Scopus is part of the Elsevier Bibliographic Databases. The inclusion into this well-known database gives JEOS:RP the opportunity to increase the visibility and awarness of its published articles. Within the next weeks, the first publications will be linked to the database and from there on be accessible for millions of users worldwide.

Besides, the JEOS:RP website offers several innovative features to its authors and readers. The journal website is now based on a completely new software version. Thus, citations as well as cross-links can be included (CrossRef DOI) to each article. Furthermore, the electronic journal now offers live feeds (ATOM, RSS1.0, RSS 2.0).

Authors wishing to publish their latest scientific papers in JEOS: RP are asked to contact the Deputy Editor at torok@myeos.org.
The paper must be a high quality and original contribution. It should not be submitted to any other journal for consideration.

The paper should be formatted according to the author guidelines, available at www.jeos.org.

EOS Branches

Hungarian Optical Society (HOS)

IOP Institute of Physics Optical Group

Affiliated Societies

Comité Belge d'Optique CBO - BCO Belgisch Comite voor Optica

Czech and Slovak Society for Photonics (CSSF)

FINNISH OPTICAL SOCIETY (FOS)

Nederlandse Vereniging voor Fotonica

Norsk fysisk selskap

POLSKIE TOWARZYSTWO FIZYCZNE
POLISH PHYSICAL SOCIETY

ROMANIAN OPTOELECTRONICS SOCIETY (ROS)

SOCIEDAD ESPAGNOLA DE OPTICA (SEDO)

spotlight_europe

OPERA 2015 summit meeting

OPERA2015 will hold its summit meeting on the occasion of the Photonics Europe Congress in Strasbourg, France, on the 9th of April 2008.

The OPERA2015 meeting will be divided into two parts: The first part will include a general introduction as well as a presentation of the aims, results, the OPERA2015 website and an analysis of the current situation in European optics and photonics. These important facts will be presented by the following OPERA2015 partners: *M. Wilkens* (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), *B. Snijders* (TNO), *M.-J. Antoine* (Opticsvalley) and *P. Van Daele* (IMEC).
The second part of the meeting will include a discussion dealing with the future of research and development in European optics and photonics. It will be led by the most outstanding experts and scientists, who will present strategic opportunities and sustainable business models that allow for competition with Asian and North-American countries: *Eugene Arthurs* (the Executive Director of SPIE), *David Pointer* (Managing Director at Point Source), *Mike Wale* (Bookham), *Hugo Thienpont* (Vrije Universiteit) and *Gustav Kalbe* (Photonics unit of Directorate General Information Society and Media).

OPERA2015 plays an important role for European research in optics and photonics.

More information are available at:

www.opera2015.org

spotlight_europe

Photonics21 meeting in Brussels

Photonics21 Technology Platform elected a new president.

The Board of Stakeholders elected Martin Goetzeler, CEO of OSRAM GmbH, as the new President of the European Platform at the Annual Meeting on the 5th and 6th of December 2007 in Brussels, which was sponsored by the EOS among others.

The newly elected Executive Board in detail:

President: Martin Goetzeler, CEO OSRAM
Vice Presidents: Bernd Schulte, COO Aixtron and Malgorzata Kujawinska, Warsaw University of Technology

Workgroup chairs:

- Information and Communication: Alfredo Viglienzoni, Ericsson
- Industrial Production/ Manufacturing & Quality: Peter Leibinger, Trumpf Lasertechnik
- Life Science & Health: Michael Kaschke, Carl Zeiss
- Lighting & Displays: Peter Stormberg, Philips Lighting
- Security, Metrology & Sensors: Jean-Francois Coutris, SAGEM
- Design & Manufacturing of Components & Sensors: Angela Piegari, ENEA
- Photonics Research, Education & Training: Chris Dainty, European Optical Society

More than 250 representatives from industry and academia attended the meeting. The former president, Alexander von Witzleben handed over the presidency on 6th of December in his opening talk. In 2007 the members of the Photonics21 technology platform nearly doubled to 900. 46% of the members are from Industry: (32% SME, 14% large companies). 42% are from research affiliations, 8% from associations.

In cooperation with the European Commission, Photonics21 initiated the first study on economic impact of Photonics for Europe. It contains: market information, growth rates, production volumes and employment for the European Photonics sector with specific country information for Germany, France, United Kingdom, Italy and The Netherlands. The study shows a.o. the key sectors in terms of total European production volume:

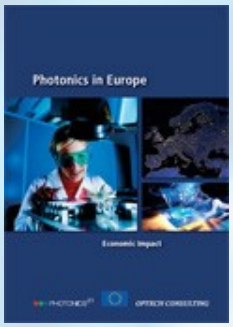
- Lighting (15%)
- Measurement & Automated Vision (14%)
- Production Technology (13%) / Medical Technology & Life Science (13%)
- Defence Photonics (12%)
- Optical Components & Systems (11%)
- Optical Communications (7%) / Solar Energy (7%)
- Information Technology (5%)
- Flat Panel Displays (3%)

EU activities

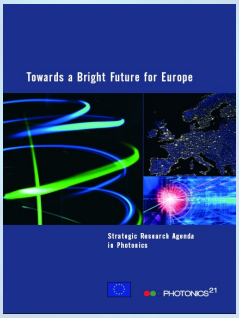
OPERA2015

... is a strategic project funded within the 6th Framework Programme of the EU and is dedicated to developing a joint strategy for optics and photonics in Europe.

The EOS is a member of the OPERA2015 consortium.
www.opera2015.org



Download the survey on photonics companies in Europe published by the European Technology Platform Photonics21 (pdf-file; 1.5 MB)



The first Photonics Strategic Research Agenda "Towards a Bright Future for Europe" was finalised in April 2006.
Download: Photonics SRA (pdf-file; 4.55 MB)

PHOTONICS21

… is a Technology Platform for all stakeholders in photonics and has more than 900 members from all over Europe and beyond.

The EOS is a member of Photonics21 and is represented in the Executive Board by the former EOS President Chris Dainty (National University of Galway, Ireland).

www.photonics21.org

FEBRUARY 2008

EOS NEWSLETTER

THE OFFICIAL PUBLICATION OF THE EUROPEAN OPTICAL SOCIETY

Diffractive Optics 2007 success

The EOS Topical Meeting on Diffractive Optics, organized by the EOS, was a great success.

The EOS Topical Meeting on Diffractive Optics (DO) was held at the University of Barcelona, Spain, in November 2007 and attracted more than 120 attendees including scientists, scholars, students, company representatives and professionals. The DO 2007 programme included around 50 oral presentations given by scientists from 15 countries, as well as the opportunity to exchange ideas at a poster session featuring nearly 60 posters. The feedback on the scientific content of the meeting was very positive. A workshop on optics modelling using LightTrans VirtualLab 3.5 was hosted by Hagen Schimmel (LightTrans GmbH) and attracted 20 participants. To round off the meeting, more that 70 delegates enjoyed the conference dinner.

Due to the positive response, Jani Tervo of the University of Joensuu in Finland (the chair of DO 2007) announced plans for a subsequent DO as an wholly EOS event. The next DO event will be held in Koli, Finland, in February 2010 and will include oral and poster presentations covering various topics within diffractive optics.

In addition to the scientific sessions, there will be time to enjoy the beautiful landscape of the Koli National Park and take part in one of the many leisure activities that will accompany the meeting. This topical meeting will certainly be a highlight among the series of previous diffractive optics congresses. Using the experience of DO 2007, the EOS has already started organizing the DO 2010 meeting.

The EOS would like to thank authors for their contributions and delegates for attending DO 2007 and look forward to welcoming everyone again in 2010. Further information will be provided as soon as it is available on our website, www.myeos.org.

Board of Photonics21 elects a new president

Martin Goetzeler is the new president of the Photonics21 Technology Platform.

Former Photonics21 president Alexander von Witzleben (left), Rudolf Strohmeier (middle) and the new Photonics21 president Martin Goetzeler (right) at the platform's annual meeting in Brussels.

The Board of Stakeholders of the Photonics21 Technology Platform has elected Martin Goetzeler, CEO of OSRAM GmbH, as its new president. Goetzeler was elected at the platform's annual meeting, which was held on 5–6 December 2007 in Brussels, and was co-sponsored by the EOS.

More than 250 representatives from industry and academia attended the annual meeting. The former president, Alexander von Witzleben, handed over the presidency on 6 December in his opening talk.

In 2007, the number of members of the platform nearly doubled to 900 with 46% of the members now coming from industry (split approximately 32% from SMEs and 14% from large companies), 42% are from research affiliations and 8% are from associations.

The details of the newly elected executive board are as follows:

- President: Martin Goetzeler, CEO OSRAM.
- Vice-presidents: Bernd Schulte, COO Aixtron and Malgorzata Kujawinska, Warsaw University of Technology.

The chairs of the workgroup are as follows:

- Information and communication: Alfredo Viglienzoni, Ericsson.
- Industrial production/manufacturing and quality: Peter Leibinger, Trumpf Lasertechnik.
- Life science and health: Michael Kaschke, Carl Zeiss.
- Lighting and displays: Peter Stormberg, Philips Lighting.
- Security, metrology and sensors: Jean-Francois Coutris, SAGEM.
- Design and manufacturing of components and sensors: Angela Piegari, ENEA.
- Photonics research, education and training: Chris Dainty, European Optical Society.

The seven workgroups have made valuable contributions throughout 2007. For example, the 2007–2008 programme "Components, systems, engineering" was derived mainly from Photonics21 research priorities. The NMP work programme 2008 "Integration of technologies for industrial applications" and "Materials" significantly considers Photonics21 input.

In the afternoon of 6 December, there were break-out sessions where specific workgroups discussed their priorities and strategy for 2008 and presented the outcome in a joint session.

To find out more see www.photonics21.org.

OPERA unveils summit talks

OPERA2015 invites you to attend its summit meeting at Photonics Europe in Strasbourg on 9 April.

OPERA2015 has released details of its summit meeting being held at Photonics Europe. The first part of the meeting will include an introduction and a presentation of the aims, results and future goals of OPERA2015. This will be followed by an analysis of the current state of the European optics and photonics market and a demonstration of the OPERA2015 website. This information will be presented by the following OPERA2015 partners: Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), Bart Snijders (TNO), Marie-Joëlle Antoine (Opticsvalley) and Peter Van Daele (IMEC).

The second part of the meeting will include a discussion regarding the future of R&D in optics and photonics across Europe. This will be led by renowned experts and scientists who will present strategic opportunities and sustainable business models that take competition with Asian and North American countries into account. Speakers will include Eugene Arthurs (the executive director of SPIE), David Pointer (managing director at Point Source), Mike Wale (Bookham), Hugo Thienpont (Vrije Universiteit) and Gustav Kalbe (photonics unit of Directorate General Information Society and Media).

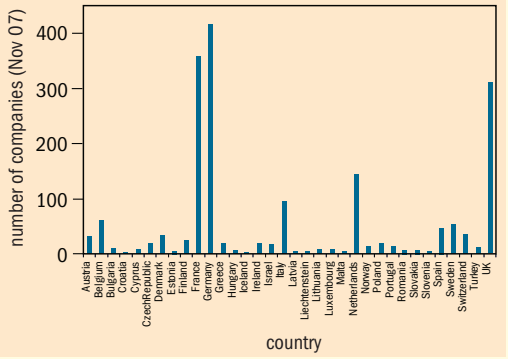
OPERA2015 plays an important role in European research into optics and photonics. Why not attend the event and convince yourself? Visit www.opera2015.org for more information. Photonics Europe will be held 7–11 April in Strasbourg, France.

Agenda for OPERA2015 summit

- Introduction: Optics and photonics in the 7th FP (Gustav Kalbe)
- OPERA2015 presentation: Aims, results and the link with Photonics21 (Markus Wilkens)
- Industry landscape (Bart Snijders)
- Research landscape (Marie-Joëlle Antoine)
- Information resource: the www.opera2015.org website (Peter Van Daele)
- Towards the future on optics and photonics research (Eugene Arthurs)
- Strategic opportunities for R&D in Europe (Mike Wale and Hugo Thienpont)
- A sustainable business model in the optics and photonics field (David Pointer)
- Final open discussion (Gustav Kalbe)

OPERA updates on its photonics database

OPERA 2015's database of European optics and photonics companies now has over 2000 entries.



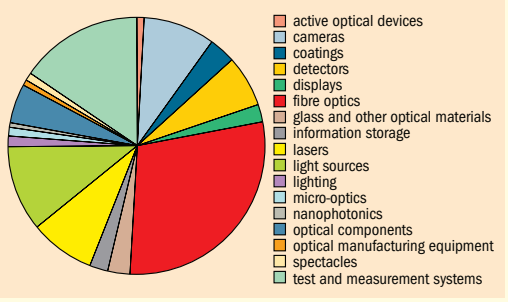


Fig. 1: Geographical breakdown of companies in the database. Fig. 2: Product areas for UK-based firms.

OPERA2015 is continuing to compile an inventory of European companies currently active in the field of optics and photonics. The general selection criterion is that the company must have a significant activity in the field. The geographical distribution of the number of companies in the OPERA2015 database is given in figure 1.

OPERA2015 can also perform detailed analysis of its current information. As an example, the distribution of product area for companies based in the UK is given in figure2.

The list of companies, including basic information such as contact details, website and product groups, is available via the OPERA2015 website, www.opera2015.org. Simply select "National Activities" on the left-hand side of the homepage and then "Industrial Activities" on the subsequent page.

More than 2000 companies have been added in the last 18 months – a result that is well above our expectations. Current estimates place the total number of companies in this field across Europe between 1000 and 5000.

We encourage all optics and photonics companies to help the OPERA2015 project by reviewing their entry in the database and checking that all of their information is up to date. Please send any additions or comments to the work-package manager at bart.snijders@tno.nl or to the contacts listed on www.opera2015.org.

Photonic devices check health

The Dutch Photonic Devices programme invites you to attend its annual meeting in April.

The Dutch innovation programme (IOP) on Photonic Devices commenced in 2005 and will run for a total of eight years. The project has a total budget of €22 m, which will be granted in four calls for research project proposals. The first call was issued in 2005/2006 and the second one will be finalized in May.

The focus of the programme is on both the photonic devices themselves as well as their application in health and medicine. The goal of the programme, issued by the Ministry of Economic Affairs, is to stimulate new research activities in the photonic devices field at universities and knowledge institutes, and to blend this research with more development-oriented activities in larger industrial companies and start-ups.

The R&D project proposals that were accepted in the first call of the Dutch Photonic Devices programme were focused on the following subjects: an infrared swept light source for high-resolution functional imaging in medicine; the use of plasmon-resonant nanoparticles for molecular imaging and the therapy of tumours; a low-cost, pen-sized Raman device; and high-resolution light detectors for radio-molecular imaging.

The realization of novel light-generation methods and detectors requires research and innovations in fields such as materials, sensors and integrated systems. In materials, this includes nonlinear optical materials for frequency conversion, photonic crystals, amplifying media for lasers and LEDs and materials for optical integration techniques. In sensors and detectors, this covers for example, CCD and CMOS technology, optical detection techniques for biosensing, imaging techniques for medical diagnostics and treatment, spectroscopy and terahertz technology. And finally, for integrated systems, this includes micro- and nano-optics, integrated optics, packaging techniques and optical production technology for high yield and mass production.

Several health and medical applications already rely on photonic devices. One example is photodynamic therapy, which is now an accepted treatment for skin tumours that uses diode-laser systems. Another example is endoscopic and laparoscopic devices that were originally designed in the 1950s and have improved greatly since then. Such developments have resulted in a much more effective use by the doctor for diagnosis and surgical therapy, and in a strongly decreased discomfort for the patient by effective miniaturization and flexibility of the probes. Medical surgery in the interior of the human body using laser welding is a widely applied technique nowadays. Another application benefiting from photonic devices is non-invasive pulse oximetry for blood-oxygen measurement.

Photonic devices are commonplace in the range of tools used in the operating theatre and are critical components in new treatments such as photodynamic therapy.

The general advantage of optical and non-invasive screening methods in health and medical technology is their relative low cost when compared with magnetic resonance or X-ray-based computer tomography techniques. With the possibility of using wide-band spectroscopic information, optical techniques are especially suited to the broad screening of large numbers of people, or even the entire population of a country. The relative low cost of an optical analysis tailors such methods to the frequent screening of a patient during their therapeutic treatment.

Each year, the Photonic Devices programme organizes a 'photonics event', comprising plenary talks, workshops and an exhibition. The next event will be held on 3 April in Utrecht, The Netherlands, and the typical attendance is 600–800 people as well as 70–80 exhibitors.

An EOS Topical Meeting on Photonic Devices will be held jointly with the Dutch photonics event between 31 March and 2 April. On the afternoon of 3 April, there will be a joint session with the photonics event and plenary talks that focus on the scientific, industrial, economic and societal aspects of photonic devices. For more details on the EOS Topical Meeting in Utrecht, see www.myeos.org.

Joseph Braat is the EOS 2006–2008 past-president.

Calendar

DATE	EVENT	LOCATION
31 March – 2 April 2008	EOS Topical Meeting on Photonic Devices and their Application in Health and Medicine	Utrecht, the Netherlands
7–11 April	Photonics Europe 2008	Strasbourg, France
16–18 April	3rd Pacific International Conference on Applications of Lasers and Optics – PICALO 2008	Beijing, China
12–15 May	2nd International Topical Meeting on Optical Sensing and Artificial Vision – OSAV 2008	St Petersburg, Russia
25–28 June	1st Mediterranean Photonics Conference	Ischia, Italy
22–25 September	ECOC 2008	Brussels, Belgium
29 September – 2 October	EOS Annual Meeting 2008	Paris, France
13–17 December	International Conference on Fibre Optics and Photonics	New Delhi, India

For more information on any of these events, please visit **www.myeos.org**.

Are you a member of the EOS?

Look at the benefits

Individual members are eligible for:

- reduced fees for *JEOS:RP* at www.jeos.org;
- a regular *EOS Newsletter* e-mail;
- reduced conference fees;
- reduced prices for EOS journals;
- free subscription to *Optics & Laser Europe*;
- and, for those living outside Germany, a 50% discount on a subscription to the German-language journal *Photonik*, published by AT-Fachverlag.

Additional benefits for corporate members:

- a company profile in the EOS directory;
- a presence on the EOS website;
- free advertisements for jobs in the EOS market;
- reduced conference fees for all employees.

EOS 2008 membership fees

Individual members (who do not belong to a branch or affiliated society of the EOS): **€40**
Students (who do not belong to a branch or affiliated society of the EOS): **€10**
Corporate members (regardless of the number of employees of the company or members of the institute): **€200**

Individual members of the branches SFO (France), DgaO (Germany), HOS (Hungary), SIOF (Italy), LAS (Russia), SOS (Sweden), SSOM (Switzerland) and the Optical Group IOP (UK) are automatically full individual members of the EOS. Individual members of the affiliated societies Promoptica and CBO-BCO (Belgium), CSSF (Czech and Slovak Republic), DOPS (Denmark), FOS (Finland), the Optics Division of the Norwegian Physical Society (Norway), the Optics Division of the Polish Physical Society (Poland), ROS (Romania) and SEDO (Spain) are automatically associate members of the EOS.

Membership information

To find out more about joining the EOS, contact Klaus Nowitzki, executive director, Hollerithallee 8, D-30419 Hanover, Germany (tel +49 (0)511 2788 115; e-mail info@myeos.org; web **www.myeos.org**).

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EOS Newsletter **is produced for the European Optical Society by IOP.**

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EOS IOP

EOS European Optical Society — Coherence for Europe ®

EOS Member Newsletter

April 2008

Topics in this issue:

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EOS_events

EOS Annual Meeting 2008: Submit your abstract by 6th June 2008

The Scientific EOS Annual Meeting 2008 will be held in Paris, France, from 29 September to 02 October at the occasion of the OPTO-exhibition (30 September to 02 October) at Paris-Nord Villepinte, Parc d'expositions et Centre de Conventions.

Roberta Ramponi is the General Chair of the EOS Annual Meeting 2008

TOM 1: Biophotonics
Chairs: Gert von Bally, Westfaelische Wilhelms-Universitaet (DE); Ivo Rendina, IMM – National Council of Research (IT); Mark Neil, Imperial College London (GB)
http://www.myeos.org/EOSAM_2008_TOM1
Featuring a half day workshop on Biophotonics Business: Opportunities and challenges for European companies
http://myeos.org/node/566#workshop

TOM 2: Terahertz - Science and Technology
Chairs: Paul Planken, Delft University of Technology (NL); Martin Koch, Technische Universitaet Braunschweig (DE)
http://www.myeos.org/EOSAM_2008_TOM2

TOM 3: Nanophotonics, Photonic Crystals and Metamaterials
Chairs: Richard De La Rue, University of Glasgow (GB); Concita Sibilia, Università di Roma I (IT)
http://www.myeos.org/EOSAM_2008_TOM3

TOM 4: Micro- and Nanoscale Photonic Systems
Chairs: Juergen Jahns, FernUniversitaet in Hagen (DE); Erez Hasman, Technion (IL); Hugo Thienpont, Vrije Universiteit Brussel (BE)
http://www.myeos.org/EOSAM_2008_TOM4

TOM 5: Organic Photonics
Chair: Guglielmo Lanzani, Politecnico di Milano (IT)
http://www.myeos.org/EOSAM_2008_TOM5

TOM 6: Nonlinear Optics: Materials, Devices and Spatio-Temporal Effects
Chairs: Cornelia Denz, Westfaelische Wilhelms-Universitaet (DE); Gilles Pauliat, Institut d'Optique - Graduate School, (FR); Robert Kuszelewics, CNRS-LPN (FR)
http://www.myeos.org/EOSAM_2008_TOM6

TOM 7: Dynamical Optics
Chairs: Gordon Love, Durham University (GB); Chris Dainty, National University of Ireland (IE); Michael Totzeck, Carl Zeiss SMT AG (DE)
http://www.myeos.org/EOSAM_2008_TOM7

EOS Workshop on Masters and PhD Education in Photonics
Chairs: Chris Dainty, National University of Ireland, Galway (IE); Pierre Chavel, Institut d'Optique - Graduate School, Orsay (FR)
http://www.myeos.org/EOSAM_2008_Workshop

Société Française d'Optique French Branch of the EOS

OPTO

Abstract submission
Deadline: 6th June 2008
Notification to authors: 10th July 2008
Deadline for early-bird registration: 29th August 2008

Guidelines for abstracts:
www.myeos.org/abstractguidelines

Contact
Petra Bindig
paris@myeos.org
http://www.myeos.org/EOSAM_2008

inside_EOS

Board Elections 2008: List of candidates

2008 is an election year for the EOS Board and the membership have now nominated their candidates.
The nominees are:

- Pedro Andres (ES)
- Thomas Graf (DE)
- Emmanouil Kriezis (GR)
- Gilles Pauliat* (FR)
- Thomas Pearsall (FR)
- Giancarlo Righini (IT)
- Peter Török* (GB)
- Paul Urbach (NL)
- Valentin Vlad (RO)

* These two candidates are standing for re-election for a second term.

As in 2004 and 2006, the elections will be held electronically via the EOS website. At the beginning of June, every member will receive his/her login for the 2008 elections. The elections will be open from early June through August.

Candidate profiles
www.myeos.org/elections2008
(available in the middle of April)

Contact
David Briers
(EOS Election Officer)
david.briers@physics.org

inside_EOS

EOS Prize Nominations 2008

The purpose of the prize is to encourage a European dimension in research in pure or applied optics. Any member of the EOS is requested to propose an author of a research paper for the EOS Prize 2007.

The purpose of the prize is to encourage a European dimension in research in pure or applied optics. Any member of the EOS is requested to propose an author of a research paper for the EOS Prize 2008.

Deadline for nominations:
Monday, 19th May 2008
23:59 hrs GMT.

Conditions for eligibility are:
i) That the work was performed in Europe
ii) That the work is published under the auspices of the EOS (for example in an EOS journal or at an EOS Topical Meeting)
iii) That the work has not been awarded before by another prize committee.
The work should be officially available in form of an electronic version of the text, a printed version from a scientific journal or proceedings. Summaries only will not be considered by the prize committee. If no proceedings were edited from the organizer of the EOS Topical Meeting, a publication in an appropriate European journal will also be accepted.

Criteria:
a) High professional / academic / technical quality
b) Work which is a collaboration between more than one European country will be viewed favourably
c) Work with adequate scientific content performed in an industrial company is strongly encouraged for a proposition to the prize committee.

The **Prize Rules** and the **Nomination Form** are available at:
http://www.myeos.org/members/price.

Contact
Petra Bindig
bindig@myeos.org

The EOS Prize 2007 was awarded to:

M. Lassen [1,2], V. Delaubert [1,3], C.C. Harb [1,4], P.K. Lam [1], N. Trebs [3], H.-A. Bachor [1]

([1] The Australian National University, Australia; [2] DTU, Denmark; [3] Laboratoire Kastler Brossel, France; [4] The University of New South Wales , Australia)

for their outstanding contribution on

"Generation of squeezing in higher order Hermite-Gaussian modes with an optical parametric amplifier"

Published in the Journal of the European Optical Society – Rapid Publications Vol 1, 06003 (2006)

ONLINE JOURNAL OF THE EUROPEAN OPTICAL SOCIETY
RAPID PUBLICATIONS
EOS European Optical Society
www.jeos.org

inside_EOS

EOS Fellow Nominations 2008

Members of the EOS are invited to nominate candidates for the category of Fellowship. The category of EOS Fellow may be conferred upon distinguished members of the society. It is the highest category of membership of the EOS and up to 2% of the membership may be elected to the Fellowship.

It is expected that Fellows will play a leading role in guiding and advising the Society. A candidate for Fellowship must be a member of the EOS. Membership dues are the same as for normal members of the Society.

Successful nominees will have one or more of the following qualities:

- Have made outstanding research contributions to optics and photonics, through published papers, books, conference presentations, patents or other published material.
- Have served the optics and photonics community by teaching or training, or by industrial leadership, or by service as an Editor, conference organiser or other professional service.
- Have made a special contribution to the European Optical Society.

Any member of the EOS may nominate up to *three candidates* for Fellowship. A nomination form must be completed for each candidate by downloading the form and submitting by FAX, as an email attachment, or by regular mail. Each nomination must be supported by:

- *Two letters of support*, of which at least one must be from another EOS member: the letters of support should address the criteria for Fellowship listed above.
- A short biography/CV of the candidate, *not to exceed five pages*.

The nomination form and supporting material must be received by the closing date:

Monday, 19 May 2008, 23:59 GMT

All applications will be considered by the Fellows Committee (Chairman: Joseph Braat, Past President of the EOS).
Any application not successful will be carried over for updating and consideration for up to three consecutive years.

Documents
List of Fellows:
http://www.myeos.org/files/EOS_Fellows.pdf

Nomination Form:
http://www.myeos.org/files/EOS_Fellows_2008-Nomination.doc (MS Word version)
http://www.myeos.org/files/EOS_Fellows_2008-Nomination.pdf (pdf version)

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EOS_events

Russian-European Match-Making Event sets basis for joint FP7 projects

On 12 March 2008, alongside the PHOTONIKA 2008 exhibition in Moscow, the EOS and the Laser Association (LAS) organized a match-making event with 60 European and Russian photonics experts to identify partners for FP7 photonics projects. Outcome: 10 possible joint projects.

Russia has outstanding researchers in the field of Photonics - three Nobel Prize Winners are solid evidence and a good enough reason for the Photonics Unit of the European Commission to foster the integration of Russia in FP7 research projects. In order to evaluate common interests the Photonics Unit proposed this match-making event and the Laser Association actively supported this idea.

Prof. Ivan B. Kovsh (President of the Laser Association) and Thierry van der Pyl (Head of the Photonics Unit of the European Commission).

Thierry van der Pyl explains the Commisssion's expectations of the cooperation with Russia.

Based on the interests of the participants, the EOS and LAS organised 45-minute face-to-face meetings for 34 Russian and 26 European photonics experts to discuss their ideas for joint FP7projects. "90 percent considered these meetings as fruitful and will follow-up on their first discussions. Some have already agreed upon the next steps for a common project proposal within the scope of the next calls-for-proposals of the EC Photonics unit, and more than 10 possible joint projects were formulated." says Klaus Nowitzki, Executive Director of the EOS.

Thierry van der Pyl, Head of the EC Photonics unit, outlined the Commission's expectations regarding the cooperation with Russia and gave a short overview of the funding possibilities. Integrating the most relevant Russian partners in a project proposal is surely positive". The LAS President, Ivan B. Kovsh, and Thierry van der Pyl are optimistic about the future of Russian-European cooperations in the field of photonics. Together with the Secretariat of the 'Photonics21' Technology Platform it is planned to improve the continuous information exchange with regard to the European Research Agenda on Photonics.

The event was organized within the scope of the Phorce21 project and in cooperation with the Photonics21 Secretariat.

It was supported by the Association of European Businesses in Russia.

More information:
Photonics Unit of the European Commission:
http://cordis.europa.eu/fp7/ict/photonics/home_en.html
Laser Association (LAS):
http://www.cislaser.com/eng/default.htm
Photonics21 Technology Platform:
http://www.photonics21org
Association of European Businesses in Russia:
http://www.aebrus.ru

Contact:
Klaus Nowitzki (EOS)
nowitzki@myeos.org
Ivan B. Kovsh (LAS)
las@tsr.ru

EOS_events

Pre-announcement: World of Photonics Congress 2009

The World of Photonics Congress is the leading international congress for optical technologies in Europe. It is held in conjunction with LASER. World of Photonics (15 - 18 June 2009, Munich, Germany).

The World of Photonics Congress 2007 recorded substantial growth figures. Leading scientists from throughout the whole world presented their research result in six individual conferences, which took place under the auspices of the World of Photonics Congress. They showed the future scenarios of optical technologies in more than 2,300 speeches and presentations (2005, 1,800).

Preparations for the next congress are already well underway and the EOS will organise three conferences within the scope of WOP 2009:

Frontiers in Electronic Imaging
Chair: Peter Seitz, Swiss Center for Electronics and Microtechnology, Zurich, Switzerland

Manufacturing of Optical Components
Chair: Klaus-Friedrich Beckstette, Carl Zeiss SMT AG, Oberkochen, Germany

Dates and deadlines:
Publication of the call for papers: June 2008
Notification to authors: 15 February 2009
Publication of the programme: 01 March 2009

Congress programme and organizing Parties:
CLEO Europe/EQEC (OSA, EPS, IEEE/LEOS)
ECBO – European Conference on Biomedical Optics (OSA, SPIE Europe)
LIM – Lasers in Manufacturing (WLT)
Optical Metrology (SPIE Europe)
EOS Topical Meetings (EOS)
Medical Laser Applications (DGLM)
Industry Workshops (MMG and partners)

Contact
European Optical Society (EOS)
Email: munich@myeos.org

EOS Branches

Hungarian Optical Society (HOS)

Société Française d'Optique French Branch of the EOS

Affiliated Societies

Comité Belge d'Optique CBO - BCO Belgisch Comite voor Optica

Czech and Slovak Society for Photonics (CSSF)

FINNISH OPTICAL SOCIETY (FOS)

ROMANIAN OPTOELECTRONICS SOCIETY (ROS)

SOCIEDAD ESPAGNOLA DE OPTICA (SEDO)

EOS_co-sponsored events

Upcoming EOS co-sponsored events

OSAV'2008 [more]
12-15 May, Saint Petersburg, Russia

ECONOS 2008 & MicroCARS 2008 [more]
25-27 May, Igls, Austria

The 7th Workshop on Information Optics [more]
1 – 5 June, Annecy, France

CGIV 2008/MCS'08 [more]
9-13 June, Terrassa-Barcelona, Spain

Nanophotonics Summer School [more]
16 - 20 June, Santander, Spain

Optics within Life Sciences-10 [more] 2-4 July, Singapore

Laser-surface interactions for new materials production: taloring structure & properties [more]
13-20 July, Venice, Italy

2nd International Workshop on Liquid Crystals for Photonics [more]
21-23 July, Cambridge, UK

More at: EOS event calendar

JEOS:RP_publications

New publications in JEOS:RP

ONLINE JOURNAL OF THE EUROPEAN OPTICAL SOCIETY RAPID PUBLICATIONS

European Optical Society www.jeos.org

Several papers were recently published in JEOS:RP, the electronic Journal of the European Optical Society: Rapid Publications. JEOS:RP is an open-access journal.

VOLUME II:

Tolerancing of single point diamond turned diffractive optical elements and optical surfaces [07028]
R.F. Bittner [more]

Third Order Bragg Grating Filters in Small SOI Waveguides [07029]
S. P. Chan, V. M.N. Passaro, G. Z Mashanovich, G. Ensell, G. T. Reed [more]

Polarization and coherence for vectorial electromagnetic waves and the ray picture of light propagation [07030]
A. Luis [more]

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Contact
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spotlight_europe

Unlocking Europe's potential for innovation: EP vote gives green light to the European Institute of Innovation and Technology (EIT)

On March 11, the European Parliament adopted the Regulation establishing the European Institute of Innovation and Technology (EIT).

Welcoming the Parliament's vote, European Commission President José Manuel Barroso stated: "I am delighted with this decisive step forward towards establishing the EIT. The EIT is set to become an important feature of Europe's innovation landscape. It will facilitate and enhance partnerships and co-operation between the worlds of business, research and higher education across the European Union, thereby helping to continue to boost jobs and growth in Europe in the future."
Commenting on the successful completion of this legislative process, the President added: "Today, all parties involved have clearly re-confirmed their determination to see the EIT through."

To boost Europe's innovation capacity, the EIT will operate on the basis of highly integrated partnerships known as "Knowledge and Innovation Communities". These KICs will pool together a critical mass of the best resources from higher education institutions, research organisations, businesses and other stakeholders in the innovation process. They will be selected and coordinated by an independent Governing Board, composed of 18 renowned personalities from business, research and academia. The involvement of business at both the strategic and operational levels is the cornerstone of the whole EIT initiative.
The Governing Board members will be appointed in June 2008. In January, the Commission already set up an ad-hoc Identification Committee whose task is to identify and propose future members of the Board. In this capacity, the Committee has just launched an open consultation on the main criteria to be taken into account. The entire identification process is expected to take approximately four months.
The first two or three KICs will be selected within 18 months after the appointment of the Governing Board. The focus will be on strategic areas where the EU faces vital current and future challenges. These are likely to include climate change, renewable energies and the next generation of information and communication technologies.
Following the adoption of the Regulation, the European Council will decide on the location of the EIT's future headquarters, possibly as early as June this year.

Source
http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/414&format=HTML&aged=0&language=EN&guiLanguage=en

EIT Website
http://ec.europa.eu/eit/

spotlight_europe

First projects launched under FP7 now profiled on CORDIS

One year into the Seventh Framework Programme (FP7) and action is well underway, with the third call for proposals currently active.

Information on the first projects accepted for funding under FP7 has now also been published on CORDIS, the EU's official information service for research and development. The profiles of 133 projects in the ICT research theme are now available online, with projects in nanoelectronics, software and security represented. The first call for project proposals represented a total budget of just over €1 billion. More project profiles will be published on CORDIS as information becomes available, throughout 2008.
The new FP7 projects can be consulted by selecting the 'Programme acronym' FP7-ICT in the CORDIS Search at:
http://cordis.europa.eu/search/index.cfm?fuseaction=proj.advSearch
Dedicated project search interfaces for the FP7 and ICT services are currently under development. For information on new calls see the FP7 service, and in particular for ICT, see: http://cordis.europa.eu/fp7/ict/.
Source: http://cordis.europa.eu

Nanophotonics Roadmap

MONA Merging Optics & Nanotechnologies

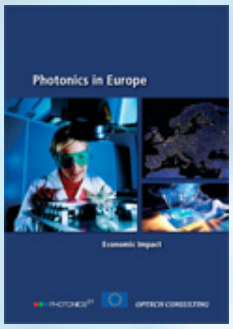
The ultimate objective of the MONA project (Merging Optics and Nanotechnologies) was the development of a European roadmap for nanophotonics. Almost 300 people from industry and academia have been involved in the construction of this roadmap, which gives insight into the future of materials, equipment, processes and applications.
The MONA Nanophotonics Technology roadmap is now available for download from www.ist-mona.org.

EU activities

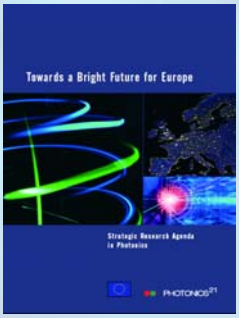
OPERA 2015

... is a strategic project funded within the 6th Framework Programme of the EU and is dedicated to developing a joint strategy for optics and photonics in Europe.

The EOS is a member of the OPERA2015 consortium.
www.opera2015.org



Download the survey on photonics companies in Europe published by the European Technology Platform Photonics21 (pdf-file; 1.5 MB)



The first Photonics Strategic Research Agenda "Towards a Bright Future for Europe" was finalised in April 2006.
Download: Photonics SRA (pdf-file; 4.55 MB)

PHOTONICS 21

… is a Technology Platform for all stakeholders in photonics and has more than 900 members from all over Europe and beyond.

The EOS is a member of Photonics21 and is represented in the Executive Board by the former EOS President Chris Dainty (National University of Galway, Ireland).

www.photonics21.org

inside_EOS

OPERA2015 Summit in Strasbourg

On 9 April 2008, during the Photonics Europe Congress in Strasbourg, OPERA2015 presented the results of extensive research into the industrial and academic research infrastructure throughout Europe.

The first part of the meeting included an introduction and a presentation of the aims, results and future goals of OPERA2015, followed by an analysis of the current state of the European optics and photonics market and a demonstration of the OPERA2015 website.
The second part included a discussion about the future of optics and photonics R&D in Europe. Renowned experts presented strategic opportunities and sustainable business models that took competition with Asian and North American countries into account.

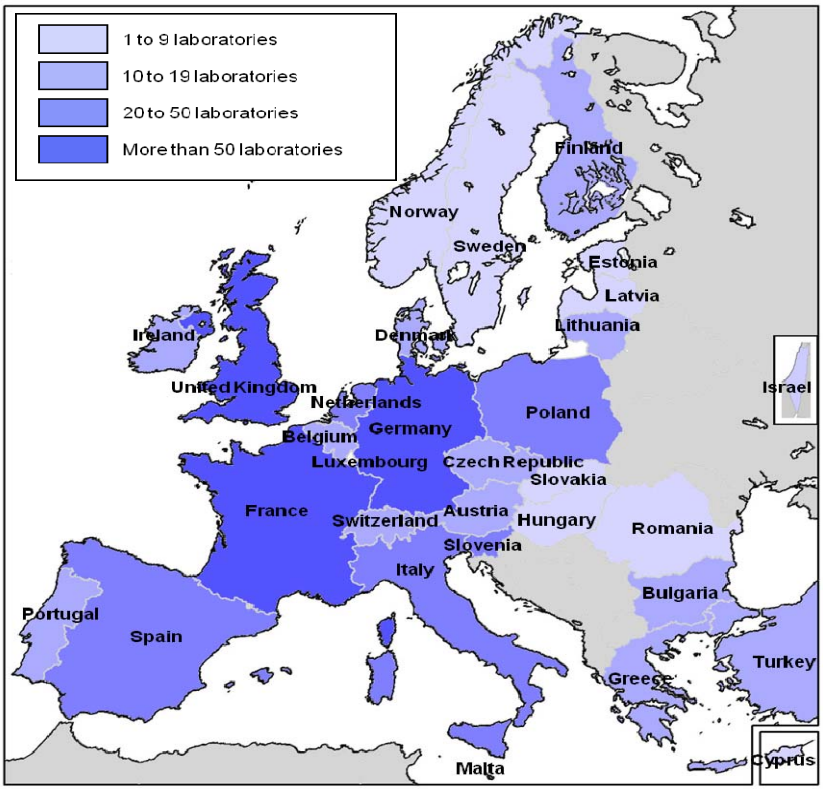
Photonics funding in 2009/2010
Gustav Kalbe from the European Commission presented the Commission's plans for photonics funding in 2009 and 2010. According to the provisional budget the EC plans to spend 90M€ for photonic components (organic & disruptive (in tune): 30 M€, photonic components for multi-apps: 60 M€). It is not yet determined when the relevant calls will be published, but it is clear that the Commission will shift its focus towards more long-term research objectives.

OPERA2015 Reports
With the reports on photonics companies and research groups and institutes in Europe, OPERA2015 presented two more deliverables.
The report on photonics companies in Europe compiles information about more than 2000 companies and includes country profiles as well as a product groups and market field analysis.
This first comprehensive report on European research groups and institutes active in the field of Photonics analysed 65 research areas and identified 10 main research areas. The analysis of the research areas shows that the strengths of European research are:

- Lasers and their applications
- Spectroscopy and Measurement systems
- Nanophotonics and Quantum optics
- Biophotonics

The included country profiles are based on the analysis of more than 600 research groups (see also http://www.myeos.org/files/events/opera/report_europeanresearch.pdf).

The OPERA2015 project is now completed and will be integrated in the Photonics21 European Technology Platform. The OPERA information resources will be made available through www.photonics21.org. The partners are: VDI Technologiezentrum GmbH VDITZ, the Netherlands Organisation for Applied Scientific ResearchTNO, Enterprise Ireland EI, Interuniversity Microelectronics Center IMEC, European Optical Society EOS and Opticsvalley – Association promouvoir la vallée de l'optique.



Programme and presentations :

Introduction. Optics and Photonics in the 7th FP
Gustav Kalbe (Head of Section - Photonics, Information Society & Media Directorate General, European Commission)
http://www.myeos.org/files/events/opera/gustav_kalbe.pdf

OPERA2015 Introduction. Aims, Results and the link with Photonics21
Markus Wilkens (VDI Technologiezentrum and Secretariat of the European Technology Platform Photonics21)
http://www.myeos.org/files/events/opera/markus_wilkens.pdf

Industry landscape
Bart Snijders (TNO Science and Industry)
http://www.myeos.org/files/events/opera/bart_snijders.pdf

Resource for photonics: website
Peter van Daele (Ghent University - IMEC)
http://www.myeos.org/files/events/opera/peter_vandaele.pdf

Towards the future on optics and photonics research
Eugene Arthurs (SPIE and Photonics21)

Strategic opportunities for R&D in Europe
Mike Wale (Bookham, UK)
Hugo Thienpont (Vrije Universiteit)
http://www.myeos.org/files/events/opera/mike_wale.pdf

A sustainable business model in the optics and photonics field
David Pointer (Point Source)

Contact and more information:
Markus Wilkens (VDI Technologiezentrum)
wilkens@vdi.de
www.opera2015.org

Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Deliverable: 6.4
REPORT ON THE EVENT "OPERA2015 SUMMIT"
(Final report)

Due date of deliverable: 30.04.2008
Actual submission date: 30.04.2008

Start date of project: 01.04.2005 Duration: 37 month

Organisation name of lead contractor for this deliverable: Idetra

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	PU
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)	

INDEX

1. Introduction

The workpackage 6 has had as main objective to ensure the dissemination of OPERA2015 results among the scientific and industry community as well as the broad public. To achieve it, the consortium has approached the broad public through several means in order to make them sensitive for the key technology Optical Technologies.

This project has strongly fostered the Europe-wide dialogue between research, industry and governmental bodies, initiating and coordinating publicly funded research programs. The dissemination and PR activities were directed in three directions:

- ✓ Raising awareness among the public and improving considerably the presence of Optics and Photonics in the broad media across Europe.
- ✓ Informing the Optics and Photonics scene and making relevant information and knowledge broadly available
- ✓ Making public and political representatives sensitive for the European OP strategy and engaging in related activities.

At the end of the project, an OPERA 2015 event was organized as a forum to present the strategic vision for Optics and Photonics in the European Research Area, OPERA 2015. VDI and IDETRA were mainly in charge of its organization, although the collaboration of all the partners was required.

The final event, called OPERA2015 Summit, was celebrated the month 37th, which acted as the forum to present the strategic vision of Optics and Photonics in the European Research Area- OPERA2015.

Furthermore the final event, other activities have been used for disseminate OPERA2015 results, as for example: conferences, website, OLE magazine, EOS newsletters and fairs where brochures and posters were delivered.

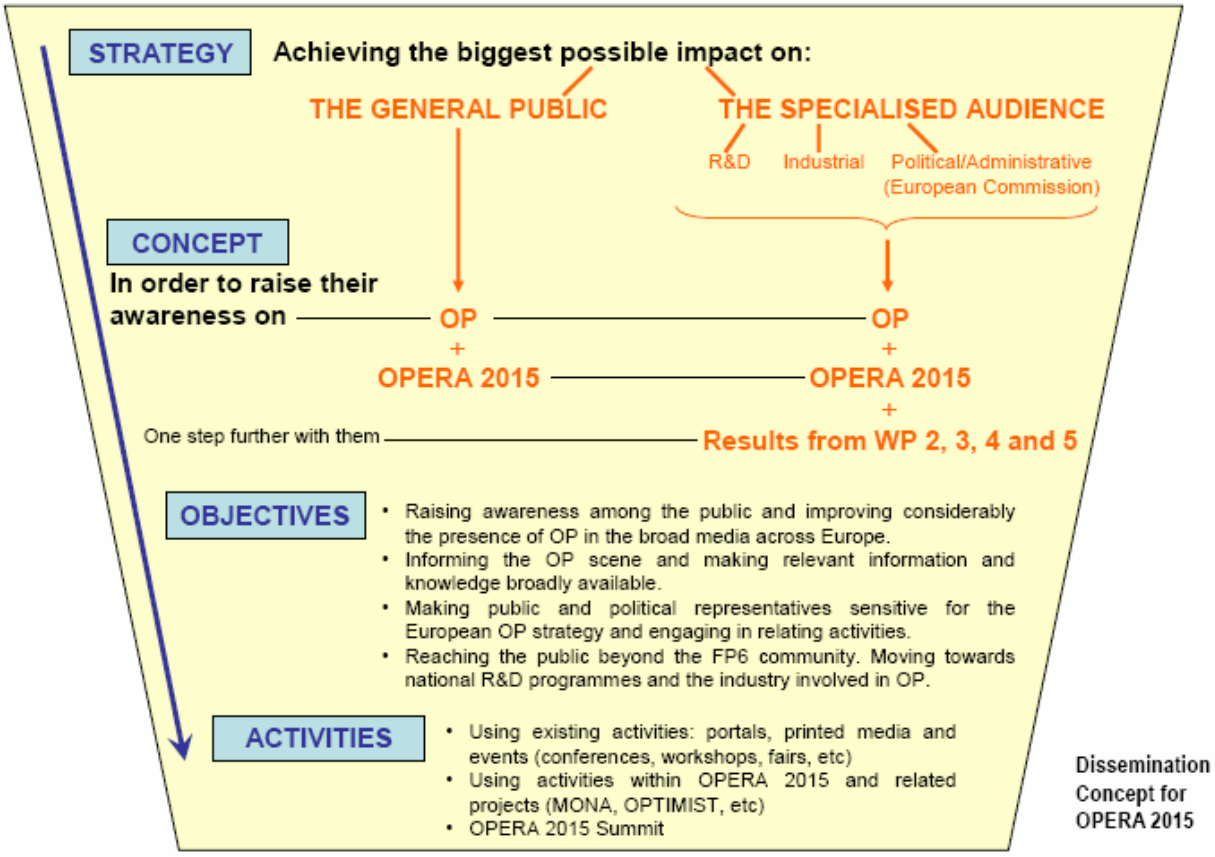
2. Aim and focus

Optics and photonics are two of the most important technologies for markets in the 21st century. It influences on all aspects of our lives and is essential to Europe´s industrial competitiveness. Many important European industries (manufacturing, lighting, health, life-science, space, defence and transport among others) rely on the same fundamental mastery of light. Without strong European leadership in optics and photonics technologies, these industries will be left vulnerable to the fierce global competition from the US and Asia.

As the optics and photonics industry and research in Europe has already become complex and multidisciplinary, the main goal of OPERA2015 is to try that the research and business in optics and photonics were not so fragmented by their determined objectives and products; because consequently Europe could lack a concerted effort to develop the fundamental scenes, technologies, components and systems that together

drive all applications. This is the reason of the OPERA[2015] existence, because we think that the best way to fight against this threaten is through an excellent exchange of information.

Due to it, OPERA[2015] has helped to coordinate such wide and comprehensive information of this field in a website (www.opera2015.org), a forum for interaction of European IST-research, where it could be found: articles, news, events, innovative projects, an exhaustive database in laboratories and companies and even market analysis.



Dissemination Concept for OPERA 2015

The Opera2015 Summit had as main aims:

- ✓ to introduce itself to those who still did not know what Opera2015 is,
- ✓ to show its results to those who have been interested in the project progress, to those who have been following Opera2015 steps and
- ✓ to analyze the current situation in Europe concerning to the Optics and Photonics field from the points of view of:
  - o industry
  - o research
  - o business
  - o politics

3. Methodology

The methodology followed to organize the Summit event has been the following one:

1. Search the most adequate event.

The chosen event has been the Photonics Europe Congress, held in Strasbourg, during the second week of April 2008. This congress was chosen because of:

- ✓ its date; it is held approximately closed to the final of the Opera2015 project.
- ✓ its importance in the Optics and Photonics World.

Photonics Europe is characterised by bringing together different disciplines, technologies, and perspectives from across Europe and around the world. For this reason, it was thought that a great amount of participants would come to this congress where research was introduced, new contacts could be developed, etc.

The most notorious characteristics of this congress and the reason for what Opera2015 wanted to be there, to be co-participant of such important event were:

- ✓ Photonics Europe was composed of conferences, workshops, seminars, and an exhibition that combine into a dynamic learning environment
- ✓ Photonics Europe had programmes and experts on industry and new business development
- ✓ Photonics Europe served as the platform for new information and updates on the Seventh framework Programme of the European Community for research, technological development and demonstration activities (FP7) in the ICT theme.

Our participation in that event was found in the “Special Forums and Events”, and at the same time within the Industry Events - Industrial Perspectives Programme.

To sum up:

Event	Photonics Europe Congress 2008
Programme	Special Forums and Events / Industry Events / Industrial Perspectives Programme
Date	9th of April 2008
Schedule	13:30 – 17:15

2. Agreement with organizers

SPIE Europe

06 July 2007

SPIE Europe Ltd.
2. Alexandra Gate
Ffordd Pengam
Cardiff CF24 2SA
United Kingdom
Phone: +44-(0)29 – 2089 4747
Fax: +44 – (0)29 – 2089 4750
info@spieeurope.org

Irene Sánchez Nieto
Gestor de I+D+i
R&D and Innovation Consultant
IDeTra
c/ Hermosilla 48, 3º izda
28001Madrid
Spain

Dear Irene,

SPIE Europe is pleased to invite an invitation to the Optics & Photonics in the European Research Area network (OPERA) to serve as a cooperating organization for SPIE Europe's Photonics Europe which will again take place from 7 – 11 April 2008 in Strasbourg, France. Photonics Europe 2008 expects over 2,100 attendees and provides a broad-based forum for international exchange and networking in the field of optics and photonics. We believe this symposium will be of strong interest to OPERA members and constituents, and appreciate the support you have provided to previous Photonics Europe symposia.

In accepting this invitation, your network would have no financial or legal obligation or risk for the event. The benefits of serving as a cooperating organization that are afforded to your network include that SPIE Europe will:

- List your organization's name/logo as a cooperating organization on all promotional materials and web pages publicizing the event
- Provide you with a room on Friday, 11 April, to hold a network meeting.
- Provide your organization with a quantity of calls-for-papers and advance programmes to distribute to your members/constituents. Alternatively, SPIE Europe will provide an electronic file of these programmes for dissemination.

In return, to help your members to become aware of this meeting, OPERA agrees to:

- List this meeting on your print and on-line conference calendar(s), and link to it from your web-based calendar
- Provide SPIE Europe with up to 5,000 mailing labels and/or electronic email contact addresses for use in promoting the meeting,
- Distribute up to two emails to your members/constituents announcing the meeting utilizing promotional text provided by SPIE Europe.

Should there be interest amongst your members to exhibit as part of a cluster pavilion, we will be pleased to discuss a group booking with you.

Please advise us of our acceptance by email or fax at your earliest convenience. To ensure that we are using your most up-to-date logo, I would also appreciate if you could forward a printable version of it.

We look forward to hearing from you and working with your organization on this important meeting.

Sincerely,

Karin Burger
Manager Europe

3. Prepare the Agenda

OPERA2015 PROGRAMME	
PHOTONICS EUROPE CONGRESS (STRASBOURG, 9TH APRIL 2008)	
13:30	**Introduction. Optics and Photonics in the 7th FP** Gustav Kalbe (Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)
13:45	**OPERA2015 Presentation. Aims, Results and the link with Photonics21** Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21)
14:00	**Industry Landscape** Bart Snijders (TNO Science and Industry)
14:20	**Research Landscape** Marie-Joëlle Antoine (Opticsvalley)
14:40	**Information Resource: The Website www.opera2015.org** Peter Van Daele (INTEC, Ghent University - IMEC)
15:00	**BREAK**
15:15	**Towards the future on Optics and Photonics Research** Dr. Eugene Arthurs (SPIE and Photonics21)
15:35	**Strategic Opportunities for R&D in Europe** Mike Wale (Bookham UK) Hugo Thienpont (Vrije Universiteit)
16:15	**A sustanaible business model in the optics and photonics field** David Pointer (Point Source)
16:45	**Final Open Discussion** (chairman: Gustav Kalbe, Head of Sector - Photonics, Information Society & Media Directorate General, European Commission)

4. Announce the Summit in Opera2015 website

5. Search Summit speakers / Keep in touch with them

As it has been commented, this event was divided into two different parts. The first part was performed by some of OPERA2015 partners as: *Markus Wilkens* (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), *Bart Snijders* (TNO), *Marie-Joëlle Antoine* (Opticsvalley) and *Peter Van Daele* (IMEC). Here OPERA2015 was introduced to all the attendees, consequently it was explained its aims, results, its website importance as well as an analysis of the current situation in the industrial, research and business landscape in the European scene in optics and photonics field.

Along the second part, some of the most outstanding experts and scientists as: *Eugene Arthurs* (the Executive Director of SPIE), *David Pointer* (Managing Director at Point Source), *Mike Wale* (Bookham), *Hugo Thienpont* (Vrije Universiteit) and *Gustav Kalbe* (Photonics unit of Directorate General Information Society and Media) will discuss about the future of the European research and development in optics and photonics from diverse points of view: research, industry and politician.

The reason for having chosen these experts is clearly explained when their abridged curricula are read. Their high knowledge in this subject as well as their exceptional capacity of communicating, make them to be the best options for this event.

Gustav Kalbe
In 1995 he began working as a project manager in photonic networks at Belgacom S.A., where he was R&D manager when he left the company. In 1998 he joined the Directorate General Information Society & Media of the European Commission where he has been working since. He started working as a Project Officer, managing research projects addressing optical telecommunications (4th Research Framework Program "ACTS"). At the start of the 5th Research Framework Program, in 1999, he joined the "Future & Emerging Technologies" (FET) unit, whose mission is to support ICT related, visionary and risky long term research of a foundational nature. There he was a Project Officer managing research projects dealing with Photonics and Quantum Information Processing & Communications. At the beginning of the 6th Research Framework Program he took over the responsibility of managing the FET-Open research program, a bottom-up research scheme to fund ICT related research of a foundational nature.
Since January 2007 Gustav Kalbe is working in the newly created Photonics unit of Directorate General Information Society and Media.

	Eugene Arthurs Eugene Arthurs is currently Executive Director of SPIE – The International Society for Optical Engineering – which is the leading organization serving the optics and photonics community. Prior to joining SPIE, Arthurs spent 25 years in industry in the US. Arthurs led development in industry and government sponsored projects with universities in the UK and in the US. His career also involved joint projects with government laboratories such as Sandia, Lawrence Livermore National Laboratory, and NIST, and contract work for corporations such as Dupont, IBM and ITW. Arthurs serves on the Advisory Board of the Photochemical Research Center at Bowling Green State University. He is also an elected member of the Board of Directors of the Council for Optical Radiation Measurements.

	Michael Wale Director Active Products Research Bookham: founded in 1988 as a UK company, Bookham made history as the first company in the world to manufacture components that integrated optical processing functions on a silicon chip using high-volume production methods. In 2004, Bookham redomiciled to the US and is now a publicly traded company on NASDAQ. Bookham designs, manufactures and markets optical components and subsystems that enable broadband communications. In 2006, Bookham acquired Avalon Photonics based in Zurich, Switzerland. Avalon is a leading provider of single-mode and multi-mode Vertical Cavity Surface Emitting Lasers (VCSEL) chips, arrays and subassemblies for sensing and datacom applications.

	David Pointer He is the Managing Director at Point Source. Point Source: designs and manufactures high performance fiber optic laser delivery systems and lasers for commercial applications in biotechnology and semiconductor manufacturing. Point Source has been chosen as one of four finalists in The AXA Small to Medium Sized Business of the Year Award category of the National Business Awards South East Regional Programme 2007. Point Source wins award for 405nm fiber-coupled laser. Speech: A sustainable business model is one that will survive the founders and current management team. It has long-term goals for factors other than finance. It is based on great ideas that can be turned into profitable products and services. It will create wealth and sustainable employment for the national and local economy.

	Hugo Thienpont (not participated. Two session in parallel) He is the author of more than 105 SCI-stated journal papers and around 350 publications in international conference proceedings. He edited more than 15 conference proceedings and authored 5 chapters in books. He was invited speaker at more than 45 international conferences and is co-inventor of 13 patents. He was a member of the board of the European Optical Society EOS and of the IEEE-LEOS Benelux chapter, is presently Chair to the SPIE Advisory Committee on Europe, and serves in technical and scientific program committees of photonics-related conferences, organized by international societies like SPIE, IEEE, OSA, EOS and ICO. He is general chair of the SPIE “Photonics Europe” world-conference in Strasbourg in 2004, 2006 and 2008 and of the SPIE “International Congress on Optics and Optoelectronics” in Warsaw in 2005, and in Prague in 2007. In 2005 he received the SPIE President’s Award 2005 for meritorious services to the Society and for his leadership in photonics in Europe, and he is elected director of SPIE. He also becomes a member of the Board of Stakeholders of the Technology Platform Photonics21, a high-level advisory board for optics and photonics in EC FP 7. In October 2007 he received the International Micro-Optics Award MOC 07 from the Japanese Optical Society.

Other researchers who were considered for this Summit were the following ones:

PROPOSALS	NAMES	ACTUAL JOB	CURRICULUM VITAE	PROS AND CONS
1	**Dr. Rer. Nat. Reinhart Poprawe**	Head of the Chair for Laser Technology at RWTH Aachen University and managing director of the Fraunhofer Institute for Laser Technology ILT, Aachen Vice-rector for Structure, Research and Junior Academic Staff	Managing Director at Thyssen Laser-Technik GmbH Aachen Head of Department of the Fraunhofer Institute for Laser Technology ILT, Aachen (Fraunhofer Prize on October 22, 1987)	It is going to be very difficult to accept becuase maybe he will have a lot of commitments
2	**José Miguel López Higuera**	Responsible of: Photonics Engineering Group within Cantabria University (Spain) R&D project manager	Manager of several departments at University. He has worked in more then 30 national and international R&D projects author and co-author of 300 publications (books, chapters, articles in magazines, conferences in the field of Photonic (Optoelectronics, Fibre Optic Devices and Systems and optical Sensors) Technical Evaluator in the European Commission Member Senior of: IEEE, IEE, OSA, SPIE.	
3	**Lluis Torner Sabata**	The Institute of Photonics Sciences Manager Barcelona Politécnica University professor	Researchs of his group were chosen for hte Optics in the Year in 1995, 1997, 1999, 2001, 2002, 2003 and 2006 Fellow of Optical Society of America	
4	**Eric W. Van Stryland**	Last President Elect OSA (Optical Society of America) Director CREOL (Center for Research and Education in Optics and Lasers) University of Central Florida, USA	2003-6 President, Optical Society of America (elected position, President in 2006) 2003 Pegasus Professor of Optics – the highest award given by the University of Central Florida 2005- Dean of The College of Optics and Photonics 2004- Director, Florida Photonics Center of Excellence (begun with $10M from Gov. Jeb Bush) 1999- Director, School of Optics/CREOL, University of Central Florida	

The reason for having chosen ones and not other has been mainly based on the contacts and the easiness of getting in touch with them.

6. Announce Summit through other channels

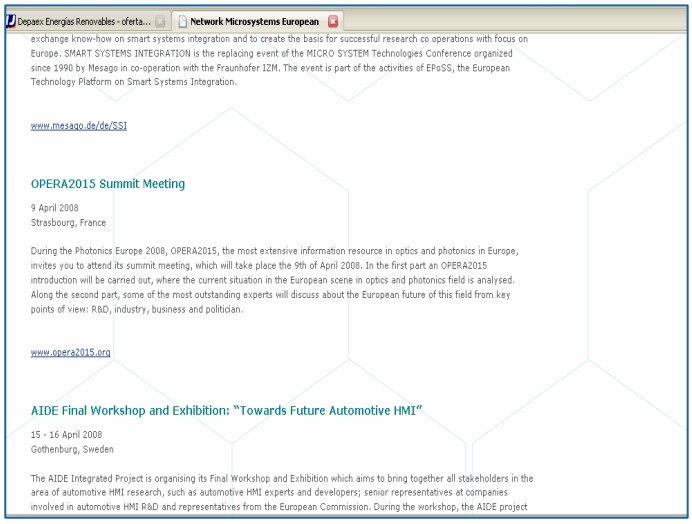
In order to achieve our Summit to the most people possible, Opera2015 Summit was published through different websites of this sector.

The chosen ones were:

- ✓ Nexus
- ✓ Cordis Wire
- ✓ Fibresystems.org
- ✓ Optics.org
- ✓ Symposiam24.com

The reason for choosing the first two websites was because their importance in the Europe-wide R&D field.

The reason for choosing the next two was because they are the most read in the optics and photonics sector.


Depaex Energías Renovables - oferta...
Network Microsystems European
exchange know-how on smart systems integration and to create the basis for successful research co operations with focus on Europe. SMART SYSTEMS INTEGRATION is the replacing event of the MICRO SYSTEM Technologies Conference organized since 1990 by Mesago in co-operation with the Fraunhofer IZM. The event is part of the activities of EPoSS, the European Technology Platform on Smart Systems Integration.
www.mesago.de/de/SSI
OPERA2015 Summit Meeting
9 April 2008
Strasbourg, France
During the Photonics Europe 2008, OPERA2015, the most extensive information resource in optics and photonics in Europe, invites you to attend its summit meeting, which will take place the 9th of April 2008. In the first part an OPERA2015 introduction will be carried out, where the current situation in the European scene in optics and photonics field is analysed. Along the second part, some of the most outstanding experts will discuss about the European future of this field from key points of view: R&D, industry, business and politician.
www.opera2015.org
AIDE Final Workshop and Exhibition: "Towards Future Automotive HMI"
15 - 16 April 2008
Gothenburg, Sweden
The AIDE Integrated Project is organising its Final Workshop and Exhibition which aims to bring together all stakeholders in the area of automotive HMI research, such as automotive HMI experts and developers; senior representatives at companies involved in automotive HMI R&D and representatives from the European Commission. During the workshop, the AIDE project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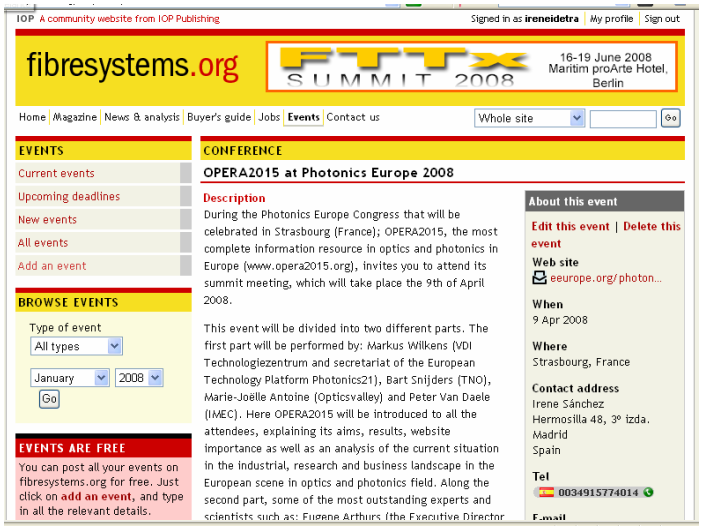
OPERA2015 IN PHOTONICS EUROPE 2008
2008-01-23
Irene Sánchez
Idetra
Hermosilla 48, 3º B
28001 Madrid
ESPAÑA
irenesanchez@idetra.com
Tel: 0034915774014
During the Photonics Europe Congress that will be celebrated in Strasbourg (France); OPERA2015 (www.opera2015.org), the most complete and extensive information resource in optics and photonics in Europe, will invite you to attend its summit meeting, which will take place the 9th of April 2008.
OPERA2015 is a European project funded within the 6th Framework Programme and is dedicated to developing a joint strategy for optics and photonics in Europe.
The OPERA2015 summit meeting will take place the 9th of April 2008 during the Photonics Europe Congress celebrated in Strasbourg (France).
This event will be divided into two different parts. The first part will be performed by: Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), Bart Snijders (TNO), Marie-Joëlle Antoine (Opticsvalley) and Peter Van Daele (IMEC). Here OPERA2015 will be introduced to all the attendees, explaining its aims, results, website importance as well as an analysis of the current situation in optics and photonics field in the industrial, research and business landscape in the European scene.
Along the second part, some of the most outstanding experts and scientists such as: Eugene Arthurs (the Executive Director of SPIE), David Pointer (Managing Director at Point Source), Mike Wale (Bookham), Hugo Thienpont (Vrije Universiteit) and Gustav Kalbe (Photonics unit of Directorate General Information Society and Media) will discuss about the future of the European research and development in optics and photonics from key points of view: research, business, industry and politician.
OPERA2015 is playing an important role in making the European Research Area in Optics and Photonics a reality. Let us demonstrate it to you! Join us!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CONFERENCE
OPERA2015 at Photonics Europe 2008
Description
During the Photonics Europe Congress that will be celebrated in Strasbourg (France); OPERA2015, the most complete information resource in optics and photonics in Europe (www.opera2015.org), invites you to attend its summit meeting, which will take place the 9th of April 2008.
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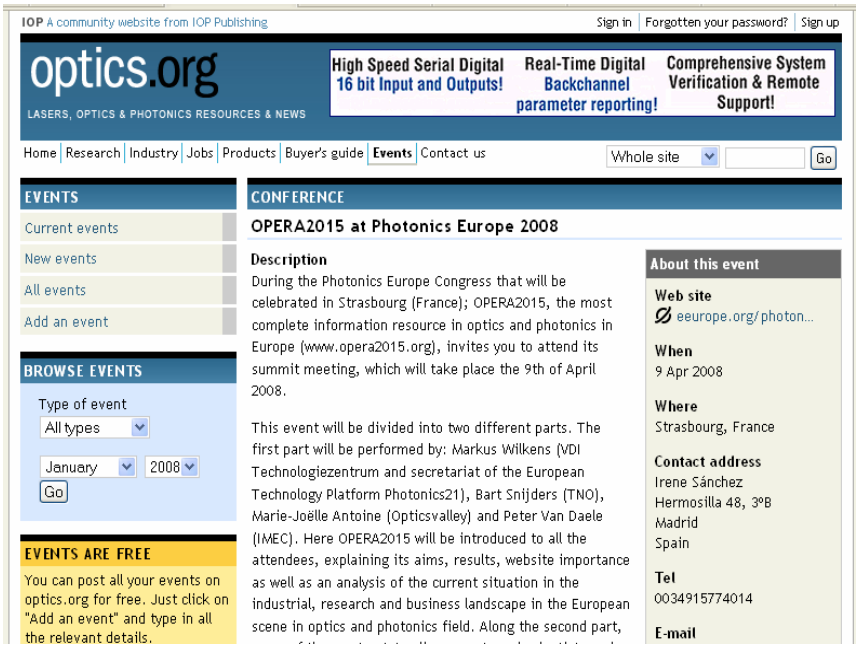
About this event
Edit this event | Delete this event
Web site
eeurope.org/photon...
When
9 Apr 2008
Where
Strasbourg, France
Contact address
Irene Sánchez
Hermosilla 48, 3º izda.
Madrid
Spain
Tel
0034915774014
E-mail



Furthermore the opera2015 Summit was published through:

- ✓ Brochures delivered to:
  - o UK Clusters like:
    - Institute of Physics Council
    - Institute for Materials Research
    - Scottish Optoelectronic Association
    - Association of Industrial Lasers Users (AILU)
    - Fibreoptic Industry Association (FIA)
    - Engineering and Physical Sciences Research Council (EPSRC)
    - UK Industrial Vision Association (UKIVA)

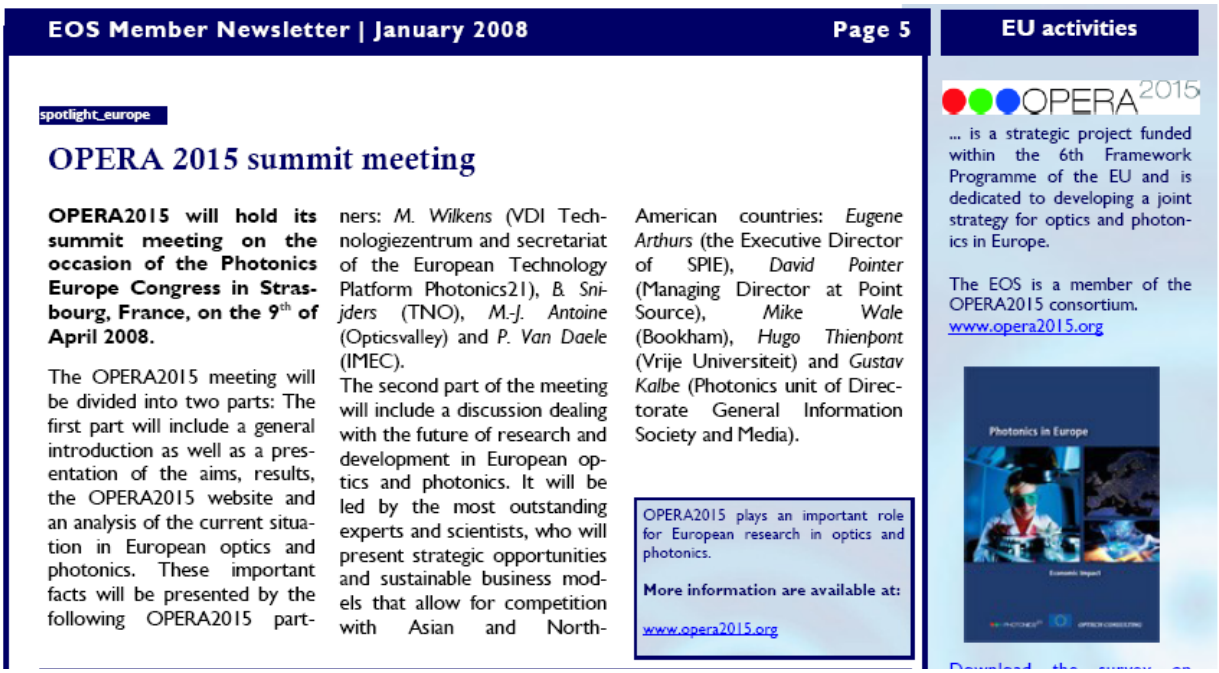
- IET Photonics Professional Network
- DTI Technology Manager
- Welsh Optoelectronic Association (WOF)
- BAE Systems (Sowerby research laboratory)
- Photonics Cluster(UK)

o Photonics West 2008

o Optical Fiber Communication Conference and Exposition (California)

o Topical Meeting on Photonics Devices

✓ EOS Newsletters



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spotlight_europe

OPERA 2015 summit meeting

OPERA2015 will hold its summit meeting on the occasion of the Photonics Europe Congress in Strasbourg, France, on the 9th of April 2008.

The OPERA2015 meeting will be divided into two parts: The first part will include a general introduction as well as a presentation of the aims, results, the OPERA2015 website and an analysis of the current situation in European optics and photonics. These important facts will be presented by the following OPERA2015 partners: *M. Wilkens* (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), *B. Snijders* (TNO), *M.-J. Antoine* (Opticsvalley) and *P. Van Daele* (IMEC).

The second part of the meeting will include a discussion dealing with the future of research and development in European optics and photonics. It will be led by the most outstanding experts and scientists, who will present strategic opportunities and sustainable business models that allow for competition with Asian and North-American countries: *Eugene Arthurs* (the Executive Director of SPIE), *David Pointer* (Managing Director at Point Source), *Mike Wale* (Bookham), *Hugo Thienpont* (Vrije Universiteit) and *Gustav Kalbe* (Photonics unit of Directorate General Information Society and Media).

OPERA2015 plays an important role for European research in optics and photonics.

More information are available at:

www.opera2015.org

EU activities

OPERA2015

... is a strategic project funded within the 6th Framework Programme of the EU and is dedicated to developing a joint strategy for optics and photonics in Europe.

The EOS is a member of the OPERA2015 consortium.
www.opera2015.org

✓ OLE newsletters

NEWS FROM OPERA2015

OPERA2015 presents results

OPERA2015 invites you to its meeting at Photonics Europe in April 2008.

OPERA2015 will present the results that it has achieved over the last few years on 9 April 2008 at Photonics Europe. The OPERA2015 summit meeting will be divided into two parts.

The first part will include a general introduction as well as a presentation of the aims, results and future goals of OPERA2015. This will be followed by an analysis of the current state of the European optics and photonics market, and finally, a demonstration of the OPERA2015 website, the most extensive forum for optics and photonics in Europe.

The second part of the meeting will include a discussion regarding the future of research and development in optics and photonics across Europe. This will be led by renowned experts and scientists who will present strategic opportunities and sustainable business models that take competition with Asian and North American countries into account.

OPERA2015 plays an important role in European research into optics and photonics. Why not attend the event and convince yourself? For more information see www.opera2015.org. Photonics Europe will held in Strasbourg, France, between 7 and 11 April 2008.

Alexander von Witzleben, Photonics21 president (and managing director of Jenoptik) and Viviane Reding, the european commissioner for information society and media, attending Photonics Europe in 2006.

NEWS FROM OPERA2015

OPERA unveils summit talks

OPERA2015 invites you to attend its summit meeting at Photonics Europe in Strasbourg on 9 April.

OPERA2015 has released details of its summit meeting being held at Photonics Europe. The first part of the meeting will include an introduction and a presentation of the aims, results and future goals of OPERA2015. This will be followed by an analysis of the current state of the European optics and photonics market and a demonstration of the OPERA2015 website. This information will be presented by the following OPERA2015 partners: Markus Wilkens (VDI Technologiezentrum and secretariat of the European Technology Platform Photonics21), Bart Snijders (TNO), Marie-Joëlle Antoine (Opticsvalley) and Peter Van Daele (IMEC).

The second part of the meeting will include a discussion regarding the future of R&D in optics and photonics across Europe. This will be led by renowned experts and scientists who will present strategic opportunities and sustainable business models that take competition with Asian and North American countries into account. Speakers will include Eugene Arthurs (the executive director of SPIE), David Pointer (managing director at Point Source), Mike Wale (Bookham), Hugo Thienpont (Vrije Universiteit) and Gustav Kalbe (photonics unit of Directorate General Information Society and Media).

OPERA2015 plays an important role in European research into optics and photonics. Why not attend the event and convince yourself? Visit www.opera2015.org for more information. Photonics Europe will be held 7–11 April in Strasbourg, France.

Agenda for OPERA2015 summit

- Introduction: Optics and photonics in the 7th FP (Gustav Kalbe)
- OPERA2015 presentation: Aims, results and the link with Photonics21 (Markus Wilkens)
- Industry landscape (Bart Snijders)
- Research landscape (Marie-Joëlle Antoine)
- Information resource: the www.opera2015.org website (Peter Van Daele)
- Towards the future on optics and photonics research (Eugene Arthurs)
- Strategic opportunities for R&D in Europe (Mike Wale and Hugo Thienpont)
- A sustainable business model in the optics and photonics field (David Pointer)
- Final open discussion (Gustav Kalbe)

✓ Partners websites

7. Prepare brochures, posters, memory sticks.

In order to reach the highest possible awareness in the Optics and Photonics Community and the general public, a broad spectrum of information and dissemination materials has been produced within OPERA 2015 Summit. Each has its individual role in the diffusion of information about the project and its results.

The dissemination material is a key part to every project. Through this material, the project introduces itself to the researchers, workers, industry, etc. related to the field of Optics and Photonics.

A great effort has been done in the design and delivery to the right public.

The three objects of this material have been:

- ✓ Brochures and Posters. The overall functionality of the Brochure and Posters is to give general information on the OPERA 2015 project to the European Optics and Photonics community and beyond. The brochure has been regularly updated with information that has been derived from the project. It was disseminated at international scientific Conferences and Optics and Photonics Fairs as well as it was made available to the general public as download document through the project website OPERA2015.org.
- ✓ Memory sticks. They were delivered among the attendees during the Summit event. They contained the presentations performed by every speaker along the conferences.

Identification of the importance of the dissemination material

- ✓ To introduce OPERA2015 to people related to the Optics and Photonics world
- ✓ To be present in conferences, congress, etc. where OPERA2015 does not participate itself
- ✓ To publish what OPERA2015 is and let people know:
    - o The fact that OPERA2015 is looking for collaborators among the EC projects
    - o The Programme with which OPERA2015 is going to participate in the Summit event

Design

There have been two designs for the posters and other two for the brochures. The reason for those changes was the aim of those ones and as well the public whom they were addressed to.

The first design was taken over to introduce OPERA2015 to a concrete public, that is to say, to the EC projects so that OPERA2015 got more collaborators.

The second design had as objective the Summit event, so OPERA2015 itself was introduced and also the OPERA2015 Programme in the Photonics Europe was detailed and included.

Therefore, the design of the poster and brochures have been modified in order to update the information gathered within them but also to correct some information as well as to improve the message given. Other aim to change the design and the contents of the dissemination material has been to make them more attractive to the people as well as to be better addressed to the readers of the different occasions.

Figures

In all, there have been printed 1.150 brochures, 30 posters and one poster additional with another format and size.

The first pack of 500 brochures and 10 posters were delivered among the consortium partners so that they could deliver them in the conferences where each one could participate as well as in their works.

The second pack of 500 brochures was delivered among the partners EOS, IMEC and UKCPO, because they were going to attend several conferences where they could be interesting that OPERA2015 was published as well as among clusters.

National and international conferences, meetings and fairs are significant dissemination channels for OPERA 2015 in order to reach the Optics and Photonics community on scientific, business and political level. Therefore it is quite important for the project to attend and to be visible at these events. Through the participants of the project the access through a rather widely ramified European network is assured, example of this are:

- ✓ Photonics West
- ✓ Topical Meeting on Photonics Devices
- ✓ OFC in California
- ✓ Clusters around UK

8. Organize guest travels / catering

Opera2015 also took in charge of organizing the travel and to cover the travel costs of some of the external speakers who came to participate in such important event.

HOTEL RESERVATION FORM

SPIE EUROPE 2008

April 7th to 11th

Complete this form in capital letters and return it together with the payment to ☛	✉
Please return this form **before February 25th 2008** ! After that date, requests are subject to hotel availabilities and cannot be guaranteed.	***STRASBOURG EVENEMENTS– SERVICE HÉBERGEMENT*** ***PLACE DE BORDEAUX - WACKEN*** ***F – 67082 STRASBOURG CEDEX*** ☎ *33 (0)3 88 37 67 67* - 🖷 *33 (0)3 88 37 38 43* *e-mail : hotel@strasbourg-events.com web site : www.strasbourg-events.com* *Access code on line reservation : 0600238*

Family name _____ First name _____

Company _____

Address _____

Zip code _____ City _____ Country _____

Tel. _____ Fax _____ E-mail _____

VERY IMPORTANT

No reservation will be made without its corresponding payment. Upon receipt of payment Strasbourg Events will send a voucher to each participant indicating the name and address of the hotel. The prepaid hotel deposit will be deducted from the hotel bill when checking out. The remaining amount to be paid is to be settled **directly with the hotel**.

RESERVATION (Please consult the list of hotels)

Single room(s) : _____ Double room(s) : _____ Twin room(s) : _____

Arrival date : _____ April 2008 Departure date : _____ April 2008 Number of nights : _____

In a hotel : ☐ ★★★★ ☐ ★★★ ☐ ★★

1st Choice.....2nd Choice.....3rd choice.....

We don't guarantee that your 1st choice will be available and we will work our way down the list of your choices

ROOM PRICES AND HOTEL DEPOSIT

Prices are given per night, per room, without breakfast, taxes and services included. The amount of the hotel deposit includes also 13 € reservation fees due to Strasbourg Events. No reservation will be made without its corresponding payment. **After the 25th February 2008, requests are subject to hotel availabilities and cannot be guaranteed**

Hotel category	*Single room (in €)*	*Double & Twin room (in €)*	*HOTEL DEPOSIT* Including 13 € Reservation fees	*NUMBER OF ROOMS*	*TOTAL*
★★★★	135 to 188	135 to 188	*148*	x.....	.....€
★★★	95 to 150	105 to 155	*133*	x.....	.....€
★★	64 to 75	64 to 85	*83*	x.....	.....€
				TOTAL :	.....€

CANCELLATION

In case of written cancellation sent to Strasbourg Events **before March 31st 2008**, the deposit will be refunded, **hotel reservation fees excluded (= 13 €)**. After that date, no refund will be possible.

PAYMENT

☐ Cheque payable to "Strasbourg Evénements"

☐ Bank transfer (Stating the name of the congress and the name of the participant) – Please join a copy of the bank transfer - No bank transfer after : **17.03.08**
Bank : CIAL Strasbourg Account n : 10037 33080 00023701301 39 ; IBAN : FR76 1003 7330 8000 0237 0130 139 ; BIC : CMCIFRPP

☐ Credit card ❍ Visa ❍ Eurocard/Mastercard ❍ American Express

Card number _____ Expiration date _____

I authorise Strasbourg Evénements to charge my credit card with the amount of : _____ €

Name of cardholder _____ Date _____ and Signature

☛ **BANK CHARGES MUST BE PAID BY THE CUSTOMER** ☚

In application of Article L.27 of 06.01.78, the information requested here is necessary in order to process your request and for related services. The categories of information requested are only those necessary for processing this reservation and for the related services of the Group. You may have access to the information concerning you or make any necessary corrections by contacting our service.

Name and Address

SPIE ID #

First / Given Name | MI. | Last / Family Name

Title

Company

Address (include Mail Stop)

City | State / Province | Zip/Postal Code

Country

Phone | Fax

E-Mail Address (SPIE does not sell e-mail addresses) | Date of Birth

☐ Check this box if you do not wish to receive relevant information from organizations other than SPIE.

VAT No.:

Details:

SPIE Membership

☐ Annual SPIE Membership: €85 ☐ Annual Student Membership: €20 (Est. graduation date:_____)

Online Journal Option (choose one): ☐ Optical Engineering ☐ Electronic Imaging ☐ Biomedical Optics ☐ Nanophotonics ☐ Microlithography, Microfabrication, and Microsystems ☐ Applied Remote Sensing

Conference Registration

☐ Check box to indicate appropriate conference registration fee.

	SPIE Member	Nonmember
☐ **Speaker/Author**		
Full meeting plus one proceedings volume	☐ €400	☐ €460
Full meeting plus Symposium CD-ROM	☐ €465	☐ €525
☐ **Non-Author/Attendee**		
Full meeting plus one proceedings volume	☐ €460	☐ €520
Full meeting plus Symposium CD-ROM	☐ €525	☐ €585
☐ **Session Chair/Committee**		
Full meeting plus one proceedings volume	☐ €400	☐ €460
Full meeting plus Symposium CD-ROM	☐ €465	☐ €525
☐ **Full-time student** *DOES NOT include Proceedings or Symposium CD-ROM*	☐ €125	☐ €145
☐ **EXHIBIT VISITOR ONLY**	☐ FREE	☐ FREE

☐ **Reception Guest Ticket,** *Tuesday 8 April* ☐ €15

☐ **Lunch Ticket,** *One Complimentary Lunch Ticket included with conference registration.*
Indicate which day you'd like:
☐ Tuesday ☐ Wednesday ☐ Thursday

☐ **Additional Lunch Tickets** – €20 per ticket. Indicate day(s):
☐ Tuesday ☐ Wednesday ☐ Thursday

Industry Programme

Included with Conference Registration. **€100 per session for non-conference attendees.**

Indicate session(s) you wish to register for:

☐ Tuesday Morning
☐ Tuesday Afternoon
☐ Wednesday Morning
☐ Wednesday Afternoon
☐ Thursday Morning
☐ Thursday Afternoon

☐ **Yes, I will attend the Student Entrepreneurship Workshop** (Students only)

Courses/Workshops— *Fees increase €50 after 28 March 2008*

Write the number(s) and price(s) of the courses/workshops you will attend.

SC _____ @ €_____
WS _____ @ €_____

Additional Proceedings/CD-ROMs & Digital Library Subscription

Proceedings: Vol. _____@ € _____ Vol. _____@ €_____ Vol. _____@ € _____

CD-ROMs: CDS_____ @ € _____ CDS_____ @ € _____

Tax & Shipping (see worksheet on facing page) € _____

Subscribe to the SPIE Digital Library
1-year subscription, **up to 25** full-article downloads: Regular ☐ €110 Student/Retired ☐ €70 Nonmember ☐ €185
1-year subscription, **up to 50** full-article downloads: Regular ☐ €145 Student/Retired ☐ €95 Nonmember ☐ €250

Once form is submitted and validated, you will receive an email confirmation with instructions for setting up your account. At that point, you may begin using all the features of the Digital Library.

Payment Method

Date:_____

Credit card payments will be charged in USD and converted to your local currency by your card company or bank. Payment by check may be made in Euro (see http://www.xe.net/ucc/ to convert your total fees).

☐ Cheque #_____ Amount € _____ payable to SPIE Europe.

Credit Card:
☐ VISA
☐ MasterCard
☐ American Express
☐ Diners Club
☐ Discover

Card Number:

I authorize SPIE Europe to charge total payment fee (as indicated on this form) to my credit card.

Expiration Date ________ (Month Year) Signature_____

Register and Pay Today!

After 28 March 2008, Fees increase €75 (Courses increase €50; Student fees increase €40) PLUS you must register onsite

Preregistration for SPIE Europe Photonics Europe
7–10 April 2008
Palais de la Musique et des Congrès
Place de Bordeaux
Strasbourg, France

Mail or fax this form to
SPIE Europe Ltd.,
2 Alexandra Gate,
Ffordd Pengam, Cardiff, CF24 2SA
United Kingdom
Fax: +44 (0)29 2089 4750

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☐ If, due to a disability, you have special needs, check here and SPIE Europe will contact you.

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REGISTRATION TOTAL
€_____

INDUSTRY PROGRAMME TOTAL
€_____

GUEST RECEPTION TICKET TOTAL
€_____

ADDITIONAL LUNCH TICKET TOTAL
€_____

COURSE/WORKSHOP TOTAL
€_____

ADDITIONAL PUBLICATIONS TOTAL
€_____

DIGITAL LIBRARY SUBSCRIPTION TOTAL
€_____

SUBTOTAL
€_____

VAT @19.6%
€_____

Payment must accompany registration.

TOTAL
€_____

In order to thank the participants and attendees their presence in the event, Opera2015 prepared an excellent catering for the break that divided the two parts that shape the Summit.

The catering was hired to Beck Gastronomie, the congress catering firm and the Menu chose is the one below:

Beck Gastronomie GmbH * Schutterwälder Str. 1 * 77656 Offenburg

European Photonics Industry Consortium
Mme Martine Keim Paray
17, rue Hamelin
75016 Paris

Offenbourg, le 27 fevrier 2008
Contact: Michel Gasser
Tel. # 49 781 967 17 60

DEVIS

Données de références:

Date de l'évènement: Mercredi 9 avril 2008 de 15hoo à 15h15
Lieu de l'évènement: Workshop OPERA 2015
Nombre de convives: 100 personnes

Buffet

Pièces salées

- Les canapés classiques (magret de canard fumé, jambon cru, crevettes, saucisson sec, saumon fumé, fromages....)
- Les pains viennois (mini viennois à la provencale, mini viennois à la mozzarella et pesto)
- L´assortiment de navettes briochées(au saumon fumé, au foie gras de canard à la mousse de crevettes)
- Brochette au fromage et tomate
- Brochette de dinde et ananas
- Mini pâté en croute

Pièces sucrées

- Tartelettes aux fruits
- Mignardises
-

Prix par personne 11,50 EUR H.T.

Beck Gastronomie Exclusiv

DETAIL DES PRESTATIONS COMPRISES DANS LE PRIX DU BUFFET

BOISSONS PROPOSEES AU BUFFET

Jus de fruits variés
Eau minerale plate et gazeuse
Jus de fruits
Café

A discretion

PERSONNEL DE CUISINE

Livraison en liaison chaude et froide, selon les normes en vigueur
Distribution et réassort. des buffets
Remise en état des locaux de cuisine après la prestation

PERSONNEL DE SERVICE

Mise en place très soignée du couvert et du buffet
Service stylé
Remise en état des lieux après la préstation

LOCATION DE MATERIEL

Nappage et serviettes de tables
Assiettes
Couverts
Verres

Bankverbindung: Volksbank Offenburg | BLZ 664 900 00 | Kto. Nr. 1212 311
Sitz der Gesellschaft: Offenburg | Amtsgericht Offenburg | HRB 20 79 | Geschäftsführung: Christian Beck
Steuernummer 14045/06257 | Ust-IdNr. DE 217013146

9. Prepare D6.4

4. Results

It could be said that the Opera2015 Summit has been a really success. Almost 100 people have enjoyed themselves and learnt interesting topics from the field of Optics and Photonics.

In order to be able of estimating the amount of attendees who came to the event, there were two ways used which were:

- Count the number of brochures and memory sticks delivered among the attendees at the moment of their entrance in the first case and during the break in the second one
- The business cards gathered during the exchange brochure by business card while they were coming in

Moreover, there was a third way of quantifying, but it was not successful due to the few feedback obtained. It consisted of delivering within the brochure an evaluation form where the attendees could express their opinion with respect to the event; but we only got ten. Therefore those few comments are not representative.

According to the first two ways to estimate the attendance it is thought that there was an average attendance of 100 people. Those who gave us their business cards are named in the table below, anyway it was counted almost other 25 people who entered during the speeches from which it was impossible to pick their cards. Normally it is considered that in these cases, in the events, it can only be counted the 70%. Therefore, it is thought that there were around 80 attendees.

The capacity of the room was 100 people. At the beginning there was almost full, few seats were empty. As the speeches went by, people were leaving due to so many sessions at the same time, in parallel. One of which was the EOS reception.

The presentations performed are attached in the Annexes part of the report.

Nº	PARTICIPANT	ENTITY NAME	TYPE OF ENTITY	TOPIC	POSITION	COUNTRY
1	John Lincoln	Harlin Ltd.	Consultancy		Consultant	UK
2	Dr. Gintas Slekys	Altechna Co. Ltd.	Company	Laser related technologies and components	Director	Lithuania
3	Vincent Genis	BEST Board of European Students of Technology	Educational Commitee			Belgium
4	Peter Hallet	SPIE	Society	Industry Relations, Exhibitions and Sales	Manager	USA
5	Warren Clark	Electro optics	Magazine		editor	UK
6	Dr. Stefan P. Grabowski	Philips Research	Company	Solid State Lighting	Senior Scientist	Germany
7	Greg Balckman	Europa Science	Magazine		Feature writer	UK
8	Dr. Peter Waegli	Waegli Research	Consultancy	Photonics (optics, fibre optics, optoelectronics); Signal processing; Image acquisitions and processing; Sensors and microsystem technology; Spectroscopy; Vacuum technology; Plasma science	Scientist	Switzerland
9	Dr. Rainer Hainberger	Austrian Research Centers	Research Center	Nano-System-Technologies	Dipl.-Ingenieer	Austria
10	Dr. Jürgen Mohr	Forschungszentrum Karlsruhe	Institute for Microstructure Technology	Microoptics	Head of the Microoptics Department	Germany
11	ir. Jeroen Missine	Universiteit Gent	University	Faculty of Engineering	Doctoral Research	
12	Augustin Grillet	Barco	Global technology company	Medical imaging, media & entertainment, infrastructure & utilities, traffic & transportation, defense & security, education & training and corporate AV	R&D Projects Coordinator	Belgium
13	Sean Amos	UPS 2	Integrated Knowledge Centre	Technium Optic	Business Manager	UK
14	Ir. Jan T. Bosiers	DALSA	Corporate Company	Semiconductor and electronics	R&D Director	The Netherlands
15	Kurt J. Weingarten	Time-Bandwidth	Company	Diode-pumped solid-state lasers	Chairman & Founder	Switzerland

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14	Ir. Jan T. Bosiers	DALSA	Corporate Company	Semiconductor and electronics	R&D Director	The Netherlands
15	Kurt J. Weingarten	Time-Bandwidth	Company	Diode-pumped solid-state lasers	Chairman & Founder	Switzerland
16	Dr. Johannes Baier	Philips Research	Company	Light Generation	Senior Scientist	Germany
17	Marco Hering	Sony Deutschland GmbH	Company	Nano technology over wireless and wired communication	Optical Engineer	Germany
18	Audrey Hantiu	Chamber of Commerce and Industry of Bordeaux	Chamber of Commerce	R&D Department	Project Manager	France
19	Mark Sanderson	Kroto Innovation Centre	Innovation Center	Nanoscience Technology	Incubator Manager	UK
20	Dr. Richard Hogg	The University of Sheffield	University	Electronic & Electric Engineering	Reader in Opto-Electronic Devices	UK
21	Dr. Sabine Heusing	Libniz-Insistut für Neue Materialien	Institute	Chemistry and technology of new Materials and Nanocomposites Glass and optics	Scientist	Germany
22	Francesco Enrichi	CIVEN - Coordinamento Interuniversitario Veneto per le Nanotecnologie	Association	Optics and Spectroscopy	Scientist	Italy
23	Ian Maxwell	Llywodraeth Cynulliad Cymru - Welsh Assembly Government	Administration	Enterprise, Innovation and Neetworks	Opto-Electronics Sector Manager	UK
24	Carolin Kühnl	Messe München GmbH	Company	Trade Fair	Congress Manager	Germany
25	Dominic Light	Electro optics	Magazine		Business Development Manager	UK
26	Ali Erdem Özcan	Aselsan	Company	Microelectronics, Guidance and Electro-Optics Division	Electro-Optics Systems Engineer	Turkey
27	Latif Süngü	Aselsan	Company	Microelectronics, Guidance and Electro-Optics Division	Electronics Engineer	Turkey
28	Marja Salmimaa	Nokia Research Center	Research Center	Interaction Laboratory	Senior Display Technology Expert	Finland
29	Pasi Saarikko	Nokia Research Center	Research Center	Interaction CTC	Principal Scientist	Finland
30	Thierry Thévenin	CEA - Center of Scientific and Technological Studies of Aquitaine	Research Center	Defence	Knowledge&Technology Transfer Officer	France

Nº	PARTICIPANT	ENTITY NAME	TYPE OF ENTITY	TOPIC	POSITION	COUNTRY
31	Dr. Lorenzo Occhi	Loepfe Brothers Ltd.	Company	Sensors		Switzerland
32	Dr. Ir. Wendy Meulebroeck	Vrije Universiteit	University	Applied Physics and Photonics	Post-Doc Researcher	Belgium
33	David Faye	Thales Group		Laser Sources & Nolinear optics Lab	Research Scientist	France
34	Dr. Ing. Stefan Wiechmann	Jenoptik AG	Company	Photonic and mechatronic technologies	Innovation Manager	Germany
35	B M A Rahman	City University	University	Photonics	Professor	UK
36	Issey Tanaka	Nikon Corporation	Company	Imaging	Expert	Japan
37	Toshio Morioka	NICT - National Institute of Information and Communications Technology	Research Center	Communications Technologies	Executive Researcher	Japan
38	Dr. Nidal Bizri	HIAST - Higher Institute for Applied Science and Technology	Research Center	Scientific and Technology Research		Syria
39	Dr. Zafer Moussa	HIAST - Higher Institute for Applied Science and Technology	Research Center	Scientific and Technology Research		Syria
40	Thomas Kaiser	Friedrich-Schiller Universiät Jena	University	Physics and Astronomy	Research Scientist	Germany
41	Henri Rajbenbach	European Commission	Administration	Microsystems	EC Member	Belgium
42	Dr. Cristina Álvarez Díez	Carl Zeiss AG	Research Center	Imaging, Medical Technology, Nanotechnology, semiconductors, etc.	Research Scientist	Germany
43	Pierre Chavel	Institut d´Optique	Research Center	Optics	Associate Director	France
44	Felix Lustenberger	EPC - Espros Photonics Corporation	Company	Photonics chips	Vice President Engineering	Switzerland
45	Dr. Rainer Kling	Laser Zentrum Hannover e.V.	Research Center	Laser		Germany

Nº	PARTICIPANT	ENTITY NAME	TYPE OF ENTITY	TOPIC	POSITION	COUNTRY
46	Dr. Gerald Farrell	DIT - Dublin Institute of Technology	University	Electronics and Communications	Head of School	Ireland
47	Emmanuel Grard	3S Photonics	Company	Chips (lasers and detectors);Transmission Laser and Detector Modules; Pump Laser Modules; Filters	LDM & PLX Program Manager	France
48	Marie Freebody	Optics	magazine		Reporter	UK
49	Pieter Dumon	Universiteit Gent	University	Information Technology	ePIXnet silicon photonics platform coordinator	Belgium
50	Dr. Yuliya Semenova	DIT - Dublin Institute of Technology	University	Electronics and Communications	Senior Researcher	Ireland
51	Nimendra Tuladhar				Students	
52	Pieter-Jan Cauwenbergh				Students	
53	Caglar Ataman				Students	
54	Pengfei Wang				Students	

To add up, not only has been considered success for so great attendance, but also due to the great quality of its speakers and their papers. It has been a great pride to be able to have count on experts with such professional background as Dr. Eugene Arthurs, Mike Wale, Gustav Kalbe and David Pointer; as well as the belonging speakers to the Opera2015 project as Markus Wilkens, Peter Van Daele, Bart Snijders and Marie-Joëlle Antoine.

Some photos of the event are included below as proof of success of the event:


OPERA2015
Optics and Photonics in the
European Research Area

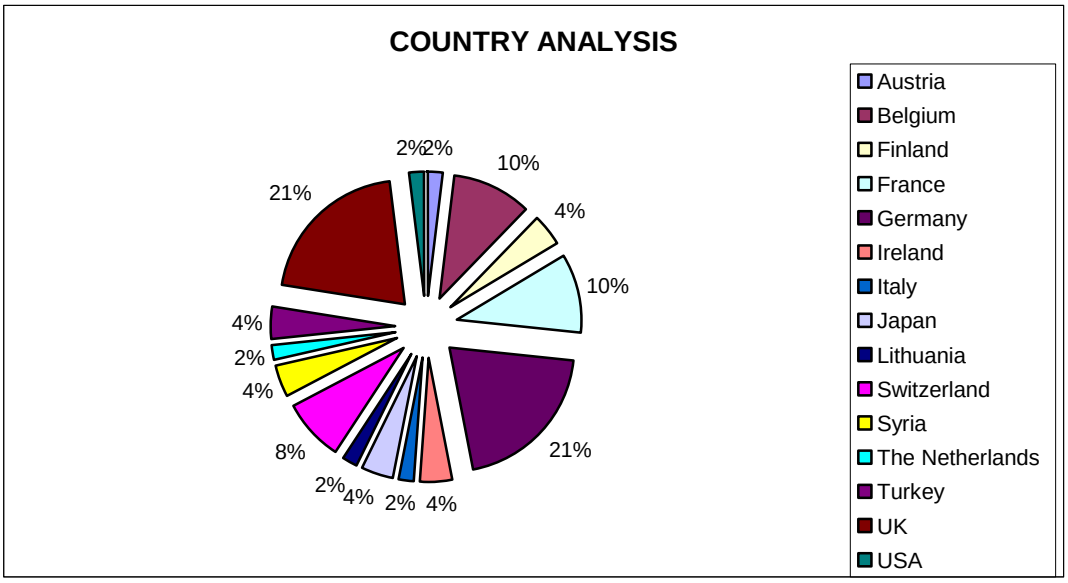
5. Conclusion

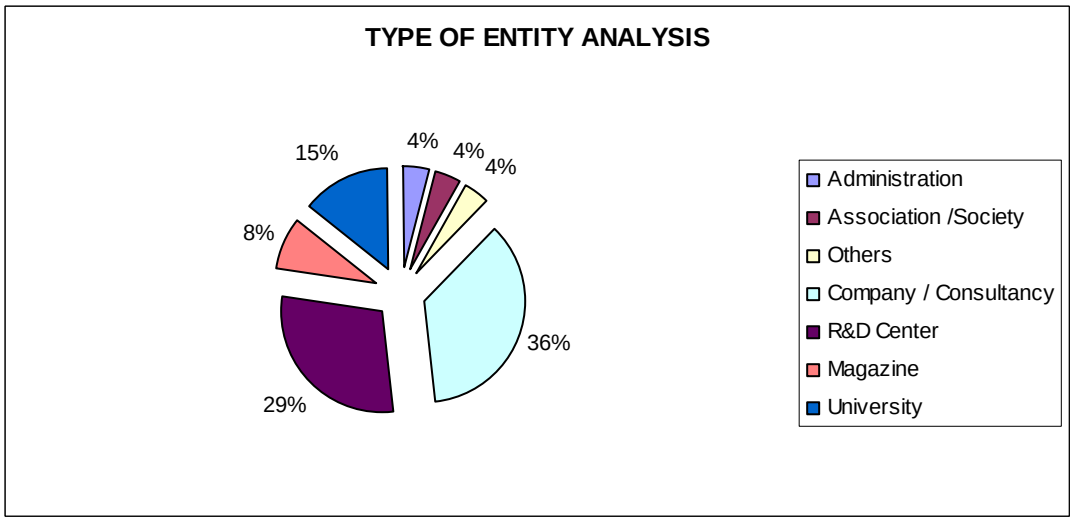
Concerning to the quality of the attendees, that is to say their positions, type of entity they came from and country; some graphics have been added. From this information it could be abridged the following conclusions:

1. A majority of attendees are from UK and Germany, followed by Belgium and France.
2. The majority of attendees work for Companies, in Research Centers and Universities.

From these results we could have the following conclusions:

1. The diffusion in those countries have be better then in the rest of them, fact that has been ruled out due to the diffusion of the event was carried out through international websites, international events, and from the European Photonics Consortium.
2. The interest and therefore the research and business in the optics and photonics sector in these two (four) countries are better and more developed along Europe.





Project no. 015734

OPERA2015

Optics and Photonics in the European Research Area

Instrument: Coordination Action

Thematic Priority: Information Society Technologies

Final plan for using and disseminating the knowledge

Period covered: from month 1 to month 37 Date of preparation: 30.04.2008

Start date of project: 01.04.2005 Duration: 37 month

Project coordinator name: Markus Wilkens
Project coordinator organisation name: VDI Technologiezentrum GmbH

Contents **Page**

1. The dissemination of OPERA 2015 :

In order to reach the highest possible awareness in Optics and Photonics Community and the general public, a broad spectrum of information and dissemination materials had been produced within OPERA 2015. Each has had its individual role in the diffusion of information about the project and its results as well as in reaching the overall objective namely making OPERA 2015 the central information exchange platform of Optics and Photonics in Europe.

During the 37 month of the project the dissemination has been very successful. Meanwhile most of the members of the photonics community in Europe have heard of OPERA 2015.

The dissemination activities of OPERA 2015 are documented in Annex 1 a -d

1.1. Website

An informative website – the keystone for the whole project - www.opera2015.org has been implemented only three month after the start of the project and has been regularly optimized. The website provides selected news, information and documents around a variety of projects, promotes events and offers a database of more than 2.000 addresses and names of European photonics companies, universities and research and development institutes. Links and information regarding European Projects in the field of Photonics have also been deposited on the website. The amount of website calls has increased permanently since the start of the website.

1.2 Newsletter

An own newsletter was established and published within the 36 month duration of the project regularly sixteen times as OPERA2015-Newsletter/EOS-Newsletter. The content of the newsletter was built on information about the project's progress and on information provided by the OPERA 2015 partners and had been sent to more than 2,000 addresses. The databases have been provided by European Optic + Photonic Research Projects Coordinates and Optic + Photonics European Research Group. The newsletter has also been disseminated as a supplement in the Optics & Laser Europe journal several times.

1.3 Power Point Presentation

For the presentation of OPERA 2015 on conferences and fairs a power point presentation has been developed and regularly updated with information that have been derived from the project. Members and partners of OPERA 2015 got the possibility to use the presentation for introducing the OPERA 2015 project.

1.4 Flyer

The function of the flyer was to give short and comprehensive information on the OPERA 2015 project to the European Photonics community. It was disseminated at international scientific conferences and photonics fairs and is still available as a download document on the OPERA 2015 website.

1.5. Conferences, Meetings and Scientific Events

The OPERA 2015 project has been introduced on many international and national conferences and scientific events and succeeded to be introduced to a broad Optics and Photonics community on scientific, business and political level.

OPERA 2015 attended fifteen conferences, meetings and scientific events.

1.6 Final Summit

The final summit of OPERA 2015 took place alongside the Photonics Europe Congress in Strasbourg. To announce the summit, there were several publications on partner websites, newsletters and a special invitation via Email.

1,150 brochures had been produced and disseminated to the visitors of the Congress and 31 Posters were hung out to attract the visitors to join the OPERA 2015 project.

With nearly 100 visitors, the final summit has been a great success:

2. Final plan for using and dissemination of knowledge

At the end of the project many useful information of the photonics industry in Europe have been gathered and published. There is a need to use the knowledge as well after the project has been finished not only for a positive cost and management accounting. As the results of OPERA 2015 will serve as input in the new European Project PHORCE 21, the dissemination is guaranteed for the next three years.

The cooperation with the European technology platform Photonics21 makes sure that the OPERA 2015 results will be disseminated further on by presentations held at photonics events, publications and on congresses that will be attended in the future. A further dissemination will as well be assured through the participation of OPERA 2015 participants in the Photonics21 initiative (e.g. IMEC, TNO, EPIC, EOS, VDITZ).

The OPERA 2015 website will still be present and permanently updated, because it has become known as an informative website on photonics in Europe during the last three years.

The reports (deliverable 3.3) that give an overview of the inventory and analysis on European Optics and Photonics industry will be continued and complemented by a questionnaire to all Photonics21 members to get even more detailed information of the European Optics and Photonics community.

Cooperation with other European Programmes will be reinforced.

Annex 1a Dissemination activities of OPERA 2015 in 2005

	January	February	March	April	May	June	July	August	September	October	November	December
Press releases						EOS Newsletter			EOS Newsletter	Announcement of the website in 6 international journals		
Internet										Implementation of the website Announcements on 61 websites in 12 countries	permanent update and development	
Newsletter						OPERA 2015			OPERA2015		→	→
Flyer									development of OPERA2015 flyer			Production and dissemination
Conferences, Meetings and Scientific Events						LASER - World of Photonics, Munich		International Congress on Optics and Optoelectronics, Warsaw	SPIE Europe International Symposium on Optical Systems Design, Jena			Annual Meeting Photonics21. Brussels →

Annex 1b Dissemination activities of OPERA 2015 in 2006

	January	February	March	April	May	June	July	August	September	October	November	December
Press releases	EPIC News	EOS-Newsletter		EPIC News		EOS-Newsletter			EOS-Newsletter			
Internet	→	→	→	→	→	→	→	→	→	→	→	→
Newsletter		OPERA2015 Newsletter				OPERA2015 Newsletter			OPERA2015 Newsletter		EOS-Newsletter	
Flyer	→	→	→	→	→	→	→	→	→	→	→	→
Conferences, Meetings and Scientific Events				SPIE Europe International Symposium Workshop in Strasbourg					ECOC 2006, Cannes	IST Conference in Helsinki Workshop in Wroclaw		Annual Meeting Photonics21. Brussels

Annex 1c Dissemination activities of OPERA 2015 in 2007

	January	February	March	April	May	June	July	August	September	October	November	December
Press releases			Photonics Newsletter	Optics and Laser Europe Announcement Annual Meeting	EOS Member Newsletter	Optics and Laser Europe	Optics and Laser Europe Announcement Annual Meeting		Optics and Laser Europe	Photonics Newsletter Optics and Laser Europe Announcement Annual Meeting		Optics and Laser Europe Optics and Laser Europe Announcement Annual Meeting
Internet	→	→	→	Announcement of the summit on the following websites: Nexus; Cordis Wire, Optics.org, Fibresystems.org, Symposia24		→	→	→	→	→	→	→
Newsletter		EOS Newsletter				EOS Newsletter			EOS Newsletter			EOS Newsletter
Flyer	→	→	→	→	→	→	→	→	→	→	→	→
Conferences, Meetings and Scientific Events						LASER - World of Photonics, Munich						Annual Meeting Photonics21. Brussels

Annex 1d Dissemination activities of OPERA 2015 in 2008

	January	February	March	April	May	June	July	August	September	October	November	December
Press releases	EOS Member Newsletter	Optics and Laser Europe		EOS Member Newsletter								
Internet	→	→	→	→								
Newsletter		EOS Newsletter										
Flyer	→	→	→	→								
Summit - Brochures - Poster - USB Sticks				Final Summit - Dissemination of 1,150 brochures; 31 posters and 174 USB sticks with information, photos and the speeches of the participants								
Conferences, Meetings and Scientific Events				Photonics Europe Congress, Strasbourg								