PROJECT FINAL REPORT
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Name, title and organisation of the scientific representative of the project's co-ordinator:	Hercules Avramopoulos Professor Institute of Communication and Computer Systems/National Technical University of Athens
Tel:	+30 210 772 2076
Fax:	+30 210 772 2077
E-mail:	hav@mail.ntua.gr
Project website address:	http://www.euro-fos.eu

Dissemination level		
PU	Public	√
PP	Restricted to other programme participants (incl. the Commission Services)	
RE	Restricted to a group specified by the consortium (incl. the Commission Services)	
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Authors:	**Name**	**Partner**	
	Christos Kouloumentas Costis Christogiannis Hercules Avramopoulos	ICCS/NTUA	
WP participants	ICCS/NTUA, UPC, Inst. TELECOM, ACREO, AIT, CHALMERS, SSSUP, KIT, TNI, IT, DTU, UPVLC, POLITO, HHI, UEssex, IMEC, TU/e		
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Table of Contents

Changes performed in the present revised version of the document

1. Correction of application references and of duplicated entries of the patents listed in Table B1 (List of Applications for Patents, Trademarks, Registered Designs, Etc.).
2. Correction of the number of patent applications mentioned in Question 15 of Section H (Use and Dissemination) of the Report on Societal Implications (page 104), according to the corrections mentioned above.

List of Acronyms

BPSK	Binary Phase Shift Keying
CE	Centre of Excellence
D8PSK	Differential 8-Phase Shift Keying
DoW	Description of Work
ECOC	European Conference on Optical Communications
FP7	Framework Programme
IAB	Industrial Advisory Board
IP	Integrated Project
JEA	Joint Experimental Activity
M.Sc.	Master of Science
NoE	Network of Excellence
OCDMA	Optical Code-Division Multiple Access
OFC	Optical Fiber Communications (Conference on)
OFDM	Orthogonal Requency Division Multiplexing
OLT	Optical Line Terminal
ONU	Optical Network Unit
OOK	On-Off Keying
OPS	Optical Packet Switching
OTDM	Optical Time-Division Multiplexing
PhD	Doctor of Philosophy
PON	Passive Optical Network
QD	Quantum Dot
QD-SOA	Quantum Dot-Semiconductor Optical Amplifier
QPSK	Quadrature Phase Shift Keying
R&D	Research and Development
RF	Radio Frequency
RoF	Radio over Fiber
RSOA	Reflective Semiconductor Optical Amplifier
RT	Research Topic
SME	Small-Medium Enterprise
SOA	Semiconductor Optical Amplifier
STREP	Specific Targeted Research Project
WDM	Wavelength Division Multiplexing
WP	Work-Package

Section A - Final publishable summary report

A1. Executive summary

EURO-FOS has been a network of excellence (NoE) focusing on photonic components and subsystems for optical communications, funded by European Commission (EC) under the 7th Framework Programme (FP7). It started in May 2008 and concluded in April 2012. Its concept was conceived upon the observation that the map of European research in photonic communications technology includes a large number of active but smaller in scale academic laboratories distributed all over Europe. EURO-FOS has been an ambitious initiative to integrate expertise, equipment and resources from the 17 participating institutes towards the creation of a powerful Pan-European laboratory (eurofoslab) that scales more than linearly the potential of the individual institutes. Using the structure of eurofoslab, the objective of EURO-FOS has been three-fold: 1) to enable partners make top-quality research through the sharing of ideas and resources and through the organization of large-scale experimental activities, 2) to enhance the collaboration of partners with industry through the agreement on common research thrusts and through the organization of a service provision platform addressing the needs of the photonics industry, and 3) to exploit the size of the network and organize a large number of education and dissemination activities spreading the word for photonics across Europe.

The operation of EURO-FOS supported the integration of all partners through frequent meetings, continuous interaction, participation in the set up of eurofoslab and participation in joint experimental activities (JEAs). Looking back, the things that EURO-FOS has achieved over its 4-year lifetime look really impressive:

The network succeeded in the development of eurofoslab through the registration of expertise and resources in the web-based inventories of the lab. A total of 839 items have been registered including more than 50 large-scale optical communications testbeds. Moreover, the network succeeded in creating the structure and the web-tools that enable searching and booking of appropriate equipment, planning of experimental activities and reporting on the progress on these activities, thus turning the vision of the Pan-European Laboratory into a reality.

Furthermore, EURO-FOS succeeded in integrating all participating institutes in its research activities. Research was organized within 4 centres of excellence (CEs) covering different discrete scientific areas of optical communications. To implement this research, partners organized a total of 66 JEAs involving the participation of a large number of external industrial and academic partners. The scientific outcome of these activities has been impressive: more than 400 EURO-FOS papers were published, some of them presenting world-record results and scientific "firsts". Moreover, a total of 12 patents were filed aiming at turning the research output into exploitable technology.

Regarding the education and dissemination activities, EURO-FOS organized 7 workshops, 5 booths at major photonic conferences, 2 summer schools and 2 winter schools, and a large number of smaller-scale events addressing the general public and the local communities. As a result of the collaboration of the partners on educational activities, the network produced an education kit and organized the framework for joint supervision from senior staff of 13 PhD students working on the scientific topics of EURO-FOS.

Finally, EURO-FOS succeeded in bringing academia closer to industry. The network created a cluster of 29 industrial affiliates that have been closely monitoring and participating in the network activities, and an industrial advisory board (IAB) consisting of representatives from 6 of these affiliates (ADVA, NSN, ALU Germany, Tellabs, VPI and Finisar). Through continuous interaction with the members of the IAB, EURO-FOS has been trying to align its research topics with industrial trends and explore the interest of industry for the

set up of a service provision platform in the field of photonic communications based on the expertise and equipment of European academic institutes. Although the idea of securing the self-sustainability of eurofoslab through the establishment of industrial collaborations on a pay-for-service basis has been over-optimistic, significant steps were made; as for example the identification of the need for further elaboration on the legal framework for the operation of such a service provision platform, the identification of industrial interest for specific technical services, the pilot run of "charge-free" service provision projects in the last year of the network, and the definition of a viable techno-economic plan for retaining the eurofoslab structure in the post EURO-FOS era with a 2-year horizon.

A2. Summary of project context and objectives

EURO-FOS has been an FP7 network of excellence (NoE) funded by the European Commission and coordinated by the Institute of Communications and Computer Systems of the National Technical University of Athens (ICCS/NTUA). It has formed a powerful cluster of 17 European academic institutes from 12 European countries with expertise in the design, development and testing of photonic components and subsystems that are applicable in high-capacity optical communication networks.

The idea for creating such a network came up with the observation that unlike the case of North America or Japan, the map of European research in photonics technology includes a large number of particularly active but smaller in scale laboratories distributed all over Europe. In this sense, EURO-FOS has represented an ambitious initiative to integrate expertise, equipment and resources from the participating institutes towards the creation of a powerful Pan-European laboratory.

EURO-FOS scientific activities have related to the design, development and testing of advanced subsystems and prototypes through the functional integration of photonic devices, aiming at bridging the gap between research on fundamental device-level physics and developments on the network level of optical communications. Collaboration between the consortium members has focused on four discrete scientific areas including: 1) digital optical transmission systems, 2) optical sources and amplification systems, 3) high-speed optical network subsystems and 4) next-generation optical access subsystems, and this collaboration has been tunnelled through the organisation of joint experimental activities. The general objectives of the network throughout its lifetime have been:

To reinforce common research thrusts and enable innovation, by clustering top photonic research groups in Europe and integrating researchers by facilitating their exchange and mobility throughout Europe.

To be the enabler of complex and advanced experiments: EURO-FOS has aimed at facilitating shared access to expensive laboratory infrastructures creating "economies of scale" in the validation of photonic subsystems and systems. This has included shared access to state-of-the-art photonic devices and prototypes, shared access to test and measurement equipment, and shared access to advanced test-beds and deployed optical fibre links in Europe.

To strengthen European research scene by creating a mechanism for the consortium members to access photonic devices previously developed or being developed in complementary smaller scale (e.g. STReP/IP) European projects on photonic components. Functional integration of photonic devices from different but complementary projects has been envisaged to create new concepts and ideas through the design and development of novel subsystems. The application of photonic components in cross-disciplinary applications has been envisaged to stimulate further innovation in the development of photonic subsystems.

To establish links between academia and industry in the field of photonic sub-systems and. Such links have the potential to enable the channelling of innovation from universities into industry and translate basic research into commercially exploitable technology.

A3. Main Scientific and technical (S&T) results and foregrounds

To accomplish its objectives, EURO-FOS used the internal structure presented in Figure 1, organizing the managerial and technical activities within 8 work-packages (WPs).

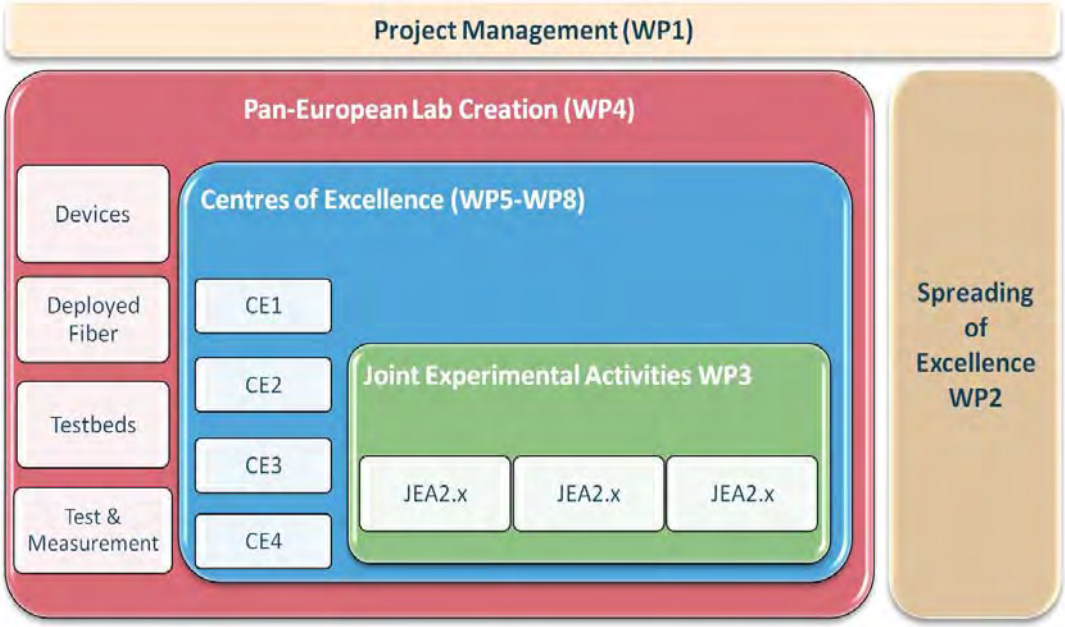


Figure 1: Structure and organization of EURO-FOS activities.

Pan-European Lab creation – integration of resources: Work on the creation of the Pan-European Lab (eurofoslab) started already from the beginning of the project aiming to set up the mechanisms, the procedures and the web-tools that would enable the integration and the management of resources (referring both to expertise and infrastructure/equipment) from the 17 participating institutes. University of Essex (UEssex) led the effort as the WP4 leader to come up with a practical structure that would allow the partners for:

- Registering their resources (expertise, photonic components, subsystems, systems, testbeds, installed fibre links, simulation tools) in common inventories.
- Searching for missing/complementary resources belonging to other partners using resource management tools.
- Reserving these resources and organizing joint experimental activities (JEAs) with the participation of other EIURO-FOS beneficiaries or with the participation of external industrial and academic partners.
- Reporting on the progress on the experimental activities providing updates on experimental results, validation of concepts and future plans for extending the scientific scope of the collaborations.

Apart from their private domains addressing the 17 beneficiaries of the network, the web-tools of eurofoslab had also public domains that were exposed to external/unregistered users and allowed these users for searching the available resources and proposing joint experimental endeavours.

Through the continuous motivation and efforts from all partners, the eurofoslab was equipped at the end of the project (May 2012) with 840 items including:

- **57 systems and large-scale testbeds** such as Terabit/s optical time-division multiplexing (OTDM) and orthogonal frequency division multiplexing (OFDM) testbeds, coherent wavelength division multiplexing (WDM) testbeds, WDM transmission systems at 1550 nm (C- and L-band) and 1310 nm, radio over fiber (RoF) systems based on single-mode and multi-mode fibers, and other.
- **68 subsystems** like complete optical line terminals (OLT) and optical network units (ONU) for access networks, transmitters, receivers and regeneration units.
- **419 components** including a large variety of photonic, electronic and optoelectronic devices.
- **276 test & measurement instruments** like optical and RF-spectrum analyzers, digital communication analysers, real-time oscilloscopes, auto-correlators, optical sampling oscilloscopes and other.
- **5 installed fiber links** for large-scale field trials and demos, and
- **15 software suits** for the simulation of optoelectronic components and lightwave communication systems.

Through this impressive collection of resources at eurofoslab, EURO-FOS facilitated shared access to expensive laboratory infrastructures, creating "economies of scale" in the development, testing and validation of photonic subsystems and systems. More significantly, the collaboration and synergy through eurofoslab allowed for new perspectives and a higher potential for the EURO-FOS beneficiaries in designing and participating in ambitious, large-scale experimental endeavours, otherwise not feasible due to the lack of equipment in the individual laboratories.

Research and scientific results: Research within EURO-FOS was organized in a number of research topics (RTs) that were falling within 4 centres of excellence (CEs), i.e. within 4 areas of optical communications. Notably, the relevant research was implemented by joint experimental activities that were usually spanning across multiple RTs and areas, as they were representing complex experimental endeavours, enabled by the diverse expertise of the network participants and the availability of a large variety of advanced equipment. The four scientific areas of interest within EURO-FOS were the following:

1) CE1 - Digital optical transmission systems: The relevant activities were led by Heinrich-Hertz Institut (HHI) and were dedicated to the investigation, design and experimental evaluation of new photonic subsystems that enable higher capacities, longer reach, better transmission performance and higher bandwidth efficiency for high (multi-Terabit) capacity transmission systems. The development of such systems is considered today as the only viable way to meet the increasing capacity demands across Internet that are generated today by the end-users and are associated with a number of popular broadband services and applications such as high-definition tv, social media etc. Topics of interest within CE1 included multi-carrier transmission systems for core and metro networks with particular emphasis on orthogonal frequency division multiplexing (OFDM) techniques, coherent transmission systems using spectrally efficient (higher-order) modulation formats, combination of optical time-division multiplexing (OTDM) technology with multi-level modulation formats, and in the last year of the network transmission systems using multi-mode and multi-core optical fibres.

The concepts developed and the results obtained during the 4 years of the network have been really many and significant. Examples include the demonstration by HHI of transmission of eight 28 Gbaud 16-QAM channels over 480 km using a real-time transmitter, the development of a Nyquist-WDM Tb/s super-channel transmission system by POLITO, with symbol rate up to 30 Gbaud, subcarrier spacing down to Nyquist limit and maximum distance up to trans-oceanic distances, the demonstration by KIT and industrial associates of EURO-FOS of an all-optical OFDM system accommodating 26 Tb/s line-rate OFDM streams, the development

and experimental testing by ACREO, HHI, Chalmers, TNI, IT, POLITO and Inst. TELECOM of algorithms and techniques for the mitigation of nonlinear effects during propagation of optical signals, the demonstration by TU/e and DTU of optical packet switching and detection of high-speed OTDM data packets up to a speed of 640 Gb/s, a record transmission over 110 km of an 0.87 Terabit/s OTDM signal with D8PSK modulation format and polarization diversity by Chalmers, Inst. TELECOM, DTU and ICCS/NTUA, and the design and implementation of signal processing techniques for gridless/elastic networking environments by UEssex and SSSUP.

2) CE2 - Optical sources and amplification systems: This subset of activities was coordinated by Scuola Superiore Sant' Anna (SSSUP) and was related to the investigation of novel amplification systems for access and burst-traffic networks, new types of semiconductor optical amplifiers based on quantum dots (QD-SOAs), techniques and applications of parametric amplification and development of novel schemes for tunable laser sources for telecom and sensing applications.

Also for this set of activities the concepts that were developed and the results that were obtained have been significant. Main activities included the investigations by UPC, IT and AIT on remotely pumped amplification schemes that are suitable for amplification in extended reach passive optical network (PON) architectures, the investigations of quantum dot semiconductor optical amplifiers (QD-SOAs) by KIT and HHI, the development by UPVLC of mode-locked lasers based on novel nanomaterials (carbon-nanotubes), the development by UPVLC, SSSUP and DTU of high-quality mode-locked lasers as multi-wavelength comb sources in integrated WDM-PON and millimeter-wave radio architectures, the development by Inst. TELECOM in collaboration with Orange Labs of low-chirp, multi-wavelength sources based on electro-optic modulation, with excellent perspectives for use in WDM-PONs, and the joint investigations by Chalmers, DTU, TNI and HHI on the topic and the optimization parameters of optical parametric amplification that can further extend the reach of transmission systems with significant positive impact on their cost and energy efficiency.

3) CE3 - High-speed optical network subsystems: EURO-FOS activities within this area were coordinated by DTU and were devoted to the investigation of the role of all-optical techniques for developing next-generation routers and cross-connects in optical network architectures. Efforts focused in particular on the development of all-optical processing units for advanced modulation formats, the investigation of a variety of all-optical switching technologies, the development of novel clock-recovery and regeneration schemes, as well as the integration of sub-modules for the implementation of fundamental functionalities in optical routing systems.

The work within CE3 has been impressive. Significant outcome of this work relates to the development by KIT and HHI of a self-coherent receiver for polarization multiplexed DQPSK signals, the demonstration by DTU and Inst. TELECOM of the first 650 Gb/s OTDM detector performing clock recovery, channel identification and multiplexing, the demonstration by ICCS/NTUA, SSSUP and TU/e of a complex contention resolution scheme for nodes in optical packet switching (OPS) networks, the demonstration by ICCS/NTUA, HHI and industrial affiliates of a complex phase-insensitive regenerator for OOK, BPSK and QPSK signals, the demonstration by Inst. TELECOM, ICCS/NTUA and external academic partners of an optical code division multiple access (OCDMA)-based packet forwarding/switching optical node, and a large-scale experimental demonstration of an all-optical router relying on SOA-based switching elements.

4) CE4 - Next-generation optical access subsystems: The last subset of research activities was led by Universitat Polytècnica de Catalunya (UPC) and was devoted to the study of novel components and subsystems for passive optical networks (PONs) and wired-wireless hybrid networks that will implement fibre-to-the-x (FTTx) architectures and will allow for bringing the full potential of optical communications till

the final users (i.e. the citizens) of the networks. Research focused on advanced radio-over-fiber (RoF) techniques, monitoring and mitigation of transmission impairments in extended reach PON architectures, novel designs of user terminals and optical line terminal (OLT) subsystems including burst-mode receivers, optical transmitters, optical signal generation devices, as well as remote node architectures and modules for metro-access convergence.

The work has been impressive also in this case. Research highlights include the first demonstration by TU/e and UPVLC of bidirectional transmission of ultra wide band (UWB) signals over a single 100 µm core plastic fiber, the transmission of multi-standard OFDM-based signals in coexistence with legacy baseband data signals by UPVLC, UEssex and IT, the demonstration by UPC of a variety of RSOA-based ONU designs, the demonstration by ICCS/NTUA and UPC of optically-assisted downstream cancellation techniques using Fabry-Perot filters at the ONU, and the design, development and application of novel burst-mode receivers in PON scenarios by IMEC, UPC, TNI and ICCS/NTUA.

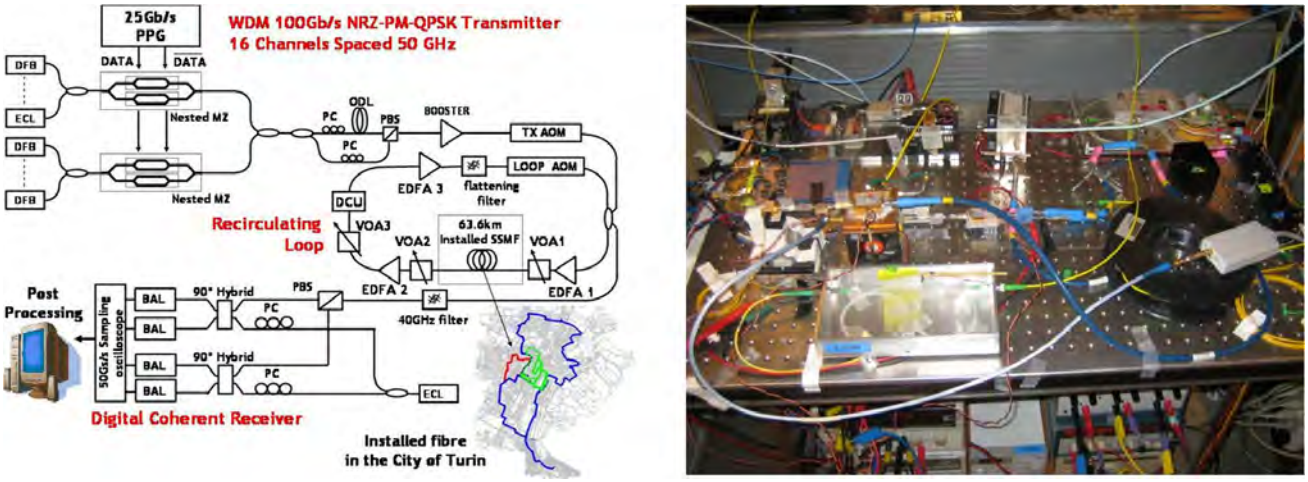


Figure 2: Left: Setup of a transmission loop experiment over installed fiber supporting transmission of 16x100 Gb/s channels with polarization-multiplexed QPSK format. Right: Part of the experimental setup for 0.87 Terabit/s OTDM signal transmission with D8PSK modulation format and polarization diversity. The picture illustrates the optoelectronic clock recovery subsystem used in the transmission setup. Both works performed as joint experimental activities within CE1.

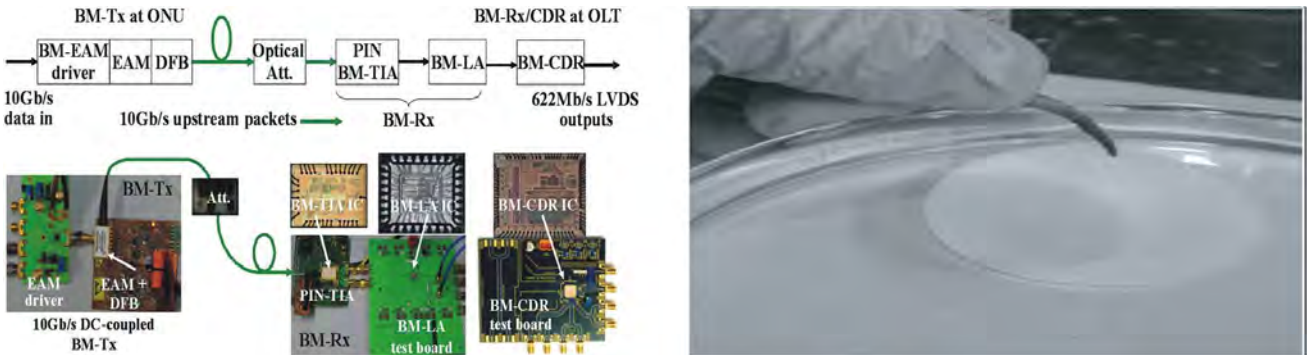


Figure 3: Left: Experimental setup developed within EURO-FOS for 10 Gb/s uplink transmission in next generation PONs using burst-mode elements. The work was performed as joint experimental activity in CE4. Right: picture of a floating carbon nanotubes film on water during preparation for characterization within

EURO-FOS with respect to its linear and nonlinear optical properties. The work was related to CE2 and CE3 of EURO-FOS.

Organization of joint experimental activities and integration of partners: Research within the 4 CEs and interdisciplinary research involving more than one CE, has been implemented mainly through the organization of joint experimental activities (JEAs). For each JEA it was necessary the participation of at least 2 EURO-FOS beneficiaries, while it was optional the participation of additional external partners from industry or academia. Figure 4 summarizes the main numbers associated with the organization of JEAs throughout the 4-year lifetime of the project: 66 JEAs were set up in total involving 86 mobility actions and a total cumulative period of 205 weeks that young or senior researchers spent while visiting collaborating institutes for the needs of the joint experiments. The total number of publications resulting from the 66 JEAs is 214 indicating the quality of the experimental activities and the scientific impact on the relevant fields.

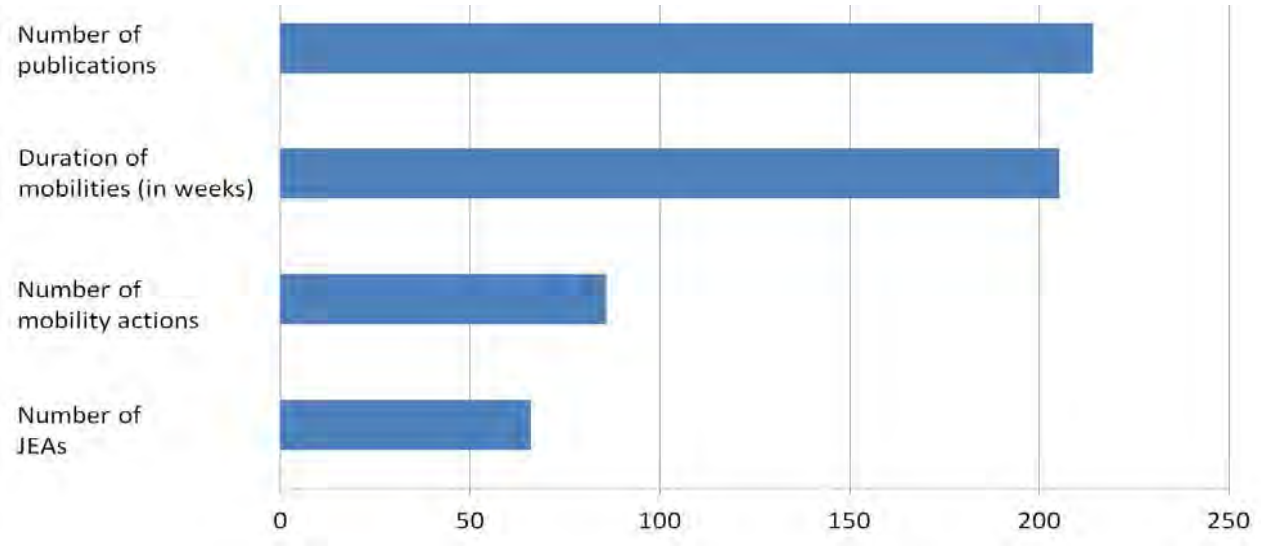


Figure 4: Main metrics related to the organization of JEAs during the total duration of EURO-FOS.

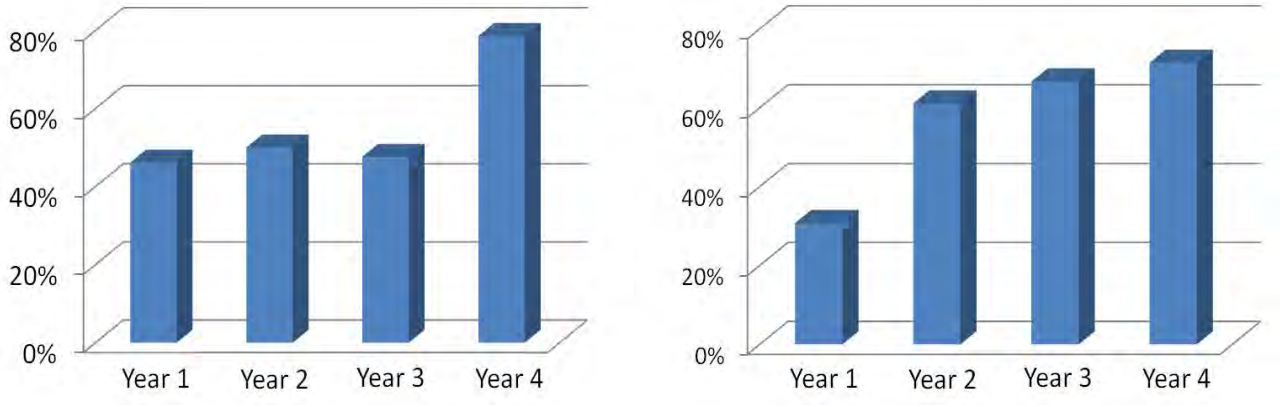


Figure 5: Left: JEAs with more than 3 participants as percentage of the total number of JEAs in each year. Right: JEAs relating to the research topics of more than 1 CE as percentage of the total number of JEAs in each year.

The number of large-scale JEAs (involving 4 or more participants) and the number of JEAs that had a broader technical scope spanning over more than one CE, have been considered throughout the project lifetime as

important indicators for the level of integration of partners and the level of integration of technical expertise. Figure 5 illustrates on the left side the evolution of the large-scale activities as percentage of the total JEAs in each year indicating the success in the integration of partners, especially towards the end of the project. The same figure illustrates on the right side the evolution of the JEAs that involve more than 1 CE, again as percentage of the total number of JEAs in each year, and indicates the increasing success of the network in organising activities with a broader scientific and technical scope.

A4. Potential impact

The concept of EURO-FOS was conceived so as to have high impact on the scientific community, the industry and the general public, and the consortium succeeded in taking good care of all three directions. The following paragraphs present the dissemination actions towards these three categories and the possible impact.

Dissemination towards the scientific community and possible impact: EURO-FOS succeeded in integrating the efforts of 17 academic institutes, clustering the young and senior researchers of these institutes and creating a framework for close collaboration on theoretical and experimental work and supervision of PhD students. EURO-FOS pursued the dissemination of the research results obtained through scientific, publications, patent applications/registrations, organization/support of workshops, organization of booths at major conferences in the field, and collaboration with Photonics21 European Technology Platform and with other research organizations and bodies from Europe, US and Japan. Within the 4 years, the consortium published more than 400 publications as a result of the activities within the framework of JEAs or as a result of solo or collaborative work related to the specific topics of EURO-FOS. At the same time the consortium members filed 12 patents and produced 55 high quality application notes that made available to the scientific community through the web-sites of EURO-FOS and eurofoslab. The total of this material (publications, patents, application notes) represents an impressive amount of knowledge generated from the network activities and made available to the scientific community through various means. This generated knowledge represents novel concepts and ideas and complex technical implementations that became possible through the joint efforts of EURO-FOS partners. The consortium also organized 7 scientific workshops on the topics of the 4 CEs, and 5 booths at the exhibitions of the ECOC and OFC conferences over the last years. It established connections and collaborations with academic institutes from Europe, US and Japan and participated in meetings that European Commission organized with Photonics21 for the definition of future research directions and future activities in the field of optical communications.

Finally, EURO-FOS succeeded in establishing collaborations with more than 30 European or national projects, especially specific targeted research projects (STREPs), providing a framework for these projects to extend their studies and investigate the operation of new components and concepts in broader environments.

Figure 6: Left: EURO-FOS booth at OFC 2011 exhibition. Middle: poster of the workshop organized by Inst. TELECOM with the support of EURO-FOS. Right: Presentation of EURO-FOS in the IEEE Photonics Society News (April 2011 issue).

Impact on industry: EURO-FOS organized the participation of 29 companies in the network as industrial affiliates. The industrial affiliates set up an industrial advisory board (IAB) consisting of representatives from 6 affiliates (ADVA Optical Networking, Nokia-Siemens Networks (Munich), Alcatel-Lucent (Stuttgart), VPI Systems, Finisar and Tellabs). The members of the IAB have been in close collaboration with the consortium providing feedback on the research directions inside each centre of excellence and the relevance of these directions to current industrial interests, as well as on the perspectives of eurofoslab to evolve into a service provision platform addressing the needs of SMEs and larger companies in the field of optical communications. The communication between the consortium and the members of the IAB was realized through direct contacts and phone-conferences, through the joint organization of a workshop in March 2011 in Berlin, and through questionnaires.

As a result of the relevance of the EURO-FOS research lines with topics of industrial interest, EURO-FOS succeeded in attracting the massive participation of industry in its research activities, either in the form of industrial participation in JEAs or in the form of collaboration on preparatory work within the four CEs. As an example, Figure 7 illustrates the contribution of 20 industrial partners in the research activities of EURO-FOS in Year 4, which resulted in the publication/submission of 67 joint papers.

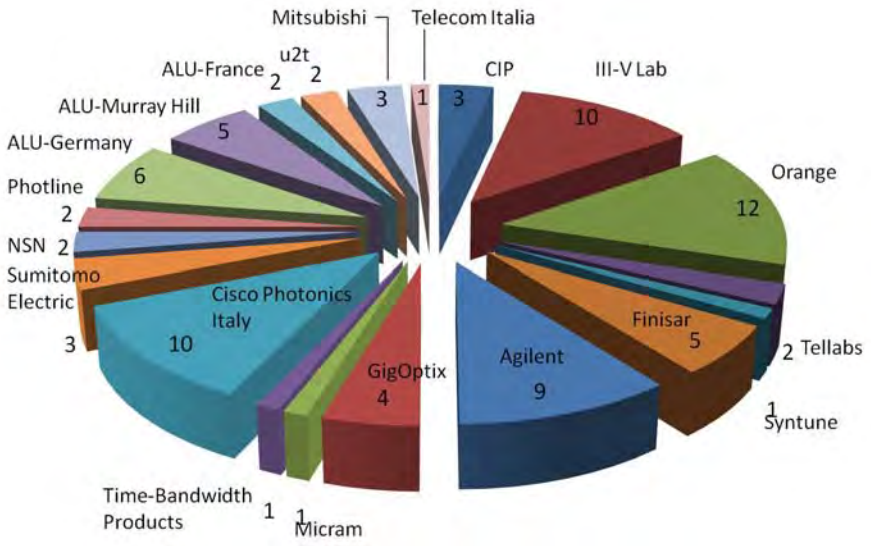


Figure 7: Contribution of industrial partners in the 67 joint publications/submissions in Year 4 of EURO-FOS.

Finally, as a result of the continuous interaction with the members of the IAB and representatives from other companies, the consortium succeeded in communicating the role that eurofoslab can play in the future for covering part of the industrial R&D needs and bridging the gap between academia and industry. Based on this interaction, the consortium achieved to identify the services of major interest for the industry and the major concerns regarding the legal framework of these collaborations. Furthermore it achieved to set up a pilot run of a service provision project between EURO-FOS and ADVA Optical Networking and define a plan for self-funding and preserving the structure of eurofoslab for 2-years after the end of the project (May 2012-April 2014). Using this structure the ex-EURO-FOS partners and other organizations from industry or academia will be able to use the web-tools of eurofoslab for booking resources, planning collaborative experiments and disseminating the relevant results.

Figure 8: Left: Lecture at AIT during the first summer school of EURO-FOS (June 2009). Right: First edition of the EURO-FOS "Academic Research on Photonic Systems in Europe".

Societal impact – impact on the general public: EURO-FOS also tried to explore the size of the network and organized a series of dissemination events addressing undergraduate students in relevant university departments, and the general public in the cities of the participating institutes. To this end, EURO-FOS prepared the hand-book of "Academic Research on Photonic Systems in Europe" listing M.Sc. and Ph.D. programs offered by European institutes in the field of optical communications, organized two summer

schools and two winter schools, prepared an education kit comprising lectures, notes and presentations, which remains available through the web-site of the project, and supported a large number of media campaigns and small-scale dissemination actions in the form of open-day-like events that aimed to spread the word for photonics among the general public and explain the significance of photonic technology for our everyday life. The number of attendees of all these activities has been quite a few thousands indicating their successful organization and their significant societal impact.

A5. The Project's Public web-site: (http://www.euro-fos.eu)

The EURO-FOS website has been launched fully operational since day 1 of the project execution. The public section of the website provides to the visitors all the necessary information related to:

- ✓ The mission and the objectives of the network as well as the tackled research areas and the joint activities performed during the deployment of EURO-FOS NoE.
- ✓ The Pan-European laboratory and its facilities
- ✓ Profiles of the organisations participating in the Network and the activity of the four Centers of Excellence (CEs) of the project
- ✓ All the significant documents prepared during the implementation of EURO-FOS that comprise part of the project's legacy: application notes (ANs) as well as vision/white papers resulted from the Joint Experimental Activities performed by the 17 members of EURO-FOS consortium and Network, during the 4 years of the operation of the network. Both the application notes and the vision/white papers formulate an extremely useful source of on-hands information and consolidated laboratory know-how to the researchers in the domain of photonics communications.
- ✓ The training material presented by EURO-FOS members in the framework of the courses of summer and winter schools organised by the project (for registered users only)
- ✓ All major dissemination activities performed and material produced during the project (e.g. press releases, newsletters, full lists of scientific publications during the project etc)

In the framework of the effort of EURO-FOS consortium to preserve the communication links with industry the public website of the project will be maintained and de-cluttered from any redundant information in order to remain operational for at least two years after the end of the project.

A6. Pan-European Lab website (http://www.eurofoslab.eu)

The site implements the Pan-European virtual laboratory web-based platform developed during the project. The platform offers a set of web services and tools that have been maintained and improved, in terms of functionality, on a continuous basis throughout the whole duration of EURO-FOS. The backbone of the services offered by the Pan-European virtual laboratory are summarised as follows:

- **Inventory service**: The platform comprises a centralized data repository to store participants' offered resources including photonic equipments, test-beds, components and test and measurement facilities.
- **Resource and facilities services**: A set of web-based interfaces and services for resource owners and virtual lab users to enter information for registering their resources, listing, browsing and searching registered facilities and resources.

- **Joint experimental setup, planning, scheduling and listing services**: A set of tools and interface for the users to set up joint experimental activities, including allocation of the appropriate photonic resources, reservation and booking of experimental resources registered in the system, as well as tools for scheduling and planning of joint experimental activities.

Thus the platform realises an EU-wide based laboratory that virtually integrates and coordinates all existing photonic equipments, test-beds, components, facilities contributed the members of EURO-FOS network, at the service of any potential user beyond the consortium members: EU researchers, academic institutions, SMEs and industry engaged in R&D within the photonics area.

Figure 9. EURO-FOS Pan-European virtual laboratory structure.

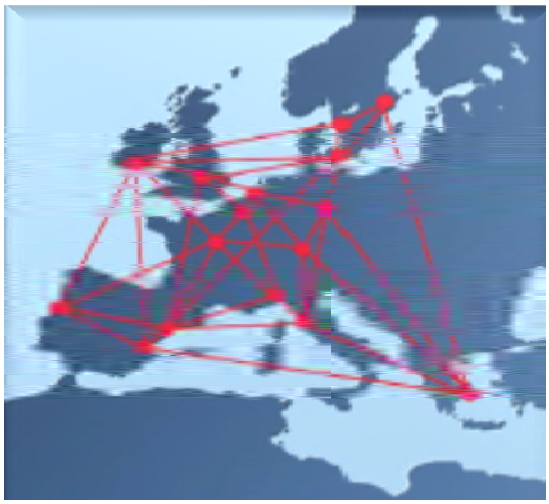
Figure 10. The homepage of the Pan-European virtual laboratory site.

EURO-FOS network will seek ways towards the maintenance and sustainability of the virtual laboratory beyond the contractual end of the project, in an effort to offer its capabilities and functionality in future collaborations between the network members and interested parties of the European photonics community, with special emphasis on services provided to industrial parties.

A7. The EURO-FOS Consortium

EURO-FOS has been a network of 17 European academic research groups that are active in the design and development of photonic systems that find application in telecommunication networks.

Consortium: *Institute of Communication and Computer Systems/National Technical University of Athens (**ICCS/NTUA**), Heinrich-Hertz-Institut (**HHI**), University of Essex (**UEssex**), Universitat Politècnica de Catalunya (**UPC**), Institut TELECOM (**Inst. TELECOM**), ACREO AB (**ACREO**), Technical University of Eindhoven (**TU/e**), Athens Information Technology (**AIT**), Chalmers University of Technology (**Chalmers**), Karlsruhe Institute of Technology (**KIT**), Politecnico di Torino (**POLITO**), University College Cork (**TNI**), Scuola Superiore Sant'Anna (**SSSUP**), Universidad Polytecnica de Valencia (**UPVLC**), Interuniversity Microelectronics Centre (**IMEC**), Instituto de Telecomunicaões (**IT**), Technical University of Denmark (**DTU**)*



Coordinator contact details
Prof. Hercules Avramopoulos
National Technical University of Athens
9 Iroon Polytechniou St., 15773, Athens, GREECE
Tel: +30-210 772 2076, Fax: +30-210 772 2077
e-mail: hav@mail.ntua.gr

Section B – Use and dissemination of foreground

B1. Use and dissemination of foreground

Dissemination of foreground knowledge within EURO-FOS NoE has been a multidimensional activity comprising numerous divert tasks towards the promotion of the scientific results derived through the joint experimental activities by the consortium members, as well as towards spreading network's reputation to the general public. In this framework, EURO-FOS has planned and executed a very active dissemination strategy under the title "Spreading of Excellence", aiming at the:

- promotion promoting the network's views on key technological issues
- disseminating of latest results derived from joint research for the stimulation of new research lines based on looking forward technology solutions
- creation of synergies between the network and other European research projects
- contribution to the European research agenda
- creation of links and collaborations with non-EU consortia
- training of highly-skilled researchers with subjects associated with fiber-optic communications
- dissemination of photonics technologic to non-scientific European public

The major components of EURO-FOS' spreading of excellence activities are summarised as follows:

- ✓ **Scientific publications in international conferences and journals:** During the 4 years of its operation, EURO-FOS network has produced approximately 690 publications. A percentage of 30% of these publications were the result of JEA work among the EURO-FOS partners, around 160 publications were produced as result of collaborative work with industrial partners, while 76 invited talks and presentations were given by the consortium members in numerous sound conferences. The various publications are classified and summarized in the following table.

Reporting period	Total number of publications	Publications as outcome from JEAs	Publications with industry	Invited publications
Year 1	81	14	11	7
Year 2	123	25	25	15
Year 3	182	40	30	16
Year 4	304	130	101	38

- ✓ **Presence in European and international workshops:** EURO-FOS had a consistent and multi-fold presence in the major events related to photonics technology and communication, namely ECOC, ICTON and OFC. In particular, EURO-FOS has been participating with a booth at ECOC (from 2008 until 2011) as well as in OFC 2011. In addition the network has actively organised a number of workshops in ECOC and ICTON.
- ✓ **Organisation of training activities:** EURO-FOS project organised two (2) summer schools (in 2009 and 2010) and a number of winter courses. The winter courses were organised in a decentralised manner and took place in parallel in the countries of origin of the members of the consortium, in an effort to diffuse modern advancements of photonic technologies to a large number of students around Europe. Besides their geographical distribution, these winter courses addressed a wide group of audience, in terms of age and back ground knowledge, ranging from high school students up to university undergraduates and graduates.
- ✓ **Dissemination activities towards the general public:** EURO-FOS organised 37 smaller or larger scale events in order to address non-scientific audience, aiming to the general public about the potential of photonic technology and the ways that its applications affect and change everyday life. Event for

the general public included media campaigns (newspapers, web articles and TV broadcasts), presentations to schools, visits to the laboratories of the network members and demonstrations, as well as participation of individual partners in various local public events, such as local technology fairs and open workshops).

The dissemination activities of EURO-FOS NoE are estimated to have echoed at more than 50.000 people:

- ✓ **34.306** visits at the EURO-FOS website within the period 2009-2012
- ✓ **8.919** visits at the eurofoslab web-site within the period 2009-2012
- ✓ **250** recipients of EURO-FOS newsletters and announcement of events
- ✓ **1.600** students attended the tutorials of summer/winter schools
- ✓ **1.700** visitors to the EURO-FOS booths in 4 international conferences (ECOC and OFC)
- ✓ **500** researchers attended the 8 workshops organised by the project
- ✓ **>35** PhD researchers have been benefited in their work
- ✓ **>1850** persons attended the 37 events organized in fairs, media and high schools
- ✓ **32** top quality enterprises conducted collaborative research within JEAs
- ✓ **>400** publications presented in first line international conferences and journals

The intense and forward looking research activities carried out during the lifetime of EURO-FOS project in combination with the multidimensional spreading of excellence strategy adopted by the network resulted in the legacy of the project to the European research community, namely:

- ⇨ **Collection of training material:** A collection of presentations used as the training material for the purposes of the summer and winter schools and courses on photonics technology performed by EURO-FOS members to a wide audience of students of medium and higher education
- ⇨ **Collection of application notes (ANs):** The 17 members of the EURO-FOS network prepared and made available 55 ANs covering a large range of experimental processes and set-ups tackling practical aspects related with optical measurement methodologies, set-up of optical experiments and system/sub-system as well as component characterization. The collection of ANs consolidates the valuable expertise of the EURO-FOS partners in optical experimentation.
- ⇨ **Collection of Vision and White papers:** Comprises 6 papers that provide an overview on key research topics related with the four Centers of Excellence of EURO-FOS network.

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NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[1] (if available)	Is/Will open access[2] provided to this publication?
1	Phase-Incoherent DQPSK Wavelength Conversion Using a Photonic Integrated Circuit	M. Bougioukos	IEEE Photonics Technology Letters	Vol. 23, no. 22	IEEE	USA	2011	1649-1651		No
2	All-Optical Carrier Recovery Scheme for Access Networks with Simple ASK Modulation	B. Schrenk	J. Opt. Commun. Netw.	Vol. 3	IEEE/OSA	USA	2011	704-712		No
3	Colorless ONU with All-Optical Clock Recovery for Full-Duplex Dense WDM PONs	A. Maziotis	IEEE Photonics Technology Letters	Vol. 23	IEEE	USA	2011	1433-1435		No
4	Experimental Demonstration of an Elastic Packet Routing Node Based On OCDMA Label Coding	H. Brahmi	IEEE Photonics Technology Letters	Vol. 24, no. 9	IEEE	USA	2012	71-73		No
5	All-optical clocked D flip-flop memory using a hybrid integrated S-R latch	C. Reis	Microwave Optical Technology Letters	Vol. 53, no. 6	Wiley Periodicals	USA	2011	1201-1204		No
6	Blockwise Digital Signal Processing for PolMux	M. Selmi	Journal of Lightwave	Vol. 29, no. 20	IEEE/OSA	USA	2011	1542-1551		No

[1] A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

[2] Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

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	QAM/PSK Optical Coherent Systems		Technology							
7	Modulated Grating Y-Structure Tunable Laser for λ-Routed Networks and Optical Access	J. M. Fabrega	IEEE Journal of Selected Topics on Quantum Electronics	Vol. 17	IEEE	USA	2011	1542-1551		No
8	Dual-Operability and Bandwidth Partitioning Enabling ONU with Tandem-Modulator	B. Schrenk	IEEE/OSA JOCN	Vol. 3	IEEE/OSA	USA	2011	674-682		No
9	High Customer Density PON with Passive Amplification through Distributed Pump for >1:1000 Tree Split	B. Schrenk	Journal of Lightwave Technology	Vol. 29	IEEE/OSA	USA	2011	1951-1957		No
10	C+L band extended reach amplified next generation access networks	J. Girao	Microwave Optical Technology Letters	Vol. 53, no. 10	Wiley Periodicals	USA	2011	2414 - 2418		No
11	Efficient coding/decoding scheme for PSK optical systems with differential encoding	S. Mumtaz	IET Optoelectronics	Vol. 5, no. 6	IET	UK	2011	241-246		No
12	Experimental and theoretical investigation of Mode Size Effects on Tilted Facet Reflectivity	G. de Valicourt	IET Optoelectronics	Vol. 5, no. 4	IET	UK	2011	175-180		No
13	Impact de la saturation du gain d'un amplificateur	M.N. Ngo	Journées Nationales	P167		France	2011	23-		No

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	optique à semiconducteurs utilisé pour l'amplification 'booster' du réseaux d'accès sur la qualité du signal optique		d'Optique Guidée							
14	Contrôle de la dérive de fréquence dans les lasers DFB à puits quantiques rétroactionnés optiquement	F. Grillot	Journées Nationales d'Optique Guidée	P167		France	2011	218-		No
15	Modélisation d'un laser modulateur intégré à modulation duale (D/EML)	K. Kechaou	Journées Nationales d'Optique Guidée	P172		France	2011	233-		No
16	Demonstration of Failure Reconfiguration via Cross?Layer Enabled Optical Switching Fabrics	C.P. Lai	IEEE Photonics Technology Letters	Vol. 22, no. 23	IEEE	USA	2011	1679-1681		No
17	Blocs d'extraction de labels cod´es en CDMA optique	H. Brahmi	Journées Nationales d'Optique Guidée	P146		France	2011	155-		No
18	Conception de flip?flop tout?optique en utilisant des portes Ou?Exclusif	H. Brahmi	Journées Nationales d'Optique Guidée	P147		France	2011	158-		No
19	Dependence of non-linear impairments on polarisation state and baud rate in WDM systems with DQPSK and OOK channels	M. N. Chughtai	Optics Express	Vol. 20, no. 7	OSA	USA	2011	8155-		Yes

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20	Frequency-Domain Chromatic Dispersion Equalization Using Overlap-Add Methods in Coherent Optical System	T. Xu	Journal of Optical Communications	Vol. 32	OSA	USA	2011	131-155		No
21	Multi-Standard Wireless Transmission over SSMF and Large-Core POF for Access and In-home Networks	Y. Shi	IEEE Photonics Technology Letters	Vol. 24, no. 9	IEEE	USA	2012	736-738		No
22	Multichannel wavelength conversion of 50-Gb/s NRZ-DQPSK signals using a quantum-DOT SOA	M. Matsuura	Optics Express	Vol. 19, no. 26	OSA	USA	2011	B560-B566		Yes
23	320Gbit/s wavelength conversion using four-wave mixing in quantum-dot semiconductor optical amplifiers	M. Matsuura	Optics Letters	Vol. 36, no. 15	OSA	USA	2011	2910-2912		No
24	Optical switching and detection of 640 Gbits/s optical time-division multiplexed data packets transmitted over 50 km of fiber	F. Gomez-Agis	Optics Letters	Vol. 36	OSA	USA	2011	3473-3475		No
25	Scalable InP integrated wavelength selector based on binary search	N. Calabretta	Optics Letters	Vol. 36	OSA	USA	2011	3846-3848		No

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26	1x8 self-routing of 40 Gbit/s phase-modulated packets	M. Presi	Electronics Letters	Vol. 48, no. 3	IET	UK	2012	169-171		No
27	320-to-40-Gb/s Optical Demultiplexing Using Four-Wave Mixing in a Quantum-Dot SOA	M. Matsuura	IEEE Photonics Technology Letters	Vol. 24, no. 2	IEEE	USA	2012	101-103		No
28	Real-time OFDM transmitter beyond 100 Gbit/s	R. Schmogrow	Optics Express	Vol. 19	OSA	USA	2011	12740-12749		Yes
29	Free-space optical delay interferometer with tunable delay and phase	J. Li	Optics Express	Vol. 19	OSA	USA	2011	11654-11666		Yes
30	42.7 Gbit/s electro-optic modulator in silicon technology	L. Alloatti	Optics Express	Vol. 19	OSA	USA	2011	11841-11851		Yes
31	Reduced propagation loss in silicon strip and slot waveguides coated by atomic layer deposition	T. Alasaarela	Optics Express	Vol. 19	OSA	USA	2011	11529-11538		Yes
32	26 Tbit s−1 line-rate super-channel transmission utilizing all-optical fast Fourier transform processing	D. Hillerkuss	Nature Photonics	Vol. 5	Nature Publishing Group	USA	2011	364-371		No
33	512QAM Nyquist sinc-pulse transmission at 54 Gbit/s in an optical bandwidth of 3 GHz	R. Schmogrow	Optics Express	Vol. 20	OSA	USA	2012	6439-6447		Yes

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34	Real-time Nyquist pulse generation beyond 100 Gbit/s and its relation to OFDM	R. Schmogrow	Optics Express	Vol. 20	OSA	USA	2012	317-337		Yes
35	Error vector magnitude as a performance measure for advanced modulation formats	R. Schmogrow	IEEE Photonics Technology Letters	Vol. 24	IEEE	USA	2012	61-63		No
36	The Input Power Dynamic Range of a Semiconductor Optical Amplifier and Its Relevance for Access Network Applications	R. Bonk	Photonic Journal	Vol. 3	IEEE	USA	2011	1039-1053		No
37	Transmission of 9x138 Gb/s prefiltered PM-8QAM signals over 4000 km of Pure Silica-Core fiber	R. Cigliutti	Journal of Lightwave Technology	Vol. 29, no. 15	IEEE/OSA	USA	2011	2310-2318		No
38	Experimental validation of an analytical model for nonlinear propagation in uncompensated optical links	E. Torrengo	Optics Express	Vol. 19, no 26	OSA	USA	2011	B790-B798		Yes
39	Analytical results on channel capacity in uncompensated optical links with coherent detection	G. Bosco	Optics Express	Vol. 19, no 26	OSA	USA	2011	B440-B451		Yes
40	Modeling of the impact of nonlinear propagation	A. Carena	Journal of Lightwave	Vol. 30, no. 10	IEEE/OSA	USA	2012	1524-1539		No

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	effects in uncompensated optical coherent transmission links		Technology							
41	Demonstration of a 32 x 512 split, 100km Reach, 2 x 32 x 10Gb/s Hybrid DWDM-TDMA PON Using Tunable External Cavity Lasers in the ONUs	P. Ossieur	Journal of Lightwave Technology	Vol. 30, no. 10	IEEE/OSA	USA	2011	3705-3718		No
42	Polarisation Multiplexed Multi Bit-Rate 16QAM Transmission Employing Modified Digital Back-Propagation	D. Rafique	Optics Express	Vol. 19	OSA	USA	2011	B805-810		Yes
43	Regenerative Optical Buffer based on SOA-amplified Recirculating Loop	G. Serafino	IEEE Photonics Technology Letters	Vol. 23, no. 22	IEEE	USA	2011	1715-1717		No
44	All-Optical Gated Wavelength Converter-Eraser Using a Single SOA-MZI	A. Nguyen	IEEE Photonics Technology Letters	Vol. 23, no. 21	IEEE	USA	2011	1621-1623		No
45	Optical Dynamic RAM for All-Optical Digital Processing	G. Berrettini	IEEE Photonics Technology Letters	Vol. 23, no. 11	IEEE	USA	2011	685-687		No
46	Phase and Amplitude Stability of EHF-Band Radar Carriers Generated From an	G. Serafino	Journal of Lightwave Technology	Vol. 29, no. 23	IEEE/OSA	USA	2011	3551-3559		No

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	Active Mode-Locked Laser									
47	40-Gb/s NRZ-to-RZ and OOK-to-BPSK Format and Wavelength Conversion on a Single SOA-MZI for Gridless Networking Operations	F. Fresi	IEEE Photonics Technology Letters	Vol. 24, no. 4	IEEE	USA	2012	279-281		No
48	Linear and nonlinear optical properties of carbon nanotube coated single mode optical fiber gratings	G. E. Villanueva	Optics Letters	Vol. 36, no. 11	OSA	USA	2011	2104-2106		No
49	Dual-Drive LiNbO3 Interferometric Mach-Zehnder Architecture with Extended Linear Regime for High Peak-to-Average OFDM-based Communication Systems	M. Morant	Optics Express	Vol. 19, no. 26	OSA	USA	2011	B450-B456		Yes
50	480Mbit/s UWB Bi-Directional Radio over Fiber CWDM PON using Ultra-Low Cost and Power VCSELs	T. Quinlan	Optics Express	Vol. 19, no. 26	OSA	USA	2011	B197-B202		Yes
51	Performance of a 60-GHz DCM-OFDM and BPSK-Impulse Ultra-Wideband System with Radio-Over-Fiber and Wireless Transmission Employing a	M. Beltran	Journal on Selected Areas in Communications	Vol. 29, no. 6	IEEE	USA	2011	1295-1303		No

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	Directly-Modulated VCSEL									
52	Fiber Wireless Transmission of 8.3-Gb/s/ch QPSK-OFDM Signals in 75–110-GHz Band	L. Deng	IEEE Photonics Technology Letters	Vol. 24, no. 5	IEEE	USA	2012	383-385		No
53	Dual Photonic Generation Ultrawideband Impulse Radio by Frequency Shifting in Remote-Connectivity Fiber	M. Beltran	Journal of Lightwave Technology	Vol. 29, no. 24	IEEE/OSA	USA	2011	3645-3653		No
54	42.13 Gbit/s 16QAM-OFDM photonics-wireless transmission in 75-110 GHz band	L. Deng	Progress In Electromagnetics Research	Vol. 129	PIER Journals	USA	2012	449-461		Yes
55	DC-coupled burst-mode receiver with high sensitivity, wide dynamic range and short settling time for symmetric 10G-GPONs	J. Put	Optics Express	Vol. 19, no. 26	OSA	USA	2011	B604-B610		Yes
56	10 Gbit/s burst-mode limiting amplifier with switched time constants for fast settling and large CID tolerance	J. Put	Electronics Letters	Vol. 47, no. 17	IET	UK	2011	970-972		No
57	Mitigation of Intra-Channel Nonlinearities Using a Frequency-Domain Volterra	F. P. Guiomar	Optics Express	Vol. 20, no. 2	OSA	USA	2012	1360-1369		Yes

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	Series Equalizer									
58	Digital post-compensation using volterra series transfer function	F. P. Guiomar	IEEE Photonics Technology Letters	Vol. 23, no. 19	IEEE	USA	2011	1412-1414		No
59	Weighting Nonlinearities on Future High Aggregate Data Rate PONs	J.D. Reis	Optics Express	Vol. 19, no. 27	OSA	USA	2011	26567-		Yes
60	Theoretical analysis of optical clocked D flip-flop using a single SOA assisted symmetric MZI	T. Chattopadhyay	Optics Communications	Vol. 285, no. 9	Elsevier	The Netherlands	2012	2266-2275		No
61	Analysis of Nonlinearities on Coherent Ultra-Dense WDM-PONs Using Volterra Series	J.D. Reis	Journal of Lightwave Technology	Vol. 30, no. 2	IEEE/OSA	USA	2012	234-241		No
62	High-Capacity 60 GHz and 75-110 GHz Band Links Employing All-Optical OFDM Generation and Digital Coherent Detection	A. Caballero	Journal of Lightwave Technology	Vol. 30	IEEE/OSA	USA	2012	147-155		No
63	DPSK Regeneration at 40 Gb/s and Beyond Using a Fiber-Sagnac Interferometer	Ch. Kouloumentas	IEEE Photonics Technology Letters	Vol. 22, no. 16	IEEE	USA	2010	1187-1189		No
64	All-optical synchronous S-R flip-flop based on active interferometric devices	C. Reis	Electronics Letters	Vol. 46	IET	UK	2010	709-710		No
65	High-Speed Digital Coherent	J.K. Fischer	Journal of	Vol. 29, no. 4	IEEE/OSA	USA	2011	378-385		No

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	Receiver Based on Parallel Optical Sampling		Lightwave Technology							
66	Rayleigh Scattering Tolerant PON Assisted by Four-Wave Mixing in SOA-based ONUs	B. Schrenk	Journal of Lightwave Technology	Vol. 28	IEEE/OSA	USA	2010	3364-3371		No
67	Nonlinear Pulse Reshaping with Highly Birefringent Photonic Crystal Fiber for OCDMA Receivers	F. Ihsan	IEEE Photonics Technology Letters	Vol. 22, no. 18	IEEE	USA	2010	1367-1369		No
68	Influence of self- and cross-phase modulation on 40 Gbaud dual polarization DQPSK/D8PSK signals in 10 Gbit/s OOK WDM systems	E. Tipsuwannakul	Optics Express	Vol. 18	OSA	USA	2010	24178-24188		Yes
69	Compensation of intra-channel nonlinear fibre impairments using simplified digital back-propagation algorithm	D. Rafique	Optics Express	Vol. 19	OSA	USA	2011	Vol. 22, no. 18	IEEE	USA
70	320-to-10 Gbit/s all-optical demultiplexing using sum-frequency generation in PPLN waveguide	F. Gomez-Agis	Electronics Letters	Vol. 46, no. 14	IET	UK	2010	1008-1009		No
71	Clock-distribution with instantaneous synchronisation for 160 Gbit/s optical time-domain	F. Gomez-Agis	Optics Letters	Vol. 35, no. 19	OSA	USA	2010	3255-3257		No

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	multiplexed packet transmission									
72	Optical frequency multiplication using fibre ring resonator	Y. Shi	Electronics Letters	Vol. 46, no. 11	IET	UK	2010	781-783		No
73	40-Gbaud 16-QAM transmitter using tandem IQ modulators with binary driving electronic signals	G.-W. Lu	Optics Express	Vol. 18, no. 22	OSA	USA	2010	23062-23069		Yes
74	Cancellation of nonlinear phase distortion in self-homodyne coherent systems	P. Johannisson	IEEE Photonics Technology Letters	Vol. 22, no. 11	IEEE	USA	2010	802-804		No
75	Filter optimization for self-homodyne coherent WDM systems using interleaved polarization division multiplexing	M. Sjödin	Journal of Lightwave Technology	Vol. 29, no. 9	IEEE/OSA	USA	2011	1219-1226		No
76	Modified constant modulus algorithm for polarization-switched QPSK	P. Johannisson	Optics Express	Vol. 19, no. 8	OSA	USA	2011	7839-7846		Yes
77	Convergence comparison of the CMA and ICA for blind polarization demultiplexing	P. Johannisson	J. Opt. Commun. Netw.	Vol. 3, no. 6	OSA/IEEE	USA	2011	493-501		No
78	Real-time software-defined multiformat transmitter generating 64QAM at 28	R. Schmogrow	IEEE Photonics Technology Letters	Vol. 22, no. 21	IEEE	USA	2010	1601-1603		No

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	GBd									
79	Nonlinear silicon photonics	J. Leuthold	Nature Photonics	Vol. 4	Nature Publishing Group	USA	2010	535-544		No
80	An All-Optical Grooming Switch for Interconnecting Access and Metro Ring Networks	R. Bonk	J. Opt. Commun. Netw.	Vol. 3, no. 3	OSA/IEEE	USA	2011	206-214		No
81	80 Gb/s wavelength conversion using a quantum-dot semiconductor optical amplifier and optical filtering	C. Meuer	Optics Express	Vol. 19, no. 6	OSA	USA	2011	5134-5142		Yes
82	Ultra-narrow-spacing 10-channel 1.12 Tb/s D-WDM long-haul transmission over uncompensated SMF and NZDSF	G. Gavioli	IEEE Photonics Technology Letters	Vol. 22, no. 19	IEEE	USA	2010	1419-1421		No
83	Performance evaluation of coherent WDM PS-QPSK (HEXA) accounting for non-linear fiber propagation effects	P. Poggiolini	Optics Express	Vol. 18, no. 11	OSA	USA	2010	11360-11371		Yes
84	A 135km, 8192-Split, Carrier Distributed DWDM-TDMA PON with 2 x 32 x 10Gb/s	P. Ossieur	Journal of Lightwave Technology	Vol. 29, no. 4	IEEE/OSA	USA	2011	463-474		No

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	Capacity									
85	All-Optical Variable Buffer Based on Semiconductor Optical Amplifier	G. Berrettini	Journal of Quantum Electronics	Vol. 47, no. 4	IEEE	USA	2010	510-		No
86	N-bit Optical Dynamic RAM for All-Optical Digital Processing	G. Berrettini	IEEE Photonics Technology Letters	Vol. 23, no. 1	IEEE	USA	2011	685-687		No
87	All-Optical N-Bits Shift Register Exploiting a Ring Buffer Based on Semiconductor Optical Amplifier	E. Lazzeri	IEEE Photonics Technology Letters	Vol. 23, no. 1	IEEE	USA	2011	45-47		No
88	High frequency microwave signal generation using dual-wavelength emission of cascaded DFB fiber lasers with wavelength spacing tunability	G. E. Villanueva	Optics Communications	Vol. 283, no. 24	Elsevier	The Netherlands	2010	5165-5168		No
89	Tunable Photonic Microwave Filter With Single Bandpass Based on a Phase-Shifted Fiber Bragg Grating	J. Palací	IEEE Photonics Technology Letters	Vol. 22, no. 19	IEEE	USA	2010	1467-1469		No
90	Spectral self-imaging effect by time-domain multilevel phase modulation of a periodic pulse train	J. Caraquitena	Optics Letters	Vol. 36, no. 6	OSA	USA	2011	858-860		No

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91	60-GHz Ultra-Wideband Radio-Over-Fiber System Using a Novel Photonic Monocycle Generation	M. Beltrán	IEEE Transactions on Microwave Theory and Techniques	Vol. 58, no. 6	IEEE	USA	2010	1609-1620		No
92	Radio-Frequency Transparent Demodulation for Broadband Hybrid Wireless-Optical Links	D. Zibar	IEEE Photonics Technology Letters	Vol. 22, no. 11	IEEE	USA	2010	784-786		No
93	100-GHz Wireless-Over-Fiber Links With Up to 16-Gb/s QPSK Modulation Using Optical Heterodyne Generation and Digital Coherent Detection	R. Sambaraju	IEEE Photonics Technology Letters	Vol. 22, no. 22	IEEE	USA	2010	1650-1652		No
94	Localization and Fingerprint of Radio Signals Employing a Multichannel Photonic Analog-to-Digital Converter	R. Llorente	IEEE Transactions on Microwave Theory and Techniques	Vol. 58, no. 11	IEEE	USA	2010	3304-3311		No
95	EAM-SOA millimeter-wave frequency up-converter for radio-over-fiber applications	J. Palací	Optics Communications	Vol. 284, no. 1	Elsevier	The Netherlands	2011	98-102		No
96	Optoelectronic Generation of W-band millimeter-wave signals using Brillouin amplification	B. Vidal	Electronics Letters	Vol. 46, no. 21	IET	UK	2010	1449-1450		No
97	Energy-Efficient Optical Access Networks Supported	B. Schrenk	IEEE J. Select. Top. Quantum Electr.	Vol 17, no. 2	IEEE	USA	2011	480-488		No

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	by a Noise-Powered Extender Box									
98	Cross-Phase Modulation Impact on Coherent Optical 16QAM-WDM Transmission Systems	J.D. Reis	Microwave and Optical Technology Letters	Vol. 53, no. 3	Wiley Periodicals	USA	2011	633-636		No
99	High-Speed Transmission in Multi-Mode Fibers	R. Freund	Journal of Lightwave Technology	Vol. 28, no. 4	IEEE/OSA	USA	2010	569-586		No
100	Field Experiments with a Grooming Switch for OTDM Meshed Networking	G. Zarris	Journal of Lightwave Technology	Vol. 28, no. 4	IEEE/OSA	USA	2010	316-327		No
101	Driving Requirements for Wavelength Shifting in Colorless ONU With Dual-Arm Modulator	M. Omella	Journal of Lightwave Technology	Vol. 27, no. 17	IEEE/OSA	USA	2010	3912-3918		No
102	Reach Extension Strategies for Passive Optical Networks	F. Saliou	J. Opt. Commun. Networks	Vol. 1, no. 4	OSA/IEEE	USA	2009	C51-C60		No
103	Direct 10 Gb/s Modulation of a Single-Section RSOA in PONs with High Optical Budget	B. Schrenk	IEEE Photonics Technology Letters	Vol. 22	IEEE	USA	2010	392-394		No
104	WiMedia-compliant UWB transmission over 1-mm core diameter plastic optical fibre	H. Yang	Electronics Letters	Vol. 46, no. 6	IET	UK	2010	434-436		No
105	Optical frequency	Y. Shi	Electronics Letters	Vol. 46, no. 11	IET	UK	2010	781-783		No

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	multiplication using a fibre ring resonator									
106	Design Characteristics for a Full-Duplex IM/IM Bidirectional Transmission at 10 Gb/s Using Low Bandwidth RSOA	I. Papagiannakis	Journal of Lightwave Technology	Vol. 28, no. 7	IEEE/OSA	USA	2010	1094-1101		No
106	Optical grooming switch with regenerative functionality for transparent interconnection of networks	P. Vorreau	Optics Express	Vol. 17	OSA	USA	2009	15173-15185		Yes
107	Optical properties of highly nonlinear silicon-organic hybrid (SOH) waveguide geometries	T. Vallaitis	Optics Express	Vol. 18	OSA	USA	2010	9324-9340		Yes
108	NRZ-PM-QPSK 16x100 Gb/s Transmission over Installed Fiber with Different Dispersion Maps	G. Gavioli	IEEE Photonics Technology Letters	Vol. 22, no. 6	IEEE	USA	2010	371-373		No
109	Wavelength Transparency of All-Optical Packet Envelope Detection Circuit for RZ-Format Optical Packet Switching Applications	F. Fresi	IEEE Photonics Technology Letters	Vol. 21, no. 20	IEEE	USA	2009	1565-1567		No
110	Optical Digital Signal Processing in a Single SOA without Assist Probe Light	C. Porzi	J. of Select. Topics in Quantum Electronics	Vol. 16, no. 5	IEEE	USA	2010	1469-1475		No

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111	320 Gb/s Photonic Processing Based on Sum/ Difference Frequency Generation and Pump Depletion in a Single PPLN Waveguide	A. Bogoni	Optics Letters	Vol. 34, no. 12	OSA	USA	2009	1825-1827		No
112	Dual-Wavelength DFB Erbium-Doped Fiber Laser with Tunable Wavelength Spacing	G. E. Villanueva	IEEE Photonics Technology Letters	Vol. 22, no. 4	IEEE	USA	2010	254-256		No
113	5Gb/s Upstream Experiments for High Split Extended Reach Passive Optical Networks	X. Yin	IET Optoelectronics	Vol. 46, no. 1	IET	UK	2010	54-55		No
114	Error-free wavelength conversion at 160 Gbit/s in PPLN waveguide at room temperature	M.V. Drummond	Electronics Letters	Vol. 45	IET	UK	2009	1135-1137		No
115	Unveiling Nonlinear Effects in Dense Coherent Optical WDM Systems with Volterra Series	J.D. Reis	Optics Express	Vol. 18, no. 8	OSA	USA	2010	8660-8760		Yes
116	Investigation of 10 Gb/s RSOA-based Upstream Transmission in WDM PONs Utilizing Optical Filtering and Electronic Equalization	I. Papagiannakis	IEEE Photonics Technology Letters	Vol. 20, no. 24	IEEE	USA	2008	2168-2170		No

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117	10 Gb/s full-duplex bidirectional transmission with RSOA-based ONU using detuned optical filtering and decision feedback equalization	M. Omella	Optics Express	Vol. 17, no. 7	OSA	USA	2009	5008-5013		Yes
118	Extended Black Box Model for Fiber Length Variation of Erbium-Doped Fiber Amplifiers	J.A. Lazaro	IEEE Photonics Technology Letters	Vol. 20, no.24	IEEE	USA	2008	2063 - 2065		No
119	A High-Speed Multiwavelength Clock Recovery Scheme for Optical Packets	M. Spyropoulou	IEEE Photonics Technology Letters	Vol. 20, no.24	IEEE	USA	2008	2147-2149		No
120	640-Gbit/s data transmission and clock recovery using an ultrafast periodically poled lithium niobate device	L. K. Oxenløwe	Journal of Lightwave Technology	Vol. 27, no. 3	IEEE/OSA	USA	2009	205-213		No
121	Repetition Rate Multiplication of Pseudorandom Bit Sequences	Ch. Kouloumentas	IEEE Photonics Technology Letters	Vol. 21, no.7	IEEE	USA	2009	456-458		No
122	Fundamental performance limits of optical duobinary	M. Joindot	Optics Express	Vol. 16, no. 24	OSA	USA	2008	19600-19614		Yes
123	Evaluation of the computational effort for	P. Poggiolini	Optics Express	Vol. 17, no. 3	OSA	USA	2009	1385-1403		Yes

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	chromatic dispersion compensation in coherent optical PM-OFDM and PM-QAM systems									
124	1.28 Tbit/s single-polarisation serial OOK optical data generation and demultiplexing	H. C. Hansen Mulvad	Electronics Letters	Vol. 45, no. 5	IET	UK	2009	280-281		No
125	Breakthrough switching speed with an all-optical chalcogenide glass chip: 640 Gbit/s demultiplexing	M. Galili	Optics Express	Vol. 17, no. 4	OSA	USA	2009	2182-2187		Yes
126	Optical Subsystems for Next Generation Access Networks	J. A. Lazaro	ANIC 2011		OSA	Canada	2011			No
127	Wavelength reuse in a colorless ONU with all-optical clock recovery for full-duplex dense WDM PONs	A. Maziotis	ICTON 2011		IEEE	Sweden	2011	Tu.C6.7		No
128	Rayleigh Scattering Robust Access Network by λ-Shifting through Extraction of Suppressed RZ Clock Harmonic	B. Schrenk	ECOC 2011		OSA	Switzerland	2011	Mo.2.C.4		No
129	Full-Duplex 20/10 Gb/s WDM-PON with	J. A. Lazaro	OFC 2012		OSA	USA	2012	OTh1F.6		No

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	Remodulation of Chirped ASK and Multi-level Quaternary PAM and OFDM									
130	Experimental Investigation of 28-GBd PS-QPSK Signals	J. K. Fischer	ECOC 2011		OSA	Switzerland	2011	Mo.2.B.1		No
131	Transmission of a Serial 5.1-Tb/s Data Signal Using 16-QAM and Coherent Detection	D. Rafique	ECOC 2011		OSA	Switzerland	2011	We.8.B.6		No
132	Transmission of a Serial 5.1-Tb/s Data Signal Using 16-QAM and Coherent Detection	E. Palushani	ECOC 2011		OSA	Switzerland	2011	We.8.B.5		No
133	Coherent Detection Using Parallel Optical Sampling	J. K. Fischer	12. ITG Fachtagung Photonische Netze			Germany	2011	pp. 32-36		No
134	Integrated Coherent Receiver Modules for 100G Ethernet and Beyond	J. K. Fischer	12. ITG Fachtagung Photonische Netze			Germany	2011	pp. 24-28		No
135	Ultrafast Transmission Systems using Coherent Technology	R. Ludwig	Techn. Dig. of Optoelectr. and Comm. Conf. (OECC 2011)			Taiwan	2011	8D1_1		No
136	Wavelength Conversion of 40-Gb/s NRZ DPSK Signals within a 45-nm range using a 1.3µm Quantum-Dot	C. Meuer	ECOC 2011		OSA	Switzerland	2011	We.10.P1.26		No

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	Semiconductor Optical Amplifier									
137	Wavelength-tuneable remote node for enhanced resilience and optimization of WDM access networks	F. Bonada	ICTON 2011		IEEE	Sweden	2011	Tu.B6.5		No
138	Demonstration of a Remotely Pumped Long-Reach WDM/TDM 10 Gb/s PON with Reflective User Terminals	B. Schrenk	ECOC 2011		OSA	Switzerland	2011	Th.12.C.3		No
139	Bandwidth assignment criteria against Rayleigh backscattering effect in TDM-PON single-fibre wavelength-reuse networks	E.T. López	ICTON 2011		IEEE	Sweden	2011	Tu.C6.7		No
140	Techno-economics of resilient extended FTTH PONs	J. Prat	ICTON 2011		IEEE	Sweden	2011	Tu.A6.2		No
141	Digital Nyquist WDM for Access Networks using Limited Bandwidth Reflective Semiconductor Optical Amplifiers	J. A. Lazaro	OFC 2012		OSA	USA	2012	JTh2A.57		No
142	A robust deflation based demultiplexing algorithm for QAM coherent optical	M. Selmi	ECOC 2011		OSA	Switzerland	2011	We.10.P1.56		No

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	systems									
143	Transmission Performance of Chirp-Controlled Signal Emitted by Electroabsorption Modulator Laser Integrated with a Semiconductor Optical Amplifier	M. N. Ngo	OFC 2012		OSA	USA	2012	OW4F.6		No
144	First demonstration of dispersion limit improvement at 20 Gb/s with a Dual Electro-absorption Modulated Laser	K. Kechaou	OFC 2012		OSA	USA	2012	OTh3F.1		No
145	Up to 10 Gbit/s transmission in WDM?PON architecture using External Cavity Laser based on Self-Tuning ONU	Qian Deniel	OFC 2012		OSA	USA	2012	JTh2A.55		No
146	Frequency offset estimation on Polarization-Multiplexed coherent OFDM system stressed by chromatic dispersion and PMD	J. Karaki	CLEO 2012		IEEE	Germany	2012	CF1F.3		No
147	Improving PDL tolerance of long-haul PDM-OFDM systems using polarization-time coding	E. Awwad	SPPcom 2012		OSA	USA	2012	SpTu2A.5		No
148	Joint equalization and	S. Ben Rayana	SPPcom 2012		OSA	USA	2012	SpW2B.3		No

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	polarization-time coding detection to mitigate PMD and PDL impairments									
149	Multi-band OFDM versus single-carrier DP-QPSK for 100 Gbps long-haul WDM transmission	J. Karaki	SPPcom 2012		OSA	USA	2012	SpTu1A.2		No
150	Full standard triple wireless transmission over 50m large core diameter graded index POF	Y. Shi	POF Conference		IEEE	Spain	2011	579-582		No
151	All-Optical Self-Routing of 40 Gb/s DPSK Packets	G. Contestabile	IEEE Photonics 2011 Conference (IPC11)		IEEE	USA	2011	ME2		No
152	Thousand-port optical packet switch architecture with highly distributed control	S. Di Lucente	ECOC 2011		OSA	Switzerland	2011	We.10.P1.94		No
153	Scalable and low latency label processor for large port optical packet switch	J. Luo	NOC 2011		IEEE	UK	2011	220-223		No
154	Scalable optical packet switch for multiple data-rate packets using RF tone based in-band labeling	J. Luo	ECOC 2011		OSA	Switzerland	2011	Mo.2.A.3		No
155	All-optical self-routing of 40 Gb/s DPSK packets	M. Presi	Photonics Conference (PHO),		IEEE	USA	2011	41-42		No

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			2011							
156	Mode-Locking dynamics in a quantum-dash Fabry-Pérot laser diode for packet based clock recovery Application	R. Maldonado-Basilio	OFC 2012		OSA	USA	2012	JTh2A.14		No
157	Low latency and large port count optical packet switch with highly distributed control	J. Luo	OFC 2012		OSA	USA	2012	OW3J.2		No
158	320-to-40-Gb/s optical demultiplexing by means of optical filtering of chirped signal using a quantum-dot SOA	M. Matsuura	OFC 2012		OSA	USA	2012	OTh3H.4		No
159	Low-latency Photonic Packet Switches with a Large Number of Ports	H.J.S. Dorren	OFC 2012		OSA	USA	2012	OTh1G.3		No
160	150 Mb/s Wifi Transmission over 50m Large Core Diameter Step Index POF	Y. Shi	POF Conference		IEEE	Spain	2011	487-489		No
161	Simultaneous Transmission of Wired and Wireless Services over Large Core POF for In-Home Networks	Y. Shi	ECOC 2011		OSA	Switzerland	2011	Tu.3.c.5		No
162	Multi-standard wireless distribution over MMF and plastic optical fibre	Y. Shi	16th Annual symposium of the IEEE Photonics		IEEE	Belgium	2011	117-120		No

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			Benelux Chapter							
163	480Mb/s UWB Distribution over Large-Core POF Based Bus and Tree P2MP Systems for In-Home Networks	Y. Shi	OFC 2012		OSA	USA	2012	OTh3G.5		No
164	Cost-effective and Scalable Architecture for Moving Cell Application Employing Integrable Tunable Laser Assembly	N.C. Tran	OFC 2012		OSA	USA	2012	OTu2H.7		No
165	A Perspective from Europe on In-Home Networking	T. Koonen	OFC 2012		OSA	USA	2012	NTh1D.1		No
166	Experimental Demonstration of Mixed Formats and Bit Rates Signal Allocation for Spectrum-flexible Optical Networking	R. Borkowski	OFC 2012		OSA	USA	2012	OW3A.7		No
167	Spectrum, Cost and Energy Efficiency in Fixed-Grid and Flex-Grid Networks	M. Angelou	OFC 2012		OSA	USA	2012	NM3F.4		No
168	Mitigation of fiber Bragg grating-induced group-delay ripple in 112 Gbit/s DP-QPSK coherent systems	E. Tipsuwannakul	OFC 2012		OSA	USA	2012	JW2A.69		No
169	Transmission of 3×224 Gbit/s DP-16QAM signals with (up to) 7.2 bit/s/Hz	E. Tipsuwannakul	OFC 2012		OSA	USA	2012	OW4C.6		No

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	spectral efficiency in SMF-EDFA links									
170	Low-complexity duobinary signaling and detection for sensitivity improvement in Nyquist-WDM coherent system	J. Li	OFC 2012		OSA	USA	2012	OM3H.2		No
171	Experimental Demonstration of PDL Mitigation using Polarization-Time Coding in PDM-OFDM Systems	S. Mumtaz,	SPPcom 2011		OSA	Canada	2011	SPWB6		No
172	150 Gbit/s real-time Nyquist pulse transmission over 150 km SSMF enhanced by DSP with dynamic precision	R. Schmogrow	OFC 2012		OSA	USA	2012	OM2A.6		No
173	A surface plasmon polariton absorption modulator	J. Leuthold	ICTON 2011		IEEE	Sweden	2011	Mo.B2.2		No
174	Silicon-Organic Hybrid (SOH) Electro-Optical Devices	C. Koos	Integrated Photonics Research (IPR)		OSA	Canada	2011	IWF1		No
175	Terabit/s Super-Channels Based on OFDM	J. Leuthold	SPPcom 2011		OSA	Canada	2011	SPMB1		No
176	Nonlinear optics on the silicon platform	W. Freude	OFC 2012		OSA	USA	2012	OTh3H.6		No
177	Photonic wire bonding for single-mode chip-to-chip	N. Lindenmann	8th Intern. Conf. Group IV		IEEE	UK	2011	FD2		No

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	interconnects		Photonics (GFP'11)							
178	Real-Time Nyquist Pulse Modulation Transmitter Generating Rectangular Shaped Spectra of 112 Gbit/s 16QAM Signals	R. Schmogrow	SPPcom 2011		OSA	Canada	2011	SPMA5		
179	Performance evaluation of coherent PSQPSK (HEXA) modulation	G. Bosco	SPPcom 2011		OSA	Canada	2011	SPTuB2		No
180	A simple and accurate model for non-linear propagation effects in uncompensated coherent transmission links	P. Poggiolini	ICTON 2011		IEEE	Sweden	2011	We.B1.3		No
181	Experimental validation of an analytical model for nonlinear propagation in uncompensated optical links	E. Torrengo	ECOC 2011		OSA	Switzerland	2011	We.7.B.2		No
182	Analytical results on channel capacity in uncompensated optical links with coherent detection	G. Bosco	ECOC 2011		OSA	Switzerland	2011	We.7.B.3		No
183	Spectral shaping in ultra-dense WDM systems: optical vs. electrical approaches	G. Bosco	OFC 2012		OSA	USA	2012	OM3H.1		No

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184	Ultra-long-haul transmission of 16x112 Gb/s spectrally-engineered DAC-generated Nyquist-WDM PM-16QAM channels with 1.05x(symbol-rate) frequency spacing	R. Cigliutti	OFC 2012		OSA	USA	2012	OTh3A.3		No
185	Non-linearity compensation limits in optical system with coherent receivers	G. Bosco	SPPcom 2012		OSA	USA	2012	SpW3B.6		No
186	On the use of DFB Lasers for Coherent PON	R. Gaudino	OFC 2012		OSA	USA	2012	OTh4G.1		No
187	Hybrid DWDM-TDMA PONs for Next Generation Access	P. Ossieur	OFC 2012		OSA	USA	2012	OW1B.7		No
188	Polarisation Multiplexed 224 Gb/s 16QAM Transmission Employing Digital Back-Propagation	M. Mussolin	ECOC 2011		OSA	Switzerland	2011	We.8.B.6		No
189	Modified split-step Fourier methods for compensation of nonlinear fibre impairments	D. Rafique	ICTON 2011		IEEE	Sweden	2011	Tu.P.5		No
190	Regenerative re-circulating fiber loop for optical buffering	F. Scotti	Photonics Conference (PHO), 2011		IEEE	USA	2011	47-48		No
191	Control of the operation regimes of a passively modelocked fiber laser	G. E. Villanueva	CLEO/EQEC 2011		IEEE	Germany	2011	CJ-P.29		No

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	based on an intracavity polarizing fiber									
192	Tilted Fiber Bragg Grating Assisted Nonlinear Effects in Carbon Nanotube-Coated Optical Fibers	G. E. Villanueva	CLEO/EQEC 2011		IEEE	Germany	2011	CD-1.2		No
193	Linear Regime Extension Technique in Parallel LiNbO3 Interferometric Architectures for UWB Applications	R. Llorente	ECOC 2011		OSA	Switzerland	2011	We.10.P1.33		No
194	Ultra-Low Cost and Power VCSEL-Based 480Mbit/s UWB Radio over a Bi-Directional CWDM PON	T. Quinlan	ECOC 2011		OSA	Switzerland	2011	We.10.P1.108		No
195	38.2-Gb/s Optical-wireless transmission in 75-110 GHz based on electrical OFDM with optical comb expansion	M. Beltrán	OFC 2012		OSA	USA	2012	OM2B.2		No
196	Transmission Impairment Compensation Using Broadband Channel Sounding in Multi-Format OFDM-based Long-Reach PONs	Maria Morant	OFC 2012		OSA	USA	2012	OW3B.2		No
197	First Demonstration of Cooler-less, Bi-Directional,	T. Quinlan	OFC 2012		OSA	USA	2012	OTh3G.1		No

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	Format-Agnostic, Wireless and Gigabit Ethernet Network Provision using Off-The-Shelf VCSELs									
198	Experiments on 10Gb/s fast settling high sensitivity burst-mode receiver with on-chip auto-reset for 10G-GPONs	X. Yin	OFC 2012		OSA	USA	2012	NTu1J.4		No
199	Succesful experimental validation of an integrated burst mode receiver designed for 10G-GPON systems in a packet-OADM metro network	D. Chiaroni	OFC 2012		OSA	USA	2012	JW2A.9		No
200	A 10Gb/s burst-mode TIA with on-chip reset/lock CM signaling detection and limiting amplifier with a 75ns settling time	X. Yin	International Solid-State Circuits Conference 2012		IEEE	USA	2012	416-417		No
201	DC-coupled burst-mode receiver with high sensitivity, wide dynamic range and short settling time for symmetric 10G-GPONs	X. Yin	ECOC 2011		OSA	Switzerland	2011	Mo.1.c.5		No
202	Physical Impairments on	J.D. Reis	International		Brazilian	Brasil	2011	1 - 5		No

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	High Aggregate Data Rate Passive Coherent Optical Networks		Microwave and Optoelectronics Conf. (IMOC)		Microwave & Optoelectronics Society/IEEE					
203	Transmission Aspects on Broadband Coherent Optical Access Networks	J.D. Reis	Latin-American Conf. on Communications - LATINCOM		IEEE	Brasil	2011	1-6		No
204	Weighting Nonlinearities on Future High Aggregate Data Rate PONs	J.D. Reis	ECOC 2011		OSA	Switzerland	2011	We.10.P1.109		No
205	Mitigation of Intra-Channel Nonlinearities Using a Frequency-Domain Volterra Series Equalizer	F. P. Guiomar	ECOC 2011		OSA	Switzerland	2011	Tu.6.B.1		No
206	Density and Guard Band in Migration Scenarios to Coherent Ultra-Dense WDM	J.D. Reis	Global Telecommunications Conf. - GLOBECOM	Vol. 54	IEEE	USA	2011	1 - 5		No
207	Asymmetric gain-saturated spectrum in one-pump fiber optical parametric amplifiers	Z. Lali-Dastjerdi	IEEE Photonics Conference, IPC'2011		IEEE	USA	2011	TuO3		No
208	QPSK phase regeneration in saturated degenerate dual-pump phase sensitive amplifiers	F. Da Ros	IEEE Photonics Conference, IPC'2011		IEEE	USA	2011	MM3		No

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209	Extinction ratio and gain optimization of dual-pump degenerate-idler phase sensitive amplifiers	N. Kang	IEEE Photonics Conference, IPC'2011		IEEE	USA	2011	MM2		No
210	Pump-to-signal intensity modulation transfer in saturated-gain fiber optical parametric amplifiers	Z. Lali-Dastjerdi	IQEC/CLEO 2011		IEEE	Australia	2011	5650-CT-3		No
211	High-frequency RIN transfer in fibre optic parametric amplifiers	Z. Lali-Dastjerdi	CLEO Europe 2011		IEEE	Germany	2011	CI2.5		No
212	Gain optimization in fiber optical parametric amplifiers by combining standard and high-SBS threshold highly nonlinear fibers	F. Da Ros	CLEO 2012		IEEE	USA	2012	CM4N.5		No
213	Synthesis of flat-top gain response in fiber phase sensitive amplifiers with improved phase noise regeneration tolerance	N. Kang	CLEO 2012		IEEE	USA	2012	CM4N.8		No
214	Pulse Distortion in Saturated Fiber Optical Parametric Chirped Pulse Amplification	Z. Lali-Dastjerdi	CLEO 2012		IEEE	USA	2012	JW2A.82		No
215	DWDM-to-OTDM Conversion by Time-Domain	H.C. Hansen Mulvad	ECOC 2011		OSA	Switzerland	2011	Mo.1A.5		No

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	Optical Fourier Transformation									
216	Ultra-wide band signal generation using a silicon micro-ring resonator	Y. Ding	IEEE Photonics Conference, IPC'2011		IEEE	USA	2011	TuI2		No
217	Modulation Speed Enhancement of Directly Modulated Lasers Using a Micro-ring Resonator	Y. An	IEEE Optical Interconnects Conference 2012		IEEE	USA	2012	TUB2		No
218	Transmission Property of Directly Modulated Signals Enhanced by a Micro-ring Resonator	Y. An	OptoElectronics and Communications Conference (OECC 2012)		OSA/IEEE/ Optical Society of Korea	Korea	2012	SC2_1086		No
219	41.6 Gb/s RZ-DPSK to NRZ-DPSK format conversion in a microring resonator," in OptoElectronics and Communications Conference	M. Xiong	OptoElectronics and Communications Conference (OECC 2012)		OSA/IEEE/ Optical Society of Korea	Korea	2012	SC2_1085		No
220	Wavelength Conversion with Large Signal-Idler Separation using Discrete Four-Wave Mixing in a Silicon Nanowire	H. Hu	CLEO 2012		IEEE	USA	2012	CW1A.2		No
221	Engineering Rules for Optical Generation and	A. Caballero	ECOC 2011		OSA	Switzerland	2011	We.10.P1.115		No

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	Detection of High Speed Wireless Millimeter-wave Band Signals									
222	Experimental Demonstration of an All‐Optical Packet Forwarding Gate Based on a Single SOA‐MZI at 40 Gb/s	H. Brahmi	OFC 2011		OSA	USA	2011	OMK5		No
223	0.87 Tbit/s 160 Gbaud Dual‐Polarization D8PSK OTDM Transmission over 110 km	E. Tipsuwannakul	ECOC 2010		OSA	Italy	2010	We.6.C.4		No
224	Single- and multi-carrier techniques to build up Tb/s per channel transmission systems	R. Freund	ICTON 2010		IEEE	Germany	2010	Tu.D1		No
225	8×224 Gbit/s PDM 16QAM WDM Transmission with Real-Time Signal Processing at the Transmitter	M. Nölle	ECOC 2010		OSA	Italy	2010	1-3		No
226	Self-Coherent Receiver for PoMUX Coherent Signals	J. Li	OFC 2011		OSA	USA	2011	OWV5		No
227	Digital Coherent Receiver Based on Parallel Optical Sampling	J.K. Fischer	ECOC 2010		OSA	Italy	2010	Th.10.A.4		No
228	High Spectral Efficient Phase and Quadrature Amplitude	R. Freund	SPPcom 2010		OSA	Germany	2010	SPTuA2		No

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	Modulation for Optical Fibre Transmission									
229	Self-Pumped Dense (40λ×32 split) PON with Extended 30 dB Loss Budget and ONUs Comprising a Single 10 Gb/s RSOA	B. Schrenk	ECOC 2010		OSA	Italy	2010	Tu.3.B.3		No
230	FSK+ASK/ASK Operation for Optical 20/10 Gbps Access Networks with Simple Reflective User Terminals	B. Schrenk	OFC 2011		OSA	USA	2011	JWA79		No
231	On an ONU for Full-Duplex 10.5 Gbps with Shared Delay Interferometer for Format Conversion and Chirp Filtering	B. Schrenk	OFC 2011		OSA	USA	2011	OThB7		No
232	SOA/REAM as Vector Modulator for QAM Upstream	B. Schrenk	OFC 2011		OSA	USA	2011	OThK1		No
233	All-Optical Intra-PON Data Routing Between ONUs with a MG-Y Tunable Laser as 2.5 Gbps Burst-Mode Transmitter	F. Bonada	OFC 2011		OSA	USA	2011	JWA74		No
234	Multi-Operability and Dynamic Bandwidth Allocation in PONs with	J. Bauwelinck	OFC 2011		OSA	USA	2011	Tu.5.B.4		No

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	Electrically Reconfigurable SOA/REAM-Based ONUs									
235	Self-Pumped Dense (40λ×32 split) PON with Extended 30 dB Loss Budget and ONUs Comprising a Single 10 Gb/s RSOA	B. Schrenk	OFC 2011		OSA	USA	2011	Tu.3.B.3		No
236	Full-Duplex 10 Gb/s Transmission in Ultra-Dense PONs With Tree Splits >1:1k and Noise-Powered Extender Box	J. Bauwelinck	ECOC 2010		OSA	Italy	2010	Th.10.B.3		No
237	Optical CDMA enhanced by nonlinear optics	Cédric Ware	ICTON 2010		IEEE	Germany	2010	Tu.C1.3		No
238	On the Interest of Chirped Lasers for AMOOFDM Transmissions through Long Distance PON Networks	L.A. Neto	OFC 2011		OSA	USA	2011	OWK4		No
239	PDL mitigation in PolMux OFDM systems using Golden and Silver Polarization-Time codes	S. Mumtaz	OFC 2011		OSA	USA	2011	1-3		No
240	A Highly Birefringent Photonic Crystal Fiber Based Nonlinear Thresholding Device for OCDMA Receiver	F. Ihsan	Nonlinear Photonics (NP)		OSA	Germany	2010	NThA4		No
241	Scalable and data format	N. Calabretta	CSNDSP 2010		IEEE	UK	2010	PCSN-5		No

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	agnostic optical packet switch sub-systems for optical packet switched networks									
242	160-Gbit/s packet clock distribution with instantaneous synchronization and low timing jitter	F. Gomez-Agis	ECOC 2010		OSA	Italy	2010	1-3		No
243	Multiband OFDM UWB transmission over 1-mm core diameter graded-index plastic optical fibre	H. Yang	ANIC 2010		OSA	Germany	2010	AThA3		No
244	UWB Radio over MMF Transmission with Optical Frequency up-Conversion to the 24 GHz Band	R. Alemany	ANIC 2010		OSA	Germany	2010	AThD1		No
245	Flexible radio-over-fibre signal distribution in in-building networks based on modulated ASE noise	H.D. Jung	ECOC 2010		OSA	Italy	2010	P6.16		No
246	Multi-standard transmission of converged wired and wireless services over 100m plastic optical fibre	H. Yang	ECOC 2010		OSA	Italy	2010	We.7.B.3		No
247	Towards Converged Broadband Wired and	D. Visani	Optical Network Design and		IEEE	Italy	2011	4.2		No

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	Wireless In-home Optical Networks		Modeling (ONDM 2011)							
248	Convergence comparison of CMA and ICA for blind polarization demultiplexing of QPSK and 16-QAM signals	P. Johannisson	ECOC 2010		OSA	Italy	2010	Th.9.A.3		No
249	Interleaved polarization division multiplexing in self-homodyne coherent WDM systems	M. Sjödin	ECOC 2010		OSA	Italy	2010	Mo.1.C.3		No
250	Terabit/s FFT Processing – Optics can do it on-the Fly	J. Leuthold	ICTON 2010		IEEE	Germany	2010	Mo.D1.4		No
251	Silicon High-Speed Electro-Optic Modulator	L. Alloatti	Group IV Photonics 2010		IEEE	China	2010	ThC2		No
252	101.5 Gbit/s Real-Time OFDM Transmitter with 16QAM Modulated Subcarriers	R. Schmogrow	OFC 2011		OSA	USA	2011	OWE5		No
253	All-optical real-time OFDM transmitter and receiver	W. Freude	CLEO/IQEC'11		IEEE	USA	2011	CThO1		No
254	All-optical FTT signal processing of a 10.8 Tb/s single channel OFDM signal	J. Leuthold	Photonics in Switching (PS)		OSA	USA	2010	PWC1		No
255	Optical vector signal analyzer based on differential detection with	J. Li	Optics & Photonics Congress		OSA	Germany	2010	SPTuB3		No

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	inphase and quadrature phase control									
256	40 Gbit/s Silicon-Organic Hybrid (SOH) Phase Modulator	L. Alloatti	ECOC 2010		OSA	Italy	2010	Tu.5.C.4		No
257	Impact of alfa-factor on SOA Dynamic Range for 20GBd BPSK, QPSK and 16-QAM Signals	R. Bonk	OFC 2011		OSA	USA	2011	OML4		No
258	'Ultrafast silicon-organic hybrid (SOH) photonics	W. Freude	CLEO/IQEC'11		IEEE	USA	2011	CThR1		No
259	Experimental investigation of multi-wavelength clock recovery based on a quantum-dot SOA at 40 Gb/s	M. Spyropoulou	Optics & Photonics Congress		OSA	Germany	2010	SPTuB4		No
260	100 Gbit/s electro-optic modulator and 56 Gbit/s wavelength converter for DQPSK data in silicon-organic hybrid (SOH) technology	W. Freude	IEEE Photonics Society Summer Topicals 2010		IEEE	Mexico	2010	96-97		No
261	All-optical signal processing with silicon-organic hybrid slot waveguides	J. Leuthold	Integrated Photonics Research, Silicon and Nano Photonics (IPR)		OSA	USA	2010	IWC1		No

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262	Transoceanic PM-QPSK Terabit superchannel transmission experiments at baud-rate subcarrier spacing	E. Torrengo	ECOC 2010		OSA	Italy	2010	We.7.C.2		No
263	Impact of Nonlinear Fibre Impairments in 112 Gb/s PM-QPSK Transmission with 43 Gb/s and 10.7 Gb/s Neighbours	D. Rafique	ICTON 2010		IEEE	Germany	2010	We.D1.6		No
264	Stable Optically Generated RF Signals from a Fibre Mode-Locked Laser	G. Serafino	23rd Annual Meeting of the IEEE Photonics Society		IEEE	USA	2010	TuK 4		No
265	Photonic generation of RF multiple carriers using a mode-locked laser and a single photodiode	P. Ghelfi	Proc. of SPIE 2011		SPIE	USA	2011	7960-27		No
266	Ultra-Stable Radar Signal from a Photonics-Assisted Transceiver Based on Single Mode-Locking Laser	P. Ghelfi	OFC 2011		OSA	USA	2011	OThA2		No
267	Experimental Performance Comparison of 60 GHz DCM OFDM and Impulse BPSK Ultra-Wideband with Combined Optical Fibre and Wireless Transmission	M. Beltran	ECOC 2010		OSA	Italy	2010	Th.9.B.3		No

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268	Shared Medium 2 Gbps Baseband & 2 Gbps UWB In-Building Converged Optical/Wireless Network with Multimode Fiber and Wireless Transmission	J. B. Jensen	ECOC 2010		OSA	Italy	2010	We.7.B.4	OFC 2011	
269	100 GHz Wireless on-off-Keying Link Employing All Photonic RF Carrier Generation and Digital Coherent Detection	R. Sambaraju	ANIC 2010		OSA	Germany	2010	AThA4		No
270	16 Gb/s QPSK Wireless-over-Fibre link in 75–110 GHz band employing optical heterodyne generation and coherent detection	D. Zibar	ECOC 2010		OSA	Italy	2010	Th. 9.B.6		No
271	Full Standard Triple-Play Bi-Directional and Full-Duplex CWDM Transmission in Passive Optical Networks	M. Morant	OFC 2011		OSA	USA	2011	OWB3		No
272	Specialty Fiber Evaluation for In-building Distribution of Multiple-Format OFDM Radio Signals	M. Morant	OFC 2011		OSA	USA	2011	JWA16		No
273	Complete Mitigation of Brillouin Scattering Effects in	M. Morant	OFC 2011		OSA	USA	2011	JWA72		No

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	Reflective Passive Optical Networks using Triple-Format OFDM Radio Signals									
274	"Real World" FTTH Optical-to-Radio Interface Performance for Bi-directional Multi-Format OFDM Wireless Signal Transmission	M. Morant	OFC 2011		OSA	USA	2011	NTuB6		No
275	Multi-Gigabit Wireless Over Fibre Links Employing Photonics Down Conversion and Digital Coherent Detection	D. Zibar	23rd Annual Meeting of the IEEE Photonics Society		IEEE	USA	2010	ThM5		No
276	Frequency-to-Time Conversion via Polarization Mode Dispersion	J. Caraquitena	23rd Annual Meeting of the IEEE Photonics Society		IEEE	USA	2010	ThO5		No
277	Control of the operation regimes of a passively mode-locked fiber laser based on an intracavity polarizing fiber	G.E. Villanueva	CLEO/EQEC		IEEE	Germany	2010	CJ-P.29		No
278	Tilted Fiber Bragg Grating Assisted Nonlinear Effects in Carbon Nanotube-Coated Optical Fibers	G.E. Villanueva	CLEO/EQEC		IEEE	Germany	2010	CD-1.2		No

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279	Experimental Performance Comparison of 60 GHz DCM OFDM and Impulse BPSK Ultra-Wideband with Combined Optical Fibre and Wireless Transmission	M. Beltran	ECOC 2010		OSA	Italy	2010	Th.9.B.3		No
280	Optical Generation with FTTH Transmission of 60 GHz Impulse-Radio Ultra-Wideband Signals	M. Beltrán	ANIC 2010		OSA	Germany	2010	AWC7		No
281	Optical Technologies for Multi-Gbit/s Ultra-Wideband Radio: From the Access to the Pico-Cell	R.Llorente	ICTON 2010		IEEE	Germany	2010	We.A3.3		No
282	Localisation of Ultra-Wide Band Radio Signals by Time-Multiplexed Photonic Analog-to-Digital Processing	R. Llorente	ECOC 2010		OSA	Italy	2010	1-3		No
283	Optical Line Terminal and Remote Node Sub-Systems of Next-Generation Access Networks	J. Bauwelinck	ANIC 2010		OSA	Germany	2010	AWA5		No
284	Architectural Optimization of Coherent Ultra-Dense WDM based Optical Access Networks	J.D. Reis	OFC 2011		OSA	USA	2011	OTuB7		No
285	Reduction of Inter-Channel	J.D. Reis	Latin America		OSA	Brazil	2010	TuB4		No

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	FWM Crosstalk on Coherent QPSK Ultra-Dense WDM Transmission		Optics and Photonics Conf.-LAOP							
286	C+L band extended reach next generation access networks through Raman amplification: assessment in rural scenario	B. Neto	OECC 2010		OSA/IEEE	Japan	2010	6A1-5		No
287	C+L band gain equalization for extended reach WDM-ring PON using hybrid Raman/in line EDFA amplification	B. Neto	ICTON 2010		IEEE	Germany	2010	We.P.18		No
288	Up to 40 Gb/s Wireless Signal Generation and Demodulation in 75-110 GHz Band using Photonic Techniques	R. Sambaraju	International Topical Meeting on Microwave Photonics MWP'10		IEEE	Canada	2010	PDP		No
289	160 Gb/s all-optical contention resolution with prioritization using integrated photonic components	P. Bakopoulos	ECOC 2009		OSA	Austria	2009	6.3.5		No
290	Phase-Incoherent DPSK Regeneration Using a Fiber-Sagnac Interferometer	Ch. Kouloumentas	OFC 2010		OSA	USA	2010	OMT5		No

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291	All-Optical Carrier Recovery with Periodic Optical Filtering for Wavelength Reuse in RSOA-based Colorless Optical Network Units in Full-Duplex 10Gbps WDM-PONs	E. Kehayas	OFC 2010		OSA	USA	2010	OWG4		No
292	Terabit/s Single-Carrier Transmission Systems Based on Coherent Time-Division Demultiplexing	C. Schmidt-Langhorst	OFC 2010		OSA	USA	2010	OThV3		No
293	Novel Integrated Coherent Receiver Module for 100G Serial Transmission	A. Matiss	OFC 2010		OSA	USA	2010	PDPB3		No
294	High-Speed Digital Coherent Receiver with Parallel Optical Sampling	J.K. Fischer	OFC 2010		OSA	USA	2010	PDPB4		No
295	C+L Band Remote Node for Amplification in Extended Reach Full-Duplex 10Gb/s WDM/TDM Passive Optical Networks	B. Schrenk	ECOC 2009		OSA	Austria	2009	We.P6.19		No
296	Colourless FSK/ASK Optical Network Unit Based on a Fabry Pérot Type SOA/REAM for Symmetrical 10 Gb/s WDM-PONs	B. Schrenk	ECOC 2009		OSA	Austria	2009	We7.5.6		No

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297	Design Optimization for 10Gb/s Full-duplex Transmission using RSOA-based ONU with Electrical and Optical Filtering and Equalization	M. Omella	ECOC 2009		OSA	Austria	2009	7.5.5		No
298	Remotely Pumped Erbium Doped Fibre Bidirectional Amplifier for Gain Transient Mitigation	F. Bonada	ICTON 2009		IEEE	Portugal	2009	Th.B3.4		No
299	Passive Optical Network for Long-Reach Scalable and Resilient Access	J. Prat	ConTel09		IEEE	Croatia	2009	271-275		No
300	L-band in-line remote amplification for an extended WDM-PON ring architecture	S. Chatzi	ICTON 2009		IEEE	Portugal	2009	TuD5.5		No
301	Design of inline remote amplification for an extended WDM-PON ring architecture	S. Chatzi	NOC 2009		IEEE	Spain	2009	443-450		No
302	PDL Mitigation in PolMux OFDM Systems using Golden and Silver Polarization-Time Codes	S. Mumtaz	OFC 2010		OSA	USA	2010	JThA7		No
303	Accurate digital Frequency Offset Estimator for	M. Selmi	ECOC 2009		OSA	Austria	2009	1-2		No

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	coherent PolMux QAM transmission systems									
304	Pseudo-Newton based equalization algorithms for QAM coherent optical systems	M. Selmi	OFC 2010		OSA	USA	2010	OThM3		No
305	All-optical packet switch at data rate beyond 160 Gb/s	N. Calabretta	ICTON 2009		IEEE	Portugal	2009	1-4		No
306	All-optical wavelength conversion using cross-phase modulation at 42.7 Gbit/s in silicon-organic hybrid (SOH) waveguides	T. Vallaitis	Photonics in Switching, 2009		OSA	Italy	2009	1-2		No
307	Linear and Nonlinear Semiconductor Optical Amplifiers	J. Leuthold	OFC 2010		OSA	USA	2010	OThI3		No
308	Single Source Optical OFDM Transmitter and Optical FFT Receiver Demonstrated at Line Rates of 5.4 and 10.8 Tbit/s	D. Hillerkuss	OFC 2010		OSA	USA	2010	PDPC1		No
309	Optimum Filter for Wavelength Conversion with QD-SOA	R. Bonk	CLEO/IQEC		IEEE/OSA	USA	2009	CMC6		No
310	Optical Vector Signal Analyzer Based on Differential Direct Detection	J. Li	Annual Meeting of the Lasers and Electro-Optics		IEEE	Turkey	2009	TuA4		No

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			Society (LEOS)							
311	Semiconductor optical amplifiers (SOA) for linear and nonlinear applications	W. Freude	DPG Spring Meeting		Deutsche Physikalische Gesellschaft	Germany	2010	DS 296 7.2		No
312	Ultrafast silicon-organic hybrid (SOH) photonics	W. Freude	CLEO/IQEC'10		IEEE	USA	2010	CThR1		No
313	A surface plasmon polariton absorption modulator	A. Melikyan	CLEO/IQEC'10		IEEE	USA	2010	JThE77		No
314	Investigation of the Impact of Ultra- Narrow Carrier Spacing on the Transmission of a 10-Carrier 1Tb/s Superchannel	G. Gavioli	OFC 2010		OSA	USA	2010	OThD3		No
315	Colorless 10Gb/s extended reach WDM PON with low BW RSOA using MLSE	I. Cano	OFC 2010		OSA	USA	2010	OWG2		No
316	100 Gb/s WDM NRZ-PM-QPSK Long-Haul Transmission Experiment over Installed Fiber Probing Non-Linear Reach With and Without DCUs	G. Gavioli	ECOC 2009		OSA	Austria	2009	3.4.2		No
317	All-Optical Clocked D-Type Flip-Flop Exploiting SOA-Based Optical SR Latch and Logic Gates	J. Wang	Photonics in Switching 2009		OSA	Italy	2009	ThI1-6		No
318	Radio Frequency	R. Sambaraju	OFC 2010		OSA	USA	2010	OML1		No

TABLE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS

NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[1] (if available)	Is/Will open access[2] provided to this publication?
	Transparent Demodulation for Broadband Wireless Links									
319	Fully DC-Coupled 10Gb/s Burst-Mode PON Prototypes and Upstream Experiments with 58ns Overhead	C. Melange	OFC 2010		OSA	USA	2010	OWX2		No
320	Evolution of Burst Mode Receivers	X. Z. Qiu	ECOC 2009		OSA	Austria	2009	7.5.1		No
321	Wavelength Conversion of a 160 Gb/s RZ OTDM Signal in a PPLN Waveguide at Room Temperature	M.V. Drummond	Photonics in Switching 2009		OSA	Italy	2009	1-2		No
322	Nonlinear Effects Prediction in Ultra-Dense WDM Systems Using Volterra Series	J.D. Reis	OFC 2010		OSA	USA	2010	JWA9		No
323	650 Gbit/s OTDM Transmission over 80 km SSMF Incorporating Clock Recovery, Channel Identification and Demultiplexing in a Polarisation Insensitive Receiver	M. Galili	OFC 2010		OSA	USA	2010	OWO3		No
324	Record-Length 10.7 Gb/s Uncompensated	G. Gavioli	OFC 2009		OSA	USA	2009	OWE6		No

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	Transmission Experiment over Installed Fiber Using Narrow-Filtered Duobinary and a Correlation-Sensitive MLSE-Rx									
325	All-optical 160Gb/s half-addition half-subtraction and AND/OR function exploiting pump depletion and nonlinearities in a PPLN waveguide	A. Bogoni	ECOC 2008		OSA	Belgium	2008	PDP Th.3.E.7		No
326	320 Gb/s nonlinear operations based on a PPLN waveguide for optical multiplexing and wavelength conversion	A. Bogoni	OFC 2009		OSA	USA	2009	OThS5		No
327	All-optical time domain 160 Gb/s ADD/DROP based on pump depletion and nonlinearities in a single PPLN waveguide	A. Bogoni	OFC 2009		OSA	USA	2009	JThA59		No
328	Full-Duplex Bidirectional Transmission at 10 Gb/s in WDM PONs with RSOA-based ONU using Offset Optical Filtering and Electronic Equalization	M. Omella	OFC 2009		OSA	USA	2009	OThA7		No

TABLE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS

NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[1] (if available)	Is/Will open access[2] provided to this publication?
329	An Agile Multi-Wavelength Optical Source with Configurable Channel Spacing and CW or Pulsed Operation for High-Capacity WDM Optical Networks	P. Bakopoulos	OFC 2009		OSA	USA	2009	OWB6		No
330	Demonstration of 8 Error-Free Cascades of 2R NRZ SOA-MZI Wavelength Converter	D. Apostolopoulos	OFC 2009		OSA	USA	2009	OThS2		No
331	Wavelength Conversion for NRZ Signals with Enhanced Regenerative Characteristics	K. Vyrsokinos	OFC 2009		OSA	USA	2009	JWA32		No
332	2R/3R Optical Grooming Switch with Time-Slot Interchange	P. Vorreau	ECOC 2008		OSA	Belgium	2008	PDP Th.3.F.4		No
333	Field Trial of WDM-OTDM Transmultiplexing employing Photonic Switch Fabric-based Buffer-less Bit-interleaved Data Grooming and All-Optical Regeneration	G. Zarris	OFC 2009		OSA	USA	2009	PDPC10		No
334	Rep. Rate Multiplication of Pseudo-Random Bit Sequences	C. Stamatiadis	OFC 2009		OSA	USA	2009	OThF1		No
335	Generation and Coherent	C. Schmidt-	OFC 2009		OSA	USA	2009	PDPC6		No

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NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[1] (if available)	Is/Will open access[2] provided to this publication?
	Time-Division Demultiplexing of up to 5.1 Tb/s Single-Channel 8-PSK and 16-QAM Signals	Langhorst								
336	Enhanced 10-Gb/s NRZ Transmission Distance using Dual Modulation of an Integrated Electro-absorption Modulated Laser Transmitter	J. Petit	OFC 2009		OSA	USA	2009	OThG2		No
337	Spectral slicing of a supercontinuum source for WDM/DS-OCDMA application	C. Ware	ICTON 2008		IEEE	Greece	2008	158-161		No
338	OFDM radio-over-fibre systems employing routing in multi-mode fibre in-building networks	H. Yang	ECOC 2008		OSA	Belgium	2008	Tu 4.F.6		No
339	All-Optical Balanced Detection System with sub-ps Resolution	H. Sunnerud	OFC 2009		OSA	USA	2009	OThF4		No
340	Fiber-optic parametric amplifiers and their applications	P. Andrekson	ECOC 2008		OSA	Belgium	2008	Tu.B.3.1		No
341	High resolution optical waveform sampling	P. Andrekson	IEEE Winter Topical Meeting		IEEE	Austria	2009	MC2.2		No
342	High resolution optical	P. Andrekson	OSA Optics and		OSA	USA	2008	CMB3		No

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NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[1] (if available)	Is/Will open access[2] provided to this publication?
	waveform analysis		Photonics congress							
343	Polarisation-independent sub-picosecond flat-top pulse generation for ultra-fast 640 Gbit/s gating	L.K. Oxenløwe	OFC 2009		OSA	USA	2009	OWS5		No
344	Dynamic range enhancement and amplitude regeneration in single pump fibre optic parametric amplifiers using DPSK modulation	C. Peucheret	ECOC 2008		OSA	Belgium	2008	Tu.4.D.4		No
345	Colorless WDM-PON Performance Improvement Exploiting a Service-ONU for Multiwavelength Distribution	G. Berrettini	OFC 2009		OSA	USA	2009	OMN2		No
346	RZ to CSRZ Format and Wavelength Conversion with Regenerative Properties	A. Marculescu	OFC 2009		OSA	USA	2009	OThS1		No
347	10 Gb/s RSOA Transmission by Direct Duobinary Modulation	M. Omella	ECOC 2008		OSA	Belgium	2008	Tu.3.E4		No

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
1	*Web*	*KIT*	*Photonics*	*2008*	*http://en.wikipedia.org/wiki/Photonics*	*Scientific Community, Industry, Civil Society, Policy makers, Medias*	*>400 Millions/month*	*Worlwide*
2	*Periodic Newsletters*	*ICCS/NTUA, AIT*		*Jul 2008, Dec.2008, Apr 2009, Nov. 2009 Aug 2010 Jun 2011 Jun 2012*	*EURO-FOS Website*	*Scientific Community, Industry*	*~9.000/year*	*Worldwide*
3	*Article*	*AIT, ICCS/NTUA*	*EURO-FOS Project*	*2008*	*Imfocom magazine*	*Scientific Community, Industry*	*~10.000*	*Greece*
4								
5	*Exhibition*	*ICCS/NTUA*	*Project booth at ECOC 2008*	*21-25 Sep. 2008*	*Brussels, Belgium*	*Scientific Community, Industry, Medias*	*~4.500*	*Worldwide*
6	*Exhibition*	*ICCS/NTUA*	*EURO-FOS Project presentation at the booth of ICT-BONE Project*	*Nov. 2008*	*ICT 2008, Lyon, France*	*Scientific Community, Industry, Policy makers, Medias*	*~3.000*	*Worldwide*
7	*Workshop*	*ICCS/NTUA*	*EC Concertation meeting*	*18-19 Sep. 2008*	*Barcelona, Spain*	*Scientific Community, Industry, Policy makers*	*~500*	*Europe*
8	*Workshop*	*IT*	*EURO-FOS Presentation*	*Apr. 2008*	*Portugal*	*Scientific Community, Industry, Policy makers, Medias*	*~500*	*Portugal*

[3] A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

[4] A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias ('multiple choices' is possible).

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
9	*Brochure*	*ICCS/NTUA*	*EURO-FOS Project Brochure*	*2008*	*ECOC 2008, Brussels, Belgium*	-	-	*Worldwide*
10	*Poster*	*ICCS/NTUA*	*EURO-FOS Project Poster*	*2008*	*ECOC 2008, Brussels, Belgium*	-	-	*Worldwide*
11	*Video, Media briefing, interview*	*IT*	*EURO-FOS Project*	*April 2009*	*Grande Porto TV (Portugal)*	*Scientific Community, Industry, Civil Society*	*~0,5 million*	*Portugal*
12	*Workshop*	*AIT*	*"FTTx architectures, technologies, business and economic aspects*	*12 May 2009*	*Athens, Greece*	*Industry, Civil Society, Policy makers, Medias*	*~300*	*Greece*
13	*Workshop*	*ICCS/NTUA*	*"Optoelectronic hardware developments for wireless photonics applications", "In-house and in-building networks" and "Convergence of wireless and FTTx technologies".*	*May 18-20 2009*	*Duisburg, Germany*	*Scientific Community, Industry, Policy makers*	*~500*	*Europe*
14	*Workshop*	*ICCS/NTUA*	*1st EURO-FOS Workshop on Photonic Systems (WORPS)*	*Jun. 2009*	*ICTON 2009, Azores, Portugal*	*Scientific Community, Industry*	*~3.000*	*Worldwide*
15	*Courses/Seminars*	*AIT*	*1st EURO-FOS Summer School*	*July 2009*	*AIT premises, Athens Greece*	*Scientific Community*	*~30*	*Europe*
16	*Exhibition*	*ICCS/NTUA*	*Project booth at ECOC 2009*	*20-24 Sep. 2009*	*Vienna, Austria*	*Scientific Community, Industry, Medias*	*~4.500*	*Worldwide*
17	*Media*	*KIT*	*Pionier der Datenverarbeitung mit Licht: Professor Jürg Leuthold erhält den Landes-forschungspreis für die Entwicklung eines optischen Chips*	*19 May 2009*	*Campus-Report bei Uni-Radio Baden, Radio Regenbogen*	*Civil Society*	*~10.000*	*Germany*
18	*Media*	*KIT*	*Auf der Überholspur der Datenautobahn*	*30 May 2009*	*Baden-Württemberg aktuell*	*Civil Society*	*~10.000*	*Germany*
19	*Media*	*KIT*	*Landesforschungspreis geht an drei Forscher*	*15 Jun 2009*	*Baden-Württemberg aktuell*	*Civil Society*	*~10.000*	*Germany*
20	*Media*	*KIT*	*Prof. Jürgen Leuthold wird mit dem Landesforschungspreis Baden-Württemberg*	*15 Jun 2009*	*SWR2 Impuls*	*Civil Society*	*~10.000*	*Germany*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			ausgezeichnet – Mit 160 Gigabit / Sekunde in die Zukunft aus: SWR2 Impuls					
21	*Presentation*	*ICCS/NTUA*	*"The exciting field of photonic technology" by Prof. Hercules Avramopoulos*	*July 2009*	*AIT, Athens*	*Scientific Community*	*~200*	*Greece*
22	*Presentation*	*ICCS/NTUA*	*"Photonic Communications and EURO-FOS" by Prof. Hercules Avramopoulos*	*Oct. 2009*	*Athens*	*Scientific Community, Industry, Civil Society, Medias*	*~200*	*Greece*
23	*Article*	*Institut Telecom*	*Presentation of EURO-FOS Project*	*Sep. 2009*	*Journal of the French Optical Society*	*Scientific Community*	*~1.500*	*France*
24	*Workshop*	*ICCS/NTUA*	*4th Concertation meeting on "Photonics-Enabled Applications"*	*10-11 Sep. 2009*	*Athens, Greece*	*Scientific Community, Industry, Policy makers*	*~300*	*Europe*
25	*Poster*	*IMEC*	*10Gb/s burst-mode prototypes for next-generation fiber access networks*	*20-21 Oct. 2009*	*Alcatel-Lucent's Bell Labs Open Days, Antwerp, Belgium*	*Scientific Community, Industry*	*~300*	*Belgium*
26	*Presentation*	*DTU*	*EURO-FOS Project*	*2009*	*Copenhagen, Denmark*	*High school students*	*~200*	*Denmark*
27	*Media*	*DTU*	*Presentation of EURO-FOS project*	*2009*	*National Danish Television*	*Civil Society*	*~5.000*	*Denmark*
28	*Invited talk*	*IMEC*	*Evolution of Burst Mode Receivers*	*20-24 September 2009*	*ECOC 2009, Vienna, Austria*	*Scientific Community, Industry, Medias*	*~4.500*	*Worldwide*
29	*Invited talk*	*KIT*	*An all-optical grooming switch with regenerative capabilities*	*28 Jun-2 Jul 2009*	*ICTON 2009, São Miguel, Portugal*	*Scientific Community, Industry, Medias*	*~2.000*	*Worldwide*
30	*Invited talk*	*HHI*	*Next generation optical networks based on higher-order modulation formats, coherent receivers and electronic distortion equalization*	*28 Jun-2 Jul 2009*	*ICTON 2009, São Miguel, Portugal*	*Scientific Community, Industry, Medias*	*~2.000*	*Worldwide*
31	*Presentation*	*Institut Telecom*	*Presentation of EURO-FOS project in a course on optical communications to*	*March 2010*	*Paris, France*	*Scientific Community*	*~100*	*France*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			students coming from various European universities within the frame of a European SOCRATES project called ATHENS					
32	*Presentation*	*IMEC*	*Demonstration of a POF link*	*March 2010*	*Leuven, Belgium*	*Scientific Community (Bacelor Students)*	*~50*	*Belgium*
33	*Presentation*	*IMEC*	*Presentation of EURO-FOS Project and lab tour*	*April 2010*	*Leuven, Belgium*	*Scientific Community (postgraduate students)*	*~50*	*Belgium*
34	*Workshop*	*DTU*	*1st Annual Workshop on Photonic Technologies for Access and Interconnects*	*28-30 Jan. 2010*	*Stanford University, California, USA*	*Scientific Community*	*~600*	*Worldwide*
35	*Invited talk*	*IMEC*	*Burst-mode transmitters and receivers for next generation 10Gb/s optical access networks*	*19-21 May 2010*	*CMOS Emerging Technologies Workshop, Whistler, BC, Canada*	*Scientific Community, Industry*	*~500*	*Worldwide*
36	*Publication*	*UPC, ICCS/NTUA*	*Enhancing dynamic student learning by teamwork in innovative projects at an ERASMUS MUNDUS Master subject adapted to the EHEA (EEES)*	*30 June-2 July 2010*	*6th International Congress on University Teaching and Education, Barcelona, Spain*	*Scientific Community*	*~200*	*Worldwide*
37	*Invited talk*	*IMEC*	*10Gb/s Burst Mode Receivers*	*24-25 Feb. 2010*	*EPIC Symposium, FTTH conference 2010, Lisbon,Portugal*	*Scientific Community, Industry, Medias*	*~2.500*	*Worldwide*
38	*Publication*	*AIT*	*Higher Education Handbook*	*April 2010*	*EURO-FOS website*	*Scientific Community, Civil Society*	*~100.000*	*Europe*
39	*Courses/Seminars*	*DTU*	*2nd EURO-FOS Summer School*	*August 2010*	*DTU premises, Copenhagen, Denmark*	*Scientific Community*	*~30*	*Worldwide*
40	*Courses/Seminars*	*ACREO*	*Winter school on photonics technology for 2 classes of year 2 from Thorhildsplans Gymnasium*	*January 2011*	*ACREO premises, Stockholm, Sweden*	*Civil society*	*~55*	*Sweden*
41	*Courses/Seminars*	*ACREO*	*Winter school: 4 lab sessions (2 hours each)*	*Winter 2010-*	*SSSUP premises, Pisa,*	*Scientific Community*	*~55*	*Italy*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			to SSSUP students of the Master degree course and PhD course	*2011*	*Italy*			
42	*Courses/Seminars*	*CHALMERS*	*Winter school on photonics technology for 2nd and 3rd year undergraduates*	*Winter 2010-2011*	*CHALMERS premises, Borås, Sweden*	*Scientific Community*	*~25*	*Sweden*
43	*Courses/Seminars*	*UPVLC*	*Winter school on photonics technology for students from secondary schools and professional technical schools*	*February - March-2011*	*UPVLC premises, Valencia, Spain*	*Civil society*	*~25*	*Spain*
44	*Courses/Seminars*	*TU/e*	*Winter school on optical packet switch for graduate students*	*Winter 2010-2011*	*TU/e premises, Eindhoven , The Netherlands*	*Scientific Community*	*~20*	*The Netherlands*
45	*Courses/Seminars*	*TNI*	*Winter school on photonics*	*Winter 2010-2011*	*TNI premises, Cork, Ireland*	*Scientific Community*	*~25*	*Ireland*
46	*Courses/Seminars*	*IMEC*	*Winter school on photonics technology for master students in electrical engineering*	*Spring 2011*	*IMEC premises, Leuven, Belgium*	*Scientific Community*	*~145*	*Belgium*
47	*Courses/Seminars*	*AIT*	*Winter school on photonics technology for postgraduate and high school level students*	*Jan-Mar. 2011*	*AIT premises, Athens, Greece*	*Civil society*	*~100*	*Greece*
48	*Courses/Seminars*	*DTU*	*Winter school on photonics technology for Primary and Secondary school students*	*Jan-May 2011*	*DTU premises, Copenhagen, Denmark*	*Civil society*	*~200*	*Denmark*
49	*Courses/Seminars*	*POLITO*	*Winter school on photonics technology for graduate and undergraduate engineering students*	*Winter 2010-2011*	*POLITO premises, Torino, Italy*	*Scientific Community*	*~80*	*Italy*
50	*Courses/Seminars*	*ICCS/NTUA*	*Winter school on photonics technology for high school students*	*Winter 2010-2011*	*Athens, Greece*	*Civil society*	*~50*	*Greece*
51	*Presentation*	*ICCS/NTUA*	*"The horizons that photonics technology open in the modern world " by Prof. Hercules Avramopoulos*	*Jan 2011*	*Athens, Greece*	*Civil society*	*~200*	*Greece*
52	*Educational visits*	*AIT*	*15 visits of high school students*	*Winter 2010-2011*	*Athens, Greece*	*Civil society*	*~240*	*Greece*
53	*Educational visits*	*IMEC*	*Lab tour for master students*	*April 2011*	*Leuven, Belgium*	*Scientific Community*	*~120*	*Belgium*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
54	*Lectures*	*SSSUP*	*Lectures on photonics technology for high school students*	*Winter 2010-2011*	*Istituto Tecnico "E. Mattei", Pisa, Italy*	*Civil society*	*~250*	*Italy*
55	*Presentation*	*DTU*	*30 presentations on photonics technology at Danish high schools*	*Winter 2010-2011*	*Denmark*	*Civil society*	*~200*	*Denmark*
56	*Lectures*	*IT*	*Lectures on photonics technology in the framework of 'Academia de Verão' (Summer Academy) for high school students*	*July 2010*	*Porto, Portugal*	*Civil society*	*~250*	*Portugal*
57	*Presentation*	*ACREO*	*Presentation on photonics technology for high school students*	*Oct 2010 - Jan 2011*	*Stockholm, Sweden*	*Civil society*	*~300*	*Sweden*
58	*Workshop*	*Institut Telecom*	*Special workshop for the celebration of the 50th Birthday of the LASER*	*15 Dec. 2010*	*Paris, France*	*Scientific Community, Civil society*	*~250*	*France*
59	*Workshop*	*POLITO*	*Open technology fair "Notte dei Ricercatori"*	*24 Sep. 2010*	*Torino, Italy*	*Civil society, Media*	*~200*	*Italy*
60	*Exhibition*	*ICCS/NTUA*	*Project booth at ECOC 2010*	*19-23 Sep. 2010*	*Torino, Italy*	*Scientific Community, Industry, Medias*	*~4.900*	*Worldwide*
60	*Exhibition*	*ICCS/NTUA*	*Project booth at OFC 2011*	*6-10 March 2011*	*Los Angeles, USA*	*Scientific Community, Industry, Medias*	*~11.000*	*Worldwide*
61	*Workshop*	*ICCS/NTUA*	*Photonics Concertation meeting*	*20 Oct. 2010*	*Brussels, Belgium*	*Scientific Community, Industry, Policy makers*	*~400*	*Europe*
62	*Article*	*ICCS/NTUA*	*EURO-FOS: Towards a Pan-European Laboratory for Lightwave Communications*	*Apr. 2011*	*IEEE Photonics Society News*	*Scientific Community, Industry*	*~5.000*	*Worldwide*
63	*Workshop*	*ICCS/NTUA*	*"Petabit Routing: Electronic Optical or Hybrid? Where to Draw the Line?"*	*19-23 Sep. 2010*	*ECOC 2009, Torino, Italy*	*Scientific Community, Industry, Medias*	*~4.900*	*Worldwide*
64	*Workshop*	*HHI*	*"Single and Multi-Carrier Techniques to Build Terabit/s per-Channel Optical Transmission Systems"*	*19-23 Sep. 2010*	*ECOC 2009, Torino, Italy*	*Scientific Community, Industry, Medias*	*~4.900*	*Worldwide*
65	*International Symposium*	*DTU*	*"International Symposium on Ultra-high Capacity Optical Communication and Related Optical Signal Processing and*	*16-17 Sep 2010*	*Copenhagen, Denmark*	*Scientific Community, Industry, Medias*	*~600*	*Worldwide*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			Devices"					
66	*Workshop*	*HHI*	*EURO-FOS Workshop*	*27 March 2011*	*Berlin, Germany*	*Scientific Community, Industry*	*~50*	*Europe*
67	*Invited talk*	*HHI*	*Single- and multi-carrier techniques to buildup Tb/s per channel transmission systems*	*27 Jun-2Jul 2010*	*ICTON 2010, Munich, Germany*	*Scientific Community, Industry*	*~500*	*Worldwide*
68	*Invited talk*	*HHI*	*High Spectral Efficient Phase and Quadrature Amplitude Modulation for Optical Fibre Transmission*	*21-24 Jun 2010*	*SPPCom, Karlsruhe, Germany*	*Scientific Community, Industry*	*~500*	*Worldwide*
69	*Invited talk*	*HHI*	*Terabit/s single-carrier transmission systems based on coherent time-division demultiplexing*	*16-17 Sep 2010*	*International Symposium on Ultra-high Capacity Communication and Related Optical Signal Processing and Devices, DTU, Denmark*	*Scientific Community, Industry*	*~500*	*Worldwide*
70	*Invited talk*	*UPC*	*Technologies, subsystems and modeling of next generation extended PONs*	*15Jun 2010*	*French Chapter of IEEE Photonics Society, Paris, France*	*Scientific Community, Industry*	*~150*	*France*
71	*Invited talk*	*UPC*	*Homodyne Ultra dense WDM-PONs: can they be affordable in access?*	*8-10Jun 2010*	*NOC 2010, Faro, Portugal*	*Scientific Community, Industry*	*~350*	*Worldwide*
72	*Invited talk*	*UPC*	*Optical Subsystems for Next Generation Access Networks*	*12-14Jun 2010*	*ANIC 2011, Toronto, Canada*	*Scientific Community, Industry*	*~500*	*Worldwide*
73	*Invited talk*	*ACREO*	*DSP-based compensation of non-linear impairments in 100 Gb/s PolMux QPSK*	*27 Jun-2Jul 2010*	*ICTON 2010, Munich, Germany*	*Scientific Community, Industry*	*~500*	*Worldwide*
74	*Invited talk*	*TU/e*	*Scalable and data format agnostic optical packet switch sub-systems for optical packet switched networks*	*21-23 Jul 2010*	*CSNDSP 2010, Newcastle, UK*	*Scientific Community, Industry*	*~500*	*Worldwide*
75	*Invited talk*	*KIT*	*'Ultrafast silicon-organic hybrid (SOH)*	*May 16–21,*	*CLEO/IQEC'10, San*	*Scientific Community,*	*~2.000*	*Worldwide*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			photonics	*2010*	*Jose (CA), USA*	*Industry, Medias*		
76	*Invited talk*	*KIT*	*100 Gbit/s electro-optic modulator and 56 Gbit/s wavelength converter for DQPSK data in silicon-organic hybrid (SOH) technology*	*July 19–21, 2010*	*Summer Topicals 2010 "Novel Waveguiding, Structures and Phenomena", Playa del Carmen, Riviera Maya, Mexico*	*Scientific Community, Industry, Medias*	*~1.000*	*Worldwide*
77	*Invited talk*	*KIT*	*All-optical high-speed signal processing with silicon-organic hybrid slot waveguides*	*26–29 Oct, 2010*	*European Optical Society Annual Meeting (EOS'10), Parc Floral De Paris, France*	*Scientific Community, Industry, Medias*	*~600*	*Worldwide*
78	*Invited talk*	*KIT*	*Linear and nonlinear semiconductor optical amplifiers*	*27 Jun-2Jul 2010*	*ICTON 2010, Munich, Germany*	*Scientific Community, Industry*	*~500*	*Worldwide*
79	*Invited talk*	*UPVLC*	*Multi-Gigabit Wireless Over Fibre Links Employing Photonics Down Conversion and Digital Coherent Detection*	*Nov 2010*	*23rd Annual Meeting of the IEEE Photonics Society, Denver (CO), USA*	*Scientific Community, Industry*	*~500*	*Worldwide*
80	*Invited talk*	*AIT*	*Overview of NGA Technologies*	*Feb. 2011*	*EPIC, WDM-PON Forum & FTTH Council Europe at the Framework of the FTTH Conference 2011, Milan, Italy*	*Scientific Community, Industry, Policy makers*	*~450*	*Worldwide*
81	*Workshop*	*ACREO*	*High Speed Transmission workshop*	*26-30 Jun. 2011*	*ICTON 2011, Stockholm, Sweden*	*Scientific Community, Industry, Medias*	*~300*	*Worldwide*
82	*Exhibition*	*ICCS/NTUA*	*Project booth at ECOC 2011*	*18-22 Sep. 2011*	*Geneva, Switzerland*	*Scientific Community, Industry, Medias*	*~4.900*	*Worldwide*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
83	*Workshop*	*POLITO*	*Link design: a forgotten art?*	*18-22 Sep. 2011*	*ECOC 2011, Geneva, Switzerland*	*Scientific Community, Industry, Medias*	*~4.900*	*Worldwide*
84	*Courses/Seminars*	*AIT*	*Winter school seminars on Optical communications and recent research activities*	*Nov. 2011*	*Athens, Greece*	*Scientific Community*	*~20*	*Greece*
85	*Courses/Seminars*	*AIT*	*Next generation optical access networks*	*Mar. 2012*	*Athens, Greece*	*Scientific Community*	*~20*	*Greece*
86	*Educational demo*	*IMEC*	*Lab demo of optical testbed to Master students*	*17-19 Apr. 2012*	*Lueven, Belgium*	*Scientific Community*	*~100*	*Belgium*
87	*Courses/Seminars*	*Institut Telecom*	*Course on optical communication within the frame of the European ATHENS program*	*Nov. 2011*	*Paris, France*	*Scientific Community*	*~15*	*France*
88	*Presentation*	*ICCS/NTUA*	*Presentation and lab tour to high school students by Prof. Avramopoulos*	*Oct. 2011*	*Athens, Greece*	*Civil society*	*~70*	*Greece*
89	*Courses/Seminars*	*DTU*	*Winter school on photonics technology for high school teachers*	*Winter 2011-2012*	*Copenhagen, Denmark*	*Civil society*	*~50*	*Denmark*
90	*Demonstration*	*DTU*	*4 experimental roadshows for high school students on the basic principles of photonics through simple experimental demonstrations carried out by the students*	*Winter 2011-2012*	*Copenhagen, Denmark*	*Civil society*	*~85*	*Denmark*
91	*Courses/Seminars*	*DTU*	*Winter school on optical communications at Lyngby Tekniske Gymnasium*	*Winter 2011-2012*	*Copenhagen, Denmark*	*Civil society*	*~45*	*Denmark*
92	*Lecture*	*KIT*	*Open lecture "From Bits to Terabits" to OSA student members from several European universities*	*17 Mar. 2012*	*Karlsruhe, Germany*	*Scientific Community*	*~70*	*Germany*
93	*Courses/Seminars*	*POLITO*	*Winter school seminars on photonics technology for high school students*	*7 Dec. 2011*	*Torino, Italy*	*Civil society*	*~200*	*Italy*
94	*Seminar*	*POLITO*	*Briefing of high school students on academic studies on photonics*	*9 Mar. 2012*	*Torino, Italy*	*Civil society*	*~100*	*Italy*
95	*Courses/Seminars*	*SSSUP*	*Winter school seminars on photonics technology for high school students*	*23 Jan. 2012*	*Pisa, Italy*	*Civil society*	*~80*	*Italy*
96	*Courses/Seminars*	*TU/e*	*Winter school seminars on optical local area*	*16 Dec. 2011*	*Eindhoven, The*	*Scientific Community*	*~40*	*The Netherlands*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
			networks to bachelor and master students		*Netherlands*			
97	*Courses/Seminars*	*UPC*	*Presentation of the main Companies, Research Centres and Research Frontiers in the field of Optical Communications in Europe In the framework of the "Master in Photonics" (as part of the Eramsus Mundus "Europhotonics")*	*23 Mar. 2012*	*Barcelona, Spain*	*Scientific Community*	*~28*	*Spain, Germany, France, Iran, India*
98	*Courses/Seminars*	*UPVLC*	*Seminar courses and lab demonstrations on Radio over Fiber Systems to 4th year undergraduate students on Telecommunication Engineering degree*	*Nov.-Dec. 2011*	*Valencia, Spain*	*Scientific Community*	*~45*	*Spain*
99	*Seminar*	*UPVLC*	*Open session on optical fiber communications for master students from the Bucaramanga University (Colombia)*	*Dec. 2011*	*Valencia, Spain*	*Scientific Community*	*~12*	*Colombia*
100	*Presentation*	*DTU*	*Open presentation to 7 Danish high schools on current topics and opportunities in optics, with special emphasis on EUROFOS' related topics*	*Winter 2011-2012*	*Copenhagen, Denmark*	*Civil society*	*~300*	*Denmark*
101	*Demonstration*	*DTU*	*Demo of a free-space optical transmission system for transport of music using an IPOD, a laser pointer, a low-speed photo detector and loud speakers*	*2009-2011*	*Post & Tele Museum, Denmark*	*Civil Society, Medias*	*~15.000*	*Denmark*
102	*Presentation*	*AIT*	*Presentations followed by short lab demonstrations to high school students*	*Nov. 2011-Mar. 2012*	*Athens, Greece*	*Civil society*	*>300*	*Greece*
103	*Demonstration*	*IMEC*	*Lab demo to high school students*	*17 Mar. 2012*	*Leuven, Belgium*	*Civil society*	*~50*	*Belgium*
104	*Media*	*KIT*	*Laser puts record data rate through fibre*	*22 May 2011*	*http://www.bbc.co.uk/news/science-environment-13469924*	*Civil society, Medias*		*Worldwide*
105	*Media*	*KIT*	*News in Science, Laser pushes data speed to new limits, ABC news*	*23 May 2011*	*http://www.abc.net.au/science/articles/2*	*Civil society, Medias*		*Worldwide*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
					011/05/23/3222799.htm			
106	*Media*	*KIT*	*Weltrekord in superschneller Datenübertragung, SWR3*		http://www.swr3.de/info/nachrichten/Weltrekord-in-superschneller-Datenuebertragung/-/id=47428/did=1071978/1ey6fe7/	*Civil society, Medias*		*Germany*
107	*Media*	*KIT*	*Neuer Rekord in der Datenübertragung, 700 DVDs pro Sekunde übermittelt, n-tv.de*		http://www.n-tv.de/technik/700-DVDs-pro-Sekunde-uebermittelt-article3401561.html	*Civil society, Medias*		*Germany*
108	*Media*	*KIT*	*Geschwindigkeitsrekord, Forscher übertragen 26 Terabit in einer Sekunde, SPIEGELONLINE*	*23 May 2011*	http://www.spiegel.de/wissenschaft/technik/0,1518,764360,00.html	*Civil society, Medias*		*Germany*
109	*Media*	*KIT*	*World Record in Ultra-Rapid Data Transmission, scienceblog.com*	*23 May 2011*	http://scienceblog.com/45462/world-record-in-ultra-rapid-data-transmission/	*Civil society, Medias*		*Worldwide*
110	*Media*	*KIT*	*World Record in Ultra-Rapid Data Transmission, sciencedaily.com*	*23 May 2011*	http://www.sciencedaily.com/releases/2011/05/110523101741.htm	*Civil society, Medias*		*Worldwide*
111	*Media*	*KIT*	*Scientists break data transfer record, German scientists sent data contained on 700 DVDs over a single laser beam in one second*	*24 May 2011*	*computerworld.com*	*Civil society, Medias*		*Worldwide*
112	*Presentation*	*UPVLC*	*EURO-FOS Project*	*17 Jun 2011*	*General public*	*Civil society*	*~150*	*Spain*

TABLE A2: LIST OF DISSEMINATION ACTIVITIES

NO.	Type of activities[3]	Main leader	Title	Date	Place	Type of audience[4]	Size of audience	Countries addressed
					dissemination event at UPVLC premise, Valencia, Spain			
113	*Presentation*	*UPC*	*Market oriented young research*	*15-16 Jun 2012*	*"bizBarcelona" congress, in collaboration with the "Innova" Program of the UPC, Barcelona, Spain*	*Scientific community, industry, civil society, medias, policy makers*	*~200*	*Spain*
114	*Article*	*UPC*	*"Dispositivos ópticos"*	*Sept. 2011*	*"Redes, Telecom e Instalaçoes" (RTI) (technical magazine oriented to telecommunications industry in Brasil)*	*Scientific community, industry, civil society, medias, policy makers*		*Brazil*
115	*Article*	*ICCS/NTUA*	*EURO-FOS: Pan-European Photonics Network*	*April 2012*	*SPIE Professional On line magazine http://spie.org/x86602.xml*	*Scientific community, industry, civil society*	*~1000*	*Worldwide*
116	*Publication*	*ICCS/NTUA, AIT*	*Higher Education Handbook in Photonics 21 site*	*Winter 2011*	*http://www.photonics21.org/download/Photonics21_news/euro-fos_d2_7.pdf*	*Scientific community, civil society*	*~10.000*	*Europe*

B2. Exploitation and Use of Foreground

EURO-FOS beneficiaries have recognised the opportunities resulted from of their participation in EURO-FOS network and elaborated on individual exploitation plans that consolidate the gained benefits. These plans for each beneficiary are summarized below:

1. ICCS/NTUA

ICCS/NTUA has exploited its participation in EURO-FOS project in a three-fold manner:

- *Education:* Material related to the concept and the objectives of the project has been included in the lectures of undergraduate and postgraduate courses giving the opportunity to the students of the department to get familiar with advanced research efforts and current technological trends. Moreover ICCS/NTUA took great advantage of the mobility framework of EURO-FOS motivating young PhD students of the institute to work together with their colleagues abroad building good working relationships and gathering valuable technical experience.
- *Research:* Over the four years of EURO-FOS, ICCS/NTUA gained significant experience and substantial expertise in fields tackled by the joint research activities in which it participated. Having built over the past concrete expertise on optical signal processing techniques (topics mainly falling within CE3), ICCS/NTUA is trying through joint activities to link this subsystem level expertise to system applications both for core (CE1-related topics) and access networks (CE4-related topics). The relevant experience has been used for further advancing the research methodologies and technical concepts of ICCS/NTUA and enabling new collaborations either in the form of free-research activities or within the frames of other ongoing research contracts.
- *Enhancement of links with industry:* ICCS/NTUA is exploiting the EURO-FOS network to establish substantial collaboration links with a large number of network beneficiaries in different areas of optical communications. The importance of these links is further amplified ICCS/NTUA is a stakeholder of the Greek Photonics Technology Platform, an initiative which gathers major industrial and academic entities in the Greek photonics sector and aims at reinforcing and integrating research and development activities on photonics at a national level. ICCS/NTUA has a strong presence in the Platform steering committee and pursues the transfer of research outcomes to Greek industry.

2. HHI

The activities of the Fraunhofer HHI throughout the duration of EURO-FOS have proven to be extremely beneficial to enlarge and strengthen Fraunhofer HHIs partnerships with European Universities, research organisation and industry partners. The combination of Fraunhofer HHIs strengths, such as the setup and operation of complex, high speed optical transmission systems, FPGA-based sub-system development and numerical investigations, with the expertise of other EURO-FOS partners has continued and intensified in year 4 of the project. This lead to a number of joint applications for European research projects. Successful examples are the following two projects:

- IDEALIST is a new Integrated Project (IP) together with University of Essex, University of Peloponnese and Technische Universiteit Eindhoven
- SASER, a project under the Celtic-Plus umbrella in collaboration with the Technical University of Denmark, ADVA AG Optical Networking, VPI Systems GmbH, Nokia Siemens Networks Optical GmbH, u2t Photonics AG starting in August 2012. The development of close relations with key industry partners within EURO-FOS, e.g. from the advisory board, was a key for the successful project application and will help to fulfil the project goals. Within SASER even a direct industry sub-contract to Fraunhofer HHI is planned, showing the success of EURO-FOS in creating and intensifying direct links to the industry.

Further joint project applications, such as in the upcoming EU-Japan call or in a "Fraunhofer-Carnot" (German-French) call, are planned for the near future, as well as joint experimental activities.

3. UEssex

UEssex took significant advantage of its established collaboration within EURO-FOS network of excellence to pave the way for shaping both educational and research & development opportunities. Utilizing its ultra high speed optical testbed, sub-wavelength network testbed, wavelength/waveband switching, and its recent elastic optical networking testbed, UEssex is continuing to utilize collaborations already built within EURO-FOS framework to combine the expertise to produce higher impacts.

Besides the benefits resulted from the participation in joint research activities UEssex has gained remarkable experience in the dimension of ICT tools that support research networking, through the design and development of the Pan-European laboratory platform for the purposes of the project. This gained knowhow allows UEssex to be considered as a key partner in any future initiative towards the sustainability and/or extension of EURO-FOS network as well as of any similar networking initiatives, both at national and European level.

4. UPC

UPC has been exploiting the EURO-FOS network for establishing long term collaboration with industry, by trade and industrial links. The results of this collaboration were proven extremely fruitful since they led to a number of patents directly related with research activities within EURO-FOS:

i. World patent application, "Optical Network Unit", PCT 100822354, 10 March 2011 (UPC, ICCS/NTUA and Alcatel-Lucent)

ii. World patent application, "Method and Apparatus for bidirectional optical link using a simple integrated and wavelength-agnostic semiconductor device for simultaneous phase and amplitude shift keyed data transmission", PCT/ES2012/070136, 04 March 2011 (UPC, ICCS/NTUA and Alcatel-Lucent)

The collaboration between UPC, the other EURO-FOS partners and industry resulted in longer term collaborations as for example: UPC, AIT and SSUP has established a collaboration with industrial partners BT, Ericsson and Alcatel-Lucent III-V Labs on the topic of coherent DWDM for PONs following the studies performed under specific joint research activities (JEA 4.06). This topic is identified by the industrial partners as a key direction for the enhancement of the access networks capacity however significant developments are required in terms of OLT, ONU design, as well as new components and DSP. The establish collaboration initiated through EURO-FOS has already led to a successful new project in FP7 call 8, COCONUT.

On the other hand, UPC has been exploiting the EURO-FOS network of excellence for establishing substantial collaboration links with a large number of partners, some of them participating in several 7FP projects. Thanks to this collaboration, UPC has been carrying on collaboration among STREP projects, leading to fruitful results, going even beyond the final objectives of the individual original STREP projects.

Finally, UPC has been exploiting the EURO-FOS network for enhancing mobility of PhD students in a motivating network of research institutes and industrial affiliates, providing access to priceless technical training and first contact with industrial research environment, providing a first contact for later first employment at industrial R&D. A fruitful result of this collaboration, within the framework of EURO-FOS network, among partners and the industry has been the Award given by Industrial European Technology Platform PHOTONICS 21 to a PhD student from UPC (Bernhard Schrenk). This prize is an acknowledgment that the research carried out by EURO-FOS network is of high industrial impact, and a very useful asset for UPC to pursue and enhance its existing and future links with industrial partners.

5. Institut TELECOM

Integration of the group optical communication group of Institut TELECOM within the EURO-FOS network has been a major event, in terms of gained benefits and expertise. The joint experimental activities and the integration process have helped the group to establish itself as a major team in optical communication together with the other prestigious partners of EURO-FOS project. Collaborative work has been performed with many teams in the consortium including HHI, KIT, ICCS/NTUA, UPC etc. All these collaborations have led to joint publications.

The topic of coherent communications has been one of the major driving forces within the last for years. When EURO-FOS started INSTITUT TELECOM had just begun investing in the field of coherent reception systems. The great advantage of our team is to mix specialists in optical communications and in digital communications. The JEAs have allowed us to perform our first experiments in partner's labs, testing new original algorithms before our own experimental set-up was active. The experience acquired was of prime value for developing our experimental skills. In addition, on the same subject, one of our laboratory engineers has had the opportunity to spend 6 month in Chalmers within the scope of EURO-FOS.

In the field of optical sources for access networks, the networking with European partners was a great argument and strength for addressing industry within national initiative projects. In addition, existing collaborations with industrial partners were highly boosted through the inclusion of these industrial partners included in JEAs, enhancing the European integration activity on the same time.

Institut TELECOM has taken several opportunities offered at a European level to enhance specific relations. In particular, Institut TELECOM participates to a call for a project within the EIT-KIC-ICT lab with ACREO and HHI related to the development of a platform for coherent optical communications (closely related to CE1). Also, Institut TELECOM and HHI planned to respond to a "Carnot-Fraunhofer" (France-Germany) call for project. Although these two proposals were unsuccessful the resulting integration experience is rich.

Institut TELECOM is really enthusiastic on the continuation of collaboration with EURO-FOS partners over the coming years: Institut TELECOM participates to the newly accepted CELTIC project SASER, which includes as partners, industrial affiliates in France (Orange Labs, 3-5 Labs, ALU), industrial affiliates in Germany (ALU-D and U2T) and EUROFOS partner HHI. .

EURO-FOS project has been a major driving force towards investment in the optical communication labs both on an internal basis, (Institut TELECOM deciding to invest in our group's activity) as well as on a regional basis. Participation to the network was an important factor for us to win a call for scientific investment from Île-de-France region, which allowed the development of our laboratory, while the support from EURO-FOS partners was a key argument for this success. The whole proposal amounted to 500€, a third being invested by the regional body.

Finally, we would like to stress out the fact that the Paul Baran Young Scholar 2012 form the Marconi Society was awarded to Guillem de Valicourt, PhD student of Institut TELECOM whom co-published with no less than eight groups from EURO-FOS during his PhD.

6. ACREO

ACREO has exploited EURO-FOS to obtain world-class research results together with other partners (e.g. HHI, POLITO, and Chalmers) that would otherwise be impossible to achieve relying merely on own resources. EURO-FOS has also provided ACREO the means to consolidate collaboration with other partners such as Tyndall Institute, UPC and Institut Telecom Paristech. In addition ACREO has taken several opportunities offered at a European level to enhance specific relations. In particular, we have participated to a call for project within the EIT- KIC-ICT lab with Institut Telecom Paristech related to the development of a platform in coherent optical communications (closely related to CE1). In addition, we have leveraged EURO-FOS to exploit and keep alive our collaborations with some industrial affiliates, especially Syntune.

Our plans for the near future, when it comes to exploiting the results and activities of EURO-FOS project include to continue the excellent scientific collaborations initiated and strengthened by the project, both in terms of joint research activities, but also in definition of new research projects, such as FP7 and HORIZON 2020 Call answers. With regard to collaboration with industry, there is an ongoing discussion with Syntune and UPC on the opportunity to extend the characterization activity initiated during EURO-FOS. Finally, ACREO intends to support and participate in any initiative on the continuation of the network, due to the extremely important impact of such networking activities to the links and collaboration with industry.

7. TU/e

Beyond EURO-FOS period, TU/e will continue to focus on three aspects: 1) High-capacity links: to drastically increase the capacity of (existing) fibre links, our research topic encompasses advanced multi-level multi-phase signal modulation techniques using optical coherent detection yielding improved spectral efficiency, dense wavelength multiplexing along with wideband low-noise (parametric) optical amplification techniques, and signal processing techniques for overcoming fibre non-linearity. As a new dimension for increasing fibre capacity, mode multiplexing techniques are included; 2) Telecommunication nodes: to break the capacity and power consumption barriers of packet routers, our research programme includes work on advanced photonic devices with a potential for dense circuit integration (e.g. micro-disk lasers), large-scale integratable (3-dimensional) optical switch architectures, and router system architectures employing multi-dimensional (time, wavelength, space) optical switching. A new field of research that we are currently developing is optics in computers. We focus on optical interconnects (incl. networks) for communication between racks (for instance in data-centers) and for communication between chips on a circuit board, and 3) User access networks: to create an integrated-services broadband highway all the way up to the individual user, our research programme includes flexible optical wavelength routing in hybrid wavelength-time multiple-access networks, radio-over-fibre techniques for offering mobility and reduced power consumption, and advanced dispersion-robust signal modulation techniques for low-cost in-building (plastic) multimode optical fibre networks. On a longer-term perspective, we investigate mode group diversity multiplexing as an additional dimension for offering independent service delivery paths, and free-space optical transmission techniques for interference-free high-capacity wireless links. Control- and management layer will also be investigated to come with a fast and reliable control mechanism of key opto-electronic devices for home and access networks. Photonic integration will be done for photonic digital signal processing in order to simplifying and making the control scheme more robust and reliable.

8. AIT

Over the four years of EURO-FOS project, AIT has been significantly benefited by the network's activities both with respect to its educational as well as to the research activities that jointly form the two main targeted functions of AIT. Moreover, many of the actions initiated and developed through EURO-FOS and in close collaboration with other members of the consortium will continue to benefit AIT activities, even after the end of EURO-FOS project. The next paragraphs identify the two main directions for the exploitation of the EURO-FOS network, related with: a) training and educational activities and b) research and development activities.

Exploitation with respect to educational and training activities: AIT's Networks and Optical Communications (NOC) group has widely utilized EURO-FOS to establish mobility actions for its PhD students and young researchers during all 4 years of the project. In total, 3PhD students, 3 young researchers and one experienced researcher participated in 11 mobility actions (2 in Y1, 2 in Y2, 3 in Y3 and 4 in Y4) that resulted in 7 journal and 12 conference publications jointly produced with the several collaborating members including UPC, KIT, TNI, ICCS/NTUA, DTU and POLITO. Also the joint work and studies have resulted in the completion of several PhD thesis chapters for the 3 PhD students two of which have already awarded their PhD. Beyond these measurable benefits, the established mobility actions assisted AIT's researchers in gaining experience and knowledge on their topics of research and exploring new research areas. Also

significant know-how has been brought back to AIT improving the NOC group laboratory functions and the evaluation tools used in theoretical studies.

Additionally, AIT's leading role in WP2 on dissemination and training activities in EURO-FOS, resulted in the enrichment of the relative educational material which has been used to perform the planned summer school and later winter school seminar classes on photonics technologies. In particular the close visibility to other members research work, offered through EURO-FOS, allowed the continuous and accurate update of the lecturing material as well as the identification of better methods to educate AIT's students on the relative topics. Finally, the leading role of AIT in WP2, and in particular in the initiation and preparation of the last two winter schools, offers a larger visibility to local and international students improving the recognition of AIT and NOC group in Europe.

Exploitation with respect to research and development activities: AIT identifies the important role of EURO-FOS in both enriching the quality and outcomes of the established research and in the successful promotion of novel research ideas that led to the generation of new research initiatives and collaborations.

Within the duration of the EURO-FOS project, AIT's research work performed in 3 ICT STREPs has been significantly assisted by joint collaborations as well as discussions with other experts from the consortium. These projects are: the successfully implemented STREP SARDANA and the currently running STREPs ACCORDANCE and CHRON. For these projects, EUROFOS offered a unique platform for extended measurements and implementation of new ideas and improvements that have been flourished through these projects but were not part of the initial work description. In particular, the measurement activities performed over the last year of EURO-FOS, in collaboration with DTU and the assistance of the industrial affiliates LeCroy and SHF, have significantly benefited CHRON project, by providing experimental results for the accurate optimization of the cognitive resource allocation algorithms in transparent networking, leading finally to the development of a wavelength routing and network planning tool. Moreover, the latest research collaborations established with partners POLITO and KIT on a similar topic have started producing sound results on the cost and energy consumption optimization of Nyquist-WDM in optical networking (already accepted for publication) and will continue after the end of the EURO-FOS project. Furthermore, significant expertise have been gained through experienced partners within the consortium in the generation of AIT's physical layer 4-node network test-bed that will be first used in the demonstration of the CHRON objectives but is also expected to attract other research collaborations

Finally, of particular importance to AIT was the promotion of the established collaborations and novel research activities with the purpose to attract further research grants by the EC. These efforts were successful for the case of the newly funded FP7 ICT project COCONUT that was initiated as a result of the JEA4.6 between AIT and UPC. These two partners together with the EURO-FOS partner SSSUP in the role of project coordinator have initiated collaboration with industrial partners Ericsson, BT, 3-5Labs and Promax leading to an innovative project that addresses the implementation of a next generation optical access network based on the ultra-dense WDM approach studied in principle through the aforementioned JEA. A similar collaboration for the submission of a new research proposal under FP& call 11 is already planned between AIT and POLITO based on the collaborative work mentioned in the previous paragraph, for use of Nyquist-WDM in optimizing the optical network resources.

9. CHALMERS

Chalmers has been exploiting the EURO-FOS network to strengthen the collaboration bonds with old partners, as well as establishing new links to research groups in the forefront of optical communication. The activities during the first years resulted in fruitful collaboration on signal processing on new modulation formats as well as transmission experiments with visiting researchers present in the lab. Many of the collaborations would not have taken place without the framework of EURO-FOS.

The future exploitation of the network includes a continued support of Eurofoslab, including financial support when this is required. This website have the ability to be an entry-point for future collaborators and clients, however it still needs to be more established in the photonics community.

Even though the financial support for EURO-FOS is over, the network will survive through the engaged participants. Chalmers will support and be active in applications for future collaboration project based on consortiums with EURO-FOS members. With work meetings on events already visited, such as ECOC or ICTON, collaboration will continue, however on a task-oriented level and with establishing financing as an additional part of the future JEAs.

10. KIT

KIT has started new collaborations with industrial partners that last beyond the EURO-FOS project duration. KIT has also started new collaborations with academic partners that did not exist before. Through EURO-FOS, KIT has 4 new industrial collaborations, access to equipment that we did not have before, we published more than 50 scientific publications in collaboration with EURO-FOS partners and we filed 2 patents that are hopefully going to make a lasting difference.

The main results KIT achieved during the period of EURO-FOS is listed as following:

- Self-coherent receiver based on tunable delay interferometer has been demonstrated with capability of receiving PolMUX DQPSK signal at 100Gbit/s. This work has led to two patents and a Ph.D. thesis.
- Within EURO-FOS we started the "Software defined transmitter" project. This has led to a collaboration of the KIT with Agilent Technology that has led to new projects for four years in a row.
- An optical OFMD signal generation and reception has been performed based on the above two achievements with collaboration with Finisar. World record measurement has been achieved and collaboration with Finisar is ongoing.
- Through EURO-FOS we got into contact with the Thales/III-V Labs. To this day KIT is performing characterization work for this Industrial lab.
- KIT has started new work on advanced modulation format in part through EURO-FOS. This has led to a Nature publication and on OFDM signals and initiated the work related to Nyquist shaped signals. Thanks to these activities new projects have been initiated.
- Investigation on quantum dot SOA. QD-SOA operated in both linear and non-linear region has been discussed. This work has been integrated in a Ph.D. thesis but is now also considered for use in a PON architecture by one of the Industrial partners.
- A more in-depth understanding of non-linear device for ultra-fast optical modulation has been gained through EURO-FOS and a few well cited papers have been generated.
- Through EURO-FOS the European project OTONES has been initiated.

11. POLITO

POLITO took advantage of the EURO-FOS network to enlarge and strengthen its partnerships with European Universities and research organizations. Substantial collaboration links with most of network beneficiaries have been established and are now fruitfully ongoing. POLITO was able to set-up joint activities delivering several joint papers in the last year of project.

POLITO has a long experience in theoretical and simulative analysis of optical communication systems and thanks to EURO-FOS network was able to develop an intense experimental activity gaining a considerable know-how: PhotonLab facility is now a renowned laboratory in the field of optical communication systems.

The most important ongoing collaborations born during the deployment of EURO-FOS project but go beyond its contractual end are summarised as follows:

- The activity on digital nonlinear compensation based on Volterra series in collaboration with IT resulted one joint paper for ECOC 2012 and the participation of POLITO as an external partner in a proposal prepared by IT for Portuguese national project
- The activity on physical layer aware network planning in collaboration with AIT resulted one joint paper for ECOC 2012, while the extension of the work will be submitted in JLT paper.
- The activity on Nyquist pulse shaping in collaboration with UPC resulted one joint paper for OFC 2012
- POLITO continues its collaboration with IMEC on anti-aliasing filter design and manufacturing. IMEC manufactured two sets of anti-aliasing filters under the requirements of POLITO and the latter is carrying out record experiments applying the Nyquist-WDM technique with PM-16QAM. PM-64QAM is also considered in the plans of the near future

12. TNI

Throughout the entire project, TNI has established substantial collaboration links with both industrial and academic partners. Additionally, TNI has used the mobility framework of EURO-FOS to foster excellent working relationships between PhD students and post-doctoral researchers in several international institutions. Two specific "exploitation successes" are provided hereafter:

i. In no small part due to the collaborative work performed in the framework of the CE4 JEAs in the area of optical access networks, TNI has identified the need for a so-called "linear burst-mode receiver". This type of receiver has been successfully demonstrated for the first time at Tyndall, and allows the use of electronic dispersion compensation in the upstream direction of time-division multiplexing passive optical networks. The further development of the LBMRx prototype is now focused upon commercialization and design of a "product-grade" LBMRx, work funded by an Enterprise Ireland commercialization project. A notable outcome of this work is the presentation of Vitesse Semiconductor (US) of the LBMRx technology to an important standardization body [F. Chang (Vitesse), D. Li (Hisense-Ligent), "10G EDC for Extended Reach in SMF: both down- and upstream", Presentation to the IEEE 802.3 Extended EPON Study Group, November Plenary, 8-10 Nov. 2011].

ii. In the same area of optical access networks, TNI is an important partner in the Integrated Project "DISCUS" (leading two Work Packages and having responsibility for the final test-bed), a new FP7 project due to start Q4 2012. In this project, TNI will further develop electronic equalization techniques, work originally started in some of the CE4 JEAs. The Integrated Project DISCUS involves several academic and industrial partners (e.g. IMEC and Alcatel-Lucent) of EuroFOS. Similarly, TNI is involved in the new FP7 STREP project "FABULOUS", where one of TNI's responsibilities is to study the resilience of frequency division multiple access (FDMA) passive optical networks against Rayleigh backscattering, a topic that was studied under the umbrella of the CE4 JEAs

13. SSSUP

SSSUP participation in the EURO-FOS Network of Excellence constituted a valuable opportunity for setting up new collaborations with partners with complementary expertise in the area of optical communications, as well as for consolidating links already established in the past. During the years of the project, fruitful collaborations have been established, resulting in joint experiments and publications. Through the opportunity of joint research activities with top-level partners, the project has represented a meaningful chance for deepening further and further partner's expertise and promoting new ideas. Nevertheless, the beneficial effects of the participation to EURO-FOS continue beyond the end of the project, as the project has put the seed for strong interactions and collaborations that won't end with the project itself. The strong

links developed between partners allow a deeper knowledge of partners' expertise, available facilities and capabilities as well as a concrete awareness of the potential outcome of joint activities. New projects involving EURO-FOS partners are already ongoing or at proposal stage (i.e. the COCONUT project involving EURO-FOS partners SSSUP, AIT and UPC in collaboration with Ericsson, BT, 3-5Labs and Promax), following the precious outcome derived from participation in EURO-FOS.

14. UPVLC

UPVLC has exploited EURO-FOS Network of Excellence to enhance its collaboration with leading European research groups in different areas of photonics. UPVLC expertise on radio-over-fiber systems in access network architectures and on ultrafast-ultrashort optical sources has been successfully shared with EURO-FOS partners. More concretely, the participation of UPVLC within the EURO-FOS NoE has allowed establishing fruitful collaborations with different partners, resulting in many joint experiments and publications. Moreover, UPVLC has exploited the mobility framework of EURO-FOS to carry out several research stays of PhD students and young researchers in other EURO-FOS institutions in order to gain experience and knowledge on their topics of research. On a short term perspective, UPVLC aims to maintain the strong interactions with other EURO-FOS partners, targeting the promotion of new ideas and concepts on the aforementioned topics for the preparation of new research proposals.

Beyond EURO-FOS period, UPVLC aims at exploiting the knowledge gained to establish efficient links with European industry. In particular, during the fourth year of the project, UPVLC has made important efforts to establish different collaboration with industrial partners through several joint experimental activities with the goal of promoting the industry-academia interaction. Results obtained in frequency conversion system based on local oscillators using pulsed fiber laser (RT6.3) have led to the application for a national project under the Spanish funding INNPACTO program. This program is addressed to facilitate the collaboration between research entities and industry. The consortium includes the companies ALTER Technology Group, DAS Photonics and the National Institute of Aerospatial Technology (INTA), and UPVLC as research entity. This project has recently been granted (IPT-2011-1081-370000). Additionally, some Spanish industrial companies (IKUSI and TECATEL) have expressed their interest in the scientific developments carried out on radio-over-fibre access systems for in-home networks (RT8.1) and subsequent joint research projects have been recently settled.

15. IMEC

During the course of EURO-FOS, IMEC has successfully demonstrated state-of-the-art 10 Gb/s burst-mode receiver chipset and their related subsystems for advanced 10G symmetric PONs and other optical networks. This achievement has been obtained with EURO-FOS partners and industrial affiliates via JEAs. The prototypes have been integrated into the test beds of TNI, UPC and NTUA for joint experiments. Moreover multiple units in Alcatel-Lucent Bell Labs were significantly involved in the development and demonstration of the prototypes. For example, Bell Labs Stuttgart Germany and Murray Hill USA provided their inputs for the sub-system requirement specifications; two people of IMEC worked on site in Bell Labs Murray Hill to evaluate the Burst Mode chipset in an end-to-end XG-PON2 prototype developed by Alcatel-Lucent; Bell Labs Villarceaux France and IMEC evaluated the chipset for a 10 Gbit/s packet-optical add/drop multiplexer (P-OADM) metro network in the test bed of the FP7 ICT ALPHA project; and Alcatel-Lucent's III-V Labs provided their newly developed high-bandwidth APD (FP7 MARISE) for integration with the prototypes designed by IMEC. IMEC also provided training and transferred part of the designs to Alcatel-Lucent for further research on dual rate PON systems.

Furthermore, worldwide collaborations were also carried out with big vendors such as STMicroelectronics COT Business Unit of the Wireline Infrastructure Division in Italy (providing us technical chip fabrication support), Sumitomo Electric Device Innovations, Inc, Japan (supporting the APD-TIA ROSA assembly and joint experiments) and Vitesse Semiconductor USA (providing us advanced samples for demonstration).

Within the framework of EURO-FOS the above excellent collaborations and success demos have led to >15 joint publications at major international conferences and in high-tier journals. This resulted in enhancing IMEC's world-class expertise on high speed optical front-end ASIC/subsystem designs, and in contributing to the university courses on high-speed electronics and high-frequency design. This know-how and strong partnership helped us to get significant funding after EURO-FOS. For example, Bell Labs is very pleased about our professionalism and committed team work during the EURO-FOS collaboration, they decided to fund us for another collaboration on energy efficient clock and data recovery (CDR) for PON in the frame of the global GreenTouch consortium (refer to the EuroFOS testimonial letter written by Bell Labs).

Also due to the participation in EURO-FOS Network of Excellence and its acquired networking, research and dissemination results 3 new EU-funded FP7 ICT Call 8 projects will start this year to assist in attracting new PhD students mainly Belgians and to perform high-level R&D researches. Delivering experienced postdocs to European industries effectively transfer our know-how knowledge to companies, giving them a head start in this field.

Finally due to the excellent collaborations during EURO-FOS Prof. Xing-Zhi Qiu is invited to present a tutorial talk at OFC 2013, which will keep our leading position in this field and offer an opportunity for future potential technology exploitation. IMEC protected our intellectual property via patent applications. IMEC is exploiting our IPs to major players (such as system vendors, semiconductor vendors, O/E component vendors etc). Consultancy services/licensing and design services as well as joint system demonstrations with industrial partners can be organized.

16. IT

IT, by means of its participation in the EURO-FOS network has managed to create solid links with several partners, through joint experimental and theoretical activities. These, provided PhD students and young researchers the possibility of interacting and getting extra advanced know-how and experience through these. These collaborations already resulted in continued joint activities, even unfunded, which is the case of the reverse propagation studies which are undergoing with politecnico de the Tonino, and the activities with UPC on the access networks.

Also, participation in the summer schools and workshops organized by EURO-FOS allowed higher visibility and enhancement in the existing activities and PhD and MsC works.

IT has also encouraged the involvement of their own professors, PhD students and young researchers, who are associated with the Optical Communications Group and not necessarily involved actively in EURO-FOS project, on learning and dissemination activities within the project, which has resulted in relevant contributions to the project's scientific book authoring and other side activities normally in the scientific domain.

IT collaborations with scientific and industrial partners will endure after the EURO-FOS duration in areas such as optical signal processing, optical routing, advanced modulation formats and technologies for access networks, coherent transmission, among others.

The demonstration achieved in the field of all-optical routing, result of one of the joint activities will enable demonstrating to IT internal and external industrial partners the feasibility and the application scope of this technology. A first demonstration to Portugal Telecom was already made during the EURO-FOS duration in a much simpler design, a simple all-optical switch. We plan to further expose the idea and try to further explore the results.

Volterra series for optical nonlinear simulation have been developed mainly by IT, but been used in collaborations and cooperation with several partners, like Politecnico Torino and ACREO. IT plans to use the current existing feeds of collaboration to generate further impact and results which may result in patents, publications and projects (PhD joint or not, EU, etc).

GPON_activities, namely on extension and performance enhancement, will continue to be pursued by IT and Industry.

IT plans to continue sharing facilities and participating in the EURO-FOS Lab in order to reinforce the availability of this shared facility and therefore its impact.

17. DTU

Within EURO-FOS project, DTU's most important exploitation asset will be the large amount of expertise and knowhow on several recently proposed areas related to optical communications that has been acquired. These expertise and knowhow relate both to "traditional" research lines, as well as new research lines related to the research topics suggested within the project, such as parametric amplification, WDM-to-OTDM conversion, radio-over-fibre, signal processing using micro-ring resonators, etc.

A second invaluable outcome of EURO-FOS is related to the inherent interaction within the project with other institutions or associated partners performing state-of-the-art research, and from the possibility of strengthening those relations through further collaboration. As an example, we could mention the completion and planning of long 6 months research stays at the facilities of other EURO-FOS partners that are mandatory to complete PhD programs offered by DTU Fotonik.

Furthermore and from a short/mid-term perspective, EURO-FOS has proved extremely important for fund rising in national calls. As an example, we could mention that EURO-FOS has allowed the enrolment of Francesco Da Ros in his PhD program through co-financing, which has covered a small but essential part of the total accumulated expenses. Furthermore, EURO-FOS has helped define the research lines that resulted in Zohreh Lali-Dastjerdi's PhD program, fully supported by Danish funding.

Finally, EURO-FOS is believed to be proven invaluable in long term fund rising in future EU relevant calls, mainly due to the strong ties that have been acquired with some of the key players in European research through close collaboration throughout the EURO-FOS project. This will most probably turn out as the most profitable outcome of any project for a non-profit organization as DTU Fotonik, since this will both secure and fuel further research on topics related to photonics.

TABLE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights[5]:	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s)	Subject or title of application	Applicant (s) (as on the application)
Patent	NO		**European Patent Register Application:** Application number: 08851826.1 Filing date: 19.11.2008 Publication number: EP2213021A2 Publication date: Aug 4, 2010 **United States Patent Application:** Application number: 12/680,011 Filing date: Nov 19, 2008 Publication number: US 2010/0321072 A1	Device and Method for Signal Detection in a TDMA Network	Johan Bauwelinck, Tine De Ridder, Cedric Mélange, Peter Ossieur, Bart Baekelandt, Xing-Zhi Qiu, Jan Vandewege
Patent	NO		**European Patent Register Application:** Application number: 10177922.1 Filing date: 21.09.2010 Publication number: EP2299615A1 Publication date: Mar 23, 2011 **United States Patent Application:** Application number: 12/886,298 Filing date: Sep 20, 2010 Publication number: US 2011/0069952 A1	Circuit for end of burst detection	Cedric Melange, Johan Bauwelinck, Xing-Zhi Qiu, Jan Vandewege
Patent	NO		FR 10/58204 (October 2010)	Méthode et système de transmission	S. Mumtaz, G. Rekaya-

[5] A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.

TABLE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights[5]:	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s)	Subject or title of application	Applicant (s) (as on the application)
				WDM à codage chromate-temporel	Ben Othman, Y. Jaouen, B. Thedrez
Patent	NO		**European Patent Register Application:** Application number: 10382063.5 Filing date: 18.03.2010 Publication number: EP2367306 Publication date: 21.09.2011	Optical Network Unit	B. Schrenk, E. Kehayas, P. Bakopoulos, J.A. Lazaro, J. Prat, and C. Kazmierski
Patent	NO		**Word Intellectual Property Oganisation:** Application number: PCT/ES2012/070136 Filing date: 05.03.2012 Publication number: WO2012/120172 Publication date: 13.09.2012	Method and apparatus for a bidirectional optical link comprising simultaneous amplitude and phase modulation by means of an integrated semiconductor device that is wavelength agnostic	B. Schrenk, José A. Lázaro, P. Bakopoulos, C. Kazmierski, Josep J. Prat
Patent	NO		**Instituto Nacional da Propriedade Industrial (Portugal):** Application number: - Filing date: 29.10.2010 Publication number: PT 105360 Publication date: 30.04.2012	Method Of Generating Eye Diagrams In Asynchronous Mode	Vítor Ribeiro; António Teixeira; Mário Lima
Patent	NO		Rapport de recherche, n° FR 11/. (2011)	Méthode Et Système De Transmission Sur Fibre Optique Multi-Mode Et/Ou Multi-Coeur	G. Rekaya-Ben Othman, Y. Jaouën et S. Mumtaz

Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information *(completed automatically when **Grant Agreement number** is entered.*

Grant Agreement Number:	224402
Title of Project:	Pan-European Photonics Task Force: Integrating Europe's Expertise on Photonic Subsystems
Name and Title of Coordinator:	Prof. Hercules Avramopoulos

B Ethics

1. Did your project undergo an Ethics Review (and/or Screening)? • If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 *'Work Progress and Achievements'*	***Yes***
2. Please indicate whether your project involved any of the following issues (tick box) :	***YES***
RESEARCH ON HUMANS	
• Did the project involve children?	
• Did the project involve patients?	
• Did the project involve persons not able to give consent?	
• Did the project involve adult healthy volunteers?	
• Did the project involve Human genetic material?	
• Did the project involve Human biological samples?	
• Did the project involve Human data collection?	
RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	
• Did the project involve Human Foetal Tissue / Cells?	
• Did the project involve Human Embryonic Stem Cells (hESCs)?	
• Did the project on human Embryonic Stem Cells involve cells in culture?	
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	
PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	
• Did the project involve tracking the location or observation of people?	

RESEARCH ON ANIMALS	
• Did the project involve research on animals?	
• Were those animals transgenic small laboratory animals?	
• Were those animals transgenic farm animals?	
• Were those animals cloned farm animals?	
• Were those animals non-human primates?	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	
DUAL USE	
• Research having direct military use	No
• Research having the potential for terrorist abuse	

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	0	1
Work package leaders	0	8
Experienced researchers (i.e. PhD holders)	46	283
PhD Students	50	148
Other		

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	**34**
Of which, indicate the number of men:	27

D Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project?

○ Yes
● No

6. Which of the following actions did you carry out and how effective were they?

	Not at all effective				Very effective
❑ Design and implement an equal opportunity policy	○	○	○	○	○
❑ Set targets to achieve a gender balance in the workforce	○	○	○	○	○
❑ Organise conferences and workshops on gender	○	○	○	○	○
❑ Actions to improve work-life balance	○	○	○	○	○

○ Other:

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

○ Yes- please specify

● No

E Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

● Yes- please specify: Seminars, student awards, lectures, demonstrations

○ No

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

● Yes- please specify: Application notes, Vision/white papers, lecture presentations

○ No

F Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

● Main discipline[6]: 2.2

○ Associated discipline:

○ Associated discipline:

G Engaging with Civil society and policy makers

11a Did your project engage with societal actors beyond the research community? *(if 'No', go to Question 14)*

● Yes
○ No

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

○ No

[6] Insert number from list below (Frascati Manual).

○ Yes- in determining what research should be performed ○ Yes - in implementing the research ● Yes, in communicating /disseminating / using the results of the project	
11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	○ Yes ● No
12. Did you engage with government / public bodies or policy makers (including international organisations)	
○ No ○ Yes- in framing the research agenda ○ Yes - in implementing the research agenda ● Yes, in communicating /disseminating / using the results of the project	
13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers? ○ Yes – as a **primary** objective (please indicate areas below- multiple answers possible) ● Yes – as a **secondary** objective (please indicate areas below - multiple answer possible) ○ No	

13b If Yes, in which fields?

Agriculture		Energy		Human rights	
Audiovisual and Media		Enlargement		Information Society	
Budget		Enterprise		Institutional affairs	
Competition		Environment		Internal Market	
Consumers		External Relations		Justice, freedom and security	
Culture		External Trade		Public Health	
Customs		Fisheries and Maritime Affairs		Regional Policy	
Development Economic and Monetary Affairs		Food Safety		Research and Innovation	
		Foreign and Security Policy		Space	x
Education, Training, Youth	x	Fraud		Taxation	
Employment and Social Affairs		Humanitarian aid		Transport	

13c If Yes, at which level?

- ○ Local / regional levels
- ○ National level
- ● European level
- ○ International level

H Use and dissemination

14. How many Articles were published/accepted for publication in peer-reviewed journals?	**125**
To how many of these is open access[7] provided?	**30**
How many of these are published in open access journals?	**30**
How many of these are published in open repositories?	**0**
To how many of these is open access not provided?	**95**
Please check all applicable reasons for not providing open access:	
■ publisher's licensing agreement would not permit publishing in a repository ❑ no suitable repository available ❑ no suitable open access journal available ❑ no funds available to publish in an open access journal ❑ lack of time and resources ❑ lack of information on open access ❑ other[8]: ……	

15. How many new patent applications ('priority filings') have been made? *("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).*		**7**
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	**0**
	Registered design	**0**
	Other	**0**
17. How many spin-off companies were created / are planned as a direct result of the project?		**0**
Indicate the approximate number of additional jobs in these companies:		**0**

18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:

❑	Increase in employment, or	❑	In small & medium-sized enterprises
❑	Safeguard employment, or	❑	In large companies
❑	Decrease in employment,	❑	None of the above / not relevant to the project
■	Difficult to estimate / not possible to quantify		

[7] Open Access is defined as free of charge access for anyone via Internet.
[8] For instance: classification for security project.

19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (*FTE = one person working fulltime for a year*) jobs:	*Indicate figure:*
Difficult to estimate / not possible to quantify	■

I Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?

○ Yes ● No

21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?

○ Yes ● No

22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

■	Press Release	■	Coverage in specialist press
■	Media briefing	❑	Coverage in general (non-specialist) press
■	TV coverage / report	■	Coverage in national press
■	Radio coverage / report	❑	Coverage in international press
■	Brochures /posters / flyers	■	Website for the general public / internet
❑	DVD /Film /Multimedia	■	Event targeting general public (festival, conference, exhibition, science café)

23 In which languages are the information products for the general public produced?

❑	Language of the coordinator	■	English
■	Other language(s)		

***Question F-10*:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES
1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]
1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)
1.3 Chemical sciences (chemistry, other allied subjects)
1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)
1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2 ENGINEERING AND TECHNOLOGY
2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)
2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]
2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES
3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)
3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)
3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES
4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)
4.2 Veterinary medicine

5. SOCIAL SCIENCES
5.1 Psychology
5.2 Economics
5.3 Educational sciences (education and training and other allied subjects)
5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary , methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES
6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)
6.2 Languages and literature (ancient and modern)
6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]

List of Figures

List of Tables