SEVENTH FRAMEWORK PROGRAMME

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Annual report on dissemination activities including preliminary roadmap

FP7-ICT-216863/UoP/R/PU/D01.2

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Nature of the Deliverable R

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Editors: UoP / Tanya Politi

Abstract:

This deliverable reports on the dissemination activities that took place in the first year of the project as organized by WP01 and also in conjunction with other WPs. Six types of activities organized to assist in disseminating information and spreading excellence as follows. 1) Workshops and conferences either supported or organized by the consortium:-in this type of activity we include events like exhibition booths and also presentations /tutorials that present material to a wide audience. 2) Preparation of dissemination material:- to be used in the events described in (1) above. 3) Organization of a Schools based public event in order to reach out to young pupils. 4) The development of a Roadmap. 5) The coordination of online dissemination with emphasis on Newsletters and 6) the formation of a Think Tank to discuss specific issues with industry. The activities that were performed in the first year of the project under these categories are described below.

Keyword list:
Dissemination, roadmap, events, Think-Tank

Clarification:

Nature of the Deliverable

R Report
P Prototype
D Demonstrator
O Other

Dissemination level of Deliverable:

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

This report was delivered and edited by T. Politi- UoP.

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Disclaimer

The information, documentation and figures available in this deliverable, is written by the BONE ("Building the Future Optical Network in Europe*) – project consortium under EC co-financing contract FP7-ICT-216863 and does not necessarily reflect the views of the European Commission*

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1. Executive Summary :

ICT BONE is a Network of Excellence that promotes transnational collaboration on optical networking and communications. The project follows from the successful e-Photon/ONe+ and e-Photon/ONe and the consortium, although initially very diverse, has progressively gained momentum in terms of collaboration and integration.

WP01 is the workpackage in charge of disseminating the information, technical results and scientific work progress of the Network, both within the consortium itself and also with external parties involved in the area of optical networking with the objective of facilitating the smooth integration and spreading of excellence.

The high level of technical excellence of each partner in the consortium enables WP01 to focus on and support methods for the dissemination of their research, which in turn promotes integration. The variety of topics covered by the various workpackages make this an interesting and challenging task to accomplish, but the strong collaborative framework that has been established within the consortium, that comprises a community of its own, assists greatly in the dissemination of knowledge across the consortium. As far as external parties are concerned these mainly comprise: a) European institutes outside the consortium where it is felt that contact should be established, b) industry in the area of optical communications where ties for mutual interactions are being established, c) international institutes, d) other IST and ICT projects with similar or complementary scope, and e) outreach to younger generations of pupils/students to raise awareness of optical networking. Hence the dissemination activities target the consortium itself and the five groups mentioned here.

In the first year of the project dissemination activities were mainly focused on the development of the framework through which dissemination and spreading of excellence may be achieved. This mainly comprised activities such as, creation of task forces and Think Tanks, development of electronic platforms for information exchange, procedures for assuring quality and tracing of events, support for workshops and events, developing methodology for the roadmap, formation of the schools event. These procedures together with the actual events are reported here.

In the second year greater focus will be given to implementing the schools event, collating the information for the roadmap and interacting with external parties to disseminate research results.

2. Introduction

Some of the activities within BONE are defined to support the general framework of the project or centralise the dissemination & teaching activities, namely:

- WP01: Dissemination & Outreach
- WP02: Teaching
- WP03: Electronic Communication Aid

In this report the activities of WP01 are described whose objectives are:

- To disseminate information concerning the expertise, research and integration activities of the Network of Excellence and spread excellence to other European researchers and their institutions.
- To reach out to the European communities and young researchers and explain the purpose and challenges of optical networking and how the Network of Excellence can support local initiatives in this area.
- To facilitate the integration of a strong collaborative institution framework, to allow expert groups to effectively collaborate within the Network on key topics.
- To extend the roadmap [commenced in e-Photon/ONe] into a focused view (roadmap) of the evolution of photonic networks [within Europe] for telecom and non-telecom applications; and bench mark European research activities against international programmes.

3. Workshops and Conferences

Dissemination & Outreach is closely linked to public events where BONE partners are present. In these events partners generally not only discuss their work and/or represent their institution but also present:

- the BONE project and how a NoE fosters research,
- the opportunities BONE offers to partners,
- the topics jointly studied by BONE members,
- the BONE view on future ICT.

Hence WP01 supports and promotes events and conferences in the area of optical communications and optical networking. In the first months of the project the definition of the procedure together with listing of the events took place (Milestone M01.1). Gerald Franzl (TUW) coordinated discussions on the level of endorsement together with the description and related documents. The different levels of endorsement are listed below. Event organizers that wish to have a specific workshop/conference supported by BONE contact the Advisory Board who makes a decision based on their knowledge and submitted information on the event. This is to ensure the quality of the event and its added value both to the event and the consortium.

Advertised events: These are events that WP01 considers interesting for the partners and have a scope similar to the scope of the project, and hence are advertised on the website and newsletter. They are marked on the public calendar of the BONE website.

Supported Events: These are conferences and events that the NoE has supported with active participation by either contributing a large number of papers or/and by organizing a workshop in conjunction with the event etc. This level of support may also include recommendation to WP-leaders to co-locate WP-meetings. These activities aim at increasing the number of potential attendees by organising BONE partners meet at the same place/time. Organizers may use the NoE logo but have to provide a report on the event (size, program, feedback, etc.).

Co-organised Events: These are workshops/events co-organised by BONE WPs. BONE partners are strongly involved in the formation, technical content and added value of these events that might be (a) workshops (b) running a booth, (b) dissemination of material (flyers etc), and presentation of the BONE project. The organizer must have the NoE logo on their website and provide a report on the event, highlighting the NoE contribution and added value.

Sponsored Events: These are stand alone public events organized by BONE with direct financial support from BONE budget, i.e., BONE schools organised under WP02.

It is noted here that BONE internal events that are not public, are not considered as Dissemination & Outreach topic and are organised & communicated by relevant WPs and JAs. The specific Task is organised by the Sub-group: Workshops and Conferences (workshopsandconferences-list@ict-bone.eu).

3.1 Advertised events

A number of events were advertised either by email, by posting on the website (Online Calendar) or in the Newsletter. It is noted here that in different occasions WP leaders send emails to disseminate events that are related to their WP and the activities within. Some of the events that were advertised through the BONE website are: TERENA'08, NOC'08, BROADNETS'08, CSNDSP'08.

These events either involve a number of partners in the TPCs or are considered important for part of the BONE network.

3.2 Supported events

These are events whose scope matches that of BONE. Other than OFC, ECOC and ICT in all other cases one of the organizers should specifically ask for permission from WP01. In this case the conference organizer should contact WP01 leaders with the case for support (focus of the conference, etc). This is forwarded to the advisory board as standard procedure for approval. If approved the conference is advertised on the BONE Calendar as a BONE supported event and announcements are regularly updated on the website together with newsletters. The logo of BONE can then be used by the conference (website advertisements etc) If not approved the conference can still be advertised.

Supported Events in 2008 include:

3.2.1 Title: ECOC 2008- 34th European Conference and Exhibition on Optical Communication

Date: 21- 25 September, 2008

Venue: Brussels Expo, Brussels, Belgium

Number of participants: see below

Organiser/Authors: IBBT, Belgium

General Description:

ECOC is the largest conference on optical communication in Europe, and one of the most respected and long-standing events of its kind in the world. ECOC 2008, from 21 to 25 September 2008, was the 34th edition, which indicates the stability and the attractiveness of this conference as one of the world's major events in the field, providing a prime forum for new developments and results in optical communication techniques and networks.

In total 1226 delegates attended the conference with an extra 1965 exhibitors and 2376 visitors to the exhibition. This is an increase with respect to ECOC 2007, indicating that the success of ECOC does not depend on the size of the organizing country. The fact that 55 % of the conference delegates are coming from Europe, 31% from Asia/Pacific (in total nearly 250

participants from Japan) and 13 % from North America, indicates that ECOC 2008 was a truly global conference.

The program consisted of a set of high-level plenary speakers, tutorials, invited papers, workshops, symposia, and most importantly, parallel sessions with technical papers and posters. The program highlighted new breakthroughs in the field of optical communications in different areas such as: Fibers, Fiber Devices and Amplifiers; Waveguide and Optoelectronic Devices; Subsystems and Network Elements for Optical Networks; Transmission Systems; Backbone and Core Networks; Access and Local Area Networks. As has been the case at ECOC 2006, Brussels also hosted a CLEO Focus Meeting "Physics in Optical Communications" within the ECOC 2008 program. For the first time, the 14th Microoptics Conference (MOC '08) was also co-located with ECOC.

Description of BONE participation and added value:

As the main European event on the field of optical communications many of the partners attended the event. Due to the fact that the coordinator was also the general Chair of the event the BONE involvement was very strong. For example two workshops were organised by BONE WP- leaders into topics related to BONE (see below). A number of joint and single partner papers were presented. Especially two invited papers were presented by BONE WP leaders. At the exhibition a BONE booth was presented (see below).

3.2.2 Title: ONDM 2008- 12th International Conference on Optical Networking Design and Modelling

Date: March 12-14, 2008

Venue: Universitat Politècnica de Catalunya (UPC). Campus of Vilanova i la Geltrú, Catalonia (Spain).

Number of participants: 99

Organizers/Authors: UPC, Spain

General Description:

ONDM is a major European conference focusing on the area of optical networking. The main conference topics indeed range almost all relevant areas in optical communications and networks. From many years the ONDM conference is being a meeting point for people coming from the leading industry and from the research and academic side willing to spread and update their knowledge in the conference technical areas. Co-located with the main conference usually take place other meetings, invited speakers sessions, panels, demos, workshops, project meetings and other events.

On 2008 the number of regular submissions was 66 from which 24 selected in a peer review process was accepted (this give and acceptance rate of about 25%). From these papers, the *best paper award* was given to the paper *"Routing and Wavelength Assignment Encompassing FWM in WDM Lightpath Networks"*, authored by Adelys Marsden, Akihiro Maruta and Ken'ichi Kitayama, Department of Electrical, Electronic and Information Engineering, Graduate School of Engineering, Osaka University (Japan). On the other hand, ONDM 2008 hosted the COST 291 Plenary Meeting and annual Workshop, the VII Workshop in G/MPLS

Networks (WGN7), demonstrations of two FP6 projects (NOBEL 2 and PHOSPHORUS), one panel on the feasibility of multiplayer optical networking, and four invited papers.

Description of BONE participation and added value:

As one of the flagships of FP7 program projects on Optical Networking, the BONE NoE was one of the ONDM 2008 sponsors, together with two more relevant FP6 projects in this field, namely the Action COST 291 and the NOBEL 2 IP project.

Within the BONE community Ph. D. students were allowed to attend ONDM 2008 even if they did not have a paper to present. Expenses to attend the conference was declared as eligible to be charged to the BONE budget for those partners that had papers accepted and for those sending Ph. D. students to the conference.

A large number of contributed papers from the BONE partners were presented in the conference. More specifically, the contributed papers from BONE covered the research activities of the consortium in the areas of network technologies and engineering, optical switching subsystems, access networks, and applied services in optical networks. Notable to mention is that the two papers that got the International Federation for Information Processing (IFIP) travel grant was authored from BONE partners (IBBT and France Telecom). These papers was "*Analytical Model for Dynamic Waveband Switching*", Paul Ghobril, France Telecom R&D, Lannion Cedex, France; and "*Performance Analysis of a Hybrid Optical Switch*", Marc De Leenheer, C.Develder, J.Vermeir, J.Buysse, F.De Turck, B.Dhoedt and Piet Demeester, Dept of Information Technology, Ghent University, IBBT.

Due to the participation of BONE members, ONDM 2008 provided an excellent platform for the promotion of the BONE activities in a wider research community

3.2.3 Title: ICTON 2008-10th International Conference on Transparent Optical Networks

Date: 22-26 June, 2008

Venue: AIT, Athens, Greece

Number of participants: >260

Organizers/Authors: AIT, Greece

General Description:

The scope of the ICTON conference is concentrated on the applications of transparent and all-optical technologies in broadband telecommunication networks, systems, and components. Papers have been presented by leading International Institutions and companies in the fields of optical transmission, optical switching and routing, control plane architectures and algorithms, wireless and wireline optical networking, optical access networks and others.

Description of BONE participation and added value:

Since the topics of ICTON conference are closely related to the research topics of the BONE project, a large number of contributed papers from BONE were presented in the conference. These papers covered the latest research activities of the consortium in the areas of network technologies and engineering, optical switching subsystems, access networks, transmission technologies and applied services in optical networks, covering most of the research topics

reflected in the BONE's WPs. Additionally, a large number of invited speakers originated from BONE presenting their views and future activities.

Due to the large participation of BONE members, this conference provided an excellent platform for the promotion of the BONE activities to the wider research community, as well as for interaction between researchers on topics of common interest and provided the opportunity for fruitful discussions and the development of new joint activities. For this reason the organizers had provisioned two separate meeting rooms in the ICTON venue that were used by individuals to meet and discuss their ideas.

Moreover, a large number of joint technical BONE meetings were organised in parallel and on the day after the ICTON conference. These meetings were: a) A joint WP11 WP12 WP21 WP22 WP24 WP26 meeting that ran the whole day and involved all the WPs that are dealing with optical networking, engineering, control, management and services issues, b) a WP14 meeting on technical activities related to switching technologies and subsystems, c) a WP15 meeting on technical activities related with transmission issues and d) a WP01 meeting to discuss the Schools Event and Roadmap.

3.2.4 Title: ICT Event 2008

Date: 25-28 November 2008

Venue: Lyon, France

Number of participants: 4500

Author: UoP

General Description:

The biennial ICT Event is the most important forum for discussing research and public policy in information and communication technologies at European level. The Event brings together researchers and innovators, policy and business decision-makers working in the field of digital technologies. The event was consisted from an exhibition, a parallel conference, and networking sessions designed to facilitate contacts between researchers, innovators and engineers from all ICT fields.

Description of BONE participation and added value:

BONE had an exhibition stand at the ICT event. Many delegates visited the BONE stand and a large number of brochures where distributed. More details can be seen below at the BONE events.

In addition a PhD student from University of Peloponnese attended the exhibition as a *young reporter*. He and 39 other PhD students from around Europe attended both the exhibition and the conference in order to write individual reports for the event. Two conference sessions where assigned to him to report on: ICT infrastructure for science – virtualising global research and Language-based interaction. As reported by him, the ICT exhibition was an incredible experience where all the trends of the ICT where presented while the conference sessions corresponded to all the latest challenges of the ICT scientific field.

Also a special session on Next Generation Access Networks organized by UCL, the WP leader of VCE Access networks aiming at charting the future and creating partnerships for new-generation access networks. This session aimed to define priorities and develop visions

for new R&D proposals in the field of next-generation access networks, with a particular emphasis on optical alternatives. Rather like a workshop, the meeting focused on three themes: current EU-funded research, future challenges faced by the different players, and providing participants, particularly SMEs, with a chance to find partners for forthcoming projects or proposals. Members of BONE have also arranged a number of short presentations of European projects.

3.3 Co-organised events

3.3.1 Workshops

Workshops of high technical content are one of the key dissemination activities, where BONE members can disseminate technical results. In most cases a workshop is organized by the WP leaders (rather than WP01), but due to their wide audience they are considered a very important dissemination tool. At the beginning of each year WP01 asks WP leaders for a list if intended events in an effort to provide support and to keep track of the events. The list is uploaded on the intranet and it is updated on a regular basis.

For year 1 of the project the following list of events were organized.

1	All-Optical versus OEO Networks http://www.ecoc2008.org/programme.asp#workshops	**ECOC 2008**	BONE	AIT
2	Network Solutions to Reduce the Energy Footprint of ICT	**ECOC 2008**	WP21	IBBT
3	Workshop on Optical Grids, Drivers & applications for high performance optical networks http://www.ecoc2008.org/programme.asp#workshops	**ECOC 2008**	WP21	UEssex
4	Photonic Communication Systems and Networks	**CSNDSP 2008**	WP14	UPatras
5	6th International Workshop on Optical Burst/Packet Switching (WOBS)	**BROADNETS 2008**	WP24	UPatras

3.3.1.1 Title: Workshop on All-Optical versus OEO Networks

Date: Sunday 21 September

Venue**:** ECOC 2008, Brussels, Belgium

Number of participants: >100

Organizers (**author**): **Ioannis Tomkos, AIT, Greece** and Winston Way, Opvista, USA

General Description:

The sustainable growth of the internet and high-bandwidth on-demand services has introduced new challenges to next-generation networks in terms of capacity, configurability, and resiliency. Significant networking advancements need to be achieved with architectures and technologies that are scalable with respect to performance, size, and power requirements, while they should be capable of handling high traffic volumes and dynamically changing connection patterns at low cost.

Transparent (all-optical) networking solutions have been touted as having the potential to meet those requirements and offer significant benefits in terms of performance and cost. On the other hand recent advancements in photonic integrated circuits have enabled the operation of opaque networks based on optoelectronic conversions (OEO) at much lower cost than what was originally considered possible in the past.

The purpose of this workshop was to present the new advances in all-optical and OEO solutions and identify the benefits that each solution can bring. Also issues related with the implementation feasibility and the required time to market was addressed. More details on the programme and the presentations can be found at:

http://www.ecoc2008.org/programme.asp#workshops

Description of BONE participation and added value:

The workshop was organized by BONE. During the workshop leading industrial companies around the world was brought together to discuss about the pros and cons of the all-optical and OEO based networks. High level speakers from network operators, equipment vendors and academia, shared their experience and views for the evolution of the network architecture and the technologies that in the future may revolutionize the way that we design and operate the networks.

The presented talks and opinions provided a thorough insight into the topic and gave the incentive for fruitful discussions during the breaks and the panel discussion at the end of the workshop. The view of active industrial members is particularly useful in order to recognize and follow the future trends in research areas related with optical networks.

3.3.1.2 Title: ECOC 2008 Symposium: "Network Solutions to Reduce the Energy Footprint of ICT"

Date: Sept. 22, 2008, 14:30-18:30

Venue: ECOC 2008, Brussels, Belgium

Number of participants: audience: about 150 / presenters (and panel members): 7

Organizers (**author**): organised by **Mario Pickavet (Ghent University – IBBT)** and Rod Tucker (University of Melbourne)

General Description:

ICT provides many energy-saving solutions, but is also responsible for a considerable and quickly increasing energy footprint on its own. Recent surveys estimate that the complete life cycle of ICT equipment today is responsible for about 4% of the worldwide primary energy consumption. This percentage is expected to double within 10-15 years, if current ICT energy trends are not drastically deviated. Due to these forecasts, the awareness for ICT energy reducing research is rising steeply in the community.

This symposium provided insight in the main ICT energy consumption factors and their expected future evolution. Possible research directions and future network paradigms have been outlined, motivated and elaborated by expert speakers from industry and academia. Special attention was paid to the role of optics. A closing panel discussion reflected on similar or deviating approaches and identify the key research challenges and action points. More details on the programme and the presentations can be found at:

http://www.ecoc2008.org/programme.asp#workshops

Description of BONE participation and added value:

The symposium organisation was largely run through the TP21 of the BONE project (joint activity on Green Optical Networking). The invited speakers were chosen from different fields/approaches and from around world, to allow the audience to get a broad, overall view on the key aspects of the energy footprint of ICT.

The symposium was attended by many BONE partners and did also attract a large audience external to the BONE project.

3.3.1.3 Title: ECOC 2008 "Workshop on Optical Grids, Drivers & applications for high performance optical networks"

Date: Sunday 21 September

Venue**: ECOC 2008**, Brussels, Belgium

Number of participants: >100

Organizers (**author**): organised by **Chris Develder (Ghent University – IBBT), Dimitra Simeonidou (University of Essex, UK)** and Chunming Qiao (SUNY Buffalo, USA)

General Description:

This Workshop on Optical Grids brought together practitioners and researchers from both the high performance computing and networking fields. The main objective was to discuss the work on the emerging aspects related to advanced techniques, platforms, paradigms and models for the design, deployment and usage of high performance optical networks with a particular focus on Grid networks and applications. Such optical Grids promise to offer cost and resource efficient delivery of geographically distributed network services with potentially high data rate, processing and storage demands, to a wide user base. To fulfill that promise, fundamental questions need to be addressed, including (re)designing the architecture of a flexible optical layer, dimensioning and routing/scheduling algorithms. Fundamental differences from 'classical' network designs are due to the fact that. traffic volume is dependent on dimensions and locations of computational/storage resources, as well as the job scheduling algorithm, and the fact that Grid users generally do not care where their jobs are processed (i.e. unknown destinations, hence no clearly defined traffic matrix). The workshop presented a carefully selected set of invited speakers, covering a broad scope of research questions in the optical Grid networking realm. Topics ranged from applications that call for Grid infrastructure (e.g. consumer-oriented applications such as data centers, and high performance computing mainly targeting the research communities), over control plane functionality enabling these Grid applications, down to the design and deployment of the optical network architecture and infrastructure to support them. The concurrent optimization (in terms of cost, performance, etc.) of optical networking and Grid resources to offer a scalable, efficient and cost-effective environment is of key interest. In addition, evaluation of next-generation optical technologies (e.g. optical packet or burst switching), high performance optical networks, as well as architectures for optical Grid applications was considered. More details on the programme and the presentations can be found at:

http://www.ecoc2008.org/programme.asp#workshops

Description of BONE participation and added value:

The workshop organisation was largely run through the TP21 of the BONE project. At the opening presentation the BONE work on grid networking was presented. The workshop was attended by many BONE partners and did also attract a large audience external to the BONE project.

3.3.1.4 Title: Photonic Communication Systems and Networks

Date: 23-25 July 2008, Gratz Austria

Venue: Graz University of Technology, Graz

Number of participants: 50

Organizer **(Author)**: **Kyriakos Vlachos, RACTI, Greece**

General Description

The purpose of this new colloquium on Photonic Communication Systems and Networks was to showcase the latest developments in key open areas of optical communication networks and emergent service paradigms. More than 30 papers were received, 18 of which were accepted for oral presentations. A poster session was also held. All accepted papers are indexed in IEEE Xplore. Some of them have been invited to submit and extended version to Mediterranean Journal of Electronics and Communications (MEDJEC), see web site: http://www.medjec.com/. The full call for papers can be found here: www.ceid.upatras.gr/faculty/kvlachos/PCSN Call for Papers.pdf

Description of BONE participation and added value

BONE has sponsored the workshop, while many submissions from BONE network were received. In addition, people from the BONE network comprised the TPC and performed the reviews. In general, the workshop was successful and it is considered to repeat every two year, in conjunction with CSNDSP. The added value for the consortium was important since it allowed the exchange of information and the discussion on scientific matters on future topics of photonic communication systems. In addition, the organization of the workshop in parallel with a conference dedicated to communication systems and networks such as CSNDSP, allowed the dissemination of knowledge to different areas of expertise as well as the sharp increase of BONE visibility.

3.3.1.5 Title: 6th International Workshop on Optical Burst/Packet Switching (WOBS)

Date: September 8th, London

Venue: UCL, London

Number of participants: 20

Organizer **(Author)**: **Kyriakos Vlachos, RACTI, Greece**

General Description:

The workshop was held in conjunction with BROADNETS 2008 in London, UK on September 8th, 2008. More than 15 papers were received, 8 of them accepted for oral presentation. There was no poster session. An invited session was also organised, with 4 invited speakers from US and EU academia. All accepted papers are indexed in IEEE Xplore. Full information for the event can be found here: http://www.obsmeeting.org/2008/, while the final program here: http://www.obsmeeting.org/2008/ program.shtml

Description of BONE participation and added value:

BONE sponsored the workshop, and submissions from BONE partners were received. In addition, people from the BONE network comprised the TPC and performed the reviews. The organization of WOBS was important, since within the BONE network, there are many activities and workpackages related to Optical Burst Switching. In addition and since 2003, the International Workshop on Optical Burst/Packet Switching (WOBS) serves as a premier forum for researchers from academia, industry and government to meet, exchange ideas, and discuss the technical and commercial challenges associated with burst-switched and packet-switched optical networks. Therefore, it was important for Europe to showcase leading research in this area and organizing this event. It must be noted here that for the first time, WOBS was organised outside USA.

3.3.2 Booths at exhibitions

Booths at exhibitions are highly appreciated as important dissemination events. The organization of these events is coordinated by UoPelop, UoEssex and KTH.

ECOC 2008. A very successful event took place in Brussels on 22-24th September 2008; the largest conference on optical communication in Europe. Together with that the largest exhibition in the area of optical communications took place. Stand 320-321 of the ECOC exhibition was organized by ICT BONE and accommodated dissemination material from different ICT projects. The stand displayed posters and rolling presentation about BONE activities and also posters and videos from other associated European projects. A demonstration of POF-PLUS was taking place at the stand. The stand was visited by many exhibition visitors- a number of 50 business cards were collected. Several other projects were represented with videos and posters including some optical network projects like: PHOSPHORUS, NOBEL2, ISIS, some optical component projects like TRIUMPH, POF-PLUS, and HECTO and the Network of Excellence EUROFOS with which BONE is planning to sign an MoU. Material and information (flyers etc) was also available from other projects like FUTON, BOOM etc

Mike O'Mahony and Dimitra Simeonidou UoEssex, T. Politi and C. Matrakidis from UoP and other representatives form other projects attended the event and assisted with the BONE stand.

The ICT BONE booth at ECOC 2008 exhibition

ICT 2008 BONE had an exhibition (information) stand at the ICT 2008 event in Lyon on 25-27th November 2008. This is Europe's biggest research event for information and communication technologies. The stand displayed information about BONE activities and also had brochure handouts from other associated ICT projects. 2 posters and 2 presentations were prepared for BONE together with the brochure. The dissemination of information was given out in electronic form.

Lena Wosinska KTH , Dimitra Simeonidou UoEssex, Peter Van Daele – IBBT and Andreas Drakos UoP attended the event representing the BONE stand.

The ICT BONE booth at ICT 2008 exhibition

3.3.3 Presentations/Posters/Papers at events

Technical papers for all WP:

ICT BONE represents an important platform for collaboration between research centers and universities of excellence in optical networking in Europe. Disseminating this excellence among partners but also with external parties is important and one way to achieve this is through technical papers. Emphasis is given to papers at conferences as they are accompanied by presentations.

The large number of **135 single partner** papers and **54 joint publications** and a number of accepted papers that will be presented in the next months show the extent of dissemination as all these papers present the acknowledgement to the project.

Tutorials and presentations:

Examples of tutorials/ presentation at events related to BONE and supported by dissemination activities are as follows:

- Presentation by UC3M of the work carried out in WP22 at the G/MPLS workshop 2008. The BONE Logo was included on the slides.
- Presentation of Fabio Neri (PoliTo) to the Sunday ECOC 2008 workshop on Future Internet Design discussed the work carried out in BONE. The logo of BONE was included on the slides.
- Presentation of the work carried out at TP21 by D. Simeonidou (UoEssex) at ECOC 2008 as invited paper. The logo of BONE was also included on the slides.
- Maurice Gagnaire (GET-ENST) gave a 3 hour tutorial titled "From opacity to transparency via translucent optical networks" at the Networks 2008 conference that took place in Budapest on the 28th of September 2008. The logo of BONE was included on the slides of this tutorial, which included references to the activities related to this domain in WP15 and WP27.
- Piero Castoldi (SSSSUP) has undertaken a dissemination action for WP12 within the FEDERICA-Phosphorus tutorial and workshop (TNC2008) by giving a tutorial on "Service plane capabilities and challenges". The website of the event is http://www.ist-phosphorus.eu/event_07.php
- During the first half of 2008, two seminars describing some of the activities carried on by UniBO within the NoE took place at the University of Pittsburgh, PA, USA, as part of the events organized by the Pittsburgh section of IEEE:
    1. Contention resolution in optical packet/burst-switched networks: key parameters and cost-effective scheduling. Speaker: Walter Cerroni (UniBo) /Date: Friday, February 1, 2008 Location: SIS Building, University of Pittsburgh, USA.
    2. SIP-based support for future IT services over high-speed optical networks. Speakers: Franco Callegati, Aldo Campi (UniBo) Date: Friday, April 11, 2008 .Location: SIS Building, University of Pittsburgh, USA.
- AGH presented a paper that described the BONE project during the biggest telecommunication event in Poland: National Telecommunications Conference,

KSTiT, "NoE BONE – a continuation of work of the e-Photon/ONe+ in the fields of modern optical networks", Bydgoszcz, 10-12 September 2008.

- Peter Van Daele – IBBT represented BONE at FP7 Concertation Meetings.

In some international events dissemination took place through display of ICT BONE dissemination material.

APOC 2008 (Hangzhou, China): An ICT BONE poster was displayed at APOC 2008 by L. Wosinska- KTH near the entrance of the conference.

POEM 2008 (Wuhan, China): ICT BONE flyers were distributed by M. O'Mahony UoEssex at the registration desk of the conference.

3.4 Sponsored Events:

Master School and Summer School

Two co-located events have been organized by WP02 in October 2008 (13-17) at FPMs (partner 03) premises (Faculté Polytechnique de Mons, rue de Houdain 9, B-7000 Mons, Belgium): the first BONE **Master School** and the first BONE **'Summer' School**.

The **Master school** consisted in two intensive days (October 13-14, 2008) of tutorials (12 hours) devoted to Optical fibre technology and propagation. Organization of Master school is in line with fulfilling one of the main objectives in BONE/WP02 "spreading excellence within and outside the project through the organization and execution of common Master study in Optical Communications and Networks combining benefits of teaching in situ, teleteaching or application of learning tools". Selected topic is a part of Master study course curriculum No.1 *Introduction to Optical Networks – Light propagation* Participants had the opportunity to optionally extend the Master school on October 15-17 with a program of practical classes (9 hours). In the period of 4 months after Master School there will be an in-line exam that would allow students to collect ECTS for their doctoral or Master courses.

All tutorials of Master school were transmitted in real time to TELECOM-Bretagne enabling interactive teaching. Also all tutorials were stored on server of BONE Directory service enabling delayed video-streaming for all BONE users.

The **Summer school**, that took place October 15-17, 2008, was dedicated to the theme **'The role of electronics and signal processing in optics'**. This theme is linked with the WP15 (Virtual Centre of Excellence on Transmission Techniques) workpackage and received the support of WP15 leader, Periklis Petropoulos (ORC, United Kingdom). Lecturers coming from the BONE NoE proposed in-depth tutorials on several aspects linked to this very hot topic. Time slots have also been allocated to give the opportunity to PhD students and researchers attending the Summer school to present their preliminary or final work results in oral or poster sessions.

The number of registered participants to the **Master school**, meaning that they were physically present in Mons premises, is 43. They came from 9 different countries and from 10 BONE partners. There was also one participant coming from outside of the BONE project. On the top of those 43 participants, must be added the 25 TELECOM-Bretagne Master students who were participating using videoconferencing. **This raises the total number of participants to 68, which is a success indicator for such an event.** Among the participants, 37 followed only the theoretical courses (October 13-14, 2008) and 31 followed the full

ECTS program. The latter category is shared between those who had practical classes in Mons (6) and the TELECOM-Bretagne Master students who had them in Brest (25).

The number of registered participants to the **Summer school** is 25. They came from 11 different countries and from 15 BONE partners. There was one participant coming from outside of BONE project.

Picture taken at the ICT BONE Summer School

3.5 Participation to TPCs and special issues

Another way of disseminating the high quality work that is being carried out at ICT BONE and ensuring excellence is through participation of the partners in Technical Programme Committees (TPCs) of important events and conferences.

Peter Van Daele (IBBT) was a General Chair of the biggest European event on optical communications, ECOC 2008. Fabio Neri (PoliTo) is the general chair of ECOC 2010 and member of the ECOC Management Committee; also a large number of partners are involved in the associated TPCs. Other events that involve the strong commitment of BONE partners are ONDM, OFC, ICC and Globecom etc that are considered high profile events for the optical networks community.

Involvement in special issues of Journals, with direct mentioning of BONE, is also regarded as an excellent means of spreading knowledge about the project. Examples are:

Maurice Gagnaire (IT/Telecom Paristech), Dimitra Simonidou (U-ESSEX) and Pacale Primet-Blanc(Normale Sup. Lyon) have proposed to the editorial board of the Annals of Telecommunications a special issue on Grids and Cloud Computing. This journal is edited by Springer and appears every two months.

The proposal is that this special issue will make direct references to the activities of the WP21 "Topical project on Service Oriented Optical Network Architectures. About one third of the 15 papers that will be selected will be invited papers from various European research programs (BONE, EGEE, EGI, BEinGRID etc.). The CFP should be announced in June 2009. The special issue should appear in January 2010.

http://www.annals-of-telecommunications.com/en_accueil.html

Lena Wosinska (KTH) Dimitra Simeonidou (UoEssex), Anna Tzanakaki (AIT), Carla Raffaelli (UNIBO), and Christina (Tanya) Politi (UoP), have proposed to the editorial board of OSA- Journal of Optical Networking and managed to organised a special issue on "Optical Networks for the Future Internet," ("Feature Issue: ONFInt" : J. Opt. Netw. **7**, i-ii (2008)).

The collaboration between the guest editors started in the framework of BONE, and its technical focus was related to the work that carried out in the project. The special issue was disseminated to the project and the response has been very large. The announcement for the special issues was made during May 2008 and the deadline for submission was 1 of November.

http://www.opticsinfobase.org/JON/abstract.cfm?URI=JON-7-10-i

4. Dissemination Material

In order to disseminate the integration activities of BONE a variety of dissemination material was developed in the first year of the project and these activities are coordinated by UoEssex.

Two kinds of presentations were developed to be used on different occasions. In the first one description of the different workpackages and the work that is carried out therein was collated. WP01 coordinated the collection of the slide show that aimed initially to be presented at exhibition booths (see ECOC 2008) for the visitor that is interested in technical details of the project. Also it was given out as electronic material to visitors of the ICT booth. The second presentation is focused on the integration activities within the project. It is also aimed at being used as stand alone rolling presentation at shows like ICT event that the project aims should be highlighted. Parts of both presentations can be used at other dissemination events (concertation meetings etc)

Two kinds of posters were developed in the same philosophy as above in order to capture the eye of visitors at exhibition booths. The first is siimpler and portrays BONE as a network of research centres and a platform for collaboration. It was presented at ECOC 2008 (to capture the attention of the passer by) together with the detailed technical rolling presentation for the interested conference attendees.

The second addresses the interested visitor with more details on the structure and was used for more generic events like the ICT event were it was combined with the rolling presentation that gives an overview of the project integration activities.

A flyer following the guidelines of the first poster was developed and distributed at booths and events and also by partners.

BONE poster 1 can also be found *here*

BONE poster 2 can also be found *here*

Building the Future Optical Network in Europe
an EU FP7 Network of Excellence (WWW.ICT-BONE.EU)

The Network comprises six Virtual Centres of Excellence, spanning 49 institutes in 17 countries, covering specific issues in Optical Networking and focussing on new technologies & architectures. Teaching & dissemination are also core activities.

Lead Partner & Contact: IBBT (Be) Peter Van Daele (peter.vandaele@intec.ugent.be)

Centres of Excellence

Network Technologies and Engineering (for all-optical metro and core)

Protection and restoration
Traffic engineering and congestion resolution
Control plane for fast resource allocation according to user needs

Services and Applications

Service definition, architectures and implementation
Application definition architectures requirements
Services and application in an integrated view; Service interconnection fault tolerance
Service Plane functionalities and demonstration
Joint optimisation of Grid and network resources; Cloud computing

Optical Switching Systems

Evaluation of the position of photonic switching in future optical networks.
Provisioning, protection and restoration, switch fabrics, transparency.
Switching topologies and architectures, node design and buffering.

Transmission techniques

Addressing new problems in transmission; coherent systems; 100Gb/s transmission
Regeneration, Burst amplification

Access Networks

Architecture of hybrid optical/wireless networks
Techno-economic analysis of optical access networks; Secure OCDMA-based PONs

In-building Networks

In-building optical network architectures
Hybrid (optical/copper/wireless) & wireless optical communication
Management and control of In-building optical networks & fault and performance monitoring
Interfacing in-building networks with access network
Techno-economic analysis & safety and health aspects

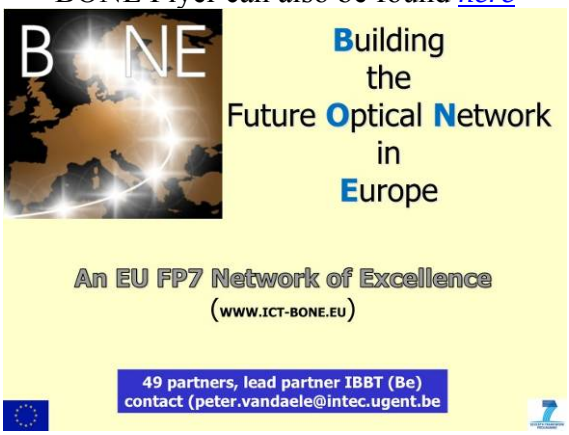
Teaching & Dissemination

Masters in Optical Communication & Networks, summer and winter schools
Roadmaps of photonic networking, workshops, schools talks

Consortium:

Interdisciplinair instituut voor BreedBand Technologie vzw – IBBT: Vienna University of Technology : Faculté Polytechnique de Mons: Heinrich Hertz- Fraunhofer: Technische Universität Berlin: Universität Duisburg-Essen: University of Stuttgart: Technical University of Denmark: Centre Tecnologic de Telecomunicacions de Catalunya: Telefónica I+D : Escuela Politécnica Superior – Universidad Autónoma de Madrid : Universidad Carlos III de Madrid: Universitat Politecnica de Catalunya: Universidad Politécnica de Cartagena: Universidad Politécnica de Valencia : Universidad de Vigo: France Telecom: Groupe des Ecoles des Télécommunications: Research and Education Laboratory in Information Technology – AIT: Institute of Communication and Computer Systems/ National Technical University of Athens : Research Academic Computer Technology Institute – RACTI: National and Kapodestrian University of Athens: University of Peloponnese: Budapest University of Technology and Economics: University of Zagreb Faculty of Electrical Engineering and Computing: CORITEL: Fondazione Ugo Bordoni: Superior Institute of Communication and Information Technologies: Politecnico di Milano: Politecnico di Torino : Scuola Superiore Sant'Anna di Studi Universitari e Perfezionamento: Alma Mater Studiorum - Università degli Studi di Bologna: University of Modena and Reggio Emilia: Sapienza-Università di Roma : Telenor ASA: Eindhoven University of Technology : Instituto de Telecomunicações IT: Akademia Gorniczo-Hutnicza im. Stanislawa Staszica w Krakowie: Poznan University of Technology: HUAWEI Technologies Deutschland GmbH: Kungliga Tekniska Högskola – KTH: Bilkent Universitesi: Universita degli Studi Roma Tre : University of Southampton : University of Cambridge: University College London: University of Essex: Swansea University : Ericsson

BONE Flyer can also be found *here*



BONE rolling presentation

BONE information presentation

5. Public Event

The Technical Annex states that "*a high level public lecture will be organised which will address the general public and schoolchildren to explain the role of optics in telecommunications with the aim of promoting understanding and enthusing teenagers to think about a career in telecommunication. Specifically this will be done by designing an afternoon event that combines explanations with simple demonstrations; then [in a number of countries] the event can be staged in the local language at one of the partner institute".* In order to organise the event several conference calls and meetings were held. A group of interested partners was put together that was committed to participate in the event: Mike O'Mahony (UoEssex) who is leading the activity, B. Mikac (TelFer), F. Neri (Polito), T. Politi (UoP), P. Van Daele (IBBT), A. Tzanakaki (AIT) and L. Wosinska (KTH). At a WP01 meeting in Athens that was especially organised for those issues, several key aspects of the proposed event were discussed, for example age group of the children, structure of the event etc. Following this, M. O'Mahony (UoEssex) coordinated discussions with a local girls school [close to the University of Essex] to understand the schools view of how such an event might best be organised. Similar discussions were held by B. Mikac (Telfer). In this way a rough outline of the event was agreed as follows.

The event would focus on 14/15 yr female students [it is a girls school]. Likely numbers are 60 children plus adults (6-10). From a schools perspective it would need to be a full day visit [10am-3 pm]. The programme would involve the core lecture [Telecommunications using Light] together with lab visits and a chance to talk to (student friendly) researchers. A web page would be constructed prior to the event and suitable handout material developed. During the event there would be a chance to speak to researchers at other partner institutes in Europe and have some questions and answer opportunities.

The core lecture will last about 90 minutes and focus on Telecommunications and the increasing role of optics. It will focus on early and modern techniques of telecommunications and the reasons for the introduction of optics, together with some of the applications made possible due to the use of optical technology. The objective is to get over concepts using simple hands-on experiments [eg mirrors for switching light] and to back this up with glimpses of modern technology realisations through video, photos and microscopes. There will be an emphasis on question and answer.

The event will be followed by a questionnaire to gauge student reaction and learn lessons for the future and for similar events held in partner institutes.

The first deliverable (and Milestone) that reports on the activities for the public event is prepared by UoEssex and uploaded on the private part of the website. So all the details about the design of the event can be viewed there.

6. Roadmap

The term “roadmap” describes a generic direction for technology development or usage. However, a standard definition of technology roadmapping does not exist, and a survey on technology roadmaps that have been created indicates that there is considerable diversity as to what constitutes a roadmap. In its broadest context, a technology roadmap provides a consensus view or vision of the future technological landscape for decision makers. The roadmapping process provides a way to identify, evaluate, and select strategic alternatives that can be used to achieve a desired technology or business objective. Robert Galvin[1], former Chairman of the Board of Directors for Motorola, offered this definition of roadmapping:

> "A 'roadmap' is an extended look at the future of a chosen field of inquiry composed from the collective knowledge and imagination of the brightest drivers of change in that field."

In e-Photon/ONe+ a Roadmap on Optical Communications has been developed and the objective of WP01 is to extend the Roadmap in order to understand the role of optical networking in the Network of the Future.

The aims of this specific Road Map are the following:

- To understand the situation in Europe as it is formed from the expertise and views of the BONE partners and representatives regarding the availability of specific network and IT technologies at different areas of Europe combined. This information will put together the idea of what is the situation today form the network/service access point of view what are the different capacity prospects in different parts of Europe.
- To gather an idea of how the network services and applications will evolve in the future and what requirements this may impose in the Network of the Future. This will be built upon the expertise of BONE WP leaders and will set out the desired requirements for the Network of the Future. For example we will investigate what may be the new video based services beyond high definition TV such as cinema services for example as they are a strong driver for network bandwidth together with the growth of established ‘narrow bandwidth’ services such as VOIP, messaging which are significant drivers for core bandwidth are because they are more ubiquitous and they result in less efficient use of transmission bandwidth. These future services will assist us set the requirements on the network.
- To extrapolate these requirements in order to understand how the network is required to be involved. For example as services must be delivered more efficiently, with assured quality and high security better and efficient ways to organise and deliver services may be required including more automation in the service provisioning processes. We will analyse the limits of today’s network as it stands and we will establish a picture for the Network of the Future. This procedure will be base upon the broad spectrum of views

[1] Science. Volume 280, Number 5365, Issue of 8 May 1998, p. 803

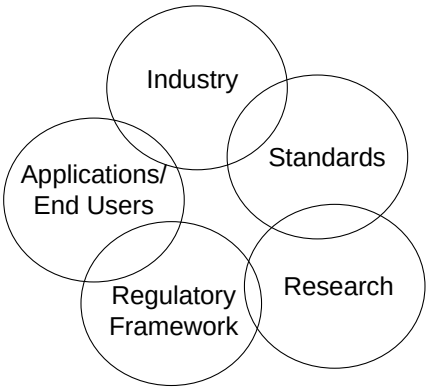
about the trends and directions in optical transport network technologies that was developed in the e-photon/One+ Roadmap.

- To investigate what is missing in research and development to cover this picture of the Network of the Future
- To set out the issues and solutions in a way that will provide options to those people who have the responsibility to develop and implement future networks the technologies and the required areas for further research activity.

The audience for the *Road Map* is those people are involved in the process of developing future commercial networks and technologies and who are concerned with prioritising further research activity. This includes booth people from industry and academia but also those with the responsibility to direct the future research programme (funding bodies).

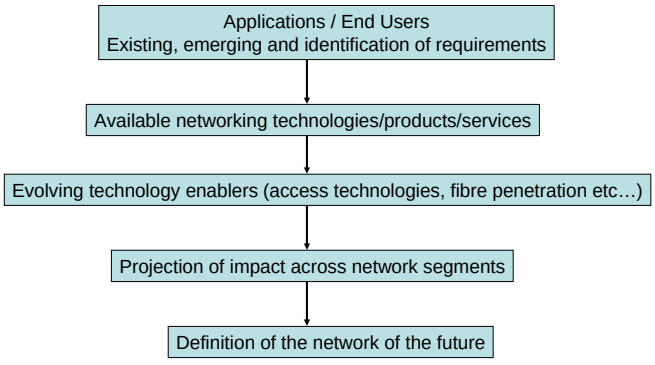
6.1 Methodology

For the roadmap a short methodology was developed by UEssex, UoPelop and AIT. The main idea is based on the figure below that illustrates the factors influencing the evolution of scientific sectors and their interrelation:



Networking Evolution Drivers

The roadmap methodology was developed in the first year of the project based on previous experience and a number of documents that can be found on the e-Documents area of the Roadmap subgroup. The methodology is described below:



To describe the effort of WP01 one can say that a description of the situation in networking as is today should be defined together with the 'momentum' that is gained from technology in order to chart an overall direction for Network of the Future, while identifying the missing elements for this procedure.

6.2 Preliminary Roadmap Data

The first steps for the definition of the Roadmap are shown below:

1. **Collect data on existing/emerging services at European Level**

   For the description of the Market pull- Technology push situation (as defined by the first three steps in the figure above) we need to collect data on existing/emerging services in Europe and also collect data on access technologies in Europe. This means that a taskforce is set up and at the Plenary meeting from a group of people with diverse backgournds and nationalities.

   Evi Zouganeli (Telenor) has set up a JA in WP11 with respect to the scalability routers and will fit well with the fourth step of the roadmap.

   John Mitchell (UCL), WP leader of the Access Technologies, is involved in order to assist with the definition of the picture of technology push situation.

   Fabio Neri (PoliTo) is involved in order to assist as contact point for the Italian case study for the access network evolution.

   Lena Wosinska (KTH) is involved in order to assist as contact point for theSwdish model as a case study for the access network evolution

   A. Tzanakaki (AIT) and T. Politi (UoPelop) could help as contact point for the Greek case study etc.

   Mike O'Mahony (UEssex) distributed the BREAD roadmap where a methodology was developed for a relevant issue. Also T. Politi (UoPelop) and Mike O'Mahony (UEssex) will build on the previously developed Roadmap .

2. **Collect data on access technologies in Europe Roadmap taskforce**

   A questionnaire was distributed to the Roadmap Taskforce (see Appendix) in order to collect the data and most inputs have been already received. The data are being processed so that the European situation on existing access network technologies and services will be depicted.

3. Projection of impact on the various network segments. This will take place by Roadmap taskforce together with WP leaders so that the projection will take place per subject area.
4. Build the converged image of the Network of the future and the missing points in this gap between the situation as is today and the future

7. Online Dissemination

WP01 is in close collaboration with WP03 regarding the definition of the ICT BONE electronic platform and the BONE directory service and mailing lists. Although there was a delay in the final definition of the BONE electronic tool, the public website was widely used for dissemination purposes and the private part for exchange of information and for working area.

WP01 (and specifically TUW and UoPelop) is responsible for the update of the public part with respect to events and Calendar. This activity is coordinated with the endorsement of the events and the Newsletter.

WP01 is also responsible for the definition of the layout, the collection of information the write up and the distribution of a bi-monthly Newsletter.

In the figure the first page of on of the newsletters is shown. Two volumes have been distributed internally to the BONE project and in the next year the possibility of sending to external to the BONE interested readers would be made available.

BONE NEWSLETTER VOL. 2 DECEMBER 2008

ICT BONE Newsletter

NEWS ROUNDUP

ICT BONE NEWS
Important news for ICT BONE partners with emphasis to management issues like annual reporting, deliverable dates, C Forms but also formal collaborations with other NoEs and institutes.

PAST EVENTS
Events where ICT BONE had a n important role.

FUTURE INTERNET ASSEMBLY
ICT BONE contribution to Trust & Identity Session

UPCOMING EVENTS
Events to follow with high interest for ICT BONE partners

ICT BONE Newsletter: past and upcoming activities

Xmas Wishes

On behalf of the ICT BONE Project Office, WP01 and the Newsletter Editorial team we wish you all the best for 2009.

ICT BONE News

The **annual reporting** must be filled in on line by the end of December. **Deliverables** (due at M11) and must be sent to the project office as soon as possible.

Forms C will be filled on line using a new tool developed by the EC. An e-mail will be sent to the coordinator (hopefully, at the beginning of January) with access keys, so that all partners will be able to fill in their financial form.

An **MoU** between **ICT EURO-FOS** and **ICT BONE** is under preparation by the Project Office but it has not been finalized yet. The MoU will assists cooperation with EURO-FOS and enhance complementarity.

After a long discussion on the list of Collaborating Partners at the previous Plenary Meeting, an agreement was prepared by the Project Office to involve external institutions within ICT BONE activities. The agreement will be distributed soon.

Past Events

ICT 2008

ICT BONE had an exhibition stand at the ICT 2008 event in Lyon on 25-27 of November.

It was very successful with many visitors and large numbers of brochures were distributed. In addition a PhD student from University of Peloponnese visited the exhibition as a young reporter and attended some conference sessions that he reported on.

FIA Contribution /Trust & Identity Session

ICT BONE was asked to contribute in the Future Internet Assembly on the Trust and Identity session. A questionnaire will be distributed to the partners, and the answers will be used to compose the ICT BONE contribution.

Upcoming Events

ICT Mobile Summit

The ICT-MobileSummit 2009 is the eighteenth in a series of Annual Conferences supported by the European Commission under the ICT Theme of Framework Programme 7 (FP7). ICT-

BUILDING THE FUTURE OPTICAL NETWORK IN EUROPE www.ict-bone.eu

BONE December 2008 newsletter

8. Think Tank

One of the aims of WP01 is to create a Think-Tank together with European Industry to get specific input on challenges of European Networking and Roadmapping issues. It is envisaged that the specific think tank will meet bi-annually to consolidate a view on specific topics that are addressed by the VD/JPs.

The Think-Tank of WP01 was initiated. The formation of the Think-Tank started with the invitation of TID and continued with TELENOR, France Telecom, Huawei and Ericsson, all industrial partners to the consortium.

9. Impact & Conclusions

The BONE NoE provides a European-wide technical and social platform for research and researchers involved in the study of optical networking and its application to the general field of communications. Through its historical development (by way of e-photon/ONe) a strongly integrated consortium of almost 50 partners has emerged, which viewed internationally reflects the face of European optical network research. Its partners are increasingly in demand for invited talks at prestigious events and as members of TPCs, and the BONE Logo is valued as a mark of quality on meetings and conferences. Individual partners are involved with national industry providing insight into future directions of networking and networking technologies. Collaboration between partners is providing educational material for the training of future engineers and a great strength of the Network is enabling transfers for doctoral students between laboratories. This year also the Network is moving towards the involvement of schools to try and stimulate an interest for science and technology and to show that engineering is a discipline which has high quality content both technically and also socially. Thus we believe the BONE NoE has a wide and deep impact on society.

This specific report described the dissemination activities organised during the first year of the project. Emphasis was placed on realising a generalized framework for future dissemination activities; in addition a number of high quality events were organized and recorded during the period.

Six types of activity were discussed, namely:

1. Workshops and conferences and events either supported or organized by the consortium; exhibition booths are also included. During the period, for example, two major conferences were supported, five co-organised workshops and two exhibition booths.
2. Preparation of dissemination material (posters, presentations and flyers). This material was made available to be used in different types of events. During the period 2 A0 posters, a detailed technical rolling (power-point) presentation, a brief overview rolling (power-point) presentation and an A4 flyer were produced. These were deployed as needed at events.
3. The organization of a Schools public event. A girls school close to the University of Essex has agreed to participate, when 60 girls (ages 14/15) will attend the university for a days activities (with links to European BONE partners).
4. The development of a Roadmap. In the first year the methodology of previous roadmaps was extended, so in the second year information will be compiled and analyzed.
5. Online dissemination with emphasis to Newsletters
6. The formation of a Think-Tank to communicate specific issues with the industry.

10. Annex

BONE WP01

Roadmap of Optical Networking

Questionnaire

1. What is the population in your country and the population density? Indicate whether there are major cities with very high population density?

2. What are the geographical dimensions of the country?

3. What is the percentage of the population using computers in your country?

4. What is the percentage of the population having Internet access in your country?

5. What is the percentage of the internet users that have broadband access? Can you identify specific percentages for businesses and households?

6. What type of broadband access technologies are used and in what percentage? What are the line rates available to the end users?

7. What are the type of services that the users access and in what percentage?

8. What is the cost of broadband connections per bit?

9. Is FTTX available in your country, if yes identify:

    a. Type of FTTX variant
    b. Numbers of FTTx subscribers
    c. Investment on FTTx/country/population
    d. Number of FTTx providers
    e. Available bandwidth to the end users
    f. Price/bps

10. What type of services do broadband users access in your country?

a. Voice
b. Data
c. Video
d. TV
e. other

11. Your comments on the future outlook: