



Activities and Results of the FP7 ICT Project **BONE** (**B**uilding the Future **O**ptical **N**etwork in **E**urope: The e-Photon/ONe Network)

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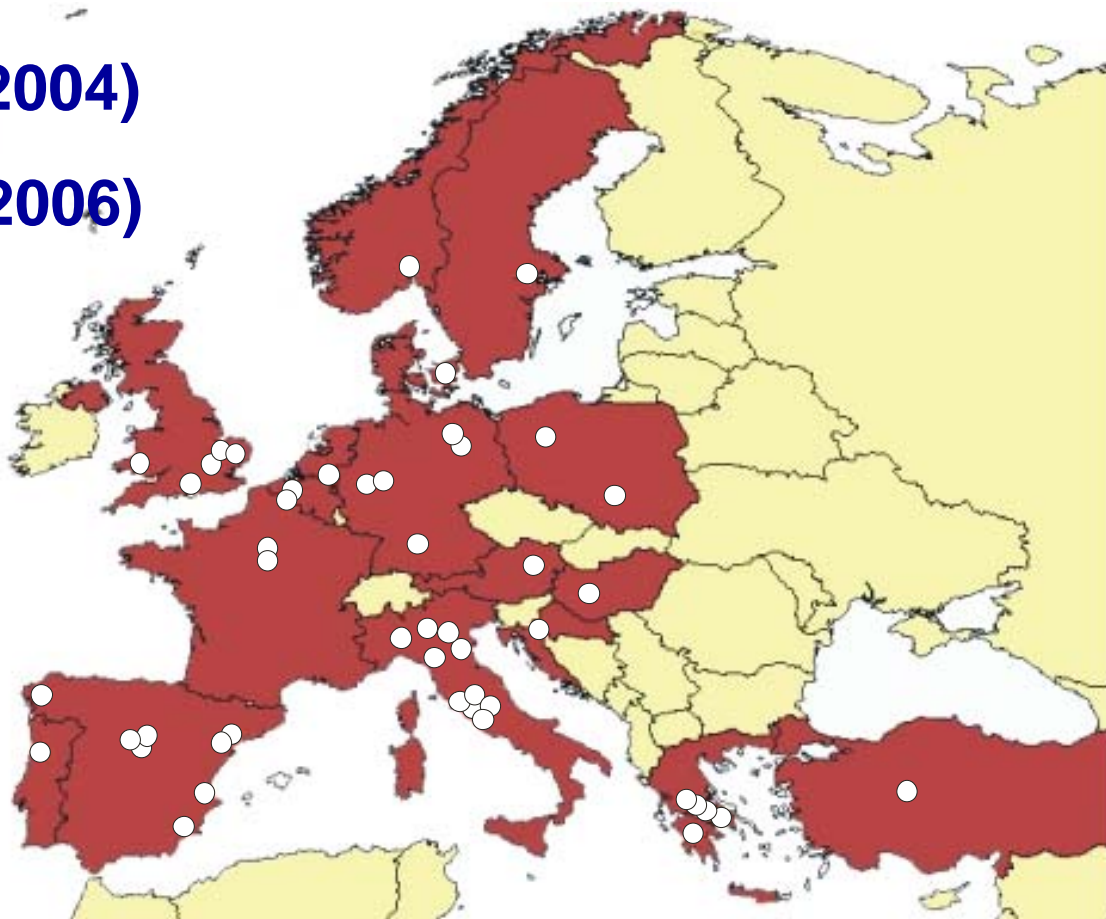


e-Photon/ONe (2003-2004)

e-Photon/ONe+ (2005-2006)

BONE (2008-2010)

49 partners
17 countries
523 researchers

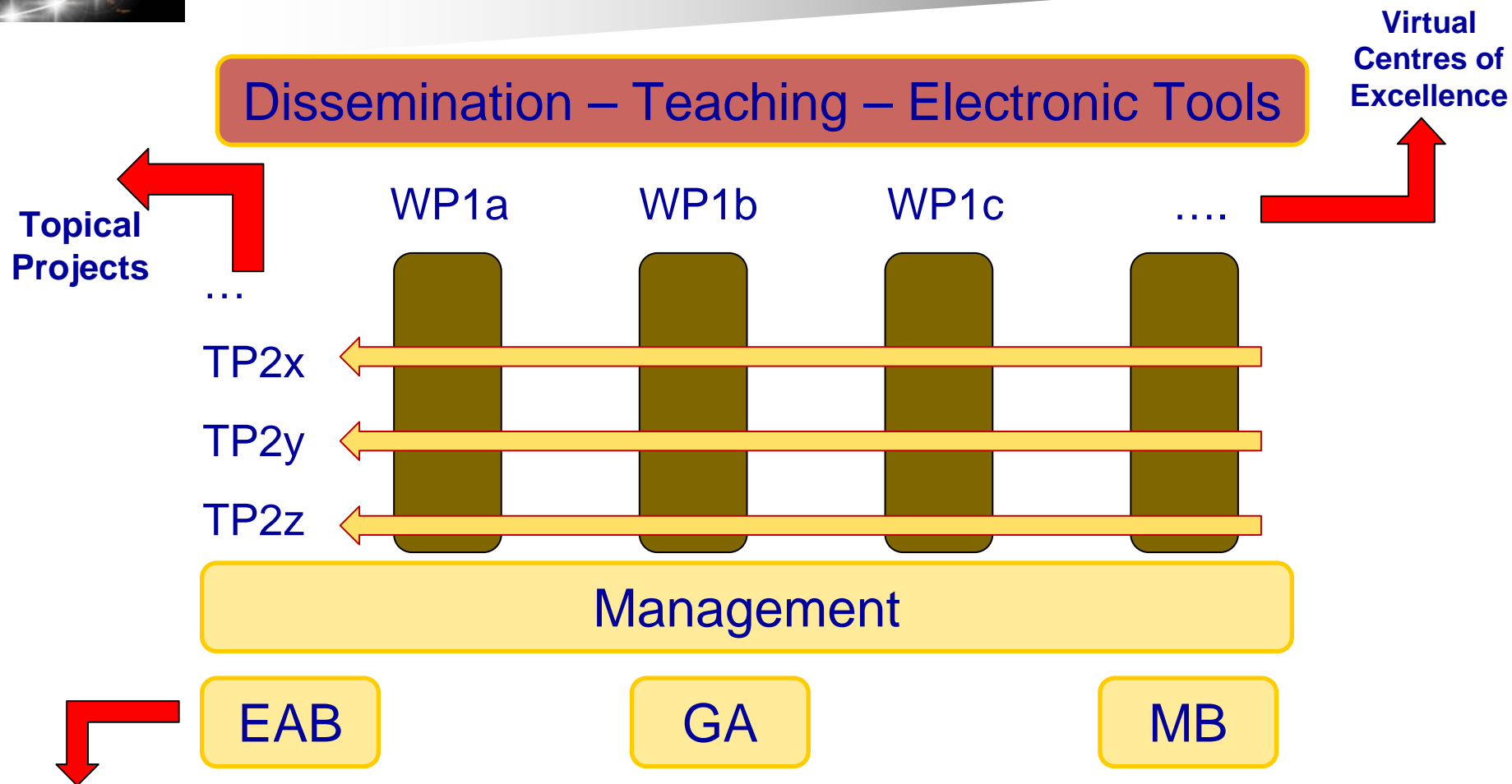




- **Build Virtual Centres of Excellence** that cover specific issues in the field of Optical Networking that can serve European industry with education & training, research tools & testlabs and pave the way to development of new technologies & architectures.
- **Reach out**, include and link to research activities in national programmes, or programmes outside Europe.
- **Stimulate** an intensified collaboration, exchange of researchers between the research groups involved and active in the field
- **Disseminate** the expertise and know-how of these European Research groups to a broader audience, both R&D oriented as well as industry- and decision maker oriented.



BONE Structure



Prof. Dr. Admela Jukan (TU Carolo-Wilhelmina, Braunschweig)
Prof. Kenichi Kitayama (Osaka U.)
Dr. Bill St Arnaud (CANARIE Inc., Canada)
Dr. Eric Tsang (Communications Research Centre, Canada)



General Tasks

- WP00 Project Organisation & Management
- WP01 Dissemination & Outreach
- WP02 Teaching
- WP03 Electronic Communication Aid

Virtual Centres of Excellence (VCE)

Topical Projects (TP)



General Tasks

Virtual Centres of Excellence (VCE)

- WP11 Network Technologies and Engineering
- WP12 Services and Applications
- WP13 Access Networks
- WP14 Optical Switching Systems
- WP15 Transmission techniques
- WP16 In-building Networks

Topical Projects (TP)



General Tasks

Virtual Centres of Excellence (VCE)

Topical Projects (TP)

- WP21 Green optical networking
- WP22 MPLS, GMPLS and routing
- WP23 Optical communication networks in support of user mobility and networks in motion
- WP24 Edge-to-core adaptation for hybrid networks
- WP25 Optical interconnects
- WP26 Alternatives for multi-layer networking with cross-layer optimization
- WP27 Physical impairments constrain based routing in packet switching networks

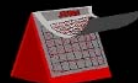
Building the Future Optical Network in Europe



BONE Directory
Service



BONE Portal



BONE Calendar

BONE is an active member of the FP7 Cluster "Converged and Optical networks"



BONE is co-organizer of the European Workshop on photonic solutions for wireless, access, and in-house networks May 18 - 20, 2009, Duisburg, Germany

www.ict-bone.eu

Home

About BONE

BONE Structure

BONE Partners

Deliverables

Teaching

Publications

Newsletter

BONE Calendar

Open Positions

Gender Issues

Links

Contact

The BONE-project is about people, integration and collaboration in the field of optical networks.

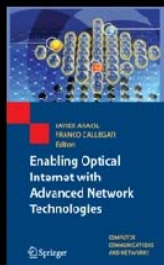


BONE stimulates discussions, mobility and interchange of ideas amongst researchers working at 49 institutes around Europe.



BONE is about dissemination ...

BONE teaches the world about Optical Networks ...



"Enabling Optical Internet with Advanced Network Technologies" Javier Araçil & Franco Callegati To appear soon ISBN: 978-1-84882-277-1



Get here the presentations of the BONE workshop at OFC 2009 on "Energy Footprint of ICT: Forecasts and Network Solutions" (5.1 Mb)



BONE is a Network of Excellence funded by the European Commission through the 7th ICT-Framework Program.



The BONE-project validates the results of the European Commission funded FP6-Network of Excellence "ePhoton/ONE" by stimulating a more intensified collaboration, exchange of researchers and building on Virtual Centres of Excellence that can serve European industry with education & training, research tools & testlabs and pave the way to new technologies & architectures.



BONE Measurable Objectives & Results

- The number of joint papers and presentations

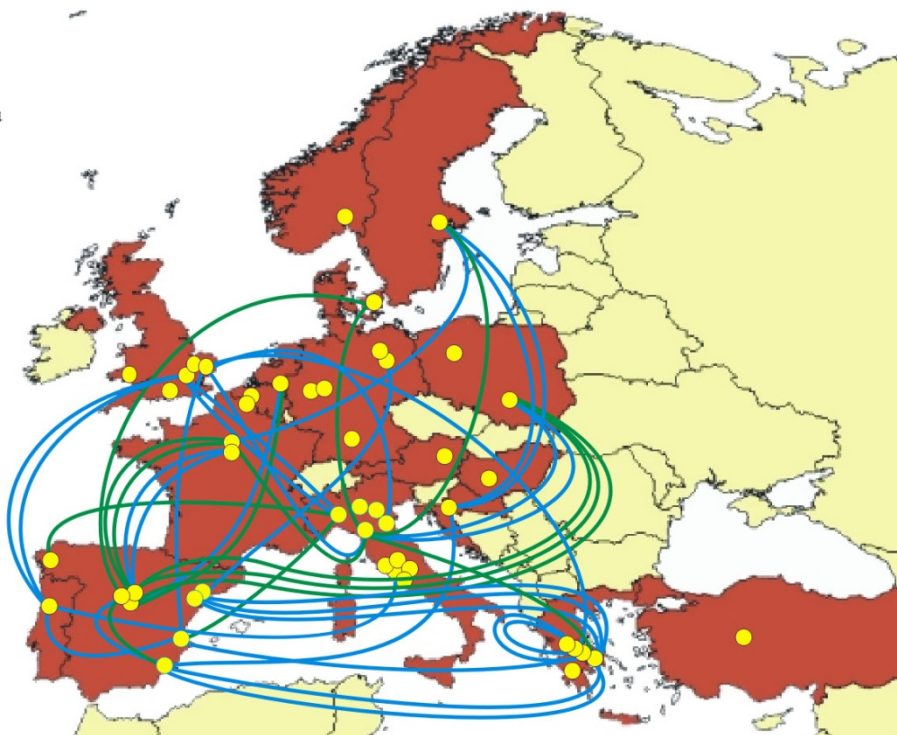
	Y1	Y2
Total number of publications:	188	366
Including joint papers:	62	162
Total number of A1-publications:	40	111
Total number of C1-publications:	145	223

BONE links with

- 15+ EU-projects
- MoU with EuroFOS & COST ICO802
- 45 papers with BONE + national-projects acknow.



Exchanges between partners



● BONE partner

— Mobility actions year 1

— Mobility actions year 2



BONE as dissemination channel

Booths at exhibitions



The ICT BONE booth at ECOC 2008 exhibition



The ICT BONE booth at ICT 2008 exhibition



Public event

- Focused on **14/15 yr (female) students** (120 children) for a full day visit
- The programme involved the core lecture [**Telecommunications using Light**] together with lab visits and a chance to talk to researchers.
- The core lecture lasted about 90 minutes and focused on **Telecommunications and the increasing role of optics**
- The objective was to get over concepts using **simple hands-on experiments** and to back this up with glimpses of modern technology realisations through video, photos and microscopes.
- During the event there were **video links** to researchers at other partner institutes in Europe and have some questions and answer opportunities.
- Involved partners: **UEssex, UoP, AIT, IBBT, Polito, KTH, FER**



Public event



July 2009, UEssex + other partners



Teaching objectives

- Spread excellence within and outside the project through the organization and execution of teaching activities based upon a common Master program in Optical Communications and Networks;
- Organize BONE master/summer schools each year;
- Create curricula and teaching materials with license for open access (Creative Commons Public License);
- Store all materials on project web site;
- Encourage other types of knowledge dissemination, stimulating exchange of teaching materials, lecturers and students;
- Apply of advance techniques for spreading knowledge: by video lessons, tele-teaching and using learning tools.
- Pay special attention to the dissemination towards the New Member States



BONE teaching BONE Master Schools

FPMs, Mons, Belgium, Oct. 15-17, **2008**

Optical Fibre Technology and Propagation

AGH, Krakow, Poland, Sept. 30 – Oct. 2, **2009**

Optical Core Networks - Selected Areas



BME, Budapest, Hungary, Sept. 8-10, **2010**

Photonics in Switching



- FPMs Mons, Belgium, October 15-17, **2008**
Electronics and Signal Processing for Optical Transmission
- AGH, Krakow, Poland, September 28-29, **2009**
"Advances in core networks"
- **BME, Budapest, Hungary, Sept. 6-7, 2010**
Design of a National Backbone Network
Tutorials of experts, oral presentations and
poster session of PhD students



Call for participation

BONE Summer/Master Schools

BME, Budapest, Hungary, **Sept. 6-10, 2100**

Schools are open for outside participants

Low fees and accommodation costs

Presentations of student papers

Accepting pre-registrations: 1st June

Paper abstract submission: 25th June

Final registration: 25th July

Full paper submission: 25th August

<http://www.tmit.bme.hu/bone-school>





1. Introduction to optical networks - Light propagation
2. Optical Technologies and Components
3. Optical Core Networks
4. Optical Access and Metro Networks
5. Photonics in Switching
6. Optical Network Resilience
7. Optical transmission
8. Spin-off applications of optical telecommunications technology
9. Optimization and planning in optical networks
10. Free Space Optical Technologies for Broadband Applications



Roadmap

Extend the roadmap [e-Photon/ONe] into a focused view of the evolution of photonic networks [within Europe] for telecom and non-telecom applications; and benchmark European research activities against international programmes.



- The main EU channel for dissemination of results from research groups in the field of **optical networks**:
 - Over 190 publications
 - Major involvement with BONE ack. at major events
- Major effort regarding education of young researcher:
 - About 30 **mobility actions** of researchers
 - **Summer School and Master School**



Integration of activities in research related to optical networks is realized:

- Through mobility grants
(align research work, PhD work and experiments)
- Through alignment of national projects with European research. (25% of BONE-publications carry ackn. of National projects)
- Through cooperation across European funded projects
(BONE has joint publications with 15 other EU-funded projects).

Key message: avoid conflicts by realistic aligning



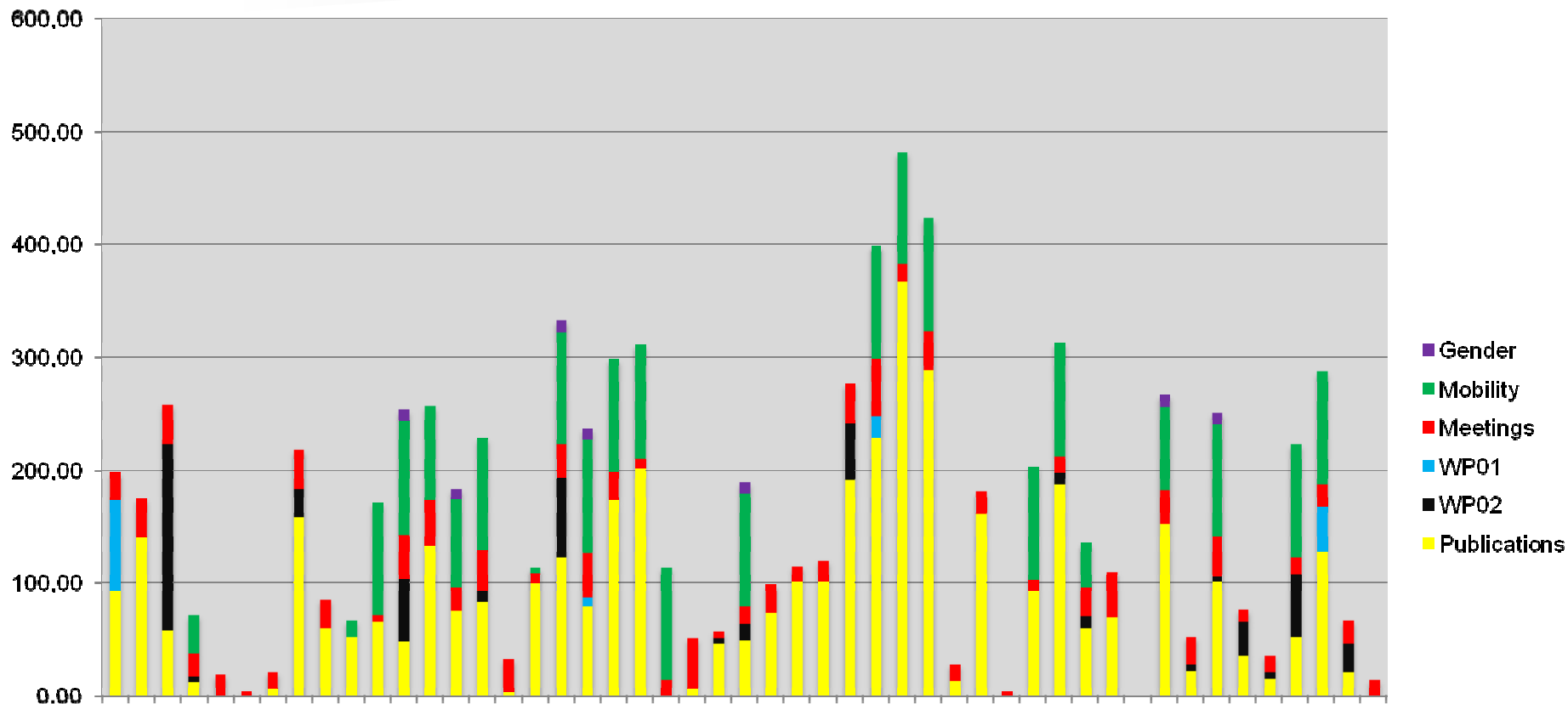
What is BONE ?

- BONE is a **Network**
 - 523 researchers / 49 partners / 17 countries
 - 60+ joint publications
 - 30+ mobility actions
- of **Excellence**
 - 50+ papers submitted to OFC 2009 (San Diego, USA),
 - with an acceptance rate of over 80 %,
 - significantly higher than the average acceptance rate
 - Involved in workshops / major events
 - BONE people are international key players

Key message: integration through awareness



Point scoring system



BONE

