D7.1 Project presentation, communication plan and dissemination plan

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Executive Summary of the Deliverable

COMBO will ensure the dissemination of results of the project to decision and policy makers at national, European, and global level, to industrial business managers and market leaders, and of course to researchers, scientists, and innovators. The dissemination activities will encourage, orchestrate, and assess the communication of the results of the project. Dissemination of results is undertaken via several routes like established channels for providing information on the project during its progress, and ensures that the project's results are in use during the project's lifetime and after the project has finished.

Regarding its dissemination activities, COMBO will:

- Set-up and maintain a project web-site that will act as an information and service portal, disseminating project results and providing access to standards, reference implementations, demonstration software, material explaining COMBO innovation, connection to other projects, press information, success stories and industrial transfer;
- Participate in national and European market fairs where the COMBO will be presented by its industrial partners;
- Set-up of an Industry Advisory Board involving relevant personalities in the field who are interested in different activities of COMBO;
- Cooperate closely with commercial, standardization and scientific interest groups and their organisations and create interest groups in the field of COMBO activities;
- Widely publish in international academic and trade journals, conference proceedings, and national publications;
- Organise industrial and academic workshops, as well seminars for presenting project results;
- Contribute to formal pre-standardization and standardization bodies, fora and industry groups and exchanging continuously background information. This contribution to standards will be a key priority of COMBO project, since the dramatic network evolutions and revolutions required by fixed/mobile convergence will be made possible only when standardised. One of COMBO goals will thus be to strongly push in several standardization bodies (in particular BBF, 3GPP, IETF, FSAN, ITU) a uniform and detailed vision of fixed/mobile convergence, so as to foster a consistent approach in key standards related to fixed and mobile network architectures;
- Disseminate and exchange project results towards other European operators and vendors. For this purpose a combined effort by the four operators DTAG, FT and TID and TT will be set up in terms of e.g. an operator task force.

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Glossary

Acronym / Abbreviations	Brief description
3GPP	The 3rd Generation Partnership Project
ACP	Asia Communications and Photonics Conference
BBF	Broadband Forum
BBU	Base band unit
BROADNETS	International Conference on Broadband Communications, Networks, and Systems
CA	Consortium Agreement
CCN	Content Centric Networks
CDN	Content delivery network
ECOC	European optical communications event
EIT	European Institute of Innovation and Technology
ETNO	European Telecommunications Network Operators' Association
ETP	European Technology Platform Working group and a collection of IEEE standards
EW	Rules for Procedure
FIA	Grant Agreement
FMC	Consortium Agreement
FSAN	Full Service Access Network
FTTH	Fibre to the Home
FTTP	fibre-To-The-Premises
GA	Grant Agreement
HPSR	High Performance Switching and Routing
IAB	Industry Advisory Board

IBC	International Broadcasting Convention
ICC	IEEE International Conference on Communications
ICNRG	Information-Centric Networking Research Group
ICTON	International Conference on Transparent Optical Networks
IEEE 802.3	Working group and a collection of IEEE standards
IETF	Internet Engineering Task Force
IP	Integrated Project
IPR	Intellectual Copy Right
IRTF	Internet Research Task Force
ITU	International Telecommunication Union
ITU-T	The ITU Telecommunication Standardization Sector
JNSM	Journal of Network and Systems Management
LTE Forum	Long-term evolution
MEF	Managed Extensibility Framework
MPLS	Multiprotocol Label Switching
MWC	Mobile World Congress
NEM	Networked and Electronic Media European Technology Platform
NFV	Network Functions Virtualization
NGMN	Next generation mobile networks
NG-POP	next generation point of presence
NoE	Network of Excellence
OFC	Optical Fibre Communication Conference and Exposition
OIF	Optical Internetworking Forum

OMA	Open Mobile Alliance
ONDM	International Conference on Optical Networking Design and Modelling
OPEX	Operating Expenditure
OTT	Over-the-top
PMC	Project Management Committee
QoE	Quality of Experience
QoS	Quality of Service
RfP	Rules for Procedure
SC	Scientific Committee
SME	Small and Medium Enterprise
STREP	Specific Targeted Research Projects
WBA	Wireless Broadband Alliance
WDM	Wavelength-division multiplexing
WDM PON	Wavelength-division multiplexing passive optical network

Table of Content

1 INTRODUCTION

The objective of this document is to set out the terms of Communication and of the Use and Dissemination of the knowledge arising from the project. In order to give a cumulative overview of the project's undertaken and planned activities, regular updates will be implemented, leading to a final plan giving a complete view of activities undertaken (exhaustive list of all the papers, contributions to standardisation and public demonstrations published or performed within the lifetime of the COMBO project, meaning from January 1st, 2013 to December 31st, 2015) and describing future route to full use and dissemination of the knowledge.

2 DEFINITION

All definitions are listed either in the Annex II – General Conditions to the Grant Agreement – or in the Consortium Agreement.

Some essentials definitions are reminded or complemented below.

"**Confidential Information"** means any and all information that is disclosed or otherwise made available by the disclosing Party to the receiving Party pursuant to the Consortium Agreement including, without but not limited to: Background or Foreground; financial information, such as but not limited to pricing and customer lists; technical information, such as but not limited to research, development, algorithms, procedures, software and know-how; business information, such as but not limited to operations, planning, marketing interests and products.

Such information may be disclosed or made available orally, in written (including but not limited to, fax, e-mail, text message (SMS)) or machine readable format or other tangible including but not limited to raw materials, components, models, prototypes or any tool or equipment whatsoever) or intangible form (including but not limited by visual inspection during any tour of the disclosing Party's facilities or premises).

"Dissemination" means the disclosure of foreground by any appropriate means other than that resulting from the formalities for protecting it, and including the publication of foreground in any medium;

"Foreground" means the results, including information, whether or not they can be protected, which are generated under the *project*. Such results include rights related to copyright; design rights; patent rights; plant variety rights; or similar forms of protection;

"Use" means the direct or indirect utilisation of Foreground in further research activities other than those covered by the project, or for developing, creating and marketing a product or process, or for creating and providing a service. Direct utilisation is done by the participant owning the Foreground (e.g. though further research or commercial or industrial exploitation in its own activities) while indirect utilisation is done by other parties (e.g. through licensing).

3 COMBO OVERVIEW AND DESCRIPTION

3.1 Project summary

COMBO started on January 1st 2013 and will end on December 31st 2015.

The COMBO Integrated Project will propose and investigate new integrated approaches for Fixed / Mobile Converged (FMC) broadband access / aggregation networks for different scenarios (dense urban, urban, rural). COMBO architectures will be based on joint optimisation of fixed and mobile access / aggregation networks around the innovative concept of Next Generation Point of Presence (NG-POP). This will lead to a better distribution of all essential functions, equipment and infrastructures of convergent networks.

More specifically, COMBO main objectives are:

- Define optimised FMC network architectures, which will be quantitatively assessed and compared with respect to Key Performance Indicators such as cost, energy consumption, bitrate, delay, QoS;
- Assess multi-operator FMC scenarios to ensure openness and flexibility for network operators and service providers;
- Demonstrate experimentally FMC network features in lab and field tests to show the feasibility of proposed architectures;
- Drive standardisation bodies with respect to FMC architectures to boost COMBO concepts in coming standards and to foster large scale implementation of FMC networks.

The COMBO Project brings together 17 Partners which are:

1. France: JCP-CONSULT SAS.
2. Germany: DEUTSCHE TELEKOM AG.
3. Spain: TELEFONICA INVESTIGACION Y DESARROLLO SA.
4. France: FRANCE TELECOM SA.
5. Italy: ALCATEL-LUCENT ITALIA S.P.A.
6. France: Institut Mines-Telecom.
7. Sweden: ERICSSON AB.
8. United Kingdom: ADVA OPTICAL NETWORKING LIMITED.
9. Sweden: LUNDS UNIVERSITET.
10. Spain: CENTRE TECNOLOGIC DE TELECOMUNICACIONS DE CATALUNYA.
12. Italy: POLITECNICO DI MILANO.
13. Hungary: BUDAPESTI MUSZAKI ES GAZDASAGTUDOMANYI EGYETEM.
14. Hungary: AITIA INTERNATIONAL INFORMATIKAI ZARTKORUEN MUKODO.
15. Spain: TELNET REDES INTELIGENTES SA.

16. Germany: ADVA AG OPTICAL NETWORKING.
17. United Kingdom: FON Wireless Ltd.
18. Turkey: TURK TELEKOM.

3.2 Expected project impact

COMBO will exert a strong impact at the European level related to the following FP7 expectations:

- Strengthened positioning of European industry in the different fields of fixed mobile convergence: the COMBO consortium gathers major vendors, operators and SMEs in the field which all have the ambition to develop products and issue standards based on COMBO achievements.
- Increased economic and energy efficiency of access/transport infrastructures: this key impact will be reached as COMBO takes into account technical, economical and energy consumption analysis to optimise both capacity and consumption of FMC architectures.
- Contributions to standards and regulation as well as the related IPRs: COMBO partners are already active and will exploit the generated IPR by contributing to FSAN, ITU, IEEE 802.3, 3GPP, ETSI.
- Industry adoption of spectral-efficient broadband wireless and fixed systems, novel Internet architectures and technologies: COMBO will redefine fixed and mobile architectures and provide the industry with networking solutions to deploy spectral-efficient broadband wireless systems.

4 COMMUNICATION & DISSEMINATION FORECASTED ACTIVITIES

4.1 Generalities

The present document intends to present a practical summary of the main topics that project partners should follow and use as reference when disseminating the work done.

Dissemination can be seen as the means (i.e. press releases, conferences, scientific publications, exhibitions, workshops, newsletters, websites, etc.) through which research results are presented to the public.

The European Commission's Guide to Dissemination is used as a reference for successful dissemination of the project and should be used as a complementary reference: http://cordis.europa.eu/fp7/ict/components/documents/communication-and-dissemination-guidelines-a4.pdf

It is important to note that official publications in the course of a protection right application (e.g. the compulsory publication of a patent application after its filing) are not considered as dissemination. The target of the dissemination material may be the spreading of information to the general public or a specific group of professionals in a

determined sector. An overview on the most successful means of dissemination, as well as useful suggestions on how to arrange an effective communication strategy, can be found at the European Commission "Guide to successful communications" web-page:

(http://ec.europa.eu/research/science-society/science-communication/index_en.htm)

All Documents must contain the following specific sentence (or a translation thereof) in the description referring to FP7 funding (Article 45 RfP – Article II.28.2 of GA):

"The work leading to these results has received funding from the European Union's Seventh Frame work Programme (FP7/2007-2013) under grant agreement n° 317762"

Use of the EU emblem

The EU emblem may be used only with the prior agreement of the Commission. As the European emblem is protected under article 6ter of the Paris Convention, participants are formally prohibited to register the European emblem, or any sign identical or similar to the European emblem, as a trademark. When participants are allowed to use the European emblem, they should do so in its entire and original form, and always separately from their own logo or trademark. Once the contractual relationship between a participant and the European Commission has expired, the participant should cease to use the European emblem, and withdraw its representation from any new documentation.

Confidentiality and protection

References: Articles 3 – confidentiality - and 46 - Use and dissemination - of RfP and Articles II.9 and II.30 of GA

Where dissemination of Foreground does not adversely affect its protection and use, there is an obligation to disseminate it swiftly. However, no dissemination of Foreground may take place before a decision is made regarding its possible protection. Indeed, any disclosure, even to a single person who is not bound by secrecy or confidentiality obligations (typically someone from a different organisation outside the consortium), prior to filing for protection, can be considered as constituting a disclosure detrimental to patentability, be it by written (including by e-mail) or oral (e.g. at conferences, or even to a single person) (Article 46.3 RfP – Article II.30.2 of GA).

Evidently, no dissemination at all may take place if it is intended to protect the Foreground as a trade secret (i.e. confidential know-how).

Confidentiality obligations are also detailed in the Consortium Agreement (article 4.3). Any data which is to remain secret should be clearly marked as confidential and appropriate measures should then be taken by the other participants and the Commission to maintain confidentiality, even after the end of the project.

As a reminder, the Consortium Agreement foresees a period of confidentiality to be five (5) years from the date of termination of the CA, (except for Source code Foreground – 10 years delay) unless one of the exceptions detailed in the CA.

4.2 Intended activities by the consortium

4.2.1 International and National Events targeted

Project results will be published through articles and papers at various international and national conferences and workshops. There are a huge number of such conferences, thus the partners should keep a critical eye on the quality of these and try to make a qualified selection of appropriate conferences to participate at:

- The targeted events that have been identified for 2013 are:

  Past Events:

  - OFC (March 17-21) Anaheim – USA
  - LTE Forum (April 9-10) İstanbul – Turkey
  - MPLS & Ethernet World Congress (March 17-21) Paris - France
  - ONDM (April 16-19) Brest – France
  - FIA (May 08-10) Dublin – Ireland
  - GreenTouch (May 13-16) Shanghai – China

  Future Events:

  - e-Energy (May 20-24) Berkeley – USA
  - ICTON (June 23-27) Cartagena – Spain
  - Future Network & Mobile Summit 2013 (July 03-05), Lisbon - Portugal
  - HPSR (July 8-11) Taipei – Taiwan
  - IBC (September 6-11) Amsterdam – Netherlands
  - ECOC (September 22-26) London – UK
  - NEM Summit (October 28-30) Nantes -France
  - BROADNETS (November 11–12) Limassol – Cyprus
  - MPLS/SDN 2013 international conference (November 17-20) Washington - USA
  - ACP 2013 (November 12-15) Beijing – China
  - Globecom 2013 (December 9-13) Atlanta – USA
  - ICC (June 9-13) Budapest - Hungary
  - EW-2013 (April 16-18), Guildford, UK
  - IEEE GreenCom (August 27-30), Beijing – China
- The targeted events that have been identified for 2014 are:
  - MWC 2014 (Feb 27-Mar 01), Barcelona – Spain

4.2.2 Universities and Colleges

In total (6) partners in the project have close relations to universities and colleges. These partners shall ensure that project visions and results are disseminated among educational staff and students. The intention is that project ideas shall be included in different training activities as student projects, incorporation into lectures etc.

The academic partners of the project aim at disseminating the project vision and results within their students in form of lectures and courses:

ULUND

- ULUND - EITF25 - Internet - Techniques and Applications.
- ULUND - ETS052 - Computer Communication.
- ULUND - ETS130 - Communication Systems.
- ULUND - ETSF05/ETSF10 – Internet Protocol.

The partners also plan to promote the project ideas at internal seminars and workshops and to exploit new technologies and intellectual property in opportunities for spin-out companies associated with the university and its various campuses.

BME

BME as a university will use the experience of COMBO project in the education in several ways, e.g.:

- “Architectures of Networks and Services” course (VITMM130).
- other network and FMC related courses.

Currently BME has 4 BSc and 2 MSc students working on their thesis in COMBO related topics

EAB and ULUND

Ericsson and ULUND have extensive collaboration regarding Network and performance management. As a part of this, two master thesis students are investigating the cross-layer dependencies and QoS/QoE aspects for copper based mobile backhaul. Their thesis with title “Analysis of QoS and QoE aspects for copper-based mobile backhaul” is scheduled to be finished in end of May 2013. Their work falls within the scope of D4.1 in WP4 task T4.1.

FON

Though FON does not fall under the category of a University or College, FON has a good relationship with the Faculty of Engineering of the University of the Basque Country and intends to make a seminar as stated in 5.3.

AITIA

There are COMBO-related MSc theses coming up at BME, Hungary, supervised by colleagues of AITIA in the second year of COMBO. AITIA also intends to make a seminar in relation to analysis of COMBO traffic scenarios, as well as in relation to fault, service and network management issues related to COMBO.

IT-TB

FMC impact on Fixed and Mobile network architecture is described to final year engineering students in the following courses:

- UVFIP RT310: Architecture and traffic engineering principles for telecom operators' networks.
- UVF12B503: Operated Networks: from infrastructure to deploy and OTT services.
- UVF2R4: Deployment and performance of mobile networks.

Moreover, one PhD (Souheir Eido, start time 01/2013) has been started on functional analysis of a FMC architecture and one MSc (Jinhuang YU) has started his MSc thesis on BBU hostelling in a FMC architecture.

4.2.3 Industry Board and Exchange with European Network operators

Current status of the Industry Advisory Boards (IAB) members is as follow.

To guarantee maximum proximity to market needs, in addition to involved industrial Partners, the Consortium will create an Industry Advisory Board, whose main role consists in monitoring the industrial impact of the project. The industry board is chaired by the Project Technical Leader and consists of representatives of industrial companies, end users and large stakeholders on the requirements produced by WP2 and the choices made by the project. The purpose of this board is to gather views and directions from main stakeholders and at this stage, potential members that were identified are the following:

- NSN.
- Docomo.
- Telecom Italia.
- Telekom Poland.

An invitation letter is in the drafting process, and will be sent to the potential IAB members (See Annex II). The first meeting of the IAB, at this stage is going through a check on the way to potentially cover the expenses related to travels for potential IAB members. It is planned to have a meeting organized collocated with a major event in the Domain, in the autumn of 2013.

4.2.4 Dissemination at Concertation and cluster events

The project will actively participate in the activities organised at programme level relating to the ICT Future Networks area with the objective of providing input towards common activities and receiving feedback (e.g. from clusters and coordination groups), offering advice and guidance and receiving information relating to ICT programme implementation, standards, policy and regulatory activities, national or international initiatives, etc. Such activities may include Concertation meetings twice a year, in Brussels and the ICT Future Network and Mobile Summit. Participation in Future Internet Assembly events and related activities will also be relevant.

4.2.5 Potential dissemination at other relevant projects

COMBO will establish close co-operation on similar activities with other projects within and outside FP7. The project co-operation strategy will organize concertation workshops with other European projects:

- STREP ACCORDANCE

  Input from ACCORDANCE on the suitability of OFDM-PON for LR PON and backhauling will be a starting point for the architecture work in WP3.

  Coordination: The collaboration with ACCORDANCE can be easily implemented with minimum administration, since COMBO partners DTAG and JCP are involved in ACCORDANCE.

- STREP ERMES

  ERMES investigates a new optical technology for the support of large-bandwidth end-users in next-generation access network. A knowledge transfer of the capabilities of this new solution could be helpful in the identification of the feasible new solutions for the fixed segment to be considered in the FMC objective of COMBO.

  Coordination: Partners POLIMI, FT and ALU-I are members of ERMES and therefore the interactions between projects will be easy.

- IP OASE

  OASE studies different access technologies and architectures for their suitability to allow a restructuring of the fixed line access and aggregation network. It also investigates co-operation models for multi-operator and service provider open access scenarios. Since almost all OASE deliverables are public the findings from OASE will serve as a starting point for WP2 fixed line roadmap and also for WP3 and the cost and multi-operator assessment in WP5.

  Coordination: Since DTAG has the technical lead in the project OASE a thorough knowledge transfer can be assured.

- IP SOCIALSENSOR

  SocialSensor is an integrated project that started in October 2011 and will run until September 2014. It develops a new framework for enabling real-time multimedia indexing and search in the Social Web. The project will move beyond conventional text-based indexing and retrieval models by mining and aggregating user inputs and content over multiple social networking sites. Social Indexing will incorporate information about the structure and activity of the user's social network directly into the multimedia analysis and search process. Furthermore, it will enhance the multimedia consumption experience by developing novel user-centric media visualization and browsing paradigms. For example, SocialSensor will analyse the dynamic and massive user contributions in order to extract unbiased trending topics and events and will use social connections for improved recommendations.

In SocialSensor JCP works on efficient content distribution, caching and pre-fetching

- NoE TREND

  TREND covers aspects of energy efficiency in different parts of the network: energy efficiency in network infrastructures, assessment of the fundamental energy-saving potential of network technologies and protocols, guidelines for policies and incentives to stimulate energy-efficiency in networks, redesign the home equipment for energy efficient communications, organizing the flying bits: saving energy on wireless access, power on/off strategies for energy saving and transparent connectivity, energy-efficient networking equipment, energy-efficient network design and control, energy-efficient service provisioning and content distribution, energy-efficient protection schemes

  Inputs from TREND public results about promising wired/wireless technologies in the access network segment can be useful to COMBO.

  Coordination: Partners FT, TID and POLIMI are also active in TREND and therefore the interaction between the two projects will be established.

- CELTIC-MEVICO.

  In the scope of MEVICO project, new network concepts for meeting the future requirements of the evolving radio technologies and usage of the Internet for the future LTE & LTE Advanced networks were developed

  MEVICO is oriented towards the evolution of the Evolved Packet Core of the 3GPP, whereas COMBO is focused on actual mutualisation and convergence of fixed and mobile infrastructures. COMBO will use MEVICO results and integrate them into the convergent architectures, targeting in particular a better distribution of mobility functions implemented in the Evolved Packet Core network of the 3GPP.

  Coordination: Partners EAB, DT, FT, TT were also active in MEVICO so that use of MEVICO results in COMBO will be straightforward.

- CELTIC-HFCC

  The HFCC/G.fast project has three goals. The first is to complete the standardization of G.fast, a process started by the CELTIC project 4GBB (2009-2012). The second is to maintain a European technology lead in the broadband area and thus laying the foundation for continued export successes. The third goal is to address the path from a completed standard to a commercial success, including providing a new backhaul technology for wireless broadband systems. The standardization and technology development by the project facilitates a push of broadband deployment in Europe, thus giving the Digital Agenda a boost.

- CELTIC+-SASER

  The CELTIC+-SASER has been launched in July 2012. The goal of the SASER research program is to provide the scientific, technical, and technological concepts and solutions for the transport (metro and core) networks in the 2020 time frame. The aforementioned open issues directly

translate into stringent requirements to the Layer 1, Layer 2, and Layer 3 infrastructure and shall be covered by a technical approach based on a novel safe, secure, scalable transport network infrastructure at sustainable costs and energy as an indispensable enabler for any security, reliability, availability, quality and scalability features.

Coordination: IT-TB and FT are both active in SASER and COMBO and shall be able to relay information between the 2 projects.

- CELTIC+-SIGMONA.

  The SIGMONA project, “SDN Concept in Generalized Mobile Network Architectures”, will study network architectures and functions for evolution of the LTE/EPC (3GPP) mobile networks. The main focus is on the network, although and end-to-end system approach, including the LTE radio system, will be taken.

  Coordination: Since TT is also active in SIGMONA project knowledge transfer can be assured.

- METIS

  METIS: Mobile and wireless communications Enablers for Twenty-twenty (2020) Information Society will provide an important platform for a European-led early global consensus on fundamental questions connected to the development of the future mobile and wireless communications system, and pave the way for future standardization, its objective is to lay the foundation for a future mobile and wireless communications system for 2020 and beyond.

  Coordination: Partners EAB, DT, FT and TID are working in this project in different areas of interest have been identified to be of COMBO interest such as scenarios, requirements, system design and performance.

- DISCUS

  The project goal is to exploit demonstrated technology and concepts needed to define and develop a new radical architectural concept that can enable an integrated wireless and FTTP future network which addresses the economic, energy consumption, capacity scaling, evolutionary, regulatory and service demand challenges arising from an FTTP enabled future.

  Coordination: TID is also working in the access technologies and architectures, so specific sessions could be programmed to share the knowledge and architecture evolution views.

- IP MobileCloud.

  Mobile Cloud is an FP7 Call 8 IP project started end of 2012 which addresses the seamless integration of mobile Device, Network, and Cloud Domain. It aims at unifying telco and IT concepts in order to provide “one service, on-demand” experience. Cloud (“Com+IT+SW”-as-a-Service) services virtually appear like provided by one entity and with one SLA-based subscription.

  "Mobile Cloud" IP addresses the mobile network only, and with a cloud-based concept. It does not deal with fixed-mobile convergence issues which are key

for operators. Nevertheless, some issues will be common with Combo, such as an optimized sharing of BBUs among several RRHs. This is why interaction between MobileCloud and Combo will be useful.

Coordination: Partners FT and ALU are also active in MobileCloud so that the interaction between the two projects will be established.

- SYMBIOSIS

  SYMBIOSIS (System-level studY for coping with MoBIle data grOwth in evolved cellular networkS and future Internet environmentS) is mainly focused on studying, conceiving, and evaluating network-level services (e.g., routing, mobility, global resource management) towards a more efficient operation of mobile broadband networks at a global scale.

  Coordination: CTTC is participating in the SYMBIOSIS project related to a convergence of cellular and data words and therefore the interaction between the two projects can result in mutual benefits for both projects.

- PIANO+ Project IMPACT and TUCAN

  IMPACT is focusing on Next Generation Access Networks and considers in large part WDM-PON technology. ADVA-UK are involved from a packet functionality perspective which includes aspects such as packet aggregation, and delivery of content and services over such access. Due to the wide range of IMPACT topics there is potential for overlap and interaction on the subject of convergence.

  The PIANO+ projects TUCAN and IMPACT aim at developing key components for WDM-PON, namely low-cost tunable lasers and integrated OLT transceivers. These components are relevant for FMC access/backhaul/fronthaul systems. In case of timely availability of these components, they can also be tested in the COMBO context.

  Coordination: ADVA-DE participates TUCAN, IMPACT and COMBO and can coordinate the respective activities.

- EIT-ICT labs activity " Heterogeneous Networks and Mobile Backhaul"

  The activity is focused on technology transfer in the area of converged transport solutions that utilize the capabilities of WDM-based access and aggregation network. Open issues of mixed wireless and fixed topologies and resource sharing and load balancing of BBUs and RRUs. Beside this, a mix of backhaul solutions is expected in heterogeneous networks. Ericsson intends to investigate mobile backhaul requirements for small-cell support in terms of backhaul infrastructure expansion, densification, and capacity upgrade.

  Coordination: EAB, JCP and ULUND is participating in the ICT lab activity that is focused on technology transfer and dissemination from the partners results in COMBO

4.2.6 Connection with industry fora, European Technology Platforms and other initiatives

Contacts with other international initiatives will be pursued. COMBO will especially interact with the following initiatives:

- ETNO

  ETNO (European Telecommunication Network Operator Association) for discussion of COMBO results with respect to converged network architectures and potential infrastructure enhancements.

- FTTH

  FTTH Council Europe, member organisation with a mission to accelerate FTTH deployments in Europe, and with Ericsson as one of the members.

- Greentouch

  GreenTouch for all topics related to energy efficiency of networks.

- Net!Works ETP

  Net!Works ETP for topics related to network architectures, in particular mobile networks.

- Photonics21 ETP

  Photonics21 ETP for topics related to very high fixed broadband access.

4.2.7 Project website

A project website [http://www.ict-combo.eu] has been set-up to publicize the work and results produced within the project. This website is intended to facilitate contacts and exchanges with other research and industrial initiatives on the relevant topics. This site will be continuously kept updated about general public project information, public deliverables and other results that may interest the public. All partners are asked to contribute content continuously throughout the project's lifespan, and specifically, a call for content is launched every two months. The technical management of the website is under the responsibility of Partner 1 (JCP-Consult SAS) and is a collaborative process, with full involvement from all partners providing content.

Figure 1: **COMBO Website homepage**

The home page is divided in three principal areas: the news, the events and the project presentation and of COMBO for a fast and easy navigation.

The news will be updated on a regularly basis.

Only the upcoming events are showed on the homepage, but the visitors can access the full list of upcoming and passed events, once they follow the 'Read More' tag on the Home Page, or following the Events tag on the top of the page.

4.2.8 Presentations and Publications

Relevant publications like technical magazines, IEEE transactions as well as newspapers will be used to disseminate project visions and results.

At least 10 publications per year (but likely substantially more than that) will be produced by the project. At the time of writing, five invited presentations are confirmed to be given at upcoming conferences:

4.2.8.1 Presentations/Publications submitted

Future Network & Mobile Summit (FuNems):

- "Converged fixed and mobile broadband networks based on Next Generation Point of Presence". Pending acceptance
- Stéphane GOSSELIN et al., Converged fixed and mobile broadband networks based on Next Generation Point of Presence, submitted to FuNems 2013.

- Philippe CHANCLOU et al., Optical fiber solution for mobile fronthaul to achieve Cloud Radio Access Network, submitted to FuNems 2013.

OFC symposium:

- "Unified Access and Aggregation Network Allowing Fixed and Mobile Networks to Converge". Accepted and presented
- Dirk BREUER et al., Unified Access and Aggregation Network Allowing Fixed and Mobile Networks to Converge, invited symposium paper presented of OFC 2013.

ONDM:

- Keynote speech at ONDM 2013, where stakes of convergence of broadband fixed and mobile networks will be highlighted together with the corresponding COMBO vision.

EW-2013:

- A. Krendzel "LTE-A Mobile Relay Handling: Architecture Aspects", the 19th European Wireless Conference (EW-2013), 16-18 April, Guildford, UK, 2013

ECOC2013:

- Invited paper on Tunable Lasers in Access

Globecom:

- Moufida FEKNOUS, Bertrand LE GUYADER, Annie Gravey. Evolution of access and aggregation networks

4.2.8.2 Presentations/publications planned to be submitted:

- P. Dini, M.Miozzo, N.Baldo "A Model to Analyze the Energy Savings of Base Station Sleep Mode in LTE HetNets" to be submitted to IEEE GreenCom 2013
- R. Martínez, R. Casellas, R. Muñoz and R. Vilalta, "Experimental Evaluation of Delay-Sensitive Traffic Routing in a Multi-Layer Aggregation Network for Fixed Mobile Convergence", to be submitted to ECOC 2013
- Julio Araujo, Frederic Giroire, Yaning Liu, Modrzejewski Remigiusz and Joanna Moulierac. " Energy Efficient Content Distribution ", IEEE ICC2013, Budapest, Hungary, 9-13 June, 2013.

4.2.9 Workshops

To disseminate COMBO results, workshops at conferences and other events will be organised and publicly announced to gather the attention of the community.

Currently, the list of the accepted workshops, the proposed workshops, and those for which proposals are planned to be submitted is as following:

Accepted workshops:

- ONDM: OASE workshop, where COMBO was invited to make a presentation

- FuNEMS: TREND workshop, where COMBO was invited to make a presentation

4.2.10 Newsletter

The COMBO project will distribute a newsletter every six months that will also be available on the website.

A subscription button is currently being implemented on the website in order to enable visitors to receive it on request.

4.2.11 Leaflet

A Project Leaflet will be created, intended for dissemination at workshops, conferences and meetings where the COMBO project will be presented. The leaflet will be short and concise, and will invite the viewer to refer to either the website and/or to contact the project directly.

4.2.12 Poster

The COMBO project has created and will display posters with the relevant COMBO information at events where the project will have a workshop or booth.

The COMBO project has submitted an A0 poster at the FIA Dublin in May 7th and 8th 2013 to a competition of posters.

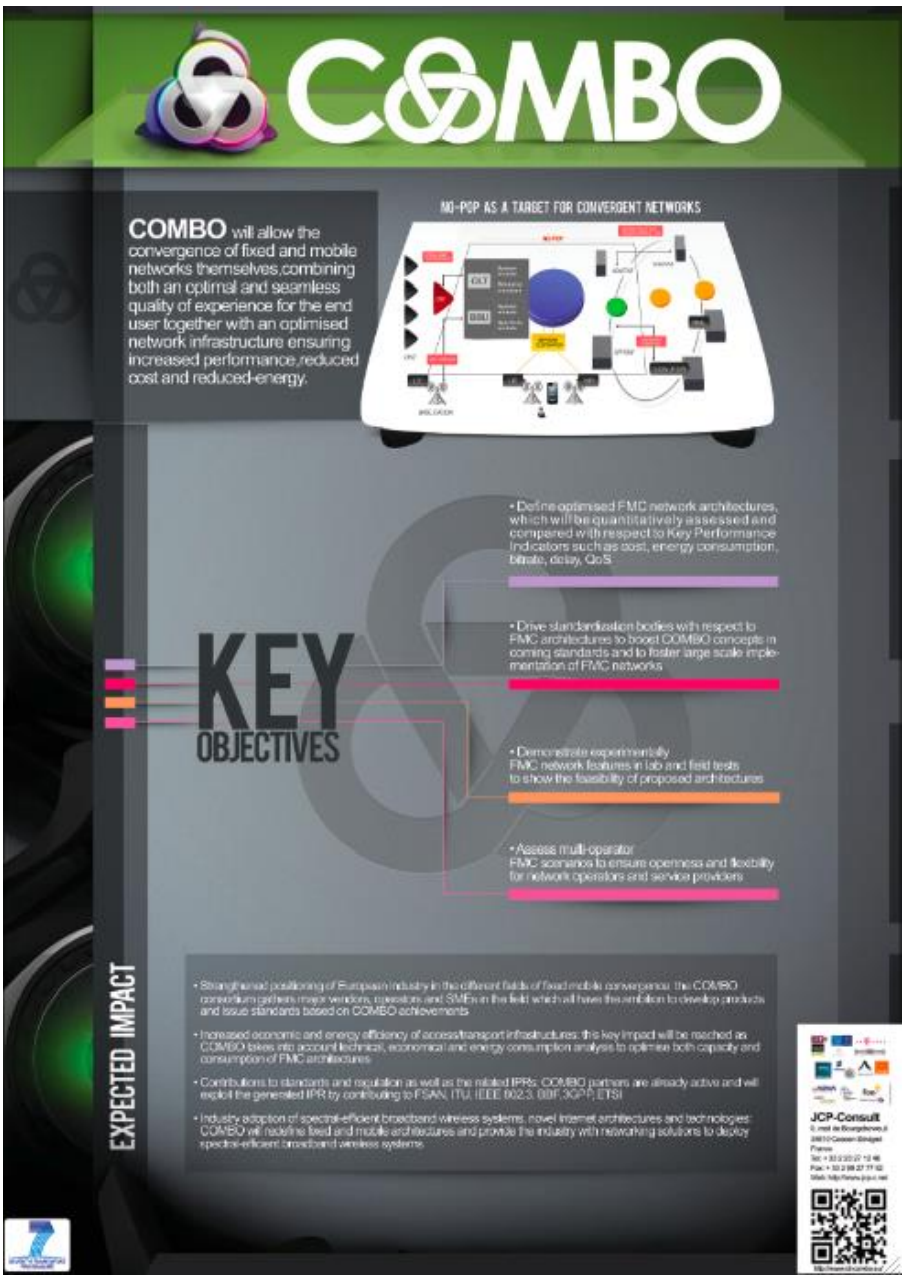

Figure 2: **Outline of the COMBO A0 poster.**

4.2.13 Liaison and dissemination in the appropriate standard bodies

A preliminary list of targeted bodies and fora are:

- IEEE 802
- ITU-T
- OIF
- MEF
- FSAN

- 3GPP
- NGMN
- Alliance, Open Mobile Alliance (OMA)
- Broadband Forum (BBF)
- Future Internet Assembly (FIA)
- Wi-Fi Alliance
- Wireless Broadband Alliance (WBA).
- ETSI Network Function Virtualisation sub-group (NFV)
- IRTF research group (ICNRG)

4.3 Partner exploitation and dissemination plans

4.3.1 Exploitation plans of the participants

All partners of COMBO will drive the dissemination of project results through internal and external exploitation of the results. In the following the different partners describe their activities as also shortly summarised in WP7 in the exploitation and standardization tasks.

JCP

Firstly, they will extend their on-going research work on CDN/CCN and storage management in general. JCP is active currently in other European projects like SocialSensor where they investigate CCN/CDN use for multimedia content real time transport on mobile networks. Based on the outcome of the project, JCP will look into possible productisation with partners (which would lead to a new company creation), together with other available JCP products like IP compression software. Also, the knowledge acquired in CDN/CCN will be used for consulting and training purposes, as these are 2 on-going activities of JCP.

Secondly, the work on business analysis and modelling will be used to increase JCP expertise and credibility on this domain, especially with the new methodologies used in COMBO. JCP has already an existing track record in strategy and business with small and large companies (DIVx, windriver, bluestreak...) and operators, and will try to extend this activity.

Project management experience will be used in JCP consulting activities in national and industrial project, which is one main company activities. Standardization follow-up will also be an additional asset for JCP. JCP is very active in standardization in general with a full time presence in 3GPP-RAN, and support of standardization in different areas like networking, search, mobile gaming.

DTAG

The department of Deutsche Telekom (DTAG) which will be involved in COMBO, mainly performs internal strategic consulting for the different business units of DTAG group and the headquarters of DTAG. Therefore the results of COMBO will be

primarily used in the mid- and long-term strategy towards a converged fixed and mobile access network evolution of DTAG. Several internal initiatives and projects of DTAG aim at preparing the next-generation access network strategy and related concepts with respect to network consolidation, convergence and optimization to address the growing traffic demands and new business models. For example, DTAG has announced cooperation's with other network operators in terms of infrastructure deployment and cooperation. A variety of these important topics will be investigated in COMBO and the results will flow into Deutsche Telekom's activities.

Moreover DTAG is well represented in different standardization bodies and fora like ITU-T, FSAN, 3GPP, IEEE, and BBF etc. and will therefore fed the findings and results of COMBO into the appropriate standardization bodies, emphasizing the carrier's high interest in convergence of fixed and mobile networks not only from a service perspective but also from an network deployment point of view. Special attention will be paid to ensure an open standardised solution which enables mass market volume for the access and aggregation network and thus potentially low cost.

TID

Telefónica I+D (TID) is a 100% subsidiary of Telefónica S.A, being Telefónica's R&D arm. Telefónica is present in 25 countries with an average of 285,000 professionals and more than 299 million customers at September 2011: more than 231 million mobile phones accesses; more than 40 million fixed telephony accesses; more than 19 million Internet and data accesses and 3.2 million pay TV accesses. Research and development is essential to identifying those factors that are going to shape the future of telecommunications and the development of Telefónica's businesses. TID was created in 1988 to lead Telefónica's activities in this field. Its mission is to help improve Telefónica's competitiveness through technological innovation, broadening the range and quality of services on offer and making it possible to reduce operating costs.

TID underpins all of these operations from the results of research projects that can evolve into new services for their customers. TID itself obtains benefits from the technical know-how earned during COMBO project execution, enhancing its own portfolio of innovative products and services for end customers, and in providing the companies of Telefónica with tools and means to improve their business practices and open new markets. The multinational characteristics of some of these companies make possible abroad spectrum of applications for these improvements. Therefore, Telefonica I+D, as the R&D subsidiary of the Telefonica corporation, has close relationships with all the different business units of the Group, where many of them could be very interested in the results of this research project, that can evolve into new technologies to offer new services for their customers. . Some specific work to be developed inside COMBO, such as, use network reference scenarios and FMC use cases will take into account current network infrastructure used by Telefónica in different countries and future FMC to assure that the FMC network architecture designed in COMBO could be adapted and implemented inside Telefonica easily and with the lower impact and cost. Additionally the techno-economic assessment will take into account the those countries in which Telefonica has both FTTx and 2G/3G

mobile subscribers to compare and asses how evolved FMC business models proposed by COMBO can fit in the evolution of Telefónica business units.

FT

Orange Labs' goal is to ensure the efficiency of France Telecom Group's technical foundation. It determines the key technologies to set up in order to adapt the technical architecture of the Group and anticipate the evolutions of the telecommunications industries. These preliminaries are necessary not only for the improvement of the quality of service and quality of experience given to the customers (coverage/accessibility and speed/comfort) but also to maintain our capacity to invest in future projects. With more than 3,500 engineers, researchers and technicians spread in 15 sites in Europe, North America, Africa and Asia, and a portfolio of more than 7700 patents, the R&D arm of France Telecom is implemented at international level that enables cooperation with influent industrial groups, the international scientific community, standardization and regulatory bodies. As a matter of fact, 70% of the products and services marketed by the Group are born in our labs.

FT contribution to COMBO will be carried out by the Wireline and Transport Convergent Networks Direction, specialised in research, anticipation, standardization and deployment of all types of access and aggregation networks for all categories of customers. As for DT or TID, the results of COMBO will be primarily used by FT in the mid- and long-term joint operators' strategy towards a converged fixed and mobile access and aggregation network. Various internal R&D projects consider fixed/mobile convergence as an ultimate target, and the concept of Next Generation Point of Presence is currently being developed in Orange Labs as a key option to reach this target, including in particular access network node consolidation, BBU hotelling, distribution of P-GWs and CDN servers. All these key topics will be investigated in COMBO and the results will thus be directly exploited by internal FT projects, providing the guidelines to fixed/mobile network evolution in the 2020 horizon timeframe.

FT is also convinced that the key target of COMBO project is standardization of proposed converged fixed/mobile network architectures. Orange Labs are active in different pre-standardization and standardization bodies such as BBF, 3GPP, IETF, FSAN and ITU and will thus combine its efforts with the other industrial partners of the consortium to feed COMBO results into these standardization bodies, with the ultimate goal to reduce communication network costs and energy consumption, while ensuring network openness and a seamless and comfortable experience to all our customers.

ALU-I

Alcatel-Lucent's, OPTICS ALUI #1 worldwide in the Long Haul market segment and access network segment, has a strong market share of optical telecommunications equipment in all segments and regions, leveraging on its broad geographical presence, broad portfolio and diversified business.

COMBO project can provide guidelines and new solutions for the aggregation and backhauling segment of the network that will utilise optical transmission technologies. New configurations for the BTU and edge nodes would be designed in the project with advantages in terms of power consumption reduction and integration between

electronic and photonic devices could allow a simplification of new transmission equipment. Last mile segment of the network play a fundamental role on both the performance/ quality of end-to-end future internet services thus the overall scope of passive optical networks shall be enlarged with new medium access techniques having the characteristic to also enhance the security and capacity (high leverage solution) of the access segment. The project gives the possibility to an industry like Alcatel-Lucent and other industrial partners involved to validate in advance the solutions and to define also in advance roadmap of these products already included in the R&D lines. Larger capacity fixed mobile convergent network design can result by exploiting the benefits of COMBO. As final result once the validation has been assessed the project can foresee that time to market can be reduced and more detailed industrialization and exploitation plan can be achieved. The partnership of the project can also lead to spin-off activities or new ventures around the market of the WDM PON and CPRI utilisation.

IT-TB

The exploitation plan from Institut Telecom – Telecom Bretagne includes scientific communication in major conferences and journals addressing the fields of fixed and wired network architecture and application of these innovative networking concepts for teaching and professional training in Telecom Bretagne. Moreover, whenever possible and technically sound, IT-TB will try to patent interesting new solutions generated by its research inside the project.

EAB

Ericsson is the market leader in 2G, 3G and 4G mobile technologies. The product portfolio comprises mobile and fixed network infrastructure and broadband and multimedia solutions for operators, enterprises and developers. The converged network solutions to be developed in COMBO will further strengthen our offers for end-to-end solutions. The COMBO studies on architectural solutions for node consolidation, functional split, convergence level and common usage, and optimization of resources will enable us to develop cost and energy efficient network solutions, which can handle the future needs for mobile broadband backhaul. The COMBO results will give an understanding of pros and cons of distributed versus centralized intelligence, and on architecture and network solutions enabling different levels of network sharing, such as transport sharing. Furthermore, will the developed performance management solutions ensure a high QoS in the network and that troubleshooting time and thus OPEX can be minimized. These outcomes will be fundamental for the development of new innovative converged architectures and solutions.

Regarding the technology demonstrators in COMBO, both the R&D results from COMBO as well as pre-existing know-how of nodes and link technologies will be used. Moreover, the demonstrators will allow Ericsson to evaluate new and potentially disruptive solutions that are built upon the combined strength of the COMBO partners. Successful part of the demonstrators can then be incorporated in our technology product roadmap while less promising solutions can be removed from technology roadmaps without the risk of spending large resources on tacks that will not reach volume production.

An Ericsson internal steering group for the COMBO activities has been created and it includes representatives from Product Management and Product development units.

ADVA-UK

ADVA Optical Networking is recognised as the global market leader in Ethernet Access Device market by Infonetics, and is recognised as a thought leader in Transport and WDM technologies. The Ethernet Access side of ADVA's business develops solutions for the mobile backhaul market and has a roadmap of functions to be developed in this area. ADVA-UK is a subsidiary of ADVA-DE and is the original centre of design for the Ethernet Access portfolio known as FSP150, and provides input to other areas within ADVA relating to requirements of future products. The requirements of a converged fixed and mobile backhaul network as studied within COMBO will be analysed and fed into our product development plans so that we can be confident of our feature set moving forwards. Development of proof of concept functions that are beyond state of the art will allow ADVA to remain at the forefront of technology in this area.

The practical and demonstration activities within COMBO will allow ADVA to validate the approach to some specific technologies in the area of fixed/mobile backhaul networking. Results from the COMBO project will feed directly into ADVAs roadmap and will also be used to underpin ADVAs input to standards community including MEF, ITU-T and Broadband Forum.

ULUND

The exploitation plan of the research group of Broadband Communications at Lund University includes publications of the results in peer reviewed scientific journals and conferences. The results of the project will also be exploited through the improvement of the academic degree of engineers by Master or PhD programmes, which will bring first-rate knowledge and expertise into industry.

CTTC

As a non-profit research institution, CTTC has limited (business) plans for direct, commercial exploitation of COMBO outcomes. By the nature of its activity, CTTC exploitation plans involve, potentially, technology transfer contracts for consulting and services as well as software licenses of developed components. Technology and "Know How" transfers are established on a case-by-case basis, developed in the framework of (bilateral) agreements given a customer specific needs and requirements.

The research activities and results obtained by CTTC in the context of COMBO will be disseminated through scientific journals and international conferences. These advances will be also presented at CTTC by means of internal open weekly seminars. Finally, CTTC will also promote their activities related to COMBO within well-known events (e.g., Mobile World Congress) taking advantage of CTTC presence in specific booths. For the latter, specific promoting material in different formats (poster, flyers...) will be prepared.

POLIMI

POLIMI is an education and research institution and its exploitation interests are mainly concerned with the use of project results in courses at Politecnico, new

consultancy opportunities (technology transfer initiatives) in cooperation with CEFRIEL (the IT centre of excellence at Politecnico). The exploitable results of the project relevant for POLIMI are: (1) the experiences gathered in the definition, design, and implementation of the COMBO project; (2) the expertise acquired from tailoring models and methods for energy consumption and cost optimization in fixed mobile converged networks; (3) the expertise acquired from applying the concept of WDM-PON to converged backauling of mobile and fixed traffic. In preparation of MS courses at POLIMI of next academic year, specific lectures related to COMBO project are being planned. The research of activity of some PhD students has started within the COMBO project.

BME

BME as the leading technical university of Hungary plays central role in educating future generations of telecommunication engineers, and also participates in various European and Hungarian research projects. The experience earned within COMBO is beneficial for both of these fundamental roles.

Research activity of BME is reflected in its journal and conference publications, and several research projects. Aiming research efforts at relevant topics of the near future is a key to efficient work in this field, and research projects such as COMBO help to identify the most important directions. BME is willing to increase its publication activity regarding assessment and energy efficiency of FMC networks, based on its project contribution.

Experience and close cooperation with industrial partners strengthens our competence in various telecommunications R&D activities, which on the other hand, indirectly improves quality of education. The education should cover the newest technologies and engineering solutions for telecommunication challenges, therefore cooperation with leading industrial partners is fundamental for the University, and having personal within projects such as COMBO is the best way to follow technical development.

AITIA

As an SME with strong research and development drive in the mobile telecommunications field as well as in high speed networking, AITIA aims to get ahead of the networking state of the art with COMBO. The main areas of contributions are traffic modelling, performance management methods, and SLA validation through passive monitoring and determination of QoE from traffic analysis. Lossless monitoring and complex analysis of high speed network traffic is a segment where AITIA is targeting to become a leader. COMBO allows the application of new results in the FMC area into AITIA's corresponding product line. This results in networking specialists choosing and using our products for either research, development or cutting-edge, live traffic analysis and manipulation. AITIA will take the following steps for dissemination and exploitation:

- include the project results in a scientific journal paper or in a conference paper;
- compile a white paper about how COMBO results are utilized by AITIA products;

- provide information on advances of COMBO in the company website;
- update the marketing material with features specific to FMC;
- disseminate results together with BME, Hungary, by building COMBO results in new MSc seminars.

TELNET

Telnet Redes Inteligentes is a SME company located in Spain. Some of the main activities of Telnet are BTS antennas design and manufacturing, as well as access network equipment for FTTx architectures. These are two areas which require strongly efforts in research and development to follow the track of state-of-art. Because of cooperative projects like COMBO, Telnet is able to keep that track of SoA and develop new expertise areas, since otherwise we will be much more difficult. Apart from this purpose, obviously the main purpose of Telnet R&D department lies in finding new opportunities and markets, mainly uncovered by big vendors or specific developments by request of operators. Regarding our participation in COMBO, it is a great opportunity to get it, contribute to the future FMC network, and establish business relations with other partners, principally operator. COMBO will be also a nice opportunity to introduce to operators and validate WDM-PON equipment, avoiding the typical barriers that a small company has to tackle. Furthermore, Telnet has already experience in successful products in its portfolio that were born from projects similar to COMBO.

ADVA-DE

ADVA Optical Networking is a major equipment manufacturer serviceing Mobile backhaul, Business Services and fixed line networks. Its market leading transport solution FSP3000 is an optical transport and metro access solution encompassing WDM technology. As part of ADVAs roadmap, WDM-PON is identified as a key tool for reducing energy and simplifying next generation networks while providing the best option for scalability. ADVA is actively investigating WDM-PON technologies and intends to use the COMBO project to test the views of operators and to liaise with industry especially in the areas of convergence in the network.

ADVA intends to strengthen its feature set and market penetration plans for WDM-PON using COMBO to explore the fronthaul requirements of a converged network. ADVA-DE is present in standards activities including ITU and FSAN, and intend to use COMBO results and concepts to formulate its strategy in this area.

FON

From Fon’s side, Convergence of fixed and Mobile Broadband access/aggregation networks provides the possibility to become the best alternative to the exponential growth in mobile data traffic demand. Its participation in this project offers to Fon the opportunity of discussing which are the most suitable billing and tariff mechanisms to support offloading mechanisms. Special interest would be also to come up to propositions that could be considered as engaging from a user perspective in becoming an active agent in the offloading process for the scenarios considered.

On the other hand, Fon will exploit this project from the standardization point of view, due to the fact that it should ensure that convergence of fixed and mobile broadband

access is as much as possible compliant with the latest recommendations of the network standardisation bodies.

Finally, and probably the most direct aspect in which offloading techniques will have impact, is the exploitation of the results obtained in this project to manage in a more efficient way the resources of the wireless networks.

Therefore, Fon plans to present the different outcomes of the COMBO project within the company group in order to make the company aware of the challenges and opportunities the evolution of current networks towards an FMC represents.

For that purpose, internal presentations and workshops are going to be scheduled in a yearly basis. The feedback from these events will be used to and to define Fon's approach to FMCs.

TT

Turk Telekom (TT), the leading communication and convergence technology company in Turkey, provides integrated telecommunication services from PSTN and GSM to broadband internet. In addition to having a mobile network and a Turkey's largest fixed voice/DSL network, TT also provides public Internet access to its customers in various Wi-Fi Hotspot points distributed across the Turkey. Throughout its large heterogeneous network, TT enables its millions of fixed and mobile internet subscribers to access internet through many different access technologies such as UMTS, Wi-Fi, Copper, Fiber. Regarding FMC business models, TT also operates as an mobile virtual operator and at the same time provides interfaces to other virtual fixed and mobile operators to use its infrastructure.

Being both a fixed voice/DSL operator and a mobile operator TT will contribute to COMBO Project gathering inputs from its fixed, mobile and Wi-Fi network. In project, TT will mainly focus on analyzing the fixed aggregation networks, mobile backhaul concepts and Wi-Fi access networks and then focus on identifying the possible functional and structural convergence among them. As TT provides convergence technology solutions, the optimum FMC architectures defined in COMBO project will be exploited in reducing the cost and the energy consumption of its heterogeneous network while providing the best connection option to its customers.

Additionally, business models converging the fixed, mobile and mobile virtual network operators will be the important outcomes of the project for TT. The traffic management techniques developed in the project will also guide TT to manage the highly increasing network traffic in running on its heterogeneous network especially in dense urban areas. Seamless mobility issues across different kind of access technologies are another aspect of TT to work on throughout the COMBO project.

Turk Telekom is also a member of ITU and ETSI and will investigate the possible COMBO related contributions to the relevant standards defined by these organizations.

4.3.2 Dissemination plans of the participants

P4: FT

- Forecasted PUBLICATIONS & PRESENTATIONS

- OFC invited presentation on fixed-mobile network convergence (March 2013)
- ONDM 2013 Keynote speech (April 2013)
- 2 FuNems 2013 papers if accepted (July 2013)

P6: IT-TB

- Forecasted PUBLICATIONS & PRESENTATIONS
  - Moufida FEKNOUS, Bertrand LE GUYADER, Annie Gravey. Evolution of access and aggregation networks. Submitted to Globecom 2013.

P7: EAB

- Forecasted EVENTS
  - Ericsson will participate in the EIT ICT Labs Partner Event that will take place April 17-18 in Paris
- Forecasted PUBLICATIONS & PRESENTATIONS
  - EAB has start preparing publications where an DWDM-centric aggregation networking solution is mapped onto the COMBO requirements for NGPoP

P10: CTTC

- Forecasted EVENTS EW-2013. MWC:2014
  - - Internal CTTC weekly seminars
  - - Mobile World Congress -2014
- Forecasted PUBLICATIONS & PRESENTATIONS,
  - IEEE ICC 2014 and 2015
  - IEEE Globecom 2014 and 2015
  - ACM Mobicom 2014 and 2015
  - IEEE GreenCom 2014 and 2015
  - OFC/NFOEC 2014 and 2015
  - ECOC 2013, 2014, 2015
  - ONDM 2014 and 2015
  - ICTON 2014 and 2015
  - NOC 2014 and 2015
  - IEEE/OSA JOCN
  - IEEE/OSA JLT

P11: POLIMI

- Forecasted PUBLICATIONS & PRESENTATIONS

- Presentation of COMBO concepts at FUNEMS workshop on Future wired and wireless networks: Green, Heterogeneous and Cloud-powered (Lisbon, 2013)

P12: BME

- Forecasted EVENTS
  - DRCN 2013 conference: COMBO as Technical Co-Sponsor (http://www.drcn2013.org)
  - Internal seminars and workshops
- Forecasted PUBLICATIONS & PRESENTATIONS:
  - ONDM 2013
  - Approx. 4 conference and 1 journal papers planned yearly, e.g:
  - ONDM 2014
  - DRCN 2014
  - ICC 2014
  - Networks 2014
  - HPSR 2015
  - ICTON 2015

P13: AITIA

- Forecasted EVENTS
  - Mobile Roaming Word Summit 2013, 2014
  - CNSM, Conference on Service and Network Management, 2014
- Forecasted PUBLICATIONS & PRESENTATIONS
  - Journal Paper of traffic monitoring and modelling for FMC
  - (Primary target: JNSM)
  - Conference paper on QoS and QoE mapping
  - (Primary target: IEEE GlobeCom)
  - White paper on complex traffic generation for FMC network segments

P16: FON

- Forecasted EVENTS
  - WBA Wi-Fi Global Congress London, UK, 10th – 13th June 2013.
  - WBA Q3 2013 Working Sessions Atlanta, USA, 11th – 12th September 2013. Board Meeting – 10th February 2013. Co-Hosted by AT&T
  - WBA Wi-Fi Global Congress Beijing, China, 18th – 21st November 2013.
- Forecasted PUBLICATIONS & PRESENTATIONS

- Fon intends to schedule a seminar in the University of the Basque Country in order to transmit the main conclusions coming from the COMBO project to the university community.
- Open to collaborate in a white paper about WiFi on FMC scenarios in the future.

P17: TT

- Forecasted EVENTS
  - Net!Works – European Technology Platform
  - Network and Electronic Media European Technology Platform (NEM)
  - LTE Forum (9-10 April, İstanbul)

5 FOLLOW-UP PROCEDURES

To follow-up on the above described activities, the Coordinator of the project has created a follow-up tool (tables based on EC guidelines, which have been uploaded to EMdesk - T) and will actively update it, in collaboration with the Dissemination Manager and Consortium members (see Annex I):

List of all Dissemination activities where COMBO will be represented, with a link to a summary page that says who was present, what has been done. This table will be updated by the Coordinator (JCP-Consult) in close collaboration with the Dissemination Manager and the Consortium every Quarter.

A. List of all Publications created by the COMBO partners, with a link to a summary page describing the publication..
B. List of all IPR applications undertaken by COMBO partners regarding the outcomes of the COMBO project.
C. List of main updates and changes done to the COMBO website..
D. List of all exploitable foreground undertaken by COMBO, with a link to a summary page.

6 REFERRED DOCUMENTS

[1] Project Contract GA 317762 and Annex II (General Conditions)
[2] Project Contract - Annex 1 “Description of the Work” (DoW)
[3] COMBO Consortium Agreement (CA)
[4] Rules for Participation (RfP) - Regulation (Ec) No 1906/2006 Of The European Parliament And Of The Council

7 ANNEX I: TEMPLATES OF FOLLOW-UP TABLES

A. List of Dissemination activities

NO.	Type of activities	Main leader	Title	Date/Period	Place	Type of audience	Size of audience	Countries addressed
1	*Conference*		*European Conference on Nanotechnologies*	*26 February 2010*				
2								
3								
4								
5								
6								
7								
8								
9								
10								

B. List of 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 (if available)	Is/Will open accessprovided to this publication?
1	*Economic transformation in Hungary and Poland'*		*European Economy*	*No 43, March 1990*	*Office for Official Publications of the European Communities*	*Luxembourg*	*1990*	*pp. 151 - 167*		yes/no
2										
3										
4										
5										

C. List of IPR applications

Type of IP Rights	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant (s) (as on the application)

D. List of Website updates

NO.	Type of activities	Done by	Date/Period	Place in website	Comments
1	*Content based*		*26 February 2013*	*About page*	
2					
3					
4					
5					
6					

E. List of Exploitable Foreground

Type of Exploitable Foreground	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
	Ex: New superconductive Nb-Ti alloy			*MRI equipment*	*1. Medical 2. Industrial inspection*	*2008 2010*	*A materials patent is planned for 2006*	*Beneficiary X (owner) Beneficiary Y, Beneficiary Z, Poss. licensing to equipment manuf. ABC*

8 ANNEX II: LETTER TO IAB MEMBERS

Grant Agreement N°: 317762

IAB Invitation Letter Date

Address

Place & date

Dear……

Up to now, fixed and mobile access networks have been optimised and evolved independently, with partly contradicting trends. In the next decade, an exponential growth of data traffic in both networks is still expected.

COMBO (Convergence of fixed and Mobile BrOadband access/aggregation networks), an FP7 European Funded Research Project, has started its activities on January 1st 2013. This project will target a unified access and aggregation network architecture allowing fixed and mobile networks to converge (Fixed / Mobile Convergence, FMC). This convergence of fixed and mobile networks will be driven by the requirement to combine an optimal and seamless quality of experience for the end user together with an optimised network infrastructure ensuring both reduced cost and reduced energy consumption.

To guarantee maximum proximity to market needs, in addition to involved industrial Partners (DEUTSCHE TELEKOM, TELEFONICA, FRANCE TELECOM, TÜRK TELEKOM, ALCATEL-LUCENT, ERICSSON, FON, ADVA OPTICAL NETWORKING), the Consortium has created an Industry Advisory Board (IAB), whom main role consists in monitoring the industrial impact of the project.

The IAB will consist of representatives of industrial companies, end users and large stakeholders who will be consulted on the requirements selected and the choices made by the project. The purpose of this board is to gather views and directions from main stakeholders. In addition to written exchanges, one annual meeting is foreseen during which progress made by the project will be exposed and advices collected.

We are pleased to invite XXXXXX to join our **COMBO** IAB. We stay at your disposal to answer any question you might have before taking your decision.

Be ensured your participation is foreseen as a great added value that will reinforce the project impact. We would be very honored by your positive answer.

Yours Sincerely….