E3Network

Energy Efficient E-band transceiver for backhaul of the future networks

DELIVERABLE **D6.5.3**

Report on Dissemination Effort 3

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1	08/04/2016	CEIT	Draft version
2	03/06/2015	CEIT, FHG, ALU, CEA, SIVERS IMA	All Sections
3	06/06/2016	FHG, ST, OTE	Section 2.2.1 and Section 2.2.2

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LIST OF ANNEXES

EXECUTIVE SUMMARY

This deliverable summarizes the dissemination effort done by the E3Network consortium during the period. During the first period, the consortium focused their effort on raising awareness of the project objectives among the general public. Different articles were published in the popular press and technical magazines with this aim. During the second and third period, the E3Network consortium has endeavoured to promote the technical achievements of E3Network within the technical and scientific community. Thus, the results of·E3Network have been presented in different conferences around Europe and published in scientific journals.

1. INTRODUCTION

Within the dissemination plan of E3Network described in [1], two major steps were defined in order to fulfil the Communication and dissemination objectives of the project:

1. To raise awareness with the largest pool of potential end-users.
2. To promote and deepen the understanding of the E3Network project.

The current document describes the dissemination activities that the consortium has performed during the first and second period of the project. Thus, this document is an update to deliverable D6.5.1 and D6.5.2, which summarized the dissemination effort done within the first period and second period, respectively. In the different tables of the current document, the activities of the first and second period are shown in gray; whereas the ones performed in the third period are shown in black.

Within deliverable D6.5.3, the dissemination activities have been classified as activities that raise awareness or activities that aim to deepen the understanding of the project. For all the activities performed, the type of audience of each dissemination activity has been related to the target group of our dissemination plan as follows:

1. **"End-users"**

   The main target group of E3Network consists of the **operators (end-users)** that will buy the point-to-point link that will be built in the project.

2. **"Scientific"**

   The **Technical and Scientific Community** is also interested in the innovations in the design of the physical layer of a transceiver (digital signal processing algorithms, RF design, mixed signal methods, etc.).

3. **"Standardization bodies"**

   E3Network aims to raise awareness of the results of the project among the relevant **Standardization bodies**.

4. **"General Public"**

   On the one hand, we will consider the potential users of the Future Networks (**customers of the operators**). On the other hand, E3Network will also target the **general public** interested in ICT technologies.

2. PERFORMED DISSEMINATION ACTIVITIES

2.1 Communication and dissemination for awareness

2.1.1. Raising awareness through the project website and other web 2.0 communication tools

The E3Network website (http://www.ict-e3network.eu) was set up at the beginning of the project. This website has been maintained during the whole project to report project activities, progress and achievements. The main objective of this web-site is to raise awareness of the project results with the largest pool of public. The web-site raises awareness among our end-users, among the scientific community, among standardization bodies and also among the general public.

All news related to the project are published in the web page, in Twitter (@ICT_E3Network) and by means of RSS or Really Simple Syndication (http://www.ict-e3network.eu/rss.xml). A copy of all the news published in the web-site during the first and second period can be found in the Annex A.1 and Annex A.2. Annex A.3 presents a copy of all the news published in the web-site during the third period.

Additionally, the abstracts of conference papers and journal articles are also posted in the web-site. A private area has been established to store all confidential documents of the consortium. This private website is also useful to track the development of the project and coordinate all the tasks done within the project.

Google Analytics and Google's tools for webmasters have been employed to analyse the RSS feeds and public web page use. The Google Analytics feasibility was set up at the beginning of the project. Figure 1 shows the number of different visitors the web page has received throughout the third period.

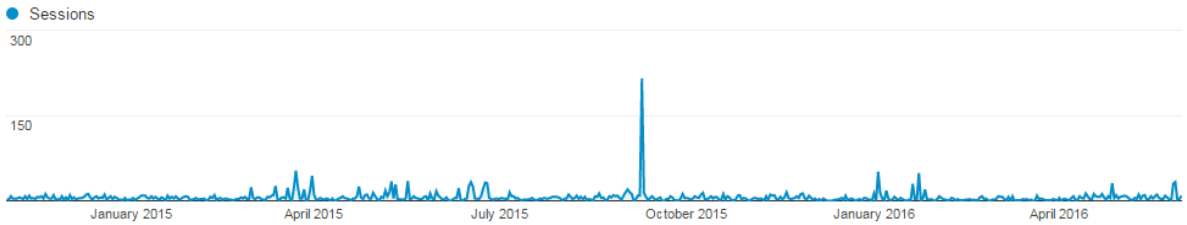

Figure 1. Number of visitors received in the web page in this period

The absolute number of different visitors during this last period has been 2.835. However, we have had returning visitors, so that the total amount of visits has been of 3.532.

During the third period, 7.679 pages have been visited, with an average of around 2,17 pages per visit. Moreover, nearly 20% of the visitors have been returning visitors, which may imply that users that visited once the project web-site were interested in learning how the project was evolving and returned in a different time.

Figure 2 shows where the visitors are from. We can observe that, during the analysed period, we received visits from 116 countries, thus, compared with the second period, we have received visitors from 47 new countries. From this figure, we can conclude that the project site has been able to reach to a significant number of countries around the world.(116 out of 194) Among the visitors, 8.33% were internet home users (target group: "General Public"), 14.29% were research institutes or universities (target group: "Scientific Community") and 77.38% came from industry. Among all the visitors that came from industry, around 23% were operators (our target group "End-users").

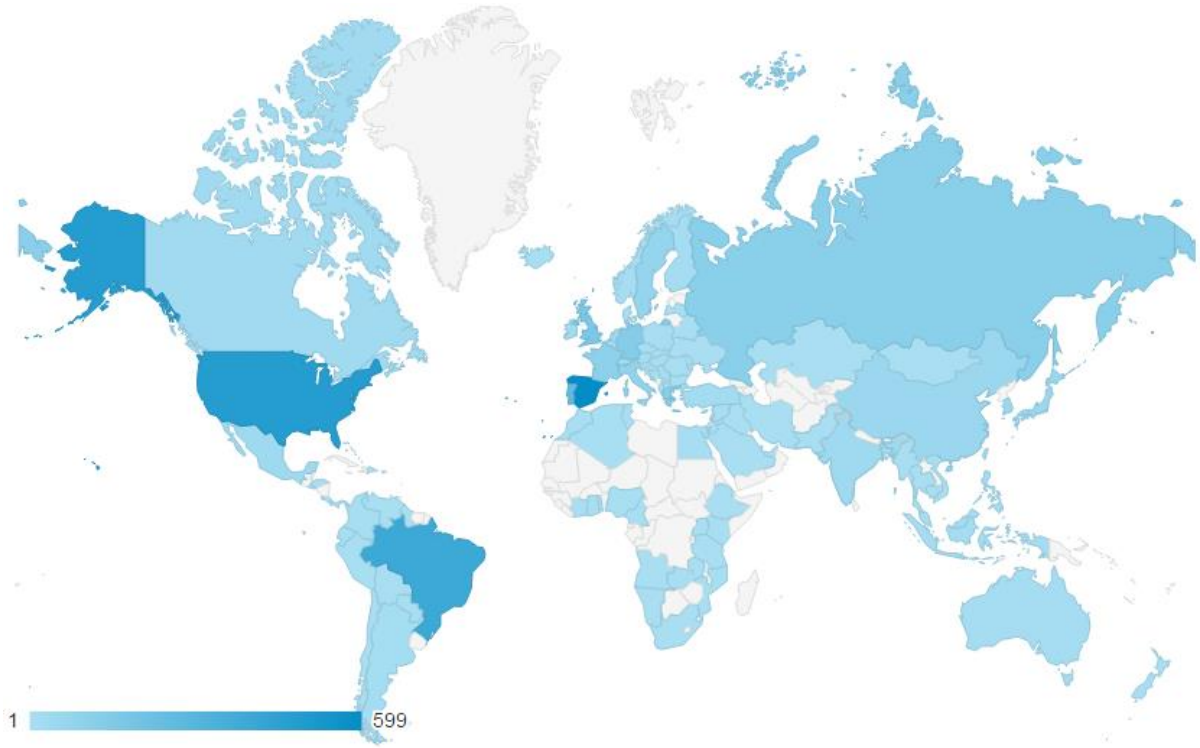

Figure 2. Distribution of the web page visitors throughout the World.

Table 1 shows the web sites that describe the E3Network project and present results of our project. The dissemination effort done within the third period is shown in bold in the table. Besides the E3Network official website, some partners of the consortium describe the main objectives of the project in their own website.

Table 1. E3Network in the internet

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Web	CEIT	E3Network web site http://ict-e3network.eu	Dic. 2012	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world
2.	Web	INCIDE	http://www.incide-semi.com/	Jan. 2013	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
3.	Web	ALU-I	http://www.alcatel-lucent.it/	May. 2013	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world
4.	Web	CEIT	http://www.ceit.es/en/areas-of-r-a-d/electronics-and-communications/integrated-circuits-ic-design-a-antennas/e3network-energy-efficient-e-band-transceiver-for-the-backhaul-of-future-networks	Feb. 2013	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world
5.	Web	Sivers IMA	http://www.siversima.com/page/2/	Nov. 2013	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world
6.	Web	SiR	http://www.siliconradar.de/projects_4_e.html	Mar 2014	Internet	End-users, Scientific, Standardization bodies, General Public	-	Whole world
7.	**Web**	**ST**	**http://www.st.com/web/en/press/it/t3685**	**July 2015**	**Internet**	**End-users, Scientific, Standardization bodies, General Public**	**-**	**Whole world**

2.1.2. Raising awareness through the media

The E3Network project also advertises our results through the media (newspapers etc). The main goal of these dissemination activities is to communicate the project's results to the general public and the customers of the operators. The general public will be the main beneficiary of the fast broadband access to the Internet that E3Network will allow. Thus, special effort has been done to explain clearly the potential impact of the project in the media. Table 2 shows the pieces of news that have been published in the media during the project. The dissemination effort done within the third period is highlighted in bold in the table. Some of these news have been published in technical magazines or newsletters whose target group is the technical and scientific community. A copy of all the articles

published during the first and second period can be found in the Annex A.1 and Annex A.2. Those articles published during the third period have been compiled in the Annex A.3.

Moreover, the project has prepared a factsheet that summarizes the main objectives and activities of E3Network. This factsheet is also provided in the Annex A.1 to deliverable D6.5.3.

During this period, an advertisement article related to the E3Network project and its objectives have been published on the ST's external and internal web sites and on the international magazines specialized on semiconductor and telecommunication applicative sectors.

Table 2. E3Network in the media

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Press Releases	CEIT	The E3Network European project, led by CEIT-IK4 begins its activity.	December 2012	Published in English	General Public	-	EU countries
2.	Articles published in the popular press	CEIT	Ingenieros de CEIT lideran el desarrollo de la nueva red de Internet para la UE	December 2012	Newspaper Expansion (Published in Spanish)	General public	179.000	Spain (and other Spanish-speaking countries)
3.	Articles published in the popular press	CEIT	Ingenieros de CEIT lideran el desarrollo de la nueva red de Internet para la UE	December 2012	Newspaper Europapress (Published in Spanish)	General public		Spain (and other Spanish-speaking countries)
4.	Articles published in the popular press	CEIT	Ingenieros del Ceit lideran el desarrollo de la Red promovida por la UE	December 2012	Newspaper Noticias de Gipuzkoa (Published in Spanish)	General public	9.035	Spain
5.	Articles published in the website of popular TV	CEIT	Ingenieros de CEIT lideran el desarrollo de la nueva red de Internet para la UE	December 2012	Webpage of Telecinco TV (Published in Spanish)	General public		Spain (and other Spanish-speaking countries)
6.	Articles published in the popular press	CEIT	CEIT-Ik4 participará en el diseño del «internet del futuro»	December 2012	Newspaper Diario Vasco (Published in Spanish)	General public	450.000	Spain

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
7.	Video	CEIT	A new dimension in mobile telecommunications	December 2012	Youtoube Ceit website	General public, Scientific		World-wide
8.	Articles published in the popular press	CEIT	Ingenieros de CEIT lideran el desarrollo de la nueva red de Internet para la UE	December 2012	yahoo (Published in Spanish)	General public		Spain (and other Spanish-speaking countries))
9.	Articles published in the popular press	CEIT	Ingenieros de CEIT lideran el desarrollo de la nueva red de Internet para la UE	December 2012	Structuralia (Published in Spanish)	Scientific		Spain (and other Spanish-speaking countries)
10.	Articles published in the popular press	CEIT	A new dimension in mobile telecommunications	January 2013	Basque Research Newsletter (Published in Spanish & English)	Scientific	10.000	Spain (worldwide)
11.	Articles published in Cordis	CEIT	A new dimension in mobile telecommunications	January 2013	Published in Cordis	Scientific		EU-27
12.	Articles published in the popular press	CEIT	Una nueva dimesión de las telecomunicaciones en el móvil	January 2013	Dyna Magazine, Industrial Engineering (Published in Spanish)	Scientific		Spain
13.	Factsheet	CEIT	Energy Efficient E-band Transceiver for the Backhaul of Future Networks	February 2013	Web-page/ conferences where CEIT has assisted	Scientific	-	Whole world (particulary Europe)

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
14.	Press Release	OTE	OTE Participates to the E3Network research project.	February 2014	**https://www.ote.gr/documents/10280/43608705/100214_E3Network_en.doc/b58dc9c3-abed-4cee-81da-cf296ee789f9 (Published in Greek & English)**	Scientific	-	World-wide
15.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	MobileNews (published in Greek)	General public, Scientific	-	Greece
16.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Sofokleous 10 (published in Greek)	General public, Scientific	-	Greece
17.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	EURO2DAY (published in Greek)	General public, Scientific	-	Greece
18.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Sportandbusiness.gr (published in Greek)	General public, Scientific	-	Greece
19.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Capital.gr (published in Greek)	General public, Scientific	-	Greece
20.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	FMVOICE.GR (published in Greek)	General public, Scientific	-	Greece

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
21.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	moneypost.gr (published in Greek)	General public, Scientific	-	Greece
22.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	NewsApsou.gr (published in Greek)	General public, Scientific	-	Greece
23.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	ΗΝΑΥΤΕΜΠΟΡΙΚΗ (published in Greek)	General public, Scientific	-	Greece
24.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Banking News gr(published in Greek)	General public, Scientific	-	Greece
25.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Capital.gr (published in Greek)	General public, Scientific	-	Greece
26.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	dealnews.gr (published in Greek)	General public, Scientific	-	Greece
27.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	weather.gr (published in Greek)	General public, Scientific	-	Greece
28.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Acrobase (published in Greek)	General public, Scientific	-	Greece
29.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Radar.gr (published in Greek)	General public, Scientific	-	Greece

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
30.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	techpress.gr (published in Greek)	General public, Scientific	-	Greece
31.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Newsbeast.gr (published in Greek)	General public, Scientific	-	Greece
32.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	grafida.net (published in Greek)	General public, Scientific	-	Greece
33.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Palo (published in Greek)	General public, Scientific	-	Greece
34.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Η Άποψη (published in Greek)	General public, Scientific	-	Greece
35.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	fmvoice.eu (published in Greek)	General public, Scientific	-	Greece
36.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Matrix24 (published in Greek)	General public, Scientific	-	Greece
37.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Rss feeds του mykosmos.gr (published in Greek)	General public, Scientific	-	Greece
38.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	telecomsnews.gr (published in Greek)	General public, Scientific	-	Greece

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
39.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Fortunegreece.com (published in Greek)	General public, Scientific	-	Greece
40.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Digital TV Info (published in Greek)	General public, Scientific	-	Greece
41.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	evrytanika.gr (published in Greek)	General public, Scientific	-	Greece
42.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	ipaideia.gr (published in Greek)	General public, Scientific	-	Greece
43.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Greekinformatics.gr (published in Greek)	General public, Scientific	-	Greece
44.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	ADSLgr Online Community (published in Greek)	General public, Scientific	-	Greece
45.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	ToXrima.gr (published in Greek)	General public, Scientific	-	Greece
46.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	EMEA Business Monitor (published in Greek)	General public, Scientific	-	Greece
47.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	ICTplus (published in Greek)	General public, Scientific	-	Greece

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
48.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	InsuranceDaily (published in Greek)	General public, Scientific	-	Greece
49.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	i-TECH4U (published in Greek)	General public, Scientific	-	Greece
50.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	newpost.gr (published in Greek)	General public, Scientific	-	Greece
51.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	Ειδήσεις με μια ματιά, Νέα από την Ελλάδα και τον κόσμο (publishedin Greek)	General public, Scientific	-	Greece
52.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	myPhoneForum (published in Greek)	General public, Scientific	-	Greece
53.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	biztech.gr (published in Greek)	General public, Scientific	-	Greece
54.	Announce-ment in electronic media	OTE	OTE Participates to the E3Network research project.	February 2014	telecompaper.com (published in English)	General public, Scientific	-	World-wide
55.	**Announce-ment in electronic media**	**ST**	**Advanced Semiconductor Technology from STMicroelectronics Underlies Tomorrow's Mobile Network Infrastructures**	**July 2015**	**globenewswire.com (published in English)**	**General public Scientific**	**-**	**World-wide**

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
56.	Announce-ment in electronic media	ST	Une nouvelle technologie microélectronique de pointe développée par STMicroelectronics supporte les infrastructures des réseaux mobiles de demain	July 2015	www.st.com (published in French)	General public Scientific	-	World-wide
57.	Announce-ment in electronic media	ST	意法半导体（ST）的先进半导体技术为未来移动网络基础设施奠定重要基础	July 2015	www.st.com (Japaness version)	General public Scientific	-	World-wide
58.	Announce-ment in electronic media	ST	Semiconductor technology has laid an important foundation for the future mobile	August 2012	www.raypcb.com (published in English)	General public Scientific	-	World-wide
59.	Announce-ment in electronic media	ST	The European Project E3Network 意法半导体为未来行动网络基础设施奠定根基	September 2015	gb-www.digitimes.com.tw (published in Japanish)	General public Scientific	-	World-wide

2.1.3. Promoting the technical achievements of E3Network in conferences

As explained in the dissemination plan (D6.2), one of the most important dissemination parts is the scientific dissemination. This is achieved through scientific and technical presentations to international conferences and workshops. During these events, E3Network partners have presented the ongoing research on ICT that will be integrated with the E3Network transceiver. Table 3 presents a summary of the conferences and workshops where the work done in E3Network has been presented. The dissemination effort done within the third period is highlighted in bold in the table. A copy of the articles presented in these conferences during the first and second period can be found in the Annex A.1 and Annex A.2, respectively. Annex A.3 compiles the articles presented in conferences during the third period.

Table 3. Conference papers published within E3Network

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Conference poster	CEIT	Future Network and Mobile Summit 2013 "On the Design of an E-band Link for the Backhaul of Future Networks"	3-5 July 2013	Lisbon, Portugal	Scientific, end-users	~100	EU-27
2.	Conference presentation	OTE	1st Workshop on Innovative European Policies and Applied Measures for Developing Smart Cities (IPMSC 2013) in the scope of the 14th EANN (Engineering Applications of Neural Networks) International Conference (EANN-2013) "Energy Efficient E-band Transceiver for Future Networking"	13-16 September 2013	Chalkidiki, Greece	Scientific, end-users, General Public	~40-50	World-Wide
3.	Conference presentation	OTE	5th Pan-Hellenic Conference on Protypation, Standards and Quality, which was organized by (ENEPROT). "Energy Efficient E-band transceiver".	21-22 February 2014.	Thessaloniki Greece	Scientific, Business	~100	Greece
4.	Conference presentation	CEIT	European Wireless 2014. "Impact of AC Coupling on Zero-IF Architectures for Wide-Band Milimeter-Wave Gigabit Transmitters".	14-16 May 2014	Barcelona Spain	Scientific	~200	World-Wide

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
5.	Conference presentation	CEIT, FHG	International Conference on Wireless and Mobile Communications (ICWMC 2014). "Non-frequency-selective IQ Imbalance in Zero-IF Transceivers for Wide-Band mmW Links". Best Paper Award	22-26 June, 2014	Seville Spain	Scientific	~300	World-Wide
6.	Conference Presentation	CEIT	PRIME 2014: 10th Conference on Ph.D. Research in Microelectronics and Electronics. "66-87 GHz Power Amplifier with 20dBm 1-dB compression point and 35% peak PAE in a 55nm SiGe technology".	30 June – 3 July, 2014.	Grenoble (France)	Scientific	~150	World-Wide
7.	**Conference Presentation**	**CEIT**	**Conference on Design of Circuits and Integrated Systems, "Parallel Implementation of a Sample Rate Conversion and Pulse-Shaping Filter for High Speed Backhauling Networks".**	**26-28 Nov, 2014.**	**Madrid (Spain)**	**Scientific**	**~300**	**World-Wide**

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
8.	Conference Presentation	CEIT	Global Symposium on Millimeter-waves 2015. "68-73 GHz Common-Base HBT Amplifier in 55 nm SiGe Technology"	25-27 May 2015	Montreal, Quebec (Canada)	Scientific	>250	World-Wide
9.	Conference Presentation	CEA	XIXèmes Journées Nationales Microondes. "Synthèse de fréquence millimétrique très faible bruit de phase basée sur une multiplication de fréquence par 30 en BiCMOS 55nm"	3-4-5 June 2015	Bordeaux (France)	Scientific	600	France
10.	Conference Presentation	CEIT	19th International Conference on Circuits, Systems, Communications and Computers, (CSCC 2015). "Frequency-selective IQ Imbalance Compensation in Zero-Second-IF Transmitters for Wide-Band mmW Links"	16-20 July 2015	Zakynthos Island, (Greece)	Scientific	>250	World-Wide

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
11.	Conference Presentation	CEA	ESSCIRC 2015 41th European Solid-State Circuits Conference. "A 45GHz/55GHz LO frequency selector for E-band transceivers based on switchable injection locked-oscillators in BiCMOS 55nm"	14-18 Sept 2015	Graz (Austria)	Scientific	600	World-Wide
12.	Conference Presentation	CEIT	IEEE International Conference on Ubiquitous Wireless Broadband – ICUWB "A Wideband Millimeter-Wave Up-Conversion Mixer for Future Backhaul E-Band Point-To-Point Links with a 0dBm 1-dB Compression Point"	4-7 Oct 2015	Montreal-Quebec (Canada)	Scientific	>250	World-Wide

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
13.	Conference Presentation	CEIT	XXX Conference on Design of Circuits and Integrated Systems. "Frequency-selective IQ Imbalance Compensation in Zero-Second-IF Transmitters for Wide-Band mmW Links"	25-27 Nov 2015	Estoril (Portugal)	Scientific	>250	World-Wide

2.2 Communication and dissemination for understanding E3Network

2.2.1. Dissemination for understanding of E3Network

Table 4 provides a summary of the dissemination effort done within Exhibitions and Conferences in order to promote the understanding of E3Network by one of our main target groups: the technical and scientific community. During the third period, the following activities were carried out:

- CEIT went to the "Avnet MEMEC Techday- Internet Of Thing for Smart Cities" to present E3Network to the people that attended this exhibition.
- Mario Frecassetti from ALU-I presented the trends in Microwave Backhaul evolution in a plenary session of the Conference on Design of Circuits and Integrated Systems 2013, which was held in San Sebastian (Spain) the 28th November 2013.
- Laurent Dussopt (from CEA-LETI, representing MiWaveS) and Igone Velez (from CEIT, representing E3Network) gave an speech about "Millimetre wave small-cell access and backhauling for 5G" in the Future Internet Assembly 2014, which was held in Athens (Greece).
- Laurent Dussopt (CEA-LETI) spoke about "Advanced mmW technologies" during the EU-Taiwan Workshop on 5G Research, where he explained part of the work done within E3Network and MiWaves.
- IXYS San Sebastian attended the Electronica 2014 in Munich, Germany. This is one of the most important electronics exhibitions in the world. During this exhibition, IXYS San Sebastian has taken the opportunity to show the work in progress to potential customers who might be interested in high speed converters, and in particular in the use of FMC expansion boards to be directly

used with FPGA boards. A short overview of E3Network project was given as well, to see if those companies might find an interest in some other building blocks or algorithms being developed.

- M. Leyh (FHG) talked about “Millimeter-Wave Gigabit Wireless Backhaul” in the RAN World in Dusseldorf (20- 21 January 2015). RAN World was sponsored by the main operators in Europe and aimed to share real knowledge about how operators are tackling the challenges of today and preparing for the future. This conference has been a good opportunity for E3Network to disseminate its results and to interact with the main stakeholders in the field.
- OTE has participated in a Meeting organized by the Hellenic Branch of FITCE (Federation of Telecommunications Engineers of the European Community) in cooperation with the Pan-Hellenic Union of Mechanical and Electrical Engineers, the Union of Greek Physicists and the Technical Chamber of Greece. The Meeting took place on May 11th 2015 and was focused on ‘the Contribution of ICT to the Environment, Energy Saving, Industry and Public Administration”. The concept and expected impact of E3Network was presented in the Meeting and discussed through an interactive approach between representatives of the academic community but also executives from the market sector.
- Igone Velez (CEIT) together with Laurent Dussopt (CEA) have given a joint presentation of E3Network and MiWaves in the European Conference on Networks and Communications 2015, which was held in Paris in June.
- During the Workshop on Millimetre waves organized by ITU-R Working Party 5C in Bucharest (6-15 July 2015), Mario Frecassetti (ALU) has given a presentation on “Eband and V-band - survey on status of worldwide regulation”. E3Network was presented as an example of the interest of equipment manufacturer in using this band for multigigabit interconnections.
- The scope of the E3Network project has been presented by FHG throughout the 5G Lab Germany – Academic Interaction Day workshop, Dresden, 25 September 2015.
- CEIT has presented a demonstrator of E3Network in Lisbon ICT2015 (20-22 October 2015). This event was a good opportunity to disseminate the project ideas to professionals from the industry, academia and research and promote interaction with users and stakeholders.
- CEIT has participated in the “Millimetre-wave Technology for High-speed Broadband Wireless Networks” workshop in Valencia (Spain). Igone Velez presented the results achieved in E3Network. This event was a good opportunity to interact with other consortia working on millimeter Wave technologies and with potential users of the E3Network system.

Table 4. Presentations and Exhibitions of E3Network for understanding E3Network

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Conference / Exhibition	FHG, CEIT	European Microwave Week which is the largest RF/Microwave event in Europe.	9 Oct. 2013	Nuremberg, Germany	Scientific	EU wide	EU-27
2.	Conference / Exhibition	SiR	European Microwave Week which is the largest RF/Microwave event in Europe.	8-10 Oct. 2013	Nuremberg, Germany	Scientific	EU wide	EU-27
3.	Exhibition	CEIT	Avnet MEMEC Techday- Internet Of Thing for Smart Cities	26 Nov. 2013	Barcelona (Spain)	Scientific	~50	EU-27
4.	Conference plenary session	ALU-I	Conference on Design of Circuits and Integrated Systems 2013 "Trends in Microwave Backhaul evolution"	28-11-2013	San Sebastian (Spain)	Scientific	~200	World-wide
5.	Conference presentation	CEIT CEA-LETI	Join presentation of E3Network and MiWaveS in the Future Internet Assembly 2014	18-22 Mar. 2014	Athens (Greece)	Scientific	~50	EU-27
6.	Workshop presentation	CEA	EU-Taiwan Workshop on 5G Research "Advanced mmW technologies"	24 Oct, 2014	Brussels (Belgium)	Scientific, end-users	~15	EU-27, Taiwan
7.	**Exhibition**	**IXYS**	**Electronica 2014**	**11-14 Nov. 2014**	**Munich (Germany)**	**Scientific, end-users**	**>70,000**	**World-wide**
8.	**Conference Presentation**	**FHG**	**RAN World Conference**	**20-21 Jan. 2015**	**Dusseldorf (Germany)**	**Scientific, end-users**	**~30**	**World-wide**

No	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
9.	Workshop Presentation	OTE	Hellenic Branch of FITCE Meeting about the Contribution of ICT to the Environment, Energy Saving, Industry and Public Administration	11th May 2015	Athens (Greece)	Scientific, end-users	~100	Greece
10.	Conference Presentation	CEIT	European Conference on Networks and Communications	27-30 June 2015	Paris (France)	Scientific, end-users	~30	EU-27
11.	Workshop Presentation	ALU	ITU-R workshop on mmWaves	6 July 2015	Bucharest (Romania)	Scientific	>250	World-Wide
12.	Workshop Presentation	FHG	5G Lab Germany – Academic Interaction Day workshop	25 Sep. 2015	Dresden (Germany)	Scientific	~100	World-Wide
13.	Exhibition	CEIT	ICT 2015 Exhibition	20-22 October 2015	Brussels	Scientific, end-users	~6000	EU-27
14.	Workshop presentation	CEIT	Millimetre-wave Technology for High-speed Broadband Wireless Networks.	20 Nov 2015	Valencia (Spain)	Scientific, end-users	~30	EU-27

Table 5 presents the workshops that have been organized by the partners of the consortium:

Table 5. Workshops organized for understanding E3Network

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Workshop	CEA-LETI	Layout design techniques and physical verification flow (DRC, LVS and Extraction for post-layout simulation) using the BiCMOS55 process and PDK	June 2013	Grenoble (France)	Scientific	<10	ALL countries in the consortium
2.	Workshop	OTE	1st Workshop on Innovative European Policies and Applied Measures for Developing Smart Cities (IPMSC 2013) in the scope of the 14th EANN (Engineering Applications of Neural Networks) International Conference (EANN-2013)	13-16 Sept. 2013	Chalkidiki Greece	Scientific, end-users, general public	Medium (~40-50 participants in the session)	World-Wide
3.	Workshop	ALU-I	Workshop on ALU WT portfolio and future evolution	From April 2013	Vimercate and customers premises	End-Users	ALU-WW Customers	World-Wide
4.	**Workshop**	**Sivers IMA**	**Characterization of the developed mm-wave TX & RX front ends together with the digital modulator and DAC**	**13-15 Jan 2016**	**Kista (Sweden)**	**Scientific**	**4**	**Sweden, Spain**

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
5.	**Workshop**	**Sivers IMA**	**Integration of the developed mm-wave TX/RX front ends, digital modulation and demodulation, analogue-digital converters as well as their interconnection with the network equipment.**	**16-19 Febr, 2016**	**Kista (Sweden)**	**Scientific**	**7**	**Sweden, Italy, Spain, Germany**
6.	**Workshop**	**CEIT**	**Integration of the digital baseband TX/RX, analogue-digital converters and the developed mm-wave front ends.**	**12-13 April 2016**	**San Sebastian, Spain**	**Scientific**	**6**	**Spain, Germany**
7.	**Workshop**	**OTE**	**Demo of the E3Network prototype**	**21st - 22nd June 2016**	**Athens, Greece**	**Scientific, end-users**	**~10**	**Spain, Germany, Italy, Greece**

2.2.2. Interaction with standardization bodies

The information about the interaction of the project with the relevant Standarization bodies is described in deliverable D6.4.3. As we can see in this deliverable, Mario Frecassetti (ALU) has disseminated the objectives and results of E3Network in the ETSI ISG millimetre wave transmission group meeting, ETSI TM4 meeting and WGSE19 meeting. A lot of stockholders present during these meetings are now aware of E3Network idea and preliminary results. Moreover, ALU has released a ETSI whitepaper where E3Network is quoted. This document is available on ETSI website. A copy of this whitepaper has been included in Annex A.3.

Finally, a contribution to a white paper on mm-wave semiconductor industry technology status and evolution and describing the main preliminary results from E3NETWORK is being prepared by ST. This white paper will be published by ETSI mWT ISG.

Table 6. White papers written in ETSI

No.	Type of activities	Main leader in E3Network	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	White paper	ALU	"E-Band and V-Band - Survey on status of worldwide regulation"	Jun. 2015	ETSI	Scientific, end-user	>1000	EU-27
2.	White paper	ST	"mm-wave semiconductor industry technology status and evolution"	Jan 2016 (Draft released for approval)	ETSI	Scientific, end-user	>1000	EU-27

2.2.3. Interaction with other EU projects

A good way to improve the project development is gathering information of other projects related to Future Network. Therefore, the E3Network Consortium has actively participated in the activities organised at programme level relating to the ICT Future Networks area. The consortium participates in the RAS cluster meetings and the Future Networks Concertation Meetings (now called Net-Tech Future Coordination Meetings). In the following table, we provide a summary of the meetings to which E3Network has assisted.

Table 7. Clustering meetings

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
3.	Clustering meeting	CEIT	RAS Cluster Meeting	10th October 2012	Brussels (Belgium)	Scientific	>20	EU-27
4.	Clustering meeting	CEIT	Future Networks 10th FP7 Concertation Meeting	11th October 2012	Brussels (Belgium)	Scientific	>20	EU-27
5.	Clustering meeting	CEIT	RAS Cluster Meeting	27 February 2013	Brussels (Belgium)	Scientific	>20	EU-27
6.	Clustering meeting	CEIT	Future Networks 11th FP7 Concertation Meeting	28 February 2013	Brussels (Belgium)	Scientific	>20	EU-27

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
7.	Clustering meeting	CEIT	RAS Cluster Meeting	22 October 2013	Brussels (Belgium)	Scientific	>20	EU-27
8.	Clustering meeting	CEIT	Future Networks 12th FP7 Concertation Meeting	23 October 2013	Brussels (Belgium)	Scientific	>20	EU-27
9.	Clustering meeting	CEIT	Future Internet Assembly 2014	18-20 March 2014	Athens (Greece)	Scientific	>200	EU-27
10	Clustering meeting	CEIT	Net-Tech Future Coordination Meetings	23-24 October 2014	Brussels (Belgium)	Scientific	>20	EU-27
11	**Clustering meeting**	**CEIT**	**Net Future 2015 Conference**	**25-26 March**	**Brussels (Belgium)**	**Scientific**	**>20**	**EU-27**
12	**Clustering Meeting**	**CEIT**	**FP7 & H2020 Network Technologies Concertation Day**	**1st March 2016**	**Brussels (Belgium)**	**Scientific**	**>20**	**EU-27**

As part of the RAS cluster, the consortium participated in the preparation of the white paper on the European view of High capacity PHY for future radio access-5G. This white paper will present the main challenges in the design of the E-band backhaul link to be used in the future radio access.

Table 8. White papers written in collaboration with other EU Projects

No.	Type of activities	Main leader in E3Network	Title	Date	Place	Type of audience	Size of audience	Countries addressed
13	White paper	CEIT	White Paper on the European view on High capacity PHY for future radio access and 5G	Aug. 2013	Internet	Scientific	>100	EU-27

Finally, the results of the E3Network project are related with the goals of the MiWaveS FP7 project. In this project, mmW radio links are proposed for small cell networks. 60 GHz band is proposed for the access link between the users and the small cell access point, whereas both (or either) 60 GHz and E band are proposed for the back-haul link between the access points of the small cell. The distances that are considered in MiWaves project for those links are smaller than those addressed in E3Network, but the developments of both project may share some common activities. Three partners of E3Networks project, CEA, ST-I and Sivers-IMA are participating in the MiWaves project. CEA-Leti coordinates the MiWaveS project and participates in the 60 GHz access links radio design and antennas design activities in MiWaveS. ST-I as well as Sivers IMA participates in the back-haul link in MiWaves project.

Additionally, there is some relationship between the MiWEBA project and E3Network. CEA is participating in both project and has been the link between both project. The MiWEBA project addresses the network and protocol issues of integrating mmW radios and links on cellular networks. Its relation with E3Network project is less strong, but it may provide interesting feed-back concerning the requirements of data traffic and protocol requirements from the higher layers of the link to the lower layers considered in E3Network project.

As an example of the collaboration among MiWaveS and E3Network during this period, it can be pointed out that, as explained before, the project coordinators of both projects gave a joint speech about “Millimetre wave small-cell access and backhauling for 5G” in the European Conference on Networks and Communications 2015, which was held in Paris in June 2015. During the Workshop on Millimeter waves organized by ITU-R Working Party 5C in Bucharest (6-15 July 2015), Mario Frecassetti (ALU) gave a presentation on “Eband and V-band - survey on status of worldwide regulation”. In this presentation, he talked about E3Network and other two FP7 projects (MiWaves and IPHOBAC).

Finally, CEIT has presented the results achieved in E3Network in the “millimetre-wave Technology for High-speed Broadband Wireless Networks” workshop in Valencia, where the most significant European projects working in the millimetre wave technologies were represented. This event was a good opportunity to interact with other consortia working on millimeter Wave technologies and with potential users of the E3Network system.

2.2.4. Final year projects, Master Thesis and PhD Thesis

The consortium has carried out final year projects, master thesis and PhD Thesis related to research and development tasks of E3Network. Table 9 provides some information about the final year projects and PhD Thesis that have been carried out or are being carried out within the project.

Table 9. Final Year Projects, Master Thesis and PhD Thesis

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1.	Final Year Project	CEIT	Design of tunable inductors for self-healing actuation systems integrated in mm-wave power amplifiers	11/07/2013	San Sebastian, Spain	Scientific	20	Spain

No.	Type of activities	Main leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
2.	Final Year Project	CEIT	Design of a High Performance modem for Future Mobile Communication Systems	19/07/2013	San Sebastian, Spain	Scientific	20	Spain
3.	Ph.D. Thesis	CEA-Leti	Conception et etude d'une synthèse de fréquence innovante en technologies CMOS avancées pour les applications en bande de fréquence millimétrique	16/09/2014	Phelma, Grenoble, France	Scientific	40	France, Italy
4.	**Final Year Project**	**CEIT**	***Development of a control application for a Future Mobile Communication System***	**09/2015**	**San Sebastian, Spain**	**Scientific**	**20**	**Spain**
5.	**Ph.D. Thesis**	**CEIT**	***Design and implementation of a transmitter for millimetre wave applications in a low-cost technology***	**Expected date: Sep. 2017**	**San Sebastian, Spain**	**Scientific**	**20**	**Spain**
6.	**Ph.D. Thesis**	**CEIT**	***Design and implementation of digital signal processing based calibration of analog front-end imperfections for wide-band millimeter-wave Links***	**Expected date: Sep. 2017**	**San Sebastian, Spain**	**Scientific**	**20**	**Spain**

2.2.5. Articles in journals and magazines

Table 10 shows the article in scientific journals published and submitted by the consortium during the project. A copy of these articles can be found in the Annex A.3. Additionally, the consortium has other 2 manuscripts under preparation to be submitted to scientific journals.

Table 10. Articles in journals and magazines within E3Network (both published and submitted)

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 access provided to this publications?
1.	Layout-Aware Design Methodology for a 75 GHz Power Amplifier in a 55nm SiGe Technology	CEIT	Integration, the VLSI Journal	Volume 52	Elsevier	Word-wide	2016	208-216	doi:10.1016/j.vlsi.2015.07.010	NO
2.	IQ Imbalance in Heterodyne Transceivers with zero-second-IF for Wide-Band mmW Links	CEIT	"International Journal on Advances in Telecommunications"	vol 8, no 1&2	IARIA Journals	Word-wide	2015	25-34	ISSN: 1942-2601	YES
3.	Frequency-Selective IQ Imbalance in Zero-Second-IF Transceivers for Wide-Band mmW Links	CEIT	International Journal of Communications, Volume 5, 2015, Pages: 98-104	Vol 9	North Atlantic University Union	Word-wide	2015	98-104	ISSN: 1998-4480	YES

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 access provided to this publications?
4.	"A Wideband and High-Linearity E-Band Transmitter Integrated in a 55 nm SiGe Technology for Backhaul Point-to-Point 10 Gbps Links"	CEIT	IEEE Transactions on Microwave Theory and Techniques		IEEE	Word-wide	Submitted in 2016			
5.	"A 15-21 GHz I/Q Upconverter with an On-Chip Linearization Circuit for 10 Gbps mmW Links"	CEIT	IEEE Microwave and Wireless Components Letters		IEEE	Word-wide	Submitted in 2016			

2.2.6. Books and book chapters

Table 11 shows the book chapter that the consortium has published during the project. A copy of this chapter can be found in the Annex A.1.

Table 11. Book Chapter published within E3Network

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 access provided to this publications?
1.	Energy Efficient E-band Transceiver for Future Networking.	OTE, ALU	Communications in Computer and Information Science Engineering Applications of Neural Networks	Volume 384	Springer Berlin Heidelberg	Word-wide	2013	292-301	DOI:10.1007/978-3-642-41016-1_31	No

3. CONCLUSIONS

During the third period, the dissemination activities of the E3Network project have been mainly focused on promoting the technical achievements of E3Network to the scientific community. The results of·E3Network have been or will be presented in the following conferences: “Conference on Design of Circuits and Integrated Systems 2015 and 2016”, “Global Symposium on Millimeter-waves 2015“, “International Conference on Circuits, Systems, Communications and Computers, (CSCC 2015)”, “ESSCIRC 2015 41th European Solid-State Circuits Conference“ or ”IEEE International Conference on Ubiquitous Wireless Broadband – ICUWB 2015”.

Some results have also been published in scientific journals such as “Integration, the VLSI journal”, “International Journal on Advances in Telecommunications” or “International Journal of Communications”. Additionally, 4 other manuscripts have been submitted or are under preparation to be submitted to scientific journals, such as “IEEE Transactions on Microwave Theory and Techniques” or “IEEE Microwave and Wireless Components Letters”.

Moreover, the consortium has been present in different forums and exhibitions, such as the Electronica 2014, “RAN World 2015” and “ICT2015”.

The E3Network Consortium is also actively participating in the RAS Cluster Future Networks Concertation Meetings. Within this cluster, the consortium has close links to other FP7 project with shared interests, i.e.: MiWaves and MiWEBA. As an example of the collaboration among MiWaveS and E3Network during this period, the project coordinators of both projects gave a joint speech about “Millimetre wave small-cell access and backhauling for 5G” in the “European Conference on Networks and Communications 2015”, which was held in Paris (France). Moreover, ALU also spoke about “Eband and V-band - survey on status of worldwide regulation” Workshop on Millimeter waves organized by ITU-R Working Party 5C, where E3Network, MiWaveS and IPHOBAC was explained.

4. REFERENCES

[1] E3Network, Deliverable D6.2 “Dissemination Plan”, 23rd May 2013.