Horizon 2020 TWEETHER

Travelling wave tube based w-band wireless networks with high data rate distribution, spectrum & energy efficiency

Project no: 644678

Project acronym: **TWEETHER**

Project title: **Travelling wave tube based w-band wireless networks with high data rate distribution, spectrum & energy efficiency**

WP7.

Deliverable D7.6:

Dissemination & Communication Report

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

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EXECUTIVE SUMMARY

The dissemination and communication activities in the TWEETHER project are carried out within work package 7 (WP7). The main objective of WP7 is to promote and disseminate the projet vision, technical approach, research activities undertaken by the consortium and the results achieved to the greatest number of actors who would be potentially interested: scienticfic community, industrial ecosystem, policy makers, standardization bodies, potential end-users and the general public.

Given the relevance of having a wide visibility of the project activities for a succesful impact in the targeted audience and stakeholders, from the beginning of the project significant effort has been devoted to communication and dissemination activities.

The purpose of this deliverable is to report the communication and dissemination activities carried out during this reporting period (i.e., January 2015 to June 2016) to effectively introduce TWEETHER to a wide audience both at local and international levels.

This document is structured as follows. Section 1 provides an overview of the TWEETHER project and explains the objectives pursued in WP7 and in the dissemination and communication activities. A summary of the dissemination activities, including the project website, scientific publication in journals and conferences, participation in international conferences and workshops and organization of workshops, is given in Section 2 along with a brief description about the interaction with other relevant European research projects and standardization bodies. The communication activities carried out are presented in Section 3. In particular, the press releases launched, the promotional material elaborated and the social media channels used are reported in this section. Finally, Section 5 provides some figures to evaluate the dissemination and communication progress.

1. INTRODUCTION

TWEETHER is a European research initiative, funded under H2020, that brings together world-leading European industries and academic institutions across Europe to set a milestone in the millimetre wave technology with the realization of the first W-band (92-95GHz) wireless system for distribution of high speed internet everywhere. Such a system, combined with the development of beyond state-of-the-art affordable millimetre wave devices, will provide backhaul for 4G and future 5G and access everywhere with performance similar to the fibre to overcome the digital divide that prevents a large part of population from data hungry internet contents.

In order to ensure that the TWEETHER project and its innovative approach are successfully promoted to its target audience, dissemination and communication activities are of great importance for the project partners. Therefore, one of the main objective of the work package 7 is to ensure an effective and timely dissemination of TWEETHER vision and achievements toward several audiences such as research communities, industrials, standardisation and regulation bodies, and funding agencies. To this end, dissemination and communications have been planned right at the beginning of the project and are focused on:

- To share the technical results of the project with the scientific community.
- To promote technological developments obtained in TWEETHER within the relevant industrial community to facilitate the step from the laboratory to the market.
- To attract potential customers such as telecom operators and generate expectation towards the project results, in order to prepare their exploitation.
- To identify additional potential application fields, customers and business opportunities.
- To inform worldwide standardization bodies to contribute and improve the current standards in the field of W-band and wireless broadband networks.

Based on the interest of the target audience, different activities have been planned, each tailored to each specific audience (See Table 1).

Table 1. Dissemination and communication activities tailored to each audience

	Scientific community	Industrial ecosystem and potencial end-users	Standardization bodies and policy makers	General public
Website	✓	✓	✓	✓
Publication of papers in conferences and journals	✓	✓	✓	
Workshops	✓	✓	✓	
Panel sessions	✓	✓	✓	
Exhibitions	✓	✓		
Newsletters	✓	✓	✓	✓
Press releases	✓	✓	✓	✓
Promotial Material	✓	✓	✓	✓
Social Networks	✓	✓	✓	✓
Small-scale Field-trial		✓	✓	✓

In next sections, a detailed description of all the activities carried out during this period is provided.

2. DISSEMINATION ACTIVITIES

During this reporting period (January 2015 – June 2016), dissemination was intense with the publication of several papers in international conferences, participation in conferences and industrial workshops and organization of several workshop and special sessions with other relevant European project in the milimetre-wave arena. In addition, effort has been put in the promotion of the project activities through the website, the publication of newsletters and the participation in cluster meetings and other events organized by the EC or other policy makers.

All these dissemination activities have been focused on the introduction of TWEETHER to potential users, industry and expert groups with the objective to explain the scope of the research activities perfomed by the consortium and the relevant W-band technologies to be developed, as well as the objectives and the technical approach. Therefore, the main goal during this period was to raise awareness of TWEETHER.

For next period, dissemination activities will be more focused on the publication of the technological developments of the project. In addition, it is expected that the strongest impact for dissemination will be the small-scale field trial of the proposed wireless network platform incorporating the building blocks developed in the project, with special focus on the industrial ecosystem and standardization bodies.

An overview of the activities performed during this period are detailed hereunder.

2.1. Website

A provisional website to announce the kick-off meeting was posted on the 19th of December, 2014, while the final version of the website (www.tweether.eu) is available online since March, 2015. The TWEETHER public website is intended to provide a vision of the project to the general public and represents the primary source of dissemination of news and information about the project activities to different stakeholder groups such as the European industry, scientific community, and potential end-users such as telecommunication operators. The public website is therefore the core element of the external communication strategy of the TWEETHER project and the specific purpose of the site is to:

- Raise awareness about the project activities.
- Facilitate the diffusion of the project's results.
- Promote the exploitation of the results.

The website includes a summary of the TWEETHER project, including the context and the main objectives to be addressed, the project consortium and a short description of the work plan. In addition, it introduces the main technological challenges to be faced by the project to set a milestone in millimetre wave technology and provides an up-to-date list of publications and deliverables, and the latest news about the project activity (meetings, presentations, etc.). Public documents (public deliverables, newsletters, etc.) can also be downloaded from the website.

A screenshot of the website home page is shown in Fig. 1.

Fig. 1. TWEETHER website home page

The audience of the website is followed with Google Analytics and Statcounter web trackers with the objective of extracting and monitoring real-time web statistics to assess the website visibility, identify its most popular webpages, and optimize its design for improved user experience. Some example of the available statistics are detailed below:

- Sessions: Total number of Sessions within the date range. A session is the period time a user is actively engaged with the website.
- Users: Number of users that have had at least one session within the selected date range. Includes both new and returning users.
- Pageviews: Total number of pages viewed.
- Pages/Session (Average Page Depth) is the average number of pages viewed during a session.
- The average length of a Session.

All these statistics allows us to identify if the website content is of interest for the visitors, what pages are the most visited, the percentage of returning visitors, etc.

In particular, over April 2015 to June 2016 period, more than 6147 pages were visited by more than 1400 users with about 40% of returning visitors.

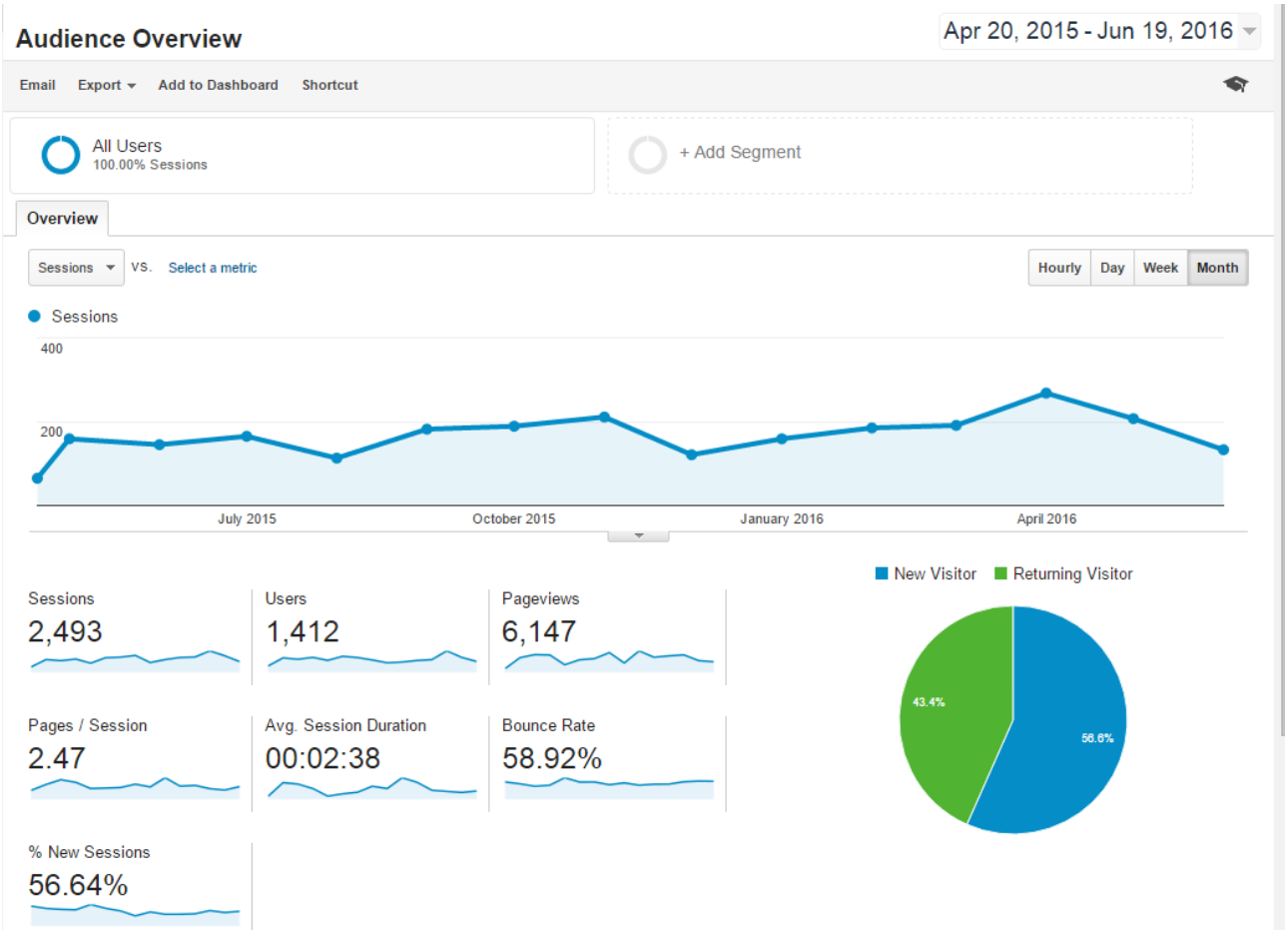

Fig. 2. Audience of the TWEETHER website over April 2015 to June 2016

Another interesting information extracted from the web trackers is the geographical distribution of the website visitors as it helps analyze the visibility of the project. As shown in Fig. 3, apart from the expected visits from Europe, there have been additional visits from all over the world (America, Asia, Middle and Far East, Africa, etc.), revealing the wide visibility of TWEETHER.

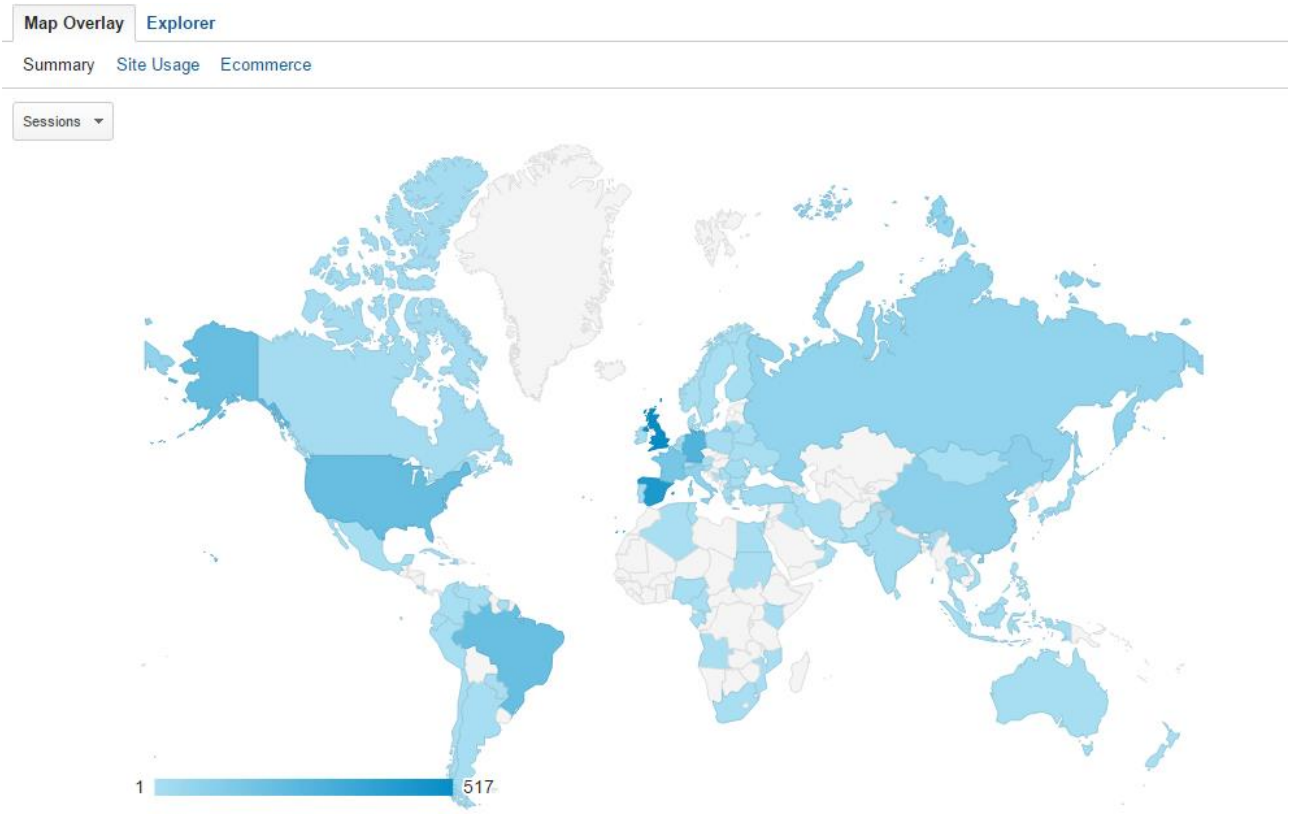

Fig. 3. Visitors' geographical distribution

2.2. Publication of papers in journals and conferences

During this period the objectives of the scientific publications have been focused on the introduction of the TWEETHER general concept, technical approach, and research activities to potential users, industry and expert groups. Moreover, the TWEETHER network architecture and preliminary results of the W-band technology developed in the project have also been disseminated to the scientific community through the publication of the following scientific papers:

- C. Paoloni, R. Letizia, F. Napoli, Q. Ni, A. Rennie, F. André, K. Pham, F. Magne, I. Burciu, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, "Horizon 2020 TWEETHER project for W-band high data rate communications", 16th International Vacuum Electronics Conference (IVEC 2015), Beijing, China, April 2015.
- C. Paoloni, R. Letizia, Q. Ni, F. André, I. Burciu, F. Magne, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, "Scenarios and Use Cases in Tweether: W-band for Internet Everywhere", 24th European Conference on Networks and Communications (EuCNC 2015), Paris, France, June 2015. Invited Paper in a Special Session focused on "Millimetre wave technologies for 5G Scenarios". This Special Session has been organised in collaboration with other EU projects such as MiWaveS and MiWEBA.
- C. Paoloni, R. Letizia, F. André, S. Koeller, F. Magne, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, G. Ulisse, A. Ramirez, R. Vilar, "W-band TWTs for new

generation high capacity wireless networks", 17th International Vacuum Electronics Conference (IVEC 2016), Monterey, US, April 2016.

- C. Paoloni, F. Magne, F. André, V. Krozer, M. Marilier, A. Ramirez, R. Vilar, R. Zimmerman, "W-band point to multipoint system for small cells backhaul" in the Special Session "Millimeter-waves as a key enabling technology for 5G: Status of the pre-development activities and way forward", 25th European Conference on Networks and Communications (EuCNC 2016), Athens, Greece, June 2016.
- C. Paoloni, R. Letizia, F. André, F. Magne, M. Rocchi, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, "Millimeter Wave Wireless System based on Point to Multipoint Transmissions", 25th European Conference on Networks and Communications (EuCNC 2016), Athens, Greece, June 2016.

Accepted but not published:

- C. Paoloni, F. André, V. Krozer, R. Zimmerman, S. Koeller, Q. T. Le, R. Letizia, A. Sabaawi, G. Ulisse, "A Traveling Wave Tube for 92 – 95 GHz band wireless applications", 41st International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz 2016), Copenhagen, Denmark, 2016.

In addition, the following papers have been submitted and are currently under revision:

- C. Paoloni, F. André, F. Magne, M. Marilier, R. Zimmerman, V. Krozer, A. Ramirez, R. Vilar, "W-band wireless network for backhaul and Access", IEEE GLOBECOM 2016, Washington, DC, USA, 2016
- TWEETHER contribution to the white paper of 5GPPP focused on the design of the architecture for the 5G era (: https://5g-ppp.eu/5g-architecture-call-for-white-paper-inputs/).

Although dissemination has been strong during this period, relatively few scicentific papers have been published so far. The objective for the coming years is to increase significantly the number of journal and conference papers to report the outcome of the project when more detailed technical results become progressively available.

A list of journals, magazines and conferences, which are relevant to the scope of TWEETHER and may be considered by TWEETHER partners for publication, is provided hereunder.

List of targeted journals and magazines:

TWEETHER scope	Journal or Magazine Title	Impact factor
Wireless Communications	IEEE Wireless Communications	4.184
Wireless Communications	IEEE Communication Magazine	5.125
Wireless Communications	IEEE J. on Selected Areas in Communications	3.672
Wireless Communications	IEEE Transaction on Wireless Communications	2.925
Wireless Communications	IEEE Vehicular Technology Magazine	2.783
Wireless Communications	IEEE Transaction on Communication	2.298
Wireless Communications	IEEE Transaction on Vehicular Technology	2.243
RF and integration technologies	IEEE Circuits and Systems Magazine	3.000
RF and integration technologies	IEEE Electron Device Letters	2.528
RF and integration technologies	IEEE Transaction on Microwave Theory and Techniques	2.284
RF and integration technologies	IEEE Transaction on Electron Devices	2.207
RF and integration technologies; Antennas	IEEE Microwave Magazine	1.975
RF and integration technologies	Journal of Infrared Millimeter and Terahertz Waves	1.851
RF and integration technologies; Antennas	IEEE Microwave and Wireless components Letters	1.599
RF and integration technologies	Progress in Electromagnetics Research-PIER	1.315
Antennas	IEEE Transaction on Antennas and Propagation	2.053
Antennas	IEEE Antennas and Wireless Propagation Letters	1.751
Antennas	IET Microwaves Antennas & Propagation	0.817

List of targeted conferences and workshops:

TWEETHER scope	Conference or Workshop Title
Wireless Communications	IEEE GLOBECOM
Wireless Communications	European Conference on Networks and Communications (EuCNC)
Wireless Communications	IEEE International Conference on Communications (ICC)
Wireless Communications	IEEE Wireless Communications and Networking Conference (WCNC)
Wireless Communications	IEEE International Wireless Symposium (IWS)
RF and integration technologies; Antennas	European Microwave Week (EuMW)
RF and integration technologies; Antennas	International Microwave Symposium (IMS)
RF and integration technologies	IEEE Radio Frequency Integrated Circuit (RFIC)
RF and integration technologies	IEEE International Vacuum Electronics Conference (IVEC)
RF and integration technologies	International Conference on Infrared, Millimeter and Terahertz Waves (IRMMW-THz)
RF and integration technologies	IEEE international Solid-State Circuits Conference (ISSCC)
Antennas	European Conf. on Antennas and Propagation (EuCAP)
Antennas	IEEE Antennas and Propagation Society International Symposium (APS-URSI)

2.3. Participation in international conferences and workshops

Apart from the scientific paper publications, during this period, TWEETHER has actively participated in international conferences and workshops, where project activities have been introduced to reserach and industrial community.

The list of the TWEETHER participation in international conferences and workshops is given below.

- TWEETHER presentation at RF MST Cluster Meeting, Barcelona, Spain, 1st July 2015.
- C. Paoloni, "W-band access and backhaul for high capacity wireless networks", Layer 123 Packet Microwave & Mobile Backhaul 2015, London, UK, September 2015.
- F. Magne, "On 5G realistic outcomes for 2020", Workshop on Millimetre-wave Technologies for High-Speed Broadband Wireless Networks (mmW2015), Valencia, Spain, November 2015.
- C. Paoloni, "Traveling Wave Tube based W-band Wireless Network with High Data Rate, Distribution, Spectrum and Energy Efficiency – TWEETHER", Workshop on Millimetre-

wave Technologies for High-Speed Broadband Wireless Networks (mmW2015), Valencia, Spain, November 2015.

- C. Paoloni "Case Study: Using Horizon 2020 Funding to Build New Generation Wireless Networks", Utilising Horizon 2020 Funding to Produce Excellence in Research Forum – Inside Government, London, UK, 10th February 2016.
- TWEETHER presentation at RAS Concertation Meeting, Brussels, Belgium, 1st March 2016.
- C. Paoloni, "Deployable High Capacity Wireless Network", Loss of supply workshop, Lancaster, UK, 9th March 2016.
- R. Vilar, "W-band Point to Multipoint Backhaul for dense urban scenarios", Workshop on Key enabling technologies on antenna and channel models for an effective mmWave 5G deployment, European Conference on Antennas and Propagation (EuCAP 2016), Davos, Switzerland, April 2016.
- Presentation of the TWEETHER project at the RF MST Cluster Meeting, Bucharest, Romania, 4 July, 2016.
- V. Krozer, "MMIC Chip-Set Development for Broadband W-Band Receivers and Transmitters", Workshop on Millimetre-Wave Electronics for High Capacity Wireless Networks, European Microwave Week, London, UK, October 2016.
- C. Paoloni, "TWEETHER - W-Band High Capacity Wireless Networks", Workshop on Millimetre-Wave Electronics for High Capacity Wireless Networks, European Microwave Week, London, UK, October 2016.
- V. Krozer, "H2020 TWEETHER Project for Wireless Communications at W-Band", Workshop on Compact and High Performance Millimetre-Wave and THz Sources & Systems, European Microwave Week, London, UK, October 2016.

For successive years it is expected an increase in the participation of TWEETHER partners in conferences and workshosps.

2.4. Organization of workshops

During this reporting period, TWEETHER has organized two workshops and a special session jointly with other relevant European projects in the field.

TWEETHER Workshop

A workshop on "Millimetre-wave Technologies for High-Speed Broadband Wireless Networks", which was held in Valencia on the 20th November 2015, was organized in the frame of TWEETHER and hosted by the Nanophotonics Technology Center of the Polytechnic University of Valencia and Fibernova Systems.

The idea underlying the workshop was to organize a joint dissemination activity with other EU project working on the same topic, that is, millimetre wave technologies for wireless networks and for 5G systems, to review the most recent achievements in this technical field, and to discuss the

main technical challenges to be addressed. To this end, nine European projects from the FP7 and H2020 Framework Programmes were invited to participate (E3Network, MiWaveS, MiWEBA, SARABAND, TWEETHER, mmMAGIC, METIS II, 5G-Crosshaul, 5G-XHaul). Moreover, the workshop included the participation of the new ETSI's millimetre Wave Transmission (mWT) Industry Specification Group and a panel discussion about the potential of millimetre wave communications for 5G systems.

The agenda and the presentations of this workshop can be found in the TWEETHER website through this link: https://tweether.eu/workshop/agenda.php

A joint Special Session of the mmMAGIC, TWEETHER, MiWaveS and MiWEBA projects at EuCNC 2016

A joint Special Session on "Millimeter-waves as a key enabling technology for 5G: Status of the pre-development activities and way forward" has been co-organized with mmMAGIC, MiWaveS and MiWEBA projects at the European Conference on Networks and Communications, which will be held in Athens on the 30th June 2016.

The Special Session intends to start an open discussion, sharing and exchanging the experiences of the work done by these 4 EU-funded projects (from FP7 and H2020) currently working on different aspects of millimetre wave technologies and it is expected to attract the interest of the research and industrial community that are active in the fields of millimetre wave, mobile backhaul links and 5G networks.

The Special Session is composed of 4 papers, 1 invited speaker and a final panel, whose main target is to facilitate an open discussion with the audience, focusing on the research and technical aspects related to the discussed presentations.

More information about this session is available on this link: http://www.eucnc.eu/?q=node/161

TWEETHER workshop co-organized with mmMAGIC at EuMW2016

A workshop on "Millimetre-Wave Electronics for High Capacity Wireless Networks" will be co-organized with the mmMAGIC project at the European Microwave Week, which will be held in London on the 3rd October 2016.

This workshop will offer the vision on the state of the art in the field of millimeter-wave wireless networks through the latest update from renowned experts from operators, electronic manufacturers and academia. The complementary synergies of two large Horizon 2020 projects, mmMAGIC and TWEETHER, will disclose new routes for an integrated approach, for developing new electronic components and systems to define new architecture for anticipating the future of wireless communications. This workshop is oriented to operators, service providers, manufacturers and academics in the field of wireless communications systems.

Four high calibre keynote speakers and six thematic talks will provide the audience an outstanding overview on millimetre wave wireless networks and stimulating concepts and materials for a lively and constructive discussion.

More information about this workshop can be found in the following link: http://www.eumweek.com/conferences/workshop_schedule.html

Apart from these workshops, towards the end of the project, when the prototypes and the field trial will be ready, two workshops will be organized to inform other parties, including industrial representatives, telecom operators and academia, about the project results and main achievements.

2.5. End-User group oriented dissemination activities

To get an accurate picture of the market requirements and deployment scenarios, TWEETHER has established an "End-User Group" composed of telecom operators such as Everything Everywhere (UK), Telecom Italia (Italy), Deutsche Telekom (Germany), Eurona Telecom (Spain) and Orange-Lab (France).

In the first months of the project, TWEETHER consortium enquired this "End-User Group" on the needs of deployment and capacity parameters to determine the initial requirements for performing economical backhaul and access wireless solutions. The feedback received was used to identify the TWEETHER possible scenarios and to detail the system and components specifications.

On the other hand, Everything Everywhere (EE) invited the TWEETHER project to participate in Layer 123 Packet Microwave & Mobile Backhaul event, where the project could gain valuable insight into the operators' requirements for mobile backhaul, and different operators such as Telecom Italia and Vodafone-ONO participated in the TWEETHER workshop organized in Valencia.

2.6. Newsletters

A series of biannual newsletters has been started in order to communicate on the project advances and the main events. The first issue was published in June 2015 and the second issue was distributed in January 2016. Third issue is currently under preparation.

These newsletters are posted on the website, announced on Twitter, and sent by email to a selection of industrial and academic contacts including other funded project coordinators.

2.7. Liaison with other projects and clustering

TWEETHER will actively seek links and interaction with other projects and fora, whose thematic areas are related to TWEETHER objectives. The goal is not only the exchange of information, but also the creation of any possible synergies on the development of the technical work and the maximization of the impact of the research activities. This activity will be conducted through events such as conferences, workshops, and concertation meetings, which will be a key vehicle for these links.

TWEETHER has so far strong interaction with other EU projects working on different aspects of millimetre wave technologies such as mmMAGIC, MiWaveS, MiWEBA and iBrow. Indeed, we have organized different joint dissemination activities with them, as explained previously. These collaborations are of great interest as they may lead in mutual benefit in terms of research, dissemination and/or exploitation.

Apart from the liaison with other projects, clustering plays a key role in promoting synergies and cross-fertilization among projects. Following this line, TWEETHER participated in last RF MST Cluster Meeting, which took place on the 1st July 2015 in Barcelona, Spain, and will participate in

next meeting, which will be held in Bucharest, Romania on the 4th July 2016. Should be mentioned that other EU project such as iBrow and M3TERA joined these meetings.

In addition, TWEETHER participated in the "FP7 and H2020 network Technologies Concertation Day", which was held in Brussels on the 1st March 2016, where running FP7 and H2020 projects from call ICT5 and ICT6 were presented to the audience.

Finally, besides contacts with other projects and clusters, TWEETHER has also established contacts with operators, service providers (e.g., Huawei, Samsung), and the ETSI mWT ISG standardization group dealing with the promotion of millimetre-wave technologies for high-speed transmission applications.

3. COMMUNICATION ACTIVITIES

Apart from the activities focused on the dissemination of the project results, the TWEETHER project has carried out communication activities for promoting the project and its findings and for maximizing the social impact of the project results.

This section presents the communication activities undertaken to advertise the existence of TWEETHER in different mass media and social media channels to reach a wide audience, composed of experts and non-experts.

3.1. Press releases

TWEETHER consortium is fully aware of the large audience that the "mass media" involve, as well as their power as an efficient and cost-effective way of transmitting information. To this end, several press releases were launched at the beginning of the project as a first step to trigger interest of professional and the society in general for research activities performed in TWEETHER.

In particular, a first press release announcing the TWEETHER project was produced by Lancaster to officially launch the project and to make publicity of the kick-off meeting, which was held in Lancaster on the 15th and 16th of January, 2015 (See Fig. 4). Additionally, the UPV also distributed a press release among several Spanish media and some partners included news related to the project on their respective websites. The high interest in the project is demonstrated by the outstanding number of contacts, exceeding 2 million, reached with these press releases.

Additionally, it is worth mentioning that EE distributed an article communicating its close collaboration with TWEETHER and this article reached more than 1 million contacts.

Apart from these press releases, UPV launched a press release to advertise the workshop on Millimetre-wave Technologies for High-Speed Broadband Wireless Networks, which was organized in Valencia in November 2015.

Creating the world's fastest outdoor wireless Internet connection

19 December 2014

Lancaster University engineers are to head up a European team working on the world's first W-band wireless system, heralding the arrival of ubiquitous, high speed internet.

The ground-breaking £2.8 million TWEETHER project, funded by Horizon 2020, will set an important milestone in 'millimetre wave technology' for high speed wireless mobile and fixed point Internet.

Millimetre waves - extremely high frequency waves found in the spectrum between microwaves and infra-red waves - are deemed to be the most promising and cost effective solution for the future.

Fig. 4. Press release launched to announce TWEETHER

3.2. Promotional Material and Newsletters

With respect to promotional material, a first brochure containing general information about the project, its objectives and its partners was produced (See Fig. 5). This brochure is available for download via the TWEETHER website. This brochure will be updated with the aim of communicating concrete results of the project and potential use cases of the TWEETHER system.

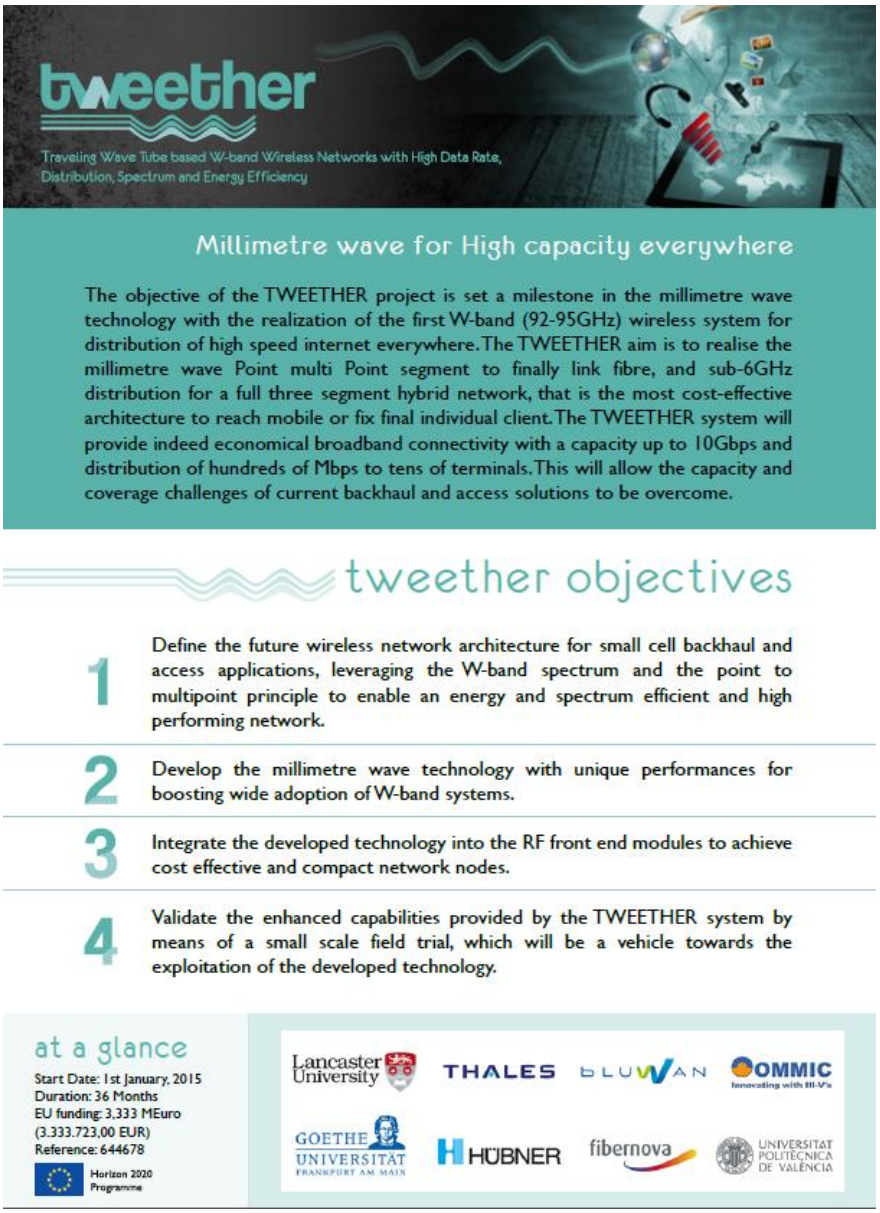

Fig. 5. Snapshot of the TWEETHER brochure

Moreover, a 2-page factsheet was created and submitted to the EC. The information provided in the factsheet includes the main objectives TWEETHER addresses, the technical approach followed to achieve the concrete objectives and the expected impact of the project.

Newsletters are a good medium to let people know about the TWEETHER project, inform readers regularly about recent achievement, new initiatives, events in which TWEETHER members have participated, or even interesting case studies. As explained in Section 2.6, a biannual newsletter is being produced, having already distributed several issues of the newsletter.

3.3. Social networks

TWEETHER has identified several social media channels to promote the project and reach the widest public.

In this line, the Twitter group (@h2020tweether) was launched in January 2015; to date it counts 32 followers, more than 20 of them being external to the consortium. More than 30 tweets were posted to date to announce the consortium meetings, publications, panel sessions, press release, etc.

Fig. 6. Twitter group

In addition, a YouTube channel was created recently to upload videos related to the project. So far it has been realized at Lancaster the first promotional video of TWEETHER. This video can be displayed at https://youtu.be/hoxOtDjQ_aE. The videos has been watched 121 times.

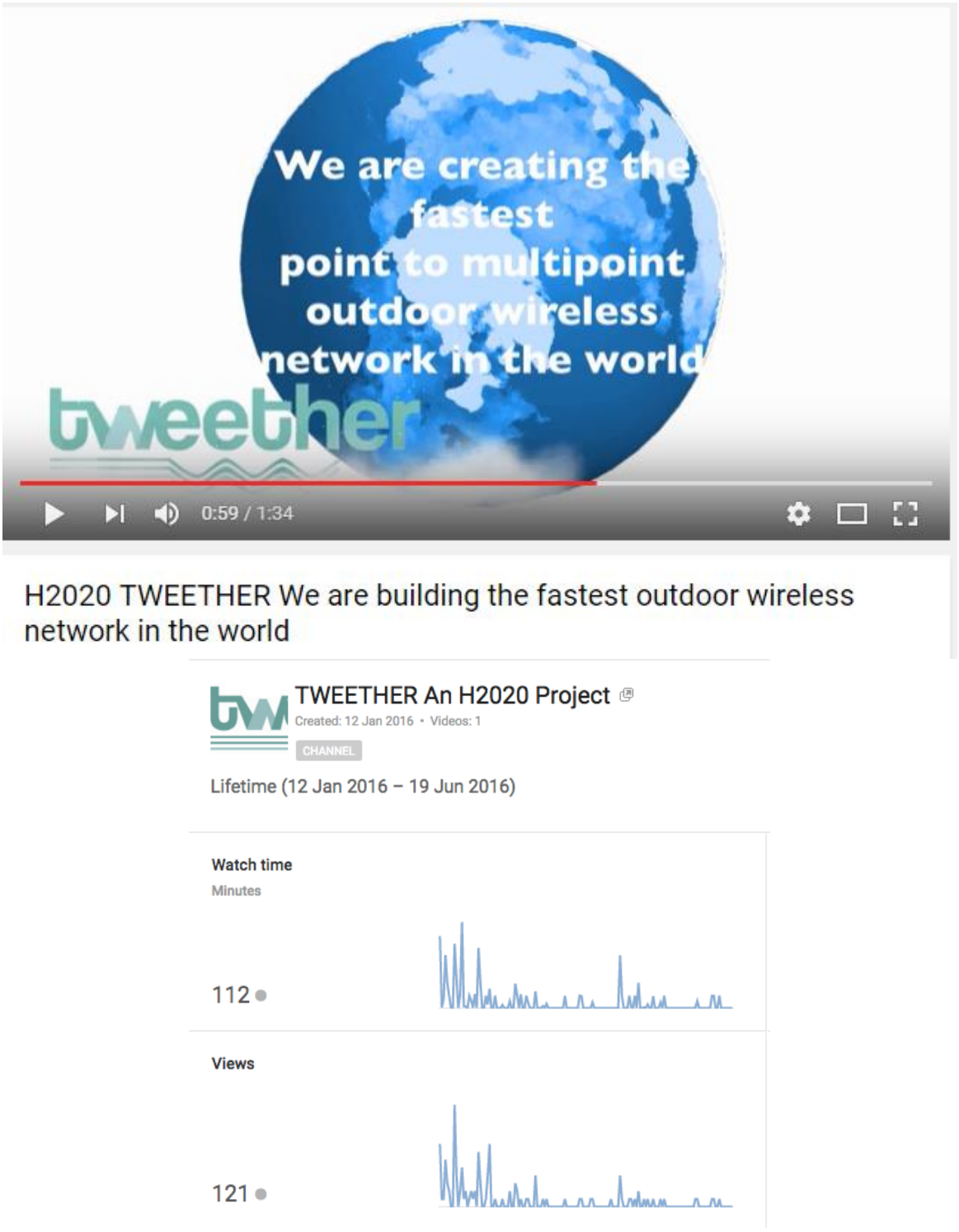

Fig. 7. TWEETHER video and views screenshot from You Tube

Moreover, Prof. Claudio Paoloni published an article titled "Why 'no signal' appears in towns as well as the countryside – and what could help" on The conversation.com, 7 December 2015. This article explained the potential of millimetre wave wireless networks as a solution for Internet access in the countryside and targeted non-scientific audience. It has had almost 2000 readers.

4. EVALUATION OF DISSEMINATION AND COMMUNICATIONS ACTIVITIES

As stated throughout the text, dissemination is an important tool to achieve the expect impact of the project. For this reason, the planned dissemination activities of TWEETHER have been properly tailored to each identified audience to ensure that the different stakeholders are aware of the benefits and advantages provided by TWEETHER. But, to ensure an effective dissemination is important to evaluate dissemination and communication actions in order to know if the foreseen activities have been successfully completed and the objectives of such activities have been satisfyingly reached.

Table 2 and Table 3 summarize the dissemination and communication activities reported during this period.

Table 2. Reported dissemination activities

Type of dissemination activities	Number
Scientific Papers in journals and conferences (accepted)	6
Scientific Papers in journals and conferences (submitted)	2
Invited talks and project presentations in conferences and workshops	12
Organization of workshops and special sessions	3
Newsletters	3
Liaison with other EU projects and clustering	6
Total	32

Table 3. Reported communication activities

Type of communication activities	Number
Website (TWEETHER website and mmW workshop)	2
Press releases	3
Non-scientific publications	1
Promotional material	2
Social Media (Twitter, LinkedIn, Youtube)	3
Video	1
Total	12

With all these activities, TWEETHER has reached a wide audience, as shown in Table 4.

Table 4. Audience reached by TWEETHER actions

Type of audience reached in the context of all dissemination & communication activities	Estimated Number of Persons reached
Scientific Community	> 300
Industry: Thales Group, Intel Mobile Communications, Samsung, Huawei, Ranplan UK, Vivid Components Ltd, IQE Silicon Compounds, Alcatel-Lucent Deutschland, IMDEA, Ericson Ab, Nokia Solutions and Networks, etc.	> 30
Civil Society: Scottish Futures Trust	1
General Public	>2 Millions
Standardization bodies: ETSI mWT ISG	1
Policy makers: DG-CNECT	1
Medias: medias reached by press releases	> 30
Customers (e.g. telecom operators): EE, Telecom Italia, Deutsche Telekom, Cosmote, Eurona, Vodafone-ONO, Abertis Telecom, etc.	> 10

From the tables above, it can be stated that the dissemination and communication activity has been quite strong. Moreover, the high interest in the project is demonstrated by the impressive number of contacts, from different type of audience, obtained through the TWEETHER actions.

5. CONCLUSION

This deliverable provides a summary of the dissemination and communication activities carried out by consortium partners with the aim to promote ongoing activities, results, ideas and the evolution of the TWEETHER project. The reported activities show substantial dissemination effort, resulting in considerable contacts among targeted audience and a wide visibility of the project both at local and international levels.

The TWEETHER website is a central piece of the communication tools as it provides the adequate platform to gather all the information publicly available on the project; therefore, the content will be kept updated to attract more audience.

In this deliverable, more than 21 contributions to conferences and workshops have been reported. It is expected that this publication activity will be increased in the second half of the project as more technical results, including experimental ones, become available. Therefore, submission of scientific papers in conferences and journals will be one of the primary goals for next reporting period. Important journals and conferences have been identified with respect to the respective TWEETHER areas.

During this reporting period, TWEETHER has organized two workshops and a special session, jointly with relevant European projects in the field, in high impact conferences. In next period, TWEETHER will organize other workshops for disseminating its outcomes and achievements.

In addition, TWEETHER partners are eager to continue interactions and collaboration with other European research projects in order to leverage the technical results and amplify their impact and

will intent to increase contacts with operators, service providers and standardization bodies, with greater emphasis on exploitation.

Newsletters will inform readers regularly about the project progress and recent events in which TWEETHER members have participated. Press release will be issued, accompanying major public achievements of the project, like public workshops and demonstration events. Social media channels will be more intensively to timely inform interested parties about important events or news about TWEETHER.

In conclusion, by using online and social media tools, materials such as white paper, brochure, poster and website, participating in relevant conferences and workshops and publishing the project results in relevant journals and conferences, TWEETHER expects to improve the impact of actions carried out by the consortium and reinforce the awareness of the project in the market.