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## **Deliverable D6.5: Dissemination Plan**

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<b>Summary</b> <p>This document presents the Dissemination Plan, that is the strategy agreed and set up by the partners for promoting the DREAM project and for dissemination of new knowledge. A common action plan, setting out the agreed approach to dissemination throughout the project, is also included. The second part of the document, summarizes the consortium initiatives for DREAM promotion, from the project starting date to month 24 (M24), and keeps track of the activities performed individually by each partner. Compared do D6.2, this document is updated with the promotion and dissemination inititives in the second year of the DREAM project (M12-M24).</p>	
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## Executive Summary

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Planning efficient and effective promotion and dissemination initiatives has required a careful analysis of the communication intentions and classification of the right target audience. This allows the selection of key messages to broadcast, with the purpose of maximizing the impact of project promotion, and definition of a proper strategy and approach to knowledge dissemination.

This document presents the DREAM dissemination plan and summarizes the activities carried out by the consortium in the first two years of the project.

Pushed by the consortium needs and by distinct motivations of each partner, three different communication objectives have been identified: (1) favouring the exploitation of the DREAM outcomes, (2) dissemination of scientific results and (3) creating public awareness on EU-funded research programs. The different communication means and initiatives that the consortium is using comprise internet channels, networking through different means specific to each partner, attendance to showcase events (like conferences and exhibitions) and scientific publications. The messages and content of the communications are initially selected according to the different communication objectives and target groups. Promotion initiatives will be following an action plan agreed by the consortium and are stimulated and monitored for the entire duration of the project. The activities carried out during the first year of the project consisted in the creation of the DREAM identity, realization of a web-site and promotional material, networking with similar H2020 projects, interactions with standardization bodies, attendance to showcase events, and several other partner's specific actions. The promotion of the project continued also in the second year, with similar initiatives. In addition, the dissemination of the results of the project has been started through publication of papers and participation at conferences.

## 1. Dissemination Plan

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### 1.1 Introduction

The strategy and initiatives agreed by the partners for promoting the DREAM project and for dissemination of new knowledge are proposed in this chapter. The overarching intentions of communication activities are manifold and include development of dissemination and exploitation links to a wide audience, comprising stakeholders in the public and private sectors, maximization of the reputation of the project, sharing of the project results, and impact through various activities and actions.

To define and implement an efficient plan, distinct objectives have been clearly defined as a result of the analysis of the consortium needs, obligations set by the Grant Agreement [1] and specific needs for promotion from each partner. This allowed to identify and classify the different target audiences to be addressed with purposely selected messages and content of communications. At the end, a schedule of different actions has been defined and agreed. Several initiatives have been undertaken, some are still in progress and other are scheduled for the next year of the project. Nonetheless, the dissemination plan is not a static document. It should be flexible and it must be updated regularly as new results become available or opportunities for new potential communication actions and events present themselves.

The chapter is organized in the following way: Section 1.2 introduces the implementation strategy and reports a summary of the motivations for communication of each partner. Section 1.3 presents the distinct communication objectives defined by the consortium while Section 1.4 analyzes the corresponding target groups and classifies the communication channels and means identified by the partners. Key messages for general promotion of DREAM, to diversified audiences are outlined in Section 1.5. Effort will be paid on the dissemination of scientific results and Section 1.6 explains the strategy defined for this purpose. Finally, allocated resources and action plans are reported in Section 1.7.

## 1.2 Implementation Strategy

Following the guidelines stated in the Project Proposal of the DREAM project [2], in the context of the WP6, Task 6.1

*“The purpose of this task is to ensure an efficient dissemination of the scientific achievements and adequate communications related to the project. All the partners will contribute with publications in international, refereed journals and at targeted conferences, and will also be active in individual promotion and communication with normal dissemination activities within their channels and areas of expertise. The task will be initiated by the development of a dissemination plan setting out an agreed approach to dissemination throughout the project. The strategy is intended to optimize and maximize the impact of the dissemination and communication activities. The Consortium will approve the dissemination strategy and the detailed dissemination plan before any dissemination takes place. The dissemination goals will be achieved by various other means, including but not limited to: Courses of various types, conferences and workshops, printed documents, web sites, trade shows, press releases, etc. The results of the technological research work conducted in the development work packages of the project will be submitted for publication to international, peer-reviewed journals according to the established dissemination plan. A project website will be set up, providing up-to-date information about the project and its results to the public. Scientific publications will be made available according to the green open-access policy”.*

The activities summarized in the project proposal have been discussed within the consortium and organized in a structured way for the definition and actuation of the DREAM dissemination plan. More specifically, the proposal of the plan has required to devise the right ways to reach distinct and well defined common objectives, by considering the partner’s needs, by identifying the project stakeholders’, and defining the proper communication paths and approaches.

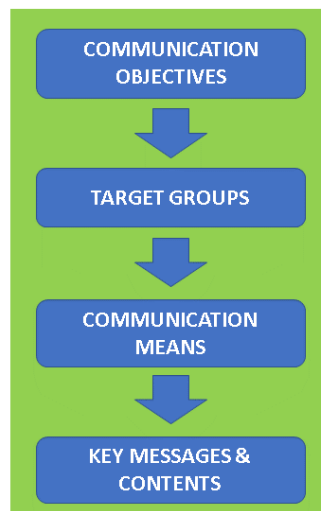


Fig. 1. Implementation strategy for the dissemination plan

As depicted in Fig.1, the implementation strategy has followed an approach that comprises four main sequential steps:

(1) Identification of the *Objectives*. The DREAM dissemination activity has been analysed considering the needs of the consortium and of each partner, with the purpose of defining clear and distinct communication objectives.

(2) Identification of the *Target Groups*. Considering each distinct objective, the specific target audience needs to be classified. In this way, right channels and appropriate messages can be selected to ensure a smooth and effective communication.

(3) Identification of the *Communication Means*. The dissemination activity will exploit channels and means made available by each partner and new ones activated within the consortium. The most appropriate communication means to be used for reaching different target groups have been defined and selected by the consortium.

(4) Identification of the *Key Messages and Content*. The messages must be carefully selected and content properly designed to be effective in reaching the target groups. The consortium has identified messages to broadcast for project promotion and potentially relevant scientific results and new knowledge to be disseminated. Messages will be updated following the project evolution.

All the members of the DREAM consortium are engaged to proactively contribute on project promotion and dissemination. University of Pavia (UniPV), as task leader, will further contribute by coordinating, stimulating and monitoring the activities of the consortium. Forms, reported in the appendix of this document, have been prepared with the purpose of acquiring specific inputs from each partner for preparation of the dissemination plan and to monitor the progress of the activities.

The consortium comprises Industries, Research Institutes and one University. Each partner has a different mission and expertise and contributes to the project bringing its own competence. The consortium has identified common dissemination objectives and has organized shared actions to reach the target audiences. Each partner will contribute to project promotion motivated also by its own communication needs, and by exploiting its network and its typical communication channels and means (such as partner's web-sites, social media, press releases). To this purpose, a survey has been performed. The consortium members, with a short description of the role in the project, typical communication needs and adopted dissemination channels are reported below.

**VTT** is the biggest contract research organisation in Northern Europe and his mission is to support the European Industry in entering emerging mmWave markets with high business potential. VTT is the coordinator of DREAM and technically contributes by developing the D-band antenna array with beam steering functionality.

The VTT promotion activities are pushed by the need to (1) attract new commercial contracts, (2) strengthen existing cooperations (3) attract funding and (4) rise the scientific reputation and visibility. Typical communication channels comprise internal and external presentation to customers, participation to Industry-oriented events, seminars in Universities, and scientific publications.

**Ceit-IK4** Technology Center (CEIT) mission is to provide industry with services through the development of research projects and to train young researchers. The ICT division will contribute to the project by developing part of the D-band radio transceiver chipset in BiCMOS technology.

CEIT communication needs are oriented to the attraction of students and researchers to be involved in the Lab activities, (2) rise the international visibility and reputation, (3) expand cooperations to attract new research contracts and funding.

The typical communication channels include presentations and seminars in Universities, advertising through its internet channels, meetings with customers, attendance to exhibitions and scientific dissemination at international conferences and/or on international Journals.

**STmicroelectronics (ST-I)** is an independent worldwide broad-range semiconductor supplier and it is ranked in the top ten semiconductor companies in the world. ST has 11 main production sites, 7 Advanced R&D centers and 39 design and application centers, with more than 43600 employees over the world. Within the DREAM project, ST-I will provide the technology platform for IC fabrication, design support and will contribute to definition of system, sub-system and components specification. The Corporate External Communications (CEC) is the organization within ST responsible for developing, managing and orchestrating external communications. The aim is to improve and extend ST's perception globally and increase the consideration of ST as a supplier to existing and future partners. The targeted audiences includes customers, partners, media, industry analysts, and the general public. (Investors and financial analysts are handled separately by our Investor Relations organization. Within the CEC there are 2 teams:

1.the Media Relations team is responsible for building and maintaining the relationship between the Company, its Executives and staff, and the numerous business, technical, and general media that have an interest in our activities. The team often also performs Public Relations functions, where the activities are similar, though typically targeted at broader audiences, including neighbors, customers, suppliers, competitors, and employees.

2.the External Events team work on building ST's image though the channel of external events, both public and private. The team, distributed across the four ST regions work closely with ST's organizations to deliver a range of services to ensure a professional presence at trade shows, conferences, customer and investor days.

Dissemination is also performed by driving the standardization activities through management of Standards and Alliances memberships, technology survey on new standards and trends, active participation to standard bodies when needed and aligned with Divisions, quarterly alignment with Divisions, yearly long-term strategy review with the executive staff.

**III-V Lab** is one of the leading industrial laboratories in Europe in the field of very high speed photonic and electronic circuits for telecom and data center interconnect. Its mission is to develop key components in advance, to validate new concepts or to make demonstrators for mm-wave wireless and high speed optical systems. Based on its long experience, III-V Lab is well qualified to design the functional blocks in D-band and integrate them in large RFIC addressed by DREAM. Communication activities of III-V Lab are focused on the attraction of graduate students to strengthen the design and innovation effort, (2) rise its reputation and visibility to industrial partners (3) expand its cooperation network to attract new research contracts and funding. III-V Lab delivers seminars and talks to Universities, perform advertising through its internet channels and meetings with customers, and disseminate achievements on scientific journals and by attending conferences and exhibitions.

**ERZIA** Technologies SL is a Spanish SME with strong heritage and expertise in RF&MW devices, space, critical applications and Ground Support Equipment. In DREAM project, ERZIA will be in charge of the phased array D-band transceiver platform integration and subsystem validation.

The promotion initiatives of ERZIA within the DREAM project are mainly pushed by the need of attracting new talented engineers to be involved and expand the company. ERZIA is planning to use its own communication channels and deliver presentation and seminars to students close to graduation.

**NOKIA** is a global leader in the technologies that connect people and things. Powered by the innovation of Nokia Bell Labs and Nokia Technologies, the company is at the forefront of creating and licensing the technologies that are increasingly at the heart of our connected lives.



The X-Haul department of the Nokia Mobile Network business unit will be involved in the DREAM project with the mission of developing and improving the Nokia Microwave Mobile Backhaul portfolio. Nokia is contributing to DREAM by leading the system analysis and spec definition and with the responsibility for building a proof of concept demo.

The NOKIA communication activities are motivated by the following needs (1) rise its international credibility, visibility and reputation among Customers mainly (Mobile operators), (2) attract new commercial contracts anticipating competitors (3) strengthen its network of cooperation and expand it finding new potential technological partners (4) shape the standardization and regulation environment making possible future commercial opportunities. The typical communication and dissemination channels of NOKIA include private events organized by NOKIA with key customers (NOKIA technological Roadmap), advertising through its webpages and press releases to all NOKIA group, presentations during public seminars, international standardization and regulatory meeting, presentations of scientific results at international conferences, publications on scientific journals.

**Università di Pavia (UniPV)** has a twofold mission: (1) training and education, (2) performing advanced and high-quality research. The Analog Integrated Circuit Lab of the Engineering Department is involved within DREAM, and will mostly contribute by investigating innovative solutions for D-band frequency synthesis in BiCMOS technology.

The UniPV communication activities are motivated by the following needs (1) attract talented students to be enrolled in its basic and advanced education programs, (2) rise its international visibility and reputation, (3) expand its network of cooperation and attract research funding.

The typical communication and dissemination channels of UniPV include public events organized by University, advertising through its webpages and press releases, presentations during lectures, seminars delivered by professors, presentations of scientific results at international conferences, publications on scientific journals.

### 1.3 Objectives

The purpose of Task 6.1 of WP6, documented in this deliverable, is to ensure that the DREAM project, its results and their social impact will be adequately and effectively promoted by the consortium.

The overarching intentions are manifold and include development of dissemination and exploitation links to a wide audience, including stakeholders, public and private sectors, maximization of the reputation of the project, sharing of the project results, and impact through various activities and actions.

Following the implementation strategy presented in Section 1.2, the communication and dissemination activity is planned to reach three distinct objectives:

**Objective - 1** ensure a smooth and fruitful exploitation of the DREAM achievements. This requires continuous identification of stakeholders and potential customers, and establishing contacts through appropriate communication activities, selected contents and messages, starting from the initial phase of the project and continuing up to the conclusion and beyond. This objective comprises also the establishment of close links with other projects active in the same area of DREAM.

To avoid conflict issues due to intellectual property rights, the principles followed by all the consortium partners have been and will be the ones defined and agreed in the DREAM Consortium Agreement [4], w.r.t. Section 8 'Foreground', Section 9 'Access Rights' and Section 11 'Miscellaneous'.

**Objective - 2** dissemination of the scientific achievements. Being the DREAM project supported by public funding of European Community, full share of the new knowledge, scientific and technological innovations with potential users, researchers, industry and other commercial players, must be performed by each partner and by the consortium, as explicitly requested by the Grant Agreement [1].

**Objective - 3** expand the public awareness on the relevance of project to categories not directly involved. This action is to demonstrate the benefits and the potentials of transnational cooperation in the framework of EU programs, to sustain and reinforce high scientific excellence and improve EU competitiveness.

## 1.4 Target Groups and Communication Channels

The three different objectives of the dissemination activity identified are oriented to different target groups, that will be reached exploiting different communication channels with appropriate messages. An overview of the target groups and planned communication channels is given by Fig. 2.

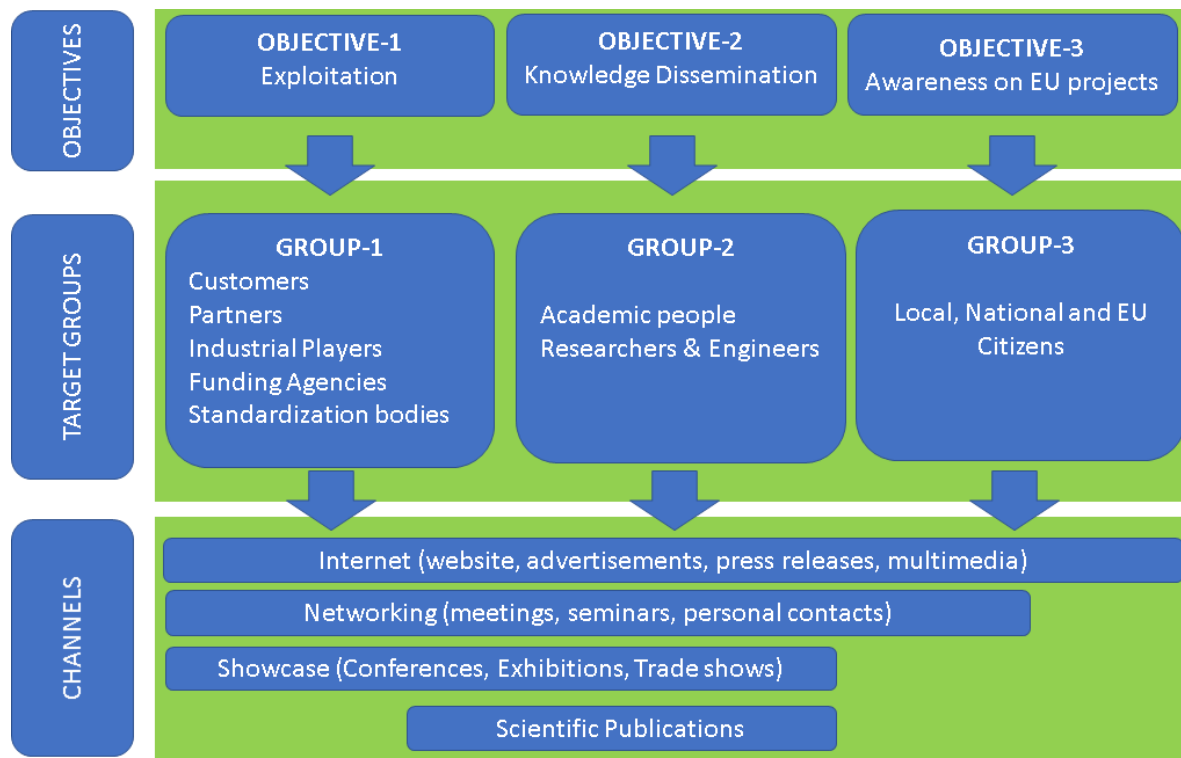


Fig.2 Target groups for each objective of DREAM dissemination and communication means.

### Target Groups

The first communication objective, consisting of promotion actions to support the partners' exploitation plans, is focused to a target group which is mainly oriented to business activities and it is characterized by a solid technical background on the subjects of DREAM or complementary fields. For the industrial partners of the consortium, this group is mostly composed of consolidated customers, to which well-established communication channels are already available, and new potential customers that can be reached through the DREAM dissemination activity. For Research Institutes and University, this target group is primarily made of colleagues (of the same or other institution) and potential partners for new funding opportunities, funding agencies, and industry players that could be interested in establishing and supporting new research cooperation. Considering the characteristics and interests of this group, communication messages must clearly highlight the skills of the consortium, identify the innovation, technological advances and know-how expected from DREM project with respect to state of the art, and possibly report time to market for new potential products, market needs and business opportunities.

This target group includes also standardization bodies. Incidence on standardization is considered within the DREAM project (task 6.2 “Standardization & Regulation in D-band” is part of WP6). DREAM will be promoted within standardization groups by ST-I and Nokia-IT and know-how will be exploited for driving the standardization activities. The plans and outcomes of this task are described in detail in a dedicated project delivery [3].

The second communication objective, i.e. dissemination of the new know-how developed within DREAM, is oriented to the scientific community. This target group comprises academic people (professors, researchers, students), researchers and engineers of public institutes and private companies. This dissemination activity will start as soon as relevant results from the different technical work packages of DREAM will be available. The most important communication mean is through presentations at international conferences and submission of scientific papers to international journals. Among the partners of the consortium, the Research Institutes and University are expected to be more involved in this kind of dissemination, being regular scientific publication activity a relevant part of their mission.

The third communication objective is to expand the public awareness about the relevance and importance of research projects funded by the European Community. The target group comprises EU population i.e. Local, National and European citizens. The group is characterized by the lack or just a shallow knowledge about technical or technological aspects. Therefore, attention has been placed in the selection and formulation of communication messages. To attract the interest of this group, the content of the communications has to highlight the needs of EU population, with emphasis on social and environmental impact. Moreover, in any kind of communication the composition of the DREAM consortium should be made clearly visible, with the purpose of highlighting the transnational cooperation between different partners and to give the perception about the importance to share knowledge in this way to strengthen the EU leadership and competition on strategic technological areas.

## **Communication Channels**

The bottom part of fig.1 summarizes the communication means, grouped into different categories, that have been identified by the consortium.

Internet. Allowing to reach all the target groups, Internet will be a primary communication channel. A project web site has been realized to present the DREAM project and broadcast key messages. The website will be continuously updated, reporting news, events, project advances, and it will be used as a repository for scientific publications and presentations, according to the Open Access policy of H2020. The website and other internet resources of the partners, such as social communication channels, with an already established audience and network of followers, will be also exploited for advertisements, press releases, communications, and to redirect people to the main DREAM website.

Networking. Another relevant dissemination category comprises networking, with direct and bilateral human interactions. Industrial partners will promote the DREAM project and its results during face-to-face technical and marketing meetings with customers and with internal and external presentations. For Research Institutes and University, this communication mean includes lectures and invited speeches or seminars. Networking will mostly address the first two dissemination objectives and target groups, but during open science dissemination events, periodically organized by public Research Institutes and University, the DREAM project could be promoted also to a general public, reaching partially also the third target group.

Showcases. The first two target groups will be reached also through congressional events. Attendance to conferences, workshops, exhibitions is the third communication channel identified by the consortium. Based on inputs from the partners of the consortium, a list of such kind of events, suitable for promotion of the DREAM project, to present achievements or to disseminate the developed know-how, has been made and it is reported in the Table-I

Table-I. Showcase events suitable for DREAM dissemination.

<b>Showcase Name</b>	<b>Type</b>	<b>Geographic Area</b>	<b>Domain</b>
International Solid State Circuits Conference	Conference	International	Integrated Circuits
European Solid State Circuits Conference	Conference /Workshop	Mostly European	Integrated Circuits
European Microwave (EuMW)	Conference /Workshop /Exhibition	International	Microwave and mmWave components and Systems
International Microwave Symposium (IMS)	Conference /Workshop /Exhibition	International	Microwave and mmWave components and Systems
ICT Event	Conference /Exhibition	Mostly European	ICT community
European Conference on Networks and Communications (EuCNC)	Conference /Workshop	Mostly European	ICT community
IEEE International Conference on Communications (ICC)	Conference /Workshop	International	ICT community
European Conference on Antennas and Propagation (EuCAP)	Conference	Mostly European	Antenna design and propagation
ETSI ISG mWT meetings	Conference	International	Microwave and mmWave for telecom. systems
CEPT ECC SE 19 meetings	Conference	European	Regulation for Microwave and mmWave domain
ETSI ATTM TM4 meetings	Conference	Mostly European	Standardization for Microwave and mmWave solutions
Official ST web site	Announcement in electronic media	International	Advanced Semiconductor Technology

Scientific Publications. This communication channel consists in submitting manuscripts for publications on the proceedings of international conferences and journals for scientific dissemination. The primary target group is the research and scientific community. Producing papers accepted on conferences and journals with very high scientific reputation (i.e. high impact factor for the journals and limited acceptance rate for conferences) is a kind of measurement and proof on the relevance and impact of the scientific production of DREAM. This will rise the reputation of the consortium members and provides value to the partner's exploitation paths. Considering the relevance of this kind of dissemination, a dedicated section describing the planned approach and expected outcome is reported in this document (Section 1.6). Based on inputs from the partners of the consortium and WP leaders, a list of journals suitable for scientific publications, considering the different technological areas covered by the DREAM project, has been formulated and reported in Table II. The domain of each Journal is classified also considering the outcomes of each technical work-package of the project. Only journals compliant with the Open Access policy have been selected.

Table-II. List of Scientific Journals suitable for DREAM dissemination.

<b>Journal Title</b>	<b>Publisher</b>	<b>Geographic Area</b>	<b>Impact Factor</b>	<b>Green Open Access</b>	<b>Domain</b>	<b>DREAM WP</b>
Journal of Solid State Circuits	Institute of Electrical and Electronics Engineers (IEEE)	International	4.18	Yes	Integrated Circuits	WP-2
Transactions on Circuits and Systems	Institute of Electrical and Electronics Engineers (IEEE)	International	2.41	Yes	Integrated Circuits	W-2
Transactions on Microwave Theory and Techniques	Institute of Electrical and Electronics Engineers (IEEE)	International	2.90	Yes	Microwave and mmWave components and Systems	WP-1 WP-2 WP-3 WP-4 WP-5
Microwave and Wireless Components Letters	Institute of Electrical and Electronics Engineers (IEEE)	International	2.17	Yes	Microwave and mmWave components and Systems	WP-1 WP-2
Antennas and Wireless Propagation Letters	Institute of Electrical and Electronics Engineers (IEEE)	International	3.45	Yes	Microwave and mmWave components and Systems	WP-1 WP-3

## 1.5 Key Messages to Broadcast

Providing broadband wireless communications to a majority of European citizens is a major objective of the European Commission. The relevance of the topic, which is the core of the DREAM project, can be understood and well appreciated by all the identified target groups, spanning from potential customers, academic people, researchers and general public i.e. EU citizens not specifically involved in technical or engineering jobs.

DREAM fosters the research and development of advanced, cutting-edge technologies for wireless high data rate communication links, able to cope with the requirements of future cellular networks beyond 5G. The results of the project will contribute to the increase of the mobile backhaul and front haul capacity, addressing the explosive growth of data traffic in present days and in the near future. The technology developed by DREAM will also contribute to a reduction of the costs and power consumption (green radio) of high data rate small cell backhaul/fronthaul links in D-band.

Key messages have been identified for the general promotion of the DREAM project. They will be reported on communication media such as web-site and press releases and adopted to produce promotion material to be used in events like conferences, exhibitions, seminars.

The key messages summarize the DREAM background and explain the project vision and objectives in a simplified manner such that they can be appreciated by all the targeted groups.

**Background** With a current annual growth rate in the range of 70%, the mobile data traffic of the smartphones, tablets, machine-to-machine and other portable devices dramatically challenges the wireless cellular network which is currently under deployment. Nowadays, there is a shared vision among industry, operators and academy that future wireless networks will have to provide wideband wireless access and ubiquitous computing anywhere and at any time. The human life of the majority of the EU citizen will be surrounded by intelligent wireless sensors, which will bring radical changes to the way we live and do things. Supporting this scenario is a challenge for network operators and wireless network infrastructures and it will demand a tremendous performance improvement of medium range wireless infrastructure. High data-rate millimeter-wave (mmWave) technologies, that demonstrate striking capabilities for the short- and medium-range wireless communications, can bring a tremendous performance improvement. But several technical challenges needs to be addressed by a convergence of advanced semiconductor nanotechnology and a robust wireless infrastructure meshed network with seamless fiber performances.

**DREAM Vision** DREAM' vision of 5G and beyond mobile networks is a heterogeneous network composed of sub-6 GHz macro-cells overlaid by small cells providing radio access in mmWave frequency bands. These small cells are linked together and to the core network through high data rate wireless backhaul link operating in D-band. While macro-cells will provide broadband and high Quality of Service coverage over extended areas and support mobility, mmWave small cells will enable very high data rate radio access to mobile users and extended traffic capacity locally, for instance in areas with a high density of users or with specific needs for high-data rate communications. In this concept, small-cell off-loading technology developed in past and current networks will allow managing the traffic and splitting the data/control traffic when possible to benefit from the improved performances available in mmWave small cells. DREAM work is focused on the 130-174.8GHz band (D band), which is currently available and benefits of a very huge bandwidth and then of a very high data rate potential throughput.

**DREAM Objectives** The main goal of the DREAM project is to enable wireless links with data rate exceeding current wireless solutions by at least a factor of 10 by the exploitation of the radio spectrum in D-band (130-174.8GHz) with advanced silicon microprocesses, and by implementing antenna array beam forming technology.

In a very short statement:

***DREAM will bring wireless systems to the speed of optical systems***

has been selected as a slogan for the project, allowing to express very well and in a concise way the key challenges and potential breakthrough of the technology that will be developed by the consortium.

More specifically, the technical objectives can be outlined as follow:

Objective 1: demonstrate the feasibility of low-cost silicon transceiver analog front end enabling link data rate up to 100Gb/s in D-band. The project targets to enable innovative mmWave systems beyond 100GHz delivering data rate exceeding current wireless backhaul solution by at least a factor of 10.

Objective 2: provide mobile access to content-rich data using a fast and broadband link, which faces the challenge of bringing mmWave radios to both the access points and the User Equipment (UE) in order to exploit the large bandwidth available. Fast mobile broadband access, with low latency enabling high speed end-to-end connectivity even at the cell edge (100Mb/s minimum), will be enabled by the D-band very high throughput inter-small cell backhauling links.

Objective 3: Reduction of the power consumption of the access and small cell backhaul links (green radio): the use of mmWave radios and directive antennas in the short distance links (user access and small cell backhaul) results in a reduced emitted power requirement, more efficient transmitter implementation and a better efficiency of the spectrum usage (higher order modulations with large spectral efficiency can be used due to the more favourable link budget and lower interferences). The project targets to reduce significantly the radios and network power consumption by using mmWave in comparison with existing solutions using lower frequency bands.

Objective 4: Increase the flexibility and the cost saving of the operator networks. The D-band inter small cell backhauling can route data hungry application traffic to fibre network available close to the access points. To optimize the inter-small cell data transferring, to get flexible backhauling and network mesh re-configurability, an important feature of the link solution will be the antenna beam steering functionality.



## 1.6 Scientific Publications

A significant effort is planned for transferring findings and new knowledge developed within DREAM through the main dissemination channels for scientific achievements, such as presentation at international conferences and manuscripts submitted to scientific journals.

This kind of dissemination is prone to the risks of violating ownership of the results, intellectual property rights or to share information which is believed to be sensitive or strategic for the exploitation of the results by the consortium or few specific members. Therefore, precise rules have been set-up. The principles that will be followed by all the consortium partners are defined and agreed in the DREAM Consortium Agreement [4]. In summary, prior notice of any planned publication shall be shared with the consortium at least 45 calendar days before the publication. In this way each partner can rise objections in case of issues related to confidential information, violation of other partner results or background.

In agreement with H2020 rules [5], green open access will be favoured, where post-prints or publishers' PDFs of the research publications will be made available through one or more of the partners' institutional repositories and on the project portal, at no charge, and after an embargo period of between zero and six months has elapsed, depending on publisher policy. Where green open access is not possible in a particularly desired target publication, the policy is to make a once-off payment, as per gold open access, to the publisher to ensure open access to the publication. This publication will then be accessible from the journal website, as well as being placed on the institutional repositories of one or more partners. Gold open access fees will come from the project budget. As open access is mandatory, publishers that do not allow green or gold open access will not be chosen for dissemination. Funding Acknowledgments in accordance to the Grant Agreement [1] will be included in all the scientific publications.

This formulation is proposed for acknowledgment: *"This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 761390"*

The dissemination of scientific results is planned to start from the second year till the conclusion of the project and beyond. All the five technical work packages of DREAM are expected to generate new knowledge worth of publication. Scientific Journals suitable for publications of the activities of each WP have been identified and listed in Table II. The scientific outcomes of each WP are briefly summarized below:

WP1 (Applications, Technology Specifications and Architectures) investigates the heterogeneous wireless network with mmWave small cell access and backhauling. System requirements for small-cell D-band access point and radio transceivers will be developed following a top-down approach and considering different scenarios and use cases. WP1 will provide analysis of D-band frequency arrangement, correspondent regulation and propagation characteristics, and new knowledge about modelling and simulation of the ultra-high capacity wireless networks.

WP2 (Radio analog front end for antenna beam steering) will cover the development of all the D-band radio transceiver functional blocks, such as IQ-mixers, low-noise amplifiers, frequency multipliers, power amplifiers, frequency multiplication, LO generation and distribution in 55nm BiCMOS technology. D-band is presently a domain for niche applications, where very expensive III-V technologies are used. The purpose of WP2 is to demonstrate the viability of silicon to ensure cost effectiveness, compactness and amenability to mass fabrication of D-band radio transceivers. The potential of silicon will be fully investigated. New knowledge about design, simulation and verification techniques, suitable for a silicon VLSI technology are expected from WP2.

WP3 (*Antenna Technology Including Beam Steering Control*) devises low form factor directive steerable planar antenna array solutions suitable for D-band applications. The expected results in terms worth of scientific disseminations are the following: (a) comparison of different beam steering techniques such as phased arrays, reflect arrays...(b) study of solutions for mutual coupling reduction between array elements (c) design and testing of medium-gain beam steering antenna array (d) investigation of co-simulation approaches of antenna elements with RFICs.

WP4 (*Subsystem Validation and Integration platform*) will deliver D-band radio front end prototype modules, including the integration of the analog transceiver chips with the beamforming antenna array. New knowledge will be developed by investigating and comparing suitable integration platform technologies, such as low-temperature co-fired ceramics (LTCC), liquid crystal polymers (LCP), PTFE films.

WP5 (*Proof of Concept, Demonstrator*). The activity of this WP is aimed at providing the final D-band short-haul ultra-high-speed transceiver demonstrator. In specific, the radio transceiver and antenna array will be driven in real time by a base-band unit, able to handle a high throughput, perform basic functionalities like synchronization and channel estimation and to manage the wireless connection. The demonstrator allows to perform true tests on the field, considering many different scenarios and use cases. The knowledge gained from this kind of experimental results will be of very high scientific interest.

## 1.7 Consortium Action Plan

The Gantt chart of DREAM, taken from the project proposal, is shown as Table III. This chart details the timing of the work packages and the tasks to be done in each one. It indicates the dates of project deliverables as well together with the timing of the milestones. The highlighted parts are referred to WP6.

Table – III. DREAM Gantt chart with Deliverables and milestones. WP-6 is highlighted.

	M01	M02	M03	M04	M05	M06	M07	M08	M09	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	
WP1 Applications, Technology Spec. and Arch.			MS1.1																																		
T1.1 Applications, Solution spec.					D1.1																																
T1.2 System architecture and specs							D1.2																														
T1.3 Sub-system and interconnections spec.									D1.3.1										D1.3.2								D1.3.3										
WP2 Radio analog FE for antenna beam steering					MS2.1					MS2.2		MS2.3		MS2.4		MS2.5				MS2.6		MS2.7									MS2.8						
T2.1 D-band transceiver functional block design ...							D2.1.1												D2.1.2								D2.1.3										
T2.2 Frequency synthesizer design							D2.2.1												D2.2.2								D2.2.3										
T2.3 Analog transceiver front-end integration ...																			D2.3.1								D2.3.2					D2.3.3					
WP3 Antenna tech. including beam steering ctrl.						MS3.1				MS3.2								MS3.3								MS3.4				MS3.5							
T3.1 Analysis of requirements			D3.1																																		
T3.2 Antenna element development										D3.2																											
T3.3 Antenna array development																										D3.3											
T3.4 Digital control system development ...																												D3.4									
WP4 Subsystem Validation & Integration platform																										MS4.1						MS4.2					
T4.1 Design of integration platform																																					
T4.2 Assembly of individual blocks																																					
T4.3 Demonstrator assembly and test																											D4.1					D4.2					
WP5 Proof of Concept, Demonstrator																																					
T5.1 Design of testbed architecture, spec. and plan.																										D5.1											
T5.2 Test execution and validation																																				D5.2	
WP6 Dissemination, Exploitation & Standard.																																					
T6.1 Dissemination			D6.1.1								D6.1.2														D6.1.2											D6.1.3	
T6.2 Standardization & Regulation in D-band											D6.2.1													D6.2.2												D6.2.3	
T6.3 Exploitation											D6.3.1													D6.3.2												D6.3.3	
WP7 Project management																																					
T7.1 Project administrative management			D7.1		D7.2,D7.3						D7.4																										
T7.2 Financial management																																					
T7.3 Technical coordination																																					

The resources available from each project partner to carry out WP-6, which includes communication activities, are summarized in the Table IV:

Table IV: WP-6 resources

Partners	Resources (PM)	Budget for personnel costs
VTT	5	38.735,69 €
Ceit-IK4	4	16.893,36 €
ST-I	2	11.840,00 €
III V LAB	1	8.319,73 €
ERZIA	2	7.194,70 €
NOKIA	4	23.600,00 €
UNIPV	9	32.968,42 €

Table V lists the communication actions scheduled by the consortium, based on the objectives and analysis proposed in this document.

Table V. Consortium action plan for DREAM communications.

<b>Partner taking leadership</b>	<b>Action</b>	<b>Content / Purpose</b>	<b>Time</b>
UniPV	realization and update of DREAM website	General project presentation, news, progress & repository	M3
UniPV	Realization of DREAM promotion material (poster, flyer...)	Background, vision and objectives of DREAM	M3
All	Project promotion through individual channels	Background, vision and objectives of DREAM	M3
VTT	Bridge with other H2020 projects on similar topics	Promotion of the project	M6
Nokia & ST-I	Shape the standardization and regulation	Promotion of the project within standardization and regulatory bodies. Shape the regulation aspect and the standardization for fitting with DREAM	M6
Research Institutes & University	Scientific publications on journals and conferences	New knowledge and scientific results	M12
Industries	Whitepapers, participation to exhibitions, trade-shows	Technological achievements of DREAM, possibly with demo	M24
All	Contacts and networking with customers, partners, industry players	Highlight of DREAM achievements for Exploitation	M24

### Partner's Specific Plan

The following tables report individual promotion and dissemination need, and the actions scheduled by each partner within the framework of DREAM project.

<b>VTT</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Attract new commercial contracts	Industry and other research organizations	Presentation of the project, with emphasis on opportunities for industry	(a) Presentations the project to potential customers (b) Poster and flyer in industry events	M0
Strengthen existing collaborations and start new ones. Involvement in new funded projects	Other research organizations. Companies interested on the topic of the project	Presentation of the project with emphasis on the contributions and achievements of VTT, know-how and skills gained from this project.	(a) Seminars in other Universities and Companies. (b) Presentations at international conferences. (c) Scientific publications on international journals	M6
Rise the scientific reputation and visibility of the VTT	Scientific community	Results of scientific relevance, new ideas	(a) Presentations at international conferences. (b) Scientific publications on international journals	M18

<b>Ceit-IK4</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Attract new and talented students to Research Center labs	Students currently attending Degree and/or Master programs in TECNUN (Universidad de Navarra)	Presentation of the project, with emphasis on challenges and training opportunities for high-tech future job positions	(a)Presentations and seminars to students	M12
Strengthen existing collaborations and start new ones. Involvement in new funded projects	Universities, Research Centers and Companies interested on the topic of the project	Presentation of the project with emphasis on the contributions and achievements of CEIT, know-how and skills gained from this project.	(a) Presentations to potential clients/partners. (b)Presentations at international conferences. (c)Scientific publications on international journals	M3
Rise the scientific reputation and visibility of the Research Center	Scientific community	Results of scientific relevance, new ideas	(a) Presentations at international conferences. (b) Scientific publications on international journals	M18

<b>ST-I</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Knowledge sharing	Internal and external, general public, key customers, scientific community	Semiconductor technologies, new IP for MMW front end enabler, silicon based chip set for cellular network infrastructure	Presentations, announcement in electronic media	M24
Announcements and Advertisements	Potential ST's customers	Semiconductor technologies, new IP for MMW front end enabler, silicon based chip set for cellular network infrastructure	Presentations, announcement in electronic media, ST's official web site	M30

<b>III-V Lab</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Attract candidates for a CIFRE PhD program III-V Lab intends to put in place to strengthen the design and innovation effort within DREAM project.	Students currently attending Master programs and/or Engineering Schools programs	Presentation of the PhD subject and DREAM project, with emphasis on the industrial research dimension and perspectives offered by the French CIFRE program	(a)Presentations and seminars to students through contacts in universities and engineering schools (b) Poster and flyer in University events (c) Add project info on the Lab website	M0
Strengthen existing collaborations and start new ones. Involvement in new funded projects	Colleagues of other affiliations (universities, institutes, companies, etc.).	Presentation of the project with emphasis on the contributions and achievements of III-V Lab, know-how and skills gained from this project.	(a) Seminars. (b)Presentations at international conferences. (c)Scientific publications on international journals	M12
Rise the reputation and visibility of III-V Lab	Industrial community	Results of technical and industrial, new performances demonstrated, new system applications enabled	(a) Presentations at international conferences. (b) Scientific publications on international journals	M18

<b>ERZIA</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Attract new and talented Engineers	Students currently attending Master program at University of Cantabria	Presentation of the project, with emphasis on challenges and training opportunities for high-tech future job positions	Presentations and seminars to students	M12

<b>NOKIA</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Rise international credibility, visibility and reputation among Customers	Customers: Mobile operators	Presentation of the project with emphasis on contributions and achievements of NOKIA, know-how and skills gained from this project	Presentations and seminars during internal workshops	M0
Attract new commercial contracts anticipating competitors	Customers: Mobile operators	Presentation of the project results as potential feasible solution for current and future cost effective solutions	Presentations and seminars during internal workshop	M6
Strengthen its network of cooperation and expand it finding new potential partners.	Technology providers	Presentation of the project, with emphasis on challenges for innovative and cost effective solution	1) Presentations to potential partners. 2) Presentations at international conferences.	M0
Shape the standardization and regulation path	Operators and national administrations (regulators)	Presentation of the project, with emphasis on DREAM needs for regulation (spectrum mainly) and standardization (mainly for CE mark)	1) presentation to the regulators 2) presentation to the standardization	M6

<b>UniPV</b>				
<b>Communication needs</b>	<b>Target Audience</b>	<b>Key contents</b>	<b>Means / channels</b>	<b>Time</b>
Attract new and talented students in Master and PhD programs	Students currently attending Bachelor and/or Master programs in UniPV and other Universities	Presentation of the project, with emphasis on challenges and training opportunities for high-tech future job positions	(a) Presentations and seminars to students (b) Poster and flyer in University events (c) Add project info on the Lab website	M0
Strengthen existing collaborations and start new ones. Involvement in new funded projects	Colleagues of other Universities. Companies interested on the topic of the project	Presentation of the project with emphasis on the contributions and achievements of UniPV, know-how and skills gained from this project.	(a) Seminars in other Universities and Companies. (b) Presentations at international conferences. (c) Scientific publications on international journals	M6
Rise the scientific reputation and visibility of the University	Scientific community	Results of scientific relevance, new ideas	(a) Presentations at international conferences. (b) Scientific publications on international journals	M18

## 2. Progress Monitoring

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### 2.1 Project Identity

A visual identity has been given to the project by designing a logo that reflects precise aesthetic canons to communicate in an effective and not misunderstanding way the soul of the project. It's the best way to unite the partners within the project, representing DREAM to the society.

The Logo provides the project's intention right from the start, by expressing the core concepts of the project (the overcoming of the present mobile communication network and the introduction of beyond 5G technologies). The logo includes the dissemination to all partners to be used in all communication materials. It will be used for the whole duration of the project for any deliverable, report and dissemination tool.

The logo, reported in Fig. 3, is publicly visible on DREAM website. A common template for slides, reflecting the colours and graphic aspects of the Logo, has been also created and shared within the consortium. It is used in all the related DREAM presentations (internal or external).



Fig. 3. DREAM logo.

### 2.2 Project E-platform

A DREAM e-platform has been created, consisting of a dedicated project web portal to broadcast public information, milestones, advancements of the project, announcements and all the related scientific publications. This platform is one of the the main communication channels of the project, since it is publicly accessible to everyone. It has been implemented and is managed by UniPV partner through an external agency. The website is online from M3, i.e. November 2017.

The website can be consulted at the following url: <http://www.h2020-dream.eu/>

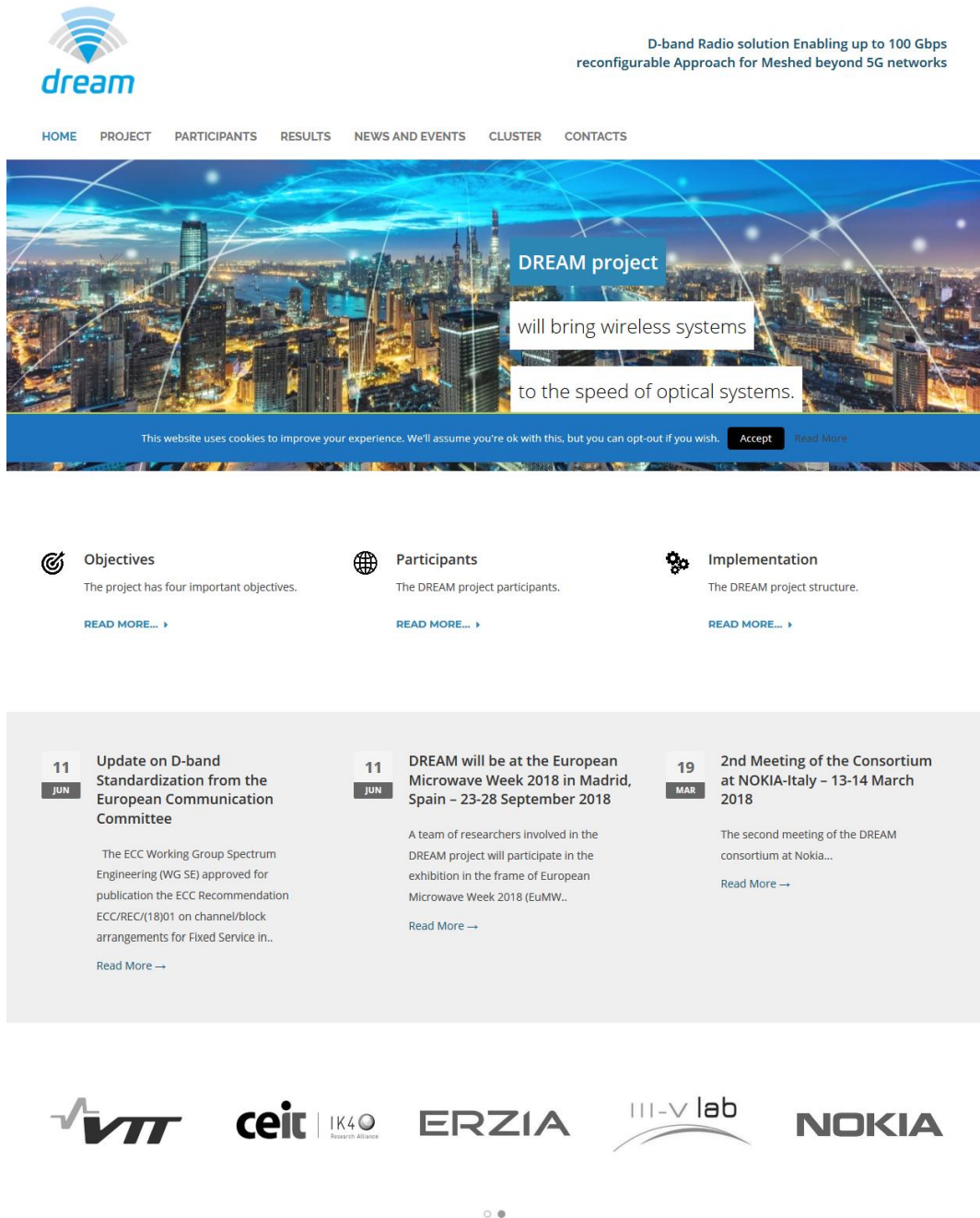


Fig. 4. Home page of the DREAM web page.

DREAM website contains all important facts about the project, which have been divided in five sections:

- (1) Project,
- (2) Participants
- (3) Results
- (4) News and events
- (5) Cluster



Priority has been given to the news section, which is being constantly updated with the latest information. The page shows the project path since the kick-off meeting held in September 2017. Here is a list of the published news until July 2019:

<b>Published News</b>	<b>Date</b>
DREAM will be at IEEE European Solid State Circuits Conference (ESSCIRC-2019)	August 2019
DREAM will be at IEEE 5G World Forum	August 2019
DREAM presented at the EuCNC 2019 and 7th Global 5G Event (G5GE) in Valencia	June 2019
Dr. Vladimir Ermolov will give an invited talk at the International Symposium on Wireless Communication Systems (ISWCS 2019) – August 27-30, 2019	June 2019
Meet DREAM researchers at the EuCNC 2019 and 7th Global 5G Event (G5GE) in Valencia – June 17-21, 2019	May 2019
4th Meeting of the Partners at University of Pavia, Italy – 2-4 April 2019	April 2019
DREAM presented at the Second Towards TeraHertz Communications Workshop – 7 March 2019	March 2019
Second Towards TeraHertz Communications Workshop	Jan. 2019
Positive result for DREAM's first review	Jan. 2019
2nd Towards THz Communications Workshop	Dec. 2018
3rd Meeting of the Partners in Brussels, Belgium – 8-9 November 2018	Nov. 2018
DREAM presented at the European Microwave Week 2018 in Madrid, Spain – 23-28 September 2018	Sept. 2018
Update on D-band Standardization from the European Communication Committee	June 2018
DREAM will be at the European Microwave Week 2018 in Madrid, Spain – 23-28 September 2018	June 2018
2 <sup>nd</sup> Meeting of the Consortium at NOKIA-Italy – 13-14 March 2018	April 2018
The DREAM project has been presented at the ETSI ISG mWT meeting #10	March 2018
The DREAM project is presented at Workshop on TeraHertz Communication – March 7, 2018	Feb. 2018
OFCOM UK: Fixed wireless spectrum strategy	Jan. 2018
NOKIA leading effort to push for spectrum above 95GHz	Jan 2018
ETSI TM4 started to work on the new WI deals with D Band – 13-15 December 2017	Jan 2018
ECC D-Band recommendation ready for approval phase and for public consultation – 4-5 December 2017	Dec. 2017
DREAM kick-off plenary meeting in VTT-Micronova – 3-5 Sep. 2017.	Nov. 2017

DREAM website is being regularly updated based on activities and news that are coming up during the project.

## Web-Site Monitoring

Close monitoring based on analytical tools have been used to improve the website's efficiency. This enables the consortium to monitor the interest shown to the platform as a result of the dissemination activities undertaken. Relevant data are shown in Fig.5a from the beginning of the creation of the website to July 2019. Fig. 5b shows the geographical origin of the visitors.

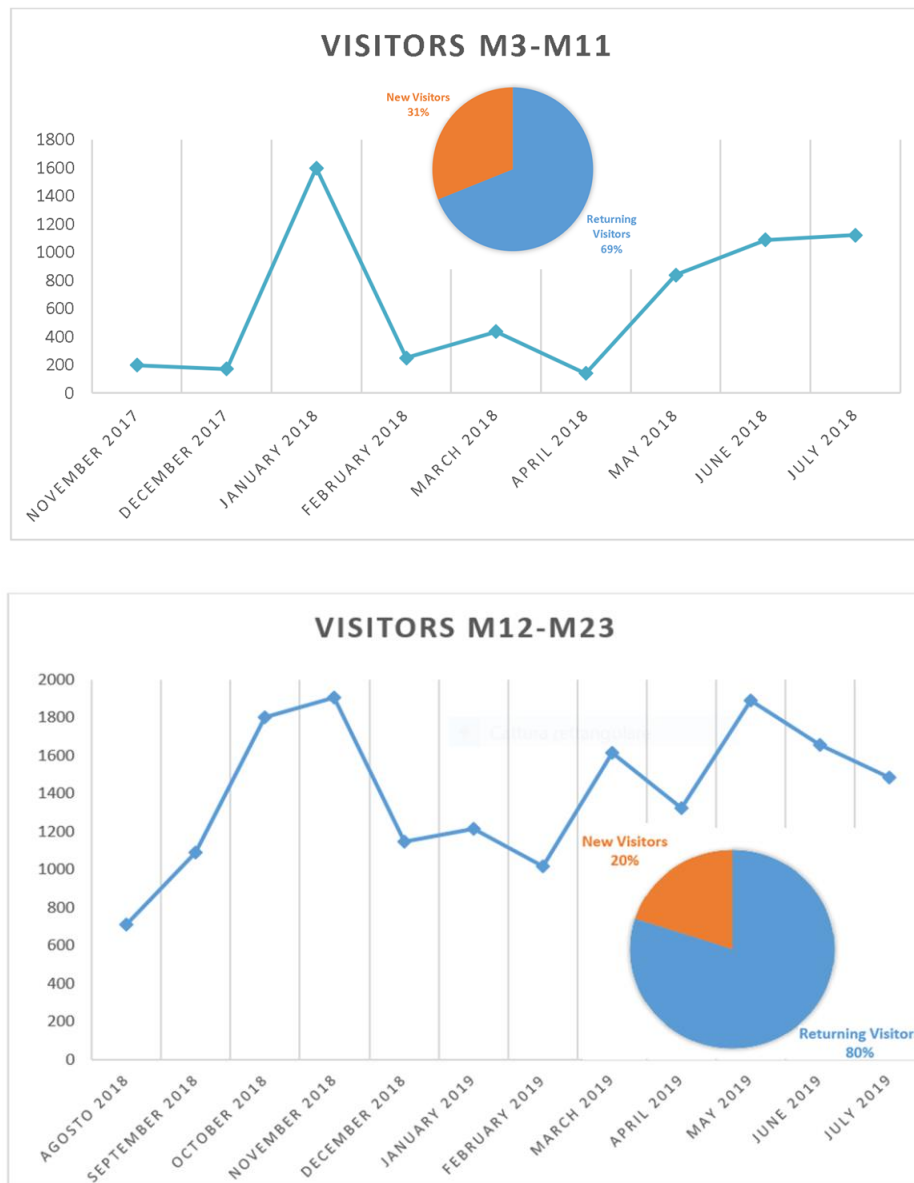


Fig. 5a. Visits to dream web-pages in the first year (M3-M11) and second year (M12-M23) of the DREAM project.

The website's chart gathers statistics on the number of visitors, which is very positive. The total amount of visits in the first 9 months of the project was 5834 with an average number of visits nearly of 600/month. In the second year of the project the total amount of visits increased a lot reaching 16.891 visits. On average, the number of visits per month is now over 1000 with peaks close to 2000 visits in November 2018 and May 2019. The percentage of returning visitors has also grown (80%), meaning that the website has been able to bring back people

who were interested in the project. The percentage of new visitors continues to be significant (20%), although it clearly decreased compared to the initial stage of the project.

The plots in Fig. 5b groups the visits from geographical areas and demonstrates a good international visibility. Comparing the first year (M3-M11) with the second year (M12-M23), it is possible to notice that the visits from USA experienced a significant growth (26,9%) and now overtook the visits from Italy (21%). Important countries like China (4,9%) and France (3%) follow with a lower but still interesting percentage.

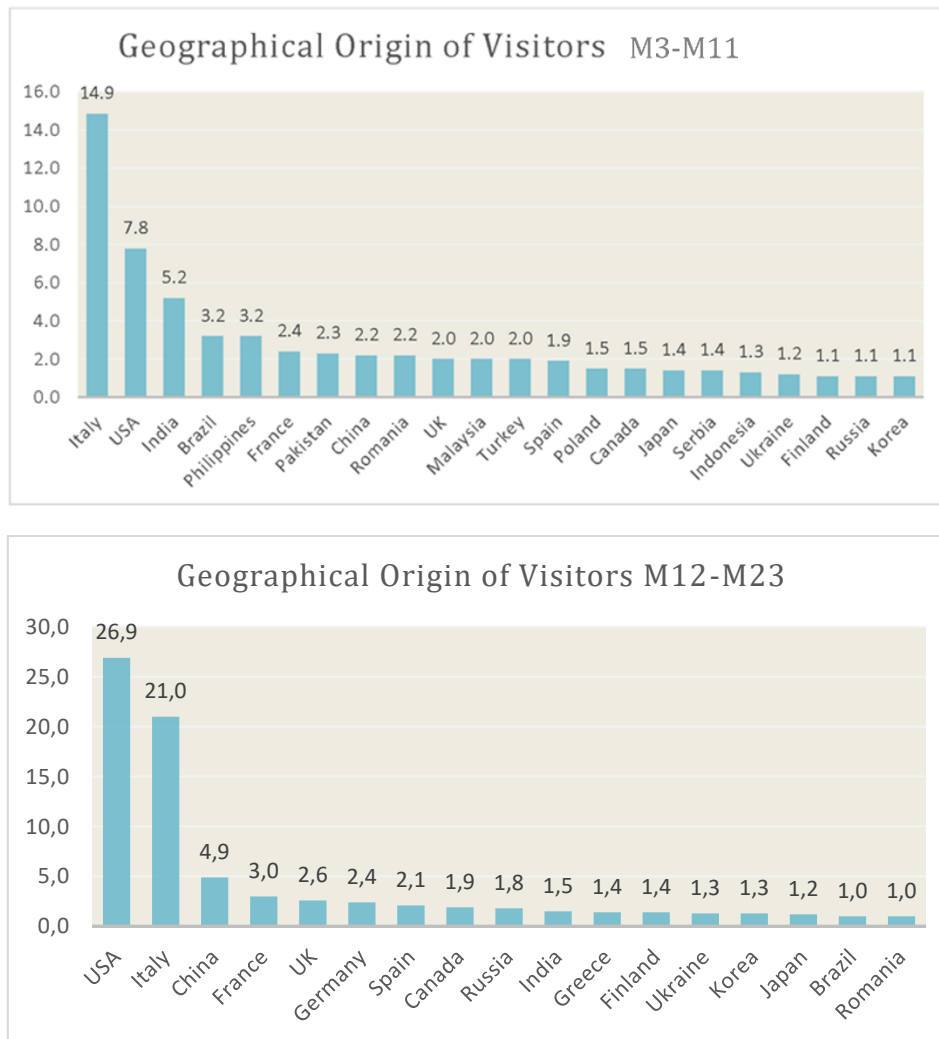


Fig. 5b. Origin of the visitors the first year (M3-M11) and second year (M12-M23) of the DREAM project.

## 2.3 Bridge with other EU projects

Starting from January 2018 (M5), a cluster of UE projects of the same call, H2020 ICT 09-2017 “Networking research beyond 5G” has been established. The purpose is to promote the respective projects within the cluster and to set-up shared and common promotion activities to reach a wider audience and improve the impact of communications. A cluster page is included in the DREAM web-site and reported in Fig. 6. A similar page, with links on the DREAM web site is publicized by the other projects.



**dream** D-band Radio solution Enabling up to 100 Gbps reconfigurable Approach for Meshed beyond 5G networks

HOME PROJECT PARTICIPANTS RESULTS NEWS AND EVENTS **CLUSTER** CONTACTS

ICT-09-2017 cluster H2020-Dream / ICT-09-2017 cluster

DREAM was funded alongside several other projects in the H2020 call ICT-09-2017 “Networking research beyond 5G”. These projects are working together to share and disseminate information among themselves and to a wider audience. There will also be a range of events including workshops and conferences: please check the news feeds for details!

The other cluster members are:

**EPIC**  
*Enabling Practical Wireless Tb/s Communications with Next Generation Channel Coding*  
EPIC aims to develop a new generation of Forward-Error-Correction (FEC) codes in a manner that will serve as a fundamental enabler of practicable beyond 5G wireless Tb/s solutions. The project also aims to develop and utilize a disruptive FEC design allowing to advance state-of-the-art FEC schemes and to obtain the principal channel codes for beyond-5G (B5G) use-cases. The design framework developed within the project will offer new ways to conduct research and development and has the potential to affect the development of all future B5G communication systems.  
<https://epic-h2020.eu/>

**TERAPOD**  
*Terahertz based Ultra High Bandwidth Wireless Access Networks*  
The aim of TERAPOD is to investigate and demonstrate the feasibility of ultra high bandwidth wireless access networks operating in the Terahertz band. The project will focus on end to end demonstration of the THz wireless link within a Data Centre Proof of Concept deployment, while also investigating other use cases applicable to beyond 5G such as wireless personal area networks, wireless local area networks and high bandwidth broadcasting. The project seeks to bring THz communication a leap closer to industry uptake through leveraging recent advances in THz components, a thorough measurement and characterization study of components and devices, coupled with specification and validation of higher layer communication protocol specification.  
<http://terapod-project.eu>

**TERRANOVA**  
*Terabit/s Wireless Connectivity by Terahertz Innovative technologies to deliver Optical Network Quality of Experience in Systems beyond 5G*  
TERRANOVA envisions to extend the fibre-optic systems’ Quality of Experience to wireless links by exploiting frequencies above 275 GHz. This means reliable connectivity at extremely high data rates in the Tbit/s regime and almost ‘zero-latency’ for networks beyond 5G. The consortium will employ breakthrough technology concepts, namely: the design of baseband signal processing for the complete optical and wireless link and the development of THz wireless frontends and their integration with photonic components. A network information theory framework, caching techniques, channel and interference models, all tailored to the particularities of the THz regime and extremely large bandwidths will achieve the successful co-design of components and network solutions.  
<https://ict-terranova.eu/>

**ULTRAWAVE**  
*Ultra capacity wireless layer beyond 100 GHz based on millimeter wave Traveling Wave Tubes*  
The ULTRAWAVE project is aimed at developing a high capacity backhaul that enables 5G cell densification by exploiting bands beyond 100 GHz. New travelling wave tubes delivering high power will allow the creation of an ultra capacity layer providing more than 100 Gbps per kilometer square in point-to-multi-point at D-band (141-174.8 GHz) fed by novel G-band (300 GHz) point-to-point high capacity links. The ULTRAWAVE system is empowered by the convergence of three main technologies: vacuum electronics, solid-state electronics and photonics. This ULTRAWAVE layer will enable backhaul of hundreds of small and pico cells, no matter the density, opening scenarios for new network paradigms aiming at a full 5G implementation.  
<http://www.ultrawave2020.eu/>

**WORTECS**  
*Wireless Optical/Radio Terabit Communications*  
WORTECS will explore Tb/s capability of the spectrum above 90 GHz, combining radio and optical wireless technologies. The primary challenge of WORTECS is to propose scientific and technology advances for novel use of the spectrum, de-risking technological building blocks at frequencies above 90 GHz up to THz communications backed by innovative usage scenarios, for instance, virtual reality. It will also address visible light communications and develop radically new approaches for spectrum efficiency. WORTECS aims to offer: optical wireless communication and radio over 90 GHz Proof of Concept with several Gbps throughput; innovation on antenna, coding and heterogeneous wireless network studies with new architectures and protocols for routing, latency and caching.  
<https://wortecs.cms.orange-labs.fr/>

Fig. 6. ICT-09-2017 Cluster page.

In 2019 an agreement for mutual promotion has been established with the european project Car2TERA (<https://car2tera.eu/>) given the common target with DREAM of developing hardware in silicon for communications at carrier frequencies in SubTHz region.

## 2.4 Promotional Material

A series of dissemination materials have been produced, in order to define and maintain the common identity of the project, raising its visibility to the public and all the partners through promotional activities.

All the materials will be distributed at the events attended by the partners in order to increase the visibility of the project and extend our network and contacts.

1. Slides for presentation of the DREAM project have been prepared and shared within the consortium for individual promotion. The slides, shown in Fig. 7, summarize the key messages described in this document, i.e. background, vision and objectives of DREAM. In addition, the project organization and consortium composition are presented.

The figure displays a series of 10 slides from the DREAM project presentation. The slides are organized as follows:

- Slide 1:** D-band Radio solution enabling up to 100Gb/s reconfigurable approach for meshed beyond 5G network.
- Slide 2:** Outline: Vision, Objectives and Technical Challenges, Project Organization and Partners, Info and Contacts.
- Slide 3:** Vision: Nearly 10x wireless speed increase every 4 years. Extrapolating into the future, 1000x/s will be required around 2030.
- Slide 4:** New Transport networks: Need of an ultrahigh data rate wireless solution. Small cells deployed within the macro-cell coverage to manage data traffic explosion.
- Slide 5:** Objectives: Demonstrate the feasibility of low-cost 5G/6G transceiver enabling link data rate up to 100 Gb/s in D-band.
- Slide 6:** Technical Challenges: Defining the specifications of high data rate wireless link in D-band.
- Slide 7:** Project Organization: WP1 Applications, Technology Specifications and Architectures; WP2 Radio access layer and for antenna beam steering; WP3 Network Technology including Beam Steering Control; WP4 Subsystem Validation and Integration platform; WP5 Proof of Concept Demonstration.
- Slide 8:** Partners: ST, VTT, ceit, IK4Q, life augmented, III-V lab, NOKIA, ERZIA.
- Slide 9:** Info and Contacts: Project Coordinator: Dr. Vladimir Ermolov, vladimir.ermolov@vtt.fi.
- Slide 10:** DREAM website address: www.h2020-dream.eu.

Fig.7 Shared slides for individual DREAM promotion actions.

2. The leaflet (Fig.8) shows a complete view of the project, describing the vision, the objectives, the work plan and the project solution. The main purpose of the leaflet is to provide our audiences with an attractive and written overview of the main project objectives and characteristics. All partner's logos are also displayed on the back page, alongside with DREAM website address.



## The project's structure

- The work plan of the project has in total 7 WPs:
- 2 non-technical WPs for management, dissemination, exploitation and standardization activities;
  - 5 WPs for technical tasks.

**WP1 (Applications, Technology Specifications and Architectures).** Will provide the applications, technology specifications and architectures for the solution based on a transceiver operating in D-Band.

**WP2 (Radio analog front end and antenna beam steering).** Will cover the development of all the D-band analog frontend transceiver functional blocks required to provide cost-efficient, high data rate wireless back- and front haul radio links for the project, using the advanced 55nm BiCMOS technology of ST-I to cope with the integration of the complete D-band frontend on a single chip set.

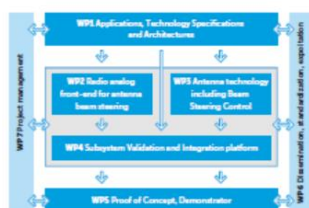
**WP3 (Antenna Technology including Beam Steering Control).** Will develop the antenna elements and array integration concepts needed in the demonstration platforms.

**WP4 (Subsystem Validation and Integration platform).** Will design the demonstrator platform and integrate deliverables of WP2 and WP3. The work will include design of power supplies, RF and electrical interfaces, integration of RF and DC subsystems and a system for beam steering control.

**WP5 (Proof of Concept, Demonstrator).** Will design the testbed architecture and define the test planning. It will also build the testbed based on the prototypes of WP4.

**WP6 (Dissemination, standardization, exploitation).** Receives inputs from all the work packages of the project to disseminate the developed technology.

**WP7 (Project management).** Is the work package that deals with the coordination and management issues.



## Participants



## Info & contacts

Project Coordinator: Dr. Vladimir Ermolov  
e-mail: Vladimir.ermolov@vtt.fi



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 761390

[www.h2020-dream.eu](http://www.h2020-dream.eu)



**D-band Radio solution**  
**Enabling up to 100 Gbps**  
**Reconfigurable Approach for**  
**Meshed beyond 5G networks**



*Dream project will bring wireless systems to the speed of optical systems*

Fig.8a. Leaflet external side.



## The vision

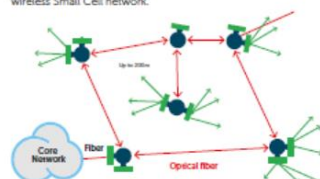
Exploitation of the radio spectrum in D-band (130-174.8 GHz) with beam steering functionality enables wireless links with data rate exceeding current V band and E band wireless backhaul solutions by at least a factor of 10 and brings wireless systems to the speed of optical systems.

## The main objective

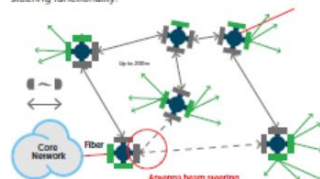
The main objective of this project is the research and development of advanced, cutting-edge technologies for wireless high data rate communication links able to cope with the requirements of future cellular networks beyond 5G. The increase in wireless communication speed has been almost ten-fold every four years until now. Assuming the development is extrapolated into the future, 100 Gbps wirelessly will appear in around 2020. To date, there is still a lack of technology compatible with the next high demanding telecommunications standards beyond the 5G. New network architectures that can be deployed efficiently will be required to address this very demanding high density urban environment.

## The small cells & the Dream's solution

Small cells are a key enabler of future networks and they are currently a focus of research leading to new challenges for the backhaul network because of their dense deployment. In order to allow the Small Cell backhauling network deployment at reasonable costs with seamless fiber performances, project DREAM envisages the multi gigabit wireless Small Cell network.



The DREAM project will research a wireless link solution supporting data rates up to 100 Gbps covering distances of up to 300 m at ultra-high carriers in the D-band frequency range 130 GHz-174.8 GHz. To support such data rates wirelessly, channel bandwidths of few gigahertz will be required. In order to optimize inter-small cell data transferring, to get flexible backhauling and network mesh re-configurability in network approach, an important feature of the link solution will be beam steering functionality.



## The dream's project objectives

**1 Demonstrate the feasibility of low-cost SiGe BiCMOS transceiver analog front end enabling link data rate up to 100 Gb/s in D-band.**

The project targets to enable innovative mmW systems beyond 100 GHz delivering data rate exceeding current V band and E band wireless backhaul solution by at least a factor of 10.

**2 Provide a high capacity backhauling in D-band for future Small Cells access point networks.** This enables the challenge of bringing mmW radios to the access points in order to exploit the large bandwidth available and to avoid disruption or environmental impact of fibre optic laying. Fast mobile broadband access with low latency and high speed end-to-end connectivity even at the cell edge (100 Mb/s minimum), will be enabled by the D-band very high throughput inter-small cell backhauling links.

**3 Increase flexibility and cost saving for network operator.** Inter-small cell backhauling connections by compact and low cost D-band transceiver, with antenna beam steering option, will enable the network deployment and will bring small cell access point data traffic close to the fiber backbone. Software Defined Network deployed using Centralized Radio Access Network in highly optimized and power efficient data center will be consequently enabled.

**4 Reduction of the cost and power consumption (green radio) of high data rate small cell backhaul/fronthaul links in D-band.** The use of D-band radios, directive and beam steering antennas results in a reduced emitted power requirement, more efficient transmitter implementation and a better efficiency of the spectrum usage (since high frequency reuse can be achieved). The project targets to reduce significantly the radios and network power consumption, by moving to low complexity modulation scheme leveraging wide frequency bands available beyond 100 GHz (more than 40 GHz of potential bandwidth around 150 GHz).

Fig.8b. Leaflet internal side.

- Alongside the leaflet, a professional A0 paper size poster has been created (Fig.9). The purpose is to catch the audience attention, focusing mainly on the visual aspects. An important part has been given to diagrams and figures which illustrate the core of the project. From the content point of view, the poster of DREAM illustrates its objectives, work plan and includes basic information on the project, together with all partners' logos.



Fig.9. DREAM poster.

## 2.5 Promotion within Standardization Bodies

Considering the nature of the project in providing a solution for a future wireless backhaul network, it is a primary interest of industrial partners to shape the regulation and standardization environment. Shaping the Regulation, means influencing the regulatory authorities to recommend the D-Band for this kind of application and with a suited channel separation. This is the baseline condition for having the chance to exploit the DREAM results in future commercial products.

Shaping the standardization means influencing the main standardization body, ETSI, in developing an harmonised standard with a set of requirements in line with the DREAM solution. These requirements shall be recognised as fulfilling the principle set into the European Directive, RED, as well.

To reach the goals, DREAM has to participate to at least the following working groups: ETSI, ATTM TM4, CEPT ECC WG SE19 and ETSI ISG mWT. Details about this activities are deeply explained in deliverable 6.4

The following table is a record of meetings in the first year of the project:

Table VI. Participation to standardization and regulation meeting.

	Partner	Type of Activity /Description	Type	Date	Place
M1-M11					
1	NOKIA	ECC SE19 meeting # 78	Regulation	3-5 December 2017	Copenhagen (D)
2	NOKIA	ETSI ATTM TM4 Meeting # 58	Standardization	11-13 December 2017	Sophia Antipolis(F)
3	NOKIA & ST-I	ETSI ISG mWT meeting # 10	Lobby	13-15 February 2018	Sophia Antipolis(F)
4	NOKIA	ECC SE19 meeting # 79	Regulation	3-4 April 2018	Copenhagen (D)
5	NOKIA	ETSI ATTM TM4 Meeting # 59	Standardization	9-11 April 2018	Sophia Antipolis(F)
6	NOKIA	ETSI ISG mWT meeting # 11	Lobby	19-21 June 2018	Sophia Antipolis(F)
M12-M23					
7	NOKIA	ECC SE19 meeting # 80	Regulation	August 2018	Vienna (D)
8	NOKIA	ECC SE19 meeting # 81	Regulation	December 2018	Biel/Bienne (CH)
9	NOKIA	ECC SE19 meeting # 82	Regulation	April 2019	Rome (I)
10	NOKIA	ETSI ATTM TM4 Meeting # 60	Standardization	November 2018	Sophia Antipolis(F)
11	NOKIA	ETSI ATTM TM4 Meeting # 61	Standardization	April 2019	Sophia Antipolis(F)
12	NOKIA	ETSI ISG mWT meeting # 12	Lobby	October 2018	Sophia Antipolis(F)
13	NOKIA	ETSI ISG mWT meeting # 13	Lobby	April 2019	Sophia Antipolis(F)
14	NOKIA	ETSI ISG mWT meeting # 14	Lobby	June 2019	Sophia Antipolis(F)
15	NOKIA	ITU-R WP 5C	Standardization & Regulation	April 2019	Geneve (CH)



## 2.6 Conferences and Exhibitions

Partners attended conferences/exhibition and promoted the DREAM project through this channels. National and international congressual events represent a great opportunity to promote the project, to share the results with experts and to achieve an effective and efficient dissemination of the project. The following table is a record of such events:

Table VI. Participation to conferences, Workshops and Exhibitions.

	Partner	Type of Activity /Description	Type	Date	Place
M1-M11					
1	VTT	Nokia Brooklyn Summit 2018	Conference,	26.4.2018	New York, USA
2	VTT, Erzia	IEEE International Microwave Symposium IMS 2018.	Conference & Exhibition	June 10-15, 2018	Philadelphia USA
3	VTT	Towards TeraHertz Communications Workshop	Worksohp	March 7, 2018	Brussels, Belgium
4	VTT, Erzia	European Microwave Week 2018	Conference & Exhibition	Sept. 23-28, 2018	Madrid, Spain
M12-M23					
5	III-V Lab, VTT	2019 Asia-Pacific Microwave Conference	Conference	Scheduled 10-13 Dec. 2019	Singapore
6	NOKIA	Workshop "Evolution of Fixed Service in Backhaul support of IMT 2020 / 5G"	Workshop	April 2019	Geneve, Switzerland
7	Erzia	IEEE International Microwave Symposium IMS 2019	Exhibition	June 2-7, 2019	Boston, USA
8	NOKIA, VTT	European Conference on Networks and Communications, 2019	Conference & Exhibition	June 2019	Valencia, Spain
9	NOKIA, VTT	16th International Symposium on Wireless Communication Systems (ISWCS)	Conference	Scheduled August 2019	Oulu, Finland
10	CEIT	XXXIV Conference on Design of Circuits and Integrated Systems, DCIS 2019	Conference	Scheduled Nov. 2019	Bilbao, Spain
11	UniPV	European Solid State Circuit Conference, ESSCIRC 2019	Conference	Scheduled Sept. 2019	Krakow, Poland
12	Erzia	European Microwave Week 2019	Exhibition	Scheduled Sept. 29-Oct. 4, 2019	Paris, France

## 2.7 Partner's Specific Promotions

Each partner of the consortium contributed to DREAM promotion through its network and exploiting its own communication channels and means. This comprises presentation at internal meeting (within the same company or institution), presentation at customers, seminars, speeches. All this kind of activities are helpful to publicize general information and build partnerships as well as directly targeting different audiences. Individual initiatives of this kind are monitored and recorded in the table below, as part of Task 6.1 of WP6.

Table VII. Partner's specific initiatives.

	Partner	Type of Activity /Description	Date	Place	Attendance/ Measured Impact
M1-M11					
1	VTT	Presentation of the project to OMMIC	--	France	6 people
2	VTT	Presentation of the project to Infineon	--	Germany	8 people
3	VTT	Presentation of project to Fraunhofer IAF	--	Germany	4 people
4	VTT	Presentation of project to European Space Agency	--	Netherlands	6 people
5	VTT	Presentation of the project to customers	--	Finland	11 events, 8 different companies/organizations, 100+ participants
6	CEIT	Published on its WEB and social networks the starting of the project.	Since January 2018	--	--
7	CEIT	Presented the project in meetings with customers.	Since January 2018	--	--
8	CEIT	Presented the project and phase-shifter design to researchers, professors and internship students of Tecnun-Univ. of Navarra	July 20, 2018	Tecnun-University of Navarra, Donostia, Spain	5 people
9	UniPV	Publicity of DREAM on the Lab web page	Since January 2018	--	2 students hired and now involved in DREAM activity
10	UniPV	Presentation of DREAM to Students of UniPV	Dec. 5, 2018	University of Pavia	15 students attending
11	UniPV	Presentation of DREAM to Students of Università di Modena e Reggio Emilia	May 4, 2018	University of Modena and Reggio Emilia	20 students attending
12	UniPV	Presentation of DREAM in Huawei design Center, Milan	Jan. 30, 2018	Milan - Italy	20 engineers attended
13	III-V Lab	Publicity of DREAM on the Lab web page		<a href="http://www.3-5lab.fr/news.htm">http://www.3-5lab.fr/news.htm</a>	
14	III-V Lab	Presentation of DREAM to Students	Dec, 2017	III-V Lab & web meeting	1 internship hired for 6 months to work in DREAM activity.
15	III-V Lab	Presentation of our activity in DREAM to Bordeaux INP ENSEIRB-MATMECA	June 29, 2018	III-V Lab	Looking for a PhD student.

16	NOKIA	Presentation of DREAM to ETSI ISG mWT	March, 2018	ETSI premise Sophia Antipolis	25 engineers attended . Dream quoted in ETSI ISG mWT deliverable [6]
17	NOKIA	Presentation of DREAM inside NOKIA		Webmeetings	100+ engineers attended
18	NOKIA	Publicity of DREAM on the NOKIA Intranet main page	Since March, 2018	NOKIA intranet web page	Potentially, All NOKIA community
19	NOKIA	Presentation of the project to customers	--	Italy, France	10 events among different companies, 100+ participants
20	ERZIA	Publicity of DREAM on the Lab web page	Since December 2017	<a href="https://www.erzia.com/news/2017/12/20/erzia-joins-dream-rd-eu">https://www.erzia.com/news/2017/12/20/erzia-joins-dream-rd-eu</a>	
21	ST-I	Presentation of the DREAM project and its objectives	March 5 2018	ST Design Center in Castelletto (MI)	More than 20 employees attended
M12-M23					
22	VTT	Presentation of project to Fraunhofer IAF	--	Germany	4 people
23	VTT	Presentation of project to European Space Agency	--	Netherlands	4 people
24	VTT	Presentation of the project to customers	--	Finland	8 events, 8 different companies/organizations, 50+ participants
25	VTT	Presentation of DREAM at 2nd Towards TeraHertz Communication Workshop	March 7, 2019	Brussels	--
26	VTT/ NOKIA	Presentation of DREAM at European Conference on Networks and Communications (EuCNC)	June 2019	Valencia, Spain	--
27	VTT/ NOKIA	16th International Symposium on Wireless Communication Systems (ISWCS)	August 2019	Oulu (Finland)	---
28	CEIT	Presentation of DREAM to other researchers & academics	Sept. 23-28, 2018	European Microwave Week (Madrid)	30-40 people
29	CEIT	Presentation of DREAM to potential customers and partners	Oct. 2018 to August 2019	CEIT's and customers' premises	5-6 attendees (mostly engineers) per time
30	CEIT	Dissemination of project activities through Ceit's social media	Sept 2018	Twitter & Facebook	Followers (>1700 people)
31	UniPV	Presentation of DREAM to Students of UniPV	Nov. 21, 2018	Pavia (Italy)	20 students attended
32	UniPV	Presentation of DREAM to Huawei	April 30, 2019	Milan (Italy)	5 engineers attended
33	UniPV	Presentation of DREAM to HiSilicon	July 4 <sup>th</sup> , 2019	Shanghai (china)	6 engineers attended

34	III-V Lab	Presentation of DREAM circuits to Bell-labs researchers.	Sept. 20, 2019	Murray-Hill, USA	5 engineers attended from Analog ASICs department.
35	NOKIA	Presentation of DREAM to NOKIA X-Haul Sales community	June 24,2019	Milan plus Web-meeting	>50 engineers attended
36	NOKIA	Presentation of DREAM to NOKIA R&D Community	September 20, 2018	Milan plus Web-meeting	36 engineers attended
37	NOKIA	Message in the Yammer NOKIA X-Haul Group	June 28.2019	NOKIA Yammer	Reached all NOKIA community 150 visits in the first week
38	NOKIA	Customers Presentation	Starting from September 2018. 3-4 times per months	Customers premises	5-10 attended per time
39	NOKIA	NOKIA Haul Internal New letter	July 2019		Reached all XHaul community (>1000 person)
40	NOKIA	Workshop "Evolution of Fixed Service in Backhaul support of IMT 2020 / 5G"	April 2019	ITU Geneve	>50 attended
41	NOKIA	NOKIA white Paper "The evolution of microwave transport - enabling 5G and beyond"	April 2019	NOKIA web	More than 600 access per month
42	NOKIA	NOKIA contribution on ETSI GR mWT #008 on "Analysis of Spectrum, License Schemes and Network Scenarios in the D-band"	August 2018	ETSI website	---
43	ERZIA	Presentation of DREAM to talented students	14 March, 2019	Santander, Spain	30-40 people
44	ERZIA	Presentation of DREAM to potential customers and partners	Sept 2018 to Aug 2019	Erzia's and customers' premises	2-3 attendees (mostly engineers) per time
45	ERZIA	Dissemination of project activities through Erzia's website	Sept 2018 to Aug 2019	Erzia's website	---

## 2.8 Scientific Publications

Dissemination of scientific achievements has started in the second year of the project. The table VIII lists the scientific papers produced by partners and consortium which have been submitted, published or accepted for publication. Once formally published, a copy of each paper will be available for download on the DREAM e-platform.

Table VIII. Scientific Publications.

	First Author	Title	Journal or Conference title	Publisher	Volume, Pages, Year
1	M. Frecassetti, NOKIA	D-Band Transport Solution to 5G and Beyond 5G Cellular Networks	European Conference on Networks and Communications	IEEE	17-21 June 2019; Valencia, Spain
2	M. Frecassetti, NOKIA	D-Band Radio Solutions For Beyond 5G Reconfigurable Meshed Cellular Networks	16th International Symposium on Wireless Communication Systems (ISWCS)	IEEE	27-30 August 2019, Oulu, Finland
3	M. Madipour, UniPV	40GHz Frequency Tripler with High Fundamental and Harmonics Rejection in 55nm SiGe-BiCMOS	European Solid State Circuit Conference (ESSCIRC)	IEEE	23-26 Sept. 2019, Krakow, Poland
4	D. del Rio, CEIT	Design of integrated control circuits for mm-wave phased arrays in 55-nm BiCMOS	XXXIV Conference on Design of Circuits and Integrated Systems, DCIS 2019		20-22 Nov. 2019, Bilbao - Spain
5	P. Roux, III-V Lab	Wideband Variable Gain Amplifier for D Band Backhaul Transceiver in 55nm BiCMOS Technology	2019 Asia-Pacific Microwave Conference	IEEE	10-13 Dec. 2019, Singapore
6	A. Lamminen, VTT	Technologies for D band links with beam steering functionality	2019 Asia-Pacific Microwave Conference	IEEE	10-13 Dec. 2019, Singapore

Scientific dissemination will continue in the next year based on results already achieved or that will be completed soon. An analysis has been performed to identify potential publication targets for short-term papers that will be submitted in the next 12 Months of the project and the list is reported Table IX.

Table IX. Publications planned for the next 12 Months (M24-M36)

	Partner	Expected content / title	Type & Publisher	WP
1	VTT	Patch Antennas on PCB for D-band Phased Antenna Arrays	Journal, IEEE	WP3
2	VTT	Integration technologies for D-band	Conference, IEEE	WP4
3	CEIT	Design and measurements of D-Band phase shifter	Journal, IEEE	WP2
4	CEIT	Chip to PCB transition design and measurements	Conference, IEEE	WP2, WP3
5	CEIT	Tx/Rx antenna driver chip	Journal, IEEE	WP2, WP4
6	CEIT	Measurement of ICs of control & monitoring circuits	Conference, DCIS2020	WP2
7	UniPV	Extended analysis of Frequency Multiplier x6	Journal, IEEE	WP2
8	UniPV	Preliminary results on the D-band frequency doubler	Conference, IEEE	WP2
9	III-V Lab	Wideband Circuits for D Band Phased-Array antenna in 55nm BiCMOS Technology	Conference, IEEE	WP2

10	III-V Lab	On-wafer results on the D-band direct modulator	Conference, IEEE	WP2
11	III-V Lab	Direct modulator/demodulator in D-band	Conference, IEEE	WP2

### 3. Conclusions

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This report provided an overview of the dissemination plan implemented within the DREAM project. Targeted audiences and the dissemination means that are used in order to gain awareness and visibility about the project have been described.

To maximise the visibility of DREAM several communication means are planned, using traditional and digital channels developed by the consortium and leveraging the network and promotion channels of each partner.

The strategy has been designed to support the objectives and to help the partners to achieve the goals on time and within the established budget.

The document reported all the promotion and dissemination actions of the consortium and specific partners from the beginning of the project to Month M23.

## References

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- [1] DREAM Grant Agreement
- [2] DREAM Full Project Proposal
- [3] DREAM Standardization Report
- [4] DREAM Consortium Agreement
- [5] H2020 Programme. “Guidelines to the Rules on Open Access to Scientific Publications And Open Access to Research Data in Horizon 2020”
- [6] ETSI ISG mWT: ETSI GR 008 “Analysis of Spectrum, License Schemes and Network Scenarios in the D-band”

## Appendix

The input Forms developed for defining and updating the DREAM dissemination plan and for monitoring the activities performed by the consortium are reported in this Appendix. Form-1 is used for acquiring inputs from each partner related to specific communication needs in the framework of DREAM project, the target audience, messages and channels that are expected to be used. Form-2 collects inputs for filling and updating the list of showcase events (Table-I) and scientific journals (Table-II). Form-3 and Form-4 are used for monitoring and recording the activities: Form-3 lists the promotion and communication activities performed by each partner while Form-4 is for keeping track of scientific publications. Form-5 lists short-term planned publications and is used to stimulate future scientific dissemination by each partner.

The inputs received from each partner at the time of filling this document is summarized in Table A1.

Table A1. Summary of Partners inputs.

Number of records for each partner					Date: August 23 <sup>th</sup> , 2019		
	VTT	CEIT-I4K	ST-I	III-V Lab	ERZIA	NOKIA	UniPV
Form-1	3	3	2	3	1	4	3
Form-2	2	4	1	5	-	3	5
Form-3	7+6	2+3	1	3+1	1+3	10+8	4+3
Form-4	3	1	-	1	-	2	1
Form-5	1	4	-	3	-	-	2

Form-1: Background Information Table for Communication Activities					
Partner:			Date:		Filled by:
Progressive Number	Partner communication needs	Target Audience	Key contents of the message	Means / channels	Start Time
1					
2					
...					

Form-2: Communication/Dissemination Venues					
Partner:			Date:		Filled by:
Progressive Number	Name	Type	Geographic Area	Domain	
1					
2					
...					



<b>Form-3: Record of Individual Communication Activities</b>				
Partner:		Date:	Filled by:	
Progressive Number	Type of Activity /Description	Date	Place	Attendance/ Measured Impact
1				
2				
...				

<b>Form-4: Record of Scientific Publications</b>					
Partner:			Date:	Filled by:	
Progressive Number	First Author	Document Title	Title of Journal or Conference	Publisher	Volume, Pages, Year
1					
2					
...					

<b>Form-5: Short-term plan for Scientific Publications</b>				
Partner:		Date:	Filled by:	
Progressive Number	Type (Journal/Conference)	Expected Content	Publisher/Congress Organizer	Work Package
1				
2				
...				