IoRL Deliverable D7.4

Report on Dissemination Activities

Editor:	Jian Song, Tsinghua University
Deliverable nature:	Report
Dissemination level: (Confidentiality)	Public (PU)
Contractual delivery date:	31.05.2018
Actual delivery date:	05.09.2018
Suggested readers:	Indoor communication experts and providers of indoor communication services, mobile network operators
Version:	1.0
Total number of pages:	39
Keywords:	5G, Internet of Radio Light, millimeter Wave, Network Functions Virtualization, Software-Defined Networking, Visible Light Communications

Abstract

This deliverable summarises the dissemination activities and efforts in IoRL towards creating public awareness and transferring the knowledge generated in the project to the outside world in the first reporting period. The document presents the activities and achievements structured according to the focus groups, delivery channels used and material produced. An outlook to the planned activities in the next period is also provided.

Disclaimer

The research leading to these results has received funding from the European Union Horizon 2020 Programme under grant agreement number 761992 — IoRL — H2020-ICT-2016-2017/H2020-ICT-2016-2. The funding for the China partners is from the Ministry of Industry and Information Technology of The People's Republic of China under the program of National Key R&D Program of China with Grant No. 2017YFE0112300.

[Full project title] Internet of Radio Light

[Short project title] IoRL

[Number and title of work-package] WP7 - Dissemination and Exploitation

[Number and title of task] D7.4 Report on Dissemination Activities

[Document title] Report on Dissemination Activities

[Editor: Name, company] Jian Song, Tsinghua University

[Work-package leader: Name, company] Sibel MALKOS, Arcelik Anonim Sirketi

[Participants] Ubrunel, COB, ISEP, MTEK, IM, BRE, FhG, NCSRD, VT, WUT, ARC, REL, FER, TH, LC, SFY, CI3

[Estimation of PM spent on the Deliverable]

Executive summary

This document reports on the dissemination activities and actions accomplished during the first year of the IoRL project life both at project and partner levels.

During the first reporting period of IoRL project partners already made considerable efforts to create awareness about IoRL and disseminate its early results as broadly as possible. First and foremost the audience and a strategy to reach them was identified, and the suitable communication and dissemination channels were established, including the project website, as the primary public presence of the project towards the general public.

Activities performed included, but are not limited to the followings: Conference paper contributions, Exhibitions and demos, Presentations, Media Coverage, Invited talks, Workshops, Flyers, Keynote speeches, Journal papers, Interviews, Position papers, Poster sessions, Brochures, Software, and Video/Film/TV Clip, active participation in and contribution to 5G PPP programme level activities, and collaboration with other 5G PPP projects.

Throughout all these different activities, knowledge and project results have been successfully disseminated to the outside world in an efficient and effective way.

IoRL dissemination activities will intensify in the coming next phase of the project, and will gradually shift from publicizing and disseminating conceptual results towards exhibiting and demonstrating integration results. This will include organizing workshops and demonstrating at various events, such as IEEE the Broadband Multimedia System and Broadcasting (BMSB) conference, EuCNC and SmartGridComm 2019 which will be held between Oct. 21 and 24, 2019 in Beijing, China, and other suitable events.

IoRL will continue to disseminate its results as part of the 5G PPP. It will collaborate with other 5G PPP projects, as much as possible, to amplify its impact and ensure truly global impact of the 5G PPP programme.

List of authors

Company	Author	Contribution
Tsinghua University	Jian Song	Overall report structure, coordination, consolidation, overall writing
Tsinghua University	Jintao Wang	Contribute figures of this report, overall review
Tsinghua University	Chao Zhang	Review
Eurescom	Adam Kapovits	Structure, various inputs, overall final editing
ISEP	Xun ZHANG	Contribute figures in section 6.2
Arcelik	Sibel MALKOS, Memduh Emre CAKAN, Gökhan OZOGUR, Onur DINCER	Contributions to section 7.2 and section 7.3
IM	Matteo Satta Eric Legale Guillaume de Stordeur	Proposition of structure, writing of 6.4, overall review

Table of Contents

List of figures and tables

Abbreviations

5G	Fifth Generation (mobile/cellular networks)
5G PPP	5G Public Private Partnership
IoRL	Internet of Radio Light (project)
LiFi	Light Fidelity
mmWave	Millimeter Wave
NFV	Network Functions Virtualization
R&D	Research and Development
SDN	Software-defined Networking
VLC	Visible Light Communication

Definitions

Dissemination means sharing research results with potential users – peers in the research field, industry, other commercial players and policymakers). Through the sharing of research results with the rest of the scientific community the general progress of science is supported. (as per http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/dissemination-of-results_en.htm)

Exploitation is the use of results for commercial purposes or in public policymaking. (as per http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/dissemination-of-results_en.htm)

1 Introduction

This document reports on the dissemination activities and actions accomplished during the first year of the IoRL project life both at project and partner levels.

This dissemination report is developed as part of the IoRL project Work Package 7.

The report is structured into the following parts:

- The 1st section is an Introduction
- The 2nd section describes the initial basic steps performed to provide the right framework for the dissemination activities
- The 3rd section focuses on the dissemination activities performed during the period
- The 4th section is dedicated to the dissemination materials created and used during the indicated period
- The 5th section presents the dissemination related activities performed as part of 5G PPP
- The 6th section gives a summary and provides outlook to the next steps for dissemination in the following period.

2 Initial steps

2.1 The role of dissemination in IoRL and IoRL's dissemination plan and strategy

The aim of dissemination is transferring knowledge generated by IoRL and making the project results widely known and through this also continuously cross checking and measuring progress compared to other research activities and scientific progress.

Consequently, IoRL started with developing a dissemination plan and strategy, identifying the target groups and the most appropriate channels to address them and convey the information to them. IoRL uses every possible opportunity to make the concept and the progress of the project known to the public as widely as possible. In this first conceptual phase of the project we used technical papers (journal or conference papers), invited talks/keynote speeches, interviews, flyers, Video/Film/TV Clip, and etc. and as the project progresses into integration and demonstration, there will be more and more demonstrations and showcases.

The dissemination activities so far were also more focusing on the progress and the research outcome regarding a particular aspect of the project or from an individual partner at this moment. However, with the advancement of integration we expect more systematic results or reports in the future to fully reflect the importance of our work as a system, and let public have the whole picture on what IoRL project is and how it is going to have the impact on the whole eco-system.

All IoRL dissemination activities should be understood and considered in the 5G PPP context, i.e. they should support achieving the goals of the overall programme.

2.2 Project identity formation

In all external communication and dissemination it is important that the IoRL project appears using the same design and is easily recognisable and has a strong identity, similarly to a brand in the commercial world.

As one of the first exercises in IoRL a project logo was created and agreed by the IoRL partners. Subsequently, the logo was used systematically in all communication, including the project website, project flyer and project poster.

Furthermore, templates were created both for project presentations (internal and external), as well as any official document and report created and produced by the project.

2.3 Identification of stakeholders with an interest in the IoRL solution

As reported in IoRL deliverable D7.1, the project has identified a preliminary list of groups potentially interested in the IoRL solution, starting from the defined scenarios:

- Home owners and facility managers;
- Public entities;
- Building designers;
- Certain vertical sector representatives (such as private museums or retailers);
- Specialist solution providers (transport and infrastructure companies);
- Smart manufacturing solution providers;

The above list is a living one and will be reviewed and updated.

2.4 Establishment of tools and means to plan and monitor dissemination activities

The project uses its adopted collaborative workspace to co-ordinate, prioritise and plan future dissemination activities, especially with regard to exhibitions.

Regarding dissemination monitoring, the project adopted and uses the specific tool designed and provided by Eurescom, the EuresTools® Dissemination Tracker (https://www.eurescom.eu/eurestools/reporting-controlling/eurestools-tracker.html). All dissemination activities planned are entered in the tool and progress with them can be traced and monitored throughout their entire lifecycle until publication using the tool.

3 Dissemination activities performed

3.1 Overall statistics

Following the predefined dissemination mechanisms: (1) Submission of papers to leading peer-reviewed conferences and journals, (2) Participation in program committees and editorial boards, through which participants can organise special sessions in conferences, special issues, etc., and (3) Participation in forums and industrial oriented events, IoRL

consortium members have utilized different method to efficiently and effectively introduced the concept of IoRL, shared the project results within consortium and to the outside world.

All these activities have been recorded by the partners with great details at the website of http://tracker.eurescom.eu/ which is developed by Eurescom, the project coordinator,

Table 1list all the dissemination activities by different category, as indicated in the executive summary.

Table 1 – Dissemination activities by category

Item	No. of activities
Conference contribution	13
Exhibition/demo/booth	8
Presentation	7
Media Coverage	6
Invited talk	5
Workshop	4
Flyers	4
Keynote	3
Journal	2
Interview	2
Position paper	1
Poster session	1
Brochure	1
Software	1
Video/Film/TV Clip	1

Figure 1 is presenting the same data in a pie chart format.

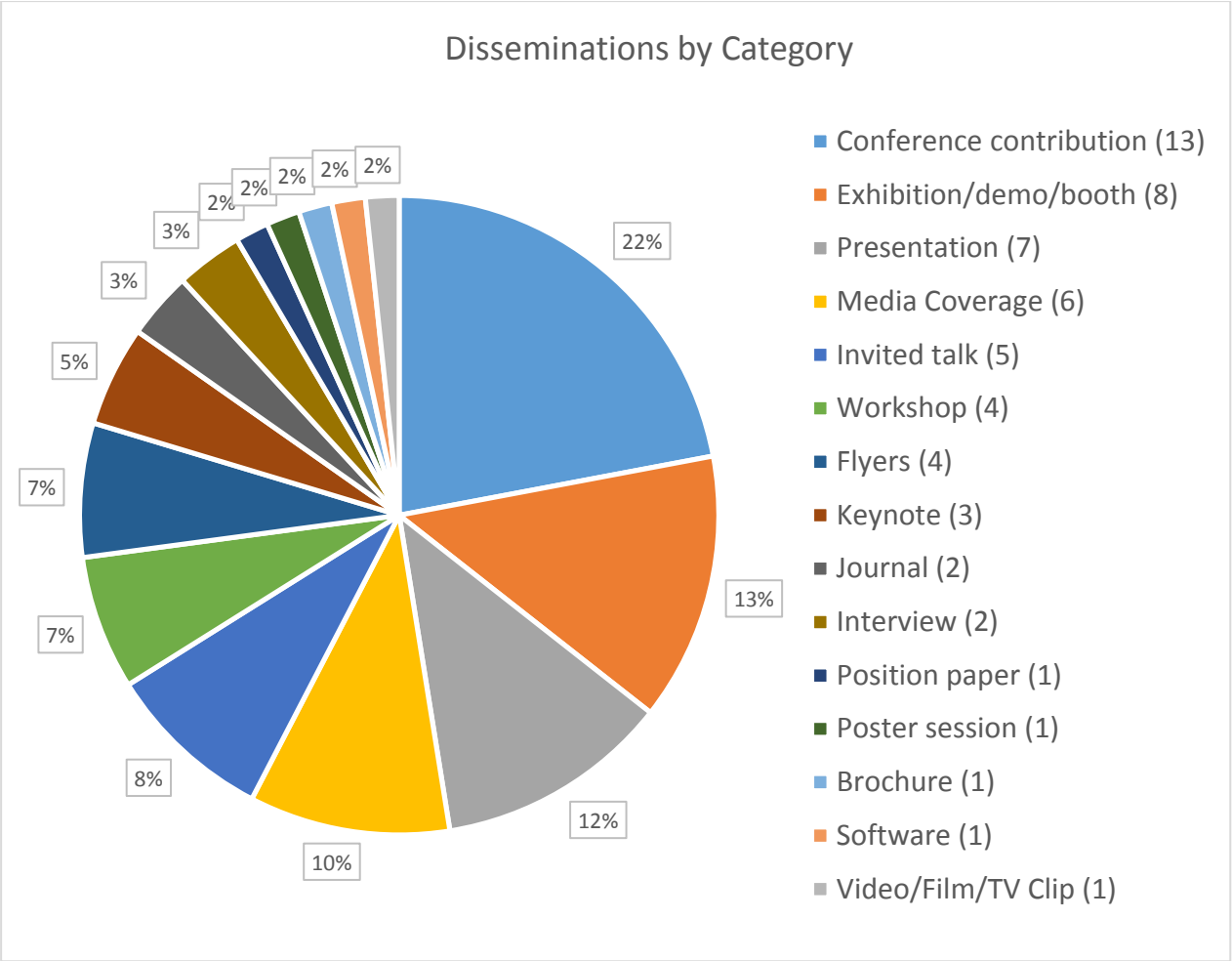


Figure 1 – Pie chart of dissemination activities by category

One can clearly see the distribution of different ways of dissemination efforts. While it shows quite balanced activities, it is no surprise to see that paper contributions, together with presentations almost take one half of the activities as the project is still at its very early stage and the majority of project partners are from the academia.

In the future, we plan to be more active in program committee/editorial board participation and forums /industry-oriented events participation, resulting in the organisation of special sessions at conferences, becoming guest editor for special issues, and initiating standardization process when the technology development becomes matured.

After checking the activities by category, we also look at activities distributions by month and the statistic results are shown in Table 2 with the associated pie chart presentation in Figure 6-2, respectively.

Table 2 – Dissemination activities by month

Month	No. of activities
January	2

February	6
March	0
April	3
May	5
June	14
July	7
August	3
September	3
October	4
November	5
December	7

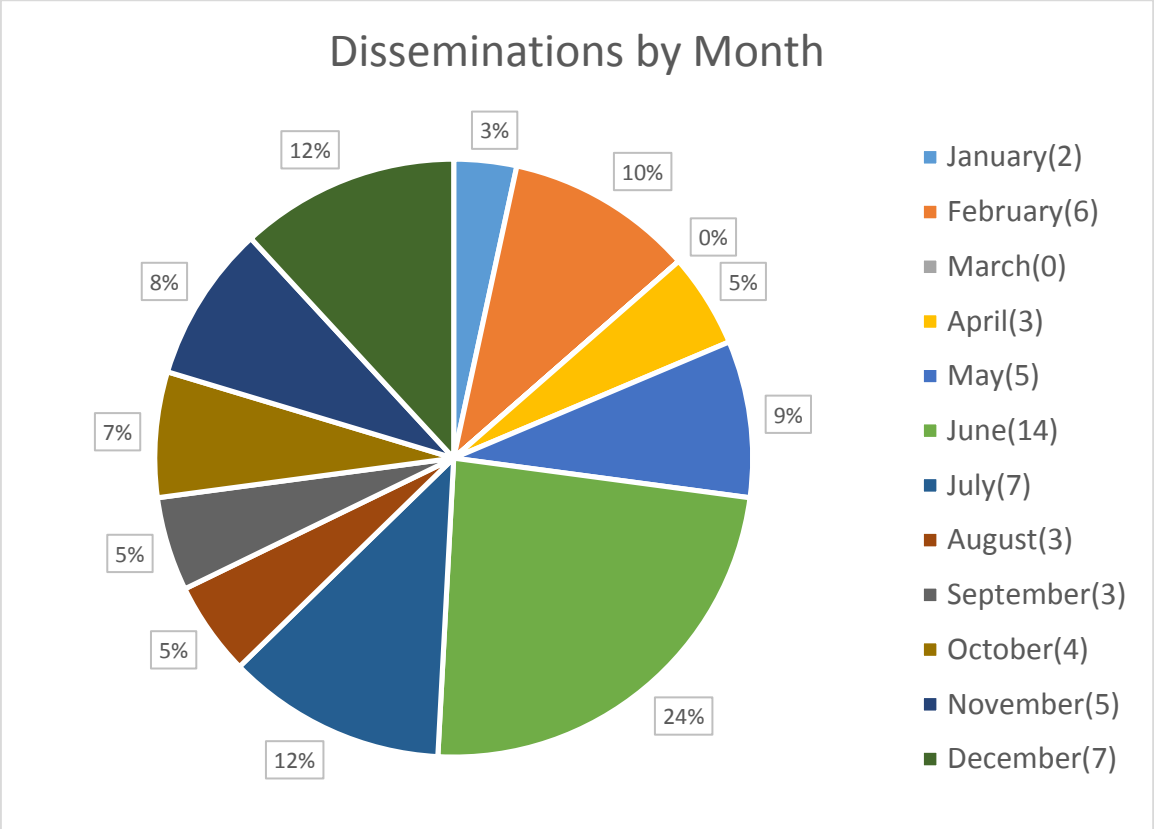


Figure 2 – The pie chart representation of the data from Table 2

If the data is further analysed, one can see that the activities are not very balanced yet it is quite understandable. Since IoRL project decides not to organize its own conference, partners have to seek the dissemination opportunities by following the schedule of relevant events and wouldn't be able to arrange all activities according to their own working agenda.

Activity distributions by region (continent) are shown in Table 3 and the associated pie chart in Figure 6-3, respectively.

Table 3 –Dissemination activities by region

Region	No. of activities
Europe	43
Asia	14
Africa	1
Oceania	1

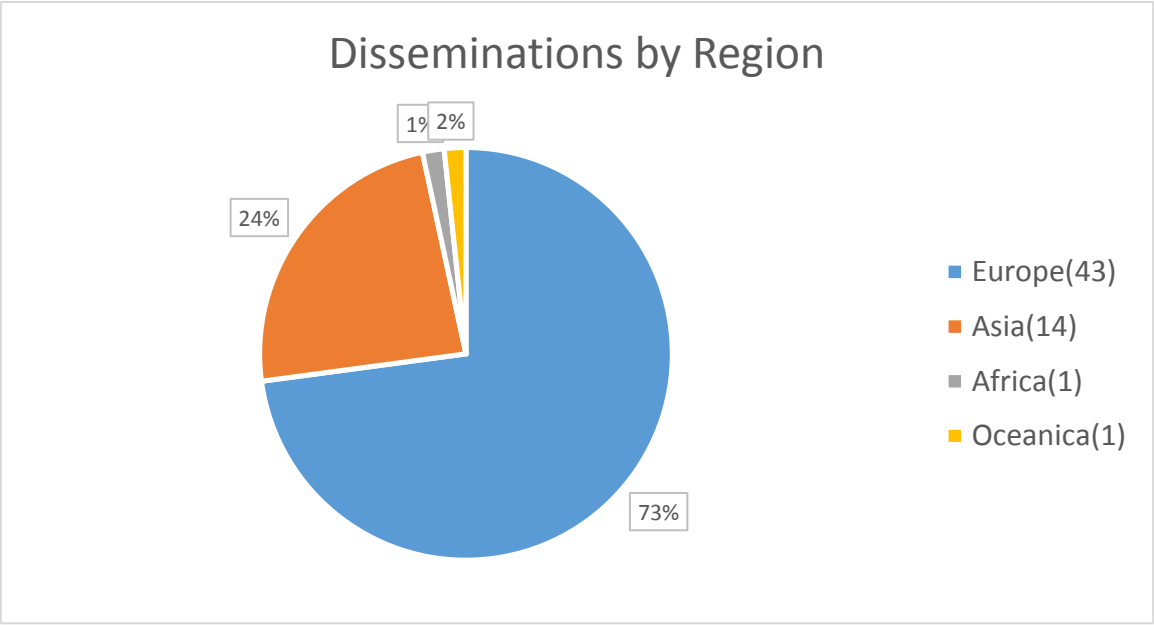


Figure 3 – Data from Table 3 presented in a pie chart format

It is no surprise to see that the majority of the dissemination activities are conducted in Europe at quite different places, not only the project is EU project but also most partners are in Europe. Chinese partner are also doing a good job in their dissemination efforts. It should be point out that in several events, European partners actually travelled to China which helps to strengthen the collaboration among partners and also achieve better influence of IoRL project on the event participants.

It is interesting to see one event in Africa (South Africa) and one in Oceania (Australia), and we sincerely hope that the impact of IoRL will be not limited to Europe and Asia even though

these two continents have great potential to utilize the project outcome, but also becomes truly international, which means has more exposure to other continents.

From the activities tracking, we are glad to see all the consortium partners have actively involved into this task in different ways and lots of activities are not solely done by one partner. These are the collective efforts of the team work, especially for the conference contributions (authors are from different partners) as well as some demo/booth activities. Some partners have already taken the backup job during the dissemination efforts. Since it is quite difficult and unnecessary to differentiate the contribution from this partner to this task quantitatively, we decide not to provide the information on the activities from each partner, and would rather treat this as a whole.

3.2 Events organised and attended

3.2.1 IoRL at 1st LiFi World Congress in Paris

During the event of the 1st Global LiFi Congress held last Feb in Paris, partner OLEDCOMM is one of the organizers and has contributed significantly to the success of this event. John Cosmas from Brunel University co-authored a paper with other partners and also provided a very preliminary demo for IoRL project concept which attracted lots of attention. Jian Song from Tsinghua was also invited to join the panel discussion on Optical Wireless Communication beyond 5G as the panelist in the morning of the 2nd day of that event and shared with audiences the experience on IoRL project by highlighting the project scope, technical merits, and the potential impact. During this event, Jian also had deep discussions with Mr. Eric Peyrucain from Airbus Leading Digital Transformation, Mr. Kenny Toye from Global LiFi Tech Inc., and Mr. Ashraf Sabha from Du (UAE).

Figure 4 – John Cosmas presenting the IoRL paper at 1st Global LiFi Congress

Figure 5 – Professor Jian Song from Tsinghua University is sharing information from IoRL with audience as the panelist at the 1st Global LiFi Congress

3.2.2 IoRL at the IEEE BTS Young Professionals Workshop on Convergence of Broadcasting and 5G Enabling Technologies Workshop 2018

This year IEEE BTS Young Professionals Workshop was hosted at the University Mediterranea of Reggio Calabria, where there was much excitement about the promise of 5G and where John Cosmas made a presentation on: “Internet of Radio-Light Architecture for the Tactile Internet”

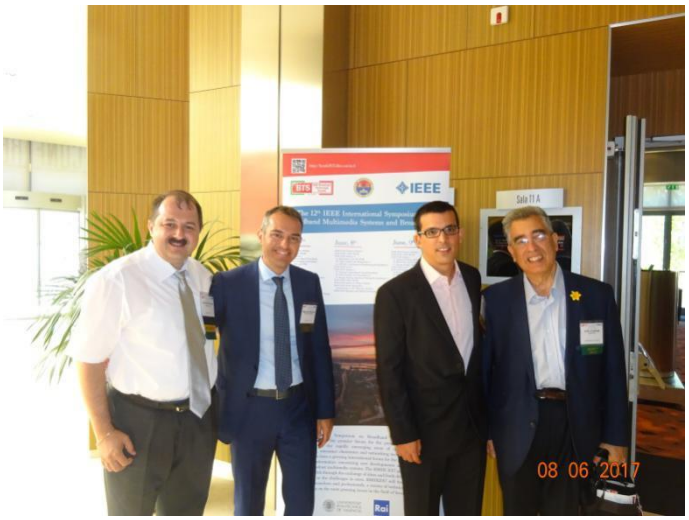


Figure 6 – IEEE BTS Young Professionals Workshop on Convergence of Broadcasting and 5G Enabling Technologies Workshop 2018. (from left to right) Gabriel Mutean (Dublin City University), Maurizio Murroni (University of Cagliari), David Gomez (Universitat Politecnica de Valencia) John Cosmas (Brunel University)

3.2.3 IoRL at MWC2018 Barcelona

At the MWC2018 Barcelona, Cobham and RunEL did joint demonstration for the first time. This demonstration shows Cobham test UE demodulating 5GNR downlink signal from RunEL base station. As the initial development stage, the SS/PBCH block is tested in this demonstration.

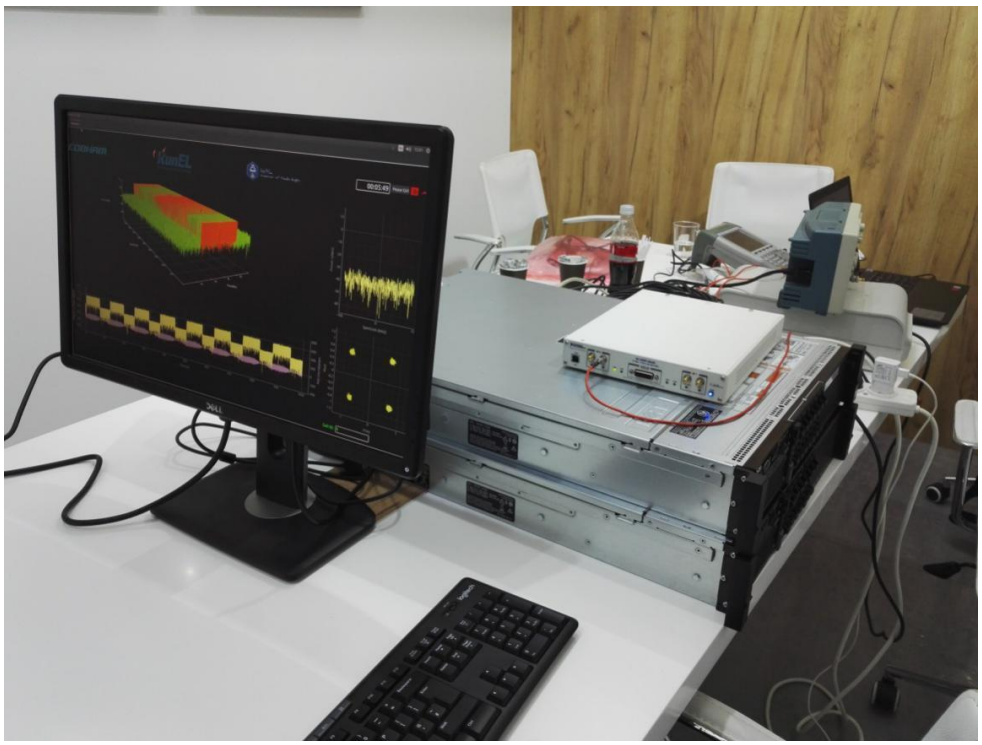


Figure 7 – Demonstration of 5GNR Signal Demodulation at MWC 2018 Barcelona

3.2.4 IoRL at BMSB

This year BMSB 2018 was hosted at the Universitat Politècnica de València on Wednesday June 6th - Friday June 8th, where IoRL project presented four papers and participated in the 5G XCAST tutorial. IoRL project was one of nine 5G PPP projects presenting at the conference in focused theme oriented sessions, namely:

- 5B Broadcast (5G XCAST)
- 5G Transport: (5G Transformer, 5G Coral, 5GEx)
- V2X (5GCAR)
- Optical Communications in 5G (Bluespace)
- Visible Light Communications (5G-IoRL)
- Media Delivery in 5G (5G-MEDIA)
- 5G Cloud (NGPaaS)

Figure 8 – Brunel Team (from left to right: Kareem, Nawar, John and Ben) on way to Welcome Reception at Palau de les Arts Reina Sofia

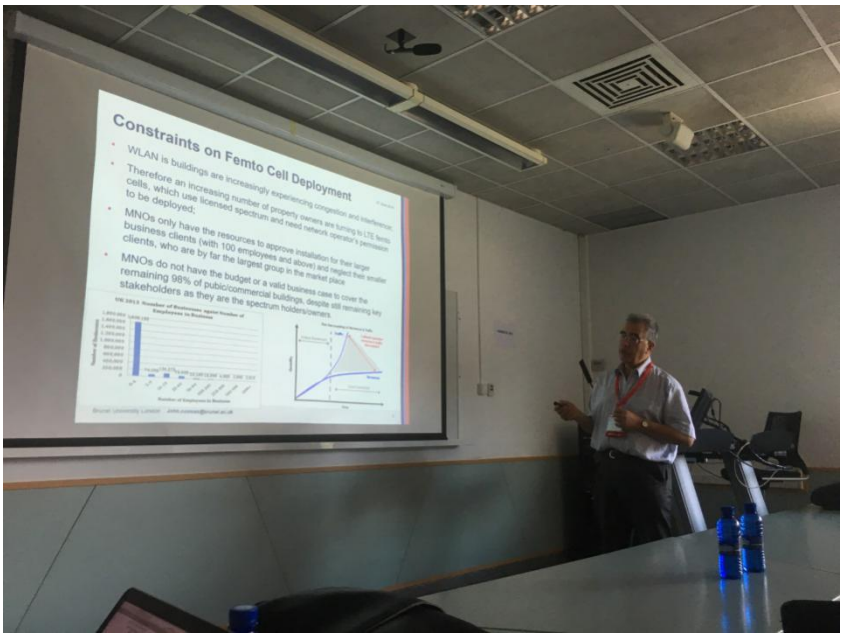


Figure 9 – John Cosmas presenting IoRL paper at BMSB

Figure 10 – Kareem Ali presenting paper

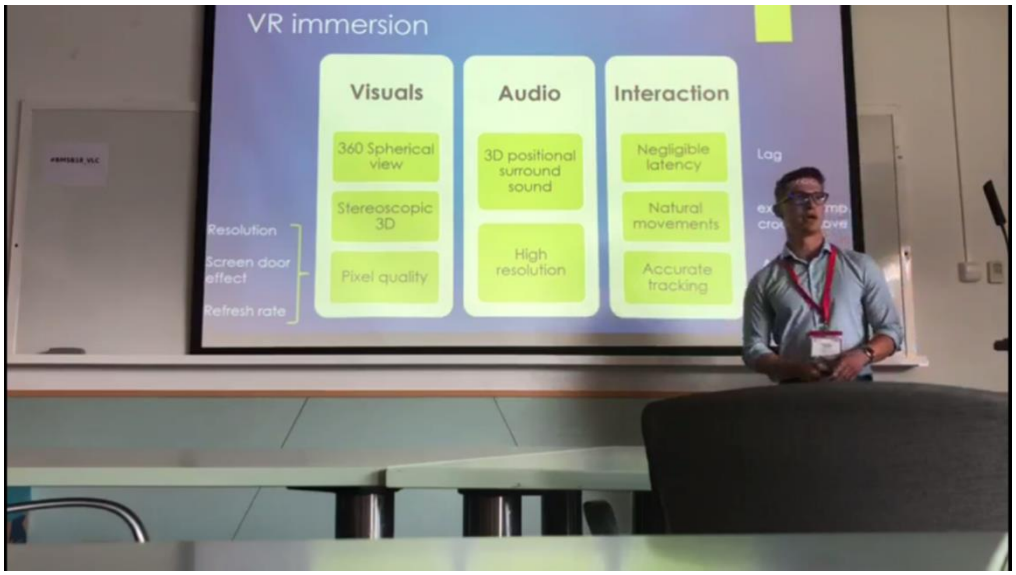


Figure 11 – Ben Meunier presenting paper

The papers that were presented were:

1. Mukhald Salih, Nawar Jawad, John Cosmas "Simulation and Performance Analysis of Software-Based Mobile Core Network Architecture (SBMCNA) using OMNeT++" IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, June 5th - 8th 2018, Valencia, Spain DOI: 978-1-5386-4729-5/18/$31.00 ©2018 IEEE
2. Ben Meunier, John Cosmas "5G Internet of Radio Light Virtual Reality System" IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, June 5th - 8th 2018, Valencia, Spain DOI: 978-1-5386-4729-5/18/$31.00 ©2018 IEEE
3. Kareem Ali, Akram Alkhatar, Nawar Jawad, John Cosmas, "IoRL Indoor Location Based Data Access, Indoor Location Monitoring & Guiding and Interaction Applications" IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, June 5th - 8th 2018, Valencia, Spain DOI: 978-1-5386-4729-5/18/$31.00 ©2018 IEEE
4. J. Cosmas, B. Meunier, K. Ali, N. Jawad, M. Salih, H. Meng, M. Ganley, J. Gbadamosi, A. Savov, Z. Hadad, B. Globen, H. Gokmen, S. Malkos, M. E. Cakan, H. Koumaras, M. Kourtis, C. Sakkas, E. Salomon, Y. Avinoam, D. Negru, M. Lacaud, Y. Zhang, L-K. Huang, R. Zetik, K. Cabaj, W. Mazurczyk, A. Kapovits "A Scalable and License Free 5G Internet of Radio Light Architecture for Services in Homes and Businesses" IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, June 5th - 8th 2018, Valencia, Spain DOI: 978-1-5386-4729-5/18/$31.00 ©2018 IEEE

3.2.5 EuCNC 2018 Ljubljana

IoRL had an exhibition booth at EuCNC, presented a poster and had a joint paper with several other 5G PPP phase two projects. The project also contributed to the Workshop on Vertical Industries & Services for 5G concerning the media vertical.

Figure 12 – Prof John Cosmas pitching the IoRL project for the EuCNC exhibition visitors

The discussions during EuCNC revealed that there is considerable synergy with the 5G City project. The cornerstone concept of 5G City is the concept of neutral host at the edge, or at the far edge of the network. The intelligent home IP gateway, a key component of the IoRL architecture is representing a collection of resources and functionalities that can act as a neutral host, and there seems to be also a clear business incentive also to exploit the intelligent home IP gateway in such a fashion.

Another interesting and promising discussion run at the event was with Zodiac Aerospace, a provider of integrated solutions for commercial aircraft cabin systems, including information and entertainment. The use of visible light communication is very interesting in this market and solutions using this technology are perceived as superior or preferred solutions. This is because visible light communication avoids RF interference, which is considered to be critical on board and is heavily regulated.

3.2.6 Workshop on 5G: Enabling Technologies and Applications, Middlesex University

A 1-day workshop was arranged on Tuesday 26th June, as part of ongoing Newton Fund project "5G for disaster and emergency management". To extend the scope of the workshop, external speakers from different areas of expertise were invited to give talks. Talks focused on 5G with the following relevant topics/applications (but not limited to):

- Disaster and emergency applications
- Connected vehicles, autonomous driving and V2X
- NOMA
- Virtualization
- Smart home/city
- Enabling 5G technologies
- Smart database and machine learning

John Cosmas presented the IoRL project with the following presentation: "A Scalable and License Free 5G Internet of Radio Light Architecture for Services in Homes and Businesses.

Attending the conference were representatives from UK's Department Media, Culture and Sport, who invited Professor John Cosmas to present the project at UK government offices.

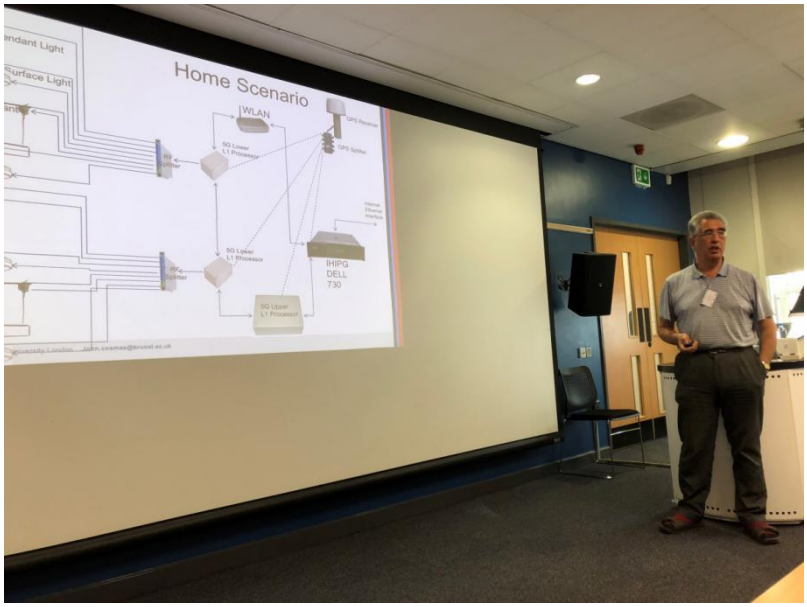


Figure 13 – John Cosmas presenting the IoRL project

3.2.7 Brunel Research Institutes Conference

Brunel University annually hosts a research conference, which brings together researchers from across the campus to develop research programmes driven by the needs of society by encouraging and supporting staff to work on these important problems. The conference us an opportunity to highlight progress and successes achieved over the year in particular the relevance of our research activities to the wider world. This year on 27th June, Professor John Cosmas presented the "Internet of Radio-Light High Performance Communications for Building" to inform his colleagues of the latest developments in this EU Horizon 2020 project.

Figure 14 – John Cosmas presenting the IoRL project to his colleagues

3.2.8 Francophone workshop: La 5G en France et en Europe : et perspectives

In collaboration with Mr. Jean Pierre Bienaimé, secretary general of 5G-PPP, a half-day national francophone workshop was arranged on 7th Juin in ISEP. (http://irest.fr/?event=la-5g-en-france-et-en-europe-enjeux-et-perspectives).

Five Invited talks focus on 5G development in France and 5G-PPP second phase project presentation. Xun ZHANG presented the IoRL project in this workshop. The list of invited talks is:

- **La 5G en France** : les villes pilotes 5G, la stratégie nationale 5G et les expérimentations des opérateurs,
- **Le challenge des fréquences** : perspectives de la Conférence mondiale des Radiocommunications 2019, situation en Europe et en France,
- **Le 5G PPP**, partenariat public-privé de R&D Européen et le nouvel écosystème des industries verticales,
- Les déploiements prévus dans le monde, la normalisation : **l'Europe et la France en retard ou dans le bon timing ?…**
- Présentation d'un projet Européen du 5G PPP : **Internet of Radio Light (IoRL)**

Figure 15 –Panel discussion with Xun Zhang as panelist at the most right

Figure 16 – Audience at the event

3.2.9 5th CTIF Global Capsule (CGC) Workshop

This year's theme for the workshop was "5G and Beyond: Applications to the Automotive and Health Industry" July 2-3, 2018. A very interesting set of presentations included:

- Massive Grant-Free Multiple-Access in 5G IoT Networks, Professor Lie-Liang Yang, University of Southampton, UK
- Smart antenna, WSN and MIMO test-beds for 5G Communications, Professor Tian Hong Loh, National Physical Laboratory, NPL
- Tunable mmWave antenna design for 5G Communications, Dr Alexandros Feresidis, University of Birmingham, UK
- The Midlands Future Mobility 5G Testbed and Early Results, Dr Matthew Higgins, University of Warwick, UK
- UK 5G & IoT testbeds and trial activities and 5G reality check, can we deliver?, Stuart Revell, RTACS Ltd
- Propagation studies for 5G Communications, Professor Sana Salous, Durham University, UK
- A 5G Broadband Radio-Light Architecture for Media and Entertainment in Buildings, Professor John Cosmas, Brunel University London.

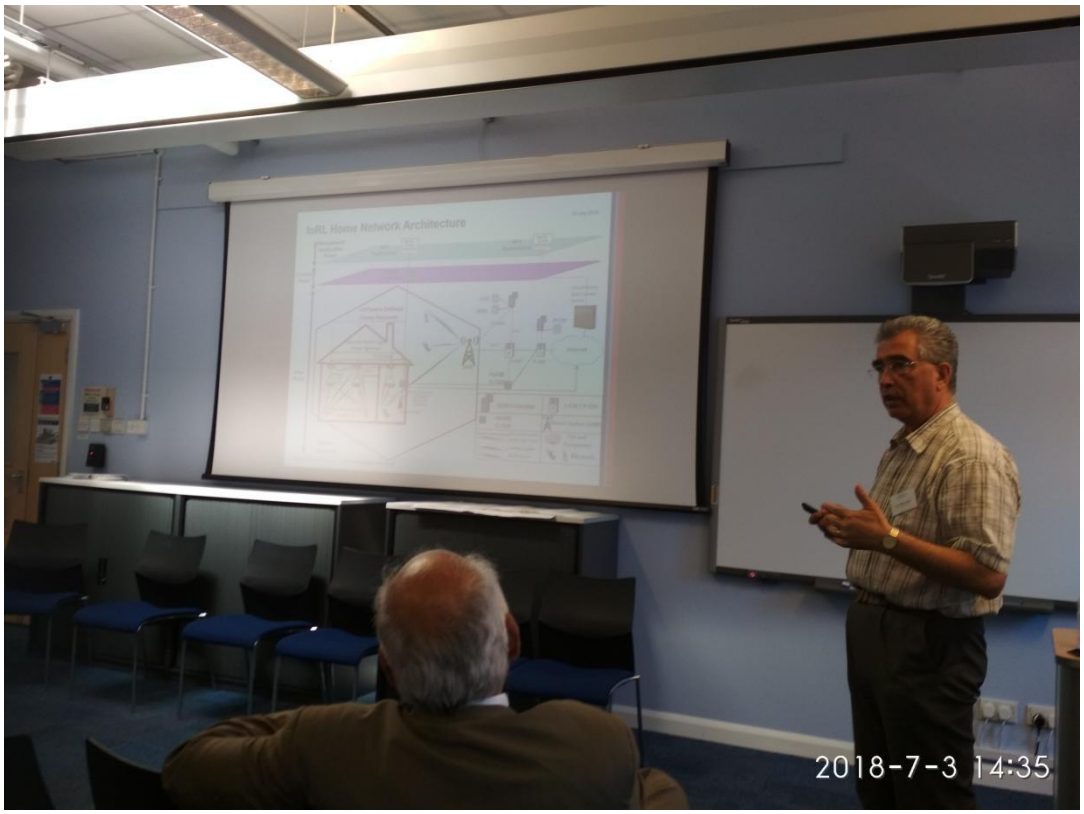


Figure 17 – John Cosmas presenting the IoRL Architecture

3.2.10 Ongoing activities and outlook to some future activities

IoRL organised a workshop on 5G Networks Security as part of the ARES Conference 2018, that takes place 27-30 August 2018.

IoRL is co-organising the IEEE CAMAD Workshop on User-centric network management and service provisioning together with the H2020 RISE project CASPER, that will take place 17-19 September.

IoRL participated in a joint 5G PPP proposal for a booth at the ICT 2018 event in Vienna, which has been accepted. This means that IoRL will be present at the 5G PPP booth at ICT Vienna in December.

In 2019, IoRL is planning to participate and exhibit and showcase its results at the following events: MWC Barcelona (through its partners presence and/or as part of a 5G PPP presence) and EuCNC Valencia.

We are also looking forward to promoting the results of IoRL jointly together with other Horizon 2020 projects, notably other parallel 5G PPP projects.

3.3 IoRL publications made to date

The following two tables can partially reflect the impact of IoRL work from the citation point of view on papers. All the statistics are from Google Scholar.

Table 4 – IoRL journal and book publications

Publication title	Journal / Book	Partner	Citations	Date
1X4 MMI visible light wavelength demultiplexer based on GaN slot-waveguide structure	Photonic and Nanostructures - Fundamentals and Applications	Dror Malka	0	Jul-18
An Improved FD-DFE Structure for Downlink VLC Systems Based on SC-FDMA	IEEE Communication Letters	Chao Zhang Zhi Li	0	Apr-18

Table 5 – IoRL conference publications

Paper title	Conference name	Venue	Partner	Citations	Date
Internet of Radio Light: Unleashing Innovation in Building Networks	Global Wireless Summit 2017	Cape Town, South Africa	Adam Kapovits John Cosmas	0	22-Feb-18

Internet of Radio-Light: 5G Broadband in Buildings	EU Wireless 2017	Dresden, Germany	Xun Zhang John Cosmas Yue Zhang	6	17-Aug-17
5G Internet of Radio Light Services for Supermarkets	14th China International Forum on Solid State Lighting （SSLCHINA 2017）	Hilton Beijing Capital Airport	John Cosmas Ben Meunier Kareem Ali Nawar Jawad Mukhald Salih Hongying Meng Jian Song Jintao Wang Min Tong Cao Xiaohong Xun Zhang Chuanxi Huang Yue Zhang Moshe Ran Einat Ran Eliron Salomon Yoav Avinoam Zion Hadad Baruch Globen Mathias Lacaud Daniel Negru Tasos Kourtis Charilaos Koumaras Christos Sakkas Li-Ke Huang Rudolf Zetik Krzysztof Cabaj Wojciech Mazurczyk Adam Kapovits	1	2017
5G Internet of Radio Light Services for Musée de la Carte à Jouer	Global LiFi Congress	Paris, France	John Cosmas Ben Meunier Kareem Ali Nawar Jawad Hongying Meng Eric Matteo Satta Xun Zhang Chuanxi Huang	1	19-Mar-18

			Jorge Garcia Marios Negru Yue Zhang Tasos Kourtis Charilaos Koumaras Christos Sakkas Li-Ke Huang Rudolf Zetik Pascaline Jay Florian Goutagneux Krzysztof Cabaj Wojciech Mazurczyk M. Emre Cakan Adam Kapovits		
A Scaleable and License Free 5G Internet of Radio Light Architecture for Services in Train Stations	EU Wireless 2018	Catania, Italy	John Cosmas Ben Meunier Kareem Ali Nawar Jawad Mukhald Salih Hongying Meng Javier Royo Pablo Fernandez Zion Hadad Baruch Globen Haluk Gökmen Sibel Malkos M. Emre Cakan Tasos Kourtis Charilaos Koumaras Christos Sakkas Eliron Salomon Yoav Avinoam Daniel Negru Mathias Lacaud Yue Zhang Li-Ke Huang Rudolf Zetik Krzysztof Cabaj	1	14-Jun-18

			Wojciech Mazurczyk Xun Zhang Adam Kapovits		
1 × 8 Green Light Intensity Splitter Based on Gallium-Nitride Slot Waveguide in MMI Structure	SPIE - Optical System Design 14-17 May 2018 Frankfurt, Germany	2018, Frankfurt, Germany	Dror Malka Moshe Ran	0	5-Jun-18
A Novel VLC Attocell Network Structure Using Superimposed Optical-OFDM	The 14th International Wireless Communications and Mobile Computing Conference (IWCMC 2018)	Dubai, United Arab Emirates	Chao Zhang Zhi Li	0	8-Feb-18
Deflected Field-of-Views Receiver for Indoor MIMO Visible Light Communications	2017 International Conference on Infocom Technologies and Unmanned Systems (ICTUS'2017)	Dubai, United Arab Emirates	Jian Song Lin Wei Hongming Zhang	0	8-Feb-18
A Real-time High-speed Visible Light Communication System Based on RGB-LEDs	The IEEE International Symposium on Broadband Multimedia Systems and Broadcasting 2017	Cagliari, Italy	Chao Zhang Zhi Li Dedong Sun Hui Yang Jian Song	5	20-Jul-17
Dynamic Dwell Timer for Vertical Handover	The 13th Internationa	Valencia, Spain	Chao Zhang Ruiqi Liu	0	20-Jul-17

in VLC-WLAN Heterogeneous Networks	l Wireless Communications and Mobile Computing Conference (IWCMC 2017)				

3.4 Press coverage

There is one press release and five media coverage on IoRL.

Concerning Press coverage during first year if IoRL project, the table below gives an overview on the evolution of the number of press hits and videos on the whole project's lifetime per pilot.

Table 6 – Press coverage created by IoRL project

Title	Date	Link	Partner	Dissemination level
Issy-les-Moulineaux, une des premières villes à travailler sur le « Lifi », l'internet de la lumière par la 5G	2017-07-11	http://www.calameo.com/read/0007627957c44097d8ac4	Issy	Local
Un nouveau projet européen pour Issy : Internet of Radio Light (IoRL)	2017-07-10	http://seineouestdigital.fr/projet-iorl	Issy	Local
IoRL - Internet of Radio Light: a brand new EU project is coming to Issy	2017-07-10	http://www.issy.com/en/node/18149	Issy	European/International
Issy-les-Moulineaux choisie pour préparer l'Internet par la lumière	2017-07-19	https://5g-ppp.eu/iorl-internet-of-radio-light-project-launch"	Issy	National
La nouvelle révolution numérique passe par Issy avec l'internet de la	2017-09-01	http://www.leparisien.fr/issy-les-moulineaux-92130/issy-les-moulineaux-choisie-pour-preparer-l-	Issy	National

lumière		internet-par-la-lumiere-09-08-2017-7184880.php#xtor=AD-1481423553		
Ici on passe l'internet de la lumiére	2017-09-01	Hardcopy of "Le Parisien"	Issy	National
Issy named in ICF Smart21 Communities of the Year	2017-11-05	https://fr.calameo.com/read/000762795badbd74b62c8	Issy	International
Issy classée parmi les "Smart21 Communities" 2018	2017-11-08	"http://www.issy.com/en/node/19217	Issy	National
Dossier Smart Issy	2017-12-01	https://fr.calameo.com/read/000762795cb4e2e4c1ae0	Issy	National

In this list, it has to be highlighted that some news have an important coverage, such as the articles written by the French National newspaper "Le Parisien" that made a coverage about Issy, including also IoRL, following Issy's press release over the summer 2017 (see figures below).

(a)

(b)

Figure 18 – Video of DAEM in Greek TV show (a) and Capture of article published on 5G PPP and Issy-les-Moulineaux Press release (b)

Many activities have been conducted in France due to the location of the museum of Issy-les-Moulineaux (Playing Card Museum) and of the IoRL LiFi Global Congress, held in February 2018.

Le Parisien

PAYS :France
PAGE(S) :3
SURFACE :30 %
PERIODICITE :Quotidien

DIFFUSION :250095
JOURNALISTE :Emeline Cocq

► 10 août 2017 - N°22684 - Edition Hauts De Seine

Ici, on prépare l'Internet par la lumière

Pendant trois ans, la ville va être le théâtre d'expérimentations vouées à développer une nouvelle norme de réseau sans fil, « 100 fois plus puissante que le wi-fi ».

ISSY-LES-MOULINEAUX

PAR EMELINE COCQ

AUJOURD'HUI, le réseau est saturé par l'explosion du nombre de téléphones portables et d'objets connectés. Pour lui « donner de l'air », le Li-Fi (Light Fidelity, qui utilise la lumière comme moyen de connexion) a été retenu comme solution par la Commission européenne. Et c'est Issy-les-Moulineaux qui a été sélectionné pour expérimenter, pendant trois ans, cette nouvelle norme de réseau sans fil. Avec comme objectif de l'adapter à la future 5G, prévue pour 2020. Le projet regroupe une vingtaine de partenaires internationaux.

La société Oledcomm, ici Cyril Mayer, directeur général et cofondateur avec Suat Topsu, est pionnière dans la découverte du Li-Fi.

QU'EST-CE QUE LE LI-FI ?

Le Li-Fi est un système de communication qui utilise la lumière comme moyen de transmission. Concrètement, il s'agit de consulter une page Internet en se connectant à une ampoule LED. « 100 fois plus puissant que le wi-fi, le Li-Fi est également plus sûr et consomme dix fois moins d'énergie », assure Matteo Satta, chargé du projet à la mairie d'Issy. Aujourd'hui, le Li-Fi, qui existe depuis quatre ans, est développé par plusieurs sociétés.

QUELLE EST LA NATURE DU PROJET ?

« Le problème, c'est d'intégrer le Li-Fi à la 5G, explique Suat Topsu, fondateur de l'entreprise française Oledcomm, pionnière dans la découverte du Li-Fi. Demain, les fabricants installeront une puce 5G dans les téléphones. Dans cette puce, il y aura également le Li-Fi pour que le téléphone puisse passer automatiquement en réseau Li-Fi (en présence d'une lampe LED) pour soulager le réseau radio. Cette commutation entre réseau d'éclairage et réseau radio permettra de créer suffisamment de bande passante pour pouvoir connecter tout le monde. »

POURQUOI ISSY ?

Depuis fin 2015, la ville teste le Li-Fi au Musée de la carte à jouer, grâce à une ampoule LED au plafond. « C'est donc logiquement à Issy-les-Moulineaux que ce projet va être expérimenté », poursuit Suat Topsu. « C'est un peu l'âme de la ville », ajoute Matteo Satta. Ce chantier va coûter 8 M€, cofinancés par la Commission européenne.

Figure 19 – Article published by the French national newspaper "Le Parisien"

It has to be noticed that, being the project in its initial phase, the press coverage is supposed to increase following the technical architecture in place and with the deployment of demonstrators in France, China, Spain and United Kingdom.

4 Dissemination material produced

4.1 Website

The IoRL website has been set up early on in the life of the project. WordPress was selected as the platform for the IoRL website. The website is hosted by Eurescom and partners have access with editing rights to enter news items on the website.

In the following we present some basic statistics regarding the access and use of the website.

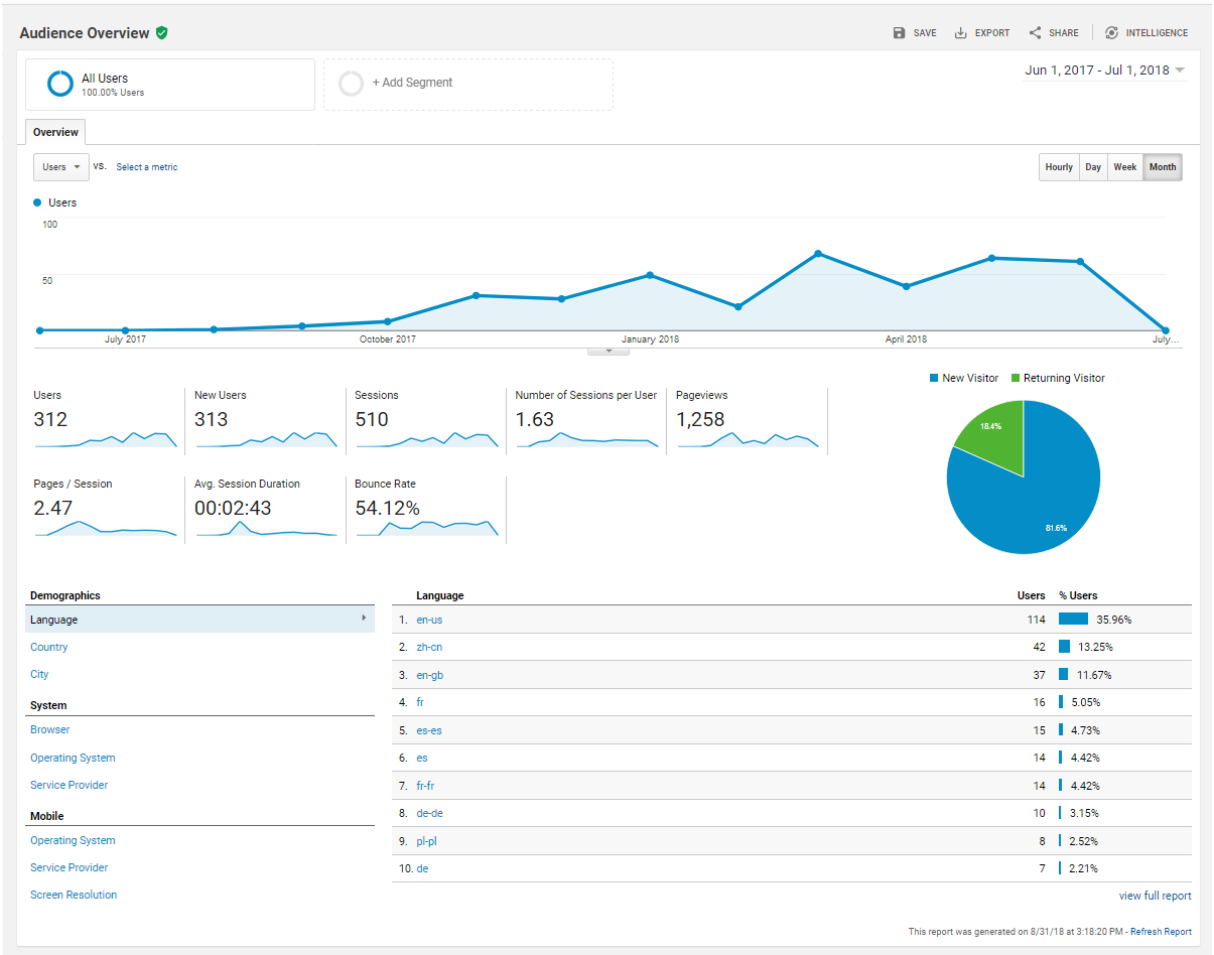
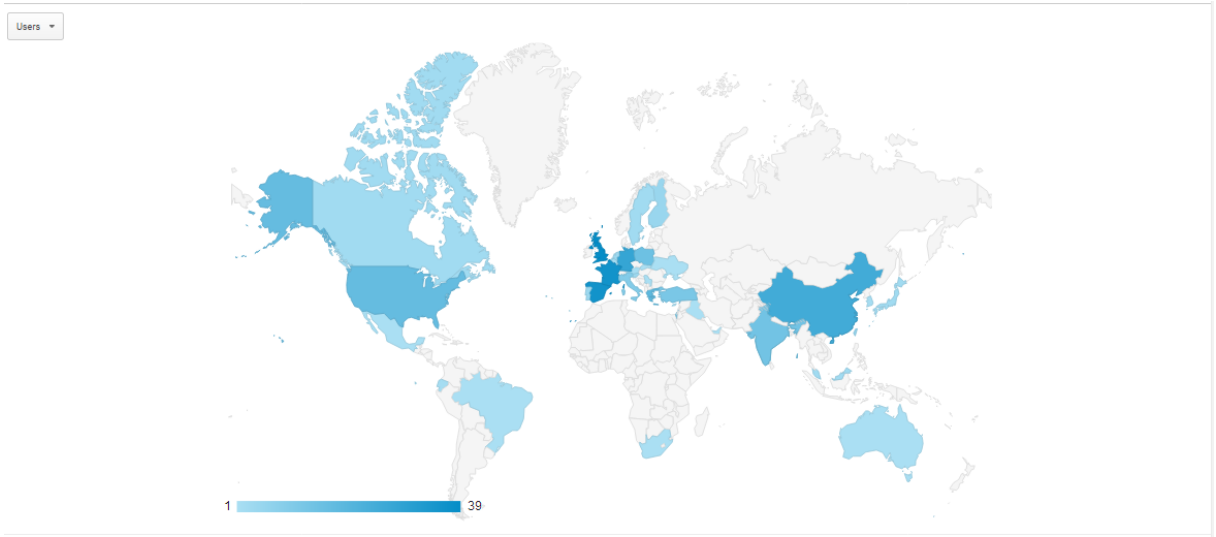


Figure 20 – General overview of the IoRL site audience and visitors

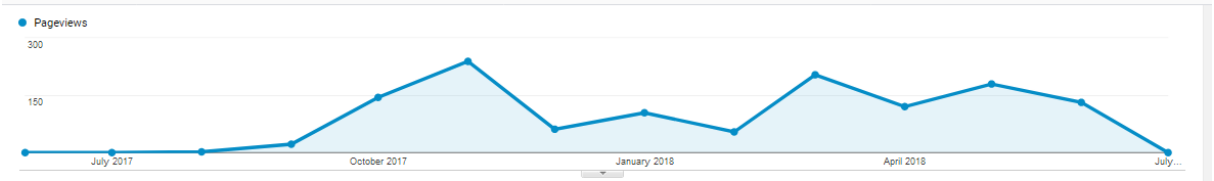


Primary Dimension: Country City Continent Sub Continent

Secondary dimension advanced

Country	Acquisition			Behavior			Conversions		
	Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
	312 % of Total: 100.00% (312)	313 % of Total: 100.00% (313)	510 % of Total: 100.00% (510)	54.12% Avg for View: 54.12% (0.00%)	2.47 Avg for View: 2.47 (0.00%)	00:02:43 Avg for View: 00:02:43 (0.00%)	0.00% Avg for View: 0.00% (0.00%)	0 % of Total: 0.00% (0)	$0.00 % of Total: 0.00% ($0.00)
1. United Kingdom	39 (12.19%)	38 (12.14%)	49 (9.61%)	40.82%	2.08	00:02:04	0.00%	0 (0.00%)	$0.00 (0.00%)
2. Spain	36 (11.25%)	35 (11.18%)	47 (9.22%)	53.19%	2.23	00:01:25	0.00%	0 (0.00%)	$0.00 (0.00%)
3. France	36 (11.25%)	35 (11.18%)	61 (11.96%)	50.82%	2.59	00:01:36	0.00%	0 (0.00%)	$0.00 (0.00%)
4. Germany	28 (8.75%)	27 (8.63%)	99 (19.41%)	55.56%	3.08	00:05:31	0.00%	0 (0.00%)	$0.00 (0.00%)
5. China	25 (7.81%)	24 (7.67%)	27 (5.29%)	85.19%	1.15	00:00:59	0.00%	0 (0.00%)	$0.00 (0.00%)
6. Greece	19 (5.94%)	19 (6.07%)	36 (7.06%)	58.33%	1.61	00:01:35	0.00%	0 (0.00%)	$0.00 (0.00%)
7. United States	17 (5.31%)	18 (5.75%)	24 (4.71%)	41.67%	3.58	00:05:04	0.00%	0 (0.00%)	$0.00 (0.00%)
8. Poland	15 (4.69%)	15 (4.79%)	18 (3.53%)	50.00%	2.06	00:01:59	0.00%	0 (0.00%)	$0.00 (0.00%)
9. India	14 (4.38%)	14 (4.47%)	22 (4.31%)	68.18%	2.18	00:01:30	0.00%	0 (0.00%)	$0.00 (0.00%)
10. Turkey	12 (3.75%)	12 (3.83%)	30 (5.88%)	46.67%	2.70	00:02:57	0.00%	0 (0.00%)	$0.00 (0.00%)

Figure 21 – Origin of the interest and hits on the IoRL website



Primary Dimension: Page Page Title Other

Plot Rows Secondary dimension Sort Type: Default advanced

	Page	Pageviews	Unique Pageviews	Avg. Time on Page	Entrances	Bounce Rate	% Exit	Page Value
		1,258 % of Total: 100.00% (1,258)	1,019 % of Total: 100.00% (1,019)	00:01:51 Avg for View: 00:01:51 (0.00%)	510 % of Total: 100.00% (510)	54.12% Avg for View: 54.12% (0.00%)	40.54% Avg for View: 40.54% (0.00%)	$0.00 % of Total: 0.00% ($0.00)
1.	/	554 (44.04%)	408 (40.04%)	00:02:16	387 (75.88%)	50.65%	47.83%	$0.00 (0.00%)
2.	/consortium/	172 (13.67%)	150 (14.72%)	00:03:01	50 (9.80%)	70.00%	54.07%	$0.00 (0.00%)
3.	/publications/	83 (6.60%)	75 (7.36%)	00:02:29	19 (3.73%)	68.42%	48.19%	$0.00 (0.00%)
4.	/objectives/	66 (5.25%)	54 (5.30%)	00:01:43	3 (0.59%)	66.67%	16.67%	$0.00 (0.00%)
5.	/deliverables/	55 (4.37%)	54 (5.30%)	00:01:21	11 (2.16%)	54.55%	32.73%	$0.00 (0.00%)
6.	/contacts/	47 (3.74%)	33 (3.24%)	00:01:44	3 (0.59%)	66.67%	19.15%	$0.00 (0.00%)
7.	/news/	35 (2.78%)	27 (2.65%)	00:01:05	2 (0.39%)	50.00%	22.86%	$0.00 (0.00%)
8.	/use-cases/	27 (2.15%)	27 (2.65%)	00:00:12	0 (0.00%)	0.00%	14.81%	$0.00 (0.00%)
9.	/hello-world/	26 (2.07%)	22 (2.16%)	00:01:00	3 (0.59%)	33.33%	30.77%	$0.00 (0.00%)
10.	/demo-videos/	25 (1.99%)	20 (1.96%)	00:00:10	1 (0.20%)	0.00%	8.00%	$0.00 (0.00%)
11.	/framework/	23 (1.83%)	23 (2.26%)	00:00:12	1 (0.20%)	0.00%	0.00%	$0.00 (0.00%)
12.	/imprint/	19 (1.51%)	17 (1.67%)	00:00:33	9 (1.76%)	77.78%	47.37%	$0.00 (0.00%)
13.	/advisory-board/	12 (0.95%)	12 (1.18%)	00:00:35	0 (0.00%)	0.00%	33.33%	$0.00 (0.00%)
14.	/disclaimer/	12 (0.95%)	7 (0.69%)	00:02:48	1 (0.20%)	0.00%	25.00%	$0.00 (0.00%)
15.	/events/list/?tribe_paged=1&tribe_event_display=past	12 (0.95%)	10 (0.98%)	00:00:16	2 (0.39%)	50.00%	33.33%	$0.00 (0.00%)
16.	/events/	10 (0.79%)	10 (0.98%)	00:00:20	4 (0.78%)	75.00%	30.00%	$0.00 (0.00%)
17.	/event/iorl-workshop-at-ieee-bmsb-2018/	9 (0.72%)	9 (0.88%)	00:03:03	2 (0.39%)	50.00%	44.44%	$0.00 (0.00%)
18.	/events/list/	9 (0.72%)	9 (0.88%)	00:00:41	3 (0.59%)	66.67%	55.56%	$0.00 (0.00%)
19.	/events-participation/	8 (0.64%)	7 (0.69%)	00:00:08	2 (0.39%)	50.00%	25.00%	$0.00 (0.00%)
20.	/promotional-material/	8 (0.64%)	7 (0.69%)	00:00:14	1 (0.20%)	0.00%	25.00%	$0.00 (0.00%)
21.	/?page_id=27&preview=true	7 (0.56%)	2 (0.20%)	00:03:14	1 (0.20%)	0.00%	14.29%	$0.00 (0.00%)
22.	/upcoming-events/	7 (0.56%)	7 (0.69%)	00:00:04	0 (0.00%)	0.00%	0.00%	$0.00 (0.00%)
23.	/event/iorl-workshop-on-5g-network-security-ares-2018/	6 (0.48%)	5 (0.49%)	00:01:43	0 (0.00%)	0.00%	50.00%	$0.00 (0.00%)
24.	/event/ieee-camad-workshop-on-user-centric-network-management-and-service-provisioning/	5 (0.40%)	5 (0.49%)	00:00:57	3 (0.59%)	100.00%	80.00%	$0.00 (0.00%)
25.	/event/4th-project-plenary-meeting-of-iorl/	4 (0.32%)	3 (0.29%)	00:00:11	0 (0.00%)	0.00%	50.00%	$0.00 (0.00%)

Figure 22 – Distribution of interest across the different parts of the IoRL website

4.2 Social media

The project has discussed the use of various social media channels already at its kick-off meeting. Social media was assessed as a useful means to address both the general public, but also ICT expert community at large, in a less targeted way. The consortium agreed to use Twitter and Youtube as the two main channels. Facebook was also considered, but eventually discarded as inappropriate. It was felt that Facebook brings certain connotations and is just too much geared towards individuals, having a channel to reach out and maintain a follower space, especially in comparison to other channels.

The account name for the IoRL project is “5GIoRL” on the Twitter. Up until now, 159 tweets are shared on the IoRL Twitter page and it is followed by 55 followers. The posts shared on Twitter page can be accessed using the following link: https://twitter.com/5GIoRL. Shared posts include following topics:

- News from IoRL partners about LiFi,
- Major news from 5G PPP and EU Commission,
- Dissemination of symposium, conference and workshop calls,
- Tweets of IoRL members during meetings and conferences.

As an example, screenshot of one Twitter post is added below. This post has viewed by 800 times and clicked 10 times.

Figure 23 – Screenshot of a Twitter post

We are planning to share more posts on the Twitter in the future. We will be more active to improve the engagement of stakeholders and to attract attention of new followers.

A project YouTube channel has been set up, and hosts videos produced by the IoRL team, and the project website links the videos from the YouTube channel.

For legal reasons the YouTube channel is under the control of the IoRL co-ordinator Eurescom.

4.3 Flyer and poster

The IoRL flyer was designed in a collaborative manner. The initial content was assembled by Arcelik, which was then reviewed by the co-ordinator Eurescom. Mostlytek provided the design and finalised the layout, and eventually Eurescom organised the printing of the flyer.

The IoRL flyer was distributed at EuCNC 2018 and Communicasia 2018, and IoRL consortium partners will use the flyer at upcoming national and international events, as well as distributing them to their business contacts.

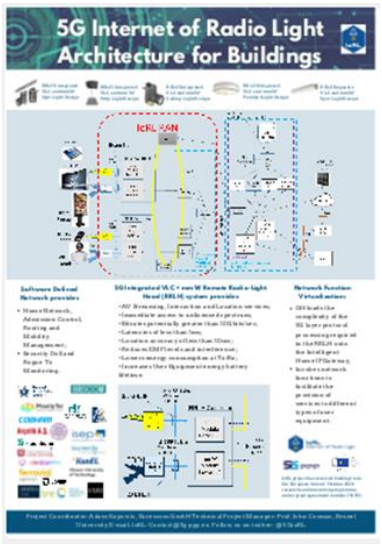


Figure 24 – IoRL poster

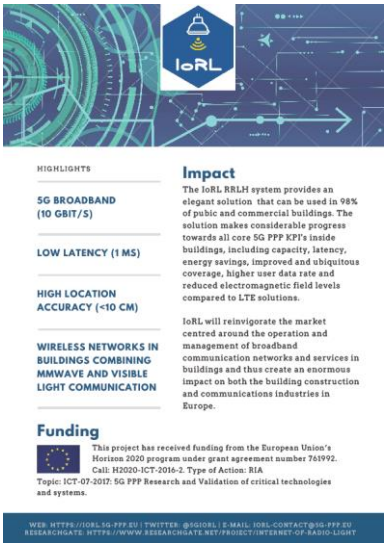


Figure 25 – IoRL flyer page 1

Figure 26 – IoRL flyer page 2

Design of the architecture and communication with user equipment are showed visually on the poster. Logos from all partners are placed on the poster along with the IoRL, 5GPPP and EU Commission logos. Project website, social media address and e-mail are shared in order to get feedbacks.

5 IoRL dissemination activities as part of the 5G PPP

IoRL is part of the 5G Infrastructure Public Private Partnership (5G PPP), a joint initiative between the European Commission and European ICT industry (ICT manufacturers, telecommunications operators, service providers, SMEs and researcher Institutions). The 5G-PPP is now in its second phase that consists of 21 projects, of which IoRL is one. It is the ultimate ambition of IoRL not only to be successful on its own right, but to be a good team player and taking its fair share in contributing to the overall success of 5G PPP. As such IoRL is committed to participate and contribute to programme level actions actively.

Notably, in the period we report here IoRL has participated in the regular conference calls of the 5G PPP COMMS group. Through this it benefited from learning about relevant events, dissemination opportunities, and teaming up with other projects. It also shared information about its activities, most notably dissemination activities organised, or co-organised.

IoRL has participated in the following joint activities with other 5G PPP projects, or on programme level:

- Contributions to 5G PPP program level cartography;
- Contributions to 5G PPP KPIs;
- Presentation about IoRL delivered by ISEP at the French national event « 5G in France and Europe : challenges and perspectives » at ISEP premises in Issy les Moulineaux on 7th June 2018 where the EC was represented by Peter Stuckmann who also provided a talk, as well as the other 5G PPP project 5GCAR;

- Provided input to the brochure produced by the 5G PPP NMQ WG for EUCNC'18 regarding the network management and QoS challenges towards verticals use cases;
- Contribution to the 5G PPP joint paper to EuCNC concerning verticals;
- Organisation of a workshop as part of BMSB;
- Organisation of a workshop on 5G Networks Security as part of the ARES Conference 2018;
- Co-organisation of the IEEE CAMAD Workshop on User-centric network management and service provisioning together with the H2020 RISE project CASPER.

Some of these events will take place after the period, but much of the organisation and preparation work took place within the period and needs to be credited.

IoRL continues to strive to explore synergies with peer 5G PPP projects.

6 Summary of dissemination performance and plans for the next period

6.1 Summary of dissemination performance to date

IoRL is a research and development project that is committed to deliver and demonstrate its envisioned solution in real life situations in four locations. The period covered by this report coincides well with the conceptual phase of the project. Accordingly, in this past period the dissemination and impact creation focused on:

- Identification of stakeholders and audience, and the best way to address them;
- Establishment of dissemination strategy and dissemination vehicles / tools;
- A broad awareness creation about the project;
- Dissemination of the IoRL concept.

The first year is always challenging for the dissemination activities in a research and development project, as results are just emerging. The dissemination activities summarised in this report and the statistics clearly demonstrate that IoRL started off very actively promoting its concept and creating awareness about its activities not only within Europe, but worldwide already in this past period. Through these efforts IoRL created a number of links and contacts and established itself well among the 5G PPP phase 2 projects' family.

6.2 Plans for the next period

In contrast to the past period, in the following period the project progresses in the next, implementation phase that will produce laboratory bench-top working systems. Accordingly, we expect a gradual shift from presenting the conceptual work and its results to exhibiting and demonstrating the IoRL system, together with its first performance results. This translates to a shift whereby IoRL will seek opportunities to demonstrate and exhibit its results, alongside of continued effort in publicising its technical achievements in prestigious

technical for and journals, especially regarding the achieved performance and improvements over conventional radio only solutions.

IoRL will continue to seek and explore synergies with the other 5G PPP projects, and pursue opportunities to jointly disseminate its results along with them, also to the extent of joint demonstrations, when and where possible.

In summary, the above clearly means that the project plans and is committed to further intensify dissemination efforts in the coming period.

