



REAL-time monitoring and mitigation of nonlinear effects in optical **NETworks (REAL-NET)**

Deliverable D6.2 Interim report on publications and public engagement activities completed

Project details

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1 EXECUTIVE SUMMARY

Dissemination is a crucial instrument for achieving best practice and knowledge circulation inside the REAL-NET consortium and outside, spreading excellence, raising public awareness of the project and its results. Coherently, specific dissemination and outreach activities, to be performed throughout the project life time, have been carefully planned in the Grant Agreement.

This deliverable describes the publications and public engagement activities achieved during this first year of recruitment of the ESRs. In particular, this document details: i) the scientific outcomes of the project, in form of publications, conference oral presentation and seminar; and ii) dissemination activities being, outreach activities, social media interactions, website, twitter and newsletters.

2 SCIENTIFIC OUTCOMES DISSEMINATION

The main lines of dissemination and transfer of open results and knowledge include: participation in conferences, seminars, workshops; publication of papers, presentations and seminar talks. To ensure ESRs are able to communicate their research effectively to a wide audience and they will gain all the skills necessary to present with confidence and impact, REAL-NET aims to disseminate the ESRs results to 18 journal papers, 14 conference papers and 16 seminar talks. All consortium members and all ESRs ensure to acknowledge the EU financial support in all publications and presentation in the scope of REAL-NET Programme by specifying the Marie-Curies Innovative Training Networks (EID) action along with REAL-NET project number.

Coherently with the fact that ESRs play leading roles in their projects, the REAL-NET supervisory board and ESR supervisors will ensure allocations of the first author and corresponding author (in the case of joint ESRs publication) roles in publications for all ESRs. In compliance with the requirements of Horizon 2020, the consortium will make sure that publications will be freely accessible, through the gold-open-access model, or deposited in local repositories and archives (green model).

2.1 Journal papers publications

- Complex-valued neural network design for mitigation of signal distortions in optical links
Journal of Lightwave Technology (Prestigious journal)
Authors: Pedro J. Freire; Vladislav Neskornuik; Antonio Napoli; Bernhard Spinner; Nelson Costa; Ginni Khanna; Emilio Riccardi; Jaroslaw E. Perilepsky; Sergei K. Turitsyn

2.2 Conference papers

Invited presentation at ECOC2020:

- Experimental Verification of Complex-Valued Artificial Neural Network for Nonlinear Equalization in Coherent Optical Communication Systems.
Authors: Pedro J. Freire; Vladislav Neskornuik; Antonio Napoli; Bernhard Spinner; Nelson Costa; Emilio Riccardi; Jaroslav E. Perilepsky; Sergei K. Turitsyn
- Simplifying the Supervised Learning of Kerr Nonlinearity Compensation Algorithms by Data Augmentation
Authors: Vladislav Neskornuik; Pedro J. Freire; Antonio Napoli; Bernhard Spinner; Wolfgang Schairer; Nelson Costa; Jaroslav E. Perilepsky; Sergei K. Turitsyn

2.3 Seminar talks

All ESRs regularly present their progress and latest results at in-house seminars at their local host and secondment institutions. Besides, Pedro Sourza, ESR2, presented a seminar to Infinera US and AiPT people willing to participate, talking about “Neural networks as a solution to impairment mitigation in optical communication systems”.

2.4 Future scientific planning

In addition, ESRs’ presentations at forthcoming international conferences and publications in academic journals have already been planned and will be delivered in the next few months.

3 COMMUNICATION AND PUBLIC ENGAGEMENT

The objective of communication and public engagement is to share the benefits of higher education, research knowledge and expertise with the general public.

The term “public engagement” covers a wide range of activities. By definition it describes the myriad of ways in which the activity and benefits of higher education and research can be shared with the public. This is not a one-way communication from the scientist to the audience, but a two-way process, involving interaction and listening, with the goal of generating mutual benefit.

Considerations regarding the target audience and the aim of the activity influence the choice of activities. Working with schools connects young people with contemporary research and using

unfamiliar and specialist scientific equipment can excite pupils and helps to inspire the next generation of researchers.

A far larger and dispersed potential audience can be reached through the internet, connecting to people across the world to talk about REAL-NET research.

3.1 Outreach activity to ERASMUS Mundus students

On 24th February 2020 the REAL-NET project manager together with MOCCA and FONTE project managers, lead an Outreach Activity aimed at student in two photonics-related ERASMUS MUNDUS JOINT MASTERS DEGREE (EMJMD) programmes, coordinated by AiPT: SMARTNET and PIXNET

As both programmes train EMJMD students in photonics and communication technologies, this was a great opportunity to discuss post-MSc options to the students, and in particular introduce them to the Marie Skłodowska-Curie Actions (MSCA).



Figure 1 Outreach activity to ERASMUS Mundus students

3.2 Aston OSA spie

On 3rd March 2020 ESR1, Mohammad Hosseini, and ESR2, Pedro J. Freire, participated in an outreach event organised together with Aston OSA spie. REAL-NET ESRs explained optics to undergraduate students and celebrate, also, together the International Women's week.



Figure 2 Pedro and Mohammad during the Aston OSA spie event on 3rd March 2020

3.3 Shared experience with MSc students

Mohammad Hosseini (ESR1) and Diogo Sequeira (ESR6) participated at the Outreach event on the 21st May 2020, where they shared their PhD experience with MSc students.

The event, held virtually due to the COVID-19 restrictions, has been jointly organised by ITNs ONFIRE REAL-NET and WON; and co-located within the IEEE 24th International Conference on Optical Networks Design and Modelling (ONDM 2020).

3.4 Public engagement activity by Pedro

Pedro J. Freire (ESR2) on 17th November 2020 presented his research on "Complex-Valued Neural Network Design for Mitigation of Signal Distortions in Optical Links in Highly Nonlinear Regimes" at Aston OSA spie.

4 DEVELOPMENT AND MAINTENANCE OF THE REAL-NET WEBSITE

REAL-NET website has been launched on 30th April 2020 and it is constantly updated.

The website link contains information on:

- REAL-NET ESRs
- REAL-NET consortium
- Training and network events
- Scientific achievements
- Outreach

- News and dissemination material.

The website is also a major tool to advertise open-to-all events and workshops.

5 SOCIAL MEDIA

5.1 Twitter

In addition to the above, REAL-NET has a twitter account (@REALNET_EID) where all the latest information and news about the project and its ESRs are published.

5.2 Research Gate

REAL-NET has also a dedicated page on researchnet.com (<https://www.researchgate.net/project/H2020-MSCA-EID-REAL-NET-REAL-time-monitoring-and-mitigation-of-nonlinear-effects-in-optical-NETworks>) where all the events and dissemination activities about the project are advertise.

5.3 Others

Finally, the activities of the REAL-NET project have also been advertised through leaflets, such as those on the activities of the Aston Institute of Photonic Technologies (AiPT) within Aston University. These leaflets are regularly distributed at conferences and other academic events.

6 CONCLUSION

In order to ensure the compliance with the work plan, the progresses of dissemination and outreach activities are being monitored and discussed during management meetings.

As required by the grant agreement, the coordinator will ensure that all consortium members will acknowledge the EU financial support in all publications and presentations



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