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Project Name:
**R**econfigurable **I**ntelligent **S**ustainable **E**nvironments for **6G** Wireless Networks (RISE-6G)

# Deliverable 8.5

## Final dissemination and standardisation activity report

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# Deliverable D8.5
# Final dissemination and standardisation activity report

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## Abstract

This deliverable presents the final report for standardisation and dissemination activities of the H2020 RISE-6G project considering all 36 months of its duration. It constitutes the main report of activities conducted under the first two tasks of WP8. Hereafter, we provide the list of activities relevant to scientific outreach and wider communication, and we introduce the standardisation roadmap that will include the identification of relevant standardisation development organisations and open-source projects with corresponding accepted contributions. This deliverable is an updated version of D8.3 which included the intermediate standardisation and dissemination report and has a close correspondence to D8.4, which is submitted in parallel and contains the report on the industrial exploitation under the third task of this WP.



## Keywords

*Beyond-5G, 6G, Standard, 3GPP, ETSI, O-RAN, RIS, Rel-18, publications, dissemination, communication*

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# List of Acronyms

| Acronym | Full term |
|---|---|
| 3GPP | 3rd Generation Partnership Project |
| 5GPPP | 5th Generation Public Private Partnership |
| B5G/6G | Beyond 5G/6G |
| CC-by | Creative Commons by attribution (License) |
| CN | Core Network |
| CT | Core Network and Terminal |
| DOI | Digital Object Identifier |
| DMP | Data Management Plan |
| D**X**.**Y** | The **Y**-th deliverable document of the **X**-th WP. |
| EC | European Commission |
| ETSI | European Telecommunications Standards Insitute |
| GR | Group Report |
| H2020 | Horizon 2020 |
| ICT | Information and Communication Technologies |
| IPR | Intellectual Property Rights |
| ISAC | Integrated Sensing And Communications |
| ISG | Industry Specification Group |
| KPI | Key Performance Indicator |
| O-RAN | Open Radio Access Network |
| PoC | Proof-of-Concept |
| RAN | Radio Access Network |
| RIS | Reconfigurable Intelligent Surface |
| SDO | Standards Development Organisation |
| SNS-JU | Smart Networks and Services – Joint Undertaking |
| TRL | Technology Readiness Level |
| TSG | Technical Specification Group |
| URL | Unified Resource Locator |
| WP | Work Package |
| WG | Working Group |

# 1 Introduction

The main goal of the RISE-6G project is to introduce and demonstrate a disruptive, scalable, and smart wireless connectivity paradigm enabled by Reconfigurable Intelligent Surfaces (RISs), while addressing both the design of key hardware building blocks and their integration within future Beyond 5G/6G (B5G/6G) networks. The work carried out throughout the 36 months of its lifespan toward achieving this objective has been materialised in numerous scientific and

technological results, which have been reported through the rest of the deliverables and the European Commission (EC) portal.

To maximise the Project's impact as well as coordinate and improve the outreach and exploitation of such results, WP8 has carried out numerous activities relating to its three intertwined tasks that focus on dissemination, standardisation, and industrial exploitation, respectively. The visibility and openness brought by such actions aligns with the European vision of a full digital inclusion toward green and sustainable environments and follows the Open Research Initiative illustrated under Horizon 2020.

In doing so, RISE-6G has taken full advantage of the diversity of its project partners; drawn from the wireless industry and importantly from the academic research that in fact provide the focus for value creation activities. The industry is broadly defined by the themes of two different real applications that pose the basis of field trials and demonstrators: the rail station in Rennes (France) and the industrial plant in Turin (Italy). Such a consortium has been well equipped to participate in numerous and wide dissemination activities including academic publications and lectures, standardisation contributions, proofs-of-concepts and real-life demonstrations.

This report provides a summary of the outcomes towards dissemination and standardisation, assessing the activities of T8.1 and T8.2 for the entirety of the project duration. This report has been partly compiled via continual reporting of the individual partners' activities in internal project documents, providing the added value of self-evaluation and re-planning of dissemination and standardisation activities. Concurrently, the living nature of this report up to its submission has provided an opportunity for organisation and planning of future coordinated activities for the duration of the project.

The rest of this document is organised as follows: The reminder of this section gives a brief overview of the Project's dissemination and communication plan, that embellishes previous deliverables and gives context and motivation for the reported activities. Section 2 illustrates the dissemination and communication activities, by considering individual and coordinated efforts relating to wider and academic outreach and by listing the implemented activities. The activities themselves have been analysed and taxonomised to illustrate a clear picture of the level, quantity, and nature of such works. Section 3 presents the contribution by RISE-6G to relevant standardisation bodies and gives an overview of their motivation, expected outcome, as well as roadmap for future developments and contributions in the standards.

This deliverable is designed to be self-contained, however, it has a close relation to the following RISE-6G deliverables:

- D1.3: "Final project management report": WP8 and WP1 have a close correspondence due to their organisational and reporting nature. Additionally, multiple types of project results (such as publications) constitute by nature individual dissemination items.
- D8.1: "Dissemination plan and project website": The reported activities illustrated in this deliverable implement the initial dissemination plan outlined at the first stages of the project.
- D8.2: "Standardisation action plan": Similarly, the overall strategy of the Project's standardisation's activities has been reported in D8.2.
- D8.3: "Intermediate dissemination and standardisation activity report": The current deliverable constitutes an updated version of the previously submitted report. Content from that document related to overview and analysis of the performed activities has not been repeated in the current document. However, the activities of the whole 32 months of the project are reported here in order to provide a single point of reference and to better contextualise and ascertain their efficacy.
- D8.4: "Final report on exploitation of knowledge and results": While this deliverable reports on T8.1 and T8.2, the results of the project that are exploited industrially (or in the

academic domain) are reported in D8.4, submitted concurrently. There is a close correspondence of the two documents regarding some of the reported items that offer dual benefits of dissemination (or standardisation) alongside exploitation.

- D8.6: “Data Management Plan”: D8.6 illustrates the initiative, plans, and procedures for making the results of the project as open as possible. Alongside the social benefits brought by publicly sharing the Project’s advancements, the Open Access items shared by RISE-6G also provide excellent opportunities for outreach. For this reason, such items are reported in this deliverable.

While this deliverable is intended to be self-contained, it is strongly encouraged to be read alongside the above documents. Where needed, the relationship to individual documents is mentioned in the text.

## 1.1 Types of results

Throughout its duration, RISE-6G has developed results that broadly fall under the following categories:

1. Scientific advancements, including algorithmic, theoretical, mathematical, and technological developments.
2. RIS prototypes and components
3. Measurements and field trials
4. Concepts and knowledge

The results are reported in the corresponding deliverables from the technical work packages, and corresponding exploitation strategies are presented in D8.5. As illustrated in the next section, the main process of publicly announcing them is by submitting academic publications, and proceeding, inserting them in standardisation documents and general media. The rest of the dissemination and communication strategy generally involves presenting the published material in different forms (tutorials, lectures, newsletters, etc) and via diverse media (website, live demonstrations, videos, etc).

## 1.2 Target audience

In the context of this deliverable, a distinction between two main audience groups, although understandably, this distinction admits some overlap:

1. Audience stemming from the academic and technology circles: This includes scientists, researchers, engineers, especially from relevant fields from Academia, as well as industrial leaders. The main characteristics of such a group is that (i) they possess a prior background relevant to the work carried out in this project, and (ii) monitor scientific and industrial venues, events, and advancements. To this end, this group is reached via standard scientific practices, such as journal publishing, presentations at conferences, lectureships, etc. Commonly, the term “dissemination” is used to refer specifically to such precise outreach actions.
2. The wider audience: This refers to individuals and bodies that are broadly familiar with the technological landscape of the Project but are not actively following the standard scientific discourse channels. Of particular interest are legislation bodies, the EC, media, stakeholders, as well as the general public. “Communication” activities illustrate a less technical presentation of the project’s results for a wider audience. Understandably, recipients of communication activities also belong to the first group. Our dissemination

plan takes this opportunity to provide a high-level description of the technical results through communication actions, and invite interested audience to more informative dissemination material.

## 1.3 Goals of dissemination and communication strategy

Communication to a wider audience as possible has the following benefits to the RISE-6G project:

- Invites a higher level of engagement with the stakeholders and instigate more fruitful interactions.
- Generates a market demand, beneficial to the Project's exploitation plans, and increases the awareness of the technological landscape under the RISE-6G project.
- Shows the success of European collaboration and provides transparency of how public money is spent to the citizens.
- Attracts field experts and potential collaborators, either from the scientific areas associated with the Project, or more crucially, with scientific, technological, and industrial domains where synergies are only starting to emerge.

At the same time, the importance of academic dissemination of the project's results is paramount for maximising the RISE-6G impact on the relevant community. The following goals contribute to this endeavour:

- Exploitation of the project's results: As pronounced in D8.4, the usefulness of the results developed in this project is enhanced the wider their adoption becomes.
- Accelerating research progress in the relevant areas: The widespread adoption of RISE-6G outcomes has the potential to spark exciting and fast-paced research works in numerous relevant fields, as illustrated by the acceptance and citations of the Project's publications.
- Contribute to the state-of-the-art: The technological improvements developed under RISE-6G are expected to constitute benchmarks in the fields for the following years.
- Convert scientific results into common goods: RISE-6G has carried out works under the lower to middle Technology Readiness Levels (TRLs). The Open Access nature of the dissemination strategy adopted by the project ensures that either the initial stakeholders or third parties (for open IPR results) are able to implement the studied technology toward consumer-ready applications.

# 2 Dissemination Activities

## 2.1 The Dissemination Package and Policy

To organise and coordinate the various dissemination activities carried out under WP8, a set of policies have been outlined, as illustrated in D8.3 and D8.1. Briefly, the dissemination plan is structured along the following axes:

1. Coordinated actions that include the participation of multiple partners or the entirety of the Consortium. These actions require sizable effort in terms of coordination, planning, and execution but are expected to have a high-level of visibility.
2. Individually led or collaborative activities, such as those carried out under standard academic and scientific discourse. Upon initial planning under WP8, individual partners are tasked with implementing the relevant dissemination activities. This mode of operation allows for agile and fast participation in numerous parallel dissemination and communication opportunities.
3. Outreach channels, that are used by the entirety of the consortium to communicate with the wider community, announce the project's results and other dissemination material, as well as to invite and attract engagement from collaborators, stakeholders, end-users, etc.

In support of those actions, the WP8 team has prepared the "dissemination package", as presented in D8.3, to provide a harmonised presentation image and establish a "brand-name" for RISE-6G. In the second term of the project, this package has been embellished with updated presentation and visual templates, as well as two template presentations that contain the results of the project. Those templates have been modified and used by individual partners across different venues including special sessions, conferences, and the RISE-6G Workshop.

## 2.2 Outreach channels

### 2.2.1 Social Media

The project is maintaining two active social media accounts on LinkedIn (https://www.linkedin.com/groups/12492572/) and X (formerly, Twitter) (https://twitter.com/RISE_6G).

- The LinkedIn group numbers 417 members and 58 posts. The topics posted are related to interesting papers submitted by the Consortium, conferences, special sessions, and workshops RISE-6G is organising or participating in, as well as various other dissemination opportunities such as the face-to-face meetings, deliverables, and newsletters. It is noted that external accounts of individuals from the academic and industrial landscape have often used the group to post relevant content (of dissemination opportunities and recent developments), which indicates that RISE-6G is recognised as an important entity in its domain and attracts substantial interest. The community built under the LinkedIn group is the main target of outreach, as it indicates a professional outlook for the project.
- The Twitter account (19 followers, 17 posts) is designed to be of complementary nature. Posts about main RISE-6G activities (such as the Workshop, deliverables, and meetings) are being made. Following the platform's more direct and informal, the account is additionally used as a channel of displaying the project's internal workings (e.g. via pictures, or short announcements). Additionally, the account has been used to provide a

centralised view of relevant happenings under the SNS/6G/EU/H2020 ecosystem. This is achieved by "re-twitting" mentions from accounts such as HEXA-X, 6GWorld, CORDIS_EU, as well as posts from partners' institution or individual accounts. The #RISE6G, #RISE_6G tags number 50 mentions at the time of writing.

### 2.2.2 Website

The website (https://rise-6g.eu/) has been the focal dissemination point of project's activities and results from its inception. Its structure, design, and strategy of content upload has been reported under D8.1 and D8.3. The individual items are disseminated under the following pages:

- Deliverables
- Talks and Workshops
- Newsletters
- Open Access & Submitted Publications
- Issued Journals & Magazines
- Issued Publications & Conferences

Additionally, its blog-post design has been used for posting events and content on its Home page, including uploaded presentations, videos, summer school, the Workshop, etc.

### 2.2.3 YouTube channel

The project has been additionally established its YouTube channel (https://www.youtube.com/@RISE-6G). Three types of videos have been uploaded:

- Videos with presentations of the individual WPs of the Project, each one given by the corresponding WP leader. The videos contain a top-level presentation of each WP and intermediary results.
- The RISE-6G Training Workshop, posted as individual presentation videos. Since the Workshop provided one of the most important outreach activities of the project and was the main channel of the PoC demonstrations, its presence on YouTube has been paramount. The choice of cutting the 4-hour video into its individual components has been made specifically to showcase the highlights of the project to the interested audience.
- Tutorials, lectures, and presentations given by individual Researchers. Note that while numerous such activities are reported, a few selected items have been posted for the following reasons: (i) The recordings of the given presentations come with exclusive rights from the venue organisers (e.g., conferences) that do not allow public broadcasting. (ii) The recordings have not been available.

### 2.2.4 Newsletters

RISE-6G has published four newsletters during its lifecycle with the following contents:

- Issue #1: Introduction to the RISE-6G project
  - Project Outline
  - Smart Wireless Environments
  - Technical Approach

- Dissemination
- The Consortium

- Issue #2: Half-term technical updates & in-depth presentation of the WPs.
  - Project Updates
  - Work Package 2
  - Work Package 3
  - Work Package 4
  - Work Package 5
  - Work Package 6
  - Project Partners
- Issue #3: Two-year progress report & submitted deliverables.
  - Project Updates
  - D2.1, D2.2, D2.3, D2.4, D2.5
  - D3.1, D3.2, D3.3
  - D4.1, D4.2
  - D5.1, D5.2
  - D6.1, D6.2
  - D7.1
- Issue #4: Final RISE-6G results, Proofs-of-Concepts, Workshop
  - Project Achievements
  - Final round of deliverables
  - Proofs-of-Concepts
  - Training Workshop


Figure 2-1: The front pages of the four newsletter issues from RISE-6G.

The content from the newsletters was extracted from the related deliverables, internal reports concerning dissemination, standardisation, and exploitation, as well as dissemination items

such as press releases. The visual template (shown in Figure 2-1) was created using the material from the dissemination package. The issues were circulated electronically via e-mails, LinkedIn, Twitter/X, and on the website.

### 2.2.5 Flyer and Posters

As reported in D8.3, the 2-page flyer has been created as shown in Figure 2-2. Its two-page format allowed for two-side printing handouts to be created that were disseminated during physical presence in the venues attended by RISE-6G members, as well as electronic circulation in PDF format. Additionally, the first page has been used as a standalone poster and displayed in similar RISE-6G activities. For the purposes of the RISE-6G Training Workshop (reported below), a specific poster has been created (shown in Figure 2-3) alongside a poster-themed version of the agenda. This material was also been used as a means of further dissemination by highlighting the main Project results.


**Figure 2-2: The RISE-6G leaflet and flyer.**

## 2.3 Project-level coordinated activities

### 2.3.1 Project-level publications

The Consortium has resulted in numerous publications to disseminate its technical results as illustrated in the following of the document. The majority of the publications involve the participation of few of the Partners as collaborators and are coordinated in work-package-level or as

joint efforts between two to three WPs. A number of key publications, however, resulted as joint efforts and collaborations between all or almost all Partners of the Project, as listed below:

- E. C. Strinati, G. C. Alexandropoulos, V. Sciancalepore, M. Di Renzo, H. Wymeersch, D-T Phan-huy, M. Crozzoli, R. D'Errico, E. De Carvalho, P. Popovski, P. Di Lorenzo, L. Bastianelli, M. Belouar, J. E. Mascolo, G. Gradoni, S. Phang, G. Lerosey, B. Denis, "Wireless environment as a service enabled by reconfigurable intelligent surfaces: The RISE-6G perspective", in Proc. Joint EuCNC & 6G Summit, Porto, Portugal, 8–11 June 2021.
    - The inaugural paper of RISE-6G (108 citations), written as one of the first dissemination actions has been presented in Joint EuCNC & 6G Summit, among other SNS-JU/H2020 European Projects. It shows the overall motivation, goals and objectives, and key concepts under RISE-6G.
- E. C. Strinati, G. C. Alexandropoulos, H. Wymeersch, B. Denis, V. Sciancalepore, R. D'Errico, A. Clemente, D.-T. Phan-Huy, E. De Carvalho and P. Popovski, "Reconfigurable, Intelligent, and Sustainable Wireless Environments for 6G Smart Connectivity," in IEEE Communications Magazine, vol. 59, no. 10, pp. 99-105, October 2021.
    - The magazine publication (137 citations) highlighted the technical approach of the RISE-6G project and emphasised the concept of smart radio environments as one of the key components of future networks.
- G. C. Alexandropoulos, D.-T. Phan-Huy, K. D. Katsanos, M. Crozzoli, H. Wymeersch, P. Popovski, P. Ratajczak, Y. Bénédic, M.-H. Hamon, S. Herraiz Gonzalez, P. Mursia, M. Rossanese, V. Sciancalepore, J.-B. Gros, S. Terranova, G. Gradoni, P. Di Lorenzo, M. Rahal, B. Denis, R. D'Errico, A. Clemente, and E. Calvanese Strinati, "RIS-enabled smart wireless environments: Deployment scenarios, network architecture, bandwidth and area of influence," EURASIP Journal on Wireless Communications and Networking, to appear, 2024.
    - The recent journal publication highlights two of the most important concepts developed under RISE-6G, namely the area and bandwidth of influence and has been submitted to a high-visibility journal to better emphasise the importance of those findings to the community. Those concepts have been a centrepiece of the project's outreach efforts, as they have been further introduced in RISE-6G standardisation contributions as well as exploitable items (see also D8.4).
- A. Albanese, G. Encinas-Lago, V. Sciancalepore, X. Costa-Perez, D. Phan-Huy, S. Ros, "RIS-Aware Indoor Network Planning: The Rennes Railway Station Case", in Proceedings of IEEE International Conference on Communications (ICC) 2022.
    - One of the papers highlighting the PoC plans of RISE-6G, overseen by WP7 leadership alongside the involved technical and industrial collaborators.
- Nielsen, L., Gavras, A., Dieudonne, M., Mesogiti, I., Roosipuu, P., Houatra, D., & Kosmatos, E. (2022). Beyond 5G/6G KPIs and Target Values. Zenodo. https://doi.org/10.5281/zenodo.6577506
    - RISE-6G has actively participated in the whitepaper authored by 5G PPP, and specifically, the Test, Measurement, and KPIs Validation Working Group with a focus of presenting the current status of the B5G/6G KPIs from 5G PPP Phase III and ICT-52 projects. Contributions from RISE-6G's vision, definitions, and use of relevant metrics and KPIs have been incorporated.

### 2.3.2 Collaboration with other Projects

RISE-6G has seek collaborative opportunities with other H2020/SNS-JU and 5G PPP projects throughout its activities. Apart from its contributions to the whitepaper listed above, the Consortium has participated in various joint efforts such as the ICT-52 Workshop on 6G (under the Hexa-X flagship project). RISE-6G Partners have participated in in the 5GPPP Architecture Working Group and the 5GPPP Test Measurement and KPI Validation Working Group. Additionally, the Consortium has co-authored publications with relevant projects, including METAWIRELESS, RISE-6G, and HEXA-X. Finally, the RISE-6G workshop included both participants as well as invited panellists from ICT-52 partnerships.

### 2.3.3 Training workshops

Apart from its participation in established workshops (please refer to the full lists below) and the organisation of special sessions therein, RISE-6G has additionally organised two summer schools in 2021 and 2023 under the Lake Como School of Advanced Studies. Additionally, the dissemination activities of the Project culminated in the **RISE-6G Training Workshop,** that took place virtually on 12 December 2023. The workshop was consisted of 12 presentations that spanned 4 hours and included:


**Figure 2-3: The RISE-6G Training Workshop poster and agenda.**

- A tutorial on RIS technology,
- results of the technical WPs of the project,
- highlights of the conducted PoCs,
- an overview of the overall Project's innovation, dissemination, standardisation, and industrial exploitation outputs, and

- a panel discussion from RISE-6G and external, invited, experts focused on the commercialisation aspects of RIS technology.

The workshop invitations have been circulated prior to the event via the social media accounts, the website, e-mails, as well as personal invitations. Figure 2-3 displays the promotional poster and the agenda that were used for dissemination. Overall, there were 103 participants present during the call, and the presentations were recorded. The presentations have been uploaded as individual videos on the website and on the Project's YouTube channel. An automatic transcription of the ongoing conversations was enabled, and the resulted transcript is uploaded on the website to enable access to the workshop to people with accessibility requirements, alongside replies to the live questions asked by the participants. By processing the transcript, a wordcloud has been prepared, as depicted in Figure 2-4 where the size of the displayed words corresponds to their frequency of occurrence within the workshop presentations.


**Figure 2-4: Wordcloud of most frequent terms used during the RISE-6G Training Workshop presentations.**

## 2.4 Academic dissemination activities

### 2.4.1 Publications

The project has submitted so far **188 publications** to conferences (69), journals (86), magazines (11), letters (17) and pre-prints (5). That number includes papers that have been officially published, are pending to appear, or awaiting decision under the peer-review process. High-impact venues are primarily targeted, ass it can be seen from Table 2-1. The full list of the project's publication is given in 3.2.2.

In Figure 2-6, the number the publications have been classified according to their relevant WP(s). Inter-WP collaborations are strongly encouraged and **40 of the publications that relate to more than one WP** have emerged. The detailed numbers of inter-WP collaborations are given in Figure 2-5. In a similar manner, collaborative authorship between multiple Partners has

been pursued. In fact, **56 of the submitted publications include at least two Partners** in the authors' list, **while 15 publications include at least 3**.

Apart from the large number of output papers, RISE-6G has also achieved high-visibility in its body of published works. At the time of writing, the project's publications count more than **7287 citations**. As a whole, the project has an **H-index**[1] of **43** and an **i10-index**[2] of **107**.

**Table 2-1: Top venues by number of RISE-6G publications accepted.**

| Journal / Conference name | Number of accepted publications |
|---|---|
| **IEEE Transactions on Wireless Communications** | 17 |
| **IEEE Wireless Communications Letters** | 15 |
| **IEEE International Conference on Communications (ICC)** | 11 |
| **IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)** | 10 |
| **IEEE Transactions on Communications** | 9 |
| **European Conference on Antennas and Propagation (EuCAP)** | 9 |
| **IEEE Journal of Selected Areas in Communications** | 8 |
| **IEEE Transactions on Vehicular Technology** | 7 |
| **IEEE Global Communications Conference (GLOBECOM)** | 7 |
| **European Conference on Networks and Communications (EuCNC) & 6G Summit** | 6 |
| **IEEE Open Journal of the Communications Society** | 5 |
| **IEEE Transactions on Antennas and Propagation** | 4 |
| **IEEE Transactions on Signal Processing** | 4 |

[1] H-index of X means that exactly X of the papers have at least X citations.
[2] i10-index of X means that X papers have at least 10 citations.

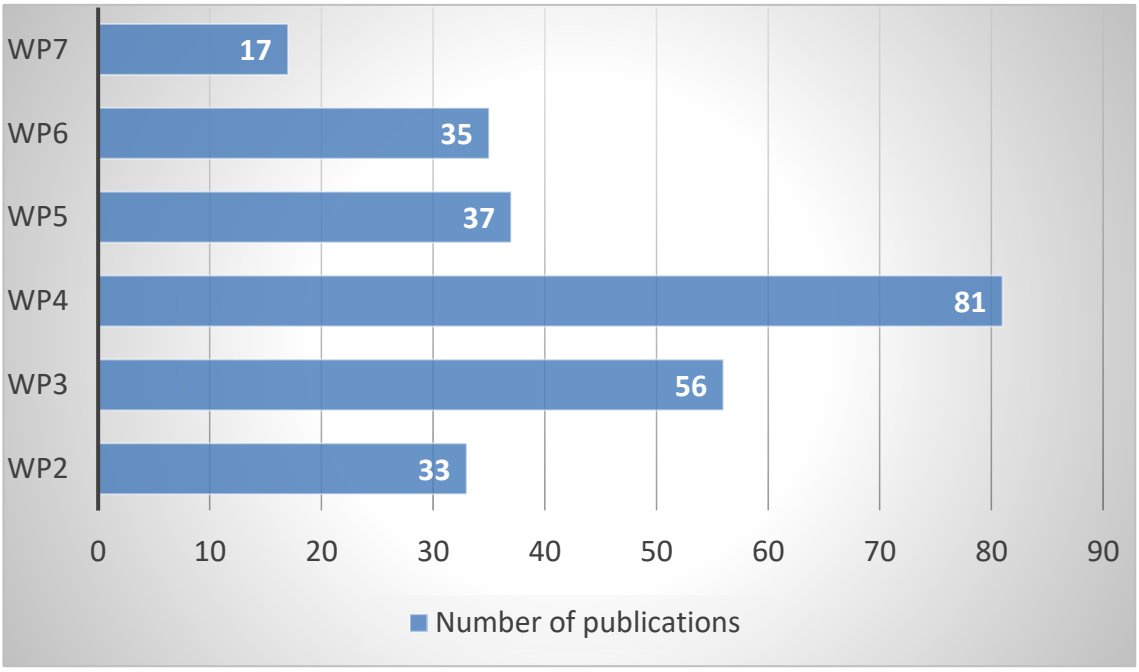


**Figure 2-6: RISE-6G publications classified according to the WP(s) of relevance.**

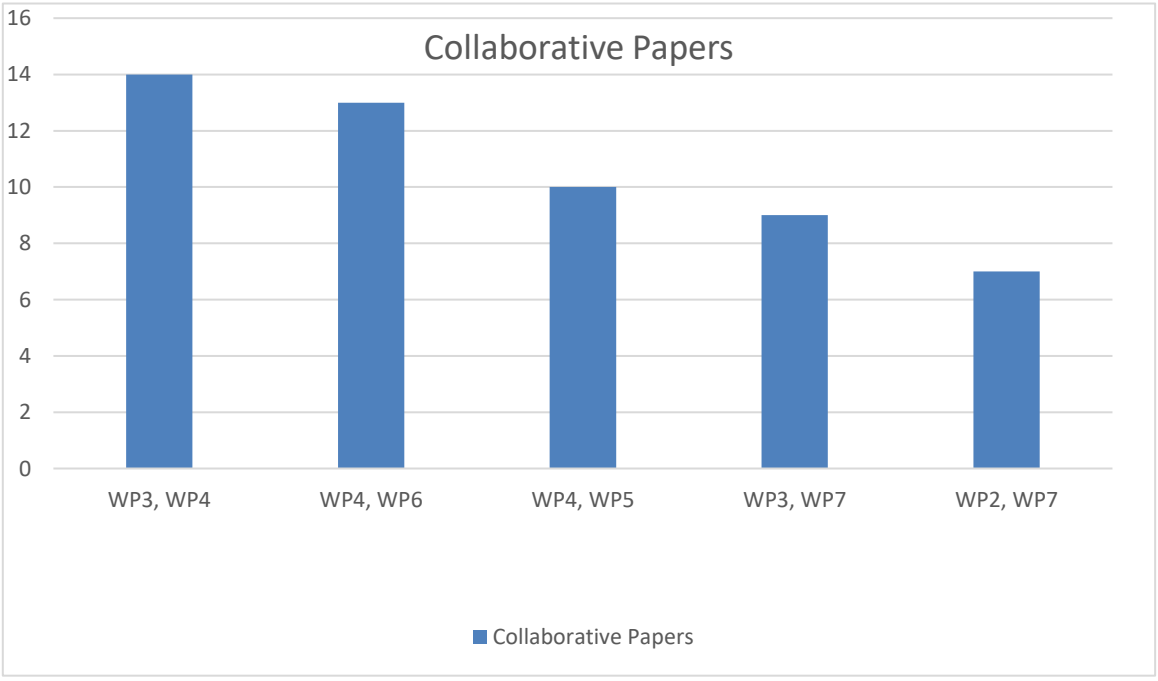


**Figure 2-5: RISE-6G inter-WP collaborations in paper authorship.**

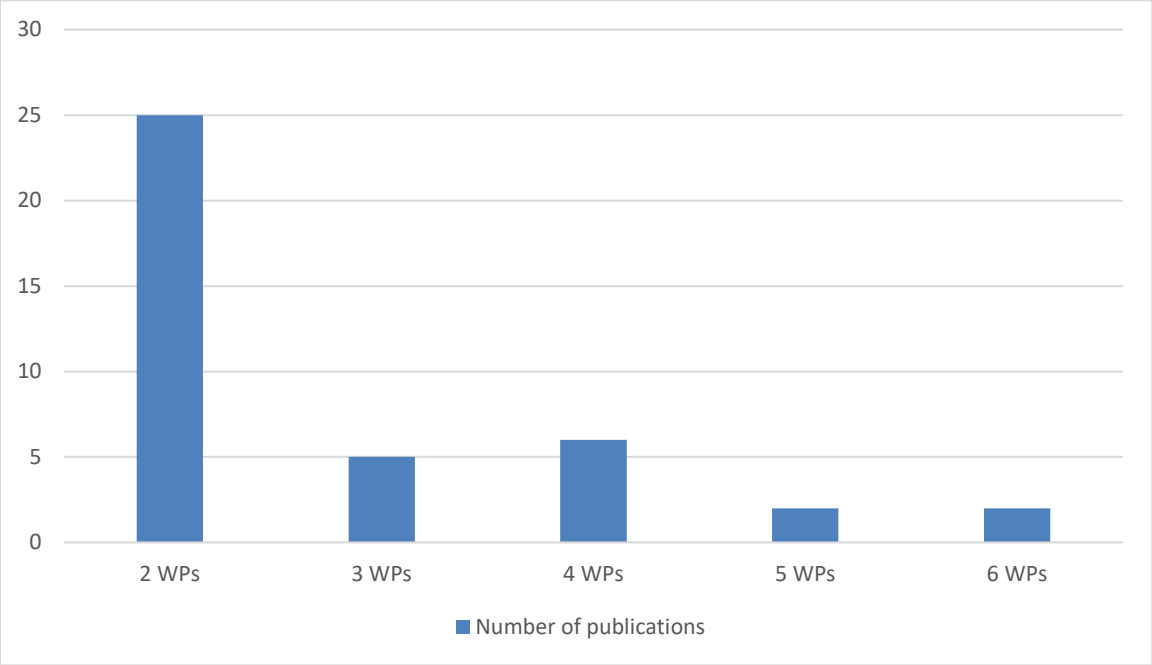


**Figure 2-7: Publications involving collaborations between multiple WPs.**

### 2.4.2 Various Dissemination Activities

There have been various further dissemination actions taken by all the partners to ensure the increased visibility of the project in the academic circles. The full list of **117 individual items** is given in Appendix II. Toward better communicating the results and ideas of the joint works conducted in the past term, 46 total talks, tutorial, presentations, and lectures were given by individuals in multiple venues and settings. Members of RISE-6G have also featured in 9 panels and booths during academic conferences. In such events, the opportunity has been taken to co-organise and co-chair 24 relevant special sessions to further enhance the outreach of the project in the community. Five special issues of related topics have been edited by project members. Finally, 21 appearances have been made in public events (including interviews, multimedia, etc) and two summer schools have been organised, apart from the Training Workshop.

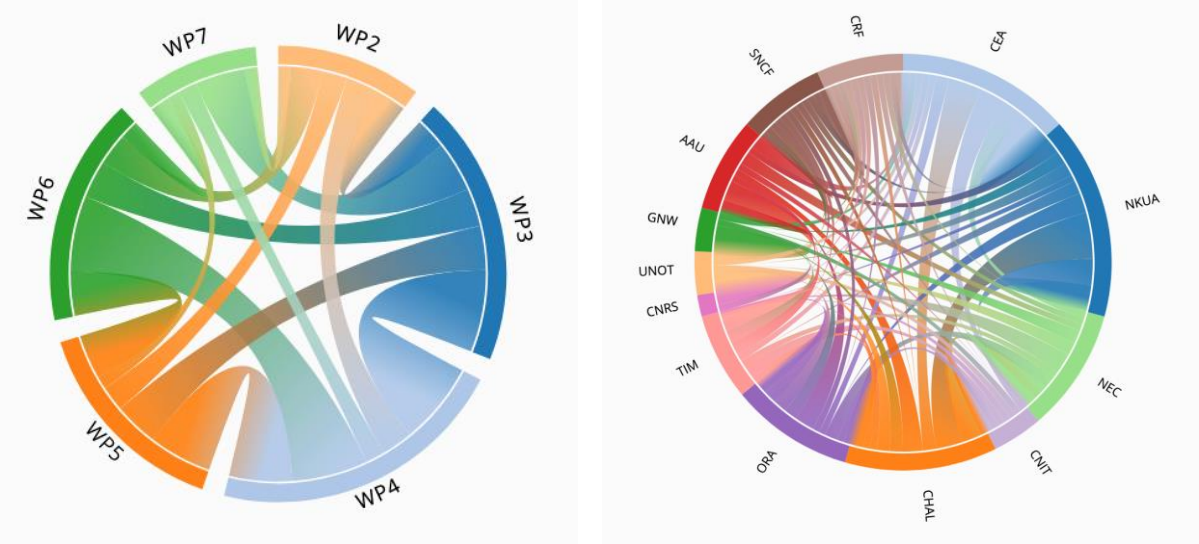


**Figure 2-8: Relation charts of inter-WP collaborations (left) and inter-Partner collaborations (right) in terms of publications. The width of each line corresponds to the relative proportion of the collaborations between each pair.**

### 2.4.3 Open Access Data

Another facet of the dissemination policy of RISE-6G is the openness of the produced results. The open access initiative, the data management plan, and the corresponding internal processes have been described in D8.6 (in the updated version). As part of this endeavor, the items made publicly available by RISE-6G are listed in Table 2-2. Note that the open access publications contain more details of code implementations and measured data, however the following ones have been curated as individual repositories and data sets. The descriptions of those items are as follows:

1. Implementation of the state-of-the-art and newly developed approach for online RIS control based on Deep Reinforcement Learning, including channel simulator code.
2. Implementation of a proposed Deep Learning approach for RIS configuration, including simulated measurements from reference material.
3. Tabulated values of the re-flection coefficient magnitude and phase as a function of the voltage, characterized experimentally, for the unit-cell of a prototype of varactor-based reconfigurable intelligent surface.
4. Measured beampattern along the azimuth direction for every configuration in a pre-defined codebook of the NEC RF-switch-based sub-6GHz RIS. Measurements were collected in an anechoic chamber.
5. Python code for the SCA method that is presented in the paper Let. [16].
6. MATLAB code for the scientific paper Let. [8].
7. MATLAB the code for the algorithm that is presented in the paper Jour. [45].
8. MATLAB simulation code for the paper Jour. [77].

**Table 2-2: Open access code and data made available by RISE-6G.**

| # | Partners | Relevant WP | Type of data | Storage Platform | Upload date | Version | License | References |
|---|---|---|---|---|---|---|---|---|
| **1** | NKUA | WP4 | Code repository | Github | 15/01/2022 | a8d8155 | Apache License | Jour. [28], Conf. [19], Conf. [36] |
| **2** | NKUA | WP4 | Code repository | Github | 07/01/2022 | 781b71f | Apache License | Conf. [18] |
| **3** | ORA | WP3, WP7 | Dataset (from measurements) | Zenodo | 24/02/2023 | V0 (7674707) | CC-by | Mag. [4] |
| **4** | NEC | WP3, WP4, WP7 | Dataset (from measurements) | Github | 10/02/2023 | 1675a23 | For research purposes – Attribution required | Conf. [41] |
| **5** | CNRS | WP4 | Code repository | Code Ocean | 09/02/2023 | 1.0 | MIT | Let. [16] |
| **6** | CNRS | WP4 | Code repository | Code Ocean | 25/09/2023 | 1.0 | MIT | Let. [8] |
| **7** | CNRS | WP4 | Code repository | Code Ocean | 24/02/2022 | 1.1 | MIT | Jour. [45] |
| **8** | CNRS | WP4 | Code repository | Code Ocean | 25/09/2023 | 1.0 | MIT | Jour. [77] |

# 3 Standardisation Activities

RISE-6G project has addressed a number of standardisation activities across relevant standards bodies and fora based on specific standard involvement of key-partners of the project. A specific focus was given to 3GPP and the European standardisation group, namely ETSI, related standards activities, as the most relevant on the definition of upcoming network generation designs.

Generally, the identification of standardization activities is crucial for promoting the adoption and widespread deployment of innovative technologies like RIS by core industrial stakeholders such as vendors and operators. Table 3-1enumerates the standard groups expected to benefit from RISE-6G's contributions, with additional standardization forums reserved for forthcoming deliverables. For a comprehensive list of RISE-6G's standardization contributions, please refer to Appendix III.

**Table 3-1: Up-to-date impact on main standardisation bodies**

| Bodies or fora | Groups | RISE-6G Contribution | Partners |
|---|---|---|---|
| **3GPP** | | 3GPP will be the key-standards body for Beyond-5G and 6G system definition. This has been included in some discussion within the Release-18 workshop and will be definitely included as Study Item within the Release-19. | NEC, TIM, ORA, CEA |
| | SA1<br>SA2<br>SA3<br>SA5 | Reference architecture for integrating innovative and novel services that might comprise RIS-enable networks that will impact directly on the Radio Access Networks, including BS (gNB) improvements and novel UE algorithms. | |
| | RAN1 | Advanced localisation techniques that might require timing, synchronisation and novel signals, such as Demodulation Reference Signal (DMRS), Channel Modelling Sounding Reference Signal (SRS) and Orthogonal Time-Frequency Space (OTFS)-related modulation for RIS environments. | |
| | RAN2 | Monitoring of 5G NR guidelines for advanced solutions that might include RIS specifications | |
| | RAN3 | Handover mechanisms in a cell-less deployment where RISs might be in place to provide service continuity. | |
| **ETSI** | RIS | RIS-related interfaces and protocols. Integration with other existing ETSI ISG. | NEC, NKUA, CEA, CNRS |

| | | | |
|---|---|---|---|
| | | **Two RISE-6G key-partners are rapporteurs of two main GRs of the ETSI RIS standard.** | |
| | THz | RIS-empowered networks working at Terahertz frequencies. Potential liaison between RISE-6G and ETSI THz group. | |
| | NFV | NFV-MANO administrative domains, Management and connectivity of multi-site network services, Network slicing in NFV), Reconfigurable Radio Systems (RRS) (Cognitive Radio (CR), Software Reconfiguration through Radio Applications) | |
| | MEC | RIS-aware applications that require pre/post-processing on edge data centres (involving AI-based algorithms). | |
| | NTECH | Enablers and associated APIs to access network resources, such as network-based authentication, location information, content caching. Service and Network interconnection and interworking with RISs. | |
| | ENI | AI-based solution supporting RIS activation and operations. | |
| | ISAC | Integrated sensing and communications activities where RISs can be envisioned as passive sensing nodes able to control communication as well as delivering additional sensing services. | |
| **O-RAN** | WG1, WG2, WG3, WG4, WG6 | Open fronthaul contribution to have RIS-based deployments.<br>**Interface between RISE-6G architecture and ORAN building blocks.** | NEC, ORA, TIM |

Following the main standard bodies, the RISE-6G project has defined a clear standardisation activity roadmap to be in line with ongoing and upcoming activities. This automatically captures updates that might influence industrial choices while keeping RISE-6G output still up-to-date. RISE-6G contributes by means of each involved partner to the main discussions to disseminate project technological innovations giving more visibility to our technical achievements. An updated project timeline matching the major SDOs is depicted in **Figure 3-1**.

## 3.1 3GPP

The 3rd Generation Partnership Project (3GPP) aims at covering cellular telecommunications technologies that will include radio access network (RAN), core network (CN) and service capabilities. This automatically provides the means for creating a complete architecture mobile telecommunication system. In general, specifications from the 3GPP standardisation group are

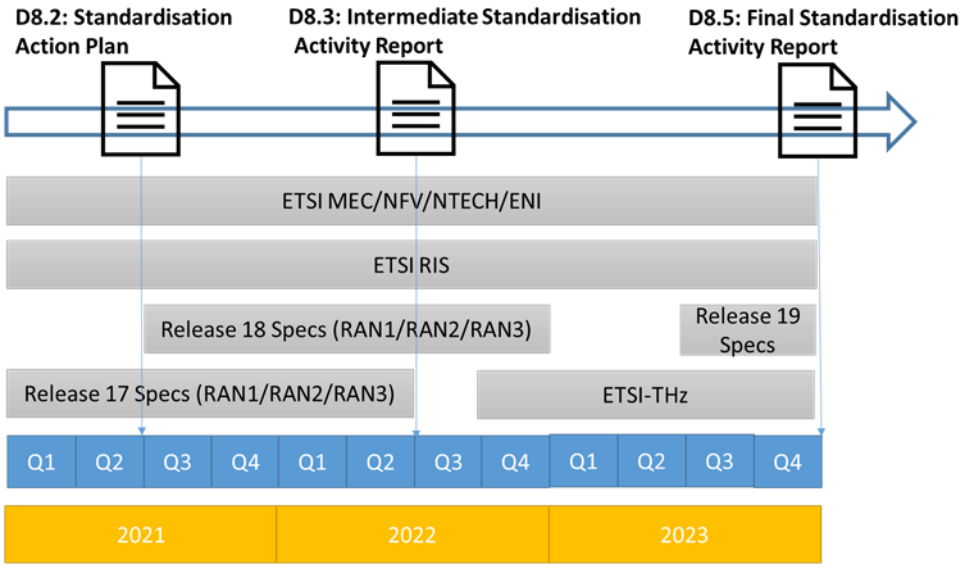


**Figure 3-1: RISE-6G timeline over major SDOs.**

proposed by each member company within specific Working Groups (WGs) and at the Technical Specification Group (TSG) level. We can identify three different TSGs, such as Radio Access Networks (RAN), Services & Systems Aspects (SA), Core Network & Terminals (CT) with their last release (17) of specifications ready and public within Q2 of 2021. Novel and innovative concepts to be included in 5G-and-beyond (B5G) and 6G network design will be part of the discussion for 3GPP Release 18 and upcoming Release 19.

RISE-6G project will mostly focus on contributions related to radio access network (RAN). However, future standard contributions may also include core networks-related topic to support seamless RIS integration into the existing system. Monitoring activities will be performed to be aligned with the relevant ongoing discussions.

### 3.1.1 RAN1, RAN2 and RAN3 for Rel-18 and Rel-19

3GPP has introduced the concept of Smart Repeater with its Release 18, namely Network-Controlled Repeater to evolve the classical RF repeater concept, mostly used for 2G, 3G and 4G networks. Smart Repeaters are a new type of network node able to exploit some side control information to enable a more intelligent amplify-and-forward paradigm and beamforming operations. Smart Repeaters are non-regenerative with two beamforming antennas, e.g., phased antenna arrays, oriented towards the serving gNB and the service area to be covered, respectively. The Smart Repeater can be interpreted as a specific type (more complex) of smart surface. In the RAN Release 18 workshop among the endorsed list of topics for further discussion (RWS-210659), additional RAN1/2/3 candidate topics have been discussed, including RIS (Reconfigurable Intelligent Surfaces) concept. Interestingly, 3GPP will enhance the concept of Smart Repeater within Release 19 in conjunction with the novel ISAC (integrated sensing and communication) topic. In particular, the objectives of the ISAC-related study item will be the following:

- Study simulation model, channel model, and performance metric of ISAC system.

- Study framework, mechanism, and procedure to support sensing function;
- Study resource schemes of sensing and communication;
- Study and identify potential schemes of sensing;

Interestingly, RIS is envisioned as a new RAN node able to provide communications and sensing capabilities.

## 3.2 ETSI

In Europe, ETSI is the European Telecommunication Institute, a recognized European Standards Organization that deals with telecommunications, broadcasting and other electronic communication networks and services. The standardisation work is carried out by means of different Industry Specification Groups (ISGs), which focus on specific activities and standardisation guidelines. The RISE-6G project will mostly focus on four existing ISGs, such as ETSI MEC, ETSI NFV, ETSI ENI and ETSI NTECH. A new ISG, namely **ETSI RIS**, has been launched in September 2021 with most of the RISE-6G relevant partners directly involved into the standard. Recently, a **new ISG has been approved** to focus on the **novel THz concept,** namely ETSI THz, considering the RIS concept as one of the core technologies. In addition, a new ISG has been approved to shed the light on a novel concept, namely integrated-sensing-and-communications (ISAC), where RIS is envisioned as a key-enabler for the future communication design.

### 3.2.1 ETSI RIS ISG

This new ISG is expected to provide an opportunity for all ETSI members to coordinate their pre-standards research efforts on RIS technology across various EU/UK collaborative projects, extended with relevant global initiatives, towards paving the way for future standardisation of the technology. The main mission of this ISG is to finally explore RIS technology and all its applications across the wide spectrum of use cases and deployments, and identify any specification needs that may be required. The scope of the ETSI RIS ISG will cover the following aspects: *i)* defining use cases, KPIs, and deployment and operational scenarios for RIS; *ii)* radio-frequency aspects including surface models, channel characterization, radiation characterization, and radiation exposure limits for RIS; *iii)* RIS-aided air-interface technologies, mechanics, and requirements; *iv)* system and network level control signaling aspects for RIS; *v)* system and network architecture framework considerations for RIS; *vi)* baseline evaluation methodology and performance analysis or RIS (link-level and system-level), *vii)* RIS microelectronics, enabling technologies, and proof-of-concepts (prototyping); *viii)* RIS verification and validation (e.g., hackathons). Many relevant partners are funding the initiative. Most of them are also part of the RISE-6G consortium, as reported in Table 3-2.

**Table 3-2: Co-founding members of ETSI RIS**

| Organization | Country | Type | ETSI Member | ETSI Board Member |
|---|---|---|---|---|
| **British Telecommunications plc** | UK | Operator | Yes | Yes |
| **CEA-LETI** | France | Research Institute | Yes | No |
| **CNIT** | Italy | Research Institute | Yes | No |
| **CNRS** | France | Research Institute | Yes | No |
| **IMDEA Networks** | Spain | Research Institute | Yes | No |

| | | | | |
|---|---|---|---|---|
| **InterDigital Europe Ltd** | UK | Vendor | Yes | No |
| **National Physical Laboratory** | UK | Research Institute | Yes | No |
| **NEC Europe Ltd** | Germany/UK | Vendor | Yes | Yes |
| **UK DCMS** | UK | Government | Yes | Yes |
| **University of Oulu** | Finland | Academia | Yes | No |
| **University of Surrey** | UK | Academia | Yes | No |
| **ZTE** | China | Vendor | Yes | Yes |

The ETSI RIS follows the roadmap as per Figure 3-2.

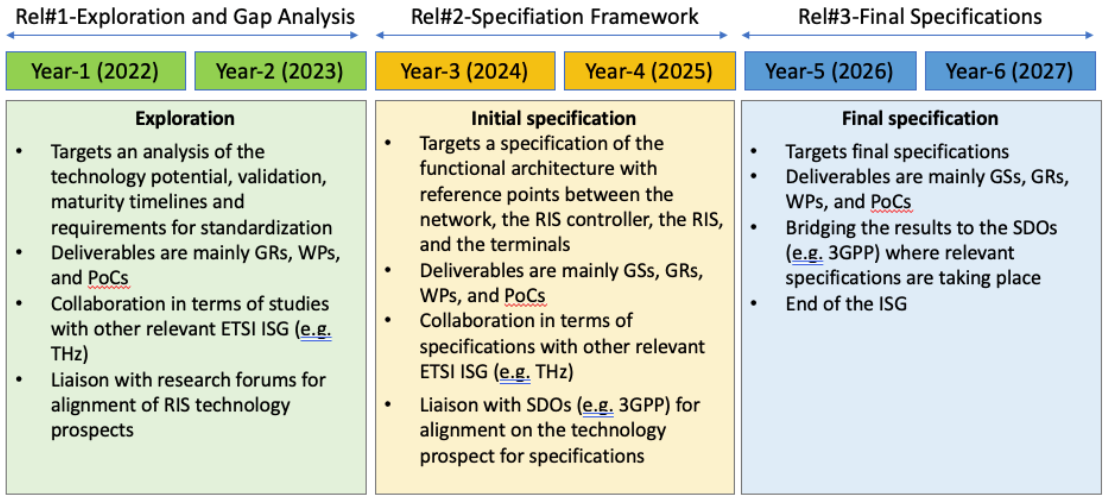


**Figure 3-2: Expected ISG Roadmap**

Specifically, within the first phase, an exploration and gap analysis will be carried out so as an initial specification will be defined in the next second phase. By the end of 2027 the final specifications will be released trying to make a clear link with other SDOs, such as 3GPP.

Three main ETSI Group Reports (GRs) have been recently published:

- GR RIS-001, “Use Cases and Deployment Scenarios”;
- GR RIS-002: “Study on Technological challenges and Impact on networks and standards”;
- GR RIS-003: “Communication Models, Channel Models, and Evaluation Methodology”.

The rapporteur of ETSI GR RIS-001 and ETSI GR RIS-003 are NEC and CNRS, respectively. Some of the RISE-6G partners are monitoring and actively contributing to the ETSI RIS meetings by reflecting the main findings and intermediate results of the project (please refer to the complete list of standard contribution in the Appendix).

In addition, three new ETSI Group Reports have been recently approved:

- GR RIS-004, “Implementation and Practical Considerations”;

- GR RIS-005: “Diversity and Multiplexing of RIS-aided Communications”;
- GR RIS-006: “Multi-functional Reconfigurable Intelligent Surfaces (RIS): Modelling, Optimisation, and Operation”.

This gives visibility to the project activities and outcomes while creating a reserved path to disseminate technical solutions and project results directly into the ETSI standard path.

### 3.2.2 ETSI ISG THz

Very recently, on the 6th of September 2022, this new ISG was approved, intending, similar to the previous group, to provide an opportunity for all ETSI members to coordinate their pre-standards research efforts on the THz technology and relevant channel modelling across various EU/UK collaborative projects, extended with relevant global initiatives, towards paving the way for the future standardisation of the various technological features.

The group aims at establishing the technical foundation for the development and standardisation of THz communications (0.1-10 THz). The tentative scope of the proposed ISG can be summarised as follows:

- Definition and selection of relevant use cases for THz communications;
- Mapping of selected use cases to relevant channel measurement scenarios;
- Definition of frequency bands of interest;
- Analysis of existing work in the area of THz channel measurements and modelling
- Performing of radio channel measurements and modelling, including:
  - indoor and outdoor environments, with and without mobility,
  - intra/inter device measurements and models,
  - sounding for integrated sensing and communication (ISAC),
  - sounding including reconfigurable intelligent surfaces (RISs),
  - machine learning (ML) methods to generate and analyse radio channels;
- Specification of the evaluation methodology for THz communication systems.

Among the founding members of the newly established group are member of the RISE-6G consortium:

**Table 3-3: Co-founding members (not exhaustive list) of ETSI THz**

| Organisation | Country | Type | ETSI Member | ETSI Board Member |
|---|---|---|---|---|
| **TUBS digital** | Germany | Academia | Yes | No |
| **CEA-LETI** | France | Research Institute | Yes | No |
| **Huawei Technologies Duesseldorf** | Germany | Vendor | Yes | Yes |
| **CNRS** | France | Research Institute | Yes | No |
| **NPL (National Physical Laboratory)** | UK | Other Gov Body | Yes | No |
| **InterDigital Europe Ltd** | UK | Vendor | Yes | No |
| **NKUA** | Greece | Academia | Yes | No |

| | | | | |
|---|---|---|---|---|
| **NEC Europe Ltd** | Germany/UK | Vendor | Yes | Yes |
| **Keysight Tech. UK Ltd.** | UK | Vendor | Yes | No |
| **University of Oulu** | Finland | Academia | Yes | No |
| **University of Surrey** | UK | Academia | Yes | No |
| **Fraunhofer IIS** | Germany | Research Institute | Yes | No |

A tentative longer-term roadmap for the ISG THz is provided in Figure 3-2 with three phases of two-year duration, namely, Phase 1: Exploration, Phase 2: Initial Specifications, and Phase 3: Final Specifications.

### 3.2.3 ETSI ISG ISAC

On the 17th of November 2023, a new ISG was approved, to provide an opportunity for all ETSI members to coordinate their pre-standards research efforts on the novel integrated communications and sensing (ISAC) topic. This emerging and novel ISG will be used to establish the RIS technology within the 6G (and beyond) landscape. Information on approved documents will be made available at the beginning of 2024. NKUA are part of the establishing members of this ISG.

# 4 Conclusions and outlook

This final report presented the activities of the RISE-6G project under communication and dissemination (Task 8.1), as well as standardisation (Task 8.2). It included an overview of the dissemination policies, before proceeding to reporting the individual activities. 184 publications have been published, accepted, or submitted with more than 7000 citations at the time of writing. 70 individual dissemination actions have been conducted, including talks, presentations, tutorials, special sessions, special issues, summer schools, and press releases. Newsletters, posters, social media, and YouTube videos comprised the main dissemination channels and the RISE-6G Training Workshop presented a great opportunity to maximise the Project's outreach. On a similar manner, RISE-6G efforts resulted in 30 contributions to the standardisation fora ETSI, 3GPP, and O-RAN.

# Appendix I. List of submitted, accepted, and published publications from RISE-6G

| # | Reference | WPs | Part-ners |
|---|---|---|---|
| | **Journals** | | |
| 1 | J. Yuan, M. Wen, Q. Li, E. Basar, G. C. Alexandropoulos, and G. Chen, "Receive quadrature reflecting modulation for RIS-empowered wireless communications", IEEE Transactions on Vehicular Technology, vol. 70, no. 5, pp. 5121–5125, May 2021. | WP4 | NKUA |
| 2 | Z. Peng, T. Li, C. Pan, H. Ren, W. Xu and M. D. Renzo, "Analysis and optimization for RIS-aided multi-pair communications relying on statistical CSI," in IEEE Transactions on Vehicular Technology, vol. 70, no. 4, pp. 3897-3901, April 2021. | WP4 | CNRS |
| 3 | Z. Wan, Z. Gao, F. Gao, M. Di Renzo and M.-S. Alouini, "Terahertz massive MIMO with holographic reconfigurable intelligent surfaces," IEEE Trans. Commun. 69(7): 4732-4750 (2021). | WP4 | CNRS |
| 4 | B. Yang, X. Cao, C. Huang, C. Yuen, L. Qian and M. D. Renzo, "Intelligent spectrum learning for wireless networks with reconfigurable intelligent surfaces," in IEEE Transactions on Vehicular Technology, vol. 70, no. 4, pp. 3920-3925, April 2021. | WP4 | CNRS |
| 5 | J. Hu, H. Zhang, K. Bian, M. Di Renzo, Z. Han, L. Song, "Meta-Sensing: Intelligent Metasurface Assisted RF 3D Sensing by Deep Reinforcement Learning," IEEE J. Sel. Areas Commun. 39(7): 2182-2197 (2021) | WP5 | CNRS |
| 6 | Y. Zhang, J. Zhang, M. D. Renzo, H. Xiao and B. Ai, "Performance analysis of RIS-aided systems with practical phase shift and amplitude response," in IEEE Transactions on Vehicular Technology, vol. 70, no. 5, pp. 4501-4511, May 2021. | WP3, WP4 | CNRS |
| 7 | Y. Chen, Y. Wang, J. Zhang and M. Di Renzo, "QoS-driven spectrum sharing for reconfigurable intelligent surfaces (RISs) aided vehicular networks," in IEEE Transactions on Wireless Communications, 2021. | WP4, WP6 | CNRS |
| 8 | S. Li, B. Duo, M. Di Renzo, M. Tao, and X. Yuan, "Robust secure UAV communications with the aid of reconfigurable intelligent surfaces", IEEE Trans. Wirel. Commun. 20(10): 6402-6417 (2021) | WP6 | CNRS |
| 9 | F. H. Danufane, M. Di Renzo, J. de Rosny, and S. Tretyakov, "On the path-loss of reconfigurable intelligent surfaces: An approach based on Green's theorem applied to vector fields", IEEE Trans. Commun. 69(8): 5573-5592 (2021). | WP3 | CNRS |
| 10 | R. Fara, P. Ratajczak, D.-T. Phan-Huy, A.Ourir, M. Di Renzo, and J. De Rosny, "A prototype of reconfigurable intelligent surface with continuous control of the reflection phase modeling, full-wave electromagnetic characterization, experimental validation, and application to ambient backscatter communications", IEEE Wireless Communications, to appear, 2021. | WP3 | ORA, CNRS |
| 11 | C. Ross, G. Gradoni, Q. J. Lim and Z. Peng, "Engineering Reflective Metasurfaces With Ising Hamiltonian and Quantum Annealing," in IEEE Transactions on Antennas and Propagation, vol. 70, no. 4, pp. 2841-2854, April 2022, doi: 10.1109/TAP.2021.3137424. | WP3 | UNOT |
| 12 | C. L. Nguyen, O. Georgiou, G. Gradoni and M. Di Renzo, "Wireless Fingerprinting Localization in Smart Environments Using Reconfigurable Intelligent Surfaces," in IEEE Access, vol. 9, pp. 135526-135541, 2021, doi: 10.1109/ACCESS.2021.3115596. | WP5 | UNOT, CNRS |

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| 13 | C. J. Vaca-Rubio, P. Ramirez-Espinosa, K. Kansanen, Z.-H. Tan, E. de Carvalho, and P. Popovski, "Assessing wireless sensing potential with large intelligent surfaces", in IEEE Open Journal of the Communications Society, vol. 2, pp. 934-947, 2021. | WP6 | AAU |
| 14 | C. Huang, Z. Yang, G. C. Alexandropoulos, K. Xiong, L. Wei, C. Yuen, and Z. Zhang, "Multi-hop RIS-empowered terahertz communications: A DRL-based hybrid beamforming design," IEEE Journal on Selected Areas in Communications, vol. 39, no. 6, pp. 1663–1677, June 2021. | WP4 | NKUA |
| 15 | K. Keykhosravi, M. F. Keskin, S. Dwivedi, G. Seco-Granados, and H. Wymeersch, "Semi-passive 3D positioning of multiple RIS-enabled users", in IEEE Transactions on Vehicular Technology, vol. 70, no. 10, pp. 11073-11077, Oct. 2021, doi: 10.1109/TVT.2021.3109786. | WP5 | CHAL |
| 16 | J.-B. Gros, V. Popov, M. A. Odit, Vladimir Lenets and Geoffroy Lerosey, "A reconfigurable intelligent surface at mmWave based on a binary phase tunable metasurface", IEEE Open Journal of the Communications Society Special Issue, under review, 2021. | WP3 | GNW |
| 17 | P. Mursia, V. Sciancalepore, A. Garcia-Saavedra, L. Cottatellucci, X. C. Pérez and D. Gesbert, "RISMA: Reconfigurable Intelligent Surfaces Enabling Beamforming for IoT Massive Access," in IEEE Journal on Selected Areas in Communications, vol. 39, no. 4, pp. 1072-1085, April 2021. | WP4 | NEC |
| 18 | P. Mursia, F. Devoti, V. Sciancalepore, X. Costa-Pérez, "RISe of flight: RIS-empowered UAV communications for robust and reliable air-to-ground networks", IEEE Open Journal of the Communications Society, vol. 2, pp. 1616-1629, 2021. | WP4 | NEC |
| 19 | L. Wei, C. Huang, G. C. Alexandropoulos, A. M. Elbir, Z. Yang, C. Yuen, Z. Zhang, M. Di Renzo and M. Debbah, "Channel estimation for RIS-empowered systems: Model-based vs model-free approaches, and opportunities," IEEE Transactions on Communications, vol. 69, no. 6, pp. 4144–4157, June 2021. | WP4 | NKUA, CNRS |
| 20 | Qiang Liy, Miaowen Wen, and Marco Di Renzo "Single-RF MIMO: From Spatial Modulation to Metasurface-Based Modulation", IEEE Wireless Communications, 28(4): 88-95, 2021. | WP4 | CNRS |
| 21 | P. Di Lorenzo, M. Merluzzi, E. Calvanese Strinati, S. Barbarossa, "Dynamic edge computing empowered by reconfigurable intelligent surfaces", IEEE Transactions on Signal Processing, under review, 2021 | WP4 | CEA, CNIT |
| 22 | V. Popov, M. Odit, J-B Gros, V. Lenets, A. Kumagai, M. Fink, K. Enomoto, G. Lerosey, "Experimental demonstration of a mmWave passive access point extender based on abinary reconfigurable intelligent surface", Frontiers in Communications and Networks, under review, 2021. | WP3, WP7 | GNW |
| 23 | Lodro M, Gradoni G, Gros J-B, Greedy S and Lerosey G, “Reconfigurable Intelligent SurfaceAssisted Bluetooth Low Energy Link in Metal Enclosure”. Frontiers in Communications and Networks, p.44. 2021. doi: 10.3389/frcmn.2021.733637 | WP3 | GNW, UNOT |
| 24 | G. C. Alexandropoulos, K. D. Katsanos, M. Wen, and D. B. da Costa,"Counteracting Eavesdropper Attacks Through Reconfigurable Intelligent Surfaces: A New Threat Model and Secrecy Rate Optimization," IEEE Open Journal of the Communications Society, vol. 4, pp. 1285–1302, June 2023. | WP6 | NKUA |
| 25 | I. Alamzadeh, G. C. Alexandropoulos, N. Shlezinger, and M. F. Imani, "A Reconfigurable Intelligent Surface with Integrated Sensing Capability," Nature Scientific Reports, vol. 11, no. 20737, pp. 1–10, Oct. 2021. | WP3 | NKUA |

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| 26 | E. Björnson, H. Wymeersch, B. Matthiesen, P. Popovski, L. Sanguinetti, and E. de Carvalho, "Reconfigurable Intelligent Surfaces: A Signal Processing Perspective with Wireless Applications," IEEE SPM, 2021. | WP2 | CHAL, AAU |
| 27 | G. Gradoni, M. Di Renzo, "Smart Radio Environments," Review of Electromagnetics, Vol. 1, 2022. | WP2 | UNOT, CNRS |
| 28 | G. C. Alexandropoulos, K. Stylianopoulos, C. Huang, C. Yuen, M. Bennis, and M. Debbah, "Pervasive Machine Learning for Smart Radio Environments Enabled by Reconfigurable Intelligent Surfaces," IEEE Proceedings, vol. 110, no. 9, pp. 1494–1525, September 2022. | WP4 | NKUA |
| 29 | K. Keykhosravi, M. F. Keskin, G. Seco-Granados, P. Popovski, and H. Wymeersch, “RIS-Enabled SISO Localization under User Mobility and Spatial-Wideband Effects”, IEEE Journal of Selected Topics in Signal Processing, 2021. | WP5 | AAU, CHAL |
| 30 | A. Fascista, M. F. Keskin, A. Coluccia, H. Wymeersch, and G. Seco-Granados, “RIS-aided Joint Localization and Synchronization with a Single-Antenna Receiver: Beamforming Design and Low-Complexity Estimation”, IEEE Journal of Selected Topics in Signal Processing, 2021. | WP5 | CHAL |
| 31 | Y. Liu, X. Liu, X. Mu, T. Hou, J. Xu, M. Di Renzo, N. Al-Dhahir, "Reconfigurable Intelligent Surfaces: Principles and Opportunities," IEEE Commun. Surv. Tutorials 23(3): 1546-1577 (2021). | WP2 | CNRS |
| 32 | X. Cao, B. Yang, C. Huang, C. Yuen, M. Di Renzo, D. Niyato, Z. Han, "Reconfigurable Intelligent Surface-Assisted Aerial-Terrestrial Communications via Multi-Task Learning," IEEE J. Sel. Areas Commun. 39(10): 3035-3050 (2021) | WP4 | CNRS |
| 33 | B. Yang, X. Cao, C. Huang, Y. L. Guan, C. Yuen, M. Di Renzo, D. Niyato, M. Debbah, L. Hanzo, "Spectrum-Learning-Aided Reconfigurable Intelligent Surfaces for "Green" 6G Networks," IEEE Netw. 35(6): 20-26 (2021). | WP6 | CNRS |
| 34 | A. Abrardo, D. Dardari, M. Di Renzo, "Intelligent Reflecting Surfaces: Sum-Rate Optimization Based on Statistical Position Information," IEEE Trans. Commun. 69(10): 7121-7136 (2021). | WP4 | CNRS |
| 35 | N. S. Perovic, L.-N. Tran, M. Di Renzo, M. F. Flanagan, "Achievable Rate Optimization for MIMO Systems With Reconfigurable Intelligent Surfaces," IEEE Trans. Wirel. Commun. 20(6): 3865-3882 (2021). | WP4 | CNRS |
| 36 | Y. Xiu, J. Zhao, W. Sun, M. Di Renzo, G. Gui, Z. Zhang, N. Wei: “Reconfigurable Intelligent Surfaces Aided mmWave NOMA: Joint Power Allocation, Phase Shifts, and Hybrid Beamforming Optimization,” IEEE Trans. Wirel. Commun. 20(12): 8393-8409 (2021). | WP4 | CNRS |
| 37 | Y. Cheng, W. Peng, C. Huang, G. C. Alexandropoulos, C. Yuen and M. Debbah, "RIS-Aided Wireless Communications: Extra Degrees of Freedom via Rotation and Location Optimization," in IEEE Transactions on Wireless Communications, vol. 21, no. 8, pp. 6656-6671, Aug. 2022, doi: 10.1109/TWC.2022.3151702. | WP4 | NKUA |
| 38 | X. Cao, B. Yang, C. Huang, G. C. Alexandropoulos, C. Yuen, Z. Han, and H. V. Poor, "Massive access of static and mobile users via reconfigurable intelligent surfaces: Protocol design and performance analysis," IEEE Journal on Selected Areas in Communications, vol. 40, no. 4, pp. 1253–1269, Apr. 2022. | WP2 | NKUA |
| 39 | G. Zhou, C. Pan, H. Ren, P. Popovski, A. L. Swindlehurst, "Channel Estimation for RIS-Aided Multiuser Millimeter-Wave Systems", submitted to IEEE Transactions on Signal Processing, 2022. | WP2 | AAU |

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| 40 | C. Ozturk, M. F. Keskin, H. Wymeersch, and S. Gezici, "RIS-aided Near-Field Localization under Phase-Dependent Amplitude Variations," submitted to IEEE Transactions on Wireless Communications, 2022, | WP5 | CHAL |
| 41 | Keykhosravi, Kamran, Benoit Denis, George C. Alexandropoulos, Zhongxia Simon He, Antonio Albanese, Vincenzo Sciancalepore, and Henk Wymeersch. "Leveraging RIS-Enabled Smart Signal Propagation for Solving Infeasible Localization Problems." IEEE Vehicular Technology Magazine, to appear, 2024. | WP5 | CHAL, CEA, NKUA, NEC |
| 42 | H. Taghvaee, A. Jain, S. Abadal, G. Gradoni, E. Alarcón and A. Cabellos-Aparicio, "On the Enabling of Multi-Receiver Communications With Reconfigurable Intelligent Surfaces," in IEEE Transactions on Nanotechnology, vol. 21, pp. 413-423, 2022, doi: 10.1109/TNANO.2022.3195116. | WP4 | UNOT |
| 43 | R. Faqiri, C. Saigre-Tardif, G. C. Alexandropoulos, N. Shlezinger, M. F. Imani, and P. del Hougne, "PhysFad: Physics-based end-to-end channel modeling of RIS-parametrized environments with adjustable fading," IEEE Transactions on Wireless Communications, vol. 22, no. 1, pp. 580–595, January 2023. | WP3 | NKUA |
| 44 | M. Jian, G. C. Alexandropoulos, E. Basar, C. Huang, R. Liu, Y. Liu, and C. Yuen, "Reconfigurable intelligent surfaces for wireless communications: Overview of hardware designs, channel models, and estimation techniques," Intelligent and Converged Networks, vol. 3, no. 1, pp. 1–32, Mar. 2022. | WP2, WP3, WP4 | NKUA |
| 45 | K. Chen-Hu, G. C. Alexandropoulos, and A. García Armada, "Differential data-aided beam training for RIS-empowered multi-antenna communications," IEEE Access, IEEE Access, vol. 10, pp. 113200–113213, October 2022. | WP4 | NKUA |
| 46 | K. Chen-Hu, G. C. Alexandropoulos, and A. García Armada, "Non-coherent modulation with random phase configurations in RIS-empowered cellular MIMO systems," ITU Journal on Future and Evolving Technologies, vol. 3, no. 2, pp. 1–14, September 2022. | WP4 | NKUA |
| 47 | S. An, X. Bu, H. Wymeersch, H. Zirath, and Z. S. He, "Millimeter-Wave Multi-Channel Backscatter Communication and Ranging with an FMCW Radar," Sensors, 2022. | WP4, WP5 | CHAL |
| 48 | F. Jiang, A. Abrardo, K. Keyhoshravi, H. Wymeersch, D. Dardari, and M. Di Renzo, "Optimization of RIS-aided Integrated Localization and Communication," IEEE Transactions on Wireless Communications, 2022, under review. | WP5 | CHAL |
| 49 | H. Kim, H. Chen, M. F. Keskin, Y. Ge, K. Keykhosravi, G. C. Alexandropoulos, S. Kim, H. Wymeersch, "RIS-Enabled and Access-Point-Free Simultaneous Radio Localization and Mapping," IEEE Transactions on Wireless Communications, 2023. | WP5 | CHAL, NKUA |
| 50 | A. Albanese, V. Sciancalepore, A. Banchs and X. Costa-Perez, "LOKO: Localization-aware Roll-out Planning for Future Mobile Networks," in IEEE Transactions on Mobile Computing, 2022. | WP4, WP5 | NEC |
| 51 | Han, V. Sciancalepore, Y. Xu, D. Feng and H. D. Schotten, "Impatient Queuing for Intelligent Task Offloading in Multiaccess Edge Computing," in IEEE Transactions on Wireless Communications, vol. 22, no. 1, pp. 59-72, Jan. 2023. | WP4 | NEC |
| 52 | C. Ozturk, M. F. Keskin, V. Sciancalepore, H. Wymeersch, S. Gezici, "RIS-aided Localization under Pixel Failures," IEEE Transactions on Wireless Communications, submitted, 2022. | WP5 | NEC, CHAL |

| | | | |
|---|---|---|---|
| 53 | H. Chen, P. Zheng, M. F. Keskin, T. Al-Naffouri, H. Wymeersch, "Multi-RIS-Enabled 3D Sidelink Positioning," IEEE Journal on Selected Areas in Communications, submitted, 2023. | WP5 | CHAL |
| 54 | P. Zheng, H. Chen, T. Ballal, M. Valkama, H. Wymeersch, and T. Y. Al-Naffouri, "JrCUP: Joint RIS Calibration and User Positioning for 6G Wireless Systems," IEEE Transactions on Wireless Communications, submitted, 2023. | WP5 | CHAL |
| 55 | Q. J. Lim, C. Ross, A. Ghosh, F. Vook, G. Gradoni and Z. Peng, "Quantum-Assisted Combinatorial Optimization for Reconfigurable Intelligent Surfaces in Smart Electromagnetic Environments," in IEEE Transactions on Antennas and Propagation, doi: 10.1109/TAP.2023.3298134. | WP4, WP3 | UNOT |
| 56 | K. Konno, S. Terranova, Q. Chen, G. and Gradoni, 2023. Generalised Impedance Model of Wireless Links Assisted by Reconfigurable Intelligent Surfaces. Under Review IEEE TAP. arXiv preprint arXiv:2306.03761. | WP3 | UNOT |
| 57 | M. Di Renzo, A. Mohamed, A. Zappone, G. Gradoni, M. Rossi, M. Moccia, G. Castaldi, and V. Galdi, V., 2023. Effects of realistic reradiation models in digital reconfigurable intelligent surfaces. Journal of Information and Intelligence. | WP3 | CNRS, UNOT |
| 58 | Creagh, S.C. and Gradoni, G., 2023. Slepian eigenvalues as tunnelling rates. Annals of Physics, 449, p.169204. | WP3 | UNOT |
| 59 | G. C. Alexandropoulos, D.-T. Phan-Huy, K. D. Katsanos, M. Crozzoli, H. Wymeersch, P. Popovski, P. Ratajczak, Y. Bénédic, M.-H. Hamon, S. Herraiz Gonzalez, P. Mursia, M. Rossanese, V. Sciancalepore, J.-B. Gros, S. Terranova, G. Gradoni, P. Di Lorenzo, M. Rahal, B. Denis, R. D'Errico, A. Clemente, and E. Calvanese Strinati, "RIS-enabled smart wireless environments: Deployment scenarios, network architecture, bandwidth and area of influence," EURASIP Journal on Wireless Communications and Networking, to appear, 2024. | WP2, WP6 | NKUA, ORA, TIM, CHAL, AAU, NEC, GNW, UNOT, CNIT, CEA |
| 60 | Q. Li, M. Wen, E. Basar, G. C. Alexandropoulos, K. J. Kim, and H. V. Poor, "Cyclic-prefixed single-carrier transmission for RIS-empowered broadband wireless systems," IEEE Transactions on Wireless Communications, to appear, 2023. | WP4 | NKUA |
| 61 | J. He, A. Fakhreddine, C. Vanwynsberghe, H. Wymeersch, and G. C. Alexandropoulos, "3D localization with a single partially-connected receiving RIS: Positioning error analysis and algorithmic design," IEEE Transactions on Vehicular Technology, to appear, 2024. | WP5 | CHAL, NKUA |
| 62 | S. Prabhakar Chepuri, N. Shlezinger, F. Liu, G. C. Alexandropoulos, S. Buzzi, and Y. C. Eldar, "Integrated sensing and communications with reconfigurable intelligent surfaces," IEEE Signal Processing Magazine, to appear, 2024. | WP4, WP5, WP6 | NKUA |
| 63 | G. Geraci *et al*., "What Will the Future of UAV Cellular Communications Be? A Flight From 5G to 6G," in *IEEE Communications Surveys & Tutorials*, vol. 24, no. 3, pp. 1304-1335, thirdquarter 2022, doi: 10.1109/COMST.2022.3171135 | WP2, WP4, WP5, WP6 | CNRS |
| 64 | T. Van Chien, H. Q. Ngo, S. Chatzinotas, M. Di Renzo and B. Ottersten, "Reconfigurable Intelligent Surface-Assisted Cell-Free Massive MIMO Systems Over Spatially-Correlated Channels," in IEEE Transactions on Wireless Communications, vol. 21, no. 7, pp. 5106-5128, July 2022, doi: 10.1109/TWC.2021.3136925. | WP4 | CNRS |

| | | | |
|---|---|---|---|
| 65 | W. Tang et al., "Path Loss Modeling and Measurements for Reconfigurable Intelligent Surfaces in the Millimeter-Wave Frequency Band," in IEEE Transactions on Communications, vol. 70, no. 9, pp. 6259-6276, Sept. 2022, doi: 10.1109/TCOMM.2022.3193400. | WP3 | CNRS |
| 66 | T. V. Nguyen, D. N. Nguyen, M. D. Renzo and R. Zhang, "Leveraging Secondary Reflections and Mitigating Interference in Multi-IRS/RIS Aided Wireless Networks," in IEEE Transactions on Wireless Communications, vol. 22, no. 1, pp. 502-517, Jan. 2023, doi: 10.1109/TWC.2022.3195683. | WP3 | CNRS |
| 67 | M. Di Renzo, F. H. Danufane and S. Tretyakov, "Communication Models for Reconfigurable Intelligent Surfaces: From Surface Electromagnetics to Wireless Networks Optimization," in Proceedings of the IEEE, vol. 110, no. 9, pp. 1164-1209, Sept. 2022, doi: 10.1109/JPROC.2022.3195536. | WP3, WP4 | CNRS |
| 68 | G. Li, C. Sun, W. Xu, M. D. Renzo and A. Hu, "On Maximizing the Sum Secret Key Rate for Reconfigurable Intelligent Surface-Assisted Multiuser Systems," in IEEE Transactions on Information Forensics and Security, vol. 17, pp. 211-225, 2022, doi: 10.1109/TIFS.2021.3138612. | WP6 | CNRS |
| 69 | L. Mohjazi, S. Muhaidat, Q. H. Abbasi, M. A. Imran, O. A. Dobre and M. D. Renzo, "Battery Recharging Time Models for Reconfigurable Intelligent Surfaces-Assisted Wireless Power Transfer Systems," in IEEE Transactions on Green Communications and Networking, vol. 6, no. 2, pp. 1173-1185, June 2022, doi: 10.1109/TGCN.2021.3120834. | WP3, WP6 | CNRS |
| 70 | B. Yang et al., "Federated Spectrum Learning for Reconfigurable Intelligent Surfaces-Aided Wireless Edge Networks," in IEEE Transactions on Wireless Communications, vol. 21, no. 11, pp. 9610-9626, Nov. 2022, doi: 10.1109/TWC.2022.3178445. | WP4 | CNRS |
| 71 | H. Han et al., "Reconfigurable Intelligent Surface Aided Power Control for Physical-Layer Broadcasting," in IEEE Transactions on Communications, vol. 69, no. 11, pp. 7821-7836, Nov. 2021, doi: 10.1109/TCOMM.2021.3104871. | WP4, WP6 | CNRS |
| 72 | S. Gong, Z. Yang, C. Xing, J. An and L. Hanzo, "Beamforming Optimization for Intelligent Reflecting Surface-Aided SWIPT IoT Networks Relying on Discrete Phase Shifts," in IEEE Internet of Things Journal, vol. 8, no. 10, pp. 8585-8602, 15 May15, 2021, doi: 10.1109/JIOT.2020.3046929. | WP4 | CNRS |
| 73 | I. Trigui, W. Ajib, W. -P. Zhu and M. D. Renzo, "Performance Evaluation and Diversity Analysis of RIS-Assisted Communications Over Generalized Fading Channels in the Presence of Phase Noise," in IEEE Open Journal of the Communications Society, vol. 3, pp. 593-607, 2022, doi: 10.1109/OJCOMS.2022.3160722. | WP3, WP4 | CNRS |
| 74 | A. Abrardo, D. Dardari and M. Di Renzo, "Intelligent Reflecting Surfaces: Sum-Rate Optimization Based on Statistical Position Information," in IEEE Transactions on Communications, vol. 69, no. 10, pp. 7121-7136, Oct. 2021, doi: 10.1109/TCOMM.2021.3096549. | WP4 | CNRS |
| 75 | C. Pan et al., "An Overview of Signal Processing Techniques for RIS/IRS-Aided Wireless Systems," in IEEE Journal of Selected Topics in Signal Processing, vol. 16, no. 5, pp. 883-917, Aug. 2022, doi: 10.1109/JSTSP.2022.3195671. | WP2, WP4, WP5, WP6 | CNRS |
| 76 | X. Liu, Y. Deng, C. Han and M. D. Renzo, "Learning-Based Prediction, Rendering and Transmission for Interactive Virtual Reality in RIS-Assisted Terahertz Networks," in IEEE Journal on Selected Areas in | WP4 | CNRS |

| | | | |
|---|---|---|---|
| | Communications, vol. 40, no. 2, pp. 710-724, Feb. 2022, doi: 10.1109/JSAC.2021.3118405. | | |
| 77 | N. S. Perović, L. -N. Tran, M. D. Renzo and M. F. Flanagan, "On the Maximum Achievable Sum-Rate of the RIS-Aided MIMO Broadcast Channel," in IEEE Transactions on Signal Processing, vol. 70, pp. 6316-6331, 2022, doi: 10.1109/TSP.2022.3229945. | WP4 | CNRS |
| 78 | G. Zhou, C. Pan, H. Ren, K. Wang and M. D. Renzo, "Fairness-Oriented Multiple RIS-Aided mmWave Transmission: Stochastic Optimization Methods," in IEEE Transactions on Signal Processing, vol. 70, pp. 1402-1417, 2022, doi: 10.1109/TSP.2022.3158026. | WP4 | CNRS |
| 79 | B. Yang et al., "Spectrum-Learning-Aided Reconfigurable Intelligent Surfaces for “Green” 6G Networks," in IEEE Network, vol. 35, no. 6, pp. 20-26, November/December 2021, doi: 10.1109/MNET.110.2100301. | WP4 | CNRS |
| 80 | Y. Zhang, J. Zhang, M. Di Renzo, H. Xiao and B. Ai, "Reconfigurable Intelligent Surfaces With Outdated Channel State Information: Centralized vs. Distributed Deployments," in IEEE Transactions on Communications, vol. 70, no. 4, pp. 2742-2756, April 2022, doi: 10.1109/TCOMM.2022.3146344. | WP2, WP4 | CNRS |
| 81 | F. Jiang, A. Abrardo, K. Keykhosravi, H. Wymeersch, D. Dardari and M. Di Renzo, "Two-Timescale Transmission Design and RIS Optimization for Integrated Localization and Communications," in IEEE Transactions on Wireless Communications, vol. 22, no. 12, pp. 8587-8602, Dec. 2023, doi: 10.1109/TWC.2023.3264559. | WP4, WP5 | CNRS |
| 82 | R. Karasik, O. Simeone, M. D. Renzo and S. Shamai Shitz, "Adaptive Coding and Channel Shaping Through Reconfigurable Intelligent Surfaces: An Information-Theoretic Analysis," in IEEE Transactions on Communications, vol. 69, no. 11, pp. 7320-7334, Nov. 2021, doi: 10.1109/TCOMM.2021.3100621. | WP4 | CNRS |
| 83 | M. Rahal, B. Denis, M.F. Keskin, B. Uguen, H. Wymeersch, “RIS-Enabled NLoS Near-Field Joint Position and Velocity Estimation under User Mobility”, submitted to IEEE Journal of Special Topics in Signal Processing (IEEE JSTSP) - Special Issue on Near-Field Signal Processing: Algorithms, Implementations and Applications, 2024. | WP5 | CEA, CHAL |
| 84 | M. Colombo, R. Diamanti, L. Bastianelli, G. gradoni, E. Colella, V. Mariani Primiani, F. Moglie and D. Micheli, "Experimental Investigation of 5G Base Station Functionalities in Reverberation Chamber at Millimeter-Wave," in IEEE Access, vol. 11, pp. 121702-121711, 2023, doi: 10.1109/ACCESS.2023.3328583 | WP3, WP6, WP7 | GNW, UNOT, CNIT, TIM |
| 85 | A. Mudonhi, R. D’Errico and C. Oestges, "Analysis of Multipath Components Distributions Over a Large Array in Indoor mmWave Channels," in IEEE Transactions on Antennas and Propagation, vol. 70, no. 9, pp. 8330-8336, Sept. 2022, doi: 10.1109/TAP.2022.3177439. | WP3 | CEA |
| 86 | S. Ghose, D. Mishra, S. P. Maity, and G. C. Alexandropoulos, "Jointly optimal RIS placement and power allocation for underlay D2D communications: An outage probability minimizing approach," IEEE Transactions on Cognitive Communications and Networking, to appear, 2024. | WP4, WP6 | NKUA |
| **Letters** | | | |
| 1 | X. Qian and M. D. Renzo, "Mutual coupling and unit cell aware optimization for reconfigurable intelligent surfaces," in IEEE Wireless Communications Letters, vol. 10, no. 6, pp. 1183-1187, June 2021. | WP3, WP4 | CNRS |

| | | | |
|---|---|---|---|
| 2 | G. Gradoni and M. Di Renzo, "End-to-end mutual coupling aware communication model for reconfigurable intelligent surfaces: An electromagnetic-compliant approach based on mutual impedances," in IEEE Wireless Communications Letters, vol. 10, no. 5, pp. 938-942, May 2021. | WP3 | UNOT, CNRS |
| 3 | Y. Xiu, J. Zhao, E. Basar, M. Di Renzo, W. Sun, G. Gui, N. Wei, "Uplink achievable rate maximization for reconfigurable intelligent surface aided millimeter wave systems with resolution-adaptive ADCs," in IEEE Wireless Communications Letters, 10(8): 1608-1612, 2021. | WP4 | CNRS |
| 4 | J. Yuan, E. De Carvalho, R. J. Williams, E. Björnson and P. Popovski, "Frequency-mixing intelligent reflecting surfaces for nonlinear wireless propagation," in IEEE Wireless Communications Letters, vol. 10, no. 8, Aug. 2021. | WP4 | AAU |
| 5 | D. Selimis, K. P. Peppas, G. C. Alexandropoulos, and F. I. Lazarakis, "On the performance analysis of RIS-empowered communications over Nakagami-m fading," IEEE Communications Letters, vol. 25, no. 7, pp. 2191–2195, July 2021. | WP3 | NKUA |
| 6 | G. C. Alexandropoulos, I. Vinieratou, and H. Wymeersch, "Localization via Multiple Reconfigurable Intelligent Surfaces Equipped with Single Receive RF Chains", IEEE Wireless Communications Letters, 2021. | WP5 | NKUA, CHAL |
| 7 | M. He, W. Xu, H. Shen, G. Xie, C. Zhao, and M. Di Renzo, "Cooperative Multi-RIS Communications for Wideband mmWave MISO-OFDM Systems," submitted to IEEE WCL 2021. | WP4 | CNRS |
| 8 | N. Stefan Perovic, L.-N. Tran, M. Di Renzo, M. F. Flanagan, "Optimization of RIS-Aided MIMO Systems Via the Cutoff Rate," IEEE Wirel. Commun. Lett. 10(8): 1692-1696 (2021). | WP4 | CNRS |
| 9 | A. Abrardo, D. Dardari, M. Di Renzo, X. Qian, "MIMO Interference Channels Assisted by Reconfigurable Intelligent Surfaces: Mutual Coupling Aware Sum-Rate Optimization Based on a Mutual Impedance Channel Model," IEEE Wirel. Commun. Lett. 10(12): 2624-2628 (2021). | WP3, WP4 | CNRS |
| 10 | Jamali, Vahid, George C. Alexandropoulos, Robert Schober, and H. Vincent Poor. "Low-to-zero-overhead IRS reconfiguration: Decoupling illumination and channel estimation." IEEE Communications Letters 26, no. 4 (2022): 932-936. | WP4 | NKUA |
| 11 | Chen, T., You, M., Zhang, Y., Zheng, G., Gros, J.B., Lerosey, G., Nasser, Y., Burton, F. and Gradoni, G., 2023. Model-free Optimization and Experimental Validation of RIS-assisted Wireless Communications under Rich Multipath Fading. Under Review on IEEE Wireless Communication Letters. | WP3, WP7 | UNOT |
| 12 | P. Mursia, S. Phang, V. Sciancalepore, G. Gradoni and M. D. Renzo, "SARIS: Scattering Aware Reconfigurable Intelligent Surface Model and Optimization for Complex Propagation Channels," in IEEE Wireless Communications Letters, doi: 10.1109/LWC.2023.3299304. | WP4 | NEC, CNRS |
| 13 | Q. Zheng, M. Wen, Q. Li, G. C. Alexandropoulos and L. Xu, "Progressive Channel Estimation for Single-Carrier Communications Aided by Reconfigurable Intelligent Surfaces," in IEEE Wireless Communications Letters, vol. 12, no. 12, pp. 1993-1997, Dec. 2023, doi: 10.1109/LWC.2023.3303250. | WP4 | NKUA |
| 14 | A. Zappone and M. D. Renzo, "Energy Efficiency Optimization of Reconfigurable Intelligent Surfaces With Electromagnetic Field Exposure | WP6 | CNRS |

| | | | |
|---|---|---|---|
| | Constraints," in IEEE Signal Processing Letters, vol. 29, pp. 1447-1451, 2022, doi: 10.1109/LSP.2022.3181532. | | |
| 15 | J. He, H. Wymeersch, M. Di Renzo and M. Juntti, "Learning to Estimate RIS-Aided mmWave Channels," in IEEE Wireless Communications Letters, vol. 11, no. 4, pp. 841-845, April 2022, doi: 10.1109/LWC.2022.3147250. | WP5 | CNRS, CHAL |
| 16 | V. Kumar, R. Zhang, M. D. Renzo and L. -N. Tran, "A Novel SCA-Based Method for Beamforming Optimization in IRS/RIS-Assisted MU-MISO Downlink," in IEEE Wireless Communications Letters, vol. 12, no. 2, pp. 297-301, Feb. 2023, doi: 10.1109/LWC.2022.3224316. | WP4 | CNRS |
| 17 | A. Mohamed, A. Zappone and M. Di Renzo, "Bi-Objective Optimization of Information Rate and Harvested Power in RIS-Aided SWIPT Systems," in IEEE Wireless Communications Letters, vol. 11, no. 10, pp. 2195-2199, Oct. 2022, doi: 10.1109/LWC.2022.3196906. | WP4, WP6 | CNRS |
| **Magazines** | | | |
| 1 | G. C. Alexandropoulos, N. Shlezinger, and P. del Hougne, "Reconfigurable intelligent surfaces for rich scattering wireless communications: Recent experiments, challenges, and opportunities," IEEE Communications Magazine, IEEE Communications Magazine, vol. 59, no. 6, pp. 28–34, June 2021. | WP2, WP3, WP4, WP5, WP6 | NKUA |
| 2 | G. C. Alexandropoulos, N. Shlezinger, I. Alamzadeh, M. F. Imani, H. Zhang, and Y. C. Eldar, "Hybrid reconfigurable intelligent metasurfaces: Enabling simultaneous tunable reflections and sensing for 6G wireless communications," IEEE Vehicular Technology Magazine, under revision, 2024. | WP3, WP4, WP5, WP6 | NKUA |
| 3 | J. He, F. Jiang, K. Keykhosravi, J. Kokkoniemi, H. Wymeersch, and M. Juntti, "Beyond 5G RIS mmWave Systems: Where Communication and Localization Meet," submitted to IEEE VTM., 2021. | WP4, WP5 | CHAL |
| 4 | R. Fara, P. Ratajczak, D.-T. Phan-Huy, A.Ourir, M. Di Renzo and J. De Rosny, "A Prototype of Reconfigurable Intelligent Surface with Continuous Control of the Reflection Phase Mode," submitted to IEEE WCM, 2021. | WP3 | CNRS, ORA |
| 5 | E. C. Strinati, G. C. Alexandropoulos, H. Wymeersch, B. Denis, V. Sciancalepore, R. D'Errico, A. Clemente, D.-T. Phan-Huy, E. De Carvalho and P. Popovski, "Reconfigurable, Intelligent, and Sustainable Wireless Environments for 6G Smart Connectivity," in IEEE Communications Magazine, vol. 59, no. 10, pp. 99-105, October 2021. | WP2, WP3, WP4, WP5, WP6, WP7 | CEA, NKUA, CHAL, NEC, ORA, AAU |
| 6 | C. Pan, H. Ren, K. Wang, J. F. Kolb, M. Elkashlan, M. Chen, M. Di Renzo, Y. Hao, J. Wang, A. L. Swindlehurst, X. You, L. Hanzo, “Reconfigurable Intelligent Surfaces for 6G Systems: Principles, Applications, and Research Directions,” IEEE Commun. Mag. 59(6): 14-20 (2021). | WP2, WP3, WP4, WP5, WP6, | CNRS |
| 7 | F. Devoti, P. Mursia, V. Sciancalepore and X. Costa-Pérez, "Taming Aerial Communication With Flight-Assisted Smart Surfaces in the 6G Era: Novel Use Cases, Requirements, and Solutions," in IEEE Vehicular Technology Magazine, doi: 10.1109/MVT.2023.3274329. | WP4, WP6 | NEC |
| 8 | F. Devoti, V. Sciancalepore and X. Costa-Perez, "Passive and Privacy-Preserving Human Localization: A Social Distancing Approach Using Commercial Millimeter-Wave Access Points," in IEEE Vehicular Technology Magazine, vol. 17, no. 4, pp. 101-109, Dec. 2022. | WP4 | NEC |

| | | | |
|---|---|---|---|
| 9 | H. Chen, H. Kim, M. Ammous, G. Seco-Granados, G. C. Alexandropoulos, S. Valaee, and H. Wymeersch, "RISs and Sidelink Communications in Smart Cities: The Key to Seamless Localization and Sensing", IEEE Communications Magazine, to appear, 2023. | WP5 | NKUA, CHAL |
| 10 | A. Zappone, M. Di Renzo and R. K. Fotock, "Surface-Based Techniques for IoT Networks: Opportunities and Challenges," in IEEE Internet of Things Magazine, vol. 5, no. 4, pp. 72-77, December 2022, doi: 10.1109/IOTM.001.2200170. | WP2 | CNRS |
| 11 | X. Cao et al., "AI-Assisted MAC for Reconfigurable Intelligent-Surface-Aided Wireless Networks: Challenges and Opportunities," in IEEE Communications Magazine, vol. 59, no. 6, pp. 21-27, June 2021, doi: 10.1109/MCOM.001.2001146. | WP4 | CNRS |
| **Conferences** | | | |
| 1 | E. C. Strinati, G. C. Alexandropoulos, V. Sciancalepore, M. Di Renzo, H. Wymeersch, D-T Phan-huy, M. Crozzoli, R. D'Errico, E. De Carvalho, P. Popovski, P. Di Lorenzo, L. Bastianelli, M. Belouar, J. E. Mascolo, G. Gradoni, S. Phang, G. Lerosey, B. Denis, "Wireless environment as a service enabled by reconfigurable intelligent surfaces: The RISE-6G perspective", in Proc. Joint EuCNC & 6G Summit, Porto, Portugal, 8–11 June 2021. | WP2, WP3, WP4, WP5, WP6, WP7 | CEA, NKUA, NEC, CNIT, CHAL, ORA, TIM AAU, CNRS, UNOT, GNW, CRF |
| 2 | G. C. Alexandropoulos, K. Katsanos, M. Wen, and D. B. da Costa, "Safeguarding MIMO communications with reconfigurable metasurfaces and artificial noise", in Proc. IEEE International Conference on Communications, Montreal, Canada, 14–18 June 2021, pp. 1–6. | WP6 | NKUA |
| 3 | P. Di Lorenzo, M. Merluzzi, and E. Calvanese Strinati, "Dynamic mobile edge computing empowered by reconfigurable intelligent surfaces", Proc. of 22nd IEEE International Conference on Signal Processing Advances in Wireless Communications, pp. 526-530, Sept. 2021. | WP4 | CNIT, CEA |
| 4 | R. Fara, D.-T. Phan-Huy, P. Ratajczak, A.Ourir, M. Di Renzo, and J. De Rosny, "Reconfigurable intelligent surface-assisted ambient backscatter communications – Experimental assessment", IEEE International Conference on Communications, pp. 1-7. | WP6 | ORA, CNRS |
| 5 | A. Mudonhi, M. Lotti, A. Clemente, R. D'Errico, and C. Oestges, "RIS-enabled mmWave channel sounding based on electronically reconfigurable transmit arrays," in Proc. EuCAP, 2021. | WP3 | CEA |
| 6 | M. Rahal, B. Denis, K. Keykhosravi, B. Uguen, H. Wymeersch, "RIS-Enabled Localization Continuity Under Near-Field Conditions", IEEE International Workshop on Signal Processing Advances in Wireless Communications 2021, Special Session on "Advanced localization algorithms toward 6G", Lucca, Sept. 2021. | WP5 | CEA, CHAL |
| 7 | A. S. de Sena, P. H. J. Nardelli, D. B. da Costa, F. R. M. Lima, L. Yang, P. Popovski, Z. Ding, C. B. Papadias, "IRS-assisted massive MIMO-NOMA networks with polarization diversity", IEEE International Conference on Communications, 2021. | WP4 | AAU |
| 8 | A. Albanese, G. Encinas-Lago, V. Sciancalepore, X. Costa-Perez, D. Phan-Huy, S. Ros, "RIS-Aware Indoor Network Planning: The Rennes | WP7, WP4, WP6 | ORA, NEC, SNCF |

| | | | |
|---|---|---|---|
| | Railway Station Case", in Proceedings of IEEE International Conference on Communications (ICC) 2022. | | |
| 9 | A. Albanese, P. Mursia, V. Sciancalepore, X. Costa-Pérez, "PAPIR: Practical RIS-aided localization via statistical user information", IEEE international conference on signal processing advances in wireless communications, 2021. | WP5 | NEC |
| 10 | K. Chen-Hu, G. C. Alexandropoulos, and A. García Armada, "Non-coherent vs. coherent OFDM communications enabled by reconfigurable intelligent surfaces," IEEE Wireless Communications and Networking Conference, Austin, USA, 10–13 April 2022, pp. 1–6. | WP4 | NKUA |
| 11 | H. Zhang, N. Shlezinger, I. Alamzadeh, G. C. Alexandropoulos, M. F. Imani, and Y. C. Eldar, "Channel estimation with simultaneous reflecting and sensing reconfigurable intelligent metasurfaces," IEEE International Workshop on Signal Processing Advances in Wireless Communications, Lucca, Italy, 27–30 September 2021. | WP4 | NKUA |
| 12 | L. You, J. Xu, G. C. Alexandropoulos, J. Wang, W. Wang, and X. Gao, "Dynamic Metasurface Antennas for Energy Efficient Massive MIMO Uplink Communications," in Proc. IEEE Global Communications Conference, Madrid, Spain, 7–11 December 2021, pp. 1–6. | WP3 | NKUA |
| 13 | J. Yuan, G. C. Alexandropoulos, E. Kofidis,T. L. Jensen, and E. De Carvalho, "Channel tracking for RIS-enabled multi-user SIMO systems in time-varying wireless channels," in Proc. IEEE International Conference on Communications, Seoul, South Korea, 16–20 May 2022, pp. 1–6. | WP4 | NKUA |
| 14 | N. Awarkeh, D.-T. Phan-Huy and, R. Visoz, "Electro-Magnetic Field (EMF) aware beamforming assisted by Reconfigurable Intelligent Surfaces," , 2021, pp. 541-545, doi: 10.1109/SPAWC51858.2021.9593226. | WP6 | ORA |
| 15 | A. L. Moustakas, G. C. Alexandropoulos, and M. Debbah, "Capacity Optimization using Reconfigurable Intelligent Surfaces: A Large System Approach," IEEE Global Communications Conference, Madrid, Spain, 7–11 December 2021, pp. 1–6. | WP4 | NKUA |
| 16 | C. Ozturk, M. F. Keskin, H. Wymeersch, and S. Gezici, "On the Impact of Hardware Impairments on RIS-aided Localization," IEEE ICC 2022. | WP3, WP5 | CHAL |
| 17 | K. Keykhosravi, G. Seco-Granados, G. C. Alexandropoulos, and H. Wymeersch, "RIS-Enabled Self-Localization: Leveraging Controllable Reflections with Zero Access Points", IEEE International Conference on Communications, Seoul, South Korea, 16–20 May 2022. | WP5 | CHAL, NKUA |
| 18 | K. Stylianopoulos, N. Shlezinger, P. del Hougne, and G. C. Alexandropoulos, "Deep-Learning-Assisted Configuration of Reconfigurable Intelligent Surfaces in Dynamic Rich-Scattering Environments," IEEE International Conference on Acoustics, Speech, and Signal Processing, Singapore, 22–27 May 2022. | WP4 | NKUA |
| 19 | K. Stylianopoulos, G. C. Alexandropoulos, C. Huang, C. Yuen, M. Bennis, and M. Debbah, "Deep Contextual Bandits for Orchestrating Multi-User MISO Systems with Multiple RISs," IEEE International Conference on Communications, Seoul, South Korea, 16–20 May 2022. | WP4 | NKUA |
| 20 | K. D. Katsanos, N. Shlezinger, M. F. Imani, and G. C. Alexandropoulos, "Wideband Multi-User MIMO Communications with Frequency | WP3, WP4 | NKUA |

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| | Selective RISs: Element Response Modeling and Sum-Rate Maximization," in Proc. IEEE International Conference on Communications, Seoul, South Korea, 16–20 May 2022, pp. 1–6. | | |
| 21 | A. Albanese, F. Devoti, V. Sciancalepore, M. Di Renzo, and X. Costa-Pérez, “MARISA: A Self-configuring Metasurfaces Absorption and Reflection Solution Towards 6G,” IEEE INFOCOM 2022. | WP4 | NEC, CNRS |
| 22 | C. Battiloro, M. Merluzzi, P. Di Lorenzo, and S. Barbarossa, “Dynamic Resource Optimization for Adaptive Federated Learning empowered by Reconfigurable Intelligent Surfaces”, Proc. of IEEE ICASSP, Singapore, 2022. | WP4 | CEA, CNIT |
| 23 | Q. Jian Lim, C. Ross, G. Gradoni, and Z. Peng, “Quantum-Assisted Combinatorial Optimization of Reconfigurable Intelligent Surfaces”, accepted for presentation at EuCAP, 2022. | WP4 | UNOT |
| 24 | H. Taghvaee, S. Terranova, N. M Mohammed, and G. Gradoni, “Sustainable Multi-User Communication with Reconfigurable Intelligent Surfaces in 5G Wireless Networks and Beyond”, accepted for presentation at EuCAP, 2022. | WP4, WP6 | UNOT |
| 25 | C. J. Vaca-Rubio, P. Ramirez-Espinosa, K. Kansanen, Z.-H. Tan and E. de Carvalho, "Radio Sensing with Large Intelligent Surface for 6G", submitted to IEEE ICC 2022. | WP5 | AAU |
| 26 | F. Ezzahra Airod, M. Merluzzi, P. Di Lorenzo, and E. Calvanese Strinati, "Reconfigurable Intelligent Surface Aided Mobile Edge Computing over Intermittent mmWave Links", submitted to IEEE SPAWC, 2022. | WP4 | CEA, CNIT |
| 27 | K. Chen-Hu, G. C. Alexandropoulos, A. G. Armada, “Non-Coherent MIMO-OFDM uplink empowered by the spatial Diversity in reflecting surfaces," in Proc. IEEE Wireless Communications and Networking Conference, Austin, USA, 10–13 April 2022, pp. 1–6. | WP4 | NKUA |
| 28 | F. Ezzahra. Airod, M. Merluzzi, A. Clemente, E. Calvanese Strinati, “Blue Communications for Edge Computing: the Reconfigurable Intelligent Surfaces Opportunity”, submitted to Globecom 2022. | WP4, WP6 | CEA |
| 29 | V. Croisfelt, F. Saggese, I. Leyva-Mayorga, R. Kotaba, G. Gradoni, P. Popovski, "A Random Access Protocol for RIS-Aided Wireless Communications" submitted to IEEE SPAWC, 2022. | WP4 | AAU, UNOT |
| 30 | M. Rahal, B. Denis, K. Keykhosravi, M.F. Keskin, B. Uguen, G.C. Alexandropoulos, H. Wymeersch, “Arbitrary Beam Pattern Approximation via RISs with Measured Element Responses”, European Conference on Networks and Commuications 2022 & 6G Summit 2022 (EuCNC’22 & 6G Summit’22), Grenoble, June 2022. | WP3, WP4, WP5, WP6, | CEA, NKUA, CHAL |
| 31 | M. Rahal, B. Denis, K. Keykhosravi, M.F. Keskin, B. Uguen, H. Wymeersch, “Constrained RIS Phase Profile Optimization and Time Sharing for Near-field Localization”, Vehicular Technology Conference 2022 – Spring (IEEE VTC-Spring’22), Workshop on Localization and Sensing with Intelligent Surfaces for 6G Networks, Helsinki, June 2022 | WP5 | CEA, CHAL |
| 32 | F. Maresca, A. Albanese, P. Mursia, V. Sciancalepore, and X. Costa-Pérez, “A Frequency-Agnostic RIS-based solution to control the Smart Radio Propagation Environment” accepted for publication at IEEE 23rd International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), 2022. | WP4 | NEC |
| 33 | K. D. Katsanos, P. Di Lorenzo, and G. C. Alexandropoulos, "Distributed sum-rate maximization of cellular communications with multiple | WP4 | NKUA, CNIT |

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| | reconfigurable intelligent surfaces," n Proc. IEEE International Workshop on Signal Processing Advances in Wireless Communications, Oulu, Finland, 4–6 July 2022, pp. 1–6. | | |
| 34 | M. Merluzzi, F. Costanzo, K. D. Katsanos, G. C. Alexandropoulos, and P. Di Lorenzo, "Power minimizing MEC offloading with probabilistic QoS constraints for RIS-empowered communication systems," in Proc. IEEE Global Communications Conference, Rio de Janeiro, Brazil, 4–8 December 2022, pp. 1–6. | WP4 | NKUA, CNIT |
| 35 | G. C. Alexandropoulos, V. Jamali, R. Schober, and H. V. Poor, "Near-field channel estimation for RIS-enabled millimeter wave MIMO communication systems," IEEE Sensor Array and Multichannel Signal Processing Workshop, Trondheim, Norway, 20–23 June 2022, pp. 1–5. | WP4 | NKUA |
| 36 | K. Stylianopoulos and G. C. Alexandropoulos, "Online RIS configuration learning for arbitrary large numbers of 1-bit phase resolution elements," IEEE International Workshop on Signal Processing Advances in Wireless Communications, Oulu, Finland, 4–6 July 2022. | WP4 | NKUA |
| 37 | R. Faqiri, C. Saigre-Tardif, G. C. Alexandropoulos, N. Shlezinger, M. F. Imani, and P. del Hougne, "PhysFad: Physics-based end-to-end communication modeling of programmable-metasurface-parametrized environments with adjustable fading," International Congress on Artificial Materials for Novel Wave Phenomena, Siena, Italy, 12–17 September 2022. | WP3 | NKUA |
| 38 | K. Chen-Hu, G. C. Alexandropoulos, and A. G. Armada "Simultaneous RIS Tuning and Differential Data Transmission for MISO OFDM Wireless Systems," in Proc. IEEE Global Communications Conference, Rio de Janeiro, Brazil, 4–8 December 2022, pp. 1–6. | WP3 | NKUA |
| 39 | R. Ghazalian, K. Keykhosravi, H. Chen, H. Wymeersch, and R. Jäntti, "Bi-Static Sensing for Near-Field RIS Localization," IEEE GLOBECOM, 2022. | WP5 | CHAL |
| 40 | H. Kim, A. Fascista, H. Chen, Y. Ge, G. C. Alexandropoulos, G. Seco-Granados, and H. Wymeersch, "RIS-Aided Radar Sensing and Object Detection with Single and Double Bounce Multipath", IEEE International Conference on Communications, Rome, Italy, 28 May–1 June 2023, pp. 1–6. | WP5 | NKUA, CHAL |
| 41 | M. Rossanese, P. Mursia, A. Garcia-Saavedra, V. Sciancalepore, A. Asadi, and X. Costa-Perez. "Designing, building, and characterizing RF switch-based reconfigurable intelligent surfaces". In Proceedings of the 16th ACM Workshop on Wireless Network Testbeds, Experimental evaluation & CHaracterization (WiNTECH '22) 2022. | WP3, WP7 | NEC |
| 42 | M. Rahal, B. Denis, K. Keykhosravi, M. F. Keskin, B. Uguen, G. C. Alexandropoulos, H. Wymeersch, "Performance of RIS-Aided Near-field Localization under Beams Approximation from Real Hardware Characterization", EURASIP Journal on Wireless Communications and Networking, 2023. | WP3, WP7 | CEA, NKUA, CHAL |
| 43 | M. Rahal, B. Denis, T. Mazloum, F. Munoz, and R. D'Errico, "RIS-aided Positioning Experiments based on mmWave Indoor Channel Measurements", in Proc. of International Conference on Indoor Positioning and Indoor Navigation 2023 (IPIN'23), Nuremberg, Sept. 2023 | WP3, WP7 | CEA |
| 44 | P. Zheng, H. Chen, T. Ballal, H. Wymeersch, and T. Y.Al-Naffouri, "Misspecified Cramér-Rao Bound of RIS-aided Localization under Geometry Mismatch," in Proc. ICASSP, 2022. | WP5 | CHAL |

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| 45 | C. Ross, G. Gradoni and Z. Peng, "A Hybrid Classical-Quantum Computing Framework for RIS-assisted Wireless Network," 2023 IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO), Winnipeg, MB, Canada, 2023, pp. 99-102, doi: 10.1109/NEMO56117.2023.10202166. | WP4 | UNOT |
| 46 | G. Gradoni, D. A. B. Miller and S. C. Creagh, "Electromagnetic Information Theory in Phase-Space: A Quantum Tunnelling Approach," 2023 IEEE 97th Vehicular Technology Conference (VTC2023-Spring), Florence, Italy, 2023, pp. 1-2, doi: 10.1109/VTC2023-Spring57618.2023.10200598. | WP3, WP4 | UNOT |
| 47 | G. Gradoni, S. Terranova, Q. J. Lim, C. Ross and Z. Peng, "Random Ising Hamiltonian Model of Metasurfaces in Complex Environments," 2023 17th European Conference on Antennas and Propagation (EuCAP), Florence, Italy, 2023, pp. 1-5, doi: 10.23919/EuCAP57121.2023.10132939. | WP3, WP4 | UNOT |
| 48 | K. D. Katsanos and G. C. Alexandropoulos, "Spatial secrecy spectral efficiency optimization enabled by reconfigurable intelligent surfaces," European Signal Processing Conference, Helsinki, Finland, 4–8 September 2023, pp. 1–5. | WP6 | NKUA |
| 49 | K. Stylianopoulos, M. Bayraktar, N. González-Prelcic, and G. C. Alexandropoulos, "Autoregressive attention neural networks for non-line-of-sight user tracking with dynamic metasurface antennas," IEEE Workshop on Computational Advances in Multi-Sensor Adaptive Processing, Los Sueños, Costa Rica, 10–13 December 2023, | WP5 | NKUA |
| 50 | D. Micheli, R. Diamanti, L. Bastianelli, E. Colella, V. Mariani Primiani, F. Moglie, A. Allasia, M. Crozzoli, M. Colombo, “Test of 5G System in the Reverberation Chamber at mm-wave”, 17th European Conference on Antennas and Propagation (EuCAP), 26-31 March 2023. | WP6, WP7 | TIM, CNIT |
| 51 | O. Franek, “Electromagnetics-Based Channel Model of Reconfigurable Intelligent Surfaces,” In 17th European Conference on Antennas and Propagation (EuCAP), 26-31 March 2023. | WP3 | AAU |
| 52 | O. Franek, ”Structured and Intuitive Phasor Transmission and Scattering Equations,” In International Conference on Electromagnetics in Advanced Applications (ICEAA), October 9—13, 2023. | WP3 | AAU |
| 53 | S. Terranova, S. Gharbieh, M. Bouslama, A. Clemente, R. D’Errico, J. B. Gros, G. Lerosey, M. Di Renzo, and G. Gradoni, “Electromagnetic validation of an end-to-end communication model for reconfigurable intelligent surfaces based on mutual impedances”, 3rd URSI Atlantic Radio Science Meeting (AT-AP-RASC 2022), 2022. | WP3, WP7 | UNOT, CEA, GNW, CNRS |
| 54 | N. Awarkeh, D. -T. Phan-Huy and M. D. Renzo, "A Novel RIS-Aided EMF Exposure Aware Approach using an Angularly Equalized Virtual Propagation Channel," *2022 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit)*, Grenoble, France, 2022, pp. 500-505, doi: 10.1109/EuCNC/6GSummit54941.2022.9815608. | WP6 | ORA, CNRS |
| 55 | N. S. Perović, L. -N. Tran, M. Di Renzo and M. F. Flanagan, "On the Achievable Sum-rate of the RIS-aided MIMO Broadcast Channel : Invited Paper," 2021 IEEE 22nd International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Lucca, Italy, 2021, pp. 571-575, doi: 10.1109/SPAWC51858.2021.9593206. | WP4 | CNRS |
| 56 | S. Lin, M. Wen, M. Di Renzo and F. Chen, "Reconfigurable Intelligent Surface-Based Quadrature Reflection Modulation," ICC 2021 - IEEE | WP4 | CNRS |

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| | International Conference on Communications, Montreal, QC, Canada, 2021, pp. 1-6, doi: 10.1109/ICC42927.2021.9500782. | | |
| 57 | E. Colella, L. Bastianelli, F. Moglie and V. Mariani Primiani, "Near Field Optimization Algorithm for Reconfigurable Intelligent Surface," 2023 XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS), Sapporo, Japan, 2023, pp. 1-4, doi: 10.23919/URSIGASS57860.2023.10265515 | WP3, WP6 | CNIT |
| 58 | E. Colella, L. Bastianelli, V. Mariani Primiani and F. Moglie, "FDTD Full Wave Simulations of Reconfigurable Intelligent Surfaces," 2023 International Symposium on Electromagnetic Compatibility – EMC Europe, Krakow, Poland, 2023, pp. 1-4, doi: 10.1109/EMCEurope57790.2023.10274286 | WP3, WP6 | CNIT |
| 59 | P. Ratajczak, E. Seguenot, D.-T. Phan-Huy 'Experimental Demonstration of 3D Reflected Beamforming at sub6GHz thanks to Varactor Based Reconfigurable Intelligent Surface' in Proc. 2023 2nd International Conference on 6G Networking (6GNet), Paris, France, 18-20 Oct. 2023. | WP3 | ORA |
| 60 | A. Mudonhi, M. Lotti, A. Clemente, R. D'Errico and C. Oestges, "Impact of a Transmitting-RIS on the Geometrical Structure of Indoor mmWave Channels," 2022 16th European Conference on Antennas and Propagation (EuCAP), Madrid, Spain, 2022. | WP3 | CEA |
| 61 | A. Mudonhi, G. Makhoul, M. Lotti, R. D'Errico and C. Oestges, " Indoor Factory mmWave Channel Characterization Using Transmitting-RIS Antenna" EuCAP 2023. | WP3 | CEA |
| 62 | S. Gharbieh, R. D'Errico, A. Clemente, "Reconfigurable Intelligent Surface Design Using PIN Diodes via Rotation Technique - Proof of Concept" EuCAP 2023. | WP3 | CEA |
| 63 | T. Mazloum et al., "Impact of Multiple RIS on Channel Characteristics: An Experimental Validation in Ka Band," 2023 Joint European Conference on Networks and Communications & 6G Summit (EuCNC/6G Summit), Gothenburg, Sweden, 2023, pp. 13-18, doi: 10.1109/EuCNC/6GSummit58263.2023.10188341. | WP3 | CEA, GNW |
| 64 | T. Mazloum, L. Santamaria, F. Munoz, A. Clemente, J.B Gros, Y. Nasser, M. Odit, G. Lerosey, R. D'Errico "Multiple RIS Channel Sounding: Preliminary Results on an Experimental Validation in RISE-6G Project" CA20120 TD(23)0449 Dubrovnik, Croatia January 23-26, 2023. | WP3 | CEA, GNW |
| 65 | Placido M. et al. "Empirical Validation of the Impedance-Based RIS Channel Model in an Indoor Scattering Environment", submitted at EuCAP 2024. | WP3, WP7 | CEA, UNOT, CNRS, GNW |
| 66 | L. Bastianelli, R. Diamanti, E. Colella, V. Mariani Primiani, F. Moglie, M. A. Toubal, M. Odit, J.-B. Gros, Y. Nasser, G. Lerosey, L. Santamaria, A. Allasia, M. Crozzoli, M. Boldi, E. Zimaglia, V. Lieti, M. Colombo, D. Micheli, "Measurements of Reconfigurable Intelligent Surface in 5G System Within a Reverberation Chamber at mmWave", accepted at EuCAP, 2024. | WP6, WP7 | CNIT, TIM, GNW, UNOT |
| 67 | N. Moghadas Gholian, M. Rossanese, P. Mursia, A. Garcia-Saavedra, A. Asadi, V. Sciancalepore, X. Costa-Pérez, "A Leakage-based Method for Mitigation of Faulty Reconfigurable Intelligent Surfaces", in Proceedings of IEEE Global Communications Conference 2023 (GLOBECOM), doi: 10.48550/arXiv.2311.00527, | WP3 | NEC |
| 68 | H. Guo, D. -T. Phan-Huy and T. Svensson, "Electromagnetic Field Exposure Avoidance thanks to Non-Intended User Equipment and | WP6 | ORA, CHAL |

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| | RIS," 2022 IEEE Globecom Workshops (GC Wkshps), Rio de Janeiro, Brazil, 2022, pp. 1537-1542, doi: 10.1109/GCWkshps56602.2022.10008663. | | |
| 69 | T. Svensson, D.-T. Phan Huy 'EMF exposure and secrecy spectral efficiency optimization with RISs Overview of WP6 – RIS for Enhanced Sustainability and Security', EuCNC & 6G Summit Workshop on Reconfigurable Intelligent Surfaces from sub-6GHz to THz: Recent Advances and Open Challenges,Gothenburg, June 2023. | WP6 | ORA, CHAL |
| **White Papers and Online Preprints** | | | |
| 1 | J.B. Gros, G. Lerosey, F. Lemoult, M. Lodro, S. Greedy, and G. Gradoni. “Multi-path fading and interference mitigation with Reconfigurable Intelligent Surfaces.” | WP3 | GNW, UNOT |
| 2 | M. Lodro, J.B. Gros, S. Greedy, G. Lerosey, A. Al Rawi, and G. Gradoni. “Experimental Evaluation of Multi-operator RIS-assisted Links in Indoor Environment.” | WP3, WP7 | GNW, UNOT |
| 3 | Marco Di Renzo, Abdelhamed Ahmed, Alessio Zappone, Vincenzo Galdi, Gabriele Gradoni, Massimo Moccia, Giuseppe Castaldi, “Digital Reconfigurable Intelligent Surfaces: On the Impact of Realistic Reradiation Models”, arxiv.2205.09799, 2022 | WP3 | CNRS, UNOT |
| 4 | Marco Di Renzo. (2022, December 12). Reconfigurable Surfaces for Wireless Communications. https://doi.org/10.5281/zenodo.7430186 | WP2 | CNRS |
| 5 | Shuhang Zhang, Hongliang Zhang, Boya Di, Yunhua Tan, Marco Di Renzo, Zhu Han, H. Vincent Poor, Lingyang Song, “Intelligent Omni-Surface: Ubiquitous Wireless Transmission by Reflective-Transmissive Metasurface,” arXiv preprints, arXiv:2011.00765, 2021. | WP2, WP3 | CNRS |

# Appendix II. List of dissemination and communication activities

## A. Presentations / Talks / Lectures / Tutorials

1. Emilio Calvanese Strinati; Vincenzo Sciancalepore; George C. Alexandropoulos, “The RISE-6G Project: Wireless Environment as a Service Enabled by Reconfigurable Intelligent Surfaces”, Hexa-X - The European 6G Initiative workshop, 2021 Joint EuCNC & 6G Summit (virtual), 9, June 2021.
2. Marco Di Renzo, “Reconfigurable Intelligent Surfaces - Where Wireless, Electromagnetics, and Metamaterials Meet”, 42nd EUROMETA School – Future Wireless Systems enabled by advanced and Intelligent Metasurfaces, 8-12 March, 2021 (virtual).
3. Gabriele Gradoni, “Reconfigurable Intelligent Surfaces - a wave chaos approach for modelling smart radio environments”, 42nd EUROMETA School – Future Wireless Systems enabled by advanced and Intelligent Metasurfaces, 8-12 March, 2021 (virtual).
4. George C. Alexandropoulos, “Simultaneous Reflecting and Sensing Metasurfaces for 6G Wireless Communications”, Recent Progress in Antennas and Metasurfaces for 6G, Special Session, 2021 Joint EuCNC & 6G Summit (virtual), 9, June 2021.
5. B. Denis, “Localization and Sensing Through Reconfigurable Intelligent Surfaces: Benefits and Challenges”, Leti Innovation Days 2021 (LIDs’21), Wireless Communications Workshop, Virtual Event, 22-23 June 2021.
6. R. D’Errico, A. Clemente, and J. B. Doré, “Millimiterwave antennas system for 5G/6G: from radio channel modelling to field trials,” Scientific Workshop on Integration Challenges for mm-Wave Phased Arrays, 15th European Conference on Antennas and Propagation, EuCAP 2021.
7. OFCOM Report on “Future of Reflective Surfaces in Wireless Communication,” in preparation (Gabriele Gradoni, Anas Al Rawi, Simon Burley).
8. Gabriele Gradoni, invited presentation on “RIS design via quantum annealing” at the CNRS ISIS meeting on reconfigurable intelligent surfaces for wireless communications, 2021.
9. Julien Mascolo, Davide Masera (CRF), Internal meetings (physical, remote) with Stellantis staff from technical departments (Supply Chain Management, Manufacturing Engineering) and plants (Mirafiori, Russelsheim).
10. Q. Jian Lim, C. Ross, G. Gradoni, Z. Peng, “Quantum-Assisted Combinatorial Optimization of Reconfigurable Intelligent Surfaces.”, 16th European Conference on Antennas and Propagation (EuCAP 2022), Madrid, Spain, 27 March – 1 April 2022. [*Best Electromagnetics Paper Award*]
11. D.-T. Phan Huy “Electro-Magnetic Field Exposure Aware Radio Design Thanks to Backscattering and Reconfigurable Intelligent Surfaces” Meeting of GdR ISIS (gdr-isis.fr) on “Reconfigurable Intelligent Surfaces for Programmable Wireless Environments”, 25th May 2021.
12. Tutorial “T1: Reconfigurable Intelligent Surfaces for Future Wireless Communications” (1 day) Organiser: Alessio Zappone, Marco Di Renzo, Dinh-Thuy Phan-Huy, Merouane Debbah. EUSIPCO 2021, 23-27 August 2021.
13. Vincenzo Sciancalepore, "RISE-6G: Reconfigurable, intelligent, and sustainable wireless environments for 6G smart connectivity”, ICT-52 Workshop on 6G, 3 February 2022.

14. George C. Alexandropoulos, Invited talk at the 1st Open Annual Workshop on Future ICT in Athens, Greece on 25 May 2022 with title: Programmable radio propagation environments: The RISE-6G perspective. The talk was part of the 5G/6G future ICT area.
15. George C. Alexandropoulos, Henk Wymeersch, “Reconfigurable Intelligent Surfaces: Localization and Communication Convergence”, 2021 Joint EuCNC & 6G Summit (virtual), 9 June 2021.
16. George C. Alexandropoulos; Lingyang Song; Henk Wymeersch; Zhu Han; Boya Di; Hongliang Zhang, “ Reconfigurable Intelligent Surfaces for 6G: Communications, Localization, and Sensing”, 2021 IEEE Globecom.
17. George C. Alexandropoulos, K. Keykhosravi , Tutorial at the IEEE Sensor Array and Multichannel Signal Processing Workshop, Trondheim, Norway on 20 June 2022 with title: Leveraging smart wireless environments for beyond 5G localization and sensing.
18. George C. Alexandropoulos, Research seminar on 9 May 2022 with title: Reconfigurable intelligent surfaces for 6G wireless communications, localization, and sensing. The seminar was organized by PAINLESS, the H2020 Marie Sklodowska-Curie Innovative Training Network with grant number 812991, in the framework of School 4.
19. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the Institute of Radiocommunications, Faculty of Computing and Telecommunications, Poznan University of Technology, Poznan, Poland on 16 November 2023 with title: *Joint sensing and communications with full duplex radios and reconfigurable metasurfaces*.
20. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the School of Physics, Engineering, and Computer Science, University of Hertfordshire, Hatfield, UK on 14 September 2023 with title: *Hybrid reconfigurable intelligent surfaces: From conventional optimization to autonomous learning*.
21. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the Department of Computer Science and Technology, Cambridge University, Cambridge, UK on 13 September 2023 with title: *Reconfigurable intelligent surfaces: From programmable wireless propagation to holographic MIMO*.
22. George C. Alexandropoulos, Keynote talk at the IEEE PIMRC Workshop (virtual) "6G Envisioned Reconfigurable Intelligent and Holographic Surfaces" on 5 September 2023 with title: *RIS-empowered smart wireless environments: Capacity characterization and optimization*.
23. George C. Alexandropoulos, Research seminar at the Summer School on Integrated Sensing and Communication, Baiona, Spain on 28 June 2023 with title: *RIS-aided joint radar and communication*. The school was sponsored by the IEEE Signal Processing Society, IEEE Aerospace and Electronic Systems Society, and EURASIP.
24. George C. Alexandropoulos, Tutorial at the IEEE International Conference on Acoustics, Speech, and Signal Processing, Rhodes, Greece on 4 June 2023 with title: *Machine learning for smart wireless environments*. (tutorial given together with M. Debbah and Y. C. Eldar)
25. George C. Alexandropoulos and Henk Wymeersch, Tutorial at the IEEE International Conference on Communications, Rome, Italy on 28 May 2023 with title: *Leveraging smart wireless environments for beyond 5G localization and sensing*.
26. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the University of Glasgow, Glasgow, Scotland on 30 March 2023 with title: *Reconfigurable metasurfaces for 6G wireless: Hardware architectures, modeling, optimization, and applications*.
27. IEEE ComSoc Distinguished Lectureship at the Department of Electrical and Computer Engineering, University of Illinois at Chicago, Chicago, USA on 10 March 2023 with title:

*Hybrid reconfigurable intelligent Surfaces: From channel estimation improvement to self-optimization*.

28. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at EURECOM, Campus Sophia Antipolis, Nice, France on 9 February 2023 with title: *Integrated sensing and communications with multi-functional reconfigurable metasurfaces*.
29. George C. Alexandropoulos, Invited talk at the session "Radio and sensing for 6G" of the ICT-52 and Hexa-X Workshop on 6G on 18 January 2023 with title: *Localization, sensing, and their integration with reconfigurable intelligent surfaces*.
30. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the IEEE ComSoc Greece Chapter, Computer Engineering and Informatics Department, University of Patras, Greece on 16 December 2022 with title: *Reconfigurable intelligent surfaces: An enabling technology for smart radio propagation and its beyond 5G applications*.
31. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the IEEE Spanish Signal Processing and Communications Joint Chapter and IEEE United Kingdom and Ireland Section on 14 December 2022 with title: *Reconfigurable intelligent surfaces: Communications, sensing, and their integration*.
32. George C. Alexandropoulos, IEEE ComSoc Distinguished Lectureship at the IEEE Atlanta Chapter, USA on 8 December 2022 with title: *Reconfigurable intelligent surfaces: Communications, sensing, and their integration*.
33. George C. Alexandropoulos, Invited talk at the Round Table "mmWaves and sub-THz Ranges in Wireless Communication: Promising Applications and Coverage Problems" at the Moscow Institute of Physics and Technology, Moscow, Russia on 23 November 2022 with title: *Metasurface-based holographic MIMO: Communications, localization, and sensing*.
34. L. Bastianelli, E. Colella, G. Gradoni, V. Mariani Primiani and F. Moglie, abstract with title: Numerical analysis of metasurfaces by using the FDTD technique. The abstract was presented at 3rd URSI AT-AP-RASC, Gran Canaria, 29 May – 3 June 2022
35. Eric Mercier, ‘’EnablingTechnologies for Future of Wireless Comm. : From System to Nano-Electronics’’, November, 17th , KeyNote at the Wireless Congress 2022, Munich.
36. Dinh-Thuy Phan Huy, Keynote 'Electromagnetic Field Exposure Aware Radio Thanks To Reconfigurable Intelligent Surfaces and Backscatters' COST Action: CA20120, Intelligence Enabling Radio Communications for Seamless Inclusive Interactions, 2nd Scientific Meeting (Working group meeting) 13th June 2022, Lyon.
37. George C. Alexandropoulos, on 6G with title: "Localization, sensing, and their integration with reconfigurable intelligent surfaces", at session "Radio and sensing for 6G", ICT-52 and Hexa-X Workshop, 18 January 2023.
38. Dinh-Thuy Phan Huy, Keynote, 'Electromagnetic Field Exposure Aware Radio thanks to Reconfigurable Intelligent Surfaces and Backscatters', Delta Winter School Reconfigurable Intelligent Surfaces and Multi-Antenna Backscatter Devices, Feb. 13-15, 2023, Ruka, Finland.
39. Dinh-Thuy Phan Huy, ' Reconfigurable Intelligent Surfaces – A network operator perspective', RIS Forum#2, RIS Technology Alliance (RISTA), online, 12 Feb. 2023.
40. Dinh-Thuy Phan Huy 'New 6G challenges: the time for electromagnetic field awareness has come', Journée URSI France, « l’énergie au cœur des ondes – ressources et environnement : gestion intelligente », 21-22 march 2023, Saclay, France.

41. Philippe Ratajczak, 'Orange's Experiments on Reconfigurable Intelligent Surfaces', Workshop "The Evolution of Smart Wireless Environments Research and Industrial Perspectives", EUCAP, 26 - 31 March 2023 | Florence, Italy.
42. B. Denis, "Recent Advances in Estimation and Control for RIS-aided Localization and Sensing: The RISE-6G Proposals", Workshop on Synergies between Communication, Localization, and Sensing towards 6G, Joint European Conference on Networks and Commuications 2023 & 6G Summit 2023 (EuCNC'23 & 6G Summit'23), Gothenburg, June 2023
43. L. Bastianelli, E. Colella, G. Gradoni, V. Mariani Primiani and F. Moglie, asbstact with title: Time Reversal for Evaluating the Influence of Scattering Objects on Chaotic Environments. The abstract was presented at 2023 XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS), Sapporo, Japan, 2023.
44. D. Micheli, R. Diamanti, L. Bastianelli, E. Colella, V. Mariani Primiani, F. Moglie, G. Gradoni, A. Allasia, M. Crozzoli and M. Colombo, abstract with title: Beyond 5G mm-wave Wireless Systems With Reconfigurable Intelligent Surfaces. The abstract was presented at 2023 XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS), Sapporo, Japan, 2023.
45. D. Micheli, R. Diamanti, L. Bastianelli, E. Colella, V. Mariani Primiani, F. Moglie, A. Allasia, M. Crozzoli and M. Colombo, paper with title: Test of 5G System in the Reverberation Chamber at mm-wave. The paper was presented at 2023 17th European Conference on Antennas and Propagation (EuCAP), Florence, Italy, 2023, pp. 1-4.
46. E. Colella, L. Bastianelli, F. Moglie and V. Mariani Primiani, paper with title: Near Field Optimization Algorithm for Reconfigurable Intelligent Surface. The paper was presented at 2023 XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI GASS), Sapporo, Japan, 2023.

## B. Panels and Booths

1. Emilio Calvanese Strinati, "Full Duplex: Technologies, Standards, and Roadmap, IEEE Wireless Communications and Networking Conference", Nanjing, 30 March, 2021.
2. Vincenzo Sciancalepore, "Reconfigurable Intelligent Surfaces (RIS) for B5G Wireless Communications", Nanjing, 1 April, 2021.
3. RISE-6G Booth (hosted by Greenerwave) at EuCNC & 6G Summit Grenoble, France, 7–10, June 2022.
4. Panel with Marco di Renzo, Dinh-Thuy Phan Huy World Wireless Research Forum Meeting #47, Plenary Session 6: Joint session with ETSI ISG RIS, Bristol, UK, March 2023.https://www.bristol.ac.uk/engineering/research/smart/events/47th-wwrf-meeting/agenda/.
5. Booth by Philippe Ratajczak, Dinh-Thuy Phan Huy, Marie-Hélène Hamon "Reconfigurable Intelligent Surface" live demonstration, Orange Research and Innovation Exhibition, 18-20 October 2022.
6. Industrial Panel with Dinh-Thuy Phan Huy, Industrial Panel 2: RECONFIGURABLE INTELLIGENT SURFACES (RIS) FOR 5G-ADVANCED AND 6G, 2022 IEEE Globecom, Dec. 2022.

7. Industrial Panel with Dinh-Thuy Phan Huy, Industrial Panel 8: RIS FOR SUSTAINABLE MOBILE NETWORKS, 2023 IEEE ICC, March 2023.
8. Youssef Nasser, “unlocking the capabilities of Reconfigurable Intelligent Surfaces and Holographic Antennas”, Globecom Industrial Panel, Dec. 4-8, 2023.
9. Booth on RIS at Mobile world congress, Feb. 2023, by Greenerwave

## C. Workshop Organization/Chairing

1. George C. Alexandropoulos (co-organizer), “Reconfigurable Intelligent Surfaces for Future Wireless Communications”, workshop, IEEE Global Communications Conference, 7-11 December 2021.
2. Emilio Calvanese Strinati (General Chair), Marco Di Renzo (TPC Chair), George C. Alexandropoulos (TPC Chair), “Reconfigurable Intelligent Surfaces for B5G/6G”, IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, 13–16 September 2021 (Virtual).
3. Co-organizer (Henk Wymeersch, CHAL; George C. Alexandropoulos, NKUA) of "Workshop on Synergies of Communication, Localization, and Sensing towards 6G" at IEEE ICC 2022.
4. Co-organizer (Gabriele Gradoni, UNOT) of “Workshop on EMC and OTA Tests of Wireless Devices in Reverberation Chambers”, at 2021 JOINT IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY, SIGNAL & POWER INTEGRITY, AND EMC EUROPE, held online, 26 July – 20 August 2021.
5. Co-organizer (George C. Alexandropoulos, H. Wymeersch), “Synergies of Communication, Localization, and Sensing Towards 6G”, workshop in the framework of the IEEE ICC, Seoul, South Korea, 16–20 May 2022.
6. Co-organizer (Benoit Denis), “Localization and Sensing with Intelligent Surfaces for 6G Networks”, workshop in the framework of IEEE Vehicular Technology Conference - Spring 2022 (IEEE VTC-Spring’22), Helsinki, June 2022
7. Co-organizer (Benoit Denis), “Localization, Sensing, and Communications for 6G Networks”, workshop in the framework of IEEE Vehicular Technology Conference - Fall 2022 (IEEE VTC-Fall’22), London/Beijing, Sept. 2022
8. Co-organizer (Emilio Calvanese Strinati) “International Workshop on Cloud Technologies and Energy Efficiency in Mobile Communication Networks (CLEEN 2022)” at IEEE International Symposium on Personal, Indoor and Mobile Radio Communications, 12-15 September, 2022 (virtual).
9. Co-organizers (Henk Wymeersch, Benoît Denis), “Synergies between Communication, Localization, and Sensing towards 6G”, workshop in the framework of Joint European Conference on Networks and Commuications 2023 & 6G Summit 2023 (EuCNC’23 & 6G Summit’23), Gothenburg, June 2023
10. Co-organizers (Henk Wymeersch, Benoît Denis), “New Techniques on Positioning and Sensing for Cellular Networks” (NTPSCN), workshop in the framework of IEEE Personal Indoor Mobile and Radio Communications Symposium 2023 (IEEE PIMRC’23), Sept. 2023

## D. Special Session Organization/Chairing

1. George C. Alexandropoulos and Emilio Calvanese Strinati, “Wireless Communications Empowered by Reconfigurable Intelligent Surfaces”, IEEE SPAWC, 27-20 September 2021.
2. George C. Alexandropoulos (co-chair), “Machine Learning Driven Wireless Networking”, BalkanCom, 15-17 September 2021.
3. Emilio Calvanese Strinati and Benoît Denis (co-chairs), “RIS-empowered Communications and Localization for Smart Radio Environments”, 2021 Joint EuCNC & 6G Summit (virtual), 11 June 2021.
4. George C. Alexandropoulos, Tutorial Co-Chair for 2022 Joint EuCNC & 6G Summit, Grenoble, France, 7–10, June 2022.
5. P. Di Lorenzo and E. Calvanese Strinati (organizers), “Machine learning in Beyond 5G Networks”, IEEE International Conference on Acoustics, Speech, & Signal Processing (ICASSP), Singapore, 2022.
6. A. Clemente and R. Sauleau (organizers), “Space-fed antenna systems for SATCOM and high-performance communication systems”, 15th European Conference on Antennas and Propagation, EuCAP 2022. *(planned)*
7. Gabriele Gradoni co-organizer and Convener of 3 special sessions: “Near field coupling in wireless communications,” “Reconfigurable Intelligent Surfaces for Wireless Communication and Sensing,” “Wave modelling of novel wireless systems,” at the XXXIV General Assembly and Scientific Symposium (GASS) of International Union of Radio Science (URSI), 28 August – 4 September, 2021 – Sapienza Faculty of Engineering, Rome, Italy (online).
8. Gabriele Gradoni convened a session on “Material Intelligence for Next Generation Wireless Systems” at 2021 IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, held online on 4-10 December 2021, (originally planned at Marina Bay Sands, Singapore).
9. Gabriele Gradoni, Ari Sihvola, Sana Salous, “Wave modelling of novel wireless systems”, General Assembly and Scientific Symposium of the International Union of Radio Science, 28 August – 4 September 2021.
10. Andrea Michel, Gabriele Gradoni, Paolo Nepa, “Near-field coupling in wireless applications”, General Assembly and Scientific Symposium of the International Union of Radio Science, 28 August – 4 September 2021.
11. Philipp del Hougne, Gabriele Gradoni, “Reconfigurable Intelligent Surfaces for Wireless Communication and Sensing”, General Assembly and Scientific Symposium of the International Union of Radio Science, 28 August – 4 September 2021.
12. Philipp del Hougne, Gabriele Gradoni, “Reconfigurable Intelligent Surfaces”, Atlantic conference of Radio Science (AT-RASC), 29 May – 3 June 2022.
13. Steve Anlage, Gabriele Gradoni, “Wave Chaos of Complex Systems”, Atlantic conference of Radio Science (AT-RASC), 29 May – 3 June 2022.
14. George C. Alexandropoulos and N. Schlezinger, “Machine Learning for Emerging Wireless Communications Technologies”, special session in the framework of the IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Oulu, Finland, 4–6 July 2022.

15. George C. Alexandropoulos and E. Calvanese Strinati (Co-organizers), “Signal Processing for Wireless Communications Empowered by Reconfigurable Intelligent Surfaces”, special session in the framework of the IEEE SPAWC, Oulu, Finland, 4–6 July 2022.
16. Emilio Calvanese Strinati, Technical Program Chairing, at EuCNC & 6G Summit Grenoble, France, 7–10, June 2022.
17. Gabriele Gradoni (co-organizer), “Near-field coupling in Wireless Communications”, special session at URSI AT-AP RASC 2022, Gran Canaria (Spain) on May 29 - June 3, 2022.
18. Gabriele Gradoni (co-organizer), “Reconfigurable Intelligent Surfaces: Modelling and applications”, special session at URSI AT-AP RASC 2022, Gran Canaria (Spain) on May 29 - June 3, 2022.
19. Gabriele Gradoni (co-organizer), “Wave Chaos of Complex Systems”, special session at URSI AT-AP RASC 2022, Gran Canaria (Spain) on May 29 - June 3, 2022.
20. Gabriele Gradoni and Luca Bastianelli, “Wave Chaos of Complex Systems”, special session at URSI GASS 2023, Sapporo (Japan) on August 19 - 25, 2023.
21. Gabriele Gradoni and Luca Bastianelli, “Wave Modelling of Novel Wireless Systems”, special session at URSI GASS 2023, Sapporo (Japan) on August 19 - 25, 2023.
22. Greenerwave hosted the 10th ISG RIS meeting in its premises (19th and 20th of September 2023)
23. Greenerwave participated in MWC 2023 (feb-march) through a live demon on its RIS.
24. Philipp del Hougne, Gabriele Gradoni, Raffaele D’Errico “RIS-Assisted Environments: Physics-Compliant Modelling and Design” EuCAP 2024.

## E. Special Issues Editing

1. Gabriele Gradoni (Guest Editor), Valter Mariani Primiani (Guest Editor), “EMC Analysis in Wireless Communication”, MDPI Electronics.
2. George C. Alexandropoulos (Guest Editor), "Intelligent Surfaces for 6G Cellular Networks: A Holistic View", MDPI Applied Sciences.
3. Guest Editor (NKUA) to special issue "Antennas and Propagation for 6G Wireless Communications", Int. J. Antennas Prop.
4. Beyond Shannon Communications: a paradigm shift to catalyze 6G JSAC journal (CEA Leti)
5. Special issue at Eurasip Journal on wireless communications and networking (CEA Leti).

## F. Public Events / Interviews / News Articles / White Papers

1. “The Construction of 6G”, Keynote talk by Eric Hardouin, Orange Labs Research Exhibition 2021, 23-25 March 2021. – Quoted RISE-6G.

2. Marco Di Renzo (interviewed), “RISE-6G Turns to Sustainable Side of Reconfigurable Intelligent Surfaces”, 6gworld.com, 9 March 2021.
3. Vincenzo Sciancalepore, “The “O” on Radio Access Networks”, ComSoc Technology News, 10 December 2021.
4. Orange, White Paper, “Orange Vision for 6G”, March 2022.
5. RISE-6G contributed together with other ICT-52 projects to the White Paper “Beyond 5G/6G KPIs and Target Values”, June 2022.
6. In-person presentation of RISE-6G to the Greek Subminister of Health, during her visit to NKUA premises, June 2022.
7. Presentation (TIM) at "Beyond 5G Expert Days 2021 by Rohde & Schwarz".
10. Orange Research and Innovation Exhibition, Philippe Ratajczak, Dinh-Thuy Phan Huy, Marie-Hélène Hamon "Reconfigurable Intelligent Surface" live demonstration, 18-20 October 2022.
8. Tech Today 'Orange shows digital future with 5G innovations', Dillon Jackson, 2022.
9. Computer Weekly 'Orange shows digital future with 5G innovations', Joe O'Halloran, 21 oct 2022. https://www.computerweekly.com/news/252526377/Orange-unveils-digital-future-with-5G-innovations .
10. 'Liberté, égalité, sécurité-you can get them if you really quantum, says Orange', Nick Booth , Mobile Europe, 19 october 2022. https://www.mobileeurope.co.uk/liberte-egalite-securite-you-can-get-them-if-you-really-quantum-says-orange/
11. TelecomTV, 'Orange's tech innovations highlight telecom's digital future,Yanitsa Boyadzhieva, ,October 20, 2022. https://www.telecomtv.com/content/digital-platforms-services/orange-s-tech-innovations-highlight-telecom-s-digital-future-45739/
12. The 10th edition of the Orange Research and Innovation Exhibition opens on 18 October, Press Release, Paris, 18 October 2022. https://newsroom.orange.com/the-10th-edition-of-the-orange-research-and-innovation-exhibition-opens-on-18-october/
13. "Orange inaugure son campus Sophia" K.Wenger, 02/06/2023. https://www.nicematin.com/economie/orange-inaugure-son-campus-sophia-851758
14. Inclusion of project's description, goal, and main advancements in European 6G Annual Journal 2023 – part of 3GPP.
15. NETWORK ENERGY EFFICIENCY PHASE 2 by NGMN Alliance (Orange member of NGMN) NGMN_Network_Engergy_Efficiency_Phase2.pdf, 10. October 2023.

## G. Multimedia

1. Public website at: https://rise-6g.eu/
2. RISE-6G LinkedIn group (/groups/12492572/)
3. Video demonstrating data transfer in non-LOS scenario, by Greenerwave’s LinkedIn account.
4. Newsletter (4 Issues)
5. 2 Leaflets / flyers
6. YouTube channel

## H. Summer Schools

1. "Complex networks and telecommunications - 2nd edition: Towards 6G", Lake Como School of Advanced Studies, 5-9 July 2021, Organised by CEA-Leti.
2. "Complex networks and telecommunications – 3rd edition: Towards 6G", Lake Como School of Advanced Studies, 3-7 July 2023, Organised by CEA-Leti.

# Appendix III. List of contributions to Standards

1. RIS(22)005014r1 "TP to GR03 on Models of Unit-Cell for various examples of hardware implementations of RIS" Orange, CEA-LETI, ETSI ISG RIS M#05, June 2022
2. RIS(22)004009r4 "Text Proposal to GR#03 Section 8" Orange ; VIVO TECH GmbH ; University of Athens, ETSI ISG RIS M#04, April 2022
3. RIS(22)TM03016r2 "Text Proposal to GR#03 on 1) Unwanted reradiation definition, and 2) Modelling CSI mismatch due to unwanted reradiation" Orange ; University of Athens ; UNIPI; VIVO, ETSI ISG RIS TM#03, March 2022.
4. RIS(22)TM02016 "TP to DGR/RIS-003 Unwanted Re-radiations models" ORANGE SA, ETSI ISG RIS TM#02, Feb 2022
5. RIS(22)TM02007 "TP to DGR/RIS-002 Inter-operator interference measurement and feedback" ORANGE SA, ETSI ISG RIS TM#02, Feb 2022
6. RIS(22)TM02012 "TP to DGR/RIS-001 bandwidth of influence" ORANGE SA, ETSI ISG RIS TM#02, Feb. 2022.
7. RIS(22)TM02011 "TP to DGR/RIS-001 Use Case of Optimisation under EMF exposure constrains" ORANGE SA, ETSI ISG RIS TM#02, Feb. 2022.
8. RIS(21)TM01007 "Use cases and deployment scenarios for RIS" ORANGE SA, ETSI ISG RIS M#01, Nov 2021
9. RIS(21)TM01008 "RIS Communication Models, Channel Models, and Evaluation Methodology" ORANGE SA, ETSI ISG RIS M#01, Nov 2021
10. RIS(21)TM01009 "RIS Technological Challenges, Architecture and Impact on Standardisation" ORANGE SA, ETSI ISG RIS M#01, Nov 2021
11. DGR/RIS-001 v1.0.1, revision by NEC
12. DGR/RIS-001 v1.0.2, revision by NEC
13. DGR/RIS-001 v1.0.3, revision by NEC
14. DGR/RIS-001 v1.0.4, revision by NEC
15. DGR/RIS-001 v1.0.5, revision by NEC
16. DGR/RIS-001 v1.0.6, revision by NEC
17. RIS(22)TM02004 “Preliminaries on DGR/RIS-001 (GR )“, NEC, ETSI RIS TM#02,
18. RIS(22)TM03013 “TP to DGR/RIS-001 on active and passive RISs”, NEC, ETSI RIS TM03,
19. RIS(22)TM03014 “TP to DGR 001 on RIS Modes”, NEC, ETSI RIS TM03,
20. RIS(22)004011, ”hardware_design_RIS_001”, NEC, ETSI RIS#04,
21. RIS(22)006021DGR/RIS-003 v008 working draft
22. RIS(22)006015Reconfigurable Intelligent Surfaces (RIS) – Communication Models, Channel Models, and Evaluation Methodology – Contribution to Section 7.6 and to Section 7.8.2
23. RIS(22)006014 Reconfigurable Intelligent Surfaces (RIS) – Communication Models, Channel Models, and Evaluation Methodology – Contribution to Section 6.1
24. RIS(22)003006WI#3: Proposed Structure and Content
25. 3GPP RAN Rel-18 Workshop, “RWS-210465 Support of Reconfigurable Intelligent Surface for 5G Advanced”, ZTE, Sanechips, China Unicom, NEC, August 2021.

26. DGR/RIS-001 v2.0.0 stable draft, revision by NEC
27. RIS(22)006034 “TP DGR RIS-003 on Scenarios of Interest”, KNUA.
28. RIS(22)006036 “TP DGR RIS-003 on channel estimation”, NKUA.
29. RIS(22)006038 “TP DGR RIS-003 on Methods for unstructured channel models”, NKUA.
30. RIS(22)006038 “TP DGR RIS-003 on Methods for unstructured channel models”.