



Advanced Dynamic spectrum
5G mobile networks Employing
Licensed shared access



Project Deliverable D2.2.2: Dissemination and Exploitation Plan and Report - Public Summary

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Advanced Dynamic spectrum 5G mobile networks Employing Licensed shared access



Project Deliverable D2.2.2: Dissemination and Exploitation Plan and Report - Public Summary

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PP = Restricted to other programme participants (including Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for the members of the consortium (including the Commission Services)

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Abstract: This deliverable presents the public summary of the dissemination and exploitation achievements for the first half of the ADEL project, and the plan for the second half of the project.

Keywords: LSA, dissemination, exploitation, project results, deliverable, plan

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1 Introduction

This deliverable presents the public summary of the dissemination and exploitation achievements during the first half of the ADEL project lifetime, and of the plan for the second half of the project.

The main objectives with regard to Dissemination and Exploitation within the ADEL project are:

- ✓ To effectively disseminate ADEL's scientific and technical results through publications in high-impact international journals and conferences.
- ✓ To showcase and advertise the proof-of-concept prototypes to potentially interested parties.
- ✓ To develop liaisons with national, European and international projects and organisations active in areas relevant to the ADEL concepts.
- ✓ To organise a summer school, and a number of conference special sessions and journal special issues on topics related to ADEL concept and scientific objectives.
- ✓ To plan effective exploitation mechanisms for the results obtained and technologies developed within the project.
- ✓ To align ADEL's concepts and technologies with the potentially ongoing parallel work in relevant standardization bodies.
- ✓ To propose modifications and enhancements to regulatory requirements based on the results of the project.

2 Reference Documents

[1] ADEL Description of Work, version October 2013.

[2] Project Consortium Agreement, version December 2013.

3 Abbreviations and acronyms

3GPP - 3rd Generation Partnership Project
ANFR - Agence Nationale des Fréquences
CEPT - European Conference on Postal and Telecommunications Administrations
CRS-i - Cognitive Radio Standardization Initiative
DSA - Dynamic Spectrum Alliance
ECC - Electronic Communications Committee
EMMIA - European Mobile and Mobility Industries Alliance
ETSI - European Telecommunications Standards Institute
FCC - Federal Communications Commission
GSMA - Groupe Spéciale Mobile Association
ITU - International Telecommunication Union
LSA - Licensed Shared Access
MNO - Mobile Network Operator
NGMN - Next Generation Mobile Networks
Ofcom - Office of Communications (UK)
RSPG - Radio Spectrum Policy Group

4 Overview of WP2 - Dissemination and Exploitation Planning

WP2 covers the ADEL activities related to dissemination and exploitation planning. The work in WP2 continues during the entire lifetime of the project. Dissemination and Exploitation tasks

within this WP are focusing on demonstrating our project results in the scientific community, industrial and academic environment. The ADEL team makes an effort to intensively engage with EU regulatory and standardization bodies, where Licensed Shared Access (LSA) is currently being discussed and considered, as a new approach to spectrum sharing in demand for new regulatory framework. Besides targeting the publication of results in conferences and journals, the goal is also standardization of relevant technologies as well as creation of their broader awareness in business fora. ADEL works on intensifying collaboration with relevant stakeholders, recognized for their potential contribution to the scope of the project, since they are expected to have the most benefit from the platform proposed in this project. In other words, early identification of potentially marketable technologies will ensure that the R&D work in the project stays relevant. Once enough evidence is collected that a specific project outcome is exploitable, detailed plans will be compiled to guide further R&D work towards its commercial exploitation.

5 Dissemination

The objective of ADEL's dissemination task is to coordinate and pursue the dissemination of the research outcomes of the project to the academic and industrial scientific communities, in order to ultimately create impact on future standards and products. Towards this goal, we established an efficient information flow within the project and an interface to the general public. The project's website (developed in WP1) enables the project members to share information and coordinate their work but also allows for communication with the general public.

In addition to this website, we publish widely in international research conferences and journals, organize special sessions at recognized international conferences and plan to organize special issues in top journals.

In the second half of the project, we plan to organize an international school for PhD students and research engineers, in which individual project partners will give advanced tutorials on their respective areas of expertise within the research topics investigated by ADEL.

We also plan to participate in industry-oriented exhibitions such as the annual Mobile World Congress in Barcelona or the LTE World Summit. Furthermore, we will explore our contacts with the relevant industrial networking organisations related to the ADEL project (such as the Small Cell Forum and the NGMN Forum) in order to offer to present tutorial talks and exhibitions.

Relevant project results are being presented to regulatory authorities in order to influence their rulemaking towards more efficient usage of available spectrum, especially within the context of LSA. An example of such authorities is Ofcom, where ADEL has a representative sitting in the Spectrum Advisory Board, and other national spectrum regulators. The first such presentation of ADEL to Ofcom was organised in M3 of the project in conjunction with the 2nd ADEL plenary meeting in London, U.K. The second one was organised in M7 of the project to ANFR in Paris, France. Another channel of dissemination will be the Wireless Innovation Forum.

The advanced sensing and communication techniques developed in ADEL can be used to enhance regulatory policies and encourage network providers to adopt flexible spectrum access on the roadmap to 5G wireless networks. Extensive sensing capabilities can indeed feed into dynamic databases (both global and local) in order to ensure compliance and support of technology neutral licenses.

5.1 Public dissemination

The ADEL partners are taking appropriate measures to engage with the public and mass media to disseminate project results and highlight the EC financial support, throughout the duration of the project. Any type of publicity, including conferences, seminars and promotional material, specify that the project has received EC research funding and display the EU emblem.

Publications and other dissemination material include the following statement, as acknowledgement that the work was generated with the financial support of the EC:

"This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 619647."

5.1.1 Project website

The project's website is available at: <http://www.fp7-adel.eu/>. The website serves as a source of information for partners and as an interface to the general public.

The project's website is being developed and regularly updated throughout the project and contains announcements of workshops and other events where we are presenting our results, information about project meetings, publishing delivered public reports, etc. All publishable material and reports are being put online, as they are produced.

5.1.2 Newsletters, Printed and Online Press

Throughout the duration of the project we will publish three newsletters, containing information on all relevant project news, results achieved, workshops held, upcoming events, etc.

The ADEL team makes an effort in contacting the relevant media in order to issue press releases with the new results to be announced, different events organized, etc. Three press releases are expected throughout the duration of the project.

As industrial partners are involved in the project, dedicated press such as professional magazines already published, and will publish in the future the ADEL project progress.

5.1.3 Information material

Short video clips will be created throughout the project simulation and testbed demonstrations. Video material made will be used as dissemination material, communicating ADEL results at different events.

Dissemination material (leaflets, brochures and posters) are being created so we can distribute it when we attend different conferences, workshops, meetings targeted etc. The project's leaflet serves the purpose of introducing the ADEL project to the public: its motivation, vision, objectives, ADEL architecture and relevant information about the consortium.

For distribution of project information material, EU channels can be used as well to increase visibility of our projects (EU publications, press briefings, EU webs, newsletters etc.). Success stories of ADEL can be published with the help of CORDIS Technology Market place as well.

5.1.4 Social media

Social media presence is currently through Facebook and Google+ pages. For now, they are used as dissemination channel for news about the project (e.g., dates of project meetings etc.). We expect that in the future, Twitter or blog posts will also be used to disseminate relevant information, as well as a Youtube channel for short videos that will be produced throughout project demonstrations.

5.2 Target groups

Stakeholders for this project are: EU regulators, i.e., those of UK, France, Greece, Portugal and others interested in the project outcomes. Industrial stakeholders are recognized in the companies and organizations that expressed their LSA drive: Qualcomm, Nokia Siemens Networks, Ericsson, and also organizations such as GSMA and DIGITALEUROPE. Relevant standardization bodies such as ETSI, policy makers such as CEPT and ECC, FCC, RSPG, etc., are all targets of interest for the dissemination of project results. These organizations are focusing on LSA as a new sharing regime proposed recently, envisaged for the 2.3 GHz band implementation in Europe.

Target groups of ADEL (EC, Regulators, Industry, Research sector, General public, Standardization bodies) should be addressed throughout three main phases:

Phase 1: Awareness raising phase, where the goal is to inform about the project, its objectives, its partners. The messages to be sent out to the public should address the points of interest, for each target group which will be elaborated within the ADEL team.

Phase 2: Results oriented phase, where the goal is to promote the results of the project, at appropriate times during and after the project. Internally, we will try to keep an updated plan, to make sure which results are to be promoted and at what times.

Phase 3: Exploitation phase, where the goal is to plan and conduct activities for results exploitation.

We hope to continue disseminating our research findings, not only during the project's duration, but also after its formal completion.

5.3 Dissemination channels

5.3.1 Dissemination within Academia, Standardisation and Regulatory Bodies

The ADEL consortium is disseminating its achievements within the academic community by pursuing publications in top journals and conferences, organizing special sessions and tutorials at high-level international conferences such as ICASSP, EUSIPCO, CROWNCOM, Asilomar, DySPAN, ICC, GLOBECOM, etc., and plans to launch special issues in well-known journals such as the IEEE Signal Processing Magazine and the IEEE Journal on Selected Areas in Communications. In particular, the ADEL consortium sets as target to publish 12 articles in major scientific journals over the project duration, and at least 12 papers in some of the most renowned IEEE or ACM conferences. It is also sought to lead the production of a book on cooperative cognition with participation from ADEL as well as external partners. Moreover, we will arrange summer and / or winter schools, e.g., for PhD students and research engineers from

the industry, to spread the outputs of the ADEL project and establish links to more and more outside partners.

We also intend to explore our close links to industrial networks like the Small Cell Forum (former Femto Cell Forum) and the NGMN that can be used as platforms to promote the ideas of the ADEL project within the industrial research community and to acquire first hand relevant feedback. Further activities for promoting the results of the ADEL project within the industrial research community include seminar talks that shall be held at project related industrial conferences as, e.g., the LTE world summit. The consortium plans to release 2 or more white paper contributions over the project duration, framing the technical problem addressed by ADEL. These documents will be submitted and discussed in relevant standard bodies, e.g., 3GPP RAN WGs, ITU, and / or other standardization activities. The ADEL consortium has been already presenting its findings a few times to ETSI during the first half of the project, and plans to do so again in the second half, also to other standardization bodies if possible.

ADEL has a specific strategy to hold project meetings at the premises of national regulators, when possible.

5.3.2 External relations

Joint workshop with SOLDIER FP7 project

ADEL consortium is willing to respond in a positive manner to every possibility of joint EU projects collaboration, and to participate in a few workshops, as an opportunity to exchange research ideas and results with other projects working on similar topics. An ADEL representative participated to a panel discussion on cognitive radio application in 5G wireless communication system, in occasion of the International Symposium on Wireless Communication Systems (ISWCS) in August 2014, organized by SOLDIER project. ADEL's main objectives and views on LSA concept were presented.

Connections with regulatory bodies

We have a specific strategy to hold project meetings at the premises of national regulators, when possible. As mentioned earlier a first such meeting took place at Ofcom premises in February 2014. A second such meeting with the French regulator was held in June 2014. A meeting with the Greek regulator regarding the concept of ADEL and the achievements of ADEL team so far has also been held. A meeting with the German regulator is being considered.

5.3.3 Standardization activities

ADEL aims to collaborate as intensively as possible with the relevant standardization project clusters, such as Cognitive Radio Standardization Initiative, CRS-i (<http://www.ict-crsi.eu/>). The ADEL consortium aims to engage with ETSI and 3GPP activities that fall in the scope and interest of our project, in order to contribute to standardization efforts on the LSA system architecture and challenges within spectrum sharing models currently examined for implementation in the EU regulatory environment.

5.4 Dissemination achievements in the first half of the project

- 1) The consortium partners published in total 3 journals in the following publication venues:
 - IEEE Communications Letters;
 - Journal of Communications and Networks;
 - ZTE Communications.
- 2) The consortium partners published in total 24 conferences papers to the following conferences:
 - Asilomar Conference on Signals, Systems, and Computers;
 - IEEE COMSOC TCCN SIG CR5G Remote Workshop;
 - IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN);
 - European Conference on Networks and Communications (EuCNC);
 - European Signal Processing Conference (EUSIPCO);
 - European Wireless Conference (EW);
 - IEEE Global Communications Conference (GLOBECOM);
 - IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP);
 - IEEE International Conference on Communications (ICC);
 - International Symposium on Communications, Control and Signal Processing (ISCCSP);
 - IEEE International Symposium on Information Theory (ISIT);
 - IEEE Information Theory and Applications Workshop (ITA);
 - IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC).
- 3) The consortium produced a total of 5 journal papers that are currently under review in the following publication venues:
 - IEEE Transactions on Signal and Information Processing over Networks;
 - IEEE Transactions on Signal Processing.
- 4) We organized a special session entitled “Communication Techniques for Licensed Shared Access” at the International Symposium on Communications, Controls and Signal Processing (ISCCSP), held in Athens, Greece, May 2014.
- 5) We will participate in the IEEE DySPAN 2015 5G Spectrum Sharing Challenge where spectrum sharing will be demonstrated using real equipment (including a database). This procedure will allow the project to further study and improve the collaborative sensing, cooperative communication, and dynamic spectrum access techniques that are investigated in the ADEL project using the WARP testbed of the B-WiSE Lab.
- 6) A total of 3 meetings were organized with National regulators:
 - A consortium-level meeting was organized with Ofcom, London, UK, in February 2015. We presented the objectives of the project, scenario proposals and regulatory issues ADEL plans to tackle by extending the LSA framework to a more dynamic sharing arrangement.
 - A consortium-level meeting was organized with an ANFR representative in Paris, France, June 2014. We presented ADEL’s view of LSA. Discussion focused on regulatory issues as seen from a regulator point of view. Further collaboration with French regulator and following up on the project results were announced from the ANFR representative.

- A meeting with the Greek regulator regarding the concept of ADEL and the achievements of ADEL team so far has been held.

7) The following 5 talks were given by ADEL partners:

- At the recent IEEE Wireless Communications and Networking Conference (WCNC 2014) in Istanbul, Turkey, a tutorial was given on “MIMO Broadcast and Interference Channels towards 5G”. The material for this tutorial reflected developments in the past CROWN and the ongoing ADEL ICT projects. The material of this tutorial is now being integrated in the “Signal Processing for Communications” course at EUR, which is taught to Master’s and PhD students.
- A presentation of ADEL project was given in the working sessions of a jointly organized (by CRAFT and SOLDER projects) workshop at ISWCS 2014 conference, held in Barcelona, Spain, August 2014.
- In September 2014, ADEL work was presented at the annual plenary meeting of CTVR (Irish National Telecom Research Centre) in Kilkenny, Ireland, where academic and industrial attendees were present. This meeting was a scientific and industrial gathering of national relevance.
- An ADEL representative gave the plenary talk "Licensed Shared Access and the Potential Role of Multiple Antennas for Context Aware Access" at the IEEE COMSOC TCCN SIG CR5G 2nd Remote Workshop in November 2014. This invited talk gave an overview of the ADEL project and presented possibilities for multi-antenna LSA and context-aware LSA.
- In March 2015, the presentation “Dynamic LSA for 5G Networks - The ADEL and TCD perspective” was given in occasion of the workshop “A Meeting on Civilian Use of Military Spectrum Bands: Technologies, Impacts and Opportunities” in Maynooth, Ireland.

8) A presentation about ADEL was given in occasion of a meeting with representatives from Finnish national CORE+ project in Oulu, Finland, September 2015. ADEL team successfully initiated collaboration with CORE+ project (which is doing research on LSA topic and developing LSA trials on live LTE network). We have plans to strengthen the collaboration in the future.

9) The following 4 presentations and contributions were produced in the context of standardization:

- We presented a consortium contribution as an official document to the ETSI RRS#24 plenary meeting, held in December 2013 in Mainz, Germany. The contribution raised a very interesting discussion in the standardization body, and several feedbacks provided have been taken into consideration in the successive next steps of the work in ADEL.
- In occasion of the ETSI RRS#26 meeting held in Canada in June 2014, in the context of CRS-i (Cognitive Radio Standardisation Initiative), the ADEL research directions were mapped with Target standard: ETSI RRS WG1, contributing to LSA system architecture work in ETSI RRS WG1.
- An ADEL representative attended the "ETSI workshop on Reconfigurable Radio Systems - Status and novel Standards“, which had a particular focus on LSA in December 2014, where an ADEL poster was presented at the EUR demonstration booth.

Information was provided to the ADEL consortium on a number of other LSA related demos that were present at the workshop.

- During the period 30 March - 2 April 2015, following an invitation from CRS-i, an ADEL representative attended the 30th face to face meeting of the ETSI RRS technical specification group, which is in charge of producing the 1st European standard dealing with LSA. During the meeting, one gave a presentation of the results achieved by WP3 during the 1st year of the project, focusing on the selected LSA reference scenarios and network architecture. The presentation included also a comparison of ADEL and ETSI architectures. The presentation motivated an intense discussion afterwards. Albeit the significant resistance to consider ADEL proposals for the 1st edition of the ETSI standard on LSA, the motivation behind such resistance and the willingness to hear additional details on some scenarios, make us believe that some of the ADEL proposals might be suitable for future editions of the standard.

5.5 Dissemination Plan for the second half of the project

1) Academic targets:

- The partners plan to continue to disseminate their accomplishments within ADEL through scientific publications in top journals and conferences. In case that it may take a long time before the papers are formally published in journals, they will be made public on open access website arxiv.org. In general, special attention will be given to public access to these publications, through the project website.
- Organize special sessions/workshops and tutorials in reputed international conferences and workshops as well as a summer school. For instance, at the IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC) in Stockholm, Sweden, June 2015, an ADEL representative will give a tutorial on “MIMO Broadcast and Interference Channels towards 5G”. Also, at the International Symposium on Wireless Communication Systems (ISWCS) in Brussels, Belgium, August 2015, a tutorial will be given on “From Network based Location Estimation to Location Aided Communications”. The material for these tutorials will reflect developments in the ADEL project.
- Launch special issues in most influencing journals such as the IEEE Signal Processing Magazine and the IEEE Journal on Selected Areas in Communications.
- Good opportunity for disseminating part of the ADEL work will be: IEEE DySPAN 2016, where TCD has a member in the Steering Committee of the conference, the 2016 edition of the European Conference on Networks and Communications (EUCNC'2016), the 2015 edition of Conference on Telecommunications (ConfTele). In order to increase ADEL visibility, during 2016 we intend to submit papers to the most respected conferences focusing on cognitive radio and dynamic spectrum access topics, e.g. CROWNCOM, besides the already mentioned DySPAN.

2) Standardization targets:

- Continue to disseminate (under the umbrella of CRS-i) the ADEL proposals in ETSI RRS WG1 meetings, in order to try to influence future editions of the LSA standard.
- Keep monitoring and impacting Standards Developing Organizations.

3) Interaction with regulators:

- Continue to closely collaborate with Ofcom to promote ADEL goals and results and push for the inclusion of ADEL's research in the LSA standards under development.
- We will contact wireless telecom operators in Greece and will continue the cooperation with the National wireless spectrum regulator to both promote ADEL's goals and results

and get important feedback on regulatory and business aspects of the enhanced LSA paradigm envisioned and developed in ADEL.

- We plan to contact again the regulation representative in France, and if the opportunity arises, organize a 2nd session of presentation of the LSA as seen by ADEL. In general the plan is to continue the discussion with the French regulatory body.
- We plan to organize a meeting on current spectrum trends and policies, with representatives of FCC and other US and EU regulatory and industry bodies. The meeting will be relevant for ADEL research outcomes dissemination within the context of LSA.
- The 2015 and 2016 editions of the "Congress of the Portuguese Committee of URSI constitute a good opportunity to interact with the Portuguese National Regulatory Authority (ICP-ANACOM), which organizes these yearly scientific meetings. As ICP-ANACOM is a member of ITU, CEPT, BEREC, we think this is a strategic meeting where to disseminate the ADEL project results, concerning the adoption of the LSA licensing regime.

4) Participation to European events:

- We will continue to contribute to dissemination efforts at European events such as the EuCNC or RAS Cluster meetings, events that are organized by the Commission to exhibit the research results in ICT projects.

5) Communication to the general public:

- We will work on communicating the project's accomplishments and aspirations to the general public. This goal will be pursued through articles in the national press, interviews with radio stations and participation to industrial exhibitions and general public science fairs (such as the Athens Science Festival and the European Researchers Night).
- Some ADEL academics might get solicited for interviews on topics of their specialization that appear in national specialized magazines, on national radio and even on national TV.

6) Interaction with National research centres:

- We plan to present ADEL results and generate interest and involvement in the LSA topic from the CONNECT industrial partners. CONNECT is a new Science Foundation Ireland (SFI) Research Centre. It is co-funded by the Irish government, through SFI, and by industry. Its mission is to research, develop and innovate new solutions to the many communications challenges facing society. New broadband architectures, new cellular technologies and the Internet of Things are at the centre of CONNECT work. The centre builds on the work of CTVR (www.ctvr.ie) which is now under its umbrella, and comprises ten different academic institutions around Ireland and 40 industry partners. The HQ is in TCD.

7) Interaction with other groups of interest:

- We plan to disseminate ADEL info and results, as a member of Dynamic Spectrum Alliance organization. The Dynamic Spectrum Alliance is a global organization advocating for laws and regulations that will lead to more efficient and effective spectrum utilization. Their membership spans multinationals, small- and medium-sized enterprises, and academic, research, and other organizations from around the world, all working to create innovative solutions that will increase the amount of available spectrum to the benefit of consumers and businesses alike.
- We will participate in EMMIA (European Mobile and Mobility Industries Alliance) activities and plan to disseminate ADEL information and results within this organization. This new

Alliance is a strategic initiative bringing together policy makers and industry representative at European level with the aim of developing more sustainable solutions in the field of mobility supported by mobile services, through better use of current and planned initiatives and enhancing transnational cooperation in this field.

6 Exploitation

6.1 Potential impact

A recent report [Deloitte Report]³ defined a framework for spectrum sharing use. There are four key parties to spectrum sharing for MNO use:

- The incumbent: providing spectrum to be shared with the mobile industry and MNOs.
- The MNOs and the mobile ecosystem: purchasing spectrum sharing licenses and providing infrastructure.
- The regulator: ensuring adequate spectrum for all parties.
- The mobile industry customers: mobile purchaser while rewarding best MNOs offers.

From the ADEL project point of view, this will be a guideline for exploitation of the results: as a necessary condition to sharing success, each of the groups mentioned above must view sharing as a net-positive outcome for their interests, in essence weighing the expected and real benefits against the anticipated and real costs and risks.

The impact expected for ADEL will be thus to convince each of these players of how LSA will be an asset for dedicated purposes.

One of the first steps of the project, with the description of adequate use-cases and the definition of adapted metrics for comparison, contributed to this aim.

6.2 Risks & limitations

As a major part of the exploitation task consists in convincing LSA actors of the possible benefits of this new spectrum sharing, inherent risks to adopt this technology will appear, according to each group these actors belong to:

- The incumbents: the risk is related to the reduction of freedom to use the spectrum.
- The regulator body: negative impact on the industry if sharing policy fails.
- MNOs and mobile ecosystem: uncertainty in terms, infrastructure and operation investment.
- The mobile industry customers: possibility of service performance reduction.

From this point of view, ADEL aims to limit the analysed use-cases to the most relevant situations and/or restricted industrial areas, to focus the exploitation of the results on specific aspects.

6.3 Contributions to standards and regulations

A continuous monitoring of, an alignment with, and a possible impact on standardization and regulatory bodies will be pursued throughout the project lifetime. For instance the partners TCS

³ « The impact of Licensed Shared Use of Spectrum » - A report for the GSMA association - 23 January 2014 - Deloitte - prepared in collaboration with *real wireless*.

and IMC are active in a number of standardisation bodies, such as ETSI-RRS (secondary access systems) and 3GPP RAN (minimisation of drive tests, SON, etc), which might have on-going discussion related to ADEL's topics, e.g. cognitive radio or energy efficiency.

6.4 Exploitation achievements in the first half of the project

- 1) The following publication in a corporate magazine was produced:
 - We published an article in the 2014 edition of "Saber & Fazer Telecomunicações" (translation: To know and to do telecommunications), which is PTIN's corporate magazine, published in Portuguese. The article entitled "5G: acesso ubíquo de alta velocidade" (translation: "5G: high speed ubiquitous access"), presents spectrum sharing as one of the key technologies for the 5th generation of mobile communications systems. ADEL project is presented in this context, highlighting the main objectives of the project and the major technical proposals allowing to achieve those targets.
- 2) Interaction with industries:
 - We established a collaboration with Coralia, an organization that supports and facilitates the operation of technological startups in Greece. Under the "umbrella" of Coralia are three technology clusters and three innovation hubs with more than 12,000 employees.
- 3) Standardization:
 - An ADEL representative attended the RRS Workshop at ETSI, Sophia Antipolis, France, in December 2014, was present with a spectrum aggregation demo, and had a poster presenting the ADEL project. The RRS workshop was the occasion to interact with several other demos on LSA that were present and helped shape further work within ADEL.
 - A presentation was given in occasion of the ETSI RRS#26 meeting, in the context of CRS-i (Cognitive Radio Standardisation Initiative) held in Canada in June 2014; ADEL research directions were mapped with Target standard: ETSI RRS WG1, contributing to LSA system architecture work in ETSI RRS WG1.

6.5 Exploitation plan for the second half of the project

- 1) Interaction with worldwide industries:
 - An ADEL partner is an advisor of NGMN Forum (Next Generation Mobile Networks) and plans to present the results of ADEL in the forum that will take place in 2015 Fall or 2016 Spring. By interacting with worldwide operators in Europe, US and China, we expect that the objectives and achievements of ADEL are better understood by industry.
- 2) Contribution to regulation:
 - We intend to organize a meeting with ANFR for results presentation and feedback on the considered use-cases.
 - We have good relations with Ofcom, and will leverage on those in order to foster a successful dissemination of the ADEL results and to potentially steer the work of that body towards the main outcomes of the project.
- 3) Contribution to standardization:

- We have a strong presence in ETSI as well as 3GPP standardisation bodies promoting new technologies, and we will monitor for possibilities to present ADEL outcomes to standardization meetings.

7 Summary and Conclusions

In this Deliverable, we have presented a summary of the dissemination and exploitation plan in ADEL project (ICT-619647), and of the achievements during the first half of the project lifetime. This work was carried out as part of WP2: Dissemination and Exploitation Planning, specifically Tasks T2.1 and T2.2.

The main conclusions of this Deliverable are as follows:

- ADEL will coordinate and pursue the dissemination of the research outcomes of the project to the academic and industrial scientific communities, in order to ultimately create impact on future LSA standards and products. The project's website will enable the project members to share information and coordinate their work but also will allow for communication with the general public.
- We will publish widely in international research conferences and journals, organize special sessions/workshops at recognized international conferences and special issues in top journals.
- In the second half of the project, we will organize a summer school for PhD students and research engineers, in which individual project partners will give advanced tutorials on their respective areas of expertise within the research topics investigated by ADEL.
- We also plan to participate in some industry-oriented exhibitions such as the annual Mobile World Congress in Barcelona or the LTE World Summit. Furthermore, we will explore our contacts to the relevant industrial networking organisations related to the ADEL project (such as the Small Cell Forum and the NGMN Forum) in order to offer joint activities as tutorial talks and exhibitions.
- Relevant project results will also be presented to regulatory authorities in order to influence their rulemaking towards more efficient usage of available spectrum, especially within the context of LSA.
- The advanced sensing and communication techniques developed in ADEL can be used to enhance regulatory policies and encourage network providers to adopt flexible spectrum access on the roadmap to 5G wireless networks. The purpose here will be to promote these ideas within the wider regulatory and policy-making community, whilst demonstrating clear and profitable routes to market.