Integrated Project

ABSOLUTE - Aerial Base Stations with Opportunistic Links for Unexpected & Temporary Events

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Second Report on Dissemination Activities
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Abstract

This deliverable provides the details of the dissemination activities performed during the second reporting period of the ABSOLUTE project. Conferences, journals and books as well as the dedicated project workshops and other focused events have been used for disseminating the ABSOLUTE project results, events, activities and relevant news. Thus, the main objective of this deliverable is to provide an overview of the main dissemination activities and evaluate the impact of ABSOLUTE project results in the scientific and industry community.

Keywords

Dissemination, conference, journal, public demonstration, stakeholder events, workshop

Table of Contents

List of Figures

List of Tables

Executive summary

The purpose of this document is to describe in detail the dissemination activities of the ABSOLUTE project during the reporting period #2. The dissemination activities have been performed taking into account the project objective, which is to have a high impact on the field of public safety and emergency communications. Thus, the objective of this report is to present the achievements of the ABSOLUTE project in terms of dissemination and impact. During the last year, different technical activities within the project and based on the project scenarios and use-cases, targeted at Public Safety Communications and rapid communication support for Temporary events, have been organized and successfully completed. The dissemination activities main goal is to ensure that the ABSOLUTE project results, both research outcomes and development products, are appropriately disseminated, to the appropriate target communities at appropriate times, via the appropriate methods.

During the reporting period #2, the ABSOLUTE partners continued to disseminate the scientific results in conferences and journals, and specific events. Furthermore, as the ABSOLUTE sub-systems are reaching maturity, it has been a focus of the project to also showcase specific demonstrations of ABSOLUTE project components at conferences and events (e.g., EUCNC 2014). The project partners also actively communicated the project results and information in various scientific fora, including being active within the EC-organized events (e.g., concertation meetings). The ABSOLUTE project workshop was also organized, co-located with IEEE ICC 2014. Finally, the website and the social networking tools were appropriately used to communicate and advertise the project news and progress. Also, a newsletter was published as part of the communication actions.

1 Introduction and Deliverable Structure

The main goal in ABSOLUTE – Aerial Base Stations with Opportunistic Links For Unexpected & Temporary Events – project is to design and validate an innovative rapidly deployable future network architecture which is resilient and capable of providing Broadband multi-service, secure and dependable connectivity for large coverage areas affected by large scale unexpected events (or disasters) leading to the partial or complete unavailability of the terrestrial communication infrastructure or for temporary events leading to the demand for very high throughput and augmented network capacity. In addition, the ambition of the project is to provide reference implementations for interoperable and backward compatible solutions, and relevant regulatory and standardization efforts, enabling quick adoption of 4G communication technologies to remarkably improve the disaster recovery and crisis management preparedness of all relevant public safety and security stakeholders in Europe and worldwide. ABSOLUTE objectives will be achieved through the opportunistic combination of aerial, terrestrial and satellite communication links with the aim to maximize network availability and allow a rapid and incremental network deployment. This seamlessly reconfigurable and highly scalable network environment will also embed adequate levels of mobility support and energy efficiency.

The objective of this deliverable is to present the dissemination report for ABSOLUTE for the period from October 2013 until September 2014 (Year 2 of ABSOLUTE). The dissemination report summarizes the publication of scientific results at conferences and high impact journals, presentation of the project progress at scientific events and at seminars, workshops organized to discuss the technical issues pertaining to the project, cooperation and liaison with projects and industry fora, and the EC activities carried out within the RAS cluster.

After introducing the document in chapter 1, where general objectives of this deliverable are explained, chapter 2 presents the overview of the dissemination activities related to the publication of scientific results. In this chapter the patents, journals, book chapters, conference and workshop publications are described.

Since the dissemination plan (D8.1.1) foresees the organization of the workshop in order to promote discussions and knowledge sharing between researchers, academia, industries and policymakers in the field of the communication challenges for interoperable and broadband public safety and emergency communications; chapter 3 focuses on describing the ABSOLUTE workshops organized and successfully completed, which were collocated with relevant and high impact international conferences. While in chapter 4 a brief overview about the dissemination activities related to presentations and seminars are provided. In this chapter details about the knowledge exchange, participation in European Commission activities, the cooperation and liaison with projects and industry, the stakeholder interaction and EAB interaction of the ABSOLUTE project are presented and discussed.

The ABSOLUTE web presence is summarized in chapter 5, were the main online and social network channels used for disseminating the main activities, events, results and relevant news of ABSOLUTE project. In this chapter also the details about the content and objectives of the newsletter created for advertisement and dissemination of the ABSOLUTE project is also reported. Finally, in chapter 6, relevant conclusions are provided.

2 Publication of scientific results

The ABSOLUTE project presentation [2] details the research targets of the project. In order to disseminate the results from the project, a number of journals, publications and conferences have been published. The scientific results from the project are disseminated through the ABSOLUTE project website (http://www.absolute-project.eu/reports/publications) for the general public, citing permissions and corresponding copyright restrictions wherever applicable. Details about the publications are detailed in the following.

2.1 Patents, Journals and Books Publications

Two patents related to the topics investigated in ABSOLUTE project have been submitted; these patents are under revision and constitute a very important outcome of the project. Table 1 provides details about the submitted patent of ABSOLUTE project.

Table 1: Patents filed

Author(s)	Contribution Title	Type	Status	Status
D. Grace	Communication Network and Method	UK Patent Application Ref No: 1410497.0	12 Jun. 2014	Submitted
Q. Zhao, D. Grace	Dynamic Topology Management in Flexible Aerial-Terrestrial Networks for Public Safety	UK Patent Application Ref No: 1415138.5	27 August 2014	Submitted

ABSOLUTE scientific results are also disseminated through several book, journal and magazine publications. Specifically, one book chapter covering the aspects related to "Temporary Cognitive Small Cell Network for Rapid and Emergency Deployments" was published. While in terms of journal and magazines; six journal articles were published, two journal articles are in the #2nd phase review and two journal articles have been submitted. Table 2 provides details about the book chapter, journal and magazine publications of ABSOLUTE project.

Table 2: Journal/Book Publications.

Author(s)	Contribution Title	Journal/Book Name	Status
A. Hourani, S. Kandeepan and S. Arunthavanthan,	Chapter: Temporary Cognitive Small Cell Network for Rapid and Emergency Deployments, Book: Small Cell Networks Design and Deployment, ISBN : 9781107056718, Feb 2015,	Cambridge University Press.	In press
S. Kandeepan, K. Gomez, T. Rasheed, L. Reynaud	Aerial-Terrestrial Communication: Terrestrial Cooperation and Energy Efficient Transmissions to Aerial Base Station	IEEE Transactions on Aerospace and Electronic Systems	Accepted/ Published December 2014
T. Kaiser, H. Cao, W. Jiang, and F. Zheng	Cognitive Radio – A Current Snapshot and Some Thoughts on Commercialization for Future Cellular Systems	Journal of Signal Processing Systems, vol. 73, no. 3, pp. 217–225, Aug. 2013.	Accepted/ Published
A. Hrovat, T. Javornik	Analysis of radio propagation models for smart city applications.,	International journal of communications, vol. 7, no. 4, pp. 83-92, 2013	Accepted/ Published
M. Pesko, T. Javornik, A.Košir, M. Štular, M.	Postopki gradnje kart radijskega okolja (Radio environment maps construction methods)	Electrotechnical Review, 2014, vol. 81, no. 1/2, pp. 123-130 (in	Accepted/ Published

Mohorčič			Slovene).	
A.Hourani, S.Kandeepan, S. Lardner	Optimal LAP Altitude for Maximum Coverage	IEEE Wireless Communication Letters	Accepted/ Published
M. Pesko, T. Javornik, A. Košir, M. Štular, M. Mohorčič	Radio environment maps: The survey of construction methods	KSII Transactions on Internet and Information Systems	#2nd phase review
K. Gomez, T. Rasheed, L. Reynaud and L. Goratti	Enabling Disaster Resilient 4G Mobile Communication Networks	IEEE Communications Magazine Oct. 2014/Disaster Resilience	Accepted
A, Mariani, S. Kandeepan A. Giorgetti	Temporal Spectrum Sensing and Performance Analysis	IEEE Transactions on Wireless Communications	2nd phase review
H. Cao, W. Jiang, M. Wiemeler, and T. Kaiser	Parallel In-band Signal Detection and Classification With Self-Interference Suppression for Cognitive Radio Network	IEEE Journal on Selected Areas in Communications	Submitted
M. Pesko, T. Javornik, L. Vidmar, A. Košir, M. Štular, M. Mohorčič	The indirect self-tuning method for constructing radio environment map using omnidirectional or directional transmitter antenna	EURASIP Journal on Wireless Communications and Networking.	Submitted

2.2 Conferences and Workshop Publications

ABSOLUTE scientific results are also disseminated in the most relevant conferences and workshops. These conferences represent the main target for scientific dissemination due to their broad outreach together with number of smaller scale events and workshops. Specifically, 48 papers were published during the first two years of the project; Table 3 provides details about the conference and workshop publications of ABSOLUTE project.

Table 3: Conference/Workshop publications

Author(s)	Title	Conference	Place	Date	Type
A. Valcarce, T. Rasheed, K. Gomez, S. Kandeepan, L. Reynaud, R. Hermenier, A. Munari, M. Mohoric, M. Smolnikar, I. Bucaille	Airborne Base Stations for Emergency and Temporary Events	Conference on Personal Satellite Services (PSATS)	Toulouse, France	Jun. 2013	Conference paper
S.Chandrasekharan, S. Kandeepan, R. Evans, A. Munari, R. Hermenier, M. Mar.itti, K. Gomez, T.Rasheed	Clustering Approach for Aerial Base-Station Access with Terrestrial Cooperation	Wi-UAV Workshop, IEEE Globecom 2013	Atlanta	9-13 Dec. 2013	Workshop paper
I. Bucaille, S. Hetuin, A. Munari, R. Hermenier, T. Rasheed, S.	Rapidly Deployable Network for Tactical Applications: Aerial Base Station with Opportunistic	IEEE Milcom 2013	San Diego	Nov. 2013	Conference paper (Invited)

Allsopp	Links for Unattended and Temporary Events, ABSOLUTE example			
S. Arunthavanathan, S. Kandeepan and R. Evans	Spectrum Sensing and Detection of Incumbent-UEs in Secondary-LTE based Aerial-Terrestrial Networks for Disaster Recovery	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
S. Arunthavanathan, S. Kandeepan and R. Evans	Reinforcement Learning based Secondary User Transmissions in Cognitive Radio Networks	IEEE Globecom 2013 BWA – WS	Atlanta	Dec. 2013	Workshop paper
A. Hourani, S. Kandeepan	Temporary Cognitive Femtocell Network For Public Safety LTE	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
A. Hourani, S. Kandeepan	Cognitive Relay Nodes for Airborne LTE Emergency Networks	IEEE ICSPCS	Gold Coast	Dec. 2013	Conference paper
A. Vilhar, A, Hrovat, T. Javornik, M. Mohorčič	Experimental analysis of wireless temporary networks deployed by low altitude platforms	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
H. Cao, W. Jiang, T. Javornik, M. Wiemeler, T.T. Nguyen, T. Kaiser	Spectrum awareness scheme of the rapidly deployable eNodeB for unexpected and temporary events	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
A. Hrovat, T. Javornik	Radio channel models for wireless sensor networks in smart city applications	Conference on Electronics, Signal Processing and Communication Systems,	Venice	Sept. 2013	Conference paper
M. Mohorčič	Integration of terrestrial and airborne wireless networks for emergency situations : the ABSOLUTE project	Symposium on Information and Communication Technologies	Tuzla, Bosnia	Jun. 2013	Conference paper (Invited)
M. Pesko, T. Javornik, M. Štular, M. Mohorčič	The comparison of methods for constructing the radio frequency layer of radio environment map using participatory measurements	Workshop on Cognitive Radio and Networking for Cooperative Coexistence of Heterogeneous Wireless Networks	Rome, Italy	Oct. 2013	Conference paper
N. Morozs, T. Clarke and D. Grace	A Novel Adaptive Call Admission Control Scheme for Distributed Reinforcement Learning Based Dynamic Spectrum Access in Cellular Networks	IEEE Tenth International Symposium on Wireless Communication Systems	Mannheim , Germany	Aug. 2013	Conference paper

N. Morozs, D. Grace and T. Clarke	Case-Based Reinforcement Learning for Cognitive Spectrum Assignment in Cellular Networks with Dynamic Topologies	Military Communications and Information Systems Conference	Saint Malo, France	Oct. 2013	Workshop paper
Q. Zhao, T. Jiang, N. Morozs, D. Grace, T. Clarke	Transfer Learning: a Paradigm for Dynamic Spectrum and Topology Management in Flexible Architectures	IEEE VTC Fall 2013 (WMCR workshop)	Las Vegas	Sept. 2013	Workshop paper
S. Rehan, D. Grace	Energy-Aware Topology Management for High Capacity Density Temporary Event Networks	IEEE ATC	Vietnam	Oct. 2013	Conference paper (Invited)
Sithamparanathan, K., K. M. Gomez, T. Rasheed, and L. Reynaud	Adaptive Energy Efficient Communications for Hybrid Aerial-Terrestrial Systems	IEEE ICC E2Nets Workshop	Budapest	Jun. 2013	Workshop Paper
2. Gomez, K. M., C. Sengul, N. Bayer, R. Riggio, T. Rasheed, and D. Miorandi	Achilles and the Tortoise: Power consumption in IEEE 802.11n and IEEE 802.11g networks	IEEE Online Conference on Green Communications	Online Conf.	Oct. 2013	Conference paper
Gomez, K. M., T. Rasheed, L. Reynaud, and I. Bucaille	Realistic Deployments of LTE-based Hybrid Aerial-Terrestrial Networks for Public Safety	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
A. Somov, T. Rasheed and V. Yedugundla	Power Control Game for Spectrum Sharing in Public Safety Communications	IEEE CAMAD (ETPSC Session)	Berlin	Sept. 2013	Conference paper
K. M. Gomez, Sithamparanathan, K., T. Rasheed, and L. Reynaud	Performance Evaluation of Broadband Aerial LTE Base-Stations for Emergency Recovery	IEEE Globecom 2013 (Wi-UAV Workshop)	Atlanta	Dec. 2013	Workshop paper
Goratti, L., K. M. Gomez, R. Fedrizzi, and T. Rasheed	A Novel Device-to-Device Communication Protocol for Public Safety Applications	IEEE Globecom D2D Workshop	Atlanta	Dec. 9, 2013	Workshop paper
R. Fedrizzi, L. Goratti, K. Gomez and T. Rasheed	On the Feasibility of Handover over WiFi Backhaul in LTE-based Aerial-Terrestrial Networks	IEEE WCNC	Istanbul	Ap. 2014	Conference paper
K. Gomez, T. Rasheed, L. Reynaud and L. Goratti	FME: A flexible management entity for Virtualizing LTE Evolved Packet Core (EPC)	IFIP NOMS	Krakow	May 2014	Conference paper (Accepted)
W. Jiang, H. Cao, T. T. Nguyen, A. B. Güven, Y. Wang, Y. Gao, A. Kabbani, M. Wiemeler, T. Kreul, F. Zheng, and T. Kaiser	Key Issues Towards Beyond LTE-Advanced Systems with Cognitive Radio	IEEE SPAWC	Darmstadt	Jun. 2013	Conference paper (Accepted)

Authors	Title	Conference	Location	Date	Type
H. Cao, W. Jiang, M. Wiemeler, T. Kaiser, and J. Peissig	A Robust Radio Access Technology Classification Scheme with Practical Considerations	IEEE Symposium on Personal, Indoor and Mobile Radio Communications	London	Sep. 2013	Conference paper (Accepted)
H. Cao, W. Jiang, T. T. Nguyen, A. B. Güven, Y. Wang, Y. Gao, A. Kabbani, M. Wiemeler, T. Kreul, F. Zheng, and T. Kaiser	The Design of an LTE-A System Enhanced with Cognitive Radio	European Signal Processing Conference	Marrakech, Morroco	Sept. 2013	Conference paper (Accepted)
H. Cao, W. Jiang, and T. Kaiser	Multi-channel Robust Spectrum Sensing with Low-complexity Filter Bank Realization	IEEE Symposium on Personal, Indoor and Mobile Radio Communications	London	Sept. 2013	Conference paper (Accepted)
R. Fedrizzi, K. Gomez, Sithamparanathan K., T. Rasheed and C. V. Saradhi	Energy Aware Routing in Heterogeneous Multi-Hop Public Safety Wireless Networks	IEEE ICC WS - APSEC	Sydney	Jun. 2014	Workshop paper (Accepted)
S. Arunthavanathan, L. Goratti, L. Maggi, F. de Pellegrini, K. Sithamparanathan	On the Achievable Rate in a D2D Cognitive Secondary Network Under Jamming Attacks	CROWNCOM	Oulu	Jun. 2014	Invited Conference paper (Accepted)
Baldini, G., L. Goratti, G. Steri, and K. Gomez	Connectivity and Security in a D2D Communication Protocol for Public Safety Applications	IEEE ISWCS	Barcelona, Spain	Aug. 2014	Workshop paper (Accepted)
T. Javornik, A. Hrovat, A. Vilhar, M. Vučnik, I. Ozimek, M. Pesko	Radio environment map (REM), An approach for provision wireless communications in disaster areas	IEEE International Workshop on Cognitive Cellular Systems	Rhine River, Germany	Sep. 2014	Conference paper (Accepted)
J. Cinkelj, A. Bekan, M. Sterk, M. Mohorcic and C. Fortuna	Design Trade-offs for the Wireless Management Networks of Constrained Device Testbeds	International Symposium on Wireless Communication Systems	Barcelona, Spain	Aug. 2014	Conference paper (Accepted)
C. Anton, A. Toma, L. Cremene, M. Mohorcic, and C. Fortuna	"Power AlPlace Game for Interference Mitigation in a Real-world Experimental Testbed",	IEEE ICC-Cognitive Radio and Networks Symposium	Sydney, Australia	Jun. 2014	Conference paper (Accepted)
J. Košmerl, A. Vilhar	Base stations placement optimization in wireless networks for emergency communications.	IEEE International Conference on Communications	Sydney, Australia	Jun. 2014	Workshop paper (Accepted)
Q. Zhao, D. Grace	Topology Management in Flexible Aerial-Terrestrial Networks for Public Safety	IEEE Cognitive Cellular Systems	Rhine, Germany	Sep. 2014	Workshop paper (Accepted)

N. Morozs, T. Clarke, D. Grace, Q. Zhao	Distributed Q-Learning Based Dynamic Spectrum Management in Cognitive Cellular Systems: Choosing the Right Learning Rate	IEEE ISCC	Madeira, Portugal	Jun. 2014	Conference paper (Accepted)
N. Morozs, T. Clarke, D. Grace	Distributed Q-Learning Based Dynamic Spectrum Access in High Capacity Density Cognitive Cellular Systems Using Secondary LTE Spectrum Sharing	Symposium on Wireless Personal Multimedia Communications	Sydney, Australia	Sep. 2014	Invited Conference Paper (Accepted)
W. Jiang, H. Cao, and T. Kaiser	Analysis of Generalized Selection Combining in Cooperative Networks with Outdated CSI	IEEE WCNC 2014	Istanbul, Turkey	April 2014	Conference paper (Accepted)
H. Cao, W. Jiang, and T. Kaiser	Parallel In-band Signal Detection With Self-interference Suppression for Cognitive LTE	IEEE WCNC 2014 FutureHetNets	Istanbul, Turkey	April 2014	Workshop paper (Accepted)
W. Jiang, H. Cao, and T. Kaiser	An MGF-Based Performance Analysis of Opportunistic Relay Selection with Outdated CSI	IEEE VTC 2014	Seoul, South Korea	May 2014	Conference paper (Accepted)
W. Jiang, H. Cao, and T. Kaiser	Opportunistic Space-Time Coding to Exploit Cooperative Diversity in Fast-Fading Channels	IEEE ICC 2014	Sydney, Australian	June 2014	Conference paper (Accepted)
W. Jiang, H. Cao, L. Goratti, M. Wiemeler, and T. Kaiser	Opportunistic Relaying over Aerial-to-Terrestrial and Device-to-Device Radio Channels	IEEE ICC 2014 APSEC	Sydney, Australian	June 2014	Workshop paper (Accepted)
W. Jiang, H. Cao, M. Wiemeler, and T. Kaiser	Achieving High Reliability in Aerial-Terrestrial Networks: Opportunistic Space-Time Coding	IEEE EuCNC 2014	Bologna, Italy	June 2014	Conference paper (Accepted)
K. Gomez, F. Granelli, L. Goratti and T. Rasheed	A Comparative Study of Scheduling Disciplines in 5G Systems for Emergency Communications	5G 2014	Levi, Finland	November, 2014	Conference paper (Accepted)
A. Hourani, S. Kandeepan. and A. Jamalipur,	"'Modeling Air-to-Ground Path Loss for Low Altitude Platforms in Urban Environments,	IEEE Globecom	Atlanta	Dec 2014	Conference paper (Accepted)

3 ABSOLUTE Workshops

At international conferences, dedicated workshops are organized collocated with these events mainly to promote concentrated discussions on several horizontal themes. This is a good opportunity for ABSOLUTE project to disseminating and presenting the project results as well as soliciting feedback on the results and progress of the project. During the lifetime of ABSOLUTE project 3 workshops have been planned as part of the dissemination plan (D8.1.1). Two workshops were already organized and successfully completed while the last workshop will be collocated with the ABSOLUTE demonstration. In the following details about the workshops are provided.

3.1 First ABSOLUTE Workshop

The first international IEEE workshop on Emerging Technologies and Trends for Public Safety Communications (ETPSC) co-located with IEEE Computer-Aided Modeling Analysis and Design of Communication Links and Networks (CAMAD) took place on last Sep. 27th of 2013 in Berlin, Germany. The international conference CAMAD provides a forum for discussion of recent developments on analytical and simulation tools and techniques for the performance evaluation of communications systems. Thus, the ETPSC workshop focuses on opportunities, challenges and future network infrastructures for public safety communications. The event was designed to discuss the most relevant research topic for public safety communications while providing the opportunity to meet and network with many of the leading technology manufactures, regulators, and scientific community in an open multi-disciplinary environment.

The ETPSC workshop was jointly chaired by representatives from the ABSOLUTE consortium:

Organizing Chairs	• Alvaro Valcarce, Triagnosys GmbH, Germany • Kandeepan Sithamparanathan, RMIT University, Australia • Serge Delmas, Cassidian SAS, France • Tinku Rasheed, CREATE-NET, Italy
Publicity Chair	• Karina Gomez, CREATE-NET, Italy

During ETPSC workshop, ten technical papers on public safety communication techniques and design of aerial communications were presented. The presented papers are listed below:

1. Temporary Cognitive Femtocell Network For Public Safety LTE. Akram Al-Hourani (RMIT University, Australia); Sithamparanathan Kandeepan (RMIT University, Australia).
2. Spectrum Awareness Scheme of the Rapidly Deployable eNodeB for Unexpected and Temporary Events. Hanwen Cao (Universität Duisburg-Essen, Germany); Wei Jiang (Univerisity of Duisburg-Essen, Germany); Tomaz Javornik (Jozef Stefan Institute, Slovenia); Michael Wiemeler (Universität Duisburg-Essen, Germany); Trung Thanh Nguyen (Faculty of Engineering, The University of Duisburg-Essen, Germany); Thomas Kaiser (Universität Duisburg-Essen, Germany).
3. Spectrum Sensing and Detection of Incumbent-UEs in Secondary-LTE based Aerial-Terrestrial Networks for Disaster Recovery. Senthuran Arunthavanathan (RMIT University, Australia); Sithamparanathan Kandeepan (RMIT University, Australia); Rob Evans (The University of Melbourne, Australia).

4. Power Control Game for Spectrum Sharing in Public Safety Communications. Andrey Somov (Create-Net, Italy); Tinku Rasheed (Create-Net, Italy); Venkata Kiran Yedugundla (NUS, Singapore).

5. Experimental Analysis of Wireless Temporary Networks Deployed by Low Altitude Platforms. Andrej Vilhar (Jozef Stefan Institute, Slovenia); Andrej Hrovat (Jožef Stefan Institute, Slovenia); Tomaz Javornik (Jozef Stefan Institute, Slovenia); Mihael Mohorcic (Jozef Stefan Institute, Slovenia).

6. A Heuristic Computation Method for Monitoring Trails Terminated at Specified Nodes. Nagao Ogino (KDDI R&D Laboratories Inc., Japan); Hidetoshi Yokota (KDDI Labs, Japan).

7. Traffic analysis and network dimensioning through simulation and emulation for Ka band high capacity satellite systems. Luca Carniato (Opensky s.r.l, Italy); Federica Fongher (Opensky, Italy); Michele Luglio (University of Rome Tor Vergata – Dip. Ing. Elettronica, Italy); Walter Munarini (Opensky, Italy); Cesare Roseti (University of Rome Tor Vergata, Italy); Francesco Zampognaro (University of Rome Tor Vergata, Italy).

8. Toward Terminal-to-Terminal Communication Networks: A Hybrid MANET and DTN Approach. Yuichi Kawamoto (Tohoku University, Japan); Hiroki Nishiyama (Tohoku University, Japan); Nei Kato (Tohoku University, Japan).

9. Realistic Deployments of LTE-based Hybrid Aerial-Terrestrial Networks for Public Safety. Karina Mabell Gomez (Create-Net, Italy); Tinku Rasheed (Create-Net Research, Italy); Laurent Reynaud (Orange Labs, France); Isabelle Bucaille (Thales Communications, France)

10. An Approach for Discrete-Event Simulations of Alamouti Scheme in Ad Hoc Networks. Everton Andrade (University of Brasilia, Brazil); Fadhil Firyaguna (University of Brasilia, Brazil); Ana Carolina Christófaro (University of Brasilia, Brazil); Marcelo M Carvalho (University of Brasilia, Brazil).

Additionally, two international speakers and invited talks were presented during the workshop. A panel session related to i) Overview of the FP7 ABSOLUTE project, ii) Disaster-resilient Multilayered Communications Network and iii) Overview on Activities of ROEC in Tohoku University was also presented.

Prof. Christian Wietfeld, TU Dortmund Germany **TALK:** Aerial ad-hoc Network Provisioning: Design Challenges and Solution Approaches.	
Mr Matthew Baker, Alcatel Lucent **TALK:** 3GPP's Programme to provide integrated Public Safety Communications through LTE.	
	Prof. Fumiyuki Adachi, Tohoku University Japan **TALK:** Disaster-resilient Multilayered Communications Network.

| | Prof. Katsumi Iwatsuki, Tohoku University Japan
TALK: Overview on Activities of ROEC   in
Tohoku University. |

Figure 3-1: Panel Session at ETPSC 2013.

With this workshop, synergies between ABSOLUTE project and the CELTIC SAN project, which is also addressing 4G technologies for public safety communications, was created. The details of the first ABSOLUTE workshop can be found here: www.absolute-project.eu/etpsc2013/

Figure 3-2: ETPSC-2013 workshop webpage.

3.2 Second ABSOLUTE Workshop

During the second year of the project, the consortium organized an *Advances in Public Safety and Emergency Communications* (APSEC-2014) workshop collocated with the IEEE International Conference on Communications (ICC) in Sydney, Australia during Jun. 2014. The ICC is a flagship conference of the IEEE communications society and represents one of the largest gatherings of researchers and industry professionals in the field of communications in the world. This conference brings together more than 1500 delegates from around the globe to discuss the latest advances in this vibrant and constantly evolving field.

Figure 3-3: Call for Papers for Second ABSOLUTE workshop.

Thus, APSEC workshop created a unique and timely opportunity to bring together the relevant stakeholders within the public safety community, including researchers, academia, industries and policymakers to discuss within the workshops mainly looking at the future trends and communication challenges for interoperable and broadband public safety and emergency communications. The core aim of the one-day workshops was identify the global public safety and emergency communication towards rapidly deployable, multi-purpose, multi-service and multi-based interoperable and integrated network infrastructures capable of supporting reliable high data rate applications serving large scale disaster emergency situations. The

Figure 3-3 shows the call for papers for the APSEC workshop.

The APSEC workshop was jointly chaired by representatives from the ABSOLUTE consortium:

Organizing Chairs	• David Grace, University of York, U.K., • Kandeepan Sithamparanathan, RMIT University, Australia, • Tinku Rasheed, CREATE-NET, Italy, • Isabelle Bucaille, Thales Communications & Security, France,
Publicity Chair	• Karina Gomez, CREATE-NET, Italy

During APSEC workshop, seven technical papers on emergency communications were presented. The presented papers are listed below:

1. Base Stations Placement Optimization in Wireless Networks for Emergency Communications Jože Košmerl (Jožef Stefan Institute, Slovenia); Andrej Vilhar (Jozef Stefan Institute, Slovenia.

2. Opportunistic Relaying over Aerial-to-Terrestrial and Device-to-Device Radio Channels Wei Jiang (Univerisity of Duisburg-Essen, Germany); Hanwen Cao (Universität Duisburg-Essen, Germany); Leonardo Goratti (Create-net, Italy); Michael Wiemeler (Universität Duisburg-Essen, Germany); Thomas Kaiser (Universität Duisburg-Essen, Germany)

3. ADeM: Active Delay Management for Critical Group Communication over Heterogeneous Public Cellular Networks Sebastian Subik (TU Dortmund University, Germany); Patrick-Benjamin Bök (TU Dortmund & Communication Networks Institute, Germany); Dennis Kaulbars (TU Dortmund, Germany); Christian Wietfeld (TU Dortmund University & Communication Networks Institute, Germany)

4. Energy Aware Routing in Heterogeneous Multi-Hop Public Safety Wireless Networks Riccardo Fedrizzi (Create-Net, Italy); Karina Mabell Gomez (Create-Net & The University of Trento, Italy); Sithamparanathan Kandeepan (RMIT University, Australia); Tinku Rasheed (Create-Net Research, Italy); Vijaya Saradhi Chava (Nanyang Technological University, Singapore)

5. Differentiated QoS for Overlay-based Disaster Response Systems Mohammadmajid Hormati (Concordia University, Canada); Fatna Belqasmi (Concordia University, Canada); Ferhat Khendek (Concordia University, Canada); Roch Glitho (Concordia University, Canada)

6. A Low-Latency and High-Throughput Scheduler for Emergency and Wireless Networks Maurizio Casoni (University of Modena and Reggio Emilia, Italy); Carlo Aug.o Grazia (University of Modena and Reggio Emilia, Italy); Paolo Valente (University of Modena and Reggio Emilia, Italy)

7. Emergency Route Selection for D2D Cellular Communications During an Urban Terrorist Attack Hu Yuan (University of Warwick, United Kingdom); Weisi Guo (University of

Warwick & New York University, United Kingdom); Siyi Wang (University of South Australia, Australia)

With this workshop, the speaker Dr. Simon Lardner, the CEO of Challenge Networks in Melbourne-Australia, provided a talk related to "LTE for Public Safety Communication". The details of the second ABSOLUTE workshop can be found here: http://www.absolute-project.eu/APSEC2014

Figure 3-4: APSEC-2014 workshop webpage.

3.3 Final Workshop and Other Potential Events

The last ABSOLUTE workshop is planned to be co-located with ABSOLUTE final demonstration in order to showcase the final project results to its advisory members and other external stakeholders. This workshop will be co-organized by the partners from the consortium and will take place during Sep./Oct. 2015. The relevant information regarding the next ABSOLUTE workshop is summarized below:

- The final ABSOLUTE Workshop will be organized to be open registration.
- The participants are expected to be the EU representatives, European Commission reviewers, ABSOLUTE partners, End Users (External Advisory Board) and invited scientific community members (and guests from industry),
- A panel section will be organized were invited talks from similar new projects will be presented. This panel aims to disseminate the ABSOLUTE project results to new project founded in similar topics.
- Two speakers are planned to be introduced in the workshop one from end user community and another from scientific community.
- During the workshop, presentation of specify topics of ABSOLUTE project are planned (for example ABSOLUTE Network Architecture, ABSOLUTE Protocol Architecture, D2D Communications, LTE-Relay, Cognitive Mechanism)

A further workshop is also planned to be organized together with external projects, (e.g. FP7 SALUS), co-located with the IFIP Networking 2015 conference. The general topic of the workshop is on Flexible wireless networks applied for public safety. The members of the ABSOLUTE consortium will be co-organizing this workshop. At this moment, the workshop proposal is under evaluation.

ABSOLUTE project will also support the organization of the WDPC (IEEE Workshop on D2D and Public Safety Communications) workshop, organized as part of the IEEE WCNC 2015 conference, where the project members (CNET) were invited to provide keynote talk at the workshop. The project also plans to take part actively in the NetFutures 2015 event during March, and the EUCNC 2015 conference, with project booths for showcasing demonstrations and the integrated sub-systems within the project.

4 Presentations and Seminars

Members of the ABSOLUTE project consortium delivered invited seminars and lectures about the technical results of the project at other institutions and universities. **Table 4** provides details about the organization of workshops, sessions, training activities of ABSOLUTE project. Specifically, the project consortium has already organized the following relevant activities:

- Panel session on Public Safety Communications at the Future Networks and Mobile Summit (FuNEMS 2013) at Lisbon during Jul. 2013. The panel speakers included participants from the project consortium apart from invited representatives.
- Panel session on Future Trends of Public Safety Communications co-located with the ABSOLUTE project workshop, scheduled for Sep. 2013.
- Advances in Public Safety and Emergency Communications (APSEC-2014) workshop collocated with the IEEE International Conference on Communications, ICC 2014, in Sydney, Australia during Jun. 2014 (explained in the previous section).
- ABSOLUTE project demonstration in the European Conference on Networks and Communications (EUCNC-2014) held in Bologna-Italy from Jun. 23rd until the 26th.

Table 4: Organization of workshops, sessions, training activities etc.

Organiser(s)/ Presenter(s)	Title	Event	Place	Date	Type
I. Bucaille	ABSOLUTE project Presentation and Progress	ABSOLUTE Stakeholder Meeting (EAB)	Paris	September 2014	Session Organization
I. Bucaille	ABSOLUTE project demonstration	EUCNC-2014	Italy	Jul. 2014	Demonstration
K. Gomez	Overview of ABSOLUTE project	University of Trento	Italy	Feb. 2014	Seminar
T. Rasheed	Overview of Device-to-Device Communications for 5G	EIT ICT Labs, Citizen Safety Activity	Sofia Antipolis, France	July 2014	Seminar & Lecture
L. Goratti	Short Range Communications for 5G	IEEE ICUWB 2013	Sydney, Australia	October 2013	Keynote Speech
L. Goratti	ABSOLUTE project scenarios and Overview	Future Networks Workshop	Sendai, Japan	January, 2014	Invited Talk
I. Bucaille	Rapidly Deployable Network for Tactical Applications: Aerial Base Station with Opportunistic Links for Unattended and Temporary Events, ABSOLUTE example	Milcom Confernece	San Diego, USA	Nov. 2013	Invited Talk
T. Rasheed	ABSOLUTE Project: Use cases and Scenarios	ETSI RRS Workshop	Maine, Germany	Dec. 2013	Seminar
I. Bucaille	ABSOLUTE: Standardisation efforts and progress	CRS-I Workshop	Bologna, Italy	June 2014	Presentation
D. Grace	'Cognitive' 5G Small Cell Systems – How can Intelligence Save Energy?	Next-GWIN 2014,	Rennes, France	June 2014	Invited Talk

ABSOLUTE project partners (CREATE-NET) collaborate with University of Trento by means of providing advice to students doing thesis in topics related to ABSOLUTE network architecture. **Table 5** provides details about the interactions of ABSOLUTE project with the University of Trento.

Table 5: Interactions of ABSOLUTE project with Universities.

Student	University	Activity	Thesis or Project Title
Emmanuel Ssebaggala	University of Trento	Thesis at CREATE-NET	Opportunistic LTE Relaying techniques for PPDR Communications
Kidist Mulusew	University of Trento	Thesis at CREATE-NET	Interplay of channel feedback, scheduling and power control for an LTE-based aerial platform
Valentina Cobbe	University of Trento	Thesis at CREATE-NET	Jamming schemes in LTE-based Networks
Abdul Hannan Azad and Santa Ahmed	University of Trento	Project at CREATE-NET	HD-video and HD-audio over Hybrid Aerial–Terrestrial Networks (LTE + WiFi technologies)
David Amitu	University of Trento	Thesis at CREATE-NET	Uplink and Downlink LTE schedulers for Public Safety

4.1 Knowledge Exchange in ABSOLUTE project

Dissemination activities have been also performed between the ABSOLUTE partners in order to exchange knowledge, expertise and coordinate activities. During the last two year of ABSOLUTE project the following meetings were held:

- Kick-off meeting (Oct.-2012) in Paris, France at Thales Communications & Security,
- 1nd Plenary Meeting (Febrary-2013) in Munich, Germany at DLR German Aerospace Center,
- 2nd Plenary Meeting (May-2013) in York, United Kindom at University of York,
- 3nd Plenary Meeting (Sep.-2013) in Berlin, Germany at Fraunhofer Heinrich Hertz Institute,
- 4nd Plenary Meeting (Febrary-2014) in Paris-France at Thales Communications & Security
- 5nd Plenary Meeting (Jul.-2014) in Paris, France at Thales Communications & Security,
- 6nd Plenary Meeting (Sep.-2014) in Duisburg-Essen, Germany at University of Duisburg-Essen,
- 7nd Plenary Meeting (Nov.-2014) in Munich, Germany at Triagnosys,

Additionally, fferent work packages and tasks.

Table 6: Research exchange visits.

Table 6 provides details about the research exchange visits within ABSOLUTE project partners. Specifically, several students from RMIT University visit different partners of ABSOLUTE project in order to perform activities of different work packages and tasks.

Table 6: Research exchange visits.

Visitors(s) and affiliation	Activities	Place	Period
Senthuran Nathan RMIT, Australia	Collaborative research in T4.5 on the security aspects of dynamic spectrum access in the ABSOLUTE project	Trento, CREATE-NET	Mar. 2013 (2 weeks)
Wilfred Amai RMIT, Australia	Collaborative research on T4.1 on aerial access using wi-fi communications: a performance study.	Trento, CREATE-NET	Mar. 2013 (2 weeks)

Kagiso Magowe RMIT, Australia	Collaborative research on localizing radios which has a strong application to avoid interference caused to the primary network users by the ABSOLUTE network. This is related to T4.5/T3.1	Trento, CREATE-NET	Sep. 2014 (1 week)
Sathyanarayanan RMIT, Australia	Collaborative research on clustering techniques for aerial communications related to T4.1	Munich, DLR	Sep. 2014 (1 week)

4.2 Demonstration at EUCNC

ABSOLUTE project participated in the European Conference on Networks and Communications (EUCNC-2014) held in Bologna from Jun. 23rd until the 26th. Figure **4-1** shows pictures of the ABSOLUTE demonstration booth at EUCNC-2014.


Figure 4-1: ABSOLUTE demonstration panel at EUCNC-2014

 ABSOLUTE project was present in the exhibition stand 8 with the demonstration entitled "Aerial Base Stations with Opportunistic Links for Unexpected &Temporary Events". Four main demonstrations were presented:

1. The first one illustrated the Portable Land Mobile Unit (PLMU) sub-system. It is composed of a suitcase having 3G base stations, WiFi access point, Wireless Sensor Network (WSN), computing platform etc. Dedicated mobile phones and tablets showing applications developed in the scope of the project were connected to the PLMU.
2. The second demonstration provided the first LTE results with Radio Remote Head (RRH) and Base-band components.
3. The third demonstration consisted of a video illustrating system simulations that are performed in the project. This video can be viewed on the ABSOLUTE website available at: https://www.youtube.com/watch?v=-G56M3xgD4g&feature=youtu.be.
4. The fourth demonstration was a video of trails that have been performed with the aerial platform.

An overview video about ABSOLUTE demonstration presented EUCNC-2014 is available at:
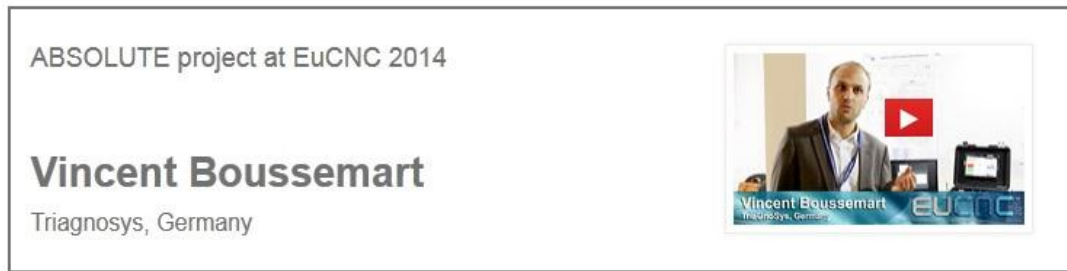
4.3 Cooperation and Liaison with projects and Industry fora

Since the technical dimension of ABSOLUTE is broad and covers several horizontal technologies and concepts, there are strong possibilities of collaboration with other relevant projects that are running in parallel, both funded by EC and other agencies. In this regard, the project has identified some preliminary collaboration opportunities already during these early phases, and is committed to continue exploring possible cooperation with other projects and initiatives, to ensure maximum outreach of project results, and to create a common working ground for joint dissemination.

During the first year, the project established a collaboration the CELTIC SAN project, mainly on joint dialogues and on joint dissemination activities, through the first ABSOLUTE project workshop, and further explored technical cooperation opportunities with the FP7 EmphAtiC project and FP7 METIS projects. During the second year of the project, the ABSOLUTE consortium further enhanced the cooperation with the EmphAtiC project with technical support at the ISWCS 2014 conference. The project also aligned with the FP7 CRS-i coordination action, mainly to exchange information regarding the standardization opportunities and ongoing initiatives/SDOs that are monitored by the two projects. In this regard, the ABSOLUTE project also made a contribution to the EUCNC workshop on standards issues, where the project coordinator, Ms. Isabelle Bucaille presented the standardization progress within the project, and the opportunities within 3GPP for device-to-device communication related activities. Finally, towards the end of period #2, the project also started to explore knowledge exchange with the FP7 SEMAFOUR project mainly to identify the development path within the SON (Self-Organizing Networks) coordination mechanisms and their implication on dynamic load balancing approaches.

The ABSOLUTE project also contributed actively to the EU concertation activities, within the RAS (Radio Access and Spectrum) cluster, and was involved actively within the preparation of the white paper on 5G radio network architecture.
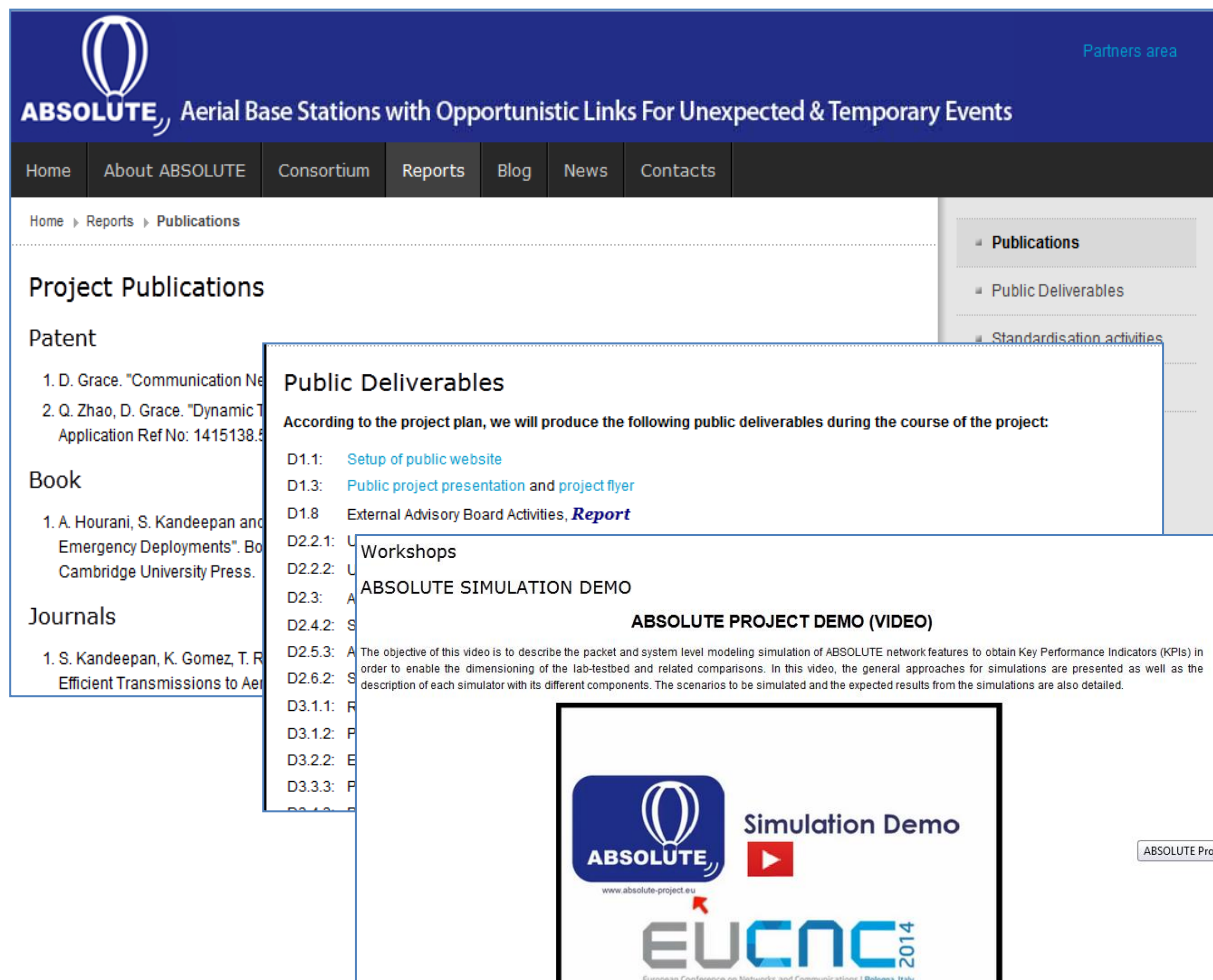
5 ABSOLUTE Web presence

The project has an official website, which is available at: www.absolute-project.eu or www.absolute-project.com. All project related information is available at the website; the main objective is to promote the ABSOLUTE project and to communicate about its progress to the outside world. The

Figure 5-1 shows the ABSOLUTE project website illustrating examples about the information available online. The most relevant information available in the ABSOLUTE website is:

- Project Publications (http://www.absolute-project.eu/reports/publications)
- Public Deliverables (http://www.absolute-project.eu/reports/public-deliverables)
- Workshops information (http://www.absolute-project.eu/news/workshops)
- Main Events (http://www.absolute-project.eu/news/events)

Figure 5-1: ABSOLUTE website homepage

ABSOLUTE project is also active in social networks like Twitter and YouTube, which ensure that updates or news related ABSOLUTE project are regularly updated to the social network space as well. The ABSOLUTE project account in twitter is available at: https://twitter.com/FP7_Absolute

Figure 5-2: ABSOLUTE Twitter channel.

In the YouTube channel a video related to the simulation performed in the project is available. The objective of this video is to describe the packet and system level modeling simulation of ABSOLUTE network features to obtain Key Performance Indicators (KPIs) in order to enable the dimensioning of the lab-testbed and related comparisons. The ABSOLUTE project account in YouTube is available at: https://www.youtube.com/watch?v=-G56M3xgD4g&list=UUasXi48NKhgRHlXmLgIP0wA.

Figure 5-3: ABSOLUTE YouTube channel.

Language	Sessions	% Sessions
1. en-us	2,835	48.74%
2. en-gb	419	7.20%
3. fr	349	6.00%
4. zh-cn	228	3.92%
5. en	183	3.15%
6. de	176	3.03%
7. de-de	174	2.99%
8. ja	144	2.48%
9. it	127	2.18%
10. pt-br	126	2.17%
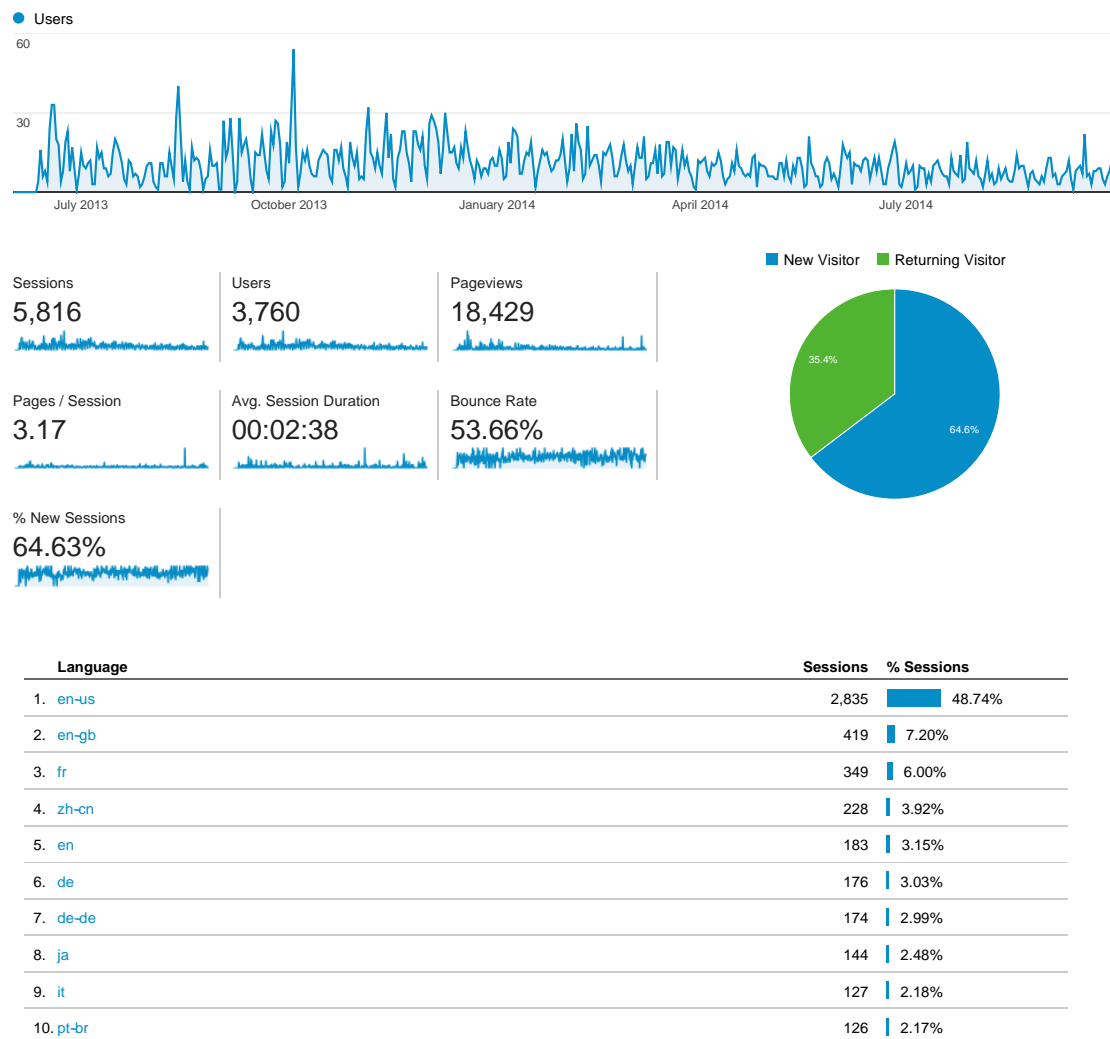
Figure 5-4: ABSOLUTE Website Statistics

5.1 Newsletters and Press Releases

The project partners prepared a newsletter in order to advertise and publicize the ABSOLUTE project activities, events and achievements within their own organizations as well as to the public at large. The main content of the ABSOLUTE newsletter if provided below:

- **ABSOLUTE in Brief:** The main objective of this section is providing to the readers an overview of the ABSOLUTE project.
- **Technical Overview:** In this section the ABSOLUTE protocol and network architecture are described. The status updates about the demo implementation of Absolute project are also provided.
- **Publications:** The ABSOLUTE newsletter is an additional channel for disseminating the ABSOLUTE scientific results.
- **Project Meetings:** In order to provide an overview of ABSOLUTE internal activities the list of the plenary ABSOLUTE meetings are also provided in the newsletter.
- **Workshops:** Details about the workshop organized by ABSOLUTE project are provided here.
- **Relevant News:** In this section the relevant news about the ABSOLUTE project are included as for example publication awards, project demonstrations and others.

Figure 5-5: ABSOLUTE newsletter.

Further, ABSOLUTE newsletter is available at the project website: http://www.absolute-project.eu/news/press-releases. The second release of the newsletter is planned for Jan. 2015 which will summarize the two year progress of the project.

6 Conclusions

This deliverable presented the dissemination activities realized during the second year of the ABSOLUTE project. This document presents several dissemination actions and activities that have been performed in order to create maximum visibility for the ABSOLUTE project results. Thus the dissemination channels and the audience & actions involved in the ABSOLUTE dissemination activities have been explained in detail. Within the dissemination activities the consortium partners put notable effort for publishing patents, journals, books chapters, conference and workshop publications. Notice that the large number of high-quality paper and article publications demonstrates the tangible efforts of the consortium partners for disseminating the ABSOLUTE project results.

As described in this document, ABSOLUTE workshops have been successfully organized collocated with international conferences of high-impact on research and industry communities. Both ABSOLUTE workshops created a unique opportunity to bring together the relevant stakeholders within the public safety community, including researchers, academia, industries and policymakers to discuss about the future trends and communication challenges for interoperable and broadband public safety and emergency communications.

Important effort have been also put by the ABSOLUTE consortium organizing presentations and seminars for disseminating the main results achieved in ABSOLUTE project in terms of ABSOLUTE network and protocol architecture, cognitive mechanisms, D2D communications and so on. As part of dissemination activities for sharing knowledge and expertise several visits and specific interaction between students and researches involved and not involved in the consortium partners have been also performed.

ABSOLUTE project have also strong presence in the web using mainly the ABSOLUTE website and the YouTube and twitter account created in order to disseminate the main activities, events, results and relevant news of ABSOLUTE project. Complementary, a newsletter summarizing the main achievements and news of ABSOLUTE projects has been also created and distributives across the consortium partners and related projects.

References

[1]   URL of ABSOLUTE project: http://www.absolute-project.eu

[2]   ABSOLUTE Public project Presentation, Deliverable D1.3

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D8.1.3*D8.1.3*

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