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Description	

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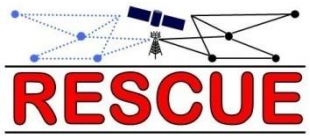

ICT- 619555 RESCUE

D5.6 Version 1.0

Final Dissemination, Standardization and Exploitation Report

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Abstract:
This document summarizes the information on the dissemination and exploitation activities that have taken place during the RESCUE project. Through the academic dissemination and exploitation activities, RESCUE has (co)-organised and participated at workshops, organised a summer school, published research results, engaged in teaching and training of students, participated in EC activities, and setup a project website, twitter account, LinkedIn group and YouTube channel. Among the dissemination and exploitation in standardisation and regulation, RESCUE has provided contributions to ITU-R and 3GPP meetings, and delivered the impact of RESCUE research to industry and economics.

Keyword list:

Academic, dissemination, exploitation, workshop, conference, journal.

Disclaimer:

Executive Summary

This document describes the activities for dissemination and exploitation of academic research that has been conducted in the RESCUE project. The project proposes the integrated "links-on-the-fly" concept, which encompasses the key technologies of distributed joint source/channel coding, to achieve successful and robust information transfer through multi-path networks, , such as public safety scenario or vehicle-to-vehicle (V2V) scenario, which are constructed from lossy point-to-point links.

The research results have been published in many world leading journals, conferences and workshops. The number of publications is 17 journal papers and 51 conference/workshop papers. This report details the RESCUE project publications as well as the dissemination locations. For instance, RESCUE has (co)-organised a workshop with DIWINE in conjunction with ICC 2015 another workshop in conjunction with the European Wireless conference in 2016, and organised summer school in 2015 in Oulu, Finland.

Moreover, RESCUE has engaged in teaching and training of students in the form of lectures, tutorials, and by conducting research work in M.Sc. and Ph.D. courses. In addition, RESCUE has participated in EC activities (e.g. EUCNC conference, RAS cluster meetings), set up a project website, Twitter account, LinkedIn group and YouTube channel. These activities were successfully conducted and providing great publicity to the project.

Among the dissemination and exploitation in standardisation and regulation, RESCUE has also provided its contributions to ITU-R and 3GPP meeting, and delivered the impact of RESCUE research to industry and economics.

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List of Acronyms and Abbreviations

Term	Description
3GPP	3rd Generation Partnership Project
5GIC	5G Innovation Centre
AFI	Autonomic Future Internet
AGH	AGH University of Science and Technology
CAMAD	International Workshop on Computer Aided Modeling and Design of Communication Links and Networks
DIWINE	Dense Cooperative Wireless Cloud Network
EC	European Commission
ETSI	European Telecommunications Standards Institute
EU	European Union
EuCAP	2016 10th European Conference on Antennas and Propagation
EuCNC	European Conference on Networks and Communications
EW	European Wireless
FP7	Framework Program 7
GSs	Group Specifications
ICC	International Communications Conference
ICCS	International Conference on Communication Systems
IEEE	Institute of Electrical and Electronics Engineers
IETF	Internet Engineering Task Force
ITU-R	International Telecommunications Union - Recommendations
ISITA	IEEE International Symposium on Information Theory and Its Application
JAIST	Japan Advanced Institute of Science and Technology
MAC	Media Access Control
M.Sc.	Master of Science
Ph.D.	Doctor of Philosophy
PHY	Physical Layer
PIMRC	
RESCUE	Links-on-the-fly Technology for Robust, Efficient and Smart communication in Unpredictable Environments
SPAWC	International Workshop on Signal Processing Advances in Wireless Communications
TC	Technical Committee
TS	Toy Scenario
TUD	Dresden University of Technology
UNIS	University of Surrey
UOULU	University of Oulu
V2V	Vehicle-to-Vehicle
VTC	Vehicular Technology Conference
WCNC	Wireless Communications and Networking Conference
WP	Work Package

1. Introduction

This document summarizes information on the dissemination and exploitation activities that have taken place in the RESCUE (Links-on-the-fly Technology for Robust, Efficient and Smart communication in Unpredictable Environments) project.

1.1. Motivation and Objective

Consider that data messages need to be transferred in unpredictable environments, for example in serious disasters such as earthquakes or tsunamis that cause destruction of the communication infrastructure. Current communications standards and systems are planned using accurate/strict link budget allocation mechanisms, which perform poorly or fail completely in such unpredictable environments. Besides, future networks will most likely be heterogeneous and dense networks. In order to overcome these limitations, the integrated concept of "links-on-the-fly" is proposed in RESCUE project to allow successful and robust information transfer through multi-path networks, such as public safety scenario or vehicle-to-vehicle (V2V) scenario, which are constructed from lossy point-to-point links.

1.2. Objective of the Document

Dissemination and exploitation of project results are a manifold including coordinating the interactions with external parties, and ensuring an adequate exploitation plan of the results and findings as well as continuous follow up of the plan. This document aims to provide dissemination, standardization and exploitation information for ideas, solutions and activities carried out in the RESCUE project. Given the project objectives, the results from different activities can be disseminated and exploited via the following vectors:

- Journal and conference publications, organization and participation in conferences and/or workshops
- Interactions with partners from other European Union (EU) or non-EU project,
- Training and teaching activities,
- Participation in EC organised events such as EUCNC and RAS cluster and concertation meetings,
- Presentations and demonstrations in seminars and upon invitations,
- Contact with standardization bodies (i.e. ITU-R and 3GPP) and interactions with industry players [ITU1].

1.3. Structure of the Document

The rest of the document is organised as follows. Section 2 provides the detailed dissemination activities of RESCUE project, which include RESCUE project website, social network profiles management, conference, event and publications in specialized media, RESCUE demonstrations and workshops; Section 3 gives RESCUE project standardization activities; Section 4 lists the exploitation activities; Section 5 draws the conclusion. In addition, this document has annexes, where all publications, talks and seminars are reported.

2. RESCUE Dissemination Activities

The dissemination activities of the RESUCE project incorporate the dissemination of the project findings and outcomes through its public website, as well as social media network profiles management. Additionally, the dissemination activities have also included organization of and participation in conferences and workshops, as well as the dissemination of the scientific results through journal, conference, and workshop papers. Furthermore, training of M.Sc. and Ph.D. students is also a key dissemination vector for RESCUE results.

2.1. RESCUE Internet Dissemination Activities

2.1.1. RESCUE Project Website

The RESCUE project website, **http://www.ict-rescue.eu/**, was established in 2013 and used throughout the project. On this website, one can find general information about the RESCUE project by clicking “RESCUE Project”, which includes the information about advisory board, fact sheet, RESCUE objectives, and the structure and introduction of six work packages. Further, in “Partners” one can find the introduction about each partner. In “RESCUE Deliverables”, the public RESCUE deliverables are given. In “News and Events”, one can view all the meetings, seminars, and workshops that were hosted and attended by RESCUE partners. The “Publications” presents the RESCUE publications in journals, conferences and workshops. From the “Contact us” one can send message to RESCUE partners regarding questions about the project. Last but not least, “wiki” for RESCUE project was also established. It is worth noting here that the project website has witnessed a couple of cyber-attacks that forced the management team to take serious counter measures, sometimes at the price of impacting the website content.

2.1.2. Social Network Profiles Management

Apart from the RESCUE project website, the other activities relate to both the internal work and towards communication outside the project. In detail, RESCUE built up its Twitter account, LinkedIn group where upcoming events, talks and RESCUE project status are announced:

- https://twitter.com/ICT_RESCUE,
- https://www.linkedin.com/groups/7429219.

RESCUE has also contributed actively to the creation of the YouTube channel (https://youtu.be/Wv_nl-wUIuY) to show the demonstration videos of the project. Moreover, the RESCUE project has also distributed its “links-on-the-fly” concept in Wikipedia.

2.2. RESCUE Dissemination and Training Activities

RESCUE has produced large numbers of publications since the project started. The table below gives a summary of the number of different type of publications which have been achieved when this report was written.

Table 2.1: RESCUE publications.

Type of publication	Number
Workshop and conference papers	51
Journal papers	17

As shown in the table, the biggest part of the publications is by conference contributions. These have been presented on totally 22 conferences and/or workshops. In addition, the 17 journal papers provide the significant achievement of the RESCUE project from both theoretical and practical simulation point of view. Among these remarkable contributions, all the partners have been involved in dissemination activities, for example, the conferences/workshops presentations, and explaining the proposed idea to industry and academia people. It is worthwhile to note that a large amount of the papers were written by collaborating among different partners in the RESCUE project. Moreover, some papers were created in collaboration of industry and academic partners outside the RESCUE project. A full list of publications is given in Annex A in this document and also can be found on the project website at http://www.ict-rescue.eu/publications.

Apart from publications, RESCUE partners have contributed significant efforts to training of M.Sc. and Ph.D. students in the form of lectures, tutorials and organizing summer schools. For instance, Dr. Szymon Szott from AGH gave an open lecture with the title: “Design of message transfer protocols enabling the use of the lossy forwarding paradigm”, and Prof. Tad Matsumoto from UOULU/JAIST gave tutorials to introduce the RESCUE project and “links-on-the-fly” concept. In order to help students deeply understand the link between RESCUE project and information theory, UOULU partners also organized an information theory summer school in Oulu 2015. In the course of the RESCUE project, a large number of students have received such kind of technical training and tutorials. A summary of trained students is presented in Annex B.

Furthermore, RESCUE partners have participated in many events and presented project results through invited talks and panel discussions at various conferences. A list of talks, presentations and contributions to panel discussions is summarised in Annex C.

2.3. RESCUE Demonstrations and Workshops

RESCUE partners have arranged a number of events throughout the project, and some of the activities have been organised jointly with other project and/or academic institution partners. In the following contents, these events are briefly introduced.

In the first year of the project, RESCUE co-organized a joint RESCUE-IC1004 special session with AGH University of Science and Technology in **11th MC Meeting of COST IC1004, 24-26 Sept. 2014, Krakow, Poland**. In this meeting,

Dr. Hicham Khalife as the RESCUE project coordinator gave a general introduction about RESCUE which includes the project goals, objectives, and current status. Then, RESCUE partners Prof. Tad Matsumoto and Dr. Christian Schneider respectively gave tutorials on "Backbone Theories and Experiments of RESCUE" and "OTA and Field Measurement based Performance Verification Techniques". These tutorials helped public audiences more easily understand the RESCUE concept.

RESCUE, DIWINE (Dense Cooperative Wireless Cloud Network) and 5GIC (5G Innovation Centre) of University of Surrey hosted a joint international workshop on **Advanced PHY and MAC Techniques for Super Dense Wireless Networks in conjunction with IEEE ICC 2015, 8-12 June 2015,London UK**. This workshop is chaired by Dr. Yi Ma, and it aims to gather researchers, regulators, and users to present and debate advanced PHY and MAC techniques for super dense wireless networks and applications, with the perspective of current cellular, Machine to Machine (M2M), and Vehicle to Vehicle (V2V) standardisation activities in 3GPP, ETSI, IEEE and IETF. The workshop was well organized and attended. Further, some global partners have shown their interest in cooperation in the future conferences and workshops. Details have been released in D5.3.

Following the successful workshop at IEEE ICC 2015, RESCUE, DIWINE and 5GIC jointly organised a **special session in IEEE CAMAD 2015, 7-9 Sept**. 2015, Guildford UK to promote a general discussion on the common open issues and future challenges on Advanced PHY and MAC Techniques for Super Dense Wireless Networks plus the dissemination of the RESCUE innovative idea. This special session is chaired by Dr. Na Yi and was well attended. The attendances showed very strong interests to the topics of this special session and the achieved results from RESCUE, DIWINE and 5GIC.

During the second half of project duration, RESCUE team arranged 2nd workshop on **Advanced PHY and MAC layer design for 5G Mobile Networks and Internet of Things in conjunction with European Wireless (EW) conference, 18-20 May 2016, Oulu Finland**. In this workshop, a demo booth for RESCUE project has been built up, where the video of TS1 demo has been displayed with good performance figures. In addition, an automatic slide-set about the essentials of RESCUE project and individual highlights from each Work Package (WP) posters have also be presented in the workshop. Details of this workshop are also available in D5.5, which will be delivered in M36.

Apart from the workshop in EW 2016, RESCUE partners have also built up an exhibition **demo booth at European Conference on Networks and Communications (EuCNC) 2016, 27-30 Jun. 2016**, Athens Greece to exploit lossy links in 5G communications. In detail, the demo aims to highlight how the "links-on-the-fly" concept enables information transfer over lossy links in a set of scenarios and configurations where the communications with state-of-the-art solutions is deemed impossible. The target is to convince 5G stakeholders and influence future wireless communications standards. Pictures of the RESCUE EUCNC booth can be found below.

Figure 1 RESCUE demonstration booth at EUCNC 2016

More interestingly, main RESCUE results were disseminated in the **EU-Asia security-and-networks symposium organised on 9-12 March 2016 in Japan**. During this event discussions towards the future direction of lossy forwarding concept took place with a participation of researchers from **Thailand, Indonesia, Singapore and China.**

JAIST hosted this event with the objective of promoting collaboration between Europe and Asia on ICT topics.

Figure 2 Presentations from RESCUE and JAIST in the EU-Asia Workshop

2.4. RESCUE Other Activities

During these 3 years, RESCUE has been involved actively in European Community (EC) activities in order to promote lossy forwarding concept. Such activities included both internal European interactions and interactions between European partners and global researchers. Regarding the first set of interactions, RESCUE participated and gave presentations in multiple RAS cluster meetings to introduce the "links-on-the-fly" concept and its influence in 5G communications. Furthermore, a joint session with the DIWINE project has taken place during the RESCUE plenary meeting at TUD Dresden on 13-14 Jan. 2015, where the session discussed the potential collaborations between the 2 ongoing FP7 projects. RESCUE has also collaborated with the TEAM V2V project as we will detail later in this report.

3. RESCUE Standardization Activities

Since RESCUE project is built around a disruptive brand new idea, it has a low maturity level. As largely accepted the way from idea to standard is often too long and logically exceeding the 3 years duration of the project. However, during these 3 years, the consortium pushed hard the RESCUE ideas in different bodies. The standardization activities aim to make the RESCUE concept well known within the communication society by introducing it to the relevant European and/or international standardisation bodies, since producing standards at this level is highly unlikely. In this context, RESCUE partners (TUD and AGH in particular) have directly contributed to standards and indirectly planned cooperation activities with respect to two aspects: vehicular communication and network automaticity.

3.1. ETSI ITS Standardization Activities

The RESCUE partners from TUD regularly participate in ETSI standardization on Cooperative Intelligent Transportation Systems and Vehicular Communication for which a dedicated Technical Committee (TC), i.e. ETSI TC ITS exists. The scope of the TC is on any type of transport, i.e., road, air, rail, etc. Meanwhile, the vehicular communication is one of the two major use cases for RESCUE project. Therefore, the standardization in ETSI TC ITS is regarded as relevant, and the research work in the RESCUE project can impact considerably the standardization work. Specifically, the work in [KUH15] is strongly aligned to the ETSI TC ITS standards and serves as a reference case for comparing the RESCUE approach against the state-of-the-art. This document has been contributed to ETSI TC ITS WG3 "Networking and Transport" for discussion.

More recently, RESCUE project also established a collaboration with TEAM project (http://www.collaborative-team.eu/overview/), which aims on turning static into elastic mobility by joining drivers, travellers and infrastructure operators together into one collaborative network. A joint participation from both RESCUE and TEAM in a session at the **ITS world congress has been made from 10th to 14th October in Melbourne Australia**, to deliver a better version and impact.

3.2. ETSINTECH Standardization Activities

AGH as an ETSI member also has disseminated RESCUE results by providing contributions to the Evolution of Management towards Autonomic Future Internet

(AFI) Working Group of the ETSI Network Technologies (NTECH) Technical Committee. These contributions mainly focus on outcomes from WP3, where the designed MAC and routing layer protocols adopt autonomic principles and exhibit self-managing behavior. The study of such functionality is the focus of AFI, which has published two ETSI Group Specifications (GSs). The first is related to scenarios/use cases where network automaticity can be applied [MER11], while the second presents a generic architectural reference model for autonomic networking, cognitive networking and self-management [CIA13]. In addition, AGH regularly participates in meetings of the NTECH AFI group. During the NTECH#06 meeting, which took place in Rome, Italy between March 25th and 27th 2014, Szymon Szott (AGH) delivered a presentation on the RESCUE project describing how it could contribute to the standardization process, and during the NTECH#09 meeting, which took place in Issy Les Moulineaux, France between December 16th and 18th 2014, Szymon Szott (AGH) delivered another presentation about the RESCUE message transfer design ("Autonomic Aspects in Lossy-Link Ad Hoc Network Design"). Both presentations were met with positive outcomes.

4. RESCUE Exploitation Activities

The global consensus building is one of key objectives of the project exploitation activities. For this purpose, 51 conference papers and 17 journal papers within RESCUE project have been presented at and accepted in a number of world leading conferences and journals. By these strong publications of scientific results, the RESCUE concept and solutions could be introduced appropriately in the research communities. Moreover, apart from the publications, the RESCUE concept and solutions have also been disseminated through focused events like workshops collaborated with other projects and/or institutes in conjunction with IEEE flagship conferences. In addition, besides building up the RESCUE web page, Twitter account, LinkedIn group as well as YouTube channel helped to address the research community and industry appropriately. Further, RESCUE partners led to the development of training and tutorial activities, which helped a lot of M.Sc. and Ph.D. students to establish strong network liaisons and get views in the research activity.

The exploitation of RESCUE outcome in industrial partners' products is also envisaged at the longer terms in particular for **Thales Communications & Security**. The fact that a proof of concept was made available on GNU Radio, many internal presentations and demonstrations were organised. The important gains achieved in these simple configurations have convinced internal decision makers at TCS. Consequently, lossy forwarding will be considered as a potential candidate for future products targeting infrastructure less communications in public safety.

Apart from the above mentioned activities, RESCUE advisory board has also been built up, which includes Tim Leinmueller from Denso Automotive (automotive industrial); Bill Kassouras: Research Associate from Centre for Security Studies Hellenic Ministry of Public Order & Citizen's Protection (public safety); Christian Oberli: Associate Professor from Pontifica Universidad Catolica – Chile (wireless communication); Takeyasu Suzuki: Professor from University of Yamanashi Japan (Wireless communication and catastrophe management expert).

5. Conclusion

Deliverable D5.6, entitled “Final dissemination, standardization and exploitation report” aims to highlight the dissemination, standardization and exploitation and transfer activities conducted during the entire project. Throughout the entire project, the RESCUE partners presented the scientific findings in 51 conference/workshop papers and 17 journal papers. Additionally, the project concept and solutions have been presented in RESCUE organized workshops and exhibition demo in IEEE flagship conferences. RESCUE has actively interacted with other research community both within European Union (i.e., other EU-funded project and research institute) and externally (i.e., interactions with Japan and other Asian countries). Furthermore, RESCUE has also organized summer school, given lectures and tutorials for training M.Sc. and Ph.D. students. It should also be noted that, by setting up the social network profiles (i.e., Twitter account, LinkedIn group, YouTube channel), RESCUE has had a great impact to the public.

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Annex A

In Annex A all publications are listed which have been produced within the project work by or in collaboration with RESCUE partners.

A.1 Conference and Workshop Papers

Title	Author(s)	Event	Date
Opportunistic Relay Selection for Lossy-forwarding	W. Jiang, X. He, S. Qian, and T. Matsumoto	IEEE ICCS	Dec. 2016
Performance Analysis for Multi-Source Multi-Relay Transmission over κ-μ Fading Channel	S. Qian, J. He, M. Juntti, and T. Matsumoto	Asilomar Conference on Signals, Systems, and Computers	Nov. 2016
Efficient Power Allocation for Multiple Relays with Lossy Intra-Links and Distributed Source Coding	D. C. Gonzalez, A. Wolf, J. C. Filho and G. Fettweis	SbrT'16	Sept. 2016
Performance Analysis for Transmission of Correlated Sources over Non-Orthogonal MARCs	J. He, I. Hussain, V. Tervo, M. Juntti, T. Matsumoto	IEEE ISTC	Sept. 2016
CLF-MAC: a coordinated MAC protocol supporting lossy forwarding in WLANs	K. Kosek-Szott, M. Natkaniec, Ł. Prasnal,S. Szott	ISWCS 2016	Sept. 2016
Line-of-Sight Component Impact Analyses for Lossy Forward Relaying over Fading Channels Having Different Statistical Properties	S. Qian, J. He, X. He, W. Jiang, M. Juntti, and T. Matsumoto	IEEE Vehicular Technology Society Asia Pacific Wireless Communications Symposium (APWCS)	Aug. 2016
The lossy forwarding strategy in wireless networks in the RESCUE project (in Polish)	M. Natkaniec, J. Gozdecki, K. Kosek-Szott, Ł. Prasnal, M. Sikora, S. Sośnik, S. Szott, Ł. Trzeciakowski, J. Wszołek	KKRRiT 2016	Jun. 2016

Impact of Decentralized Congestion Control on Contention-based Forwarding in VANETs	S. Kühlmorgen, A. Festag, G. Fettweis	SmartVehicles 2016 (IEEE WoWMoM)	June 2016
Exploiting Distributed Source Coding for Multi-hop Routing in Wireless Ad Hoc Networks	S. Kühlmorgen, A. Festag, G. Fettweis	IEEE VTC	May 2016
A Rate-Distortion Region Analysis for a BinaryCEO Problem	X. He, X. Zhou, M. Juntti, and T. Matsumoto	IEEE VTC	May 2016
End-to-End Outage Probability Analysis for Multi-Source Multi-Relay Systems	J. He, I. Hussain, M. Juntti, T. Matsumoto	IEEE ICC	May 2016
Transmission of Correlated Sources over Non-Orthogonal Gaussian MACs	J. He, I. Hussain, M. Juntti, T. Matsumoto	IEEE ICC	May 2016
An error rate model of relay communications with lossy forwarding and joint decoding	V. Tervo, X. He, X. Zhou, P. Komulainen, S. Kühlmorgen, A. Wolf, A. Festag	IEEE ICC	May 2016
Relay-oriented source power allocation for MIMO selective decode-and-forward relaying	J. Hou, N. Yi, Y. Ma	IEEE ICC	May 2016
Distributed Rateless Codes for Correlated Multi-Source Relay Networks	I. Hussain, M. Juntti, and T. Matsumoto	IEEE ICC	May 2016
Improved Frameless ALOHA for Wireless Networks	I. Hussain, M. Juntt, T. Matsumoto	EW	May 2016
A Comparative Study of Different Relaying Strategies over One-Way Relay Networks	S. Qian, V. Tervo, J. He, M. Juntti and T. Matsumoto	EW	May 2016

Power Allocation for Orthogonal Multiple Access Relay Channel Allowing Intra-link Errors	V. Tervo, X. Zhou, P-S Lu, M. Juntti, and T. Matsumoto	EW	May 2016
On the Performance of Dynamic Multi-Source Multi-Antenna Multi-Relay Wireless Networks	J. He, I. Hussain, S. Qian, M. Juntti, T. Matsumoto	EW	May 2016
Evaluating New Concepts in Wireless Communications: From Theory to Practice	C. Schneider, H. Khalife, S. Szott, V. Tervo, X. He, M. Natkaniec, S. Sosnik, L. Trzeciakowski, M. Lorenz, M. Kaeske, J. Wszolek	EW	May 2016
Joint Optimization of Power Allocation and RelayPosition for Lossy-Forwarding Relaying Systems	S. Qian, M. Juntti, and T. Matsumoto	IEEE WCNC	Apr. 2016
Directional analysis of multipath propagation in vehicle-2-vehicle channels	C. Schneider, G. Sommerkorn, R. S Thom, A. Roivainen, J. Meinilä, V. Tervo	EuCAP	Apr. 2016
A cooperative MAC protocol for lossy forwarding networks	M. Brulatout, H. Khalife, V. Conan, S. Szott, M. Natkaniec, K. Kosek-Szott, Ł. Prasnal	Wireless Days 2016	Mar. 2016
Finite-SNR Diversity-Multiplexing Tradeoff for Decode-and-Forward Relaying System AllowingIntra-link Errors	W. Jiang, X. He, S. Qian, M. Juntti, and T. Matsumoto	International Conference on Information, Communications and Signal Processing	Dec. 2015
Symbol-level selective decode-forward relaying for uncoordinated dense	N. Yi, Y. Ma, J. Hou, R. Tafazolli	IEEE CAMAD	Sept. 2015

wireless networks			
Error propagation mitigation by exploiting source-relay correlation with limited channel feed-forward bits	J. Hou, C. Qian, N. Yi, Y. Ma	IEEE CAMAD	Sept. 2015
Outage Based Power Allocation for a Lossy Forwarding Two-Relaying System	A. Wolf, M. Matthé, A. Festag and G. Fettweis	IEEE CAMAD	Sept. 2015
Short Paper: Reduced Complexity Calculation of LMMSE Filter Coefficients for GFDM	M. Matthe, I. Gaspar, D. Zhang, G. Fettweis	IEEE VTC	Sept. 2015
Lossy Forwarding Technique for Parallel Multihop Multirelay Systems	A. Irawan, K. Anwar, and T. Matsumoto	IEEE VTC	Sept. 2015
A Comparative Study on Outage Probabilities of Decode-and-Forward and Lossy-Forward Relay Techniques	S. Qian, M. Juntti, and T. Matsumoto	IEEE CAMAD	Sept. 2015
Impact of Angular Spread and Number of Multipath Clusters on MIMO Channels	C. Schneider, N. Iqbal, R. S. Thomä	IEEE PIMRC	Aug. 2015
A Low Complexity Deterministic Algorithm for the Antenna/User Selection in Multi-Antenna Systems	N. Iqbal, C. Schneider and R. S. Thomä	IEEE PIMRC	Aug. 2015
A Fast And Optimal Deterministic Algorithm For NP-Hard Antenna Selection Problem	C. Schneider, N. Iqbal, R. S. Thomä	IEEE PIMRC	Aug. 2015
Improved Source Correlation Estimation in Wireless Sensor Networks	A. Wolf, M. Matthé and G. Fettweis	IEEE ICC	June 2015

Asynchronous Multi-User Uplink Transmission with Generalized Frequency Division Multiplexing	M. Matthe, L. Mendes, G. Fettweis	IEEE ICC	June 2015
CEO Problem based Analysis of D2D Cooperative User Pairing	X. He, M. Juntti, X. Zhou, P. Komulainen, and T. Matsumoto	IEEE SPAWC	Jun. 2015
Data and Error Rate Bounds for Binary Data Gathering Wireless Sensor Networks	X. He, X. Zhou, M. Juntti, and T. Matsumoto	IEEE SPAWC	Jun. 2015
Outage Probability of Correlated Binary Source Transmission over Fading Multiple Access Channels	X. Zhou, X. He, M. Juntti, and T. Matsumoto	IEEE SPAWC	Jun. 2015
Outage based Power Allocation for a Lossy-Forwarding Relaying System	S. Qian, M. Cheng, and T. Matsumoto	IEEE ICC	Jun. 2015
Performance Evaluation of ETSI GeoNetworking for Vehicular Ad hoc Networks	S. Kühlmorgen, I. Llatser, A. Festag, G. Fettweis	IEEE VTC	May 2015
Maximum-Likelihood based estimation of angular parameters of Dense-Multipath-Components	M. Käske, R. Thomä	EuCap	Apr. 2015
Required Number of Propagation Scenarios for Acceptable Reproduction of Spectral Efficiency Distribution in (Heterogeneous) Network Simulations	M. Narandzic, C. Schneider, W. Kotterman, and R. S. Thomä	EuCap	Apr. 2015
Joint Turbo Equalization and BICM-ID-based IDMA over	K. Wu, K. Anwar and T. Matsumoto	IEEE ISITA	Oct. 2014

Frequency Selective Fading Channel			
Full 3D MIMO Channel Sounding and Characterization in an Urban Macro Cell	G. Sommerkorn, M. Käske, C. Schneider, S. Häfner, R. Thomä	URSI GASS	Aug. 2014
RESCUE: Links-on-the-fly Technology for Robust, Efficient and Smart Communication in Unpredictable Environments	K. Anwar, V. Conan, M. Grieger, S. Gurgul, M. Juntti, H. Khalif;, Y. Ma, T. Matsumoto, G. Millar, M. Natkaniec, C. Schneider, R. Tafazolli, P. Xiao, N. Yi	EuCNC	Jun. 2014
Space-Time Coding for Generalized Frequency Division Multiplexing	M. Matthe, L. Mendes, G. Fettweis	EW	May 2014
Outage Analysis of Decode-and-Forward Relaying System Allowing Intra-link Errors	X. Zhou, M. Cheng, X. He, K. Anwar, and T. Matsumoto	EW	May 2014
BICM-ID-based IDMA over Multipath Fading Channels	W. Kun, K. Anwar and T. Matsumoto	IEICE General Conference	Mar. 2014
Iterative Spatial Demapping with Side Information for Three-way Relaying Systems	K. Anwar and T. Matsumoto	IEICE General Conference	Mar. 2014
Outage Based Power Allocation: Slepian-Wolf Relaying Viewpoint	M. Cheng, K. Anwar and T. Matsumoto	IEEE Globecom	Dec. 2013
Outage Probability Analysis for Correlated Sources Transmission over Rician Fading Channels	S. Qian, M. Cheng, K. Anwar and T. Matsumoto	IEEE PIMRC	Sept. 2013

A.2 Journal papers

Title	Author(s)	Event	Date

A Lower Bound Analysis of Hamming Distortion for a Binary CEO Problem with Joint Source-Channel Coding	X. He, X. Zhou, P. Komulainen, M. Juntti, and T. Matsumoto	IEEE Trans. Communications	2016
Lossy Forwarding HARQ for Parallel Relay Networks	A. Irawan, K. Anwar, and T. Matsumoto	Wireless Personal Communications	2016
Power Allocation in an Asymmetric Wireless Sensor Network	W. Jiang, X. He, and T. Matsumoto	IEEE Communications Letters	2016
PAPR Constrained Power Allocation for Multicarrier Transmission in Multiuser SIMO Communications	V. Tervo, A. Tölli, J. Karjalainen, and T. Matsumoto	IEEE Trans. Wireless Communications	2016
Asymptotically Optimal Power Allocation for WSNs with Mutually Correlated Sensing Data	A. Wolf, D. C. Gonzalez, J. C. Filho and G. Fettweis	IEEE Communications Letters	2016
Asymptotically Optimal Power Allocation for Multirelay Systems with Lossy Intra-Links	D. C. Gonzalez, A. Wolf, J. C. Filho and G. Fettweis	IEEE Trans. on Communications (currently in major revision)	2016
Precoded GFDM transceiver with low complexity time domain processing	M. Matthe, L. Mendes, I. Gaspar, N. Michailow, D. Zhang, G. Fettweis	Eurasip JWCN	2016
Joint Space-Frequency User Scheduling for MIMO Random Beamforming With Limited Feedback	J. Hou, N. Yi, and Y. Ma	IEEE Trans. Communications	2015
Outage Probabilities of Orthogonal Multiple-Access Relaying Techniques with Imperfect Source-	P-S. Lu, X. Zhou, and T. Matsumoto	IEEE Trans. Wireless Communications	2015

Relay Links			
Widely Linear Estimation for Space-Time-Coded GFDM in Low-Latency Applications	M. Matthe, L. Mendes, N. Michailow, D. Zhang, G.Fettweis	IEEE Trans. Communications	2015
Multi-User Time-Reversal STC-GFDMA for Future Wireless Networks	M. Matthe, L. Mendes, I. Gaspar, N. Michailow, D. Zhang, G. Fettweis	Eurasip JWCN	2015
Correlated Sources Transmission in Orthogonal Multiple Access Relay Channel: Theoretical Analysis and Performance Evaluation	X. Zhou, P.-S. Lu, K. Anwar and T. Matsumoto	IEEE Trans. Wireless Communications	2014
BICM-ID-Based IDMA using Extended Mapping	K. Wu, K. Anwar and T. Matsumoto	IEICE Trans. on Communications	2014
Exact and Approximated Outage Probability Analyses for Decode-and-Forward Relaying System Allowing Intra-link Errors	X. Zhou, C. Meng, X. He, and T. Matsumoto	IEEE Trans. Wireless Communications	2014
Joint Adaptive Network-Channel Coding for Energy-Efficient Multiple Access Relaying	P.-S. Lu, X. Zhou, K. Anwar and T. Matsumoto	IEEE Trans. on Vehicular Technology	2014
Reduced-Complexity Coordinated Beamforming for Multicell Downlink Max-Min SINR Problem	J. Hou, Y. Ma, N. Yi, and R. Tafazolli	IEEE Wireless Communications Letters	2014
Generalized Frequency Division Multiplexing in a Gabor Transform Setting	M. Matthe, L. Mendes, G. Fettweis	IEEE Communications Letters	2014

Annex B

In Annex B, the main activities concerning the training and teaching activities in RESCUE are given. This includes the list of students, lectures and the tutorials prepared within the project.

B.1 Training of students

Host partner	Student level	Student affiliation	RESCUE WP	Topic
JAIST	PH.D.(Shen Qian)	JAIST	WP1	Lossy forwarding with line-of-sight component
JAIST	PH.D.(Xin He)	JAIST	WP1	CEO problem
JAIST	M.S. (Jiang Weiwei)	JAIST	WP1	DMT problem
JAIST	PH.D. (Ade Irawan)	JAIST	WP1	Partial ARQ with lossy forwarding
UOulu	PH.D. (Jiguang He)	UOULU	WP1	Lossy forwarding with multiple source multiple relay network
UOulu	PH.D. (Ayswarya Padmanabhan)	UOULU	WP2	Power allocation
UOulu	M.Sc. (Anton Paatelma)	UOULU	WP2	Applying joint decoding to 802.11 WiFi
UOulu	B.Sc. (Jifang Xing)	BeihangUniversity,Beijing, China	WP2	Impact of header and payload length on error probability and energy consumption
AGH	PH.D.(ŁukaszPrasnal)	AGH	WP3	Design of message transfer protocols enabling the use of the lossy forwarding paradigm.
UOulu	Ph.D. (Antti Roivainen)	UOULU	WP4	Directional analysis of multipath propagation in V2V channels
UOulu	Ph.D (Markku Jokinen)	UOULU	WP4	Testing and measurement tasks on RESCUE implementation

B.2 Lectures and Tutorials

Presenter	Subject	Event	Date	RESCUE WP
Szymon Szott	Design of message transfer protocols enabling the use of the lossy forwarding paradigm.	Open lecture	2016	WP3
Tad Matsumoto	More In-depth Considerations on Links-on-the-fly technologies	Open lecture and tutorial	2015	WP1-2
Tad Matsumoto	Links-on-the-fly technologies: from the correlated source coding theorem viewpoint	Open lecture and tutorial	2015	WP1-2

Annex C

In Annex C, all talks and presentations are listed which have been produced within the project work by or collaboration with RESUCE partners.

C.1 Talks and presentations

Date	Event	Title	Presenter	Institute
2016	University of Kyoto	Links-on-the-fly technologies: from the correlated source coding theorem viewpoint Part III	Tad Matsumoto	JAIST/ UOULU
2016	Technical University Munich	Links-on-the-fly technologies: from the correlated source coding theorem viewpoint Part IV	Tad Matsumoto	JAIST/ UOULU
2016	Ilmenau University of Technology	Outage Probability Analyses of HARQ on Correlated Packets with Network Coded HelperTransmission: from the correlated source coding theorem viewpoint	Tad Matsumoto	JAIST/ UOULU
2016	EU-Asia Security-and-Networks Workshop	New Paradigm of Wireless Communications in Ubiquitous Environments	Tad Matsumoto	JAIST/ UOULU
2016	EU-Asia Security-and-Networks Workshop	Low SNR communications: challenges and opportunities	Valtteri Tervo	UOULU
2016	EU-Asia Security-and-Networks Symposium	Exploiting Distributed Source Coding for Multi-hop Routing in Wireless Ad Hoc Networks	Sebastian Kühlmorgen	TUD
2016	EU-Asia Security and networks symposium	Future dense wireless networks: from RESCUE point of view	Na Yi and Yi Ma	UNIS
2016	EU-Asia Security and networks symposium	RESCUE project introduction & perspectives	Hicham Khalife	TCS
2015	JAIST	Successive Convex Approximation and Its	Valtteri Tervo	UOULU

		Applications to Power Allocation Problems		
2015	University of Technology, Malaysia	Links-on-the-fly technologies: from the correlated source coding theorem viewpoint Part II	Tad Matsumoto	JAIST/ UOULU
2015	JAIST	EU FP7 RESCUE Project: General Introduction, achievements during the first year, and my impression of working as a work package leader of an EU project	Valtteri Tervo	UOULU
2015	Summer School on Distributed Compression with Applications	Exploiting Distributed Source Coding for Multi-hop Routing in Wireless Ad Hoc Networks	Sebastian Kühlmorgen	TUD
2014	EuCNC	RESCUE: Links-on-the-fly Technology for Robust, Efficient and Smart Communication in Unpredictable Environments	Khoirul Anwar	JAIST
2014	M2M Workshop on International Workshop on Weightless Communication	Links-on-the-fly Technology for Robust, Efficient and Smart Communication in Unpredictable Environments (RESCUE)	Tad Matsumoto	JAIST/ UOULU
2014	BMW Summer School 2014 - Autonomous Driving in the Internet of Cars	Improving Vehicular Communication by “Links-on-the-Fly” Technology	Sebastian Kühlmorgen	TUD
2014	COST IC	RESCUE project presentation	Hicham Khalife	TCS
2014	COST IC	FP7 Project Overview: Links-on-the-fly Technology for Robust, Efficient and SmartCommunication in Unpredictable Environments (RESCUE)	Tad Matsumoto	JAIST/ UOULU