

# R5-COP

Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating  
Systems

## Dissemination reports and plans

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|                       |                    |                            |            |
|-----------------------|--------------------|----------------------------|------------|
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## 1 Introduction

### 1.1. Summary (abstract)

This deliverable describes the dissemination activities in R5-Cop project in the second project year (M13-M24). Partners were encouraged to actively disseminate the project results. These activities include:

- production and dissemination of advertising and promotional materials of the project,
- presentation of results at conferences, workshops and other events,
- organisation of thematic workshops and other R5-COP events,
- preparation of papers and scientific publications for conference proceedings and journals,
- development of relations with other European research projects.

### 1.2. Purpose of document

The purpose of this document is to report all dissemination activities carried out within R5-Cop in the second year of the project as well as, when available, to give an overview on planned activities in the third year. This is an extension of what D93.81 reported for the first year of the project

### 1.3. Partners involved

| <b>Partners and Contribution</b> |   |
|----------------------------------|---|
| <b>Short Name</b>                | <b>Contribution</b>   |
| <b>PIAP</b>                      | Deliverable responsibility, integration of inputs from partners |
| <b>SMR</b>                       | Provided input  |
| <b>CAMEA</b>                     | Provided input  |
| <b>HUT</b>                       | Provided input  |
| <b>BME</b>                       | Provided input  |
| <b>ALT</b>                       | Provided input  |
| <b>FAU</b>                       | Provided input  |
| <b>TUBS</b>                      | Provided input  |
| <b>VTT</b>                       | Provided input  |
| <b>SINTEF</b>                    | Provided input  |
| <b>DTI</b>                       | Provided input  |

## 2 Project meetings

The following project meetings took place in 2015:

- 3<sup>rd</sup> General Assembly Meeting – Warsaw, Poland, PIAP, June 17/18 2015.
- 4<sup>th</sup> General Assembly Meeting – Bilbao, Spain, Tecnalia, Dec 02/03 2015.

### 3 Information on dissemination activities in 2<sup>nd</sup> project year

| Partner | Title / Scope   | Event / medium  |                             |   |   | Short description  |
|---------|---|---|-----------------------------|---|---|--|
|         |   | Name  | Type                        | Date  | Website / link  |  |
| HUT     | Reconfigurable Equilets Operating System - A Hybrid Architecture to Combine Flexibility and Performance for Manufacturing | International Journal On Advances in Software, issn: 1942-2628, vol. 8 no 3&4 | International journal paper | 2015  | <a href="http://www.ariajournals.org/software/soft_v8_n34_2015_paged.pdf">http://www.ariajournals.org/software/soft_v8_n34_2015_paged.pdf</a>   | The paper shows a reconfigurable platform that is used by HUT for WP41 and has a section about combining ROS with JADE through a number of interfaces. The results will be used for WP41 Industrial Assembly demonstrator and was described in D41.20. |
| ALT     | ROS training  |   | training                    | 9 April 2015, 11-13 May 2015, 19 & 26 June 2015, 6-7 July 2015, 2-4 November 2015 | <a href="http://mikrocentrum.nl/evementen/themabijeekomsten/ros-industrial-toekomst-van-flexibele-robotica/">http://mikrocentrum.nl/evementen/themabijeekomsten/ros-industrial-toekomst-van-flexibele-robotica/</a><br><a href="http://www.alten.nl/en/alten-mechatronics/whatwedo/training/">http://www.alten.nl/en/alten-mechatronics/whatwedo/training/</a><br><a href="http://mikrocentrum.nl/opleidingen/mechatronica-robotica-elektro-en-industriële-automatisering/cursus-ros-industrial/">http://mikrocentrum.nl/opleidingen/mechatronica-robotica-elektro-en-industriële-automatisering/cursus-ros-industrial/</a> | Introduction to ROS. Participants learn the basics of ROS and motion planning. A practical programming case is part of the training.   |
| ALT     | ROS demonstration   | Demo Slofare  | Demo                        | 17 March 2015   | <a href="http://www.slofware.nl/">http://www.slofware.nl/</a><br><a href="http://www.derobv.nl/">http://www.derobv.nl/</a>  | Showed how ROS-I motion planning can be used to control an industrial Fanuc robot arm for large scale 3D printing.   |
| ALT     | Application of the Robot Operating System in Industry   | High Tech systems   | Fair-presentation           | 25 March 2015   | <a href="http://www.hightechsystems.nl/en/programme/programme-2015/software-engineering/simon-jansen">http://www.hightechsystems.nl/en/programme/programme-2015/software-engineering/simon-jansen</a><br><a href="http://www.hightechsystems.nl/_Resources/Persistent/975dabc44be4b235e1d5996e3c0a40847d8ff989/Simon%20Jansen.pdf">http://www.hightechsystems.nl/_Resources/Persistent/975dabc44be4b235e1d5996e3c0a40847d8ff989/Simon%20Jansen.pdf</a>  | The viability of ROS-Industrial for developing adaptive and flexible robot solutions for industrial applications has been presented.   |
| ALT     | ROS-Industrial Nieuwsbrief  |   | newsletter                  | March 2015  | <a href="http://us3.campaign-archive2.com/?u=52becd356ac0727bfdaa7eb3f&amp;id=47c2fdd07&amp;e=de30bbcd91">http://us3.campaign-archive2.com/?u=52becd356ac0727bfdaa7eb3f&amp;id=47c2fdd07&amp;e=de30bbcd91</a>   | Inform subscribers about latest developments in ROS and flexible smart robotics and upcoming ROS events.   |
| ALT     |   | Vision & robotics fair  | Demo                        | 3-4 June 2015   | <a href="http://www.vision-robotics.nl/">http://www.vision-robotics.nl/</a><br><a href="http://rosindustrial.org/news/2015/4/16/planning-">http://rosindustrial.org/news/2015/4/16/planning-</a>  | Showed how ROS-I motion planning can be used to control a 5-DOF motion stage in a Transmission Electron Microscope (TEM).  |

|                      |  |   |   |   |   |  |
|----------------------|--|---|---|---|---|--|
|                      |  |   |   |   | and-control-of-hightech-motion-stage-using-ros-industrial   |  |
| TUBS, PIAP, DTI, ... | R5-COP project booth   | ARTEMIS Co-Summit "Smart Industry: impact of software innovation", Berlin                             | International conference and exhibition | March 10/11 2015                            | <a href="http://www.artemis-ia.eu/co-summit-2015/index.html">http://www.artemis-ia.eu/co-summit-2015/index.html</a> | Demonstrated PIAP HMI, PIAP Scout robot and Mir100 robot as well as MLF from DTI. Won exhibition award.  |
| CAMEA                | R5-COP poster display  | INTER-TRAFFIC Istanbul 2015   | International trade fair                | 27-29 <sup>th</sup> of May 2015, Istanbul   | <a href="http://www.intertraffic.com/">http://www.intertraffic.com/</a>   | The event is traffic oriented trade fair where CAMEA had own booth. There were posters (presenting current results within R5-COP project) displayed. |
| CAMEA                | R5-COP poster display  | MSV BRNO 2015   | International trade fair                | 14-18 <sup>th</sup> of September 2015, Brno | <a href="http://www.bvv.cz/en/msv/">http://www.bvv.cz/en/msv/</a>   | The event is industrial trade fair where CAMEA had own booth. There were posters (presenting current results within R5-COP project) displayed.       |
| CAMEA                | R5-COP poster display  | ITS WORLD CONGRESS Bordeaux   | International trade fair                | 5-9 <sup>th</sup> of October 2015           | <a href="http://itsworldcongress.com/">http://itsworldcongress.com/</a>   | The event is traffic oriented trade fair where CAMEA had own booth. There were posters (presenting current results within R5-COP project) displayed. |
| FAU                  | <i>Model-based Design and Testing of Decisional Autonomy and Cooperation in Cyber-physical Systems</i> | 41st Euro-micro Conference on Software Engineering and Advanced Applications (SEAA 2015)              | International conference                | August 2015, Funchal, Madeira, Portugal     | <a href="https://paginas.fe.up.pt/~dsd-seaa-2015/seaa2015/">https://paginas.fe.up.pt/~dsd-seaa-2015/seaa2015/</a>   | FAU was presenting its research results at conferences and workshops   |
| FAU                  | Reconfiguration Testing for Cooperative Autonomous Agents  | International Conference on Computer Safety, Reliability & Security (SAFE-COMP 2015), Workshop DECSoS | workshop                                | September 2015, Delft, the Netherlands      | <a href="http://safe-comp2015.tudelft.nl/">http://safe-comp2015.tudelft.nl/</a>                                     | FAU was presenting its research results at conferences and workshops   |
| SMR                  | Workshop on motion planning  | ROSCON  | International conference                | Oct 3 and 4, 2015                           | <a href="http://roscon.ros.org/2015/">http://roscon.ros.org/2015/</a>   | See deliverable D93.40   |
| VTT                  | Master's thesis "Performance evaluation of   | Aalto University  |   |   | <a href="https://aaltodoc.aalto.fi/handle/123456789/19184">https://aaltodoc.aalto.fi/handle/123456789/19184</a>     |  |

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|----------------------|--|--|-------------------------------|-------------------|---|---|
|                      | Time-of-Flight cameras” by Matti Laukkanen   |  |                               |                   |   |   |
| VTT                  | Sensors, models and human-robot collaboration  | Keynote speech in seminar “Future of Robotics in Finland Seminar 2015” | Local conference              | November 25, 2015 |   | The seminar was arranged by the IEEE Finland Joint Chapter of the Control System Society, Robotics and Automation Society and Systems, Man and Cybernetics Society at Espoo, Finland. The presentation introduced also some results from R5-COP, mostly from sensor and perception technologies developed by VTT. |
| TUBS                 | A scriptable, standards-compliant reporting and logging extension for SystemC        | Samos Conference/VIPES Workshop  | International conference      | July 19, 2015     | <a href="http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=7358369#">http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=7358369#</a>   |   |
| TUBS                 | Website <a href="http://r5-cop.eu">http://r5-cop.eu</a>                              | Internet   | website                       |                   | <a href="http://r5-cop.eu">http://r5-cop.eu</a>   | Presenting the project aims, the consortium and results to the public.  |
| TUBS                 |  | TU Night   | Local open house presentation | June 27, 2015     |   | Public presentation of current research activities.   |
| TUBS                 | “Tag der Informatik”   | Open house presentation  | Local                         | Jan 26, 2016      |   | Public presentation of current research activities with focus on recruitment and public relations.  |
| TUBS                 | Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating Platforms -- R5-COP | The Parliament Magazine  | European Parliament magazine  | Nov 16, 2015      | <a href="https://www.theparliament-magazine.eu/articles/magazines/issue-423-16-november-2015">https://www.theparliament-magazine.eu/articles/magazines/issue-423-16-november-2015</a>                                 |   |
| TUBS, MIR, PIAP, DTI | R5-COP Project Presentation  | ICT-2015   | International conference      | Oct 20-22, 2015   | <a href="https://ec.europa.eu/digital-agenda/en/ict2015-innovate-connect-transform-lisbon-20-22-october-2015">https://ec.europa.eu/digital-agenda/en/ict2015-innovate-connect-transform-lisbon-20-22-october-2015</a> | R5-COP was one of three features at the ARTEMIS-IA booth.   |
| TUBS (ARTEMIS-IA)    | Lots of visibility at ICT2015  | ARTEMIS Newsletter   | Mail newsletter and website   | Nov 03, 2015      | <a href="https://artemis-ia.eu/news/lots-of-visibility-at-ict2015.html">https://artemis-ia.eu/news/lots-of-visibility-at-ict2015.html</a>   | Follow-up to ICT-2015 presentation  |
| TUBS                 | Robots on the rise -- one year into the R5-COP project                               | ARTEMIS Newsletter   | Mail newsletter and website   | Mar 17, 2015      | <a href="https://artemis-ia.eu/news/robots-on-the-rise-one-year-into-the-r5-cop-project.html">https://artemis-ia.eu/news/robots-on-the-rise-one-year-into-the-r5-cop-project.html</a>                                 | Dedicated project feature included in the ARTEMIS Newsletter resulting from Co-Summit presentation (March 2015)   |

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|-----|---|--|------------|-----------------|--|---|
| BME | Tadeusz P. Dobrowiecki (BME), Johan Schoukens: Reducing the measurement time of the Best Linear Approximation of a Nonlinear System using improved averaging methods                            | IEEE Int. Instrumentation and Measurement Technology Conf. (I2MTC 2015), Pisa, Italy | Conference | May 11-14, 2015 | <a href="http://2015.imtc.iee-e-ims.org/">http://2015.imtc.iee-e-ims.org/</a><br><a href="http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf">http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf</a> | BME presented its scientific results related to measurements and the processing of sensor data in case of non-linear problems (WP22, WP25). |
| BME | Laszlo Sujbert and Gyorgy Orosz (BME): FFT-based Spectrum Analysis in the Case of Data Loss   | IEEE Int. Instrumentation and Measurement Technology Conf. (I2MTC 2015), Pisa, Italy | Conference | May 11-14, 2015 | <a href="http://2015.imtc.iee-e-ims.org/">http://2015.imtc.iee-e-ims.org/</a><br><a href="http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf">http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf</a> | BME presented its scientific results related to the processing of sensor data in case of data loss (WP22, WP25).                            |
| BME | István Engedy, Gábor Horváth (BME): Path Reconstruction based on Gyroscope Bias Estimation using GPS  | IEEE Int. Instrumentation and Measurement Technology Conf. (I2MTC 2015), Pisa, Italy | Conference | May 11-14, 2015 | <a href="http://2015.imtc.iee-e-ims.org/">http://2015.imtc.iee-e-ims.org/</a><br><a href="http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf">http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf</a> | BME presented its scientific results related to path reconstruction and localization (WP25).  |
| BME | Balázs Renczes, István Kollár (BME), P. Carbone, A. Moschitta, Vilmos Pálfi, Tamás Virosztek (BME): Analyzing Numerical Optimization Problems of Finite Resolution Sine Wave Fitting Algorithms | IEEE Int. Instrumentation and Measurement Technology Conf. (I2MTC 2015), Pisa, Italy | Conference | May 11-14, 2015 | <a href="http://2015.imtc.iee-e-ims.org/">http://2015.imtc.iee-e-ims.org/</a><br><a href="http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf">http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf</a> | BME presented its scientific results related to the theoretical background of processing sensor data (WP22).                                |
| BME | Péter Györke, Béla Pataki (BME): Energy harvesting wireless sensors for smart home applications   | IEEE Int. Instrumentation and Measurement Technology Conf. (I2MTC 2015), Pisa, Italy | Conference | May 11-14, 2015 | <a href="http://2015.imtc.iee-e-ims.org/">http://2015.imtc.iee-e-ims.org/</a><br><a href="http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf">http://2016.imtc.iee-e-ims.org/sites/2015.imtc.ieee-ims.org/files/I2MTC-2015_final-program_v7.pdf</a> | BME presented its scientific results related to application of wireless sensors that are also relevant for R5-COP (WP22, WP25).             |
| BME | Lajos Csep-   | IEEE Int.  | Conference | 13-17 April     | <a href="http://dx.doi.org/10.">http://dx.doi.org/10.</a>  | BME presented its scientific results  |

|     |  |  |                             |                     |  |  |
|-----|--|--|-----------------------------|---------------------|--|--|
|     | pentő, Zoltán Micskei (BME): Evaluating Symbolic Execution-based Test Tools  | Conf. on Software Testing, Verification and Validation (ICST), Graz, Austria                             | ence                        | 2015                | 1109/ICST.2015.7102587<br>DOI: 10.1109/ICST.2015.7102587,  | related to source code based test tools that can be used for test case analysis and classification (WP34).   |
| BME | Dávid Honfi, András Vörös, Zoltán Micskei (BME): SEViz: A Tool for Visualizing Symbolic Execution                                    | IEEE Int. Conf. on Software Testing, Verification and Validation (ICST), Tool Track, Graz, Austria,      | Conference                  | 13-17 April 2015    | <a href="http://dx.doi.org/10.1109/ICST.2015.7102631">http://dx.doi.org/10.1109/ICST.2015.7102631</a><br>DOI: 10.1109/ICST.2015.7102631,   | BME presented its scientific results related to the visualization of the coverage of test cases that can be used for test classification (WP34).                             |
| BME | Ákos Hajdu, András Vörös, Tamás Bartha (BME): New search strategies for the Petri net CEGAR approach                                 | Int. Conf. on Application and Theory of Petri Nets and Concurrency (PN 2015), Brussels, Belgium          | Conference                  | 21-26 June, 2015    | <a href="http://www.ulb.ac.be/di/verif/pn2015acsd2015/index.html">http://www.ulb.ac.be/di/verif/pn2015acsd2015/index.html</a><br><a href="http://dx.doi.org/10.1007/978-3-319-19488-2_16">http://dx.doi.org/10.1007/978-3-319-19488-2_16</a><br>DOI: 10.1007/978-3-319-19488-2_16.                               | BME presented its scientific results related to verification of temporal properties that can be checked on design models before applying it for on-line verification (WP34). |
| BME | Vince Molnár, Dániel Darvas, András Vörös, Tamás Bartha (BME): Saturation-based incremental LTL model checking with inductive proofs | Int. Conf. on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2015), London, UK | Conference                  | 13-18 April, 2015   | <a href="http://www.eta-aps.org/2015/tacas">http://www.eta-aps.org/2015/tacas</a><br><a href="http://dx.doi.org/10.1007/978-3-662-46681-0_58">http://dx.doi.org/10.1007/978-3-662-46681-0_58</a><br>DOI: 10.1007/978-3-662-46681-0_58.   | BME presented its scientific results related to incremental verification of temporal properties that are also used for on-line verification (WP34).                          |
| BME | Tamás Mészáros (BME): Agent-based Information Acquisition and Sharing  | Ph.D. Thesis (in Hungarian) BME, Dept. of Measurement and Information Systems, Budapest, Hungary         | Ph.D. thesis defence at BME | 19 January, 2016    | <a href="http://www.doktori.hu/index.php?menuid=193&amp;vid=15395&amp;lang=EN">http://www.doktori.hu/index.php?menuid=193&amp;vid=15395&amp;lang=EN</a><br><a href="http://www.mit.bme.hu/system/files/user_files/36/mt_tezis-fuzet.pdf">http://www.mit.bme.hu/system/files/user_files/36/mt_tezis-fuzet.pdf</a> | The thesis includes results related to information sharing of agents that is analyzed for handling of conflict situations via cooperation (WP32).                            |
| BME | Tamás Tóth, András Vörös, István Majzik (BME): A decomposition method for the verification of a real-time safety-critical protocol.  | 7th Int. Workshop on Software Engineering for Resilient Systems (SERENE 2015), Paris, France             | Conference                  | 7-8 September, 2015 | <a href="http://serene.disim.univaq.it/2015/">http://serene.disim.univaq.it/2015/</a>  | BME presented its scientific results related to decomposition that can be used in verification of safety properties (WP34).  |

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|-----|--|--|------------------------------|----------------------------------|--|--|
| BME | Oszkár Semer-<br>áth, Ágnes<br>Barta, Zoltán<br>Szatmári, Ákos<br>Horváth, Dániel<br>Varró (BME):<br>Formal Validation of Domain-<br>Specific Languages with<br>Derived Features and Well-<br>Formedness Constraints | Int. Journal<br>on Software<br>and Sys-<br>tems Model-<br>ling<br>(SoSym),<br>Springer<br>Verlag | Journal                      | 30 July<br>2015                  | <a href="http://link.springer.com/article/10.1007%2Fs10270-015-0485-x">http://link.springer.com/article/10.1007%2Fs10270-015-0485-x</a><br>DOI<br>10.1007/s10270-015-0485-x  | BME presented its scientific results related to incremental test data (test context) generation and test classification (WP34).  |
| BME | VIK MIT is Participating in the Development of Cooperative Robots (Kooperaatív robotokat fejleszt a VIK MIT), in Hungarian   | Web portal of the faculty of Electrical Engineering and Informatics, BME                         | Web portal (national)        | 8 December, 2015                 | <a href="https://www.vik.bme.hu/hir/910kooperativrobotokatfejlesztavikmit">https://www.vik.bme.hu/hir/910kooperativrobotokatfejlesztavikmit</a>  | BME published an online article about its role in R5-COP (overview of its activities for the general public of the faculty).   |
| BME | László Sujbert, György Orosz (BME): FFT-based Spectrum Analysis in the Case of Data Loss.  | IEEE Transactions on Instrumentation and Measurement. No 99. pp 1-9, 2016,                       | Journal                      | 13 January, 2016                 | <a href="http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=19">http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=19</a><br><a href="http://dx.doi.org/10.1109/TIM.2015.2508278">http://dx.doi.org/10.1109/TIM.2015.2508278</a> | BME published its scientific results related to processing sensor data in case of data loss (WP22, WP25)   |
| SAX | Introducing R5-Cop   | Mikroniek, Issue 2015-6  | Professional journal article | December 2015                    | <a href="http://dspe.nl/mikroniek">dspe.nl/mikroniek</a>   | Introduction to the project: background, objectives, structure, partners, Dutch contribution, ROS  |
| DTI | MLF Demonstrations at DTI living labs  | 20+ during 2 <sup>nd</sup> project year  | Showcases                    | All 2 <sup>nd</sup> project year |  | Several MLF demonstrations (MiR100 robot with different task configurations of the MLF) at the DTI living labs for external people from industry and academia. Examples from the last four months: <ul style="list-style-type: none"> <li>• Visit from the French Ambassador to Denmark (7/10-2015). See D93.61.</li> <li>• Workshop, presentation and demonstration of mobile robots to 20 robot technology students from Aalborg University (15/10-2015)</li> <li>• Grand opening of DTIs new innovation hall (21/10-2015)</li> <li>• Visit from Midtjysk Snedkerlaug (Association for cabinet-makers) (17/11-2015)</li> <li>• Visit, presentation and demon-</li> </ul> |

|     |                              |  |   |                                  |   |   |
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|     |                              |  |   |                                  |   | <p>stration for a Finish delegation from Ministry of Transport and Communication, Ministry of employment and economy and Robotics Finland (16/12-2015)</p> <ul style="list-style-type: none"> <li>• Visit from the Danish Metal- and Machining Industry (17/12-2015)</li> </ul>   |
| DTI | R5-COP poster and MLF poster | Living-labs at DTI                                 | Posters   | All 2 <sup>nd</sup> project year |   | Posters displaying R5-COP and the MLF concepts are on permanent displayed. About 1,000 visitors per year.   |
| DTI | eNewsletter articles         | DTI Robot newsletter. Danish and English versions, | Newsletter sent to 300+ recipients every other week | All 2 <sup>nd</sup> project year | <p>DK: <a href="http://www.teknologisk.dk/ydelsler/robotteknologi/nyheder/22786.2">http://www.teknologisk.dk/ydelsler/robotteknologi/nyheder/22786.2</a></p> <p>UK: <a href="http://www.dti.dk/services/robot-technology/news/23617.2">http://www.dti.dk/services/robot-technology/news/23617.2</a></p> <p>Signup:<br/>DK: <a href="http://www.teknologisk.dk/ydelsler/nyhedsbrev-om-robotteknologi/32962">http://www.teknologisk.dk/ydelsler/nyhedsbrev-om-robotteknologi/32962</a></p> <p>UK: <a href="http://www.dti.dk/services/newsletters/33272">http://www.dti.dk/services/newsletters/33272</a></p> | Mention of R5-COP and R5-COP results in several news articles   |
| DTI | Short promotion videos       | DTIs YouTube channel                               | Videos  | All 2 <sup>nd</sup> project year | <a href="https://www.youtube.com/user/DTIRobot/videos">https://www.youtube.com/user/DTIRobot/videos</a>   | <p>Several DTI promotion videos produced focusing on R5-COP, mobile robots, MIR, MLF, etc. E.g.:</p> <ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=EIYFiCI9v7o">https://www.youtube.com/watch?v=EIYFiCI9v7o</a></li> <li>• <a href="https://www.youtube.com/watch?v=acVXOM-qdis">https://www.youtube.com/watch?v=acVXOM-qdis</a></li> <li>• <a href="https://www.youtube.com/watch?v=yURgJzVprZA">https://www.youtube.com/watch?v=yURgJzVprZA</a></li> <li>• <a href="https://www.youtube.com/watch?v=aH0pdPeK51k">https://www.youtube.com/watch?v=aH0pdPeK51k</a></li> <li>• <a href="https://www.youtube.com/watch?v=2DDyQN5gb-U">https://www.youtube.com/watch?v=2DDyQN5gb-U</a></li> <li>• <a href="https://www.youtube.com/watch?v=iQFUUxo5h9U">https://www.youtube.com/watch?v=iQFUUxo5h9U</a></li> </ul> |
| DTI | Proposal texts               | National (Denmark) and European R&D                | Proposal texts                                      | All 2 <sup>nd</sup> project year |   | In the 2 <sup>nd</sup> project year DTI submitting several 10+ national and European R&D project proposals. In all relevant proposals R5-COP was  |

|     |   |   |   |                                    |   |   |
|-----|---|---|---|------------------------------------|---|---|
|     |   | project proposals   |   |                                    |   | used as a positive reference for profiling DTI as partner and MIR when participating. R5-COP's general goals will usually be described in short paragraphs.   |
| DTI | Power-point presentations   | 50+ DTI presentation for companies, universities, partners, etc.  | Power-point presentation                | All 2 <sup>nd</sup> project year   |   | R5-COP always has at least one slide in our centre and project presentations and is thus always promoted.   |
| DTI | Promotional product cards for visitors/clients/collaborating partners               | Product card  | 115mm*210mm two-page appetizer leaflets | All 2 <sup>nd</sup> project year   |   | DTI promotes their products and services using small card board "product cards" which are small (115mm*210mm) two-page appetizer leaflets. In the frame of R5-COP, DTI has produced one specific printed in 200 copies available to all visitors and as hand-outs at trade-fairs.   |
| DTI | Show-case at industrial event   | International convention "Shaping the strategy of tomorrow's production" held by the Production Council of Denmark in collaboration with the Danish Government at Industriens Hus in Copenhagen | Show-case                               | 27 <sup>th</sup> of February, 2015 |   | Demonstrating the capabilities of the Modular Link Framework (MLF) and the Mobile CoWorker (MCW) system. In the attendance were CEOs, CTOs and several ministers.   |
| DTI | R5-COP results presentation at ERF workshop: "Robotics for logistics and transport" | EuRobotics Forum (ERF)  | forum                                   | 11-13th of March 2015, Vienna      | <a href="http://www.eu-robotics.net/eu-robotics-forum/about-erf-2015/">http://www.eu-robotics.net/eu-robotics-forum/about-erf-2015/</a> | Workshop with the following speakers: <ul style="list-style-type: none"> <li>• Prof. Achim J. Lilienthal (Örebro University)</li> <li>• Lars Dalgaard (Danish Technological Institute)</li> <li>• Prof. Wolfgang Echelmeyer (Reutlingen Research Institute)</li> <li>• Pablo Urcola (University of Zaragoza)</li> <li>• Christopher Kirsch (IML Fraunhofer)</li> <li>• Jesús Alfonso (ITAINNOVA)</li> </ul> The DTI talk was entitled: "Flexible Logistics using the Mobile CoWorker Framework on Small Mobile Robot Platforms" |

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| DTI | R5-COP results presentation at ERF workshop: "Hardware and software modularity and interoperability in Service Robotics: Toward standardisation" | EuRobotics Forum (ERF)  | forum  | 11-13th of March 2015, Vienna                    | <a href="http://www.eu-robotics.net/eu-robotics-forum/about-erf-2015/">http://www.eu-robotics.net/eu-robotics-forum/about-erf-2015/</a>         | The DTI talk was entitled: "Modularity for Task-configuration of Small Flexible Mobile Robot Platforms (ARTEMIS-JU project R5-COP)". 20+ speakers.  |
| DTI | Co-organiser and presenter   | "Mobile Robots in production industry - Today, tomorrow and in the future" (translated from Danish)                   | Mini conference facilitated by Manufacturing Academy Denmark (MADE), Robo-Cluster, and DTI | 18 <sup>th</sup> of June 2015                    | <a href="http://made.dk/nyt-og-presse/robotterne-flytter-sig/">http://made.dk/nyt-og-presse/robotterne-flytter-sig/</a>                         | Focus on mobile robot solutions in production industry, looking at challenges, possibilities and trends. We presented solutions commercially available today and reflected on demands and needs of future mobile robot solutions. R5-COP results were a core theme. 100+ participants from Danish industry and academia |
| DTI | Invited talk   | At Danish Design Center seminar: "Design & Architecture a.m.: Factory of the Future"                                  | Seminar  | 23 <sup>rd</sup> of June 2015                    | <a href="http://ddc.dk/events/designarchitecture-a-m-fremtidens-fabrik-2/">http://ddc.dk/events/designarchitecture-a-m-fremtidens-fabrik-2/</a> | Talk entitled (Danish): "How to bring technology closer to people" about emerging robotics and Mobile CoWorkers in industrial contexts.   |
| DTI | Andersen, R. H.; Dalgaard, L.; Beck, A. B. & Hallam, J.: An Architecture for Efficient Re-use in Flexible Production Scenarios                   | IEEE International Conference on Automation Science and Engineering (CASE 2015)                                       | Conference Proceedings   | August 24-28, 2015                               | <a href="http://case2015.org/">http://case2015.org/</a>   | DTI Robot Coworker and DTI Mobile CoWorker results  |
| DTI | Show-case at fair booth  | Sign&Print trade-fair   | Trade-fair in for the graphics industry.   | September 22 <sup>nd</sup> to 24th, 2015         | <a href="http://live.agi.dk/event/signogprint/">http://live.agi.dk/event/signogprint/</a>   | Presentation of MLF demonstrator where a MiR100 collaborates with a UR5 robot through user gestures captured by a LEAP motion controller (see D93.61)   |
| DTI | Presentation of R5-COP results at IROS 2015 Workshop. Title: "Emerging Mobile Service Robots – lots of opportunities but also barriers"          | IEEE/RSJ International Conference on Intelligent Robots and Systems 2015 (IROS2015). Workshop: "Transfer of Cognitive | Scientific conference  | September 28 – October 2, 2015. Hamburg, Germany | <a href="http://caro.sdu.dk/iros15-workshop-cognitive-transfer/">http://caro.sdu.dk/iros15-workshop-cognitive-transfer/</a>                     | Presentation of R5-COP results on the MLF and on how it can be used to impact the creation of new mobile robotic systems in industry  |

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|     |                   | Robotics Research to Industrial Assembly and Service Robots” |  |                                  |  |  |
| DTI | Newspaper article | Jern Maskinin-dustrien                                       | & Printed newspaper for the metal industry | 25 <sup>th</sup> of January 2016 | of <a href="http://www.jernindustri.dk/article/view/237076/handbevaegelser_dirigerer_robotten">http://www.jernindustri.dk/article/view/237076/handbevaegelser_dirigerer_robotten</a> | Interview about LEAP motion technology we have applied and tested with the mobile robots in order to find user-friendly navigation, teaching and error handling. |

#### 4 Activities planned for 3<sup>rd</sup> project year

| Partner           | Title / Scope   | Event / medium               |                          |  |   | Short description  |
|-------------------|---|------------------------------|--------------------------|--|---|--|
|                   |   | Name                         | Type                     | Date   | Website / link  |  |
| CAMEA             | R5-COP poster display and alternatively demo  | NTER-TRAFFIC AMSTERDAM 2016  | International trade fair | 5-8 <sup>th</sup> of May 2016, Amsterdam     | <a href="http://www.intertraffic.com/">http://www.intertraffic.com/</a> | The event is traffic oriented trade fair where CAMEA will have own booth. There will be displayed poster presenting current results within R5-COP project and alternatively we will show real demo of embedded video processing or similar.        |
| CAMEA             | R5-COP poster display and alternatively demo  | TranspoQuip 2016             | International trade fair | 4-6 <sup>th</sup> of October 2016, Sao Paulo | <a href="http://itsworldcongress.com/">http://itsworldcongress.com/</a> | The event is transportation oriented trade fair where CAMEA will have own booth. There will be displayed poster presenting current results within R5-COP project and alternatively we will show real demo of embedded video processing or similar. |
| SINTEF, DTI, PIAP | Workshop: "How Do We Surpass Current Barriers to Efficient Deployment of New Robotics in Industry?" | European Robotics Forum 2016 | European forum           | 21-23 March 2016                             | <a href="http://www.erf2016.eu/">http://www.erf2016.eu/</a>             | ERF is an annual event that has become the most influential meeting of the European robotics community. This workshop is organized and hosted by the R5-COP consortium.  |
| DTI, TUBS         | Workshop: "EU programmes: new funding opportunities for robotics                                    | European Robotics Forum 2016 | European forum           | 21-23 March 2016                             | <a href="http://www.erf2016.eu/">http://www.erf2016.eu/</a>             | ERF workshop invited with R5-COP invited speaker promoting both R5-COP and the ECSEL programme.  |

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|        | projects”  |   |   |                                  |   |  |
| SINTEF | Vind: a robot self-localization framework  | IEEE Mediterranean Control Conference                       | International conference                            | June 21-24 2016                  | <a href="http://med2016.org/">http://med2016.org/</a>   | The 24th MED'16 is organized by the Mediterranean Control Association (MCA), a non-profit organization registered in the Republic of Cyprus. MCA was established in June 1998 with goals to promote initiatives for enhancing scientific exchanges, to disseminate information, to coordinate research networks, and to facilitate technology transfer primarily within the countries of the Mediterranean region. |
| TUBS   |  | TU Day  | Local open house presentation                       | 2016                             |   | Public presentation of current research activities.  |
| BME    | Tamás B. Bakó and Tamás Dabóczy (BME): Improved-Speed Parameter Tuning of Deconvolution Algorithm. | IEEE Transactions on Instrumentation and Measurement, 2016. | Journal   | 2016 (in print)                  | <a href="http://ieeexplore.ieee.org/xpl/RRecentIssue.jsp?punumber=19">http://ieeexplore.ieee.org/xpl/RRecentIssue.jsp?punumber=19</a>   | BME published its scientific results related to the theoretical background of processing sensor data (WP22).   |
| DTI    | MLF Demonstrations at DTI living labs  | 30+ during 3 <sup>rd</sup> project year                     | Showcases   | All 3 <sup>rd</sup> project year |   | Several MLF demonstrations (MiR100 robot with different task configurations of the MLF) at the DTI living labs for external people from industry and academia.   |
| DTI    | R5-COP poster and MLF poster   | Living-labs at DTI  | Posters   | All 3 <sup>rd</sup> project year |   | Posters displaying R5-COP and the MLF concepts are on permanent displayed. About 1,000 visitors per year.  |
| DTI    | eNewsletter articles   | DTI Robot newsletter. Danish and English versions,          | Newsletter sent to 300+ recipients every other week | All 3 <sup>rd</sup> project year | DK: <a href="http://www.teknologisk.dk/ydelsler/robotteknologi/nyheder/22786.2">http://www.teknologisk.dk/ydelsler/robotteknologi/nyheder/22786.2</a><br><br>UK: <a href="http://www.dti.dk/services/robot-technology/news/23617.2">http://www.dti.dk/services/robot-technology/news/23617.2</a><br><br>Signup: DK: <a href="http://www.teknologisk.dk/ydelsler/nyhedsbrev-om-robotteknologi/3296">http://www.teknologisk.dk/ydelsler/nyhedsbrev-om-robotteknologi/3296</a> | Mention of R5-COP and R5-COP results in 5+ news articles   |

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|     |  |  |   |                                  | 2<br>UK: <a href="http://www.dti.dk/services/newsletters/33272">http://www.dti.dk/services/newsletters/33272</a> |   |
| DTI | Short promotion videos   | DTIs YouTube channel   | Videos                                  | All 3 <sup>rd</sup> project year | <a href="https://www.youtube.com/user/DTIRobot/videos">https://www.youtube.com/user/DTIRobot/videos</a>          | Several new DTI promotion videos produced focusing on R5-COP, mobile robots, MIR, MLF, etc. E.g.:   |
| DTI | Proposal texts   | National (Denmark) and European R&D project proposals            | Proposal texts                          | All 3 <sup>rd</sup> project year |  | In the 3 <sup>rd</sup> project year DTI plans on submitting 10+ national and European R&D project proposals. In all relevant proposals R5-COP was used as a positive reference for profiling DTI as partner and MIR when participating. R5-COP's general goals will usually be described in short paragraphs. |
| DTI | Power-point presentations  | 50+ DTI presentation for companies, universities, partners, etc. | Power-point presentation                | All 3 <sup>rd</sup> project year |  | R5-COP always has at least one slide in our centre and project presentations and is thus always promoted.   |
| DTI | Promotional product cards for visitors/clients/ collaborating partners | Product card   | 115mm*210mm two-page appetizer leaflets | All 3 <sup>rd</sup> project year |  | DTI promotes their products and services using small card board "product cards" which are small (115mm*210mm) two-page appetizer leaflets. In the frame of R5-COP, DTI will produce additional cards for new technology and new services  |