R5-COP

Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating Systems

D93.62 Industrial exhibition and event

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Project	R5-COP	**Grant agreement no.**	621447
Deliverable	D93.62	**Date**	31/01-2017
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Document History			
Ver.	**Date**	**Changes**	**Author**
0.1	2016.12.20	Document created	Malene Tofveson Nibe, DTI
0.2	2016.12.20	Document updated	Lars Dalgaard, DTI
0.3	2016.12.21	Document updated	Malene Tofveson Nibe, DTI
0.4	2017.01.02	Document updated	Malene Tofveson Nibe, DTI
0.5	2017.01.02	Internal review	Mathias Flindt, DTI
0.6	2017.01.03	Minor changes	Lars Dalgaard, DTI
1.0	2017.01.03	Finalization	Lars Dalgaard, DTI

Note: Filename should be

"R5-COP_D##_#.doc", e.g. „R5-COP_D91.1_v0.1_TUBS.doc"

Fields are defined as follow

1. Deliverable number ***.***

2. Revision number:

draft version **v**

approved **a**

version sequence (two digits) ***.***

3. Company identification (Partner acronym) *****

Content

1 Introduction

1.1 Summary (abstract)

This deliverable reports on DTIs presence at two international events held at the DTI facilities in Odense, Denmark, where R5-COP results were presented to the visitors. The two events were 1) a Manufacturing Academy of Denmark (MADE) OpenLab event on the 12th of October 2016 with a focus on hyper flexible production with modular automation[1], and 2) the *Robotbrag* – roughly translatable to *Robot Boom* – held on the 25th of November 2016 as a joint event between DTI, DIRA[2] (Danish Industrial Robot Association), and an OpenLab of the H2020 European project RoboTT-NET[3]. Both presentations consisted of a booth with a Mobile CoWorker setup using the Modular Link Framework (WP36). In total the demonstrations were observed by more than 600 people.

1.2 Purpose of document

This report contains a short description of the events, the show-cased technology, and several pictures taken at the events. In the TA it was anticipated that DTI would exhibit R5-COP results at the AUTOMATICA 2016 international robotics trade-fair in Munich, and that this deliverable would report on this event. However, DTI was only present at AUTOMATICA 2016 as part of another EU funded project and it was unfortunately not feasible to pay for a separate booth solely for a R5-COP presence. Instead, it was decided to report on two other robotics events with international visitors hosted by DTI where R5-COP results were presented.

1.3 Partners involved

Partners and Contribution	
Short Name	**Contribution**
DTI	Creation of the setup at the two events and production of this report. Present at R5-COP booth from DTI: Thomas Madsen Almdal, Malene Tofveson Nibe, Kasper Camillus Jeppesen, Morten Winther Juelsgaard, Mathias Flindt, Lars Dalgaard

[1] http://made.dk/aktiviteter/open-lab-about-modular-automation/

[2] http://www.dira.dk/

[3] http://robott-net.eu/

2 MADE Open Lab

2.1 Preface

MADE Open Lab is arranged by MADE – Manufacturing Academy of Denmark – which is an association working on making Denmark an attractive country of manufacturing, providing products and services that can carry the high labour costs. MADE Open Lab offers companies and professionals the opportunity to gain a direct insight into the latest technologies in a specific area. An Open Lab consists mostly of short presentations of specific technologies, case stories and a demonstration of the technologies.

On the 12th of October 2016 MADE Open Lab was held at Danish Technological Institute (DTI) with a focus on hyper flexible production with modular automation. The robot halls were turned into a smaller fair and companies within robot technology had booths around in the halls.

Around 80 people from primarily manufacturing companies, universities and research institutes from various European countries participated. The participants were introduced to several research projects within MADE. Additionally, national and international speakers like Swen Jacob from Baumüller Nürnberg GmbH, Victor Naumann from Fraunhofer Supply Chain Services and Matthias Barbian from VDI Bayern Nordost presented about e.g. “Industry 4.0” and “Digital transformation”. After the interesting talks, all participants were split into 6 groups, who took turns to hear about the newest technology. The R5-COP was represented as one of the “booths”.

Figure 1 - Speakers presentations in the auditorium

Figure 2 - People arriving for robot demonstrations in the robot hall

2.2 The Showcase

Malene Tofveson Nibe (DTI) and Kasper Camillus Jeppesen (DTI) presented the mobile robots to the audience.

Figure 3 - Malene presenting DTI's developments of R5-COP

Figure 4 - The special interested visitors who stayed at the booth to hear more

For this event the MiR robot was driving around between locations in the "storage facility" at DTI, which was the setting for use case 2 described in D44.30. Likewise the LEAP sensor controlling the robot was demonstrated when Kasper was moving the robot around by hand movements (see Figure 5). The audience could also try the LEAP sensor connected to the computer (see Figure 6), where they could see their hand movements on a screen. The MYO Armband and its functionalities were presented on the MiR robot as well. While Malene presented, Kasper performed the hand gestures required to navigate the robot.

Figure 5 - Kasper controlling the robot with the LEAP sensor

Figure 6 - The audience try the LEAP sensor themselves

3 Robot Boom

3.1 Preface

The Robotbrag – *Robot Boom* – was held at the DTI facilities on the 25th of November 2016 as a joint event between DTI, DIRA, and an OpenLab of the H2020 European project RoboTT-NET. The DIRA event was part of the "DIRA Roadshow" – a travelling trade-fair with 40 exhibitors visiting five Danish cities, using the DTI facilities as the final leg of the tour. The event was a full day, where business partners and other interested from the industry, universities, municipalities etc. could participate. See Figure 7 where some of the first visitors are gathered to hear the Mayor of Odense, Anker Boye, speaking. After 15.00 the event was opened to the public. 588 people were registered on the day of the event. The area for the service robotics and thus the R5-COP related work had a great position in the exhibition hall. Accordingly, most of the participants stopped by the service robotics station. See Figure 8.

Figure 7 - Visitors listening to the opening speech from the Mayor of Odense

Figure 8 - Overview of the service robotics area

3.2 The showcase

Four talks were planned during the day. In Figure 9 and Figure 10 images from the first talk can be seen, where Malene was presenting the newly developed use case of the MiR robot with an actuated conveyer belt on top (D44.40).

Figure 9 - The MiR robot with the conveyer belt on top is demonstrating automatic transportation of boxes

Figure 10 - First talk for the interested visitors

Due to the large amount of people, barriers were placed around the area to make sure people were not interrupting the robot's missions. The use case demonstrated at the event was the early stages of the demonstration on automatic delivery and pickup. The MiR-robot equipped with a Christmas present was looping a sequence where it aligned on several locations. In one end of its path it demonstrated the proximity sensors placed in each side and in both ends of the conveyer belt. As soon as the present reached a set of proximity sensors the conveyer belt stopped in order to ensure the present stayed on the conveyer belt. In the other end of the path the MiR-robot showed that it was capable of docking to the static conveyer belt.

Many interested participants expressed their interests in the R5-COP technology and the day was very rewarding on the dissemination side from both a R5-COP and a DTI perspective.

4 Closing remarks

The two events – MADE OpenLab and The Robot Boom held – at DTI were two successful events, where the developed technology and knowledge was demonstrated to more than 600 people. Participation in Automatica could possibly also reach the same amount of visitors, but at these two events, almost everyone were relevant industrial manufacturers, hospitals, municipalities and universities and many of them could be potential partners in commercial tasks or research projects.