



ROBO-PARTNER Project | Newsletter

April, 2015

MOTIVATION

COVER OF ROBO-PARTNER PROJECT THIRD SEMESTER

Human skills are the main driver that enables producing high added value products in Europe. Thus the manufacturing processes are based on utilizing these skills. ROBO-PARTNER aspires the integration of the latest

industrial automation systems for assembly operations in combination with human capabilities, combining robot strength, velocity, predictability, repeatability and precision with human intelligence and skills.

Message from the Coordinator

Dear Readers,

Industrial robots versus or with humans? How much deep can we progress for closer and safer human robot interaction? How can we improve the communication amongst robots, humans and environment? Welcome to the 3rd newsletter of ROBO-PARTNER project... This edition presents the upward trends and the current status in ROBO-PARTNER project driven by the mentioned questions.

In the first two quarters of 2015, proceeding the preliminary concept design phase, the initial prototypes for the augmented reality applications, the speech recognition system, the navigation software guided by human detection and the user interface software for ROBO-PARTNER planning modules have been developed. The dedicated algorithms for hand-to-hand working of humans and industrial robots have been integrated to COMAU mid play load robot, where the conducted initial tests yielded outstanding performance. After four board meetings, several teleconferences and three dedicated workshops, the current status may be briefed as above.

For the next two quarters, the foci will be on implementation of H/R hybrid fenceless cell safety concepts, manufacturing of the intralogistics mobile assistant unit (IMAU) and the robot for heavy goods. Special sensing technologies applied on the robot links to detect the human proximity are still vital

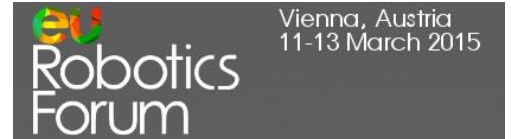
research areas from the occupational safety perspective to support.

Exploitation of the developed 'industrialized' outputs to the market and to the service of European industry in the midterm is the point of view that our consortium use all along design activities. In this context, demonstration in the real production circumstances plays a great role. We assume that human robot interaction will improve the ergonomic conditions and will contribute balancing gender equality on the shop floor.

Our project web site as well as our social media channels are open for all interested parties to visit and see the explanatory simulation videos as well as other public dissemination material. Any comment or opportunity for the cross-project cooperation are welcome.

Best Regards,

ROBO-PARTNER Coordinator



European Robotics Forum 2015

In line with ERF 2014, research projects with focus on Human-Robot Collaboration were given the opportunity to present their objectives, approaches and use cases. The presentations promoted further dialogue between different, yet related, projects about the overlapping gained experience. The forum also contributed to informing the community about the methodologies, technologies and platforms developed and the results obtained so far. The subsequent discussion explored possible synergy effects between the projects and other on-going research, technology developments and standardization efforts. Ultimately, the workshops aimed to initiate activities with regard to developing a reference architecture for a hybrid production system.

LMS, a main speaker for the "Hybrid Production Systems" workshop, took the opportunity to disclose the ROBO-PARTNER project's concept and results to

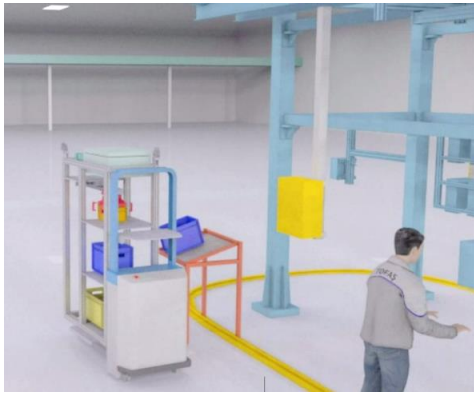


both academic and industrial communities, in light of the *Human Robot Interaction for Programming of Assembly Tasks* topic. A relevant point during the discussion came up when a member of the audience asked for a clarification on the advances beyond the state-of-the-art in the area of task oriented programming. Dr. George Michalos retort with the added value brought by the introduction of multi-modal interfaces (such as voice, gestures and force) to the programming of each individual task. Additionally, the project's poster was presented and flyers were distributed among the audience.

Progress

The beginning of Year 2 brought ROBO-PARTNER's first core developments:

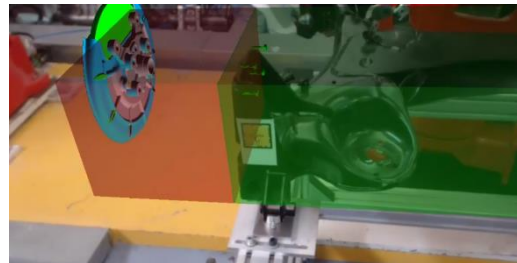
- The demonstration apparatus for all three use cases have now began to be constructed in accordance with the pre-established SMART KPIs.
- ROBOSOFT has now begun to accommodate all designed customizations on their commercialized mobile robotic platform, complying with both functional and safety issues.



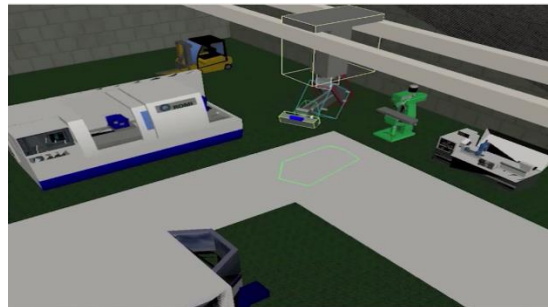
development and testing.

➤ The IMAU's ROS (Robotics Operating System) high-level building blocks, required for all intra-factory navigation and logistics tasks, are being developed and tested at UNINOVA. The interface with both hardware low-level and high-level task-planner directives are also on their early stages of

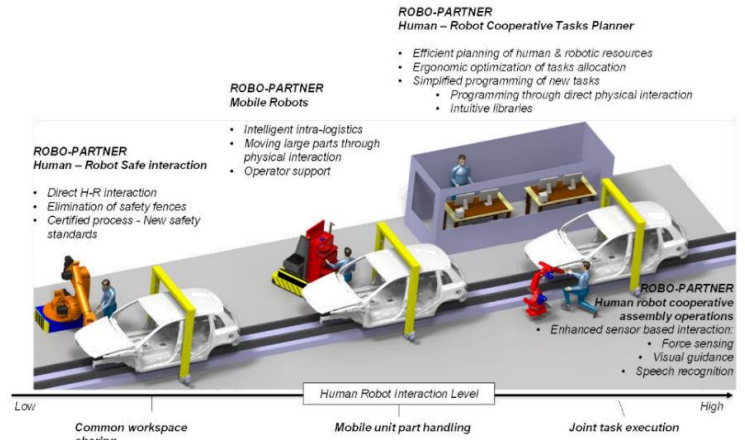
- In that end, as early design phases were completed, the multi-criteria optimization task planning is now beginning to be put into practice in the form of workflow prototypes. LMS and INTRASOFT, target the integration in the factory requisites on three fronts: Human-Robot collaborative operations; Human operator support; Smart Intra-Factory logistics planning. Here, the AR operator support, gesture and speech interaction, to be employed on all three use-cases, can thus be introduced into the loop.



- On the large part inspection scenario, Tekniker is forwarding path planning simulations on Gazebo, validating base concepts such as gesture recognition human-robot interaction. As live experimentations go, Jatorman is currently building the robotic arm to have, later this year, the system ready for tests and integration at Trimek facilities.



On our project's 1st Review Meeting in Berlin, our Technical Advisor, PTA, gave us a special emphasis on the importance of safety certification to consolidate the proposed robotic solutions as solid exploitable results of the project. Since that moment, we, in the ROBO-PARTNER project, have made the extra effort to have all prototypes safety issues standardized and certified. PILZ risk assessment has now been fit to each use-case design specification, but a continuous and close control will be paramount to ensure that, as the robotic solutions are constructed and customized, the little deviations to the design do not violate any pre-set safety requisites.



Human-centred Manufacturing

At the Impact of the Factories of the Future PPP 2015 event (29th and 30th, April), in Brussels, Belgium, LMS



was one of the organizers of the workshop: "Human-centred Manufacturing", and one of its main speakers. In this event, a joint presentation between projects ROBO-PARTNER, LIAA, Factory in a Day as well as the newly started projects FourByThree, SYMBIO-TIC and SYMPLEXITY was performed. Specific topics of the presentation involved: Scientific/Technical goals of the supported area, Current and Expected impact(s) of the supported area; Synergies and benefits of clustering; Technical cross-cutting issues; Spin-offs/Start-ups; and Patents-IPR Standardisation aspects.

Co-Summit – Smart Industry: Impact of Software Innovation 2015



On March 10th and 11th, in Berlin, Germany, the Co-Summit –Smart Industry Conference, LMS had the opportunity to set up a booth displaying videos and distributing flyers, publicizing the ROBO-PARTNER project to visiting guests.

The Project's Consortium

Project coordinator:



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Electrolux



Project Manager:



Patras Innovation Quest 2015

During Patras IQ 2015 Conference, held from the 24th to 26th of April, LMS set up one of the biggest booths on the exhibition where people from LMS provided information to the guests about their lines of research, ROBO-PARTNER project included. This exhibition aimed to narrow the gap between academy and industry, and increase the level of their cooperation by exchanging knowledge and experience. In this event more than 70 participants exhibited their innovation research work as well as implemented models. Additionally, the transfer of know-how, and issues with respect to funding and copyrights, were discussed. Over 5000 visitors attended the exhibition, amongst them the former Prime Minister of Greece, the president of the Chamber of Commerce And Industry of Athens and representatives of 59 chambers of Greece.

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Next meeting:

6th General Assembly Meeting:
June 2015 @ Turin, Italy

Upcoming Events

Impedance Control Workshop to precede the project's 6th GA meeting.

<http://www.robo-partner.eu/>
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Contact us

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<http://www.youtube.com/user/ROBOPARTNER>

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