



Newsletter

April 2018

The I-MECH project aims to design and implement a widely applicable, modular, open motion control platform and related smart components. The platform is intended for applications where dynamics and precision of the controlled motion and easy configurability are crucial. High-performance pick & place machines in the semiconductor industry, medical imaging devices, CNC-machining equipment, industrial robots and systems for industrial inkjet printing are examples of systems on which the platform will be tested. Motion control requirements for such systems span a large range of variations. Some machines require very high speed and highly accurate motion, for example semiconductor manufacturing equipment used to place more than 10 tiny electronic components per second on a substrate with an accuracy of about $1/1000^{\text{th}}$ of a millimetre. Other machines, like C-arcs used to position heavy X-Ray imaging equipment with respect to a patient, require slow but safe motion instead of high speed motion.



I-MECH Requirements Collection ongoing Process

I-MECH work package 2 investigated the wide range of motion control requirements of pilot systems participating in the I-MECH project. It could be concluded that engineers are often working on very similar problems and solutions, despite the large differences in applications of the systems. However, most pilot systems currently use custom made motion control solutions instead of reusing standard components which, besides being not particularly cost and time effective, results in a large variety of applied software and hardware interfaces. Work package 2 is currently considering the design specifications for a

reference motion control platform suited for most pilot applications. It can already be concluded that this will be challenging task due to required compatibility with legacy implementations and interfaces. Introduction of novel design methodologies, based on the latest academic insights and experiences with the development of a reference platform, is nonetheless expected to result in significant reductions in development time and development costs of high-tech machines developed by the European industry as methodologies will be relevant for a large range of applications.

Face-to-face alignment meeting on pilots in the Netherlands

The first half year of the I-MECH project focused on detailing the tasks specified in the I-MECH project proposal. Insights from engineers involved in participating pilots proved to be valuable for defining more tangible descriptions of tasks and I-MECH building blocks that will result in the I-MECH reference motion control platform. Building block owners therefore visited the pilots of Philips, Sioux CCM and Nexperia, all residing in the Netherlands, during a two day conference in February.

The group enjoyed an introduction of each pilot through plenary presentations and demos during the first part of each pilot visit. Small groups sat together per building block to align specific details during the second part of each visit. Participants took a next step during these sessions by discussing how building blocks can be integrated into specific pilots

while keeping in mind that all I-MECH building blocks eventually should be interoperable in a common platform.

Integration of building blocks on a standardized I-MECH platform is to ensure that building blocks are interoperable, can also operate on common platforms and support additional functions to for example self-deploy, configure, and report their status. Partners discussed possible integration of building blocks on a case to case basis and mapped possible configurations. This led to further insights on the requirements for building blocks and issues around standardization of interfaces. Teams will now further work out specific pilot cases, which will be used to demonstrate the I-MECH motion control platform and building blocks later in the project.



I-MECH Project presentation in Productive 4.0 Project Conference in Athens



Productive4.0 is a European ESCEL co-funded innovation and lighthouse program with 109 partners from 19 countries. Its aim is to create the capability to efficiently design and integrate hardware and software of Internet of Things (IoT) devices in the manufacturing sector. Linking the real with the digital world takes more than just adding software to the hardware.

Productive 4.0 hosted its annual Consortium Conference in Athens on March 6th -8th. The I-MECH Project participated in the conference and potential cooperation between the two projects has been explored. The I-MECH dissemination leader presented the main objectives and potential outcomes of I-MECH to more than 150 participants of Productive 4.0 conference. Following this, a dedicated workshop offered the option to further investigate potential collaborations between the two projects.



Contact Us:
info@i-mech.eu

Visit our Website:
www.i-mech.eu

Find Us on:
 I-MECH Smart Mechatronic Solutions



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