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First Public Activity Report

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Author(s):	O. Thomas
Reviewed by:	I.Dor

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Publishable summary

Unlike more traditional embedded systems, a full-fledged Cyber-Physical-Systems (CPS) is typically a network of interacting elements with physical input and output as opposed to standalone devices. The notion is closely tied to concepts of robotics and sensor networks with intelligence mechanisms based on computational intelligence, but is applicable to a much broader range of applications.

SMEs play a key role in European economies. They generate most of the innovative ideas for CPS products. However, due to limited resources, SMEs are very often not able to own all the necessary skills and technologies required to successfully develop CPS product and bring them to the market. Also, the fragmentation of the market hampers SMEs to grow outside their local market.

In the frame of H2020 and the Smart-Anything-Everywhere Initiative (www.smartanythingeverywhere.eu), EU is exploring the establishment of European pilot networks of embedded systems design centers, which help SMEs in any sector to embedded new electronic components in their products or services. The goal of these networks is to lower barriers for SMEs to enable them to build innovative CPS solutions and products, making use of high quality technology and knowledge available throughout Europe.

EuroCPS (www.eurocps.org) is targeting outcome 'b' "Innovation Actions" of the H2020 objective ICT-2014 "Smart Cyber-Physical Systems". The project aims to arm Europe with a network of design centers in order to initiate and boost synergies between SMEs, major CPS-platforms, and CPS-competency providers. The expected outcome is to capture the emerging CPS markets and create sustained demand for European manufacturing. To that end, the EuroCPS design centers act as one-stop-shop, providing technical expertise, coaching and access to advanced industrial CPS platforms in order to get SMEs up to speed on the innovation ecosystem of CPS products by facilitating access to the leading edge technologies and their implementation. In the process, design centers tap existing regional ecosystems in several countries to bring the full value chain from hardware/software platforms to high value-added CPS products and services.

To demonstrate this new cooperation model (leveraging software, system and nano-electronic industries), EuroCPS supports and funds industrial experiments (IE) considering their excellence, their impact on the ecosystem and their industrialization implementation possibility and prospects through three open calls. At least 30 granted IEs are expected for developing innovative CPS products. The IE duration is between 6 and 18 months. The IE targeted products are designed, constructed and built on the seven EuroCPS Platforms:

- Avionics platform provided by Thales,
- INEMO platform provided by STMicroelectronics,
- Integrated and open platform provided by AVL,
- Power management platform provided by Infineon,
- Quark platform provided by Intel,
- Silicon processes and package technology platform provided by STMicroelectronics,
- STM32F platform provided by STMicroelectronics.

The 14 EuroCPS partners are major European system suppliers, world-class research centers and technology providers, all rooted in the top European regional ecosystems. They act as networking, competence or platform partners in order to provide all the necessary expertise and competencies to innovators from any sector. The networking partners of the project help in attracting experiments from local ecosystem. The competence partners support the third parties with services to help using one of the technology platforms of the EuroCPS network. The platform partners provide access to their technology platforms (hardware and/or software products) with technical support (knowledge transfer, engineering support).

EuroCPS has started in February 2015. The first period of the project was meant to define all the materials necessary to manage the open call procedure, to monitor and report the granted industrial experiments, to enhance the networking and the communication through all the dedicated partners.

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Besides all these fundamental tasks, 2 open calls were successfully launched and managed resulting in the selection of **24** IEs. All the competence partners and the platform partners (except Schneider) are involved. The 9 selected IEs on the first call were all started and some of them were already reaching their first milestones. Regarding the 15 selected IEs on the second call, the Standard Agreements signatures were in progress.

The second period of the project was meant to manage the 3rd open call procedure and monitor all the selected IEs through the 3 open calls. In total, **118** applications have been submitted and **34** IEs have been selected (10 at the last call). **82%** of the IEs are cross-border involving at least 2 partners from different countries. 2 IEs involve SMEs from countries not represented by EuroCPS consortium partners.

Out of the first call **4** IEs have been completed by the end of 2016 and 5 are going to finalize at the latest in Q2 2017. Out of the second call **1** IE has been completed. The rest of the IEs of the second call are mostly in the mid-term of their projects where the IEs out of the third call are in a first period.

The figure below introduces the IEs launched through the 3 calls. They show the capacity of EuroCPS to bring innovative CPS to business from any sectors within the help of networking, competence and platform partners.

After two years of activity, the **attractiveness** for SMEs of the proposed design center model combined with financial support is highlighted by more than **150** SMEs interested in proposing IE and the high-quality of the **118** submitted proposals. The three kinds of projects (SW intensive project, System integration project, CPS with innovative components project) supported by EuroCPS are covered by the 34 selected IEs. All the technology platforms support at least 3 IEs. All the EuroCPS competence partners support at least **2** IEs. The **efficiency of the model to build on open tools, platforms and standards** is demonstrated by the completion of the three calls thanks to a tight consortium, a simple proposal (5 weeks) procedure, a fast acceptance notification (7 weeks), and a short time to launch IEs. The **capacity to initiate and boost synergies** between SMEs, technology supplier and competences inside and outside their region or traditional market place is underlined by **2** selected IEs coming from European countries not represented by a EuroCPS partner. Preliminary impacts show that IE helped SMEs to **progress in their technology development** and enabled to **develop demonstrators**. The achieved demonstrators support the diffusion of the SME technology to prospects. The **SME business plans are also becoming clearer.** Beside, EuroCPS is **providing a more tailored access to European funding for SMEs**, by providing lightweight and focused funding and services with a manageable project size and administrative overhead (proposal writing, reporting). The day-to-day support is well appreciated since the IE owners are usually not experienced with EC framework.

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