

BEinCPPS Business Experiments in Cyber Physical Production Systems

HORIZON 2020 – project 680633

www.beincpps.eu

Call for Proposals for CPPS Equipment Assessment Experiments

Guide for Proposers: Proposal submission & evaluation criteria

Identifier: BeinCPPS Call-2

Call title: Second call for BEinCPPS CPPS Equipment Assessment experiments

Project full name: Business Experiments in Cyber Physical Production Systems

Acronym: BEinCPPS

Grant agreement number: 680633

Deadline: 15th December 2016, at 17:00 Brussels local time

Expected duration of participation: 15 months, with expected commencement 1. April, 2017

Indicative budget for BEinCPPS Call-2: 1,200,000 €

Indicative budget for topics:

1. CPS-based Product Lifecycle and End-of-Life Management: € 240,000
2. CPS-based Factory Logistics Management: € 240,000
3. CPS-based Zero Defect Manufacturing: € 240,000
4. CPS Predictive maintenance: € 240,000
5. CPS Modelling and simulation: € 240,000

Maximum funding request per proposal: € 120,000 (covering all participants)

Funding constraints: BEinCPPS beneficiaries are excluded by this call

Submission language: English

Internet address for full open call information:

www.beincpps.eu

www.i4ms.eu

Submission site: <https://beincpps.ems-innovalia.org/>

A contact tool is available inside the submission site.

Mail: beincpps_opencall@innovalia.org

Introduction

BEinCPPS is funded under the European Commission's Horizon 2020 Framework Programme for Research and Innovation through the Factories of the Future Call for Proposals (H2020-FoF-2015) addressing the Topic "ICT Innovation for Manufacturing SMEs (I4MS)" (topic identifier: FoF- 09-2015).

BEinCPPS is an Innovation Action that contributes to the following technology area as expressed in the Call work programme:

Integration of Cyber-Physical-System modules in manufacturing processes and process chains (application or equipment assessment experiments) to increase sophistication and automation in production SMEs and to create novel value added services linked to process surveillance and maintenance.

BeinCPPS Call-2 targets the development of equipment assessment experiments by Manufacturing SMEs. The objective is to carry out innovative experiments in CPPS-based manufacturing facilities provided by the applicants themselves and based on HW/SW components of the BEinCPPS reference architecture. The open call aims at addressing different industrial sectors or business cases with respect to the 5 BEinCPPS Industrial Champions. **The presence in the consortium of a Manufacturing SME¹ providing the experimentation facilities is mandatory.**

1. **CPS-based Product Lifecycle and End-of-Life Management.** The Cyber and the Physical components of a CPPS artefact (Product) are characterised by quite different lifecycles, especially in the End of Life phase where the huge investments in CPPS could be partially recovered. Applicants are expected to propose their own experiments in this domain as well as providing the availability of the relevant CPPS manufacturing facility. Current BEinCPPS experimentations are located in the Rhone Alpes industrial champion in the moulds industry.
2. **CPS-based Factory Logistics Management.** CPPS play a fundamental role in the factory internal logistics: innovative experiments need to be developed specifically for planning, scheduling and monitoring raw materials and finite products inside the production system. Applicants are expected to propose their own experiments in this domain as well as providing the availability of the relevant CPPS manufacturing facility. Current BEinCPPS experimentations are located in the BEinCPPS Norte industrial champion in the shoes industry.
3. **CPS-based Zero Defect Manufacturing.** Innovative product quality assessment experiments are now enabled by CPS-based intelligent metrology and quality assessment systems. Applicants are expected to propose their own experiments in this domain as well as providing the availability of the relevant CPPS manufacturing facility. Current BEinCPPS experimentations are located in the Lombardia industrial champions in the white goods industry.
4. **CPS Predictive maintenance.** The adoption of CPS in manufacturing systems is generating huge amounts of data which require specific analytics techniques and tools. Equipment condition monitoring, diagnosis and predictive maintenance experiments are therefore enabled by this huge

¹ SME status is defined according to Horizon2020 Grants Manual

availability of shop floor data. Applicants are expected to propose their own experiments in this domain as well as providing the availability of the relevant CPPS manufacturing facility. This aspect is currently not covered by any BEinCPPS experimental facility.

5. **CPS Modelling and simulation.** During the whole lifecycle of a CPS-based production system, since its design-engineering till to its renovation-dismantling, there is a need for advanced modelling and simulation environments to generate the so-called digital twin and to simulate several different what-if scenarios. Applicants are expected to propose their own experiments in this domain as well as providing the availability of the relevant CPPS manufacturing facility. This aspect is currently not covered by any BEinCPPS experimental facility.

Submission Details

Submission deadline: All submissions must be made by 17:00 Brussels local time, December 15th 2016.

Electronic submission: Proposal submission is exclusively in electronic form using the proposal submission tool accessible via the BEinCPPS web-site: beincpps.ems-innovalia.org.

The central component of proposal submission is the uploading of a PDF-document (whose size must not exceed 5.0 MB) compliant with the instructions on the proposal structure given below.

Proposal format and structure: Proposals must be submitted in English. The main section of the proposal must not exceed 10 pages in length (with text no smaller than 11 point Arial font). Thus, with the inclusion of the cover page and administrative pages (discussed below), the maximum page count is 13 pages. **Proposals will be truncated to this page count and the independent expert evaluators will only be provided with the truncated version.**

The structure of the proposal (and indicative length per section) should be as follows:

1. Summary (0.5 pages)
2. Industrial relevance, potential impact and exploitation plans (3.5 pages)
3. Description of the work plan and concept (3 pages)
4. Quality of the consortium as a whole and of the individual proposers (2 pages)
5. Justification of costs and resources (1 page)

As indicated above, the overall length of the above 5 sections must not exceed 10 pages.

A management structure will be imposed on the successful proposals. That is, the proposal will not need to contain a description of how the resultant project will be managed.

In addition to the 10-page proposal description, a cover page and 2 pages of administrative data, including a tabular list of proposal participants, must be provided. The participant list should include for each participant, when available, the Participant Identification Code (PIC) issued by the European Commission (<http://ec.europa.eu/research/participants/portal/desktop/en/organisations/register.html>).

Indicative budget for Call-2:

BEinCPPS will make use of the H2020 Third Parties Funding method to enable the inclusion of new experiment partners. The indicative funding budget for Third Parties for BEinCPPS Call-1 is 1,200,000€

The funding of Third Parties must follow the same principles as used for existing project beneficiaries of BEinCPPS, which receives European Commission funding as an “Innovation Action”. Thus, Third Parties will receive 70% funding of eligible costs arising (except for non-profit organisations which receive 100% funding).

The funding for an individual experiment may not exceed 120,000 € (covering all participant 3rd Parties). Proposers should consider their actual needs and not target this upper limit mandatorily. The evaluation will take into account the appropriateness of the requested resources.

Erroneous budget data included in accepted proposals will not result in final budget that possibly exceeds the upper requested limit for funding of the experiment as a whole or of individual participants: BEinCPPS reserves the right to make the appropriate and necessary effort and budget cuts.

BEinCPPS EU Open Call Eligibility

The Open Calls will be eligible for any entity which is legally entitled to act as a regular business², is based in an H2020 country, however BEinCPPS open call addresses specifically manufacturing SME, which should be present in the consortiums.

List of activities being supported by third party funding

Activities
Software licenses
Travel expenses
Personnel Costs
Equipment Costs
Indirect Costs (25% of direct costs)
Costs to collaborate with Experimental Industrial Manufacturing partners

Evaluation Criteria

The evaluation criteria and the scoring scale used are very well aligned with H2020 Programme, but enhanced to favor the integration of CPPS technology, aimed by objective FoF-9-2015. The ranking of selected projects will be created assessing:

1. Soundness of service concept, innovation;
2. Impact including industrial relevance and business strategy
3. Implementation of the work-plan³
4. Effective and justified deployment of resources.

² This means that not only capital companies are eligible, but also natural persons if they hold the required trade licenses etc.

³ In order to accelerate the payment process and facilitate the participation of the SMEs, the experiment will include three milestones to better monitor the fulfilment of the objectives.

Each criterion will carry a score ranging from 0 to 5. So, the scoring scale remains the same as usual for H2020 (and also the fact that half marks can be given):

- 0: The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information
- 1 (Poor): The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses
- 2 (Fair): While the proposal broadly addresses the criterion, there are significant weaknesses;
- 3 Good The proposal addresses the criterion well, although improvements would be necessary
- 4 (Very good): The proposal addresses the criterion very well, although certain improvements are still possible
- 5 (Excellent): The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

There will be a threshold score of 3 that will apply to criteria 1-3-4, while a threshold score of 4 will apply to criterion 2. The first criterion will have a weight of 2, while the second will have a weight of 3. The remaining criteria (third and fourth) will have a weight of 1. Thus, the market impact will have a slightly higher relevance than the Innovation Technical Excellence of the service, while the use of resources and the implementation will have lesser impact on the final mark. Funding is then awarded to most highly ranked proposals as long as there is available budget. BEinCPPS financial support will be granted to projects up to the limits indicated below, on the condition that the service reaches the excellence level requested and till the budget available for each phase is exhausted. If the call budget is not exhausted, the budget will be diverted to the second call. If the same situation is faced in the second call, the budget will be considered available for further activities to be agreed with the EC. The priority order for proposals with the same score is handled as follows:

These proposals will be prioritised according to the scores they have been awarded for the criterion impact.

- If these scores are also equal, priority will be based on scores for excellence.
- If these scores are also equal, priority will be based on scores for the criterion implementation of the workplan with a final reference to the use of resources.

All proposers (successful and unsuccessful) are contacted with the results of their evaluation.

The final support to each third party will be determined once the BEinCPPS project participants provide the project with the requested justification in the resources used; i.e. Personnel costs (nominal), travel expenses, equipment, etc.

All payments to beneficiaries will be handled by the BEinCPPS consortium lead partner POLIMI. Typically 30% of the payment will be released at contract signature, 30% at an intermediate review (after 6 months) and 40% at conclusion of the experimentation. The intermediate and final reviews will be based on mid-term and final deliverables produced by the project and will be evaluated by a review team appointed by BEinCPPS workpackages leaders.