

HORIZON 2020

Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs



Guide for Proposers

!NEW! Version 2.0 !NEW!

14 July 2020

Grant Agreement:
872548



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1. Introduction

The initiative for Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs (DIH4CPS) will help European enterprises overcome innovation hurdles and establish Europe as a world leading innovator of the Fourth Industrial Revolution. DIH4CPS will create an embracing, interdisciplinary network of DIHs and solution providers, focused on cyber-physical and embedded systems (CPES), interweaving knowledge and technologies from different domains, and connecting regional clusters with the pan-European expert pool of DIHs.

The open call aims at adding at least 10 experiments to the DIH4CPS ecosystem. Currently, the DIH4CPS ecosystem contains 11 experiments involving DIHs and SMEs

Below, a list of the initial 11 experiments can be found. For more detailed information, please visit the project's official website: <http://dih4cps.eu/>

N	Description	Sector	Country
1	CPS for safe and sustainable aquaculture farming	Aquaculture	Germany
2	Complete clinical data with data from patient environment	Home Health Care	France
3	Personalised interactive Tourist Platform	Tourism	France
4	Energy management in buildings and residential sector	Energy	Italy
5	Advanced 3D audio-visual installations for hospitality events, trading shows and conferences	Entertainment	Spain
6	Increased productivity in olive processing by implementing CPS and image recognition	Food processing	Spain
7	CPS for security and wellbeing of shop floor workers	Healthcare	Portugal
8	Track and trace scheduled product in an open and hostile environment by deploying CPS.	Construction	UK
9	Smart Mobility using Cyber-Physical embedded systems	Mobility	Luxemburg
10	Sensorised planter boxes for urban orchards	Agriculture	Poland
11	Capacity planning and production optimization for custom machine orders for SMEs	Machine Production	Hungary

2. Open Call Objectives

2.1. Overview

The scope of this first Open Call aims to attract Application Experiments that apply Cyber-Physical Systems and Embedded Systems (CPES) providing a demonstrable positive economic impact on SMEs in their sector. Application Experiments have to validate CPES technology and also services from Digital Innovation Hubs (DIHs). This includes replicable experiments that would, for example, lower production costs, influence product development or increase revenues or improve manufacturing management in similar SMEs.

The current COVID-19 pandemic has brought a tough situation for Europe's economy. This is especially true for many SMEs across Europe. As a part of a European strategy to combat this current crisis, the Open Calls of DIH4CPS will focus on solutions specifically suitable for a successful recovery from the COVID-19 crisis. A successful proposal should deliver a roadmap that convincingly demonstrates the Application Experiment's contribution to the economic recovery of SMEs from the COVID-19 crisis. Industry sectors and geographical regions with proven impact from the COVID19 are of special relevance.

The Application Experiments will bring together DIHs, by supporting the research centres, suppliers and end-users of CPES. The selection of proposals will aim to achieve a uniform DIH-coverage across Europe. More details about the evaluation criteria can be found in section 7 of this document.

2.2. Technological topics

The types of activities that qualify for financial support are experiments focused at enhancing capabilities of all European Start-ups, particularly SMEs, to launch innovative products or services with advanced digital technologies in the field of CPES. The following technological topics will be of interest (but not limited) to the open call:

1. **Digital twins.** The concept refers to a replica of physical assets, processes, devices or systems allowing for real time optimization. Examples of applications of this technology can be found within various sectors, such as healthcare or manufacturing.
2. **Augmented reality.** This topic refers to the technology behind the interactive experience of real-world environment enhanced by computer-generated perceptual information. Common sectors for this technology include healthcare, entertainment, tourism and architecture.
3. **Artificial Intelligence.** Human decision making and control over physical systems could in various applications be replaced with mechanisms related to artificial intelligence. Customized artificial intelligence developments are also used for Big Data Analytics. Algorithms based on artificial intelligence have a broad spectrum of applicability, including proactive maintenance, logistics and agriculture.
4. **Dashboard controls.** Some industrial control systems and medical monitoring systems require surveillance and inputs from human operators. Providing the human operator with valid graphic information is key to the successful control over physical systems and processes.

Application Experiments are not limited to strictly technological innovation related to the aforementioned topics. For example, SMEs providing innovative methodologies or other innovative procedures related to the topics (or other technologies) will be considered. Application Experiments have to validate CPES technology and also services from DIHs.

3. Open Call Information

Project Acronym: DIH4CPS

Project grant agreement number: 872548

Project full name: Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs

Call Identifier: DIH4CPS-OC1

Call title: Open Call for experiments aimed at fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs

Total funding: 1 800 000 EUR

Deadline: 31st August 2020, at 17:00 Brussels local time

Expected duration of participation: 18 Months, with expected start November 2020

Maximum amount of financial support per proposal: 180 000 EUR

Maximum amount of financial support for each third party: 100 000 EUR

Language in which proposal should be submitted: English

Web link for further information: www.dih4cps/open-calls/

Email address for further information: calls@dih4cps.eu

4. DIH4CPS Open Call Requirements

4.1 Eligibility Criteria

- 1 Applicants must be legal entities established in countries eligible for participation in EC H2020 projects, as indicated in the following documents:

https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-a-countries-rules_en.pdf

http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/3cp-art/h2020-hi-list-ac_en.pdf

- 2 Each mini consortium must consist of at least 1 DIH and maximum 2 additional partners.
- 3 The DIH must be enrolled in the EC DIH catalogue¹ or present a plan for successful enrolment by the end of the experiment.
- 4 Applicants need to be registered and have a Participant Identification Code (PIC)².
- 5 Each proposal can request a maximum contribution of 180 000 € in this open call.
- 6 Each third party can receive a maximum contribution of 100 000 € from the project DIH4CPS. Please note that if a third party has already received financial support by any other I4MS³ or Smart Anything Everywhere⁴ initiatives, the maximum amount of support can be 100 000€ – X (X= the amount of support already received by the other projects).
- 7 Each participant shall represent at least 20% of the overall budget of a proposal.
- 8 Proposals shall allocate 80% of the overall funding of the experiment to SMEs.
- 9 Involved SMEs shall sign an SME declaration.
- 10 Applicants shall not have any potential conflict of interest with the selection process and during the implementation of the project. All cases of potential conflict of interest will be assessed case by case.
- 11 DIH4CPS beneficiaries cannot apply to this call.
- 12 The topic of the experiment must cover Cyber-Physical and Embedded Systems.
- 13 Proposals must be submitted in English.

4.2 Additional Requirements

Applicants must clearly indicate in their proposal the results they intend to achieve and how to measure their impact providing a set of measurable Key Performance Indicators (KPIs) to be validated during the contract negotiation phase. This is a mandatory requirement for any proposal.

¹ <https://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool>

² <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/participant-register>

³ <https://i4ms.eu/>

⁴ <https://smartanythingeverywhere.eu/>

5. Submission of Proposals

5.1 General Information

Submission deadline: All submissions must be made by 17:00 Brussels local time, 31st August 2020.

Electronic submission: Proposal submission is exclusively in electronic form using the proposal submission tool accessible via the DIH4CPS open call web-site: <http://dih4cps.eu/open-calls/>

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 11 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 (excluding annexes). **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. Technical Excellence (1.5 page)
3. Industrial relevance, potential impact and exploitation plans (2 pages)
4. COVID-19 recovery roadmap (1.5 pages)
5. Work plan and budget (3 pages)
6. Quality of the consortium (2.5 page)

As indicated above, the overall length of the above 6 sections must not exceed 11 pages.

In addition to the 11-page proposal description, a cover page and 0.5 page of administrative data, including, when available, the Participant Identification Code (PIC) issued by the European Commission.

<http://ec.europa.eu/research/participants/portal/desktop/en/organisations/register.html>.

Finally, proposals will also include two annexes:

- a. Annex 1: SME self-declaration (one per SME involved, provided in proposal template);
- b. Annex 2: Ethics questionnaire (provided in proposal template).

5.2 Submission process

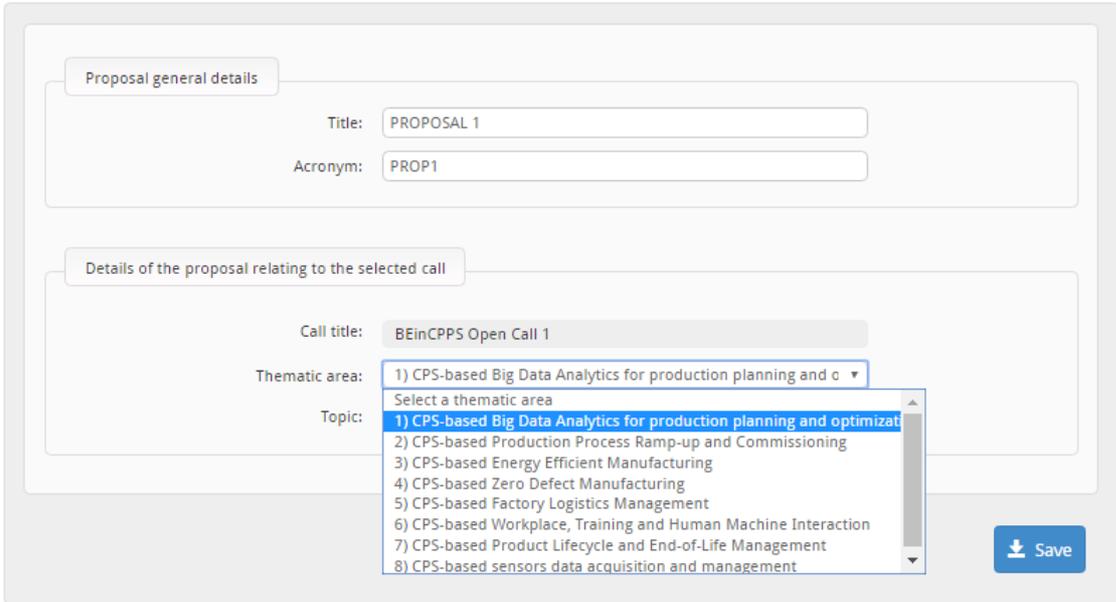
Proposals must be submitted electronically in PDF format ONLY at <https://DIH4CPS.ems-innovalia.org/>

If you discover an error in your proposal, and provided that the call deadline has not passed, you may submit a new version. Only the last version received before the call deadline will be considered in the evaluation.

Proposals must be received by the closing time and date of the call. Late proposals – including force majeure circumstances – or proposals submitted in any other way than through the online submission tool, will not be evaluated.

The picture below provides an overview of the general details to be firstly inserted when creating the proposal. Proposers have to insert information such as title, acronym and select the thematic area, topic and keywords of the Call best matching their proposal.

General details



Proposal general details

Title: PROPOSAL 1

Acronym: PROP1

Details of the proposal relating to the selected call

Call title: BEinCPPS Open Call 1

Thematic area: 1) CPS-based Big Data Analytics for production planning and o

Topic: 1) CPS-based Big Data Analytics for production planning and optimizat

2) CPS-based Production Process Ramp-up and Commissioning

3) CPS-based Energy Efficient Manufacturing

4) CPS-based Zero Defect Manufacturing

5) CPS-based Factory Logistics Management

6) CPS-based Workplace, Training and Human Machine Interaction

7) CPS-based Product Lifecycle and End-of-Life Management

8) CPS-based sensors data acquisition and management

Save

Figure 1 Proposal general details

Once the general details of the proposal are saved, the proposer is granted access to fill in the rest of the online proposal sections, such as the abstract and budget allocation (Picture 2).

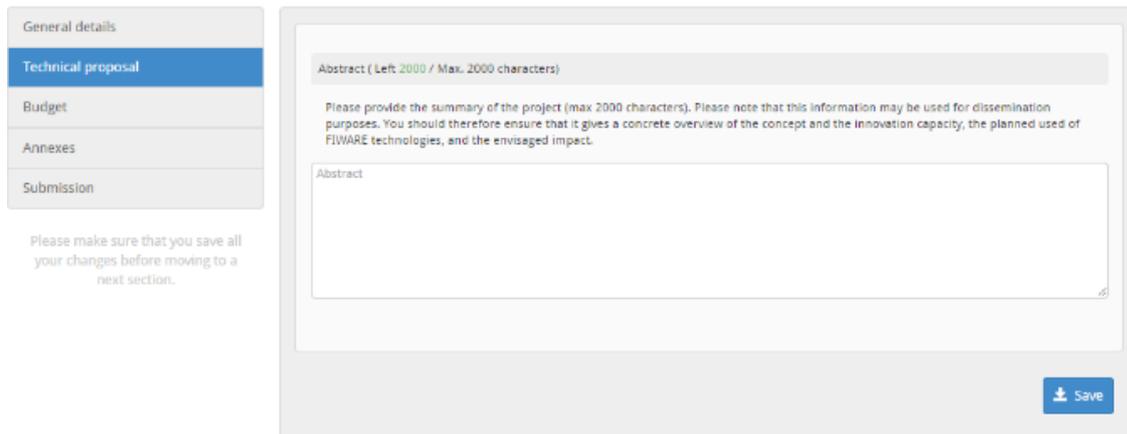


Figure 2 Insert abstract

Next, the proposer can upload their technical proposal (Picture 3).

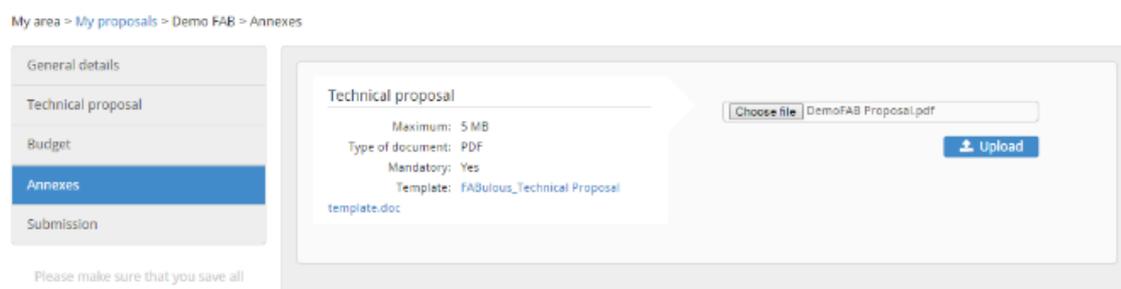


Figure 3 Upload technical proposal

Once all sections are filled in, the proposer can submit the proposal and receive a PDF version of it afterwards (Picture 4 and Picture 5).

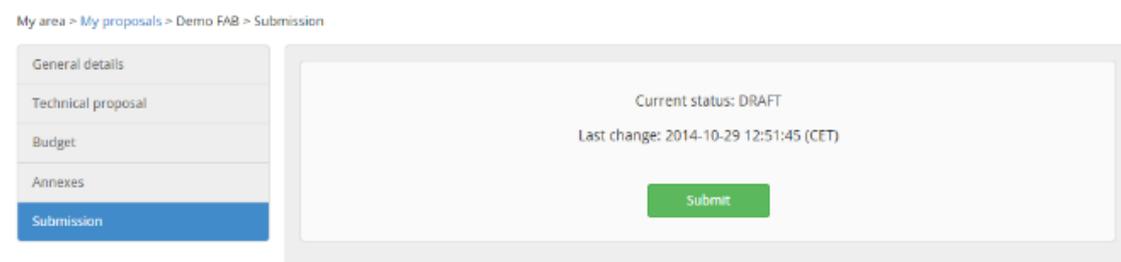


Figure 4 Submit proposal

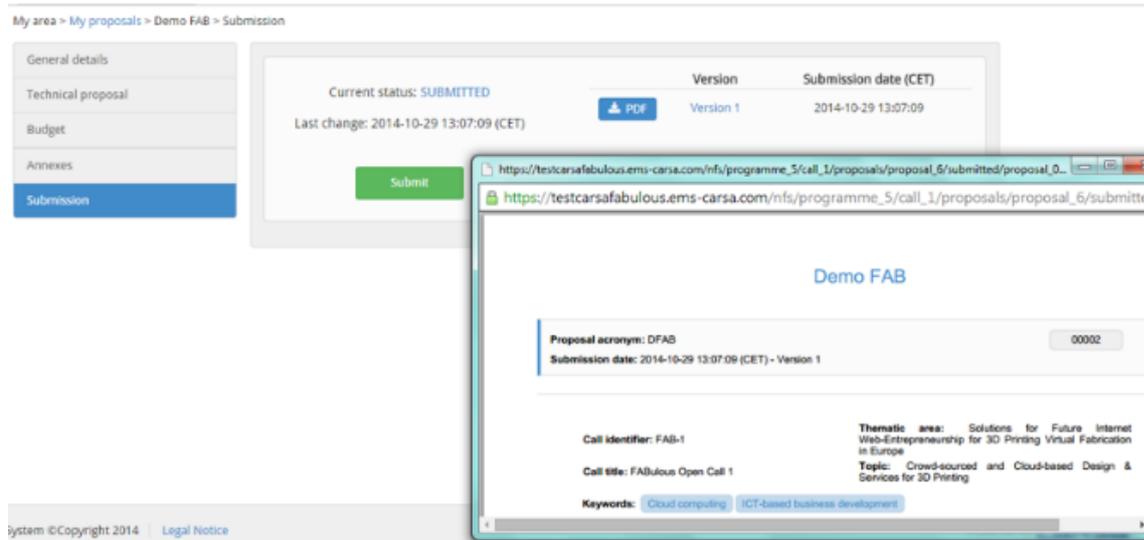


Figure 5 Download PDF version of proposal

5.3 Acknowledgement of receipt

As soon as possible after the close of call, an Acknowledgment of receipt will be emailed to each proposal coordinator by DIH4CPS coordinator. Sending an Acknowledgement of receipt does not imply that a proposal has been accepted as eligible for evaluation.

6. Indicative budget for DIH4CPS Open Call 1

DIH4CPS will make use of the H2020 Cascade Funding method to support the winners of the open calls. The funding budget for Third Parties for DIH4CPS OC1 is 1 800 000 €.

The funding of Third Parties must follow the same principles as used for existing project beneficiaries of DIH4CPS, 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 proposal may not exceed 180 000 €. Proposers should consider their actual needs and not target this upper limit mandatorily. In addition, each proposer should represent at least 20% of the overall budget of the proposal. The evaluation will take into account the appropriateness of the requested resources.

There is a 100 000 EUR limit to any third party as a maximum threshold to receive FSTP in Smart Anything Everywhere and I4MS initiatives.

At least 80 % of the experiment funding must go to SMEs. Each involved DIH shall calculate at least two person months or approximately 10 000 € of personnel costs for the enrolment in the DIH4CPS network.

7. Evaluation Criteria

The evaluation criteria and the scoring scale used are very well aligned with H2020 Programme but augmented to favour the integration of CPS technology in new sectors, contributing to the COVID-19 crisis recovery. The ranking of selected projects will be created assessing:

1. Technical Excellence
 - Quality and soundness of main concept and objectives
 - Novel concepts and approaches
 - Innovation capacity of the application experiment
 - Implementation and adequate usage of CPES technologies.
 - New products and/or services to be developed
2. Industrial relevance, potential impact and exploitation plans
 - Level of digitalisation of the application sector, which is being addressed
 - Level of relevance of the domain of embedded and cyber-physical systems for the proposed application experiment
 - Replicability of the experiment in other SMEs
 - Quality of exploitation model
3. COVID-19 recovery roadmap
 - Factors and needs of the sector affected by COVID-19
 - Requirements to combat situation
 - Contribution to recovery
 - Quantifiable metrics defined
4. Workplan and budget
 - Overall quality of the work plan
 - Sufficient deliverables to monitor results
 - Balanced budget, eligible costs
5. Consortium
 - Quality and relevant experience of the consortium
 - Level of support by the DIH
 - Added value to DIH4CPS consortium
 - Plan for enrolment of the DIH in the EC catalogue (if applicable).

Each criterion will carry a score ranging from 0 to 5 as usual for H2020:

- 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.

Funding is then awarded to most highly ranked proposals as long as there is available budget. If the call budget is not exhausted, the remainder will be diverted to the second call.

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 industrial relevance and impact (#2).
- If these scores are also equal, priority will be based on scores for technical excellence (#1).
- If these scores are also equal, priority will be based on scores for the criterion COVID-19 recovery roadmap (#3).
- If these scores are also equal, priority will be based on scores for the criterion quality of the consortium (#5).
- Final priority is given to criterion of workplan and budget (#4).

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

8. Relationship with DIH4CPS and funding scheme

8.1 Relationship with the DIH4CPS and funding scheme

Within the applying consortium, the coordinator of the experiment will be the Subgrantee. Contracts with the Subgrantee will be done by DIH4CPS's coordinator, UNINOVA.

Any legally binding commitment from the side of DIH4CPS shall be subject to the entering into a written contractual agreement between UNINOVA and the Subgrantee.

The administrative tasks for the Subgrantee, including cost and activity reporting obligations and related documents will be provided during the negotiation and contracting phase.

The Subgrantee will be requested to submit, at the mid and end of the project, a Progress and Final Report consisting of:

- Progress of the experiments
- Technical results including KPI
- Dissemination and exploitation activities
- Cost statement

These reports will be reviewed by DIH4CPS and will be agreed upon during the negotiation phase.

Besides the mandatory reports, Subgrantee are free to define and issue other deliverables or documents to present the results of the project.

Eligible costs consist of

- personnel costs,
- software licenses
- travel expenses
- equipment costs
- partnering costs to industrial experimental facilities.
- Indirect Costs (25% of direct costs)

Subgrantees have to comply with the rules and the principles mentioned in Section I, Article 6 (Eligible and ineligible costs) of the H2020 AMGA – Annotated Model Grant Agreement (see

http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf), in the same way as the beneficiaries of the DIH4CPS project. The rules concerning eligibility of costs, identification of direct and indirect costs and upper funding limits can be found in Section I, Article 22 of the H2020 AMGA. Following other articles of the AMGA apply: 23, 35, 26, 38 and 46.

8.2 Funding scheme

Each experiment may receive a maximum contribution of 180 000 EUR in this open call. The financial support is estimated in the proposal, but the exact amount

corresponds to reimbursement of actual costs during incurred by the recipients when implementing the experiment.

There is a 100 000 € limit to any third party as a maximum threshold to receive FSTP in Smart Anything Everywhere and I4MS initiatives. The DIH4CPS management team will inform the project officer about the selected third parties to receive assistance in verifying this rule is fulfilled.

The funding rate is 70% (except for non-profit legal entities, where a rate of 100% applies).

Each participant will receive 30% of the funding in the beginning of the application experimentation and 70% in the final of the application experimentation (including the receive and acceptance of the reports). The financial support corresponds to reimbursement of actual costs demonstrated by the participants in the experiment.

8.3 Intellectual property rights

The IP of the experiment's results generated by the Subgrantee will be owned by it.

Subgrantees grant the DIH4CPS consortium partners access to the results, for the pursuance of the objectives of the Project and the exploitation of the Project results in accordance with the GA. Details will be defined during the negotiation phase.

Subgrantees shall respect the intellectual property rights, including copyright, and abide by data protection legislation, that apply to software and data available or part of the DIH4CPS platform. All accepted proposals will have to submit a signed consortium agreement before starting the experiment.

9. Support to Experiments

9.1 Call Helpdesk

For further information on the call, please visit the Forum available on the project website, read and/or post any questions <http://dih4cps.eu/community/>

9.2 Useful Documents

- DIH4CPS Open Call Announcement
- DIH4CPS FAQ
- Proposal template

Please refer to <http://dih4cps.eu/open-calls/> for the complete documentation.