



WHITE PAPER ON THE FINANCIAL SUPPORT
OF THIRD PARTIES:
WHAT WE HAVE LEARNED

Author: Cristina Iobbi (Technical University of Munich)

Contributors: Geoff Pegman (R.U.Robots), Marie-Luise Neitz and Adam Schmidt (Technical University of Munich)

Contents

1. Introduction.....	3
2. Management of the open calls process	3
3. Results	4
3.1 ECHORD++: from lab to market.....	4
3.2 RobMoSys: Better tools. Better models. Better systems.	5
3.3 HORSE	6
3.4 ESMERA: boosting robotics innovation	6
4. What we have learned	8
4.1 Final considerations.....	9

1. Introduction

Financial Support to Third Parties (FSTP) represents a key element of further increasing the expected impact of an EU-funded projects. It is an instrument whereby the administration of open call for proposals is delegated to a consortia of private organisations aimed at increasing the efficiency and effectiveness of smaller tranches of funding. For instance, in compliance with the European Commission (EC) regulations and recommendations¹, projects receiving funding under Horizon 2020 (H2020) publish open calls to provide cascade funding to the third parties, becoming liable for them to the EC.

The open calls have a European dimension, are competitive, and aim at: (i) selecting start-ups or scale-ups for acceleration or incubation purposes; (ii) supporting experiments on a specific innovative technology or framework; (iii) integrating more participants to the project to extend its scope or to address specific tasks.

The topic of the open calls is closely tied to the objectives of the parent projects and it should be carefully defined. For instance, depending on these objectives, an open call can be based on a very general topic or on a more restricted one. While the first will target large groups within the scientific community, the second will attract only specific target audiences. This will determine the final number of applications expected and influence the expected impact of the project.

The Chair of Robotics, Artificial Intelligence and Real-time Systems at the Technical University of Munich (TUM) has gained wide practical experience in managing the open calls of EU-funded projects on robotics research, starting with the Seventh Framework Programme for Research (FP7) project ECHORD++, to the H2020 projects RobMoSys, ESMERA, HORSE and HBP. This white paper will provide a brief overview of the open calls process (section 2), will present and compare the results of several open calls (section 3), and lastly, will provide valuable insights about the lessons learned (section 4).

2. Management of the open calls process

The management of the open calls consists of four key steps (Figure 1):

- Preparation: the call documents and supporting documents are produced.
- Opening: the call is launched via the open call platform. In addition, the call is disseminated to the public and the applicants are supported via a helpdesk, usually in the form of email support.
- Evaluation: the eligible proposals are evaluated by independent expert evaluators via a two-step process, i.e. the remote evaluation and a panel meeting.
- Reporting and feedback: upon the completion of the full evaluation process, the funding suggestions are reported to the EC, and the results communicated to the applicants.

¹ [Guidance note on financial support to third parties under H2020](#)

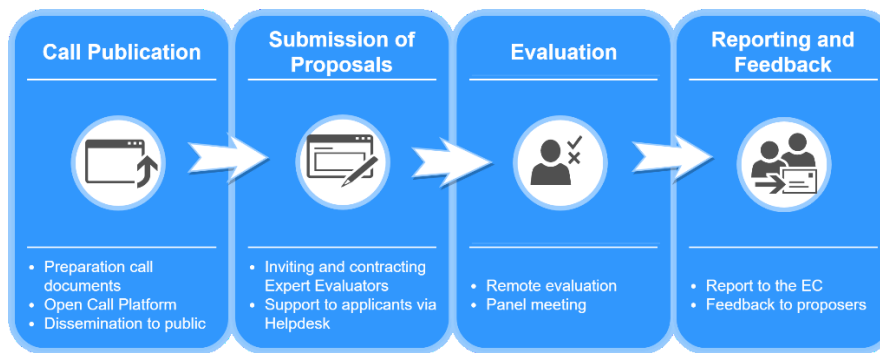


Figure 1: The open call management. The picture shows the four key steps about the management of the open calls.

Two basic key performance indicators can be measured for the open calls:

- **Oversubscription.** It refers to a situation in which the number of the proposals submitted greatly exceeds the number of proposals to be funded. This is defined as the ratio between the number of proposals that will get funded (F) and the number of proposals submitted (S). Clearly for good proposals to be funded some oversubscription is desirable. However, to prevent inefficiency of effort within the target community a threshold of 20% can be considered, i.e. the number of proposals received exceeds five times the number of proposals to be funded. This indicator can be calculated after the closure of the open calls.
- **Percentage of proposals scored above the threshold in all criteria.** This indicator, that can be measured after the completion of the evaluation, indicates that the proposals were scientifically excellent with high potential impact.

3. Results

3.1 ECHORD++: from lab to market

The strategic mission of the FP7 project ECHORD++ (European Coordination Hub for Open Robotics Development, project run time 2014-2019) is to facilitate the cooperation between academia and industry to enhance the knowledge transfer from lab to market. For instance, it promotes the direct cooperation between robot manufacturers, researchers and users, and brings them together at the operational level. It is the follow-up project of ECHORD (European Clearing House for Open Robotics Development, project run time 2009 – 2013), which was instantiated as an incubator to drive innovation by facilitating the cooperation between academia and industry.

To complement its scope, i.e. fostering the collaboration between academia and industry and bridge research to the market, ECHORD++ offered, during the first two years, funding opportunities for research and development (R&D) experiments via two competitive open calls². With a run time of 12-18 months and a target funding of EURO 300,000.00, experiments refer to small to medium sized scientific research and/or technology development projects carried out by a team of one or more research institutions and robot manufacturers. In addition, experiments can be categorized according to different types, i.e. expectation and target horizon for the individual experiment outcome, scenarios, i.e. the expected use of state-of-the-art robot technologies in the near future, and research

² The first call for ECHORD++ experiment proposals opened on 3 March and closed on 14 April, 2014. The second call for ECHORD++ experiment proposals opened on 4 May and closed on 23 June, 2015.

foci which define the areas in which scientific advancement can be expected. Applicants were encouraged to submit proposals for a research project selecting one between 4 research foci, 3 experiment types and 6 scenarios.

Having within ECHORD++ the aim of linking industry with academia, two open calls with quite broad topics were launched. For instance, the two calls gave applicants the possibility to define their own project, based on some thematic areas outlined in the guide for applicants. This resulted in a large number of applications that were submitted by the applicants in response to both open calls. In particular:

- *First call for ECHORD++ Experiment Proposals.* 137 proposals were submitted by 348 organizations. Upon the evaluation, 47% of the proposals were above the threshold and a total of 16 proposals were suggested for possible funding.
- *Second call for ECHORD++ Experiment Proposals.* 114 proposals were submitted by 241 organizations. Upon the evaluation, 53% of the proposals were above the threshold and a total of 16 proposals were suggested for possible funding.

Both open calls for ECHORD++ resulted in oversubscription (Figure 2). This data indicates that: (i) the demand for funding was higher than the available funding; (ii) the open calls with broad topics evoked high levels of response from the scientific community, resulting in a very high number of applications submitted.

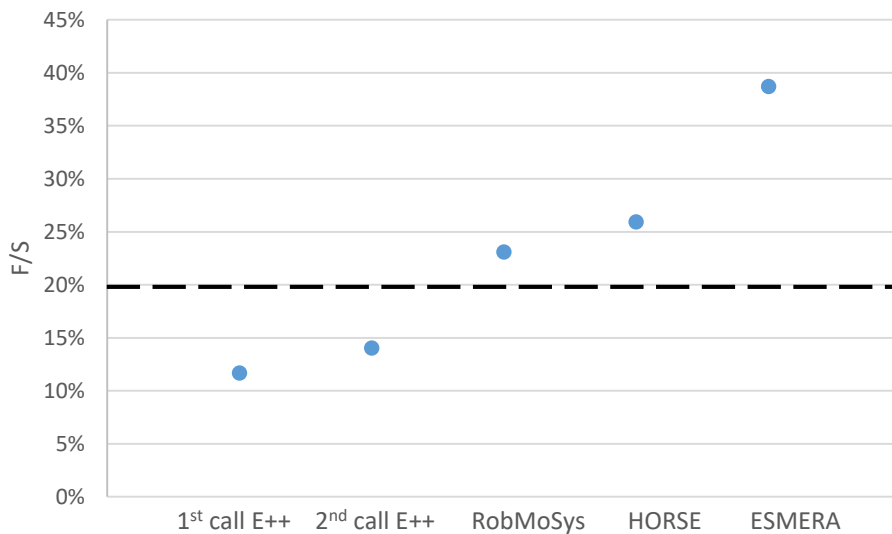


Figure 2: Oversubscription. The horizontal line indicates the threshold value set at 20%. The values below the threshold indicates that oversubscription occurred for that call. F=proposals to be funded; S=proposals submitted by the applicants.

3.2 RobMoSys: Better tools. Better models. Better systems.

The H2020 project RobMoSys (Composable Models and Software for Robotic Systems, project run time 2017-2020) envisions an agile, multi-domain, model-driven European robotics software ecosystem providing both widely applicable software products and software-related services. Within the project time frame, the ambition is to shape a European digital industrial platform for robotics, that is modular, composable, re-usable and easy to use. In the medium-term, companies should be able to rely on the RobMoSys

outcomes to build robotic applications by composing high quality composable models and associated software functions.

Striving for a step change in system-level composition of robotics, the project launched *the first RobMoSys open call*³ with unique, attractive research funding opportunities for prospective applicants to contribute to its ecosystem. The call addressed single institutions or small consortia with a strong track record in model-driven software development to contribute in the realization of a step change in system-level composition for robotics, and demonstrate this in real-world scenarios. To this aim, the open call was based on a very narrow topic.

In response to the first RobMoSys open call, a total of 26 eligible proposals were submitted by the applicants. Upon the evaluation, 23% of proposals were above the threshold, and a total of 6 proposals were suggested for possible funding. Thus, the open call was not oversubscribed (Figure 2), suggesting that the narrow topic of the call targeted only a specific group within the scientific community, resulting in a very small number of applications submitted.

3.3 HORSE

The project HORSE (Smart integrated Robotics system for SMEs controlled by Internet of Things based on dynamic manufacturing processes) aims to bring a leap forward in the manufacturing industry by proposing a new flexible model of smart factory which involves the collaboration of humans, robots, autonomous guided vehicles and machinery in order to complete industrial tasks in an efficient manner. The main strategy builds on existing technology and research results in robotics and smart factories, and integrates them in a coherent and flexible software framework.

HORSE launched the *HORSE Open Call for Application Experiments*⁴ to involve new end-users in the process of development and validation of the HORSE framework in real-life industrial settings. The experiments are expected to validate, extend and refine the framework as well as to maximize the impact of HORSE on the European manufacturing sector.

In response to the open call, a total of 27 eligible proposals were submitted by the applicants. Upon the evaluation, only 26% of proposals were above the threshold, and a total of 7 proposals were suggested for possible funding. Thus, the open call was not oversubscribed (Figure 2), suggesting that the narrow topic of the call targeted only a very specific group within the scientific community, resulting in a small number of applications submitted.

3.4 ESMERA: boosting robotics innovation

The project ESMERA (European SMEs Robotics Applications, project run time 2018-2022) can be considered a starting block for European SMEs designing and developing robotic solutions, aimed at unlocking the innovation potential of SMEs. To this end, ESMERA promotes applied robotics technology developed for industrial challenges set by key

³ The first RobMoSys Open Call opened on 10 July and closed as of 9 October, 2017.

⁴ The call opened on 1 December 2017 and closed on 5 March 2018.

European companies and organisations. Hence, the SMEs have the opportunity to realise new technologies that address real life problems in areas where a market already exists.

ESMERA offers direct financial support to the solution-providing SMEs. *The first open call for ESMERA* asked for contributions proposing a solution to eight challenges defined by leading companies in the energy, manufacturing, agri-food and construction areas nearly autonomous robots or human-robot collaboration and could demonstrate these in real-world scenarios.

In response to the first open call⁵, 31 eligible proposals were submitted by the applicants. An in-depth analysis of the number of proposals submitted for each challenge suggests that the challenges with general topics which are applicable to different sectors received more proposals than the challenges in a narrower and restricted area (Figure 3). Indeed, considering the two challenges for the energy sector (E1 and E2, Figure 3) and the two challenges for the construction sector (C1 and C2, Figure 3), the challenges E1 and C1 with a broader topic received more proposals than the challenges E2 and C2 with a narrower topic. In accordance with the data mentioned above, the challenge A1 in the agri-food sector with a general topic received many proposals (Figure 3). Finally, the three challenges selected for the manufacturing sector (M1, M2, M3) with narrow topics received few applications (Figure 3). Overall, the first open call for ESMERA was based on a targeted and narrow topic, leading to a small number of applications submitted.

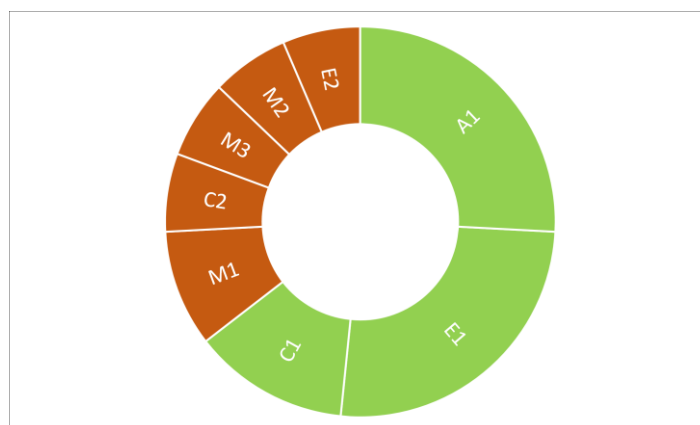


Figure 3: ESMERA challenges and number of proposals submitted. Green reflects challenges A1, E1, C1 which received a larger number of proposals. Orange reflects challenges E2, M2, M3, M1, C2 which received the smaller number of proposals. E1: developing a navigation and localization system for robots; E2: developing a nuclear waste sorting system; M1: developing a robot to do wire harness assembly task; M2: developing a system for dishwasher gasket assembly; M3: developing a system for paint quality check; C1: developing a heavy tool carrier in a construction environment; C2: developing a vegetation management system; A1: developing an autonomous weed control system.

In response to the first open call for ESMERA, a total of 31 eligible proposals were submitted by the applicants. Upon the evaluation, a total of 12 proposals were suggested for possible funding. Thus, the open call was not oversubscribed (Figure 2), suggesting that the narrow topic of the call targeted a specific group within the scientific community, resulting in a very small number of applications submitted.

⁵ The 1st Open Call for the ESMERA Project opened on 01 August and closed on 9 November, 2018.

4. What we have learned

Open calls are tools aimed at further increasing the expected impact of an EU-funded projects. Therefore, their topics are closely tied to the objectives of the parent projects. The success of the open calls depends on several factors, e.g. the clarity of the call documents in defining the topic of the call and its requirements, the expertise of the evaluators in selecting the most relevant proposals, the efficiency of the dissemination to attract as many prospective applicants as possible.

Depending on the objectives of the projects, an open call can be based on a broad or narrow topic. Here we suggest that open calls with very general topics are more readily welcomed by the broader scientific community, and the open calls with narrow and specific topics target very specific audiences. Hence, the topic of the open call, whether broad or specific, determines how many applicants will submit a proposal. For instance, ECHORD++, having the goal of linking academia with industry, launched two open calls with broad topics to target large groups within the scientific community that could contribute to its goal. This resulted in many applications submitted (Figure 4). On the other hand, other projects had more specific goals, e.g. to increase the uptake of the tools and methods developed within the projects (HORSE and RobMoSys) or to encourage SMEs to tackle concrete research challenges provided by the current industries (ESMERA). For these projects, the open calls were based on narrower topics, resulting in a limited number of applications submitted (Figure 4).

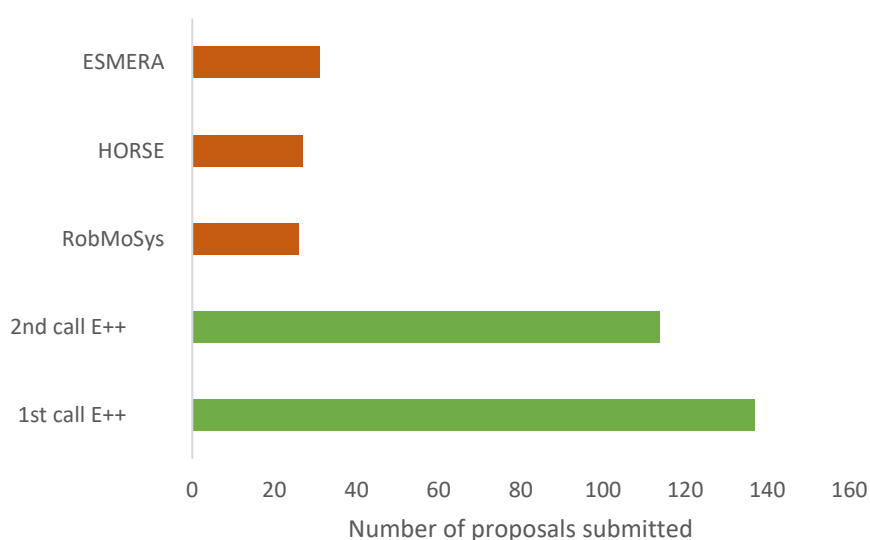


Figure 4: Number of proposals submitted in response to the open calls for the projects ESMERA, HORSE, RobMoSys, and ECHORD++. The green colour indicates the open calls with broad topics while the orange colour defines the open calls with narrow topics.

Receiving a large number of proposals in response to an open call can increase the probability of receiving more applications of high quality, leading to the selection of the most relevant applications for funding to contribute to the impact of the project. Indeed, both open calls of ECHORD++ with broader topics resulted in about 50% of the proposals being above the threshold upon the evaluation (subsection 3.1 ECHORD++: from lab to market). Although the correlation between the number of proposals submitted and the

ones being above the threshold upon the evaluation seems to be positive, this is a preliminary estimate and more data will be collected and analysed.

4.1 Final considerations

Currently, many European-funded projects are offering services to the robotics community by providing funding for experiments or more direct support for SMEs, or by opening the access to research infrastructure and shared facilities. For the FSTP a successful tool, the consortia delegated to manage the open calls should provide the methodological knowledge and competence expertise together with high level scientific excellence in the specific field. This ensures the compliance of the EC regulations and recommendation and, at the same time, the scientific expertise to support and further implement the overall process based on the project' needs and stakeholders' requirements.

FSTP is a key instrument to promote the advancement of robotics research & innovation. This is essential for productivity, competitiveness, to address societal challenges, and to promote the enhancement of technologies which are used within the robotics community and transferable to many other industrial sectors. Although FSTP is a tool that can be widely applied to technology development, robotics benefits particularly from this type of targeted, but individually small scale, support given the nature of the robotics (and artificial intelligence) community with a high density of small organisations working at the leading edge of robotics technology not yet forming a cohesive community. On this regards, FSTP is a tool which aids SMEs to be linked with the larger stakeholders and raise their output and efficiency, thus having a significant impact on Europe's manufacturing and employment capacity.

To conclude, FSTP represents a key element of further increasing the expected impact of an EU-funded projects. It is a tool which has contributed to the advancement of research and development in many technological areas in H2020, and will continue to support the digital innovation of Europe.