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Research and Innovation Action

EUROPEAN SMES ROBOTICS APPLICATIONS

GUIDE FOR APPLICANTS

The First Open Call for ESMERA Experiments (ESMERA-FOCE)

Project acronym:	ESMERA
Project grant agreement:	No: 780265
Project full name:	European SMEs Robotics Applications
Project web address:	http://esmera-project.eu
Call title:	The First Open Call for ESMERA Experiments
Call identifier:	ESMERA-FOCE
Full call information:	http://esmera-project.eu/Open-Calls
Call publication date:	01.08.2018
Proposal submission deadline:	31.10.2018, at 18.00 (Brussel's time)
Proposal submission web address:	http://opencalls.esmera-project.eu
Expected duration:	9 months for experiments in Phase 1 (max 18 months for experiments advancing to Phase 2)
Total budget:	€2,200,000 (maximum 16 experiments for the Phase 1 and maximum 8 experiments for the Phase 2). Maximum funding per proposal: €200,000 (€75,000 for the Phase 1, €125,000 for the Phase 2, including 25% indirect costs)
More information:	opencalls@esmera-project.eu

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1. General Information

This guide is related to the Horizon 2020 project ESMERA (European SMEs for Robotic Applications, Grant Agreement Number 780265, www.esmera-project.eu). The project focuses mainly on EU SMEs that are oriented towards the development of novel technologies and are in need of both technical and business support to accelerate the transfer of their ideas to the market. ESMERA aims to support EU SMEs in materializing, testing and promoting robotic technologies through:

- Providing industrial challenges defined by key EU companies and user organisations (in the areas of energy, manufacturing, construction and agri-food) and stimulating SMEs to compete to address real-life problems that already have a market,
- Engaging a number of competence centres (CCs) that can provide an environment for development, evaluation, testing, and demonstration,
- Offering direct financial support through a cascade funding mechanism,
- Offering mentoring and support in developing business cases and managing the complete chain from "idea to market product",
- Involving industrial associations and networks that can directly promote the developed solutions to their members.

ESMERA is organizing Open Calls asking SMEs developing robotics technologies to compete with each other and propose their innovative application ideas to the challenges. The Open Call mechanism offers funding opportunities to small, focused projects (called *experiments*) with a duration of 18 months (split into two 9-month phases) and the maximum budget is 200,000€ (75,000€ for Phase I, and 125,000€ for Phase II). Funding will support experiments in real industrial settings involving robotic technologies using the ESMERA platform. ESMERA will fund 32 experiments (16 for the first Open Call and 16 for the second Open call) for the Phase I and 16 challenge winners among them (8 for the first Open Call and 8 for the second Open Call) will be funded for the Phase II. All research experiments that will be selected for funding will have to directly address the problems set by these challenges and eventually be demonstrated in a relevant environment in order to ensure that the results are directly applicable. ESMERA will provide all necessary means for them to carry out research including support during RTD activities and support for commercialization.

The Open Call mechanism is organized in full compliance to the guidelines provided in the "Good practices and templates for organizing open calls under the H2020 Financial Support to Third Parties scheme[1]" set out by the European Commission.

2. Expected Contributions and Impact

The project asks for contributions that propose innovative robotics solutions to develop robotic technologies while competing with each other to solve the real-life problems that are defined by industrial end-users. To this end technologies such as nearly autonomous robots or human-robot collaboration are expected to be applied and demonstrated in real-world scenarios.

ESMERA introduces the notion of challenges which originate from the needs of EU companies and end-user organisations in different sectors that employ production processes that have not yet been, partially or fully, automated by robotics. The challenges defined by ESMERA can be found in ESMERA Challenges. Considering that the major robot providers and system integrators have not yet managed to provide solutions

[1] https://www.ffg.at/sites/default/files/downloads/page/h2020guidancenote_financialsupport2thirdparties.pdf

for given problems, the project gives a great opportunity for testing radically new concepts. The principle of the mechanism relies on the mobilisation of existing CCs which are offering expertise in robotics, equipment, services applicable for multiple technological development purposes to SMEs on developing their proposals and providing assistance both in the proof of concept and the industrialization/ commercialization of the product. The project's ambition is to implement innovative Application Oriented Research Experiments in robotics with European SMEs that are driven by the defined challenges (ideally seven to eight competitors per area depending upon the number and quality of the received proposals). In conjunction with the support mentioned above, the innovation potential is expected to be very high.

In addition, SMEs and CCs will combine their strong know-how, experience and facilities in developing, customizing and applying novel technologies. It is therefore expected that during this process several innovative solutions will arise either through the customised research activities or through the application of existing technologies in different areas.

Special emphasis is given to step changes for Call-specific robot capabilities to be advanced in the following areas (but not limited to them):

- Configurability,
- Interaction capability, perception, sensing,
- Decisional autonomy in terms of context awareness,
- Dependability,
- Unmanned aerial vehicles (UAVs),
- Inspection robots,
- Actuation,
- Manipulation,
- Mobility,
- Cognitive ability, and
- Autonomy.

Step changes are either multiplicative advances in technical capability (quantifiable metric changes) or a categorical step change in a technology that radically alters what can be achieved at an application level.

There are no limitations regarding the hardware elements used in the experiments. However, it is strongly encouraged to provide support to robots and machinery not integrated into the framework yet such as (but not limited to):

Collaborative human-robot manufacturing environment,

- Modular robots,
- Mobile platforms,
- Safety components (e.g. SafetyEYE, SAPARO floor etc.),
- AGVs,
- VR/AR platforms as part of a robotic solution,
- Additive manufacturing robotic cells, and
- Haptic teleoperation interfaces and other novel human-robot interfaces.

For more details for each existing Competence Centers, please check CCs.

Each experiment will be evaluated either in a setup defined by the applicants or in a test area in the responsible CC. For the evaluation, the necessary parts will be provided and different setups will be assessed

by external experts. The experiments will be required to provide a minimum set of information (i.e. videos, presentation) that will be used for the evaluation their experiment by the reviewers (see proposal template).

3. Activities, Eligibility and Funding

Activities eligible for funding:

The activities that are selected as experiments only cover Research and Technology Development (RTD) activities, aimed at a significant advance beyond the established state of the art. Thus, RTD is the only eligible activity within ESMERA. Other types of expenses are not eligible for funding.

Cost categories eligible for funding:

The research experiments are funded at 100% of their total (respecting the funding rules for H2020). Funding mainly addresses effort (research, dissemination and communication, management and demonstration) and other costs (consumables, travel and accommodation). It should be noted that equipment is not funded by ESMERA since it is provided by CCs or organizations supporting the challenges. Only the costs of leasing or renting of equipment are considered eligible if the need for it is justified in the experiment proposal. In any case, the experiment participants are allowed and free to also use their own equipment, if available.

Participants of the experiments are allowed to sub-contract 10% of the budget, but sub-contracting should not cover the core activities of the experiment. The subcontracting tasks, objectives and reasons to subcontract should be specified very clearly in the proposal.

Each experiment proposal will include justifications of costs and resources. Checking the consistency between these costs and the expected work of the experiment will be part of the evaluation of experiments.

Funding rates and payment schemes:

In ESMERA, one or more organizations can apply for funding by submitting a proposal describing their goal and business value, the technical plan to achieve it and an estimate of the involved cost. The non-profit third parties will be funded for 100% of their total costs for the experiment (direct costs including 25% indirect costs). Funding for the profit-making third parties is 100% of their respective direct cost (including 25% indirect cost). The financial support provided by ESMERA will cover the maximum amount of 200,000€ (EC funding rules for H2020 apply[2]) per experiment for both phases, with the involved organizations committing to finance the remaining share. Additionally, each organization is limited to receive up to 200,000€.

Third parties can receive pre-financing of up to 40%. Further payments will be made upon successful completion of milestones, deliverables as specified in the respective contract with the coordinator of ESMERA and are measured against Key Performance Indicators (KPIs) defined for each individual experiment as a basis for the bi-monthly monitoring of the experiment. The total interim payment is up to 40% of the total budget within the duration of the experiment and a final one is given upon its successful finalization.

Key Performance Indicators:

[2] http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/applying-for-funding_en.htm

All proposals, apart from considering the industrial KPIs specified by the Challenge Provider for the challenge should suggest an additional set of limited but sharp and appropriate individual KPIs according to the technical approach, which may be fine-tuned during the preparation of the contract. Relevance and appropriateness of KPIs will also be evaluated based on the feasibility of the objectives.

Entities eligible for funding:

All applicants have to meet the conditions set out in H2020 conditions to be eligible for funding[3] in order to be considered eligible for the ESMERA project. Because of expected step change contributions, the Call welcomes, in particular, consortia of partners offering complementary, multi-disciplinary competences. Consortia should consist of the solution provider (a robotics SME[4]) and other partners depending on their needs (e.g. another SME, large company, research institutions, universities). The consortium must consist of the members who do not have a conflict of interest with the partners in the ESMERA consortium. The contribution in the experiment of each member of the consortium and a justification of their competences shall be defined in the proposal and will be evaluated by the ESMERA external experts.

In ESMERA, financial support may be provided to any legal entity possessing a validated Participant Identification Code (PIC). At the moment of submission though, the entity can apply with the provisional PIC. Once these conditions are met, financial support can be given to natural persons, public or private bodies, research organizations, non-profit organizations, small and medium enterprises, international organizations of EU interest, established in an EU Member State or in an Associated Country (you can find the list of countries eligible for finding in the General Annexes of H2020 Work Programme[5]).

Maximum funding and possibility to participate in several proposals:

A two-stage financing model is assumed in the ESMERA project. The maximum amount of funding which will be dedicated to the individual participants is 200.000 €. In the first phase (proof of concept), the maximum budget is 75.000 € for funding and in the second phase (industrial leadership and business support), it is 125.000 €. To better manage Phase I and Phase II, applicants are allowed to participate in **only one proposal** (no multi experiment engagement possible).

4. Proposal Submission

The proposals will be submitted via a web platform at http://opencalls.esmera-project.eu. Here the applicants will be able to:

- enter the proposal information and partner data,
- upload their proposal (the proposal template can be downloaded from www.esmera-project.eu/Open-Calls),
- submit the requested budget,
- have access to supportive documentation,

[3] http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/from-evaluation-to-grant-signature/evaluation-of-proposals/elig_eval_criteria_en.htm

[4] SME: Based on the definition provided by European Commission in http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en, SMEs are defined as:

- Staff headcount is less than 250, and
- Annual turnover is less than or equal to €50m or annual balance sheet total is less than or equal to €43m.

[5] https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016-2017/annexes/h2020-wp1617-annex-a-countries-rules_en.pdf

- contact the help desk, and
- download their proposal and requested budget.

It is the proposers' responsibility to ensure the timely submission of proposals. The complete proposal consists of (i) the completed and uploaded proposal template and (ii) the completed web forms.

Once the requested information has been entered, the portal will allow you to download a combined scientific-administrative document for your reference. You can edit your submission as many times as you like, and the version submitted most recently before the deadline will be considered for evaluation. However, the deadlines given in these guidelines are binding and proposals submitted after the deadline will not be taken into consideration.

Shortly after the effective submission of the proposal, an acknowledgement of receipt thereof will be sent to the e-mail address of the proposal coordinator named in the submitted proposal. The sending of an acknowledgement of receipt does not imply that a proposal has been accepted as eligible for evaluation. For any given proposal, the experiment coordinator acts as the main point of contact for ESMERA.

Upon receipt by ESMERA, proposals will be registered and their contents entered into a database to support the evaluation process. Eligibility criteria for each proposal will also be checked by ESMERA before the evaluation begins. Proposals that do not fulfil these criteria will not be included in the evaluation. A proposal will only be considered eligible if it meets all of the following conditions: (i) it was received before the deadline given in the call text; (ii) the template and web form (all sections!) have been completed and (iii) the eligibility criteria set out in Section 3- Activities, eligibility and funding are met.

It should be noted that English is the official language for ESMERA Open Calls and the proposal and other supportive documents must be in English. Moreover, all the documents in the reporting period also must be in English. The applicants must use the provided template in the project website and clearly explain their project in each step. The applicants should monitor the web platform as additional information will be published to a Q&A.

5. Ethical Issues

Research activities in Horizon 2020, and particularly in ESMERA, should respect fundamental ethical principles, particularly those outlined in "The European Code of Conduct for Research Integrity[6]". Therefore, questions about ethical issues are to be addressed in the proposal text, if ethical issues apply to an application experiment, before and during the runtime of the research activities within ESMERA, including the approval by the relevant committees and the compliance with the recent General Data Protection Regulation (GDPR). Additionally, applicants must clearly state that there is no active engagement between the ESMERA consortium partners and the Challenge Provider of the challenge they address, that would compromise the fair and unbiased character of the ESMERA project.

6. Pre-proposals

As a special service to potential applicants, pre-proposals can be submitted via the ESMERA Open Call Platform during the first nine weeks after publication of the call. A member of the staff of the ESMERA Project will respond to pre-proposers within a reasonable period. If this will be longer than five business days, the applicants will be informed. The response will be limited to clarifying whether the proposal fits

[6] https://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf

into the scope of the call. Please note that it is not mandatory to submit one and it has no influence on the evaluation of the full proposal. Moreover, the pre-proposers should follow the pre-proposal template in ESMERA open call webpage[7].

7. Proposal Evaluation and Selection

Only the eligible proposals (see Section 3 - Activities, Eligibility and Funding) are considered in evaluation and the evaluation process will be performed in two steps. In the first step, the experts will review each proposal according to the expected impact, realistic estimations of effort and benefit, timeline, transfer potential to other domains and cost (see Section 9 - Proposal evaluation criteria). Each proposal will be evaluated by at least two acknowledged evaluators with different expertise in the technology field or in the application area(s) and in business development. In the case that there is a strong deviation between the reports, a third independent expert evaluates the proposal. Only external experts (independent from the ESMERA consortium and also without a conflict of interest with any proposers[8]) will be involved in the evaluation process and will have confirmed their independence and neutrality before.

All experts perform evaluations in their private capacity, not as representatives of their employer, their country or any other entity. They will sign a declaration of confidentiality concerning the contents of the proposals they read and a declaration of absence of any conflict of interest. Both the confidentiality and the conflict of interest rules will follow the Code of Conduct set out in the Annex 1 of the H2020 Model Contract for experts[9].

The outcome of the first step will be a ranked list of all proposals based on the individual scores obtained by each proposal. In the second step, during a physical or virtual panel meeting, the most promising candidates will be identified based on the individual evaluations. The chair of the panel will inform all participants about the results of evaluation and selection. A public summary report will be published on the project website within 30 days of the end of the selection procedure.

8. Redress Procedure

Upon receiving the evaluation results the applicants have two weeks to start the redress procedure by sending a complaint via the proposal submission platform. Please note that the Redress Committee will not call into question the judgements made by qualified expert evaluators, nor will it take into consideration any new information or explanations not included in the original proposal. More details about the redress procedure can be found in Guidelines for Redress Procedure in ESMERA open call webpage.

[7] www.esmera-project.eu/Open-Calls/
[8] Proposer refers to the SMEs/entities participating in a consortium applying for an experiment.
[9] http://ec.europa.eu/research/participants/data/ref/h2020/experts_manual/h2020-experts-mono-contract_en.pdf

9. Proposal Evaluation Criteria

1. Technical/ research excellence	**Weight: 40%**
• Clarity of the adaptation / integration / extension of the method, • Technical quality of the outcomes, • Technical excellence with regard to the state of the art in the field, • Appropriateness and feasibility of the envisioned Technology Readiness Level (TRL) in relation to the current TRL of the solution.	Score: ?/10 (Threshold 6/10)
2. Expected impact	**Weight: 40%**
• The degree of innovation and the quality of the work and participant, • Impact assessment approach to KPIs, • The impact of the possible results on the market with regard to the impact of the prior development (reality before and after the achievement), • Potential to apply wider applications within the targeted industry or in general.	Score: ?/10 (Threshold 6/10)
3. Clarity of the work plan	**Weight: 20%**
• Coherence, appropriateness, effectiveness of the overall implementation and integration approach, • Appropriateness of the work plan and scheduling, • Risk management, • Clarity of the project plan (clarity of activities in Phase I and Phase II), identification of milestones and deliverables, • Coverage of the necessary competences.	Score: ?/10 (Threshold 6/10)
Remarks	
Ethical implications and compliance with applicable international, EU and national law.	Essential
OVERALL SCORE	Score: ?/10 (Threshold 6/10)

Glossary/Acronym Terms

ESMERA: European SMEs Robotics Applications

SME: Small and Medium-sized enterprises form a specific target group for the experiments and the CCs in ESMERA. The term is used in the same way as defined by the EC (http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition/).

Experiment: An experiment is a small to medium sized scientific research and/or technology development project carried out by a team of at least one SME and potentially additional research institutions, robot manufacturers and robot and automation users, which typically lasts no longer than 9 months (for each phase).

CC: Competence Centre is a physical infrastructure supporting different user groups by providing state-of-the-art hardware, software components, and support in the form of experienced staff.

RTD: Research and Technology Development.

Step Changes: Step changes are either multiplicative advances in technical capability (quantifiable metric changes) or a categorical step change in a technology that radically alters what can be achieved at an application level.

TRL: Technology Readiness Level

CP: Challenge Provider

Q&A: Questions and Answers

GDPR: General Data Protection Regulation

VR: Virtual Reality

AR: Augmented Reality

UAV: Unmanned Aerial Vehicle

AGV: Autonomous Guided Vehicle

PIC: Participant Identification Code