H2020—ICT—732410

RobMoSys

Composable Models and Software for Robotics Systems

Deliverable D7.2: Open Call II preparation documents

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Executive Summary

Project RobMoSys, co-funded from the European Union's Horizon 2020 research and innovation programme under agreement No 732410, foresees as an eligible activity the provision of financial support to third parties, as a mean to achieve its own objectives. An overview of the workflow and the call documents developed for the Second Open Call (call identifier: RobMoSys-SRC) are outlined in this deliverable D5.2.

RobMoSys's main goal is to create and consolidate an **EU Digital Industrial Platform for Robotics** to establish a common methodology for model-based software development, improve tools and foster interoperability by model interchange and composability. Therefore, the Second Open Call focuses on aspects of: **Building Industry-Driven Ecosystem** and **Creating Strong RobMoSys Community.**

The Second Call for proposals in RobMoSys embraces three (3) different **Instruments[1]:**

- **Instrument #1: Fast Adoption** – The aim is to boost a fast adoption of the RobMoSys approach in industry. It focuses on SMEs and small teams in large industrial companies, target groups ranging from software component suppliers to robotics system builders. As a result, 10-14 selected teams will develop RobMoSys – conformant industrial case studies.
- **Instrument #2: Ecosystem Challenges** – The goal is to strengthen the RobMoSys ecosystem with in-depth developments on the RobMoSys baseline (models, tools, components, architectural patterns). It addresses small consortia, offering complementary, multi-disciplinary competences that go beyond the mainstream robotics community. RobMoSys is looking for 5-7 tandems fitting one or more determined technical topics (see Appendix B).
- **Instrument #3: Innovation Expert Intake** – The objective is to push innovation and strengthen the RobMoSys community. It is dedicated to legal entities offering expert services. 17-23 experts will contribute by focusing on either supporting the RobMoSys Academy (concepts of new tutorial, training, methodological guidance and demonstrators) or the RobMoSys technology (suggestions on improvement of RobMoSys adoption, digital platform, accessibility to software components etc.).

The preparation of three different Instruments within Second Open Call was possible due to the experience gathered in first open call and in the EU-funded FP7 projects ECHORD, ECHORD++ as well as the Horizon 2020 project HORSE and the FET-Flagship Human Brain Project. All documents and instruments had to be customized, though, to comply with the requests outlined in the best practice guidelines of the European Commission[2]. In addition to this, the project will strictly adhere to the Conflict of Interest rules developed by the European Commission and outlined in [3].

The deliverable is prepared by TUM. The report contains a short introduction of the call, details on shaping the scope of the open call, timeline, brief description of employed electronic tools, dissemination plan and final version of documents provided to applicants. Deliverable5.2 is contributed by task 5.1: Organisation of experts Workshops and Task 5.2: Preparatory activities.

[1] An instrument is a type of RobMoSys third-party contract characterized by a profile of contributions, a funding scheme, distinctive expected results and hence different evaluation criteria.

[2] See annex 7 Good practices and templates for organizing open calls under the H2020 financial support to third parties scheme

[3] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/pse/h2020-guide-pse_en.pdf

Content

1 Introduction

The goal of this document is to give a summary of the timeline, the content and the intention behind the Second Open Call of the project. It also provides a short overview of the electronic tools used to manage the call, the guidelines, templates and supporting documents provided to the applicants.

With the Open Call 2, RobMoSys wants to focus on:

- the link between component level and system level - on introducing engineering principles for putting together and configuring components to complex systems.
- illustrating the advantages of the RobMoSys approach in very concrete examples for which the pilots provide a baseline.
- building awareness of RobMoSys approach and strengthening the RobMoSys community.

Similarly to the previous open call, the current round of third-party financing is based on results of consultations with a group of Tier 1 experts and intensive dialogue with the community. The outcome was again analysed, consolidated and condensed into the call documents. This Second Open Call in a nutshell can be described as follows:

Call identifier: RobMoSys-SROC

Call title: Second RobMoSys Open Call

Indicative budget for the call: €2,550,000

Funding rate: Instrument #1 – 100% for all entities

Instrument #2 - 100% (non-profit), 70% (for-profit)

Instrument #3 – 100% of direct personnel and travel costs.

Pre-financing: 40%

Submission language: English

Web address for full open call information: https://robmosys.eu/open-call-2/

E-mail: opencalls@robmosys.eu

Section 2 of this document presents how the scope of the open call was shaped, whereas Section 3 gives an overview of the expected timeline of the call and the evaluation process that will follow it. An overview of the software tools used in the open call – the software platform and the ticketing system - is provided in section 4. The outlook for the dissemination actions is given in section 5.

The report also contains the open call documents that were presented to the potential applicants:

- Appendix A: Call text
- Appendix B: Guide for Applicants
- Appendix C: Guide for Evaluators
- Appendix D: Proposal templates
- Appendix E: Funding agreement template
- Appendix F: Supporting document – description of the pilots
- Appendix G: Guide for Redress Procedure.

2 Shaping the call

The exact scope of the call was established by the consortium partners in an iterative process of revisions. The suggestions and remarks from community and Expert Workshop (held in February 2017) were taken under consideration. Details on the workshop results were gathered in Annex 1 to the Deliverable 5.1.

Initially, Open Call 2 consisted of four different Instruments: three actual calls and one tender. Specification of each Instrument is provided in Table 1.

Table 1. Details on initial 4 Instruments within Open Call 2

Instrument:	Instrument #1	Instrument #2	Instrument #3	Instrument #4
Name	Fast Adoption	Ecosystem Challenges	Innovation Expert Intake	Media Production of Academy Showcases
Form	call	call	call	tender
Number of funded projects	8-10	5-7	15-20	according to offer
Objective	to boost a fast adoption of the RobMoSys approach in industry	to strengthen the RobMoSys ecosystem with developments on the RobMoSys baseline within one or more determined technical topics	to push innovation and strengthen the RobMoSys community by contribution to either the RobMoSys Academy or the RobMoSys technology	to create multimedia content (promotion of the project) and enriching RobMoSys Academy (education).
Target group	SMEs and small teams in large industrial companies	small consortia	legal entities offering expert services	media organizations
Expected runtime	Max 6 months	Max 12 months	Max 6 months	Max 6 months
Total Indicative Budget	500 KEUR	1.600 KEUR	200 KEUR	250 KEUR (50 KEUR – media 200 KEUR–education)
Max Funding per Proposal	60 KEUR	300 KEUR	20 KEUR	according to offer
Funding rate	100% for any entity (including 25% indirect costs),	100% non-profit, 70% for-profit, both include 25% indirect costs	100% for personnel cost and travel expenses (NO indirect costs),	based on invoices
Cut-off dates	April 30, 2019 October 30, 2019	April 30, 2019	April 30, 2019 October 30, 2019	April 30, 2019 October 30, 2019

Upon close inspection of the regulations concerning Financial Support to Third Parties (FSTP) in Horizon2020, it turned out https://codev-tuleap.cea.fr/plugins/document/robmosys/ that the Instrument #4 cannot be funded in its originally foreseen form. Therefore, the second RobMoSys open call had to be amended and the Instrument #4 was no longer a part of it. The budget initially allocated to this instrument has been reallocated to the remaining three. All documents provided to applicants has been changed accordingly. The parts related to the Instrument #4 have been removed

and the financial aspects of the other instruments have been updated. Final version of Open Call 2 is as follows:

Table 2.Details on final 3 Instruments within Open Call 2

Instrument:	Instrument #1	Instrument #2	Instrument #3
Name	Fast Adoption	Ecosystem Challenges	Innovation Expert Intake
Form	call	call	call
Number of funded projects	10-14	5-7	17-23
Objective	to boost a fast adoption of the RobMoSys approach in industry	to strengthen the RobMoSys ecosystem with developments on the RobMoSys baseline within one or more determined technical topics	to push innovation and strengthen the RobMoSys community by contribution to either the RobMoSys Academy or the RobMoSys technology
Target group	SMEs and small teams in large industrial companies	small consortia	legal entities offering expert services
Expected runtime	Max 6 months	Max 12 months	Max 6 months
Total Indicative Budget	720 KEUR	1.600 KEUR	230 KEUR
Max Funding per Proposal	60 KEUR	300 KEUR	20 KEUR
Funding rate	100% for any entity (including 25% indirect costs),	100% non-profit, 70% for-profit, both include 25% indirect costs	100% for personnel cost and travel expenses (NO indirect costs),
Cut-off dates	April 30, 2019 October 30, 2019	April 30, 2019	April 30, 2019 October 30, 2019

3 Timeline

The timeline and workflow of RobMoSys to manage the Second Open Call have been set up in compliance with the requirements summarized in the best practice guidelines of the European Commission.

The Second Call of RobMoSys is planned to consist of two cut-off dates for Instruments #1 and #3, and only one cut-off date for Instrument #2. However, if all funds foreseen in Instruments #1 and #3 are used up in first cut-off date due to high quality of proposals, the second round will not take place.

The first cut-off date is a date of closing the first round of current open call: 30th April 2019. Within this round the call will be opened on 1st February 2019. The entire workflow from the opening of the call in February until the final selection in July / August will take 6 – 7 months. The process can be illustrated as follows:

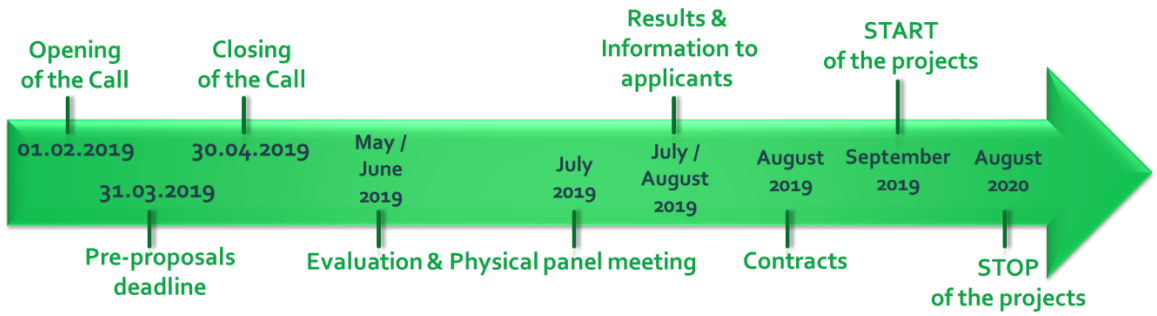


Figure 1. Workflow of the 2 Open Call for first cut-off date

The second cut-off date is a date of closing the possible second round of current open call: 31st October 2019. Within this round the call is planned to be opened on 1st August 2019. The entire workflow from the opening of the call in August until the final selection in January / February 2020 is scheduled to take 6 – 7 months. The process can be illustrated as follows:

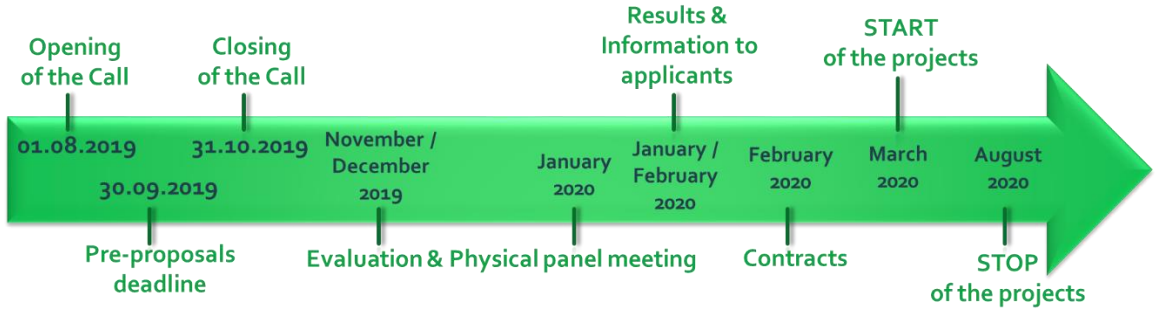


Figure 2. Workflow of the 2 Open Call for the possible second cut-off date

All third-parties projects, within both rounds of Second Open Call, are planned to be finished by August 2020 with the preservation of expected runtime.

4 Electronic tools

The RobMoSys consortium has either customized or developed from scratch several electronic tools during the first open call to comply with the requirement of the European Commission for a fair, transparent and impartial approach in the management of Open Calls for Third Party funding. Those tools are being exploited during the Second Open Call as well.

4.1. Open Call Management Platform

The platform is being used to manage applications received for the Second Open Call of the RobMoSys project. Applicants to the Open Call of RobMoSys need to fill out the sections described below.

In order to start submitting a proposal, administrative data on each applicant must be provided. This information is also necessary to generate statistical output of the call.

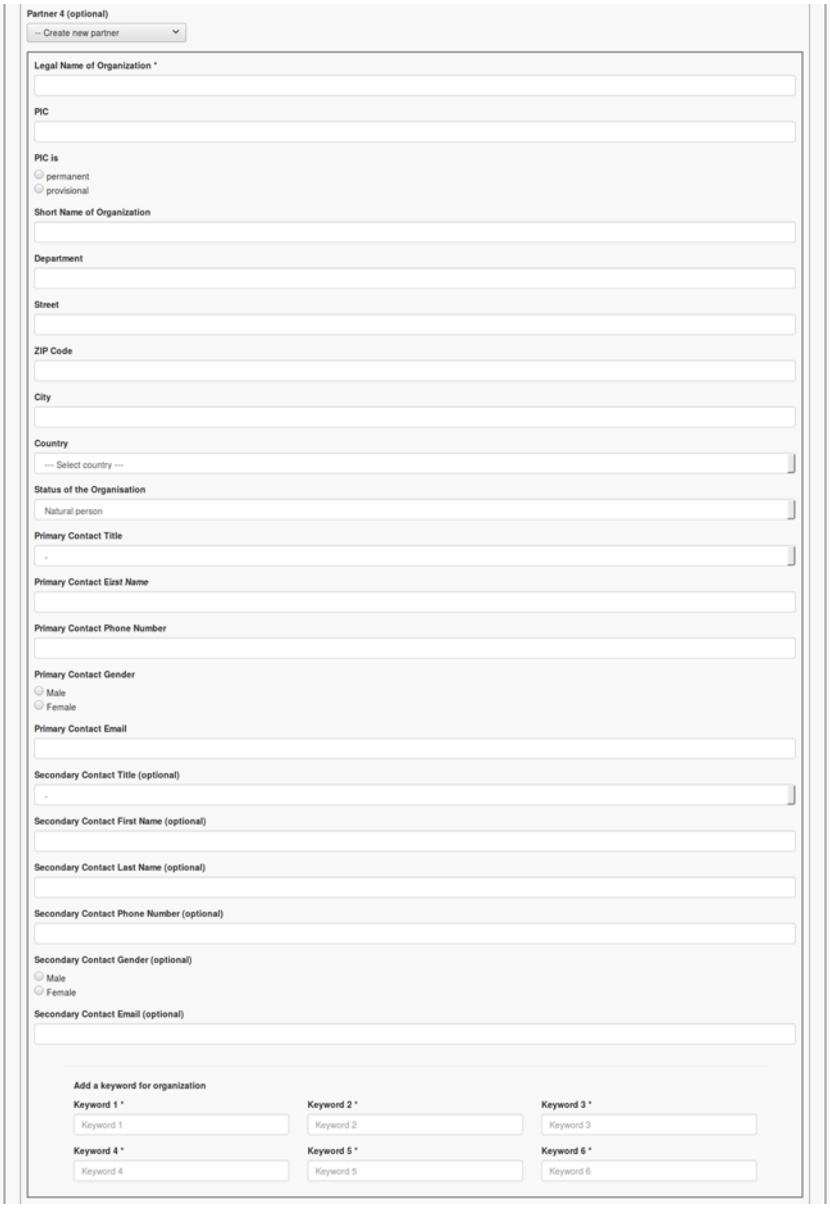


Figure 3. The administrative data section of the platform

The actual submission of the proposal consists of several steps.

Firstly, the general information on the proposed project (title, acronym and summary of the project) as well as the composition, if applicable, of the consortium need to be filled.

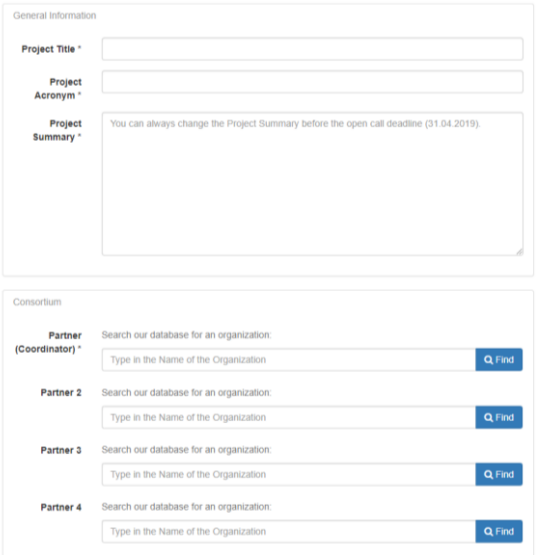


Figure 4. General information on project and consortium section

Second step is optional and refers to pre-proposal check. The response which applicant receives will be limited to clarifying whether the proposal fits into the scope of the call and whether it is eligible. It will not provide any suggestions on how to improve the proposal so it has higher chance to be funded.

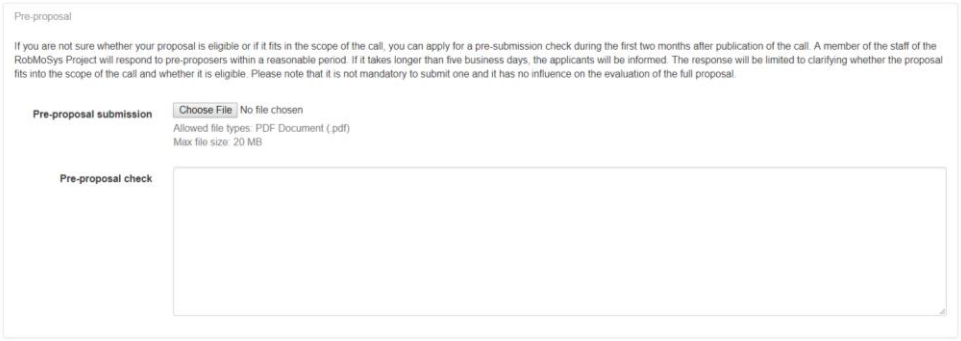


Figure 5. Pre-proposal check section

Proper proposal submission is done by uploading the completed proposal file and filling the budget section directly on platform. The proposal templates for each Instrument (see Appendix D) is available on RobMoSys website and submission platform.

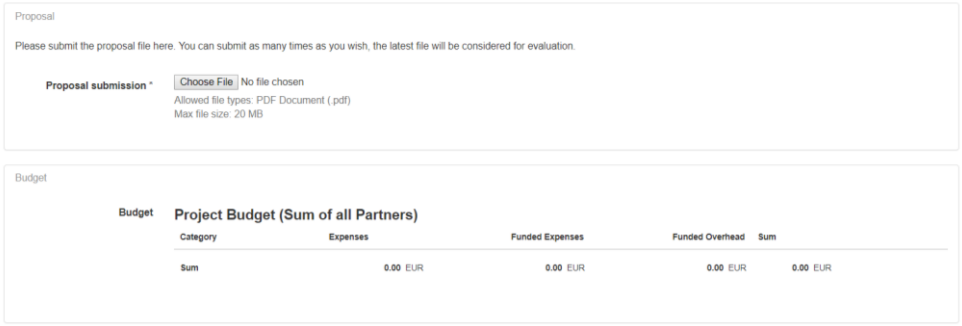


Figure 6.Proposal submission and budget section

Budget in Instrument #1 foresees funding rate amounting 100% with 25% of indirect costs. Details of budget in question are showed on Image 7.

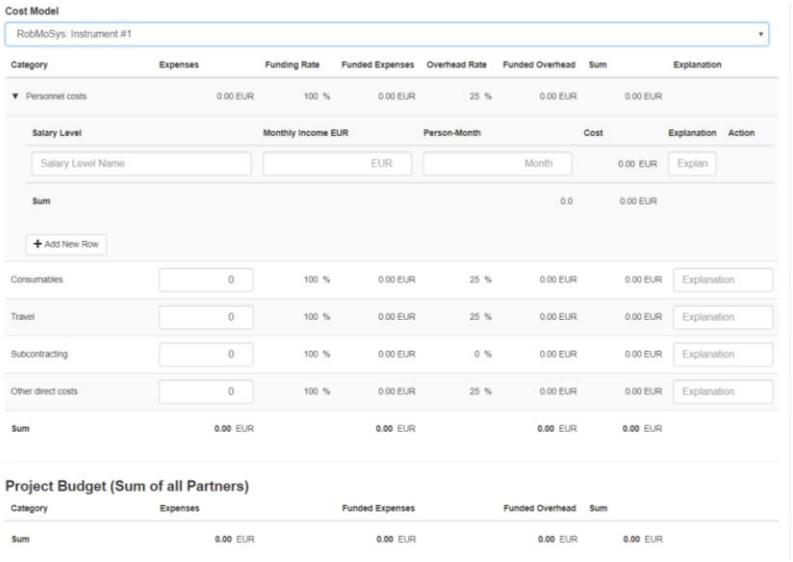


Figure 7. Budget section in Instrument #1

In Instrument #2 two possible budget models are designed for the for-profit companies (see Image 8) or non-profit organisations (see Image 9).

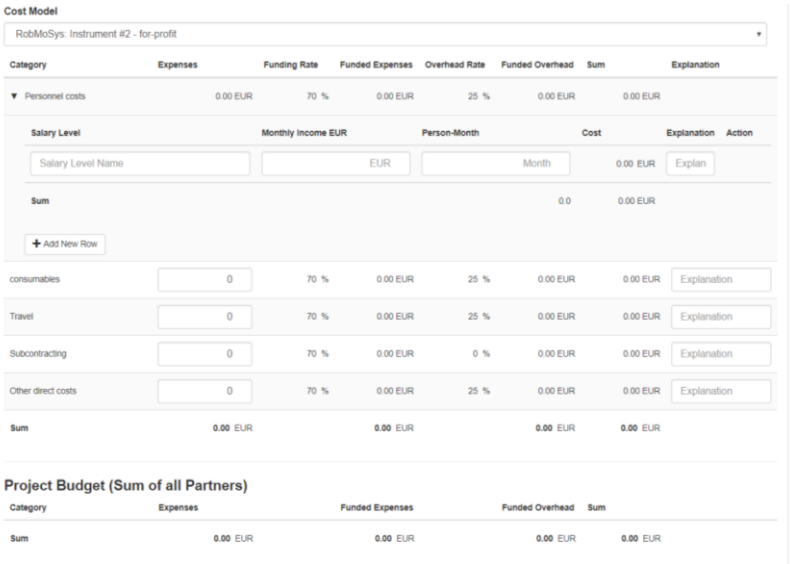


Figure 8. Budget section for for-profit companies in Instrument #2

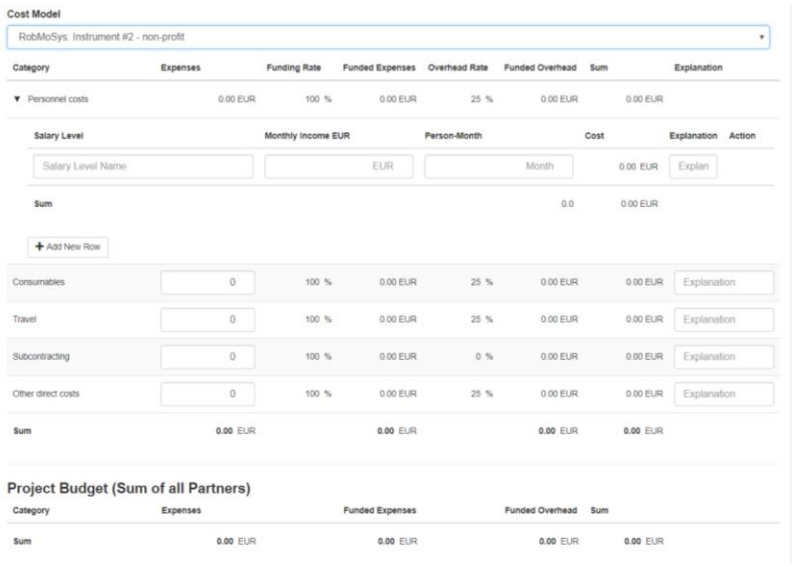


Figure 9.Budget section for non-profit organisation in Instrument #2

Budget in Instrument #3 foresees funding rate amounting 100% with no indirect costs. Details of discussed budget are showed on Image 10.

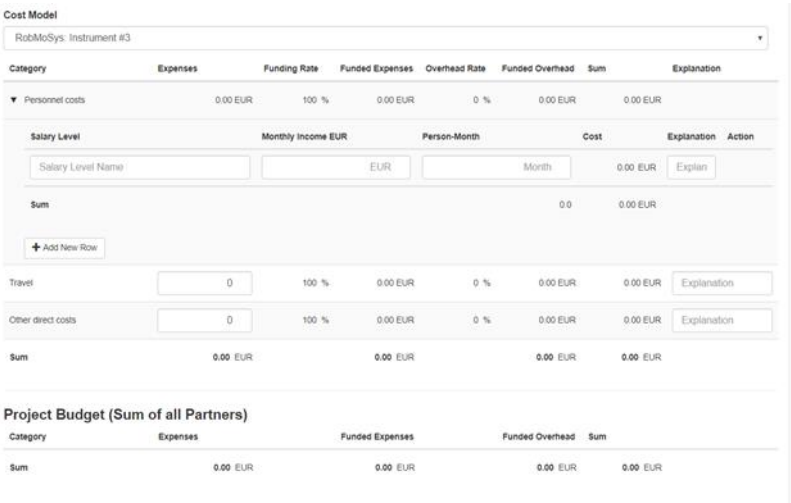


Figure 10. Budget section in Instrument #3

The last section contains the keywords and possible Conflict of Interest (CoI) declaration. Keywords part is a mean to find the best match between proposal and evaluator in terms of a scope and area of expertise.

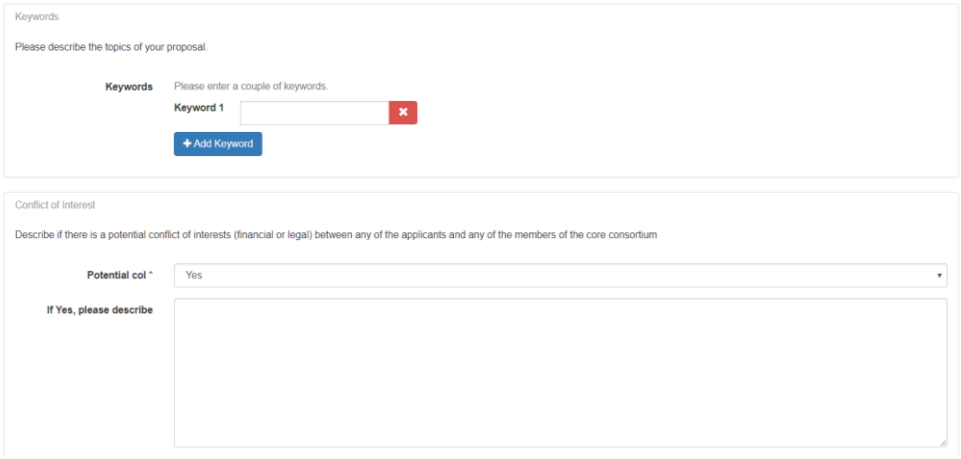


Figure 11. Keywords and potential CoI section

Once the open call is closed, the open call management team will be able to provide statistics regarding the overview of applications and the applicants. Statistics on data such as the number of applicants, domains of expertise of the applicants, countries that participated in the application and type of institution that have applied will be provided to the EC.

4.2. Ticketing system

A ticketing system (OTRS 5) to systematically archive and address enquiries of applicants was set up. The ticketing system allows all incoming inquiries to be channelled to those members of the core consortium who are most competent to answer them (Administrative, General, and Scientific/ Technical). In addition, it provides an overview of the status of the enquiries (pending or closed) with a time stamp to make sure that all potential applicants will receive the requested information in a timely manner. Another benefit of the system is that the entire correspondence is stored in a closed system which allows tracking the flow of information between the RobMoSys consortium and the applicants in case of a redress. Statistical data on the number of enquiries, the response time etc. can be generated, as well.

An email address to the ticketing system is provided on the RobMoSys website, if applicants have questions regarding administrative, scientific or general questions related to this call.

5 Promotion of the call

Second Open Call has been announced by different means.
The RobMoSys website provides:

- the link to the Open Call Management Platform, which supports the proposal submission of the applicants
- the access to the open call documents (call text, guide for applicants, guide for evaluators, guide for redress procedure, funding agreement template and proposal template). Documents are provided to download as word or pdf file.

Three Information and Brokerage days have been planned for informing the participants about the project and giving them the opportunity for networking among each other. The first event was organized for the local community on January 10th in Paris, France. The second took place right in the beginning of the call, on February 13th in Munich, Germany. The last one is scheduled to be on April 12th in Barcelona, Spain. Registration for those events is possible over the RobMoSys website.

The Second Open Call and the Information and Brokerage days are being announced over the social media channels (twitter, newsletters, mailing list, press release), referring to the RobMoSys website

for further information and registration.

Appendix A: Call Text

Announcement of an open call for recipients of financial support

Project full name: Composable Models and Software for Robotics Systems
Project acronym: RobMoSys
Project grant agreement number: 732410
Call name: Second RobMoSys Open Call
Call identifier: RobMoSys-SROC
Language in which proposal should be submitted: English
Web link for further information: https://robmosys.eu/open-call-2/
Email address for further information: opencalls@robmosys.eu

Project RobMoSys, co-funded from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410, foresees as an eligible activity the provision of financial support to third parties, as a means to achieve its own objectives.

RobMoSys's main goal is to create and consolidate an EU Digital Industrial Platform for Robotics to establish a common methodology for model-based software development, improve tools and foster interoperability by model interchange and composability. The Open Calls for Contributions to RobMoSys is one of the means implemented to achieve this goal.

The First RobMoSys Open Call, which was open from July 2017 to October 2017, has funded six Integrated Technical Projects (ITPs) with a focus on strengthening the RobMoSys platform with better metamodels, tools and models.

The Second RobMoSys Open Call focuses on the following aspects:

- **Industry-Driven Ecosystem.** RobMoSys defines a model-based ecosystem of assets and services to help the robotics industry to improve their software/system engineering practice. We look for proposals joining us in our effort to create this ecosystem and to demonstrate with real industrial cases your own success story.
- **Towards a Strong RobMoSys Community.** We call for expert groups willing to be coached by members of the RobMoSys core consortium, in order to implement the RobMoSys concepts. Successful applicants must be ready to advance the RobMoSys way of thinking, and to go for real world examples in line with the RobMoSys industrial pilots (developed by the RobMoSys core consortium).

The second call for proposals in RobMoSys embraces three (3) different *Instruments*. An instrument is a type of RobMoSys third-party contract characterized by a profile of contributions, a funding scheme, distinctive expected results and hence different evaluation criteria.

Instrument #1: Fast Adoption

With this instrument, RobMoSys wants to boost a fast adoption of the RobMoSys approach in industry. It focuses on SMEs and small teams in large industrial companies, target groups ranging from software component suppliers to robotics system builders. The funded ITPs must develop RobMoSys-conformant pilots (industrial case studies) based on existing assets (software and tools

from the RobMoSys ecosystem), or provide software components conformant to the RobMoSys pilots.

Instrument #2: Ecosystem Challenges

This instrument aims at strengthening the RobMoSys ecosystem with in-depth developments on the RobMoSys baseline (models, tools, components, architectural patterns). Submissions of ITPs must fit one or more of the following technical topics:

- Topic 1: ROS 2 and Model-Driven Software Development
- Topic 2: Functional composition inside components
- Topic 3: System level composition / safety
- Topic 4: System level predictability of properties, Navigation
- Topic 5: System level predictability of properties, Manipulation
- Topic 6: OPC UA Robotics
- Topic 7: Open topic

Further details on each of these topics can be found at the abovementioned link for the second call.

Instrument #3: Innovation Expert Intake

This instrument looks for proposals from legal entities offering expert services in order to push innovation and strengthen the RobMoSys community. Applications can focus on supporting the RobMoSys Academy or the RobMoSys technology. Herewith, experts must be willing to familiarize themselves with the RobMoSys approach, to actively participate in technical workshops, to meet with RobMoSys partners in their labs, to contribute to the RobMoSys community building, or involvement in specific ITPs.

Summary of main information per instrument

Instrument	Instrument #1	Instrument #2	Instrument #3
Expected runtime	Max 6 months	Max 12 months	Max 6 months
Total Indicative Budget	720 KEUR	1.600 KEUR	230 KEUR
Max Funding per Proposal	60 KEUR	300 KEUR	20 KEUR
Cut-off dates	April 30, 2019 October 30, 2019	April 30, 2019	April 30, 2019 October 30, 2019

Appendix B: Guide for Applicants

GUIDE FOR APPLICANTS - CORRECTED

Second RobMoSys Open Call

Contents

Definitions

Instrument:	Type of RobMoSys third-party contract outlining the contributions a successful applicant can make to RobMoSys. This Open call distinguishes three of these "Instruments", each of them with a specific scope, an individual funding scheme and distinctive expected results & impact.
RobMoSys Ecosystem:	The collection of assets (tools, models, software components, application pilots, guidance documents) and services (e.g. for adoption, coaching) issued by RobMoSys, which are developed, maintained and evolved by the RobMoSys Community.
RobMoSys Community:	It is the keystone for the sustainability of the RobMoSys project. The functions of the RobMoSys Community include, but are not limited to: (i) developing RobMoSys models (see: https://robmosys.eu/wiki/model-directory:start) , software components and tools (see: https://robmosys.eu/wiki/baseline:start) to be released/hosted in open source, (ii) operating dedicated code repositories, (ii) build chains, test facilities, fostering exchanges between RobMoSys partners and industry partners, (iv) managing the quality and maturity of RobMoSys tools, (v) ensuring open innovation through the sharing of the research, development, and maintenance efforts as far as possible, fostering sustainable commercial services and ecosystems around the RobMoSys tools.
Integrated Technical Project (ITP):	A third-party RobMoSys-funded project composed of one or more legal entities aiming at adopting, developing or boosting the RobMoSys Ecosystem.
RobMoSys Academy:	The set of structured resources providing guidance and support for RobMoSys stakeholders, including methodological guidance, tutorials, training, demonstrators and coaching.
Coaching Support:	The RobMoSys project assigns one member of the core consortium to each ITP with the following role: to assist the assigned ITP in aligning with RobMoSys background in a consistent way; to serve as main link between the ITP and the RobMoSys consortium for questions or requests or to trigger potential collaborations or interactions between ITPs.
Project Steering Committee (SC):	The RobMoSys Project Steering Committee comprises one representative from each of the core partners of RobMoSys. The Steering Committee is involved in evaluation and selection process to ensure fit between the selected projects and overall goals of RobMoSys.
Expert Evaluators:	The experts, independent of the RobMoSys consortium and of any proposer, with the role of assessing the proposals submitted in response to the Second RobMoSys Open Call.
Expert Rapporteurs:	They are responsible for drafting the consensus report (CR), it can be either one of the evaluators involved in the evaluation of the proposal or an additional expert.

1. General Aspects

1.1. Why this Guide

This guide aims at supporting applicants addressing the *Second Open Call of RobMoSys.* It provides the relevant administrative details. The main purpose of this guide, though, is to outline to the applicants the requirements of the RobMoSys project in order to facilitate proposal matching with the three[4] different *Instruments* embraced in this Second Open Call as well as the overall objectives of the RobMoSys project. The three instruments differ in purpose and expected impact, and hence are subject to different evaluation criteria. The next sections explain the contributions expected from proposals geared to these 3 instruments which can vary considerably.

The RobMoSys Wiki (https://robmosys.eu/wiki/) provides technical details on the RobMoSys approach and on technical topics mentioned in this document. A reading guide to the wiki which is focused on the Second Open Call is available at https://robmosys.eu/wiki/open-call-2.

The a frozen copy/snapshot of the wiki is taken and the archived wiki is going to be available at http://www.robmosys.eu/wiki-sn-03/.

1.2. Objectives of the RobMoSys project

RobMoSys's vision is that of an agile, multi-domain, model-driven European robotics software ecosystem. It will consist of a specialized set of players with both vertical and horizontal integration levels, providing both widely applicable software products and software-related services. This ecosystem will be able to rapidly address new functions and domains at a fraction of today's development costs.

RobMoSys wants to coordinate the efforts and activities of the community in order to realize a step-change towards a **European ecosystem for open and sustainable industry-grade software development for robotics.** Specifically, RobMoSys addresses the following goals:

- **RobMoSys** envisions an integrated approach built on top of the current code-centric robotic platforms, by applying model-driven methods and tools.
- **RobMoSys** will enable the management of the interfaces between different robotics-related domains in an efficient and systematic way according to each system's needs.
- **RobMoSys** aims to establish Quality-of-Service properties, enabling a composition-oriented approach while preserving modularity.
- **RobMoSys** will drive the non-competitive part of building a professional quality ecosystem by encouraging the community involvement.
- **RobMoSys** will elaborate many of the common robot functionalities based on broad involvement of the community via two Open Calls.

Towards that purpose, RobMoSys **creates a consolidated EU Digital Industrial Platform for Robotics** which establishes a common methodology for software development, improves tools and fosters interoperability by model interchange and composability. The RobMoSys approach aims at solving

[4] Upon close inspection of the regulations concerning Financial Support to Third Parties (FSTP) in Horizon2020 it turned out, that the Instrument #4 cannot be funded in its originally foreseen form. Therefore, the second RobMoSys open call had to be amended and the Instrument #4 is no longer a part of it. The budget initially allocated to this instrument has been reallocated to the other three

critical issues in the area of robotics software development observed in industry. Moreover, it draws a clear migration path for a step-by-step adoption of existing model-driven software and tool assets, the so-called RobMoSys ecosystem, for interested early adopters.

The RobMoSys Open Calls are one of the means implemented by the RobMoSys core consortium to achieve this goal. The Second Open Call of RobMoSys focuses on the following aspects:

- **Industry-Driven Ecosystem.** RobMoSys defines a model-based ecosystem of assets and services to help the robotics industry to improve their software/system engineering practices. We look for proposals joining us in our effort to create this ecosystem and to demonstrate with real industrial cases your own success story.
- **Towards a Strong RobMoSys Community.** We call for expert groups willing to be coached by members of the RobMoSys core consortium, in order to implement the RobMoSys concepts. Successful applicants must be ready to advance the RobMoSys way of thinking, and to go for real world examples in line with the RobMoSys industrial pilots (developed by the RobMoSys core consortium).

1.3. RobMoSys Call Principles

RobMoSys strives for high-quality projects funded via the FSTP instrument, FSTP standing for Financial Support to Third Parties, that will facilitate the accomplishment of the goals and impact targeted in RobMoSys. Therefore, proposals will be evaluated not only on the merit of their excellence but mostly on their fit with the RobMoSys goals and approach.

Proposals applying successfully for funding under the technical instruments (see Instrument no 1 and 2 below) must deliver components and documentation that meet the *usability* and *reusability* expectations of engineers in industry who develop *reliable* and *predictable* robotic applications. The adherence of the developed components to the (re)usability expectations will be assessed and verified during the runtime of the selected FSTP projects at least within the RobMoSys Community.

The core aspects of the **technical approach** (instruments 1 and 2) that RobMoSys wants to advocate and support are:

- **better models, better tools, better software**
- rich data sheets for software components
- more inter-component communication patterns, with (richer) configuration capabilities
- horizontal and vertical composition
- system-level performance metrics and explicit dependency relations

Integrated Technical Project (ITP) proposals **must** always realise the **first ambition**, and all of the other aspects that are relevant for each specific instrument.

The cornerstones of the **Coaching Support** (see Instrument 3) by members of the RobMoSys consortium are:

- open communication forum (Discourse software): https://discourse.robmosys.eu/
- internships at RobMoSys consortium member premises
- inter-ITP workshops and workshops open to the broader robotics community (e.g., at European Robotics Forum, in Summer Schools (co)organised by RobMoSys, etc.)
- collaborative improvements of RobMoSys' technical and educational Wiki material (RobMoSys Academy).

2. Instruments

An instrument is a type of RobMoSys third-party contract outlining the contributions a successful applicant is expected to make to RobMoSys. This open call defines three (3) instruments, each of them being characterized by specific contributions, a specific funding scheme, distinct, targeted results and impact as well as own evaluation criteria. Figure 1 shows the main funding figures for each instrument.

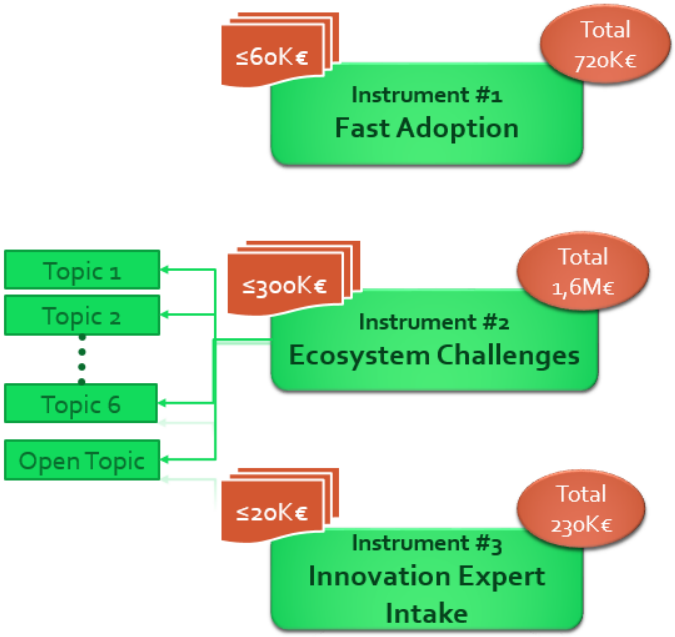


Figure 12. The RobMoSys instruments for the Second Open Call

2.1. Instrument #1: Fast Adoption

With this instrument, RobMoSys wants to boost fast adoption of the RobMoSys approach in industry. It focuses on SMEs and small teams in large industrial companies, target groups ranging from software component suppliers to robotics system builders. The funded ITPs must develop RobMoSys-conformant pilots (industrial case studies) based on existing assets (software and tools from the RobMoSys ecosystem), or provide software components conformant to the RobMoSys pilots.

Instrument #1	Fast Adoption
Expected runtime	≤6 months
Total Indicative Budget	720 KEUR
Max Funding per Proposal	60 KEUR
Funding rates	100% for any entity (including 25% indirect costs)
Cut-off dates	April 30, 2019 October 31, 2019
Eligible activities	- Experimentation with RobMoSys Pilots - Software development - Development of demonstrators (showcases, demos, videos) related to own industrial cases in line with RobMoSys Pilots - Co-operation with other members of RobMoSys Community - Participation in inter-ITP workshops organized by RobMoSys (at least one per project)
Expected results	- Demos (e.g., videos) - Adoption Report - Application (usage or implementation) with at least two RobMoSys-conformant components

Targeting the right scope in view of runtime and funding is key: ITPs funded under the umbrella of Instrument 1 are not expected to build applications with fully RobMoSys-conformant software components. **At least two** of these RobMoSys-conformant components have to be implemented, though. An overview of RobMoSys-conformant components is provided here: https://robmosys.eu/wiki/model-directory:start. That is the baseline to demonstrate the value of the composability within RobMoSys' (data sheets, system composition patterns and communication patterns), to let the pilot application deal with relevant **cause-effect constraints** between components at the system level.

RobMoSys describes the path of gradual familiarization with the RobMoSys approach and community interaction (see Annex 1).

A project proposal must convincingly demonstrate that the project consortium is ready not to work in isolation, but achieve the targeted results in co-operation with other members of the RobMoSys Community. The RobMoSys consortium will organise dedicated workshops to help projects to achieve this goal, and to have constructively critical discussions on each other's approach, design and software. Project proposals must explicitly plan to participate in such workshops, at least one during the project runtime.

2.2. Instrument #2: Ecosystem Challenges

This instrument aims at strengthening the RobMoSys ecosystem with profound developments on the RobMoSys baseline (models, tools, components, patterns). Submissions of ITPs must fit one or more of the following technical topics:

- Topic 1: ROS 2 and Model-Driven Software Development
- Topic 2: Functional composition inside component
- Topic 3: System level composition / safety
- Topic 4: System level predictability of properties, Navigation
- Topic 5: System level predictability of properties, Manipulation
- Topic 6: OPC UA Robotics
- Topic 7: Open Topic

Further details on each of these Topics can be found at the following Annex 2.

Instrument #2	Ecosystem Challenges
Expected runtime	≤12 months
Total Indicative Budget	1,600 KEUR
Max Funding per Proposal	300 KEUR
Funding rates	100% for non-profit third parties (including 25% indirect costs) 70% for profit making third parties (including 25% indirect costs)
Cut-off dates	April 30, 2019
Eligible activities	- Experimentation with RobMoSys Pilots - Software development under the form of models, metamodels and tools - Development of software components for demonstrators related to own case studies or refinement of the RobMoSys pilots - Co-operation with other members of RobMoSys Community - Participation in inter-ITP workshops organized by RobMoSys (at least three per project)
Expected results	- Deliverables to be planned by each ITP (specifications, implementation releases, evaluation reports, among others)

	- Demonstrators (e.g. videos)

Again, finding the right scope is key: Quality beats quantity: It is much better to provide a small-scale contribution, so that the resulting reliability, predictability, usability and reusability can be developed with greater accuracy, than when diluting the project efforts on a large-scale scope.

Each project proposal must identify explicitly which demonstrator will be developed to benchmark the project's progress, and what exactly the benchmark will be. These targets can be subject to adjustments during the funded runtime of the ITPs. Adjustments may result from discussions with RobMoSys, either in-person or using the RobMoSys Community building instruments, which are partially in place already, but will be enriched via the projects funded under Instrument 3.

A project proposal must convincingly demonstrate that the project consortium is ready not to work in isolation, but achieve the targeted results in co-operation with other members of the RobMoSys Community. The RobMoSys consortium will organise dedicated workshops to help projects to achieve this goal, and to have constructively critical discussions on each other's approach, design and software. Project proposals must explicitly plan to participate in such workshops, at least one during the project runtime. Applicants have to take this into consideration when they plan their budgets.

2.3. Instrument #3: Innovation Expert Intake

This instrument looks for proposals from legal entities that offer their expertise as a service. RobMoSys wants to take them on board in order to push innovation and strengthen the RobMoSys community. Expert services offered can focus on either supporting the RobMoSys Academy or the RobMoSys technology. As a precondition of their involvement, the selected experts must be willing to familiarize themselves with the RobMoSys approach, to actively participate in technical workshops, to meet with RobMoSys partners in their labs, to contribute to the RobMoSys community building, or getting involved in specific ITPs. Please mind that only applications filed by legal entities - not by individual experts - are eligible. Even though the application must be filed by a legal entity, the CV of the individual expert is a fundamental part of the evaluation of proposals under Instrument 3. Once selected for funding, the expert representing the legal entity CANNOT be replaced!

Instrument #3	**Innovation Expert Intake**
Expected runtime	≤6 months
Total Indicative Budget	230 KEUR
Max Funding per Proposal	20 KEUR
Funding rates	100% of personnel costs and travel expenses for any third party entity (no indirect costs)
Cut-off dates	April 30, 2019 October 31, 2019
Eligible activities	- Advising activities at the premises/laboratories of RobMoSys partners - Exploitation of all community-building channels - Identification of projects and applications in terms of suitability to expert's contribution - Co-operation with other members of RobMoSys Community - Participation to Innovation Experts workshops organized by RobMoSys (at least one)
Expected results	- Implementation of community building activities described in the project application - Final Expert Report

For proposals in this instrument, it is an absolute **must** that the expert exploits all community-building channels offered by RobMoSys,, and identifies (pro-actively and with the help of the coaches of RobMoSys) all projects and applications that can profit most from the expert's contributions.

This instrument is, by necessity, very flexible in terms of the contribution which would be eligible if suggested. However, some contributions are considered as fundamental by RobMoSys:

- *Adoption Measures*: How to improve the fit between RobMoSys and the needs of its user community for easy adoption and how to improve the RobMoSys migration and adoption paths?
- *Digital Infrastructure*: How to improve the RobMoSys digital platform for easy accessibility to software components and for easy interoperability?
- *Market Uptake*: How to develop the RobMoSys strategy for easy management of associated ecosystem technologies (towards marketplaces), and for and for easy alignment with industrial needs?
- *Community Creation*: How to contribute to growing RobMoSys community?
- *Academy Growing*: How to enrich the concept and service portfolio of the RobMoSys Academy, including tutorial, training, methodological guidance and demonstrators

RobMoSys considers that experts with the following background could make a good contribution to the project:

- robotics or software engineering experts solely involved in the ROS-ecosystem so far, but wanting to get actively involved in RobMoSys now
- experts in real-time embedded systems willing to link their concepts to RobMoSys
- deep software engineering experts wanting to identify how to overcome deficiencies in model-driven tooling workbenches
- experts in automotive software engineering wanting to push forward a link to their resource management
- experts in DDS middle-ware willing to push forward the mapping of RobMoSys communication patterns onto this middle-ware

The applicants with other expertise valuable for RobMoSys are also welcome.

Applicants are requested to demonstrate clearly in their proposals that they are very well aware of the areas in which their specific expertise fits best the project goals and the ongoing developments. RobMoSys is interested in building a long-term relationship with the experts. Applicant are further requested to pro-actively discuss the content of their contributions with RobMoSys, using the RobMoSys communication and interaction channels.

3. Proposal submission

The proposal will be submitted via the proposal submission platform. The platform will provide:

- The functionalities to enter general/administrative proposal information and partner data.
- The functionalities to upload a completed proposal document, providing full scientific details of the proposal.
- Information which is required to avoid any potential conflict of interest
- Contacts for administrative, scientific / technical and RobMoSys-related questions
- The link to a ticketing system to address your requests / enquiries

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 submit 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 ITP coordinator acts as the main point of contact between the ITP team and RobMoSys.

Upon receipt by RobMoSys, 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 RobMoSys 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) template and web forms (all sections!) have been completed and (iii) the eligibility criteria set out in Section 3 – Activities, Results and Funding per Instrument are met.

4. General Conditions

The activities eligible for funding as well as the funding rates differ considerably between the different instruments. The relevant information is provided in the overview tables for each of these instruments.

Cost categories eligible for funding:

In RobMoSys open-call ITP budget, mainly address personal expenses (staff and travel).

In Instruments #1 and #2, up to 25% of the budget can be reserved for consumables needed to cover activities related to use case implementation in Pilots. Equipment costs are not eligible. Third parties are expected to provide the entire equipment necessary to perform the activities (robotic platforms, etc.) themselves.

Participants of Instruments #1 and #2 are allowed to sub-contract 10% of the budget, but sub-contracting should not cover core activities (see above overview tables per instrument). Subcontracted activities have to be specified very clearly in the proposal.

Each proposal for an ITP will include justifications of costs and resources. Checking the consistency between these costs and the expected work of the ITP will be part of the evaluation of ITPs.

Funding rates

The following funding rates apply to individual instruments of the Second RobMoSys Open Call:

Instrument #1: 100% funding rate for all entities, including 25% indirect costs.

Instrument #2: 100% funding rate for non-profit entities, 70% for for-profit entities, including 25% indirect costs.

Instrument #3: 100% funding rate of direct personnel and travel costs, **no indirect costs.**

Inter ITP workshops:

All accepted ITPs commit themselves to participate in inter ITP workshops. The purpose of these workshops is to better harmonize the contributions of the different ITPs to the RobMoSys platform and ecosystem and to strengthen cooperation among ITPs. It is intended to have a minimum number of inter ITP workshops as indicated in Section 2 (per Instrument) during the runtime of ITPs

Payment schemes:

In the RobMoSys ITPs, one or more organizations can apply for funding by submitting a proposal describing their goal, the technical plan to achieve it, and an estimate of the involved cost.

Third-party beneficiaries will receive their payments according to the following schedule:

1. One pre-financing payment of 40% of the funding, within 30 days from the entry into force of the ITP agreement;
2. Instrument #2 receives an interim payment of 40% of the funding, within 60 days from receiving an ITP progress report
3. Final balancing payment of all the funding, not exceeding the initial budget, within 60 days from receiving the final ITP report.

Key Performance Indicators:

ITP proposals suggest a limited but sharp set of individual KPIs, these KPIs will be fine-tuned during the preparation of the contract.

Entities eligible for funding:

Because of the expected step change contributions, the Call welcomes, in particular, consortia offering complementary, multi-disciplinary competences that go beyond the mainstream robotics community; for example, robotics experts teaming up with software engineering people, or tool builders, or experts from automotive, aerospace, embedded cyber physical systems.

Instrument 3 is looking for entities, both non-profit and for-profit, employing experts with a background which are described in section 2.3.

In RobMoSyS, 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, international organizations of EU interest, established in an EU Member State or in an Associated Country.

Maximum funding and possibility to participate in several proposals:

There are no restrictions regarding the number of proposals in which an entity can participate. However, the funding for the beneficiary (as defined by the EC[5]) will not exceed 250,000€ (even if a

[5] http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/amga/h2020-amga_en.pdf

party participates in more than one ITP), restriction of shifts between partners in an ITP concerning this matter will be part of the contract.

5. Ethical issues

Research activities in Horizon 2020, and particularly in RobMoSys, should respect fundamental ethical principles, particularly those outlined in "The European Code of Conduct for Research Integrity". Therefore, questions about ethical issues are to be addressed in the proposal text, if ethical issues apply to an ITP, before and during the runtime of the research activities within RobMoSys, including the approval by the relevant committees.

6. Pre-proposals

As a special service to potential applicants, pre-proposals can be submitted via the RobMoSys Open Call Platform during the first nine weeks after publication of the call. A member of the staff of the RobMoSys Project will respond to applicants within a reasonable period, if longer than five business days the applicants will be informed. The response will be limited to clarifying whether the proposal fits into the scope of the call and is eligible with respect to avoiding conflict of interest with the core consortium. Please note that it is not mandatory to submit one and it has no influence on the evaluation of the full proposal. Pre-proposal should be based on the Proposal Template.

7. Evaluation Process

Proposal writers are strongly advised to read the accompanying document to this "Guide for Applicants", namely the "Guide to Evaluators": by understanding what the RobMoSys Consortium expects from Evaluators, proposal writers should be able to focus their ideas on what is really important, and to improve the quality with which their proposals can be evaluated.

• Conflict of Interests (CoI)

The applicants must take all measures to prevent any situation where the impartial and objective implementation of the project is compromised for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest ('conflict of interests'). They must formally notify to the RobMoSys Consortium without delay any situation constituting or likely to lead to a conflict of interests and immediately take all the necessary steps to rectify this situation.

Moreover, as the RobMoSys Core Consortium is going to be involved in the evaluation and selection process, it is necessary to ensure from the very beginning that this process remains as transparent and unbiased as possible. A clear violation of impartiality could arise from either legal or financial ties between any of the applicants and any of the members of the core consortium. Examples of such situation include (but are not limited to):

- Member of the core consortium (either institution or any of the persons involved in the implementation of the project) being shareholder of the applying institution
- Member of the core consortium (either institution or any of the persons involved in the implementation of the project) benefitting financially from success of an application
- Any employee of the applying entity being simultaneously an employee of any of the members of the core consortium.

In order to avoid such situations, the applicants will be required to state any relationships with the core consortium during the application process via the online submission platform. Reporting such

relationships does not immediately mean exclusion from the call – each such case will be analysed individually, and the decision will be included in the evaluation report. On the contrary, failure to report a potential CoI in case any doubtful relationship is discovered will be automatically considered a disqualifying factor.

Annex 1: RobMoSys Adoption Path

RobMoSys defines a process for stepwisely intensified adoption levels of the RobMoSys approach and community interaction (Figure 2).

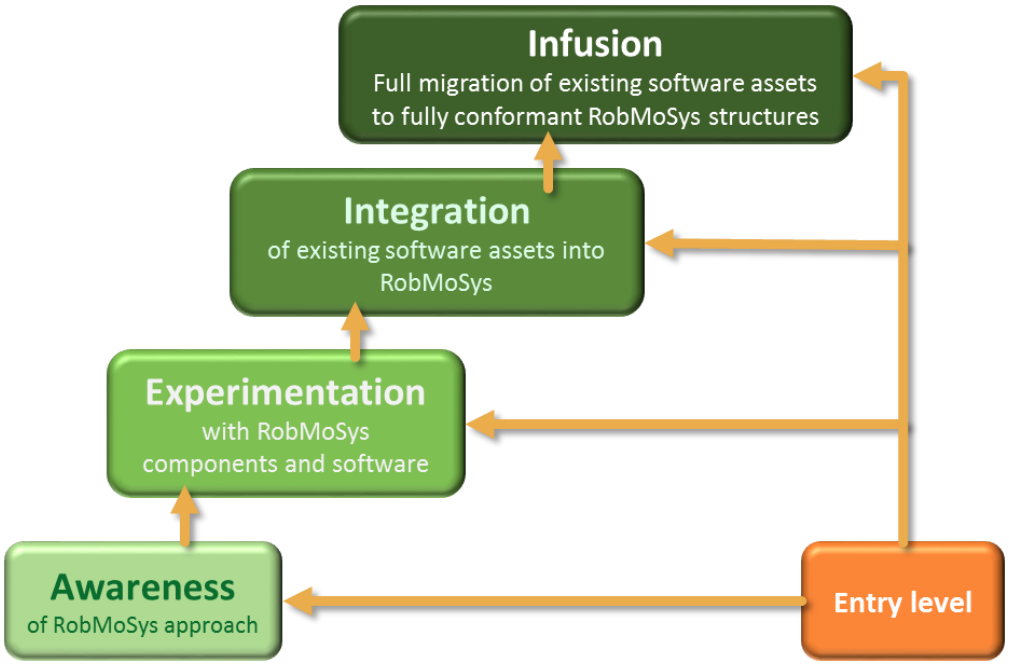


Figure 2. The RobMoSys Adoption Path

Level 1: Awareness. This is the entrance point for RobMoSys newcomers and provides basic information for adoption. RobMoSys provides a structured Tutorial, as well as User Stories (https://robmosys.eu/user-stories/). Other important RobMoSys awareness means are newsletters, Brokerage Days, workshops organized by RobMoSys partners, and Discourse Forum. The main goals of this level are to:

- stay abreast of available RobMoSys principles, modelling structures and tools,
- understand applicability and limitations of the RobMoSys approach to the development of robotics software,
- actively seek the implementation of RobMoSys to appropriate, real software engineering problems in industry, and
- touch base with potential users and verify the need for RobMoSys to adopt its approach and technologies.

Level 2: Experimentation. It implies to set up and run experimental cases to understand and test the RobMoSys approach. RobMoSys facilitates this by providing two toolchains with User Manuals and Usage Scenarios to be reproduced. In addition, a set of RobMoSys pilot skeletons (see one page descriptions of each of these pilots provided as additional information for this call) are available to work on real-world case studies. Finally, RobMoSys fosters "internships": motivated people can spend some time in RobMoSys partner labs, to get embedded in the RobMoSys approach, and to learn first-hand from the core developers within RobMoSys. The main goals stading behind this level of engagement with RobMoSys are to:

- gather hands-on experience with the RobMoSys approach,
- find answers to technical questions and hypothesis by conducting controlled experiments,
- identify any technical constraint to apply RobMoSys in real-world cases, and
- improve, fine tune and extend all RobMoSys information (tutorials, wiki,...). Not in the least by adding to a repository of "best practice designs" of concrete robotic systems.

Level 3: Integration. This is a first step of the RobMoSys migration path. It implies the usage of RobMoSys technologies (models, software components and tools) by robotics development users. These users may keep their existing assets and connect to RobMoSys by using pre-defined mechanisms such as the RobMoSys Mixed Port Component, or partially conform to /convert with RobMoSys structures. The main goals of this level of engagement with RobMoSys are to:

- start with an early adoption of the RobMoSys approach, using RobMoSys architectural patterns and associated tooling,
- support smooth transition to full RobMoSys benefits (compositionality, predictability), by still reusing existing components and systems, and
- develop or adapt (existing) pilots demonstrating the added value offered by RobMoSys in the context of real industrial settings.

Level 4: Infusion. This step implies the full migration of existing assets to fully conformant RobMoSys structures. The main goals are to:

- show full adoption of the RobMoSys approach in an organization,
- demonstrate complete business cases showing a clear Return of Investment (RoI), and
- understand pros and cons of how RobMoSys permeates (an area of) an organization.

The advantage of these different levels (different entry levels with different support from our side) is that we can produce win-win situations at various levels of engagement: migration pilots, coaching, expert advice, and incremental adoption.

Annex 2: Instrument #2 / Ecosystem Challenges

This instrument aims at strengthening the RobMoSys ecosystem with in-depth developments on the RobMoSys baseline (models, tools, components, architectural patterns). Submissions of ITPs must fit one or more of the following technical topics:

Topic 1: ROS 2 and Model-Driven Software Development

We aim for at maximum 1 ITP.

Intention (in direct and close interaction with the RobMoSys consortium):

- ROS-2 concepts shall be classified within the RobMoSys meta-models and concepts. Thereby, it shall become explicit what can / cannot be expected when using which structures of ROS-2. It is also about identifying reasonable clusters of conformance levels to understand what combinations of concepts to use to cover which need of composability, analyzability, predictability.
- The RoMoSys architectural patterns shall be introduced to ROS-2 and shall be realized within ROS-2 or on top of ROS-2 as far as possible and as far as reasonable. Thereby, it shall become explicit how to deal with left open gaps in ROS-2, e.g. how to consistently transform and configure modeled resource configurations for (hard, soft) real-time etc.
- Selected ROS-2 concepts and RobMoSys architectural patterns on top of ROS-2 shall become represented in a consistent way in RobMoSys tooling such that one of the RobMoSys technical user stories can be illustrated.
- Part of the activity is also to establish a sustainable link between the RobMoSys ecosystem and the ROS-2 ecosystem. Thereby, a cross-fertilization between both shall result in a consistent landscape of offerings with a clear understanding of their individual pros and cons as well as the links and complementarities between them.

Hints:

- ROS-2 does not yet offer model-driven composition structures based on the need for separation of roles, analyzability and predictability. Thus, right now you cannot yet get the benefits out of such structures with ROS-2.
- However, there is not always the need for the full semantic richness of the RobMoSys model-driven composition structures. Thus, this is also about identifying reasonable clusters of conformance levels and what kind of properties are covered by which conformance level.
- The focus is on ROS-2 by purpose as ROS-2 provides a much better baseline than ROS-1 for realizing RobMoSys architectural patterns. The structures of ROS-2 are more advanced and much more consistent than those of ROS-1 and they are thus much closer to the structures in the RobMoSys meta-models.
- ROS-1 (sub-)systems can be linked to RobMoSys anyway via e.g. the “Mixed Port Component” which allows for a smooth integration and migration path.

Links to Background:

- ROS-1 Mixed-Port Components in the SmartMDSD Toolchain: https://wiki.servicerobotik-ulm.de/tutorials:ros:mixed-port-component-ros

- ## Topic 2: Functional composition inside components

We aim for at maximum 1 ITP.

Intention (in direct and close interaction with the RobMoSys consortium):

- We call for expertise to introduce further models of computation into the RobMoSys component model. This is foremost about model-driven support for linking functional blocks (function libraries containing computations and data structures) with resources managed by the component (like communication, coordination and configuration).
- This is also about preserving semantics of data (like precedence constraints, data freshness, variances and others) when linking functional blocks with resources managed by the component. This might include, for example, the configurability of dedicated component internal schedulers at system composition time, a proper trade-off with resources assigned at deployment time and, especially, the model-driven management of constraints along these steps (e.g., the partial ordering constraints involved in the computation of cascaded control and/or estimation loops; or access constraints on data structures in shared memory, such as ringbuffers).
- Another aspect is the representation of selected details of the component internals in its according digital data sheet. This forms the basis for selecting, analyzing, and configuring components at system composition time according to the modeled (extra)functional design of an application.
- The effects and benefits shall be illustrated along selected RobMoSys technical user stories by the example of the RobMoSys pilots.

Hints:

- The RobMoSys software component model already supports computations in triggered tasks (time triggered, port-triggered, state-triggered, etc.). Triggered tasks run concurrently inside a software component and are managed by the lifecycle automaton of the software component.
- During system composition, binary software components are configured to match system level needs. A primary example is dealing with dependency graphs (like cause-effect chains): they involve ports in various components, and the composition under such constraints must result in proper configurations of the trigger settings inside all components involved in a dependency.
- RobMoSys provides first digital data sheets for software components explicating first relevant properties like variation points and data dependencies between ports etc.

Links to Background:

- Annotation and Documentation via the Digital Datasheet: https://wiki.servicerobotik-ulm.de/how-tos:documentation-datasheet:start

- ## Topic 3: System level composition / safety

The development of robotics systems, in particular for operation in proximity to and/or in collaboration with humans, raises safety issues, which are exacerbated by the increasing complexity of software and electronics hardware. This topic asks for proposals to reinforce the RobMoSys ecosystem with model-based safety engineering methods and tools for enabling safety-aware composition of robotics modules. **We aim for one (1) ITP in this topic.**

Intention (in direct and close interaction with the RobMoSys consortium):

- RobMoSys component models must expose safety properties (e.g. potential faults and their propagation models), safety constraints (e.g., safety requirements issued from the risk identification process), and safety assurance artefacts (e.g. FMEA studies for a given module), in a way that they can be used for system-level safety assessment by robotics integrators.
- A RobMoSys modelling view for Safety is being developed and must be enriched with a compositional approach of safety-related information. This will provide versatility of robotics solutions, which will be achieved by the replacement of some components without the need of repeating the whole safety assessment process.
- To improve accessibility, reusability and compositionality of robotics building blocks, this model-based approach must focus on complementing digital data sheets with machine-readable safety-relevant information.
- Proposals must be aligned to safety standards for software and computer hardware development and deployment. Standards such as ISO 13849-1 (Safety of Machinery – Safety Related Parts of Control Systems) and (ISO) EN/IEC 62061 (Safety of Machinery – Functional Safety of safety-related electrical, electronic and programmable electronic control systems) provide well-proven practices to evaluate risks and to define safeguards and electronics protective measures. In rehabilitation or surgical robotics, the medical devices regulation applies with or EN/IEC 62304 (Medical device software – Software life cycle processes) and functional safety levels can be defined using EN/IEC 61508 (Functional Safety of Electrical/Electronic/Programmable Electronic Safety-related Systems).
- Methodological guidance must be embedded in RobMoSys tools to follow model-based workflows in conformance to safety standards.

Hints:

- Despite the core role and awareness of standards, the usage of available safety recommendations for software and computer hardware development and deployment is rather low in the robotics industry. Proposals must focus on overcoming this situation.
- Contract-based approaches can be of high interest for supporting predictable composition of safety properties. Formalizing safety assumptions and guarantees will reinforce the modelling and validation process.
- Special focus on RobMoSys pilots is expected for example in collaborative robotics, and mobile manipulation.
- Any project in this area is expected to strongly collaborate with RobMoSys partners, as there are some background which must be used as part of any safety-related support.

Links to Background:

- RobMoSys approach for Model-Based Safety Analysis:
  - http://www.servicerobotik-ulm.de/models2018/assets/slides/RobMoSys_MODELS_Papyrus4Robotics.pdf
  - https://robmosys.eu/wiki/baseline:environment_tools:papyrus4robotics
  - https://robmosys.eu/wiki/pilots:hr-collaboration

- Topic 4: System level predictability of properties, Navigation

We aim for at maximum 1 ITP.

Intention (in direct and close interaction with the RobMoSys consortium):

- We call for expertise to showcase with us predictability and management of system level properties by means of the RobMoSys model-driven composition approach in the **domain of mobile robot navigation**.
- We aim for predicting, matching and maintaining system level properties during system composition time, during deployment time and during run-time by the example of adequate navigation in different contexts. This includes horizontal as well as vertical composition applied to the navigation domain.
- Thus, the focus is on system level predictability of properties and qualities of navigation skills and composed navigation systems, the according management / reservation of resources as is required vertically (e.g. at the link between task level coordination and skill configuration) and horizontally (e.g. dependency graphs across different components).
- Examples of RobMoSys technical user stories related to this topic are: model-driven reservations of resource shares to achieve an intended quality of navigation; checking the impact of a lower resolution sensor on the outcome of a composed processing chain for navigation; to manage system mode changes with their relevant resource shares from within the task coordination layer; the consistent management of environment models and coordinate system references; policies expressed for navigational spaces which are followed by the robots in these spaces; and many more.
- This requires the implementation and migration of alternative components offering (further) navigation skills with e.g. different qualities and different resource requirements and explicating their operating modes, variation points and resource requirements. However,, it is ***not*** about researching and developing new navigation algorithms.
- The effects and benefits are to be illustrated by the RobMoSys Application Pilots which relate to mobile navigation, e.g. the application pilot “goods transport in a company” and the application pilot “mobile manipulation for assistive robotics in a domestic environment or in care institutions”.
- In contrast to topic 3, the focus of topic 4 is ***not*** on safety.

Hints:

- RobMoSys offers a pilot skeleton for mobile robot navigation as baseline which comprises domain-specific service definitions, component models, software components and task level coordination for executing navigation tasks. The pilot skeleton is available for different mobile robots and also with a Gazebo simulation.
- Cross-Links between topic 4 navigation, topic 5 manipulation and finally mobile manipulation will be fostered and moderated via the RobMoSys coaching process.

Links to Background:

- Intralogistics Industry 4.0 Robot Fleet Pilot:
  - https://robmosys.eu/wiki/pilots:intralogistics
- Flexible Navigation Stack and its support in RobMoSys tooling:
  - https://robmosys.eu/wiki/domain_models:navigation-stack:start

- https://robmosys.eu/wiki/baseline:environment_tools:smartsoft:smartmdsd-toolchain:navigation-stack:start
- https://robmosys.eu/wiki/baseline:scenarios:tiago_smartsoft

- ## Topic 5: System level predictability of properties, Manipulation

We aim at maximum for 1 ITP.

Intention (in direct and close interaction with the RobMoSys consortium):

- We call for expertise to showcase with us predictability and management of the system level properties of the performance of **manipulation applications**, by means of the RobMoSys model-driven composition approach.
- The system level performance includes the feedback to the human operator about the progress of the manipulation task.
- This requires the development of models and meta models with which manipulation tasks can be specified, their properties can be configured, and their execution can be monitored. The aim is *not* to create *the* unique language for manipulation, but to build the generic foundations: links between constraints of manipulation actions as represented by traditional assembly graphs; tooling to create constraints between manipulation actions based on models of the robots' kinematics, the manipulated objects' geometry and dynamics, and the available workspace; creation of monitoring actions to check the result of previous manipulations, with a configurable degree of "completeness"; creation of appropriate semantic tags to indicate which series of manipulation actions are expected to be executed atomically, and the tooling to introduce "undo" actions (semi) automatically; etc.
- Tooling to inform the operators about the intentions and predicted space occupation of the robots involved in the manipulation is a plus, considering the industrial relevance of "cobotic applications".
- In the same context, an extra plus is the development of "shared control" task models, to allow the human operator and the robot(s) to take care of complementary parts of the manipulations, concurrently.
- The effects and benefits are to be illustrated by the RobMoSys Application Pilot which relates to multi-arm manipulation.
- There are cross-links with Topic 2, because of the high relevance of dependency graphs and cause-effect chains. And with Topic 4, because mobile navigation and manipulation have many aspects in common.

- ## Topic 6: OPC UA Robotics

We aim for at maximum 1 ITP.

Intention (in direct and close interaction with the RobMoSys consortium):

- We call for expertise to assist in having OPC UA becoming aware of and taking up RobMoSys architectural patterns for composition. This is to contribute to the OPC UA ecosystem the benefits of the RobMoSys composition approach. This supports to match the not yet covered demands of industry for advanced system composition within the OPC UA industry driven ecosystem.

- We call for expertise in RobMoSys related OPC UA companion specifications, such as the (draft) OPC UA robotics companion specifications. This topic is about the implementation of examples which are conformant to these OPC UA companion specs. The examples shall be in the context of the RobMoSys pilots in order to push forward by concrete settings the link between the industry-driven discussions on domain-specific information models at tier-2 (called companion specs in OPC UA) and the robotics models consolidated by RobMoSys.
- A relevant part of this activity is to bring the expertise of the RobMoSys ecosystem and its advanced architectural patterns for robotics in touch with the industry-driven OPC UA working groups which define the next parts of the robotics companion specification. It is about offering the robotics principles as consolidated by the RobMoSys ecosystem and consultation about them. Thus, strong links into relevant working groups for companion specifications are necessary in order to establish reliable links between the industry driven OPC UA ecosystem for industry 4.0 and the RobMoSys robotics ecosystem. An ideal partner constellation comprises an industrial partner like a robot manufacturer which is already established in the robotics companion specification working group.

Hints:

- OPC UA has the potential to offer a uniform and standardized way to access devices like sensors, mobile platforms and manipulators and to interact in a standardized way with infrastructure outside a robot.
- The RobMoSys architectural patterns are particular strong with respect to coordination, configuration and horizontal composition including digital data sheets and describing and configuring skills. All these topics are envisioned for the next parts of the OPC UA robotics companion specification and thus, consultations and mutual exchange at the tier-2 level between the OPC UA ecosystem bodies and the robotics expertise represented by the RobMoSys ecosystem are desirable.
- An OPC UA mixed port component allows RobMoSys software components to interact with OPC UA devices. The concept, the model-driven support and examples are accessible from within the RobMoSys conformant SmartMDSD Toolchain via the open-source SeRoNet Plug-Ins. These Plug-Ins already cover a first set of OPC UA services for access from within a RobMoSys software component and vice versa.
- A mapping of selected RobMoSys architectural patterns (services, communication patterns, digital data structures) onto OPC UA mechanisms is under preparation by the SeRoNet project to be accessible from within the SmartMDSD Toolchain.

Links to Background:

- OPC UA mixed port component:
  - https://wiki.servicerobotik-ulm.de/tutorials:opcua-client:start
  - https://wiki.servicerobotik-ulm.de/tutorials:opcua-client-system:start
  - https://wiki.servicerobotik-ulm.de/tutorials:opcua-server:start
- OPC UA and RobMoSys architectural patterns:
  - https://robmosys.eu/wiki/other_approaches:opc-ua

Topic 7: Open Topic

We aim for a small numbers of ITPs, that will be selected after ITPs for Topic 1 to Topic 6 have been selected. The contents of the ITPs in this Topic 7 may be along the lines of the previous Call 1, or they

should have a similar focus on generic, platform-level models, tools and software. That is, any robotics application should profit from the outcome of a Topic 7 ITP, to various extents. A non-exhaustive list of examples: the generic foundations of control or estimation algorithms and components, or of the instrumentation of components for monitoring, logging and visualization; the generic foundations of formal verification tooling for components and/or systems.

Appendix C: Guide for Evaluators

GUIDE FOR EVALUATORS - CORRECTED

Second RobMoSys Open Call

Contents

Definitions

Instrument:	Type of RobMoSys third-party contract outlining the contributions a successful applicant can make to RobMoSys. This Open call distinguishes three of these "Instruments", each of them with a specific scope, an individual funding scheme and distinctive expected results & impact.
RobMoSys Ecosystem:	The collection of assets (tools, models, software components, application pilots, guidance documents) and services (e.g. for adoption, coaching) issued by RobMoSys, which are developed, maintained and evolved by the RobMoSys Community.
RobMoSys Community:	It is the keystone for the sustainability of the RobMoSys project. The functions of the RobMoSys Community include, but are not limited to: (i) developing RobMoSys models (see: https://robmosys.eu/wiki/model-directory:start) , software components and tools (see: https://robmosys.eu/wiki/baseline:start) to be released/hosted in open source, (ii) operating dedicated code repositories, (ii) build chains, test facilities, fostering exchanges between RobMoSys partners and industry partners, (iv) managing the quality and maturity of RobMoSys tools, (v) ensuring open innovation through the sharing of the research, development, and maintenance efforts as far as possible, fostering sustainable commercial services and ecosystems around the RobMoSys tools.
Integrated Technical Project (ITP):	A third-party RobMoSys-funded project composed of one or more legal entities aiming at adopting, developing or boosting the RobMoSys Ecosystem.
RobMoSys Academy:	The set of structured resource providing guidance and support for RobMoSys stakeholders, including methodological guidance, tutorials, training, demonstrators and coaching.
Coaching Support:	The RobMoSys project assigns one member of the core consortium to each ITP with the following role: to assist the assigned ITP in aligning with RobMoSys background in a consistent way; to serve as main link between the ITP and the RobMoSys consortium for questions or requests or to trigger potential collaborations or interactions between ITPs.
Project Steering Committee (SC):	The RobMoSys Project Steering Committee comprises one representative from each of the core partners of RobMoSys. The Steering Committee is involved in evaluation and selection process to ensure fit between the selected projects and overall goals of RobMoSys.
Expert Evaluators:	The experts, independent of the RobMoSys consortium and of any proposer, with the role of assessing the proposals submitted in response to the Second RobMoSys Open Call.
Expert Rapporteurs:	They are responsible for drafting the consensus report (CR), it can be either one of the evaluators involved in the evaluation of the proposal or an additional expert.

1. General Aspects

1.1. Why this Guide

This guide aims at supporting the evaluation of proposals submitted to the *Second RobMoSys Open Call*. The evaluation process involves both external evaluators, hereafter called *Expert Evaluators*, and internal evaluators embodied in the RobMoSys Steering Committee (SC). The Second RobMoSys Call embraces three[6] different *Instruments* characterized by distinctive contribution goals and hence different evaluation criteria. The extent of the (external and internal) evaluator role is different depending on the Instrument. This guide will help evaluators to assess proposals, contribute to evaluation panels, and draft evaluation reports.

Further information about RobMoSys vision, principles, adoption path and Instruments can be found in the Guide for Applicants, Section 1.

1.2. Evaluators Role

The underlying principles to bear in mind during evaluation are:

- **Excellence**: projects must demonstrate a high level of quality in relation to the topics and criteria set out in the calls
- **Transparency**: funding decisions must be based on clearly defined rules and procedures, and applicants should receive adequate feedback on the outcome of the evaluation
- **Fairness and impartiality**: all proposals must be treated equally and evaluated impartially on their merits, irrespective of their origin or the identity of the applicants
- **Confidentiality**: all proposals and related data, knowledge and documents must be treated in confidence
- **Speed and efficiency**: proposals should be evaluated and grants awarded and administered as swiftly as possible, without compromising quality or breaking the rules

1.3. Evaluator's Code of Conduct and Conflict of Interest

It should always be anticipated in the Open Call that entities being part of the RobMoSys core consortium ensure the impartial and objective implementation of the action and take all measures to prevent any situation resulting in a "conflict of interests" for reasons involving economic interest, political or national affinity, family or emotional ties or any other shared interest. Therefore, the beneficiaries cannot apply.

As regards other entities who have some link (loose or not) to the beneficiary entities, these can apply to the call as long as the evaluation process (thus the evaluators) is completely independent and none of the above situations occurs and neither is the impartial and objective implementation of the action

[6] Upon close inspection of the regulations concerning Financial Support to Third Parties (FSTP) in Horizon2020 it turned out, that the Instrument #4 cannot be funded in its originally foreseen form. Therefore, the second RobMoSys open call had to be amended and the Instrument #4 is no longer a part of it. The budget initially allocated to this instrument has been reallocated to the other three.

compromised. The exact procedure for avoiding such conflict is described in the Guide for Applicants of the Second RobMoSys Open Call.

This impartiality will have to be demonstrated in the reports that the European Commission and the Project Officer (EC/PO) receives from the consortium describing the process and results of the calls that have taken place. The EC/PO should as usual not be otherwise involved in the open call process.

Both external experts (independent from the RobMoSys consortium and also without a conflict of interest with any of proposers) and internal experts (being employees of the members of the RobMoSys consortium but not having a conflict of interest with any of proposers) will be involved in the evaluation process and will have confirmed their independence and neutrality before.

It is important to notice, that 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:

(http://ec.europa.eu/research/participants/data/ref/h2020/experts_manual/h2020-experts-mono-contract_en.pdf).

In addition to a high level of competence, evaluators must not have any conflict of interests. A disqualifying conflict of interest exists if an evaluator:

- Was involved in the preparation of the proposal,
- Could stand to benefit, or to be disadvantaged, as a direct result of the evaluation carried out,
- Has a close family relationship with any person representing a participating organization in the proposal,
- Is a director, trustee or partner of any beneficiary, participating in the proposal, or by a subcontractor/third party carrying out work for any beneficiary in the proposal concerned,
- Is employed by one of the beneficiary in the proposal concerned,
- Is in any other situation that comprises his/her ability to review the proposal impartially. Evaluators with disqualifying conflicts of interest cannot take part in the evaluation of proposals. A potential conflict of interest may exist, even in cases not covered by the clear disqualifying conflicts indicated above, if any expert:
- Was employed by one of the participating organisations in a proposal in the last three years,
- Is involved in a contract or research collaboration with a participating organisation, or had been so in the previous three years
- Is in any other situation that could cast doubt on his/her ability to review the proposal impartially, or that could reasonably appear to do so in the eyes of an external third-party Evaluators cannot evaluate proposals where they have a potential conflict of interest. Also, they are excluded from the panel meeting.

2. Evaluation Process

Project proposals and individual contracts are awarded through different processes depending on the kind of Instrument. Instrument #1 and #2 follow a mixed evaluation process with external and internal evaluators contributing to the peer-review and selection activities. Instrument #3 follows a workflow managed by internal evaluators. This section describes the different roles and workflows for each of the instruments.

2.1. Who is Who

- **External Evaluators**: The experts, independent of the RobMoSys consortium and of any proposer, with the role of assessing the proposals submitted in response to the Second RobMoSys Open Call.
- **RobMoSys Steering Committee (SC)**: The RobMoSys Project Steering Committee in this document. It comprises one representative from each project partner.
- **Expert Rapporteurs**: He/she is responsible for drafting and finalizing the Consensus Report (CR).
- **Panel Moderator**: This role assists the participants of the evaluation panels to arbitrate the discussions.

2.2. Workflows

The sections below present the workflows of the evaluation and selection processes of the individual instruments of the Second RobMoSys open call.

Instrument #1: Fast Adoption

The evaluation will be performed in two steps. In the first step, the External Evaluators 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 3.1.).

Each proposal will be evaluated by at least two acknowledged evaluators with different expertise, for example in the technology field or in application area(s). Afterwards, for each of the proposals, a consensus report will be drafted by a rapporteur – one of the original evaluators – and agreed upon by all the evaluators assigned to the particular proposal.

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 the Steering Committee will identify the most promising candidates. The decision will be strongly based on the ranking created by the External Evaluators. However, the Steering Committee will ensure that the proposals are realistic in terms of time and effort, follow the RobMoSys approach and can have significant impact on the ecosystem. A justification for each alteration of the ranking will be provided by the Steering Committee.

The chair of the Steering Committee will inform all the participants about the results of evaluation and selection. A public summary report will be published on the project website within 30 days from the end of the selection procedure.

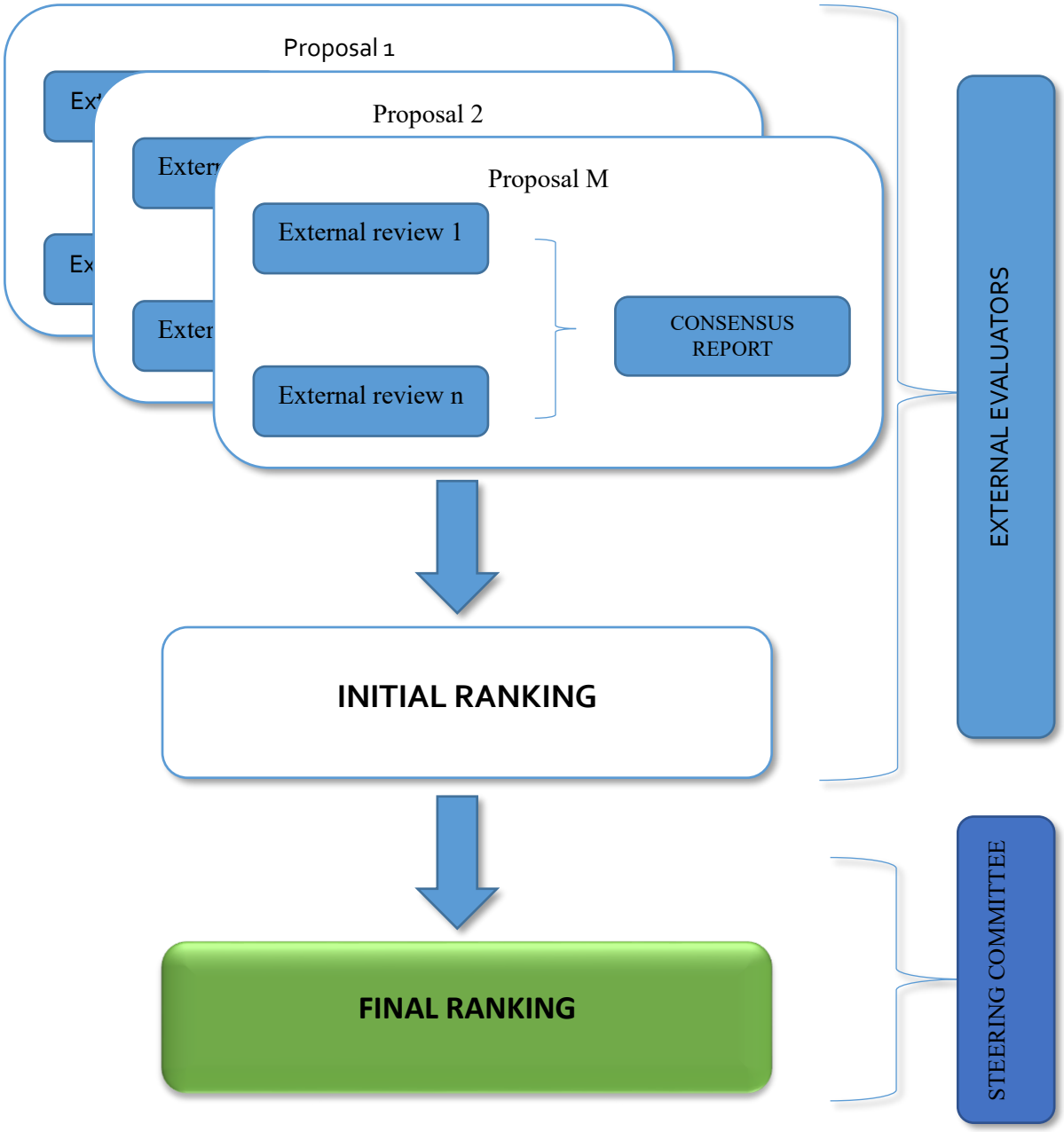


Figure 13. Evaluation workflow for Instrument #1

Instrument #2: Ecosystem Challenges

The evaluation will be performed in three steps. In the first step, both the External Evaluators and the RobMoSys Steering Committee will review each proposal according to the expected impact, technical and scientific excellence and implementation plans (see Section 3.2).

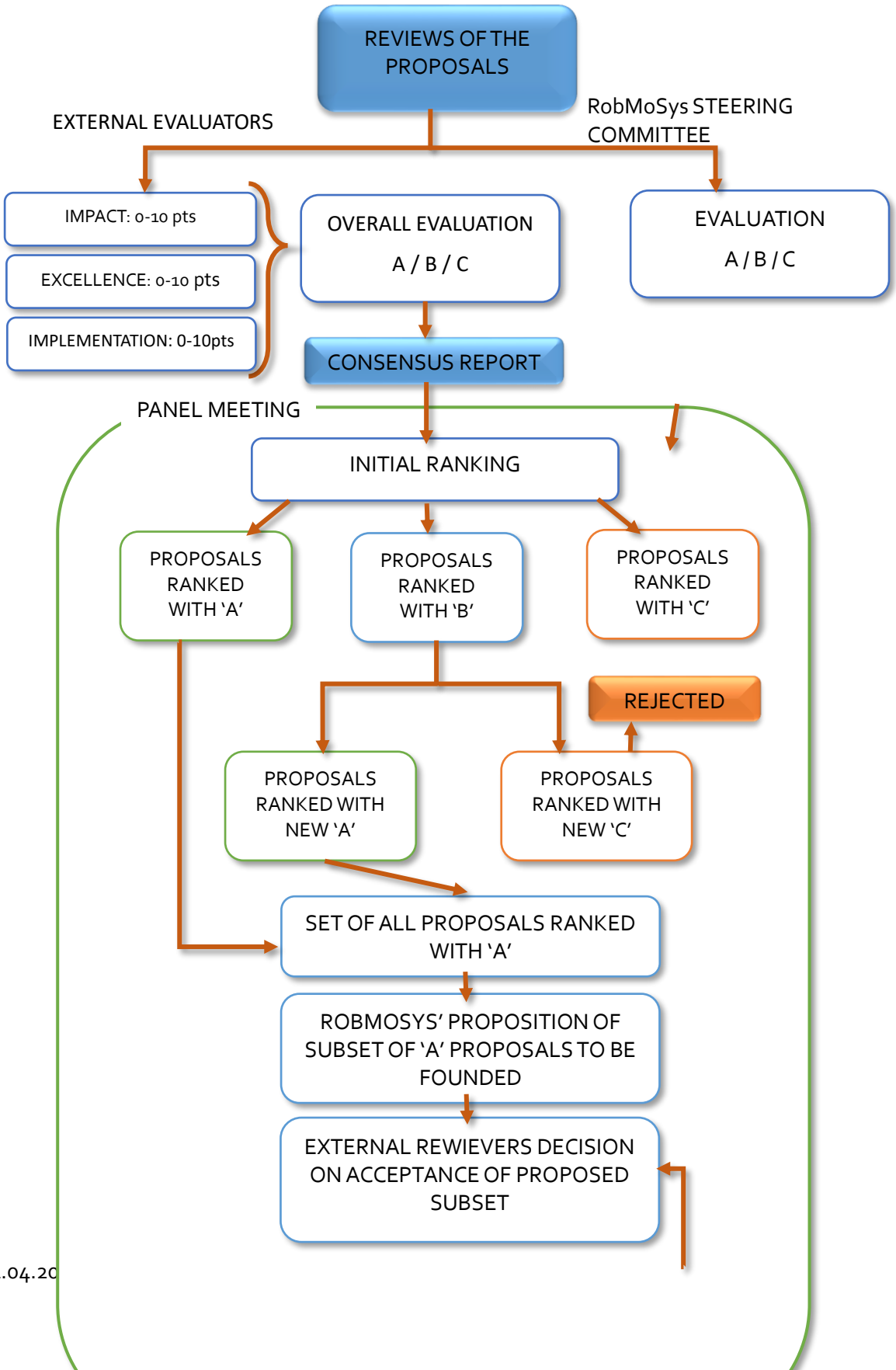
Each proposal will be evaluated by at least two acknowledged evaluators with different expertise, for example in the technology field or in application area(s). Besides assigning scores to each of the criteria the evaluators will recommend either funding of the proposal (A), rejecting it (C) or postponing the decision (B). Afterwards, for each of the proposals, a consensus report will be drafted by a rapporteur

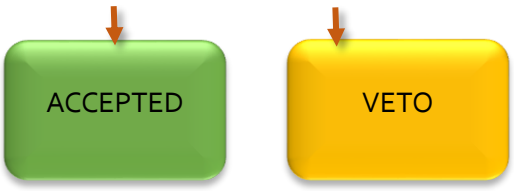
– one of the original evaluators – and agreed upon by all the evaluators assigned to the particular proposal. Similarly, Steering Committee will prepare a report in which they comment on the proposal and recommend one of the actions – A, B or C. The outcome of the first step will be a ranked list of all proposals based on the recommendations and the individual scores obtained by each proposal from the External Evaluators.

In the second step a Panel Meeting, involving all the evaluators and members of the Steering Committee will identify the most promising candidates. Proposals assigned C by the externals evaluators are immediately rejected, whereas proposals assigned A are immediately accepted for the final consideration. Afterwards, all the proposals, for which the recommendation was B are presented by both an External Evaluator involved in the original review and a member of the Steering Committee and discussed upon. A vote involving both the External Evaluators and the Steering Committee decides whether to reject such a proposal or accept it for final round.

In the third step, the Steering Committee proposes a subset of the proposals under final consideration selected to the External Evaluators, who get to vote whether to accept the selection or reject it. Upon rejection, the Steering Committee needs to propose another set based on the recommendations of the External Evaluators. Upon acceptance, the selected proposals are finally accepted.

The chair of the Steering Committee will inform all the participants about the results of evaluation and selection. A public summary report will be published on the project website within 30 days from the end of the selection procedure.


REVIEWS OF THE PROPOSALS
EXTERNAL EVALUATORS
RobMoSys STEERING COMMITTEE
IMPACT: 0-10 pts
EXCELLENCE: 0-10 pts
IMPLEMENTATION: 0-10pts
OVERALL EVALUATION
A / B / C
EVALUATION
A / B / C
CONSENSUS REPORT
PANEL MEETING
INITIAL RANKING
PROPOSALS RANKED WITH 'A'
PROPOSALS RANKED WITH 'B'
PROPOSALS RANKED WITH 'C'
REJECTED
PROPOSALS RANKED WITH NEW 'A'
PROPOSALS RANKED WITH NEW 'C'
SET OF ALL PROPOSALS RANKED WITH 'A'
ROBMOSYS' PROPOSITION OF SUBSET OF 'A' PROPOSALS TO BE FOUNDED
EXTERNAL REWIEVERS DECISION ON ACCEPTANCE OF PROPOSED SUBSET



Instrument #3: Innovation Expert Intake

The proposals will be assigned to individual members of Steering Committee who prepare the individual evaluation reviews based on the criteria described below (see Section 3.3.). An initial ranking will be created based on scores assigned to the individual proposals. Afterwards, the final decision is taken by the Steering Committee that analyses the ranking and reports and has a chance to vote on changing the initial ranking.

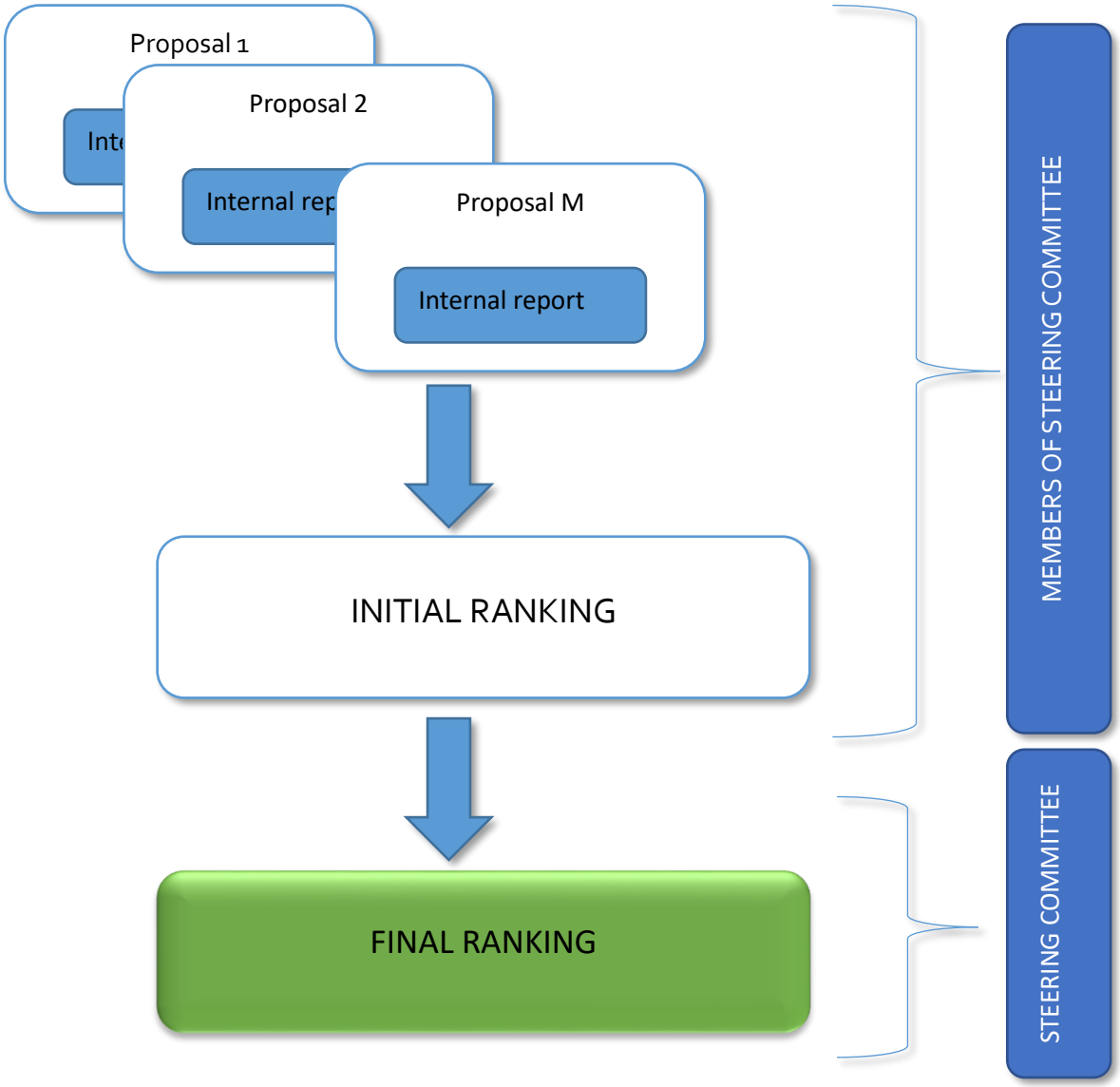


Figure 15. Evaluation workflow for Instrument #3

3. Evaluation Criteria

The sections below present the evaluation criteria for each of the individual proposals of the Second RobMoSys Open Call. The criteria reflect the expected impact of project funded under those instruments.

3.1. Instrument #1

1. Expected impact	**Weight: 40%**
• Show clear roadmap of full adoption of the RobMoSys approach in an organization, in line with the RobMoSys Adoption Path • Size of the potential users group(s) • Demonstrate complete business cases showing a clear Return of Investment (RoI) • Accessibility of the results, preferring open source licensing that enables composability similar to proven platform projects as Eclipse	Score: ? / 10 *(Threshold: 6/10)*
2. Technical excellence	**Weight: 30%**
• Compliance with the RobMoSys meta-models and methodology • Support smooth transition to full RobMoSys benefits (compositionality, predictability) • Develop or adapt (existing) pilots demonstrating RobMoSys added value in the context of real industrial settings • Quality • Envisioned Technology Readiness Level • Clarity of suggested KPIs	Score: ? / 10 *(Threshold: 6/10)*
3. Implementation of the ITP	**Weight: 30%**
• Ready not to work in isolation, but in co-operation with other members of the RobMoSys Community. • Composition of the tandem/consortium • Risk management	Score: ? / 10 *(Threshold: 6/10)*
Remarks	
Ethical implications and compliance with applicable international, EU and national law	*Essential*
OVERALL SCORE :	Score: ? / 30 *(Threshold 21/30)*

3.2. Instrument #2

1. Expected impact	Weight: 40%
• Size of the potential users group(s) • Potential extension of the RobMoSys ecosystem coverage • Accessibility of the results, preferring open source licensing that enables composability similar to proven platform projects as Eclipse • Significance of the results on the development of the RobMoSys approach and community	Score: ? / 10 *(Threshold: 6/10)*
2. Technical excellence	**Weight: 30%**
• Compliance with the RobMoSys meta-models and methodology • The excellence w.r.t. the state of the art in the field • Quality • Envisioned Technology Readiness Level • Clarity of suggested KPIs • Fit to the selected challenge	Score: ? / 10 *(Threshold: 6/10)*
3. Implementation of the ITP	**Weight: 30%**
• Coherence, appropriateness, effectiveness • Composition of the tandem/consortium • Risk management	Score: ? / 10 *(Threshold: 6/10)*
Remarks	
Ethical implications and compliance with applicable international, EU and national law	*Essential*
OVERALL SCORE :	Score: ? / 30 *(Threshold 21/30)*

3.3. Instrument #3

1. Expected impact	Weight: 40%
• Size and significance of the community to be reached • Expected results of the planned activities	Score: ? / 10 *(Threshold: 6/10)*

• Quality and importance of events to be attended	
2. Technical excellence	**Weight: 30%**
• Quality of the technical idea to be analyzed with the core consortium • Experience of the expert assigned to the project • Technical correctness of the community building activities	Score: ? / 10 *(Threshold: 6/10)*
3. Implementation of the ITP	**Weight: 30%**
• Cost effectiveness • Realistic timeline • Planning of the events and/or workshops	Score: ? / 10 *(Threshold: 6/10)*
Remarks	
Ethical implications and compliance with applicable international, EU and national law	*Essential*
OVERALL SCORE :	Score: ? / 30 *(Threshold 21/30)*

4. Evaluation Reports

4.1. Individual Evaluation Report (IER)

The evaluators indicate if the proposal falls entirely outside of the scope of the part of the call that they are evaluating or involves ethical issues that will need further scrutiny. They evaluate each proposal considering the evaluation criteria in Section 3. For each criterion, the Expert Evaluators give a **provisional score** between **0 and 10 points**, which are detailed in Table 1 and formulate a set of positive or negative **arguments**. Each argument should be described with two or three lines of text.

Table 3. The grading criteria

0	The proposal fails to address the criterion	The proposal fails to address the criterion under examination or cannot be judged due to missing or incomplete information.
1-2	Poor	The criterion is addressed in an inadequate manner, or there are serious inherent weaknesses.
3-4	Fair	While the proposal broadly addresses the criterion, there are significant weaknesses.
5-6	Good	The proposal addresses the criterion well, although improvements would be necessary.
7-8	Very good	The proposal addresses the criterion very well, although certain improvements are still possible.
9-10	Excellent	The proposal successfully addresses all relevant aspects of the criterion in question. Any shortcomings are minor.

The eligibility of proposals follows the following two-step process: i) only the score per criterion is considered and ii) the overall score is calculated considering the weight of each criterion. The criteria used to evaluate proposals in Instruments 1-3 will be the same as the ones used by the EC, namely **Expected Impact, Technical Excellence**, and **Implementation**:

- The **Expected Impact** considers the following aspects: the foreseen degree in which goals stated in the addressed robotic challenge will be achieved, the potential to develop a ready-for-the-market solution and the potential key exploitation results of the proposed project.
- **Technical/Research Excellence evaluates** adequacy and progress with respect to state of the art in the three instruments and seven robotic topics (Instrument #2) outlined in the call.
- **Implementation (Clarity of the work plan)** considers the adequacy between objectives and allocated resources (including equipment), as well as the overall organisation of the work.

The proposal must have 6/10 per criterion to be considered eligible for funding. The weight and the threshold for each criterion are defined as follows:

1. Technical/Research Excellence: weight 40% and threshold 6/10
2. Expected Impact: weight 30% and threshold 6/10,
3. Implementation (Clarity of the management plan): weight 30% and threshold 6/10.

4.2. Consensus Report (CR)

In Instruments #1 and #2, once the evaluations are completed, the expert evaluators form a remote consensus group to come to a common view, discuss their individual evaluation reports and agree on comments and final scores. The evaluators explicitly agree on both the text and the final mark for each criterion.

The consensus group discussion results in a Consensus Report (CR) drafted by the Rapporteur including justification of scores and dissenting views, if any. It is of the utmost importance that, once the consensus is reached, each evaluator explicitly agrees with the report and the marks. This CR is the base document for the decisions to be made in the panel meeting. Moreover, the CR will be sent to the applicants whose proposals are below threshold score.

5. Ethical issues

Research activities in Horizon 2020, and particularly in RobMoSys, should respect fundamental ethical principles, particularly those outlined in “The European Code of Conduct for Research Integrity”. Therefore, questions about ethical issues are to be addressed in the proposal text, if ethical issues apply to an ITP, before and during the runtime of the research activities within RobMoSys, including the approval by the relevant committees.

6. Redress procedure

Upon receiving the evaluation results the applicants have two weeks to start the redress procedure by sending complaint via the e-mail: opencalls@robmosys.eu.

Appendix D: Proposal templates

Proposal Template

For Second Open Call for RobMoSys Contributions

Project acronym:	RobMoSys
Project Grant Agreement:	No. 732410
Project Full name	Composable Models and Software for Robotics Systems
Project web address:	http://robmosys.eu/
Call title:	Second RobMoSys Open Call
Call indentifier:	RobMoSys-SROC
Full Call information	http://robmosys.eu/open-calls/
Call publication date:	01.02.2019
Proposal Submission Deadline:	30.04.2019, at 17:00 (Brussels time)
Proposal Submission web address:	proposal submission platform
Expected duration:	6 months
Total Budget:	€720,000. Maximum funding per proposal: €60,000 (including 25% indirect costs)
More information:	opencalls@robmosys.eu

Contents

- This template is for the 2nd call for RobMoSys Fast Adoption proposals. The content of this form must conform to the **Guide for Applicants** and **Guide for Evaluators**.
- Call opens 1st February 2019.
- This form may be submitted electronically any time before the 30th April 2019, 17:00 Brussels time, to the electronic submission facility at the RobMoSys proposal submission platform. This form does not require budgetary information because budgetary information must be provided via the electronic submission platform.

Text in red represents comments and should be deleted in your submission. Page limits refer to this text style in word: Times New Roman 11 pt font, Line spacing 1.15 lines, 6pt after, Standard A4 page size and margins

Excellence (limit: 2 Pages)

The evaluation criteria applying to the Excellence section can be found in the Guide for Evaluators.

- Highlight compliance with the RobMoSys meta-models and methodology
- Describe planned transition to full RobMoSys benefits (compositionality, predictability)
- Describe new pilots that will be developed or the way existing pilots will be adapted to demonstrate RobMoSys added value in the context of real industrial settings
- Describe the envisioned technology to be integrated, provide clear indication of the expected Technology Readiness Level

Impact (Limit: 3 Page)

The evaluation criteria applying to the Impact section can be found in the Guide for Evaluators.

- Describe the roadmap for adoption of the RobMoSys approach in your organization which is aligned with the RobMoSys Adoption Path
- Present the size of the users group(s)
- Demonstrate complete business case and the expected Return of Investment
- Highlight accessibility of the results, open-source is the preferred licensing scheme

Implementation (limit: 4 Pages)

The evaluation criteria applying to the Implementation section can be found in the Guide for Evaluators.

- Provide a coherent and appropriate work description including at least:
  - Task list including the timing of the different tasks, efforts and role of partners
  - List of deliverables[7]
  - List of milestones
- Address risk management
- Describe your plans for cooperating with the RobMoSys community

List of Key Performance Indicators (limit: 1 Page)

Management of knowledge and of IP (limit: 1 Page)

Appendix. Ethical issues

Proposal Template

[7] Please indicate the nature of the deliverable using one of the following codes: R = Report, P = Prototype, D = Demonstrator, O = Other. Please indicate the dissemination level using one of the following codes: PU = Public, PP = Restricted to other programme participants (including the Commission Services), RE = Restricted to a group specified by the consortium (including the Commission Services, CO = Confidential, only for members of the consortium (including the Commission Services).

For Second Open Call for RobMoSys Contributions

Project acronym:	RobMoSys
Project Grant Agreement:	No. 732410
Project Full name	Composable Models and Software for Robotics Systems
Project web address:	http://robmosys.eu/
Call title:	Second RobMoSys Open Call
Call indentifier:	RobMoSys-SROC
Full Call information	http://robmosys.eu/open-calls/
Call publication date:	01.02.2019
Proposal Submission Deadline:	30.04.2019, at 17:00 (Brussels time)
Proposal Submission web address:	proposal submission platform
Expected duration:	12 months
Total Budget:	€1,600,000. Maximum funding per proposal: €300,000 (including 25% indirect costs)
More information:	opencalls@robmosys.eu

Contents

- This template is for the 2nd call for RobMoSys Ecosystem Challenges proposals. The content of this form must conform to the **Guide for Applicants** and **Guide for Evaluators**.
- Call opens 1st February 2019.
- This form may be submitted electronically any time before the 30th April 2019, 17:00 Brussels time, to the electronic submission facility at the RobMoSys proposal submission platform. This form does not require budgetary information because budgetary information must be provided via the electronic submission platform.

Text in red represents comments and should be deleted in your submission. Page limits refer to this text style in word: Times New Roman 11 pt font, Line spacing 1.15 lines, 6pt after, Standard A4 page size and margins

Excellence (limit: 4 Pages)

The evaluation criteria applying to the Excellence section can be found in the Guide for Evaluators.

- Highlight compliance with the RobMoSys meta-models and methodology
- Describe planned transition to full RobMoSys benefits (compositionality, predictability)
- Describe new pilots that will be developed or the way existing pilots will be adapted to demonstrate RobMoSys added value in the context of real industrial settings
- Describe the envisioned technology to be integrated, provide clear indication of the expected Technology Readiness Level
- Describe how your project fits the selected challenge

Impact (Limit: 3 Page)

The evaluation criteria applying to the Impact section can be found in the Guide for Evaluators.

- Describe the roadmap for adoption of the RobMoSys approach in your organization which is aligned with the RobMoSys Adoption Path
- Present the size of the users group(s) and the wider community to be addressed
- Demonstrate complete business case and the expected Return of Investment
- Highlight accessibility of the results, open-source is the preferred licensing scheme
- Highlight the impact of your project on the RobMoSys approach and community

Implementation (limit: 4 Pages)

The evaluation criteria applying to the Implementation section can be found in the Guide for Evaluators.

- Provide a coherent and appropriate work description including at least:
  - Task list including the timing of the different tasks, efforts and role of partners
  - List of deliverables[8]
  - List of milestones
- Address risk management
- Describe your plans for cooperating with the RobMoSys community

List of Key Performance Indicators (limit: 1 Page)

Management of knowledge and of IP (limit: 1 Page)

Appendix. Ethical issues

Proposal Template

[8] Please indicate the nature of the deliverable using one of the following codes: R = Report, P = Prototype, D = Demonstrator, O = Other. Please indicate the dissemination level using one of the following codes: PU = Public, PP = Restricted to other programme participants (including the Commission Services), RE = Restricted to a group specified by the consortium (including the Commission Services, CO = Confidential, only for members of the consortium (including the Commission Services).

For Second Open Call for RobMoSys Contributions

Project acronym:	RobMoSys
Project Grant Agreement:	No. 732410
Project Full name	Composable Models and Software for Robotics Systems
Project web address:	http://robmosys.eu/
Call title:	Second RobMoSys Open Call
Call indentifier:	RobMoSys-SROC
Full Call information	http://robmosys.eu/open-calls/
Call publication date:	01.02.2019
Proposal Submission Deadline:	30.04.2019, at 17:00 (Brussels time)
Proposal Submission web address:	proposal submission platform
Expected duration:	6 months
Total Budget:	€230,000. Maximum funding per proposal: €20,000 (no indirect costs)
More information:	opencalls@robmosys.eu

Contents

- This template is for the 2nd call for RobMoSys Innovation Expert Intake. The content of this form must conform to the **Guide for Applicants** and **Guide for Evaluators**.
- Call opens 1st February 2019.
- This form may be submitted electronically any time before the 30th April 2019, 17:00 Brussels time, to the electronic submission facility at the RobMoSys proposal submission platform. This form does not require budgetary information because budgetary information must be provided via the electronic submission platform.

Text in red represents comments and should be deleted in your submission. Page limits refer to this text style in word: Times New Roman 11 pt font, Line spacing 1.15 lines, 6pt after, Standard A4 page size and margins

Excellence (limit: 4 Pages)

The evaluation criteria applying to the Excellence section can be found in the Guide for Evaluators.

- Describe the idea that you want to discuss with the core consortium and fit into the RobMoSys approach
- Describe the background of the expert designated for this project highlighting accomplishments relevant to RobMoSys and links to communities which will be reached
- Present the community building activities you are planning to organize (e.g. workshops, attendance to conferences etc.)

Impact (Limit: 2 Page)

The evaluation criteria applying to the Impact section can be found in the Guide for Evaluators.

- Describe the community you will reach and the expected impact you will have on this community
- Describe the events you are planning to attend or organize in which RobMoSys approach will be further disseminated

Implementation (limit: 3 Pages)

The evaluation criteria applying to the Implementation section can be found in the Guide for Evaluators.

- Present a timeline of your project including the onsite coaching, events to be organized and events to be attended
- Justify costs to be incurred
- Describe your plans for cooperating with the RobMoSys community

Appendix. Ethical issues

Appendix E: Funding agreement template

RobMoSys Funding Agreement

[This Template Funding Agreement is applicable to the ITP participating in Instrument 1, 2 and 3.]

[The rights and obligations contained in this Funding Agreement derived from the RoBMoSys Grant Agreement and Consortium Agreement. Consequently, they are not negotiable. Only Annex 1's content is negotiable.]

[Several part of this template are shown in grey highlights*. This is due to the structure of the Open Call, which is divided in different Instruments, and to the fact that a single partner or a consortium of partners can apply. Such structure sometime implies differences in the rights or obligations of the selected applicants. The parts highlighted in grey will be used to adapt the Funding Agreement to the Instrument under which the ITP is selected, and to the number of applicants in the selected ITP.]*

This RobMoSys Funding Agreement for providing Funding to the PARTNER, hereinafter referred to as the "Agreement", is entered into by and between:

The **COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES** [Atomic Energy and Alternative Energies Commission-CEA], a public entity of a scientific, technical and industrial character, registered in the Paris Trade and Companies Register under No R.C.S. Paris B 775 685 019 and having its registered office at 25 Rue Leblanc, Bâtiment le Ponant D, Paris 75015, hereinafter referred to as "**Funding Partner**", acting its LIST Institute (CEA LIST) and represented by the Director of CEA LIST;

and

OFFICIAL NAME OF THE PARTNER and Acronym
VAT Number:
Legal Status:
Legal office address:

Hereinafter referred to as "PARTNER";

[For ITP participating in Instrument 1 or 2 only, if applicable: And the other members of the selected Consortium of applicants led by the PARTNER as Lead Partner, only if they sign their accession form to the Agreement:
To be completed with the legal details of the other Members of the selected Consortium of applicants**]**

Hereinafter sometimes individually or collectively referred to as "Party" or "Parties".

CEA, FACHHOCHSCHULE ULM, KATHOLIEKE UNIVERSITEIT LEUVEN, TECHNISCHE UNIVERSITAET MUENCHEN, PAL ROBOTICS SL, ECLIPSE FOUNDATION EUROPE GMBH, COMAU SPA, EUNITED AISBL and SIEMENS AKTIENGESELLSCHAFT (hereinafter sometimes collectively referred as the "RobMoSys Beneficiaries" or the "RobMoSys Consortium") participate to the H2020 project entitled "Composable Models and Software for Robotics Systems-of-Systems" (hereinafter the "RobMoSys Project").

The RobMoSys Beneficiaries entered into a Grant Agreement N° 732410 with the European Commission (the "Grant Agreement" or "GA") and signed together in 2016 a Consortium Agreement with respect to the RobMoSys Project (the "Consortium Agreement" or "CA").

Under, and as a project goal of, RobMoSys, there is reserved an amount of grant funding to be distributed to the selected eligible proposals within the RobMoSys open calls for proposals, in accordance with the rules set out in Article 15 of the GA regarding financial support to third parties.

The PARTNER has submitted an Integrated Technical Project proposal to the RobMoSys 2nd open call for funding **[For ITP participating in Instrument 1 or 2 only, if applicable:** as Lead Partner of a consortium of applicants**].** Such Integrated Technical Project proposal has been approved/awarded by the RobMoSys Beneficiaries to receive Funding.

The Funding Partner is willing to provide financial support to the PARTNER [**For ITP participating in Instrument 1 or 2 only, if applicable:** and to the others ITP Consortium Members**]** for the implementation of such ITP. The PARTNER [**For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** is [are] willing to receive such funding under the terms and conditions of this Agreement.

The Funding Partner shall sign this Agreement which shall be compliant with the GA and CA, with the PARTNER, after validation by the other Participating Partners.

It is a requirement of the award that the PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** and the others ITP Consortium Members**]** as "third party/ies" or "indirect beneficiary/ies" shall enter into this Funding Agreement **[For ITP participating in Instrument 1 or 2 only, if applicable**: or accede to this Agreement**]** in order to source funding from RobMoSys for the purposes of funding/contributing to the funding of the ITP.

Now therefore it has been agreed as follows:

1. DEFINITIONS

Words beginning with a capital letter shall have the meaning defined in the preamble of the Agreement or in this Section:

1.1 **Access Rights** means rights to use Results or Background in accordance with the stipulations of the H2020 General MGA – Multi and under the terms and conditions laid down in this Agreement.

1.2 An **Affiliated Entity,** of a RobMosys Beneficiary or of the PARTNER [**For ITP participating in Instrument 1 or 2 only, if applicable:** or of another ITP Consortium Member**]**, means any legal entity shown which legal details are written in Annex 1 "INTEGRATED TECHNICAL PROJECT", directly or indirectly Controlling, Controlled by, or under common Control with that Party, for so long as such Control lasts;

For the above purposes, "Control" of any legal entity shall exist through the direct or indirect:

- ownership of more than 50% of the nominal value of the issued share capital of the legal entity or of more than 50% of the issued share capital entitling the holders to vote for the election of directors or persons performing similar functions, or
- right by any other means to elect or appoint directors of the legal entity (or persons performing similar functions) who have a majority vote.

Common Control through government does not, in itself, create Affiliated Entity status.

1.3 **Agreement** means this Funding Agreement, together with its Annexes.

1.4 **Background** means any and all, data, information, know-how– whatever its form or nature (tangible or intangible), including any rights such as intellectual property rights – listed in Annex 1 "INTEGRATED TECHNICAL PROJECT" – that is Needed to implement the ITP or exploit the Results and that is:

- owned or controlled by a Party or a RobMoSys Beneficiary prior to the date of signature of the "INTEGRATED TECHNICAL PROJECT" (Annex 1); or
- developed or acquired by a Party or a RobMoSys Beneficiary independently from the work in the ITP even if in parallel with the performance of the ITP, but solely to the extent that such data, information, know-how and/or intellectual property rights are introduced into the ITP by the owning Party;

1.5 **Controlled Licence Terms** means terms in any licence that require that the use, copying, modification and/or distribution of Software or another work ("Work") and/or of any work that is a modified version of or is a derivative work of such Work (in each case, "Derivative Work") be subject, in whole or in part, to one or more of the following:

a) (where the Work or Derivative Work is Software) that the Source Code or other formats preferred for modification be made available as of right to any third party on request, whether royalty-free or not;
b) that permission to create modified versions or derivative works of the Work or Derivative Work be granted to any third party;
c) that a royalty-free licence relating to the Work or Derivative Work be granted to any third party.

For the avoidance of doubt, any Software licence that merely permits (but does not require any of) the things mentioned in a) to c) is not under Controlled Licence Terms (and so is under an Uncontrolled Licence).

1.6 **Exploitation** or **Exploit** means the use of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities;

1.7 **Fair and Reasonable conditions** means appropriate conditions, including possible financial terms or royalty- free conditions, taking into account the specific circumstances of the request for access, for example the actual or potential value of the results or background to which access is requested and/or the scope, duration or other characteristics of the exploitation envisaged;

1.8 **Funding** means the cash element of the funding to be given by the Funding Partner to the PARTNER for the implementation of the **ITP** as detailed in Annex 1 "INTEGRATED TECHNICAL PROJECT".

1.9 **Integrated Technical Project** or **ITP** means the selected proposal detailed in Annex 1 "INTEGRATED TECHNICAL PROJECT" to be carried out by the **PARTNER [For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** and the Participating Partners.

1.10 **Intellectual Property Rights Policy** means the Policy set out at Section 5 of this Agreement.

1.11 **[For ITP participating in Instrument 1 or 2 only, if applicable:** ITP Consortium Members means the PARTNER as the Lead Partner of the ITP Consortium which was selected for execution of the FTP and the other members of such Consortium of applicants.**]**

1.12 **Participating Partners** means the entities and organisations participating in the ITP, as listed in Annex 1 "INTEGRATED TECHNICAL PROJECT".

1.13 **Needed** means:

For the implementation of the **ITP**:

Access Rights are Needed if, without the grant of such Access Rights, carrying out the tasks assigned to the recipient party would be technically or legally impossible, significantly delayed, or require significant additional financial or human resources.

For Exploitation of own Results:

Access Rights are Needed if, without the grant of such Access Rights, the Exploitation of own Results would be technically or legally impossible. Where Confidential Information is concerned, only Confidential Information which has been disclosed during the Project may be considered as technically essential, except as otherwise agreed between the Parties and/or between a Party and a RobMoSys Beneficiary.

1.14 **Results** means any tangible or intangible output of the action, such as data, knowledge or information, that is generated in the action, whatever its form or nature, whether or not it can be protected, as well as any rights attached to it, including intellectual property rights;

1.15 **Technical Expert** means either an expert external to the RobMoSys Consortium or a RobMoSys Beneficiary, that is in charge of evaluating the deliverables submitted by the PARTNER in execution of the Agreement and of authorizing the Funding Partner to proceed with the payment of the Funding to the PARTNER when the deliverables have been accepted.

2. CONDITIONS FROM THE GRANT AGREEMENT AND THE CONSORTIUM AGREEMENT REFLECTED IN THE AGREEMENT

The Funding Partner receives funding from the European Commission for funding the ITP. Under the RobMoSys Grant Agreement or the Consortium Agreement, some of the obligations have to be imposed on the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]**. Those obligations are reflected in this Agreement. The specific obligations that the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]** must ensure are described in the Multi-Beneficiary General Model Grant Agreement (H2020 General MGA – Multi), available at: http://ec.europa.eu/research/participants/data/ref/h2020/mga/gga/h2020-mga-gga-multi_en.pdf, in sections 6, 22, 23, 35, 36, 38 and 46. These sections are part of the Agreement.

The PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]** acknowledge**[s]** and agree**[s]** that these obligations comprised in this Agreement and in the Multi-Beneficiary General Model are fully applicable to it. Consequently, the PARTNER **[[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]** shall do everything that is necessary to comply with these obligations, it being understood that the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]** is [are] only bound by this Agreement and not by the GA or CA signed by the RobMoSys Partners.

3. TERMS AND CONDITIONS FOR THE FUNDING

3.1 **[For ITP participating in Instrument 1 or 2, if applicable:** The Funding Partner and the PARTNER become Parties to this Agreement upon its signature by the lattest of them. Each other ITP Consortium Member shall accede to this Agreement by signing an accession form, reproduced in Annex 7, in order to be considered as a Party and recipient of EU funding.**]**

3.2 **[For ITP participating in Instrument 1 or 2, if applicable:** The PARTNER and the other ITP Consortium Members shall take part in the ITP in accordance with the state of the art. The PARTNER will, accordingly, ensure that an appropriate ITP consortium agreement shall have been entered into amongst the ITP Consortium Members before any Funding shall be disbursed to any ITP Consortium Member. The PARTNER shall notify the Funding Partner when such an ITP consortium agreement has been signed and shall provide the Funding Partner with a copy of the same, if requested.**]**

3.3 The PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]** shall carry out the tasks according to the schedule set forth in Annex 1 "INTEGRATED TECHNICAL PROJECT" at the latest. The PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** on behalf of the ITP Consortium Members**]** shall report to the Funding Partner on the activities' progress in regular intervals as indicated in Annex 1 "INTEGRATED TECHNICAL PROJECT". Such technical reports shall be based on the template reproduced in Annex 2. They shall contain detailed information on the Results generated by the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]**.

3.4 The Funding Partner shall give Funding for the ITP carried out by the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members**]**, within the limits and in accordance with the schedule of payments specified in Annex 1 "INTEGRATED TECHNICAL PROJECT".

3.5 The PARTNER shall provide the Funding Partner with costs report accompanied by the financial statement. The PARTNER shall be entitled to claim eligible costs for the ITP as described in Annex 3 "Estimated budget for the ITP" of this Agreement. The list of the eligible and in eligible costs is attached in Annex 6. **[For ITP participating in Instrument 3**: The PARTNER cannot claim reimbursement of of indirect costs in the framework of Instrument 3.]

[Alternatively, for ITP participating in Instrument 1 or 2, if applicable: The PARTNER shall collect a financial statement issued by each ITP Consortium Member and provide a consolidated costs report to the Funding Partner accompanied by the individual financial statements. The PARTNER shall be entitled to claim eligible costs for the ITP as described in Annex 3 "Estimated buget for the action" of this Agreement. The list of the eligible and in eligible costs is attached in Annex 6. The PARTNER shall have sole responsibility for accounting to the ITP Consortium Members for any amounts due to them. The Funding Partner shall be entitled to seek a breakdown of payments made by the PARTNER to ascertain/ensure that the PARTNER has expended all Funding in accordance with the Annex 1 "INTEGRATED TECHNICAL PROJECT".

3.6 The Funding shall take the form of a reimbursement of **[For ITP participating in Instruments 1, 3 or 4:** one hundred percents (100%) / For ITP participating in Instrument 2: seventy percents (70 %) if the PARTNER is a for profit making entity OR

one hundred percents (100 %) if the PARTNER is a non-profit entity**]** the eligible costs of the ITP actually incurred within the limit of the maximum Funding. The Funding Partner shall be entitled to seek a breakdown of payments made by the Partner to ascertain/ensure that the Partner has expended all Funding in accordance with the Annex 1 "INTEGRATED TECHNICAL PROJECT".

3.7 The pre-financing payment shall be paid to the PARTNER by the Funding Partner pursuant to the schedule and conditions defined in Annex 1 "INTEGRATED TECHNICAL PROJECT". **[For ITP participating in Instrument 1 or 2, if applicable:** The pre-financing payment received by the PARTNER will be further distributed to the rest of the ITP Consortium Members without undue delay, according to their budget share.

3.8 **[For ITP participating in Instrument 2 only: An interim payment and]** The payment of the balance shall be made by the Funding Partner in accordance with the schedule sets out in Annex 1 "INTEGRATED TECHNICAL PROJECT", provided that the requirements of this section 3 are met by the PARTNER.

3.8.1 The PARTNER shall provide the Funding Partner with **[For ITP participating in Instrument 2 only: an interim costs report and]** a final costs report according to the schedule set out in Annex 1 "INTEGRATED TECHNICAL PROJECT". [For ITP participating in Instrument 1 or 2, if applicable, such costs reports shall be consolidated ones.] Each of these costs reports shall be accompanied by written request**[s]** for payment and written statement**[s]** by the Technical Expert in charge of reviewing the deliverables or intermediate or final technical reports identified in Annex 1 "INTEGRATED TECHNICAL PROJECT" that such deliverables or intermediate or final reports have been accepted.

3.8.2 The PARTNER shall use the costs reporting template in Annex 4 "Costs Report Template".

3.8.3 For the final payment, the following elements shall at least be included in the PARTNER's costs reports:

a) The identification of the ITP;
b) A financial statement of costs actually incurred;
c) The identification of milestones, based on the completion of several tasks.
d) Detailed information on the deliverable(s) achieved;
e) Certification of financial statement of costs actually incurred by an independent chartered accountant or an independent statutory auditor.

No payment will be made by the Funding Partner if all the conditions set out in this article are not met or if no sufficient evidence document is presented by the PARTNER.

3.8.4 The payment shall be made as indicated in Annex 1 "INTEGRATED TECHNICAL PROJECT" after the written validation of the payment request by the Funding Partner, however always provided that the conditions listed in this Section 3 are met by the PARTNER. For the avoidance of doubt, the payment is capped as specified in the Financial conditions in Annex 1 "INTEGRATED TECHNICAL PROJECT".

3.9 The written payment requests together with the documents referred above must be sent by the PARTNER to the following address:

CEA SACLAY DIGITEO
A l'attention de M. Patrick Tourret
UAF Bât.565 - PC65
F-91191 Gif sur Yvette cedex

3.10 The PARTNER shall complete in a comprehensive manner Annex 5 to the Agreement and shall notify any changes to the Funding Partner as soon as it has occurred. The Funding Partner shall not in any case be liable for any late payment incurred by a change in the financial identification of the PARTNER.

For Instrument 4

4. LIABILITY

4.1 The PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** shall comply with all applicable laws, rules and regulations, including, but not limited to safety, security, welfare, social security and fiscal laws, rules and regulations.

4.2 The PARTNER **[if applicable:** and the other ITP Consortium Members**]** shall not be entitled to act or to make legally binding declarations on behalf of the Funding Partner or any other RobMoSys Beneficiary and shall indemnify all of the latter from any third party claim resulting from a breach of these obligations.

4.3 The contractual liability of the Funding Partner under this Agreement shall in any case be limited to the amount of the Funding provided for the ITP to the PARTNER **[if applicable:** and the other ITP Consortium Members**]** as defined in Annex 1 "Integrated Technical Project". The Funding Partner shall not in any case be liable for any indirect or consequential damages such as:

- loss of profits, interest, savings, shelf-space, production and business opportunities;
- lost contracts, goodwill, and anticipated savings;
- loss of or damage to reputation or to data;
- costs of recall of products; or
- any other type of indirect, incidental, punitive, special or consequential loss or damage.

4.4 This limitation of liability shall not apply in cases of wilful act or gross negligence.

4.5 The PARTNER **[if applicable:** and the other ITP Consortium Members**]** shall fully and exclusively bear the risks in connection with the ITP for which Funding is granted by the Funding Partner. The PARTNER **[if applicable:** and the other ITP Consortium Members**]** shall indemnify the RobMoSys Beneficiaries and the Funding Partner for all damages, penalties, costs and expenses which the RobMoSys Beneficiaries or the Funding Partner as a result thereof would incur or have to pay to the European Commission or any third parties with respect to such ITP financially supported and/or for any damage in general which the RobMoSys Beneficiaries or the Funding Partner incur as a result thereof. In addition, should the European Commission have a right to recovery against the Funding Partner or another RobMoSys Beneficiary regarding the Funding granted under this Agreement, the PARTNER shall pay the sums in question in the terms and the date specified by the Funding Partner. Moreover, the PARTNER shall indemnify and hold the

RobMoSys Beneficiaries and the Funding Partner, their respective officers, directors, employees and agents harmless from and against all repayments, loss, liability, costs, charges, claims or damages that result from or arising out of any such recovery action by the European Commission.

4.6 In respect of any information or materials (including Results and Background) supplied by one Party to another Party or to a RobMoSys Beneficiary, or by a RobMoSys Beneficiary involved in the applicable ITP to a Party, no warranty or representation of any kind is made, given or implied as to the sufficiency, accuracy or fitness for purpose nor as to the absence of any infringement of any proprietary rights of third parties.

Therefore,

- the recipient shall in all cases be entirely and solely liable for the use to which it puts such information and materials (including Results and Background), and
- there is no liability in case of infringement of proprietary rights of a third party resulting from any Access Rights.

5. INTELLECTUAL PROPERTY RIGHTS POLICY

The PARTNER **[if applicable:** and the other ITP Consortium Members**]** acknowledge[s] the terms of the "Intellectual Property Rights Policy" defined hereinafter and agree[s] to comply with the Intellectual Property Rights Policy to ensure that the Funding Partner will always be able to comply with such terms towards the other RobMoSys Beneficiaries.

5.1 General Principle regarding Ownership

Results are owned by the Party or by the RobMoSys Beneficiary that generates them.

5.2 Joint Results

As requested in the Consortium Agreement signed between the RobMoSys Beneficiaries, among which the Funding Partner, if, in the course of carrying out the ITP, a Result is generated by the PARTNER **[if applicable:** or another ITP Consortium Members**]** with one or several RobMoSys Beneficiaries, they shall own Results jointly if it is not possible to establish the respective contribution of each Party or separate them for the purpose of applying for, obtaining or maintaining their protection

Where such joint Result is covered by intellectual property rights, the joint owners shall use reasonable efforts to negotiate a joint ownership agreement reagarding the allocation, protection, and the terms and conditions of Exploitation of the joint Results as soon as possible, including a potential dissemination under Controlled License Terms.

Unless otherwise agreed or in case the Parties fail to agree on deviating terms, each of the joint owners and their Affiliated Entities shall be entitled to use their jointly owned Results as they see fit on a royalty-free basis, and without requiring the prior consent of the other joint owner(s).
Each of the joint owners and their Affiliated Entities shall be entitled to grant non-exclusive licenses to third parties, provided that either (i) the other joint owner(s) have declared their written consent hereto unless in one of the cases set out below, or (ii) such licensing is compliant with the terms of th Controlled Licensed Term chose by the Party for such joint Result.

A joint owner may grant non-exclusive licenses to third parties without prior notice and without any financial compensation in strategic projects; strategic projects are:

i. Licenses in the context of comprehensive technology transfer agreements;
ii. Licenses in cross-patent licensing agreements; or
iii. Licenses in connection with the transfer of all or a substantial part of the business activities whether by sale or merger, provided that the jointly owned Results were used – or preparations had been made for their later use – in these business activities prior to the date of transfer of the business.

Without limiting the foregoing, and except for cases where the use is limited to non-commercial research activities or educational purposes, if the contribution of a joint owner of a patentable joint Result significantly prevails in relation to the contributions of the other joint owner(s), the joint owners will jointly evaluate the unbalanced contributions and, where required under law, compensate such imbalance by making a one-time lump-sum payment to the joint owner(s) with the higher contribution.

5.3 Access Rights

5.3.1 For the purpose of this article 5.3, Background shall mean the Background as listed in the Annex 1 "INTEGRATED TECHNICAL PROJECT" and validated by the Participating Partners for the concerned ITP.

The PARTNER endeavours to detail in Attachment 1 the Intellectual Property under Controlled License Terms that will be used in the ITP.
During the ITP, the intended introduction of Intellectual Property (including, but not limited to Software) under Controlled Licence Terms in the ITP requires the prior approval of the Funding Partner and of the Participating Parties to implement such introduction.

5.3.2 Due to provisions of the Consortium Agreement signed between the RobMoSys Beneficiaries, Access Rights to Background and Results may be requested by the PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** or another ITP Consortium Member**]** from a Participating Partner only in the following case and if the following conditions are fulfilled:

The PARTNER **[if applicable:** or such other ITP Consortium Member**]** has Access Rights to Background and Results if and when such Access Rights have been agreed upon on a case-by-case basis in a separate written agreement between the PARTNER **[if applicable:** or such other ITP Consortium Member**]** and the RobMoSys Beneficiary/ies concerned. Such separate agreement shall not affect any legitimate right of another RobMoSys Beneficiary nor violate any of the provisions as set out in the GA and/or CA. The separate agreement shall ensure that the other RobMoSys Beneficiaries have access to the Background and Results of the PARTNER **[if applicable:** or of the ITP Consortium Members**]** if Needed for the Implementation of the Project or Exploitation of its own Results.

PARTNER **[if applicable:** or any ITP Consortium Member**]** which obtain Access Rights in return shall fulfil confidentiality obligations at least as stringent as the obligations stated in the Consortium Agreement to be arranged in a separate confidentiality agreement between the PARTNER **[if applicable:** or the concern ITP Consortium Members**]** and the RobMoSys Beneficiaires concerned.

Access Rights may be requested by the PARTNER **[if applicable:** or another ITP Consortium Members**]** up to twelve (12) month afer the end of the ITP.

5.3.3 The PARTNER **[if applicable:** or any ITP Consortium Members**]** shall grant Access Rights on its Background and/or Results to the RobMoSys Beneficiaries as far as such

Background and/or Results are Needed for implementation of the ITP and/or implementation of the RobMoSys Project, and/or exploitation of the RobMoSys Beneficiaries' Results.

5.3.3.1 Where any RobMoSys Beneficiary has Access Rights on a PARTNER's **[if applicable:** or any othr ITP Consortium Members'**]** Results and/or Background for implementation of the ITP, such Access Rights shall be granted on a royalty-free basis.

5.3.3.2 Where Access Rights on Results and/or Background of the PARTNER **[if applicable:** or any other ITP Consortium Members**]** are Needed by RobMoSys Beneficiaries in order to implement the RobMoSys Project:

- Access Rights to the PARTNER's **[if applicable:** or any other ITP Consortium Members'**]** Results shall be granted on a royalty-free basis and shall comprise the right to sublicense such Results to the other partners participating in the RobMoSys Project;
- Access Rights to the PARTNER's **[if applicable:** or any other ITP Consortium Members'**]** Background shall be granted only if such Background is Needed to use the PARTNER's **[if applicable:** or such other ITP Consortium Members'**]** Results to implement the RobMoSys Project. Such Access Rights shall be granted on a royalty-free basis, and shall comprise the right to sublicense such Background to the other partner participating in ITP under the RobMoSys Project:
  - as far as these other partners Need to have access to such Background to use the PARTNER's **[if applicable:** or any other ITP Consortium Members'**]** Results to carry out their own ITP under the RobMoSys Project; and
  - if no major interest opposes.

5.3.3.3 Where Access Rights on the PARTNER's **[if applicable:** or any other ITP Consortium Members'**]** Results and/or Background are Needed by RobMoSys Beneficiaries in order to exploit their Results, the conditions on which Access Rights will be granted shall be negotiated between the PARTNER **[if applicable:** or the concerned other ITP Consortium Members**]** and the RobMoSys Beneficiary concerned and agreed in a separate written agreement.
Access Rights may be requested by the RobMoSys Beneficiaries up to twelve (12) months after the end of the ITP.

6. CONFIDENTIALITY

6.1 All information in whatever form or mode of communication, which is disclosed by a Party or a RobMoSys Beneficiary (the "Disclosing Partner") to the other Party or to any RobMoSys Beneficiary (the "Recipient") in connection with the Project or ITP during its implementation and which has been explicitly marked as "confidential" at the time of disclosure, or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within 15 calendar days from oral disclosure at the latest as confidential information by the Disclosing Party, is "Confidential Information".

6.2 The Recipients hereby undertake for a period of four (4) years after the end of the ITP:

- not to use Confidential Information otherwise than for the purpose for which it was disclosed;
- not to disclose Confidential Information to any third party (other than to its Affiliated Entities and Subcontractors) without the prior written consent by the Disclosing Partner, wherein the Recipient must ensure that an arrangement is in place prior to such disclosure that subjects the Affiliated Entities and/or Subcontractors to provisions at least as strict as provided in this Section 10;

- to ensure that internal distribution of Confidential Information by a Recipient, its Affiliated Entities, Subcontractors shall take place on a strict need-to-know basis; and
- to return to the Disclosing Partner, or destroy, on request all Confidential Information that has been disclosed to the Recipients including all copies thereof and to delete all information stored in a machine readable form to the extent practically possible. The Recipients may keep a copy to the extent it is required to keep, archive or store such Confidential Information because of compliance with applicable laws and regulations or for the proof of on-going obligations provided that the Recipient comply with the confidentiality obligations herein contained with respect to such copy for as long as the copy is retained.

6.3 The recipients shall be responsible for the fulfilment of the above obligations on the part of their employees, its Affiliated Entities or third parties involved in the Project having access to Confidential Information pursuant to this Section and shall ensure that they remain so obliged, as far as legally possible, during and after the end of the Project and/or after the termination of the contractual relationship with the employee or third party.

6.4 The above shall not apply for disclosure or use of Confidential Information, if and in so far as the Recipient can show that:

- the Confidential Information has become or becomes publicly available by means other than a breach of the Recipient's confidentiality obligations;
- the Disclosing Partner subsequently informs the Recipient that the Confidential Information is no longer confidential;
- the Confidential Information is communicated to the Recipient without any obligation of confidentiality by a third party who is to the best knowledge of the Recipient in lawful possession thereof and under no obligation of confidentiality to the Disclosing Partner;
- the disclosure or communication of the Confidential Information is foreseen by provisions of the Multi-Beneficiary General Model Grant Agreement;
- the Confidential Information, at any time, was developed by the Recipient completely independently of any such disclosure by the Disclosing Partner;
- the Confidential Information was already known to the Recipient prior to disclosure without any confidentiality obligation to the Disclosing Partner, or
- the Recipient is required to disclose the Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order, subject to the provision Section 10.7 hereunder.

6.5 The Recipient shall apply the same degree of care with regard to the Confidential Information disclosed within the scope of the Project as with its own confidential and/or proprietary information, but in no case less than reasonable care.

6.6 Each Party shall promptly advise the other Party or the concerned RobMoSys Beneficiary in writing of any unauthorised disclosure, misappropriation or misuse of Confidential Information after it becomes aware of such unauthorised disclosure, misappropriation or misuse.

6.7 If any Party becomes aware that it will be required, or is likely to be required, to disclose Confidential Information in order to comply with applicable laws or regulations or with a court or administrative order, it shall, to the extent it is lawfully able to do so, prior to any such disclosure:

- notify the Disclosing Partner, and

- comply with the Disclosing Partner's reasonable instructions to protect the confidentiality of the information.

7. DISSEMINATION

Each Party agrees that any dissemination activity (including publications, presentations or contributions to any standards organisation) by the PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** or another ITP Consortium Member**]** is subject to the prior written approval of the other Participating Partners.

The Funding Partner and the other Participating Partners are entitled to include the main issues and information regarding the ITP in their reporting towards the European Commission, subject to prior written notification to the PARTNER **[if applicable:** and to the other ITP Consortium Members**]**.

8. CHECKS AND AUDITS

The PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** undertake to provide any detailed information, including information in electronic format, requested by the European Commission or by any other outside body authorised by the European Commission to check that the ITP and the provisions of this Agreement are being properly implemented.

The PARTNER **[if applicable**: and the other ITP Consortium Members**]** shall keep at the European Commission disposal all original documents, especially accounting and tax records, or, in exceptional and duly justified cases, certified copies of original documents relating to the Agreement, stored on any appropriate medium that ensures their integrity in accordance with the applicable national legislation, for a period of five years from the date of payment of the balance specified in the grant agreements.

The PARTNER **[if applicable**: and the other ITP Consortium Members**]** agree[s] that the European Commission may have an audit of the use made of the Funding carried out either directly by the European Commission staff or by any other outside body authorised to do so on its behalf. Such audits may be carried out throughout the period of implementation of the Agreement until the balance is paid and for a period of five years from the date of payment of the balance. Where appropriate, the audit findings may lead to recovery decisions by the European Commission.

The PARTNER **[if applicable**: and the other ITP Consortium Members**]** undertake[s] to allow European Commission staff and outside personnel authorised by the European Commission the appropriate right of access to the sites and premises of a partner and to all the information, including information in electronic format, needed in order to conduct such audits.

In accordance with Union legislation, the European Commission, the European Anti-Fraud Office (OLAF) and the European Court of Auditors (ECA) may carry out spot checks and inspections of the documents of the PARTNER, and of any recipient of Funding, including at the premises of the PARTNER**[if applicable**: and the other ITP Consortium Members**]**, in accordance with the procedures laid down by Union law for the protection of the financial interests of the Union against fraud and other irregularities. Where appropriate, the inspection findings may lead to recovery decisions by the European Commission. The Articles 22 and 23 of the Multi-Beneficiary General Model Grant Agreement, also apply to the PARTNER **[if applicable**: and to the other ITP Consortium Members**]**.

9. TERMINATION

9.1 The Funding Partner can terminate this Agreement with immediate effect through written notice to the PARTNER and to the other Participating Partners:

- if the PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** or any other ITP Consortium Members**]** is in breach of any of its material obligations under this Agreement, which breach is not remediable, or, if remediable, has not been remedied within thirty (30) days after written notice to that effect from the party not in breach,
- if, to the extent permitted by law, the PARTNER [**if applicable:** or any other ITP Consortium Members**]** is declared bankrupt, is being wound up, is having its affairs administered by the courts, has entered into an arrangement with its creditors, has suspended business activities, or is the subject of any other similar proceeding concerning those matters, or
- if the PARTNER [**if applicable:** or any other ITP Consortium Members**]** is subject to an Event of Force Majeure, which prevents the PARTNER [**if applicable:** or any other ITP Consortium Members**]** from correct performance of its obligations hereunder and such circumstances have lasted, or can reasonably be expected to last more than 3 months.

9.2 Access Rights granted to the PARTNER [**if applicable:** or any other ITP Consortium Members**]** shall cease immediately upon the effective date of termination.

10. CONCLUDING CONDITIONS

10.1 The Parties will not sign Annex 1, and the terms of this Agreement (for the sake of clarity this includes Annex 1) will not be effective, until the Funding Partner has received written confirmation from each Participating Partner that it agrees to their content. This written confirmation can be given by each Participating Partner sending by email or facsimile to the Funding Partner.

Once each written confirmation is given by each Participating Partner, any ancillary agreements, amendments, additions or modifications to this Agreement shall be made in writing and signed by the Parties, but will only become effective after the Funding Partner has received written confirmation from each Participating Partner that it agrees to their content, such written confirmation to be given in the manner set out at the above paragraph.

10.2 The PARTNER's [**For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members'**]** consistent level in its [their] respective field of expertise played a key role in the selection of the PARTNER **[if applicable:** and the other ITP Consortium Members**]** to implement the ITP. Any total or partial transfer of provisions and the rights and duties it entails in the prior formal approval of all signatories.

10.3 Any subcontract by the PARTNER PARTNER **[if applicable:** or the other ITP Consortium Members**]** concerning some of its tasks under this Agreement requires the prior written consent of the Funding Partner and does not affect its own obligations resulting from this Agreement. The PARTNER PARTNER **[if applicable:** or the concerned other ITP Consortium Members**]** shall secure that the subcontractor will comply with all obligations – especially coming from the Multi-Beneficiary General Model Grant Agreement, and with regard to confidentiality – resulting from this

Agreement and that the results attained by the subcontractor will be available in accordance with Section 5.

10.4 The Agreement will enter into force on the date of the last signature by the Parties.

10.5 This Agreement shall continue in full force and effect until complete fulfilment of all obligations undertaken by the Parties. However, this Agreement or the participation of one or more Parties to it may be terminated in accordance with the terms of this Agreement.

10.6 If any provision of this Agreement is determined to be illegal or in conflict with the applicable law, the validity of the remaining provisions shall not be affected. The ineffective provision shall be replaced by an effective provision which is economically equivalent. The same shall apply in case of a gap.

10.7 This Agreement shall be governed by and construed in accordance with the laws of Belgium.

10.8 Any disagreement or dispute which may arise in connection with this Agreement and which the Parties are unable to settle by mutual agreement will be brought before the courts of Brussel, Belgium.

Done in two originals, one for each Party.

SIGNATURE PAGE

On behalf of the Funding Partner: CEA Signature of the authorized representative:	On behalf of the PARTNER: Signature of the authorized representative:
Name: Jean-Noël PATILLON Title: Acting Director of CEA LIST Date:	Name: Title: Date:

ANNEX 1 – INTEGRATED TECHNICAL PROJECT

RobMoSys ITP

[This Annex 1 is applicable to the ITP participating in Instrument 1, 2 and 3.]

[Several part of this template are shown in grey highlights*. This is due to the structure of the Open Call, which is divided in different Instruments, and to the fact that a single partner or a consortium of partners can apply. Such structure sometime implies differences in the rights or obligations of the selected applicants. The parts highlighted in grey will be used to adapt the Funding Agreement to the Instrument under which the ITP is selected, and to the number of applicants in the selected ITP.]*

This Annex 1 "INTEGRATED TECHNICAL PROJECT" for implementation of the ITP in the framework of RobMoSys by the PARTNER **[For ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members], hereinafter referred to as the "ITP", is entered into by and between:

The **COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES** [Atomic Energy and Alternative Energies Commission-CEA], a public entity of a scientific, technical and industrial character, registered in the Paris Trade and Companies Register under No R.C.S. Paris B 775 685 019 and having its registered office at 25 Rue Leblanc, Bâtiment le Ponant D, Paris 75015, hereinafter referred to as "**Funding Partner**", represented by Jean-Noël PATILLON, acting in his capacity as Acting Director of CEA LIST,

and

OFFICIAL NAME OF THE PARTNER and Acronym:
VAT Number :
Legal Status:
Name of the legal signatory :
Legal office address:

Hereinafter referred to as "**PARTNER**";

[For ITP participating in Instrument 1 or 2 only, if applicable: And the other ITP Consortium Members, if they sign their accession form to the Agreement:
To be completed with the legal details of the other ITP Consortium Members**]**

Hereinafter sometimes individually or collectively referred to as "Party" or "Parties".

The Funding Partner and the PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** have agreed the main terms and conditions to implement the ITP in the course of the RobMoSys Project by signing the Agreement. They also have agreed on the following terms and conditions for the ITP within the present Annex 1, which form part of the Agreement.

Now therefore it has been agreed as follows:

1. TERMS AND CONDITIONS FOR THE ITP

The PARTNER **[For ITP participating in Instrument 1 or 2 only, if applicable:** and the other ITP Consortium Members**]** shall implement the ITP in accordance with the following:

ITP acronym:	
ITP title:	

RobMoSys call identification:	
EFFECTIVE DATE of the Agreement:	
Starting date of the ITP:	
Duration of the ITP:	

PARTNER [ITP Consortium Members for ITP participating in Instrument 1 or 2, if applicable]			
Entity [if applicable]	**Contact person and role**	**Email**	**Phone**

Other Participating Partners (monitoring team)			
Entity	**Contact person**	**Email**	**Phone**

ITP Technical description

ITP outcomes	
Expected results in terms of Industrial Impact	
Expected results in terms of IPR, software, know-how	

Implementation of the ITP	
Outline scope of work	**M1:** **M2:** **Etc.:**
Milestone M1	
TASK 1	
Task 1.1	
Description	
Starting date	
Duration	
Inputs	
Deliverable	
Task 1.2	
Description	
Starting date	

Duration	
Inputs	
Deliverable	
TASK 2	
Task 2.1	
Description	
Starting date	
Duration	
Inputs	
Deliverable	
Task 2.2	
Description	
Starting date	
Duration	
Inputs	
Deliverable	
[Add as many milestones and tasks as necessary]	

Deliverables				
Number	**Deliverable name**	**Delivery Date**	**Type**	**Dissemination level**

Dissemination		
Activity	**Date**	**Description**

PARTNER'S Background [ITP Consortium Members' Background for ITP participating in Instrument 1 or 2, if applicable]		
	owner	**Limitations for implementation and exploitation**
Existing components		

Other Participating Partners' Background		
	owner	**Limitations for implementation and exploitation**
Existing components		

Key Performance Indicators			
Number	**Description**	**Value**	**Means of verification**

Financial conditions		
	Amount	**Payment's date**
Funding		NA
Pre-financing		
[If applicable: Interim payment]		
Payment of the balance		
Payment conditions	*[Please note that the payment rates are likely to be modified. The pre-financing rate is 25% of the total Funding currently, and it is planned to increase it up to 40% of the total Funding. This is under discussions at RobMoSys level and with the UE. Depending on the pre-financing final rate, the interim payment rate (if any) will be modified. An updated template will be release as soon as possible.]* **[For ITP participating in Instrument 3: no indirect costs can be claimed by the PARTNER]** 1 Payments to be made The following payments will be made to the PARTNER: - one pre-financing payment; - **[For ITP participating in Instrument 2 only, or also for ITP participating in Instrument 1 if the pre-financing rate stays 25% of the Funding]** one interim payment, and - payment of the balance. 2 Pre-financing payment The amount of the pre-financing payment will be 25% of the Funding [please note that it is planned to increase it to 40% of the Funding for the ITP, as explained above]. The Funding Partner will make the pre-financing payment to the PARTNER within 30 days from the entry into force of the Agreement. 3 Interim payment **[For ITP participating in Instrument 1 or 2 if the pre-financing rate stays 25% of the Funding OR for ITP participating in Instrument 2 only, if the pre-financing is brought to 40% of the Funding]** The amount of the interim payment will be up to 40% of the Funding. The interim payment to the PARTNER will be made taking into account the cash still available for the PARTNER after deducing deducting the total eligible and approved costs realized for the first period from the amount of the pre-financing payment: - if the amount of available cash is equal or higher than the eligible incurred and accepted costs for the first period of the ITP, no interim payment shall be made. - if the available cash is lower than the eligible incurred and accepted costs for the first period of the ITP, the amount to be paid shall be either: (a) the remainder of eligible incurred and approved costs for the first period of the ITP minus the cash available.	

The Funding Partner will pay to the PARTNER the amount due as interim payment within 60 days from receiving the ITP progress report. Payment is subject to the sending of the completed costs report as stipulated in article 3 of the Agreement and subject to the approval of the periodic report. Its approval does not imply recognition of the compliance, authenticity, completeness or correctness of its content.

The reimbursement rate(s) are applied to the eligible costs (actual costs, unit costs and flat-rate costs declared by the PARTNER **[For ITP Consortium only:** and the ITP Consortium Members] and approved by the Funding Partner for the concerned reporting period.

4 Payment of the balance **[For all Instruments**]
The payment of the balance reimburses the remaining part of the eligible costs incurred by the PARNTER [**for ITP participating in Instrument 1 or 2, if applicable:** and the other ITP Consortium Members] for the implementation of the ITP.
If the total amount of earlier payments is greater than the final grant amount, the payment of the balance takes the form of a recovery. If the total amount of earlier payments is lower than the final grant amount, the Funding Partner will pay to the PARTNER the amount due as final payment within 60 days from receiving the final report. Payment is subject to the sending of the completed costs report as stipulated in article 3 of the Agreement and subject to to the approval of the final report. Its approval does not imply recognition of the compliance, authenticity, completeness or correctness of its content.

The amount due as the balance is calculated by the Funding Partner by deducting the total amount of pre-financing and interim payments (if any) already made, from the total Funding.

5 Currency for payments
The Funding Partner will make all payments in euro, net, without any deductions.

6 Payments to the PARTNER
Payments will be made to the PARTNER. Payments to the PARTNER will discharge the Funding Partner from its payment obligation. **[For ITP participating in Instrument 1 or 2, if applicable:** The PARTNER must distribute the payments between the ITP Consortium Members without unjustified delay.**]**

7 Date of payment
Payments by the Funding Partner are considered to have been carried out on the date when they are debited to its account.

8 Consequences of non-compliance
If the Funding Partner does not pay within the payment deadlines, the PARTNER is entitled to late-payment interest at the rate applied by the European Central Bank (ECB) for its main refinancing operations in euros ('reference rate'), plus three and a half points. The reference rate is the rate in force on the first day of the month in which the payment deadline expires, as published in the C series

	of the Official Journal of the European Union. If the late-payment interest is lower than or equal to EUR 200, it will be paid to the PARTNER only upon request submitted within two months of receiving the late payment. Late-payment interest is not due if all beneficiaries are EU Member States (including regional and local government authorities or other public bodies acting on behalf of a Member State for the purpose of this Agreement). Suspension of the payment deadline or payments will not be considered as late payment. Late-payment interest covers the period running from the day following the due date for payment, up to and including the date of payment.

Affiliated Entities			
Party to whom the entity is affiliated	**Legal name of the Affiliated Entity**	**VAT number**	**Adress of Affiliated Entity's legal office**

2. MISCELLANEOUS

2.1 This Annex 1 "INTEGRATED TECHNICAL PROJECT", which is part of the Agreement, as also are Annexes 1 to 7 included, constitutes the sole and complete understanding of the Parties with respect to its subject matter and supersedes all prior or contemporaneous communications between the Parties concerning such subject matter. This ITP will be governed and construed according to the choice of governing and constructive law set forth in the Agreement.

2.2 Save to the extent expressly modified in this Annex 1 "INTEGRATED TECHNICAL PROJECT", all of the terms of the Agreement shall apply to this ITP. Save to the extent expressly specified in this ITP, all capitalized terms used in this ITP which are defined in the Agreement shall have the meaning given in the Agreement. In the event of a conflict between this Annex 1 "INTEGRATED TECHNICAL PROJECT" and the terms of the Agreement, the terms of the Agreement shall apply.

2.3 The terms of Clause 10.1 of the Agreement will apply to the signing and enforceability of this Annex 1.

Done in two originals, one for each Party.

SIGNATURE PAGE

On behalf of the **Funding Partner**: CEA Signature of the authorized representative:	On behalf of the **PARTNER**: Signature of the authorized representative:
Name: Jean-Noël PATILLON Title: Acting Director of CEA LIST Date:	Name: Title: Date:

ANNEX 2 - TECHNICAL REPORT TEMPLATE

1. Reporting period

2. Objectives of the period

Description of the objectives of the ITP period (concept and objectives), achieved progress and potential innovation, targeted Results description and used Background.

1. Reporting period
2. Objectives of the period

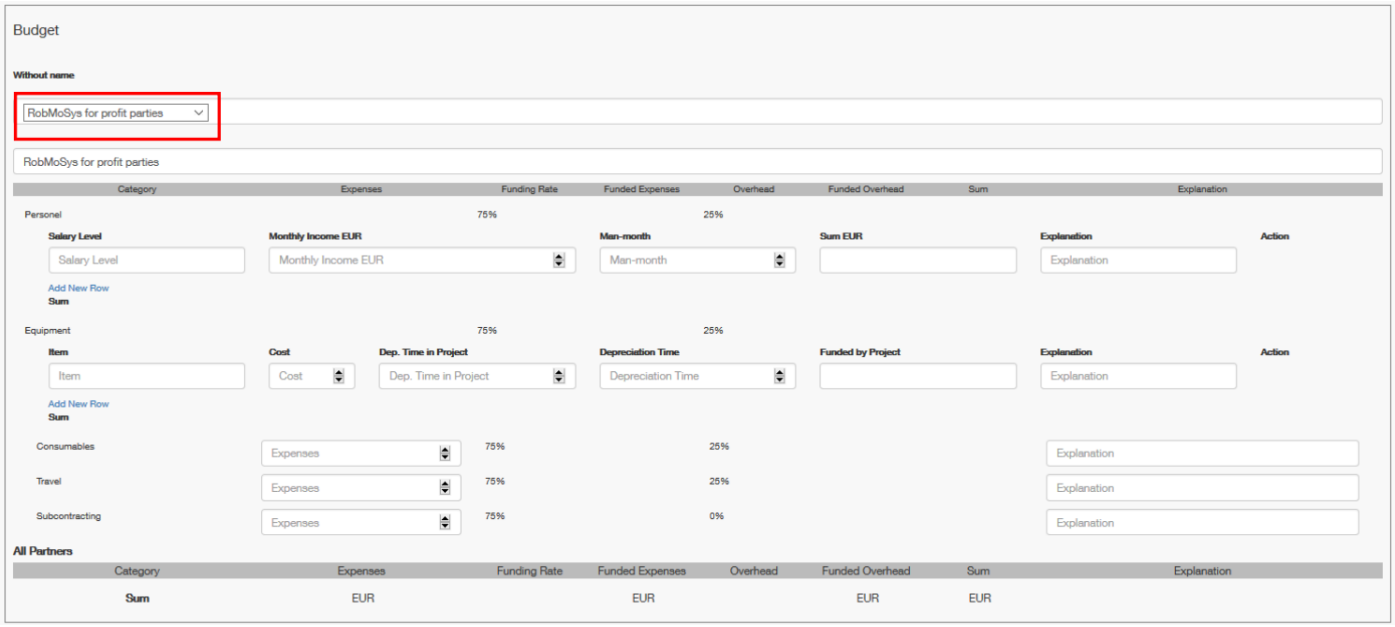
   Description of the objectives of the Industrial Experiment period (concept and objectives), achieved progress and potential innovation, targeted Results description and used Background.
3. Summary of achievements and early evaluation feedback
4. Results achieved
5. Issues with the implementation addressed
6. Risks management
7. Dissemination activities
8. Exploitation planning activities
9. Summary and Conclusion

Summarize major results and achievements and evaluate them compared with the objectives.

ANNEX 3 - ESTIMATED BUDGET FOR THE ITP [To be updated depending on the concerned Instrument]

[To be completed according to the Proposal Budget statement:]

[For ITP participating in Instrument 3: no indirect costs can be claimed by the PARTNER]



Name of the legal representative of the PARTNER

Function of the legal representative of the PARTNER

Stamp of the PARTNER

ANNEX 4 - COSTS REPORT TEMPLATE

RobMoSys

Form C - Financial Statement (to be filled in by each beneficiary)

Reporting period n ° : **1**

Reporting period	**Period 1 or 2 (m01-m**
From :	**DD/MM/YYYY**
To :	**DD/MM/YYYY**
Project Acronym :	**RobMoSys**
Contract n° :	**732410**
Name of contractor :	**[Partner name]**

SUMMARY

Direct personnel costs	
Direct costs of subcontracting	
Other direct costs	
Indirect costs (25% Personnel + Other)	
Total costs	

DIRECT PERSONNEL COSTS:

Associated Task	PM in efforts file	
TX.Y		← Fill in PMs per WP
TX.Y		
TX.Y		
TX.Y		
TX.Y		Total Costs
	0,00	← Fill in Direct personnel costs

DIRECT COSTS OF SUBCONTRACTING

When subcontracting costs are reported in the financial statement, a pop-up window will appear in the IT tool requesting to give information on the costs, description of the subcontract and if the subcontract was foreseen in Annex 1 or not. Further explanations are mandatory if subcontract not foreseen in Annex 1).

Description	Foreseen in Annex 1	Explanations if not foreseen in Annex 1	Costs (€) ← Fill in costs
		TOTAL	**0,00**

Other direct costs: explanation of major cost items if the amount exceeds 15% of personnel costs

If costs declared under "other direct costs" are equal or less than 15% of claimed personnel costs for the beneficiary in each reporting period, no need to give any detail.
If costs declared under "other direct costs" are higher than 15% of claimed personnel costs for the beneficiary in each reporting period, major direct costs items need to be recorded in the pop-up window within the IT tool. The record of items must be up to the level that the remaining costs are below 15% of personnel costs, starting from the cost items of highest value in terms of cost amount. If costs were foreseen in the Annex 1 no further explanation is needed. If costs were not foreseen in Annex 1, further explanations are needed.

Short Description	Category	Associated WP	Foreseen in Annex 1	Explanation (if not included in Annex1)	Costs (€)
				TOTAL	**0,00**

RobMoSys

ANNEX 5 - PARTNER FINANCIAL INFORMATION

THIS PROJECT HAS RECEIVED FUNDING FROM THE *EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME* UNDER GRANT AGREEMENT NO. 732410

FINANCIAL IDENTIFICATION

RobMoSys

ACCOUNT HOLDER			
NAME			
ADDRESS			
TOWN / CITY		POSTCODE	
COUNTRY		VAT NUMBER	
CONTACT PERSON			
TELEPHONE		FAX	
E-MAIL			

BANK			
BANK NAME			
BRANCH ADDRESS			
TOWN / CITY		POSTCODE	
COUNTRY			
SHORT CODE		ACCOUNT NUMBER	
IBAN			
SWIFTCODE			

REMARKS:	

BANKSTAMP + SIGNATURE of BANK REPRESENTATIVE (or JUST a SEPARATED DOCUMENTED WITH THE BANKING INFORMATION WITH THE BANCK STAMP)	**SIGNATURE of ACCOUNT HOLDER (Obligatory)** **Date:**

ANNEX 6 - LIST OF ELIGIBLE AND INELIGIBLE COSTS - EXTRACT FROM THE GRANT AGREEMENT

ARTICLE 6 — ELIGIBLE AND INELIGIBLE COSTS

6.1 General conditions for costs to be eligible

'**Eligible costs**' are costs that meet the following criteria:
(a) for **actual costs**:
(i) they must be actually incurred by the beneficiary;
(ii) they must be incurred in the period set out in Article 3, with the exception of costs relating to the submission of the periodic report for the last reporting period and the final report (see Article 20);
(iii) they must be indicated in the estimated budget set out in Annex 2;
(iv) they must be incurred in connection with the action as described in Annex 1 and necessary for its implementation;
(v) they must be identifiable and verifiable, in particular recorded in the beneficiary's accounts in accordance with the accounting standards applicable in the country where the beneficiary is established and with the beneficiary's usual cost accounting practices;
(vi) they must comply with the applicable national law on taxes, labour and social security, and
(vii) they must be reasonable, justified and must comply with the principle of sound financial management, in particular regarding economy and efficiency;
(b) for **unit costs**:
(i) they must be calculated as follows: {amounts per unit set out in Annex 2 or calculated by the beneficiary in accordance with its usual cost accounting practices (see Article 6.2, Point A) multiplied by the number of actual units};
(ii) the number of actual units must comply with the following conditions:
- the units must be actually used or produced in the period set out in Article 3;
- the units must be necessary for implementing the action or produced by it, and
- the number of units must be identifiable and verifiable, in particular supported by records and documentation (see Article 18);
(c) for **flat-rate costs**:
(i) they must be calculated by applying the flat-rate set out in Annex 2, and
(ii) the costs (actual costs or unit costs) to which the flat-rate is applied must comply with the conditions for eligibility set out in this Article.

6.2 Specific conditions for costs to be eligible

Costs are eligible if they comply with the general conditions (see above) and the specific conditions set out below for each of the following budget categories:
A. direct personnel costs;
B. direct costs of subcontracting;
C. *direct costs of providing Funding to third parties;*
D. other direct costs;
E. indirect costs;
F. *not applicable.*
'Direct costs' are costs that are directly linked to the action implementation and can therefore be attributed to it directly. They must not include any indirect costs (see Point E below).
'Indirect costs' are costs that are not directly linked to the action implementation and therefore cannot be attributed directly to it.

A. Direct personnel costs

Types of eligible personnel costs

A.1 **Personnel costs** are eligibl[9]e, if they are related to personnel working for the beneficiary under an employment contract (or equivalent appointing act) and assigned to the action ('**costs for employees (or equivalent)**'). They must be limited to salaries (including during parental leave), social security contributions, taxes and other costs included in the **remuneration**, if they arise from national law or the employment contract (or equivalent appointing act).
Beneficiaries that are non-profit legal entities2 may also declare as personnel costs **additional remuneration** for personnel assigned to the action (including payments on the basis of supplementary contracts regardless of their nature), if:
(a) it is part of the beneficiary's usual remuneration practices and is paid in a consistent manner whenever the same kind of work or expertise is required;
(b) the criteria used to calculate the supplementary payments are objective and generally applied by the beneficiary, regardless of the source of funding used.
Additional remuneration for personnel assigned to the action is eligible up to the following amount:
(a) if the person works full time and exclusively on the action during the full year: up to EUR 8 000;
(b) if the person works exclusively on the action but not full-time or not for the full year: up to the corresponding pro-rata amount of EUR 8 000, or
(c) if the person does not work exclusively on the action: up to a pro-rata amount calculated as follows: {{EUR 8 000 divided by the number of annual productive hours (see below)}, multiplied by the number of hours that the person has worked on the action during the year}.

A.2 The **costs for natural persons working under a direct contract** with the beneficiary other than an employment contract are eligible personnel costs, if:
(a) the person works under the beneficiary's instructions and, unless otherwise agreed with the beneficiary, on the beneficiary's premises;
(b) the result of the work carried out belongs to the beneficiary, and
(c) the costs are not significantly different from those for personnel performing similar tasks under an employment contract with the beneficiary.

A.3 The **costs of personnel seconded by a third party against payment** are eligible personnel costs, if the conditions in Article 11.1 are met.

A.4 **Costs of owners** of beneficiaries that are small and medium-sized enterprises ('**SME owners**') who are working on the action and who do not receive a salary are eligible personnel costs, if they correspond to the amount per unit set out in Annex 2 multiplied by the number of actual hours worked on the action.

A.5 **Costs of 'beneficiaries that are natural persons'** not receiving a salary are eligible personnel costs, if they correspond to the amount per unit set out in Annex 2 multiplied by the number of actual hours worked on the action.

Calculation
Personnel costs must be calculated by the beneficiaries as follows: {{hourly rate multiplied by the number of actual hours worked on the action}, plus for non-profit legal entities: additional remuneration to personnel assigned to the action under the conditions set out above (Point A.1)}.
The number of actual hours declared for a person must be identifiable and verifiable (see Article 18).
The total number of hours declared in EU or Euratom grants, for a person for a year, cannot be higher than the annual productive hours used for the calculations of the hourly rate. Therefore, the maximum number of hours that can be declared for the grant is: {the number of annual productive hours for the

2 For the definition, see Article 2.1(14) of the Rules for Participation Regulation No 1290/2013: '**non-profit legal entity**' means a legal entity which by its legal form is non-profit-making or which has a legal or statutory obligation not to distribute profits to its shareholders or individual members.

year (see below) minus total number of hours declared by the beneficiary for that person in that year for other EU or Euratom grants}.
The '**hourly rate**' is one of the following:
(a) for personnel costs declared as **actual costs:** the hourly rate is the amount calculated as follows: {actual annual personnel costs (excluding additional remuneration) for the person divided by number of annual productive hours}.
The beneficiaries must use the annual personnel costs and the number of annual productive hours for each financial year covered by the reporting period. If a financial year is not closed at the end of the reporting period, the beneficiaries must use the hourly rate of the last closed financial year available.
For the 'number of annual productive hours', the beneficiaries may choose one of the following:
(i) 'fixed number of hours': 1 720 hours for persons working full time (or corresponding prorata for persons not working full time);
(ii) 'individual annual productive hours': the total number of hours worked by the person in the year for the beneficiary, calculated as follows:
{annual workable hours of the person (according to the employment contract, applicable collective labour agreement or national law) plus overtime worked minus absences (such as sick leave and special leave)}.
'Annual workable hours' means the period during which the personnel must be working, at the employer's disposal and carrying out his/her activity or duties under the employment contract, applicable collective labour agreement or national working time legislation. If the contract (or applicable collective labour agreement or national working time legislation) does not allow to determine the annual workable hours, this option cannot be used;
(iii) 'standard annual productive hours': the 'standard number of annual hours' generally applied by the beneficiary for its personnel in accordance with its usual cost accounting practices. This number must be at least 90% of the 'standard annual workable hours'. If there is no applicable reference for the standard annual workable hours, this option cannot be used.
For all options, the actual time spent on **parental leave** by a person assigned to the action may be deducted from the number of annual productive hours;
(b) for personnel costs declared on the basis of **unit costs**: the hourly rate is one of the following:
(i) for SME owners or beneficiaries that are natural persons: the hourly rate set out in Annex 2 (see Points A.4 and A.5 above), or
(ii) for personnel costs declared on the basis of the beneficiary's usual cost accounting practices: the hourly rate calculated by the beneficiary in accordance with its usual cost accounting practices, if:
- the cost accounting practices used are applied in a consistent manner, based on objective criteria, regardless of the source of funding;
- the hourly rate is calculated using the actual personnel costs recorded in the beneficiary's accounts, excluding any ineligible cost or costs included in other budget categories.
The actual personnel costs may be adjusted by the beneficiary on the basis of budgeted or estimated elements. Those elements must be relevant for calculating the personnel costs, reasonable and correspond to objective and verifiable information;
and
- the hourly rate is calculated using the number of annual productive hours (see above).

B. Direct costs of subcontracting (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are eligible if the conditions in Article 13.1.1 are met.

C. Direct costs of providing Funding to third parties *are eligible if the conditions set out in Article 15.1.1 or 15.2.1 are met.*

D. Other direct costs

D.1 **Travel costs and related subsistence allowances** (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are eligible if they are in line with the beneficiary's usual practices on travel.

D.2 *The **depreciation costs of equipment, infrastructure or other assets** (new or second-hand) as recorded in the beneficiary's accounts are eligible, if they were purchased in accordance with Article 10.1.1 and written off in accordance with international accounting standards and the beneficiary's usual accounting practices.*
*The **costs of renting or leasing** equipment, infrastructure or other assets (including related duties, taxes and charges such as non-deductible value added tax (VAT) paid by the beneficiary) are also eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets and do not include any financing fees.*
*The costs of equipment, infrastructure or other assets **contributed in-kind against payment** are eligible, if they do not exceed the depreciation costs of similar equipment, infrastructure or assets, do not include any financing fees and if the conditions in Article 11.1 are met.*
The only portion of the costs that will be taken into account is that which corresponds to the duration of the action and rate of actual use for the purposes of the action.

D.3 **Costs of other goods and services** (including related duties, taxes and charges such as nondeductible value added tax (VAT) paid by the beneficiary) are eligible, if they are:
(a) purchased specifically for the action and in accordance with Article 10.1.1 or
(b) contributed in kind against payment and in accordance with Article 11.1.
Such goods and services include, for instance, consumables and supplies, dissemination (including open access), protection of results, certificates on the financial statements (if they are
required by the Agreement), certificates on the methodology, translations and publications.

D.4 **Capitalised and operating costs of 'large research infrastructure'**3[10] *directly used for the action are eligible, if:*
*(a) the value of the large research infrastructure represents at least 75% of the total fixed assets (at historical value in its last closed balance sheet before the date of the signature of the Agreement or as determined on the basis of the rental and leasing costs of the research infrastructure*4[11]*);*
*(b) the beneficiary's methodology for declaring the costs for large research infrastructure has been positively assessed by the Commission ('**ex-ante assessment**');*
(c) the beneficiary declares as direct eligible costs only the portion which corresponds to the duration of the action and the rate of actual use for the purposes of the action, and

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3 '**Large research infrastructure**' means research infrastructure of a total value of at least EUR 20 million, for a beneficiary, calculated as the sum of historical asset values of each individual research infrastructure of that beneficiary, as they appear in its last closed balance sheet before the date of the signature of the Agreement or as determined on the basis of the rental and leasing costs of the research infrastructure.

4 For the definition, see Article 2(6) of Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) (OJ L 347, 20.12.2013 p.104)-('**Horizon 2020 Framework Programme Regulation No 1291/2013**'): '**Research infrastructure**' are facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. Where relevant, they may be used beyond research, e.g. for education or public services. They include: major scientific equipment (or sets of instruments); knowledge-based resources such as collections, archives or scientific data; e-infrastructures such as data and computing systems and communication networks; and any other infrastructure of a unique nature essential to achieve excellence in research and innovation. Such infrastructures may be 'single-sited', 'virtual' or 'distributed'.

(d) they comply with the conditions as further detailed in the annotations to the H2020 grant agreements.

E. Indirect costs
Indirect costs are eligible if they are declared on the basis of the flat-rate of 25% of the eligible direct costs (see Article 5.2 and Points A to D above), from which are excluded:
(a) costs of subcontracting and
(b) costs of in-kind contributions provided by third parties which are not used on the beneficiary's premises *and*
(c) *costs of providing Funding to third parties;*
(d) *not applicable.*
Beneficiaries receiving an operating grant5[12] financed by the EU or Euratom budget cannot declare indirect costs for the period covered by the operating grant.

F. *Specific cost category(ies)*
Not applicable

6.3 Conditions for costs of linked third parties to be eligible
not applicable

6.4 Conditions for in-kind contributions provided by third parties free of charge to be eligible
In-kind contributions provided free of charge are eligible direct costs (for the beneficiary), if the costs incurred by the third party fulfil — *mutatis mutandis* — the general and specific conditions for eligibility set out in this Article (Article 6.1 and 6.2) and Article 12.1.

6.5 Ineligible costs '**Ineligible costs**' are:
(a) costs that do not comply with the conditions set out above (Article 6.1 to 6.4), in particular:
(i) costs related to return on capital;
(ii) debt and debt service charges;
(iii) provisions for future losses or debts;
(iv) interest owed;
(v) doubtful debts;
(vi) currency exchange losses;
(vii) bank costs charged by the beneficiary's bank for transfers from the *Commission*;
(viii)excessive or reckless expenditure;
(ix) deductible VAT;
(x) costs incurred during suspension of the implementation of the action (see Article 49);
(b) costs declared under another EU or Euratom grant (including grants awarded by a Member State and financed by the EU or Euratom budget and grants awarded by bodies other than the *Commission* for the purpose of implementing the EU or Euratom budget); in particular, indirect costs if the beneficiary is already receiving an operating grant financed by the EU or Euratom budget in the same period.

6.6 Consequences of declaration of ineligible costs
Declared costs that are ineligible will be rejected (see Article 42).
This may also lead to any of the other measures described in Chapter 6.

5 For the definition, see Article 121(1)(b) of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002 (OJ L 218, 26.10.2012, p.1) ('**Financial Regulation No 966/2012**'): '**operating grant**' means direct financial contribution, by way of donation, from the budget in order to finance the functioning of a body which pursues an aim of general EU interest or has an objective forming part of and supporting an EU policy.

ANNEX 7 – ACCESSION FORM

Full official name of the ITP Consortium Member (short name):
official address in full:
VAT number :
Legal signatory :
('the Consortium Partner'), represented for the purpose of signing this Accession Form,

hereby agrees

to become ITP Consortium Member

in RobMoSys Funding Agreement ('the Agreement')
between The COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES CEA and the PARTNER

for the project entitled :

By signing this Accession Form, the ITP Consortium Member accepts the Agreement and agrees to implement it in accordance with the Agreement, with all the obligations and conditions it sets out***,*** *as from [*insert date*] (****'accession date'****)*

SIGNATURE

For the ITP Consortium Partner:
[function/forename/surname] [signature]

Done in [English] on [time] [stamp]

Appendix F: Supporting document – description of the pilots

RobMoSys

Human-Robot Collaboration for Assembly

Pilot Sheet

RobMoSys defines a platform of assets and services to help **robotics industry to improve their software/system engineering practice**. Join us to **work together to create this ecosystem** and to demonstrate your own success story with **real world cases** in line with our **industrial pilots**.

Description

In the context of human-robot collaboration, the operator interacts with the robot with no fences and influences the task execution. Thus, taking into account the context and more generally the environment for task definition is both mandatory and challenging at the modeling level.

Human-robot collaboration raises also important safety requirements related to the robot, the tool, the task and the environment.
Therefore, safety and more particularly risk assessment is a major feature that this pilot aims to realize and validate.

Expected Benefits

The pilot is intended for open call 2 contributors to showcase system robustness through task reusability and safety checking at design time.
Once the task and the environment are well described, it is then easier for the integrators to rely on the tools for the risk assessment and to deduce the possible damages caused by each task in the environment.

This pilot uses Papyrus4Robotics to comply with RobMoSys methodology.

The technical expected benefits of the pilot are:

- Easy task description
- Task reusability: Task invariance to slight changes of the environment and/or hardware choices;
- Using most updated norms in order to validate the configuration (environment/robots/humans).
- Automatically identifying potential failures that could not be predicted by safety experts;

Scenario Examples

The pilot demonstrates task and environment definition for a human-robot collaboration use case: Pick & Place through RobMoSys tools. The interaction between the robot and the operator is direct (with no fences) for carrying a heavy object from a given position to a target one.

This pilot uses Isybot collaborative robot but ITP can also test and enrich RobMoSys safety functionalities with any other collaborative robot performing a pick and place task.

Potential use cases for ITP are:

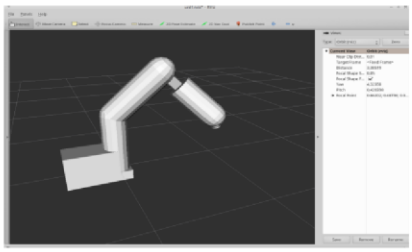
- Extend the pilot with new components for manipulation tasks
- Task reusability after a hardware/software component replacement. For example a gripper replaced with another.
- Risk assessment with RobMoSys tool constraints on the robot actions based on the environment including the operator.
- Reuse safety properties in different contexts : “Composable Safety”

Pilot Resources

A simple Pick and Place task [1] with Isybot robot is available for contributors as an exemplary application to use, to modify or to build upon.

- Virtual machine with all necessary tools, software and documentation. Eclipse and Papyrus tool, ROS Lunar and ROS stack for Isybot, A specification document for describing the use case and the modeling steps, and a preliminary version of a risk assessment.

[1] https://robmosys.eu/wiki/pilots:hr-collaboration



Get involved in the **Second RobMoSys Open Call**! Further information at: **www.robmosys.eu**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410.

RobMoSys

Modular Educational Robot

Pilot Sheet

RobMoSys defines a platform of assets and services to help **roboticsindustry to improve their software/system engineering practice**. Join us to **work together to create this ecosystem** and to demonstrate your own success story with **real world cases** in line with our **industrial pilots**.

Description

Thepilot[1]isabout **educationalapplicationinpublic environment** asschoolsoreducationalinstitutes.Themain aimofthepilotistosupplyanewroboticsplatformthat enablesteachersandstudentstoperformanddesignseveral roboticsapplicationswithdifferentlevelsofcomplexity.

Expected Benefits

Thepilot isintendedforopencall2contributorsto showcasethe **flexibility** and **modularity** ofthesystemvia compositionofsoftwarecomponentsinordertobuilda completerunning applicationinaneasierandfasterway respecttostandardmethodologies.

ThepilotcombinestheSmartMDSDToolchainandthe existingsoftwareinfrastructureofthee.DOrobotaddressing theRobMosysapproachinthisnewroboticsplatformand enableteachersandstudentsonperforminganddesigning complexroboticsapplications.Theobjectivesaretoenable:

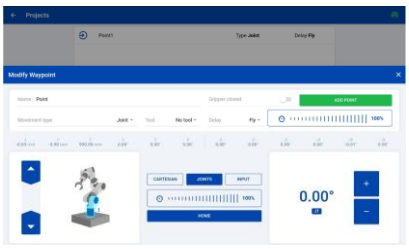
- Developers to easily design **new educational applications**
- Studentstodeveloptheirownfunctionalities
- Users to extend the **robot capabilities** with new hardware
- Userstoeasilyintegratetherobotwithan **userinterface**

Scenario Examples

Thepilotcasewillbebasedontheopenarchitectureofe.DO platform,anewrobotdevelopedforeducationalpurpose that will use a ROS node to connect the Smartsoft environmentwiththeroboticsframework.

Differentuses-casescanbetakenintoaccountDeveloping customizedsoftwarefunctionalitesondifferentlevels:

- **Basic coding** (scratch programming) using task composition
- **Emulationofindustriallines** tospeeduptheintegration.
- Implementationandtestof **advancedcontrolalgorithm**



Pilot Resources

ThepilotiscurrentlylocatedinCOMAUplantinGrugliasco (Italy).Thepilotcanbeeasilyrepeatedormovedtoother locationsduetotheeasyintegrationandinstallationofe.DO platform.

Theavailableskeletonforthepilotisbasedonthefollowing componentsandfeatures:

- **e.DOrobot** platformwithopensourcecontrollogic (basedonRaspberryPirunningRaspbianJessie)
- **ROSnode** fore.DO(KineticKamedistribution)
- Firstintegrationofe.DOplatformwith **SmartMDSD toolchainIDE**
- Firstsetof **basicbuildingblocks** andmodelsforpickand placeapplication

Get involved in the **Second RobMoSys Open Call**! Further information at: www.robmosys.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410.

RobMoSys

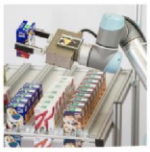
Intralogistics Industry 4.0 Robot Fleet Pilot

Pilot Sheet

RobMoSys defines a platform of assets and services to help **robotics industry to improve their software/system engineering practice**. Join us to **work together to create this ecosystem** and to demonstrate your own success story with **real world cases** in line with our **industrial pilots**.

Description

This pilot [1] is about **goods transport** in a company, such as factory **intra-logistics**. It can be used to showcase robotics **navigation**, e.g. to show the performance of goods delivery and according non-functional requirements. It can be extended to object recognition and **manipulation**.



(a) Picking items

(b) Transport and autonomous delivery of boxes with goods

(c) Order picking into boxes

Expected Benefits

The pilot is intended for open call 2 contributors to showcase the **ease of system integration via composition** of software components to a complete robotics application.

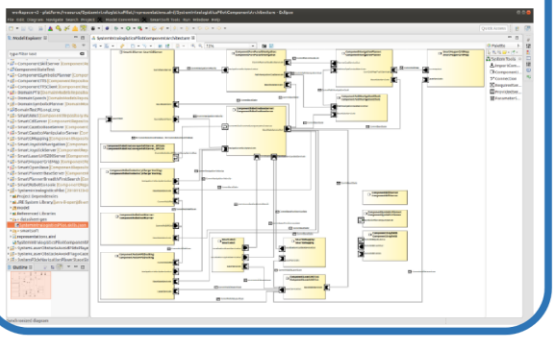
The pilot is fully **supported by the SmartMDSD Toolchain**, an Integrated Software Development Environment (IDE) for system composition in an robotics software business ecosystem. This ensures full conformance to the RobMoSys methodology when using this pilot.

The pilot can be used to demonstrate:

- Software components and system composition: e.g. composition of previously developed software components and/or exchange of software components to address new needs.
- Ecosystem collaboration including the different roles that participants can take
- Task level coordination; skills; robotic behavior
- Managing of non-functional properties
- Dependency graphs for composed components to enable predictability for navigation

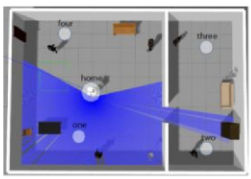
Scenario Examples

- The pilot is intended for the use with FESTO Robotino but **can be extended to any robot** thanks to the Flexible Navigation Stack [2]
- Potential Use-Cases for ITP demonstrations:
  - Integrate your own robot
  - Interact with the pilot on task-, service- or component-level.
  - Work with a single robot or a fleet of robots
- See **examples and videos of the pilot** in action in the RobMoSys wiki [1].



Pilot Resources

- The pilot is physically located at Ulm University of Applied Sciences; **Germany** and may be used on site or remotely. An excerpt is available in **simulation** for off-site use.



- **Software components available** [3] for use with the SmartMDSD Toolchain:
  - Robot platforms, mapping, planning, obstacle avoidance, etc. for immediate composition
  - Software component templates for manipulation and object recognition
- Documentation and **Tutorials available**

[1] https://robmosys.eu/wiki/pilots:intralogistics
[2] https://robmosys.eu/wiki/domain_models:navigation-stack:
[3] https://robmosys.eu/wiki/baseline:components:smartsoft
[4] https://wiki.servicerobotik-ulm.de/tutorials:start

Get involved in the **Second RobMoSys Open Call!** Further information at: **www.robmosys.eu**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410.

RobMoSys

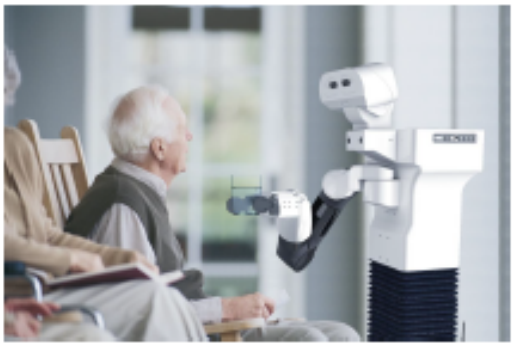
Assistive Mobile Manipulation Pilot

Pilot Sheet

RobMoSys defines a platform of assets and services to help robotics industry to improve their software/system engineering practice. Join us to work together to create this ecosystem and to demonstrate your own success story with real world cases in line with our industrial pilots.

Description

The pilot [1] is about a **healthcare robot application** in a domestic environment. It will demonstrate an autonomous mobile manipulator assisting an elderly person with physical constraints. The pilot can be used to showcase navigation and Human-Robot-Interaction (Automatic Speech Recognition, Text To Speech, Visual Perception). It can be extended with object and people recognition and manipulation.



Expected Benefits

The pilot is addressed to open call 2 contributors in order to show that a mobile manipulator product is able to adapt easily to different assistive tasks in different environments (e.g. private apartment, hospital room), by selecting a set of components or/and by changing the skills configuration and the task coordination.

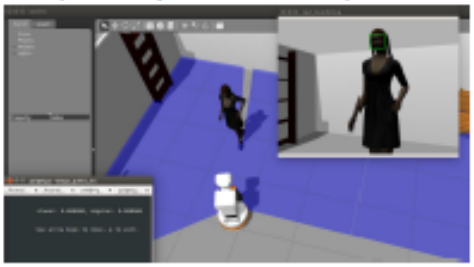
This pilot is using SmartMDSD Toolchain to comply with RobMoSys methodology and the existing software infrastructure of the TIAGo mobile manipulator.

The technical benefits of the pilot are:

- Simplify development via software components composition
- Replace of components as is, without further development
- Adaptation to the environment through skills configuration
- Create ad-hoc applications using task level coordination (robotic behaviour)
- Exchange software components to add capabilities of the robot

Scenario Examples

- The pilot will use the TIAGo mobile manipulator with ROS bridges to link the SmartSoft environment with the current TIAGo framework.
- Potential Use-Cases for ITP
  - Create assistive applications for TIAGo (welcome visitors to the apartment, finding objects in the apartment, delivering items to the elderly person, ...)
  - Extend the pilot skeleton with ITP components related to specific fields like HRI, object/people recognition, manipulation
  - Interface with the pilot on different levels (from component to task level)



Pilot Resources

The pilot can be downloaded and executed on any computer via **docker container**, which includes everything needed to run the TIAGo simulation and the SmartMDSD Toolchain. Also a real robot application can be performed on TIAGo at **PAL Robotics** facilities in Barcelona, Spain.

- **Ready-to-run container** available: TIAGo docker (Linux Ubuntu, SmartMDSD Toolchain, Eclipse IDE, Gazebo simulation, TIAGo ROS packages)
- **Software available**
  - RobMoSys software components to use with SmartMDSD Toolchain [2]
  - TIAGo SmartMDSD repositories (navigation, SmartMDSD to ROS bridge ports, System TIAGo deployment)
  - TIAGo ROS packages (manipulation, navigation and perception)
- **Documentation and TIAGo tutorials** [3]

[1] https://robmosys.eu/wiki/pilots:assistive-manipulation
[2] https://robmosys.eu/wiki/baseline:components:smartsoft
[3] http://wiki.ros.org/Robots/TIAGo/Tutorials

Get involved in the Second RobMoSys Open Call! **Further information at: https://robmosys.eu**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 732410.

RobMoSys

Flexible Assembly Pilot

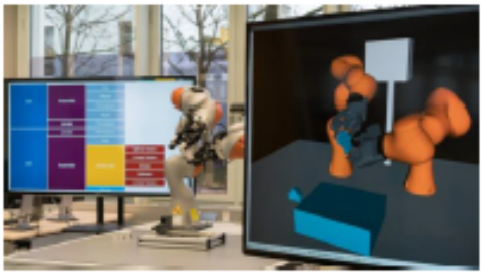
Pilot Sheet

RobMoSys defines a platform of assets and services to help robotics industry to improve their software/system engineering practice. Join us to work together to create this ecosystem and to demonstrate your own success story with real world cases in line with our industrial pilots.

Description

This pilot [1] is about highly-flexible industrial production. Advanced automation devices, like autonomous robotic systems, are no longer based on simple I/O signal communication but provide a full-fledged, high-level application programming interface to access the device's features and functionality.

This pilot showcases the development and programming of advanced production systems that can perform a large range of different tasks with high demands on performance and adaptability.



Expected Benefits

Engineering and (re)configuration of today's production systems makes automation only cost-effective for high-volume standardized production. This pilot is intended to validate the RobMoSys methodology in the context of seamless integration of hardware and software components for industrial production:

- Reduction of engineering costs for flexible production systems allowing personalized products with small batch sizes
- New approaches to automation by standardization of models and interfaces for intelligent hardware functionality
- Easy integration and extension of software tool-chains and eco-systems in industrial production setups in a vendor-neutral style
- Simplifying the entrance and usability of software components (ease of use)

Scenario Examples

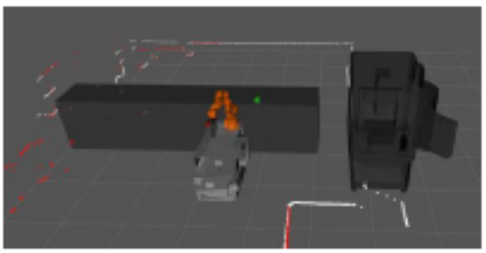
- The Pilot's intended target system is an industrial production system with advanced automation equipment. A concrete example would be a mobile or a dual-arm manipulator system equipped with multiple 2D and 3D cameras.
- Potential Use-Cases would be:
  - Specification of system tasks, such as machine-tending or manufacturing, using reusable and composable task blocks in a hardware and middleware-agnostic way
  - Extend the functionality of the system with additional hardware or software

Pilot Resources

Base functionality such as object detection and manipulation, as well as navigation and an exemplary application, are available for contributors to extend, modify or build upon.

- Virtual machine with all required development tools (SmartMDSD Toolchain [2]), software and mock-up functionality implemented in ROS for programming a mobile manipulator in the context of tending a milling machine

[1] https://robmosys.eu/wiki/pilots:flexible-assembly
[2] https://robmosys.eu/wiki/baseline:components:smartsoft



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Appendix G: Guide for Redress Procedure

GUIDE FOR REDRESS PROCEDURE

Second RobMoSys Open Call

Request for redress

Applicants have received an official letter, together with the Consensus Report (CR) showing the result of the admissibility/eligibility check or the outcome of the evaluation process of their proposal.

Within fourteen days from the receipt of the official letter, applicants may submit a request for redress if they consider that there has been a shortcoming in the way their proposal was evaluated that may have affected the final decision on whether to fund it or not, or if they believe the result of the admissibility/eligibility check is incorrect.

Requests for redress can only be based on procedural grounds[13], with clear evidence of the reasons for complaint.

Requests have to comply with the following requirements:

- The request for redress can only be related to the evaluation process, admissibility or eligibility checks;
- It clearly states the proposal name and acronym, and a clear description of the grounds for complaint;
- It must be received within two weeks from the receipt of the official letter;
- It must be sent by the coordinator of the project.

Only one request for redress per application will be considered.

Requests for redress will not be considered if they do not comply with the above requirements.

The evaluation score following any re-evaluation will be regarded as definitive. It may be lower than the original score.

Review by the redress committee

All requests for redress will be treated confidentially. An internal Redress Committee will examine requests for redress and recommend an appropriate course of action to the RobMoSys Consortium.

- The Redress Committee's role is to ensure a coherent interpretation of such requests, and equal treatment of applicants.
- The Redress Committee will not evaluate the application. If the Committee considers that there has been a shortcoming during the eligibility check or evaluation processes that is likely to have jeopardized the outcome of the evaluation of the proposal, it may suggest a further evaluation of the proposal by independent expert evaluators.
- A re-evaluation will be carried out only if there is evidence of a shortcoming that affects the final decision on whether to fund the proposal or not. This means, for example, that a problem

[13] Procedural Grounds refers to only a deficiency in the way the eligibility check and/or evaluation processes were conducted. The assessment performed by independent expert evaluators cannot be appealed.

relating to one evaluation criterion will not lead to a re-evaluation if a proposal has failed anyway on the other criteria.

- The Redress Committee will not judge the scientific or technical assessment of the independent expert evaluators, nor will it take into consideration any new information or explanations not included in the original proposal.

Communication of conclusions

Possible conclusions of the Redress Committee:

- Inadequate evidence to support the complaint;
- Evidence to support the complaint but no further action required;
- Evidence to support the complaint, with a follow-up recommended such as the reevaluation of the application.

A response will be sent by the RobMoSys Consortium within one month of the deadline for receiving the request for redress. If a definitive response cannot be given at that stage, this reply will indicate when a definitive response will be provided.