



Road-, Air- and Water-based Future Internet Experimentation

Project Acronym: RAWFIE			
Contract Number:	645220		
Starting date:	Jan 1st 2015	Ending date:	Dec 31st, 2018

Deliverable Number and Title	D8.5: Open Calls, Report on Selection (c)		
Confidentiality	CO	Deliverable type¹	R
Deliverable File		Date	2017-06-30
Approval Status²	WP leader	Version	1.0
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¹ Deliverable type: P(Prototype), R (Report), O (Other)

² Approval Status: WP leader, 1st Reviewer, 2nd Reviewer, Advisory Board



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Name / Role	Company	Level confidentiality ³ of	Type of deliverable
ALL		PU	R

CHANGE HISTORY

Version	Date	Reason for Change	Pages/Sections Affected
v01	30.04.2018	Initial version for submission	-

³Deliverable Distribution: PU (Public, can be distributed to everyone), CO (Confidential, for use by consortium members only), RE (Restricted, available to a group specified by the Project Advisory Board).



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Abstract:

This deliverable is a report of the 3rd Open Call of RAWFIE. It presents the open call launch, as well as the submission and selection process of the open call proposals. It also provides a summary of the accepted proposals with respect to this open call.

Keywords: open call, reviewer, review, testbed, UxV, software



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Part III: Executive Summary

This deliverable describes the several stages of the 3rd RAWFIE Open Call that has been completed. Initially, a general introduction of the call is presented. Then, the reader is provided with several details about the call launching and the processes followed over the three-month period that the call was open including the open call for external experts that were used as evaluators and the reviewers selection process.

As a next step, the proposal submission process is described as well as the procedures followed for the evaluation of submitted proposals. A summary of the Open Call results is also presented in this document.

The annexes provide relevant information concerning the open call for proposals, the open call for reviewers, the templates used by proposers and the templates used by the evaluators.



Part IV: Main Section

1 Introduction

RAWFIE (Road-, Air- and Water- based Future Internet Experimentation) is a project funded by the European Commission (Horizon H2020 programme) under the FIRE initiative aiming to provide research and experimentation facilities through the growing domain of unmanned networked devices. The **FIRE** initiative (**F**uture **I**nternet **R**esearch and **E**xperimentation) creates an **open research environment**, which facilitates strategic research and development of new Future Internet concepts, giving researchers the tools that they need to **conduct large-scale experiments** on new paradigms.

The purpose of the RAWFIE project is to create a federation of different testbeds that will work together to make their resources available under a common framework. Specifically, it aims at delivering a unique, mixed experimentation environment across the space and technology dimensions. RAWFIE integrates numerous testbeds for experimenting in vehicular (road), aerial and maritime environments. Vehicular Testbeds (VT) will deal with Unmanned Ground Vehicles (UGVs) while Aerial Testbeds (AT) and Maritime Testbeds (MT) will deal with Unmanned Aerial Vehicles (UAVs) and Unmanned Surface Vehicles (USVs), respectively. The RAWFIE Consortium includes all the possible actors of this highly challenging experimentation domain, from technology creators to integrators and facility owners. The basic idea behind the RAWFIE effort is the automated, remote operation of a large number of robotic devices (UGVs, UAVs, USVs) for the purpose of assessing the performance of different technologies in the networking, sensing and mobile/autonomic application domains. RAWFIE features a significant number of UxV nodes for exposing the experimenter to an extensive test infrastructure. All these items are managed by a central controlling entity, which will be programmed per case and fully overview/drive the operation of the respective mechanisms (e.g., auto-pilots, remote controlled ground vehicles). Internet connectivity will be extended to the mobile units to enable the remote programming (over-the-air), control and data collection. Support software for experiment management, data collection and post-analysis will be virtualized to enable experimentation from anywhere in the world. The vision of Experimentation-as-a-Service (EaaS) is promoted through RAWFIE. The Internet of Things (IoT) paradigm is fully adopted and further refined for supporting highly dynamic node architectures.

The objective of the 3rd RAWFIE Open Call is to support cross-domain or domain-specific real-world applications and experiments (RAWFIE-OC3-SCI, RAWFIE-OC3-SME). Each proposal should target at exactly one of the two types of activities (we call them directions of enhancement) as stated in the next paragraphs. All the proposals should fully comply with the public Deliverables (can be found here) that have been produced so far by the RAWFIE Consortium and provide system requirements as well as technical description and implementation details for the RAWFIE architecture and specific components.



2 Launch of 3rd Open Call

The 3rd Open Call was launched on September 27, 2017. The Open Call was published widely adhering to Horizon 2020 standards with respect to transparency, equal treatment, conflict of interest and confidentiality. The announcement of the Open Call was available at the project's website at <http://www.rawfie.eu/open-call-no3>, at the FIRE community portal at <https://www.ict-fire.eu/projects/> and at the Horizon 2020 Participants Portal at <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/other/competitive.html>. The call remained open for 3 months until December 29, 2017. The Open Call can be found in Appendix A1.

In line with the specific requirements of the work programme the call contained the following details:

- A list of the types of activities that qualify for receiving financial support.
- Restrictions on participation in the call.
- The criteria determining the award of the financial support.
- The criteria for determining the exact amount of financial support and the form that the financial support may take.
- The specific arrangements that the UoA may impose on the third parties (e.g. specific reporting and feedback obligations from the third party towards UoA in respect to the implementation of the supported activities; specific arrangements for providing the financial support; specific rights for RAWFIE consortium to access and use the results of the supported activities).
- The information needed to submit a proposal, including
 - the template to be used for the proposals,
 - The coordinates (email address and telephone number) of a help facility for proposers during the call. Inquiries could be sent to rawfie-contact@cnl.di.uoa.gr. Prof. Stathes Hadjiefthymiades (UoA) was the contact person for information on the call.
 - The online system URL used for proposal submission, which was www.easychair.org.
 - The deadline for proposal submission, clearly specifying the local time involved.

The types of activities that qualify for receiving financial support are the following:

- Experimentation (software)
 - Scientific Excellence (RAWFIE-OC3-SCI) – **feasibility check needed**
 - Innovation by SMEs (RAWFIE-OC3-SME) – **feasibility check needed**

Each proposal should target exactly one of the two types of activities:



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- **Activity / Direction of enhancement 1: Scientific Excellence.**

RAWFIE comprises software architectures and developments for experimentation management, data collection and post-analysis. Virtualization is used to enable remote experimentation from everywhere in the world. The infrastructure has been enriched with additional equipment and testbed facilities via the first two Open Calls. In this 3rd Open Call, the project solicited for proposals that design and deploy extensive horizontal or domain-specific experimentation (experiment design & implementation, supportive software, data analysis, data visualization, etc.) that will leverage data and resources from RAWFIE testbeds and devices in the context of mobile IoT paradigm. **The experiments should come with a concrete plan on their scientific added value and the novelties that the experiment will bring in the scientific and research community (i.e., the new technologies and methodologies validated through the experiment, the new datasets it creates, etc.).**

All types of experimental applications should be based on RAWFIE tools and should come with additional features (e.g., post analysis of data, visualization tools) or software needed for further data processing. Horizontal experiments may refer to cross-domain applications and software (e.g., experimentation over a novel network protocol, information dissemination schemes, distributed architectures, data analysis methodologies, trust and reputation algorithms, security features, etc.). Supportive software should be connected with RAWFIE architecture to become available, if needed, for other types of applications and experiments. In all categories, the adoption of open technologies, specifications and standards (including open source software and Semantic Web technologies) that will enable the openness of the RAWFIE platform towards possible future expansion was strongly recommended.

Proposals should describe **experiments and applications** that validate novel technologies connected with the mobile IoT concept and its integration with Cloud and Robotics paradigms that clearly advance the current state-of-the-art and create added value at technology and research level. Based on the RAWFIE application creation tools, the experiments will design, implement and validate a number of proof-of-concept scenarios that could potentially be applied across several or specific application domains.

This software and the experiments should be of a short duration (a maximum of 10 months) starting from March 2018. Per proposal a budget could be requested for **up to a maximum of €100K**. The applicant should be **academia, industry (not SME) or a public body**.

- **Activity / Direction of enhancement 2: Innovation by SMEs.**

RAWFIE comprises software architectures and developments for experimentation management, data collection and post-analysis. Virtualization is used to enable remote experimentation from everywhere in the world. The infrastructure has been enriched with additional equipment and testbed facilities via the first two Open Calls. In this 3rd Open Call, the project solicited for proposals that design and deploy extensive horizontal or domain-specific experimentation (experiment design & implementation, supportive software, data analysis, data visualization, etc.) that will leverage data and resources from RAWFIE testbeds and devices in the context of mobile



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IoT paradigm. **The experiments should come with a concrete business model (i.e., how the results of the experiment may be transformed into profits for the company) and what kind of new markets the experiment may open.**

All types of experimental applications should be based on RAWFIE tools and should come with additional features (e.g., post analysis of data, visualization tools) or software needed for further data processing. Horizontal experiments may refer to cross-domain applications and software (e.g., experimentation over a novel network protocol, information dissemination schemes, distributed architectures, data analysis methodologies, trust and reputation algorithms, security features, etc.). Supportive software should be connected with RAWFIE architecture to become available, if needed, for other types of applications and experiments. In all categories, the adoption of open technologies, specifications and standards (including open source software and Semantic Web technologies) that will enable the openness of the RAWFIE platform towards possible future expansion was strongly recommended.

Proposals should describe **experiments and applications** that validate novel technologies connected with the mobile IoT concept and its integration with Cloud and Robotics paradigms that clearly advance the current state-of-the-art and create added value at technology and research level. Based on the RAWFIE application creation tools, the experiments will design, implement and validate a number of proof-of-concept scenarios that could potentially be applied across several or specific application domains.

This software and the experiments should be of a short duration (a maximum of 10 months) starting from March 2018. Per proposal a budget could be requested for **up to a maximum of €75K**. The applicant should be an **SME**.

2.1 Eligibility

Regarding the eligibility of proposals:

- Proposals could only be accepted from a single party eligible for participation in the EC H2020-projects. Parties eligible for participation in the EC Horizon 2020 Framework Programme, according to the rules for eligibility which can be found at: http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-a-countries-rules_en.pdf
- Multiple proposals could be submitted by the same party. In case that multiple proposals coming from the same party pass the funding limits, RAWFIE Consortium has the right to decide which one of them will be accepted for funding.
- Successful applicants of the 1st and 2nd RAWFIE Open Call were not eligible to participate.



2.2 Feasibility check

A feasibility check was needed for the submitted proposals for both activities.

The submission phase of the experimentation proposals took place in two stages. In the first stage, the proposing party had to submit a draft, but fully completed, proposal describing the experiment using the online submission system by November 27, 2017 (a deadline which was extended to December 4, 2017). In this stage, all parts of the proposal should be completed and the RAWFIE consortium checked the feasibility of the proposed experiment (i.e., if the experiment can be supported sufficiently by the existing infrastructure, proposed devices and testbeds or further extensions are needed). RAWFIE consortium provided feedback on the feasibility check to the proposers on December 21, 2017. The feedback of the feasibility check had to be included in the respective part of the proposal template by the proposer during the final submission step. The proposer should perform only minor revisions on the proposal during the final submission stage (i.e., the core parts of the experiment should remain unchanged). During the feasibility check, no evaluation of the experiment was performed. The independent experts that performed the actual evaluation of the proposals were advised to reject proposals with significant differences between the two stages.

No feasibility check was required for proposals targeting at UGV and UAV extensions. These proposals were submitted in one step (final submission deadline).

2.3 Call for reviewers

RAWFIE invited individual experts on a wide range of scientific fields to participate in the evaluation of proposals for the first RAWFIE open call for proposals. RAWFIE Experts could come from academic institutions or from the industry. In any case, a university degree and considerable scientific or professional experience in one or more of the areas of Internet-of-Things (IoT), UxVs, cloud facilities, sensors, experimental testbeds, satellite navigation or future internet technologies were required.

The call for reviewers was made available through the RAWFIE website at <http://www.rawfie.eu/new/3rd-open-call-reviewers>. The call for reviewers was also published to the FIRE community and to the Horizon 2020 Participants Portal. In addition, external reviewers were recruited through social media, such as RAWFIE accounts on Twitter, LinkedIn, and Facebook.

The deadline for reviewers' registration was December 27, 2017. Reviewer registration form was available at <http://www.rawfie.eu/reviewer-registration> (Annex A2).



2.4 Reviewers selection

16 reviewers were registered to participate in the evaluation of the open call proposals, coming from academic institutions and industrial organizations. Reviewers were from various countries, including Italy, Spain, Greece, Serbia, Belgium, U.K. and Norway.

To ensure transparency and reviews of high quality, candidate reviewers were checked in regards with possible connection with submitted proposals and also to ensure their expertise relevance with the project scope. The pool of reviewers was subsequently used for the assignment of proposals to be reviewed.

3 Submission process of the 3rd Open Call

3.1 Proposal submission

The submission of the proposals was only possible through the EasyChair system (<http://www.easychair.org>) which allows the tracking of various information, including the identification of the time of submission. The submission deadline was Friday, December 29, 2017, at 17:00h CET (Brussels time). Over the period that the call was open (i.e., 3 months) UoA provided support to potential proposers through the rawfie-contact@cnl.di.uoa.gr by answering possible questions.

After the call closure, no additions or changes to received proposals were accepted.

3.2 Reviews assignment

The proposals were assigned to reviewers for evaluation through the EasyChair system. The assignment was based on the expertise of each reviewer and avoid possible conflicts of interest between reviewers, proposers and the RAWFIE consortium. Each proposal was assigned to 3 reviewers and each reviewer was assigned with 3 proposals at most.

3.3 Reviews submission

Reviews were submitted through the EasyChair system by the review panel. The submission deadline for the reviews was February 16, 2018.

4 Selection process of the 3rd Open Call

The evaluation and ranking was carried out by an external jury of individual experts.

Each of the 3 criteria specified in the call was evaluated in a scale of 0-5. The threshold for each of the criteria was 3. The threshold for the total evaluation was 10. Ties in ranking were resolved following the approach specified in the call text. Specifically, the considered criteria were



prioritized as listed in order of importance, i.e., criterion C1 was ranked higher than criterion C2 in terms of priority, etc. The evaluation criteria are presented in the next section.

4.1 Evaluation Criteria

4.1.1 C1. Relevance to the project architecture and technological excellence

All the contributions of third parties are intended either to enhance the current RAWFIE architecture or bring new value to it through novel experimentation. Therefore, the proposals should adhere to the requirements of the platform and build on top of the existing framework. This criterion assesses the compliance of each proposal with RAWFIE technologies and adopted approaches. The technological excellence of the proposed solution and the level of integration with RAWFIE tools and platform are also evaluated. The quality of the proposed solutions is also evaluated (e.g., scientific quality, technological excellence, complexity and innovation of the experiment, etc.).

4.1.2 C2. Impact

The funded proposals' impact (both on the project and in general) is evaluated. The open call seeks proposals which provide high added value. Proposals should enable possible future follow-up experiments and support the sustainability of the federated architecture. Market potential of the proposals as well as their ability to provide significant value to the end-users will be taken into consideration. The funded third parties will also have to integrate their proposals outcome into the current RAWFIE infrastructure and maintain a connection to the RAWFIE Consortium until the end of the project. Further integration into a future RAWFIE federation is a major target for the project. In this context, this call also searched for participants that will stay active beyond the project lifetime. Hence, proposals with high levels of engagement with RAWFIE and the FIRE community are promoted. The same stands with proposals that foresee and enable possible synergies with other H2020 projects and/or nationally funded activities. In the context of supported experiments, RAWFIE promotes innovation and excellence both in terms of horizontal cross-domain experiments and real-world domain-specific applications.

4.1.3 C3. Ability to implement

The proposers were evaluated on their ability to implement the tasks. The experience and the technical capacity of the applicant(s) are of high importance. The proposed implementation plan should be clear and methodically sound, with a clear task statement, a solid design, a good methodology and of high quality. Participants are expected to propose a concrete plan that enables them to achieve the project goals during the given time-frame. The successful beneficiaries will be invited to refine and implement the final plan with the project coordinator and the other collaborators.

5 Results

13 proposals were submitted:



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- 5 proposals for Activity / Direction of enhancement 1: Scientific Excellence (RAWFIE-OC3-SCI)
- 8 proposals for Activity / Direction of enhancement 2: Innovation by SMEs (RAWFIE-OC3-SME)

Proposals were submitted from various countries, including U.K., Spain, Greece, Portugal, Serbia, Luxembourg and Italy. The total budget requested for funding by the submitted proposals was 1.094.075 €. The maximum amount of the financial support per proposal is €100000 for RAWFIE-OC3-SCI and € 75000 for RAWFIE-OC3-SME.

The selection of the proposals was based on the score that each proposal received from the reviewers and its ranking within the activity to which it belongs, in conjunction with the budget available for the activity. Two proposals received a score below threshold and therefore were excluded from the selection process. In addition, two proposals were not submitted after the feasibility check and were excluded from the review process.

Nine proposals have been selected for funding:

- 4 proposals for Activity / Direction of enhancement 1: Scientific Excellence (RAWFIE-OC3-SCI)
- 5 proposals for Activity / Direction of enhancement 2: Innovation by SMEs (RAWFIE-OC3-SME)

The total budget that will be allocated for funding the nine successfully evaluated proposals is €769.125.

Among the nine proposals that were selected for funding, which all involve experimentation:

- 6 proposals involve experiments with UAVs (2 proposals from Activity / Direction of enhancement 1: Scientific Excellence, and 4 proposals from Activity / Direction of enhancement 2: Innovation by SMEs)
- 2 proposals involve experiments with UGVs (from Activity / Direction of enhancement 1: Scientific Excellence)
- one proposal involves experimentation with USVs (from Activity / Direction of enhancement 2: Innovation by SMEs)

The following table summarizes the submitted proposals that have been accepted to be funded as part of the RAWFIE platform.

Table 1: Accepted Proposals of the 3rd RAWFIE Open Call.

#	Proposal title	Abstract	Activity
1	IoT2Edge: Allocating selected IoT processing and storage activities	IoT2Edge aims to promote scientific excellence in the areas of edge computing and semantic interoperability in IoT environments through novel experimentation based on the RAWFIE federated testbed infrastructure. IoT2Edge will	RAWFIE-OC3-SCI



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	<p>to edge nodes to optimise performance and resource consumption ensuring interoperability</p>	<p>develop the respective supportive software (SSW) in support of the experiments that will evaluate the proposed solutions. This SSW can also enhance the current RAWFIE architecture increasing its openness and improving its performance. The IoT2Edge semantic interoperability mechanisms will be based on open specifications and standards (of ETSI and W3C for example) and will be pluggable on top of the RAWFIE platform. The edge computing modules aim to enable dynamic offloading of resource intensive processes from both cloud and mobile edge to achieve resource usage optimisation. The proposed mechanisms will be evaluated via demanding experiments driven by an IoT-enabled emergency detection use case. The IoT2Edge team of NTUA has wide expertise on all related technical domains (i.e., IoT, semantic technologies, Big Data analytics, optimized resource allocation, FIRE initiatives, and emergency response) having a long record of relevant successful EU projects</p>	
<p>2</p>	<p>SCOR: Semantic COordination for Rawfie</p>	<p>Growing interest for robotics research generates high pressure to reduce barriers to entry to the experimentation for a larger number of users. On the other side, increasing complexity of federated robotics testbeds and heterogeneous ways of their use significantly increase learning curve for experimenters. A promising approach to the problem is automatic generation of target-specific code directly from a high-level experiment description. Semantic COordination for Rawfie (SCOR) builds upon the RAWFIE platform to assist experimenters by providing a semantics-based easy-to-use visual experiment flow editor with automatic code generator. With a goal to validate the approach, it would be used in proposed experiment that operates several UgVs, collects environmental data, processes the data for knowledge generation, and store the knowledge on the SCOR server. Reasoning over the acquired knowledge is than used to facilitate high-level coordination of autonomous UgVs in a complex mission.</p>	<p>RAWFIE-OC3-SCI</p>



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3	<p>FCD4ITS: Floating Car Data Collection for Intelligent Transportation Systems</p>	<p>The FCD4ITS project will deploy and execute a set of experiments using the RAWFIE vehicular testbeds to evaluate the performance of our own (and other state-of-the-art) Floating Car Data collection algorithms, in order to understand their properties in real-world settings. We will deploy automated large-scale real-world procedures using UGVs provided by the RAWFIE testbeds to evaluate the performance and applicability of our novel algorithms and compare them to the state of the art. RAWFIE testbeds will allow validation of the solutions in real-world settings, building on our existing simulation-based evaluations. We will also give feedback to RAWFIE on facilitating the automated execution of such experiments. Our work will help the research community to understand the limitations of simulations in targeted scenarios and adapt them to better reflect the real world. Our solid experience in fundamental and applied vehicular research will allow us to successfully complete these tasks.</p>	<p>RAWFIE-OC3-SCI</p>
4	<p>IAPETuS: Integrated Environmental Management Air Quality Monitoring System</p>	<p>Air Pollution (AP) is very important not only for health, but also reduces agriculture yields, increase atmospheric temperature etc. All above effects prove the need for continuous air quality monitoring (AQM). Typical methods for AQM consist of fixed monitoring stations, or sampling techniques, but these methods have not accurate results in natural ecosystems. So, the use of monitoring sensors embedded in UAVs is more realistic and efficient.</p> <p>Our proposal adapt UAV technology for measuring and monitoring AQ at protected areas by using small AP monitoring sensors, increasing accuracy and flexibility. TEI WG have significant experience in the study, management and monitoring of natural ecosystems including collection, processing and analysis of AP data.</p> <p>Output of the project will be the verification that RAWFIE platform can efficiently endorse the proposed experiment using available testbeds and infrastructure. Project's results (tools-methodologies-data) will be disseminated to research community and public, with ultimate goal</p>	<p>RAWFIE-OC3-SCI</p>



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		to extend the FIRE community into a federation that similar solutions are sustainable beyond the end of the RAWFIE project.	
5	CELLDRONE: Experimental validation of autonomous UAV operation over cellular networks	New and exciting applications for small unmanned aerial vehicles (UAVs) have attracted much attention from academia, industry, and regulation bodies. Cellular networks offer wide area, high speed, and secure wireless connectivity, which can enhance control and safety of UAV operations in beyond visual line-of-sight (BLOS) scenarios. In this context, the objective of this experiment is to assess if commercial cellular networks can ensure UAV’s high data connectivity in low altitude and BLOS operational scenarios. ALLBESMART will integrate in-house developed 4G probes and QoS/QoE analytics software in the RAWFIE infrastructure with the goal to monitor the aerial cellular network performance for different heights and propagation conditions. Several adaptive video streaming algorithms for UAV over 4G will be demonstrated. This experiment is a crucial step in ALLBESMART’s plan to develop a disruptive “drone-as-a-service” business model.	RAWFIE-OC3-SME
6	MultiTether: Multiple ground-steered, virtually-tethered UAVs for corridor mapping	<p>MultiTether aims at enhancing mapKITE, the total 3D mapping concept based on a tandem UAV-plus-car in which the UAV follow the car by a virtual (waypoint-based) tether, with the capability of including multiple aerial nodes (i.e. UAVs) that cooperate in-flight for corridor mapping missions. This project will therefore research and rehearse on a novel aerial mapping paradigm.</p> <p>As a creator and patent-holder of mapKITE, GeoNumerics blends the necessary elements to materialize mapKITE operations and, in the MultiTether project, will contribute to RAWFIE with an experiment in which (at least) two UAVs and a terrestrial vehicle cooperate to acquire geodata and, later, post-process it to deliver 3D accurate geoinformation. MultiTether paves the way to RAWFIE’s primary goal of supporting domain-specific real-world applications for SMEs (in this case, aerial corridor mapping) and enables the promotion of RAWFIE within the geomatics, photogrammetry and mapping communities.</p>	RAWFIE-OC3-SME



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7	<p>Aerial Insights: Real time engine map generation and analytics from raw aerial imagery</p>	<p>Processing drone data with today’s state-of-the-art solutions is technically challenging and, in some cases, cost prohibitive.</p> <p>Data processing indeed requires expensive software, dedicated hardware as well expertise in multiple highly technical areas. We have estimated an investment of 25K/year is required for physical resources, software and man hours to establish and provide drone-based services. While growing and/or already established actors can afford this price, freelancers and SME (representing 80% of the commercial drone companies in Europe) cannot. This situation has become an important obstacle to enter the drone service industry and is the main reason why our team decided to enter the market.</p> <p>The RAWFIE initiative is at the forefront of research and innovation, and in several ways ahead of industry but is also exposed to the previous challenge. Even if users of the platform may be technically savvy, many of them will lack the skills and knowledge required to produce maps and 3D reconstructions from raw UAV imagery.</p> <p>Other may simply be interested in taking advantage of ready to use facilities and setting up their own processing pipelines is an undesired overhead.</p> <p>We believe the piloting, sensing, storage and analytics capabilities of RAWFIE can be supercharged by enhancing its current architecture with a processing pipeline that: 1) offers methods to generate both maps and 3d reconstructions from unprocessed aerial footage; 2) under the right conditions, provides in-flight real time feedback such as map previews, quality checks, etc; 3) based on the previous, exposes a stable platform to use pre-packaged and develop new image processing capabilities, in many cases, inspired on the requirements of the industry.</p>	RAWFIE-OC3-SME
8	<p>MARE: MARitime SafEty</p>	<p>In this proposal, the RAWFIE platform will be used to mobilize USV resources for the safety monitoring of a specified water area, gathering information of possible dangerous objects and</p>	RAWFIE-OC3-SME



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		<p>informing the personnel of the Control Center to take further actions, if needed. End user is a naval administration office, responsible of safety in the naval base. On a periodic or ad hoc basis, the Control Center (CC) wants to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Make a scan of the whole area using a USV resource, gather all the available optical data of the area <input type="checkbox"/> Automatically detect the presence of foreign objects on water’s surface <input type="checkbox"/> Keep track, and continually send real-time images of the foreign object <p>In this way the CC can proceed with appropriate actions, send manned boats with base’s personnel, in case a real dangerous object is detected.</p>	
9	ORTUS: Object Recognition Through UAV Sensing	<p>Our proposal aims at experimenting a deep learning algorithm, to recognize automatically objects in aerial video images taken by UAVs.</p> <p>The final aim is to enhance the functionalities of our existing traffic monitoring solution that will be then able to recognize in real time different kind of vehicles driving in the roads (cars, motorbikes, buses, lorries...).</p> <p>Object detection and recognition in video streams through deep learning algorithms is a state-of-the art technology and paradigm in computer vision.</p> <p>The RAWFIE system will allow to build up a specific dataset with aerial images to train a newly implemented Neural Network (NN) and to test the NN itself for recognizing objects in video stream.</p> <p>The results of our experiments will be available for public dissemination and the software implemented is available for the RAWFIE community, as a starting point for further experimentation with deep learning algorithms</p>	RAWFIE-OC3-SME

Figure 1 below presents the scores of the selected proposals for each criterion. The scores depicted are the cumulative scores of each criterion, calculated as the sum of the scores of the three reviewers for the criterion.



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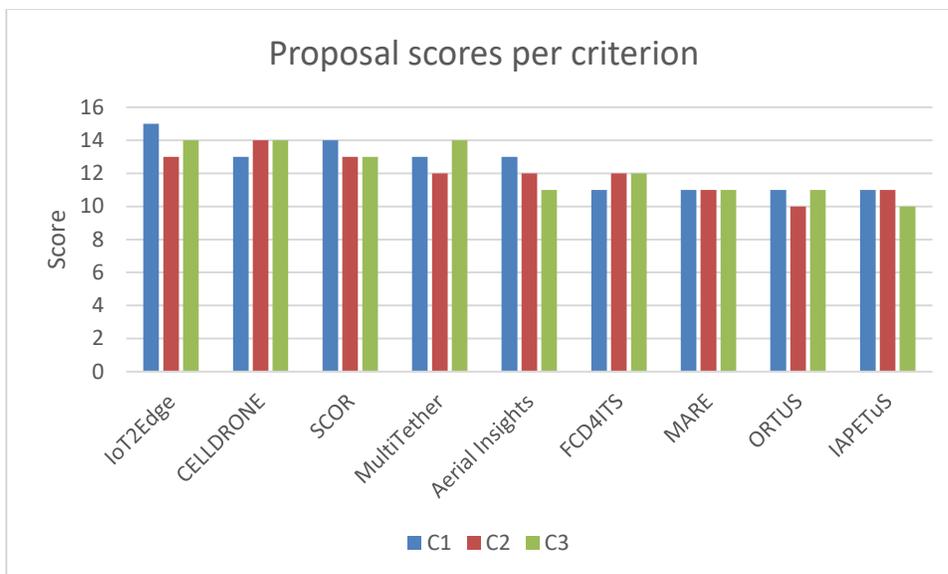


Figure 1: Proposal scores by criterion

Figure 2 shows the total scores of the selected proposals. The scores depicted are the sum of the cumulative scores of the three criteria for each proposal, calculated as the sum of the scores of the three reviewers for each criterion.

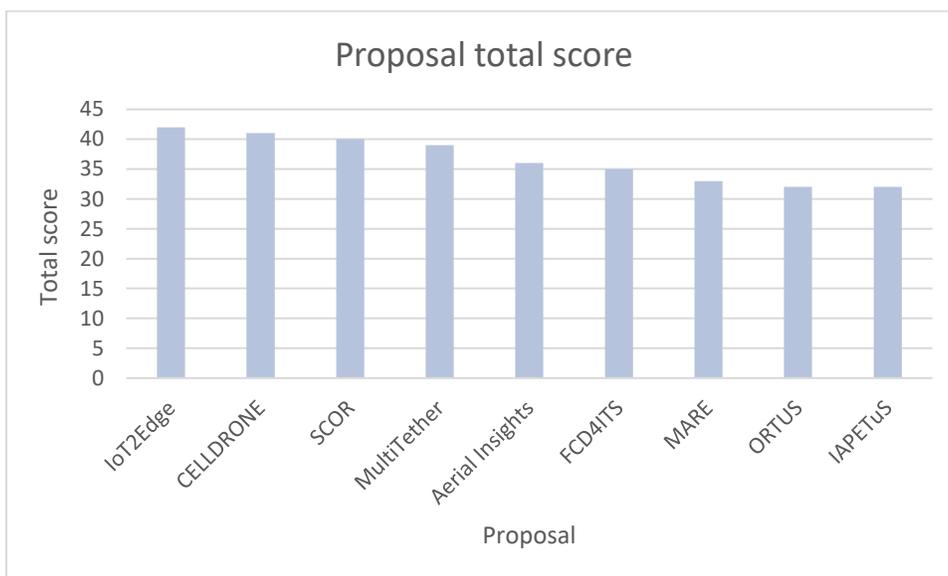


Figure 2: Proposal total scores



D8.5: Open Calls, Report on Selection (c)

As it is depicted in Figure 3, 75% of the proposals were scored above threshold (>30), with 42% of the proposals receiving a total cumulative score greater than 35.

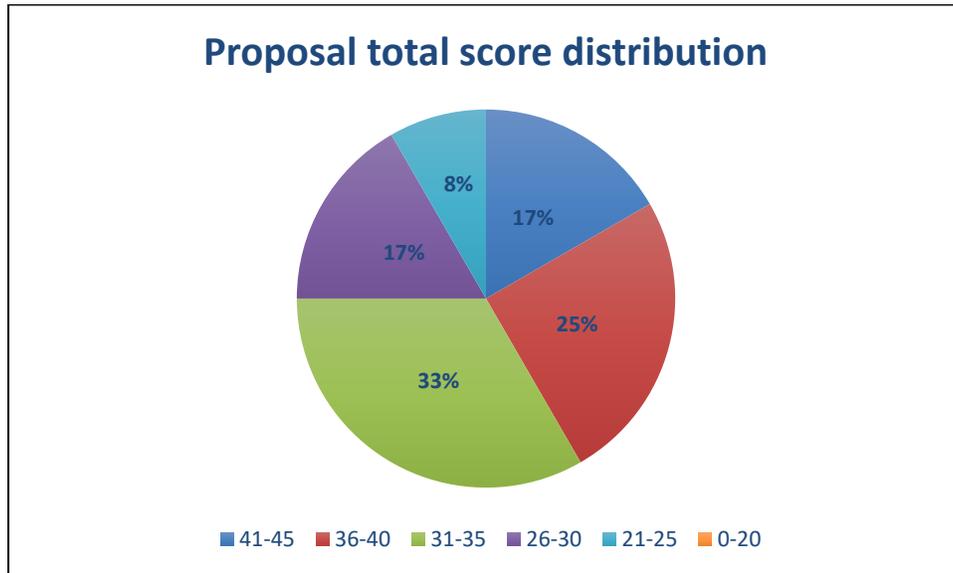


Figure 3: Proposal total score distribution

6 Annex–Tables

A1. RAWFIE Open Call 3 Announcement

Open Call announcement

Announcement of the 3rd RAWFIE Open Call for recipients of financial support



Project acronym: RAWFIE

Project grant agreement number: 645220

Project full name: Road-, Air-, Water-based Future Internet Experimentation

Project RAWFIE (www.rawfie.eu), co-funded from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 645220, foresees as an eligible activity the provision of financial support to third parties, as a means to achieve its own objectives.

The types of activities that qualify for receiving financial support are the following:

- Experimentation (software)
 - Scientific Excellence (RAWFIE-OC3-SCI) – **feasibility check is needed**
 - Innovation by SMEs (RAWFIE-OC3-SME) – **feasibility check is needed**

Feasibility check deadline: 27 November, at 17:00 CEST (Brussels local time)

Final submission deadline: 27 December 2017, at 17:00 CET (Brussels local time)

Expected duration of participation: 10 months (starting from March, 2018 to December, 2018)



D8.5: Open Calls, Report on Selection (c)

Maximum amount of financial support for each proposal: € 100 000 for RAWFIE-OC3-SCI, € 75 000 for RAWFIE-OC3-SME

Call identifier: RAWFIE-OC3 call

Language in which proposal should be submitted: English

Web link for further information (full call text/proposal guidelines/call results):

<http://www.rawfie.eu/content/open-call-no-3>

Email address for further information: rawfie-contact@cnl.di.uoa.gr

[Please use the respective call identifier in the subject of your email (RAWFIE-OC3-SCI, RAWFIE-OC3-SME)]

Tel: (+30) 2107275148, (+30) 2107275127

Eligibility of proposers and evaluation conditions:

- Proposals will only be accepted from a single party eligible for participation in the EC H2020-projects.
- Evaluation and ranking will be carried out by an external jury of individual experts.
- Multiple proposals may be submitted by the same party. In case that multiple proposals coming from the same party pass the funding limits, RAWFIE Consortium has the right to decide which one of them will be accepted for funding.
- Successful applicants of the 1st and 2nd RAWFIE Open Calls are not eligible to participate.

Other conditions:

- Proposals must follow the provided **template**.
- Proposals must be submitted through the **EasyChair** system.
- Once a proposal is positively evaluated for funding, the respective proposer will be contracted by the project coordinator (UoA) as **Third Party**.

6.1 Call Objectives

RAWFIE (Road-, Air- and Water- based Future Internet Experimentation) is a project funded by the European Commission (Horizon H2020 programme) under the FIRE initiative aiming to provide research and experimentation facilities through the growing domain of unmanned networked devices. The [FIRE initiative](#) (Future Internet Research and Experimentation) creates an **open research environment** which facilitates strategic research and development of new Future Internet concepts, giving researchers the tools they need **to conduct large-scale experiments** on new paradigms.

The purpose of the RAWFIE project is to create a federation of different testbeds that will work together to make their resources available under a common framework. Specifically, it aims at delivering a unique, mixed experimentation environment across the space and technology dimensions. RAWFIE integrates numerous testbeds for experimenting in vehicular (road), aerial and maritime environments. Vehicular Testbeds (VT) will deal with Unmanned Ground Vehicles (UGVs) while Aerial Testbeds (AT) and Maritime Testbeds (MT) will deal with Unmanned Aerial Vehicles (UAVs) and Unmanned Surface Vehicles (USVs), respectively. The RAWFIE



D8.5: Open Calls, Report on Selection (c)

Consortium includes all the possible actors of this highly challenging experimentation domain, from technology creators to integrators and facility owners. The basic idea behind the RAWFIE effort is the automated, remote operation of a large number of robotic devices (UGVs, UAVs, USVs) for the purpose of assessing the performance of different technologies in the networking, sensing and mobile/autonomic application domains. RAWFIE features a significant number of UxV nodes for exposing the experimenter to an extensive test infrastructure. All these items are managed by a central controlling entity, which will be programmed per case and fully overview/drive the operation of the respective mechanisms (e.g., auto-pilots, remote controlled ground vehicles). Internet connectivity will be extended to the mobile units to enable the remote programming (over-the-air), control and data collection. Supportive software for experiment management, data collection and post-analysis will be virtualized to enable experimentation from anywhere in the world. The vision of Experimentation-as-a-Service (EaaS) is promoted through RAWFIE. The IoT paradigm is fully adopted and further refined for supporting highly dynamic node architectures.

The objective of the *3rd RAWFIE Open Call* is to support cross-domain or domain-specific real-world applications and experiments (RAWFIE-OC3-SCI, RAWFIE-OC3-SME). Each proposal should target at **exactly one** of the two types of activities (we call them directions of enhancement) as stated in the next paragraphs. All the proposals should fully comply with the public Deliverables (can be found [here](#)) that have been produced so far by the RAWFIE Consortium and provide system requirements as well as technical description and implementation details for the RAWFIE architecture and specific components.

The submission phase of the experimentation proposals will take place in two stages. In the first stage, the proposing party has to submit a draft, but fully completed, proposal describing the experiment by 27 November using the online submission system. In this stage, all parts of the proposal should be completed and the RAWFIE consortium will check the feasibility of the proposed experiment (i.e., if the experiment can be supported sufficiently by the existing infrastructure, proposed devices and testbeds or further extensions are needed). RAWFIE consortium will provide feedback on the feasibility check to the proposer before December, 22nd. The feedback of the feasibility check has to be included in the respective part of the proposal template by the proposer during the final submission step. The proposer should perform only minor revisions on the proposal during the final submission stage (i.e., the core parts of the experiment should remain unchanged). During the feasibility check, no evaluation of the experiment will be performed. The independent experts that will perform the actual evaluation of the proposals will be advised to reject proposals with significant differences between the two stages.

The actual testbeds that will host the successfully evaluated experiments will be decided by the RAWFIE Consortium taking into account the needs of the experiments and the availability of RAWFIE testbeds and resources. Hence, the testbed indicated by the proposer in the proposal is only an indication and it is not restrictive for the RAWFIE consortium.



D8.5: Open Calls, Report on Selection (c)

	Identifier	Category	Call Budget	Max budget per proposal	Expected type of applicant	Expected proposal
EXPERIMENTATION	RAWFIE-OC3-SCI	Scientific Excellence	€ 500.000	€ 100.000	Academia, research institute, industry (not SME), public body	Extensive cross-domain / horizontal or domain-specific experiments and supportive software
	RAWFIE-OC3-SME	Innovation by SMEs	€ 400.000	€ 75.000	Small and Medium Enterprises	Extensive cross-domain / horizontal or domain-specific experiments and supportive software
		Total funding	€ 900.000			

- **Activity / Direction of enhancement 1: Scientific Excellence.**

RAWFIE comprises software architectures and developments for experimentation management, data collection and post-analysis. Virtualization is used to enable remote experimentation from everywhere in the world. The infrastructure has been enriched with additional equipment and testbed facilities via the first two Open Calls. In this 3rd Open Call, the project solicits for proposals that design and deploy extensive horizontal or domain-specific experimentation (experiment design & implementation, supportive software, data analysis, data visualization, etc.) that will leverage data and resources from RAWFIE testbeds and devices in the context of mobile IoT paradigm. **The experiments should come with a concrete plan on their scientific added value and the novelties that the experiment will bring in the scientific and research community (i.e., the new technologies and methodologies validated through the experiment, the new datasets it creates, etc.).**

All types of experimental applications should be based on RAWFIE tools and should come with additional features (e.g., post analysis of data, visualization tools) or software needed for further data processing. Horizontal experiments may refer to cross-domain applications and software (e.g., experimentation over a novel network protocol, information dissemination schemes, distributed architectures, data analysis methodologies, trust and reputation algorithms, security features, etc.).



D8.5: Open Calls, Report on Selection (c)

Supportive software should be connected with RAWFIE architecture to become available, if needed, for other types of applications and experiments. In all categories, the adoption of open technologies, specifications and standards (including open source software and Semantic Web technologies) that will enable the openness of the RAWFIE platform towards possible future expansion is strongly recommended.

Proposals should describe **experiments and applications** that validate novel technologies connected with the mobile IoT concept and its integration with Cloud and Robotics paradigms that clearly advance the current state-of-the-art and create added value at technology and research level. Based on the RAWFIE application creation tools, the experiments will design, implement and validate a number of proof-of-concept scenarios that could potentially be applied across several or specific application domains.

This software and the experiments should be of a short duration (a maximum of 10 months) starting from March 2018. Per proposal a budget can be requested for **up to a maximum of €100K**. The applicant should be **academia, industry (not SME) or a public body**.

- **Activity / Direction of enhancement 2: Innovation by SMEs.**

RAWFIE comprises software architectures and developments for experimentation management, data collection and post-analysis. Virtualization is used to enable remote experimentation from everywhere in the world. The infrastructure has been enriched with additional equipment and testbed facilities via the first two Open Calls. In this 3rd Open Call, the project solicits for proposals that design and deploy extensive horizontal or domain-specific experimentation (experiment design & implementation, supportive software, data analysis, data visualization, etc.) that will leverage data and resources from RAWFIE testbeds and devices in the context of mobile IoT paradigm. **The experiments should come with a concrete business model (i.e., how the results of the experiment may be transformed into profits for the company) and what kind of new markets the experiment may open.**

All types of experimental applications should be based on RAWFIE tools and should come with additional features (e.g., post analysis of data, visualization tools) or software needed for further data processing. Horizontal experiments may refer to cross-domain applications and software (e.g., experimentation over a novel network protocol, information dissemination schemes, distributed architectures, data analysis methodologies, trust and reputation algorithms, security features, etc.). Supportive software should be connected with RAWFIE architecture to become available, if needed, for other types of applications and experiments. In all categories, the adoption of open technologies, specifications and standards (including open source software and Semantic Web technologies) that will enable the openness of the RAWFIE platform towards possible future expansion is strongly recommended.

Proposals should describe **experiments and applications** that validate novel technologies connected with the mobile IoT concept and its integration with Cloud and Robotics paradigms that clearly advance the current state-of-the-art and create added value at technology and research level. Based on the RAWFIE application creation tools, the experiments will design, implement and validate a number of proof-of-concept scenarios that could potentially be applied across several or specific application domains.

This software and the experiments should be of a short duration (a maximum of 10 months) starting from March 2018. Per proposal a budget can be requested for **up to a maximum of €75K**. The applicant should be an **SME**.



Expected Timeplan

The following table provides an indicative timeplan for the two types of activity expected to be targeted by the proposals of the present open call.

Type of Activity	Expected Timeplan	Stage Description
Experimentation	<p>First prototype stage: Months 1 - 5.</p> <p>Final delivery stage: Months 6 - 9.</p> <p>Full demonstration stage: Month 10.</p>	<p>A first prototype of the experiment will be provided to the RAWFIE Consortium and an initial integration with RAWFIE platform will be demonstrated.</p> <p>The finalized version of the software completely integrated and tested with RAWFIE infrastructure is delivered.</p> <p>Full demonstration to dissemination events. Minor modifications are expected according to the feedback of the consortium.</p>

The proposals are expected to propose their own plan of documentation and deliverables that will be provided to the RAWFIE Consortium. The implementation plan will be subject to the evaluation criterion C3 (“Ability to implement”). The successful beneficiaries will be invited to refine and implement the final plan with the project coordinator and the other collaborators.

6.2 Practical Information

Total budget: up to € 900,000

Expected number of proposals to be funded: up to 10 (estimated)

Maximum Commission funding per proposal: € 100 000 for RAWFIE-OC3-SCI, € 75 000 for RAWFIE-OC3-SME

Number of partners per proposal: Proposals should be submitted by single parties only. Consortia consisting of two or more partners will not be accepted.

Type of participants: The profile of participants targeting Activity 1 could be academics or industries with RTD department (not SMEs), and all kinds of private or public bodies active in the domains of IoT , Robotics, Autonomous Systems, Networking or Cloud Computing. The participants targeting Activity 2 should be SMEs. The rules of participation are the same as those applied to any H2020 project.

Duration of the contract: 10 months (starting from March, 2018 to December, 2018)

Language of the proposal: English

Proposal page limits and layout: According to the provided template, each proposal should consist of two distinct sections; Part A and Part B. Part A provides administrative information for



D8.5: Open Calls, Report on Selection (c)

the proposing party, while Part B provides information about costs, proposed plan and methodology, implementation and impact. Part B of each submitted proposal should not exceed 30 pages length including cover page, abstract, table of contents, and sections B0, B1, B2, B3 of the provided template. There is no automatic check in the system. Experts will be instructed to disregard any excess pages in each section in which the maximum number of pages is indicated. The minimum font size allowed is 11 points. The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers). Ensure that the font type chosen is clearly readable (e.g., Arial or Times New Roman). There is no page limitation for Part A since it consists of administrative forms. A single document containing both parts A and B should be submitted.

Feasibility check deadline: 27 November, at 17:00 CEST (Brussels local time)

Final submission deadline: 27 December 2017, at 17:00 CET (Brussels local time)

Contact for information on this call: Prof. Stathes Hadjiefthymiades (UoA)

email: rawfie-contact@cnl.di.uoa.gr

6.3 Eligibility

Proposals may only be submitted by:

- Parties eligible for participation in the EC Horizon 2020 Framework Programme. Rules for eligibility can be found at:
http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-a-countries-rules_en.pdf
- Single parties only.

A party may participate and submit multiple proposals. In case that multiple proposals coming from the same party pass the funding limits, RAWFIE Consortium has the right to decide which one of them will be accepted for funding.

6.4 Evaluation Criteria

Evaluation and ranking will be carried out by an external jury of individual experts. Proposals for third party funding will be evaluated against the following criteria:

C1. Relevance to the project architecture and technological excellence

All the contributions of third parties are intended either to enhance the current RAWFIE architecture or bring new value to it through novel experimentation. Therefore, the proposals should adhere to the requirements of the platform, and build on top of the existing framework. This criterion assesses the compliance of each proposal with RAWFIE technologies and adopted approaches. The technological excellence of the proposed solution and the level of integration with RAWFIE tools and platform are also evaluated. The quality of the proposed solutions will also be



D8.5: Open Calls, Report on Selection (c)

evaluated (e.g., scientific quality, technological excellence, complexity and innovation of the experiment, etc.).

C2. Impact

The funded proposals' impact (both on the project and in general) is evaluated. The open call seeks proposals which provide high added value. Proposals should enable possible future follow-up experiments and support the sustainability of the federated architecture. Market potential of the proposals as well as their ability to provide significant value to the end-users will be taken into consideration. The funded third parties will also have to integrate their proposals outcome into the current RAWFIE infrastructure and maintain a connection to the RAWFIE Consortium until the end of the project. Further integration into a future RAWFIE federation is a major target for the project. In this context, this call also searches for participants that will stay active beyond the project lifetime. Hence, proposals with high levels of engagement with RAWFIE and the FIRE community will be promoted. The same stands with proposals that foresee and enable possible synergies with other H2020 projects and/or nationally funded activities. In the context of supported experiments, RAWFIE will promote innovation and excellence both in terms of horizontal cross-domain experiments and real-world domain-specific applications.

C3. Ability to implement

The proposers will be evaluated on their ability to implement the tasks. The experience and the technical capacity of the applicant(s) are of high importance. The proposed implementation plan should be clear and methodically sound, with a clear task statement, a solid design, a good methodology and of high quality. Participants are expected to propose a concrete plan that enables them to achieve the project goals during the given time-frame. The successful beneficiaries will be invited to refine and implement the final plan with the project coordinator and the other collaborators.

Each of the criteria is evaluated in a scale of 0-5. The threshold for each of the criteria is 3. The threshold for the total evaluation is 10.

In case of possible ties in ranking, the above criteria will be considered as listed in order of importance, i.e., criterion 1 is ranked higher than criterion 2, etc.

Redress

A third party (or consortium of 2 parties) may submit a redress request to the project coordinator within 7 days of the announcement of the evaluation and funding results. The redress request may involve only the procedural aspects of the evaluation. The request will be evaluated by the project Quality Control Board, a committee of 5 representatives of different project partners, and responded to within 10 days of its reception.



A2. RAWFIE Open Call for Reviewers Registration Form



Road-, Air- and Water- based Future Internet Experimentation

Home | About | Open Calls | Partners | RAWFIE Facilities | Documents | Contact

Search

f t in

Reviewer Registration

PERSONAL INFORMATION

Title *

First name *

Last name *

Gender *

Date of birth *

Nationality *

Country of residence *

CONTACT INFORMATION

Address Line 1 *

Address Line 2

Postal Code *

P.O. Box

City *

E-mail *

Phone *



D8.5: Open Calls, Report on Selection (c)

Mobile phone	<input type="text"/>
Fax	<input type="text"/>

CURRICULUM VITAE

Degree level *

To select your degree level refer to the legal status of your degree in your country.

Core expertise

Additional expertise

Upload CV No file chosen

Please upload your CV (mandatory if interested in becoming RAWFIE expert).

Files must be less than 2 MB.

Allowed file types: **txt pdf doc docx odt**.

Professional Webpage

ORGANISATION DETAILS

Affiliation

Please provide details on your primary organisation of affiliation.

Sector *

Do you work in the national headquarters of your organisation? * Yes No

Name of Institution *

Department / Unit / Laboratory Name

Specify the name of your Unit, Laboratory, Faculty or other internal division to which you belong, if any

Address Line 1 *

Postal code *

P.O. Box

City *

Country *

Website of Organisation

Position/Job Title

I acknowledge that the information entered is correct and up-to date



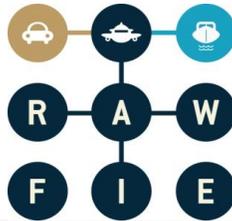
This project is funded by the European Commission (FIRE+ challenge, Horizon 2020) that aims to provide research and experimentation facilities through the growing domain of unmanned networked devices.

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A3. RAWFIE Open Call 3 Proposal Template



Road-, Air- and Water- based Future Internet Experimentation

PROPOSAL PART A	
Response to the 3rd Open Call of the RAWFIE Project Call Identifier: RAWFIE-OC3	
Proposal Title:	
Proposal Acronym:	
Addressed activity (exactly one):	

Name of Responsible person: [person name, organisation] _____

e-mail: [Contact email] _____

Phone number: [Contact phone number] _____

Proposing Party:

Participant no.*	Participant organisation name	Participant short name	Country
1			



Form for Applicants

Form for “Non Exclusion Declaration”**Certification and Declaration on Honour****I certify**

- that our organisation is committed to be contracted as a Third Party in the above mentioned project (Road-, Air-, Water-based Future Internet Experimentation, RAWFIE);
- that the information relating to our organisation set out in the A2 forms is accurate and correct;
- that the estimated costs meet the criteria for eligible costs for RAWFIE project and your normal cost accounting principles, and that they reflect the estimated costs expected to be incurred in carrying out the work described in Part B of the proposal (Description of work).

I declare on my honour that our organisation fully satisfies the conditions specified in Article 15 (*Financial support to third parties*) of the H2020 General Model Grant Agreement. I also certify that our organisation will comply to the obligations specified under Art 35 (*Conflict of interest*), 36 (*Confidentiality*), 38 (*Visibility of EU funding*) and 46 (*Liability for damages*) also apply to the third parties receiving financial support.

[Signature]

[Name First name(s)]

[Full Legal Name of organisation]

[Date]

Stamp of organisation and Signature of the legal representative of the organisation



RAWFIE: Road-, Air-, and Water-based Future Internet Experimentation

Project funded by the EU under the H2020 Framework Programme – Future Internet Research and Experimentation (FIRE+)

Grant n. 645220

RAWFIE: Open Call for Infrastructural Enhancements Call identifier: **RAWFIE-OC3**

Form for Applicant

Your Proposal

Proposal Title

Date of preparation of your proposal

Your Organisation

Participant Identity Code (if your Organisation is already registered for H2020)

Participant Legal name

Participant short name

Official Address

Street name

Number

Town

Postal Code

Country

Internet homepage (optional)

Status of Your Organisation

Non-profit Organisation (yes/no)



Public body (yes/no)	<input type="text"/>
----------------------	----------------------

Research Organisation (yes/no)	<input type="text"/>
--------------------------------	----------------------

Higher or secondary education establishment (yes/no)	<input type="text"/>
--	----------------------

Industry (if applicable)

Is your number of employees smaller than 250? (full time equivalent (yes/no)	<input type="text"/>
--	----------------------

Is your annual turnover smaller than EUR 50 million? (yes/no)	<input type="text"/>
---	----------------------

Is your annual balance sheet total smaller than EUR 43 million? (yes/no)	<input type="text"/>
--	----------------------

Are you an autonomous legal entity? (yes/no)	<input type="text"/>
--	----------------------

Following this check, do you conform to the Commission's definition of an SME (yes/no)	<input type="text"/>
--	----------------------

Dependencies with (an)other participant(s)

Are there dependencies between your organisation and (an)other participant(s) in this proposal? (yes/no)	<input type="text"/>
--	----------------------

If yes:

Organisation short name	<input type="text"/>
-------------------------	----------------------

Character of dependence* (SG/CLS/CLB)	<input type="text"/>
---------------------------------------	----------------------

Contact Point (Coordinating person for the Proposal)

Family Name	<input type="text"/>
-------------	----------------------

First Name	<input type="text"/>
------------	----------------------

Position in Organisation	<input type="text"/>
--------------------------	----------------------

Department Name	<input type="text"/>
-----------------	----------------------

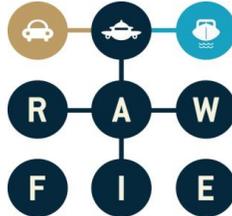


RAWFIE OPEN CALL 3

[Review report]

Street name	<input type="text"/>
Number	<input type="text"/>
Country	<input type="text"/>
Phone number	<input type="text"/>
email	<input type="text"/>

- * SG: Same group: if your organisation and the other participant are controlled by the same party;
- CLS: Controls: if your organisation controls the other participant;
- CLB: Controlled by: if your organisation is controlled by the other participant



**Road-, Air- and Water- based
Future Internet Experimentation**

PROPOSAL PART B	
<p>Response to the 3rd Open Call of the RAWFIE Project Call Identifier: RAWFIE-OC3</p>	
Proposal Title:	
Proposal Acronym:	
Addressed activity (exactly one):	

Name of Responsible person: [person name, organisation] _____

e-mail: [Contact email] _____

Phone number: [Contact phone number] _____

Proposing Party:

Participant no.*	Participant organisation name	Participant short name	Country
1			



Proposal Abstract

This section should provide a maximum of 1000 characters summary of Part B, describing in particular:

- *the relevant features of the proposal;*
- *the strengths of the proposal, and its contribution to the objectives of the 3rd Open Call of RAWFIE as well as the overall goals of the RAWFIE project;*
- *the strengths of the applicant.*



TABLE OF CONTENTS

Use this page to present the overall structure of the document.



B0. Cost and funding breakdown

Complete the table below.

Please show figures in euros (not thousands of euros).

Organisation Name: *(enter organisation name)*

	RTD	Other	Management	Total
1. Personnel costs				
2. Other direct costs				
3. Total direct costs (Sum of row 1 and 2)				
4. Indirect costs				
5. Total costs (Sum of row 3 and 4)				
6. Requested EC contribution				

In row 1, insert your personnel costs for the work involved, differentiating between:

RTD activities: *Activities directly aimed at addressing a topic of the call. Each topic will deal with a set of functionalities to be supported by the RAWFIE Platform. Proposals should address the definition of open and royalty-free specifications, as well as the development of a reference implementation, of new components in the RAWFIE Platform that will cover these functionalities.*

Other activities: *any specific activities not covered by the above mentioned types of activity such as training, coordination, networking and dissemination (including publications). These activities should be specified later in the proposal.*

Management activities *include the maintenance of the Third Party contractual agreement, if it is obligatory, the overall legal, ethical, financial and administrative management including for each of the participants obtaining the certificates on the financial statements or on the methodology, and, any other management activities foreseen in the proposal except coordination of research and technological development activities.*

In row 2, insert any other direct costs, for example equipment or travel costs.

In row 3, calculate the sum of your personnel and other direct costs.

In row 4, insert your indirect (overhead) costs.

Indirect costs *are all those eligible costs which cannot be identified by the participant as being directly attributed to the project but which can be identified and justified by its accounting system as being incurred in direct relationship with the eligible direct costs attributed to the project. You should use a uniform 25% flat-rate of your eligible direct costs (row 3 of the table).*



In row 5, calculate the sum of your direct and indirect costs.

In row 6, insert your requested EC contribution

***RTD activities:** you may request up to 100% of the total cost figure.*

***Other, Management:** you may request up to 100% funding*

***Note:** If you are successful in the evaluation, your final costs and funding estimates will also be subject to legal and financial verification by the Commission services*



B1. Proposed Plan

B1.1. Objectives and approach

Make sure that the proposal addresses exactly one of the directions of enhancement specified by the call.

Describe in detail how you propose to address the objectives of the targeted topic of the RAWFIE Open Call 3. It is suggested that you provide a concrete description of the proposed approach and the exact means that will be used to fulfil the project needs related to the addressed topic.

For each of these objectives, please specify if you plan to rely your work on an existing technology/product.

B1.2. Progress beyond the state of the art

Describe how your proposed approach compares with, and represents a step beyond, the state of the art.

B1.3. Methodology and associated work plan

A detailed work plan should be presented, broken down into work packages (WPs).

Please present your plans as follows:

- i) Describe the overall strategy of the work plan*
- ii) Describe how this plan will be executed along the project duration.*
- iii) Provide a detailed work description broken down into WPs:*
 - *WP list (please use table 1.2a);*
 - *Description of WPs target to dissemination, take up of RAWFIE results and networking (therefore classified as Other). Please use description form provided in Table 1.2b.*
 - *Description of RTD WPs if any. Please use description form provided in Table 1.2b.*
 - *Description of a Management WP describing how you plan to carry out overall management of activities. Note that technical coordination of RTD activities are not considered as Management.*
- iv) Provide a graphical presentation of the Work Packages showing their interdependencies (Pert diagram or similar)*

Note: The number of work packages used must be appropriate to the complexity of the work. The planning should be sufficiently detailed to justify the proposed effort and allow progress monitoring by the RAWFIE project coordinator.



Very important note:

Proposals should plan to start beginning of March, 2018 and last for 10 months.



Table 1.2a: Template - Work package list

Work package list

Work package No ⁴	Work package title	Type of activity ⁵	Person-months ⁶	Start month ⁷	End month ⁸
	TOTAL				

⁴ Workpackage number: WP 1 – WP n.

⁵ Please indicate one activity per work package:

RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities applicable in this call.

⁶ The total number of person-months allocated to each work package.

⁷ Measured in months from your action start date (month 1).

⁸ Measured in months from your action end date.



Table 1.2b: Template –Work package description

Work package number:	WP<x>	Start date or starting event:	M<x>	End:	M<y>
Work package title:	<WP name>				
Activity type:	<WP type> (RTD / OTHER / MGT)				
Participant Number:	1	2			
Participant Short Name:	<partner-1>	<partner-2>			

Objectives:

Description of Work:

Task <x>.1: <title of task>

Task <x>.2: <title of task>

...

Task <x>.n: <title of task>

Deliverables:

Following there is a list of deliverables and delivery dates for this WP. Deliverables follow numbering D.<i>.<j>.<n> where <i> designates the WP, <j> designates the deliverable within that WP and <n> identifies the release of the deliverable. Documents are tagged as (R) in “Nature” column, software for experimentation is tagged as (P) , hardware (e.g., robotic devices) is tagged as (H), and facilities are marked as (F) in the same column.



Deliverable Number	Deliverable Title / Description	Nature	Dissem. Level ⁹	Delivery Months
	<Deliverable title>. <deliverable description>.			x, y
...

Detailed allocation of effort (person months) -

Tasks	<partner-1>	<partner-2>	Total
<Task 1>			
<Task 2>			
...			
<Task n>			

⁹ Depending on the business model deliverables will have dissemination level 'PU' (publicly available) or 'PP' (private to the consortia and RAWFIE partners). In case of hardware and facilities, the dissemination level should be marked as 'PP'.



B2. Implementation

B2.1. Participants

Per participant, provide:

- *a brief description of the organisation,*
- *the previous experience relevant to the tasks the participant will undertake in the project.*
- *a short profile of the main individuals of the organisation who will be undertaking the work.*

B2.2. Resources to be committed

Describe how the totality of the necessary resources will be mobilised, including any resources that will complement the EC contribution. Show how the resources will be integrated in a coherent way, and show how your overall financial plan for the action is adequate.

Please identify any major non-personnel direct costs and explain why they are necessary for the activity you propose.



B3. Impact

B3.1. Expected impact

Describe how your activity will contribute towards a higher impact of the RAWFIE project. Mention the steps that will be needed to bring about these impacts. Mention any assumptions and external factors that may determine whether the impacts will be achieved.

B3.2. Evaluation of project results, and management of intellectual property

Describe the KPIs you propose for evaluating achievement of results.

If appropriate, describe your plans for the management of knowledge (intellectual property) generated in the course of the action (e.g., RTD activities covered).

B4. Ethical issues

Describe any ethical issues that may arise in the action, filling the following form

	YES	NO	PAGE
Informed Consent			
• Does the proposal involve children?			
• Does the proposal involve patients or persons not able to give consent?			
• Does the proposal involve adult healthy volunteers?			
• Does the proposal involve Human Genetic Material?			
• Does the proposal involve Human biological samples?			
• Does the proposal involve Human data collection?			
Research on Human embryo/foetus			
• Does the proposal involve Human Embryos?			
• Does the proposal involve Human Foetal Tissue / Cells?			
• Does the proposal involve Human Embryonic Stem Cells?			
Privacy			



<ul style="list-style-type: none"> Does the proposal involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction) 			
<ul style="list-style-type: none"> Does the proposal involve tracking the location or observation of people? 			
Research on Animals			
<ul style="list-style-type: none"> Does the proposal involve research on animals? 			
<ul style="list-style-type: none"> Are those animals transgenic small laboratory animals? 			
<ul style="list-style-type: none"> Are those animals transgenic farm animals? 			
<ul style="list-style-type: none"> Are those animals cloned farm animals? 			
<ul style="list-style-type: none"> Are those animals non-human primates? 			
Research Involving Developing Countries			
<ul style="list-style-type: none"> Use of local resources (genetic, animal, plant etc) 			
<ul style="list-style-type: none"> Impact on local community 			
Dual Use			
<ul style="list-style-type: none"> Research having direct military application 			
<ul style="list-style-type: none"> Research having the potential for terrorist abuse 			
ICT Implants			
<ul style="list-style-type: none"> Does the proposal involve clinical trials of ICT implants? 			
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL			



A4. RAWFIE Open Call 3 Annex

Annex 1: Resources to be committed to the 3rd RAWFIE Open Call

The following tables describe the resources, which will be made available to the 3rd Open Call by each testbed.

The actual testbeds that will host the successfully evaluated experiments will be decided by the RAWFIE Consortium taking into account the needs of the experiments and the availability of RAWFIE testbeds and resources. Hence, the testbed indicated by the proposer in the proposal is only an indication and it is not restrictive for the RAWFIE consortium.

Table 1: Testbeds to be made available for the 3rd Open Call and their existing synthesis in terms of UxVs. Over the next months, ALTU, DOGMA and IGMAC devices will be integrated with RAWFIE testbeds.

Testbed	Resources Available	UxV/activity type	Does your experiment require the testbed (Y/N)?
HAI	HAI’s industrial complex is located in Tanagra around 65 km North of city of Athens. The test-bed facility consists of a runway of around 500m which can be used for takeoff of wing UAVs. The available area will be appropriate for launching up to 10 UAVs (wing or helicopter)	(UAV Outdoor) 5 VENAC	
HMOD	Salamina straits, a narrow passage between Attica and the island of Salamina, in which the naval traffic is heavily regulated. The neighboring Naval Base of Skaramagkas is able to receive, inspect, launch and store USVs. It provides military grade emergency services (i.e. crash, fire or rescue) and has the appropriate radar facilities and systems for tracking and surveillance. In the context of the project, extra telemetry and control facilities will be set in order to accommodate the needs of the experiments.	(Mixed environment) 10 FLEXUS 3 Pladyfleet 7 NIRIIS 2 VENAC	
CATUAV	CATUAV / BCN DRONE CENTER provides testbed facilities consisting in a segregated air space of 25 square km, an airfield, a bioclimatic building and rural	(UAV Outdoor) CATUAV /BCN DRONE CENTER	



	terrain of 14 Ha ready to install and deploy a wide diversity of components and infrastructures, with no restrictions or limitations, that can cover a wide diversity of experiments related to UAVs and UGVs.	include the exclusive use of 2 UAVs for RAWFIE as UAV nodes.	
RT-ART	The testbed is ETOPIA, a center for Art and Technology, (16,000 m2) located in Zaragoza, Spain, and consists of three buildings linked together. There are five testbed options: <ul style="list-style-type: none"> • S1 - Entrance Hall of ETOPIA building (425.91 m2). • S2 - Experimental gallery (around 800 m2). • S3 - Residence. Two floors of total area around 375 m2. • S4 - Showroom (390 m2). • S5 - Building terrace (600 m2) 	(UGV Indoor) The testbed includes 4 TurtleBot2 devices	
MarEH4EU	DFKI RIC Maritime Exploration Hall (MarEH) in Bremen, Germany. This large (23x19x8m) basin is filled with salt water and allows to test surface and underwater vehicles	(USV Indoor) 7 PlaDyFleet 3 NIRIIS	
CESA DRONES	CESA provides 4 outdoor aerial testing sites: <ol style="list-style-type: none"> 1. Camp de Souge and HERM The main and permanent flight test area is located in Souge, near Bordeaux. It's a flexible restricted area with protection from industrial spying: 2800 ha reserved airspace, 2 000 feet above mean sea level and 800m paved runway. 2. HERM An access to this test area is given on demand, located in Herm (near Dax). 3. Vendays-Montalivet The third flight test area is located at VENDAYS Montalivet. It's a restricted military area, located on the Atlantic coast line, typically used for the training of Defense Ministry's General Delegation for Armaments (DGA) : 50 km of elongation and 7 km large allow long flight out of sight, 	(UAV Outdoor) 5 VENAC	



	<p>3 000 feet above mean sea and 600m x 15 m paved runway.</p> <p>4. Biscarrosse</p> <p>The last testbed area is located at 85km S/W of Bordeaux, on a civil air area, under security of civil aviation, and allows 15 km of elongation, and 5 km large, 600m x 30 m paved runway and 800 m x 30 m grass runway.</p>		
Aeroloop	<p>UAV simulation infrastructure based on a hardware-in-the-loop and software-in-the-loop approach, which will allow users to perform experiments in a flexible way, 24x7, without requiring any human on-site support</p>	UAV virtual facility / emulator	

Table 2: UxV devices to be made available for the 3rd Open Call

UxV Devices	Specification
NIRIIS	<ul style="list-style-type: none"> • Boat size (L x W x H): 1,3mm x 40mm x 30mm • Gross Weight: 9kg • Material: epoxy resin fiberglass • Power: High Power Lithium Polymer Battery • Motor: Water-cooled brushless • Operational range: 1000m • Endurance: Up to 2 hours • Speed: Up to 30km/h (8m/s) • Payload capacity: Up to 10kg • Steering: Off-set Rudder • Main Communication Frequencies: Main link:433MHz • Video Downlink: 1.2GHz • EO/Day Camera • IR Thermal Camera
PlaDyFleet	<ul style="list-style-type: none"> • Processing capabilities and data storage: NUC Intel Core i5, 1.6-2.7 GHz dual core, 3MB cache; SSD 120GB • Size and dimensions: 756x756x280 mm • Weight: 25 kg • Payload: 5 kg + water displacement • Battery: 12 V 600Wh AGM gel battery



	<ul style="list-style-type: none"> • Minimum and maximum autonomy: 2 -8 hours • Sensors: <ul style="list-style-type: none"> - Navigation – GNSS: Real Time Kinematic Global Positioning System (RTK GPS) - Navigation – Inertial: Inertial Measurement Unit (IMU) • Camera: Above water HD camera installed on all USVs • Underwater camera: Installed on one USV • Echo sounder: Single beam echo-sounder installed on one USV • Control software: ROS Indigo running Linux Ubuntu 14.04 • Compatibility with Apache Kafka architecture
VENAC	<ul style="list-style-type: none"> • Processing capabilities <ul style="list-style-type: none"> - Model: Raspberry Pi 3 Model B - CPU: ARMv8 Cortex-A53 BCM2837 64bit - Cores: quad-core - Speed: 1.2GHz - RAM: 1GB - Co-Processor: Dual Core VideoCore IV Multimedia 3D • Sensor types <ul style="list-style-type: none"> - GPS GNSS: U-blox M8N GPS - Dual IMU: 2 x Inertial Measurement Units, MPU9250 9DOF and LSM9DS1 9DOF - Barometer: 1 x MS5611 altitude sensing with 10cm resolution - Variometer: 1x-700~10000m with 0.1m (high precision version) resolution - Temperature sensor: FrSky TEMS-01 for system temperature
FLEXUS	<ul style="list-style-type: none"> • Processing capabilities (type of processors, number of cores, speed): 1.2GHz quad-core ARMv8 CPU or 2GHz quad-core ARM A15 + 1.5GHz quad-core ARM v7 + single board computer for communications • Size and dimensions: 1m long, 0.5m wide • Weight: 10kg (approx., depending on WiFi solution) • Payload capability: 10kg • Battery: 200 Wh, lithium polymer • Number and type of sensors: GPS receiver, IMU, video camera • Number and type of integrated network components and supported communication interfaces: 2 WiFi interface cards + 2 omni-directional antennas • Minimum and maximum autonomy of the device: 1.2 hours @ 2m/s (typical), 4.5 hours @ 1m/s (typical) • Auto-return capability (return to the base station automatically)



	<ul style="list-style-type: none"> • Ability of the vehicle to operate as an access point • (Remote) Control interface: QGroundControl, MAVLINK protocol • Operating Systems Linux / OpenWRT • Over-the-air programming capabilities: Yes, through Wi-Fi • Provision of collision avoidance mechanism: Optional • Compatibility with Apache Kafka architecture • Data storage of the vehicle: Minimum 16GB storage, extendable via USB drive • Support of “safe mode” operation • Localization capabilities (e.g., GNSS): GPS • Ability to operate in indoor/outdoor/mixed environments • Compliance with standards: MAVLINK, JAUS, ROS • Operational conditions (e.g., day/night) and temperature limitations: Night and day. Recommended maximum external temperature is 40 degrees Celsius
<p>ALTU</p>	<p>10 UGVs</p> <ul style="list-style-type: none"> • long range (>10Km) and short range (max 1.5Km) Remote Control systems and First Person View Audio/Video feeds, simultaneously over IP streaming and Analogue RF transmission to the Ground Control Stations • gimbal controlled HD and SD cameras with 0.0001 LUX minimum illumination capability • static and 360o long range Laser rangefinders and mapping scanners/radars for simultaneous localization, mapping and multi-directional collision avoidance • dual sensor (FLIR DUO) compact thermal and visible light imagers with live analogue and digital video output • simultaneous 2.4 GHz and 5 GHz WiFi 3x3 MIMO mesh networking Access Points with Mobile 4G/LTE Internet Connectivity and extended networking capabilities, like Firewall, Routing, VPN, etc.
<p>DOGMA</p>	<p>10 UAVs</p> <ul style="list-style-type: none"> • The Blackbird UAV platform combining the best from both worlds, featuring Flying wing type aircraft for agility and less failure points, with a fully composite construction usually met in larger airframes to ensure robustness and excellent flight



	<p>characteristics that mostly refer to a trainer type aircraft, inspired the DOGMA constructing team to build the Blackbird</p> <ul style="list-style-type: none"> • Flir Duo – dual - sensor thermal imager combines thermal imaging with 1080p color video, analog and digital HDMI live video outputs and real-time remote control of camera functions over PWM – plus MSX multi-spectral imaging enhancement (four units) • Parrot Sequoia - multispectral sensor that captures calibrated wavelength of Green, Red, Red-Edge and Near Infrared. (four units) • UAV - Short Range communication equipment (max 1500m from GCS) for Remote Control on the 2.4GHz band and Audio/Video transmission on the 5.8GHz band. With multipoint telemetry modem, capable of swarming. (four units) • UAV - Long Range communication equipment (>10000m from GCS) for Remote Control on the 800Mhz and Audio/Video transmission on the 1.3GHz band. With long range multipoint telemetry modem capable of swarming. (six units) • Dual day & night vision cameras at 45o angle view for area patrolling & surveillance, fire protection, real time monitoring, natural disaster damage assessment. (two units) • Provide fully configurable (open source) auto-pilot controller units on all of the UAVs capable of determining position, control actuators, stream all telemetry data back to the operators and be fully compatible with the Apache Kafka architecture for RAWFIEs AVRO communication protocol. • Offer highly dynamic architecture in all auto-pilot controller units that fully adapts to the IoT paradigm by integrating 3G/4G LTE, 2.4GHz WiFi internet connectivity, as well as UHF 900MHz telemetry modem, Bluetooth connectivity and FrSky 2.4GHz R/C wireless telemetry where each one enables remote programming, control and data collection in real-time.
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	<p>Supply of two (2) Ground Control Station units (GCS); ground-based portable station units where the control software application is running on and communicates with the UAVs via wired or wireless telemetry. The GCS units are also equipped with communication equipment for Audio/Video reception from the UAVs.</p> <p>Supply of four (4) Power Store and two (2) Station units for storing charging and discharging all batteries supplied for UAVs and GCS.</p>
IGMAC	<p>12 UAVs</p> <ul style="list-style-type: none"> • Remote Control systems and First Person View Audio/Video feeds via IP streaming to the RAWFIE management systems and Analogue RF transmission to the Ground Control Stations simultaneously. • 360o long range Laser rangefinders and mapping scanners/radars for simultaneous localization, mapping and multi-directional collision avoidance • dual sensor (FLIR DUO) compact thermal and visible light imagers with live analogue and digital video output • multispectral sensor (Parrot SEQUOIA) that captures calibrated wavelength of Green, Red, Red-Edge and Near Infrared. <p>simultaneous 2.4 GHz 2x2 MIMO WiFi Access Points with Mobile 4G/LTE Internet Connectivity and extended networking capabilities, like Firewall, Routing, VPN, etc.</p>

Annex 2: Experiment Work Plan and Timing

The submitted should sufficiently describe the experiment procedure, by covering the following sections:

1. Experiment design:

- Description of the experiment
- Use of the RAWFIE offered facilities
- Why the RAWFIE testbed is needed for the experiment
- Description of test scenarios, measurements and expected results of the experiment.



- In the case of new testbed extensions, the proposer should take over any implementation and integration activities

2. Experiment Setup

- Describe the experiment procedure.
- Which components will be used
- Implementation of the software to be used for the experiment

3. Experiment execution

- Experiment running and evaluation of the results

4. Reporting

- Reporting on the experiment outcome
- Recommendations for improvements on the RAWFIE platform

5. Dissemination

- Dissemination actions (conferences, workshops, FIRE events, etc.)
- Set up of Demonstrations to be used for further promotion of the RAWFIE facilities

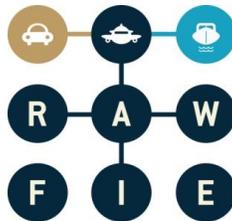
Timing:

- Duration: 10 months
- Major milestones:
 - Experiment design
 - Experiment set-up
 - Experiment execution
 - Experiment feedback
 - Dissemination, showcase

More information can be found on the project's website (<http://www.rawfie.eu/>).



A5. Evaluation Form – Evaluation Summary Report



**Road-, Air- and Water- based
Future Internet Experimentation**

REVIEW REPORT	
Response to the 3rd Open Call of the RAWFIE Project Call Identifier: RAWFIE OPEN CALL 3	
Proposal Acronym:	
Addressed activity:	



Total Score [0-15]:	
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<p>CR1: Relevance to the project architecture and technological excellence</p> <p><i>All the contributions of third parties are intended to enhance the current RAWFIE architecture. Therefore, the proposals should adhere to the requirements of the platform and build on top of the existing framework. This criterion assesses the compliance of each proposal with RAWFIE technologies and adopted approaches. The technological excellence of the proposed solution and the level of integration with RAWFIE tools and platform are also evaluated. The quality of the proposed solutions will also be evaluated (e.g., number of robotic devices, size and time availability of testbed facilities).</i></p>	
<p>Reviewers comments:</p> 	
Score [0-5]:	

<p>CR2: Impact</p> <p><i>The funded proposals' impact (both on the project and in general) is evaluated. The open call seeks proposals which provide high added value. Proposals should enable possible future follow-up experiments and support the sustainability of the federated architecture. Market potential of the proposals as well as their ability to provide significant value to the end-users will be taken into consideration. The funded third parties will also have to integrate their proposals outcome into the current RAWFIE infrastructure and maintain a connection to the RAWFIE Consortium until the end of the project. Further integration into a future RAWFIE federation is a major target for the project. In this context, this call also searches for participants that will stay active beyond the project lifetime. Hence, proposals with high levels of engagement with RAWFIE and the FIRE community will be promoted. The same stands with proposals that foresee and enable possible synergies with other H2020 projects and/or nationally funded activities.</i></p>	
<p>Reviewers comments:</p> 	
Score [0-5]:	

<p>CR3: Ability to implement</p> <p><i>The proposers will be evaluated on their ability to implement the tasks. The experience and the technical capacity of the applicant(s) are of high importance. The proposed implementation plan should be clear and methodically sound, with a clear task statement, a solid design, a good methodology and of high quality. Participants are expected to propose a concrete plan that enables them to achieve the project goals during the given time-frame. The successful beneficiaries will be invited to refine and implement the final plan with the project coordinator and the other collaborators.</i></p>	
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Reviewers comments:	
Score [0-5]:	