

Open Call #1

Guide for Applicants



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A Holistic Approach to Sustainable, Digital EU Agriculture, Forestry, Livestock and Rural Development based on Reconfigurable Aerial Enablers and Edge Artificial Intelligence-on-Demand Systems

The Members of the CHAMELEON Consortium:

























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DEFINITIONS

Term	Definition	
ESR	Each applicant will receive the evaluation result in the form of an Evaluation Summary Report.	
The lump sum is a simplified method of settling expenses in project financed from Horizon Europe funds. It means that you as a benefit are not required to present strictly defined accounting documents prove the cost incurred (e.g. invoices). However, you are obliged to demonstrate the implementation of the project in line with the deliverables set for it. It means that we will carefully assess your proposed in the quality of your work during Interim Reviews, not your accountancy. The deliverables will be fixed in the implementation elaborated at the beginning of the programme. The lump sum does release you from the obligation to collect documentation to confir costs under fiscal regulation. (https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/horizon/lump-stenders/opportunities/portal/s		
Open Call	Financial support for third parties in the framework of an EU funded project (https://webgate.ec.europa.eu/funding-tenders-opportunities/pages/viewpage.action?pageId=25559615).	
ОСМВ	The Open Call Management Board (OCMB) consisting of UNPARALLEL Innovation (UNP), Universidad de Salamanca (USAL) and Acceligence LtD (ACCELI), who are responsible for the good and timely execution of the sub-projects.	
Sub-grant agreement	A legal document signed between the third party(ies) and the OCMB that establishes all the terms and conditions for the sub-project's execution and financing.	
SMEs	Entities having up less than 250 employees and up to an annual turnover of 50 million € or up to a balance sheet total of 43 million €. Small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361 (https://single-market-economy.ec.europa.eu/smes/smedefinition_en).	
Third Parties Legal entities that participate in Horizon Europe by carrying out sort tasks in an action, but which do not sign the Grant Agreement (inclinentities linked to the beneficiaries). They are not bound by the term conditions of the Grant Agreement and consequently, the European Union (represented by the Commission or another funding body) he obligation vis-à-vis third parties. If necessary to implement the action beneficiaries may use contracts and sub-contracting for the purcha		



goods, works or services, in-kind contributions provided by third parties and also linked third parties carrying out tasks under an action.





INTRODUCTION

This document is a guide for the CHAMELEON Open Call #1 applicants. It provides a comprehensive explanation of the goals, expectations and requirements for the third parties interested in participating in this open call programme. All the info is available at https://chameleon-heu.eu.

THE CHAMELEON PROJECT

"A Holistic Approach to Sustainable, Digital EU Agriculture, Forestry, Livestock and Rural Development based on Reconfigurable Aerial Enablers and Edge Artificial Intelligence-on-Demand Systems" (CHAMELEON) is an EU-funded project under the Horizon Europe programme.

BACKGROUND AND MOTIVATION

Climate change is having a major impact on food security. More than 815 million people are chronically hungry. The world needs to increase food production by almost 50 percent by 2050 to feed a population of nine billion, yet resources such as land and water are becoming scarcer. Farming communities and others involved in agriculture must adapt agriculture to climate change and other challenges.

In this context, ICT-driven tools and technologies needed to enhance decision making through accurate, reliable and timely information have an important role to play. Agriculture, Forestry, and Livestock ecosystems must look towards emerging technologies for solutions to overcome some of the challenges they face.

OBJECTIVES AND AMBITION

The objective of the CHAMELEON project is to build a novel reconfigurable and multipurpose drone platform ecosystem featuring heterogeneous UAV agent networks operating in air with its supporting communication protocols, navigation and control strategies and monitoring station, capable of autonomously operating on any area efficiently and cost-effectively, while interfacing with existing systems. The key concept of the proposed platform ecosystem will be a hierarchical approach to the problem, utilizing fully autonomous and reconfigurable agents for continuous operation while less autonomous agents will be engaged on a "need-to" basis.





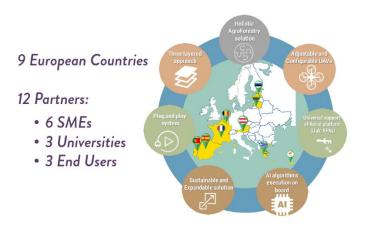


Figure 1 - CHAMELEON project overview.

With the development of this platform, CHAMELEON proposes to achieve the following goals:

- Introduce a new business model and ecosystem-oriented AI development and Big Data Platform, allowing the innovation of agriculture, forestry and livestock services and enabling new forms of communication and transactions between actors within the agriculture, forestry and livestock's business process
- Address the needs of most complex agricultural, forest and livestock ecosystems and rural environments, through UAV hardware and software system that is on demand and multipurpose
- Introduce an advanced large-scale agriculture and forestry surveying, mapping and assessment framework including different platforms (UAV, RPAS) for a hierarchy of observation scales
- Provide a suite of novel UAV enabled AI applications and tools for sustainable agriculture, forestry, livestock ecosystems and rural area services

APPROACH

CHAMELEON has three well defined areas of action, those being **Agriculture**, **Forestry** and **Livestock**. The consortium consists of 12 partner organizations distributed in 9 European Countries, with a high participation of innovative SMEs (6 in total), 3 universities and 3 end users. CHAMELEON advances will be validated in three pilot use cases in **Spain**, **Greece** and **Austria**.

PILOT 1: FOREST FIRE DEFENSE PLANS FOR RURAL AREAS

Location: Tietar Valley (Avila, Spain).

Objectives: Automate the generation of forest fires defense plans for rural areas, especially in those areas with high risk in their urban-forest interface.

The pilot will be focused on supporting the analysis of forest fires impact in urbanized areas, with Al-based prediction of the state, evolution, risk and maintenance analysis of the interface area between urbanized and forest areas.







More info: https://chameleon-heu.eu/pilots/pilot-1/

PILOT 2: LIVESTOCK MONITORING AND MANAGEMENT

Location: Crete, Greece (Western Crete area, incl. Chania and Rethimno).

Objectives: Validate the capacity of the CHAMELEON platform for tracking and health assessment of individual animals and assess its operational feasibility for a range of breeders, according to the size of their animal capital. Specifically, piloting activities will validate the platform in:



- Monitoring the activities and the position of the herd
- Monitoring the health status of certain members of the herd
- Providing fast and accurate monitoring of sudden unforeseen events

More info: https://chameleon-heu.eu/pilots/pilot-2/

PILOT 3: FOREST MONITOR FOR POTENTIAL DANGERS & VINEYARDS MONITORING

Location: Austria

Objectives: Validate the capacity of the CHAMELEON platform ecosystem for tracking water status, health of plants, health assessment of vineyards, the potential to generate a range of ecosystem services at multiple scales including mitigation of greenhouse gas emissions through long-term carbon storage and intervention strategies. Specifically, piloting activities will validate the platform in:



- Monitoring the status of water
- Monitoring the health status of plants (trees, vineyards etc.)
- Providing fast and accurate monitoring of potential dangers and reduce the stress for the owners to check by themselves in a dangerous area
- Field-based estimate of woody biomass in vineyards

More info: https://chameleon-heu.eu/pilots/pilot-3/

BUNDLES

CHAMELEON proposes the development of an on-demand UAV platform populated with bundles optimized per mode of information, and operational scenarios. These bundles consist of a set of tools and associated to a specific agriculture, forestry, or livestock problem. A bundle is always associated with a location where the pilot took place, but it would benefit from being validated in multiple geographical places. A bundle may also be restricted to a limited number of UAV models, however, broad compatibility will always be valued. Each bundle should include all the tools required for a standalone package with the documentation required for independent use.





Either to gather use case validations for the developed tools or to expand the list of solutions available, the CHAMELEON consortium will resort to external partners to expand not only the set of bundles but also the area of action to more countries. This way, CHAMELEON may result in a Pan-European network of UAV and agriculture/forestry/livestock practitioners.

OPEN CALLS

CHAMELEON has €600,000 available for financial support of third parties. The funding will be split in two open call phases (€300,000 each).

The Open Call #1 is meant to attract third parties to develop bundles to be included in the CHAMELEON platform. The Open Call #2 is meant to generate pilot use cases for bundle validation.





CHAMELEON OPEN CALL

OBJECTIVES

As part of the CHAMELEON project, 15 bundles are being developed, listed in Table 1.

With this Open Call, the goal is to attract tech innovative companies to contribute to the CHAMELEON platform with the **development of new bundles** that enhance the platform's technological offering in the scope of UAV technological approaches to agriculture/forestry/livestock problems. Adding to the contribute to the CHAMELEON project, the proposed sub-project should also constitute a clear benefit to the applicant company, as the exploitation plan will be highly valued in the evaluation of the proposal. Applicants must have a clear plan to exploit the tools developed in the scope of this open call.

Table 1 - List of existing bundles.

Bundle	Description
Vegetation monitoring and census: tree census, species, treetop color	Monitor crops, forest and vegetation for species identification and quantification
Large woody debris on rivers	Detection of woody debris in rivers to mitigate flood risks
Health status of vegetation (mainly bark beetle), game browising, ground cover, and fungal growth	Crop/forest health status monitoring and early detection of diseases
Monitoring humidity of soil and plants for assessing risk of fire	Soil and plant humidity monitoring to early detect wildfire risk signs
Crop growth and development monitoring	Vineyard development and health status monitoring. Evaluation of damage due to windstorms and wild animals
Vineyard water stress due to drought	Vineyard monitoring for drought or water stress visual signs
Livestock management (herd) and monitoring (individual animal)	Animal location and monitoring. Detection of animals lost from the herd and/or susceptible to extreme weather events
Animal's health	Animal health status prediction based on behavioral data from video capture
Monitoring flora at high-altitude grazing areas for seasonal animal feeding	Pasture classification on growth/yield status





Continuity of vegetation	Vegetation continuity monitoring to aid fire spread prevention
Characterization of urban-forest interface. Access for firefighters, evacuation, and biomass	Urban forest monitoring for fire risk due to excessive biomass, inaccessibility and weather conditions
Hot spot identification at the beginning of wildfire	Wildfire hotspot detection based on soil moisture, temperature and burned level indicators
Collecting information about health status and stress (wild animals)	Monitoring stress levels and other health indicators on wild animals
Lameness detection in Cows	Detection of lameness in herd cows based on UAV video capture
Soil zonification	Identification of different soil zones based on its composition and state

BUNDLE SUGGESTIONS

Additionally, a list of bundles has been proposed by the CHAMELEON consortium which will not be developed in the scope of the project. Applicants may propose the development of one of those or use them as examples/guidelines for their own proposals.

CHAMELEON will finance a maximum of **one proposal per bundle code**.

Table 2 - List of the "to be developed" bundles.

Bundle Code	Bundle	Description
BC1	Access to forest (paths, roads)	Monitor the access to forest areas after extreme weather conditions
BC2	Health status of vineyards and early detection of pest and fungal infestations	Detection of pests and diseases in vineyards through leaf image analysis (e.g., Grapevine cicada, Esca fungus, Phytoplasmosis, Bactrocera oleae or Dryocosmus kuriphilus)
BC3	Engraving and monitoring of trekking paths	Detection of trekking marks left on pastures due to tourism
BC4	Early detection of health status in forest	Detection of pests and drought in forests through leaf image analysis





BC5	Woody debris on forests slopes	Detection of woody debris on mountain slopes to mitigate treefall risks
BC6	Load of snow on trees	Detection of snow level on forests after heavy snowing
BC7	Application of fertilizers in inaccessible grazing areas of high altitude	Aerial fertilization in areas of difficult access or where conventional fertilizing isn't an option
BC8	Monitoring livestock/individual animal/virtual fences	Animal location for group and/or individual monitoring

AVAILABLE DATASETS

CHAMELEON provides the following datasets that can be used in the development proposed bundle:

Table 3 - List of available datasets

Dataset	Description
Data from the Reconfigurable multi-rotor UAV platform	The data fusion and object detection/identification algorithms collect data from sensors (e.g., LiDAR, Camera and UAV), fuses them and send the output results to the CHAMELEON middleware or control room and DIP. Further to this it will be able to reconfigure its operation according to the mission (use case).
Data from the CERBERUS and SAITA UAV platform	The data fusion and object detection/identification algorithms collect data from sensors (e.g., LiDAR, Camera and UAV), fuses them and send the output results to the CHAMELEON middleware or control room.
Data from UX11 and DT26 fixed wing UAVs	UX11 and DT26 fixed wing UAVs will collect video data through its embedded camera and raw data from the embedded sensors. It will receive notifications and commands from CHAMELEON C2 and it will transmit the outcomes from the edge processing to C2 (JSON Format).
Selective Spraying UAV Data	Selective spraying application for low-risk fertilization and forest health protection.
Advanced On-Board Processing/ Al-on-Demand on the Edge Service	Datasets for training the embedded AI algorithms of CHAMELEON UAVs.





UAVs, RPAS collaboration – intercommunication framework	Data for UAV to UAV and UAV to control room communication/collaboration.	
Irrigation and water stress data	Services for agriculture areas, will be able to run in parallel achieving tailored per case environments.	
Plot zoning protocol and tool	Plot zoning data will support the aerial spraying services and in DIP data market.	
Big data analytics (terrain and soil analysis)	Data will be used in selective spraying and seeding and in DIP data market.	
Plant Health Assessment Toolkit	Data will be used in selective spraying and seeding and in DIP data market.	
Advanced deep learning analytics for livestock health assessment (UAV-Assisted Livestock Health Monitoring)	Data will be used in the local livestock ecosystems and in DIP data market.	
Precise Geo-localization (Galileo and EGNOS exploitation)	Data will be used in UAVs missions and in DIP data market.	
Smart 4D models of urban- forest interfaces	Data will be used in selective seeding and in DIP data market.	

WORK PLAN

CHAMELEON will offer a **6 month programme** for applicants to propose and develop new bundles, enabling the on-boarding to the CHAMELEON platform and be active members of the consortium. The sub-project will be divided in 3 stages.

STAGE 1 - PLANNING

In this stage, the complete work plan should be developed. It includes:

- Activities to be carried out
- Goals and expected impact of the proposed solution, including early exploitation plans
- Main challenges and proposed approaches
- Detailed technical description
- Resources required to execute the sub-project
- KPIs
- Timeline for the whole sub-project
- Preliminary plan for dissemination





TIME DURATION

1 month.

STAGE 2 - IMPLEMENTATION

This stage includes the whole development phase, where the sub-project takes place. By the end of Stage 2, the results should be available for analysis and report to the Open Call leaders.

TIME DURATION

4 months.

STAGE 3 - DISSEMINATION & EXPLOITATION

After the sub-project results, the focus will be put on the dissemination. This phase includes event attendance, presence in social media, publications or any other content used to share the tools and results of the project.

Additionally, at this stage, the project team should be exploiting the results and tools for their own business/innovation activities. It is expected that the proposed sub-project results in a technical/business innovation with visible benefits to the participants.

TIME DURATION

1 months.

DELIVERABLES

At the end of each stage, sub-project leader(s) will have to produce a deliverable, reporting achieved results and sub-project milestones. A deliverable template will be provided with a guide for the expected content.

D1 - PLANNING

This deliverable should include all the technical specifications as well as the implementation plan, components and approaches. It should describe all the challenges as well as how they will be mitigated.

D2 - IMPLEMENTATION

This deliverable should describe the whole implementation process, the methods used and the obtained results, with a comprehensive analysis. Any deviation to the plan described in D1 should be described here along with the respective reason.

D3 – DISSEMINATION AND EXPLOITATION

This deliverable should reflect all the content, platforms and activities carried out for the project dissemination during the sub-project and upcoming. If available, results from these activities are welcome.





Regarding the exploitation, a detailed description on how the participant(s) expect to benefit from the developed solution both in a technical and business perspective.

FUNDING SCHEME

CHAMELEON will financially support third-parties' in **two separate open call windows**, one for bundle development and a second one for pilot use cases.

With a total budget of €300,000 for the first open call, the **5 best applicants** will be selected and **100% financed up to a maximum of €60,000 in a lump sum scheme**. All expenses must be described and justified in the submitted proposal.

The payment will be done in **three phases**, corresponding to the end of each work stage. The payment portions will be the following:

- 30% After acceptance of D1
- 40% After acceptance of D2
- 30% After acceptance of D3

The payment will be done after each deliverable's acceptance. The winners will be provided with a bank account form.

TIMELINE

Table 4: CHAMELEON Open Call #1 key dates

Event	Deadline	
Open for Submissions	01/08/2023	
Submission Deadline	01/11/2023	
Communication of the Results 26/01/2024		
Deliverable 1 – Planning	01/03/2024	
Deliverable 2 – Implementation	01/07/2024	
Deliverable 3 – Dissemination/Exploitation 31/07/2024		





PROPOSAL SUBMISSION AND EVALUATION

The application is formalised with the submission of the proposal in the CHAMELEON website (https://chameleon-heu.eu/open-calls). There you can find a comprehensive guide for the submission steps as well as all the required documentation.

Proposals **must follow the provided template** and have a **maximum of 10 pages** of content (excluding cover, tables and definitions).

ELIGIBILITY

The CHAMELEON OCMB will verify that the submitted applications comply with the following prerequisites:

- All entities are eligible for EC funding under the rules of Horizon Europe
- The open calls are applicable only for individual partners
- Sub-project is under the technological domain of UAV usage in agriculture, forestry and livestock
- Sub-projects demonstrate Europe dimension ("through cross border experimentation or expanding the impact of local sub-projects to European scale")

COUNTRY

This open call is open to all EU countries and countries associated to the Horizon Europe programme¹.

In addition to that, the Council Implementing Decision 2022/2506 stipulates that legal commitments must not be entered into with any public interest trusts established on the basis of the Hungarian Act IX of 2021 or any entity maintained by such a public interest trust².

LANGUAGE

Only documents **written in English** will be considered for evaluation. Any other language will be automatically rejected.

ABSENCE OF CONFLICT OF INTEREST

Applicants shall not have any actual and/or potential conflict of interest with CHAMELEON Open Call process, from the application to the development phase of the selected proposals. All cases of conflict of interest will be assessed case by the Support Team.

Conflict of interest may occur when there are conditions involving economic interest, political or national affinity, family or emotional ties or any other shared interest that might affect the

² https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32022D2506



¹ https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/list-3rd-country-participation_horizon-euratom_en.pdf



objective evaluation of the proposal, as defined in the HE and EC regulations. Consortium partners, their affiliated entities, employees and permanent collaborators have not the right to participate.

MULTIPLE SUBMISSIONS

Up to two proposals per applicant will be accepted for evaluation (the first two to be submitted). Others will be discarded. Only one proposal will be accepted for funding. If any entity is associated to more than two proposals, only the first two will be considered for evaluation.

EVALUATION

Each proposal will be reviewed by at least two evaluators and will follow the criteria defined by the CHAMELEON consortium, presented on Table 5.

Table 5: Open Call proposal evaluation criteria

Criterion	Description	Scoring (0-5)
Impact: Topic Relevance and Exploitation Plans	Overall impact of the proposed prototypes or use cases if successful; Topic relevance of the proposed prototypes or use cases if successful; Quality of the exploitation plans and market potential; Relevance of the prototypes or use cases to the objectives of the call.	Threshold: 3/5
Excellence: Soundness of Concept	Feasibility of the proposed prototypes or use cases and technological contribution; Level of innovation and technological challenges addressed; Quality of the work plan.	Threshold: 3/5
Beneficiary Expertise	Quality of the project team and cross- sector check; Technical capacity and excellence of the proposer and its capability to achieve the deployment of TRL 6 services;	Threshold: 3/5
Deployment of Resources	Allocation of appropriate resources to the proposed sub-project;	Threshold: 3/5





Justification of the proposed resources.

CHAMELEON will adopt the same scoring scale (0-5 excellent) as suggested by EU and half marks will be possible. The four criteria have been assigned specific weights. The target is to close the complete evaluation of the proposals within 2 months after the submission. The remote evaluation will start with a webinar organized by the CHAMELEON open call coordinators. The board will explain the call objectives and methodology. After getting access to the proposals, the expert should check if s/he is able to evaluate the proposal, if there is any conflict of interest unknown to the CHAMELEON consortium and then accept or reject the assigned proposals within 2 working days.

After evaluation, the experts will take part in a **consensus meeting** where the final score for each proposal will be established and to agree to a set of comments and marks for each of the criteria in the proposal. A member of the CHAMELEON OCMB board will act as a recorder and support the two experts in developing an agreed set of comments and scores.

After going through all the proposals, a panel meeting will be held to unify the proposal grades and to rank the proposals. In case there are proposals with equal scores the following criteria will be applied in strict order:

- Proposals regarding one of the suggested bundles will be prioritized (keep in mind that only one proposal per bundle code will be financed)
- Proposals will be ranked based on their higher impact potential (Criterion 1)
- In case there are proposals in the same position, priority will be given to proposals that have ranked higher in Criterion 2
- In case there are still proposals in the same position, priority will be given to those with higher score in Criterion 3

At the end all received applications will be informed about their scores and evaluator comments. CHAMELEON will publish the selected/non-selected projects.

ETHICAL ASSESSMENT

All proposals will pass through an ethical validation where possible ethical conflicts will be considered during the ranking process. These will be mainly related to the handling of private and person-related data.

SUBGRANT AGREEMENT

After the proposal selection and before the beneficiaries gets started with the sub-projects, the SubGrant Agreement must be signed between the proposal winners and the CHAMELEON Consortium. Prior to signing the SubGrant Agreement, winners should provide documents regarding their formal status. The CHAMELEON Consortium will verify them for eligibility. Once eligibility has been confirmed following the formal check and the SubGrant Agreement signed, applicants become an official beneficiary of the CHAMELEON project.

COMPLAINTS





If, after receiving the results applicants consider that a mistake has been made, they can file a complaint. To do so they must send an email to the contact point present in the CHAMELEON website, in English, including the following info:

- Contact details (including email address)
- The subject of the complaint
- Information and evidence regarding the alleged mistak

Applicants have 3 calendar days to submit their complaint, starting from the day after the communication of results was sent. The OCMB will assess the complaints within no more than 14 calendar days from its reception.

Please consider that:

- The OCMB will ignore anonymous or incomplete complaints
- Evaluation is run by experts in the field, and we do not interfere with their assessment, therefore OCMB will not consider complaints related to the results of the evaluation other than those related to mistakes in the evaluation of the eligibility criteria

AVAILABLE DOCUMENTATION

In the CHAMELEON website (https://chameleon-heu.eu/open-calls/) you can find the documentation for open call #1 application, which is:

- Proposal Template
- Guide for Applicants





SUPPORT

The CHAMELEON team will be actively monitoring the progress of the sub-projects, in order to provide timely help to the sub-project teams. For any question, first refer to the CHAMELEON website, where all the info is available and, for anything not mentioned there, please refer to the provided contact point.

MENTORING

After publication of the results, every winner will be assigned to a member of the CHAMELEON consortium, who will be responsible for mentoring the project. The mentor should be your main point of contact with the CHAMELEON team and should the first resort for any questions regarding this open call.

FAQS

On the CHAMELEON website, a "Frequently asked questions" (FAQs) section will be created that hopefully can answer most common questions regarding the CHAMELEON open call programme.

