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|  | EUROPEAN COMMISSIONDirectorate-General for Defence Industry and SpaceInnovation and Outreach**Innovation, Start-ups and Economics** |

**Call for Expression of Interest**

**In Orbit Demonstration/Validation (IOD/IOV) Experiments**

**HORIZON EUROPE R&I PROGRAMME**

**Application Package**

*Disclaimer: this Call is not binding for the European Commission and does not preclude future decisions.*

## Application Package

The application is composed of four parts.

Please complete all forms electronically and send them by email to DEFIS-IOD-IOV@ec.europa.eu with the subject "Call for Expression of Interest – IOD/IOV experiments" by **31 May 2022 at 17:00 (UTC)**.

**Part I**: Application and compliance matrix (Annex I)

**Part II**: Commitment on Flight Model delivery (Annex II)

**Part III**: Legal Entity forms[[1]](#footnote-1)

**Part IV**: Declaration of honour on exclusion criteria and absence of conflict of interest[[2]](#footnote-2)

**ANNEX I**

**Part I: Application and Compliance Matrix**

*The application should not exceed 30 pages.*

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| * 1. **Name of the proposed actions**
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| * 1. **Applicant: Entity(ies) making the proposal and type (e.g. individual, consortium, industry, research centre, university)**
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| Name of organisation(s) (Experiment provider) |  |
| Country (ies) |  |
| Person(s)[[3]](#footnote-3) responsible for implementation |  |
| Phone(s) |  |
| Email(s) |  |

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| * 1. **Executive summary**
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| * 1. **Objective of the proposed experiment**
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| * 1. **Themes** *(e.g. Earth observation, Telecommunication, Navigation, Space Science, Technology, Space environment, quantum, connectivity)*
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| * 1. **Type of experiment** *(e.g. instrument, equipment, technologies, system experiment, mission concepts, complete systems)*
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| * 1. **Justification of the IOD/IOV***(explain the necessity of the flight demonstration with respect to other options on ground and/or in space)*
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| * 1. **Previous space application/heritage of the proposed experiment**
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| * 1. **Funding plan of the experiment up to flight model delivery and associated tasks***Detailed description of the experiment funding plan (e.g. funding of development, including amount, date of availability of funds and remaining conditional clauses, if any, for the obtaining of these funds, including risk margin for, inter alia, potential additional qualification requirement or interfaces definitions required by the spacecraft, funding party(ies) demonstrated by letter(s) of intent)*
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| * 1. **Detailed development plan**

*Describe the development activities and related planning from the current status up to flight model delivery including design, models (Engineering Model, etc.), tests and qualification (Manufacturing Assembly Integration Testing/ Validation plan). An associated risk log should be included if any significant risk still remains with the development and schedule. Description of the development plan should also include the TRL increase from 5/6 to experiment qualification and flight readiness.* |
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| * 1. **Policy relevance***(e.g. relevance for research and innovation programmes, Union space programme components, Space Strategy for Europe, Secure Connectivity programme, European Quantum Communication Infrastructure, Space Traffic Management,* *other relevant Union initiatives)*
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| * 1. **Detailed description of the experiment and justified compliance with interface** *Detailed status of development demonstrating the estimated TRL, model philosophy, qualification status and verification activities up to TRL7.*

*Interface control documents and budgets (mechanical, electrical, data, thermal) as input to the spacecraft requirements (or launcher interface requirements document when the proposals were for self-standing complete spacecraft).* *Please note that budget values provided for each experiment in the proposals are considered as values with margins, i.e. no additional margin is allocated.* |
| 1. **Preliminary engineering drawings of the experiment**

*Indicate the required volume including all appendages, baffles etc.**For experiments needing aggregation on:* * *Small satellites in the range of 150 kg have a typical volume of around ½ m3 with half of the volume available for the total payload to be shared between the Experiments.*
* *Cubesat missions with a volume of 3U or 6U format.*
1. **Functional description of the experiment**

*The platform shall only be required to provide simple command & control & telemetry interfaces and the Experiment ensure autonomous functionalities.*1. **Total mass of the experiment; mass breakdown, margins**

*Provide the overall mass of the experiment including possible appendages, brackets, thermal hardware etc.**For experiments needing aggregation:* * *Small satellites in the range of 150 kg: typical mass allocated to the payload for small spacecraft is in the range of 70 kg to be shared between the experiments*
* *Cubesat missions with a volume of 3U or 6U format: typical mass for cubesat missions is limited to a few kg.*
1. **Field of view (if applicable)**

*Provide viewing direction, external surface and unobstructed field of view required by the experiment.*1. **Experiment Pointing and alignment requirements (if applicable)**

*Specify experiment requirements such as pointing accuracy possibly detailed in terms of absolute/relative and performance/knowledge errors including stability requirements (e.g. thermo-elastic) and compatible with currently available small sat and cubesat platform.*1. **Experiment Mechanical Interfaces**

*Indicate current qualification mechanical environment. As the Experiment will be launched on an EU manufactured launcher, it shall be compliant with the related mechanical environment (small satellite or cubesat). Typical domain can be obtained from the SSMS or MLS User’s Manual.*1. **Thermal Interfaces**

*Describe thermal interface of the experiment with the platform. The experiment shall preferably be thermally decoupled from the platform and have a typical operational range of -10C to +50C.*1. **Electrical interfaces: average and peak power consumption for each mode of operation. Time profile.**

*Provide the power required by the experiment in the various modes and the average power requirement.**Typical average power available to the complete payload (including all Experiment’s) is in the order of 75 W and a typical peak power up to 30 W per experiment can be provided. The power duty cycle for the Experiment will be determined depending on the overall demand. The power will be provided by one switched power line and should be considered non regulated (battery regulated bus). Details specification of the power interface will be provided at spacecraft selection.* 1. **Interface with data handling. Bit rates of the experiment for different modes of operation, time profile, time reference/synchronisation required, etc.**

*The Experiment will be interfaced with the avionics of the spacecraft with data links. One link will be used for the commanding and housekeeping of the Experiment (typical data bus for small satellite platform or cubesat standard interface) and if required one high bit rate link will be provided for data collection with a maximum typical data rate of 100 Mb/s. Using these links the Experiment will have access to a minimum of TBD Gbit for data storage. Details specification of the interfaces will be provided at spacecraft selection. Data will be dumped to a primary ground station at TBD location.**Note: other specific interface should be generated by the experiment itself (self-standing experiment) as it cannot be guaranteed to be provided by the spacecraft.*1. **Exploitation plan**

*Describe the exploitation of the in orbit data stemming from the experiment and identify any specific ancillary data requirements.*1. **Operations scenario and mission phases**

*Provide description of the experiment operational scenario, modes of operations*1. **Additional environment requirements**

*Describe any requirement beyond the following typical environment:** *Contamination and cleanliness requirements (standard ISO 8)*
* *Experiment magnetic cleanliness < 0.5 Am2*
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| * 1. **Mission needs***Describe the preferred orbit(s), typical orbits can be found on the Vega SSMS and Ariane 6 MLS user manual, mission constraints, mission duration, induced constrains on the spacecraft and other payloads, and other specific needs to be described*
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| * 1. **Issue / challenge***Commercial market (business case following IOD/IOV opportunity), industrial competitiveness, European non-dependence, scientific challenge, etc.*
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| * 1. **Please use this space to provide any other comments or additional information.**
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| * 1. **Compliance matrix***Please provide a declaration of compliance to the constraints and requirements listed in §1.3 of this document. Please provide rationale in case of partial and non- compliance.*
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| * 1. **Signature of organisation/partnership representatives:**
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| The signature certifies that the provided data result from the entity's commitments. In addition, the entity engages itself to inform immediately the Commission (by email to DEFIS-IOD-IOV@ec.europa.eu if any changes occur.At any stage of the experiment development, the entity may be requested to provide additional information to the Commission if necessary. |
| Name |
| Position |
| Date |

**ANNEX II**

**Part II: Commitment on Flight Model delivery**

The undersigned, ………………………, in my capacity as……………………..

confirm the availability of the funding required for the Flight Model delivery and the associated tasks for the In orbit Demonstration/ Validation (IOD/IOV) Experiment(s) …………………….

I acknowledge that failure to demonstrate the compliance of the timely delivery of the Flight Model, as indicated in the planning, may result in a postponement or exclusion of the experiment.

Date ………………

Place ………………

Signature ………………

1. Please download from:

<https://ec.europa.eu/info/publications/legal-entities_en> [↑](#footnote-ref-1)
2. Please download from:

<http://ec.europa.eu/employment_social/calls/pdf/dechonor_en.pdf> [↑](#footnote-ref-2)
3. Where the application is being made by a group, one lead person should be identified. [↑](#footnote-ref-3)