



CSEOL: CITIZEN SCIENCE FOR EARTH OBSERVATION COMPETITION GUIDELINES

1. Introduction

CSEOL (we say *Sizzle*) is an initiative funded by the European Space Agency (ESA) to find people and organizations with the energy, imagination and creative talent to help Europe's big Space data address some of our biggest problems.

We're looking for ideas that provide fantastic opportunities for citizen scientists - or the wider public - to validate what satellites observe or to put those images to use.

Perhaps there's something that enthusiastic citizen scientists can help to track by labelling, processing or assuring the quality of satellite images; or an algorithm that needs training to help in [managing natural disasters](#). As long as your idea inspires lots of people around ESA's Earth Observation (EO) data, and looks like a lot of fun to do, then we want to hear more! Our goal is to take you from idea to funding in less than 6 months – in a competitive setting.

- All **Submitted Ideas** will be considered for shortlisting by our panel of experts
- Authors of all **Shortlisted Ideas** will be invited to develop full project proposals, attend the CSEOL Bootcamp at ESA in Frascati, and pitch their full project proposal to our expert panel for the chance to receive funding and support for project implementation
- Authors of all **Selected Project Proposals** will receive funding (15k EUR to 70k EUR), training and support to help implement their winning **Pilot Project**

Figure 1: CSEOL Competition Schedule





2. Eligibility

- Any Pilot Project selected for funding and implementation will need to be led by a recognised legal entity
- Any such entity leading a Pilot Project will need to demonstrate project management capacity
- Ideas for projects must focus on an available ESA mission dataset
- Ideas for projects should incorporate use and/or production of Open Access data

3. Ownership of results

All submitted Ideas will be covered by a non-disclosure agreement - so you can be sure that your idea is safe.

Any application product and their documentation delivered to the European Space Agency (ESA) at the end of the contract must be made available to ESA for reuse without restrictions and will be published by the ESA as an open resource. However, the authors/developers will keep the full ownership of the results, including copyrights and other intellectual property rights. Due acknowledgement of names and logos contributing to the project will of course be provided.

Any project outcomes can be published without restrictions, mentioning all parties involved, with authors keeping IPR and ownership.

4. CSEOL Competition Calendar

Please note the following important dates. Specific dates of the Bootcamp and Demo Day will be announced when projects are shortlisted in May.

<ul style="list-style-type: none"> • Idea Submission Deadline: 	<p>Opening: Monday 25 February 2019; Closing: Sunday 5 May 2019</p>
<ul style="list-style-type: none"> • Shortlisted candidates notified: 	<p>Monday 13 May 2019</p>
<ul style="list-style-type: none"> • Mentoring(remote): 	<p>May and June 2019</p>
<ul style="list-style-type: none"> • Bootcamp (Frascati): 	<p>Tues 9 to Wed 10 July 2019</p>
<ul style="list-style-type: none"> • Pitch Day (Frascati) 	<p>Thurs 11 July 2019</p>
<ul style="list-style-type: none"> • Implementation phase: (remote with interaction moments): 	<p>Earliest start: September 2019 Latest finish: December 2020</p>
<ul style="list-style-type: none"> • Demo Day (Frascati): 	<p>December 2020</p>



5. Priorities for shortlisting Ideas

We want your Idea to be successful! Among the most important things we're looking for are your enthusiasm, your project's feasibility, and the potential to combine citizen science (CS), big datasets and innovative ideas. Critical are:

- 5.1 Impact and ESA strategy
- 5.2 Potential for your Idea to develop into a Pilot Project
- 5.3 Relevant Experience

5.1 Impact and ESA strategy

Your Idea needs to demonstrate impact by having a clear fit within **one** of the ESA THEMES, and **one or more** of the TOPICS detailed below. In the current Call for Ideas, we're prioritising Ideas that include improved methods for observation, spotting patterns, data labelling, and ensuring data quality.

One particular focus of this call for ideas will be to capitalize on the synergistic use of Citizen Science and AI to deliver the most scientific and societal value of the large amount of [European EO data sets](#). Rapid developments in digital technologies, together with our capacity to monitor our home planet with EO satellites, have led to entirely new opportunities for Earth science and applications. There is an increasing need to mine the large amounts of data generated by the new generation of satellites coming online, and in particular Copernicus and Sentinel data. Artificial Intelligence (AI) techniques, such as machine learning and computer vision, are now becoming increasingly important to turn large amount of EO data into relevant information in a dynamic, global and automatic way, thereby providing a comprehensive picture of our planet at the global scale and in real time. Citizen Science and Crowdsourcing can play a key role in making the most of EO data, in particular also by unlocking the power of AI applied to EO in various ways, ranging from generating labelling within training data sets to enabling quality control and pattern recognition within data.

5.1.1. Themes and Topics

In the first instance, we are looking for ideas on Themes and Topics highlighted in the table below. However, we are also happy to also receive initial ideas focused on other Themes and Topics listed.



Table 1: ESA Themes and Topics

		THEMES		
		ESA Mission	Climate change and sustainable development	Downstream services
TOPICS	<i>Includes:</i>	instrument-based activities such as GNSS(-R), Radar, Optical	developing algorithms for physical parameter retrieval	Involving citizen scientists in developing applications and services for customers
	SCIENCE	Observation – data gathering using mobile devices and data organization for integration/confrontation with EO; generation of new mission concepts for small satellites Validation – of EO products <i>via</i> crowd-sourced labelling, ground truthing, processing, and data assurance are particularly encouraged		
	POLICY	Interpretation – participation in interpreting EO data in specific policy contexts with the public <i>via</i> a two-way communications paradigm; measuring progress towards the United Nations’ Sustainable Development Goals		
	SOCIETY	Education – learning about EO data through engaging stakeholders (such as schools) <i>via</i> eg: gamification; remote collaborative experimentation Outreach – use new technologies such as Virtual or Augmented Reality and social media to connect new communities and transform EO data into narratives		
	BUSINESS	New generation value chain - product and service development <i>via</i>: e.g. combining and crowdsourcing and machine learning for detecting patterns. Projects focusing on AI, drones, and other technologies are particularly encouraged.		

5.1.2 ESA data

We’re looking for projects that use the available [ESA, Sentinel and TPM datasets](#), with one particular focus on capitalising on the synergistic use of Citizen Science and AI to deliver the most scientific and societal value of the large amount of European EO data sets. When you submit your initial Idea, you’ll need to tell us which dataset your idea involves.

5.2 Potential for your Idea to develop into a Pilot Project

Since authors of Shortlisted Ideas will be invited to develop their Ideas into full proposals for possible funding, we want you to show your Idea’s potential for a good fit with the full list of Pilot Project Selection Criteria as listed in Table 1. You will need to provide a brief indication of the *potential* of your Idea to eventually comply with these criteria.



Table 1: Full list of Pilot Project Selection Criteria

1	<p>PILOT PROJECT IMPACT & ALIGNMENT WITH ESA STRATEGY</p> <p>1.1 Specific impact:</p> <ul style="list-style-type: none"> ● Clear fit with one or more of the provided pilot <i>topics</i> ● Clear fit within ONE of the pilot <i>themes</i> <p>1.2 Wider impacts:</p> <ul style="list-style-type: none"> ● Potential to stimulate wide validation and use of EO, and maximise use of EO from ESA missions and ESA datasets
2	<p>PROJECT FEASIBILITY</p> <p>2.1 Scope for engaging Citizen Scientists and/or the wider public: anticipated number and diversity of citizens to be involved and anticipated impact of their involvement</p> <p>2.2 Technological scope including:</p> <ul style="list-style-type: none"> ● Smart use or generation of new digital or disruptive technologies - including Open Source technologies - to help achieve the envisaged impacts ● Technological readiness of the proposed technical approach <p>2.3 Clear strategy to ensure quality and validation of CS data specific to scientific applications and/or the development of downstream (commercial) products and services</p>
3	<p>TEAM EXPERIENCE</p> <p>3.1 Relevant experience of team members</p>

5.3 Relevant Experience

Given the need to implement pilots quickly, we’re looking for experience within your team in engaging Citizen Scientists or similar groups of volunteers. When you submit your initial Idea - you’ll need to tell us about your team and the expertise and experience it brings in Citizen Science, Earth Observation and Data & Technology. If you have an idea but are missing a crucial partner - an expert in earth observation, citizen science, or data and technology – you can let us know via the submission form and we’ll see if we can match you up.



6. Be prepared for what's ahead

If you submit an Idea that is eventually selected as a Pilot Project, you'll need to be ready - both in terms of what you can expect from CSEOL and what CSEOL will expect from you.

You can find information below on what you can expect in the coming months if your initial idea is shortlisted in May.

6.1 Terms of Reference for Selected Pilot Projects

6.1.1 What you can expect from CSEOL

All submitted Ideas will be covered by a non-disclosure agreement - so you can be sure that your idea is safe.

Of the Ideas submitted during this Call for Ideas, the top 10 to 20 will be shortlisted for further development. There'll be a period of mentoring, support for proposal development and networking – before ideas are pitched to the CSEOL expert panel at the ESA's research institute, ESRIN, in Frascati.

Invited attendees at the Bootcamp will receive support towards their travel costs to ESRIN and/or other specialised services to improve their proposal. The Bootcamp itself will consist of in-depth training on all aspects (social and technical) involved in implementing a successful CSEOL project including the Terms of Reference and guidelines for CSEOL pilots.

For implementing the Pilot Projects selected, CSEOL will provide a dedicated flexible environment, and access to mentors and experts, to help plan, execute and report on Pilot Projects. We will provide a budget per Pilot Project of 15k EUR up to a maximum of 70k EUR (to be agreed on a case by case basis, bearing in mind value for money). We will also provide, and continuously develop, our Citizen Science Development Kit (CSDK) - a toolkit of socio-economic and technical tools for running CS projects. We'll also provide access to EO data, and training events and materials that will help to develop and run the Pilot Projects successfully.

CSEOL will provide physical facilities at IHE Delft (Institute for Water Education) in Delft, The Netherlands, for events to enable collaboration between CSEOL, the CS community, Pilot Project leaders, and innovative SMEs and start-ups involved in developing new digital technologies and tools for CS and EO. We'll also invite you to attend a final Demo Day at ESRIN where the Pilot Projects and CSEOL project team will present the results of their efforts to ESA and a wide range of key stakeholders.

Throughout the whole project development and delivery process, we'll be facilitating collaborative learning across the Pilot Projects *via* joint teleconferences and face-to-face activities. We'll also be



encouraging you to give us feedback on your experience to help us provide the tools and support you need.

6.1.2 What CSEOL will expect from you

Leaders of the Pilot Projects selected will sign formal agreements with CSEOL that will include the conditions for financing the Pilot Projects. Requirements from the leaders of each Pilot Project will include regular reporting and communication with the CSEOL team.

7. Submit your Idea

Once your idea is clear, Idea submission shouldn't take too long. You can submit your Idea at:

<https://cseol.eu/submit-your-idea>

8. Comments and Queries

If you have any queries please go to <https://cseol.eu/feedback-cseol-call>

Or email us at: info@cseol.eu