Hackathon on Earth observation applications

Muscat, Oman

4-5 June 2023

Info Pack

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1. What is a Hackathon?

The Oman Hackathon will bring together the next generation of Earth Observation data experts in the country to develop innovative solutions that can help Oman tackle some of its biggest challenges in the fields of disaster risk reduction, oil & gas sector, surveying and water and agricultural applications. We are looking for passionate problem-solvers who have a unique perspective and the skills to build solutions to help move Oman towards a more sustainable future. The Oman Hackathon is the perfect opportunity to explore and develop innovative ideas, and to make connections with the local startup community. This hackathon will provide a platform for Oman to display its innovative spirit and to connect with the world's leading EO experts.

This event will involve intense brainstorming, rapid prototyping and creative problem solving. Multi-disciplinary teams will be tasked with creating innovative solutions to a specific challenge related to one of the topics mentioned above. Participants will be presented with a range of tasks, such as creating new applications for Earth Observation data, developing algorithms for image processing and analysis, or designing a user interface for a new application. The aim is to come up with creative solutions that can be taken to market and to make meaningful contributions to the tech industry. Additionally, there will be a series of workshops and talks from industry experts, providing valuable insights into the world of Earth Observation.

Multi-disciplinary teams of participants will work together to produce creative solutions to current challenges, with the aim of developing a product or service that can be taken to market.

The event will also create a chance for networking and collaboration, allowing entrepreneurs, students, and professionals from across the country to meet and exchange ideas. Additionally, there will be a series of webinars and talks from industry experts, providing valuable insights and knowledge.

The Oman Hackathon is a fantastic opportunity for Oman to foster a culture of innovation and creativity, and to make a name for itself in the EO sector. It has the potential to spark the development of new products and services, and to inspire a new generation of entrepreneurs and technologists.

At the end of the event, teams will present their projects to a panel of expert judges.

The best projects will be awarded prizes and the teams will have the opportunity to continue working on their projects with the support of our partners.

In preparation of the main event, we will be running a series of webinars to prepare the participants to help you develop your skills and get the most out of the event.

2. Which is the thematic focus?

The hackathon will focus on different topics linked to the user needs such as:

<u>Disaster Risk Reduction</u>

The hackathon will focus on disaster risk reduction and the development of solutions that use EO data to mitigate the risks posed by disasters. Teams will develop solutions that can help predict and respond to disasters, as well as build resilient communities. Using EO data and

programming, solutions should be able to provide early warning systems, risk mitigation strategies, and data-driven decision support tools.

Oil & Gas Sector

Other of the main topics is to enhance the efficiency and safety of the oil & gas sector. Teams will develop solutions that can help with the exploration, production, and transportation of oil and gas. Solutions should be able to provide better monitoring and surveillance of oil & gas infrastructure, as well as advanced analytics to support decision-making.

Surveying and Mapping

Earth observation support for surveying has become a crucial support to enhance the standard mapping techniques. The participants can opt for working on solutions such as the revision of existing topographic sheets or the development of more accurate land-use/land cover maps based on new classification techniques.

Water and Agricultural Applications

With the aim to improve the management of water and agricultural resources, teams will develop solutions that can help with the monitoring and assessment of water and agricultural resources, as well as the development of strategies for their sustainable use. Solutions should be able to provide better monitoring and assessment of land use and water resources, as well as advanced analytics to support decision-making.

3. Who can participate?

The hackathon is open to all individuals aged 18 or older, students, entrepreneurs, start-ups, developers, researchers, thematic experts and remote sensing and GIS experts, with a strong interest in Earth Observation, software development, and problem-solving.

All participants must:

- **Bring their own laptop**
- **Be available for the full duration of the event**
- **Be 18 years or older**

Participation is free of charge!

4. Why should you participate?

Participating in the Oman Hackathon is an opportunity for anyone interested in the EO sector. Not only will it provide an exciting platform to explore innovative ideas, but it will also give participants the chance to connect with the local Earth Observation and startup community and to share their knowledge and skills.

Additionally, the event will feature workshops and talks from industry experts, providing valuable insights into the world of tech. By taking part in this hackathon, participants will have the chance to create something new and valuable, and to make a meaningful contribution to

the tech industry in Oman. It is a fantastic way to gain experience, build connections, and to have fun!

5. You participate as a team. How?

You can register as a team or individually. We will use Slack to help participants without a team to find teammates, considering their profile, interest, and skills. The first session of the Hackathon will be dedicated to the consolidation of the teams and the development of the final idea, supported by mentors and experts.

Each team will be of 5 to 6 participants. We recommend the creation of diverse teams, including technical profiles, marketing/communication, subject matter experts and business development experience. Participants are expected to have some of the following skills: remote sensing, GIS, thematic knowledge, data analysis, data visualization, mobile or web application development, graphic design, entrepreneurship, software development, marketing, etc.

Working in a team is a wonderful way to get the most out of the Oman Hackathon. By collaborating with other participants, teams can produce creative solutions that none of them would have been able to think of on their own. Additionally, teams can divide up tasks, allowing each member to focus on the areas they are most knowledgeable and skilled in. Working together also creates an enjoyable and motivating environment, helping teams to remain energized and motivated throughout the event.

Given the complementarity that we seek, teams should consist of participants with different backgrounds and different skills. Each team member should have a specific role in the development process while complementing each other to create the best product possible.

6. The hackathon workflow

The Hackathon is structured in webinars prior to the on-site event, and on-site mentoring sessions and teamwork, going through the following process (see image below):

- The teams start building prior to the Hackathon via Slack.
- In the icebreaker session at the beginning of the Hackathon, the team building finalises, and teams have their first common gathering.
- Mentoring sessions introduce key concepts and tips for the development of the solutions:
    - From the idea to the product
    - From data to solutions
    - Pitching techniques

- Based on these mentoring sessions, participants develop their products and prepare the presentation

The objective is to come up with a ***Minimum viable product*** = “a version of a product with just enough features to be usable by early customers who can then provide feedback for future product development”. It's important to note that demonstrating *traction* through initial customer feedback and tangible evidence of progress will be favourably assessed. We want you to advance as far as possible in this very short time to convince the jury with your presentation.

You should not copy-paste existing applications nor present a product that is not viable or technically feasible, but develop a solution that

- corresponds to real world needs;
- is technically feasible;
- is innovative;
- is a product that has a potential market and;
- makes best use of Earth Observation data.

It is crucial that the solution is developed as team work, building on the expertise and capacities of all team members, covering the technical, business, marketing and thematic aspects of the solution.

Final Presentation

At the end of the Hackathon, the teams present the project to the jury:

- The product is presented in a PowerPoint presentation (or similar). The presentation needs to be handed over to the organisers at 2:00pm on 5th of June.
- The team leader of each team has 5 minutes to present the idea to the members of the jury and to the audience. The presentations are recorded.
- The jury gathers at the end of the last pitch to evaluate the ideas, using the evaluation matrix.
- Once decided, they announce the winning teams during the award ceremony.

7. Project context and organisers

The Hackathon takes place in the context of the project "Earth Observation Centre of Oman”, set up by the ***National Survey Authority*** and ***Ministry of Finance of Oman***. The project, implemented by the company ***Indra***, aims at fostering the Space sector and specifically the capacities for Earth Observation infrastructure and applications in Oman.

The Hackathon itself is organised by members of the European Topic Centre on Spatial Analysis and Synthesis at the University of Malaga (ETC-UMA, Spain). ETC-UMA is an international research centre that provides relevant knowledge in Copernicus-related research. It is a founding member of the Copernicus Academy and collaborates closely with the European Environment Agency and the Copernicus Land Service. It has expertise in organising Hackathons on Earth Observation topics, both in virtual and in-person modes.

8. The venue

The event takes place in the Novotel Muscat Airport hotel. Coffee and lunch is served free of charge.

9. Agenda

You can find the updated version of the program here:

EO Hackathon – UMA

The inauguration, webinars and the day of the presentations and awards ceremony will be recorded and shared on our website.

10. Communication

Team communication

Teams are free to use the platform for internal communication of their choice (Skype, WhatsApp, Slack, Teams, etc.).

Official communication

Communication with organizers and mentors will be via Slack..

Teams must choose a spokesperson or captain who will serve as an interlocutor between the team and the organizers.

11. Material

Participants should bring their **own laptops** and any other equipment they might need to work on their projects. It is also advisable to bring a notebook and pen, as well as any other materials they might need to take notes and record ideas.

It is important to make sure that you have administrator rights on the computers. .

Data access and access to the processing environment will be done via CREODIAS.EU. More details about the use of Creodias will be provided during their webinar.

12. Intellectual property

During the event, teams must protect their Intellectual Property and data. Please, do not put any data, developments, etc. in a publicly accessible place.

13. Prizes

1st Prize

The members of the winning team will receive a Samsung Galaxy tablet.

Access to CREODIAS worth **1000€**

2nd Prize

Access to CREODIAS worth **500€**

3rd Prize

Access to CREODIAS worth **250€**

14. Mentors

4 mentors will be available for the participants. They will support the cover the following areas of expertise:

- Business and product development: Pablo Quesada (Agforest, Spain)
- EO applications and pitching techniques: Juan Arévalo (Randbee Consultants, SPain)
- EO applications: Enass Said (Lund University, Sweden)
- Data science and programming: Dr. Mohammed Albadwi (Code Academy / SQU, Oman)

15. Jury

The jury is composed of technical, thematic, and business development experts from the industry:

- Colonel Ahmed Alwardi (National Survey Authority)
- Amjed Al.Thuhli (Ministry of Transport, Communications, and Information Technology)
- Dr Yassin Al Mulla (Sultan Qaboos University)
- Marino Palacios (INDRA Systems)
- Stéphane Ourevitch (ALSO Space)

16. Evaluation criteria

The results of the teamwork will be evaluated based on the following criteria:

- Relevance of the solution with regards to the Hackathon topics
    - Is the solution applicable to real-world situations?
    - To which degree the solution fits with the problem that it addresses?
    - Is the solution in line with the Hackathon topics?

  Weight 25%

- Interest of the project (Is the project innovative? Does the project create added value to the user? Is the project technically viable?
    - Creativity of the solution – Does the project present an innovative solution to the problem?
    - Technical complexity – How complex is the solution?
    - Creativity of the solution – Does the project present an innovative solution to the problem?
    - Originality – How unique is the presented solution?
    - Feasibility – Is the solution feasible and realistic?
    - Traction - Is the solution validated with the marked or is there any potential customer at sight?

  Weight 50%
- Quality of the team (Technical and business experience, thematic knowledge, team sprit)
    - Teamwork – Was the project the result of a collaborative effort?
    - Presentation quality – Was the project presented in a clear and organized manner?
    - Clarity of presentation – Was the presentation clearly communicated to the judges?

  Weight 25%

17. How do you access and work with data?

Each team has access to a virtual machine of CREODIAS.EU during the Hackathon as well as shortly before. CREODIAS offers an online webinar with introductory information about how to use the virtual machines, configure the workspace and do the processing

Access it available from 1 June. During the Hackathon, CREODIAS offers a helpdesk from 9-18h

18. Contact

Further information can be requested from the organising team: eohackathonoman@gmail.com