

Announcement of Opportunity

Invitation to Tender:

Expert Support for EO Data Hub Procurements

1. INTRODUCTION

The National Centre for Earth Observation (NCEO) is pleased to announce an invitation to tender to obtain external expert support for the development of the main ITTs for the EO DataHub. These ITTs will concern work to be commissioned for the implementation and initial operations of the Hub's core software infrastructure. ITTs are expected to be released in a staggered manner between May and July 2023.

The newly commissioned EO Data Hub (EODH) has the objective to deliver an innovative, pre-operational pathfinder data and analysis "single point of access" for UK EO data offerings from distributed public and commercial sources. It will implement a uniquely UK offering which will federate access to data and provide centralised software services to bring value across the breadth of UK EO sector users. The EODH:

- Builds on current EO infrastructure provision whilst looking forward to new satellite missions and other data sources;
- Provides adaptive and scalable software implemented in the cloud to access and transform data streams;
- Supports new EO transformational tools (core and user-provided) to produce analysis-ready data systems and merged products via a modular container-based approach to software.
- Improves EO data access and discovery, interoperability, transparency, and trustworthiness, including a dedicated Quality Assurance Service.
- Will enable unified but flexible UK access to EO data from across multiple (public and private) sources, through common and accessible interfaces for a broad set of data users by implementing a Hub which can access a wide variety of public, scientific and commercial data, support for data-proximate computing minimising downloads and dedicated web application and portals to serve broad communities or dedicated services.
- Is a national UK asset which provides the first phase in dedicated national data infrastructure for Earth Observation.

The EODH has been funded by the National Environment Research Council (NERC), part of UKRI, through the Copernicus transition, national project funding provided by the Department for Science, Innovation and Technology (formerly BEIS)^{1 2}. The consortium is led by NCEO (including CEDA @ STFC RAL Space and U. Leicester staff), the Satellite Applications Catapult (SAC), the Met Office, the National Physical Laboratory and the UK Space Agency.

1.1 EO Platforms and the EO Data Hub (EODH) Concept

Over the last decade, the *Platform* concept has developed and matured in the EO sector as a means to bring together data and computational resources into a unified virtual work environment for users³. The EODH builds on this approach and will offer a software framework operating in a (public) cloud environment. This suite of software services will include - but not be limited to - identity and access management, a searchable catalogue for data and other resources, capability to assemble data pipelines to transform data into value-added and/or analysis-ready data products. This software system is the key to unlocking the wide variety of data in a data stream layer, an extendable architecture in which any number of data sources can be integrated. An important feature of this UK EO Hub system is that it will interface, by intent, to public service data (state-funded through space agencies), commercial datasets e.g. from constellations, and UK scientific data as described above through Application Programming Interfaces (APIs), allowing data discovery and data access using open standards-based interfaces. Critically, the datasets will be given a “trusted” approval status through a Quality Assurance Service running in the Hub software in parallel to the data search function.

A further crucial element is that the automated workflows of the Hub will allow code containers (encapsulating algorithms or tools) that can transform the data into forms that the user can exploit more easily. These containers can be Hub-provided functions, user-supplied code or open-source routines; our aim is to provide some key tools centrally through experts in our organisations, ranging from data formatting to atmospheric correction and cloud clearing.

Finally, the **Hub capabilities will support the development of web-based applications which build upon the data access and processing functionality provided by the Hub to implement thematic area-specific portals and analysis environments for users**. These applications are intended to give end-users the ability to interrogate key products, customise data, request expert support, develop value-added products and support decision making, all tailored to the specific application scenario or theme.

¹ <https://www.gov.uk/government/publications/earth-observation-investment>

² <https://www.nceo.ac.uk/article/uk-government-commits-close-to-400-million-to-earth-observation-research-and-industry-projects/>

³ <https://docs.ogc.org/bp/20-089r1.html>

For this pathfinder project, the EODH will support the development and operation of up to three web-based applications/portals as part of the national government-supported asset, one of which will be a climate data-driven offering and the other two of which will be directed at user-driven priority sectors. To these will be added more focused, user-commissioned web applications offering specific services to collaborative and customer bases.

2 CALL DESCRIPTION

The project consortium is seeking external expert support for the development of the main ITTs for the EODH. These include calls for work concerning the integration of data streams, core Hub software infrastructure and web applications/portals which exploit the Hub. ITTs are expected to be released in a staggered manner between May and July 2023. The ITTs will be released via STFC's procurement processes.

We require the support of one or more individuals from supplier organisations. This individual or persons will join a team which will include members of the project consortium. This team will specify the ITTs considering the expressed goals of the project as mandated by NERC and DSIT, user engagement work conducted over the next months - including the outputs from the funded User Pilots, and the state-of-the-art in the provision of platform-based services in the EO sector. Taking into account the latter and the scope of the project set out in section 1, the following material is relevant:

1. Outputs from the OGC (Open Geospatial Consortium) including but not limited to specifications, engineering reports and testbeds. Examples include the OGC Best Practice for Earth Observation Application Package⁴
2. ESA's Earth Observation Exploitation Platform Common Architecture⁵
3. Relevant initiatives, programmes, services in the EO sector and broader environmental and earth sciences such as the Copernicus Climate Data Store, Copernicus DIAS, Pangeo initiative, commercial and public sector-based platforms which provide access to data or aggregate access to data across multiple sources
4. Cloud computing technologies
5. Open-source software toolkits for the processing, manipulation and analysis of data
6. Technologies and standards for federated identity and access management

The person(s) from the successful supplier(s) will be required to sign a personal NDA (Non-Disclosure Agreement). This will require them not to disclose any information about the ITTs to anyone outside of the project team. The NDA will be in force for the duration of the preparations of the ITTs, their release

⁴ <https://docs.ogc.org/bp/20-089r1.html>

⁵ <https://eoepca.github.io/>

and up to and including the closing date for the last ITT released. The exact terms for the NDA will be agreed with the selected supplier(s).

2.1 SELECTION CRITERIA

We are seeking a supplier who is able to provide a person or persons with the following skills and experience. Experience must apply to working in the EO sector and/or GIS and/or environmental and earth sciences. **The selected consultant(s) will work with NCEO (both at the University of Leicester and STFC RAL Space) and other project partners as required.**

Essential:

- Extensive experience (5 years+) of developing software applications
- Proven track record delivering software development projects against tight deadlines
- Experience with the application of standards relevant to the EO domain such as OGC, CEOS
- Experience in leadership and management for the delivery of complex software systems
- Extensive knowledge and experience of cloud technologies (such as Docker and Kubernetes) and public cloud APIs, applications and services
- Knowledge of the UK and international landscape of EO data and service providers
- Experience of developing web services, data services and web applications
- Experience of continuous integration systems connected with version control systems

Desirable:

- Track record of leading and contributing to successful bids for funding
- Experience of working in a commercial environment
- Experience of preparing ITTs
- Experience of requirements capture and analysis
- Experience of handling and processing satellite and climate datasets
- Experience of working with scalable systems for cataloguing, discovering and processing environmental data

2.2 PROJECT BUDGET AND DELIVERABLES

Individual proposals may be submitted up to the value of £40,000 (excl. VAT). The end date of this part of the project being end July 2023. **Individual personnel are expected to commit to a minimum of ten days effort per month during the period of the contract.**

The call is released on 4th April 2023 **with a closing date of Tuesday 18th April 2023 at 23.59**. Proposal selection will take place immediately, in anticipation of work commencing from 24th April 2023.

Deliverables:

- **D1:** Attendance at initial procurement planning sprint (by 30th April 2023)

- **D2:** Attendance and contribution to procurement planning meetings with the project team (by 30th June 2023)
- **D3:** Provide documented technical analysis and recommendations for software requirements to be set in the tender documents. (This analysis to be based on the state of the art in platforms development in the EO sector and the outputs from the project’s user engagement activities) (over the stated work period with completion by 30th June 2023)
- **D4:** Co-authorship, review and submission of procurement tender documents (over the stated work period completing by 31st July 2023)
- **D5:** Review and assessment of tender proposals (over the stated work period completing 31st July 2023)

3 GUIDELINES FOR PREPARING AN APPLICATION

Applicants are required to submit their bid by email, including the application form in section 11 in a cover letter, by 23.59 on Tuesday 18th April 2023. Email to:

nceo-datahub@leicester.ac.uk

The package should consist of:

- A cover letter.
- The completed application form in section 11.
- A main proposal of no more than 4 pages of A4 (12 point, Arial). The proposal should contain the following sections:
 - Proposed candidate(s) to provide expert support
 - Candidate(s) relevant experience and expertise
 - Motivations for proposing a candidate for this role
 - Proposed contributions – how will the procurement process benefit from involving the candidate(s)
 - What you consider the key success factors will be for the EO DataHub
- A 1-page statement of financial costs, giving hourly rates for personnel (ideally named), total hours and any meeting or other costs.
- A 1–2-page Track Record about the bidding organisation.
- A CV (no more than 2 pages) for the proposed person or persons.

In the cover letter please include:

- A brief outline of the candidate(s) being proposed and how they will benefit the EO DataHub procurement process
- A committing offer to the University of Leicester, who will contractually administer the contract on behalf of the UK EO DataHub consortium and on behalf of NCEO.

The financial proposal should:

- Be no more than 1 page.
- Include a table of personnel costs, including hourly rates and total hours.
- Indicate company contributions where appropriate.

Define all other costs by item, e.g., cost of meetings (estimated number of people, estimated number of meetings). You can assume that there will be 3 face-to-face meetings held at either RAL (Oxfordshire) or NCEO HQ (Leicester) during the course of the work.

Questions for clarification may be submitted by email to support@ceda.ac.uk with the subject line, “EO Data Hub Expert Support Procurements AO”. Questions posed, along with their answers, will be made publicly available. To preserve anonymity, the identity of the originator of the query will not be made public.

7. CONTRACTUAL INFORMATION

Award(s) will take the form of a contract between the University of Leicester, NCEO and the project’s lead organisation.

The award will be made on a firm fixed price basis. The Intellectual Property generated during the project will belong solely to the EO Data Hub project.

All relevant costs must be included within the total amount of the contract.

Up to 25% of the payment will be made on KO, and a further 25% payment will be made against the first deliverable due by 30th April 2023. The remainder of the payment will be made on completion of the final deliverables by 31st July 2023.

Proposed individuals also agree to:

- a) Claim finance by invoice under U. Leicester’s contracting agreements
- b) Maintain flexibility in working arrangements
- c) Sign a personal NDA (Non-Disclosure Agreement). This will require them not to disclose any information about the ITTs to anyone outside of the project team. The NDA will be in force for the duration of the preparations of the ITTs, their release and up to and including the closing date for the last ITT released. The exact terms for the NDA will be agreed with the selected supplier(s).

8. ASSESSMENT OF PROPOSALS

The review panel will consist of EODH personnel. Proposals will be evaluated against the criteria in section 2.1.

9. PROJECT REPORTING

The outcomes of this work will feed into future procurements for the EODH. There is no specific report required as an output. The participant(s) will be expected to be fully involved in the timely production of the deliverables stated above. All work will be completed by 31st July 2023.

10.ELIGIBILITY

Bids are welcomed from a variety of organisations including academia, industry and government research institutes, ideally based in the UK.

11.APPLICATION FORM

The Application Form below should be completed and submitted with the Cover Letter.

Title of Project	Expert Support for EO Data Hub Procurements
Lead organisation	
Lead contact name and email	
Other organisations involved	
Cost for lead	£
Cost for each partner organisation	£
Total cost of project	£
Address of lead organisation	
Thematic area/areas , e.g. agriculture, flooding, climate finance, disaster response, general	