ECMWF Copernicus Procurement

Invitation to Tender



Copernicus Joint Services Volume II

Enhancing User Intelligence: Targeted User Uptake for C3S

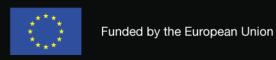
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1 Introduction

The Copernicus Climate Change Service (C3S) implemented by ECMWF on behalf of the European Union develops and delivers authoritative, quality-assured information about the past, current and future states of the climate in Europe and worldwide. It aims to a) inform policy development to protect citizens from climate-related hazards such as high-impact weather events, b) improve the planning of adaptation practices for key human and societal activities, and c) promote the development of new applications and services for the benefit of society.

C3S is a user-driven service with the aim to meet the needs of its users, now, and in the future. Thus, it is important to collect evidence in a structured and traceable way and exploit this business intelligence to support the strategy and evolution of the service. User engagement activities are a key element in this regard. The ambition of C3S User Engagement is to increase user uptake and user satisfaction, promote the development of novel ways of using the data and provide training with the ultimate objective of enhancing the overall impact of the Copernicus services. In doing so, it supplements and closely collaborates with other user-oriented service components including scientific and technical expertise, C3S Service Desk, communication and outreach as well as evaluation and quality control. Figure 1 shows the building blocks of the C3S User Engagement Strategy. This Invitation to Tender (ITT) focuses on building block "Enhance user intelligence".

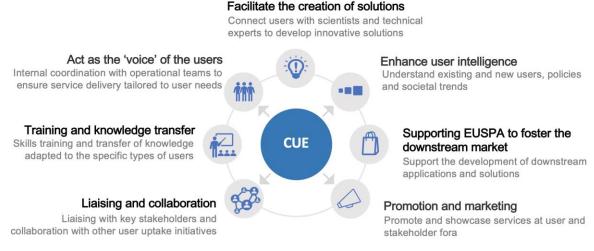


Figure 1: Building blocks of the C3S User Engagement Strategy

ECMWF, as the Entrusted Entity for the Copernicus Climate Change Service, invites tenders for the development and delivery of user intelligence and user uptake sessions. The successful Tenderer shall be responsible for the planning and implementation of targeted user engagement events to foster uptake of C3S products and services and collect user requirements.

This ITT comprises User Intelligence enhancement activities and User Uptake sessions as a key contribution to the C3S National Collaboration Programme (NCP) and other C3S user uptake activities. The successful Tenderer shall a) identify national and transnational priorities and stakeholders and b) facilitate and maintain the targeted collection of user information as well as their needs and requirements (Figure 2).

Other two actions on: Training & Knowledge Transfer (3 in the diagram in Figure 2) and Applications & workflows on demand (4 in the diagram in Figure 2) complement C3S' strategy on user uptake focusing on key elements strongly requested by several users and considered important as well by ECMWF to increase the C3S user communities and to find solutions to respond to specific user needs.

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Figure 2: C3S National Collaboration Programme outline

As Entrusted Entity, ECMWF's mandate is to support user uptake focused on European Union institutions and bodies, national and regional public authorities in the European Union or Copernicus participating states. In addition, ECMWF focuses on user needs of intergovernmental and international public organisations.

Collaboration and engagement with 'intermediate' players, including domain specialist contractors, big data specialists, researchers, etc. are important to develop actionable solutions, transfer knowledge and to illustrate applicability at the service of the Copernicus core users. Good insights into all players active in the data value chain is therefore a crucial aspect to enhance User Intelligence and is as such an important part of this ITT.

2 Background Information

The continuous and constructive exchange of information between EU Member States (MSs), Norway and Iceland, the European Commission and ECMWF, as implemented at the level of the Copernicus Committee and Copernicus User Forum, results in improved products and services that better address national needs. Nevertheless, additional interactions are needed between ECMWF and countries¹ to ensure that user requirements are well formulated, fully understood and, ultimately, adequately addressed by C3S services and products. Furthermore, specific challenges may require solutions at transboundary level, e.g. for certain catchment areas, mountain ranges or coastal areas and need to be assessed from that perspective.

In addition, to create a full picture on user requirements within the wider European and international setting and the optimal use of climate data and information in support of policy formulation, implementation, reporting and evaluation, engagement with the EU Institutions and Agencies as well as UN bodies is a cornerstone of C3S user engagement.

C3S has established a transparent and traceable process for effective handling of user requirements. It maintains a comprehensive User Requirements Database (URDB) to record all user requirements that comply with the mandate of the Service, together with rich information about context and source of each requirement. User requirements are continuously collected by C3S and prioritised based on feasibility, benefit to users, and cost effectiveness. Recommendations for technical implementation together with

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¹ Targeted countries include the 27 EU Member States, Norway and Iceland. For transboundary challenges, also neighbourhood countries may be included.

supporting information are regularly provided to the Commission in the form of User Requirement Analysis Documents (URAD) in line with the General Data Protection Regulation (GDPR).

User requirements are collected by various means, e.g. proactively in dedicated workshops and user events, as feedback to training and knowledge transfer sessions, via user surveys and questionnaires or on a continuous basis via other interactions with actual and potential users as needs arise. Co-organising national user events together with national and local representatives have proven highly effective and have led to increased uptake of services by national actors and yielding clear and actionable information about their specific requirements. The user engagement and training elements of the Service offer many opportunities for individual interactions that could often lead to better insight of specific requirements and other user needs.

Proactive and sustained engagement with users at the working level is needed to render the Service truly relevant to the Copernicus participating states. Working with key institutional users at national level, such as NMHSs and other environmental service providers, is important in order to gain a better understanding of national needs and how they can best be served. C3S will actively establish national uptake actions to enforce the connection between Service products and national regulatory activities. The role of C3S will be to enable and actively support co-development of downstream services within the countries by its national institutions.

As a user-driven service, C3S has developed a business process for the collection, management and implementation of user requirements (Figure 3). Recent efforts have been made to harvest information from all user enquiries to C3S made via the Helpdesk. These requirements are systematically ingested into an operational User Requirements Database (URDB) to cover various elements of C3S such as datasets, applications and infrastructure.

User requirements are regularly clustered, analysed and presented in User Requirements Analysis Documents (URAD), which include actionable recommendations to guide the evolution of the service. An internal C3S board deals with these recommendations and triggers appropriate actions for implementation.

The list of emerging and existing user requirements, the routinely updated user requirements analysis and the existing service product portfolio, is being continually monitored and feeding into a Service Evolution Strategy (SES) document, which proposes a longer-term perspective for forthcoming service upgrades and extensions, the expected benefits and costs, together with recommendations for potential research needs outside Copernicus operations.

The information provided here on the URAD is for context only. The production of URADs is not subject of this tender.

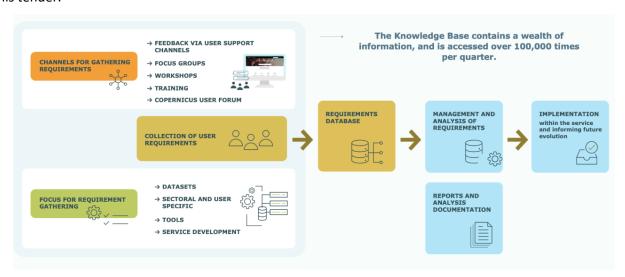


Figure 3: Sources of C3S user requirements and analysis process

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2.1 The C3S User Requirements Database: technical specifications

To facilitate the process of collecting user requirements in a structured and traceable way, a User Requirements Database (URDB) was developed in the first phase of C3S, as part of the wider Evaluation and Quality Control (EQC) activities. The initial release was in April 2019. Since then, it has been accessible to ECMWF and authorised users at https://urdb.copernicus-climate.eu.

The URDB is a web application developed in Python using the Django framework and a standard SQL database. Under the C3S_513 contract it was maintained by Telespazio UK using an agile DevOps approach. The system is deployed on ECMWF infrastructure using Docker containers with nginx as the front-end web server. The domain name https://urdb.copernicus-climate.eu/ is controlled by ECMWF. The system presently uses the internal database that comes with Django, but could, in future be configured with other "large" database engine (e.g. PostgreSQL).

The URDB is designed to function as a stand-alone system. All components are open source and free of commercial license. The operational URDB is running on a Virtual Machine provided by ECMWF on their cloud infrastructure.

Four distinct roles are supported in the URDB:

- Viewer: Explores the URDB content without changing anything
- Reporter: Inputs new Requirements
- Analyst: Organises requirements using Labels in order to compose report
- Administrator: Manages user accounts, maintains the integrity of the content

The current number of entries at the release of this ITT stands at 4706. The requirements cover a broad range of different subjects, such as requests for new data, changes to existing data, guidance, visualisation, documentation, user satisfaction, metadata, new tools and others. As a result of extensive user engagement activities within the Sectoral Information Systems (SIS), (https://climate.copernicus.eu/sectoral-specific-challenges), user needs from various sectors are well-represented (Figure 4). The SIS is the C3S component designed to develop and deliver sector specific demonstrators built on the data and tools made available by the service.

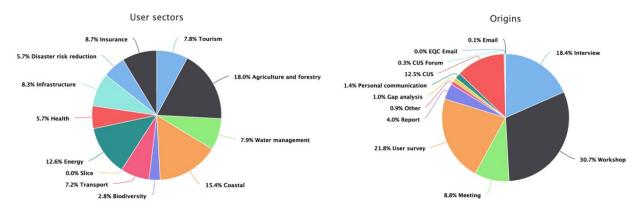


Figure 4: Current URDB statistics on user sectors (left) and origins of requirements (right)

The URDB provides various filter and reporting functionalities to facilitate use. Import and export of content via a Microsoft Excel spreadsheet is possible. A spreadsheet template of the schema is available for offline collection of requirements and is shown in Annex 1 (see Section 6.1).

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3 Technical Requirements

ECMWF intends to award a single multi-annual framework contract (maximum 36 months) for the planning and conduction of targeted user engagement activities and for the management and analysis of user requirements resulting from these activities as well as from other sources.

The aim of the user engagement activities is threefold:

- 1) Foster the uptake of C3S products and services through close interaction with entities across countries and the EU institutions and agencies.
- 2) Collect tangible and traceable user requirements from these interactions to inform C3S about critical needs and priorities mainly at the national level.
- 3) Facilitate analyses of the collected requirements to enhance C3S' understanding of the users and the context in which they operate.

The successful Tenderer shall:

- Plan and run targeted user interaction sessions at national level.
- Assess specific user needs at transboundary level for a small selection of climate vulnerable areas.
- Conduct a selected number of small-scale and targeted policy workshops (including on climate adaptation and relevant environmental policies) to assess needs at European Commission policy DGs.
- Support other user engagement activities as organised by the ECMWF C3S team.
- Conduct regular surveys, questionnaires and interviews to take stock of user satisfaction and user needs.
- Collect user requirements from user engagement interaction sessions, the C3S Helpdesk and other sources.
- Perform basic maintenance of the User Requirements Database.
- Report regularly on statistics from the URDB (such as new requirements).
- Analyse systematically and routinely requirements in the URDB and support ECMWF in producing regular URAD reports.

The tender shall be organised in work packages (WP) following the general information flow covering the user engagement activities as well as the management and reporting of information with regard to enhancing intelligence on C3S users (Figure 5).



Figure 5: Main work packages to be addressed by this tender

The following subsections list specific requirements for the different work packages.

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3.1 WP1: Stakeholder engagement

Engagement with external stakeholders, as well as setting up targeted engagement activities with users (or potential users) at the national (and to a lesser extent transnational and sub-national) level shall be the focus for gathering User Intelligence in the framework of this tender. The activities shall be planned and conducted in close cooperation with the User Outreach and Engagement team at ECMWF. Furthermore, existing synergies with the User Support team at ECMWF shall be continued by harvesting requirements emerging from Helpdesk communications.

In order to better reflect the current user characterisation (as followed in the reporting to the European Commission), the existing URDB structure (fields, templates etc.) shall be adapted accordingly and evolved. This shall also enable the capturing and ingestion of new types of requirements beyond purely technical ones in order to reflect novel market and policy needs, new user types, etc.

3.1.1 User interaction sessions at national level

Events, such as meetings and workshops, are a crucial aspect to gather user requirement inputs and to exchange thoughts about user experience and other aspects which impact effective user uptake. But usually, they are only one-off events with limited follow-up. With this contract, ECMWF would like to stretch the time of such interactions with the organisation of a regular sequence of User Interaction Sessions (lasting for 3-4 months) having workshops as closing events for this longer process. The entire User Interaction Session shall provide a platform for showing the C3S data products portfolio and linked applications and services as well as ongoing C3S developments (e.g., a climate attribution service) and further plans which are in progress. The data value chain between C3S and its service providers and the different intermediate and end users and other stakeholders shaping the creation of C3S-based solutions should be taken into account in the organisation of these sessions, and consequently of the final events. To enable further expansion to emerging and new user communities, an open approach is needed to the extent possible.

The planning of user interaction sessions shall be discussed and agreed with ECMWF, taking into account policy linkages and potential collaboration areas between C3S and stakeholders at the national level.

The successful Tenderer shall organize a minimum of **two series of user interaction sessions each year, or 6 in total** in collaboration with C3S. This mainly involves interactions with existing and prospective C3S user communities at national level.

The sessions will be co-designed in full partnership with and for national authorities. A distinction shall be made between large scale, open user events and small, closed workshops and the approach shall be adapted in line with the type of users to be involved. If needed, a desk study, survey and/or interviews will be conducted in preparation to enhance the impact.

With the overarching goal to improve ECMWF knowledge of existing and new users and their role(s) in the data value chain, and based on C3S interests in specific policies and societal trends, the outcomes of the interaction sessions (and more in general of this contract) would support ECMWF in co-designing some dedicated national follow-up user uptake actions (as part of the C3S National Uptake Strategy) to better respond to the needs of core users filling the existing gaps at national or subnational level.

3.1.2 User interaction sessions at transboundary level

The successful Tenderer shall assess specific transboundary challenges for climate-vulnerable regions. A desk study shall be performed and shall be based on previous initiatives by ECMWF C3S as well as other initiatives, including by EEA.

Depending on well-identified needs, transnational activities shall be covered as well. Examples could include the Alps and other mountain ranges, transboundary river basin catchments (e.g. Danube) or sea basins (e.g.

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Mediterranean) and the Arctic region. User requirements collected in such sessions should be clear, specific and actionable.

During the contract, a minimum of three user interaction sessions in collaboration with C3S shall be organised involving relevant transboundary authorities and selected countries. Long-term engagement actions via users' fora, applications and workflows and training sessions shall be assessed for implementation.

3.1.3 Policy workshops with and for the European Commission

The successful Tenderer shall conduct at least two small scale and targeted policy workshops in collaboration with C3S to assess needs at European Commission policy DGs, including on climate adaptation and related environmental policies.

The main goals of these workshop are:

- gather the community of existing and emerging policy users (at EU and national level) in order to discuss about C3S products/services;
- gather feedback on the products delivered by the service relevant for their policies;
- co-design some follow-up actions supporting activities to raise awareness on the potentialities of C3S products and services for the implementation of European policies.

ECMWF shall identify priorities for the workshops and establish the contacts with target policy DGs and the Knowledge Centre for Earth Observation (KCEO) of DG DEFIS/JRC.

In addition, the idea of the policy workshops is also to strengthen the cooperation with national policy experts on climate data needs through the organisation of tailor-made sessions. The C3S NCP aims at facilitating the implementation of European-wide C3S data services at the national level, together with all relevant actors.

This process shall foresee different steps as:

- before the workshop: communication to identify the core themes to be discussed during the workshop and agree on the main agenda items;
- during the workshop: cooperation with keynote speakers and invited experts to respond to the agenda priorities.
- after the workshop: cooperation to conclude on lessons learned and identify follow-up actions.

Because of these co-creation processes, the agenda and form of these workshops evolves to respond to changing user needs.

3.1.4 Support other user engagement activities as organised by ECMWF C3S team

The successful Tenderer shall support other user engagement activities as organised by the ECMWF C3S team in scope of partnerships, including with EEA, EIB, UfM, ENTSO-E, NEREUS and UN bodies as needed. Coordination shall also be sought with the EU Mission: Adaptation to Climate Change, which is a contribution to the EU Adaptation Strategy and more broadly to the European Green Deal.

Activities to be performed by the contractor may include online management of workshops, moderation, minute taking, etc.

A minimum of three support actions shall be foreseen over the full duration of the contract.

3.1.5 Structure of user interaction sessions

Each user interaction session shall include the following steps:

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1. Identification of potential user interaction session (T0-4months)

Proposals shall be made to ECMWF on potential interaction sessions co-designed and organised together with relevant national (or trans-national) authorities (hereafter called 'user interaction partner'). Proposals shall be made in February and September (or at the latest 4 months before the event; T0-4months where T0 is the date of the workshop).

Close connections and effective engagement are key to success and shall be a determining factor in the selection. Other selection criteria shall include potential increase in user uptake in terms of geographic coverage in Europe (e.g., based on user uptake statistics), specific needs for coordinated meetings in scope of the Sectoral Information Systems and the emerging C3S National Collaboration Programme, as well as other concrete user engagement opportunities or strong national interest linked to independent national ongoing actions. Aspects which potentially increase the interest such as the rotating presidency of the Council of the European Union or policy strategies at EU or UN level shall be taken into account as well.

ECMWF and the successful Tenderer shall decide together which user interaction sessions to organise.

2. Collaboration and co-design of the user interaction sessions (T0-4months-T0)

Objectives, expected impacts, speakers, audience, interaction session components and the linked roadmap shall be established by the successful Tenderer and the relevant user interaction partner and agreed with ECMWF. This shall also include the practical organisational aspects, communication plan and concrete user requirements aspects aimed to be addressed. To optimise the impact of the interaction sessions, a small desk study, interviews with stakeholders and key-users or a small and targeted survey may be organised.

These four months of collaboration with the user interaction partner should be regarded as a user interaction in its own and ECMWF and, if needed, other C3S service providers shall be involved at regular intervals during this process.

The size and format of the interaction sessions shall be determined at the beginning of this process and may vary depending on actual needs and wishes. Efforts on publicity and communication shall be aligned accordingly, in close collaboration with the ECMWF Copernicus Communications team.

Eventual COVID-19 restrictions and linked safety considerations shall be taken into account and effective mitigation actions proposed as part of the risk assessment.

In case of physical meetings, carbon footprint shall be considered in the choice of location as well as a range of lunch options, including vegetarian, to cater for all needs.

3. Organisation of the user interaction sessions (T0-T0+1month)

The objectives aimed to be achieved, shall determine the approach on the practical organisation of interaction sessions.

- Where the aim is to have an open meeting with high-level speakers and a wider target audience, a virtual setting is preferred to maximise reach. The event is ideally recorded and broadcasted via an online video platform (e.g., YouTube, Vimeo).
- Where the aim is to have a meeting to collect specific user requirements or to test ideas with a
 targeted group of users, a closed workshop is preferred to stimulate effective engagement and
 interaction. These interactive workshops are ideally organised as a physical meeting in the
 collaborating country. Alternatively, physical meetings can also be organised at the ECMWF premises
 in Bonn, Germany or Bologna, Italy.

An open meeting and targeted closed workshop/hackathon may as well be organized back-to-back or with an interval of a couple of weeks to allow for assessments and organizational needs.

For collaborations at national level, language requirements shall be taken into account.

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4. Aftercare (T0 -T0+2months)

Upon closure of the interaction session(s), a questionnaire is sent out to ask for feedback. Maximum two months after the interaction sessions, a wash-up meeting is organised with the organisational partner(s) and ECMWF to evaluate the impact of the event and to identify eventually follow-up actions and linked roadmap.

The results of the sessions are fed into the user analysis as specified in WP 3. The successful Tenderer shall provide reports documenting the acquired user feedback.

The budget proposed for the organization of the C3S user interaction sessions must include all aspects:

- preparation of the interaction sessions, including preparatory study work and surveys, if needed;
- set-up and management of registration of attendants;
- management of the virtual event platforms and recording of the event;
- logistics on venue hire, coffee and lunch breaks for attendees;
- the organization of the event itself; as well as
- the aftercare.

3.1.6 General information for stakeholder engagement

For large virtual events, simultaneous translations may exceptionally need to be foreseen. If required and agreed to do so, the additional costs will be covered by ECMWF.

Covering dinner and accommodation costs of participants is not mandatory. It is not expected that travel costs of participants shall be covered under this ITT other than possibly for invited speakers.

The Tenderer can use an indicative average number of 50 attendees for each event to estimate the budget at tender preparation level. For the actual budget planning during implementation, budget estimates will be fine-tuned depending on the requested scope and nature of the interaction sessions and this at the latest 4 months before the event takes place.

The Tenderer shall propose an interactive virtual platform compliant with Copernicus branding and present an approach to operate and manage it.

The ECMWF Copernicus Communication team publishes the announcement on the events on the C3S website and supports in social media to increase visibility and, if pertinent, press and other media coverage will be used by the successful Tenderer to describe the complete list of deliverables, milestones and schedules for this work package. All milestones and deliverables shall be numbered as indicated. All document deliverables shall be periodically updated and versioned as described in the tables.

List of minimum deliverables and milestones required:

- Concept note for each user interaction session;
- Budget Plan for each user interaction session;
- Report on results and actions from each user interaction session including, among others, user
 uptake and possible collaborations, as well as lists of tangible user requirements emerging from user
 interaction sessions;
- Concept note for each policy workshop;
- Budget plan for each policy workshop;
- Report on results and actions from each policy workshop including, among others, user uptake and
 possible collaborations, as well as lists of tangible user requirements emerging from policy
 workshops.

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3.2 WP2: User requirements collection

The primary source of user requirements will be the mechanism described in Section 3.1.

In addition to the user engagement activities described above, the successful Tenderer shall also take care of user requirements collected elsewhere across the service. This includes activities in the context of the SISs, training activities, other C3S national uptake actions and requirements emerging from Helpdesk tickets (which are tagged as potential requirements by the User Support team).

Another important source of user intelligence are surveys, e.g. on user satisfaction, which are being conducted in C3S on a quarterly basis. The successful Tenderer shall liaise with the User Support team and the Outreach, Reporting, and User Intelligence Officer to help plan, conduct and analyse surveys as required.

The successful Tenderer shall interact with the existing User Requirements Database (URDB) in the following ways:

- Ingesting new requirements from sources outlined above.
- Deriving user intelligence from requirements in the URDB (including new as well as relevant existing requirements where appropriate).

Initially, the contractor shall be responsible for the management of the URDB system, including the creation of new fields or modification of existing ones. Full technical administration and further development of system components shall, however, not be part of this tender.

User requirements shall be ingested from templates as an outcome of user interaction sessions and other sources as described above.

The existing URDB requires a careful sanity check and rationalisation of the database in order to make its use more efficient. This shall include the removal of duplicates, irrelevant requirements and, in particular, requirements without valid or concrete user information.

The successful Tenderer shall focus on requirements which can be traced back to the original source of the user and which fit into the C3S user characterisation categories.

The updated URDB shall account for the current user characterisation categories as used in the reporting to the European Commission. These include "Affiliation", "Thematic activity", "Sector of activity", "User geographic origin" and "User activity" (see Section 6.2 for details). The rationalised database is expected to facilitate any further analysis.

The successful Tenderer shall:

- take responsibility for basic administration of the current User Requirements Database;
- support the collection of user requirements for the whole C3S programme (either collected directly by the successful Tenderer or by other C3S contractors);
- insert user requirements into the database, and facilitate input by other actors authorized by ECMWF;
- rationalise the database and adapt to new user characterisation categories;
- update the existing URDB template;
- map existing user requirements to the user characterisation scheme (where possible);
- maintain the URDB as a living database with continuous access by ECMWF;
- issue a consolidated version of the database on an annual basis;
- take stock of broader user intelligence resources at ECMWF and advise on ways to integrate and streamline information (where possible).

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List of minimum deliverables and milestones required:

 Annual report on the status of the user requirements database, including recommendations for further evolution.

3.3 WP3: Analysing and reporting of collected User Intelligence

The successful Tenderer shall be responsible for providing inputs to enhance intelligence on C3S users by regularly analysing user requirements as well as for the regular reporting of statistics and findings.

3.3.1 User requirements analysis

In order to facilitate further reporting and follow-up activities, an initial analysis of user requirements shall be performed. These analyses shall be based on all requirements identified and collected in WP2 which align with the current user characterisation scheme.

The successful Tenderer shall make use of the label field in order to facilitate any further analysis.

A particular effort shall be made on the lifecycle status of the requirements which, so far, has not been used systematically. The successful Tenderer shall therefore perform a screening of the status of these remaining requirements in collaboration with ECMWF and fill the lifecycle field accordingly. The lifecycle represents the status of the requirement, such as "implemented", "in progress", "new" etc.

The successful Tenderer shall also provide a first screening of new entries in the URDB every three months to assess whether these user requirements are within the scope of C3S services and have not already been addressed by existing C3S services and their development plans.

The successful Tenderer shall cover an annual analysis of the list of most frequent requirements and an assessment of service evolution linked to the driving user requirements and present the results in an appealing format for use by ECMWF in further communications.

Lastly, the successful Tenderer should develop a number of "success stories" where user requirements have been addressed by C3S and have led to a positive impact for the users. This shall cover the whole lifecycle of a requirement, from its collection to final implementation. Success stories may also cover cases where user uptake has been increased as an outcome of a user interaction activity.

The outcomes of this work package shall support ECMWF in the production of the User Requirements Analysis Documents and the subsequent Service Evolution Strategy.

3.3.2 User statistics and user intelligence reporting

It is important to have a good overview of the user base at all times. The successful Tenderer shall therefore provide quarterly reports documenting a statistical analysis of C3S users and additional user intelligence.

The reports shall include an analysis in terms of:

User characterisation including affiliation (detailed in line with Copernicus core users and other users), thematic activity (as defined per EU policy domains), sector of activity (policy, R&D, commercial, etc.) and geographic origin. The full list, aligned with User Characterisation specifications as defined by the European Commission, shall be provided to the preferred bidder during the negotiation phase;

Collected user requirements, including service needs (e.g., near-real-time data access, policy products), product portfolio (e.g., regional products, global products), and activity level (e.g., daily access to data, occasional access to data).

The reports shall be based on the information documented in the URDB, all available data usage statistics as generated via the Climate Data Store (CDS), access statistics on the C3S web portal (incl. microsites), new and

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emerging user needs as well as potential other statistical user information such as on trainings and MOOCs including those organised via WEkEO and other linked initiatives.

 $The successful Tenderer shall acquire the relevant user information from {\tt ECMWF} and {\tt the C3S} service providers.$

In addition, for Quarter 2 (June) and Quarter 4 (December), the successful Tenderer shall report on:

- Updates on collected information on new and emerging user needs;
- Updates on the mapping of data value chains between C3S service providers and end users:
 assessment of users in function of their position in the data value chain (purveyors, intermediate
 user, end (core) user), aspects which influence connectivity and applicability (including governance,
 infrastructural and skills related aspects) and identification of stakeholders and external data
 providers essential for solution driven C3S uptake;
- Ideas to enhance overarching user experience: based on lessons learnt from user interactions, provide input on identified user journeys, assessment of needs for data connectivity and accessibility, training and capacity building, user targeted C3S products promotion, inspirational material (user stories, demonstration cases), etc. to increased user uptake and satisfaction;
- Needs assessment to reach out to new intermediate players in support of Copernicus core users' requirements: identification of new intermediate players, including domain specialists, graphic designers, etc. which can support to serve better Copernicus core users' requirements;
- Updated summary of eventual user engagement follow-up actions, including documentation, eventual trainings, capacity building sessions, feasibility studies and other actions demonstrating the use and applicability of the C3S product portfolio for Copernicus core users.

List of minimum deliverables and milestones required:

- Quarterly report on collected user requirements, user characterisation and updated lifecycle status.
- Bi-annual report on collected information on new and emerging user needs, mapping of data value chains, ideas to enhance user experience, needs assessment of new intermediate players and user engagement follow-up actions.
- Annual report of most frequent requirements and "success stories" where user requirements have been implemented or user uptake has been increased.

3.4 WP4: Liaison with ECMWF to stay abreast of C3S service offer and evolution

The successful Tenderer shall at all times closely liaise with ECMWF to stay abreast of the C3S service offer and evolution. The contractor shall keep up to date with the activities of the service by holding quarterly (and in the beginning monthly) meetings with relevant C3S stakeholders and shall be involved in internal meetings dealing with user-driven service evolution.

This may require sending personnel to ECMWF premises for a certain amount of time in order to create closer bonds, e.g. during the kick-off period of the contract or when next experts are to be integrated.

The invested time shall strengthen in-depth insights into ECMWF User Outreach and Engagement activities, C3S data products and services in order to prepare, run and evaluate user interaction sessions in an independent way.

ECMWF experts and C3S service providers shall be closely involved to promote C3S products and services and interact with national and sub-national entities to facilitate their uptake.

List of minimum deliverables and milestones required:

• Quarterly reports on meetings with C3S stakeholders.

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3.5 WPO: Management and Implementation

The following management aspects shall be briefly described in the tender (this is not an exhaustive list):

- Contractual obligations as described in the Framework Agreement Clause 2.3 and Annex 5 on reporting and planning.
- Meetings (classified as tasks and listed in a separate table as part of the proposal):
 - ECMWF will organise annual C3S General Assemblies. The successful Tenderer is expected to attend these meetings with team members covering the various topics that are part of this ITT.
 - ECMWF will host monthly Service Level Board teleconference meetings to discuss the overarching C3S service provision, service evolution and other topics. The Prime Investigator appointed by the successful Tenderer will represent the successful Tenderer in such meetings.
 - ECMWF will organise six-monthly project review meetings (linked to Payment milestones).
 Tenderers can propose additional project internal meetings (kick-off meeting, annual face-to-face meeting and monthly teleconferences) as part of their response.
- Communication management (ECMWF, stakeholders, internal communication).
- Resources planning and tracking using the appropriate tools.
- Implementation of checks, controls and risk management tools for both the prime contractor and subcontractors.
- Subcontractor management, including conflict resolution, e.g. responsibility of the prime contractor.
- A list of subcontractors describing their contribution and key personnel shall be provided, as well as back-up names for all key positions in the contract. The Tenderer shall describe how the Framework Agreement, in particular Clause 2.9 has been flowed down to all their subcontractors.
- Management of personal data and how this meets the requirements of Clause 2.8 and Annex 6 of the Volume V Framework Agreement.

Tenderers shall complete the relevant table in Volume IIIA as part of their tender, which shall include the deliverables and milestones for this work package already indicated in the tables below. Volume IIIA will be used by the Tenderer to describe the complete list of deliverables, milestones and schedules for each work package. All milestones and deliverables shall be numbered as indicated. All document deliverables shall be periodically updated and versioned as described in the tables.

WP0 Deliverables				
#	Responsible	Nature	Title	Due
D0.y.z-YYYYQQ	Tenderer	Report	Quarterly Implementation Report QQ YYYY QQ YYYY being the previous quarter	On 15/04, 15/07 and 15/10
D0.y.z-YYYY	Tenderer	Report	Annual Implementation Report Part 1 YYYY YYYY being the Year n-1	Annually on 15/01
D0.y.z-YYYY	Tenderer	Other	Preliminary financial form YYYY YYYY being the Year n-1	Annually on 15/01
D0.y.z-YYYY	Tenderer	Report	Annual Implementation Report Part 2 YYYY YYYY being the Year n-1	Annually on 28/02
D0.y.z	Tenderer	Report	Final report	60 days after end of contract
D0.y.z-YYYY	Tenderer	Report	Finalized Annual Implementation Plan YYYY YYYY being the Year n+1	Annually on 30/09

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D0.y.z-YYYY	Tenderer	Other	Copy of prime contractor's general financial statements and audit report YYYY YYYY being the Year n-1	Annually
D0.y.z	Tenderer	Other	Updated KPIs (list, targets) after review with ECMWF	One year after start of contract

WP0 Milestones				
#	Responsible	Title	Means of verification	Due
M0.y.z-Px	Tenderer	Progress review meetings with ECMWF/ Payment milestones	Minutes of meeting	~ Every 6 months

4 Tender Format and Content

General guidelines for the tender are described in Volume IIIB. This section describes specific requirements to prepare the proposal for this particular tender, along with guidelines for minimum content expected to be included in the proposal, additional to the content described in the general guidelines of Volume IIIB. This is not an exhaustive description and additional information may be necessary depending on the Tenderer's response.

4.1 Page Limits

As a guideline, it is expected that individual sections of the Tenderer's response do not exceed the page limits listed below. These are advisory limits and should be followed wherever possible, to avoid excessive or wordy responses.

Section	Page Limit
Executive Summary	2
Track Record	2 (for general) and 2 (per entity)
Quality of Resources to be Deployed	2 (excluding Table 1 in Volume IIIB and CVs with a maximum length of 2
	pages each)
Technical Solution Proposed	20 (Table 2 in Volume IIIB, the section on references, publications, patents
	and any pre-existing IPR is excluded from the page limit and has no page
	limit)
Management and Implementation	6 (excluding Table 4 and Table 5 in Volume IIIB) + 2 per each work package
	description (Table 3 in Volume IIIB)
Pricing Table	No limitation

Table 1: Page limits

4.2 Specific additional instructions for the Tenderer's response

The following is a guide to the minimum content expected to be included in each section, additional to the content described in the general guidelines of Volume IIIB. This is not an exhaustive description and additional information may be necessary depending on the Tenderer's response.

4.2.1 Executive Summary

The Tenderer shall provide an executive summary of the proposal, describing the objectives, team and service level.

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4.2.2 Track Record

The Tenderer shall demonstrate for itself and for any proposed subcontractors that they have experience with relevant projects in the public or private sector at national or international level. ECMWF may ask for evidence of performance in the form of certificates issued or countersigned by the competent authority.

For this tender, Tenderers are expected to prove a profound knowledge of the C3S service offer, a deep understanding of the value chain and types of users of C3S data products and services and the aims of the C3S user engagement.

4.2.3 Quality of Resources to be Deployed

The Tenderer shall propose a team providing the skills required for providing operational services that meet the technical requirements set out in Section 3. The team shall include a Service Manager with at least five years of experience in management of large-scale projects. The Tenderer shall describe the experience of the Service Manager and the technical project team in performing activities related to the various aspects of this tender.

Proposed personnel are expected to have profound expertise in conducting user workshops at data science as well as climate policy level. Profound knowledge of the C3S user landscape and the various user characteristics is an essential requirement.

4.2.4 Technical Solution Proposed

The Tenderer shall give a short background to the proposed solution to demonstrate understanding of that solution and of the C3S context. This section shall also include information on any other third party suppliers that are used as part of the technical solution, and a statement of compliance for each requirement formulated throughout this document, describing how the proposed solution maps to the requirements.

4.2.5 Management and Implementation

The Tenderer shall provide a detailed implementation plan of proposed activities for the duration of the Framework Agreement. Deliverables should be consistent with the technical requirements specified in Section 3. The number of milestones is not restricted, but they should be designed as markers of demonstrable progress in service development and/or quality of service delivery. Adjustments to the proposed implementation plan can be made on an annual basis depending on needs for service evolution, changed user requirements, or other requirements as agreed between the European Commission and ECMWF.

As part of the general project management description the Tenderer shall consider the elements described in Section 3.5.

5 Additional Information

5.1 Acronyms

C3S Copernicus Climate Change Service

CDS Climate Data Store

DEFIS/JRC Directorate-General for Defence Industry and Space / Joint Research Centre

DG Directorate General

EEA European Environment Agency
EIB European Investment Bank

ENTSO-E European Network of Transmission System Operators for Electricity

EQC Evaluation and Quality Control

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ITT Invitation To Tender

KCEO Knowledge Centre on Earth Observation

MOOC Massive Open Online Course
NCP National Collaboration Programme

NEREUS Network of European Regions Using Space Technologies

NMHS National Meteorological and Hydrological Service

SES Service Evolution Strategy
SIS Sectoral Information System
UfM Union for the Mediterranean

UN United Nations

URDB User Requirements Database

URAD User Requirements Analysis Document

6 Appendices

6.1 Current C3S URDB template

See separate Microsoft Excel file "CJS2_152c Volume II_final_Annex1.xlsm".

The current structure of the URDB will be updated at the start of the contract to allow for the recording of user characteristics as required by the European Commission and to accommodate the collection of additional user information, compliant with the Personally Identifiable Information Policy (PIIP) of ECMWF.

6.2 User characterisation categories

Affiliation

- Copernicus Services
- Union institutions and bodies (core users)
- National or regional public authorities in the European Union or Copernicus participating states (core users)
- National or regional public authorities outside European Union and Copernicus participating states (other users)
- Research and education organisations (other users)
- Commercial and private bodies SMEsⁱ (other users)
- Commercial and private bodies non SMEsⁱ (other users)
- Charities and non-governmental organisations (other users)
- Intergovernmental and international public organisations (other users)
- Natural persons for non-commercial purposes
- Other (specify)

i SME: Company with ≤250 employees and ≤€50 m turnover and/or ≤€43 m annual balance sheet total as per Article 2 of the Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (Text with EEA relevance) (notified under document number C(2003) 1422) (https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003H0361, https://ec.europa.eu/growth/smes/sme-definition_en)

Thematic activity

- Land
- Marine environment, maritime affairs, fisheries
- Arctic policy, polar areas
- Transport
- Energy
- Environmental compliance

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- Raw materials
- Air quality and atmospheric composition
- Health
- Tourism
- Climate change
- European Civil Protection and Humanitarian Aid Operations
- International development and cooperation
- Migration/home affairs
- Security
- Research/innovation
- Other (specify)

Sector of activity

- Policy support support to EU policy or EU national or regional policy
- Policy support other
- Commercial activity
- Research and education
- Media and public relations
- Other (specify)

User geographic origin

Countryⁱⁱ

ⁱⁱ For reporting to be aggregated by continent (incl. Europe) and broken down by country for users in Europe (Europe encompasses all countries included in 'EU Member States', 'Joining the EU', and 'Other European countries' on https://europa.eu/european-union/about-eu/countries en)

User activity

- Specify user activity per quarter per category below
 - Category 1 activity: Number of users having accessed the data or service platformⁱⁱⁱ
 - Category 2 activity: Number of users having triggered a service on the platform including search, discovery, viewing, download, processing
 - Category 3 activity: Number of users having downloaded at least one complete dataset or triggered at least one processing run on the platform

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iii Includes all Copernicus user-level data and service information access and exploitation platforms