ECMWF Copernicus Procurement

Invitation to Tender

Copernicus Joint Services
Volume II

Collection of user requirements and associated analysis for the Copernicus Climate Change Service (C3S) - Enhancing User Intelligence

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Contents

1 Introduction

The Copernicus Climate Change Service (C3S), implemented by ECMWF on behalf of the European Union, delivers authoritative and quality-assured climate information to support policy, adaptation planning and innovation in climate-related applications and services. As a user-driven service, C3S places strong emphasis on understanding and addressing the evolving needs of its users.

ECMWF user outreach and engagement plays a central role in ensuring that C3S remains relevant, impactful, and widely adopted. The C3S User Engagement Strategy identifies several key building blocks (see Figure 1), one of which is to "enhance user intelligence"**.** This Invitation to Tender (ITT) directly contributes to that area by supporting structured intelligence gathering, targeted user uptake events, and the further development of the C3S User Requirements Database (URDB).

The successful bidder shall make sure that the voice of all existing and potential users is heard and that information on their needs is collected through dedicated user uptake efforts by:

- Collecting, analysing and managing user requirements
- Organising national and transboundary workshops
- Enhancing the URDB and its alignment with internal systems
- Supporting strategic coordination and communication around user needs

It complements activities on the C3S National Collaboration Programme. Particular effort shall be paid to the collection of needs from both downstream and end users in the climate services data value chains, including academic, research and private sector actors, besides the public sector actors at global, European and national level.

Both a geographic and sector-specific balance in user communities shall be reached, including emerging new communities and needs as driven by changing geo-political priorities.

ECMWF invites tenders for a 24-month contract with a maximum budget of €750,000**,** running in parallel with the existing CJS2_152c contract during an initial transition period.

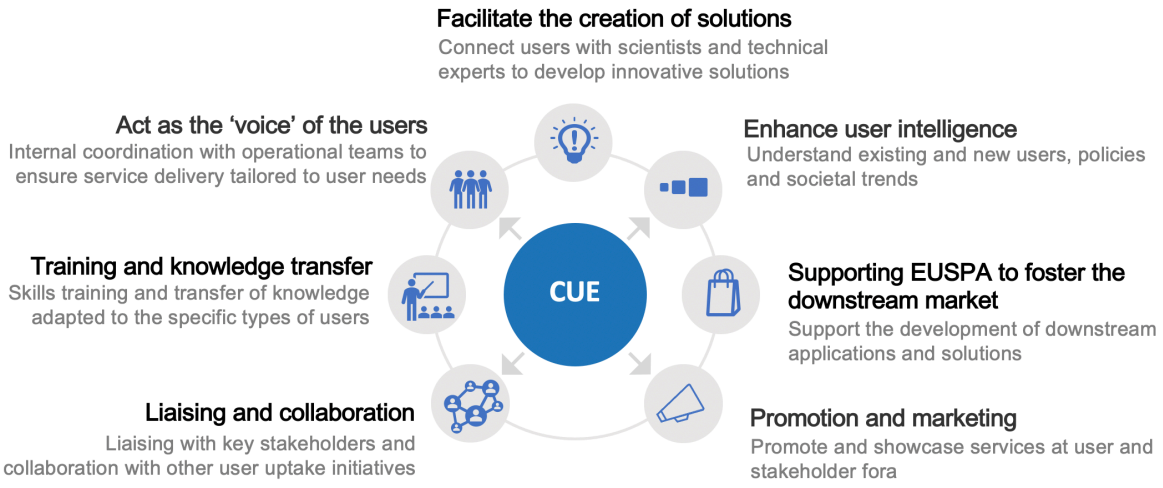

Figure 1: Building blocks of the C3S User Engagement Strategy

2 Background Information

ECMWF promotes active and sustained engagement with national and international stakeholders to ensure C3S products and services meet user needs across societal and economic sectors and governance levels. In addition to the formal exchange of information via the Copernicus Committee and User Forum, more targeted interactions with Member and Cooperating States are essential to identify, understand, and respond to user requirements.

This is particularly important for national and transboundary challenges such as mountain regions, catchments, and coastlines, and for improving the uptake of services in support of local and national regulatory frameworks. Similarly, interaction with EU Institutions, Agencies, and international bodies plays a key role in ensuring that C3S services contribute effectively to climate and other related policy implementation and reporting.

To facilitate this, ECMWF has established a structured and transparent process for managing user requirements (Fig. 2). At its core is the operational User Requirements Database (URDB), which captures user needs from a wide range of engagement activities including workshops, user surveys, feedback forms, user support queries, ECMWF forum posts and bilateral exchanges. Each requirement is assessed, prioritised and, where appropriate, translated into actionable recommendations. These are delivered to ECMWF via a dedicated channel and reviewed by an internal board to inform the evolution of the service.

This ITT builds on this approach by supporting targeted national and thematic user workshops, technical maintenance and development of the URDB, and further strengthening the interface between C3S and downstream user needs.

C3S data and services are increasingly relevant across European and international policy domains, with a first policy workshop held in collaboration with European Commission's DG CLIMA in 2024. Building on this, further strategic intelligence on institutional needs is required, including new needs within a changing geopolitical context.

Tenderers need to prove hands-on expertise in climate and other related policy at EU level with strong experience working for EU institutions and agencies in the domain of EU policy preparation and evaluation.

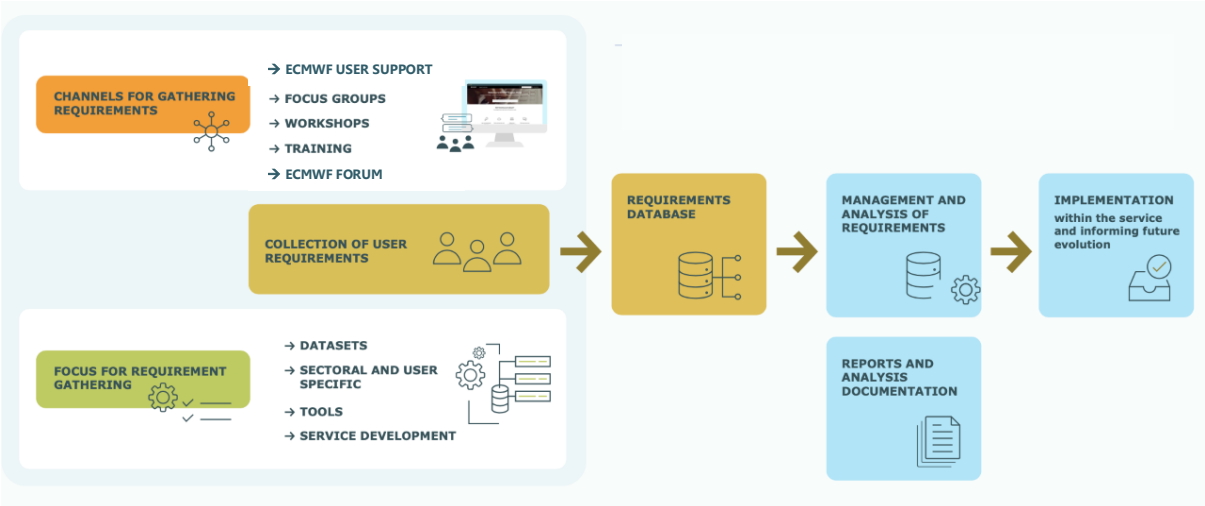

Figure 2: Sources of C3S user requirements and analysis process

2.1 The C3S User Requirements Database and consolidation process

The User Requirements Database (URDB) is the central system used by C3S to collect, structure, assess, and prioritise user requirements across the service. It captures user needs related to datasets, tools, interfaces, applications and overall service delivery. These requirements are sourced from diverse channels, including workshops, helpdesk interactions, ECMWF forum moderation, training sessions and surveys.

Over time, the number of entries in the URDB had grown to over 4,700, including outdated, duplicate, or unclear items. To improve usability and ensure strategic focus, a comprehensive consolidation and rationalisation process was launched in 2024–2025. This involved:

- Removing outdated or redundant entries
- Clustering similar user requirements
- Revisiting keyword tagging and metadata fields
- Adding thematic classifications (e.g. user category)
- Improving internal review workflows (validity check, subject tagging, similarity scoring)

As a result, the number of active, validated requirements was reduced to approximately 300 by early 2025 and has since grown to around 500 through new submissions and curated intake. This cleaned and prioritised set of user needs now provides a much stronger basis for service evolution and targeted development activities.

The consolidated URDB includes established user categories required for reporting to the European Commission, as documented in Annex 7.2.1. These categories shall be retained as the baseline for classification and reporting throughout the contract. The URDB also includes an established set of user categories developed under the previous contract, which are documented in Annex 7.2.2 and shall be used as the baseline for subsequent maintenance, analysis and evolution.

The consolidation of the database has improved traceability and relevance of user requirements. Additional improvements are being considered to further automate similarity detection, modernise backend components (e.g. Django versioning), and improve user-facing reporting and communication channels.

A remaining major gap is the integration of the URDB with internal decision-making workflows (e.g. Jira ticketing), in particular to update the lifecycle status of user requirements following internal ECMWF decisions on their implementation. So far, this has been largely a manual process. Automatising this requires a technical solution which is part of this ITT (refer to section 3.2.).

The current template of the URDB is provided in Annex 1.

2.2 ECMWF’s user engagement activities

ECMWF has a longstanding tradition of working closely with its Member and Co-operating States to promote the effective use of its data and services. Through structured training, user feedback mechanisms such as the Green Book surveys as well as liaison visits to Member and Co-operating States (MS/CS), and initiatives like Using ECMWF's Forecasts (UEF) events. The Centre maintains a vibrant dialogue with national meteorological and hydrological services (NMHSs) and other users. With CAMS and C3S, this engagement has deepened and expanded to all ECMWF MS/CS and EU MSs, both through applications and partnerships as well as through targeted user uptake activities such as the National Collaboration Programmes (NCPs).

Partnerships and applications

ECMWF maintains long-standing partnerships with European Commission policy Directorates-General and European institutions, including the European Environment Agency (EEA), the European Investment Bank (EIB), and regional and sectoral bodies such as the Union for the Mediterranean (UfM) and the European Network of Transmission System Operators for Electricity (ENTSO-E). ECMWF is also a central component of the wider European Meteorological Infrastructure (EMI), with close operational links to Member and Cooperating States (MS/CSs) and EUMETNET. Through these partnerships, ECMWF increasingly provides turn-key solutions and application-oriented services tailored to institutional users' needs. Examples include climate-risk information and indicators supporting EIB investment decision processes, and climate and energy-relevant datasets and workflows supporting ENTSO-E system planning and resilience analyses. User intelligence activities under this contract should take into account this diverse institutional user landscape and the role of applied, decision-support-oriented climate services.

ECMWF also maintains close institutional links with key international organisations and frameworks, including the World Meteorological Organization (WMO) and its Regional Climate Centres (RCCs), as well as the IPCC, UNFCCC and partner organisations such as the World Food Programme (WFP). Through these connections, C3S information underpins a range of global and regional climate-policy and climate-impact activities. A prominent example is the Copernicus Interactive Climate Atlas (C3S Atlas), which builds directly on C3S climate datasets and tools to support global climate assessments.

C3S National Collaboration Programme

By supporting countries in implementing Copernicus data within their national contexts, NCPs foster long-term partnerships, accelerate data-driven decision-making, ensure that the benefits of Copernicus reach national policy users, and support related domain specialists across Europe.

The CS3 NCP supports national institutions in enhancing their capacity to use C3S outputs, tailoring services to national priorities, improving the accessibility and usability of C3S data, and fostering collaboration between national and regional stakeholders. The programme operates through structured consultations, such as the NCP Forum, and is backed by a dedicated Joint Coordination Office that helps streamline engagement and alignment with national workflows.

Under its call-for-action funding mechanism, the NCP invites national partners to co-design climate services, integrate C3S data into operational workflows, and implement tailored downstream applications. The call encourages multi-actor partnerships, capacity building, training, and transboundary cooperation (e.g., between neighbouring states or on shared river basins/mountain regions).

Related Copernicus User Intelligence Activities

The user intelligence activities under this ITT shall be closely aligned with related initiatives in the Copernicus Atmosphere Monitoring Service (CAMS), including the use and further development of shared user intelligence assets such as the CAMS URDB.

Continuity and coherence with ongoing C3S user intelligence activities, including the current contract (CJS2_152c) led by Wageningen University and Research (ending in September 2026), shall be ensured through coordination and information exchange, while maintaining separation of contractual responsibilities.

3 Technical Requirements

ECMWF intends to award a single multi-annual framework contract (maximum 24 months) for the planning and conduction of targeted user uptake 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 uptake activities is threefold:

1) Foster awareness of the use and applicability of C3S products and services through close interaction with both public and private entities across different societal and economic sectors and the EU institutions and agencies:
    a. Specific user uptake events shall be organised at national level and in close collaboration with national public bodies. Where relevant, these shall be the National Meteorological and Hydrological Service (NMHS) and planned back-to-back with ECMWF MS/CS liaison visits.
    b. Complementary C3S user uptake activities shall target European Union institutions, in particular relevant European Commission Directorates-General (DGs), as well as other EU bodies such as the European Environment Agency (EEA) and the European Investment Bank (EIB). These EU-level policy-focused workshops shall address cross-sectoral and policy-relevant use of C3S products and services and foster dialogues on the applicability of C3S information to EU policy frameworks.
2) Collect actionable and traceable user requirements from these interactions to inform C3S about critical needs and priorities to enhance C3S' user-oriented focus.
3) Facilitate Analyse of the collected requirements to enhance C3S' understanding of the users and the context in which they operate.

The successful bidder is expected to apply innovative and effective approaches to both stakeholder engagement and the analysis of user requirements, including the use of artificial intelligence (e.g. natural language processing, clustering algorithms) to enhance insight generation, traceability, and responsiveness to emerging trends.

To support the long-term evolution of ECMWF's user engagement strategy, efforts are underway to explore the applicability of the C3S-developed User Requirements Database (URDB) and associated analytical workflows beyond C3S. As part of this contract, the existing C3S URDB shall be improved towards a modular and future-proof system, allowing for the flexible integration of user requirements from other ECMWF domains to gain efficiencies, for example the Copernicus Atmosphere Monitoring Service (CAMS) and ECMWF user uptake initiatives with EUMETNET and the NMHSs of its Member and Cooperating States. Likewise, the user requirements transformation process and Jira workflows used to manage actionable recommendations represent an early, lightweight implementation of a potential Centre-wide user requirements management system. The successful Tenderer is expected to design these components in a way that enables ECMWF to scale them for broader application in the future, ensuring alignment with strategic priorities and operational coherence across services.

Further, ECMWF has developed a Customer Relationship Management (CRM) system to improve the coordination and traceability of user engagement across its activities. While no direct integration with the URDB currently exists, the CRM has been designed to allow future linkage between individual users or organisations and the corresponding user requirements stored in the URDB. The successful Tenderer shall structure user requirements in a way that facilitates this connection. Where possible, the contractor should proactively assess options for enabling the linkage, aligning with ECMWF's data architecture and governance principles.

The successful Tenderer shall conduct the following tasks:

Stakeholder Engagement & User Requirements Collection

- Plan and run targeted national user interaction workshops, following a structured process (preparation, workshop, post-workshop follow-up including interviews), in coordination with the NCP.

- Organise thematic or transboundary workshops to address cross-border and cross-sectoral climate challenges.
- Organise and deliver EU-level and sectoral policy-focused user uptake events and workshops.
- Identify and engage with relevant stakeholders (e.g. NMHSs, researchers, (European) public authorities, private companies, NGOs, etc.) using inclusive and innovative approaches.
- Monitor EU-level policy developments relevant to climate, energy and the environment, including emerging priorities and information needs, and produce concise policy-oriented briefs and inputs, supported by an updated and expanded policy mapping exercise (building on the pilot activities with DG CLIMA) covering relevant European Commission DGs and EU institutional stakeholders and linking policy priorities to relevant C3S products and services.
- Use the outputs of policy monitoring and mapping to inform and support the design and scoping of defined C3S policy engagement activities, including thematic policy events and targeted sectoral workshops.
- Collect user requirements from a wide range of channels including:
    - User interaction sessions and workshops
    - ECMWF Support
    - ECMWF Forum (identifying emerging themes)
    - Training and knowledge transfer activities
    - NCP projects and coordination with the NCP Office
    - Sectoral activities and stakeholder liaisons, including engagement with key institutional partners (e.g. EEA, EIB, ECB, ENTSO-E, WFP, UfM), building on the thematic policy-focused workshops and events
    - Social media monitoring and other digital platforms
    - Continuous user feedback surveys
- User requirements collection shall explicitly include aspects related to the use of C3S products and services in machine learning and artificial intelligence (ML/AI) applications, where relevant.
- Pilot the use of innovative, AI-enhanced methods for user engagement and requirement detection (e.g. digital listening, automated tagging, NLP clustering).

User Requirements Database (URDB)

- Maintain and update the URDB, ensuring high-quality metadata, version control, and accessibility.
- Report regularly on statistics and trends emerging from the URDB, including user demographics, recurring themes, and source attribution.
- Cluster and analyse user requirements routinely and systematically to identify patterns, gaps, and areas for service evolution.
- Coordinate with ECMWF to align with internal governance and support the transformation of validated user inputs into structured Level-2 requirements.
- Upload Level-2 requirements into the internal Jira tracking system, ensuring traceability, categorisation, and actionable formulation.
- Provide quarterly analytical briefings summarising new requirements, transformations, trends, and recommendations.

Strategic Integration & Future Readiness

- Ensure that developments to the URDB and analytical workflows are modular and future-proof, enabling potential synergies within ECMWF, beyond C3S.
- Structure and tag user requirements in a way that supports future integration with ECMWF's CRM system, enabling requirement-to-user matching.
- Ensure the Level-2 transformation process and Jira-based tracking system are designed to support a broader institutional-scale user requirement management system**.**

- Address the technical challenges associated with implementing and operating a system-level integration between the URDB and Atlassian Jira and Jira Service Desk, ensuring automated, reliable and maintainable workflows that support current needs.
- Pilot the use of advanced analytical tools, including AI-based techniques such as natural language processing, clustering, and automation, to increase scale, consistency, and insight generation.

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 3).

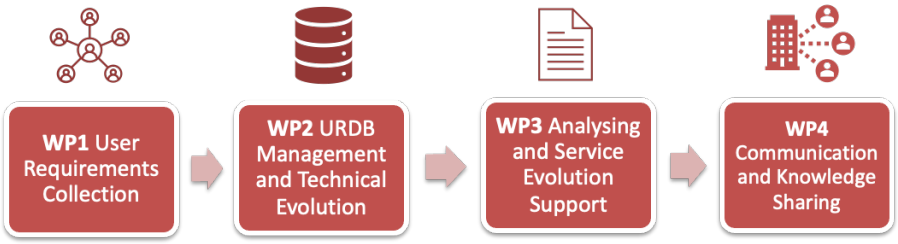

Figure 3: Main work packages to be addressed by this tender

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

ECMWF seeks a streamlined approach to the activities under this ITT. Tenderers are expected to avoid unnecessary deliverables and reporting and to focus on efficient execution and concise, high-value outputs.

3.1 WP1: Collection of User Requirements (including Stakeholder Engagement)

A core function of this contract is to ensure the continuous and systematic collection of user requirements to inform the evolution of the Copernicus Climate Change Service (C3S). This work package covers the design and implementation of activities aimed at identifying user needs from across Europe and various thematic domains. These inputs are essential to maintain the relevance and user-centric nature of C3S. The successful bidder is expected to engage with stakeholders through targeted workshops and to harvest user requirements from various sources, including online platforms, support services, and training events.

3.1.1 User Interaction Sessions

Workshops are a key instrument for structured user engagement and targeted collection of user requirements within C3S. They provide direct opportunities to interact with national and thematic user communities, identify specific sectoral or regional needs, and demonstrate the practical use of C3S data and services. By bringing together institutional users, technical experts, and intermediaries, these events foster dialogue, knowledge exchange, and co-development of solutions. The successful Tenderer shall therefore plan, organise, and deliver regular user interaction sessions that strengthen national and transboundary engagement, ensuring that outcomes are systematically captured and translated into actionable user requirements within the URDB.

User interaction sessions shall be approached as an iterative process, not limited to a single event. Each session should involve:

a) *Joint planning* and scoping in collaboration with relevant national or thematic focal points.
b) The *workshop itself*, designed to surface actionable user requirements and illustrate relevant C3S offerings.

c) An *aftercare phase*, including follow-up interviews or targeted exchanges with selected participants to deepen the understanding of the expressed needs and refine the requirements for inclusion in the URDB.

This structured process ensures both quality and continuity in user engagement and helps uncover nuanced needs that may not be captured during the event itself.

The successful Tenderer shall:

- Identify and engage relevant stakeholders, including NMHSs, research institutions, public authorities, and key intermediaries.
- Organise and deliver **three national user workshops**, including co-design and planning with local counterparts, and post-event follow-up activities such as interviews or bilateral exchanges. The user workshops should be kept small in terms of attendants and should reflect a balanced mix of different user communities, including societal and economic sectors, as well as both existing and potential new user communities. The successful Tenderer shall therefore invest in the active promotion and sourcing of interest to achieve this target.
- Organise and deliver **one transboundary workshop per year**, focusing on cross-border issues (e.g. water management, mountain regions, coastal zones). A first workshop can be held in Q4 2026 in collaboration with the Danube Commission (https://www.danubecommission.org/dc/en/, co-hosted in a country in Eastern Europe which is a Cooperating State of ECMWF (https://www.ecmwf.int/en/about/who-we-are/member-states).
- Organise and deliver **one thematic policy event** in Brussels: this should be impactful with all key stakeholders involved and be cross-DG level. The event shall be designed for targeted, high-impact engagement and involve a limited number of participants (typically up to around 40), bringing together relevant European Commission Directorates-General alongside key European institutions and bodies (e.g. EEA, EIB, ECB, ENTSO-E), depending on the thematic focus. Appropriate logistical arrangements, including suitable venue selection and catering, shall be ensured to support effective engagement and interaction.
- Organise and deliver **one small, highly targeted cross-sectoral workshop** to capture user requirements from key institutional partners (e.g. EEA, EIB, ECB, ENTSO-E, WFP, UfM). This workshop shall be designed to address specific cross-sectoral use contexts and may, for example, focus on themes such as investment and financial risk, energy security and system resilience, or preparedness and climate resilience in an international context. Where appropriate, the workshop may be organised back-to-back with existing high-level events or coordination meetings to maximise efficiency and relevance.
- Collect and systematically record user requirements emerging from these workshops for inclusion in the URDB, ensuring they are properly validated and categorised.
- Explore innovative engagement methods, including the use of digital platforms, social media listening, and hybrid workshop formats to reach underrepresented user groups and identify emerging needs.
- Report on workshop outcomes, including identified gaps, emerging user needs, and opportunities for co-development of downstream applications.

To stimulate in-person attendance at workshops and events, a budget of 35.000 EUR shall be put aside to fund or co-fund eventual travel and subsistence needs for participants from organisations with limited financial resources. The bidder shall propose a decision process including conditions and a transparent mechanism to allocate and track the use of these funds, which shall be submitted for approval by ECMWF at the start of the contract (T0+1).

Expected deliverables and milestones:

- Concept notes for each national and thematic/transboundary and policy-focused user workshop, outlining objectives, target audience, format, and expected outcomes *(due 6 weeks before each event).*
- Reports from four national workshops including planning summary, key requirements collected, and insights from follow-up interviews *(Months 6, 12, 18, 23).*
- Reports from two thematic or transboundary workshops, structured as above, with emphasis on cross-sectoral or cross-border needs *(Months 12, 23)*.
- Reports from thematic policy events and targeted sectoral policy workshops, structured as above and highlighting policy-relevant use contexts and institutional user requirements (*timing aligned with events*).
- Follow-up summaries from bilateral exchanges or interviews post-event *(annexed to each workshop or policy event report).*
- Final synthesis report on engagement outcomes and recommended approaches integrating national, thematic, transboundary and policy-focused activities *(Month 23).*

3.1.2 Other sources of user requirements

User requirements play a key role in shaping a user-driven C3S. Beyond formal workshops and targeted engagements as described above, a variety of other channels serve as entry points for capturing user needs. These inputs may arise from direct service interactions, stakeholder dialogue, or community feedback. To ensure a comprehensive and systematic approach, the successful Tenderer shall actively screen, extract, and classify user requirements from multiple sources. This includes both structured and unstructured inputs collected across helpdesk interactions, online communities, national collaboration efforts, training activities, and public-facing digital platforms. Together, these sources contribute to a richer and more representative understanding of evolving user needs.

The successful Tenderer shall:

- Continuously collect user requirements from other channels including:
    - The *ECMWF User Support*, by screening and classifying relevant user enquiries.
    - The *ECMWF Forum*, by extracting and tagging recurring feedback and emerging needs.
    - The *C3S National Collaboration Programme*, by liaising closely with the NCP Office.
    - *Training and knowledge transfer activities*, by capturing expressed user challenges or improvement suggestions.
    - *C3S sectoral information systems activities*, by liaising with respective contractors and ECMWF.
    - *Social media and digital platforms*, by monitoring relevant discussions and mentions of C3S data or services to identify potential new user communities and information gaps.
- Establish and maintain a traceable process for evaluating, validating, and ingesting these inputs into the URDB.
- Provide regular updates and recommendations to ECMWF on trends observed across these channels, including user sentiment and demand signals.

Expected deliverables and milestones:

- Bi-annual analytical briefings summarising newly collected user requirements from all channels (Helpdesk, Forum, NCP, training, social media, etc.), including sentiment and demand trends *(Months 6, 12, 18, 23).*
- Consolidated summary of new user requirements collected via non-workshop sources, validated and ingested into the URDB *(Months 12, 23).*
- Final user intelligence synthesis report**,** integrating cross-channel insights, trend evolution, and recommendations for future engagement *(Month 23).*

3.1.3 Policy Landscape Monitoring and Strategic Intelligence

As C3S data and services increasingly intersect with policy domains, it is essential to better understand institutional needs, policy drivers, and opportunities for collaboration with key EU actors. In June 2024, the 1st C3S Policy Workshop was held in collaboration with Directorate General for Climate Action (DG CLIMA). Key outcomes included the need for a mapping of climate policy domains to the C3S product portfolio, identification of gaps in downstream service uptake, and the strong recommendation to develop a policy tool that links user needs with C3S capabilities. The current contractor (CJS2_152c) initiated this mapping tool, and the next phase shall continue to build on this foundation by extending the mapping across additional policy DGs, refining linkages and proposing strategic engagements. The successful bidder shall support ECMWF in building a strategic understanding of the evolving policy landscape and inform potential future engagements.

At European Union level, C3S policy engagement shall be supported through targeted, thematic events to be held in Brussels as described in section 3.1.1, providing focused opportunities for cross-DG and cross-institutional interaction on the use and applicability of C3S information.

The successful Tenderer shall:

- Continuously monitor relevant EU-level climate, energy and environment policy developments and frameworks (e.g., EU Preparedness Union Strategy, Competitiveness Compass, Clean Industrial Deal, European Green Deal, European Water Resilience Strategy, REPowerEU, Renewable Energy Directive, Carbon Border Adjustment Mechanism (CBAM), EU Emissions Trading System (EU ETS), European Climate Adaptation Plan (ECAP), EU Adaptation Strategy and climate resilience policies, EU Biodiversity Strategy for 2030, and the Common Agricultural Policy (CAP)).
- Use this monitoring in interaction with European Commission DGs and EU institutions and bodies, and taking into account relevant knowledge exchange and coordination initiatives such as the Knowledge Centre for Earth Observation (KCEO) operated by the JRC, in order to identify areas where C3S products and services can provide added value and to provide timely intelligence on emerging priorities, stakeholder needs and opportunities for engagement.
- Liaise with DEFIS/JRC KCEO activities through six-monthly meetings, involving ECMWF.
- Maintain regular desk research outputs analysing institutional needs across relevant European Commission DGs (e.g. CLIMA, ENV, AGRI, ENER, INTPA, MENA, SANTE, etc.) and EU bodies and agencies such as EEA, ECB and EIB.
- Provide briefings and recommendations on potential opportunities for ECMWF/C3S to engage in policy-relevant events or forums.
- Build on the policy mapping tool developed under the previous contract, extending the analysis to additional DGs and institutional actors.
- Identify thematic gaps and unmet user needs to emerging policy priorities, to inform ECMWF's assessment of potential implications for C3S products and services.
- Suggest updates to the policy mapping tool and support its maintenance and use for strategic planning.

Expected deliverables and milestones:

- Bi-annual policy landscape briefing including relevant developments, opportunities for C3S input, and institutional needs (Months 6, 12, 18, 23).
- Updated version or extension of the policy mapping tool (Month 12 and Month 23).
- Annual summary report on institutional intelligence and potential collaboration pathways (Months 12, 23).

3.2 WP2: URDB Management and Technical Evolution

The C3S User Requirements Database (URDB) is the central tool for capturing, managing and analysing user requirements in a transparent and traceable manner. In the next phase of development, the successful bidder shall assume full responsibility for the operational management of the URDB and implement a number of technical improvements to ensure long-term sustainability, usability, and alignment with evolving stakeholder needs. This work package includes both day-to-day administration and strategic evolution of the system architecture and data model.

While the URDB has been developed specifically for the Copernicus Climate Change Service (C3S), the approach might be extended to similar user intelligence processes to other ECMWF areas. To support this potential evolution, the contractor shall ensure that enhancements to the URDB, such as the restructuring of fields, tagging strategies, and metadata handling, are designed in a modular and flexible manner. Where feasible, the contractor shall already incorporate fields and structural elements that could accommodate non-C3S requirements. This will enable ECMWF to adapt or scale the system for broader organisational use in the future.

The successful bidder shall liaise with relevant ECMWF internal stakeholders and organise a targeted internal workshop to inform the future-proofing of the URDB, including potential alignment with requirements emerging from an ECMWF-wide user requirements framework.

The final handover report shall summarise the operational status of the URDB at contract end, document maintenance procedures, dependencies, known issues, and recommendations to ensure continuity beyond the contract.

The successful Tenderer shall:

- Assume responsibility for the management and operational maintenance of the URDB, ensuring its continuous availability, performance, and security following the conclusion of the current service contract in September 2026 and subject to an orderly handover.
- Implement a series of technical improvements, including:
    - Introduction of improved similarity detection to identify duplicate or related user requirements using keyword and label-based approaches.
    - Upgrade of the system to Django version 5 and removal of deprecated components such as the django-report-builder.
    - Reassessment and potential repopulation of legacy requirements to align with new data model and categorisation schemes.
    - Review and refinement of existing metadata fields in collaboration with ECMWF and other relevant WPs to ensure relevance and analytical value.
- Design and implement a technical solution to enable system-level integration between the URDB and the Jira system used for Level-2 requirements (refer to section 3.3), improving workflow integration, reducing manual updates, enabling automated updates of URDB records based on ticket status changes, and ensuring consistency between user requirement records and implementation tracking. The solution shall be implemented early in the contract and integrated into operational workflows.
- Ensure that URDB records can be cross-referenced with ECMWF's CRM system and support future API-based integration if feasible.
- Ensure that the URDB remains modular and future-proof, enabling its use beyond C3S to support an ECMWF-wide user requirements management. This includes accommodating optional metadata fields and scalable structures, and liaising with relevant ECMWF internal stakeholders, including through a targeted internal workshop to inform future integration of non C3S-related requirements, without requiring major redevelopment.

Expected deliverables and milestones:

- Technical upgrade and functionality enhancement plan (Month 6).
- Implemented URDB–Jira integration, including documentation of architecture, workflows, access control and maintenance responsibilities (Month 6).
- Proposal for a modular, future-proof URDB schema that includes optional fields and structures enabling later use for other ECMWF domains (Month 12).
- Updated URDB version with improved metadata, search, and similarity features (Month 12).
- URDB system handover and operational maintenance status report (Month 23).

3.3 WP3: Analysing and Service Evolution Support

User requirements collected from various channels are initially stored in the URDB as Level-1 entries. These are individual expressions of user needs, which may vary in clarity, completeness, or specificity. As part of the analytical process, the contractor shall cluster similar or related Level-1 entries and assess their combined significance. From this, Level-2 requirements are derived. These are meta-requirements that synthesise multiple related user inputs into a single, validated recommendation suitable for action. A Level-2 requirement may take the form of a well-defined user need, a proposed solution, or a strategic recommendation to ECMWF that, if implemented, would address a group of underlying user concerns. This transformation process involves both conceptual consolidation and the application of structured metadata (e.g. user type, topic, priority, GCOS ECV) to support traceability and downstream integration into implementation workflows. Level-2 requirements are then submitted to a dedicated ECMWF Jira system for further evaluation and planning.

The successful Tenderer shall:

- Continuously analyse user requirements stored in the URDB, identify clusters of related Level-1 entries, and derive actionable Level-2 (meta) requirements that represent synthesised or strategic recommendations.
- Explore and apply innovative analytical approaches, including Natural Language Processing (NLP) and other AI tools, to cluster, prioritise, and extract insights from large volumes of user feedback and requirements.
- Validate and clearly formulate each Level-2 requirement, ensuring that it reflects consolidated user needs and is suitable for downstream technical or strategic assessment.
- Submit each Level-2 requirement as a Jira ticket, enriched with relevant metadata (e.g. topic, sector, data category, feasibility, GCOS ECV, and priority), following tagging and tracking conventions.
- Maintain an internal log of transformations (i.e. which Level-1 requirements were grouped or influenced a Level-2 output) to ensure transparency and traceability.
- Liaise with ECMWF's internal User Requirements Board and relevant service teams to discuss feasibility, dependencies, and follow-up implementation.
- Provide briefings to C3S on a quarterly basis, presenting recent findings, analysis insights, and a list of newly created Level-2 requirements with rationale for their prioritisation.

Expected deliverables and milestones:

- Quarterly analytical briefing reports (Months 3, 6, 9, 12, 15, 18, 21, 23), including:
    - Summary of recent user intelligence findings
    - List of new Level 2 requirements and associated recommendations
    - Overview statistics on captured requirements (e.g. user types, sectors, topics)
- Regular uploads of validated Level 2 requirements into Jira (ongoing, verified quarterly).

- Annual summary of analytical findings and prioritisation trends (Months 12 and 23), highlighting emerging patterns, gaps, and evidence for service evolution.
- Updated documentation of clustering and classification methodology (Month 18), including any applied innovations such as Natural Language Processing, semantic similarity scoring, or other automated techniques.

3.4 WP4: Communication and Knowledge Sharing

This work package ensures that the insights and outcomes from the user requirements process are communicated effectively to all relevant stakeholders. It builds upon existing outreach prototypes developed in the current contract and aims to transition from pilot phase to fully operationalised public-facing communication.

The successful Tenderer shall:

- Assess the status of existing communication tools (e.g. prototype public-facing website and dashboards) developed under previous contracts and develop a transition and operationalisation plan.
- Continue regular reporting via these established channels, ensuring consistency, accessibility, and relevance.
- Design and implement an external communication interface (e.g. web page and/or Confluence page) to provide visibility of the URDB and selected outputs to other contractors, stakeholders, and users.
- Develop and maintain a lightweight dashboard or equivalent visual reporting layer that communicates key user intelligence insights (e.g. user types, feedback trends, thematic gaps), drawing on analytical outputs from WP3.
- Operationalise the communication workflow, defining responsibilities, update cycles, and editorial oversight.
- Recommend and implement additional low-overhead channels if appropriate (e.g. Confluence page for internal communication, newsletter contributions, ECMWF Forum updates).
- Coordinate with ECMWF to ensure clear messaging on evolving requirements, implemented actions, and success stories.

All public-facing content, including dashboards, website material and other communication outputs developed under this work package, shall be subject to prior review and approval by ECMWF before publication.

Expected deliverables and milestones:

- Assessment and transition plan for existing communication tools, including public-facing website and dashboard (Month 6).
- Operational communication workflow, including update cycles, responsibilities, and editorial guidance (Month 6).
- Regular content updates and reports shared via selected channels (e.g. website, Confluence, CDS Forum), aligned with WP3 briefings (Quarterly: Months 3, 6, 9, 12, 15, 18, 21, 23).
- Lightweight dashboard or visual reporting tool, drawing on WP3 analytics and showcasing evolving user intelligence (First release by Month 6; updated regularly, at least every 3 months).

4 General Requirements

4.1 Implementation Schedule

ECMWF intends to award a single Framework Agreement for a period of maximum 24 months, which shall be implemented via a single multi-annual Service Contract expected to commence towards the end of Q2/beginning of Q3 2026.

Tenderers are expected to provide a detailed time plan and schedule as part of the tender response. The proposed time plan and schedule shall address the main tasks, inputs, outputs, intermediate review steps, milestones, deliverables and dates. Regular progress meetings will be held with ECMWF during the contract to assess project status, risks and actions.

4.2 WP0: Management and Coordination

This work package includes overall responsibility for day-to-day service management and coordination.

The following contract management aspects shall be considered and as needed briefly described in the proposal:

Meetings:

- Kick off meeting (by videoconference)
- Quarterly Progress review meetings (by videoconference)
- ECMWF organises the annual C3S General Assembly. The Successful Tenderer is expected to attend these meetings with maximum two contract team members and contribute to discussions related to the topic of this ITT.
- **Travel Prices:** Travel prices for physical meetings should be based on the European Commission's calculator [Table 3: Unit cost per distance band for air or combined air/rail travel, Commission Decision C(2024)5405], and consider a daily subsistence allowance not to exceed €300. Travel prices must reflect estimated actual costs and **must not include any profit margin**. If the proposed travel prices deviate from these reference values, a clear justification must be provided.

Quality assurance and control: the quality of reports and Deliverables shall be equivalent to the standard of peer-reviewed publications. The timely delivery as well as final quality check of the deliverables shall be ensured by the Successful Tenderer (in terms of content, use of ECMWF reporting templates for deliverables and reports (Microsoft Word), format, deliverable numbering and naming, typos…); all reports in this project shall be provided in English. Unless otherwise specified the specific contract Deliverables shall be made available to ECMWF in electronic format, via the relevant deliverable repository system.

Communication management (incl. external and internal communication). Any external communication activity must be agreed with the ECMWF Copernicus Communication team in advance. This includes, but not exhaustively, communication planning, branding and visual style, media outreach, website and social media activity, externally facing text and graphical content and events. Agreed activity would also need to be evaluated and reported on once complete so that success measures and KPIs could be provided to the European Commission (cf. Clause 2.4.6 of the Framework Agreement).

Set of Key Performance Indicators (KPIs) suitable for monitor contract performance. The proposed KPIs shall be SMART (specific, measurable, actionable, realistic and time bound). The Successful Tenderer shall report to ECMWF on these KPIs as part of the Quarterly and Annual Implementation Reports. The proposed set of KPIs may need to be updated regularly with ECMWF during the contract. The template to be used by the

Tenderers to describe the KPIs is included in Volume IIIB of the ITT "Template for Tenderers". Further details are provided in section 4.6 of this document.

Risk Management: The proposal shall include a risk register that describes identified risks for each work package, along with a mitigation strategy for each of the identified risks. This mitigation strategy shall be composed by both preventive and corrective measures. The risk register shall be updated regularly by the Successful Tenderer, and any update (related to new risks, likelihood or impact) shall be reported during the progress review meeting, as well as part of the quarterly and annual implementation reports.

Resources planning and tracking using the appropriate tools.

Subcontractor management, including conflict resolution, e.g. the prime contractor is responsible for settling disagreements, although advice/approval from ECMWF may be sought on the subject. A list of subcontractors describing their contribution and key personnel shall be provided, as well as backup names for all key positions in the contract. Tenderers shall describe how the Framework Agreement; in particular Clause 2.9 on Sub-contracting has been flowed down to all their subcontractors.

Management of personal data and how this meets the requirements of Clause 2.8 on Personal Data Protection and Annex 6 of the Framework Agreement.

List of minimum deliverables and milestones required as part of WP0, covering the contractual and financial reporting obligations towards ECMWF in line with the Terms and Conditions of the Framework Agreement (cf. Clause 2.3 and Annex 5):

WP0 Deliverables

Deliverable#	*Title*	*Due*
D0.y.z-YYYYQQ	Quarterly Implementation Report QQ YYYY *QQ YYYY being the previous quarter*	Quarterly on, 15/04, 15/07 and 15/10
D0.y.z-YYYY	Annual Implementation Report YYYY [Part 1] *YYYY being the Year n-1. Shall include:* • Quarterly Implementation Report Q4 YYYY ; YYYY *being the Year n-1* • *Preliminary financial information YYYY ; YYYY being the Year n-1*	Annually on 15/01
D0.y.z-YYYY	Annual Implementation Report YYYY [Part 2] *YYYY being the Year n-1*	Annually on 28/02
D0.y.z-YYYY	Annual Implementation plan YYYY *YYYY being the Year n+1*	Annually on 30/09
D0.y.z-YYYY	Copy of prime contractor's general financial statements and audit report YYYY *YYYY being the Year n-1*	Annually (no associated cost)
D0.y.z	Final report	At the end of the contract

Table 1: WP0 Deliverables

WP0 Milestones

Milestone#	*Title*	*Means of verification*	*Due*
M0.1.1.MX	Progress Review meeting with ECMWF	Minutes of meeting	Quarterly
M0.1.2.MX	Kick off meeting	Minutes of meeting	Month 1
M0.1.3.MX	Attendance to XXX meeting (e.g. General Assembly)	Minutes of meeting / Technical Note	Due one month after the meeting

Table 2: WP0 Milestones

4.3 Deliverables and Milestones

Deliverables should be consistent with the technical requirements specified in this document. A deliverable is a substantial, tangible or intangible good or service produced as a result of the contract. In other words, a deliverable is an outcome produced in response to the specific objectives of the contract. Deliverables are subject to acceptance by the technical contract officers at ECMWF. All contractual deliverables, reports and documentation for this ITT shall be produced in English. The quality of reports and deliverables shall be equivalent to the standard of peer-reviewed publications and practice. Unless otherwise specified in the specific contract, deliverables shall be made available to ECMWF in electronic format (PDF/Microsoft Word/Microsoft Excel or HTML) via the indicated ECMWF Deliverables Repository portal. The details will be agreed at the negotiation stage.

Each Deliverable shall have an associated price and resource allocation (person-months and financial budget). The total of these allocated resources shall amount to the requested budget associated with payroll/personnel cost.

Milestones should be designed as markers of demonstrable progress in service development and/or quality of service delivery, as applicable. They should not duplicate deliverables.

Tenderers shall complete the relevant table in Volume IIIA as part of their Tender, which includes the details of deliverables and milestones for all work packages and the schedules for each work package. Volume IIIA will be used by Tenderers 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.

ECMWF will provide the templates for reports and plans at the beginning of the contract. Reporting documents should be short and factual, following the guidance which will be provided by ECMWF during negotiations with the Successful Tenderer. The effort allocated to Contract management and technical coordination (WP0) is expected to amount to approx. 7-10% of the planned use of the resources.

4.4 Contribute to L2 support to Copernicus User Support Team

The objective of this task is to provide specialised support to users of the delivered products and services.

ECMWF has a well-established centralised User Support to provide multi-tiered technical support to all users of C3S data, products, tools and services. A service desk system is used for ticketing user requests and distributing these requests to specialists as needed. Dedicated staff at ECMWF promote and maintain self-help facilities (Copernicus Knowledge Base (CKB), user forum, FAQs and tutorials, etc.) and also provide individualised support on technical queries related to the CDS, data formats, data access, etc. In addition, ECMWF staff members provide specialised scientific support to address questions related to its industrial contributions to C3S, e.g., in the areas of global reanalysis and seasonal forecasting.

All C3S contractors are expected to contribute to the delivery of multi-tiered technical support for the data and/or services they provide. The Successful Tenderer shall provide expert (Level-2) support through a) the Jira ticketing system with agreed KPIs (for example, 85% of Level-2 tickets should be resolved within 15-business days), and/or b) the user forum[1] by monitoring topics and providing responses. The Successful Tenderer shall provide an email address which acts as the single contact point.

[1] https://forum.ecmwf.int/

4.5 Communication

The Successful Tenderer shall support ECMWF in its communication activities for the C3S services, where they are related to the activities described in this ITT. Additional activities such as C3S website news items, C3S brochures and flyers, may be discussed on a case-by-case basis during the contract implementation.

4.6 Key Performance Indicators

The Successful Tenderer shall report to ECMWF on a set of Key Performance Indicators (KPIs) suitable for monitoring various aspects of service performance, by using the template included in Volume IIIB (cf. also section 4.2 on management and coordination). The KPIs shall be designed to quantify various aspects of quality of service against the requirements described in this document. As part of the Tender, Tenderers shall specify a proposed set of KPIs appropriate for the service, e.g., relating to operational service delivery, quality, data access, user support, user satisfaction, etc., aligned with the requirements expressed above. These initial specifications and KPIs may need to be refined together with ECMWF during contract implementation.

At least one KPI shall assess whether user workshops achieve a balanced and representative mix of participants, including societal and economic sectors and both existing and potential new C3S user communities, while remaining limited in size (maximum 25 participants), based on evidence from participant lists and workshop outcome reports.

4.7 Payment Plan

Tenderers can propose a Payment Plan in ITT Volume IIIA “Pricing and deliverables” (cf. Excel spreadsheet “Payment Plan preparation”):

- The Payment Milestones should relate to the deliverables and milestones delivered during the corresponding Payment Milestone period (e.g. the payment covering the period January-June would only relate to the deliverables and milestones whose due dates are part of the same period).
- The frequency and due dates of Progress Review Meetings might be adapted to synchronise with the anticipated date of completion of each Payment Milestone.
- In case of request for a payment at contract signature, please note that this should be duly substantiated (e.g. in terms of necessary investment prior to implementation or during first weeks/months for ensuring the initial set up of the project). It is necessary to relate this payment to activities subject to other Payment Milestones.

5 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.

5.1 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 3, Table 5 and Table 6 in Volume IIIB) + 2 per each work package description (Table 4 in Volume IIIB)
Pricing Table	No limitation

Table 3: Page limits

5.2 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.

5.2.1 Executive Summary

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

5.2.2 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.

Particular attention should be paid on track record in relevant EU policy activities with proven hands-on experience working with EU institutions and agencies in scope of policy preparation and evaluation activities.

5.2.3 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 **Error! Reference source not found.**. 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.

5.2.4 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.

5.2.5 Management and Implementation

As part of the general project management description, and in addition to the guidance provided in Volume IIIB, the Tenderer shall consider the elements described in section 4.2 above.

6 Additional Information

6.1 Acronyms

AI	Artificial Intelligence
CAP	Common Agricultural Policy
CAMS	Copernicus Atmosphere Monitoring Service
CBAM	Carbon Border Adjustment Mechanism
CDS	Climate Data Store
CKB	Copernicus Knowledge Base
CRM	Customer Relationship Management
CS	Cooperating States
C3S	Copernicus Climate Change Service
DG	Directorate-General
EC	European Commission
ECB	European Central Bank
ECMWF	European Centre for Medium-Range Weather Forecasts
EEA	European Environment Agency
EIB	European Investment Bank
EMI	European Meteorological Infrastructure
ENTSO-E	European Network of Transmission System Operators for Electricity
EU	European Union
ETS	Emissions Trading System
GCOS	Global Climate Observing System
IPCC	Intergovernmental Panel on Climate Change
ITT	Invitation to Tender
JRC	Joint Research Centre
KCEO	Knowledge Centre for Earth Observation
ML	Machine Learning
MS	Member States
NCP	National Collaboration Programme
NLP	Natural Language Processing
NMHS	National Meteorological and Hydrological Service
NWP	Numerical Weather Prediction
PIIP	Personally Identifiable Information Policy
RCC	Regional Climate Centre
SIS	Sectoral Information System
UEF	Using ECMWF's Forecasts
UfM	Union for the Mediterranean
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
URDB	User Requirements Database
WFP	World Food Programme
WMO	World Meteorological Organization
WP	Work Package

7 Appendices

7.1 Current C3S URDB template

See separate Microsoft Excel file "CJS2_152f Volume II 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.

7.2 User characterisation categories

7.2.1 Categories used for reporting to European Commission (included in URDB fields)

User Category	Sub levels
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 – SMEs (other users)* • Commercial and private bodies – non SMEs (other users) • Charities and non-governmental organisations (other users) • Intergovernmental and international public organisations (other users) • Natural persons for non-commercial purposes • Other (specify)
Thematic activity	• Land • Marine environment, maritime affairs, fisheries • Arctic policy, polar areas • Transport • Energy • Environmental compliance • 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

Sector of activity	• Other (specify) • 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)
Country	**
User activity	Category 1 activity: Number of users having accessed the data or service platform 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

* 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)

** 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

7.2.2 User categories in the URDB (developed by current contractor)

PRODUCERS Specialist contractors Researchers	**PROVIDERS AND INTERMEDIARY USERS** Specialist contractors Big Data Specialist Researchers	**OUTREACH** Grab and Go	**DISCERNING**
Climate modelers: specifically working on developing and improving climate models that simulate Earth's climate system. They use climate data to validate and refine these models, contributing to a better understanding of future climate scenarios.	**Policy Planners:** Government officials and urban planners use climate data to inform decision-makers at policy level related to climate change adaptation, mitigation, and resilience.	**Educators and Students:** Educators at various levels, as well as students, use climate data for educational purposes. This includes teaching and learning about climate science, environmental studies, and the impact of human activities on the climate.	**Managers and Leaders:** Leaders and management are professionals that lead change and inclusion of climate services and data in their business. They are focused on strategies planning and innovations.
Environmental professionals: scientists, consultants and experts in various disciplines related to energy, agriculture, water, health, etc. They use climate data in combination with sectorial information to conduct research, analyze trends, and	**Engineers and Infrastructure Planners:** Professionals in engineering and infrastructure planning use climate data to design and construct buildings, transportation systems, and other infrastructure that can withstand the impacts of climate change, such as	**Media:** media communicates scientific findings to the public, raising awareness about climate-related issues, and facilitating informed public discourse. Through news coverage, documentaries, and other forms of communication, the media helps bridge the	**Policymakers:** have a double role as an end-user which information assist in their decision-making but also as enablers to produce climate services by promoting and

develop models to understand physical and changes in their field.	extreme weather events and rising sea levels.	gap between scientific research and public understanding, fostering a more informed and engaged society in addressing climate challenges.	implementing specific policies and subsidies programs
Meteorologists and Climatologists: experts on climate data. Meteorologists specialize in studying and predicting short-term weather patterns while climatologists' study long-term climate trends and patterns. They use climate data to analyze current weather conditions, make forecasts, and climate studies to understand the broader climatic context for specific regions.	**Data Analysts and Visualization Experts:** Professionals skilled in data analysis and visualization work with climate data to extract meaningful insights and communicate findings effectively. They play a crucial role in translating complex climate data into accessible and informative visuals.		
Citizen Scientists: Citizen scientists are individuals from the general public who actively participate in scientific research. They may contribute to data collection, monitoring, or analysis related to climate science through various community-based projects.	**Social scientists:** Social scientists analyze climate policies, public perceptions, and societal impacts, guiding equitable strategies. They also foster inclusive community engagement for effective climate action.		