ECMWF Copernicus Procurement

Invitation to Tender

Copernicus Joint Services Volume II

Enhancing User Intelligence for CAMS:
User uptake and user requirements activities

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1 Introduction

Copernicus Atmosphere Monitoring Service

Some of today's most important environmental concerns relate to the composition of the atmosphere. The increasing concentration of the greenhouse gases and the various aerosol-weather feedbacks are prominent but often uncertain drivers of climate change. Ozone distributions in the stratosphere influence the amount of ultraviolet radiation reaching the surface.

In the troposphere, aerosols, ozone and other reactive gases such as nitrogen dioxide determine the quality of the air around us, affecting human health and life expectancy, the health of ecosystems and the fabric of the built environment. The variable abundance of the reactive gases changes the oxidation capacity of the atmosphere and control therewith also the abundance of long-lived greenhouse gases. The composition of the troposphere and the associated deposition fluxes are major components of the biogeochemical cycles of carbon, nitrogen and sulphur and iron, which effect the land- and marine eco systems. Dust, smoke and volcanic aerosols affect the safe operation of transport systems and the availability of power from solar generation, the formation of clouds and rainfall, and the remote sensing by satellite of land, ocean and atmosphere.

In the wake of the agreement signed in Paris at the UNFCCC's 21st Conference of the Parties (COP-21) in December 2015, the need to monitor and to inform about the effectiveness of mitigation efforts for anthropogenic emissions of key greenhouse gases has become more acute and prominent. With its global coverage (or regional in the case of geostationary platforms), Earth Observation has a decisive role to play within such a monitoring system, complementing ground-based observations, "bottom-up" estimates of the emissions (included in official reporting) and atmospheric transport modelling.

To address these environmental concerns there is a need for data and processed information. The Copernicus Atmosphere Monitoring Service (CAMS) has been developed to meet these needs, aiming at supporting policymakers, business and citizens with enhanced atmospheric environmental information.

Within its first phase (2015 – 2020), the Service consolidated many years of preparatory research and development to deliver a range of operational services. In its second phase (2021 – 2027) these services are further consolidated, improved and expanded to address all the existing and emerging societal needs related to the atmospheric environment. The CAMS service portfolio consists of the following service elements:

a) Daily production of real-time analyses and forecasts of global atmospheric composition;
b) Reanalyses providing consistent multi-annual global datasets of atmospheric composition with a stable model/assimilation system;
c) Daily production of real-time European air quality analyses and forecasts with a multi-model ensemble system;
d) Reanalyses providing consistent annual datasets of European air quality with a frozen model/assimilation system, supporting in particular policy applications;
e) Products to support policy users, adding value to "raw" data products in order to deliver information products in a form adapted to policy applications and policy-relevant work;
f) Solar and UV radiation products supporting the planning, monitoring, and efficiency improvements of solar energy production and providing quantitative information on UV irradiance for downstream applications related to health and ecosystems;

g) Greenhouse gas atmospheric inversions for CO_2, CH_4 and N_2O net surface fluxes, allowing the monitoring of the evolution in time of these fluxes;
h) Climate forcing from aerosols and long-lived (CO_2, CH_4) and shorter-lived (stratospheric and tropospheric ozone) agents;
i) Anthropogenic and natural emissions, based on inventory data and modelling, for the global and European domains;
j) Observation-based emission estimates of atmospheric pollutants for the global and European domains;
k) Observation-based anthropogenic emission estimates of CO_2 and CH_4 for the global domain and emission hotspots.

This Invitation to Tender (ITT) spans across all above-mentioned CAMS service elements (items a-k above).

CAMS User Engagement

The aim of CAMS User Engagement is to increase user uptake and user satisfaction, unlock new potential applications and provide training with the ultimate objective to enhance the impact of the Copernicus services. In doing so, it supplements and closely collaborates with other user-oriented service components including scientific and technical expertise, CAMS Service Desk, communication and outreach as well as quality control and evaluation.

User Engagement is built around the following building blocks:
a) Facilitation of the creation of solutions: connect core users with scientists and technical experts to develop innovative solutions;
b) Enhance User Intelligence: improve our understanding of existing and new users and linked data value chains, policies and societal trends to unlock the full potential of CAMS;
c) Fostering of the downstream market in coordination with EUSPA: support the development of downstream applications and solutions;
d) Promotion and marketing: develop marketing strategies, promote and showcase services at user and stakeholder fora;
e) Liaison and collaboration: liaising with key stakeholders such as the EU and EU Member States as well as the UN and collaboration with other user uptake initiatives;
f) Training and knowledge transfer: training on skills and transfer of knowledge adapted to the specific types of users;
g) Represent the voice of the users in internal coordination: internal coordination with operational teams to ensure delivery of user needs by providing input for service evolution as well as management of user expectations.

This ITT focuses on building block *b* of the CAMS user engagement strategy.

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   Contract Summary

This ITT, entitled "*Enhancing User Intelligence for CAMS*", is for activities to support the Entrusted Entity, ECMWF, with the management of the relationship between CAMS and its different user communities, with the overarching goal to ensure the best possible use of the products by the Copernicus core users and to their full satisfaction.

In more detail, the objectives are to:

- Facilitate understanding of the requirements of users and translate these requirements into specifications for the service lines and the supporting upstream processing, product delivery, and communication and user engagement activities;

- Facilitate the understanding of new and emerging user needs, such as for instance related to the CO_2 emissions service element;

- Maintain the CAMS User Requirements Data Base (URDB) that keeps a record of all user requirements and their analysis;

- Organise and manage co-designed user interaction sessions;

- Support ECMWF in mapping data value chains to serve Copernicus core users;

- Enhance insights in user characteristics, including their overarching environmental, societal or political drives;

- Provide advice to enhance user experience and insights to engage with new intermediate players to increase user uptake and satisfaction of Copernicus core users.

The successful Tenderer will therefore have to demonstrate expertise in the field of interaction with users and gathering of user requirements and feedback.

3   Technical Specification

3.1   General Objectives

The aim of the activities covered by this ITT is to enhance our intelligence on CAMS users, including existing user requirements as well as new needs, and translate these into specifications for the CAMS service lines and the supporting upstream processing, product delivery and communication and user engagement activities. Enhancing insights in user characteristics, including their overarching environmental, societal or political drives, as well as aspects which influence user experience shall be covered.

A close interaction with the ECMWF Copernicus User Engagement Section, including the Coordinator of the CAMS National Collaboration Scheme, and the ECMWF Copernicus Service Desk will be important. Links with other CAMS service providers shall be established as well.

While direct user support is not part of this ITT, the successful Tenderer shall provide support to ECMWF for eventual follow-up actions in scope of engagements with users, as described in Section 4.3.

3.2   Work package 1 – User requirements collection and analysis

As described in section 4.6.2, CAMS will continually collect and analyse feedback from users in order to maintain requirements that meet their evolving needs. One important aspect of this is the collection of all user requirements in a User Requirements Data Base (URDB) in a structured and traceable way.

The URDB, which tracks all requirements emanating from a wide variety of user forums, surveys, support panels and the CAMS Service Desk at ECMWF, will be complemented by a User Requirements Analysis Document (URAD) that will capture the stratification of User Requirements per domain, importance and feasibility.

The successful Tenderer shall set up and maintain the URDB taking into account input from ECMWF to meet the needs of supporting the maintenance and evolution of the User Requirements Analysis Document (URAD), Service Product Portfolio (SPP), and Service Evolution Strategy (SES) (see section 4.6 for more details). While these latter three documents will be maintained by ECMWF, the successful Tenderer shall provide a first screening of the new entries in the URDB every three months to assess whether these user requirements are within the scope of CAMS services and have not already been addressed by existing CAMS services and their development plans. The successful Tenderer shall also document the CAMS response, as provided by the relevant service provider and approved by ECMWF, to each user requirement in the URDB. In addition, the successful Tenderer shall provide brief feedback on the status of a user requirement to the respective user, once the requirement has been analysed.

All user requests will be tracked in the URDB in order to provide full traceability of the original user expression; actions taken as a result (e.g., introduction in the URAD under a new or an already existing item, quick fix or addition on the CAMS website) will also be documented in the URDB. The successful Tenderer shall for this purpose set up and maintain a URDB document, ideally based on open-source software. If the successful Tenderer decides to use commercial software, it shall ensure that the content of the URDB, including links and references, can be exported in a general format that can be imported in existing open-source software without loss of information at the end of the contractual agreement that results from this ITT. The URDB shall at least contain the information contained in the current CAMS URDB as described in Annex 1.

The successful Tenderer shall be the administrator of the URDB and as such support the CAMS service providers with populating the URDB with the relevant content. The content of the URDB as of 30 September 2021, which will be provided by ECMWF, shall form the basis of the URDB and shall be imported in the proposed URDB within any proposed ramp-up phase.

A specific need includes the optimisation of the documentation of portfolio updates between ECMWF and the user requirements database to facilitate an annual re-visiting of all unfulfilled requirements in scope to update their status related to portfolio updates.

The Service Product Portfolio (SPP) provides the Service Specification and Service Level of all CAMS products. The successful Tenderer shall continually assess the specifications of all CAMS products in the SPP against the analysed user requirements in the URDB and URAD and propose a template to record the SPP which makes it fit for purpose in scope of user engagement as well as service evolution. The successful Tenderer shall interact with the relevant CAMS service providers to discuss the potential evolution of the services for each individual product and the feasibility of such an evolution.

The successful Tenderer shall report on a quarterly basis to ECMWF on these assessments, which ECMWF can take into consideration as part of the management of current and future contracts with CAMS service providers. The successful Tenderer shall as well 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.

While the focus of the user requirements collection and analysis in scope of the URDB is on CAMS operational service lines, the successful Tenderer shall as well collect and analyse new and emerging user needs (e.g., the CO_2 emissions service element, emissions of atmospheric pollutants, and deposition fluxes). These shall be reported separately, in a format to be agreed with ECMWF.

Tenderers shall complete the relevant table in Volume IIIA as part of their bid, 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.

WP1 Deliverables Template			
#	*Type*	*Title*	*Due*
D1.y.z[1]-YYYY	Data base	URDB implementation	M3 Year 1
D1.y.z-YYYYQx	Report	Quarterly requirements summary and analysis – QQ YYYY	Quarterly
…			

WP1 Milestones Template			
#	*Title*	*Means of verification*	*Due*
M1.y.z			
…			

3.3 Work package 2 – User interaction sessions

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. The data value chain between CAMS and its service providers and the different intermediate and end users and other stakeholders shaping the creation of CAMS-based solutions, should be taken into account in the organisation of these events. To enable further expansion to emerging and new user communities, an open approach is needed to the extent possible.

The successful Tenderer shall organize a regular sequence of user meetings and workshops that provide a platform for showing the CAMS data products portfolio and linked services as well as ongoing CAMS developments (e.g., CO_2 emissions service) and further plans which are in progress.

The successful Tenderer shall organize a minimum of **three series of user interaction sessions each year**. This mainly involves interactions with existing and prospective CAMS user communities at a European national level. User meetings focused on specific environmental challenges at cross-national, European or global level will be covered by ECMWF itself. The successful Tenderer may

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[1] Deliverables (and Milestones) shall be numbered as per the following format DX.Y.Z (MX.Y.Z), where X is the WP number, Y is the task number and Z is the Deliverable (Milestone) number in this task. Deliverables delivered annually should be numbered DX.Y.Z-yyyy, where yyyy is the year the Deliverable refers to (e.g. DX.Y.Z-2016, DX.Y.Z-2017). Deliverables delivered quarterly should be numbered DX.Y.Z-yyyyQx, where yyyyQx is the quarter of the year the Deliverable refers to (e.g. DX.Y.Z-2016Q1, DX.Y.Z-2016Q2). The same numbering format shall be applied for Milestones. Continuous deliverables at higher frequency can be labelled in the same way as quarterly deliverables.

however be requested by ECMWF to get involved in these interactions in scope of the collection of user requirements.

Each *user interaction session* shall include the following steps:

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 regional 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).

   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 National Collaboration Scheme as well as other concrete user engagement opportunities. 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. Note that targeted meetings with the European Commission and EU Member States on EU policy needs, shall be covered by the contractor of CAMS2_71.

   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 CAMS 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.

   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 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.

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

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

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 CAMS 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.

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.

ECMWF can support in the provision of an interactive virtual platform compliant with Copernicus branding, but it remains the responsibility to the preferred successful Tenderer to operate and manage it.

The ECMWF Copernicus Communication team publishes the announcement on the events on the CAMS website and supports in social media to increase visibility and, if pertinent, press and other media coverage.

Tenderers shall complete the relevant table in Volume IIIA as part of their bid, 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.

WP2 Deliverables Template			
#	Type	Title	Due
D2.y.z-XXXX	Other	User Interaction Event 1 – XXXX	Annually
D2.y.z-YYYY	Other	User Interaction Event 2 – YYYY	Annually
D2.y.z-ZZZZ	Other	User Interaction Event 3 - ZZZZ	Annually
D2.y.z-XXXX	Report	Report on results and actions User Interaction Event 1 – XXXX	Within 2 months after the user interaction session
D2.y.z-YYYY	Report	Report on results and actions User Interaction Event 2 - YYYY	Within 2 months after the user interaction session
D2.y.z-YYYY	Report	Report on results and actions User Interaction Event 2 - ZZZZ	Within 2 months user interaction session
D2.3.N - YYYY	Report	Budget Plan User Interaction Event N - YYYY	4 months before user interaction session N
…			

WP2 Milestones Template			
#	Title	Means of verification	Due
M2.y.z	Proposed scope and dates for the next two User Interaction Sessions	*Written communication to ECMWF*	Annually in February and September
…			

3.4   Work package 3 – User statistics, user intelligence reporting and guidance

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 CAMS 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, solar radiation products), and activity level (e.g., daily access to data, occasional access to data);

The reports shall also include the CAMS KPIs that are described in section 0.

The reports shall be based on the information documented in the URDB, all available data usage statistics as generated via the CAMS Atmosphere Data Store, access statistics on the CAMS web portal (incl. microsites), new and emerging user needs as well as potential other statistical user information such as on trainings and MOOCs incl. those organised via WEkEO and other linked initiatives.

The successful Tenderer shall acquire the relevant user information from ECMWF and the CAMS 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 CAMS 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 CAMS 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 CAMS 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 CAMS product portfolio for Copernicus core users.

Note:

*In addition, as part of the contractors **Annual Implementation Plan** (cf. WP0), the contractor shall provide a detailed outline of the planned activities for the next calendar year. As such, the successful Tenderer shall contribute to ECMWF's **CAMS User Uptake Plan** to the European Commission for the implementation of the user uptake activities at service level. This planning shall take into account and provide for the appropriate links with the user uptake activities at programme level, notably those implemented by the EUSPA.*

User guidance on data and services access

CAMS data products and services can be retrieved via an increasing number of Copernicus data portals (primarily via the Atmosphere Data Store (ADS) and CAMS catalogue as well as via other platforms including DIASs) and various entry points (e.g. the forthcoming Copernicus Thematic Hubs and the European Climate and Health Observatory (EEA)).

Users' connectivity and accessibility shall be guaranteed and closely tracked. Through compiling shared experiences and identifying user requirements for data connectivity purposes, the successful Tenderer shall support ECMWF in the development of user guidance for the navigation through data

portals and keep track to keep a centralised approach in our service offer. ECMWF User Engagement and Service Desk teams will work closely with the preferred Tenderer in this activity.

Tenderers shall complete the relevant table in Volume IIIA as part of their bid, 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.

WP3 Deliverables Template			
#	*Type*	*Title*	*Due*
D3.y.z-QQYYYY	Report	User statistics and intelligence for Q4 YYYY User statistics and intelligence for Q1 YYYY User statistics and intelligence for Q2 YYYY User statistics and intelligence for Q3 YYYY	Annually on 29 January Annually on 28 April Annually on 29 July Annually on 28 October
…			

WP3 Milestones Template			
#	*Title*	*Means of verification*	*Due*
M3.y.z			
…			

3.5   Work package 0 - Management and coordination

The following management aspects shall be briefly described in the bid:

- 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):
  o ECMWF will organise annual CAMS General Assemblies. The successful Tenderer is expected to attend these meetings with team members covering the various topics that are part of this ITT.
  o ECMWF will host monthly Service Level Board teleconference meetings to discuss the overarching CAMS service provision, service evolution and other topics. The Prime Investigator appointed by the successful Tenderer will represent the successful Tenderer in such meetings.
  o 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. 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 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 bid, 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 YYYY *YYYY being the Year n-1*	Annually on 28/02
D0.y.z-YYYY	Tenderer	Other	Preliminary financial form YYYY *YYYY being the Year n-1*	Annually on 15/01
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
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 General Requirements

4.1 Implementation schedule

The Framework Agreement will run from **1 October 2021 to 31 December 2024**. The Tenderer shall provide a detailed implementation plan of proposed activities for the full period.

4.2 Deliverables and milestones

Deliverables should be consistent with the technical requirements specified in section 3. A deliverable is a substantial, tangible or intangible good or service produced as a result of a project. In other words,

a deliverable is an outcome produced in response to the specific objectives of the contract and is subject to acceptance by the technical contract officers at ECMWF. When defining deliverables please **consolidate their numbers** against a specific single deadline where possible. All contract reports shall be produced in English. The quality of reports and deliverables shall be equivalent to the standard of peer-reviewed publications and practice. The final quality check of the deliverables should be made by the prime contractor (content, use of ECMWF reporting templates, format, deliverable numbering and naming, typos, etc.). Unless otherwise specified in the specific contract, deliverables shall be made available to ECMWF in electronic format (PDF/Microsoft Word/Microsoft Excel or compatible) via the Copernicus Deliverables Repository portal.

As described in Volume IIIA, each Deliverable shall have an associated resource allocation (person-months and financial budget, resource type: payroll only). The total of these allocated resources shall amount to the requested budget associated with payroll.

Milestones should be designed as markers of demonstrable progress in service development and/or quality of service delivery. They should not duplicate deliverables. Apart from the payment milestone review meetings, all foreseen meetings shall not be classified as milestones but listed in a separate overview table for each work package. Milestones shall not have any associated cost when reported in Volume IIIA.

4.3   User engagement

The successful Tenderer will work closely together with ECMWF's Copernicus User Engagement section which will act as the prime contact point. Regular (informal) meetings will be organised to make sure that both ECMWF and the successful Tenderer stay aligned.

The successful Tenderer may be requested to contribute to the following *additional* activities:

- Provide input to conceptional assessments and developments of specific user engagement plans and actions as launched by ECMWF;
- Contribute with content specific input to user-oriented communication material such as slides, story maps and user testimonials.

An *indicative maximum budget* of **10,000 EUR** shall be allocated in the pricing table to accommodate for these needs over the full duration of the Framework Agreement. This shall be paid as a fixed price. Details on the expected activities and the budget shall be refined during the negotiation/contract preparation phase.

4.4   Communication

The successful Tenderer shall support ECMWF in its communication activities for the CAMS services, where they are related to the activities described in this ITT. Examples are contributions to the Copernicus State of the Climate report, CAMS web site news items, and CAMS brochures and flyers.

4.4   CAMS Service Desk

Support of users during implementation is provided by the CAMS Service Desk.

A significant element of the URDB input will be provided by the CAMS Service Desk managed by ECMWF. The Successful Tenderer shall agree with ECMWF on a routine information exchange

mechanism to ensure all relevant user information that is logged as part of the service desk activities is transferred to the URDB.

4.5   Key performance indicators

Contractors shall report to ECMWF on a set of Key Performance Indicators (KPIs) suitable for monitoring various aspect of service performance. These will be used in the overall monitoring of the CAMS programme for which the following KPI categories have been identified:

- KPI1 Service availability
- KPI2 Products usage
- KPI3 Products quality
- KPI4 User support
- KPI5 User statistics
- KPI6 Service audience
- KPI7 User engagement
- KPI8 User satisfaction
- KPI9 Contracts
- KPI10 Deliverables
- KPI11 data usage

The table below provides the template to be used by the Tenderer to describe the KPIs, relevant for this ITT, together with performance targets, delivery schedules and explanations if needed. Please note that the listed KPIs form part of the overall set of KPIs comprising the full CAMS service portfolio; the successful Tenderer therefore might have to provide KPI values for a KPI in support of services outside this ITT.

All KPIs shall be labelled and numbered as indicated. All KPIs shall be periodically updated as described in the tables. Tenderers shall provide preliminary versions of the completed tables as part of their bid.

The list of KPIs shall be reviewed with ECMWF in the second year of the contract and updated if necessary.

Service availability KPI #	KPI Title	Performance Target and Unit of Measure	Frequency of Delivery	Explanations / Comments
KPI_1.5.1	Number of users segmented by main service product lines	%/year	Quarterly	
KPI_1.5.2	Number of active users by main service product lines	%/year	Quarterly	
KPI_1.5.3	Number of new users	%/year	Quarterly	
KPI_1.5.4	Number of users per country	Number/year	Quarterly	
KPI_1.5.4	Number of active users per country	Number/year	Quarterly	
KPI_1.5.5	Number of new users per country	Number/year	Quarterly	

KPI_1.6.1	Number of website visitors (overall and unique)	%/year	Quarterly	
KPI_1.6.2	Number of new unique visitors	%/year	Quarterly	
KPI_1.7.1	Number of user events organised	2/year	Annually	
KPI_1.10.1	% of deliverables delivered on time or with short delay	> 90%	Annually	

4.6 URDB requirements

4.6.1 Use of existing URDB information

For the set-up of the User Requirements Data Base (URDB), the successful Tenderer shall take into account the existing URDB and its content. The current structure of the URDB is available in Annex 1 and the up-to-date content will be made available at the start of the Framework Agreement. The description of the management of personal data shall be reported accordingly in the Annex 6 of the Volume V Framework Agreement. The 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 of ECMWF. The successful Tenderer shall ensure no existing information is lost in the proposed set up of the URDB.

4.6.2 CAMS user requirements management

As part of CAMS, the database and three documents described below will be maintained. The successful Tenderer shall develop and maintain the URDB but also provide input to the RAD, SPP, and SES documents regarding user requirements that are directly related to activities covered by this ITT.

User Requirements Database (URDB) and Requirement Analysis Document (RAD)

User requirements are collected in this database in a structured and traceable way, and links to entries in the Service Product Portfolio (see below) are provided, when appropriate. The URDB, which tracks all requirements emanating from a wide variety of user fora, surveys, and support panels, is complemented by a Requirements Analysis Document (RAD) which captures the stratification of user requirements per domain, importance and feasibility. The RAD constitutes the basis for distilling, filtering and translating user requirements into technical specifications for the Service. The URDB and RAD are maintained and continually updated by ECMWF and its contractor for CJS2_152a (User Intelligence for CAMS).

Service Product Portfolio (SPP)

Both data and value-added products are presented in this document in a structured way, providing key technical aspects, when appropriate, such as geophysical parameter, temporal resolution and coverage, spatial resolution and coverage, data formats, time availability, expected quality, data format together with a direct link to detailed information on methodology and quality monitoring for each specific product or services.

Service Evolution Strategy (SES)

The appropriateness of the list of emerging and existing user requirements, the routinely updated Requirement Analysis Document and the existing Service Product Portfolio, are continually monitored

by ECMWF and feed into a Service Evolution Strategy (SES) document. The SES document is produced on an annual basis and provides, in addition to the annual implementation plan focussing on year n+1 service Deliverables, a proposed longer term (typically 4 years) perspective for forthcoming service upgrades and extensions, the expected benefits and costs, together with recommendations for potential research needs outside Copernicus operations. This document allows informed discussions to be opened on specific proposed service upgrades and extensions with the stakeholders.

5   Tender Format and Content

General guidelines for the tender are described in Volume IIIB. Specific requirements to prepare the proposal for this particular tender are described in the next sub-sections.

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	2 + 3 per Work package (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, Table 6 and Table 7 in Volume IIIB) + 2 per each Work package description (Table 4 in Volume IIIB)
Pricing Table	No limitation

Table 1: 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.

5.2.3   Quality of Resources to be Deployed

The Tenderer shall propose a team that meets at least the following requirements:

- A senior team member (Prime Investigator) with more than 5 years of experience in managing activities related to this ITT;
- At least two additional senior team members with more than 5 years of experience on performing activities related to the various aspects of this ITT.

These team members shall be involved in the activities of this ITT at a minimum level of 10% of their total working time. The Tenderer shall also appoint a Service Manager, which will be its primary contact for contractual delivery and performance aspects.

5.2.4   Technical Solution Proposed

The Tenderer is expected to provide a short background to the proposed technical solution to demonstrate understanding of the solution proposed. This should include background of the Tenderer's understanding of the Copernicus Atmosphere Monitoring Service and the current state of user interaction methods and strategies.

An exhaustive and detailed description of the proposed solution for all work packages described above, including any ramp-up or mobilization phase, shall be given.

Annex 1   URDB Structure

See separate Microsoft Excel file "CJS2_152a_Volume II_Annex 1.xlsx".

Note:

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.