



Invitation to Tender

Destination Earth Initiative

Development and Implementation of Ethical Machine Learning Strategies for Destination Earth

Volume II

ITT Ref: DE_398
ISSUED BY: ECMWF Administration Department Procurement Section
Date: 04 March 2024
Version: Final

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1 Introduction

Destination Earth (DestinE) is an initiative of the European Commission under the EU Digital Europe programme. By pushing the limits of computing, weather, and climate sciences, DestinE is a cornerstone of the European Commission's efforts to boost Europe's digital capabilities and the Green Deal actions on climate change. It aims at supporting climate change adaptation policies and decision-making for reducing the impacts of extreme events.

Destination Earth (DestinE) is deploying several high-resolution, thematic digital replicas (digital twins, DTs) of the Earth system to monitor and simulate natural and human activities as well as their interactions. The DTs of DestinE will be used to enhance our understanding of the Earth system and to investigate how different weather and climate scenarios may impact the environment and, consequently, human life and societies.

The initial high-priority digital twins are implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF) – one on climate change adaptation and one on weather-induced and geophysical extremes. These develop enhanced simulation systems, informed by observations, based on a new generation of Earth system models. These enhanced systems will not only allow to realistically represent the Earth system but will also produce information at precisely those scales where the impact of climate change and extremes are felt and where key processes are observed. They will thus allow users from impact-sectors to access and exploit such information for their specific application.

Artificial Intelligence (AI) and, more precisely, Machine and Deep Learning (ML and DL) are important for DestinE on many distinct levels. European AI ethics, grounded in core values such as dignity and fairness, advocate for AI that enhances human autonomy. Emphasizing human oversight, it ensures AI decisions remain under human control to monitor and remove biases and discrimination, aligning with Europe's equality objectives. The GDPR framework mandates AI to uphold stringent privacy and data protection standards, ensuring consent and data minimization. Transparency in AI processes is crucial for building trust, necessitating clear explanations of AI decisions. This approach combats biases, promoting diversity and non-discrimination. The EU's emphasis on sustainability, particularly through "Destination Earth," highlights its dedication to using AI for environmental modelling and climate change adaptation. These principles ensure AI's positive societal contribution, aligning technology development with European ethical standards and environmental commitments.

In an ambitious effort to shape the future of Machine Learning and Artificial Intelligence (ML/AI) within the Destination Earth (DestinE) initiative, this Invitation to Tender (ITT) is launched. This ITT is not just a call for proposals but a clarion call to integrate and amplify the impact of ML/AI activities, setting a new precedent for innovation, policy influence, and ethical standards in the European technological landscape.

The core aim of this ITT is multifaceted, seeking to firmly establish DestinE's ML/AI activities on the global stage, not just in terms of technological advancements but as paragons of ethical AI development. The initiative is poised to create a significant ripple effect across policy frameworks by demonstrating the intrinsic value and impact of DestinE's ML/AI activities. A key objective is to imbue ML/AI with the rich tapestry of European values, ensuring that these technologies are developed and deployed in a manner that is congruent with principles of fairness, transparency, and respect for individual rights.

Central to this initiative is the adherence to stringent regulations and ethical guidelines, particularly those outlined by the EU High-Level Expert Group on Artificial Intelligence. This adherence is not viewed as a mere compliance requirement but as a foundational pillar that guides the ethical development of AI technologies. Furthermore, the ITT underscores the importance of building expertise and capabilities within Europe for crafting ethical, large-scale AI-based systems. This endeavour aims not only to elevate European industry and organizations to the forefront of ethical AI development but also to enable them to offer competitive solutions that are globally recognized for their ethical standards.

2 Context

DestinE is funded by the European Union's Digital Europe programme and implemented through a partnership between the European Space Agency (ESA), the European Centre for Medium-Range Weather Forecasts (ECMWF) and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

The first phase of DestinE, the implementation stage, covers the period 15 December 2021 – 14 June 2024. In this phase, the foundation infrastructure required to reach DestinE's ambitious goals is being configured and deployed and their capability is being demonstrated:

- The Core Service Platform (DESP; responsibility ESA) for providing many users with access to observations, simulations and models, evidence-based policy and decision-making tools, applications, and services, based on an open, flexible, scalable, evolvable, and secure cloud-based architecture.
- The Data Lake (DEDL; responsibility EUMETSAT) for handling the storage and access requirements for any input and output DestinE data that is offered to DestinE users via the seamless access through the DESP including near-data processing to maximize throughput and service scalability.
- The Digital Twin Engine (DTE; responsibility ECMWF) consisting of generic software infrastructures for workflows, extreme-scale simulation and data fusion, data handling and ML that allow exploiting the latest digital infrastructure technology for operating Earth-system DTs and their integration in the wider digital environment.
- The two high-priority DTs (responsibility ECMWF) for generating high-quality simulations and combining simulations and observations of the Earth system at unprecedented resolution to serve the EU's Green Deal policy priorities:
 - Weather-induced and geophysical extremes DT for providing capabilities for the assessment and prediction of environmental extremes at high spatial resolution and close to real-time decision-making support at continental, country, coastline, catchment, and city scales in response to meteorological, hydrological and air quality extremes (Extremes DT).
 - Climate change adaptation DT for providing capabilities to support climate change adaptation policy and scenario testing at multi-decadal timescales aiming at a real breakthrough in resolution at regional and national levels (Climate DT).

The second phase of DestinE covers the period 15 June 2024 – 14 June 2026. This phase will focus on consolidation, maintenance, ramp-up, and continuous evolution of the system components. DestinE users will thereby benefit from:

- global Extremes DT simulations available at km-scale (2.8 to 4.4 km) on a timescale of 4 days ahead and event/impact-driven (on-demand) regional simulations at sub-km scale (500-750m) on a timescale of 2 days ahead,
- global Climate DT projections up to 2050 at about 5km resolution, produced on a regular basis;
- DTE performance and stability improvements, improving data access and data information management, while improving timeliness within the constraints of the available EuroHPC resources;
- Responsive evolution of DESP services, co-designed with DESP users;
- Growing portfolio of user-provided services on DESP;
- Increasing maturity and fitness-for-purpose of the DestinE data portfolio and improved performance of federated access;
- Further development of the uncertainty quantification approach, particularly through novel ML/AI techniques;

- Further demonstration of co-developed use cases of DestinE capabilities in different impact sectors with selected users.

Subsequent phases of DestinE will focus on full operationalisation of ongoing activities and improving Destination Earth content with a long-term objective of the availability of Destination Earth services.

The European Union has defined its approach to AI systems as one that balances opportunities and mitigates risks. Following the publication of an AI strategy for Europe in 2018¹ that already defined key principles for an ethical and legal framework of developing and using AI in Europe, the EU is one of the first world regions to implement comprehensive regulation of AI via the “AI Act”², a core element of the European Commission’s AI package presented in 2021. DestinE must be developed fully in line with the EU approach to AI and respect all ethical guidelines and principles as well as any legal constraints. Considering the specific context of DestinE, i.e. Earth System and impact sector modelling, some of these guidelines are more applicable than others. The work ECMWF intends to contract via this ITT should help implement the AI developments under DestinE with optimal coherence with European technological capabilities, opportunities, and values.

3 Contract summary

The contract deliverables include a comprehensive strategy in a series of white papers. These documents, limited to thirty pages each, will review the current status quo and articulate a forward-looking vision for ML/AI, grounded in ethical principles and European values. The white papers are expected to serve as a cornerstone for future developments, offering insights and guidelines that reflect the latest advancements and ethical considerations in AI.

Accompanying these white papers, the ITT calls for the development of practical guidelines and a checklist to ensure the seamless implementation of ethical principles in DestinE ML/AI projects. This practical approach aims to bridge the gap between theoretical ethical frameworks and their application in real-world scenarios.

Moreover, high-impact communication materials derived from the white papers must be delivered, designed to engage a broad audience, and highlight the ethical underpinnings of DestinE’s ML/AI activities.

A strategic policy advisory plan is also a critical part of the ITT, aimed at engaging with European politics to foster a supportive environment for ethical AI development.

In sum, this ITT from DestinE is a call to action, inviting stakeholders to join in a concerted effort to shape the future of ML/AI in a way that honours European values, adheres to the highest ethical standards, and sets a global benchmark for responsible AI development.

Tenderers should submit proposals that address topic areas outlined in the technical specification (Section 4) below. If a consortium of suppliers is involved in the delivery of the proposal, a prime contractor should be identified to lead the bid.

The technical selection criteria for the Destination Earth (DestinE) ML/AI project focus on demonstrated ML/AI expertise, awareness and understanding of relevant ethical AI frameworks and regulations (e.g., EU guidelines), innovative and feasible technical approaches, proven ability to produce high-quality deliverables, experience in policy advice, project management capacity, creativity, sustainability considerations, ensuring candidates not only exhibit technical excellence but also align with European values and ethical standards in AI development and application. The technical requirements are described in the following sections.

¹ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions- Artificial Intelligence for Europe, COM(2018) 237 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A237%3AFIN>

² <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-regulation-on-artificial-intelligence>

4 Technical specification

The successful Tenderer shall develop a set of white papers, practical guidelines and checklists, a communication plan and a policy advisory plan:

4.1 White papers

A set of white papers shall be prepared to inform key aspects of the AI strategy for DestinE. They will support impact and engagement as they offer in-depth analysis and visionary insights, establishing thought leadership, advising policy decisions, and facilitating meaningful dialogue among stakeholders in the industry, academia, and government. The tenderer shall propose a set of 3 white papers as part of their bid, and budget for up to four optional additional white papers on topics to be identified by ECMWF during the Term of this contract (a maximum number of 7 topics shall be identified by the tenderer). These additional, optional white papers may be requested at the sole discretion of ECMWF during the Term of this contract. The topics of the papers need to be set within the framework of DestinE activities. For each proposed white paper, an extended abstract and a preliminary title is expected. Topic areas which could be covered within the white papers include, but are not limited to:

- i. **Ethical and Legal Aspects of Artificial Intelligence and Data in the EU:** Challenges and Opportunities. This topic explores the ethical and legal issues raised using AI and data in various domains relevant to DestinE. It examines the existing and proposed frameworks for regulating AI and data in the EU and identifies the gaps and challenges that need to be addressed. It should also provide some general recommendations for ensuring that AI and data are used in a way that respects human dignity, autonomy, privacy, and fairness.
- ii. **Trust and transparency in Machine Learning:** How to Enhance Trust and Transparency in AI-Generated Forecasts. This topic examines the role and importance of risk communication in the context of machine learning and AI-generated forecasts. It analyses the factors and barriers that affect the trust and transparency of AI-generated forecasts, such as the complexity and opacity of the algorithms, the quality and availability of the data, traceability of datasets used to create a model and the ethical and social implications of the outcomes. It also discusses the potential risks and consequences of miscommunication and misinformation, such as confusion, misunderstanding, bias, and distrust, which can undermine the credibility and usefulness of the forecasts. It also proposes some strategies and recommendations for improving risk communication and enhancing trust and transparency in AI-generated forecasts, such as using clear and consistent language, providing explanations and uncertainties, and engaging with stakeholders and audiences. By doing so, this topic aims to contribute to the development and adoption of more responsible and trustworthy AI systems.
- iii. **Ethical and Social Implications of Machine Learning on Supercomputers:** A EuroHPC Perspective. This topic explores the ethical and social implications of using machine learning on supercomputers, such as the EuroHPC infrastructure (and the associated energy/carbon cost). It examines the potential risks and benefits of machine learning for supercomputing, and the need for ethical and responsible governance and oversight. It also provides some recommendations and guidelines for ensuring that machine learning on supercomputers is aligned with European values and fundamental rights, such as privacy, fairness, accountability, and transparency.
- iv. **Reproducibility of Foundation Models and Digital Twins:** The training of foundation models and machine learning models is stochastic at heart. Despite this fact, models must be able to be retrained and fine-tuned on newer and better data. Creating responsible and transparent workflows to generate these large models is paramount for responsible AI and building trust with stakeholders and the public. This topic aims to address the questions: How do we ensure that these models can be trained in a way that is reproducible and sustainable? What level of reproducibility we should be aiming for? What workflows can be established that facilitate reproducibility and model sharing? What is the social and ethical impact of this type of reproducibility?
- v. **The Effect of Data Reliability and Availability for AI:** The reliable availability and extension of diverse data sources is essential for building machine learning models that work in a world affected by climate change. Additionally, sensors and measurements become more diverse and accurate. However, it is also easier than ever to spoof or jam signals, which can affect reliability despite our best efforts. Especially, in rural and less populated areas there can be incentives to reduce instrument

and therefore data coverage, this may reduce the reliability of forecasts in these areas which should be illuminated as an ethical aspect of data coverage in Europe and beyond.

- vi. **Ethical Impact of Real-world AI in a Near-term and Long-term European Perspective:** The rise of believable large-language models like ChatGPT and others has put long-term AI alignment on the map. AI alignment addresses the possibility of malignant and self-replicating AI in a long-term view. In many real-world applications, such as weather and climate prediction, this long-term view detracts from an accurate evaluation of near-term impacts the real-world AI models have. The ethical impact of benchmarking and evaluation of these models to assess their accuracy, limitations and failure cases will be addressed. Furthermore, this topic evaluates the validity of AI alignment on different classes of ML and AI models.
- vii. **Risk and exposure of AI-based systems to malicious influence:** Disaster preparedness and the effects of climate change on society and infrastructure touch a large array of stakeholder interests, including state actors, industrial actors, or civil society. As DestinE aims to support decisions, the system must be appropriately resilient to malicious attempts to misrepresent the simulated outcome of such decisions on the physical and societal systems. Threats and vulnerabilities originating specifically from AI-based systems, e.g. by systematic inclusion of biased training data, must be understood and avenues to develop resilient systems be sought.

4.2 Practical Guidelines and Checklists

Within the ambitious framework of DestinE, the task of drafting practical guidelines and checklists for ethical considerations of Machine Learning software developers is not just a procedural step; it embodies a profound commitment to ensuring that the advancements in ML/AI are harmonized. These tools are designed to translate ethical concepts into actionable steps, ensuring that ML/AI models are developed and implemented in a manner that upholds the highest standards of integrity, fairness, and respect for privacy and the environment.

The practical guidelines should incorporate existing and evolving approaches in relevant software development domains and serve as a comprehensive manual, outlining the ethical considerations specific to ML/AI development within DestinE. The target audience is software developers. They could address the issues mentioned in the white papers such as transparency in AI algorithms and decision-making processes, emphasizing the importance of making these systems understandable to both experts and laypeople. Included within these guidelines will be a robust framework for addressing data ethics, with a special emphasis on geospatial data and DestinE impact sectors. The guidelines should further address the mitigation of biases in AI models. The tenderer should propose further topics which need to be included.

The guidelines should be accompanied by a checklist that provides a clear, step-by-step guide for practitioners to follow, ensuring that every phase of the ML/AI development and deployment process aligns with the outlined ethical principles. These checklists act as a practical tool for developers, domain experts, project managers, and stakeholders to verify that all necessary ethical considerations have been addressed before moving forward at each stage of the project.

The development and implementation of these practical guidelines and checklists mark a significant stride towards reproducibility and operationalizing sustainable ethical principles in ML/AI projects within DestinE. By providing a clear and actionable framework, they should not only facilitate the ethical development of ML/AI models but also ensure these technologies contribute positively to society and the environment, reflecting the values and commitments of the DestinE initiative. Through this focused approach, DestinE champions the cause of ethical innovation, setting a benchmark for responsible AI development and deployment.

4.3 Communication plan

The tenderer shall include in their bid a clear Communication Plan, which will be further developed and agreed during the contract. This should be aimed at effectively disseminating the outcomes, achievements, and ethical considerations of the ML/AI activities under DestinE. The successful Tenderer shall deliver communication material to support effective communication targeting a broad audience, including

stakeholders in the scientific community, policy makers, industry leaders, and the public, ensuring the wide-reaching impact and visibility of DestinE's pioneering work in this area. The successful tenderer is expected to collaborate closely with the ECMWF DestinE communication team to produce a high-quality, engaging content portfolio. This content, ranging from press releases and social media posts to white papers and video materials, should be tailored to these different audiences, ensuring the clarity and accessibility of complex information. A significant focus of the Communication Plan must be on highlighting the ethical guidelines and practices embedded in the ML/AI activities. The successful tenderer should articulate how these practices align with European values and regulations, highlighting DestinE's leadership in responsible AI development. The successful tenderer must establish a close working relationship with the ECMWF DestinE communication team. This collaboration will ensure consistency in messaging, leverage existing communication infrastructure, and maximize the reach and impact of dissemination activities. Regular updates and coordination meetings should be scheduled to align strategies and share resources effectively.

4.4 Policy Advisory plan

The successful tenderer during the contract is required to develop and implement a robust Policy Advisory Plan that strategically positions the Machine Learning and Artificial Intelligence (ML/AI) activities within the Destination Earth (DestinE) initiative to inform and influence European policy-making processes focusing on the content of this tender. The plan (and its implementation) should aim to highlight the significance of ethical AI development, its potential to drive sustainable environmental solutions, and its alignment with European values and regulations.

Tenderers are required to outline in the proposal a strategic framework for the Policy Advisory Plan that identifies key policy targets, objectives, and mechanisms for influencing policy at various levels, from local to international. This framework should consider the policy landscape related to AI, environmental sustainability, and technological innovation. Proposals must detail specific engagement activities designed to foster dialogue and collaboration between the DestinE initiative and policymakers, regulatory bodies, and other relevant stakeholders. These activities could include roundtable discussions, policy briefings, workshops, and participation in policy forums or consultations.

The Policy Advisory Plan (and its implementation) should emphasize DestinE's commitment to ethical AI development and how it embodies European values. It must articulate the importance of incorporating ethical considerations into policy frameworks and regulations governing AI and environmental technology. Tenderers must demonstrate a strategy for close coordination with ECMWF and DestinE initiatives to ensure that the Policy Advisory Plan aligns with and supports the overarching goals of the initiative. This includes regular communication and updates to synchronize efforts and share insights.

4.5 IPR

It is a condition of EU funding for DestinE that ownership of any Deliverables (as defined in Volume V Agreement) developed with DestinE funding passes from the suppliers to the European Union via ECMWF. Ownership will pass from the date of creation.

All Background IPR (e.g. software and products) used by the successful Tenderer to produce the results (Deliverables) will remain the property of the owner, e.g., the successful Tenderer. The successful Tenderer will have to provide a royalty-free, non-exclusive, irrevocable, worldwide, and perpetual licence to Background IPR to the EU via ECMWF under the conditions set out in Volume V Agreement.

Developments or modifications to Background IPR which constitute Deliverables or Improvements and are created specifically for DestinE purposes will be owned by the European Union via ECMWF.

A licence will be granted to the supplier to use the Deliverables for the provision of services. Upon request, suppliers may be granted a non-exclusive licence, at the discretion of ECMWF and subject to the approval by the European Commission, to use for other purposes the Deliverables which they have provided to DestinE.

5 General requirements

5.1 Implementation schedule

ECMWF intends to award a contract, with an estimated value of €300k for the requested three mandatory white papers (including all items mentioned in Section 4, but excluding optional white papers), with an additional up to €50k for each optional white paper to be requested at the sole discretion of ECMWF. Therefore, if ECMWF elects to request up to 4 optional white papers, the maximum contract value will be €500k. The maximum duration of the contract is foreseen to be 18 months and is expected to commence by August 2024.

The Tenderer is expected to provide a detailed schedule as part of the tender response. The proposed time plan and schedule shall address the main tasks, inputs, outputs, intermediate review steps, milestones, and deliverables.

5.2 Meetings

Monthly progress meetings will be held (video conferencing) with ECMWF during the contract to assess contract status, risks, and actions and other topics that cut across various aspects of DestinE. ECMWF will organise annual physical meetings (in Bonn, occurring around April each year) to bring together all DestinE capability providers, at which the successful Tenderer is expected to be present. The cost of attending the physical meetings shall be covered by each successful Tenderer and must be included in the tendered price. ECMWF may adjust meeting frequency as needed with the option of physical meetings at ECMWF's Bonn duty station during the contract to demonstrate progress on this contract (up to 3 meetings in total). In addition, the successful Tenderer may be asked to demonstrate/ present their work at conferences and workshops on behalf of ECMWF and should allocate budget accordingly (2 conferences/ workshops). Costs other than travel and payroll of the tenderer for workshops and meetings shall not be included in the pricing of the proposal, as these will be covered outside the contract directly by ECMWF (this includes workshops and meetings required in section 4.3 and 4.4 related to engagement workshops/ policy workshops).

In addition, the successful Tenderer is expected to participate in a technical working group – which may also include other DestinE partners and relevant collaborators – aimed at discussing issues related to product definition, generation, and integration of the overall DestinE infrastructure. These discussions will be convened at regular intervals (quarterly) through videoconferencing.

5.3 Deliverables and milestones

Deliverables are to be defined by the Tenderer based on the requirements outlined above, but should include as a minimum those listed below. They can be in the form of software, documents or reports, datasets, and support to other related DestinE activities, or other as appropriate.

<i>Nature</i>	<i>Title</i>
Document	Practical Guidelines and Checklist
Document	Communication Plan
Portfolio	Communications content
Document	Policy Advisory Plan
Report	Policy engagement activities
Document	Mandatory White Paper 1
Document	Mandatory White Paper 2
Document	Mandatory White Paper 3

Each deliverable must have an associated resource allocation (person-months and financial budget). The total of these allocated resources shall amount to the requested budget associated with payroll as detailed in Volume IIIA of this ITT.

Milestones should be designed as markers of demonstrable progress in capability development and/or quality of capability delivery, as applicable. They should not duplicate deliverables but provide auditable evidence of progress and as such should be part of the proposal and not incur additional costs.

5.3.1 Documents and reports

All project reports must be produced in English. Unless otherwise specified in the specific contract, deliverable documents and reports shall be made available to ECMWF in electronic format (Microsoft Word/PDF/Microsoft Excel or compatible), via the DestinE Deliverables Repository portal; the details will be agreed at the negotiation stage.

Please refer to Clause 2.3 and the Annex 5 of the Volume V Agreement for details on Reporting Obligations.

5.3.2 Other related DestinE activities

The successful Tenderer is required to support the wider DestinE activities, for example the DestinE partnership activities, communication, and training and outreach. Sufficient resources for covering these aspects shall be foreseen and included in the tender price. Outreach activities will be organised by ECMWF during the period of the contract. In such instances, the contractors will be approached by ECMWF for support on developing and delivering content. Similarly, DestinE will require contributions to training material on relevant topics from the contractor. This is expected to amount to 2-3 hours per month.

Contractors shall not establish their own brand for the selected projects but adopt and use DestinE and ECMWF branding. A communications package (including guidelines, logos, and templates) will be provided by ECMWF at the start of the contract.

6 Tender format and content

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

6.1 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. If additional material is referenced (for example supplementary documentation or URL links to online information), a summary should still be provided in the core response.

<i>Section</i>	<i>Page Limit</i>
<i>Executive Summary</i>	1
<i>Track Record</i>	2 (for general) and 1 (per entity)
<i>Quality of resources to be Deployed</i>	2 (excluding Table 1 in Volume IIIB and CVs with a maximum length of 1 page each)
<i>Technical Solution Proposed</i>	10 (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)
<i>Management and Implementation</i>	3 (excluding Table 4 and Table 5 in Volume IIIB) + 1 per each Work package description (Table 3 in Volume IIIB)
<i>Pricing Table</i>	No limitation

Table 1: Page limits

6.2 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.

6.2.1 Executive summary

The Tenderer shall provide an executive summary of the proposal, describing the objectives, team and summarising the proposed technical solution and capability demonstration.

6.2.2 Track record

The Tenderer shall demonstrate for themselves and for any proposed subcontractors that they have experience with relevant projects. ECMWF may ask for evidence of performance in the form of certificates issued or countersigned by the competent authority. The Tenderer must include a brief description for a minimum of two recent contracts to demonstrate their capacities for undertaking the tasks foreseen.

6.2.3 Quality of resources to be deployed

The Tenderer shall propose a team providing the skills required for developing and demonstrating the solutions complying with technical requirements set out in Section 4. The team shall include a dedicated Project Manager with experience in management of projects of comparable size. The Tenderer shall describe the experience of the Project Manager and the technical project team in performing activities related to the various aspects of this tender.

6.2.3.1 Existing capabilities

Tenderers should present information outlining the strength of their present capabilities in the following form: For a tenderer tasked with developing white papers, a communication plan, and a policy influence plan within the context of the Destination Earth (DestinE) initiative, six essential capabilities are expected:

- **Expertise in ML/AI:** The tenderer must possess deep knowledge in Machine Learning and Artificial Intelligence, especially as it applies to the DestinE context. This expertise is crucial for producing white papers that accurately reflect the current state of the art, inherent biases, ethical considerations, and potential impacts on environmental policies and practices.
- **Strategic Communication Skills:** A profound ability to craft and execute strategic communication plans is essential. Close collaboration with the other DestinE Entrusted Entities (ESA, EUMETSAT) and the EC is expected. The tenderer should be adept at identifying key messages, target audiences, and the most effective channels and techniques for disseminating information to a wide array of stakeholders, including the public, industry professionals, and policymakers.
- **Policy Analysis and Advice Expertise:** The tenderer must have a strong background in policy analysis and the development of advice strategies. This includes an understanding of the European and global policy landscape related to AI, environmental sustainability, and technology innovation, as well as the ability to engage with and influence policymakers, regulatory bodies, and other key stakeholders.
- **Ethical Considerations in AI Development:** A comprehensive understanding of the ethical considerations in AI development is expected. The tenderer should be familiar with existing frameworks and guidelines, such as those published by the EU High-Level Expert Group on Artificial Intelligence, and capable of integrating these considerations into white papers, communication, and policy influence activities.
- **Collaborative and Coordination Skills:** Given the need to closely liaise with ECMWF's DestinE communication team and other stakeholders, the tenderer must excel in collaborative work environments. This includes strong coordination, project management skills, and the ability to maintain open lines of communication to ensure alignment and constructive interaction across different components of the project.
- **Innovative and Creative Approach:** The ability to think innovatively and creatively is crucial for developing compelling white papers, engaging communication materials, and effective policy

influence strategies. The tenderer should be able to present complex information in an accessible and engaging manner, propose creative solutions to challenges, and identify new opportunities for promoting DestinE’s ML/AI activities and their ethical, environmental, and societal implications.

6.2.4 Technical solution proposed

The Tenderer shall include a brief executive summary describing the overall proposed technical solution to demonstrate their understanding of the DestinE context and the specific requirements of this tender. This section shall also include information on other third-party suppliers or solutions that are proposed for delivering the technical solution.

6.2.5 Management and implementation plan

The Tenderer shall provide a detailed implementation plan of proposed activities for the duration of the contract. Deliverables should be consistent with the technical requirements specified in Section 4.

The Tenderer is requested to include management and implementation activities within a dedicated work package (WPO). The number of milestones is not prescribed, but they should be designed as markers of demonstrable progress in capabilities development and/or quality of capability delivery to keep progress monitoring manageable.

Adjustments to the proposed implementation plan can be proposed by the successful Tenderer, depending on the needs for the evolution of the technical solution, changed user requirements, or other requirements, but must be agreed to by ECMWF.

As part of the general project management description the Tenderer shall consider the following elements (this is not an exhaustive list):

- Annual Work Plan and Semestrial, Annual and Final Implementation Reports shall be provided in accordance with the Volume V Agreement Clause 2.3 and Annex 5.
- Monthly videoconferencing with ECMWF and a proposal for involvement of ECMWF in major project reviews shall be provided as part of the management plan. The tenderer is responsible for the organisation of such meetings, including provision of minutes.
- If relevant, a list of sub-contractors and details of their contribution, key technical personnel involved in the contract, legal names and addresses shall be provided. The tenderer shall describe how the Volume V Agreement, particularly Clause 2.9, has been communicated to all their sub-contractors.
- The Tenderer shall describe in the Proposal the management of personal data and how this meets the requirements of Clause 2.8 and Annex 6 of Volume V Agreement.

The table below provides the template to be used by the Tenderer to describe the complete list of deliverables, milestones, and schedules for this work package. All milestones and deliverables shall be numbered as indicated. All document deliverables shall be periodically updated and versioned as described in the table. Tenderers shall provide preliminary versions of the completed tables as part of their bid.

Deliverables for this work package shall include the following reports:

WPO Contractual Obligations Template			
<i>#</i>	<i>Nature</i>	<i>Title</i>	<i>Due</i>
D0.y.z-YYYY	Report	Semestrial Implementation Report (Jan-June 202X). This includes a specific Financial Report	15/07/202X
D0.y.z-YYYY	Report	Annual Implementation Report 2024 YYYY being the Year n-1 This includes a specific Financial Report	15/01/2025

D0.y.z	Report	Final Implementation Report	Within 60 days after end of contract
D0.y.z-YYYY	Report	12-month Work Plan YYYY being the Year n+1	within 14 days of contract signature, and on 31 st August each year thereafter
D0.y.z-YYYY	Other	Copy of prime contractor's general financial statements and audit report YYYY (YYYY being the Year n-1)	Annually (no-cost associated)

6.2.6 Key performance indicators

Contractors shall report to ECMWF on a set of Key Performance Indicators (KPIs) suitable for monitoring various aspect of service performance, including (but not limited to):

- **Completion of White Papers:** Number of comprehensive white papers developed and finalized within the specified page limit, focusing on the current and future landscape of ML/AI, grounded in ethical principles and European values.
- **Engagement Metrics for Communication Materials:** Reach and engagement levels (e.g., views, shares, likes, and comments) of the high-impact communication materials derived from the white papers, assessing effectiveness in engaging a broad audience.
- **Policy Advisory Influence:** The extent of engagement with European political entities and the impact of strategic policy advisory efforts, measured by policy changes, consultations, and mentions in policy discussions.
- **Technical Expertise and Innovation:** Evaluation of the innovative approaches and technical solutions proposed, based on expert reviews, the novelty of the solutions, and their alignment with project goals.
- **Quality of Deliverables:** Assessment of the quality of all deliverables, including white papers, guidelines, and communication materials, based on predefined quality criteria and stakeholder feedback.
- **Project Management Effectiveness:** Efficiency and effectiveness of project management, measured by meeting milestones and deadlines, budget adherence, and the management of consortium partners (if applicable).

The KPIs, to be defined by the Tenderer, are subject to review by ECMWF and may be updated if necessary.

6.2.7 Diversity and inclusion

If multiple bidders present equally qualified proposals (discrepancy lower than 1%), ECMWF will take into consideration the diversity and gender balance of each bidder's organisation as a tiebreaker when making the final decision. We recognise that diversity and a collaborative environment are essential for advancing scientific discovery and innovation, and we are dedicated to creating a culture that encourages and supports the contributions of individuals from all backgrounds. These varied backgrounds are particularly influential in adopting a holistic view of ethical AI and representing European values. As part of this commitment, we encourage bids from companies who share our values and demonstrate a commitment to diversity and inclusion in their own organisations. We believe that working with suppliers who support our efforts to create a more inclusive and diverse community is key to achieving our goals and driving progress forward in all our areas of activities. Therefore, the Centre encourages all potential bidders to take these values into consideration when submitting proposals.