**Call for Expression of Interest**

**Future EO Programme, Period 1 – Segment 2 –
Information Factory Pathfinders for Adaptation**

The "Information Factory" Concept

The concept of "Information Factory" aims to tackle challenges related to the fragmentation of the EO (Earth Observation) service landscape and the lack of scaling mechanisms that allow the cost-effective and streamlined production and consumption of services integrating EO and non-EO data to deliver fit-for-purpose solutions. The Information Factory seeks to bring together different actors from the service production and exploitation value chain in a synergetic and market-oriented way. It can be designed as an operational cloud environment that provides advanced technology and cost-effective continuous operations to access EO and non-EO data products and develop, host, operationalize and offer EO services. It shall enable the customization of fit-for-purpose EO-integrated solutions, leveraging digital innovation technologies and fostering collaboration with the EO value-adding community, non-EO data and service providers, information system integrators and other potentially relevant actors. To achieve this, it shall also ensure shared value propositions, effective partnership models and innovative business models (e.g. revenue-sharing models) to incentivize contributions from the different actors and scale the deployment of EO-integrated solutions.
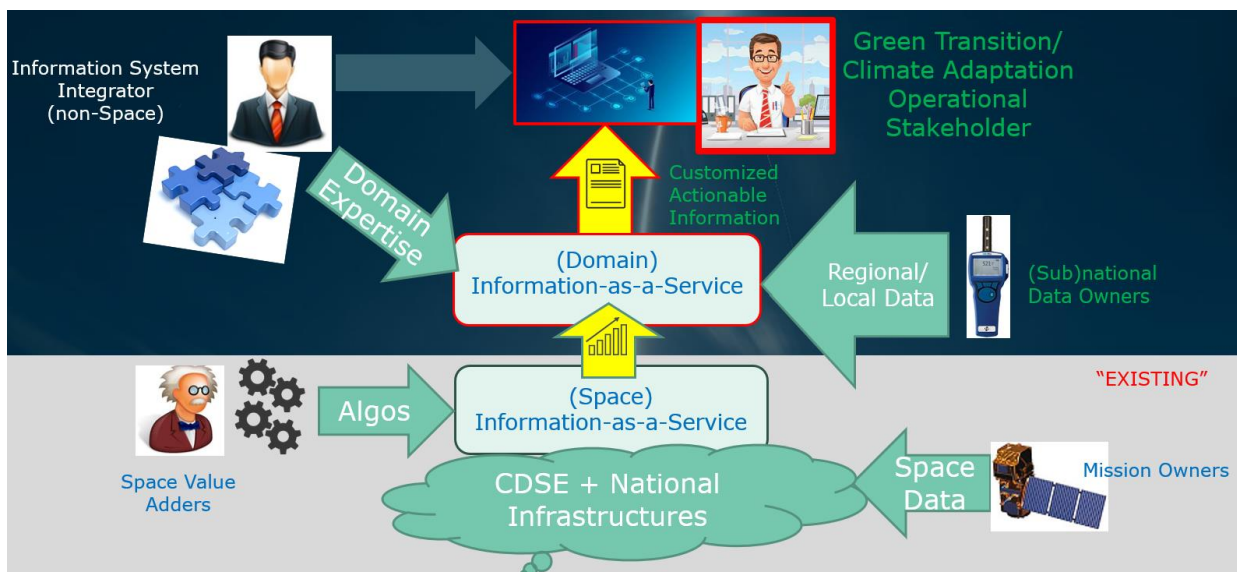
Information factory concept - simplified scheme of roles

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The ''Information Factory Pathfinders for Adaptation'' upcoming activity

The ESA's upcoming "Information Factory Pathfinders for Adaptation'' Invitation to Tender (ITT) aims at exploring the Information Factory concept in the context of adaptation, focusing on vulnerable sectors such as agriculture, energy and urban areas where adaptation efforts are still lagging behind escalating risks. The main goal of the activity is to explore critical factors that can either drive or impede the Information Factory operations and sustainability through a concrete and user-driven implementation of the concept for targeted adaptation domains. The activity shall set up an information factory building on **existing** cloud-based services and demonstrate its implementation with targeted end-users, providing blueprints and insights on the challenges encountered and effective collaborative processes to ensure the Information Factory operations and long-term viability.

The targeted adaptation domains

This activity mainly focuses on targeted adaptation domains including adaptive agriculture, energy and urban resilience, with a particular interest to consider nature-based solutions (NBS) under these domains among other possible approaches. Contributions from other adaptation domains are not excluded but may be considered as lower priority in the scope of this activity. The three priority domains are:

1. ***Adaptive Agriculture:*** encompasses agricultural practices that leverage EO-based and other data-driven services to enhance agricultural systems' resilience and adaptability to climate change and other changing environmental, economic, and social conditions.
   Of relevance in this context are EO-based and other data driven services contributing to advanced (climate adaptive) agricultural decision support systems, taking advantage of multi-scale and multi-sensor EO monitoring capabilities, digital innovation, interdisciplinary data, production forecasting, resilient crop recommendations, adaptive land management strategies, nature-based solutions etc.

2. ***Urban Resilience:*** encompasses the processes that enable cities and urbanized areas to prepare, plan, and respond effectively to climate change, natural disasters, socioeconomic stresses, and other threats, ensuring the continuity or adaptation of their

essential functions. EO-integrated tools and services play a vital role in supporting urban resilience by offering specialized capabilities for monitoring, measuring, and reporting on critical urban factors, hence directly informing decision-making and strategic planning.

Key applications include mapping and monitoring the health of green and blue infrastructure and support for nature-based solutions including urban parks, improved urban water management and greening buildings. Capabilities can also include tracking population growth and urban development, managing housing, infrastructure, and essential resources, hazard mapping and early warning systems, and assessments of urban heat and air quality. All these applications provide practical insights for adaptive urban planning, enabling cities to build and strengthen effective and resilient operational frameworks

3. **Energy resilience:** refers to the energy sector's ability to anticipate, prepare for, and adapt to changing conditions, including climatic, environmental, technological, socio-economic, and geopolitical challenges. It concerns a wide range of energy stakeholders, including decision makers to inform policy and regulatory frameworks, as well as industrial actors and civil society to implement energy resilience measures across the entire energy value chain, from resource extraction and energy production, to transmission, distribution, supply conditions and consumption.

   Of relevance in this context are EO-based and other interdisciplinary, data-driven services, including advanced modeling techniques (e.g., energy system and climate modeling), providing insights to enhance energy resilience. Key capabilities include assessment of renewable resource variability under present and future conditions (e.g. climatic conditions, extreme weather events, energy demand patterns, economic growth etc.), climate vulnerability and long-term Impact assessments (including environment and biodiversity). Capabilities can also encompass energy asset infrastructure monitoring, including support for nature-based solutions to protect energy assets and enhance adaptive land management near critical infrastructure, as well as decision-making support systems to inform adaptation options, associated costs, investment strategies, etc.

Objectives of this Call for Expression of Interest

In preparation for the upcoming "Information Factory Pathfinders for Adaptation" Invitation to Tender, this Call for Expression of Interest aims at identifying value adders in various adaptation

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domains including adaptive agriculture, energy and urban resilience, interested in operationalizing their existing information products and services within the information factory and bringing them to stakeholders and end-users.

Who is this Call for Expression of Interest addressed to?

This Call for Expression of Interest is addressed to space product and service providers (e.g. SMEs, research teams and institutions etc.), deriving value-added products from space data and interested in operationalizing their workflows and/or commercializing them as ready-to-use services. Other data-driven solutions relevant to the targeted adaptation domains are also accepted, including solutions that integrate space and non-space data, as well as modelling outputs. Both commercial and non-commercial solutions are encouraged and multiple contributions from the same value adder(s) are accepted and need to be filled in separate forms.

Why express your interest?

This Call for Expression of Interest offers a unique opportunity for space (and other data-driven) product and service providers to highlight their solutions for operational use and bringing their services to relevant end-users and stakeholders.

The long-term value proposition offered by the Information Factory to the value adding community includes the following:

- Access to scalable and reliable cloud infrastructure, relevant space and non-space data, advanced analytics, computing and visualization capabilities
- Tools for enhancing service capabilities, optimization, packaging, operationalization, hosting and 24/7 operations
- Access to viable business and revenue-sharing models
- Opportunities to collaborate and engage with stakeholders and end-users and build connections with targeted user communities
- Support to scaling offer and business models to National, European and International markets
- Benefit from the Information Factory outreach activities and active engagement with stakeholders and end-users to build awareness and capacity and foster adoption and uptake.

By expressing their interest, contributors are open for possible future collaborations, including the possibility to form a consortium to bid for the activity, early testing of information-factory services, sponsorship for service integration and enhancement, and other potential activities in the scope of information factories.

As the activity scope does not involve major scientific and technical developments, contributions shall consist of **mature value-added products and services** addressing specific adaptation needs. ESA intends to share these contributions in accordance with the ESA Framework on Personal Data Protection, on the terms set out in [this Privacy Notice](#). The content will be exclusively provided by the value adders and will not be an endorsement by the Agency. ESA reserves the right to exclude contributions that do not align with the intended activity scope.

How to express your interest?

Contributors wishing to express their interest are invited to fill out **[this form](#)** by **Wednesday 8th January 2025 16:00 hours CET**. For any questions or clarifications, please contact zaynab.guerraou@esa.int

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