EuroGEOSec – CS#6: Co-Design as a Service

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List of Acronyms

Acronym	Description
API	Application Programming Interface
CS	Case Study
EO	Earth Observation
EOMI	Earth Observation Maturity Indicators
EU	European Union
EuroGEO	European regional initiative under the Group on Earth Observations (GEO) umbrella
EuroGEOSec	EuroGEO Secretariat
GEO	Group on Earth Observations
GIS	Geographic Information System
H2020	Horizon 2020
KPI	Key Performance Indicator
MoU	Memorandum of Understanding
PERL	Pilot Exploitation Readiness Level
R&D	Research and Development
R&I	Research & Innovation
TOM	Technology–Operations–Market maturity model
TRL	Technology Readiness Level

1. Introduction

As the use of Earth Observation (EO) becomes increasingly central to addressing global challenges, companies are exploring new opportunities to develop EO-based products and services across different application fields. Yet, many such innovation efforts struggle to move beyond proof-of-concept stages due to a persistent **disconnect** between providers of products and services and user communities. These actors often operate within different knowledge domains, timelines, and institutional frameworks, making effective collaboration difficult. Addressing this fragmentation requires a **structured** yet **flexible** approach to **building mutual understanding, shared purpose, and actionable outcomes**, in order to develop solutions that meet market demand and that can be easily adopted by users.

The Horizon 2020 project e-shape[1], a flagship initiative under the EuroGEO umbrella, took on this challenge directly. Bringing together 32 pilot projects across diverse application areas, e-shape developed and tested a comprehensive **co-design methodology** specifically tailored for EO innovation. Rather than treating co-design as a generic user engagement activity, the project framed it as a **dynamic and strategic process** that adapts to evolving needs, fosters long-term cooperation, and enables ecosystem-wide learning. Through multiple iterations and continuous refinement across pilots, the e-shape methodology demonstrated its capacity to turn distant, fragmented actor groups into aligned partners capable of co-creating viable and impactful EO services.

Building on this foundation, the EuroGEO Secretariat now aims to transform these insights into a scalable and structured support mechanism: **"Co-design as a Service"**. This concept proposes a professional offering to **guide and facilitate** EO-based innovation through a clearly articulated journey, inspired by the approaches developed in e-shape. It will provide companies and institutions with access to tested **guidance**, self-assessment **tools**, and facilitation strategies. The objective is to enable stakeholders to work together effectively, design services that matter, and create conditions that allow EO service providers to replicate the approach tailored to their context.

This case study introduces the conceptual development of "Co-design as a Service" within the EuroGEO context. It explores how the service can help unlock the full potential of EO by embedding collaboration in the innovation processes, ensuring that technical capabilities are matched with real-world relevance and societal value.

[1] https://e-shape.eu/

2. Methodology

The methodology of this case study is based on a systematic analysis of the co-design experiences, tools, and frameworks developed and tested under the e-shape project[2], with the objective of distilling them into a **streamlined and operational co-design approach tailored for Earth Observation (EO) service providers**. Part of this effort is the integration of various knowledge sources[3], beginning with an in-depth review of key e-shape deliverables and pilot case studies. These documents, which include validated co-design frameworks and detailed reflections from pilot implementations, offer a rich empirical and conceptual foundation. In particular, emphasis is placed on understanding how different co-design types were applied in practice, how barriers between EO providers and end users were addressed, and how iterative collaboration shaped service development over time.

Beyond the methodological frameworks, the study also examines complementary tools produced within e-shape that contribute to the broader innovation context. These include the **EO Maturity Indicators (EOMI)**[4], a maturity assessment framework used to help countries and stakeholders evaluate the advancement and gaps in their EO ecosystems, as well as the **PERL/TOM model**[5], which offers insight into technology, operations, and market maturity of a service, enabling a richer system-level understanding of innovation readiness. Integrating both concept and tool perspectives allows the resulting co-design journey to reflect not only design logic but also broader strategic conditions for scaling innovation.

The analysis will inform the development of a **streamlined co-design journey**, consisting of structured **guidance**, **templates** for (self-)assessment, and **workshop facilitation aids**, targeted specifically at EO-based companies seeking to develop or scale user-driven services.

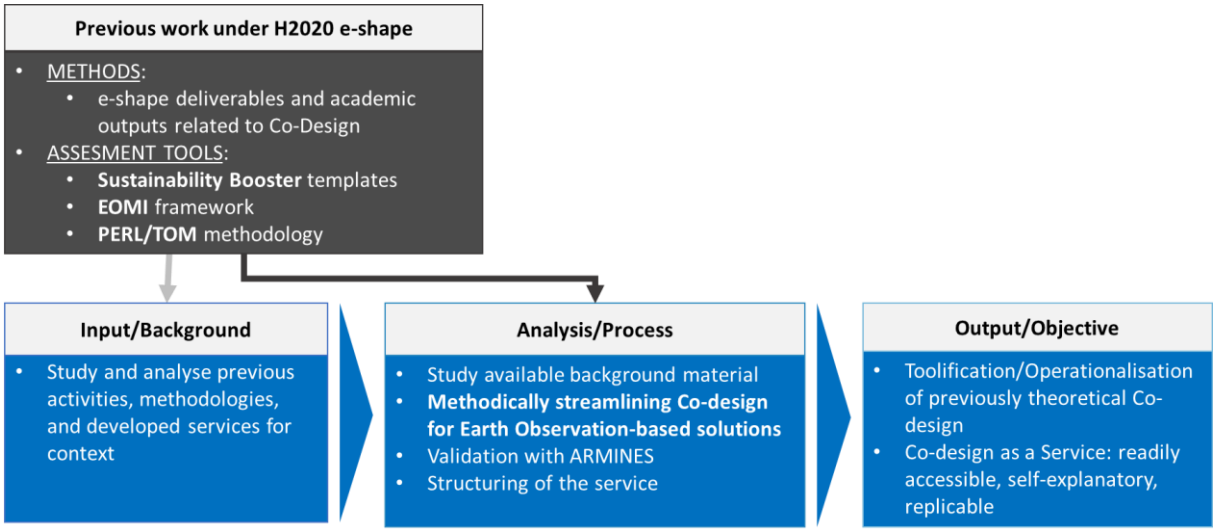

Figure 1: High-level methodology

[2] https://e-shape.eu/index.php/co-design
[3] https://e-shape.eu/index.php/resources
[4] https://e-shape.eu/images/resources/5.%20e-shape_WP4-D4.7%20Maturity%20Indicators%20Implementation%20Report.pdf
[5] https://e-shape.eu/images/resources/D5-14.pdf

Ultimately, the case study aims to contribute to the “toolification” and operationalisation of co-design, transforming it from a conceptual innovation framework into a **service-ready** offering. Positioned as “Co-design as a Service” under the EuroGEO Secretariat, the outcome of this work will support the establishment of a replicable and scalable model that enables EO service providers to engage users meaningfully, design relevant solutions, and build enduring innovation partnerships.

3. Co-design as a Service

3.1. Co-design methodology

3.1.1. Introduction

Earth Observation (EO) data, products, and services hold great potential for addressing challenges across sectors. However, their practical uptake remains limited due to:

- A **high degree of technical complexity**, requiring knowledge in both data processing and domain-specific application areas.
- **Fragmentation between EO providers and end users**, often operating in disconnected ecosystems.
- **"Grand distance"** – a conceptual and operational separation between actors who do not share knowledge, time horizons, or organisational cultures.

To bridge these divides, a **co-design methodology** tailored to EO has been developed and validated in the **e-shape** project. This methodology is composed of **three interlinked phases**, offering a coherent, practical process grounded in diagnosis, collaborative action, and institutionalisation. The **first phase, diagnosis**, involves a structured process where practitioners and facilitators collaboratively map the "data–information–usage" pathway, identifying where EO data enters the chain, how it transforms into actionable insights, and how it reaches users.

Through iterative **exchanges** and targeted **interviews**, this mapping reveals existing "blocking points" in the ecosystem, e.g. constraints in user engagement, infrastructure gaps, misaligned communication, and allows for the **classification of co-design needs into four archetypes** adapted to the EO context.

Once key needs are identified, the **second phase activates targeted co-design actions**. Each co-design type is addressed through bespoke **workshops** and structured interactions, designed not merely to refine service features, but crucially to co-design the collaboration itself. These sessions draw participants from across the data chain and generate multiple service alternatives, resilient partnership modalities, and mutual expectations rather than one-off solutions. The protocol encourages reflection after each workshop with the pilot team, both to shape next steps and refine the co-design methodology itself.

The **third phase of institutionalisation** ensures that outcomes are embedded in practice. Co-design does not end with ideas; it transitions into formalised cooperation formats (agreements, roles, timelines) and introduces performance indicators that capture both cognitive shifts and network stabilisation among partners. Through this institutionalisation, service providers gain strategic self-awareness, network resilience, and replicable collaboration patterns. Across e-shape, many pilots reported lasting benefits: clearer ecosystem vision, secured partnerships, and the ability to replicate co-design approaches in new contexts, reinforcing the methodology's long-term value and adaptability

In combination, these three phases **(diagnosis, action, and institutionalisation)** form a dynamic, iterative journey uniquely suited for EO service innovation. By diagnosing ecosystem barriers, engaging

stakeholders in designing both service and cooperation, and formalising learning into practices and partnerships, the approach produces not only better EO services but stronger innovation ecosystems.

3.1.2. Phase 1 – Diagnosis

The co-design process begins with a **structured diagnosis** aimed at understanding the current service context, identifying ecosystem challenges, and determining the appropriate co-design approach. This phase starts with **mapping** the "data–information–usage" chain. The service provider assesses how Earth Observation data flows through technical and analytical processes, is transformed into meaningful information, and eventually reaches and benefits users. This mapping exposes assumptions, breakdowns in communication, underdeveloped technical links, or misaligned incentives within the EO value chain.

The service provider then conducts **interviews or focused discussions** with key internal stakeholders. The goal is to evaluate the surrounding "design environment", the set of organisational norms, ecosystem capabilities, and stakeholder expectations that shape service development. These insights allow the team to **determine which type of co-design** is most appropriate for their current challenge. Four types have been identified in the e-shape methodology: clarifying user needs (Type 1), exploring uses and contexts collaboratively (Type 2), aligning components and integration in complex services (Type 3), and anticipating future developments within a growing usage ecosystem (Type 4). A diagnostic tool (e.g. structured spreadsheet, canvas) is used to help teams select their type(s) and plan next steps accordingly.

	Overall context	Initial state	Blocking point to be addressed	Expected outcomes
Type 1	**Adjustment between user and service designer**	**(a)** Usefulness already identified on a first basis but to be enhanced. Usability to be enhanced. **(b)** Relationship with the user to be precisely defined but at least user willing to devote time settling it.	Establishing **adapted relationships with specific users** for *usefulness & usability assessment and enhancing*	**(a)** Expanded range of lists of requirements ensuring usefulness and usability **(b)** Cooperation modalities with these specific users clearly formalized
Type 2	**Exploration for usage initiation**	**(a)** Usefulness not well-known *and/or* **(b)** Relationship with the user appearing to be difficult to establish (uncommitted users)	Establishing **adapted interactions with user communities** for *usefulness identification*	**(a)** Expanded usefulness of the service **(b)** Expanded list of relevant stakeholders to interact with
Type 3	**Engineering for service operationalization**	**(a)** Requirements for usefulness and usability established. **(b)** Relationships with some users established.	**Establishing adapted relationships with relevant partners** for *extensive usefulness & usability realization* and operationalization of the service	**(a)** Clarification of the service structure (parts ready to be operationalized, parts needing further exploration) **(b)** Cooperation modalities between R&D and operationalization entities clearly formalized
Type 4	**Exploration for usage expansion**	**(a)** Existing service (usefulness & usability established for at least one use case) **(b)** Relationships already established with existing users.	Establishing **adapted relationships with existing & potential new users** for *usefulness reinvention*	**(a)** Expanded range of potential alternatives for future usages (which usefulness for which actors) **(b)** Cooperation modalities and supports for interactions (proofs-of-concept) defined for existing and new users

Figure 2: Classification of co-design needs, description of each type, source: https://e-shape.eu/index.php/co-design

3.1.3. Phase 2 – Co-design action

Once the diagnostic phase identifies the co-design type(s), the second phase activates **targeted co-design actions**, typically through one or more **workshops**. These workshops are not general brainstorming exercises, but tailored events built around specific needs and guided by the logic of the selected co-design type. Preparation begins with a design session by the service provider, possibly with the support of a facilitator, in which they define the workshop objectives, participant mix, structure, and guiding materials. Emphasis is placed on ensuring representation across roles (e.g. end users, data producers, technical integrators, policy influencers) to foster meaningful exchange.

During the workshop, **structured sessions** are used to achieve different goals depending on the co-design type. For instance, a Type 1 workshop might aim to challenge internal assumptions by eliciting raw, unfiltered user needs and exposing disconnects between expected and real-world use. In contrast, a Type 3 workshop may involve mapping out operational relationships and clarifying responsibilities across collaborating organisations. In all cases, the methodology encourages surfacing multiple alternatives and uncertainties, rather than prematurely converging on fixed solutions. Workshops may combine **demonstration** (e.g. showcasing a prototype or dataset), **exploration** (guided discussion or scenario-building), and **synthesis** (documenting learnings and possible cooperation formats).

Immediately following the workshop, an **internal debrief** is conducted to reflect on the outcomes, identify new questions, and define next steps. This reflection phase is integral, ensuring that workshops translate into **actionable follow-up** and deeper design learning.

3.1.4. Phase 3 – Institutionalisation

The third phase focuses on embedding co-design outcomes into concrete and lasting practices. While workshops may generate ideas and alignments, these must be formalised to **ensure sustained cooperation and implementation**. To that end, this phase begins with drafting cooperation modalities based on workshop outputs. These may include role definitions, timelines, data access protocols, or memoranda of understanding, turning co-design outcomes into commitments.

This phase also introduces simple but meaningful **performance indicators**. They include **cognitive** indicators (e.g. shifts in stakeholder understanding or expanded perceptions of the user base) and **organisational** indicators (e.g. the creation of new partnerships or the definition of reusable collaboration models). Service providers use these indicators to track progress and reflect on the resilience of the relationships formed.

Lastly, institutionalisation feeds forward into future co-design cycles. Because EO service development is dynamic, new challenges and needs will emerge. The co-design process is not linear, but meant to be repeated as services evolve. A mature implementation of this phase ensures that service providers are equipped to re-initiate co-design when required, maintaining flexibility and responsiveness over time.

3.2. Co-design journey

3.2.1. Step 1 – Map the Data–Information–Usage chain

Begin by analysing how EO data flows through the service. Identify where raw data is collected, how it is processed into information, and how that information is used by the intended audience. This mapping reveals technical gaps, misaligned expectations, or unclear value pathways. It sets the foundation for understanding where user engagement is most critical.

This step

- Clarifies co-design needs: By examining the chain, it is revealed where collaboration is needed most. For example, if it is discovered that users are not engaging because they don't understand the data, this points to a Type 1 co-design need (clarifying user expectations).
- Prepares for workshops: The chain serves as a (possibly visual) starting point during co-design workshops to discuss gaps with stakeholders and brainstorm solutions.
- Aligns stakeholders: It becomes a shared map that shows everyone involved where the service stands, making it easier to align expectations and responsibilities.

Qualitative results can be derived from this exercise:

- A list of gaps (e.g., "Users don't understand the data outputs").
- Prioritised needs (e.g., "We need to simplify visualizations before further development").
- Input for the next phase of co-design (e.g., the type of workshop to run, key actors to involve).

3.2.2. Step 2 – Assess the design environment

Evaluate the context in which the service operates. This includes the organisational norms shaping decisions, the capabilities of the ecosystem (such as platforms, networks, or infrastructure), and the promises made or expected by users. This step may involve internal workshops or interviews with team members and partners to reflect on the service's position within the larger EO landscape.

This step helps to assess the non-technical but equally critical factors influencing the EO service:

- Institutional norms and constraints
- Organisational and ecosystem capabilities
- Implicit or explicit "promises" made to users or stakeholders

These factors affect how the service can evolve, where it might face resistance, and what partnerships or capacities need to be developed.

The Design Environment Analysis feeds directly into:

- Step 3 of the Co-Design Journey: Diagnosing the co-design type.
- Workshop Planning: Knowing which constraints or risks to address during stakeholder sessions.
- Service Strategy: Clarifying whether the service is aligned with the ecosystem, or whether adjustments are needed to service scope, partners, or communication.

It ensures that co-design is realistic and contextual, grounded not just in what is planned to be built, but in what the ecosystem can support, and what users are prepared to adopt.

Best practices for this step include:

- Involve both technical (EO) and domain experts.
- Map existing assumptions explicitly.
- Identify gaps between available data and potential user needs.

3.2.3. Step 3 – Diagnose your co-design type

Use a structured diagnostic tool (see Toolbox) to classify current needs. Based on the analysis so far, determine whether the situation aligns with:

- Type 1: Need to clarify user expectations and assumptions.
- Type 2: Need to explore use cases collaboratively with potential users.
- Type 3: Need to align technical, organisational, or systemic components.
- Type 4: Aim to anticipate and shape future ecosystem directions.

While more than one suitable type may be identified, the most urgent or foundational for the next co-design action should be prioritised.

This step helps to:

- Select the right kind of workshop or co-design activity to plan next.
- Understand what to focus on: expectations, use cases, system cooperation, or future ecosystem development.
- Allocate effort and resources accordingly (e.g., invite the right people, set the right objectives).

It's the inflection point where diagnostic reflection becomes a concrete co-design plan, providing:

- A **clear co-design type** tailored to the situation
- A **strategic starting point** for planning the workshop (objectives, participants, format)
- A **documented rationale** that makes the design process transparent and repeatable

Best practices for this step include:

- Use pre-diagnosis questionnaires (as in e-shape).
- Involve a "co-design facilitator" to ensure neutrality.

Once this step is completed, **Phase 2: Co-Design Action** starts, with targeted workshops or engagement activities based on the chosen type.

3.2.4. Step 4 – Plan co-design workshop

Design a co-design activity tailored to the diagnosed type. Define **objectives**, **participant profiles**, and **structure**. Engage a facilitator if possible.

Co-design type 1 workshops organise the dialogue between the service provider and the users in a specific way in order to establish adapted relationships with these specific users and to overcome fixation effects;

Co-design type 2 workshops consist in confronting the service to different contexts with users. The topic of each workshop can be formulated as follows: exploring the range of usefulness of the service and related actors of the ecosystem by leveraging the knowledge & experience of the participants to the workshop.

Co-design type 3 action is a sequence of workshop sessions to progressively refine and update a common understanding of the service structure (modules to be operationalised/to be further explored), and the related cooperation modalities on each type of modules.

Co-design type 4 action should be a cycle of workshops with users that consist in a joint exploration with the help of existing users to explore a range of perspectives for the development of future usages – either new usages for existing users or for others (supporting the evolution of the usage ecosystem in certain directions).

Workshops should include a mix of:

- Demonstration (e.g., showcasing the current service)
- Exploration (e.g., guided discussions, journey mapping)
- Synthesis (e.g., identifying insights, outlining cooperation needs)

Plan for documentation and follow-up before the event begins.

Best practices for this step include:

- Identify key individuals for workshops.
- Categorise actors, e.g. users, service enablers, data processors, regulators, funders.
- Include non-obvious or indirect users.
- Map their proximity to the EO domain.

3.2.5. Step 5 – Run co-design workshop

Execute the workshop, ensuring creating space for genuine **dialogue** and **diverse perspectives**. Avoid aiming for immediate consensus; instead, explore multiple options, note tensions or open questions, and focus on building mutual understanding and cooperation formats. This should be supported by **templates for notetaking and recording ideas**. Here, the **Resilient Fit Canvas** is particularly useful to map and evolve a service or project idea, ensuring that it is not only technically feasible but socially and institutionally aligned for long-term adoption. Using it, outcomes can be clustered in terms of

- What new concepts emerged?
- What knowledge gaps were filled?
- What cooperation formats are proposed?
- How can new concepts be implemented?

Best practices for this step include:

- Use visual tools (e.g., diagrams, mock-ups, maps).
- Maintain structured note-taking templates for reproducibility.
- Provide EO data samples or mock interfaces of solutions discussed.

3.2.6. Step 6 – Reflect and extract outcomes

Immediately after the workshop, hold a debrief with the internal team. Review what was learned, what changed in assumptions, what new relationships or commitments emerged, and what uncertainties remain. Use this reflection to decide whether further co-design cycles are needed.

Best practices for this step include:

- Distinguish between “quick-fit” (transactional fixes) and “resilient-fit” (strategic evolution).
- Engage tech teams early to test feasibility.

	"Quick-fit" actions	"Resilient-fit" actions
General description	 Focus on finding ONE type of interaction with the ecosystem (single list of requirements with one user, in a punctual relationship) *If roots only at surface level: plant only grows if water is easily accessible*	 Generating a range of alternatives (regarding the lists of requirements, the stakeholders involved, the types of partnerships) for a better adaptation to future surprises *Expanded root network: plant more resistant to various water conditions*
Type 1	Finding ONE satisfying list of requirements with one specific user	In order to end up with a robust list of requirements, exploring a range of potential services at different time horizons and related cooperation modalities
Type 2	Finding ONE relevant user to interact with	Progressively building a better understanding of the usage ecosystem and cooperation agreements with a portfolio of relevant actors
Type 3	Building the engineering for the operationalization of one service	Building relationships with relevant partners to ensure a continuous investigation on modules to be operationalized/to be explored
Type 4	Merely asking existing users what they would dream of	Setting-up a joint program for long-term exploration of new usages with existing and new actors (identification of obstacles, research efforts to be made, ‘stimulating’ proofs-of-concept, etc.)

Figure 3: Distinction between "quick fit" and resilient fit" perspectives, source: https://e-shape.eu/index.php/co-design

3.2.7. Step 7 – Formalise Cooperation

Translate insights into tangible commitments. This may include writing cooperation agreements, setting joint development plans, or defining roles for ongoing service evolution. Formalisation ensures that co-design outcomes extend beyond the workshop and into the real-world development process.

Best practices for this step include:

- Include provisional timelines for next iterations.
- Encourage joint exploration funding (e.g., EU calls, national programmes).

3.2.8. Step 8 – Monitor impact and prepare for the next cycle

Track both **cognitive** and **organisational** outcomes using **simple indicators**. These might include **increased clarity about user needs**, **new collaborations**, **clearer data access pathways**, or **deeper alignment between partners**. As the service matures or faces new challenges, reinitiate the journey

with updated diagnostics and fresh engagement: Plan next co-design cycle, shifting co-design types as needed based on emerging blocking points.

The following examples of KPIs have been identified under e-shape for three different co-design types applied to actual pilots:

Table 1: Example KPIs synthesising outcomes of co-design workshops

	Organisational KPI	Cognitive KPI
Type 1	• Validation and clarification of the different users' interests to further cooperate with. • Identification of the general form of such a cooperation for each actor.	• Overview of the different expectations of the participants regarding the type of services to be developed by the service provider.
Type 2	• Different forms of cooperation envisaged with the participants of the workshop, and identification of new relevant actors to • interact with.	• Identification of a range of potential development perspectives, thanks to a • better understanding of the users' ecosystems and the usefulness dimensions of the service.
Type 2	• Agreement between the service provider's partners on specific cooperation modalities to further work on the different modules of the service (either to be operationalised, to be explored, or still undetermined).	• Clarification of the development perspectives, defining concrete actions at different time horizons related to modules to be operationalised, to be explored and still undetermined.

Best practices for this step include:

- Revisit co-design annually or at key transition points.
- Share results with wider ecosystem to attract new partners.

3.3. Toolbox

This section provides templates for different steps of assessments and workshop facilitation. They are designed to enable service providers to autonomously perform their co-design journey, though the involvement of a professional facilitator is recommended. This toolbox will be made available on the EuroGEO website with instructions and explanations accompanying each template.

3.3.1. Template for Step 1 of co-design journey: Mapping the Data–Information–Usage Chain

At the start of your journey, map the initial vs targeted state of the service in the data-information-usage chain. Identify gaps and hidden assumptions about users or technical constraints.

Step 1: Fill in the chain

Use the following structure to describe how EO data moves through your service pipeline:

Step	Description, notes
Data acquisition	
Information processing	
User application	

Use the different sections to describe:

- The data sources (e.g., satellite imagery, in-situ sensors).
- The processing and analytics steps (e.g., algorithms, models, or dashboards).
- The intended users and how they interact with the output (e.g., decision-makers using a web tool).

Step 2: Identify breaks and bottlenecks

Ask questions like:

- Are there steps where data is not transformed into actionable insights?

- Do users understand and trust the output?
- Is there feedback from users that informs the data-processing chain?

Step 3: Annotate challenges

Use the "Description, notes" column to mark issues (e.g., lack of user feedback, data too complex, unclear value proposition).

Step 4: Prioritise challenges and define fixes

On a dedicated canvas (paper or digital e.g. using services such as Miro[6] or Mural[7]).), use sticky notes to map elements of your data-information-usage chain to associated challenges (e.g. breaks, bottlenecks, gaps, and other issues) and to facilitate ideation for solutions to these issues.

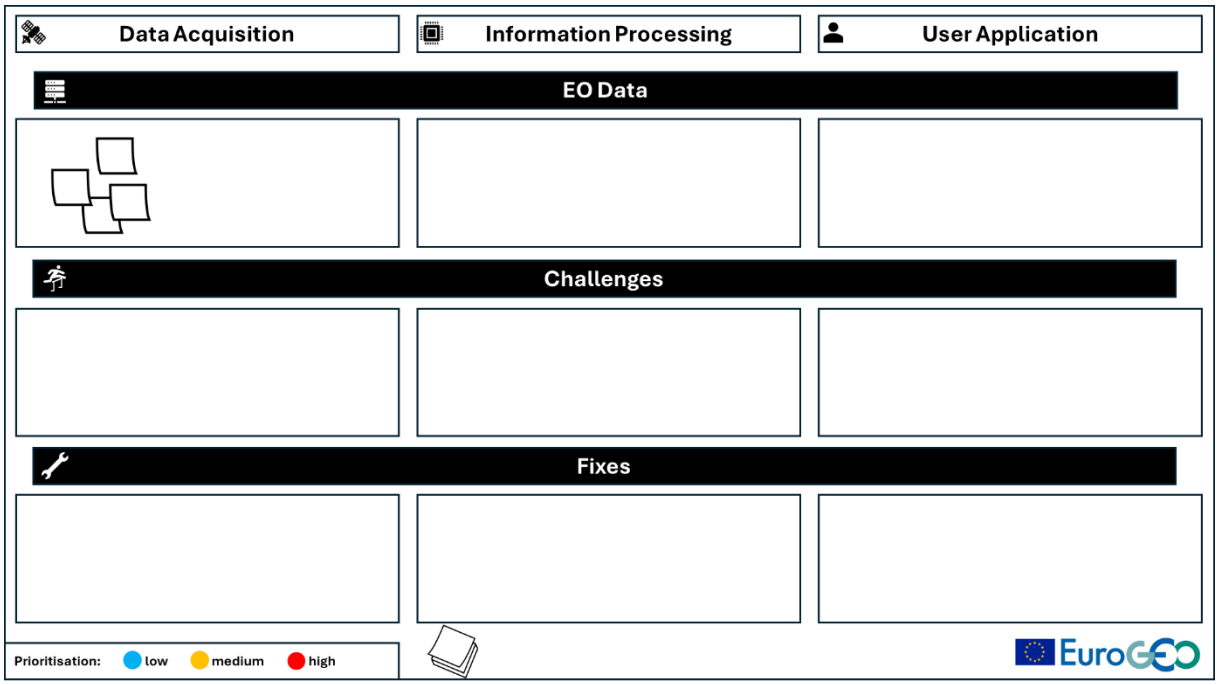

Figure 4: Data-Information-Usage Chain Canvas

- **EO Data:** Describe your current state of EO data: where it comes from (sources, formats etc.), how it's processed (models, algorithms etc.), and how users interact with it and for what (decisions, outcomes etc.).
- **Challenges:** list problems such as unclear metadata, data too raw, lack of user feedback, lack of context, output too technical, unclear value, poor access to final interface etc.

Prioritise challenges that should be addressed, using color-coded stickers.

- **Fixes:** Brainstorm possible interventions or co-design actions to address each prioritised challenge.

Using a canvas makes problems visible and structured, facilitating discussions. It aligns stakeholders who all see the same logic chain and where action is needed. Finally, it feeds into the co-design

[6] https://miro.com/
[7] https://www.mural.co/

planning, helping define what kind of workshop to run and who to invite based on the selected challenges.

3.3.2. Template for Step 2 of co-design journey: Design Environment Analysis

The template has three main prompts:

- **Norms:** What rules, mandates, or policies shape what you're allowed or expected to do? Are there regulatory barriers or incentives?
- **Capabilities:** Do you have the right resources (e.g. people, funding, tools) to act on what users need? Where are you strong or weak?
- **Promises to users:** What have you told users you'll deliver? Are those promises realistic, vague, or misaligned with their needs and/or your capabilities?

Table 2: Design Environment Analysis matrix

Dimension	Details, notes
Norms (institutional, regulatory)	
Capabilities (ecosystem and organisational; technical, human, financial)	
Promises to users (expectations, value propositions	

Fill this template as a team exercise or individually and compare insights. Use the reflections to:

- Identify gaps between intentions and reality
- Surface misalignments between service logic and institutional or market setting
- Capture where new partnerships or capacity-building are needed

This can be facilitated through a canvas (paper or digital). Use sticky notes to **map intentions to possible gaps or misalignments**. Mark the **confidence level** (high / medium / low) in each area of the design environment using color-coded stickers. Mark any **"red flags"** (e.g., user expectations you can't meet). These become priority co-design triggers. For each of the three areas, **define actions** to overcome gaps or to address red flags, e.g. to clarify the value proposition, to strengthen or scale a capability, or to clarify or reassess rules, barriers, or incentives etc.

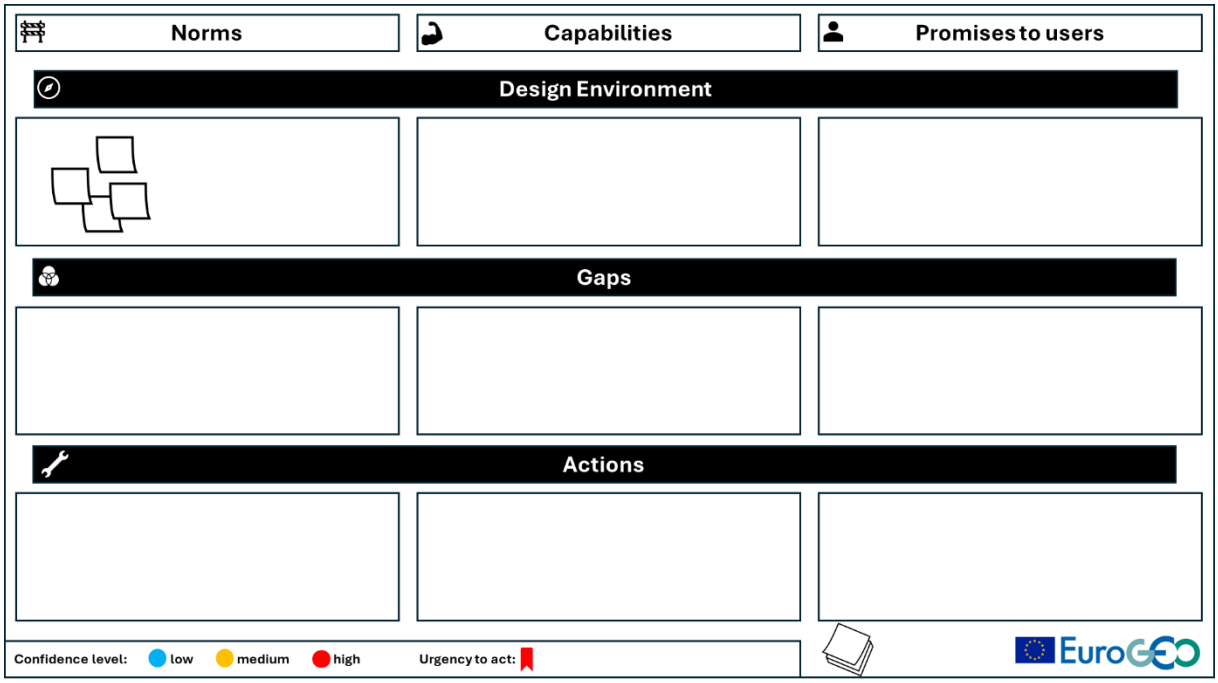

Figure 5: Design Environment Analysis canvas

This approach may produce **actionable outputs** related to each of the three areas. E.g., medium confidence in capabilities attributed to a missing in-house developer could trigger the action to hire. A red flag identified from communicating broad benefits to public users while the current solution only serves expert users may trigger the action to reposition or to create clearer messages.

3.3.3. Template for Step 3 of co-design journey: Identify co-design needs

This template presents a number of reflective questions:

- Do users understand the value of your service?
- Are you confident your current design reflects user needs?
- Are there gaps in operational integration?
- Is your ecosystem evolving or entering a new phase?

Go through each question, and answer it honestly based on what has been learned so far. Answers can be rated on a scale (e.g. yes / somewhat / no) using colour coding for these responses for better visualisation. This exercise can be done individually or with the relevant team of the service provider (**ideally with diverse perspectives**: business, technical, user-facing). Answer the following to help guide the co-design strategy:

Table 3: Co-design needs matrix

Question	Answer
Do users understand the value of your service?	
Are you confident your current design reflects user needs?	
Are there known gaps in operational integration?	
Are you entering a new market or stakeholder domain?	
Is your ecosystem evolving (e.g., new actors, new use cases)?	

From this exercise, a co-design type based on the identified pattern of responses can be derived:

- If users don't understand or use the service, choose Type 1: Clarify user expectations.
- If your team is unsure how the service fits real use cases, choose Type 2: Explore uses with users.
- If the service depends on coordination among multiple actors, choose Type 3: Align system components and actors.
- If you're entering an evolving domain with new actors, choose Type 4: Anticipate and co-shape the future.

You may match more than one type, but typically one will emerge as most urgent or foundational.

3.3.4. Template for Step 3 of co-design journey: Co-design type decision guide

The below matrix serves as an additional tool to identify the most relevant co-design type. It provides a summary of the four co-design types developed and tested in the e-shape project, linking each type to:

- The kind of context it's best suited for,
- The key indicators that suggest it's appropriate.

The goal is to choose the co-design type(s) that match the current context, so you can:

- Design the right kind of workshop,
- Engage the right actors,
- Address the most pressing design issues first.

Table 4: Co-design type matrix

Type	When to use	Relevant indicators	Example scenario
Type 1	When user needs are unclear	Low engagement, high uncertainty	Early stage, fuzzy understanding of user expectations
Type 2	To explore service uses with diverse users	Uncertain use contexts	Product exists but lacks market traction
Type 3	For aligning technical and organizational elements	Complex stakeholder involvement	Complex service requiring integration
Type 4	To anticipate and shape future ecosystems	Emerging domains, exploratory phase	Sustained partnership needed

1. **Review the outputs** of:
    - Data–Information–Usage Chain
    - Design Environment Analysis
    - Co-design needs questionnaire
2. **Cross-check** observations with each co-design type's description and indicators.
    - For example, if you noted that your users don't engage or understand the service, that aligns with **Type 1**.
    - If your service success depends on syncing multiple technical and institutional actors, that's a **Type 3** scenario.
3. **Select the most fitting type(s)**.
   You can mark the relevant type(s) directly in the template. If multiple types apply, **prioritise** them (e.g., Type 1 now, Type 4 in six months).

4. Optionally, **document your rationale** next to your choice to clarify for your team or stakeholders.

The result is a **qualitative decision**, backed by evidence from the earlier steps. You can structure output like in the following example:

- Selected Type: Type 3 – Aligning technical and organisational components
- Why: Service involves meteorological data + health systems + policy reporting. Identified confusion around roles and integration points.
- Next step: Workshop with stakeholders from each layer (data, application, regulation).
- This becomes the design brief for your co-design intervention.

3.3.5. Templates for Step 4 of co-design journey: Workshop planning

Create a **workshop design canvas**, which helps to shape the purpose, structure, and format of the workshop. Use this before the workshop, ideally with your team, possibly a professional facilitator. This should include:

- Objective of the session (aligned to co-design type)
- Key question(s) to explore
- Expected outputs (e.g. alternatives, insights, commitments)
- Target participants and roles
- Agenda overview (with time blocks)
- Materials/tools needed (e.g., mockups, demo data, journey maps)

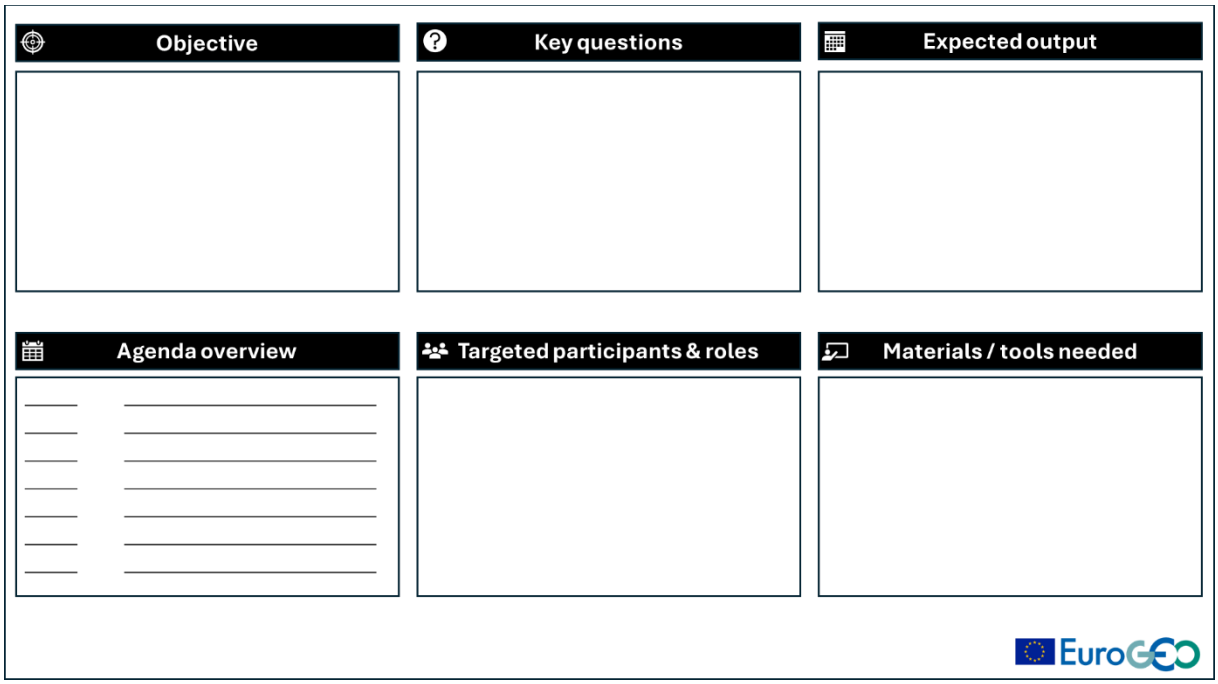

Figure 6: Workshop design canvas

To ensure inviting the right mix of voices and adjusting facilitation to engage them, the list of targeted participants and roles can be structured using a stakeholder mapping template. This serves as a visual tool to identify and position participants based on:

- Their role in the EO value chain (e.g. data provider, integrator, user)
- Their influence vs. interest
- Their experience level with EO

Table 5: Stakeholder mapping matrix

Stakeholder	Role	Influence	Interest	EO experience

Further, a printable or digital workshop agenda tailored to the co-design type should be prepared, provided to participants, and with additional notes to the workshop facilitator. An example layout could look like this:

Time	Activity	Purpose	Facilitator Notes
09:00–09:30	Welcome & Objectives	Set the tone and scope	Short intro, include EO demo if helpful
09:30–10:30	Exploration Activity	E.g. User journey mapping, ecosystem diagram	Focus on surfacing assumptions
10:45–11:30	Discussion Groups	Co-create ideas or improvements	Mixed groups, rotate roles
11:30–12:00	Synthesis & Next Steps	Capture outcomes & decisions	Use templates to document insights

3.3.6. Templates for Step 5 of co-design journey: Running the workshop

To capture workshop insights in a standardised way, an **idea capture sheet** (paper or digital) can be utilised for each idea generated, capturing elements such as:

- Idea / Insight
- Who proposed it
- User pain point or opportunity it addresses
- Questions / assumptions behind it
- Implementation barriers
- Priority level (Low / Medium / High)

A structured form can help capturing ideas and associated aspects during the workshop, with some elements to be possibly completed after the workshop, and to be used to prioritise actions.

Co-Design Workshop – Idea Capture Sheet

Workshop Title: _____

Date: _____

Facilitator: _____

1. Idea title

_____
_____
_____

2. What issue or gap (problem and/or opportunity) is this idea trying to solve?

_____
_____
_____

3. Description of the idea

_____
_____
_____

4. Key steps, features, or process

_____
_____
_____

5. Primary users, customers, or other stakeholders that could benefit

_____
_____
_____

6. Potential Impact

☐ Small ☐ Medium ☐ Large

Comments: _____

7. Feasibility – How easy or hard might it be to implement?

☐ Easy ☐ Moderate ☐ Challenging

Notes: _____

8. Resources needed (e.g. skills, tools, partnerships, budget, technologies)

_____
_____
_____

9. Possible risks or barriers

_____
_____
_____

10. Next steps needed to put into action

_____
_____
_____

Sketch / diagram (optional)

Contributors:

_____
_____
_____

A further means to capture ideas mapping them to aspects relevant for their implementation is the **Resilient Fit Canvas**, a visual capture tool through which ideas and insights from discussions get slotted into the right quadrant immediately.

Table 6: Dimensions of the Resilient Fit Canvas

Dimension	Purpose	Value	Use in workshop
New concepts	Capture fresh ideas, models, or approaches that emerged during the workshop.	Keeps innovative thinking visible before it gets buried under operational discussions.	• Populate this box in real time as participants present concepts. • Helps to see patterns and clusters in emerging innovation.
Knowledge gaps	Identify missing information, unclear assumptions, or areas requiring research before moving forward.	Avoids costly missteps by highlighting what's unknown early.	• Flag these during ideation or evaluation. • Feed them directly into your Open Questions section in the Workshop Summary & Action Tracker.
Cooperation formats	Capture opportunities for collaboration – internally across teams, or externally with partners, communities, or stakeholders.	Moves the conversation beyond "what we'll do" to "who we'll do it with" and "how we'll work together."	• Identify partnership models (joint ventures, cross-team working groups, public-private partnerships, etc.). • Link these to follow-up actions with assigned owners.
Implementation ideas	Gather concrete, actionable ways to bring concepts to life, e.g. through pilots, prototypes, processes, or policy changes.	Keeps momentum by translating vision into tangible next steps.	• Use it as the staging area before items move into the Action Tracker with owners and deadlines. • Spot quick wins versus longer-term projects.

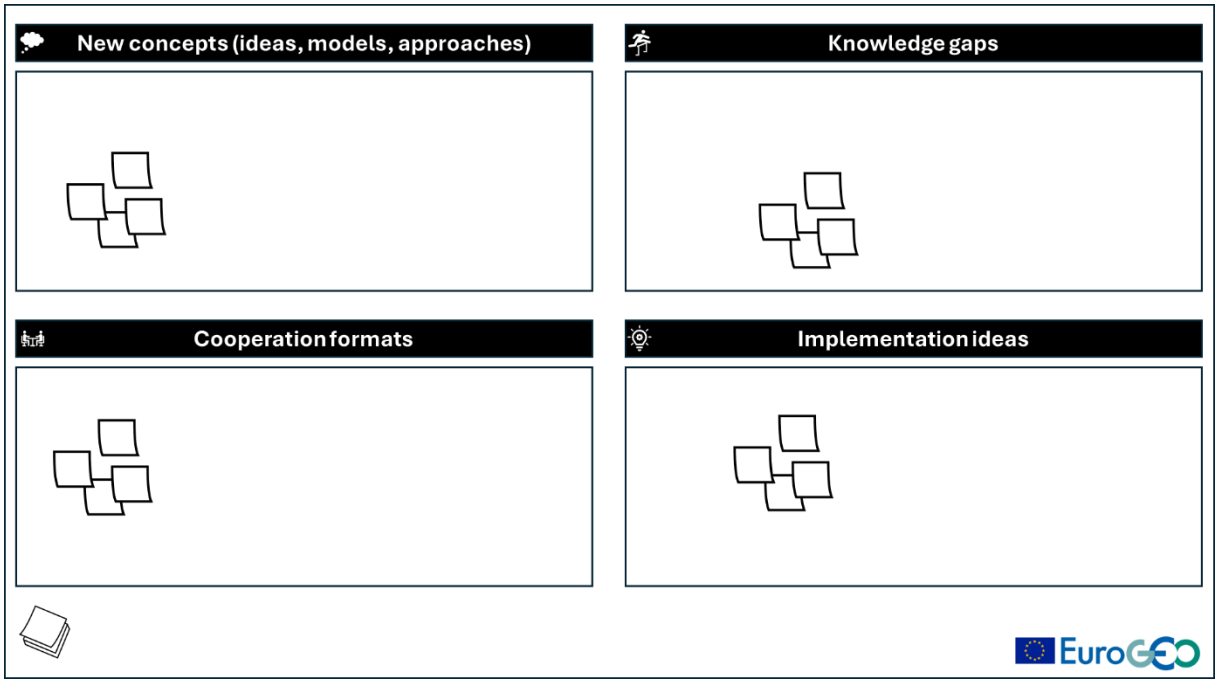

Figure 7: Resilient Fit Canvas

After the workshop, items form this canvas can be transferred into the Workshop Summary & Action Tracker (see next section):

- New concepts inform key takeaways
- Knowledge gaps feed open questions
- Cooperation formats influence follow-up actions
- Implementation ideas directly populate the action plan

3.3.7. Templates for Step 6 of co-design journey: Reflection on outcomes

During the workshop, **notes** should be taken extensively to not only capture concrete ideas, but any takeaways, decisions, unresolved issues, or actions. These notes should be used to document the workshop in a structured manner, helping to translate outputs of the workshop into actions. The structure should include aspects such as

- Key takeaways
- Decisions made
- Open questions
- Follow-up actions
- Suggestions for next co-design cycle (if needed)

The below template for summarising and tracking actions could help in the process.

Co-Design Workshop – Summary & Action Tracker

Workshop Title: _____

Date: _____

Facilitator: _____

Participants: _____

1. Key Takeaways

Technical:

_____
_____
_____

Organisational:

_____
_____
_____

User-related:

_____
_____
_____

2. Decisions made

Decision	Rationale	Date effective	Responsible person

3. Open questions for further discussion or research

Question	Context, notes	Target date	Responsible person

4. Follow-up actions, translating ideas into concrete steps

Action	Responsible person	Deadline	Status

5. Suggestions for next co-design cycle - What should be repeated, improved, or approached differently next time?

_____
_____
_____

Notes / Additional observations

_____
_____
_____

3.3.8. Templates for Step 7 of co-design journey: Formalise cooperation

While during co-design workshops stakeholders may agree on great ideas, a written agreement helps to secure and operationalise the shared commitments, responsibilities, and processes needed to move from co-design ideas to a functioning, jointly-developed EO service. It captures who will do what, by when, and with what resources so the activity keeps momentum.

The following template proposes a structure for such an agreement.

Cooperation Agreement for ongoing collaboration following co-design activities

Date: _____

Cooperation agreement between

Party A: [Organisation / Team Name] – Role description

Party B: [Organisation / Team Name] – Role description

(Add more parties if relevant)

1. Purpose

This Cooperation Agreement formalises the commitments, roles, and processes agreed upon during the co-design journey. It ensures that the insights and concepts developed collaboratively are translated into actionable next steps for ongoing service, product, or process development.

2. Shared Objectives

The Parties agree to work together to:

[Objective 1 – e.g., Develop and pilot the co-designed service concept]

[Objective 2 – e.g., Ensure inclusive participation in ongoing development]

[Objective 3 – e.g., Share relevant data and feedback to improve iterations]

3. Roles & Responsibilities

Party	Role	Key responsibilities
Party A	e.g., Lead development partner	• [Responsibility 1] • [Responsibility 2]
Party B	e.g., Service delivery partner	• [Responsibility 1] • [Responsibility 2]
All parties	Collaborative partners	• Participate in regular review meetings

		• Share progress updates • Maintain transparency in decision-making

4. Data Access & Conditions

- Data to be shared (e.g., specific datasets, research outputs, or prototypes
- Purpose of use (e.g., service refinement, testing, research)
- Access & storage (storage method, access permissions, and security measures):
- Confidentiality: All shared data is to be treated as confidential unless otherwise agreed in writing.
- Compliance: Parties will comply with relevant privacy laws, ethical guidelines, and organisational policies.

5. Communication & Coordination

- Meeting Frequency (e.g., monthly progress check-ins)
- Primary Contacts (list names and email addresses for each party)
- Decision-making process (e.g., consensus-based, designated lead approval)

6. Actions and timeline

Action	Responsible party	Due date
e.g., Provide initial access to EO data portal / API	Service provider	e.g., two weeks after agreement
e.g., Deliver tailored EO data samples for pilot area	Service provider	e.g., within one month
e.g., Integrate user-supplied ancillary data (e.g., in-situ measurements, GIS layers)	Joint	[Date]
[Step]	[Party]	[Date]

7. Duration & Review

This Agreement remains in effect until [date / project milestone], unless extended by mutual agreement. Progress will be reviewed [quarterly / bi-monthly] to assess cooperation effectiveness and make necessary adjustments.

8. Signatures

By signing, the Parties confirm their understanding and commitment to the cooperation outlined in this document.

Name	Name	Name
Title	Title	Title
Party A	Party B	Party C
_____	_____	_____
Date, signature	Date, signature	Date, signature

3.3.9. Templates for Step 8 of co-design journey: Monitor impact and prepare for next cycle

Monitoring the impact of a co-design journey on organisational (e.g. changes in processes, structures, and collaboration patterns) and cognitive (e.g. changes in understanding, awareness, and alignment) aspects can be supported by simple Key Performance Indicators (KPIs), defined to match the co-design type and specific context. The following examples are meant to inspire and to complement the examples resulting from e-shape (see Table 1).

Table 7: Organisational KPI examples

KPI examples	What it measures	Example data source	Target / Trend
New collaborations formed	Number of new formal or informal partnerships between stakeholders	Partnership logs, stakeholder survey	Increase over baseline
Data access pathways established	Number of new or improved mechanisms for sharing or accessing data	Data-sharing agreements, API usage logs	Shorter time to access; more channels
Decision-making speed	Average time from request to decision on service changes	Meeting minutes, request tracking system	Reduced over time
Service uptake	Number of stakeholders actively using the service post-co-design	Platform analytics, user accounts	Increase over time
Process adoption	Number of organisations integrating co-designed workflows into their own operations	Internal reports, user interviews	Increase over time

Table 8: Cognitive KPI examples

KPI	What it measures	Example data source	Target / Trend
Clarity of user needs	Degree to which stakeholders can articulate the primary user requirements	Pre/post surveys, workshop transcripts	More consistent and aligned responses
Shared vocabulary adoption	Use of common terms/concepts across partners	Meeting notes, document analysis	Increased use over time
Understanding of service capabilities	Stakeholder awareness of what the service can (and cannot) deliver	Pre/post quizzes, interviews	Higher scores in post-cycle assessment

Alignment of priorities	Degree of agreement on service goals and next steps	Prioritisation exercises, voting results	Increased consensus rate
Confidence in collaboration	Stakeholder self-reported confidence in joint problem-solving	Surveys, reflection exercises	Steady increase over cycles

These KPI examples are intentionally simple, low-burden, and mix quantitative and qualitative measures, so they can be easily gathered from the co-design exercise. They also allow to spot early warning signs, for example, if “alignment of priorities” drops, it is necessary to revisit diagnostics before the next cycle.

Beyond reflecting the outcomes of specific workshops as under Step 6: Reflection on outcomes, a dedicated retrospective on the overall co-design cycle should be performed. This could include the following prompts to be discussed internally or with the participants.

Co-design retrospective guide

1. What worked well?

- Which aspects of the process or tools were most effective?
- Were there specific workshops, activities, or interactions that produced valuable breakthroughs?
- Did any unexpected successes occur?

Further notes:

_____
_____
_____

2. What needs improvement?

- Which steps of the process felt unclear or inefficient?
- Were there moments where momentum was lost?
- Were roles, responsibilities, or timelines unclear?
- Did any barriers (technical, organisational, cultural) slow progress?

Further notes:

_____
_____
_____

3. How did stakeholder views evolve?

- Have participants' understanding of user needs changed?
- Has awareness of service capabilities or limitations improved?
- Have priorities or expectations shifted?
- Did new collaborations, partnerships, or trust emerge?

Further notes:

_____
_____
_____

4. Summary

Theme	Key insight	Suggested action	Priority (high, medium, low)
What worked well	[Example]	e.g., maintain approach in next cycle	High
Needs improvement	[Example]	e.g., provide clearer onboarding materials	Medium
Stakeholder evolution	[Example]	e.g., incorporate new partner into early stages	High

5. Next Steps

- Immediate follow-ups (before next cycle):
  - Action 1
  - Action 2
  - Action 3
  - Etc.
- Preparation for next cycle:
  - E.g., updated diagnostics, adjusted cooperation agreements, resource needs etc.
- Tentative start date for next cycle

3.3.10. EOMI

Earth Observation Maturity Indicators (EOMI) are a methodology designed to **assess the status and maturity of Earth Observation activities** within a country or organisational ecosystem. Developed under H2020 project GEO-CRADLE[8], and improved and tested during e-shape and following activities, it helps stakeholders understand:

- Their strengths and gaps
- The level of uptake across domains
- The readiness of enabling infrastructures
- The maturity of partnerships and innovation frameworks

It is especially valuable for **strategic self-awareness:** understanding where you stand before trying to innovate or scale.

EOMI can play a **supportive and enabling role throughout the co-design journey**, but its strongest fit is at the beginning, especially during the **Diagnosis phase**, and again during **Institutionalisation**. Here's how EOMI can be integrated effectively into each phase:

1. Diagnosis phase

Use EOMI to assess **ecosystem maturity** before launching co-design. This helps to identify whether **external factors** (e.g., lack of platforms, poor data access, weak partnerships) are **limiting service success**. It offers further evidence for choosing the **appropriate co-design type**:

- Low EO readiness and uncertain users: Type 1 or 2
- High EO infrastructure but fragmented governance: Type 3
- Emerging EO sector with future growth potential: Type 4

Applying EOMI anchors the self-assessment performed in the diagnosis phase in **system-level awareness**, not just internal team assumptions.

2. Action phase (Workshops)

While not a central tool for this phase, EOMI indicators can **inform workshop design**. If for example a poor uptake in a specific sector is shown, the workshop could be tailored to stakeholders of this sector. Further, EOMI insights can be used as inputs to **stimulate discussion** with participants.

3. Institutionalisation phase

Following a co-design cycle, EOMI indicators can be revisited to assess **whether maturity has improved** (e.g., in user engagement, platform use, cross-sectoral adoption). This helps to identify **remaining systemic barriers** to scale or replication and can support **strategic positioning** of the service in national/international EO contexts (e.g., via EuroGEO, GEO). Thus, EOMI can serve as a **strategic alignment tool**, ensuring co-design outcomes are embedded in system-wide improvement.

[8] http://geocradle.eu/en/

3.3.11. PERL/TOM

PERL (Pilot Exploitation Readiness Level) is a composite model assessing how mature a service is across:

- Technological development
- Operational capacity and integration
- Market understanding and positioning

It has been initially developed to assess pilots under H2020 project e-shape, further improved in the process, and later dubbed TOM to do justice to its applicability beyond e-shape. It's a diagnostic and planning tool used to identify readiness gaps and prioritise next steps for scaling, operationalisation, or commercialisation.

The framework can be embedded into the co-design process in much the same way as EOMI, but with a more service-focused and **go-to-market** perspective. It's particularly valuable for assessing the **readiness and maturity of an EO service** from an internal development perspective.

1. Diagnosis Phase

PERL/TOM can be used to assess an EO service's maturity before engaging stakeholders. It helps to identify whether issues stem from:

- Technical underdevelopment, suggesting a focus of co-design on feasibility
- Operational uncertainty, suggesting co-design for integration and roles
- Market ambiguity, suggesting co-design for user engagement or business modelling.

Considering the four types of co-design as defined under e-shape, PERL/TOM can help to identify the appropriate type for the current maturity of the EO service:

Type 1: Adjustment between user and service designer

Ideal when Technology and Operational readiness are moderate, but user relationships or usability still need enhancement. E.g. for a score like 6-5-3, where strengthening user feedback loops is required.

Type 2: Exploration for usage initiation

Works when Technology is early-stage and Market readiness is low, or relationships with users are uncommitted. A score like 3-4-2 suggests an a opportunity to explore basic usefulness and build initial engagement.

Type 3: Engineering for service operationalisation

Matches well when Operating capabilities are rightly assembled and some Technology maturity exists (e.g. TRL6–7), but market pathways or scale need development. A score like 7-7-4 for example suggests to focus on moving from pilot/R&D to operational, with deeper stakeholder integration.

Type 4: Exploration for usage expansion

Appropriate when a service is technically and operationally well-developed (e.g. score 8-8-6) but needs new users, contexts, or market entry. This might require reinvention and new use cases and a Type 4 co-design.

The following score constellations aim to provide examples to guide the choice of a co-design type:

TOM score	Indicated gaps	Co-design type	Why it fits
Low Tech (e.g. 3-5-4)	Core features immature, usability weak, performance not proven	Type 2: Usage Initiation	Work with uncommitted users to identify usefulness, co-shape service features
Moderate Tech, weak Ops (e.g. 6-3-5)	Core features usable but delivery capability lacking	Type 3: Operationalisation	Co-design with delivery partners to align processes, governance, and operational scaling
Moderate Tech, weak Market (e.g. 6-5-3)	Features mature but user relationships thin, low awareness	Type 1: Adjustment	Focus on refining usability (Tech) and deepening specific user relationships (Market)
High Tech & Ops, weak Market (e.g. 8-8-4)	Service ready, delivery robust, need for new demand channels	Type 4: Usage Expansion	Engage new or adjacent user communities to explore reinvention and new contexts
High overall (e.g. 8-8-8)	No major readiness gaps	Choose based on strategic goals (expansion, reinvention, deeper specialisation)	Co-design used to explore entirely new opportunities

Performing the assessment prior to the co-design journey provides a grounded baseline, helping avoid over-promising or engaging stakeholders too early. However, the score should only be used as an additional indicator for choosing the suitable co-design Type, not replacing the other steps of assessment and diagnosis

2. Action Phase (Workshops)

PERL/TOM insights can be utilised to design **better-targeted** workshops. If the service is technologically mature but operationally vague, sessions should focus on **clarifying workflows and cooperation models** (Type 3). If the market side is uncertain, workshops should focus on **exploring value propositions, users, and use cases** (Type 1 or 2).

Basing workshop design on maturity assessment ensures that co-design activities are **realistic, credible, and relevant** to where the service actually stands.

3. Institutionalisation Phase

Here, PERL/TOM may be of less relevance, but can benefit from the co-design activities itself. The PERL/TOM status can be reassessed after a coo-design cycle to monitor improvements:

- Did the workshop clarify user needs (Market)?
- Did it define new roles (Operational)?
- Did it validate technical paths (Technological)?

This may help with documenting progress and next-phase decisions.

Table 9: Role of PERL/TOM in co-design

Co-design phase	Role of PERL/TOM	Value added
Diagnosis	Evaluate EO service readiness (T, O, M)	Grounded co-design type selection
Action (Workshops)	Inform design scope, set appropriate expectations	Relevance, credibility, targeted facilitation
Institutionalization	Reassess maturity post-engagement	Progress tracking, roadmap refinement

4. Conclusion

The co-design methodology developed through the e-shape project and academic research represents a **paradigm shift** in how EO-based innovation is organised. Rather than focusing solely on user involvement or product delivery, it emphasises the **strategic orchestration of relationships**, **continuous adaptation**, and the **design of cooperation environments** that can support transformative innovation in the face of complexity and distance.

This approach is particularly suitable for innovation ecosystems characterised by:

- High levels of uncertainty,
- Multi-stakeholder involvement,
- Evolving technological landscapes.

As Europe's regional hub within the Group on Earth Observations (GEO), EuroGEO orchestrates a multi-faceted innovation support system tailored to EO service providers. Its strategic pillars are captured under the motto "Combine, Coordinate, Cooperate", enabling demonstration, incubation, scaling, and replication of EO services across Europe. It connects researchers, industry, policymakers, and users to foster mutual learning, promote best practices, and build an interoperable digital ecosystem grounded in the GEO vision

A key aspect of this support is outlined in the "White Paper: The New Era for EuroGEO" (2025), which defines a user-driven innovation framework that actively bridges Research & Innovation (R&I) with operational and market applications—what it terms Earth Intelligence. In particular, the paper positions **co-design as a central instrument** in that process,

Given the increasing complexity of societal challenges and the need for EO services to deliver actionable, user-centric value, it is **essential that EuroGEO provides structured support** for co-design practices. Offering clear guidance and ready-to-use templates empowers service providers to effectively engage stakeholders, align solutions with real-world needs, and foster sustainable uptake. By making these resources openly accessible via the EuroGEO website, alongside curated examples and recommended workflows, EuroGEO can lower the barrier to high-quality co-design implementation. Moreover, by facilitating co-design sessions during key events or via targeted Action Group support, EuroGEO can actively embed these methods into the innovation fabric of the EO community—reinforcing its leadership in fostering interoperable, impactful Earth intelligence across Europe.

5. References and resources

- e-shape co-design overview
- e-shape D2.2 Revised model for e-shape co-design
- e-shape D2.3 Report on the experiments and feedbacks for e-shape co-design
- e-shape D2.4 Validated model of co-design process for e-shape
- e-shape D2.5 Report on the cases requiring specific co-design update
- e-shape D2.6 Validated model of co-design process for e-shape
- e-shape D2.8 Diffusion of the validated model
- e-shape D2.9 Diffusion of the validated model
- e-shape D4.3 Maturity Indicators Expansion
- e-shape D4.7 Maturity Indicators Implementation Report
- e-shape D5.14 Final PERL definitions