

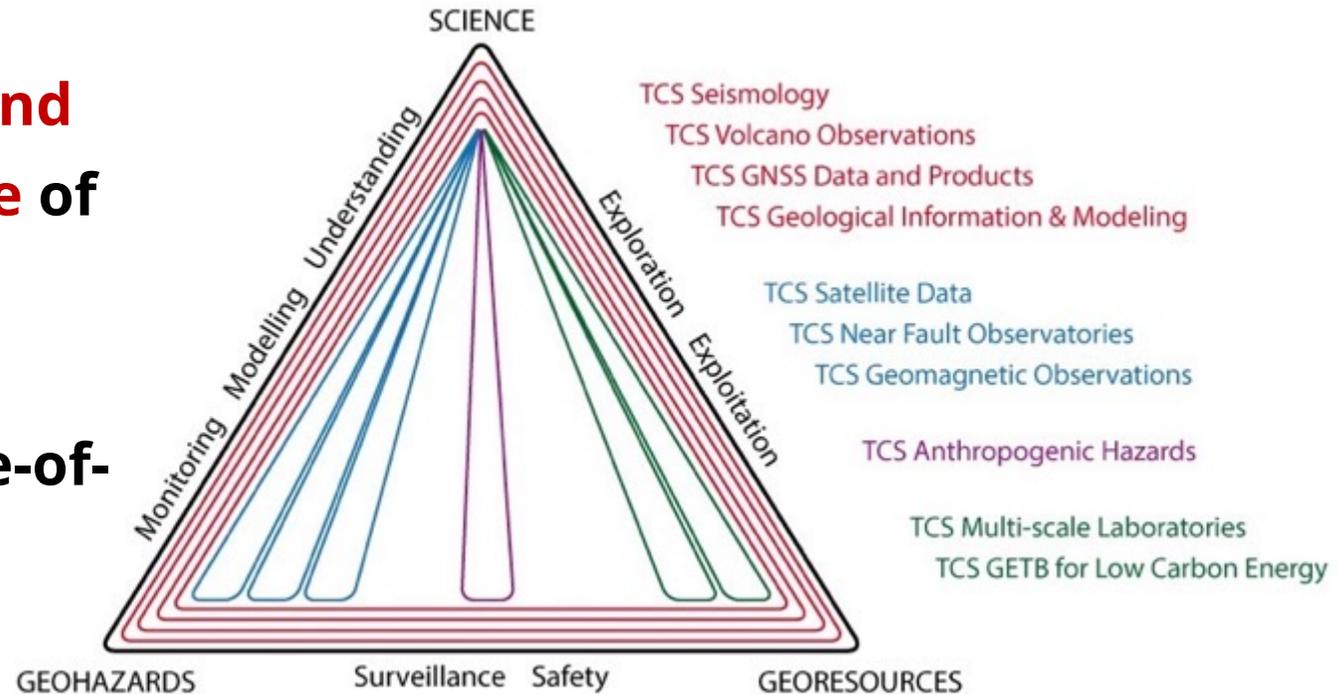


EPOS Long Term Sustainability

Massimo Cocco

Executive Coordination Office

To ensure **sustainable and universal use and re-use** of multidisciplinary solid Earth science data and products fostering state-of-the-art research and innovation



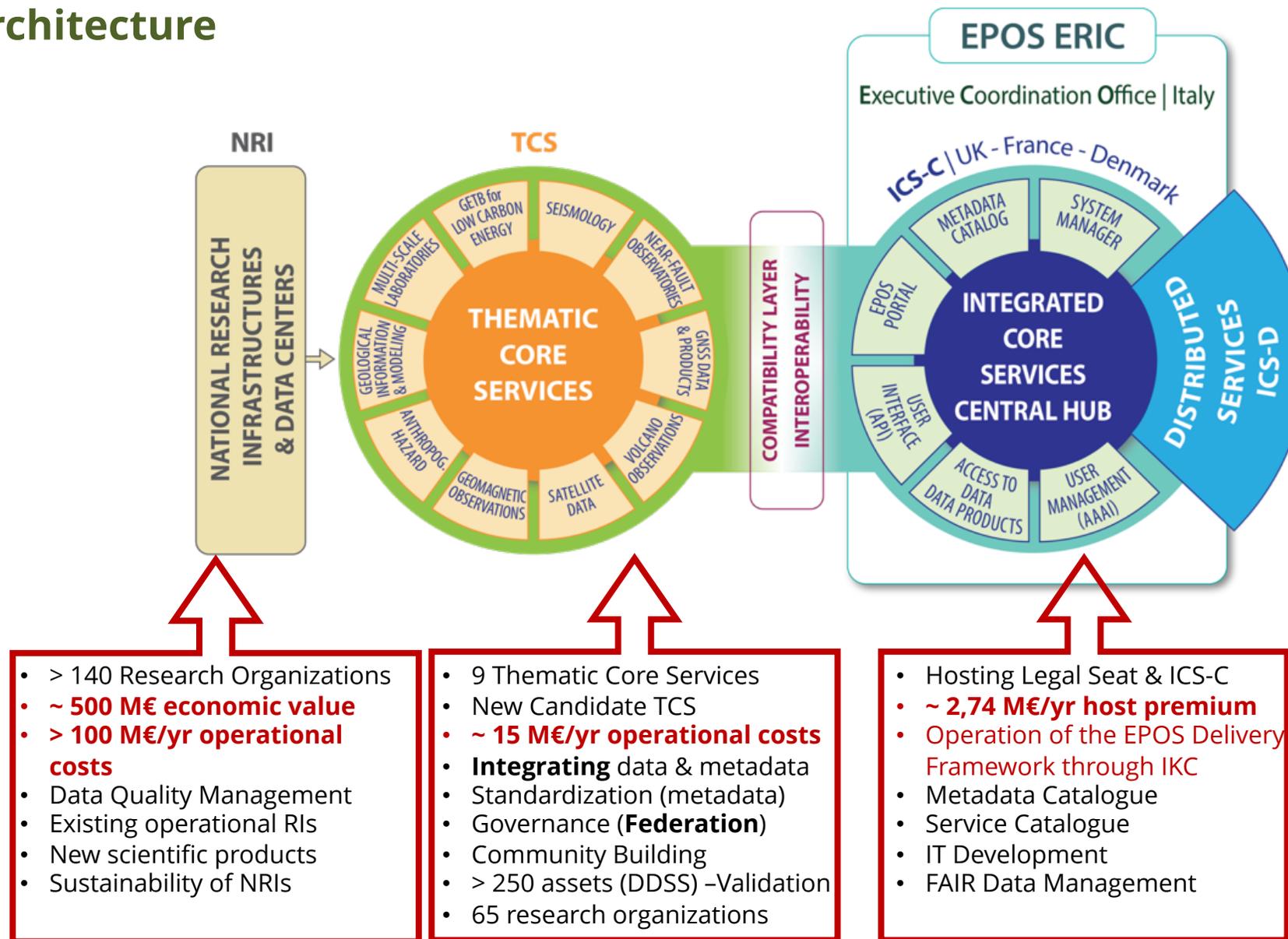
To make possible a **better understanding** of the Earth surface and sub-surface dynamics and use this progress in science for the assessment of geo-hazards and sustainable use and exploitation of geo-resources

EPOS Mission

To establish a **sustainable and long-term access** to solid Earth science data and services integrating diverse European Research Infrastructures under a **common federated framework**



EPOS ERIC Architecture



The transition from the Implementation Phase to the Operational Phase requires simultaneous construction, implementation & operation

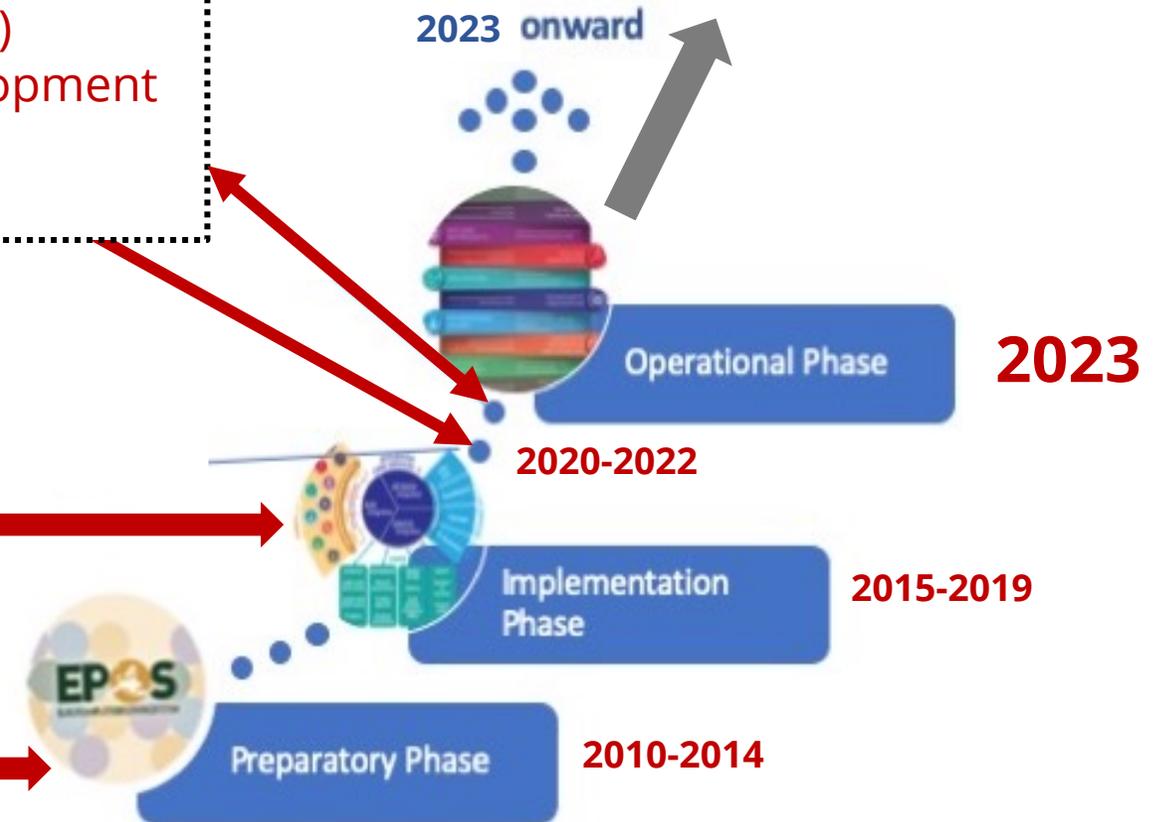
- ERIC Governance
- TCS-ICS system robustness
- Financial Viability
- User strategy
- FAIR data management

Pilot Operational Phase (POP)

- EPOS ERIC Governance & Operation
- 2020-2022 Strategic Plan (construction)
- ICS-C hosting and operation – IT development
- TCS implementation & construction
- Pilot Operational Testing for operation

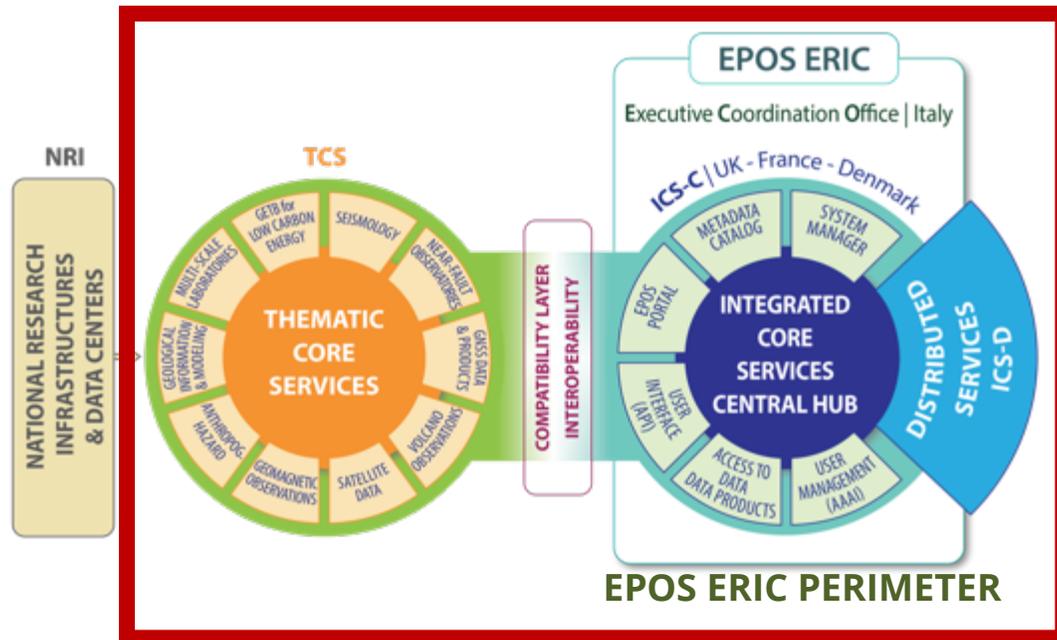
- Vision and Mission confirmed
- Implementation of functional architecture
- Thematic & Integrated Core Services TCS - ICS
- ERIC established – EPOS ERIC construction

- Vision and Mission shared with communities
- Design of the functional architecture
- Thematic Working Groups
- ERIC perspective and choice



EPOS Federated Approach

EPOS Delivery Framework



- Robust Governace
- Effective Legal Framework
- Financial Viability
- Technical Robustness
- Trust & Credibility

FEDERATED means:

- TCS communities
 - ❖ 9 TCS Governance & Coordination
 - ❖ 1 Candidate TCS
 - ❖ 1 new community (from SERA)
 - ❖ 35 Service Providers
 - ❖ Data & Service provision: 200 DDSS, 236 web-services
 - ❖ TNA Coordination & Provision
- TCS-ICS system
 - ✓ ICS-C Data Interoperability
 - ✓ Shared IT developments
 - ✓ Procurement ICS-D
- 14 Research Organizations (65 in TCS)
- 5+1 International Organizations



EPOS POP 2020-2022 Strategic Plan

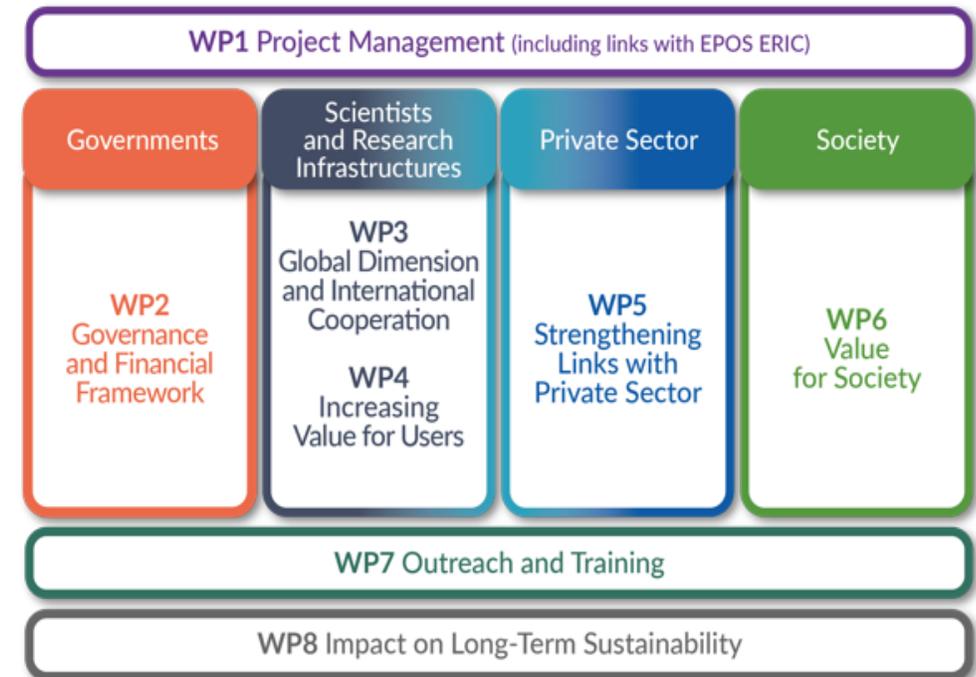


Building the EPOS Delivery Framework

1. finalizing the ICS-C hosting COMPLETED
2. establishing the TCS Governance and Coordination COMPLETED
- ✓ 3. enabling the TCS data and service provision
4. implementing and establishing TNA coordination and provision
5. fostering the IT development of the TCS-ICS delivery system COMPLETED
- ✓ 6. Supporting Sponsored Research Activities

Sustainable EPOS Delivery Framework

EPOS SP Project



EPOS Approach to Long-Term Sustainability

• Scientific Excellence

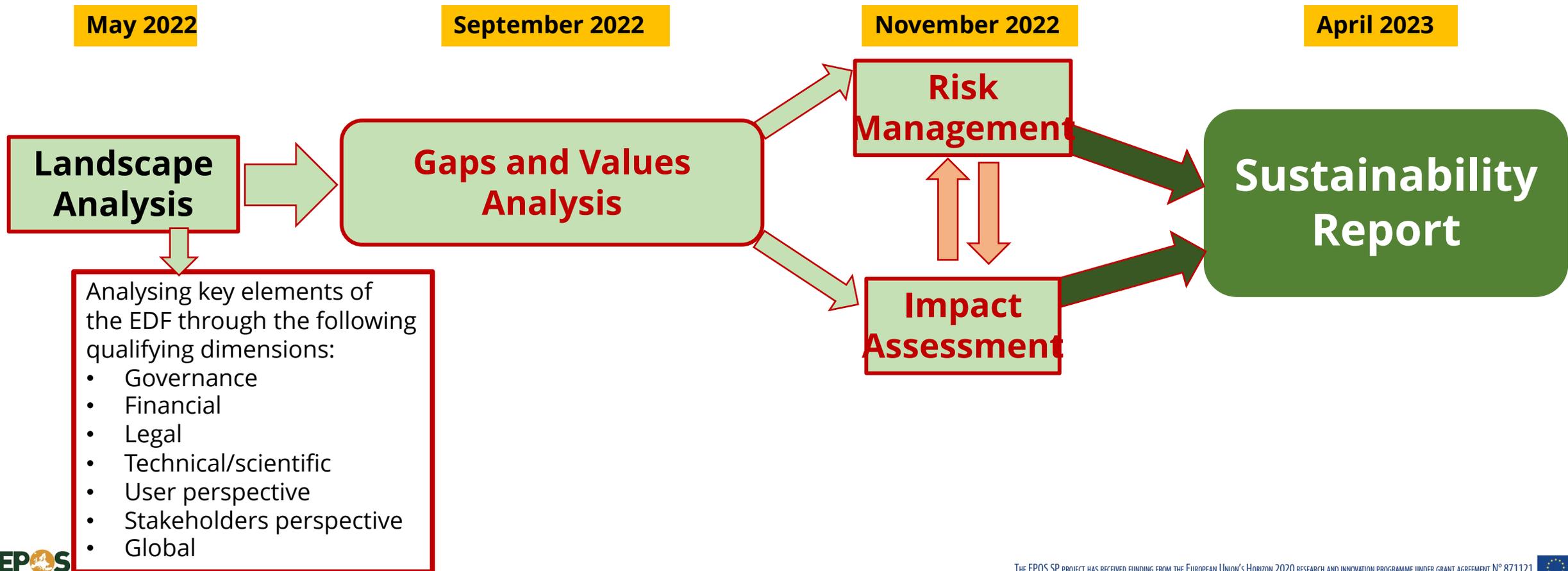
- ❖ Scientific perspectives
- ❖ Scientific Impact
- ❖ Science for society
- ❖ Innovation

• Sustainable operation

- ❖ RI key elements:
 - ✓ ECO
 - ✓ ICS-C
 - ✓ TCS
- ❖ Technical readiness for operation (POT outcomes)
- ❖ Effective Governance
- ❖ Financial Viability

EPOS Roadmap to Long-Term Sustainability

- EPOS SP mail deliverable: Long-Term Sustainability Report
- From construction to sustainable operation of the RI addressing Long-Term Sustainability



Landscape Analysis Background

EPOS Landscape can be seen as a synthesis of **organizational elements** and founding **structures** of various nature (collaborative environments, data suppliers, service providers, technological infrastructures) **characterizing** the **EPOS Delivery Framework** and the **RI architecture**.

The Landscape Analysis (LA) is aimed at presenting to well identified target stakeholders (LA's users) the **organization and functioning** of the EPOS RI **as a continuity of architectural/organizational elements interconnected to ensure RI sustainable operation**, requiring human resources, skills, technologies and coordination.

To understand and manage the complexity of the EPOS RI and the evolutionary mechanisms of its architecture and organizational structure an **analytical and in-depth study is necessary**.

The overarching goal is to increase **knowledge** and **awareness** on EPOS workings

Landscape Analysis: Scientific Perspectives

Providing access to solid Earth science data, data products, software, and services (DDSS) to enable scientific research and serendipity by the:

- integration of data and products already available independently of EPOS;
- access and integration of data and products not available without EPOS;
- provision of new data and scientific products implemented by TCS.

Fostering multidisciplinary use of solid Earth science data and products (DDSS) by the integrated use of multidisciplinary products supporting scientific research in solid Earth science;

- exploitation of new services for data visualization and analysis.

Enabling cross-disciplinary use of solid Earth science data and products for Earth science through:

- collaborations with environmental RIs;
- contributions to the Earth Observation System.

Contributing to progress in hazard assessment and risk mitigation for both:

- natural hazards;
- anthropogenic hazards.

Strengthening Computational Earth Science making available:

- new data products from High Performance Computing applications;
- fast High Performance Computing applications for hazard scenarios;
- contributions to Digital Twins and Digital Earth.

Landscape Analysis: Scientific Perspectives

SCIENTIFIC PERSPECTIVES

Contributing to IT Innovation and FAIR Data Management fostering:

- scientific progress from effective FAIR data management from sparse and small data providers (laboratories, small observatories, project outcomes);
- facilitating FAIR data management for collaborative research.

Fostering upstream developments of services for society to be used by community operators through downstream applications with particular focus on:

- progress in forecasting and predictability;
- services for Early Warning and Alert.

Strengthening international collaborations and global dimension of research in solid Earth science through:

- participation to international initiatives (GEO, GEM, NEAMT);
- new frameworks for Trans-National Access.

Promoting training and dissemination on Solid Earth Science.

Key elements - Structural Elements for the Operation

• EPOS ERIC Perimeter

- ECO
- ICS-C
 - ❖ ICS-C Office
 - ICS-C Hosting and Operation
- Decision, Support, Advise
 - ❖ General Assembly
 - ❖ Executive Committee
 - ❖ Service Coordination Committee
 - ❖ External Advisory Boards

• EDF Perimeter

- TCS
 - ❖ TCS Consortium
 - ❖ Service Providers
 - ❖ Data Providers
 - ❖ TCS Operation
- ICS-D
- Development
 - ❖ TCS-ICS Interactions
 - ❖ ICS-C Development
 - ❖ TCS Development
 - ❖ IT Board

• External to perimeters

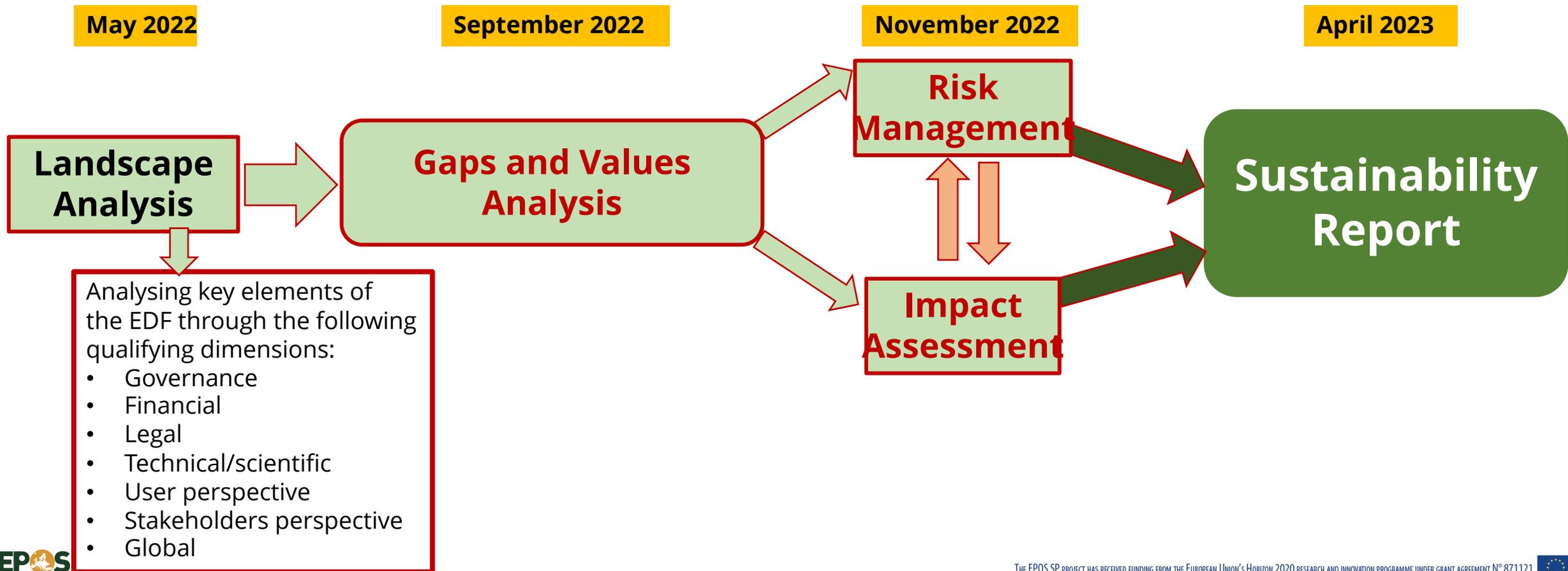
- NRIs
- Cooperative Framework

Qualifying Dimensions

- Governance
- Financial
- Legal
- Technical
- Users
- Stakeholders
- Global

EPOS Roadmap to Long-Term Sustainability

- EPOS SP mail deliverable: Long-Term Sustainability Report
- From construction to sustainable operation of the RI addressing Long-Term Sustainability



4. EPOS ERIC key documents on sustainability

EPOS-SP

Long-term Sustainability report (LTS)

Project deliverable including including LA, gaps/added values, risks, impact. Distribution at project level.

Due: Nov. 2022 (draft) & Apr. 2023 (final)

EPOS ERIC

Sustainability scenarios

Support document with scenarios derived from the draft EPOS-SP LTS report, to be shared with GA for discussion during GA meeting of December 2022.

Due: Nov. 2022

Science Program (2023-2027)

EPOS ERIC strategic document, with the scientific objectives of the EPOS RI for 2023-2027. Shared with GA.

Due: Dec. 2022 (draft), Apr. 2023 (final)

Sustainability plan (2023-2027)

EPOS ERIC strategic and operational document, that includes the non-scientific objectives of the concerned period; and business implementation plan with the selected sustainability scenario to be pursued after discussion with GA.

Due: Apr. 2023

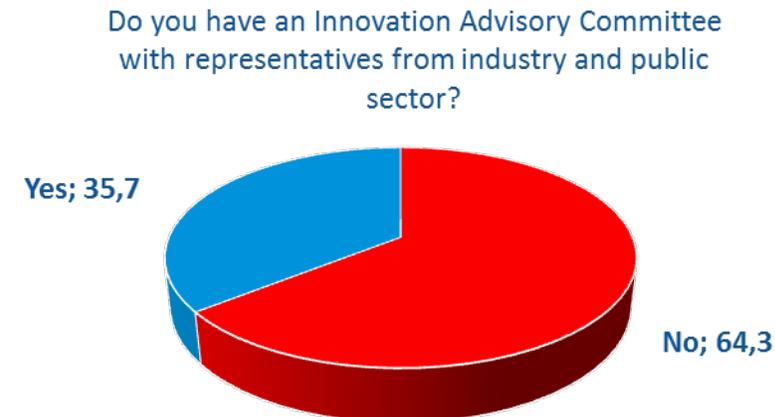
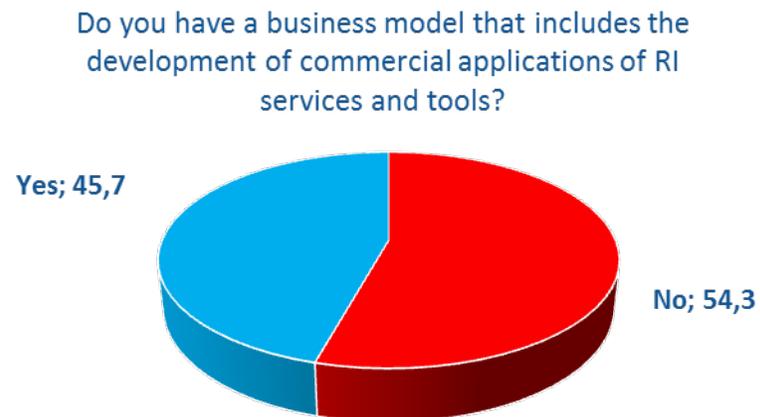
Questionnaire structure

Long Term Sustainability Preconditions:

- ➔ A. Ensuring Scientific excellence
- B. Skills of managers, operators and users
- ➔ C. Unlocking the Innovation potential of RI
- ➔ D. Measuring socio-economic impact of RI
- ➔ E. Exploiting better the data generated by the RI
- F. RI Life cycle – Upgrading of RI
- G. RI Life cycle – Decommissioning of RI
- ➔ H. Ensuring sustainable governance of RI
- ➔ I. Funding the construction and operation of RI
- ➔ J. Structuring the international dimension of RI

Unlocking the innovation potential of RI

- **54% do not have a business model** that includes the development of commercial applications of RI services and tools
- **64% do not have an Innovation Advisory Committee** with representatives from industry and public sector



Entering in the Operational Phase

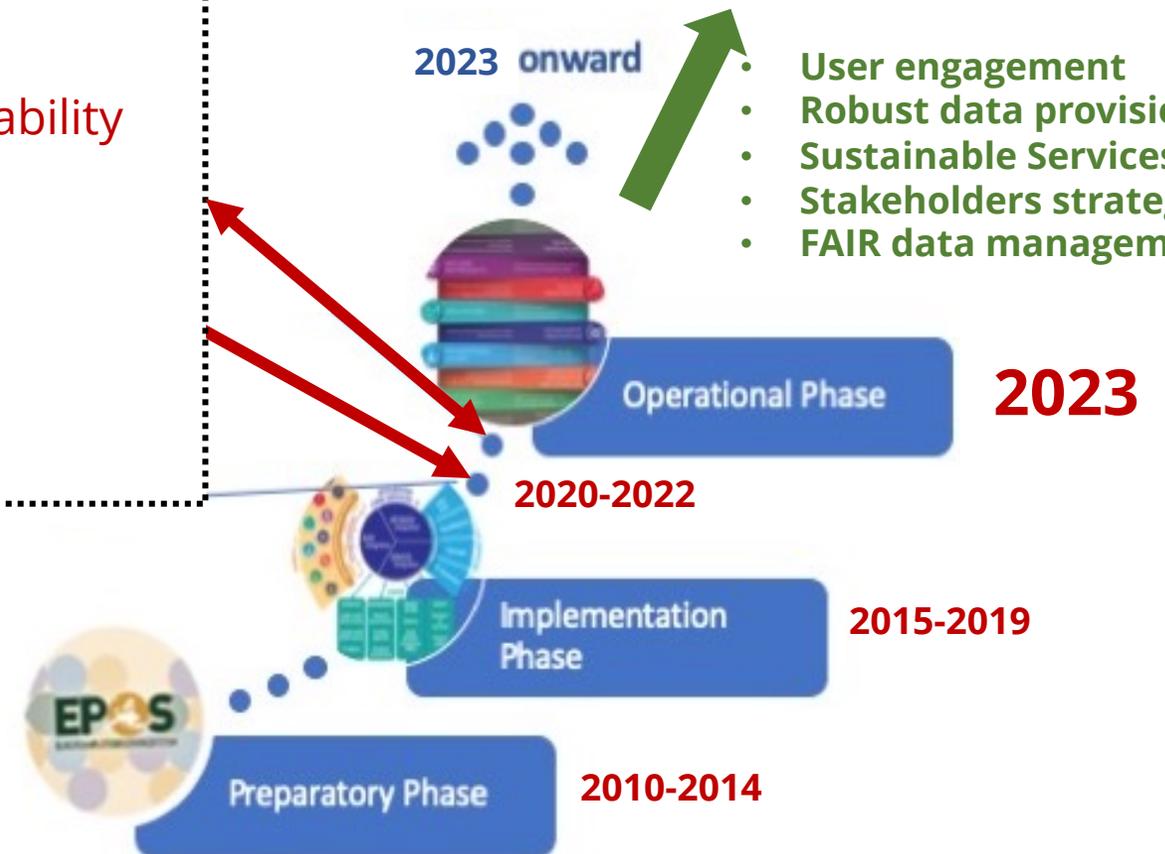
We need a strategy to manage the progressive entrance of data and serviced into the operational phase

Pilot Operational Phase (POP)

- Concluding EPOS POP
- Outcome of Pilot Operational Testing:
 - ✓ Readiness of services & interoperability
 - ✓ Access to data, products (DDSS)
 - ✓ Use of aggregated data sets
 - ✓ Multidisciplinary use
 - ✓ Cross-disciplinary use
 - ✓ Inferences for user strategy

- **Science Program**
- **Sustainability Plan**

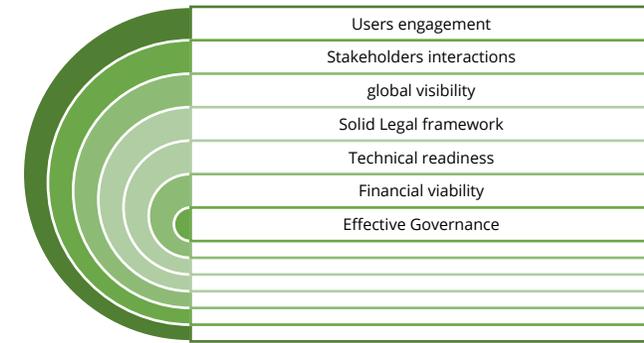
- **User engagement**
- **Robust data provision**
- **Sustainable Services**
- **Stakeholders strategy**
- **FAIR data management**



Website



Newsletter



Social Media



Thank You

Pre-conditions

(ranking scale 1-10: averages)

