



EOSC Beyond

Next Generation of the EOSC Core services

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TLP: WHITE Public

A bit of terminology...

- **EOSC Core**
 - Set of services that provides the key internal capabilities – the 'glue' – to support the basic operations of EOSC
 - This predominantly consists of services and resources which face service providers.
 - Core services with their interfaces enable the EOSC Federation, e.g. Federated EOSC AAI
- **EOSC Exchange**
 - Contains the researcher-facing resources from and for the EOSC community
- **EOSC Interoperability Framework**
 - Provides a flexible framework of interoperability guidelines to support the interoperability and composability of resources (services, datasets and other research products) in the EOSC Core and EOSC Exchange
- **EOSC Platform**
 - The EOSC Platform delivers the EOSC Core and key horizontal services as an integrated operational environment that enables EOSC research communities to take advantage of this suite of services
- **EOSC Node**
 - As a minimum, It has a registry of all assets/members (users, services, etc.) and metadata.
 - EOSC Platform is a possible deployment blueprint.
 - It has an identified owner (legal entity) and established policies (AUP, RoP, etc.)
 - Targeting a Community of Interest, including Geographical or Thematic
- **EOSC EU Node**
 - EU level EOSC Web Portal for registry services, instantiation of the EOSC Platform
 - Owned by EC and governed by the EOSC Tripartite (EC, EOSC-A, MS/AC)
 - Being implemented via the EOSC Procurement

EOSC Beyond will deliver an enhanced version of the EOSC Platform (TRL 7)

Advance Open Science and innovation in research by providing new EOSC Core capabilities

1. Enable a European Network of pilot EOSC Nodes

- Evolve the EOSC Federation Model
- Enhance current EOSC Core services to support the EOSC Node model

2. EOSC Integration Suite

- shortens the time to product of data-driven and multidisciplinary tools and services

3. EOSC Execution Framework

- Machine composability
- Dynamic deployment

4. EOSC Core Innovation Sandbox

- a pre-production environment of the EOSC Platform

5. Federated discovery and access of FAIR data across multiple EOSC Nodes and European Data Spaces

- Interoperability with SIMPL

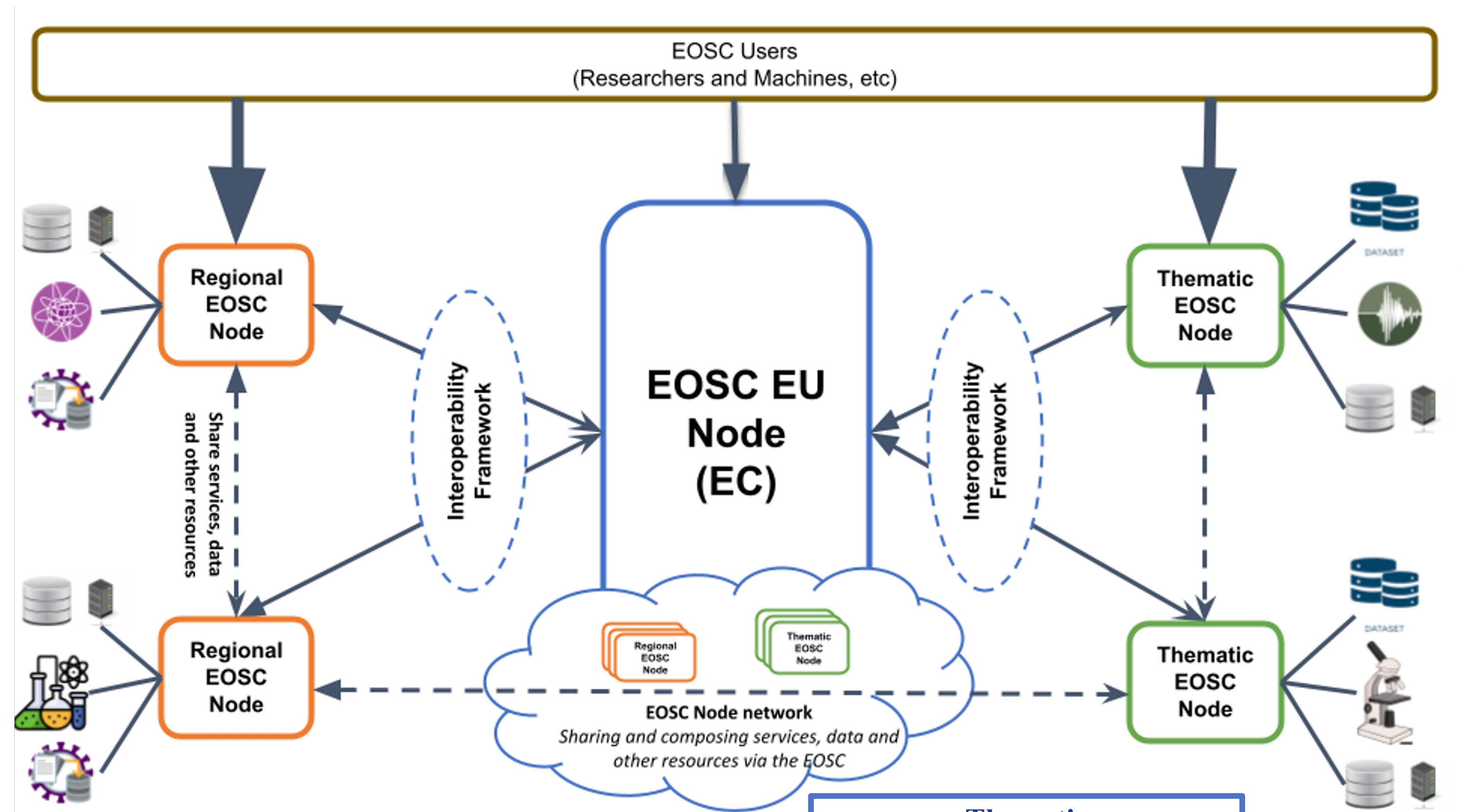
Allow scientific applications to integrate and compose multiple EOSC Resources from national, regional, thematic and EU EOSC Nodes.

Factsheet

- **Call Topic:** HORIZON-INFRA-2023-EOSC-01-04 — Next generation services for operational and sustainable EOSC Core Infrastructure
- **Budget:** 10 Million
- **Start date:** 1 April 2024
- **Duration:** 3 years
- **Coordinator:** EGI Foundation
- **Partners:** 33
 - E-Infras: EGI, OpenAIRE, EUDAT and GEANT (Associated)
 - Technology providers: ATHENA, CERN, CESNET, CYFRONET, DANS, FZJ, GRNET, GWDG, IISAS, INFN, IPB, KIT, LIP, UPV, SRCE, UKIM, UPV
 - Research communities: CNB-CSIC, CESSDA (EKKE, TARKI), CMCC, DESY, ENEA, INSTRUCT-ERIC, LifeWatch. NDFI. Premotec, UNITN

EOSC as a network of Nodes empowered by the EOSC Interoperability Framework

- **EOSC Federation Model**
 - Interfaces (APIs/Protocols) to connect nodes/services/datasets
 - Interoperability Guidelines (EOSC IF)
- **EOSC EU Node Core Services:**
 - Blueprint for the Core Services at Regional/Thematic nodes
 - Existing Core Services offered “as a service” to facilitate the setup of other EOSC Nodes
 - New capabilities to be added
- **EOSC Core Adapters:**
 - Libraries that implement the interfaces to interoperate with the Core services
 - Part of the EOSC Integration Suite



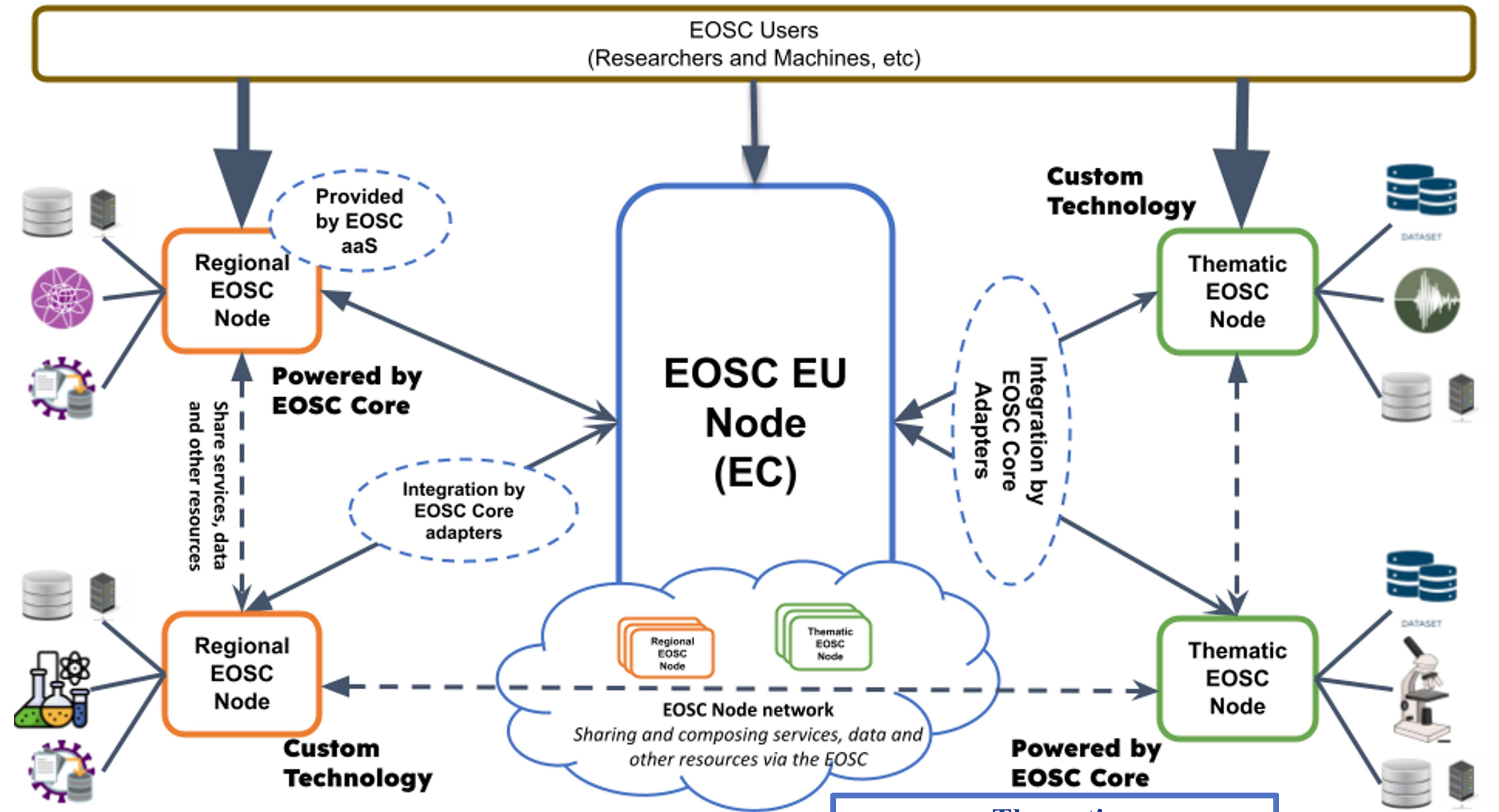
6 Pilot EOSC Nodes

- National & Regional**
1. Germany (NFDI)
 2. Czech Republic (e-Infra CZ),
 3. NI4OS Southeast Europe (GRNET, IPB, UKIM)

- Thematic**
1. Environmental (LifeWatch)
 2. Health and Food (METROFood-RI)
 3. Structural Biology (Instruct-ERIC)

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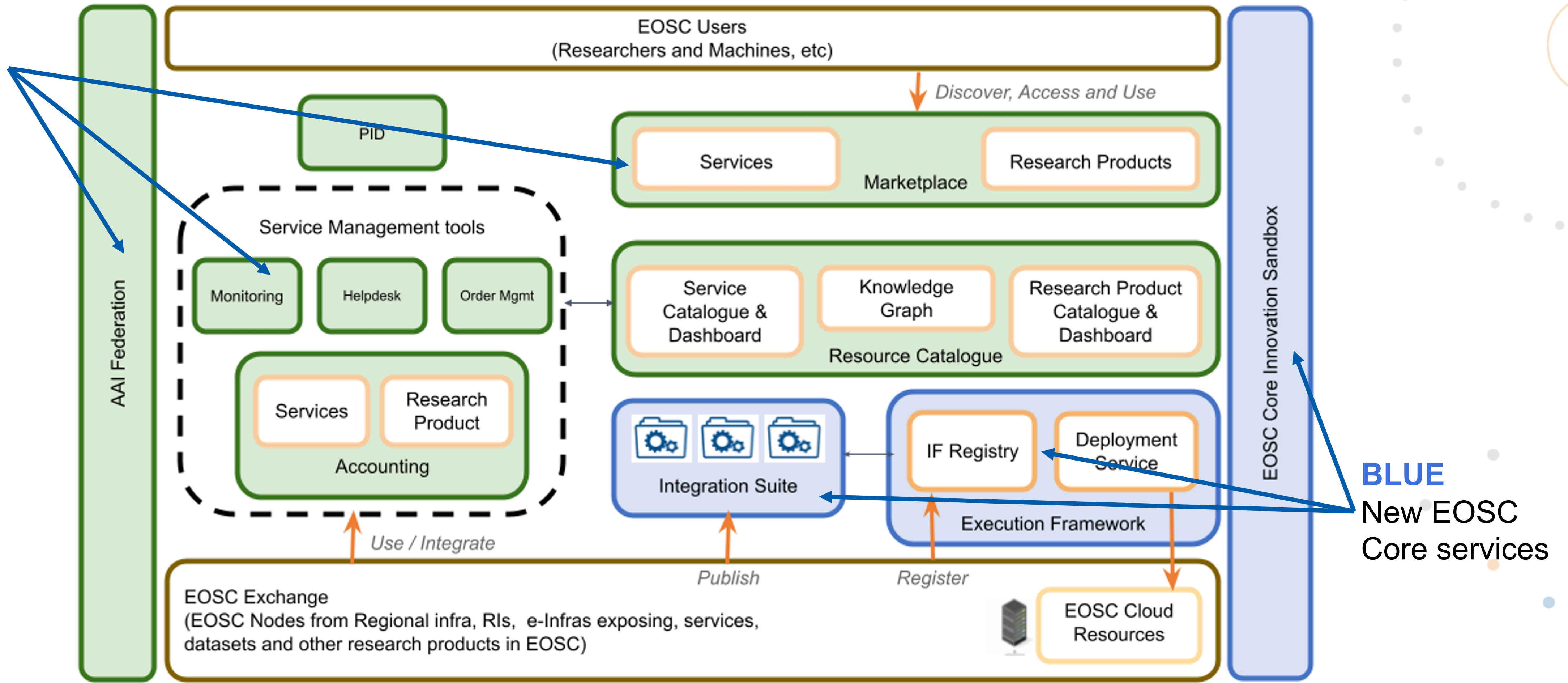
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Enhanced EOSC Platform – High-Level Architecture

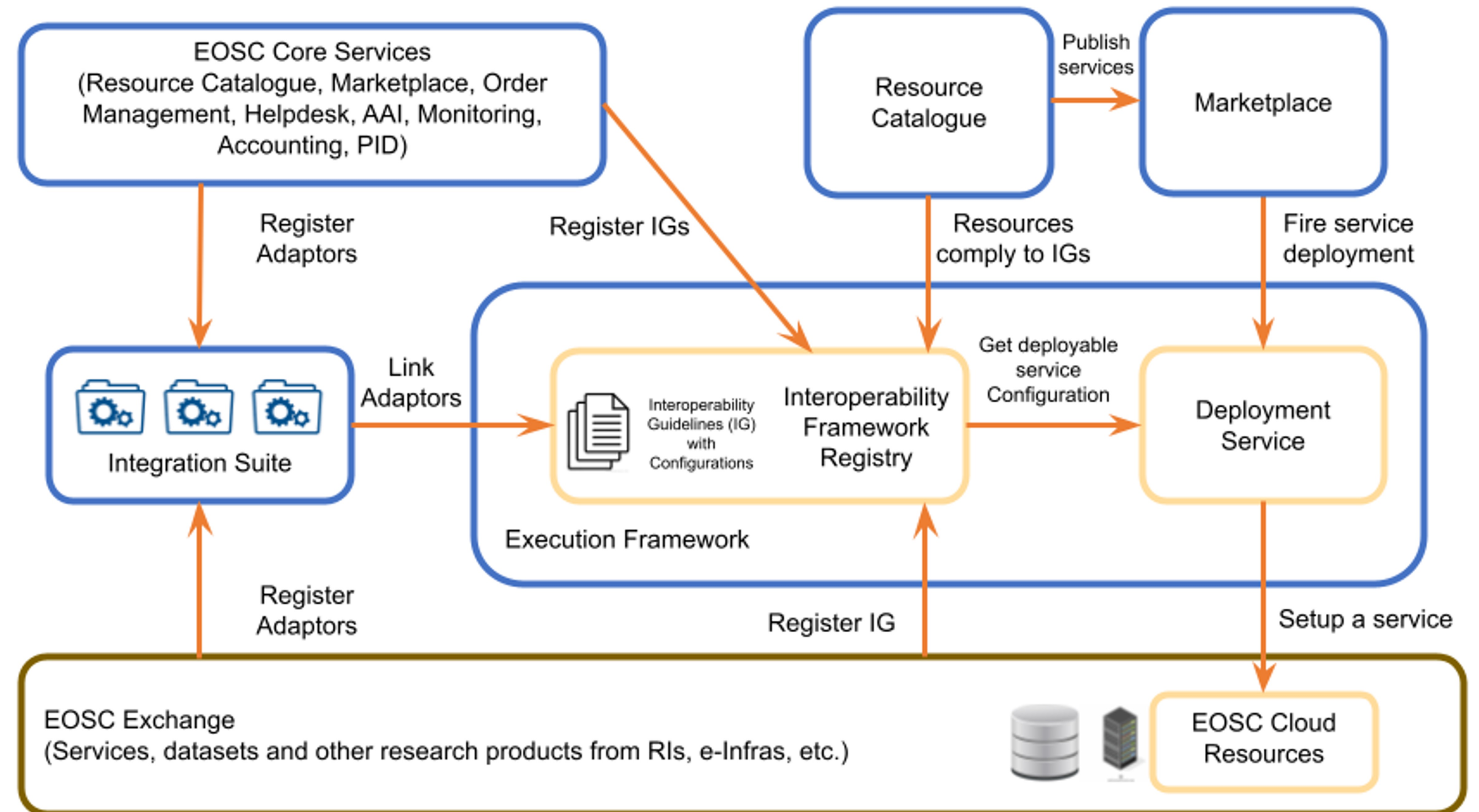
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Enhanced version of the current EOSC Core services



Extended EOSC Platform by EOSC Beyond

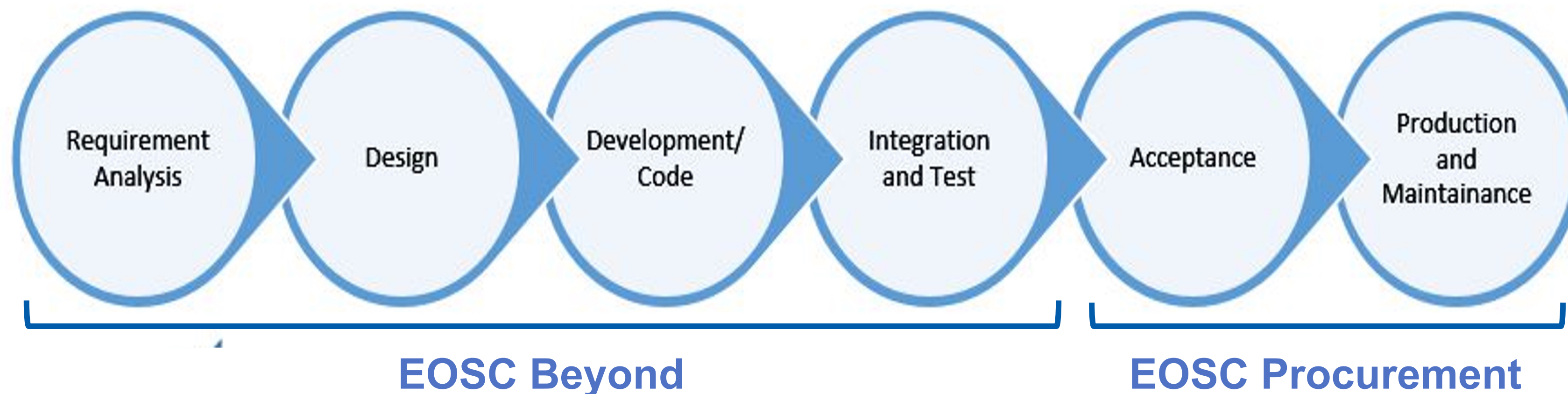
- **EOSC Integration Suite**
 - Libraries facilitating the implementation of interoperability solutions for given IF Guidelines.
 - EOSC Core Adapters (e.g. adapter to connect DCAT catalogues to EOSC)
 - Adapters for EOSC Exchange services (community based)
- **EOSC Execution Framework**
 - Enhanced EOSC IF Registry enabling machine-composability of resources via configurations (metadata describing the access parameters)
 - EOSC **Deployment Service** to provision on demand a “deployable service” (e.g. container, software) and offer seamless access to it.



Enabled Scenarios

1. **Use of software library for integration:** a service provider discovers and reuses community adapters to create a new scientific application
2. **Resource composition:** a service provider creates an application composing Exchange services by dynamically discovering their interfaces via the EOSC Resource Catalogue
3. **Resource exploitation:** a service provider or user discovers a “deployable” service and deploys it to execute data analysis

- A TRL7 EOSC Platform, including the new capabilities delivered by EOSC Beyond
- Testbed to test and validate innovation (new capabilities/services) of the EOSC Core for the EOSC EU Node
- Testbed to deploy and validate the **network of pilot EOSC Nodes**
- Open to all the EOSC Exchange Service Providers to test and validate their services in EOSC
 - Working in the integration with the EOSC Core services
 - Validate services before moving to the EOSC Production Environment
- Deliver automation to facilitate the integration of the EOSC Exchange services with the EOSC Platform
 - EOSC Core Adapters from the Integration Suite



- EOSC Beyond will **coordinate with the Data Space Support Center (DSSC)** and with other Data Spaces to ensure the interoperation with EOSC
 - Tools to give EOSC Users access to Data Spaces
 - Strong assurance identities,
 - AAI attributes as verified credentials
 - Future adoption of common metadata structures in development by data spaces
 - Consideration of DCAT, “Connectors” or “SIMPL Agents” as endpoints exposed to Data Spaces.
 - Technical, governance, access and use, and semantic interoperability mechanisms
- **SIMPL Smart Middleware Platform** for Cloud-to-Edge Federations and Data Spaces
 - Middleware (under construction) that enables cloud-to-edge federations
 - Shares many functional requirements with EOSC
 - SIMPL will be co-developed through an **open-source community** -> EOSC Beyond intends to be part of that community
- Adopt a **co-design approach** to ensure compatibility and interoperability
 - Pilot cases: AAI and Data Transfer

- **EOSC Beyond will deliver an enhanced version of the EOSC Platform (TRL 7)**
 - Advance Open Science and innovation in research by providing new EOSC Core capabilities
 - Allow scientific applications to integrate and compose multiple EOSC Resources from national, regional and thematic EOSC Nodes.
- **Innovate current EOSC Core Services:**
 - Catalogues, Marketplace, AAI Federation, Monitoring, Accounting, ...
- **Establish a network of pilot EOSC Nodes**
 - National/Regional/Thematic
- **Create 3 new EOSC Core Services:**
 - Integration Suite
 - Execution Framework
 - Core Innovation sandbox
- **Interoperability between EOSC and Data Spaces (SIMPL)**



Contact us

Let's talk. Or meet
in person

Get in touch with us

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