FAIRCORE4EOSC
Core Components Supporting a FAIR EOSC

FAIRCore4EOSC:

project objectives & expected impact + components

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Funded by
the European Union

FAIRCORE4EOSC in a nutshell

Call title: Deploying EOSC-Core components for FAIR

Research and Innovation Action

Budget: 10 million EUR

Duration: 36 months

Start: June *2022*

7 Core Partners

22 Partners

7 MS (FI, NL, GR, IT, PL, DE, FR)

+ Switzerland/IERO + Australia

Strategic cooperation with the EOSC Association, EA Task Forces, EOSC Future, the FAIRIMPACT (INFRA-2021-EOSC-01-05) -project

Coord.	CSC	Tommi Suominen
TSG	SURF	Mark van de Sanden
WP1	CSC	Anu Märkälä
WP2	DANS	Wim Hugo
WP3	OpenAIRE	Paolo Manghi
WP4	CSC	Tommi Suominen
WP5	GWDG	Sven Bingert
WP6	INRIA/ Software Heritage	Roberto di Cosmo
WP7	Clarin	Maria Eskevich

- The European Open Science Cloud (EOSC) is an ecosystem of research data and related services that will enable and enhance seamless access to and reliable re-use of FAIR research objects (including data, publications, software, etc.).
- As a roadmap for future development, a Strategic Research and Innovation Agenda (SRIA) for EOSC was created.
- Priorities highlighted in the SRIA are the establishment of the Web of FAIR data and a Minimum Viable EOSC (MVE) by 2027, that is the core components and functions to enable EOSC to operate (the EOSC-Core).

The EOSC-Core development has been initiated in the Horizon 2020 calls, but some of the challenges that require to be addressed are:

- *Identifiers:* Introducing new resource types; machine-actionable persistent identifiers (PIDs); establishing a PID meta-resolver; standardising PID graphs; PID compliance framework to ensure compliance to the EOSC PID policy and to ensure quality of service for PIDs;
- *Metadata and Ontologies:* Provide or embrace/stimulate existing registries of metadata schemas, ontologies and crosswalks, develop services that build on metadata registries and can facilitate the creation and sharing of crosswalks;
- *Interoperability:* Enable discovery of data sources available in different formats, making search tools available; Provide tools for quality validation of metadata records and of digital objects; Implement EOSC PID Policy;
- *Research Software*: metadata description standards for research software, automated deposit of new releases into a scholarly repository and Software Heritage.

In response to the gaps identified in the SRIA, the project will develop **nine** new EOSC-Core components aimed to improve the discoverability and interoperability of an increased amount of research outputs:

1. EOSC **Research Discovery Graph** (RDGraph) to deliver advanced discovery tools across EOSC resources and communities;
2. EOSC **PID Graph** (PIDGraph) to improve the way of interlinking research entities across domains and data sources on the basis of PIDs;
3. EOSC **Metadata Schema and Crosswalk Registry** (MSCR) to support publishing, discovery and access of metadata schemas and provide functions to operationalise metadata conversions by combining crosswalks;
4. EOSC **Data Type Registry** (DTR) to provide user friendly APIs for metadata imports and access to different data types and metadata mappings;

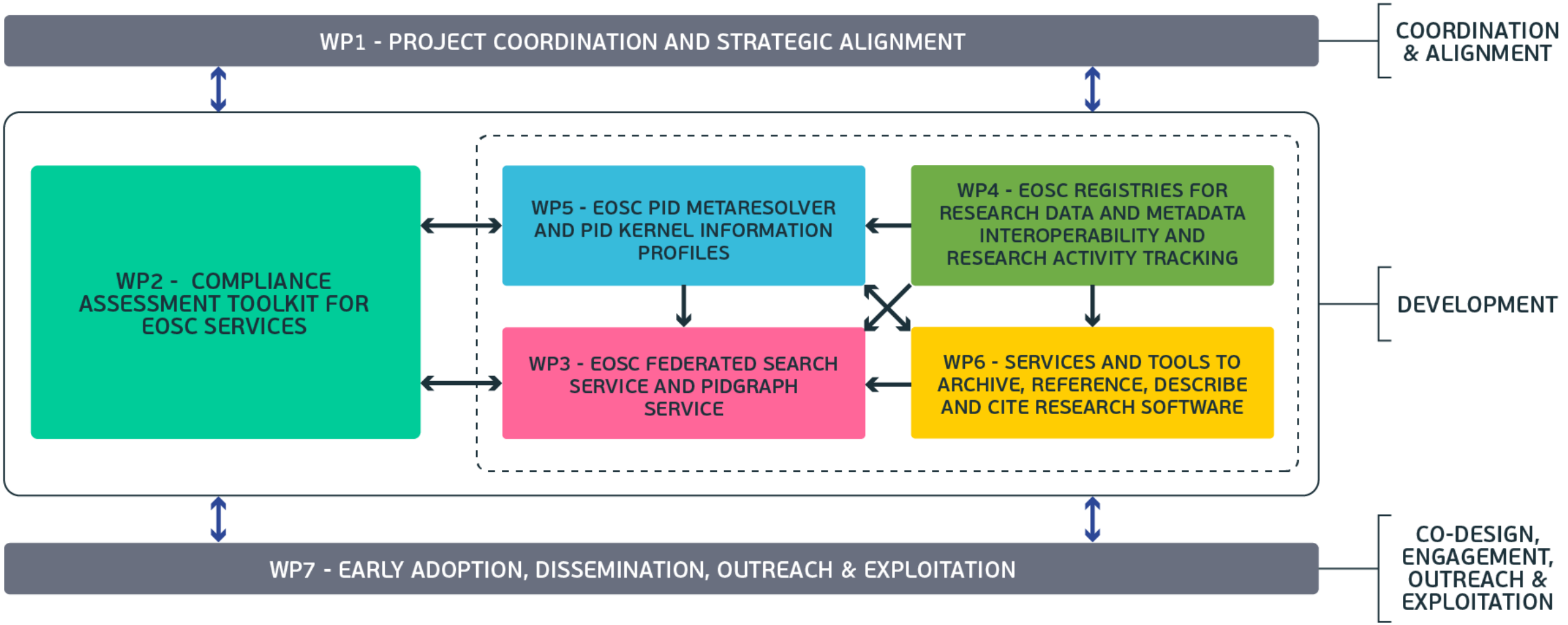
5. EOSC **PID Meta Resolver** (PIDMR) to offer users a single PID resolving API in which any kind of PID can be resolved through a single, scalable PID resolving infrastructure;
6. EOSC **Compliance Assessment Toolkit** (CAT) to support the EOSC PID policy compliance and implementation;
7. EOSC **Research Activity Identifier Service (RAiD)** to mint PIDs for research projects, allowing to manage and track project related activities;
8. EOSC **Research Software APIs and Connectors** (RSAC) to ensure the long-term preservation of research software in different disciplines;
9. EOSC **Software Heritage Mirror** (SWHM) to equip EOSC with a mirror of the Software Heritage universal source code archive.

Case studies are cross-WP activities that benefit communities and show how the new core components work together

1. Social Sciences and Humanities (lead by CLARIN, Netherlands)
2. Climate Change (DKRZ, Germany)
3. Mathematics (FIZ, Germany)
4. European Integration of National-level Services (CSC)
5. Service Providers and Research Data Management Communities (EUDAT/CSC)

Individual proof-of-concepts are carried also though Demonstrators that showcase an individual component (carried out in the WPs).

PIDS | REGISTRIES | GRAPHS | RESEARCH SOFTWARE | COMPLIANCE MEASUREMENTS



FC4E	Comments
T1.1 Project Management, Financial Coordination and External Advisory Board (CSC)	
T1.2 Technical Coordination (Technical Steering Board, Mark van de Sanden)	
T1.3 EOSC Strategic Alignment and Contribution to the EOSC Partnership and Ecosystem	For FC4E this is the more networking task at the “political” level, while T1.2 is the technical content.

FC4E	
T 7.1 Case Studies	
T7.2 Dissemination and Adoption (DKRZ)	-Stimulate uptake of the developed components in other domains - Organise co-design and knowledge transfer workshops and webinars
T7.3 Stakeholder Engagement, Communication and Outreach (TRUST-IT)	- Also joint efforts with FAIR-IMPACT
T7.4 Exploitation	- Analyse the operational costs to sustain the FAIRCORE4EOSC developed components - Investigate potential exploitation and sustainability pathways after the end of the project in collaboration with T1.3

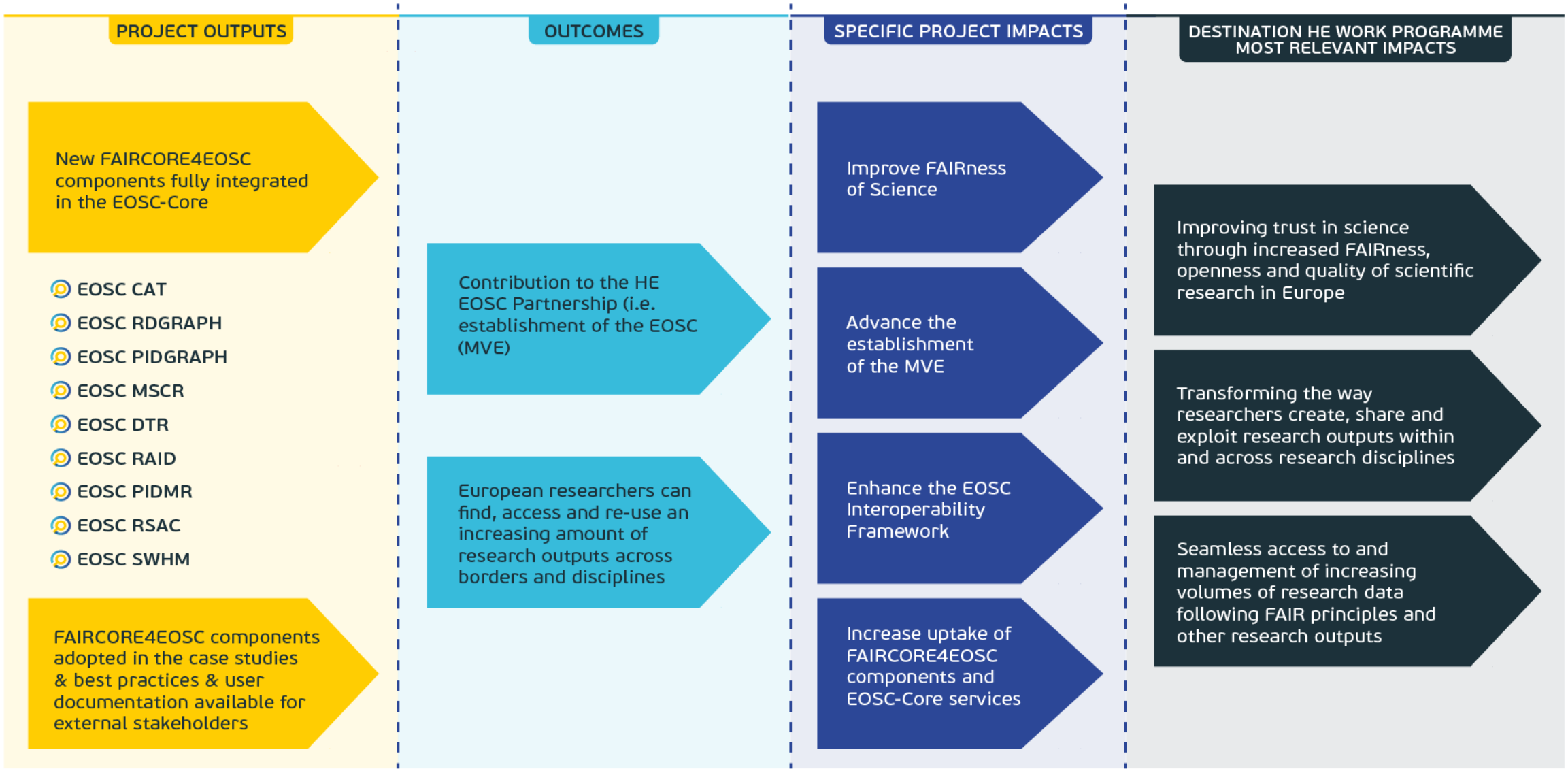
Theme	Tasks	Deliverables
PID policy (DANS)	T2.1 (PID policy) Compliance Framework Development	**D2.1 Compliance Assessment Specification** Publication of a set of standards, API specifications, and vocabularies that define the nature and capabilities of compliance assessment, encoding, and verification services and infrastructure.
	T2.2 (PID policy compliance monitoring) Service and Platform Development, Production Services	**D2.2 Compliance Assessment Toolkit** Demonstrator and reference implementations, based on the compliance assessment APIs, and supported by guidance and best practices that will assist the various roles identified in the EOSC PID Policy with application of the toolkit in compliance-related use cases.
	T2.3 Validation in Case Studies	**2.3 Validated and Verified Production Services in EOSC** Case studies will be used to verify and validate the usability and maturity of the compliance assessment services prior to production releases in the EOSC Services Catalogue.

Theme	FC4E	
Linking data, Graphs, discovery (WP3, OpenAIRE)	T3.1 Technical Management	Requirement analysis via interaction with WP7 case studies.
	T3.2 The EOSC Research Discovery Graph Service (RDGraph)	EOSC Resource Catalogue extension, RDGraph data model, Generation of the RDGraph, RDGraph APIs, Generation of RDGraph dumps.
	T3.3 Intelligent Community-oriented Discovery Tools for the RDGraph (e.g. natural language search, AI)	Natural language search, Impact-based search, Community recommendation profiles, Inference of RAIDs via RDGraph analysis
	T3.4 RDGraph Portals (Subgraphs for communities)	UI/UX development: Discovery portal, Management of community profiles, Creation and validation of RAIDs
	T3.5 The EOSC PID Graph Service (PIDGraph) (Datacite)	PIDGraph extension, PID link claims (EventData), Data Usage Statistics via the EOSC-Core, Generation of PIDGraph dumps.
	T3.6 Demonstrators	Integration of B2FIND with the RDGraph (via the EOSC resource catalogue) and the PIDGraph to enable data exchange

Theme	FC4E	
Metadata interoperability & semantic artefacts (WP4, CSC)	T4.1 Requirements, Specifications and Integration T4.2 EOSC Metadata Schema and Cross-walk Registries (maybe a converter if resources allow) T4.3 EOSC Data Type Registry (and conversion tool) T4.4 EOSC Research Activity Identifier Service (RAiD) T4.5 Demonstrators	Demonstrate metadata schema hosting for schema that are not already hosted by others and secondly demonstrates referring to externally hosted schema. A demonstrator to facilitate projects and researchers to create and share crosswalks with others that can reuse and improve them. Demonstrator showcasing application of the DTR in typing metadata scheme's elements and attributes and the use of registered data-types and data-type converters for research data format conversion

Theme	FC4E
PID kernel data (GDWG)	T5.1 Requirement Analysis T5.2 Design and Implementation of the Meta Resolver T5.3 PID Kernel Information Profiles T5.4 Meta Resolver Cross Component Integration T5.5. URN Resolution Integration Demonstrator

Theme	FC4E
Research software (WP6, INRIA/SH)	T6.1 API and Connectors Between ***Scholarly Repositories*** and Software Heritage T6.2 API and Connectors Between ***Open Access Publishers*** and Software Heritage T6.3 API and Connectors Between ***Aggregators*** and Software Heritage T6.4 ***Metadata and PIDs for Software***: Curation and Standardisation T6.5 Archival of EOSC-Core Software and Deployment of an ***EOSC Run Mirror*** of Software Heritage


PROJECT OUTPUTS
OUTCOMES
SPECIFIC PROJECT IMPACTS
DESTINATION HE WORK PROGRAMME MOST RELEVANT IMPACTS
New FAIRCORE4EOSC components fully integrated in the EOSC-Core
EOSC CAT
EOSC RDGRAPH
EOSC PIDGRAPH
EOSC MSCR
EOSC DTR
EOSC RAID
EOSC PIDMR
EOSC RSAC
EOSC SWHM
FAIRCORE4EOSC components adopted in the case studies & best practices & user documentation available for external stakeholders
Contribution to the HE EOSC Partnership (i.e. establishment of the EOSC (MVE)
European researchers can find, access and re-use an increasing amount of research outputs across borders and disciplines
Improve FAIRness of Science
Advance the establishment of the MVE
Enhance the EOSC Interoperability Framework
Increase uptake of FAIRCORE4EOSC components and EOSC-Core services
Improving trust in science through increased FAIRness, openness and quality of scientific research in Europe
Transforming the way researchers create, share and exploit research outputs within and across research disciplines
Seamless access to and management of increasing volumes of research data following FAIR principles and other research outputs

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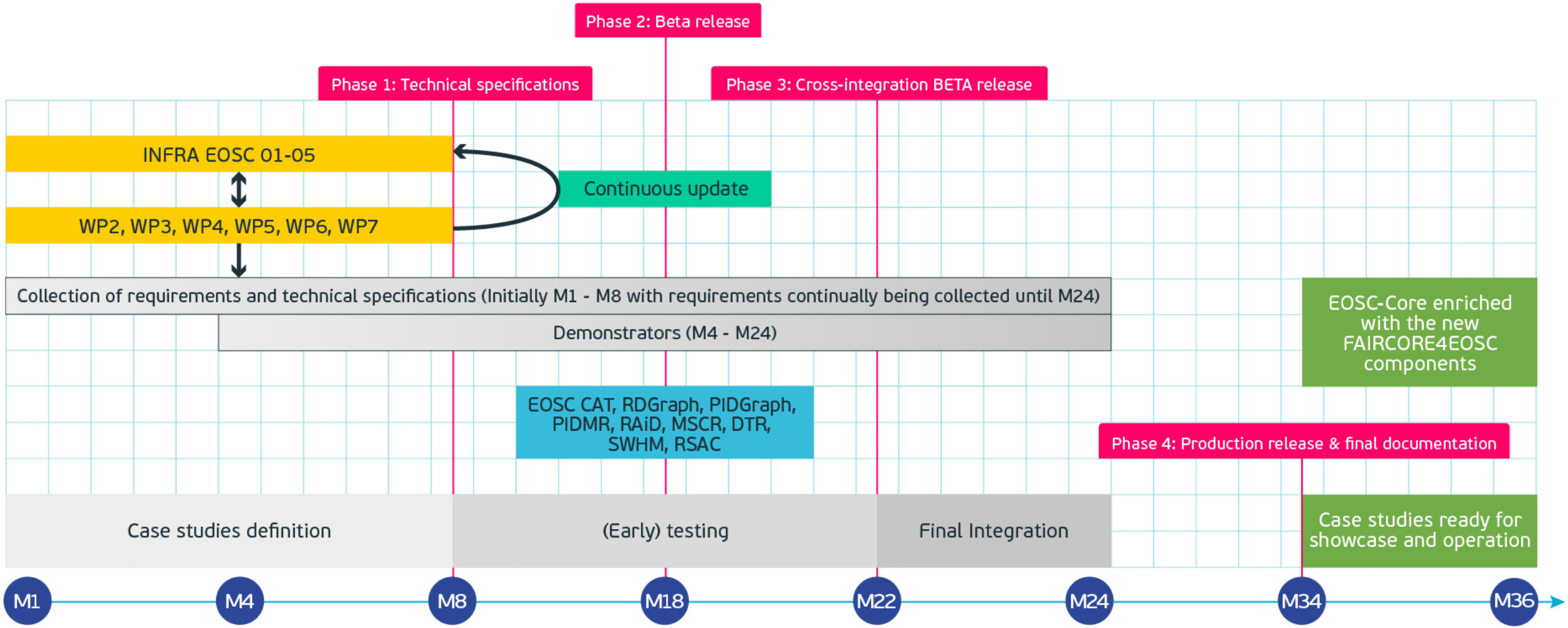
FAIRCORE4EOSC TECHNICAL IMPLEMENTATION



Consortium Partners

Thank you for listening!

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