

## Partners



Standardize within your Node.  
Connect across the Federation.



**ostrails**  
Open Science Plan-Track-Assess Pathways

A blueprint in support of  
the EOSC Federation.



Supporting

**EOSC**

## The Challenge

As EOSC Nodes develop, they face critical interoperability gaps:

- **Disconnected tools** - DMPs, repositories, FAIR assessors, knowledge graphs operate in isolation
- **Siloed data management** - planning remains disconnected from execution and assessment
- **Quality of metadata** - inconsistent standards and validation across services
- **Lack of qualified references** – relationships between digital objects are missing and not exchanged
- **Inconsistent results** - FAIRness assessment model not in place, leading to metrics being interpreted differently by different providers

## Our Solution

**Three interoperability frameworks that work as a unified system:** Not abstract frameworks; practical APIs and reference implementations that enable real-time data exchange.

**Standardize how planning, tracking, and assessing work within your node using common protocols.**



Structured formats of project, policy, DO metadata; Automations; no duplications; Compliance, reporting & assessment (FAIR-by-design & DMP evaluation)

Qualified references (project, datasets, software, people, services); Discovery, provenance, context; domain autonomy; enabling federation .

Modular, policy/domain aware metrics and profiles; automated/assisted checks w/ PIDs + SKG context; machine readable results/feedback to repos, DMPs, reports.

## Who Is It For

Candidate EOSC Nodes

EOSC Federation & Governance

EOSC Implementers & Providers

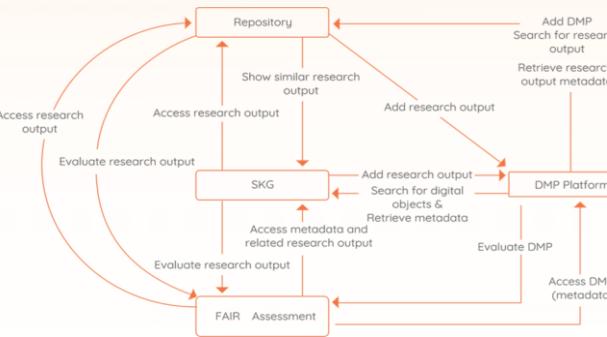
RPOs & RFOs



OSTrails connects these three domains to function together as a unified system eliminating silos.

## OSTrails: three frameworks, one unified system

**The OSTrails Reference Architecture** defines how DMPs, SKGs, and FAIR assessments interact within and across their own domains.



## Benefits for the EOSC Nodes & Federation

### Within Nodes:

- Unified workflows across plan, track, assess (PTA)
- Support research communities to manage, share, evaluate data
- Reduce redundancy in DMP creation & FAIR assessments
- Scalable, automated processes that don't rely on manual interventions

### Across the Federation:

- Real-time interoperability with other EOSC Nodes on PTA activities
- Cross-node discovery & data exchange
- Comparable metrics and federation-wide analytics
- Evidence-based policy decisions with structured, machine-readable outputs

## OSTrails IF: Blueprint & Toolkit

**1. DMP-IF:** Machine-actionable DMPs that connect planning to execution. Link DMPs directly to repositories, metadata services, and knowledge graphs.

- **DMP Common Standard:** Machine-actionable, interoperable DMPs with automated checks.
- **OSTrails AP:** Domain-rich, policy-ready.
- **maDMP API:** Real-time to repositories, knowledge graphs, FAIR assessors.

**2. SKG-IF:** Standardized metadata schemas (schema.org, DCAT) linking research outputs, projects, and institutions within and across nodes.

- **SKG-IF Data Model:** Shared structure for research entities & links; semantic consistency across SKGs.
- **Data Model Extensions:** Flexible domain metadata, vocabularies & relations.
- **SKG-IF Common API:** Standard, real-time retrieval, search & entity linking across SKGs.

**3. FAIR-IF:** API-driven FAIR evaluation using standardized metrics. Integrate assessment directly into data workflows.

- **FAIR Testing Component Model:** Platform components for functional comparison & gap analysis; consistency across tools.
- **FAIR Test Vocabulary:** Standard vocabulary for outputs & component metadata; cross-tool result merging & machine-actionable reports.
- **FAIR-IF API:** Common interface for real-time test execution & results across tools & OSTrails IFs.

*Co-created with >80 Research Data Management tools Piloted across 24 national, institutional & thematic contexts.*