OSTrails

Open Science Plan-Track-Assess Pathways

# Thematic Pilot : ESCAPE Astronomy & Particle Physics

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# OSTrails: Plan-Track-Assess pathways

- **Plan**
  - Expand the usage of maDMP (machine actionable DMP).
  - Use maDMP for data life-cycle efficient management.
  - *Design and implement an interoperability framework (DMP-IF)* for exchanging between DMP plaforms (DSW, DAMAP, ARGOS, DMP-Opidor …)
- **Track**
  - Connect scholarly & scientific knowledge graphs (a.k.a., registries)
  - *Design and implement an interoperability framework (SKG-IF)* for uniform access
- **Assess**
  - Define tests, metrics, and benchmarks to assess FAIRness of research data resources, with institutional or thematic profiles
  - *Design and implement an interoperability framework (FAIR-IF)* for defining tests and running benchmarks.

# OSTrails Consortium

- 32 partners
- 15 national pilots
- 8 thematic pilots


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# Astronomy Pilot Scope

- ESCAPE cluster communities
  - Astronomy => IVOA alliance
  - Planetary sciences => IPDA alliance
  - Heliophysics => IHDEA alliance
  - Particle physics => CERN
- Close collaboration with:
  - FAIRsharing (Univ. Oxford)
  - PANOSC (ESRF)
- Two sub-Pilots:
  - MASER repository SNO (B Cecconi) *(I'll focus on this one in this presentation)*
  - CTA data management (M Servillat)

Collaborations

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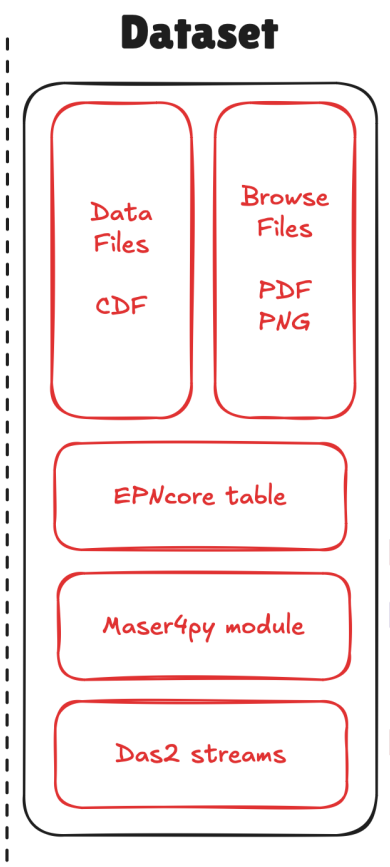
# OSTRAILS — Astronomy — Plan

MASER Repository Data publication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# OSTRAILS — Astronomy — Plan

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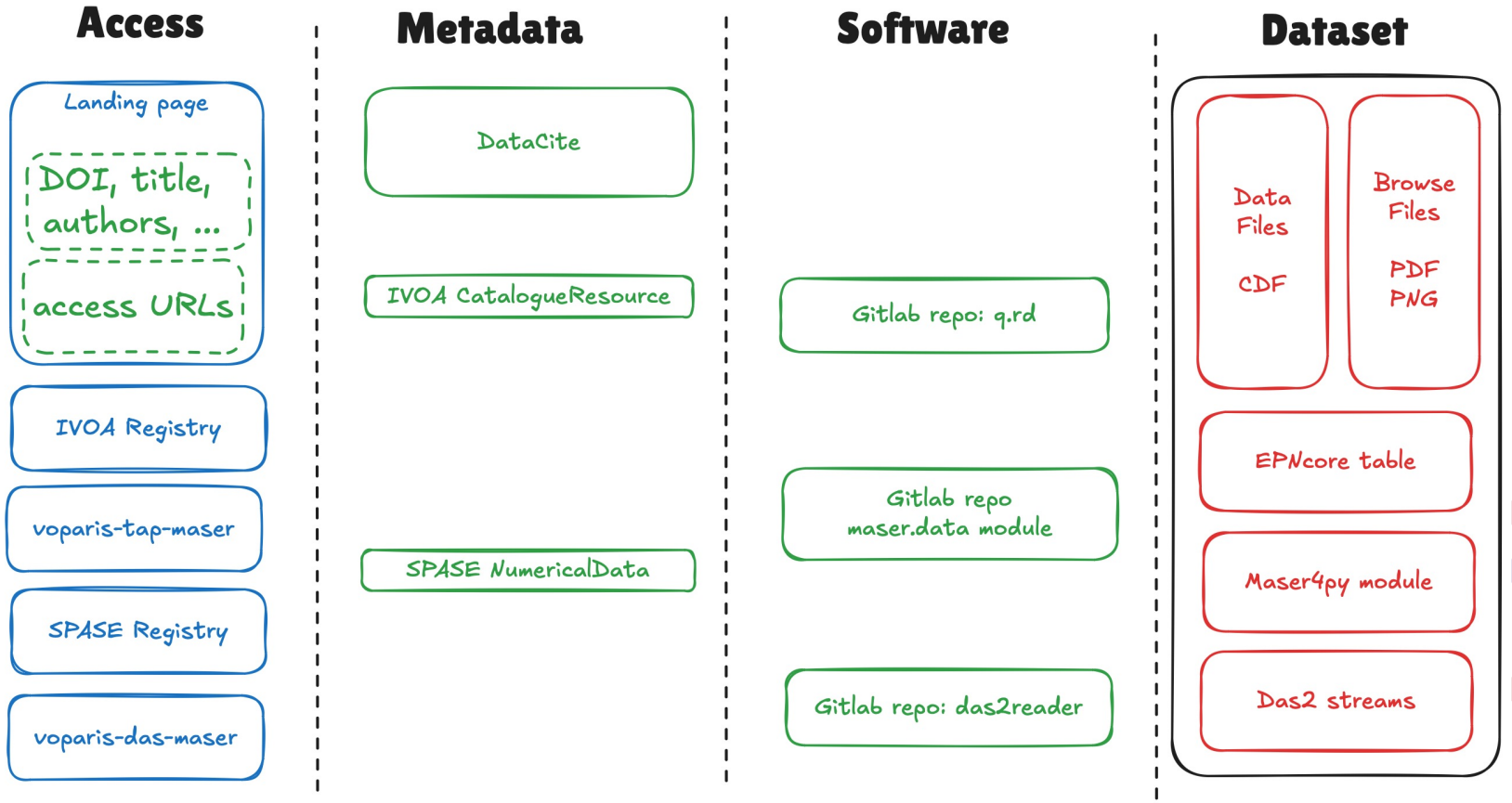


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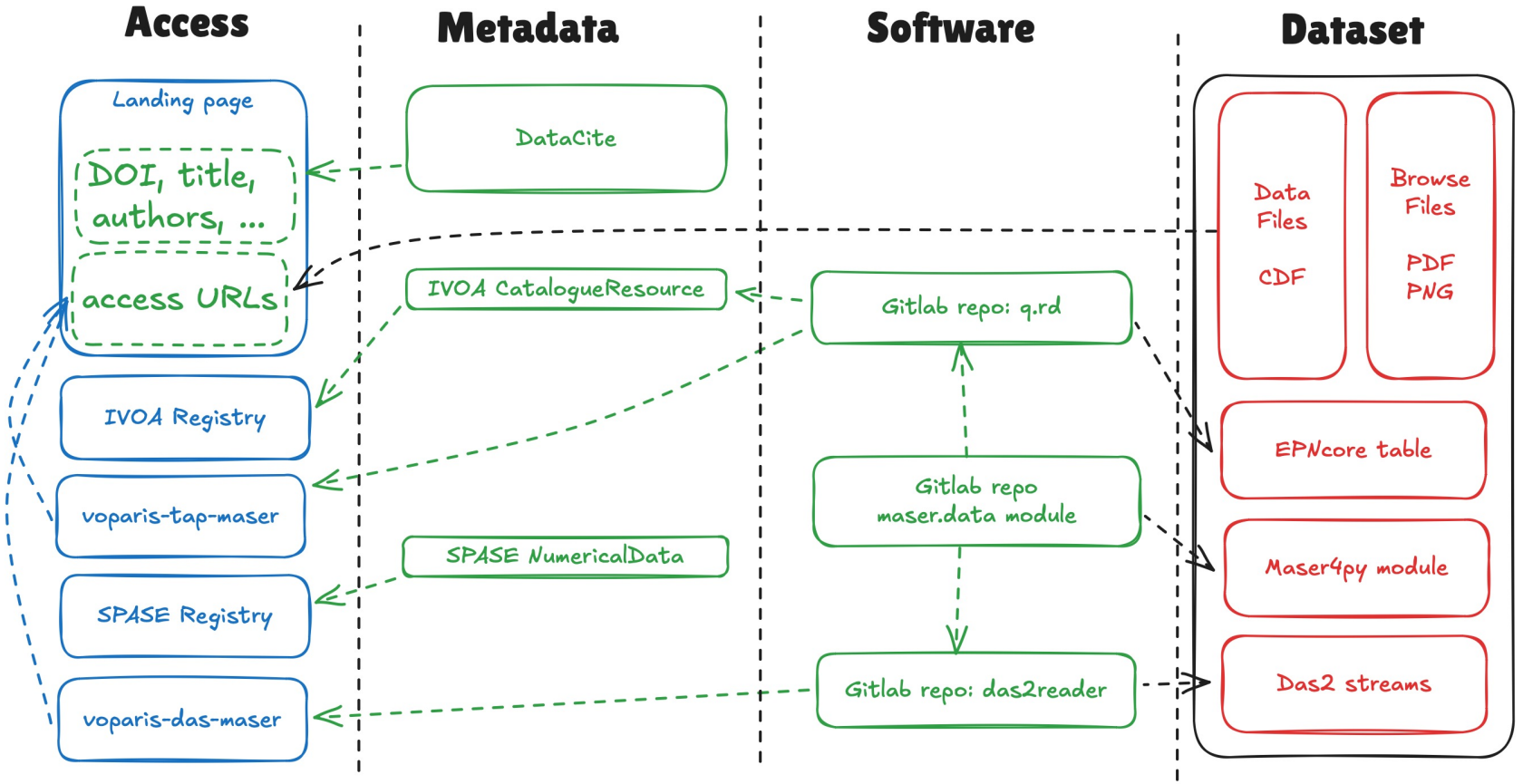
MASER Repository Data publication

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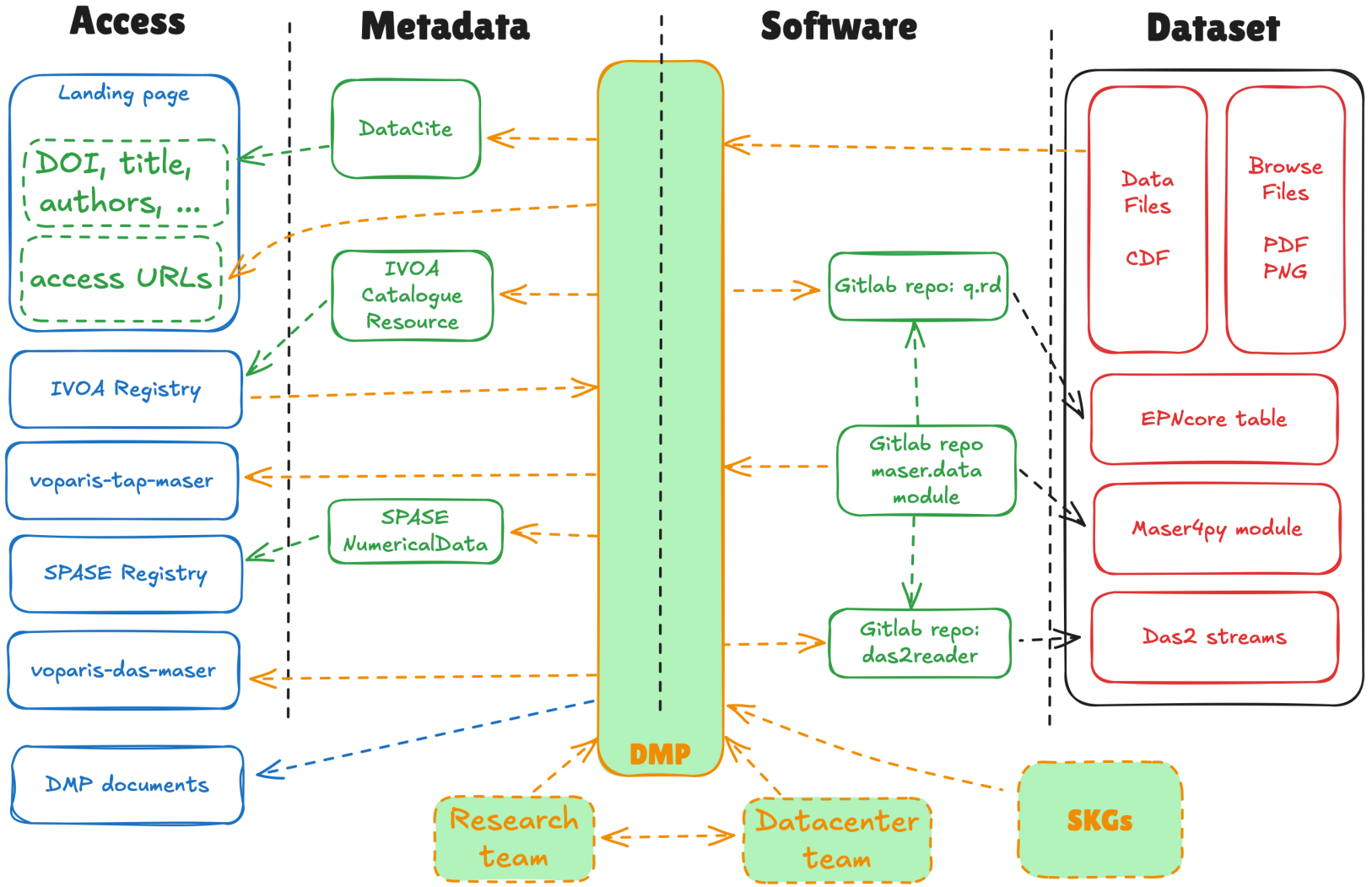
MASER Repository Data publication



# OSTRAILS — Astronomy — Plan

- Adopting maDMP tool:
  - DataStewardShip (DSW) selected
    - **Old MS Word template is now in our DSW knowledge model.**
    - **Use online version of DSW: https://fair-wizard.com**
  - Use DSW for managing repository metadata:
    - **including data publication (Datacite), provenance…**
    - **community APIs deployment metadata (scripts, server, configurations)**
  - Use SKG to fill in DMPs (see next slide)
  - DMP templates for agency reports, as well as for internal usage (implementation of services in data center)

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# OSTRAILS — Astronomy — Track

- Mapping our community registries with SKG-IF
  - Astronomy: IVOA registry (mostly data access API endpoints)
    - **Work to map data services to research products (papers, datasets… with DOIs)**
  - Heliophysics: ongoing work with with US colleagues
    - **They do similar work, based on SOSO (“Science on schema.org”)**
- SKG currently includes scholarly resources, data resources
  - only ResearchData “files” / “portals” : we need “data access services”
  - Testing implementation in SKG-IF
  - SKG-IF API (OpenAPI) being prepared

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# OSTRAILS — Astronomy — Track

- Other developments:
  - Reuse ontologies developed with FAIR-IMPACT
  - Include provenance in SKG
- Prototype graph database
  - Use case = MASER repository
  - Ingest MASER-related IVOA, Datacite, SPASE metadata
  - Showcase access using SPARQL queries

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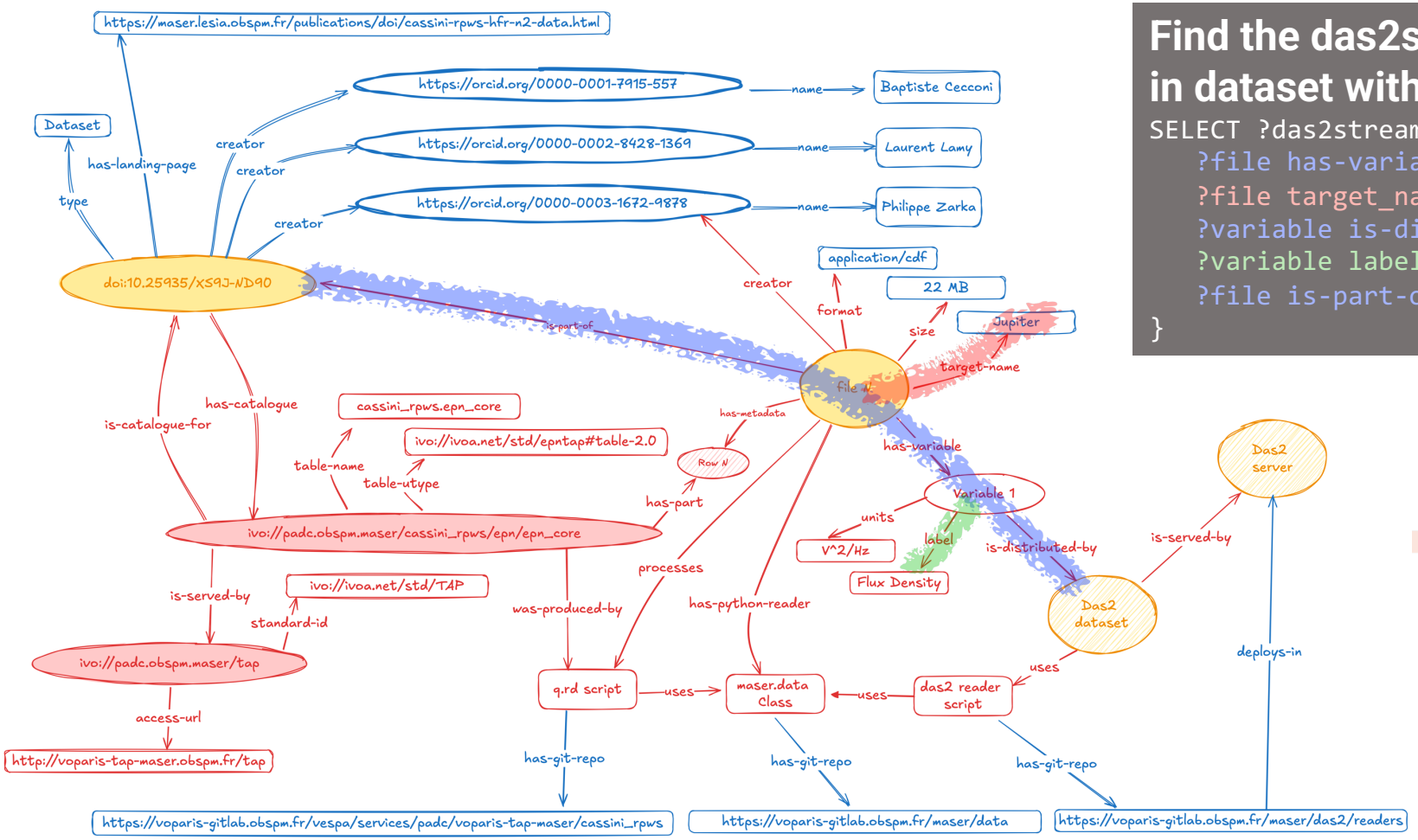
# OSTRAILS — Astronomy — Track




**Find the das2stream for flux density of Jupiter in dataset with a DOI I found in a paper:**

```
SELECT ?das2stream WHERE {
   ?file has-variable ?variable ;
   ?file target_name “Jupiter” ;
   ?variable is-distributed-by ?das2stream ;
   ?variable label “Flux Density” ;
   ?file is-part-of ?DOI .
}
```

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# OSTRAILS — Astronomy — Assess

- FAIR assessment
  - Define metric => Are “Subjects” metadata IVOA UAT terms?
  - Define test => open datacite record, select <subject> elements and check if schemeURI is https://ivoa.net/rdf/uat
  - Define benchmark => add +10 to Findable score
- FAIR profiles for astronomy communities
  - using FAIRsharing records
    - https://doi.org/10.25504/FAIRsharing.f50cc0 = IVOA UAT
  - include products/services validators as part of the FAIR assessment
- Implement FAIR metrics and assess resources of ESCAPE Pilot

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# OSTrails Astronomy pilot — Summary

- Implement maDMP for astronomy resources
  - Deploy for MASER and NenuFAR
- SKG generic interface: open IVOA (and SPASE and PDS) registries to wider audience
  - Check with B2find if we can improve references to IVOA Registry
- FAIR assessment
  - Adopt FAIR assessment profiles including IVOA tooling in evaluation.