



Final Design Review Meeting
Edinburgh, September 28th 2026

FAIR & Open Science Guidelines

First Draft, Open Floor

Oscar Reina, Nadia Tonello, BSC
SPACIOUS WP6.4 — FAIR & legacy
policies for data products

<https://gitlab.bsc.es/spacious/wp6/wp6.4>

Working session — feedback welcome !



Funded by
the European Union

SPACIOUS is a Horizon Europe HORIZON-CL4-2023-SPACE-01-71 project
funded under grant agreement no. 101135205

<https://spacious.ub.edu/>

Agenda

- **Why FAIR & Open Science, for SPACIOUS**
- What WP6.4 delivers — and the European context
- **The FAIR Compliance Panels — the core of this session**
- From FAIR to Open — closing the loop
- Open floor & next steps

This is a working draft — interrupt anytime with questions.

Why FAIR, Why Now

“As open as possible, as closed as necessary”

- Open Access — published papers freely available to all
- Open Data — research data freely accessed, used, and shared
- Open Source — software source code freely available under an open licence
- FAIR is how these become real: persistent identifiers, rich metadata, standard formats

Astronomy's backdrop: IVOA standards and ESA's open-archive culture.

What WP6.4 Delivers

- A set of guidelines and recommendations for FAIR & OS practice at SPACIOUS
- Grounded in the SPACIOUS Data Management Plan
- Version 1.3 — but a living, document by nature

Currently available at: <https://gitlab.bsc.es/spacious/wp6/wp6.4/guides>

- Covers three fronts: data (re-used + generated), software (FAIR4RS), and publications
- The SPACIOUS Zenodo Community is already live — the default generalist repository

zenodo.org/communities/spacious

SPACIOUS: FAIR by Design

- Built on Gaia- and Euclid-scale ESA mission data, from the outset
- A shared cloud platform for astrophysical big-data analysis
- A rare chance to build FAIR in from day one — not retrofit it later
- The platform itself is an Open Science move: it lowers the barrier to who gets to participate

Open Science, European-Style

- ESCAPE (2019–2022): the precedent — ESFRI facilities, EOSC, a FAIR-aligned data lake
- EOSC, under FP10, is becoming the Common European Data Space for Research and Innovation
- Horizon Europe already obligates Open Access and FAIR data as a condition of funding
- **SPACIOUS's own grant agreement is bound by this — not a recommendation, a requirement**

FAIR at a Glance

F**Findable**

Persistent IDs, rich metadata

A**Accessible**

Retrievable via open, standard protocols

I**Interoperable**

Shared formats and vocabularies

R**Reusable**

Clear licence, provenance, community standards

Each principle is implemented through concrete resources:

FAIR Supporting Resources (FSRs)

Anything that supports FAIRification: policies, DMPs, guidelines, training, assessment tools

e.g. SPACIOUS DMP · WP6.4 guidelines · F-UJI · RSQKit

FAIR Enabling Resources (FERs)

The subset essential to implement a principle: PID services, repositories, protocols, formats, vocabularies, licences

e.g. DOI · SPACIOUS Zenodo Community · VO/TAP · FITS/ECSV · IVOA vocabularies · CC BY 4.0

**How this connects**

The panel that follows lists the FERs SPACIOUS recommends — for each FAIR principle and each type of product — in the spirit of a FAIR Implementation Profile.

Each cell = one enabling resource.

The FAIR Compliance Panel

	Findable	Accessible	Interoperable	Reusable
Re-used Data	ESA/DPAC DOI, ready-made	VO/TAP via ESA archives	FITS/ECSV, IVOA-native	Credit ESA/Gaia/DPAC
Generated Data	SPACIOUS Zenodo Community	Open by default, no embargo	FITS/ECSV/HDF5, never .mat	CC BY 4.0 + README
Software & Notebooks	Zenodo-GitHub, auto-DOI	Public repo, real code	requirements.txt / env.yml	MIT/Apache 2.0 + CITATION.cff
Publications	Journal DOI, always cited	Gold OA or Green/arXiv	DOI/bibcode cross-refs	CC BY 4.0 + DAS

Everything SPACIOUS produces lives in one place → zenodo.org/communities/spacious

Re-used Data

Gaia, Euclid — already ESA-managed

F Findable	Already carries an ESA/DPAC-issued DOI or ID. Reference it in metadata — never re-mint one.
A Accessible	Already VO/TAP-accessible via ESA archives. FITS/ECSV headers are self-describing metadata.
I Interoperable	Already FITS/ECSV, IVOA-compliant, VO-registered. No reformatting needed — use it as delivered.
R Reusable	Credit ESA/Gaia/DPAC in every publication. Check the specific Data Release licence terms.

Generated Data

SPACIOUS-derived products

F Findable	Deposit in the SPACIOUS Zenodo Community (default) or CDS/VizieR; mint a DOI, fill full metadata.
A Accessible	VO/TAP/REST, or direct download via the Community. Open by default — no embargo unless justified.
I Interoperable	Use FITS, ECSV, CSV, HDF5, or Parquet — not XLS/.mat. Follow IVOA vocabularies and UCDs for metadata.
R Reusable	Licence as CC BY 4.0 (or CC0 for max openness). Ship a README, demo notebook, and provenance note.

Software & Notebooks

FAIR4RS in practice

F Findable	Link GitHub/GitLab to Zenodo for every release. DOI lands in the SPACIOUS Zenodo Community.
A Accessible	Keep the repository public on GitHub or GitLab BSC. The source itself must be open, not just a paper.
I Interoperable	Ship requirements.txt or environment.yml. Use standard APIs; align with IVOA VO tools.
R Reusable	Licence as MIT or Apache 2.0. Document build/run steps; add a CITATION.cff.

Publications

Your scientific results

F Findable	The journal assigns the DOI — always cite it in full. Include it in every reference list and data statement.
A Accessible	Gold OA (compliant journal or APC), or Green via arXiv. Check embargo terms with Sherpa RoMEO first.
I Interoperable	Cross-reference datasets and software via DOI/bibcode. Use standard citation formats throughout.
R Reusable	CC BY 4.0 — required for Horizon Europe Gold OA. Data Availability Statement plus grant acknowledgment.

From FAIR to Open

FAIR is necessary, not sufficient, for Open Science. A dataset can be perfectly FAIR and still sit behind a paywall or a restrictive licence.

Licence chosen, no embargo	→	Open Data
Public repo, open licence	→	Open Source
OA route already chosen	→	Open Access
README + notebooks shared publicly	→	Open Methods

SPACIOUS's Horizon Europe grant agreement obligates open data and open access as a condition of funding — not a recommendation.



Over to You

Bring your own use case

- Where does your data or code fit in this panel?
- Where does it break the map?
- What's missing that you need to make your science FAIR?

Next Steps

- Feedback shapes v2.0 and beyond — this is a living document by nature
- Send comments via the SPACIOUS GitLab OR
- Contact: SPACIOUS Data Management team (WP6)
- Timeline: next revision milestone — [TBD, maybe Lisbon ?]
- Please bring me your use case if you like