



RO-Crate:

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RO-Crate: package your research outputs with their metadata

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Overview

RO-Crate is an **open, community-driven, lightweight** approach to packaging research objects with their metadata.

Using RO-Crate makes research outputs more **attributable, interconnected, and FAIR**.

Benefits of RO-Crate

RO-Crate uses **linked data**, which means RO-Crate metadata is naturally interconnected, interoperable, and queryable.

The **RO-Crate specification** is general enough to be usable in many different infrastructures and domains, and to describe all kinds of research objects.

Custom **RO-Crate profiles** extend the specification to meet the needs of a particular domain or community. Current profiles support the description of:

- workflows and specific workflow runs
- experimental life science data
- digital cultural heritage records

Projects Using RO-Crate

Archiving research data



Tracking provenance in Trusted Research Environments



Describing and managing workflows/workflow runs



(and more)

Interactive Example

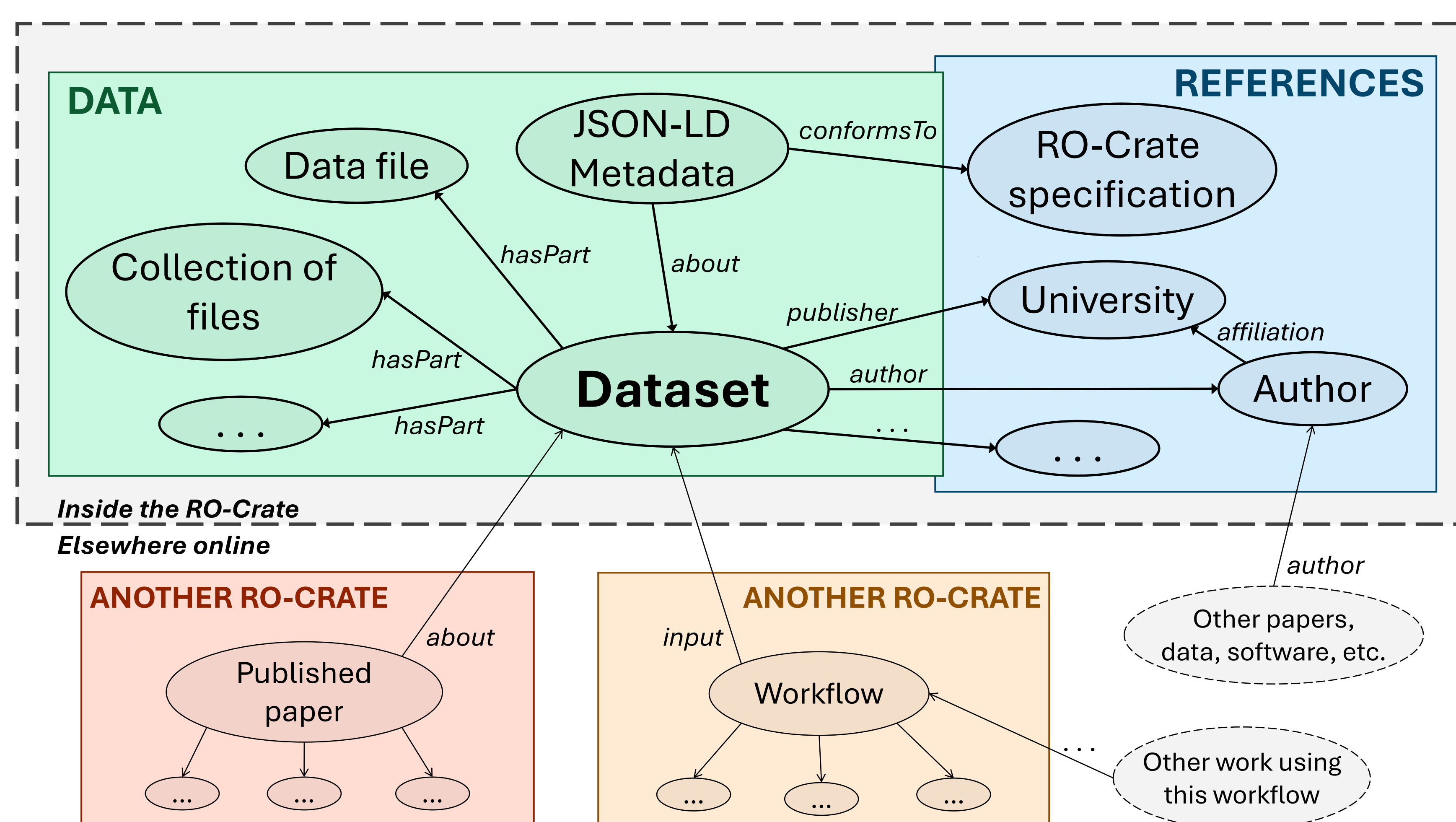
RO-Crates can be rendered into human-friendly HTML pages! Browse an example:



<https://bit.ly/ro-crate-example>

How RO-Crate Works

1. Turn your dataset into an RO-Crate by adding a **JSON-LD¹ metadata file**
2. In that file, describe your data with **terms**, using **persistent identifiers (PIDs)** to reference things outside the dataset
 - **Terms** come from an established common vocabulary and have their own PIDs. For example, *name*, *datePublished*, and *author* are used from schema.org
 - Common **PIDs** include ORCID² for authors, DOI³ for data/papers, and so on
3. Publish the RO-Crate like any other dataset
4. Other RO-Crates can reference this RO-Crate using its PID and a relevant term (e.g. as an *input* to a workflow, or a *subject* of a paper)
5. Your RO-Crate is now part of a web of **interconnected references**, which can be **traversed and queried**
 - Ask questions like "which workflows use this dataset as an input?" or "who has authored papers referencing this dataset?"



Graph representation of RO-Crate metadata.

Top left (green): data which exists within the RO-Crate (i.e. within the same directory as the metadata file).

Top right (blue): objects which are referenced within the RO-Crate metadata but exist outside the RO-Crate itself.

Bottom (orange, yellow, white): demonstration of other RO-Crates/resources online referencing this RO-Crate.

RO-Crate Community

RO-Crate is developed in the open on GitHub². Anyone can join our global community to develop the specification, profiles, and tools.

Start with attending a **community drop-in session³**!

- **Wednesday 18 September, 3pm BST**
- **Thursday 3 October, 10am BST**

To learn more about RO-Crate, visit <https://w3id.org/ro/crate/>.

References:

1. JSON for Linking Data, <https://json-ld.org>
2. <https://github.com/ResearchObject/ro-crate>
3. <https://bit.ly/ro-crate-calendar>



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