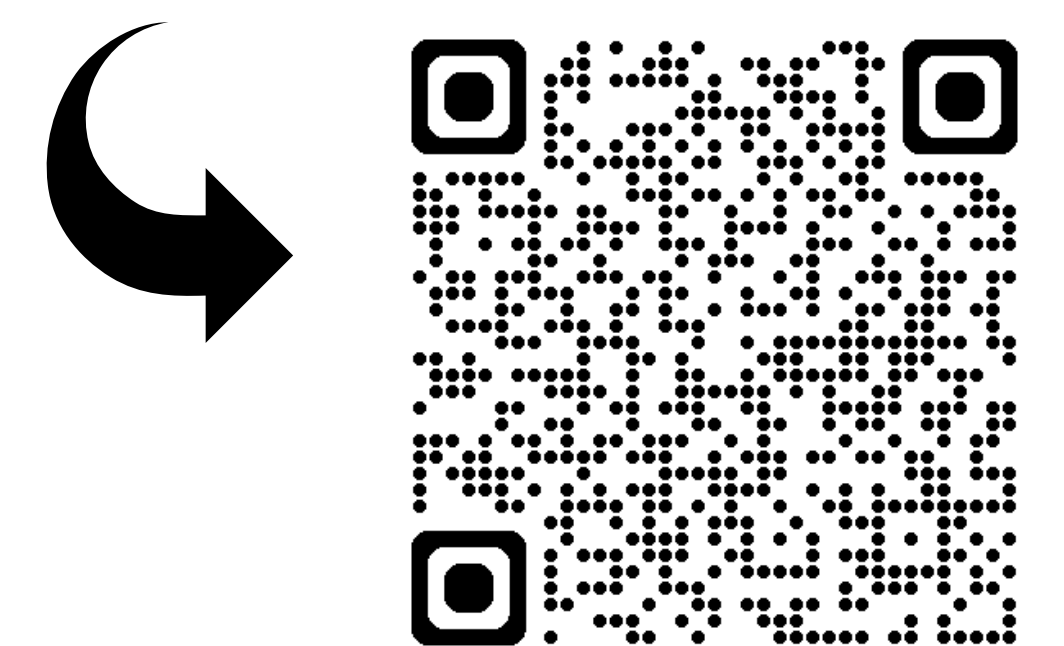


Summary

Transforming fragmented research outputs into connected, machine-readable knowledge graphs.

- The **Digital Objects Ontology (DOO)** provides a shared semantic framework to describe digital research outputs: datasets, software, models and workflows
- By making relationships, context and provenance explicit, the DOO enables **cross-domain interoperability**, **improved discoverability**, and **trustworthy, context-aware AI systems**

Check out the **Digital Objects Ontology** in more detail here!



1. The Challenge

Digital research infrastructure (DRI) is growing, but outputs remain disconnected:

- Inconsistent or missing metadata
- Undefined relationships between outputs
- Weak or implicit provenance and context
- Hard to integrate across domains or AI pipelines

These issues limit **discoverability**, **trust**, **reuse** and **automation**.

2. Our Vision

A semantic foundation for DRI in which digital research outputs are **connected**, **discoverable** and **reusable** by humans and machines, including AI systems.

3. Digital Objects Ontology

The DOO provides a consistent way to describe:

- datasets
- software and code
- models and algorithms
- computational notebooks and workflows

It also captures essential context:

- contributors and roles
- projects and organisations
- funding
- infrastructure
- links between outputs

It enables the creation of domain-agnostic queryable research graphs with **transparent dependencies** and **provenance**.

4. DOO & AI-Readiness

A DOO-aligned knowledge graph supports:

- **Context-aware AI** that understands relationships between research outputs and the wider scientific ecosystem
- **Trustworthy AI** that is transparent and traceable
- **Safe automation** guided by object types, dependencies and constraints
- **Responsible governance** through embedded attribution, funding and licensing information

The DOO provides the semantic foundations needed for **environmental and cross-domain AI** to operate **reliably** and **responsibly**.

5. Use Case

At the UK Centre for Ecology & Hydrology, the DOO is being used to integrate:

- Long-term monitoring datasets
- Hydrological, climate and ecosystem models
- Environmental data science methods and workflows

6. Benefits

- Harmonised **metadata** across projects
- Better **integration** across platforms
- Transparent **provenance**
- Strong semantic base for **AI initiatives**
- Improved support for **cross-domain** research

