



Use Case for an Access Brokerage for ESRC based on ODRL

Future of ODRL Workshop
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<https://ukdataservice.ac.uk/>



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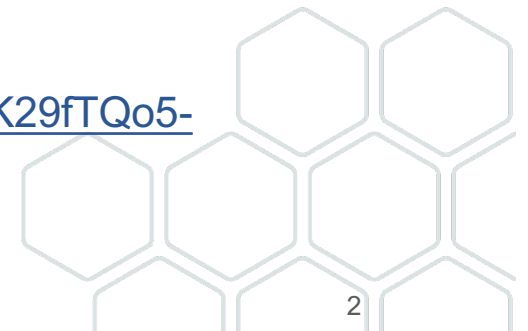


Overview

- UKDS and UK Context
- CDIF Context
- Problem statement
- Strawman architecture
- Possible Access and Usage lifecycle
- Next steps



- Our use case:
 - <https://docs.google.com/document/d/1bLFLIxGjOcH1fjgNcLp6wcxK29fTQo5-/edit>

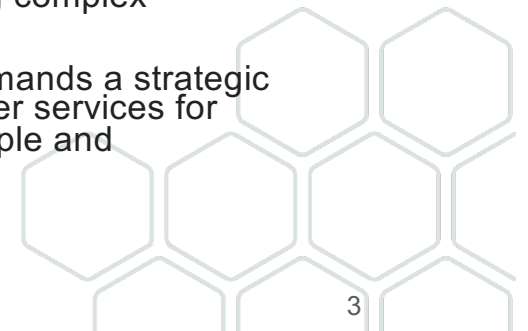


About the UK Data Service

- The [UK Data Service](#) is the principal repository for economic, population, and social research data in the UK. As hosts of the largest trusted digital archive of its kind, our expertise in the collection, preservation, and dissemination of quality data is the culmination of nearly sixty years of sustained investment by the [Economic and Social Research Council \(ESRC\)](#) in the UK's research data infrastructure.
- [Access to UK Data Service data](#) is **free at the point of use** for **non-commercial use**
 - **Data required for non-commercial purposes can be downloaded, or accessed, at no cost.** Charges will apply if the data are to be used for a **commercial purpose**.

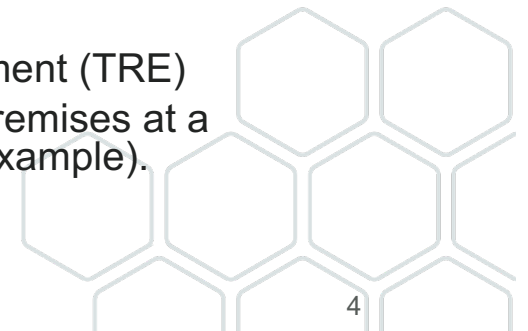
Our challenge: <https://ukdataservice.ac.uk/ukdataservicestrategy202430/>

- The challenge confronting data infrastructure services like the UK Data Service is to streamline the research data lifecycle enhancing its efficiency and effectiveness. To achieve this, it is important to acknowledge the importance of upstream data service activities, well before the data are made available to researchers for analysis and knowledge creation.
- Our objective is to make it quicker and easier for researchers to get the data they need, when they need it, reducing the time and effort currently expended in accessing and preparing complex datasets for research.
- There is a clear requirement to be able to perform these tasks at scale and this demands a strategic commitment to automation, not for its own sake, but because it will yield much better services for our users and quicker access to the data they need. This means investment in people and processes as well as technology.



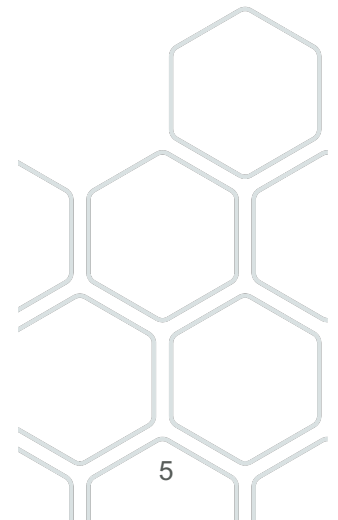
UK Context

- Both research **studies** and research **infrastructures** are funded by the Economic and Social Research Council (including UK Data Service)
- Numerous use cases of varying complexity
- Simple access and usage scenario is somewhat easier to articulate:
 1. Data owners deposit data - essentially ODRL Assets - into repositories;
 2. Repositories conduct further data processing and enrichment of metadata;
 3. Repositories then publish these datasets as static resources in a “catalogue”
 4. Researchers browse and select which resources they would like to work with
 5. Researchers request access to the data
 6. If approved, Researchers then Use the data
 - Often by downloading the data
 - Sometimes by analysing the data in a Trusted Research Environment (TRE)
 - This endpoint is typically a RESTful API and is hosted either on-premises at a repository, or at a cloud provider (UK Data Service use AWS for example).



(Source: Richard Welpton, ESRC, 2025)

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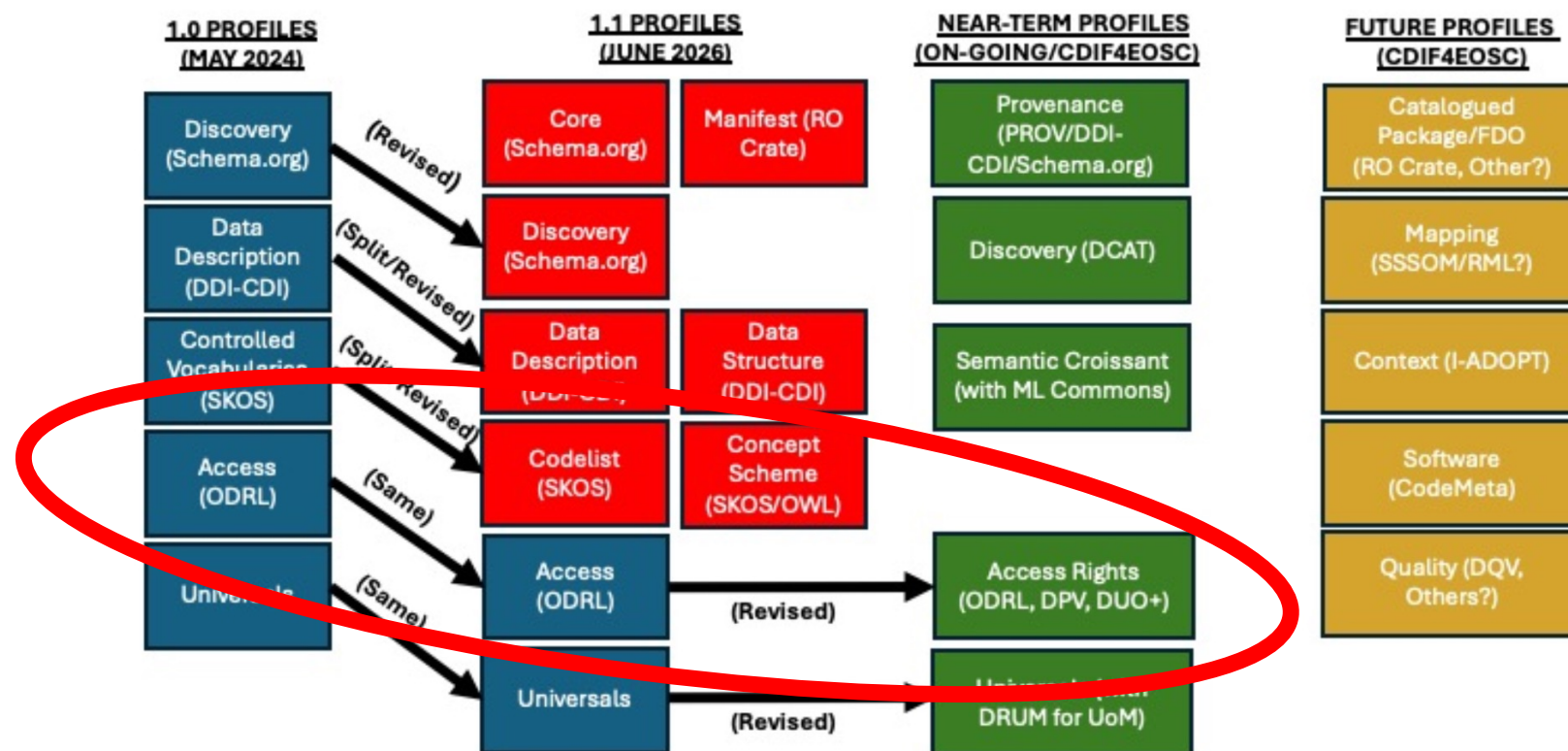


CDIF Context: The Cross-Domain Interoperability Framework

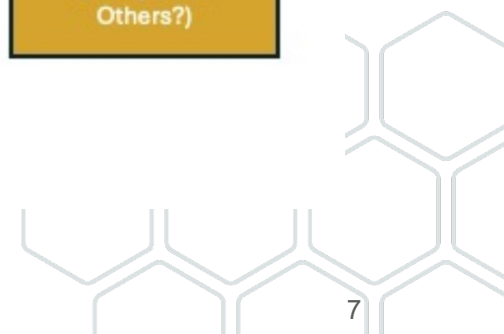
- CDIF is an emerging framework developed by CODATA and collaborators with the goal is to simplify and standardise interoperability for global data practitioners in key areas of data use
- A foundational principle of CDIF is that new standards are never created. Instead, CDIF leverages well-established existing standards to create specific implementation guidance, and these are defined in CDIF “profiles”.
- ODRL (supported by usage of DPV and DUO) is one of the foundational components of CDIF. At time of writing, there is a very basic description of ODRL usage within CDIF 1.1- see diagram below - but a more detailed Access Profile is in development and will be released to practitioners by November 2026.
- Importantly for CDIF, it now has significant support and financial backing from the European Open Science Cloud through the CDIF4EOSC Horizon Europe project
 - (8M euro, 20206-2029) - <https://www.cdif4eosc.eu/>
- CDIF4EOSC will embed ODRL into standard repository practice with real tools.
 - For example, a proof-of-concept ODRL Policy Editor will be further developed up to production level based on the business logic finalised in CDIF4EOSC
 - cf. <https://odrl.dev.codata.org/policies>



CDIF Profiles – including ODRL for Access

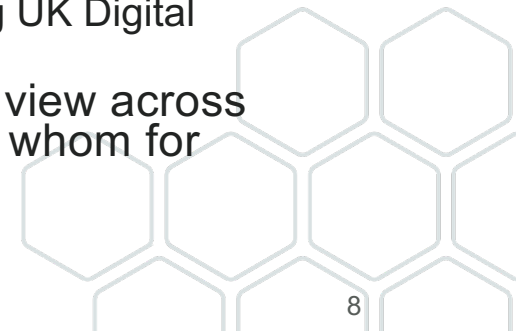


- <https://cdif.org/>

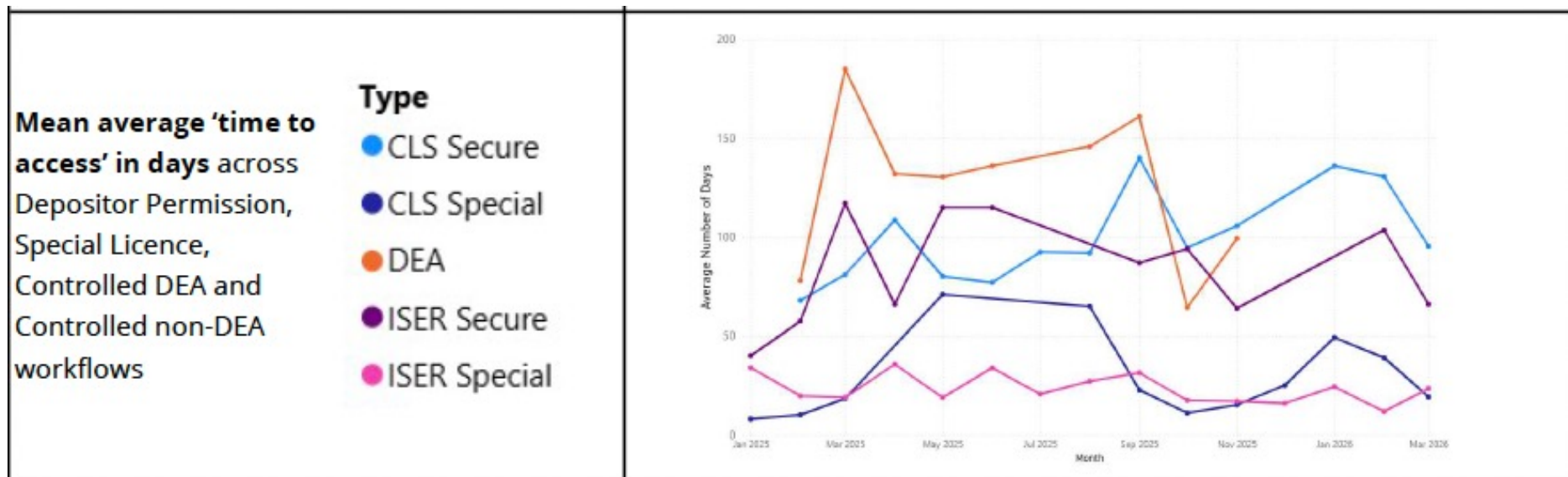


Problem statement

- The repository activity of “Access” remains a largely **human-mediated and administrative** activity.
- While researchers typically (but certainly not always) apply for access to data in an electronic form, the subsequent management of the access request process and subsequent delivery of the data can be bureaucratic, expensive, and slow.
 - -> It takes too long for researchers to get hold of the data they need to conduct their research.
- The problem is compounded in that each repository will have its own set of **local processes and terminology**, even though these local implementations share completely common characteristics with all of the other repositories.
 - Often under the exact same legal and/or regulatory arrangements (e.g UK Digital Economy Act)
- It is not currently possible to get a unified analysis and reporting view across ESRC investments in relation to what data is being accessed by whom for what purpose.



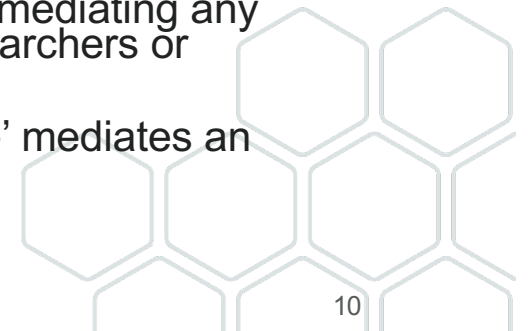
Time to Access (y-axis = Days)

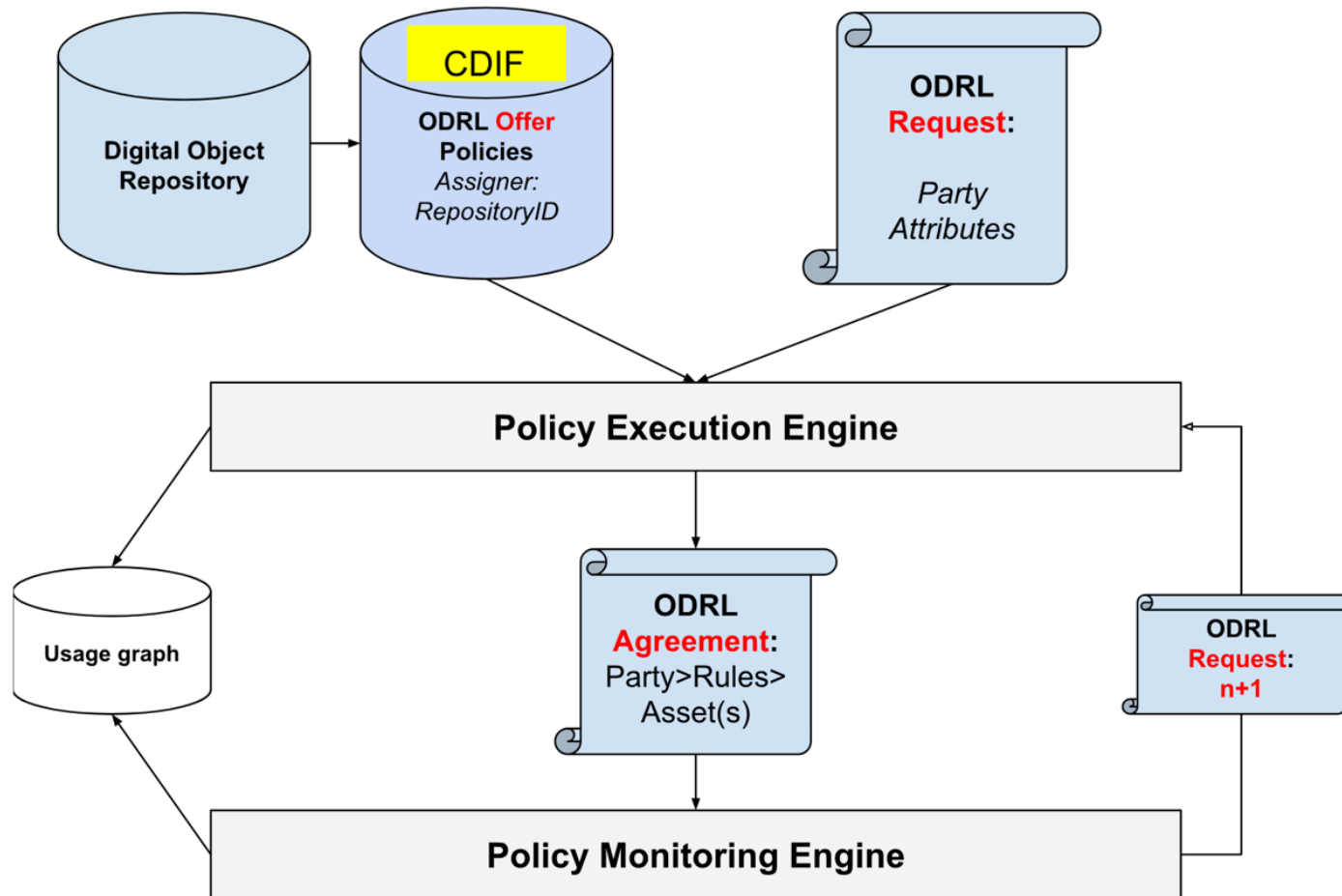


Strawman access brokerage architecture

An Access & Usage “lifecycle” would be expected to consist of the following:

- A researcher browses or searches the UK Data Service Catalogue (or another repository in ESRC).
- They select a dataset and initiate an Access Request from the UK Data Service’s Catalogue UI.
- The UKDS Catalogue passes the Access Request to the ESRC Access Brokerage.
- Through its “Policy Execution Engine”, the Access Brokerage evaluates the researchers’s request for data and orchestrates and fulfills any required ‘access conditions’ (ODRL Rules and Actions).
- The Access Brokerage generates an ODRL Agreement which defines the ‘usage conditions’ that the researcher is subject to.
- The ‘Policy Monitoring Engine’ is then responsible for intercepting and mediating any further changes to the research project, such as adding additional researchers or datasets to the project.
- At the conclusion of the research project, the ‘Policy Monitoring Engine’ mediates an end-of-project workflow, such as destruction of data.





CDIF4EOSC Tooling



Object Marshalling:

- Resource Identifier
- Content/Metadata Extractors
- Cross Domain Format Transformer

AI Tooling

OntoPortal Ontology
and I-ADOPT Services

CV Predictor

Term Generator

Enrichment:

- CDIF Variable Analyser
- I-ADOPT Variable Analyser
- **Privacy Annotator**

AI Prompt
Registry

FAIRAISteward (HITL):

- Variable metadata editor
- Privacy metadata editor
- **ODRL policy editor**

**ODRL Policy
Constructor**

Crosswalker (Mappings):

- SSSOM
- RML

Integration:

- CDIF Generator
- Croissant Generator
- Data Product Packager
- QA Validator

Repository Integrator:

- Dataverse/CKAN
- Triple store

ODRL Policy Editor

<https://odrl.dev.codata.org/policies>

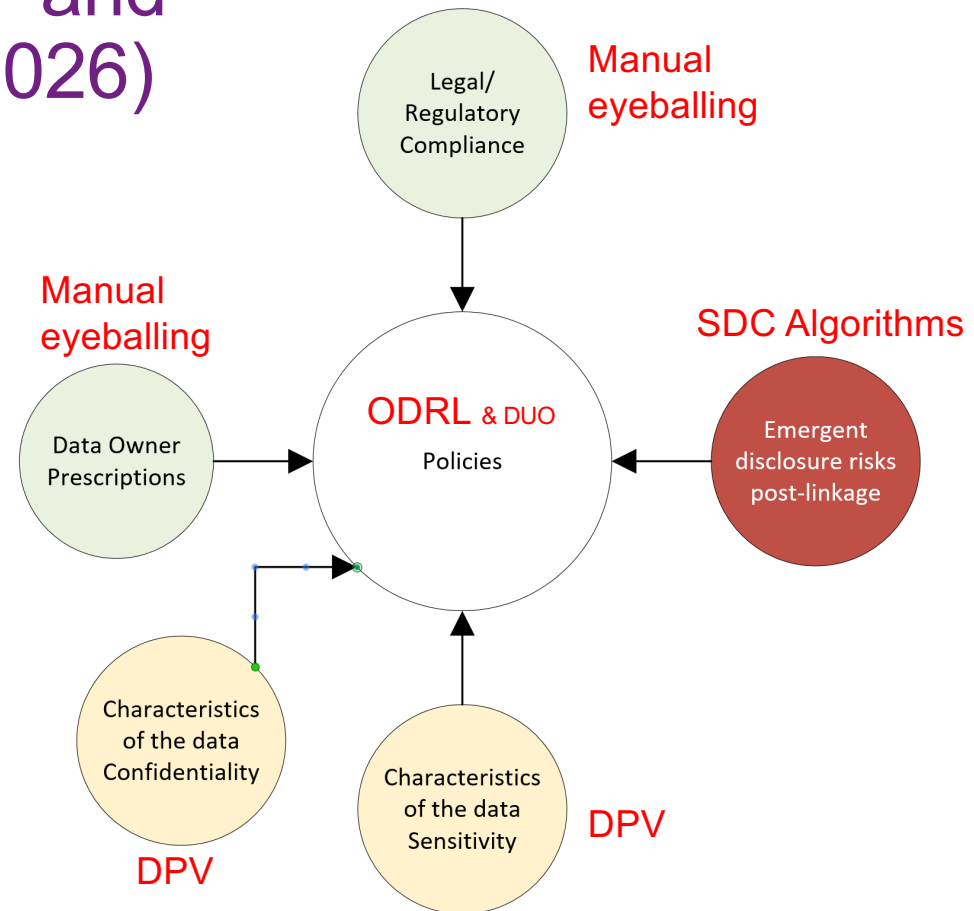


The screenshot displays the ODRL Policy Editor web application. The interface includes a sidebar with navigation options: Live Demo, Dashboard, DID Manager, VC Wallet, Policy Builder (selected), Prompts Manager, Variables, Groups, and Croissants. The main area is titled 'Policy Builder' and contains sections for 'Core Properties' and 'Permissions'. The 'Core Properties' section includes fields for Type (Offer), UID (did:oyd:fe3e0b9d-dca8-40b0-9741-accb48d67800), and Assigner DID (did:oyd:...). The 'Permissions' section includes fields for Asset Target (http://example.com/asset) and Action (distribute). A 'CONSTRAINT (OPTIONAL)' section is also present with fields for spatial, eq, and https://... A preview window on the right shows the generated JSON-LD policy.

```
policy-preview.jsonld Valid JSON-LD
{
  "@context": "https://www.w3.org/ns/odrl.jsonld",
  "type": "Offer",
  "uid": "did:oyd:fe3e0b9d-dca8-40b0-9741-accb48d67800",
  "profile": "http://example.com/odrl:profile:01",
  "permission": [
    {
      "target": "",
      "action": "distribute"
    }
  ]
}
```

Distinguishing “Access” and “Usage” (Bell, IPDLN 2026)

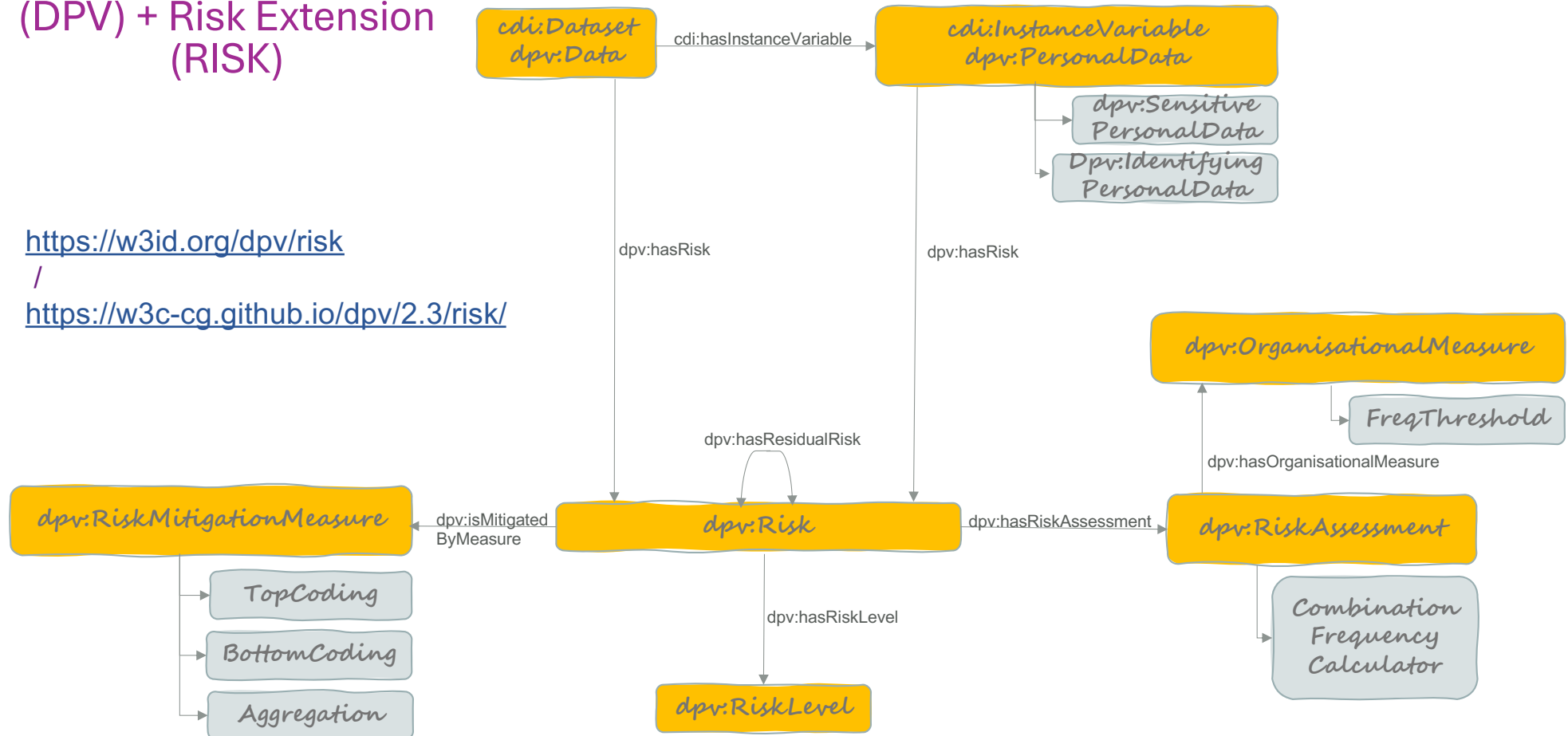
- **Access** relates to the activities which mediate the initial retrieval of a digital object for research
- **Usage** relates to all subsequent operations performed on that digital object.
- The definition and description of both these activities are bounded by access and usage policies.



Data Privacy Vocabulary (DPV) + Risk Extension (RISK)

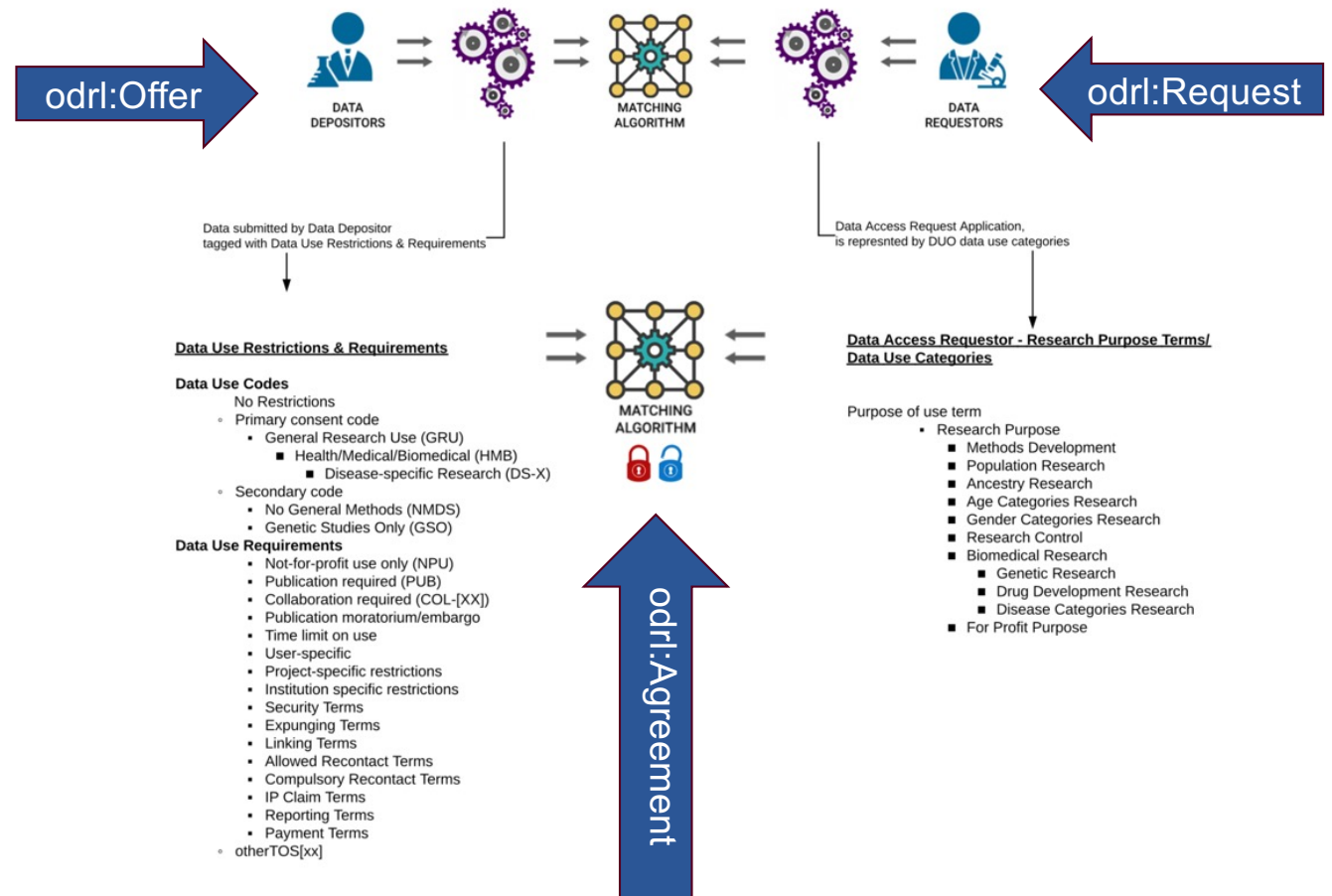
<https://w3id.org/dpv/risk>

<https://w3c-cg.github.io/dpv/2.3/risk/>



Closing the loop: DUO + DPV + ODRL

- Source:
<https://github.com/EBISPO T/DUO#powering-dataset-access-screening-queries>



Aligning ODRL, DPV and DUO

- Pandit HJ, Esteves B. Enhancing Data Use Ontology (DUO) for health-data sharing by extending it with ODRL and DPV. *Semantic Web: – Interoperability, Usability, Applicability*. 2024;15(4):1473-1498. doi:[10.3233/SW-243583](https://doi.org/10.3233/SW-243583)
- <https://journals.sagepub.com/doi/full/10.3233/SW-243583>
- Three premises:
 - Dataset policies (e.g. licenses) as **odrl:Offer**
 - Data use requests as **odrl:Request**
 - Data use decisions as **odrl:Agreement**



Questions?

