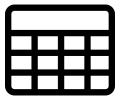


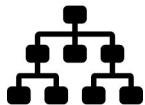
# Going Meta #8: Common RDF integration patterns



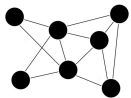
# Data Exchange: serialisations for each data model



- **Tabular:** CSV, JSON-Lines (or even JSON or XML)



- **Hierarchical:** JSON, XML



- **Linked/RDF:** RDF/XML, JSON-LD, Turtle, N-Triples...

# Access Mode / Dynamic nature / size

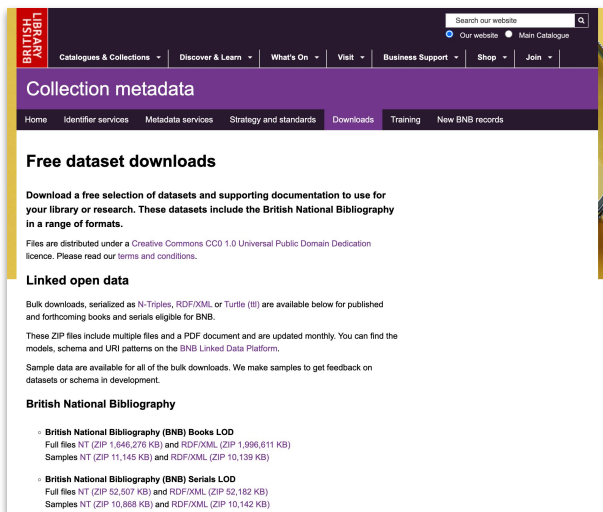
- Download / Static / large
- ... something in between ...
- API Based / Dynamic / smaller (in general)
  - URI de-ref
  - SPARQL
    - SELECT / CONSTRUCT / DESCRIBE

# Format returned by each request type



URL DEREF	→ RDF	→ n10s
SPARQL DESCRIBE	→ RDF	→ n10s
SPARQL CONSTRUCT	→ RDF	→ n10s
RDF DUMP	→ RDF	→ n10s
SPARQL SELECT	→ TABLE	→ LOAD CSV, APOC

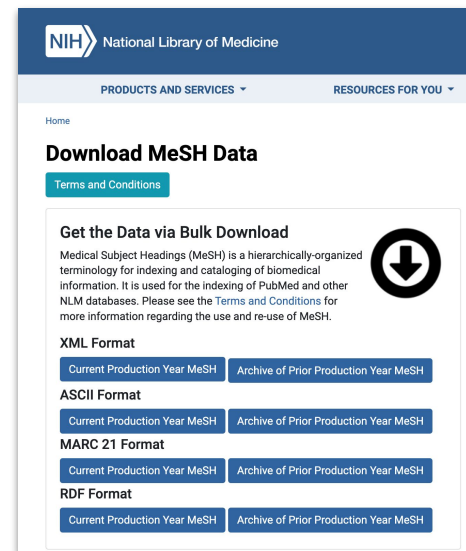
# Download / Static / Large



<https://www.bl.uk/collection-metadata/downloads>



<https://en-word.net/>



<https://www.nlm.nih.gov/databases/download/mesh.html>

# API Based / Dynamic / smaller

**DBpedia** Browse using **Formats** Faceted Browser **Sparql Endpoint**

## About: Neo4j

An Entity of Type: [work](#), from Named Graph: <http://dbpedia.org>, within Data Space: [dbpedia.org](#)

Neo4j is a graph database management system developed by Neo4j, Inc. Described by its developers as an ACID-compliant transactional database with native graph storage and processing, Neo4j is available in a GPL3-licensed source-available "community edition", with online backup and high availability extensions licensed under a closed-source commercial license. Neo also licenses Neo4j with these extensions under closed-source commercial terms.

**neo4j**

Property	Value
<code>@prefix dbo:</code>	<code>&lt;http://dbpedia.org/ontology/&gt;</code>
<code>@prefix dbr:</code>	<code>&lt;http://dbpedia.org/resource/&gt;</code>
<code>dbr:Paradise_Papers</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Nikolaj_Nyholm</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>@prefix ns2:</code>	<code>&lt;http://dbpedia.org/resource/Hybrid_transactional/&gt;</code>
<code>ns2:analytical_processing</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:elastic</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Query_language</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:GraphQL</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Panama_Papers</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:DataNucleus</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>@prefix foaf:</code>	<code>&lt;http://xmlns.com/foaf/0.1/&gt;</code>
<code>@prefix wikipedia-en:</code>	<code>&lt;http://en.wikipedia.org/wiki/&gt;</code>
<code>wikipedia-en:Neo4j</code>	<code>foaf:primaryTopic dbr:Neo4j</code>
<code>dbr:Spatial_database</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Solution_stack</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Graph_database</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Open-core_model</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:AppImage</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:FlaskDB</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:List_of_commercial_open-source_applications_and_services</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:IBM_storage</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:International_Consortium_of_Investigative_Journalists</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:List_of_JVM_languages</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Eight_Roads_Ventures</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Cloud_database</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>&lt;http://dbpedia.org/resource/Bolt_(network_protocol)&gt;</code>	<code>dbo:author dbr:Neo4j</code>
<code>dbo:wikiPageWikiLink dbr:Neo4j</code>	
<code>@prefix dbp:</code>	<code>&lt;http://dbpedia.org/property/&gt;</code>
<code>&lt;http://dbpedia.org/resource/Bolt_(network_protocol)&gt;</code>	<code>dbp:author dbr:Neo4j</code>
<code>&lt;http://dbpedia.org/resource/Cypher_(query_language)&gt;</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Graph_Query_Language</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>&lt;http://dbpedia.org/resource/Gremlin_(query_language)&gt;</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>&lt;http://dbpedia.org/resource/Rod_Johnson_(programmer)&gt;</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbp:workInstitutions</code>	<code>dbr:Neo4j</code>
<code>&lt;http://dbpedia.org/resource/Paxos_(computer_science)&gt;</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:IBM_Tivoli_Storage_Manager</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>
<code>dbr:Comparison_of_structured_storage_software</code>	<code>dbo:wikiPageWikiLink dbr:Neo4j</code>

<https://dbpedia.org/data/Neo4j.ttl>

**SPARQL Query Editor** About Tables Conductor Facet Browser Permalink

Default Data Set Name (Graph IRI)

<http://dbpedia.org>

Extensions: `cmd` `save` `del` `spunge` `USER: SPARQL`

Query Text

```
SELECT *
WHERE {
  [] dbp:starring [ rdfs:label "Harrison Ford"@en ] ;
    rdfs:label ?title;
    dbp:director [ rdfs:label ?dirname ] ;
    dbp:runtime ?runtime;
    dbp:gross ?gross .
  FILTER LANGMATCHES(LANG(?title), "EN")
  FILTER LANGMATCHES(LANG(?dirname), "EN")
}
```

Results Format

CSV

Execute Query Reset

<https://dbpedia.org/sparql/>

**NIH** U.S. National Library of Medicine

Products and Services Resources for You Explore NLM Grants and Funding

## Medical Subject Headings RDFS

Home SPARQL

Enter SPARQL Query

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX meshv: <http://id.nlm.nih.gov/mesh/vocab#>
PREFIX mesh: <http://id.nlm.nih.gov/mesh/>
PREFIX mesh2022: <http://id.nlm.nih.gov/mesh/2022/>
PREFIX mesh2021: <http://id.nlm.nih.gov/mesh/2021/>
PREFIX mesh2020: <http://id.nlm.nih.gov/mesh/2020/>

SELECT DISTINCT ?class
FROM <http://id.nlm.nih.gov/mesh>
WHERE {
  [] a ?class .
}
ORDER BY ?class
```

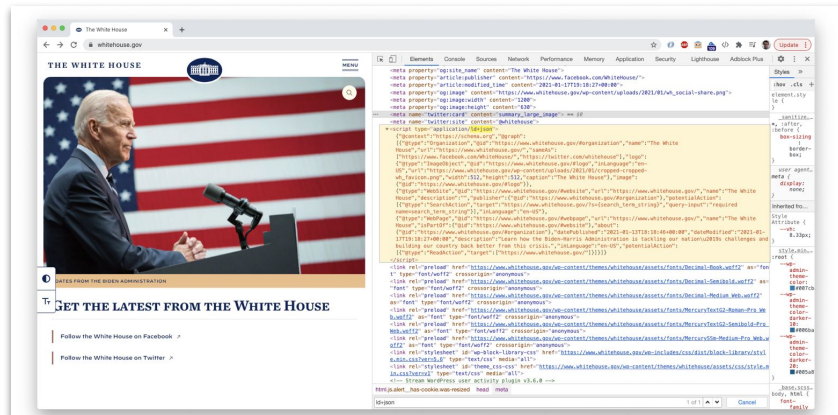
RDFS inference? ☐ Year  Output:

Results per page:

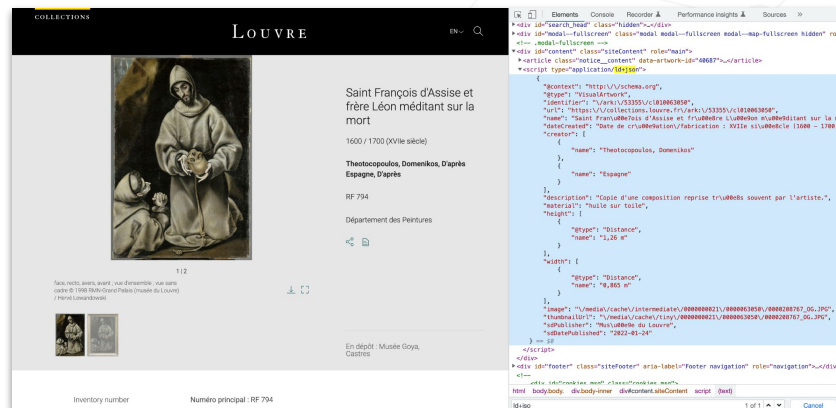
Submit Query Reset

<https://id.nlm.nih.gov/mesh/query>

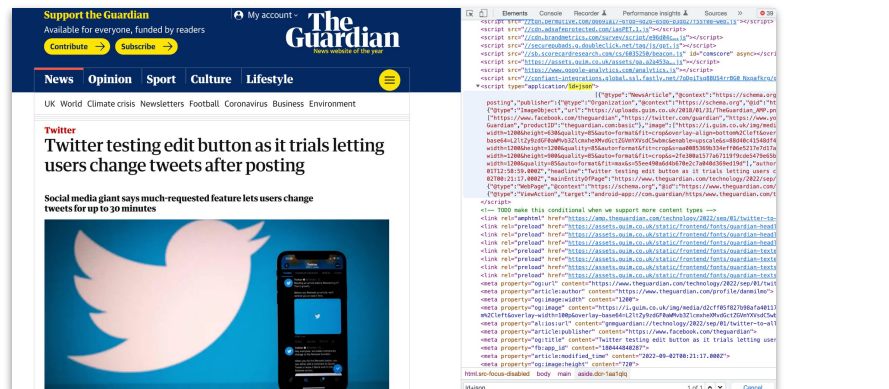
# Somewhere in between...



<https://www.whitehouse.gov/>



[https://collections.louvre.fr/...](https://collections.louvre.fr/)

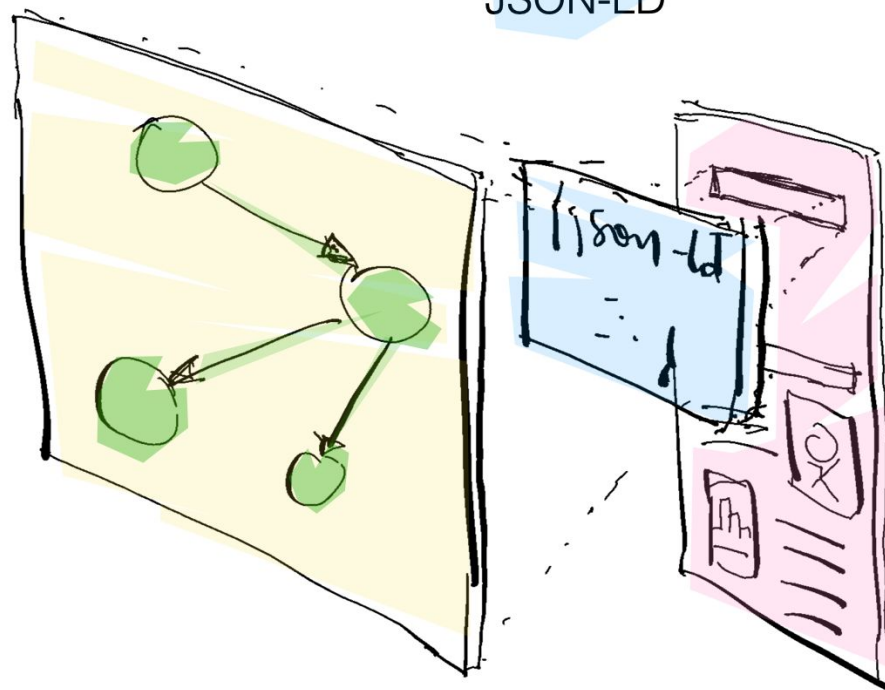


<https://theguardian.com>

NEO4J

RDF /  
JSON-LD

HTML



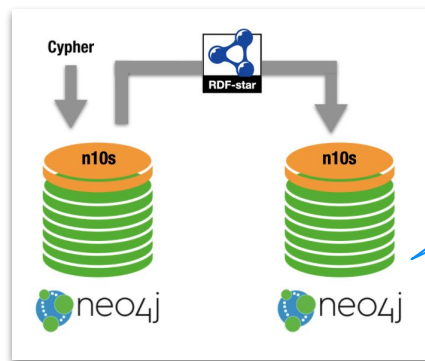


# Patterns

- Migration (export-import)
  - Triple Store to Neo4j
  - Neo4j to Neo4j
  - Neo4j to Triple Store

<http://goingmeta.live/>

## Going Meta #1: Cypher & SPARQL



Old post,  
hence the old  
logo 🤖

<https://jbarrasa.com/2021/02/12/quickgraph8-revisited-lossless-graph-copy-between-neo4j-dbs-with-rdf-star/>

# Patterns

- Enrichment (merge data)
  - Materialized / persisted
  - On demand / Virtualized

