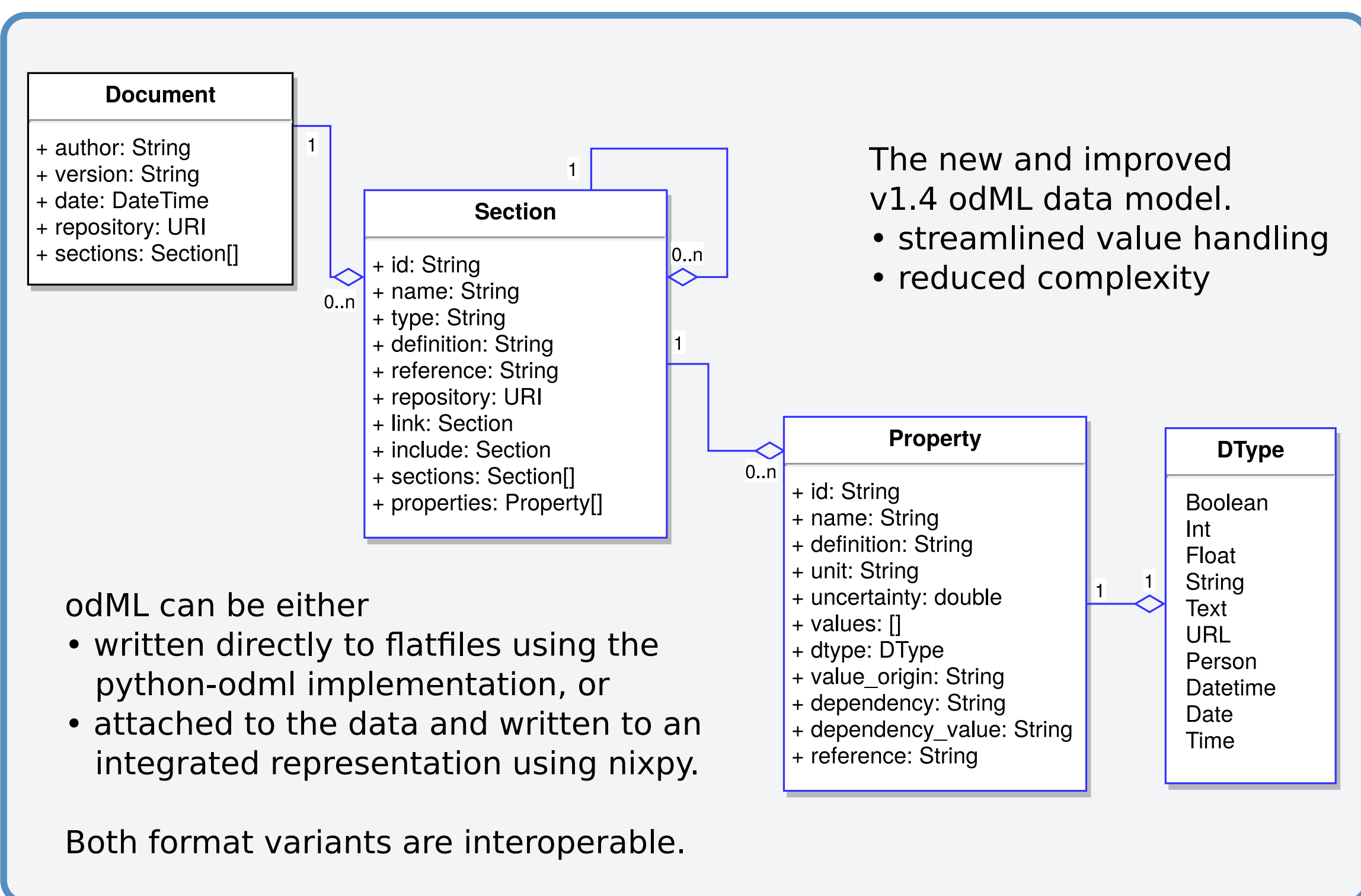


Overview

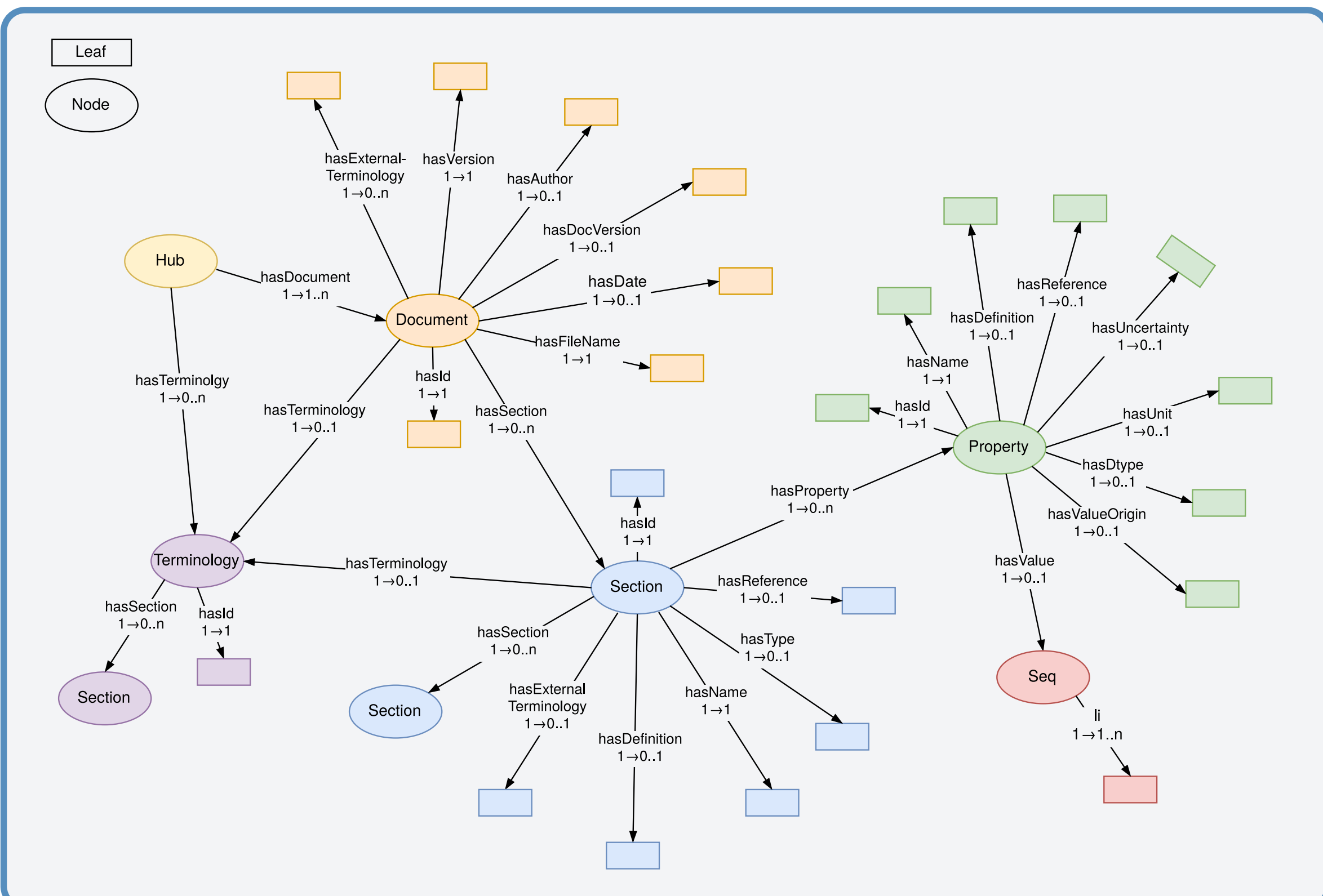
Annotation of research data with metadata is crucial to provide context for analysis and re-use. The odML[1] format (RRID:SCR_001376) offers a flexible and comprehensive solution for the scientist to collect and organize metadata in a structured form that is both human readable and machine actionable[2] for documentation and automated analysis. To further support the FAIR principles[3], we present tools to export metadata from odML to RDF[4], which opens metadata up to semantic web services. The G-Node SPARQL server[5] is aimed at providing searchable whole metadata sets for meta analyses and also providing links to the actual published scientific data set.

Scientists can upload their metadata to make their data findable and accessible even if it was a data publication or if it is an unpublished data set. Furthermore, the GIN[6] data hosting service (RRID:SCR_015864) provides an opt-in feature to automatically update the metadata service when changes to a dataset occur, to ensure the metadata is always up-to-date. Finally with a metadata resource service the G-Node hosts a platform providing terminologies for metadata annotation and features a forum for general feedback, usage discussions and exchange of metadata templates with the scientific community.

odML data model



RDF representation of odML data model



Using OWL to fine-tune RDF Metadata

Extend the basic odML OWL ontology by subclassing the basic odML flavored RDF to

- retain your own metadata structure and terms even in RDF.
- enable more specific SPARQL queries for your needs while enabling general searches through odML terms.

```
### https://g-node.org/projects/odml-rdf#Cell
:Cell rdf:type owl:Class ;
      rdfs:subClassOf :Section ;
      rdfs:comment "Description"^^xsd:string ;
      rdfs:label "Cell" .

### https://g-node.org/projects/odml-rdf#Electrode
:Electrode rdf:type owl:Class ;
           rdfs:subClassOf :Section ;
           rdfs:comment "Description"^^xsd:string ;
           rdfs:label "Electrode" .

### https://g-node.org/projects/odml-rdf#Stimulus
:Stimulus rdf:type owl:Class ;
          rdfs:subClassOf :Section ;
          rdfs:comment "Description of the Stimulus."^^xsd:string ;
          rdfs:label "Stimulus" .
```

Find the odML, NIX and GIN projects at

<http://meta.g-node.org>
<https://github.com/G-Node/python-odml>
<https://github.com/G-Node/nixpy>
<https://gin.g-node.org>

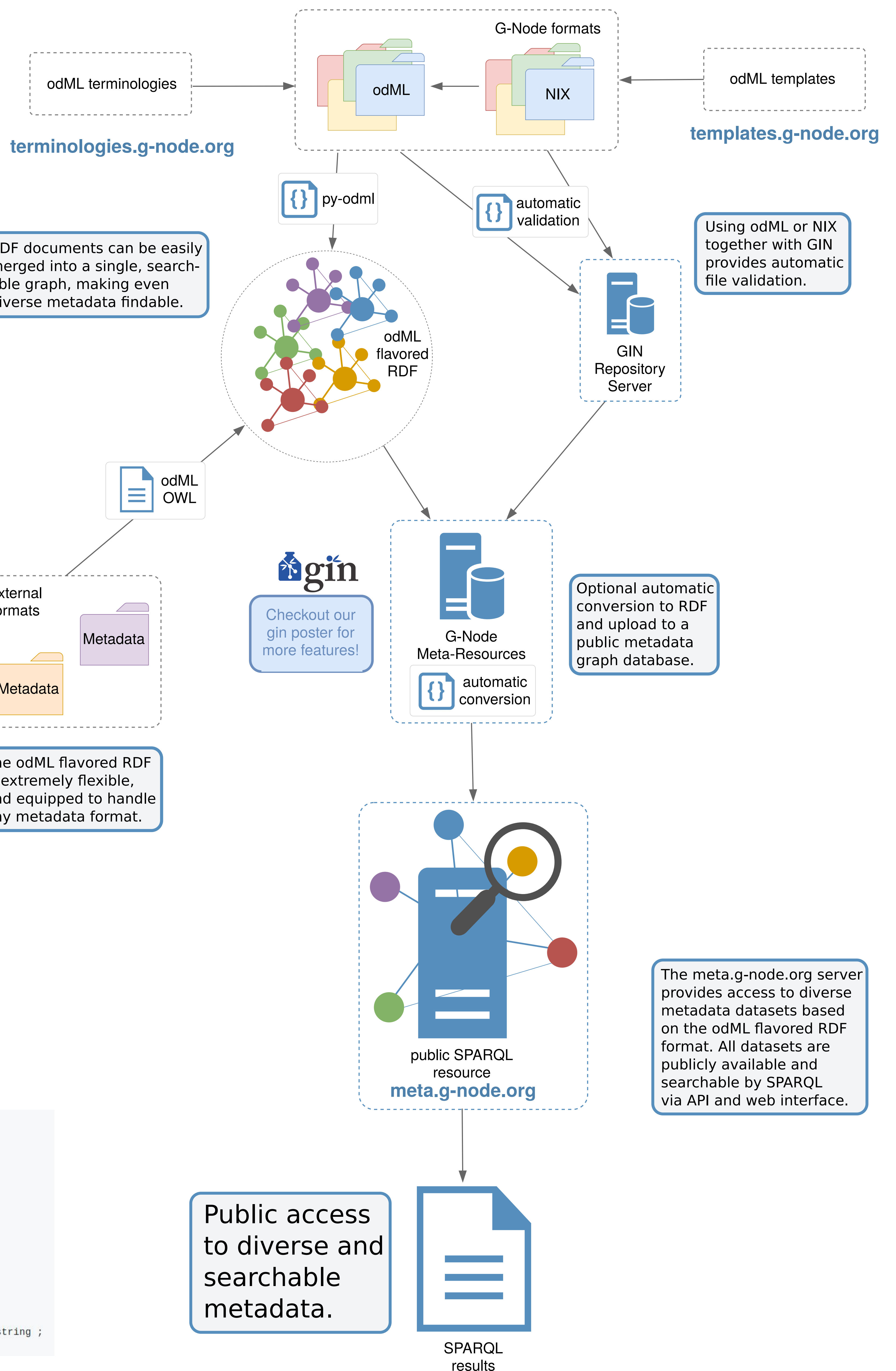
Find out about more G-Node projects at
<https://g-node.github.io>

Contact: dev@g-node.org

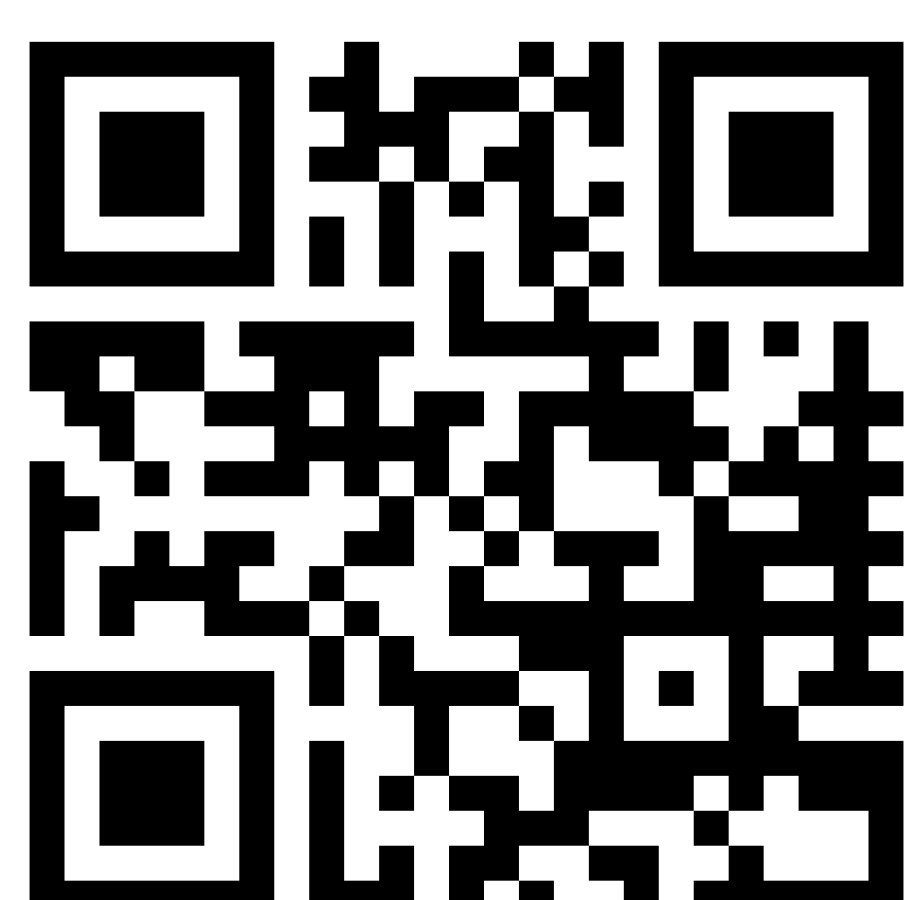
References

- [1] Grewe et al (2011); doi:10.3389/fninf.2011.00016
- [2] Zehl et al (2016); doi:10.3389/fninf.2016.00026
- [3] Wilkinson et al (2016); doi:10.1038/sdata.2016.18
- [4] <https://www.w3.org/RDF/>
- [5] <https://meta.g-node.org>
- [6] <https://gin.g-node.org>

Poster presented at
INCF Neuroinformatics 2019
Warsaw, Poland



Resources and references



Find the odML, NIX and GIN projects at
<http://meta.g-node.org>
<https://github.com/G-Node/python-odml>
<https://github.com/G-Node/nixpy>
<https://gin.g-node.org>

Find out about more G-Node projects at
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Contact: dev@g-node.org



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