

Maintaining reproducible data workflows while keeping data in sync, backed up, and easily accessible from within and outside the lab is a key challenge in research. To minimize time and effort scientists have to spend on these tasks, we provide a suite of tools designed for comprehensive and versioned management of scientific data including convenient storage of data, analysis and metadata annotation for easy reproducibility, data sharing and re-usability.



Collect and manage all information about your experiment

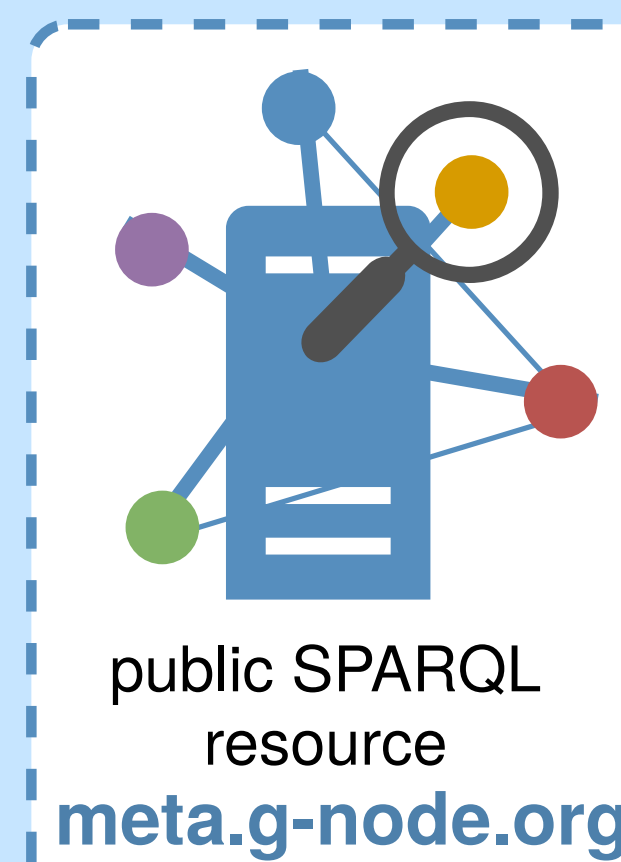
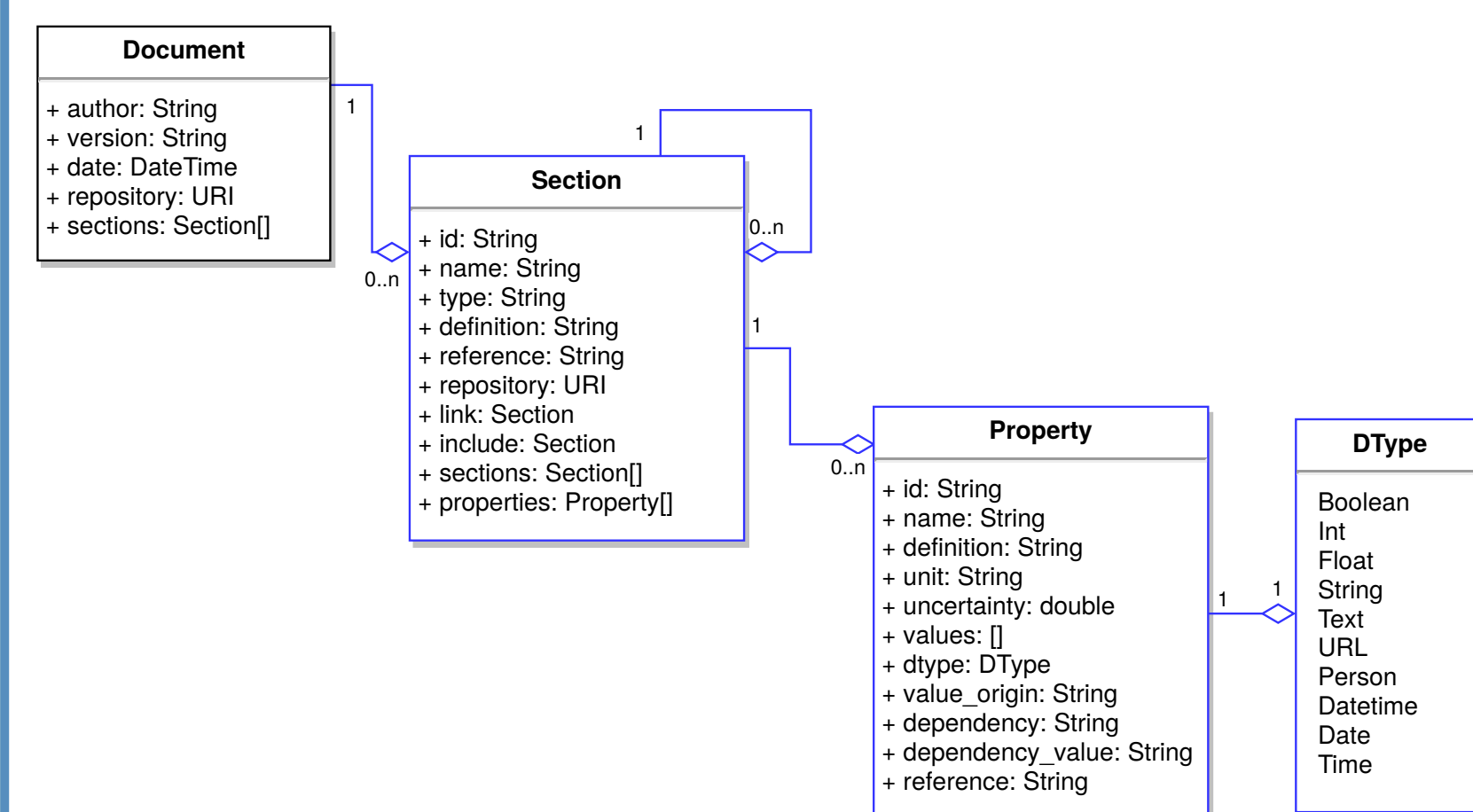
Main features

- Open metadata format [1]
- Flexible hierarchical key-value storage
- Save to common structured formats: XML, JSON, YAML
- Template system for reusable metadata structures
- Terminology repository [2] for reusable definitions

- GUI editor [3]
- Available for macOS and Linux
- Cross-document drag-and-drop for metadata subtrees

- Export to RDF retaining your own terms and structure
- Query metadata using semantic web technologies
- Search cross document via SPARQL queries
- Make metadata publicly available on meta.g-node.org

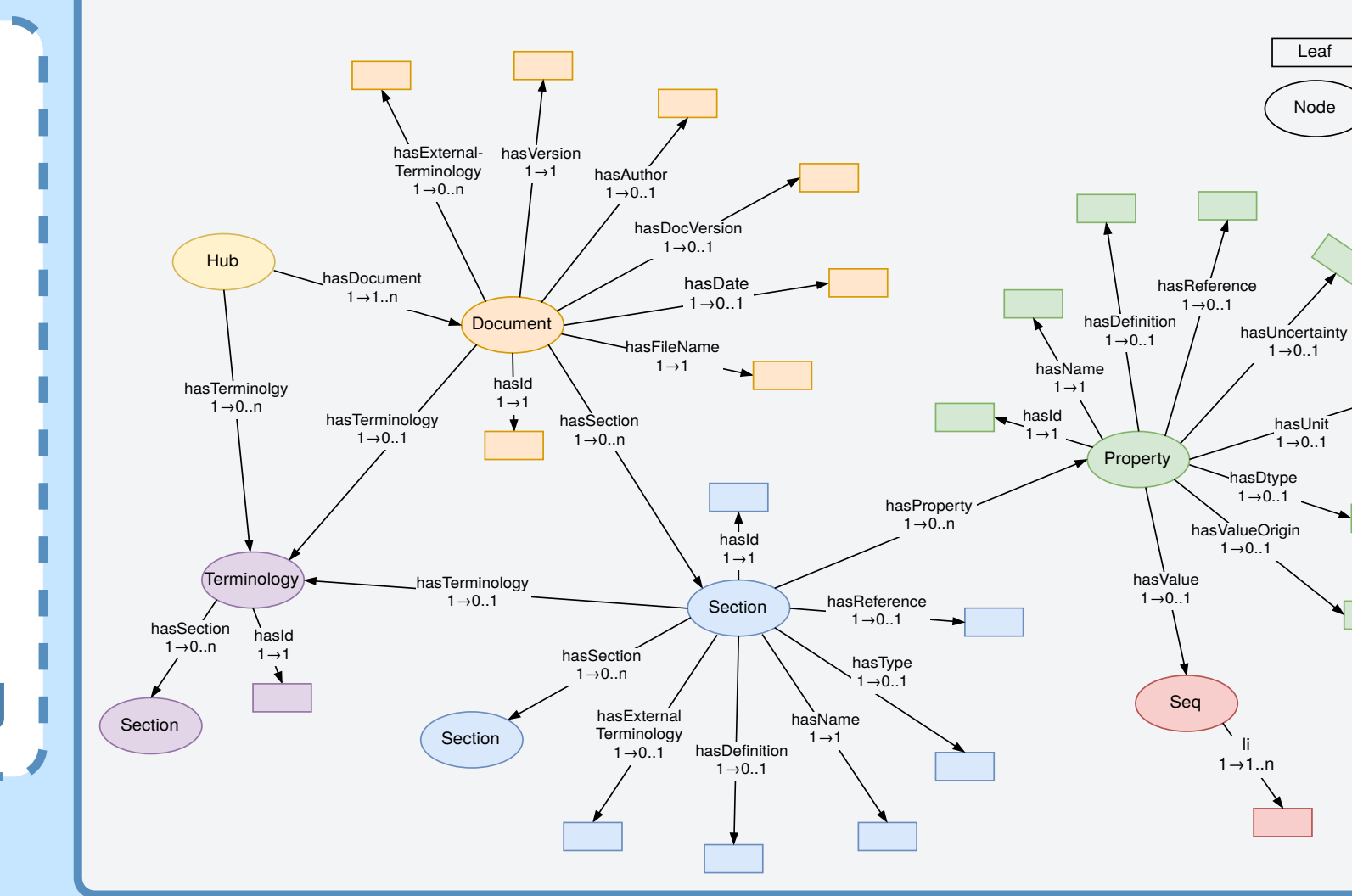
The odML Metadata format



Queries

meta.g-node.org:
access diverse metadata datasets
all datasets are publicly available
searchable by SPARQL via API and web

odML RDF schema

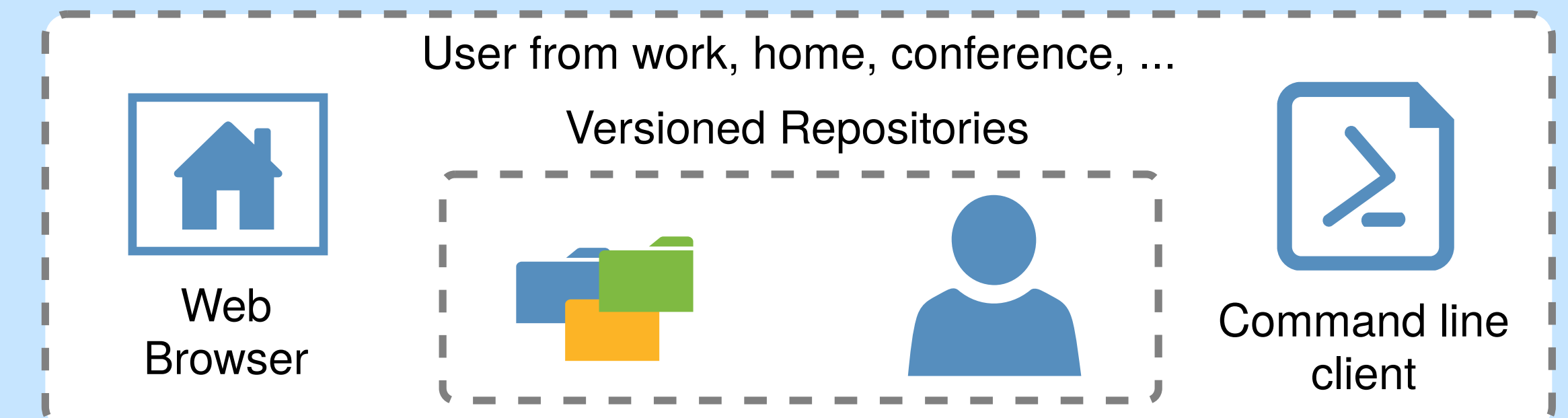


Secure data storage, easy collaboration and publication

Main features

- Access data from any location
- Free storage for scientific data [11]
- Built in versioning (built on git [12])

- Platform independent
- Secure access
- Public and private repositories
- Citable data by DOIs



odML files in gin:
• indexed and searchable
• treeview rendering for convenient exploration



GIN Repository Workflow

- Browse, download, and upload data via web
- Download and upload large files via command line
- Automate workflows using command line client
- All changes are versioned automatically

GIN Client

```

$ gin login
Login: achilleas
Password: *****
Hello achilleas. You are now logged in.

$ gin get G-Node/odmlFiles
Fetching repository 'G-Node/odmlFiles'... OK
Initialising local storage... OK

$ gin ls
Synced:
  metadata.xml
  metadata080707.xml
  metadata080708.xml
  metadata080709.xml
$

```

GIN Web

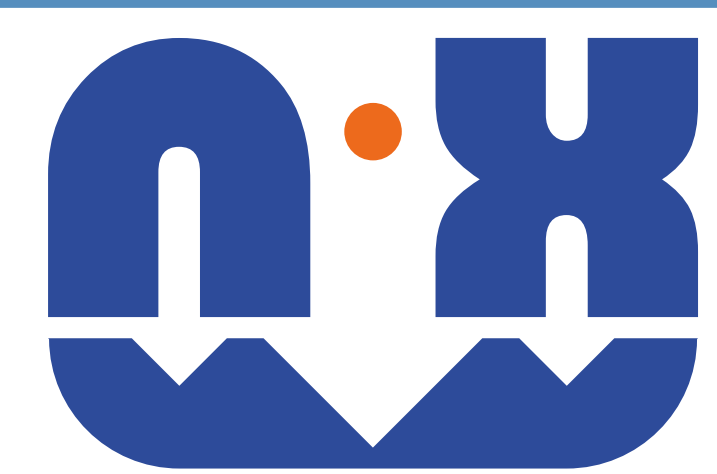


Upcoming features

- Format validation
- BIDS, odML, NIX, custom formats
- CI for scientific data, run automated tests for scripts and data integrity.
- automated export of odML to RDF

Collaboration

- User management
- User Access Levels
- On and offsite collaboration



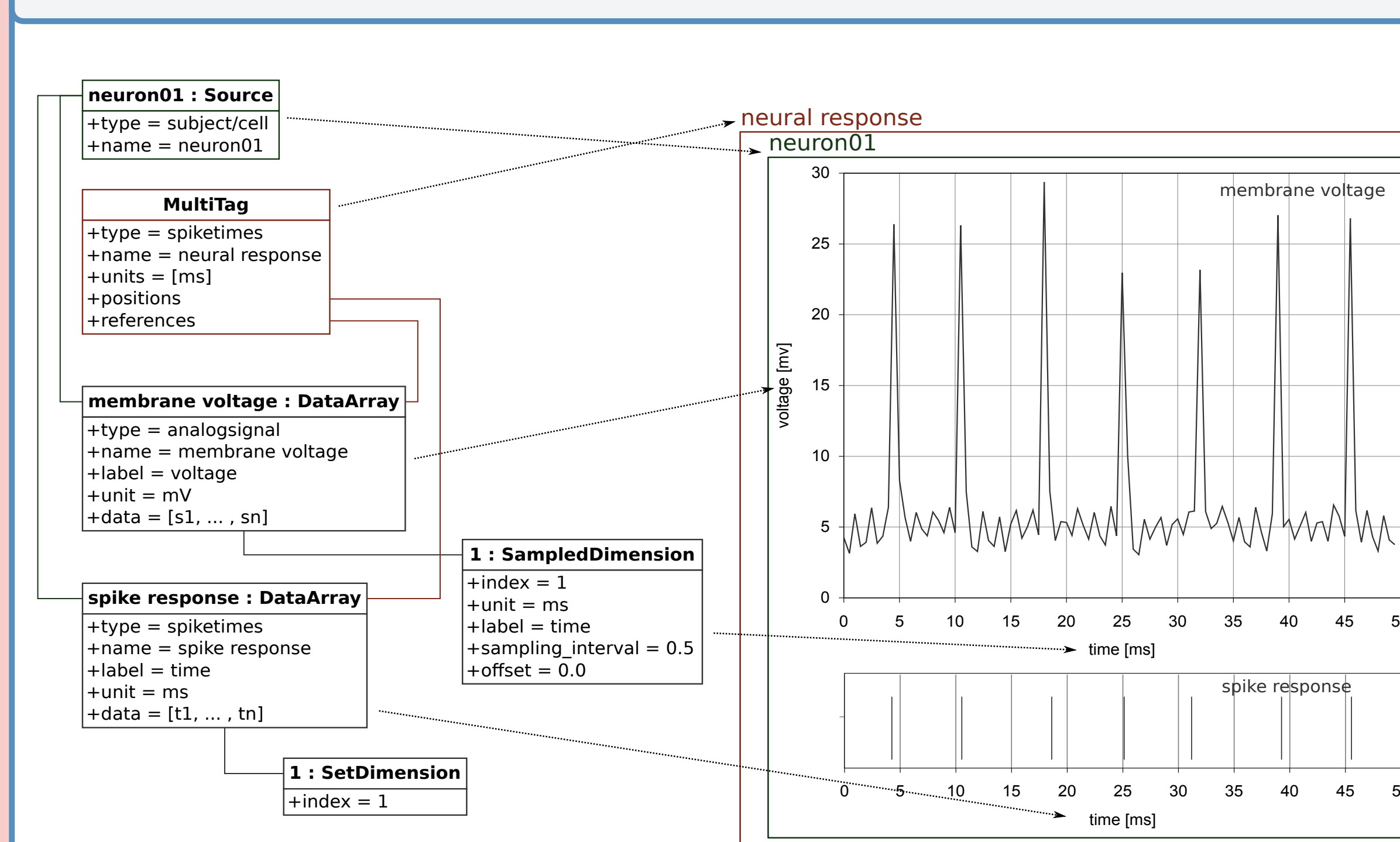
Manage data and metadata together in an open, versatile format

Main features

- Open data format
- Store data, analysis results, and metadata conveniently in the same file
- Descriptive associations between data, analysis results, and metadata

- Free open source libraries for multiple programming languages: C++ [4], Python [5], Matlab [6], Java [7]
- NIX IO for Neo [8]
- Enables interoperability with Neo compatible tools, e.g., the Elephant toolkit [9]
- NIXView [10] Cross-platform GUI

The NIX data model



Resources

Contact: dev@g-node.org

- [1] Grewe et al (2011), doi:10.3389/fninf.2011.00016
- [2] <http://www.g-node.org/projects/odml/terminologies>
- [3] <https://github.com/G-Node/odml-ui>
- [4] <https://github.com/G-Node/nix>
- [5] <https://github.com/G-Node/nixpy>
- [6] <https://github.com/G-Node/nix-mx>
- [7] <https://github.com/G-Node/nix-java>

- [8] <http://neuralensemble.org/neo>
- [9] <http://neuralensemble.org/elephant>
- [10] <http://bendalab.github.io/NixView>
- [11] <https://gin.g-node.org>
- [12] <https://git-scm.com>



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