Achieving reproducible data workflows: Lightweight tools for safe and efficient data management

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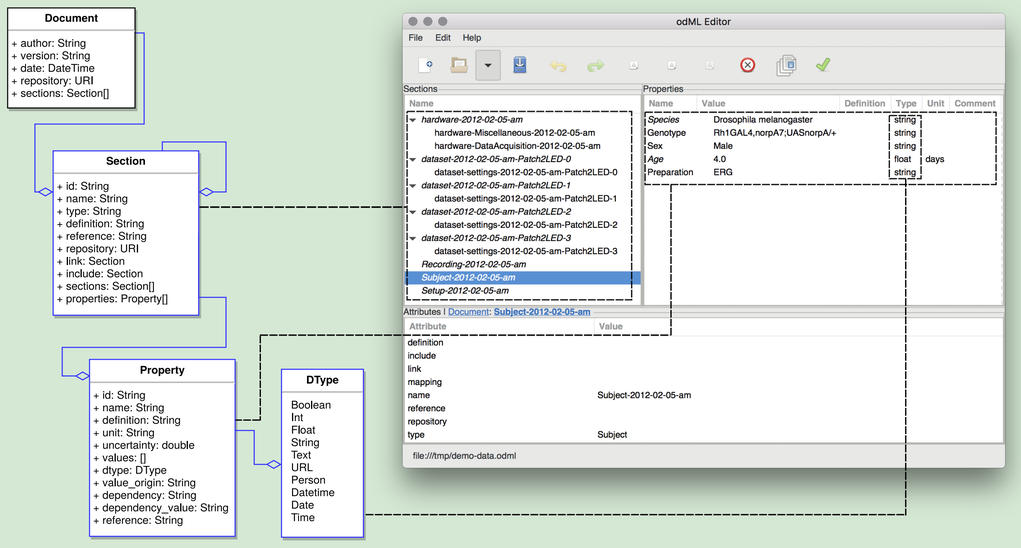
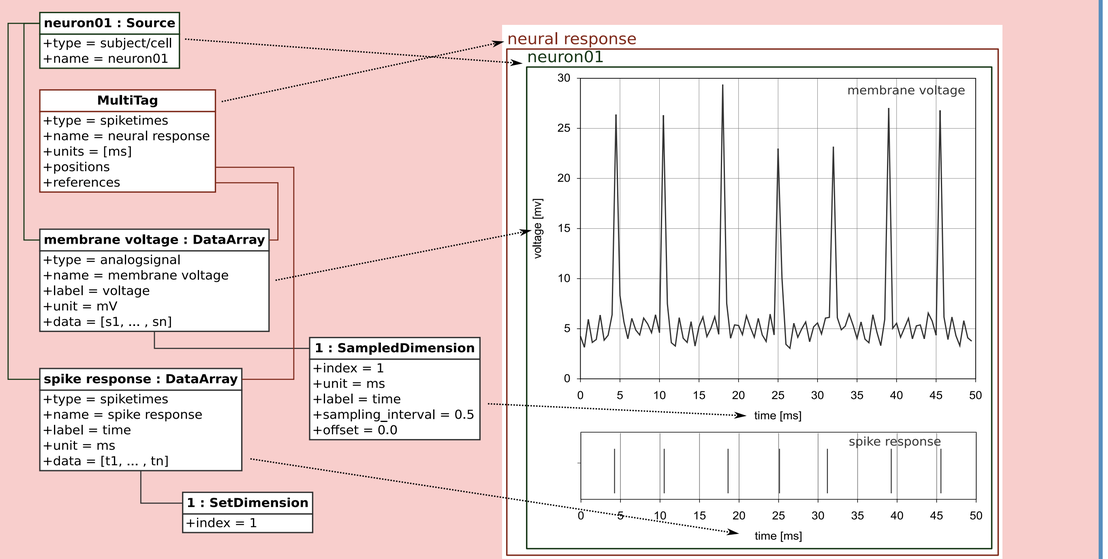
Maintaining reproducible data workflows while keeping data in sync, backed up, and easily accessible from within and outside the lab is a key challenge in research. To minimize time and effort scientists have to spend on these tasks, we provide a suite of tools designed for comprehensive, reproducible and versioned management of scientific data.

Organize and Store Data and Metadata

Manage all information about your experiment



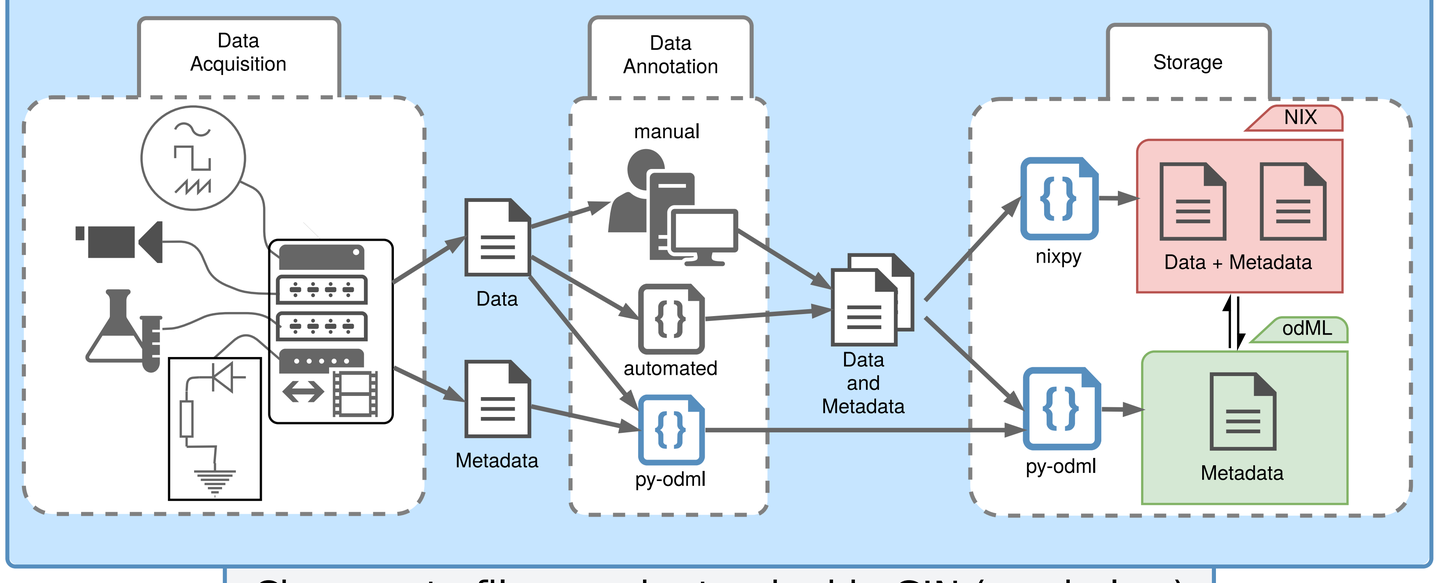
Manage data and metadata in one versatile format



The odML format

- Metadata format used in NIX
- Read and write metadata using library or editor
- Export to RDF: Query using Semantic Web

Data / Metadata acquisition workflow using odML and NIX



Changes to files can be tracked in GIN (see below)

The NIX format

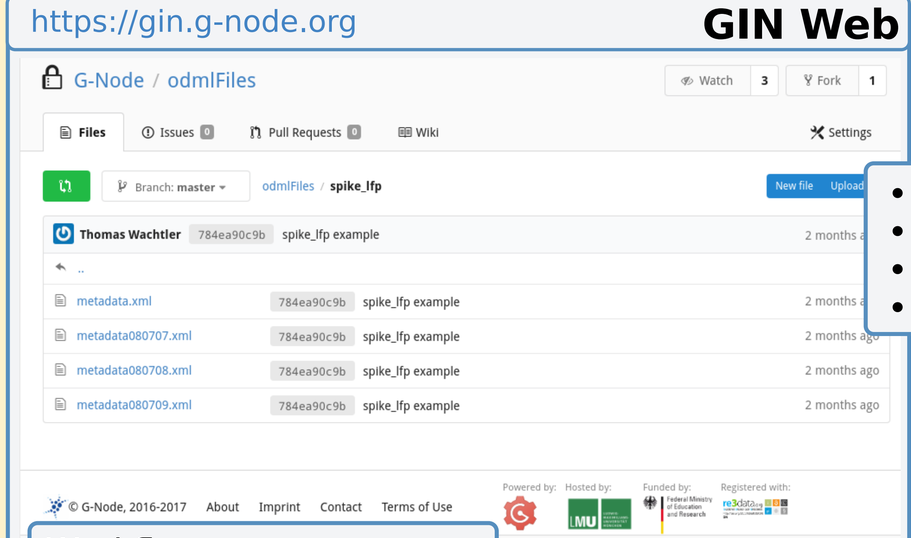
- Open data format
- Store data, analysis results, and metadata in the same file
- Descriptive associations between data, analysis results, and metadata

Libraries
Free open source libraries for:

Store data securely; publish and collaborate with ease

GIN Web

https://gin.g-node.org



- Platform independent
- Secure access
- Public and private repositories
- Versioning of data

Main features
- Access data from any location
- Backup
- Built-in versioning

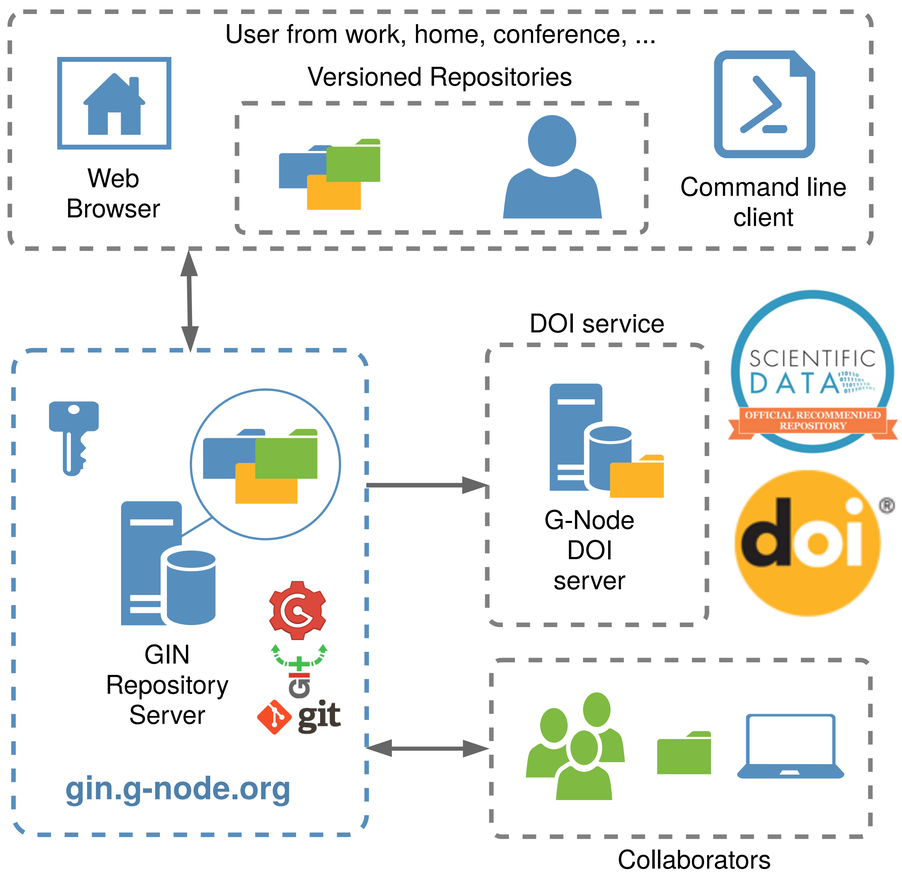
Workflow
- Manual access via web and command line
- Script automation

GIN Client

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

$ gin get G-Node/odmlFiles
Fetching repository 'G-Node/odmlFiles'... done.

$ gin ls
Synced:

        metadata.xml
        metadata080707.xml
        metadata080708.xml
        metadata080709.xml

$ |
```

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

GIN Services



Resources

Poster presented at the NWG Conference 2019 (Goettingen)

Contact:
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https://gin.g-node.org
https://github.com/G-Node/nix
https://github.com/G-Node/python-odml
https://github.com/G-Node/gin-cli
https://github.com/G-Node/gogs
http://neuralensemble.org/neo
http://neuralensemble.org/elephant

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