In neuroimaging, data sharing remains an exception [1]. While other disciplines (e.g. bioinformatics) require data be made available to publish a paper, in neuroimaging, data sharing is mainly confined to sharing the paper itself.

The Biomedical Informatics Research Network (BIRN) Derived Data Working Group (DDWG) [10] recently joined forces with the Neuroimaging Data Sharing Task Force (NIDASH-TF) formed by the International Neuroinformatics Coordinating Facility’s (INCF) Program on Standards for Data Sharing [9] supporting widespread publication and use of provenance, derived data, and resources in neuroimaging.

The NIDASH-TF is working to facilitate sharing of neuroimaging data in a variety of ways, whether raw or derived data and its provenance, lexical information, or exchange formats, while taking into account legal and ethical considerations.

### Methods

The NIDASH Data Model (DM) working group holds weekly calls with participating members from the international community as well as several INCF hosted meetings per year.


NIDASH code is made available through the “NI-DM” GitHub organisation. [https://github.com/nidash](https://github.com/nidash)

NI-DM Data Model Site provides specification documents and examples for NI-DM end-users. [http://nidm.nidash.org](http://nidm.nidash.org)

The NIDASH-TF meets several times a year to review progress on various projects that will make data sharing easier and more fruitful for the scientific community.

### Results

NIDASH DM working group has developed terminologies for DICOM [6,7] and neuroimaging terms [2], and the Neuroimaging Data Model (NI-DM) [2,5]. NI-DM is a neuroimaging-specific extension of the PROV Data Model [11] to facilitate sharing of semantically meaningful neuroimaging provenance and derived data.

Using these tools, we have developed applications to federate data across relational databases and Excel spreadsheets [4], visualizing FreeSurfer segmentations across a large cohort [3], and modeling SPM generated statistical results [8].

We have begun development of detailed specifications of the core NI-DM standard, an extension of the W3C PROV model, and "object models" specifying the recommended set of entities, agents, and activities to describe a workflow and/or derived data product: [http://nidm.nidash.org/specs/](http://nidm.nidash.org/specs/)

We have also developed and deployed a website for sharing raw statistical maps (NeuroVault.org) which will use NI-DM. The INCF-TF meetings have encouraged adoption of these resources. We are linking this work with projects that are providing data, hosting data, developing lexicons or ontologies, and generating derived data. The group includes developers and remains in close contact with projects that plan to use the developed resources, or may do so in the future when articles will be linked to actual data analysis repository (e.g., Neurosynth, NeuroVault, Brainspells), as well as integration platforms such as NeuroDebian.

### Conclusions

The future short-term goals of the NIDASH DM working group are to:

1. Refine existing terminologies and object models.
2. Work with existing software packages to incorporate the data model (e.g. SPM)
3. Create similar models for related tools (e.g., FSL, AFNI) so that common aspects across software packages can be identified
4. Facilitate broad and expanded use of the NI-DM standard for data querying and data exchange, fostering applications such as meta analyses.

### References

[8] [http://www.incf.org/core/programs/datatasharing](http://www.incf.org/core/programs/datatasharing)
[9] [https://wiki.incf.org](https://wiki.incf.org)
[10] [https://wiki.birncommunity.org](https://wiki.birncommunity.org)