

Open NeuroPET: enabling FAIR data sharing

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Goals

Our aim is to develop methods to openly (CC0) or securely (DUA-GDPR) share positron emission tomography (PET) brain imaging data according to the [Brain Imaging Data Structure](#) [1] accompanied by user friendly tools for data curation. Our secondary objective is to develop pipelines for automated quality control (QC) and [molecular imaging template building](#).

FAIR neuroPET data

Find and Access data with nEurothenticate: Our proposed nEurothenticate is the future gateway for secured data sharing and is compatible with the already existing EBRAINS infrastructure. User will be able to upload curated data along with a [Data Usage Agreement](#). Data are checked and pushed to a EU restricted cloud storage along with the metadata using a jsonld file using [schema.org](#). Thanks to [DataLad](#)[2], all metadata will be visible and platforms such as OpenNeuro or EBRAINS can list the datasets, making them *Findable* and *Accessible* worldwide. Because data are curated using BIDS, they are also *Interoperable* and *Reusable*.

GDPR governance: Users have to register and provide their IDs, which is the basis for accessing EU data. Having IDs, data can be accessed after signing the DUA and, if non-EU based, an additional [Standard Contractual Clause Agreement](#) needs to be provided. Users will be able to register their institutions which will allow to check if the IT infrastructure is secured - see [Data Protection Impact Assessment](#); this is primarily to ensure downloaded data cannot be leaked.

Existing tools for PET data

We have created Matlab(R) and Python PET BIDS converters available @<https://github.com/openneuropet/BIDS-converter>. Converters allow converting source ecats files to nifti+json. There are also tools to help converting metadata to json files.

References

- [1] Norgaard M, Matheson GJ, Hansen HD, Thomas AG, Searle G, Rizzo G, Veronese M, Giacomel A, Yaqub M, Tonietto M, Funck T. PET-BIDS, an extension to the brain imaging data structure for positron emission tomography. *bioRxiv*. 2021 Jan 1.
- [2] Halchenko et al., (2021). DataLad: distributed system for joint management of code, data, and their relationship. *Journal of Open Source Software*, 6(63), 3262.