Tutorial BIDS Manager:

Version 1.0

BIDS is a standardized way for organising and describing neuroimaging, neurophysiology and behavioral data. This structure has been adopted by a multitude of neuroscience labs around the world to facilitate data sharing and analysis (https://www.nature.com/articles/sdata201644).

BIDS Manager software described in this guide is a tool that allows various users to easily import and explore databases in BIDS format.

This document will guide you to import your data in BIDS format and explore your BIDS Dataset.

Manually driven processes for data storing can lead to human errors, which cannot be tolerated, specifically in the context of a clinical datasets. The BIDS manager offers a secure system to import and structure participant and patient datasets.

BIDS Manager aims to achieve the following objectives:

- Provide software for clinicians and researchers with a user-friendly interface;
- Define the appropriate directory for the dataset corresponding to a study;
- Select required data;
- Select the data to import
- Monitoring and reporting system of taken actions during data importation and storage

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1. Before starting

1.1. Requirements

BIDS Manager requires Windows or Linux system. If you work on Linux system, you need python 3.7. Moreover, it requires two software pieces to convert the data in the appropriate format, the first one is AnyWave for the electrophysiological data and the second is dicm2nii for the imaging data. For now, only this two software are accepted as converters.

1.2. Installation (python):

BIDS manager requires the following python libraries:

- future
- pydicom
- PyQt5

1.3. Installation (compiled version):

The installation of the BIDS Manager is not permanent, the software runs as an executable.

To launch the software:

- Copy the folder [BIDSMANAGER] with its subfolders onto the computer.
- To launch the software, double-click on bids_manager.exe. A terminal launch at startup (black window) and then the main interface is displayed.

2. Dataset description

2.1. Supported File Formats:

Input	FORMATS
Clinical Information	All relevant information for your dataset
Neuroimaging data	- Anatomical images in dicom data - Functional images in dicom format - Fieldmap data in dicom format - Dwi data in dicom format
Neurophysiology data	- Intracranial Electroencephalography (SEEG, ECog) in different formats: Micromed, EDF+/BDF+, Brainvision Analyser, ANT EEProbe, Neuroscan, ADES, SPM, EEGLAB, EGI - Electroencephalography (EEG) in same format than SEEG

Electrode implantation	- Pictures or files showing the electrode position (pdf, jpg, png) - Implantation file with electrodes coordinates (tsv file)
Supplementary files	- Pictures (jpg, png) - Process data (nifti, mat, tsv, vhdr)

2.2. Dataset preparation

Brain Imaging Data Structure (BIDS) is "a simple and intuitive way to organize and describe your neuroimaging and behavioral data" (Fig.1, https://bids.neuroimaging.io/). This organisation has been designed by Gorgolewski Krzysztof J and the neuroscience community (Gorgolewski et al., 2016). The goal was to determine a consensus on how to organize and share data. At the beginning, it has been developed for neuroimaging, then it has been expended to all neuroscience data.

BIDS is inspired by the format used in OpenfMRI repository. The data are structured by subjects. In each subject, you can find a modality folder where the data will be stored in simple format determined by the community. The name of each file is a series of key-value containing information on the subject and the acquisition.

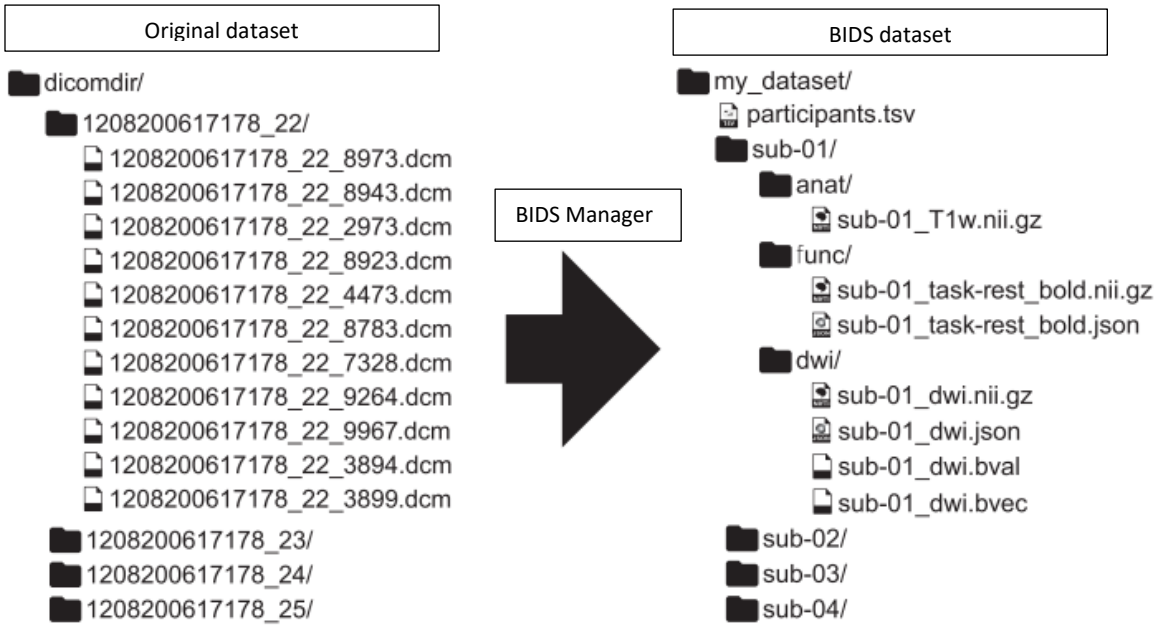

Figure 1: BIDS structure dataset (Gorgolewski et al. 2016)

For more information on BIDS structure, please read the following paper Gorgolewski et al., 2016.

BIDS Manager will help you switch between your original dataset and BIDS dataset.

2.3. Specific files and supplementary tool

To properly run, BIDS Manager needs information contained in several files that must be specific to each dataset. These files are required for the exploration and management of the dataset. This section describes the required files and the procedure for generating them

2.3.1 requirements.json file

The first file is a specific file named “requirements.json” (Fig. 2). This file can be created by BIDS Manager or manually by the user. This JSON file summarizes what information and data should be present in your database. The requirements.json file is specific to one protocol (i.e. one BIDS directory). It gives the demographic information that should be present in participants.tsv, and the

Figure 2: Requirements file

type of data that must be present in the database. This file allows BIDS Manager to verify if the different subjects in the database have the required data and are ready for the analysis or not.

2.3.2 data2import.json file

In order to know what to import, BIDS Manager needs a file named data2import.json. This file must be present in the folder containing the data to be imported. In fact, it is recommended to copy all the data that will be imported in a specific folder. This folder will be deleted after the importation. This file contains all information needed by BIDS Manager to organize the data. Four sections are present in this file. The first section is named *Subject* and contains all the information about the subject. It contains the clinical information and the modalities of this subject. For each modality, different attributes are given to create the file name and the location of the original file is mentioned. The second section is *derivatives* which allows to indicate the files to import in derivatives folder. However, this section is not fully developed yet, so you won't use it for now. The third section is *DatasetDescJSON* which is similar to the "dataset_description.json" of your BIDS folder. This section is very important because it allows BIDS Manager to make sure it imports the files in the correct directory. The most important is the value following the key "name"; it corresponds to the protocol name and BIDS Manager will compare this name with the one written in the dataset_description.json of the BIDS directory. If these names are different BIDS Manager will not import the data. The last section is *UploadDate* and gives the date and hours of the creation.

Figure 3 represents an import directory and Figure 5 represents the data2import.json associated. As you can see, there is a picture in this folder.

```
import_dir
  |-- data2import.json
  |-- seeg_recording_1.eeg
  |-- seeg_recording_2.trc
  |-- MRI_dir_T1w
       |-- MRI_dir_T1w_1.dcm
       |-- MRI_dir_T1w_2.dcm
       :
       |-- MRI_dir_T1w_N.dcm
  |-- DWI_dir_T1w
       |-- DWI_dir_T1w_1.dcm
       |-- DWI_dir_T1w_2.dcm
       :
       |-- DWI_dir_T1w_N.dcm
  |-- a_drawing_1.jpg
```

Figure 3: Import directory example

Pictures are considered as "Sidecar" in BIDS Manager because they are complementary information of one modality acquisition. This picture will be stored in the modality folder associated. In our case, this picture is associated with the iEEG modality, so in the data2import.json, it is present in the modality "IeegGlobalSidecars".

Once the data2import.json is created, the importation can be run by BIDS Manager. In order to avoid false importation, BIDS Manager follows the pipeline described in the figure 4.

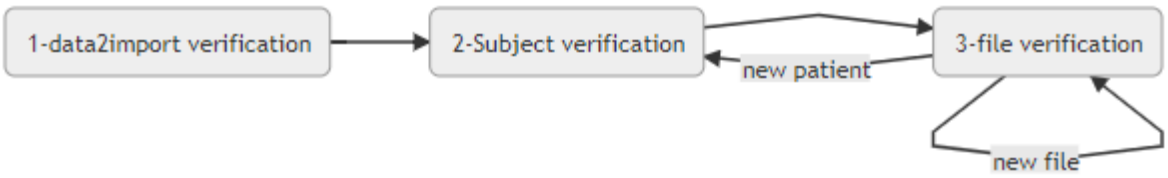

Figure 4: Diagram explaining verification for importation

This pipeline includes multiple verification stages at the subject and file levels. For more information on the verification procedure, please go to the annexe.

```
{
 "Subject": [
  {
   "sub": "01",
   "Anat": [
    {"sub": "01", "ses": "01", "acq": "preop", "ce": "",
     "rec": "", "run": "", "mod": "", "modality": "T1w",
     "fileLoc": "MRI_dir_T1w",
     "AnatJSON": {}
     }
   ],
   "Func": [],
   "Fmap": [],
   "Dwi": [
   {"sub": "01", "ses": "01", "acq": "AP", "run": "", "modality": "dwi",
   "fileLoc": "DWI_dir_T1w", "DwiJSON": {}, "Bval": [], "Bvec": []}
   ],
   "Meg": [],
   "Ieeg": [
    {"sub": "01", "ses": "01", "task": "seizure", "acq": "",
    "run": "01", "proc": "", "modality": "ieeg",
     "fileLoc": "seeg_recording_1.eeg",
     "IeegJSON": {},
     "IeegChannelsTSV": []
    },
    {"sub": "01", "ses": "01", "task": "seizure", "acq": "",
    "run": "02", "proc": "", "modality": "ieeg",
     "fileLoc": "seeg_recording_2.trc",
     "IeegJSON": {},
     "IeegChannelsTSV": []
    }
    ],
   "Beh": [],
   "IeegGlobalSidecars": [
    {"sub": "01", "ses": "01", "acq": "Drawing1", "modality": "photo",
     "fileLoc": "a_drawing_1"
    }
    ],
   "age": "20",
   "sex": "M",
  }
],
 "DatasetDescJSON": {
  "Name": "Protocol_Name", "BIDSVersion": "1.0.1", "License": "n/a"}
}
```

Subject ID

Attributes to create the filename, and the sub-folders in the subject directory

Location of the imagery in the import folder

Clinical information of this subject. Values that will be present in the participants.tsv

Figure 5: data2import.json example

2.3.3 Participants.tsv file

Participants.tsv file is required by BIDS specification. This document contains the id of all participants in the dataset. Moreover, for each participant, there is demographic and/or clinical information about them. The values displayed in this file will depends on the values specified in the requirements.json file. BIDS Manager also adds different information to let you know if the participants have all the data required in the dataset.

According to the modalities required in your dataset, participants.tsv will have column dedicated to those modalities and display ready or not for each participant. There is a general column to say if the participant is ready named “Subject_ready” and there is another column according to the modalities in the requirements.

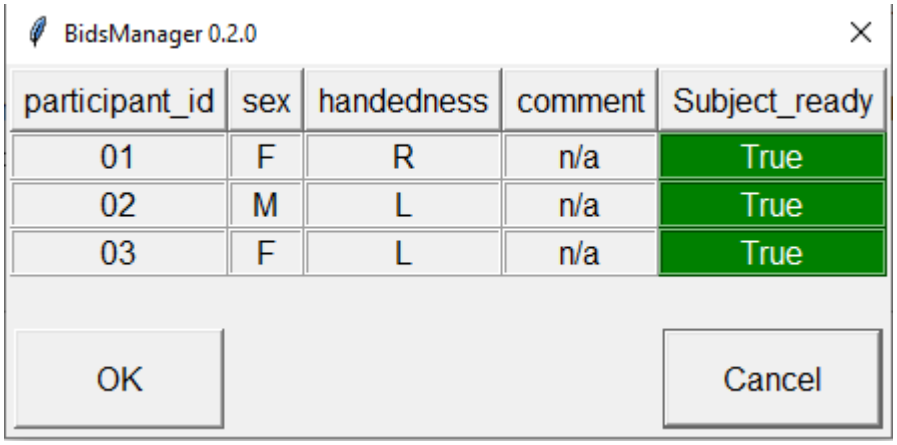

Figure 6:Participants tsv file showing by BIDS manager

In this example (figure 7), the modalities required by participant are one anatomical, one Ieeg, one implantation file in \ieeg, and verify the integrity of the Ieeg channels. The integrity is verifying that all ieeg files have similar electrodes name for the same participant.

Anat_ready	Ieeg_ready	Ieeg_integrity	IeegGlobalSidecars_ready
True	True	False	True
True	True	False	True
True	True	False	True
False	True	False	True
False	True	False	True

Figure 7: Column describing if your participant's data are ready

2.3.4 Complementary tool

As manually creating the data2import can be difficult, BIDS Manager has a complementary tool named “BIDS Uploader”. This tool creates the import directory (copy the original data inside) and create the data2import.json corresponding. To call this tool, the requirements file must be present in the BIDS directory. Moreover, it must be completed with all sections (e.g. clinical information, modalities required, and possible modalities). In fact, BIDS Uploader reads the requirements.json file and offers you to complete specific information of your BIDS dataset.

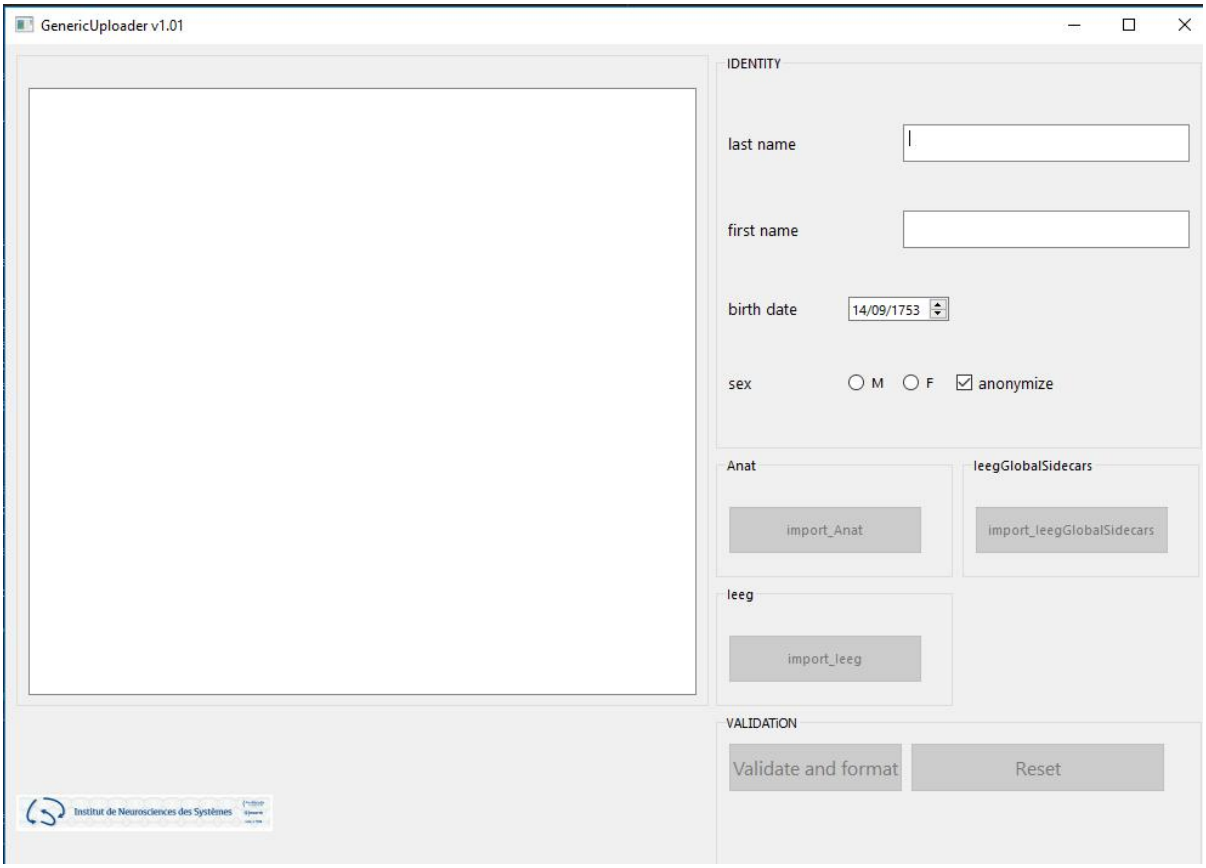

Figure 8: BIDS Uploader interface

By subject, you inform the demographic and clinical information, the modality to import with file location and once you validated, the data2import is created and the data are copied.

More explanation will be given on the different buttons of the GUI in the section functionality (4.2.1).

3. Software interface

3.1. Interface Overview:

The main interface of BIDS Manager offers four drop-down menus.

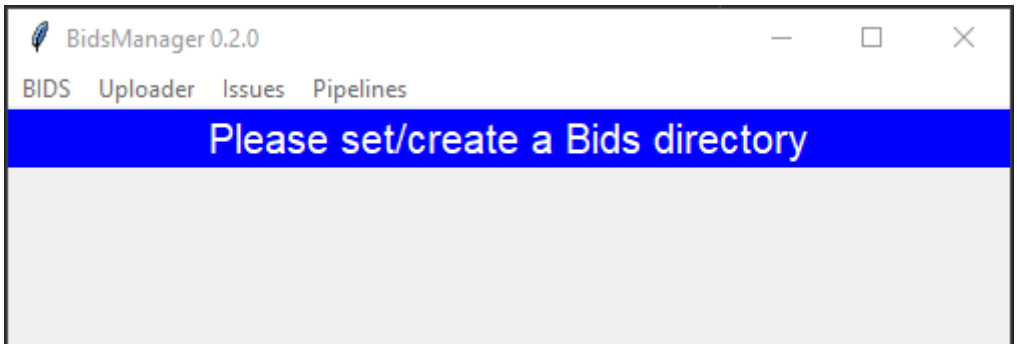

Figure 9: BIDS Manager main interface

BIDS menu will be used to set and explore your BIDS directory.

The menu *Uploader* allows importing your data in BIDS format.

If you had issues during your importation and you do not know how to solve them, don't worry the menu *Issues* is here to help you.

Pipelines > To be updated in the next version of the software.

3.2. Window description

According to the option you selected in BIDS Manager, different windows can be displayed. Most of the time, the main window will not change, and other windows will pop up, but in some case the main window change his configuration.

3.2.1 Window to show JSON files

This window displays the content of json files. The keys are displayed in the left column whereas the values are displayed in the right columns. If a key is mandatory by BIDS specification, it will be displayed in red. Figure 11 shows an example with the dataset description file.

3.2.2 Window to show TSV files

This window displays the content of tsv files. It appears as a table. The header of the tsv files are displayed as buttons whereas the content is displayed as boxes. In some case, the front color can be red or green. The green means good or ready although red means bad or not ready. Figure 6 shows an example with the participants.json file.

3.2.3 Window to explore dataset

This window displays the elements in your BIDS Dataset. On the left column, you can find the keys and on the right the values. If the value is a directory or a file and so openable, it will be displayed

in a blank box. While you will double-click on it, a menu will pop-up with different action if it is a file or a new window will be opened to display the content if it is a directory. Figure 28 shows an example with one BIDS dataset.

3.2.4 Window to display issue

In that case, we keep the main window and we change its configuration. The main window will now be divided in two list boxes. On the right, the issues are displayed and on the left the action are displayed. Two buttons are on the right, one is to apply the actions and the second is to delete the actions. Figure 35 shows an example with importation issues.

4. Procedure

This section will inform you step by step how to create your BIDS directory, import your data and explore your dataset.

4.1 Create your BIDS dataset

If it is your first-time using BIDS format, BIDS Manager will help you create the BIDS directory to store your data with the required files. To start, click on “create new BIDS directory” in the BIDS menu (see figure 10).

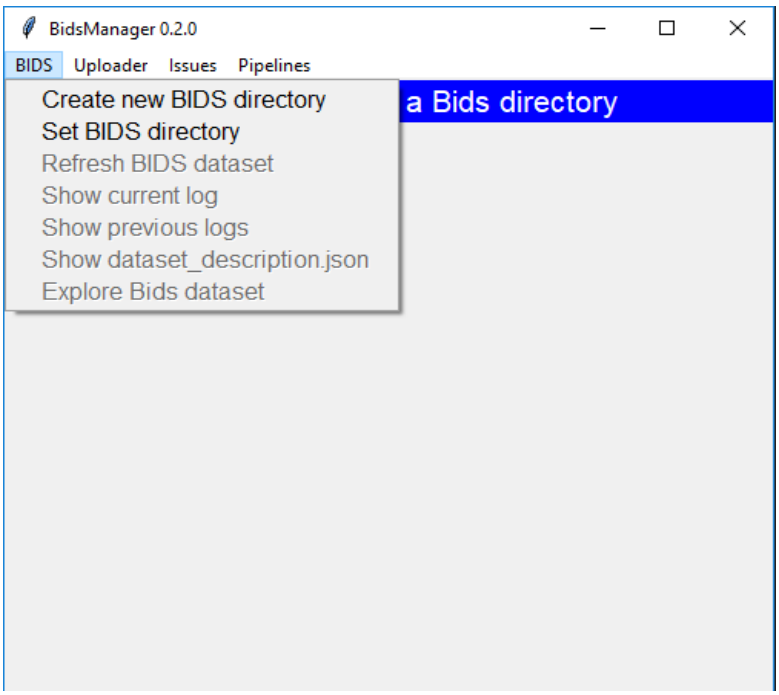

Figure 10: BIDS Menu - BIDS Manager

It will ask you to select an empty folder, then, a window will appear to create the dataset description file (Figure 11).

NOTE: Each time you set a BIDS directory, BIDS Manager writes in [YourBIDSdir]/derivatives/log a file named “access.json” which stores the user name and access time. This file allows BIDS Manager to know whether a user is currently accessing the dataset. When you try to set a BIDS directory already in use, a window will pop up displaying the information written in access.json and block the access to this dataset. Each time you close BIDS Manager or set another BIDS directory, the access.json is deleted and the BIDS directory can be accessed by another user. If BIDS Manager is closed without removing the access.json, the software will block the access to the dataset. In such case, the access.json has to be removed manually but verify beforehand by contacting the last user that this dataset is not in use anymore.

4.1.1 Dataset Description

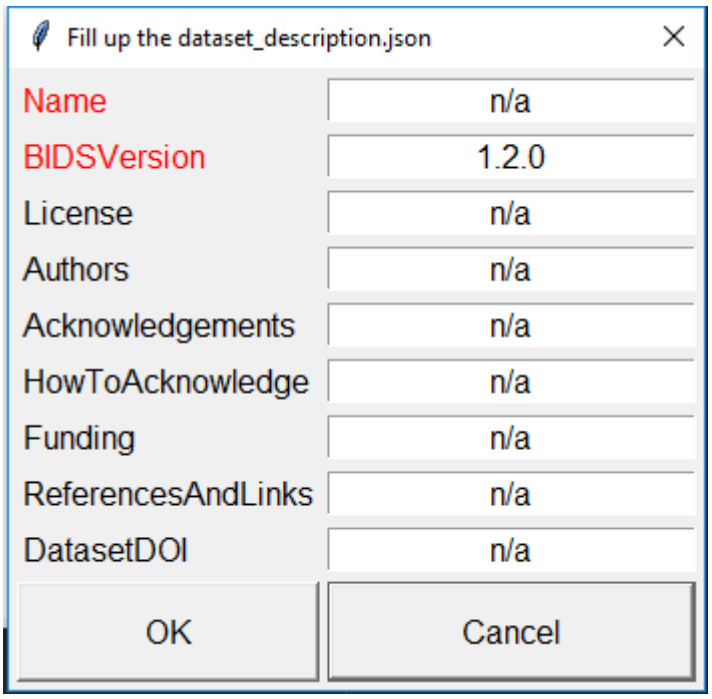

Figure 11: Dataset description

The value in red are very important, if the "Name" is not informed, an error will occur. The "Name" corresponds to the protocol name. It allows to verify that subjects are imported in the correct BIDS directory.

The next step is to inform the value for the requirements file.

4.1.2 Requirements

This interface (Fig. 12) can show you how to create your requirements file. You can also load an existing requirements file.

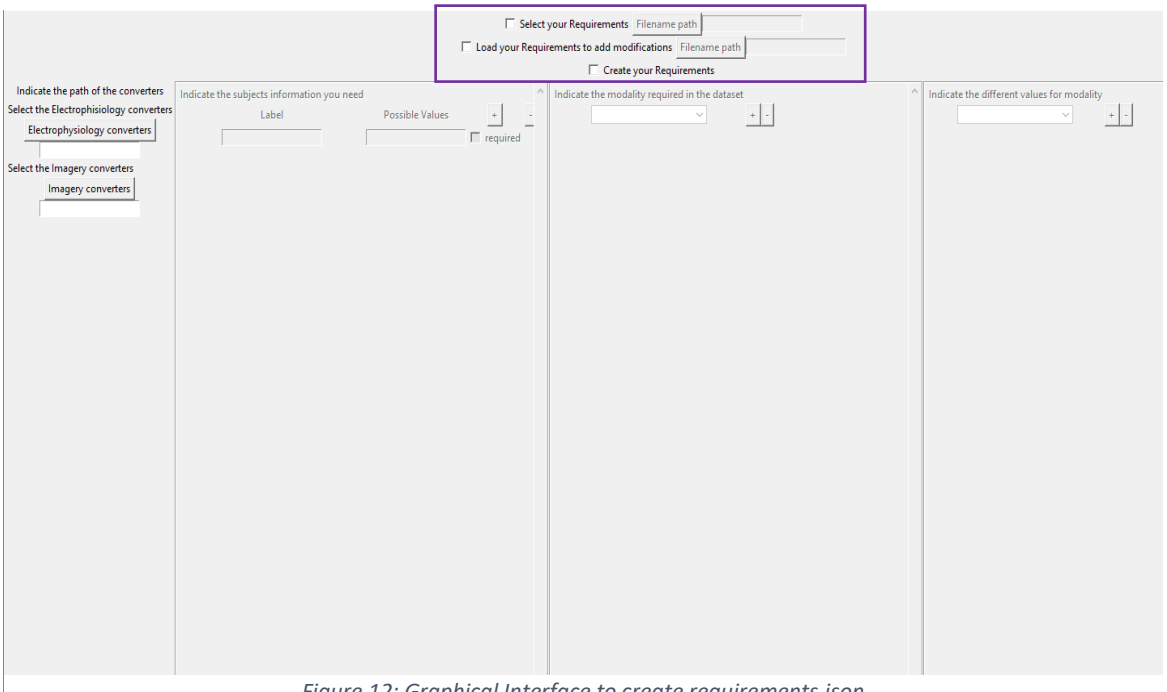

Figure 12: Graphical Interface to create requirements.json

The first three buttons give the following option: i) select your own requirements.json, ii) load a requirements.json and modify it by adding elements using the GUI, and iii) create your own requirements.json thanks to the GUI. By checking the “Create your Requirements” or “Load … to add...”, you will display three frames.

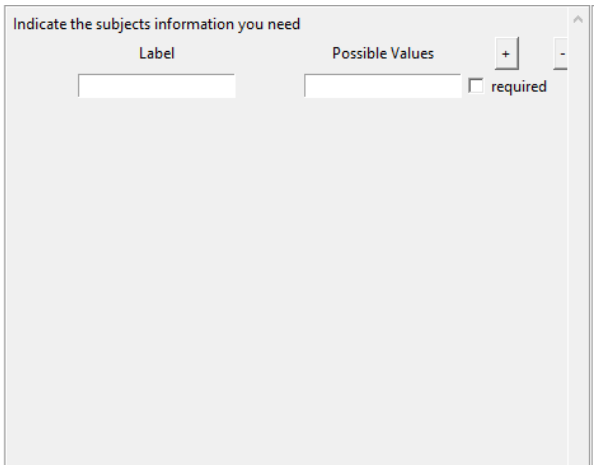

Figure 13: Interface to inform clinical information

The first frame (Fig. 13) is to fill the demographic or clinical information required in your participants.tsv. **Label** is the name of your information (ex: age, sex, …) and cannot be empty. **Possible values** is the list of the values that the label can taken (e.g. F, M), it can stay empty. The values in “possible Values” must be separated by a comma. The checkbox **required** is to indicate if the information is mandatory or not.

On the right of the frame, there is two buttons to add (+) and remove (-) lines. You can add as much information as you want.

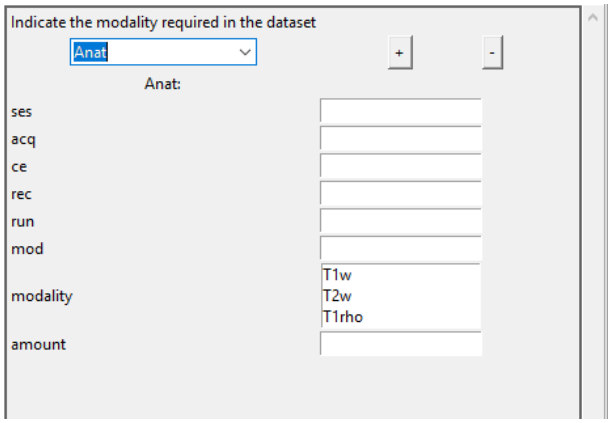

Figure 14: Interface to indicate the data required in the dataset

The second frame (Fig. 14) is named “Indicate the modality required in the dataset”. This frame allows setting which type of data are required in the dataset.

The drop-down list allows selecting a modality and the (+) button adds it. Then, you have to tag the data (e.g. session, modality, etc.). The (-) button delete the last added modality.

For the modality part, you can select several modality types. However, if you select multiple type, it means you require all the selected modality type in your dataset. If you do not select type, it means you require one modality, but you do not pay attention to the type. For the other keys, if you do not want a specific value but you want the key in the name, you should write “_” (e.g. you need at least one run but do not mind which one then write “_” next to “run”).

You can add as much information as you want. However, be careful by selecting the type of data required because all your subject must have them.

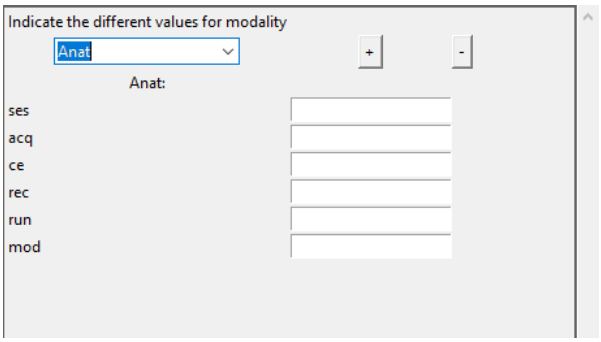

Figure 15: Interface to inform possible attributes for each modality

The third frame (Fig. 15) named "Indicate the different values for modality" is to indicate the characteristics of each modality. For each of them, you indicate the possible values of the different keywords use to name the data (e.g. ses = preimp, postimp). The values **must be separated by a comma**. The difference with the second frame is those modalities are not mandatory in the database, but it gives the possibilities to tag the data using those values. You should add all the modalities that you could have in your database with all possible keys.

The last part (Fig. 16) is compulsory whether you loaded an existing requirements.json or created your own. You must indicate the path of the software use to convert the electrophysiology and imaging data. For now, only AnyWave and dicm2nii are valid converters.

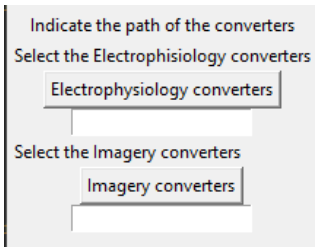

Figure 16: Interface to inform converter paths

Once, you click on "Ok", the 'requirements.json' is created/saved in the folder "code" along the 'dataset_description.json' and the 'participants.tsv' in your BIDS directory.

4.2 Import data in your BIDS dataset

Once you have indicated a BIDS directory to BIDS Manager either by using the option "Create new BIDS directory" or by using the option "Set BIDS directory", you can import data in your dataset. There are two choices to import data with BIDS Manager. Both options are in the menu *Uploader* (Fig. 17).

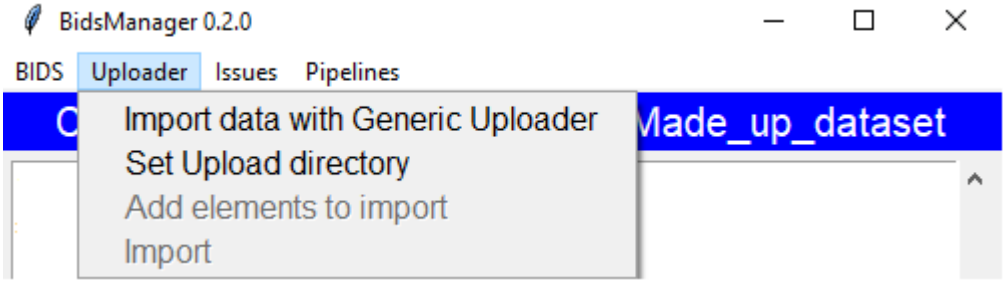

Figure 17: Uploader Menu - BIDS Manager

The first option ‘Import data with BIDS Uploader” uses the BIDS Uploader tool to create the data2import file. The second option “Set upload directory” is in the case you already have data2import file. The following section will guide you in these two choices.

4.2.1 Import data with BIDS Uploader

By clicking on this option, you will open the tool “BIDS Uploader”. BIDS Uploader allows to indicate by subjects the type of data to import, copy it in specific directory and create the data2import.

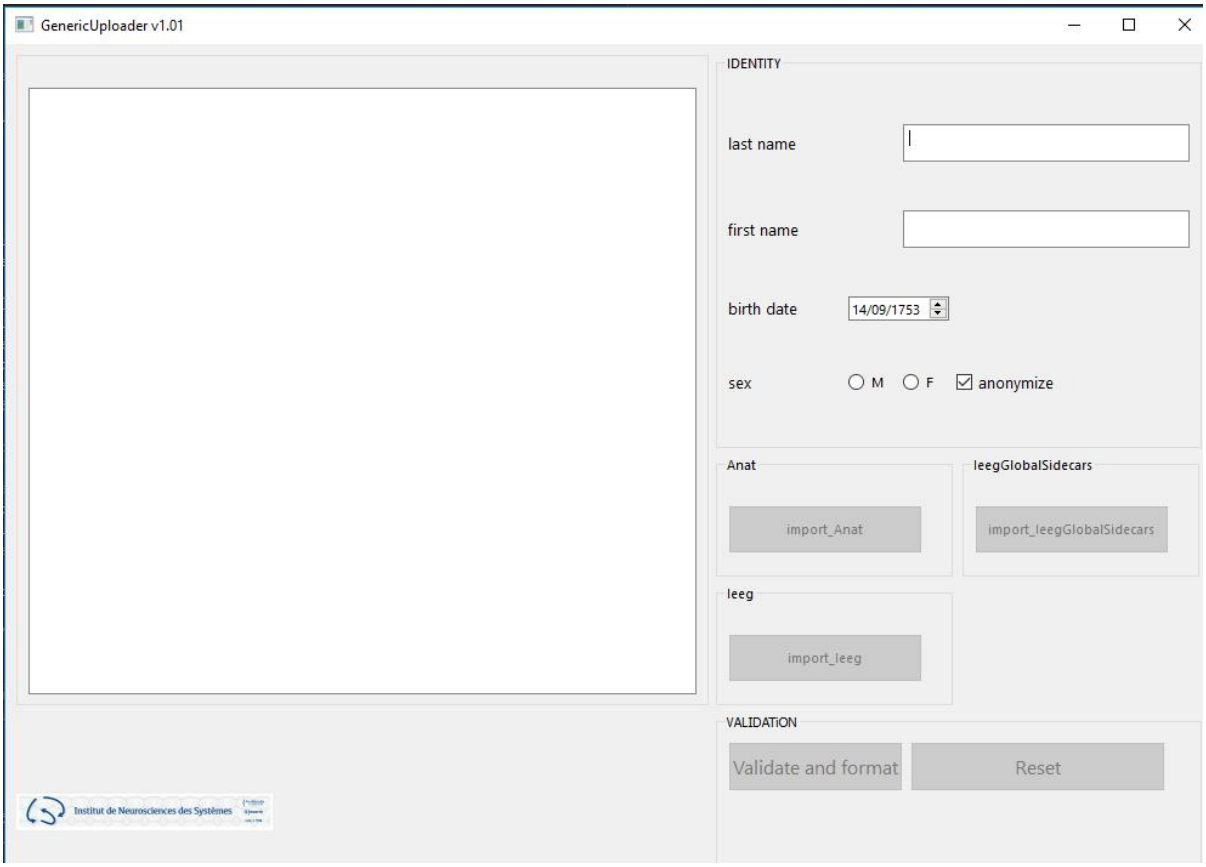

Figure 18: BIDS Uploader interface

This GUI (Fig. 18) is dynamically created according to the requirements. The requirements.json file gives to the uploader which type of data can be imported and the information to fill in. If you did not create requirements.json file, I suggest you do it now before to continue.

The main frame of the uploader is the log.

The identity frame is to fill in the demographic and clinical information. Once the name, sex and date of birth are informed, a new window pops-up with the information requested for your BIDS database (Fig. 19). The anonymize checkbox allows anonymizing your subject ID (create hexadecimal key).

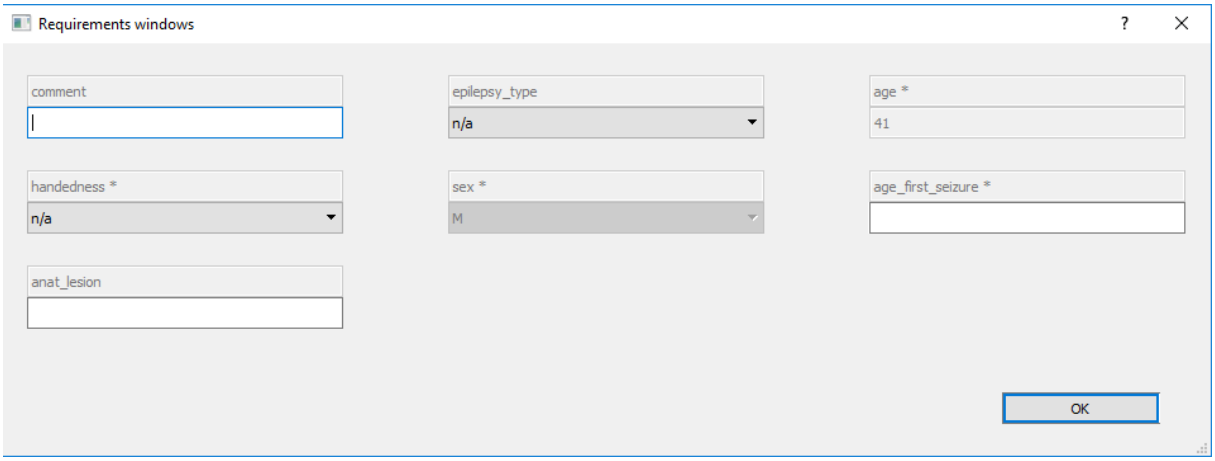

Figure 19: Clinical information interface - BIDS Uploader

The * indicates the required information.

The other frames are to import the modalities. Clicking on “import_<modality>” opens a new window with the attributes to inform (Fig. 20). Select the attributes of the file you want to import

Figure 20: Modality interface - BIDS Uploader

and click on “Import”. It will ask you the path of your data. You can only import one file at the time (or one MR sequence folder, e.g. you cannot set a folder containing a T1w and a T2w sequence, as the modality you input do not match, it will create an issue later on)

At each step, the log is updated (Fig. 21), and you can see what has been done. You can also verify or modify those steps.

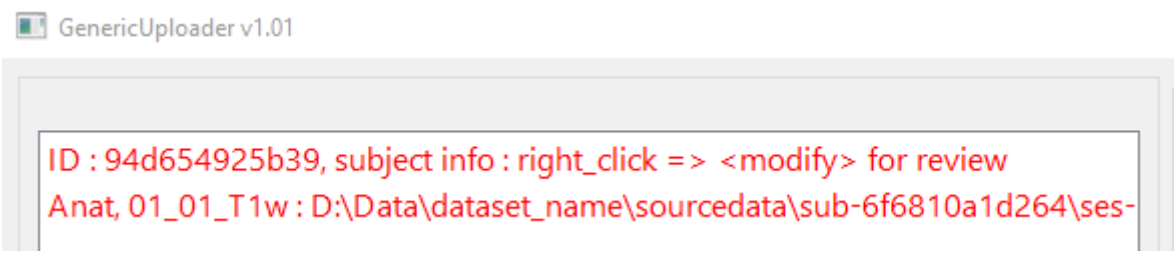

Figure 21: Main frame - BIDS Uploader

Double clicking on the first line (the one for the participant’s information), allows you to review or modify this information. If you click on “modify”, you have to go back to the frame “identity” and fill in again the information.

The last step is to click on “Validate and format”. If some lines in the log frame are still in red, it means BIDS Uploader found mismatches in the participant’s information input by the user and those inside the file. You have to “Check” the file by right-clicking on it to display those mismatches. You can either force the validation (in case the data were already anonymized) or remove the file from the list. When all the lines in the log are green or orange, you can click again on “Validate and format”, and it will create the data2import for this subject, copy, anonymized the data (if option checked) and reset the BIDS Uploader. You can add new subjects. Once, you finish to inform the data for all subjects, close the window of the BIDS Uploader and BIDS Manager will import these data in the BIDS directory.

4.2.2 Import data by setting an upload directory

This option is for you if you already have an upload directory with one data2import.jon. Clicking on “Set Upload Directory” will ask you to indicate the path of your upload directory.

At this moment BIDS Manager reads the data2import and ask you to verify the file that you want to import (Fig. 22).

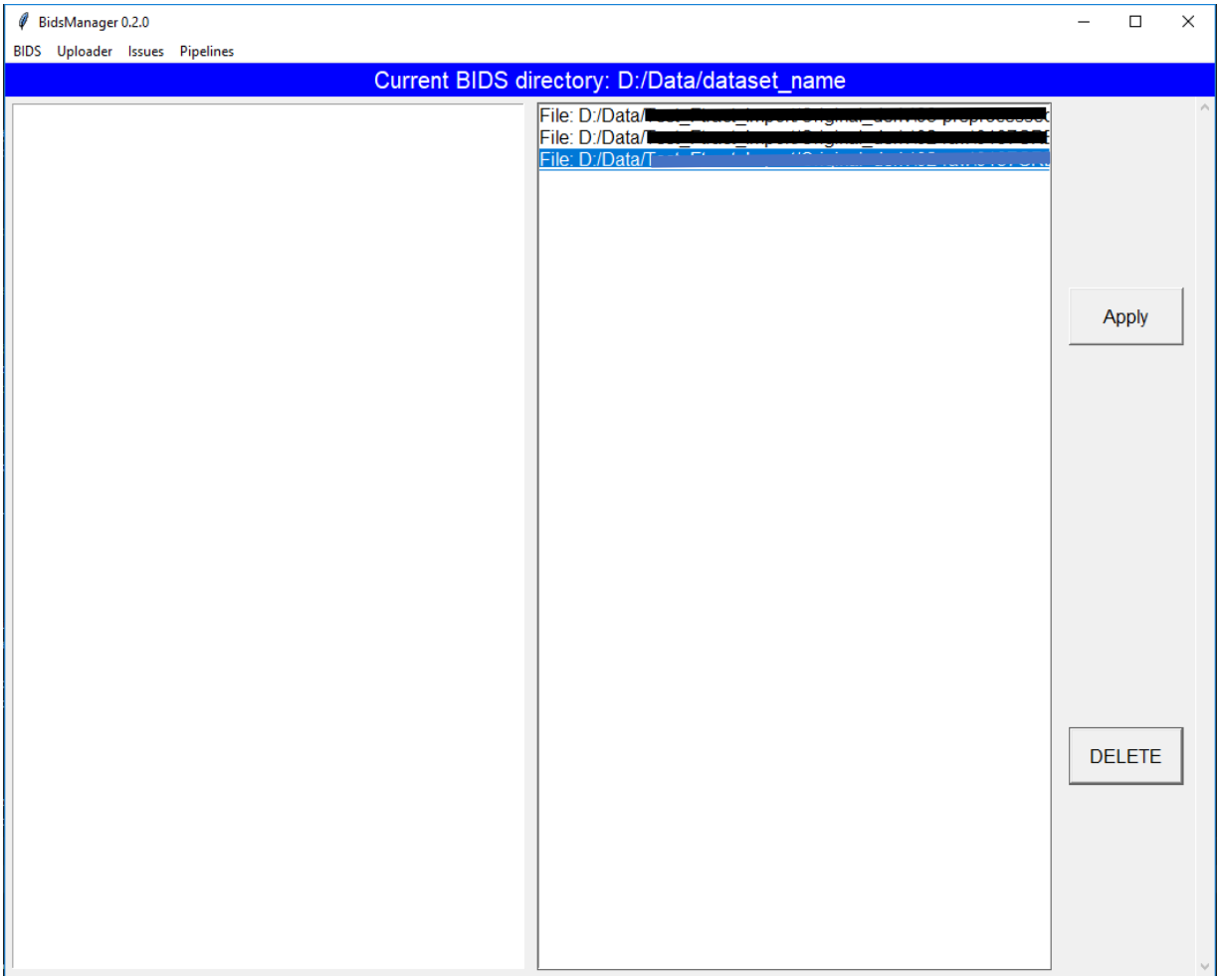

Figure 22: Verification interface - BIDS Manager

The new style of the main window is to allow you to do some verification and applied some actions. In the main windows it says: "/import directory/fileLoc is not verify". By double clicking on this sentence, it opens a new window and offers you several options (Fig. 23).

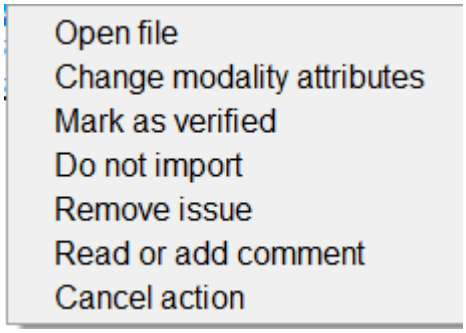

Figure 23: Action Menu

To do the importation, files must be "mark as verified". This step is to ensure you import file with the corresponding attributes and without corruptions.

However, before applying this action, you can do several things as add comment, or open file. The action "Change modality attributes" allows you to do some changes before importing the data. It opens a new window with the attributes corresponding to the modality (Fig. 24).

The attributes in red are required.

For some attributes, a drop-down list is present with the possible values. Those values are the ones already present in your database. You can modify the ones present in the data2import by the ones from the list and it will modify the data2import.jon file.

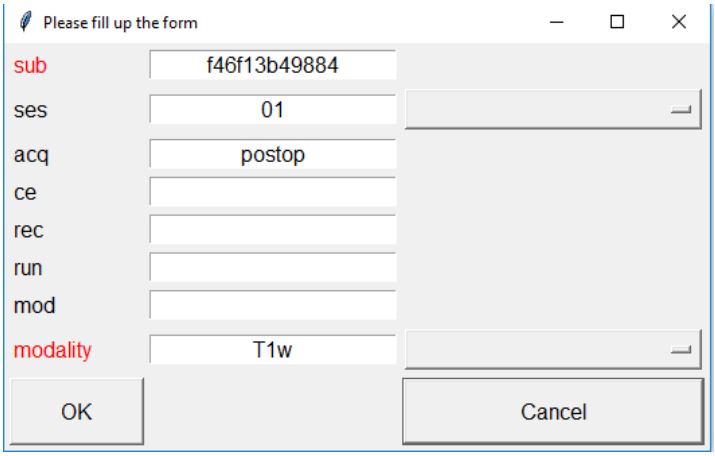

Figure 24: Interface to modify attributes

Once you have decided what to do with your issue, you can either apply the actions or delete all the actions. "Apply" will allow you to finally import your data.

Your data2import.json file and your data are ready to be imported.

However, if you forgot some data, you can add them to the upload directory and the data2import. To do that, you have to use the option "add elements to import" in the menu *Uploader* which became active when you selected an upload directory.

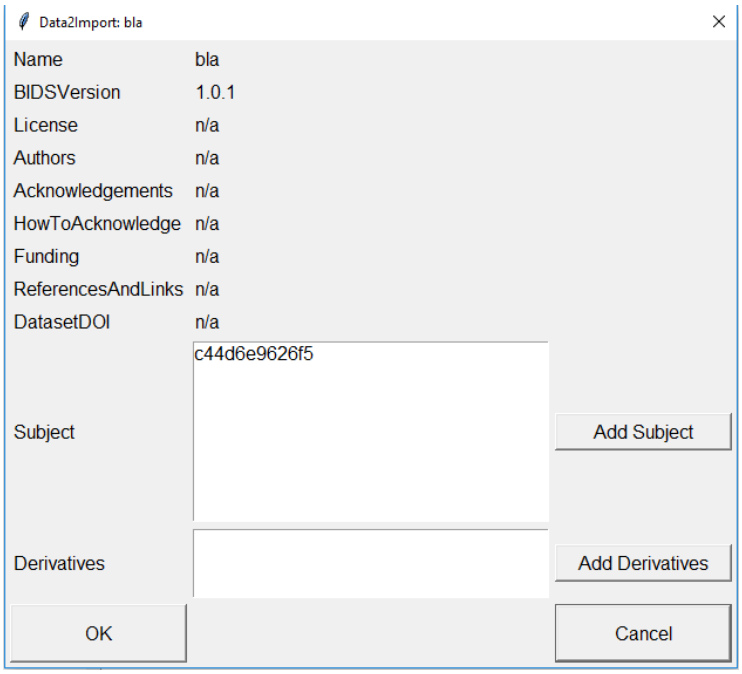

Figure 25: Interface to add elements in the data2import (1)

This new window allows selecting the subject for the new elements (Fig. 25). By double clicking on the subject, it opens new window to indicate the information of the subject and select the modality to add (Fig. 26).

Multiple windows pop-up to help you inform the attributes of the file with its location (Fig. 27).

For some attributes, a list is offered in order to give you what values already exist in your dataset.

Once you are satisfied of your upload directory and data2mport, you can click on “Apply” to apply the action, then, BISD Manager will ask you to confirm the Uploader folder and import the data in the appropriate folders.

If there is no action to apply on the import files, you can click on “Import” in *Uploader* menu and BIDS Manager will import the data in the appropriate folders.

The main window will display the progress of the importation and if an error occurs. You can also retrieve the progress in the log file located in derivatives/log of your BIDS directory.

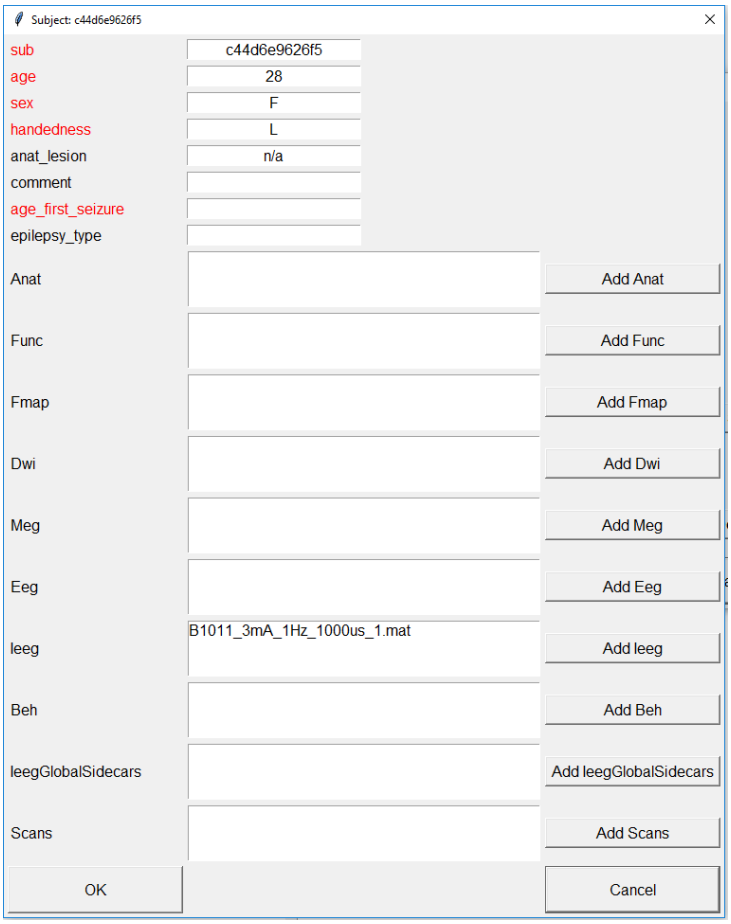

Figure 26: Interface to add elements in the data2import (2)

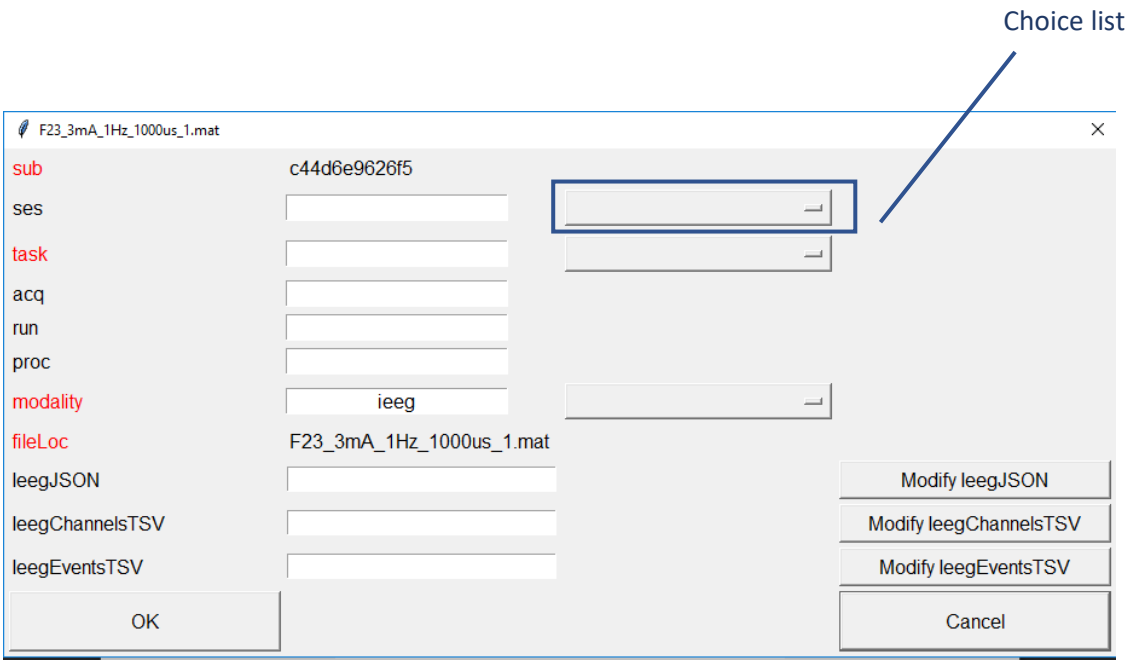

Figure 27: Interface to add elements in the data2import (3)

4.3 Explore BIDS Dataset

Now that you have filled in your BIDS directory, it is time to explore what is present in this directory. In the menu BIDS, there is an option “Explore BIDS dataset”.

As you can see in figure 28, a new window pops-up displaying the information presents in the dataset_description.json, the subject folders, derivatives folders, and the participants.tsv file.

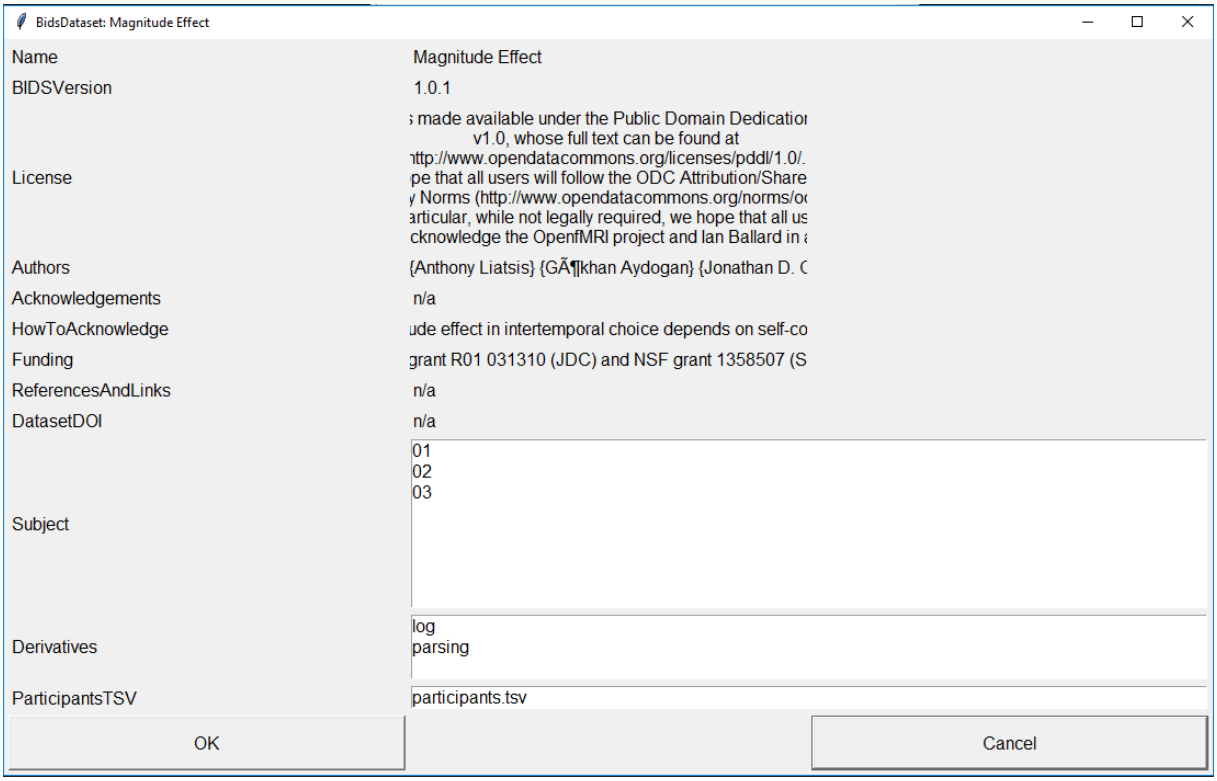

Figure 28: Explore BIDS Dataset

By double clicking on one subject or one derivative, you will open a new window to show the dataset presents and the clinical information (if it is a subject).

If you would like to see what data are present in one subject, double-click on your subject and a window will appear with the files present classified by modality. (Fig. 29)

Let us be curious by double clicking on one file. One menu will appear offering different action as:

- Open file
- Show attributes
- Remove file

Open file will open the file with appropriate software. Show attributes open a new window to display the characteristics of the file selected and its sidecar (e.g. events, channels). (Fig. 30)

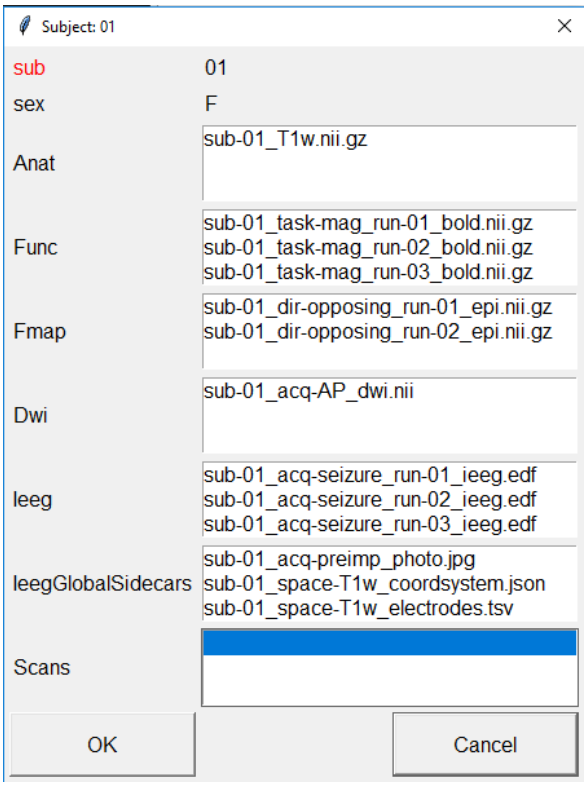

Figure 29: Subject's dataset

The window shows the attributes of the file, the location and the different sidecar files. For example, for an IEEG file, three files are written: the channels, the events and the json file. It is possible to open those files in BIDS Manager.

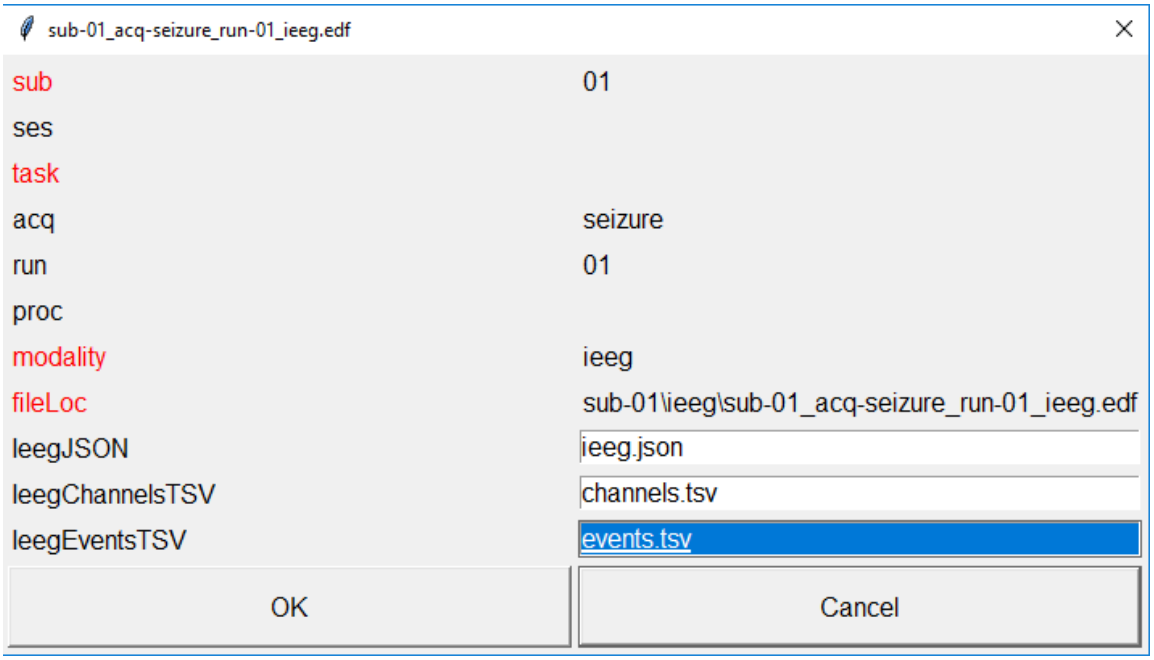

Figure 30: Attributes of one ieeg file

By double clicking on the sidecar file, it opens the file. Some tsv files have the particularity to be modified form the BIDS Manager GUI. The files concerned are participants.tsv (Fig. 31) and channels.tsv (file for electrophy modalities).

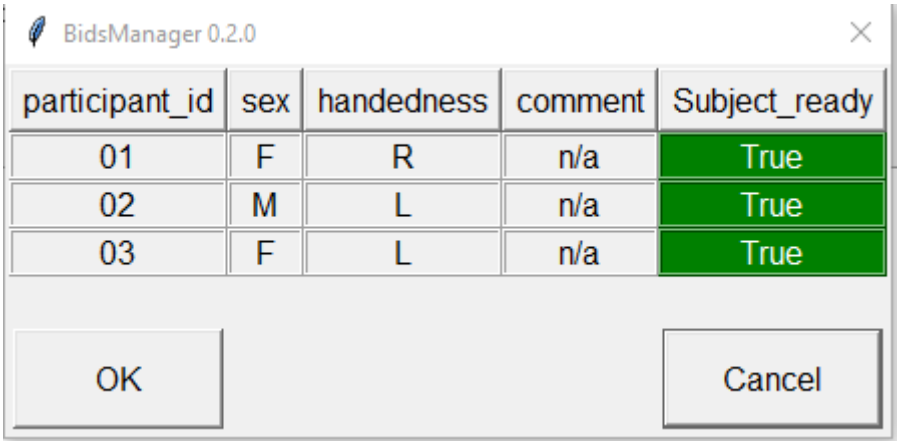

Figure 31: Participants.tsv file opened with BIDS Manager

For the participants.tsv, you can modify each line separately by double clicking on the participant_id of the subject and select “Modify the participant’s line”. A new window (Fig. 32) is opened with the selected line and the elements that are possible to modify. If values are fixed in the requirements, the user must choose the option available in this list.

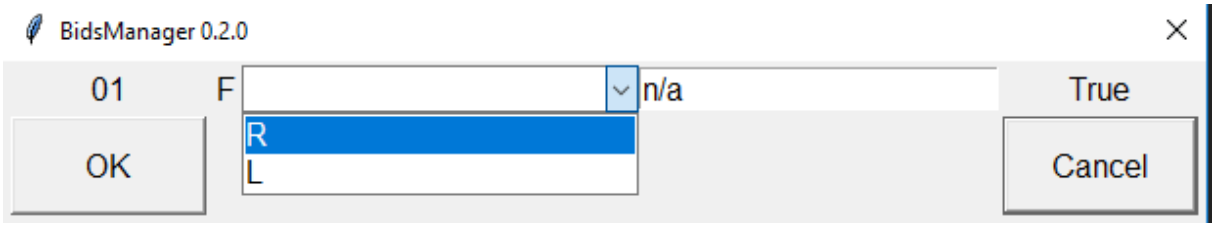

Figure 32: Interface to modify a line of the participants.tsv

It is also possible to open the subject dataset by double clicking on the participant_id and select “Open subject dataset”.

The way to opened and modify channels.tsv is pretty similar to participants.tsv except that, for now, only the status of the electrodes can be turned in bad or good by double clicking on it.

BidsManager 0.2.0

name	type	units	low_cutoff	high_cutoff	sampling_frequency	notch	group	reference	description	status	status_description
.Sp1	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp2	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp3	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp4	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp5	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp6	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp7	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp8	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp9	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp10	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp11	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp12	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp13	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp14	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp15	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp16	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp17	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Sp18	OTHER	n/a	n/a	n/a	512	n/a	.Sp	n/a	EEG	good	n/a
.Wp1	OTHER	n/a	n/a	n/a	512	n/a	.Wp	n/a	EEG	good	n/a
.Wp2	OTHER	n/a	n/a	n/a	512	n/a	.Wp	n/a	EEG	good	n/a

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OK Cancel

Figure 33: leeg channels file opened in BIDS Manager

Explore BIDS dataset is a great function to determine what is inside your dataset and if necessary, do some modifications.

5. Issues

In case you did your importation with no errors, well done!!! If your importation failed due to an issue, do not worry you can fix it. In BIDS Manager, there is a menu named *Issues* (Fig. 34), it can solve two types of issues. The first one corresponds to the issues raised at importation, the second to the issues with the channels or your electrophysiology data.

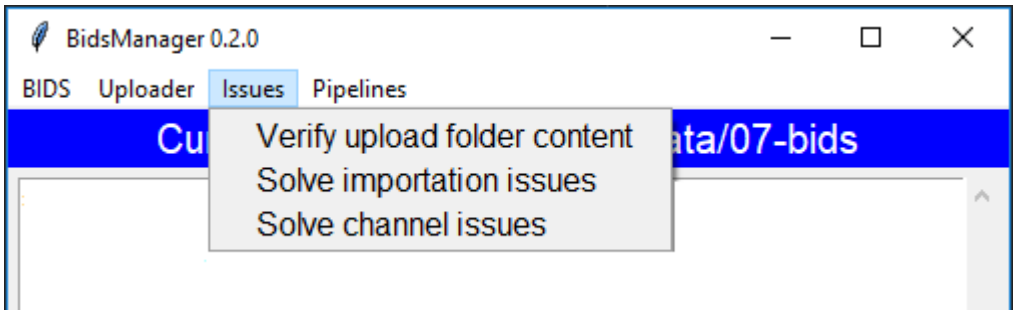


Figure 34: Issues Menu - BIDS Manager

5.1 Importation Issue

After selecting an uploader directory and import the selection, it is possible that the program finds incoherence between your dataset and the data you want to import. The encountered issue can be:

- Wrong protocol: Not the same dataset name
- Wrong subject characteristics: The attributes of the subject are different between the one in the dataset and the one in the importation file
- Same source data: You are trying to import data twice
- Files with same attributes: You are trying to import a file which already exist in the dataset

Figure 35: Interface to solve importation issues

Clicking on “Solve importation issues” will display the different issue in the main windows as you can see in figure 35. For each issue, different actions can be applied depending on the type of the issue.

5.1.1 Wrong protocol

This issue is due to incoherence between the protocol name of your BIDS directory (dataset description) and the name given in the data2import (DatasetDescJSON).

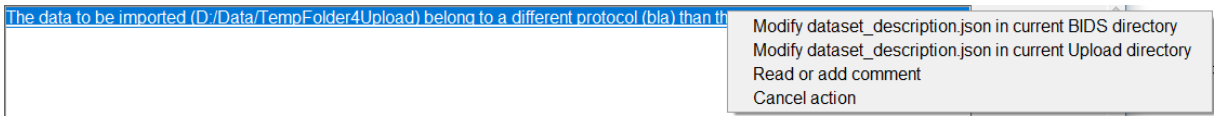


Figure 36: Possible action to apply to solve importation

By double clicking on the issue (Fig. 36), BIDS Manager offers you to do some modifications. You can either change the protocol name of your BIDS dataset or of your data2import.json file. You can also add comment which will not solve the issue but can be useful to let another user know your thoughts about the problem of this importation.

5.1.2 Wrong subject characteristics

This issue is due to incoherence between the clinical information of the subject in your dataset and the one given by the data2import.json file. The methods to apply the action is similar to the precedent one. You have the choice to modify the data2import with the value in your dataset or to modify the value in your dataset.

5.1.3 Same source data

This issue means that you try to import data that are already in your dataset. You can decide to not import this file by double clicking on the issue.

5.1.4 File with same attributes

This issue means that a file with the same attributes that the one you are trying to import is already in your dataset. You can change the attributes of the file in your data2import to solve the issue by double clicking on the issue or remove the file present in the BIDS directory.

5.2 Channel Issues

Your importation went well but you got some warnings about the channels of some electrophysiology files!!

BIDS Manager verifies a subject folder that all IEEG/EEG files have the same electrode's name than _electrode.tsv, it also verifies the type of the electrode. The possible issues are:

- Channel type is not conformed
- Channel name is not conformed

Clicking on the function “Solve channel issues” will display the channel issues in the main window. If the name or type of the electrode is wrong, you will have the following message: “In file X of subject X, {electrode name} does not match electrodes.tsv reference.”

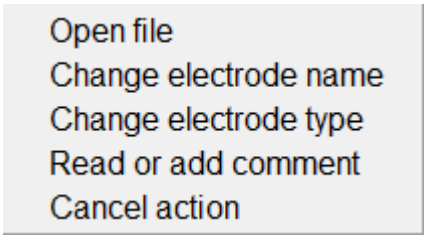


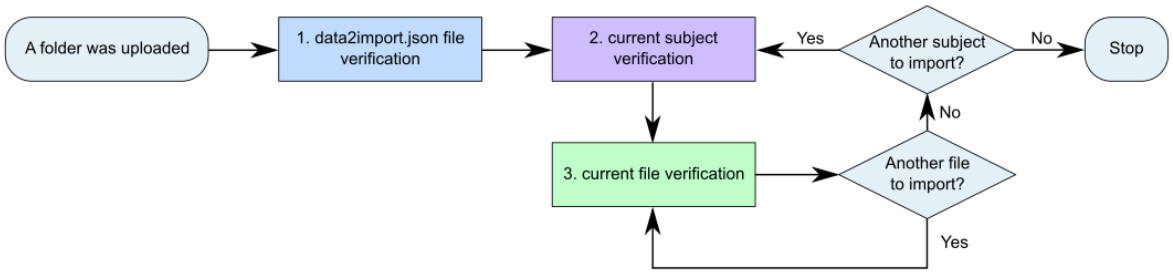
Figure 37: Menu to apply action on channel issue

By double clicking on the issue, menu will offer you two options (Fig. 37), changing the name or the type of the electrode. According to your issue, it is your call to do the right decision. Then, it will open a new window and suggest the channel’s name or type.

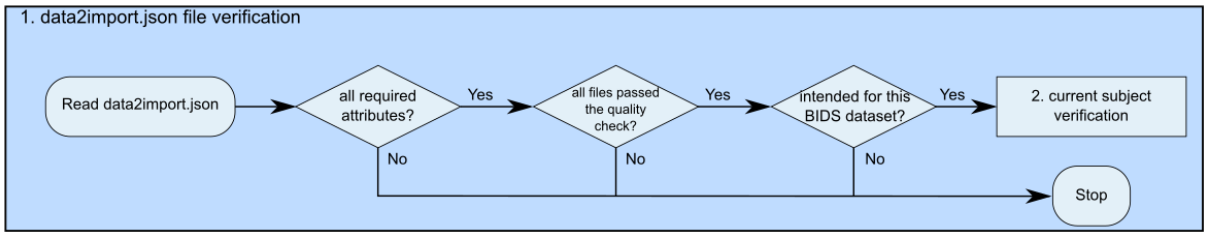
References:

Gorgolewski, K. J., Ghosh, S. S., Das, S., Calhoun, V. D., Hanke, M., Poldrack, R. A., … Schaefer, G. (2016). The brain imaging data structure, a format for organizing and describing outputs of neuroimaging experiments. *Scientific Data*, *3*, 160044. https://doi.org/10.1038/sdata.2016.44

Annexe:

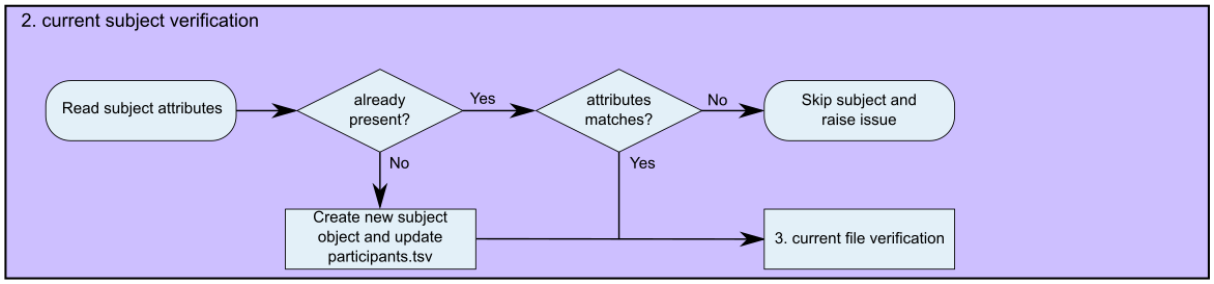


In this part, you will discover how the importation of your files works with BIDS Manager. The first diagram explains the big steps of the process whereas the followed diagram shows explanation for each step. The first step is the verification of the data2import file, the second the verification of the subject to import, and the third the verification of the files.

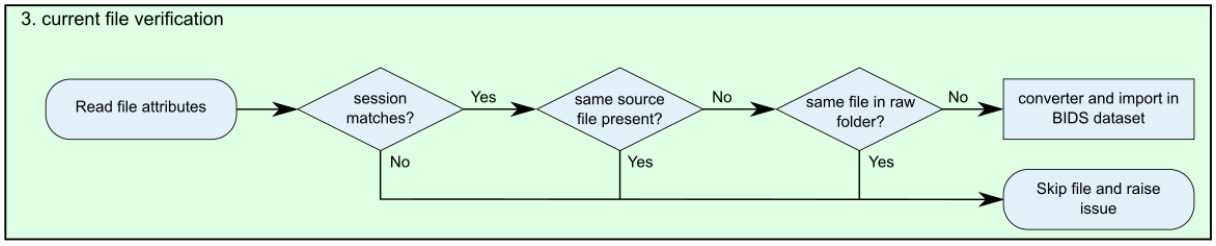


As described by the diagram, many verifications are done to verify the data2import file. Firstly, the attributes of the file have to be consistent with the ones in BIDS Manager. Secondly, the import files have to be marked verified by the user. Thirdly, the protocol name in the data2import must be the same as the one in the BIDS dataset. Finally, if it completed the verification, it goes to the second step.

Once the data2import completed the verification, the subjects included are verified.



The subject presents in the data2import are compared to the subject already presents in the BIDS dataset. If the subject is already present, BIDS Manager checks the attributes (age, sex, etc. depending on the requirements file) and if the attributes are not equal, the subject is not imported. However, if it is the same subject, BM go to the next step “file verification”.



In this part, the modalities that should be imported are verified. As the precedent steps, their attributes are verified then the file location is compared to the source data present in the BIDS dataset, if the source are similar to one already present, the import file is skipped. Then, it compares the attributes to create the filename and if the filename is already present in the BIDS dataset the file is not imported. Finally, if everything is correct, the file is converted in the appropriate format and import in the expected folder.