

BIDS Extension Proposal 4 (BEP004): Susceptibility Weighted Imaging (SWI)

version 0.0.1 (working copy)
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This document contains a draft of the Brain Imaging Data Structure standard extension. It is a community effort to define standards in data / metadata. This is a working document in draft stage and any comments are welcome.

This specification is an extension of BIDS, and general principles are shared. The specification should work for many different settings and facilitate the integration with other imaging methods.

To see the original BIDS specification, see [this link](#). This document inherits all components of the original specification (e.g. how to store imaging data, events, stimuli and behavioral data), and should be seen as an extension of it, not a replacement.

Template:

```
sub-<participant_label>/[ses-<session_label>/]
    swi/
        sub-<participant_label>[_ses-<session_label>][_acq-<label>][_rec-<label>]
        ]_part-<phase|mag>[_coil-<index>][_echo-<index>][_run-<index>]_GRE.nii.gz]
```

Background reading:

- <https://radiopaedia.org/articles/susceptibility-weighted-imaging-1>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3259351/>

Breakdown of filename keys:

- `part-<phase|mag>` - denoting if this is the phase or magnitude image (compulsory)
- `coil-<index>` - denoting which coil is the image from (optional) if skipped total is assumed
- `echo-<index>` - denoting which echo does this correspond to (optional)
- `acq-<label>` - denoting which set of acquisition parameters was used (if multiple GRE acquisitions were performed - optional)

- `rec-<label>` - denoting which reconstruction was used; “norm” corresponds to normalized images (optional)
- `run-<index>` - denotes a repetition of identical an acquisition with identical scanning parameters

Examples:

Total magnitude:

`sub-01_part-mag_GRE.nii.gz`

Total magnitude (multi echo):

`sub-01_part-mag_echo-1_GRE.nii.gz`

`sub-01_part-mag_echo-2_GRE.nii.gz`

Total magnitude - normalized:

`sub-01_part-mag_echo-1_rec-norm_GRE.nii.gz`

`sub-01_part-mag_echo-2_rec-norm_GRE.nii.gz`

Total phase:

`sub-01_part-phase_GRE.nii.gz`

Total phase (multi echo):

`sub-01_part-phase_echo-1_GRE.nii.gz`

`sub-01_part-phase_echo-2_GRE.nii.gz`

Single-coil magnitudes:

`sub-01_part-mag_coil-01_echo-1_GRE.nii.gz`

`sub-01_part-mag_coil-01_echo-2_GRE.nii.gz`

sub-01_part-mag_coil-02_echo-1_GRE.nii.gz

sub-01_part-mag_coil-02_echo-2_GRE.nii.gz

Single-coil phases:

sub-01_part-phase_coil-01_echo-1_GRE.nii.gz

sub-01_part-phase_coil-01_echo-2_GRE.nii.gz

sub-01_part-phase_coil-02_echo-1_GRE.nii.gz

sub-01_part-phase_coil-02_echo-2_GRE.nii.gz

Combined Magnitude and Phase

sub-01_swi.nii.gz

Minimum Intensity Projection

sub-01_minIP.nii.gz