# **2026-T4** NeuroMaps: A Compact Fingerprint for Analyzing Brain Activity

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## **T4A.** S B Interactive Prototype

### Functional Requirements

FR1 **Baseline framework** A baseline framework should implement a backend for generating the NeuroMaps through the Python implementation. This should be sent to a fronend where the saliencies are rendered as a bitmap and the region outlines as SVG elements. Multiple NeuroMaps should be shown in a mosaic or small multiples visualization.

- FR1a **Settings support** All the settings necessary to generate the NeuroMaps (see Python code) should settable through respective inputs with reasonable default values and value ranges.
- FR1b **Support for arbitrary inputs** The solution should support the upload of arbitrary results of z-/t-scores and atlases. Either as NIfTI file or direct link from `NeuroVault.org`.
- FR1c **3D Brain Viewer (optional)** (Interactive) 3D viewer, showing the morphed brain. The NeuroMaps approach includes an optional morph stage where the brain's morphology is slightly altered.
- FR1d **Deployment (optional)** Deploy the prototype viewer to the HEREDITARY demo website.

FR2 **Interactivity** The Prototype should support different interactive elements.

- FR2a **Region-wise mouseover** The different atlas regions (indicated through the outlines) should be hoverable. Upon hovering show, e.g., in a tooltip or a sidebar, the overall z-/t-scores (maybe even as a histogram), size of the area, overlapp with other regions
- FR2b **Lense (optional)** A visual lense tool (moving with the mouse when over a NeuroMap) should serve as a magnifying class. The baseline is a simple magnifier of the region in question, but more elaborate (non-linear) mappings could be use to locally untangle overlaps.
- FR2c **Projection-axis slider (optional)** With the NeuroMaps the activities are integrated along the projection axis. This integration step could be limited to a certain range (e.g., with a Gaussian dropoff). A slider could serve for selecting the position in the axis direction.