

BESA Program Suite: Spike Detection and Localization Pipeline for MEG

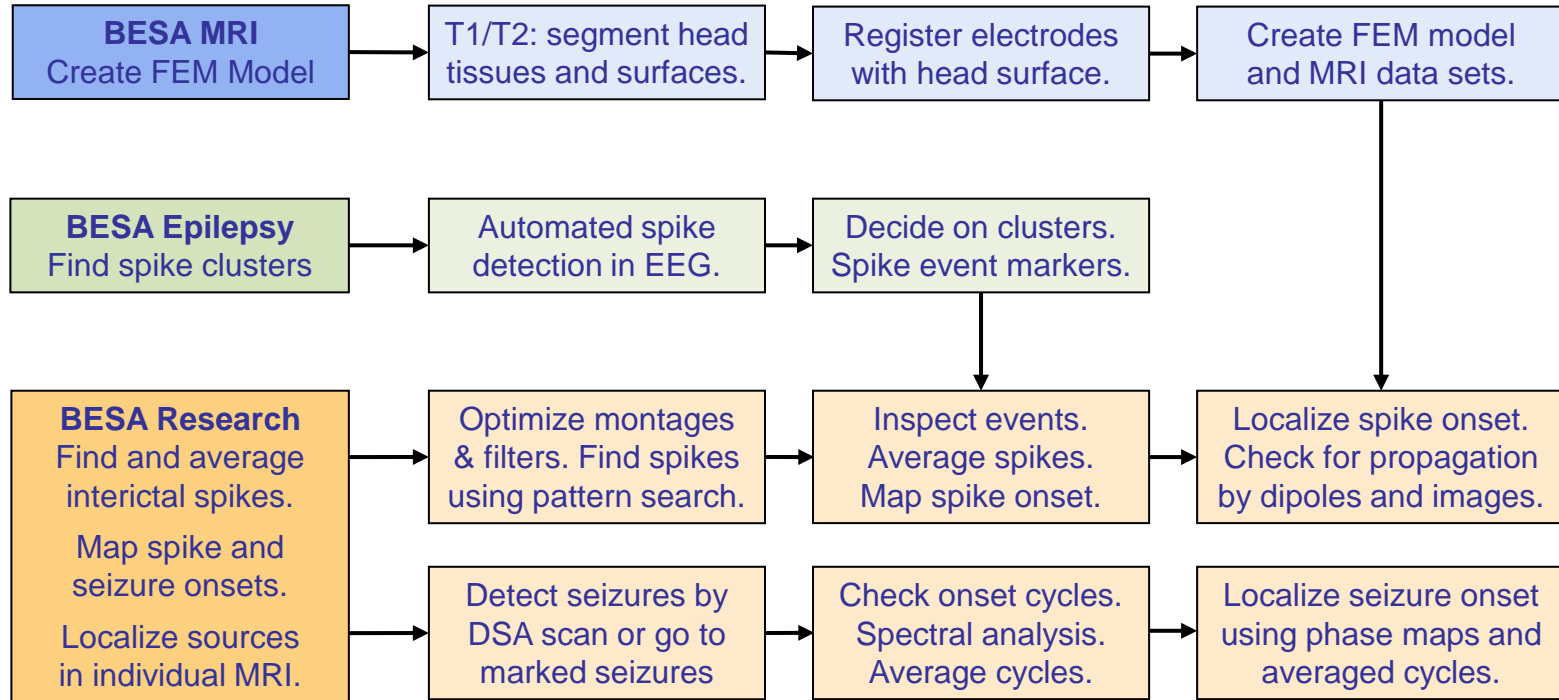
Michael Scherg, Tobias Scherg, Stefan Rampp

BESA GmbH, Gräfelfing / Munich, Germany
University Hospital, Dept. of Neurology, Erlangen, Germany



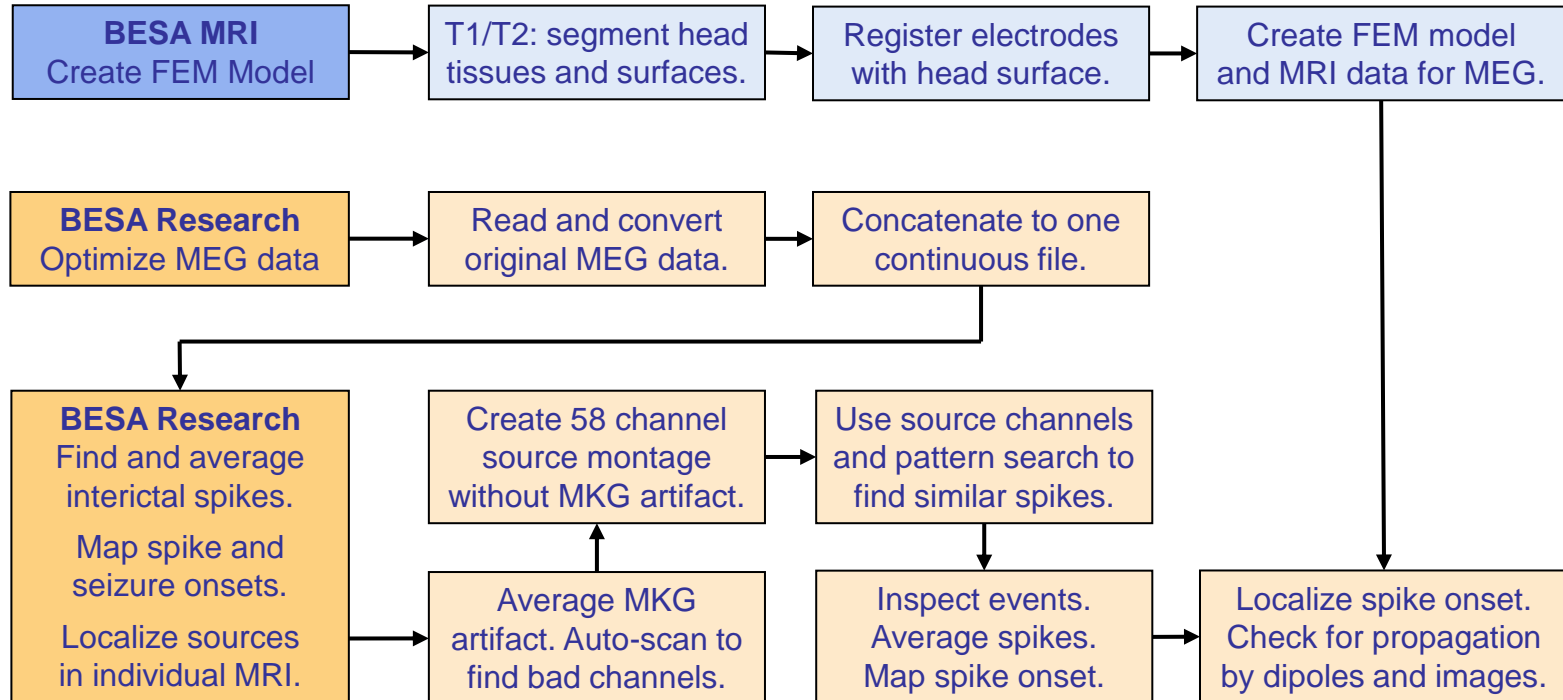
BESA: Reliable pipeline to analyze interictal spikes and seizure onset

LTM – EEG

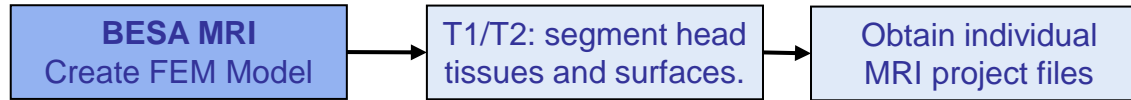


BESA: Reliable pipeline to analyze interictal spikes and seizure onset

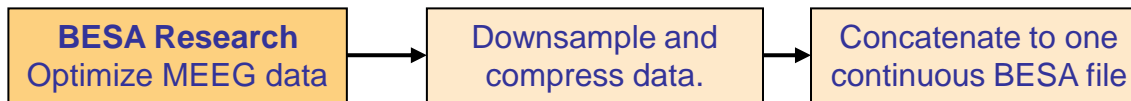
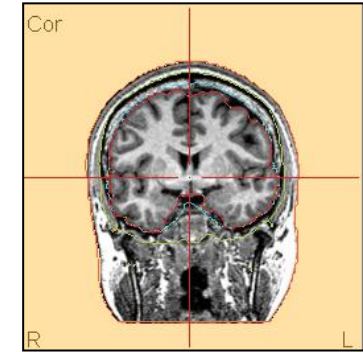
MEG



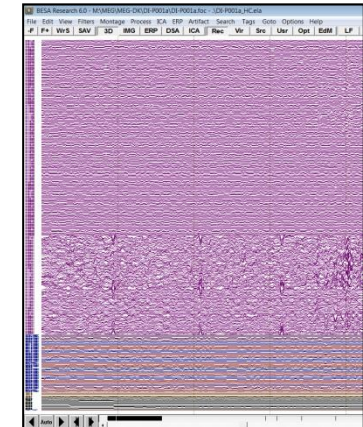
Worksteps 1-2: Prepare MRI & FEM and prepare compact MEEG data



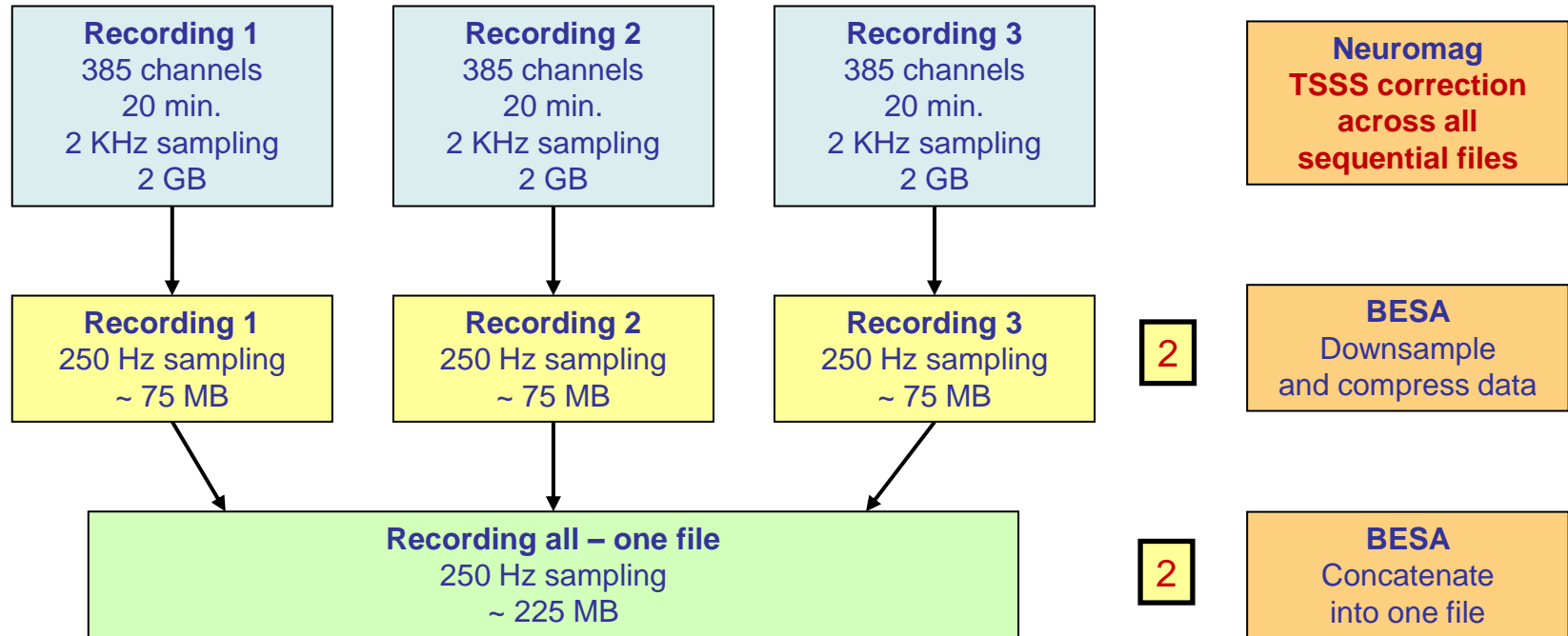
1



2



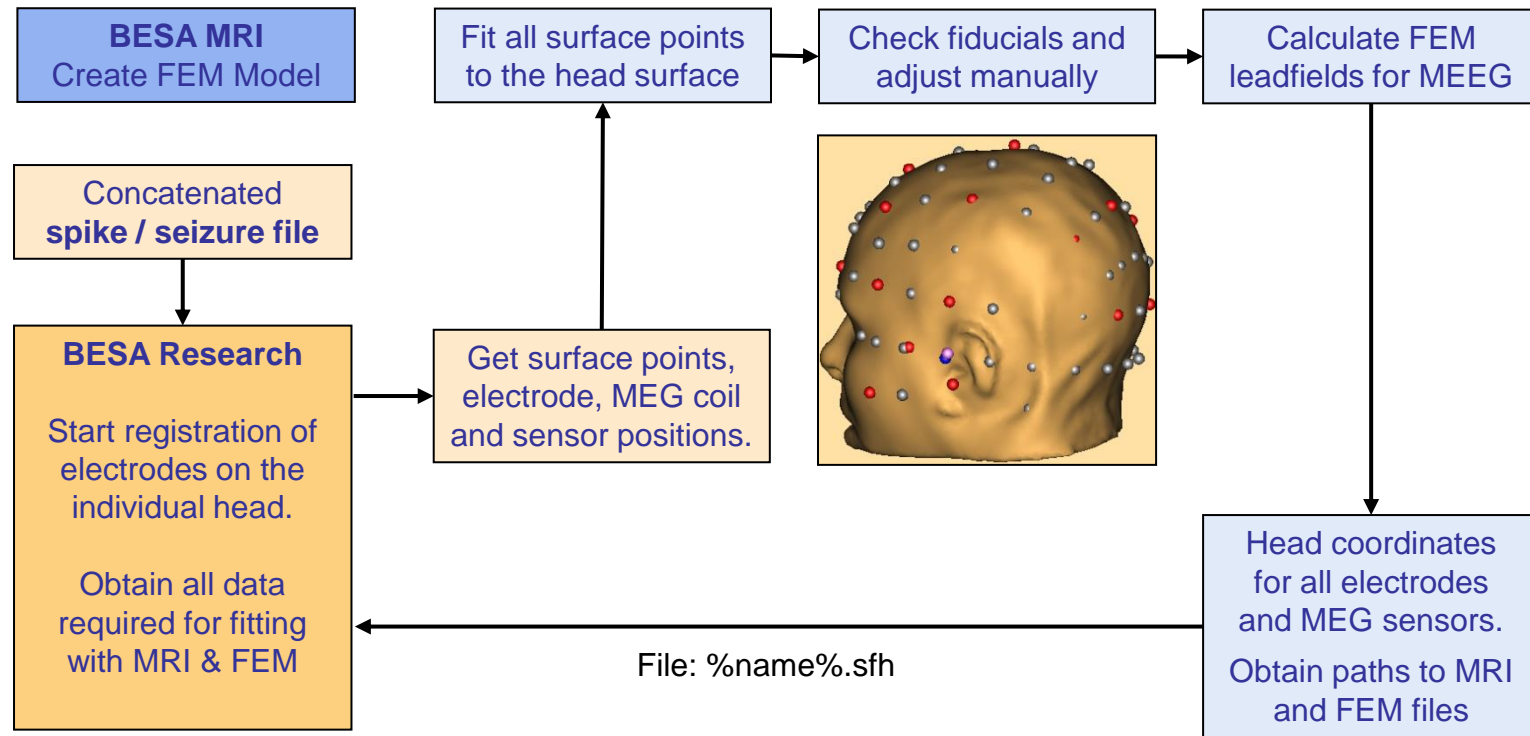
Workstep 2: Speeding up by downsampling and concatenating to 1 file



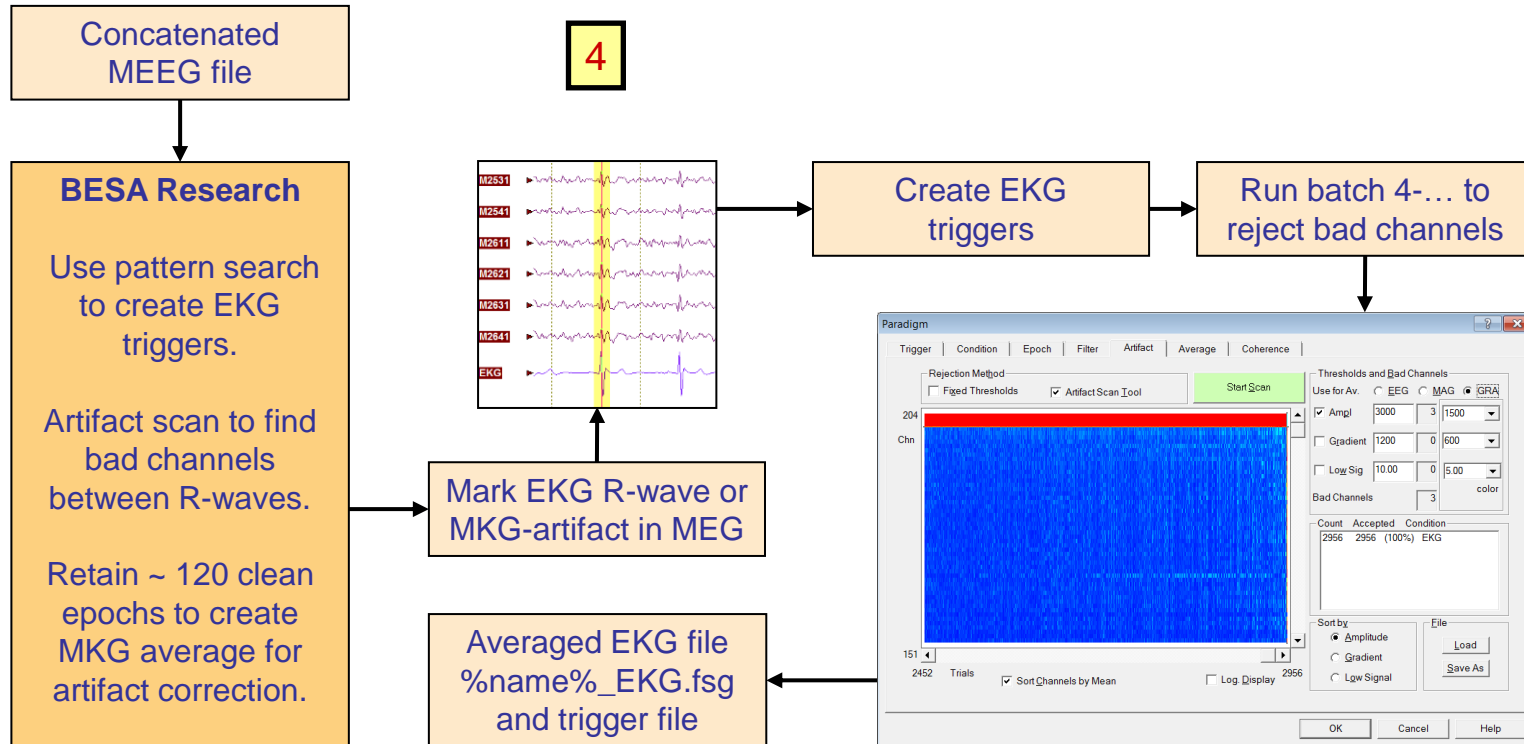
Spike energy is mostly within 5 - 40 Hz. A 4 ms sampling interval with a bandwidth of 80 Hz is sufficient for detection, event marking and localization.



Workstep 3: Register sensors with MRI and calculate FEM model



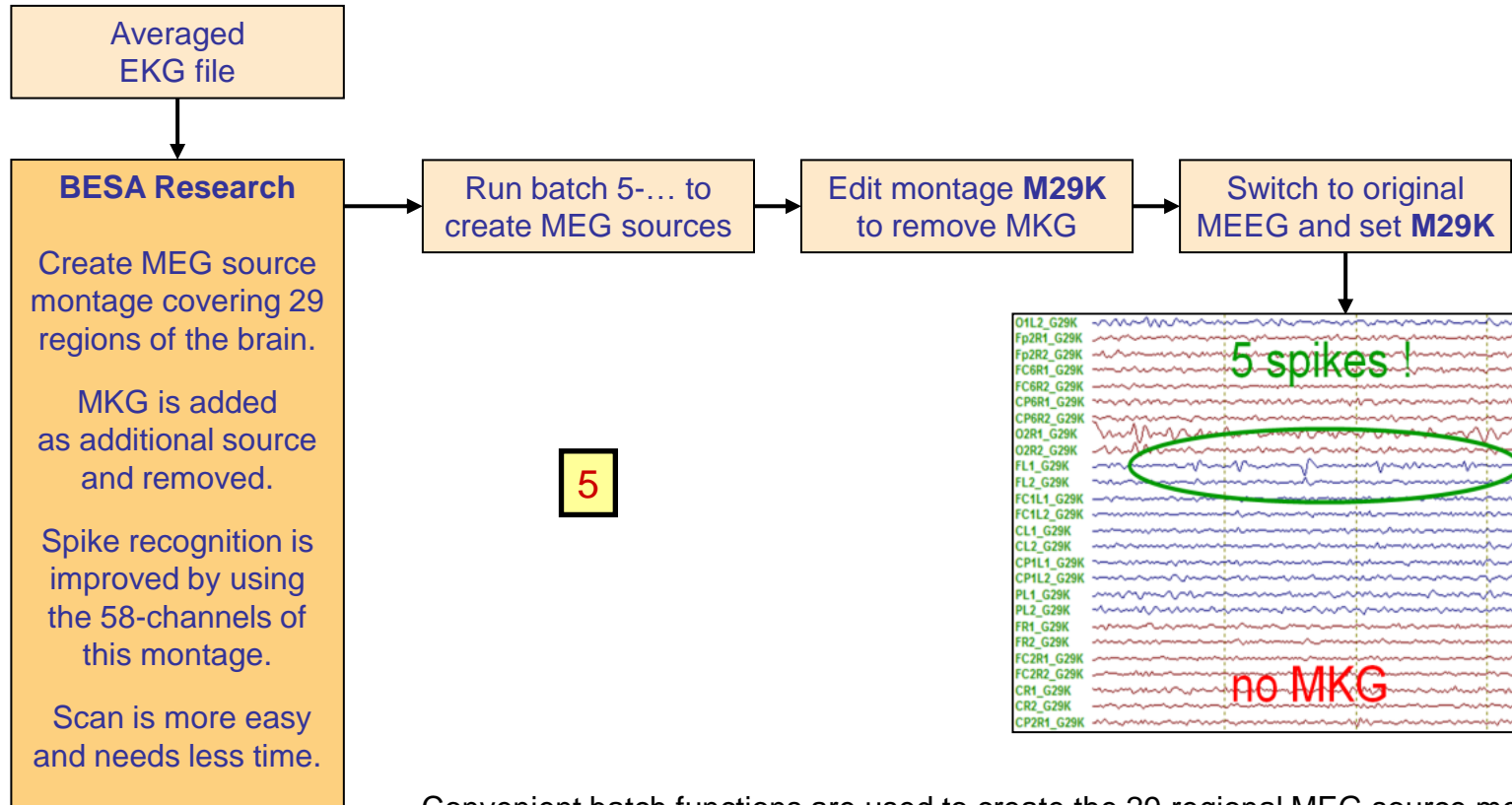
Workstep 4: Use MKG for artifact correction and bad channel rejection



A convenient batch function is available to check the epochs between R-waves. The BESA artifact rejection tool is used to identify bad MAG or GRA channels.



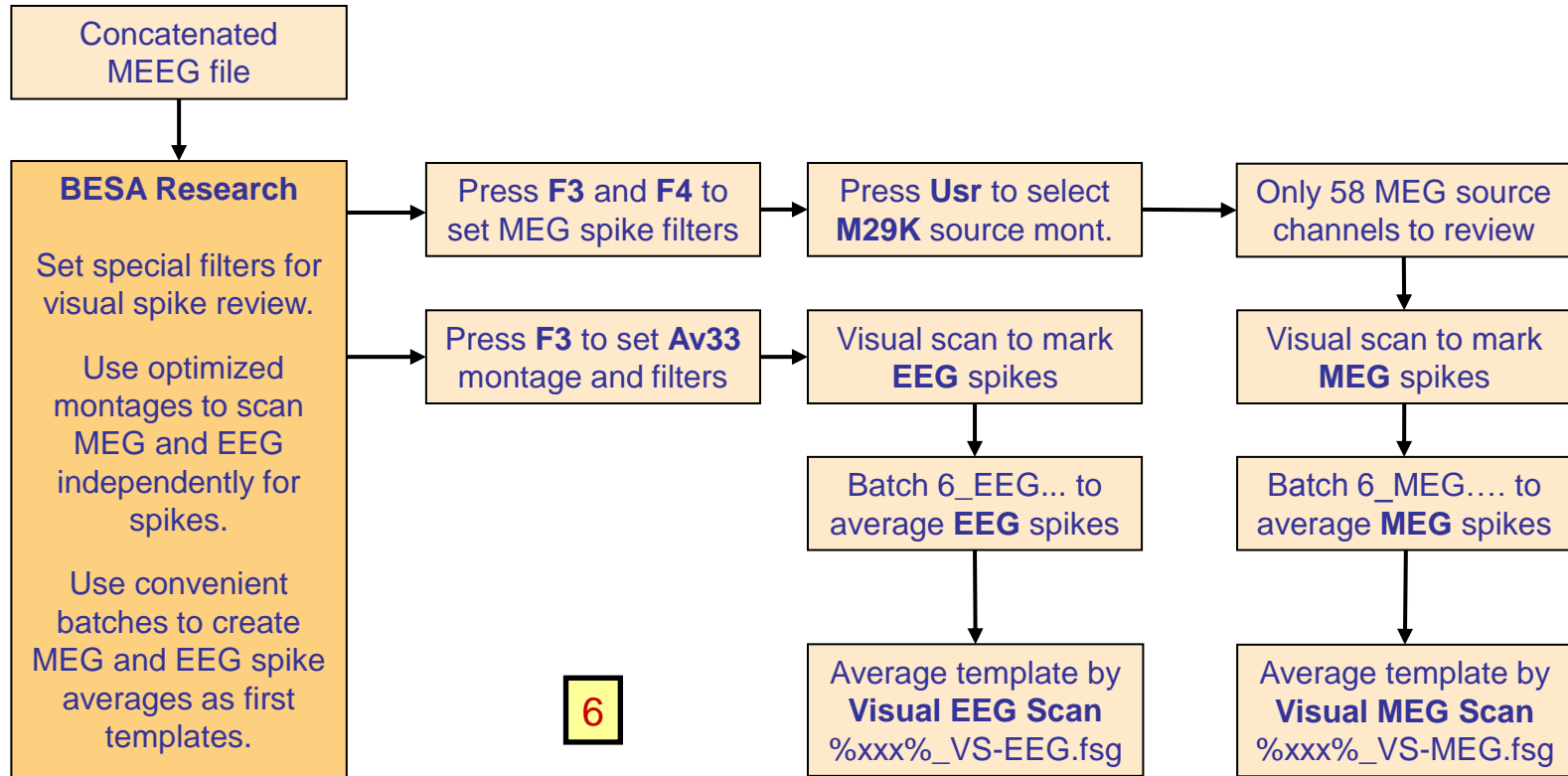
Workstep 5: Create artifact-corrected MEG source montage for easy scan



Convenient batch functions are used to create the 29-regional MEG source montage from either the magnetometer or gradiometer channels: M29K.mtg or G29K.mtg.



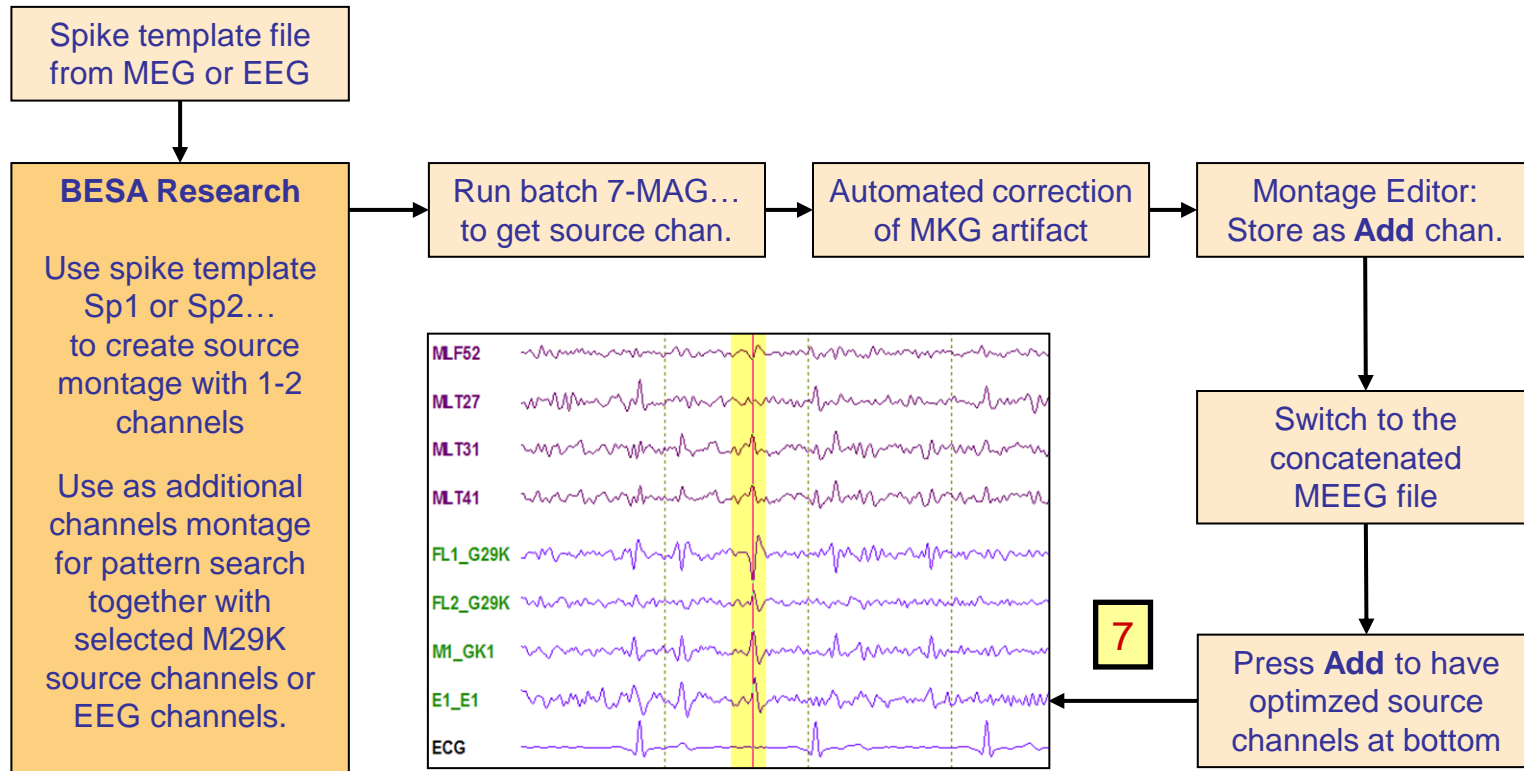
Workstep 6: Scan MEG source & standard EEG montages for spikes



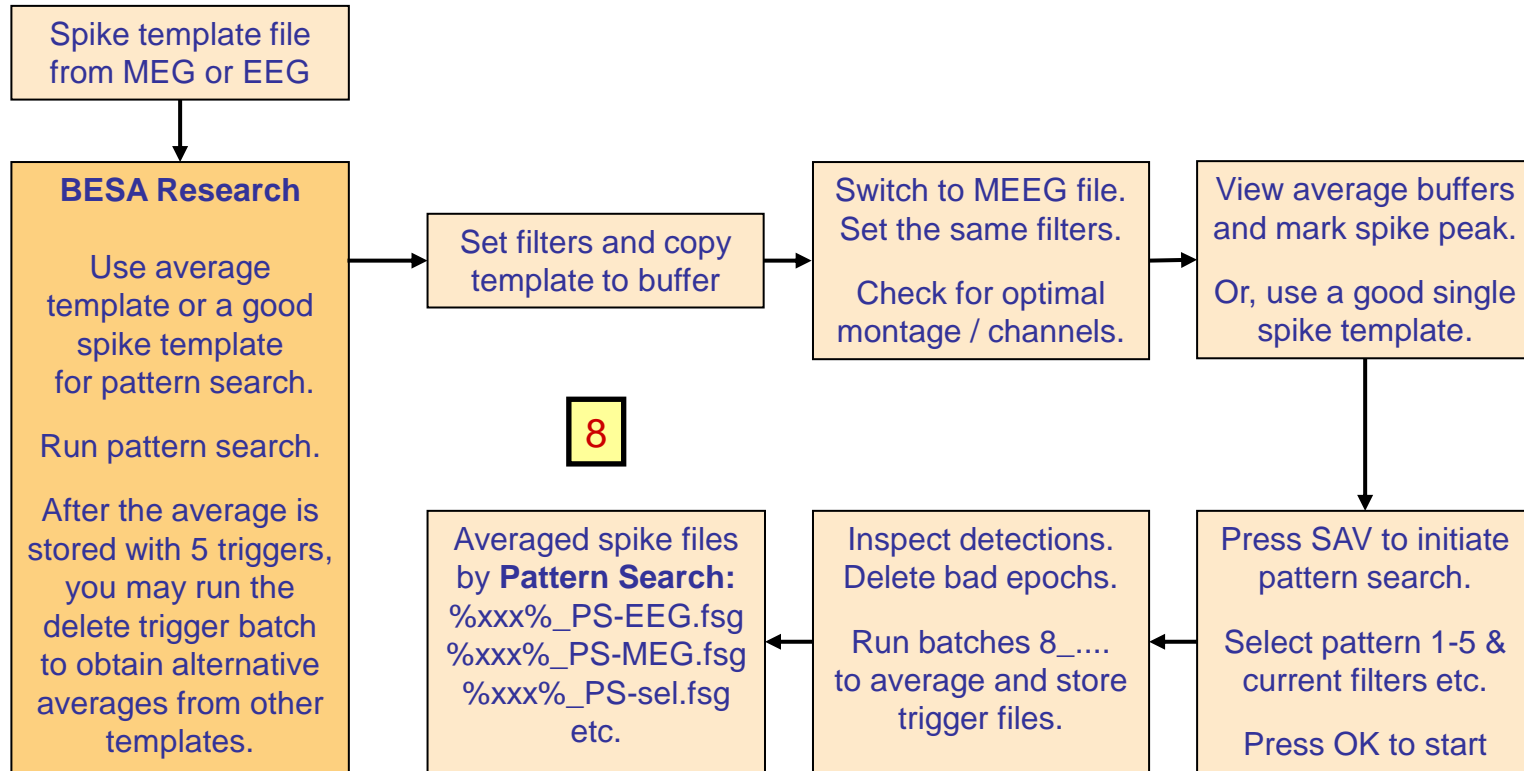
6



Worksteps 7 (optional): Optimized source channel for spike pattern search



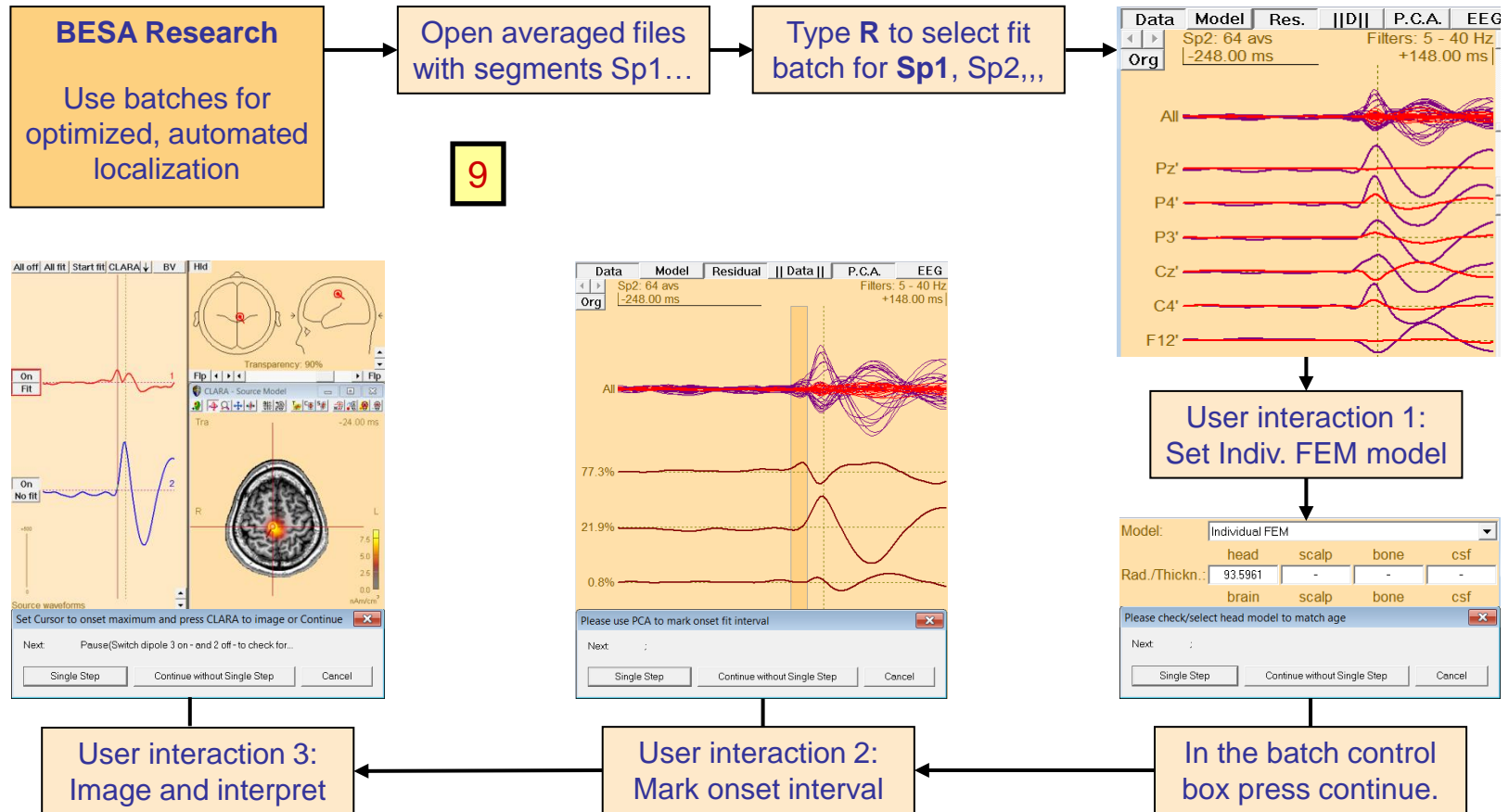
Workstep 8: Use EEG and/or MEG spike templates for pattern search



Function keys and convenient batch functions are used to set filters and average after pattern search is completed and spike detections have been checked in Selected View.



Workstep 9: Localize and image spike onset automatically with indiv. MRI



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MEG

