

## ER-flow Application Description Template

<b>Application Name:</b> Freesurfer
<b>Application domain:</b> Medical Imaging
<b>Brief description of application</b> Freesurfer is a set of automated tools for reconstruction of the brain's cortical surface from structural MRI data, and overlay of functional MRI data onto the reconstructed surface. It also segments brain regions automatically. Freesurfer software can be executed with various runtime arguments to select image analysis steps and other processing configurations. This application provides a complete analysis of the brain equivalent to the "recon-all" option.
<b>Data:</b> <b>input data format:</b> nifty / dicom (image) or archive (with image and other data) <b>output data format:</b> an archive containing the results of the various steps <b>sample data:</b> lfn:/grid/vlmed/AMC-e-BioScience/medical-imaging/freesurfer/sample-data/Freesurfer-input.zip <b>application</b> <a href="http://surfer.nmr.mgh.harvard.edu/">http://surfer.nmr.mgh.harvard.edu/</a> <b>documentation</b> <a href="http://surfer.nmr.mgh.harvard.edu/fswiki">http://surfer.nmr.mgh.harvard.edu/fswiki</a> <b>publication</b> <a href="https://surfer.nmr.mgh.harvard.edu/fswiki/Publications">https://surfer.nmr.mgh.harvard.edu/fswiki/Publications</a>
<b>Execution environment</b> DCI: (EGI, SRM/LFC, vlmed VO) middleware: gLite, CVMFS workflow system: WS-PGRADE, MOTEUR
<b>Execution characteristics</b> input: 100MB, 1 to hundreds output: 150MB, many organized processing time (per unit): 24 - 36 hours memory usage: n.a. disk usage: ~2GB
<b>Target users</b> Neuroscientists, radiologists, psychiatrists of the AMC Brain Imaging Center <a href="http://www.lebic-amc.nl">http://www.lebic-amc.nl</a>  number of users: 10+ user type: end-user
<b>Usage scenario for workflow in the ER-FLOW</b>  Various workflows have been implemented to port this application to EGI for the vlmed VO. These workflows are published on the SHIWA repository with appropriate documentation, metadata and sample data. Due to licensing of Freesurfer, only vlmed VO members can run application. Users start Freesurfer from the AMC science gateways. Additionally, the Freesurfer_recon-all workflow can be accessed and executed via the SHIWA Portal by external users.
<b>Contact information</b> (workflow developers) name: Mahdi Jaghoori name: Vladimir Korkhov e-mail: <a href="mailto:m.jaghoori@amc.uva.nl">m.jaghoori@amc.uva.nl</a> e-mail: <a href="mailto:vkorkhov@gmail.com">vkorkhov@gmail.com</a>