

# suiteHEART<sup>®</sup>

## cMRI Analysis Software

### General Features

- Intuitive, easy-to-use interface.
- Fully automated preprocessing of ventricular function, flow and delayed enhancement.
- Image review tools including a study viewer and compare mode.
- Image manipulation settings such as window/level, cine, zoom, pan and rotation persist through the review session and are saved automatically.
- User defined normal values for volumetric results can be specified by age, BSA, weight, or gender.
- Flexible report format with options to include History, Technique, and Impression, as well as tables for measurements, polar plots, graphs, and images.
- Customized reporting macros that can automatically populate with measured and calculated values.
- Report export as a PDF or DICOM file which can be archived and viewed on PACS.
- Images and cines export as AVI, Quicktime, JPEG, TIFF and PNG.
- Automatic generation of a report database which can be searched based on user defined parameters.
- DICOM connectivity supported by suiteDXT, which manages networking and storage of patient studies for analysis by suiteHEART<sup>®</sup> Software.
- Both unlimited and per-case limited licensing agreements are available.
- Multi-vendor compatible (see supported manufacturers).



### T1 Mapping

- Calculate T1 relaxation times for native and post images.
- Pixel-wise colormaps and polar plot display.
- ECV quantification.



### T2 Mapping

- Calculate T2 signal decay results.
- Two or three parameter fit options.
- Pixel-wise colormaps and polar plot display.



### T2Star Analysis

- Calculate T2\* and R2\* results.
- Two or three parameter fit options.
- R2\* pixel-wise colormaps.



### Function Analysis

- Allows for manual and automated segmentation of the left and right ventricles.
- Auto-segmentation optionally includes or excludes papillary muscles and trabeculations. Auto-segmentation can be applied to all phases and slices, or it can be configured to apply automatically to a subset of images, such as for example, only end-diastole and end-systole.
- Manual nudge tool for ROI editing. Edits update on adjacent cardiac phases after reinitiating auto segmentation.
- While editing ROIs, the user has the option of viewing a cine of the slice or a cross-referenced perpendicular image.
- Definition of the left ventricular and right ventricular base can be optionally performed on a perpendicular long axis cine series.
- Measures and calculates routine cardiac chamber parameters such as ejection fraction, stroke volume, end-diastolic and end-systolic volumes, cardiac output and myocardial mass.
- Matrix mode allows the user to explicitly specify the end-diastolic and end-systolic phases on a slice-by-slice basis.
- Full left ventricular regional analysis for wall motion, wall thickness and percent thickening with results displayed in graph, polar plot and tabular formats.
- Quantification of left ventricular dyssynchrony using temporal uniformity of wall thickening.
- Calculation of the instantaneous aortic transvalvular pressure gradient using the Hakki equation and user defined inputs of planimetered aortic valve area and LV volume versus time curve.
- Fast left ventricular, left atrial, and right atrial volumes can be determined from one or more cine images using the modified Simpsons rule.
- Strain Analysis\* based on feature tracking for SSFP and DENSE images.

\*Strain Analysis is an Investigational Device: Claims have not been evaluated by the FDA. Use pursuant to company instruction and research agreement. NeoSoft, LLC proprietary and confidential.



### 3D Viewer/4D Flow

- Dedicated local "real-time" application which supports oblique reformatting of 3D and 4D image types.
- Displays interactive 4D flow (3D plus color coded velocity overlay).
- Conventional interactive view control tools for image manipulation.
- Surface, MIP and MINIP render modes.
- Create post-processed MIP reformats from 3D or 4D image types.
- Retrospectively create conventional single-slice or multi-slice multi-phase cine images for use in functional analysis.
- Retrospectively create conventional single-slice or multi-slice multi-phase phase contrast images for use in flow analysis.
- Automatic phase error correction for 4D flow.



## Flow Analysis

- Automated and manual vessel segmentation with ROI editing.
- Graphical outputs include instantaneous flow, peak velocity, positive and negative flow.
- Semiautomatic calculation of regurgitant fraction, Pressure Half-Time, Peak PG, Mean PG and Qp/Qs.
- Retrospective adjustment of velocity encoding value to correct for aliasing at acquisition.
- Three flow baseline correction methods, including automatic phase error, phantom and background ROI.



## Myocardium Evaluation Analysis

- Automated and manual segmentation.
- Provides semi-automatic tools to identify regions of high signal intensity using a Full Width Half Max (FWHM) or 2-7 SD algorithms.
- Provides semi-automatic tools to identify regions of edema on black blood imaging techniques using a 2 SD algorithm with image normalization.
- Infarct mass, percent infarct mass, edema mass, Salvage mass and Signal Intensity Ratio results.
- Quantify regions representing microvascular obstruction (MVO).
- Manual pixel editing tools with user adjustable thresholding.
- Results can be displayed in a 16 segment polar plot or slice-by-slice format.
- Polar plots can be displayed in continuous color-scale (transmurality), or in discrete levels with a user specified threshold (e.g. >50%).



## Time Course Analysis

- Assists in the analysis of signal intensity versus time curves for the calculation of semi-quantitative indices of myocardial time course images such as slope, maximum slope, signal intensity ratio, peak and arrival time.
- Endocardial and epicardial regions of interest with image contour registration using a cross correlation algorithm.
- Results can be displayed as a pixel-wise color-overlay on the image with an adjustable transparency for easy visualization.
- Semi-quantitative results can be displayed on the image in 16 segments with the transmural assessment option.



## Patent Foramen Ovale Analysis

- Create signal intensity versus time curves from user defined regions of interest.

## System Requirements

Minimum System Requirements
Supported Operating Systems: <ul style="list-style-type: none"> <li>• Windows 7 Professional or Enterprise with SP1 (64 bit version)</li> <li>• Windows 10 Professional or Enterprise (64 bit version)</li> </ul>
Video card (NVIDIA); 4GB RAM, minimum of 1664 CUDA Cores, support for OpenGL 4.0, support 1920 x 1080 resolution or higher
Monitor shall support 1920 x 1080 resolution or higher
Anti-Virus/Anti-Malware software installed
Minimum 16GB memory
Available hard drive space minimum 25GB
PDF viewer, Adobe Reader 11.0 or higher
An open network port for DICOM transfer over network
Static IP address (recommended)
Java Runtime Environment (JRE) version 9
CUDA Toolkit version 9.1 or later
Solid-State hard drive
Intel® Core™ i7 processor
27" Monitor

## Supported Manufacturers

suiteHEART® Software has been evaluated with cardiac MRI images from the following manufacturers:

- GE Healthcare
- Philips Healthcare
- Siemens