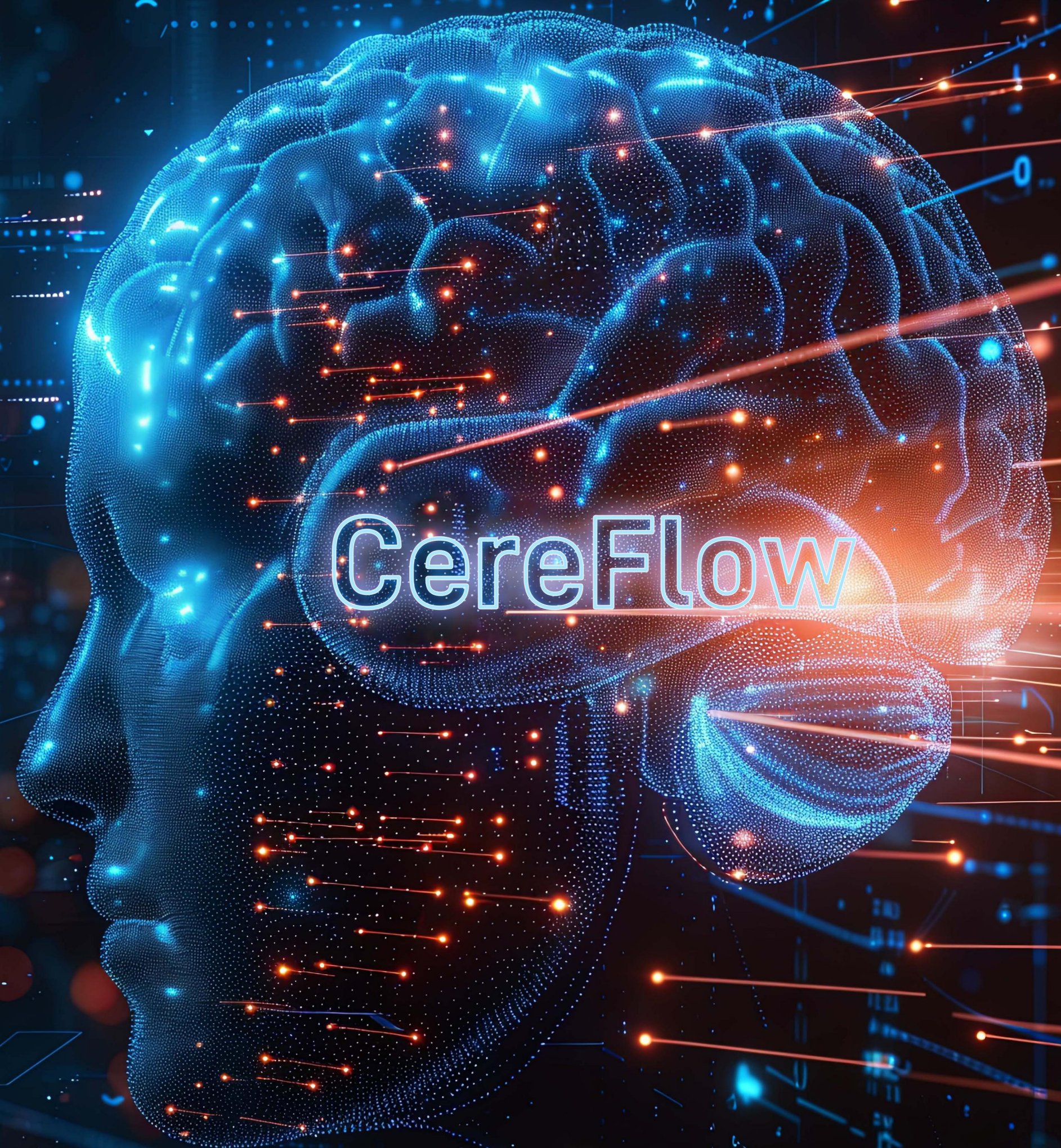




# CereFlow v1

## User Manual







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## 1 Introduction

- + Welcome to CereFlow!
- + This software is a post-processing tool for multi-PLD ASL<sup>①</sup>, designed to be used in conjunction with the Siemens 1.5T, 3.0T MRI scanner, offering quantitative calculation of cerebral blood flow (cCBF)<sup>②</sup> based on ATT<sup>③</sup> correction.

## 2 Usage Restrictions

- + CereFlow is intended solely for use by medical staff in healthcare institutions who have undergone relevant professional training and possess clinical diagnostic experience. For other purposes such as research, training, and equipment maintenance, users should manually remove sensitive information before importing data.
- + When using CereFlow, it is recommended that medical personnel interpret brain images in conjunction with other commonly used imaging methods.
- + CereFlow does not have automatic diagnostic capabilities, and the final clinical diagnosis should be determined by medical staff in combination with other imaging methods.

① ASL: Arterial Spin Labeling

② cCBF: correction CBF

③ ATT: Arterial Transit Time

## 3 Upgrades and Maintenance

- + Any operations or error messages encountered during the operation of CereFlow will be displayed in the software's real-time log. Users can provide operation or error information to the manufacturer, who will provide software maintenance services.
- + During the maintenance or use of this software, if there are any design changes, the manufacturer will be responsible for providing upgrade services for the software.

### 3.1 Manufacturer Information

- + Manufacturer/Producer Name: AnImage Technology (Beijing) Co., Ltd.
- + Manufacturer/Producer Address: Room 178, 4th Floor, Block A, Building 24, No. 68 Beiqing Road, Haidian District, Beijing
- + Production Address: Rooms 205, 206, and 207, Unit 201, Building 3 (3A), No. 16 Baocan South Street, Daxing District, Beijing
- + After-sales Service Unit: AnImage Technology (Beijing) Co., Ltd.
- + Contact Number: 010-69465675
- + E-mail: cereflow@an-image.cn



## 4 Getting Started

- + CereFlow recommends processing with 2mm T2 Flair or 3D T1 sequences along with the multi-PLD ASL sequence.

### 4.1 What is multi-PLD ASL

- + multi-PLD ASL is a multi-delay, multi-parameter arterial spin labeling (ASL) scanning sequence that completes a scan, including a full proton density map M0, within 5-7 minutes. It features 16 post-labeling delay (PLD) imaging acquisitions, covering the entire effect relaxation time as the pseudo-continuous labeling bolus travels from the labeling plane to the brain imaging plane, making the imaging more accurate.
- + It is also suitable for central nervous system diseases that require shorter PLD for imaging or longer PLD for observing collateral circulation. It provides multi-parameter imaging for cerebral blood flow (CBF)<sup>④</sup> calculation, arterial transit time (ATT) calculation, and arterial cerebral blood volume (aCBV)<sup>⑤</sup> calculation. Compared to traditional single-parameter imaging, it not only addresses accuracy issues but also achieves hemodynamic assessment.

### 4.2 What Can We Do

- + The CereFlow software will perform quantitative calculation of cerebral blood flow (cCBF) based on ATT correction for the sequence, providing:
  - Display of basic image information
  - Synchronized axial display of perfusion and post-processed cCBF, ATT, aCBV images for each cerebral lobe, arterial supply area, and limbic system area
  - Display of quantitative perfusion tables for each cerebral lobe, arterial supply area, and limbic system area
  - Reports provide CBF calculations for over 300 brain tissue structures in the left and right frontal, parietal, temporal, occipital lobes, and cerebellum; CBF calculations for 12 intracranial arterial supply areas including the anterior cerebral artery (meningeal branches, perforating branches), posterior cerebral artery meningeal branches, middle cerebral artery (meningeal branches, perforating branches), and anterior choroidal artery; CBF calculations for 20 limbic system areas such as the hippocampus and caudate nucleus; CBF calculations for 48 white matter fibers such as the corticospinal tract and corona radiata; and CBF calculations for 16 brainstem tissues such as the substantia nigra and locus coeruleus.

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④ CBF: Cerebral Blood Flow

⑤ aCBV: arterial Cerebral Blood Volume





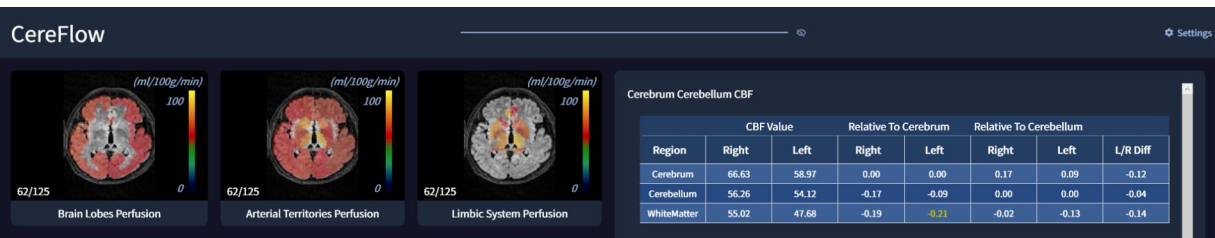
### 4.3 Information Displayed After CereFlow Image Processing

- + Patient information is displayed by default in the central position at the top of the page.
- + Image information is displayed on the left side of the page: sequence type, color mapping, number of scanning layers, and the current displayed layer.
- + The upper left side of the page displays the axial background perfusion images: lobar perfusion images, arterial supply area perfusion images, and limbic system area perfusion images.
- + The lower left side of the page displays the axial structural images and the processed cCBF, ATT, and aCBV perfusion images.
- + The right side displays the background perfusion tables: cerebellar and cerebral perfusion tables, lobar perfusion table, arterial supply area perfusion table, and limbic system area perfusion table.
- + The content of the background perfusion tables includes: absolute CBF values for the regions, differences in values relative to the whole brain, and differences in values relative to the cerebellum.

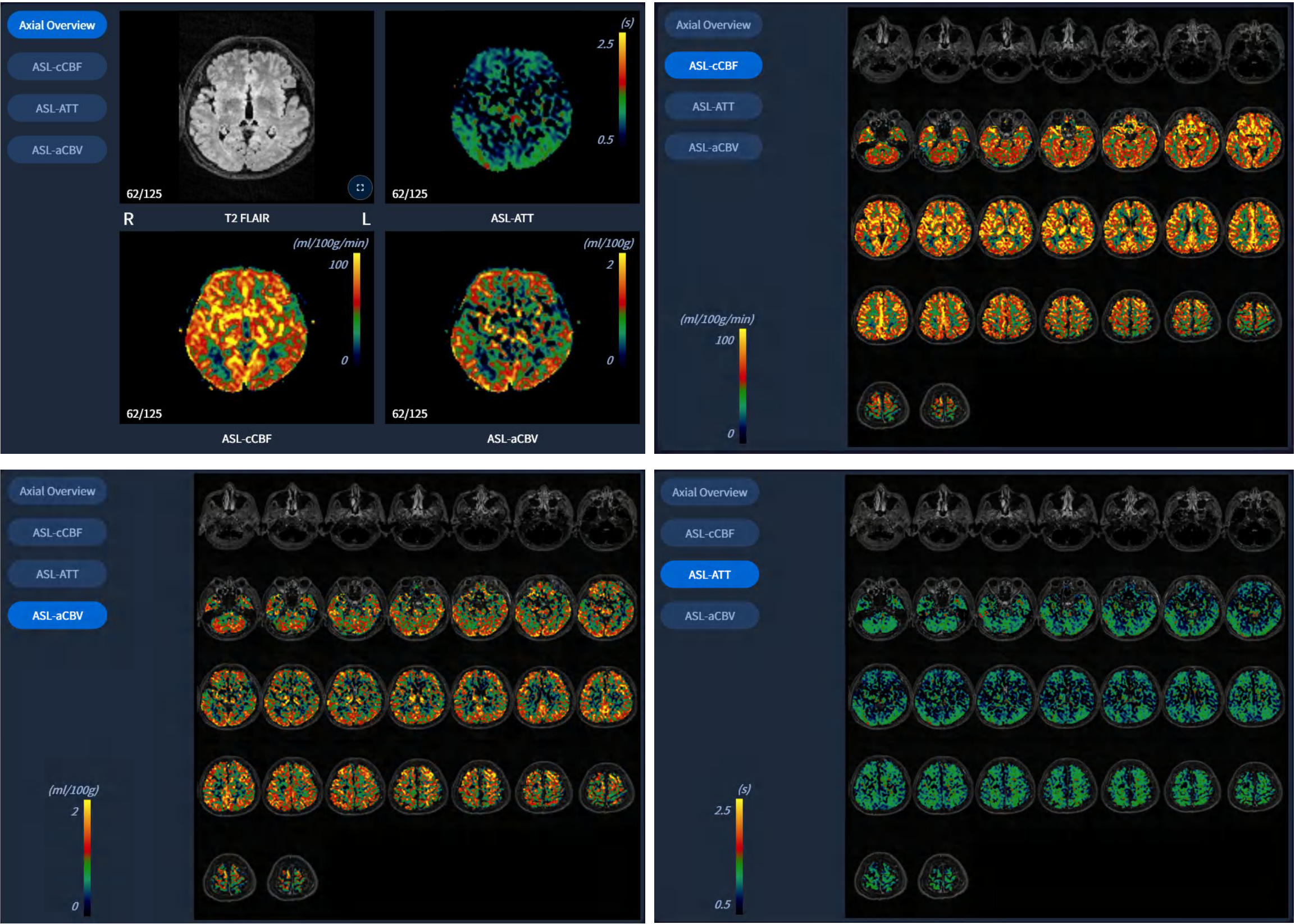


### 4.4 CereFlow's Functions

- + Clicking the "eye" icon button next to the patient information allows for anonymizing the data.






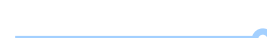
- + Click the "Axial View" button to display a single layer sequence image.
- + Click the sequence type buttons such as ASL-cCBF, ASL-ATT, ASL-aCBV to display the sequence images in a mosaic tiled view.

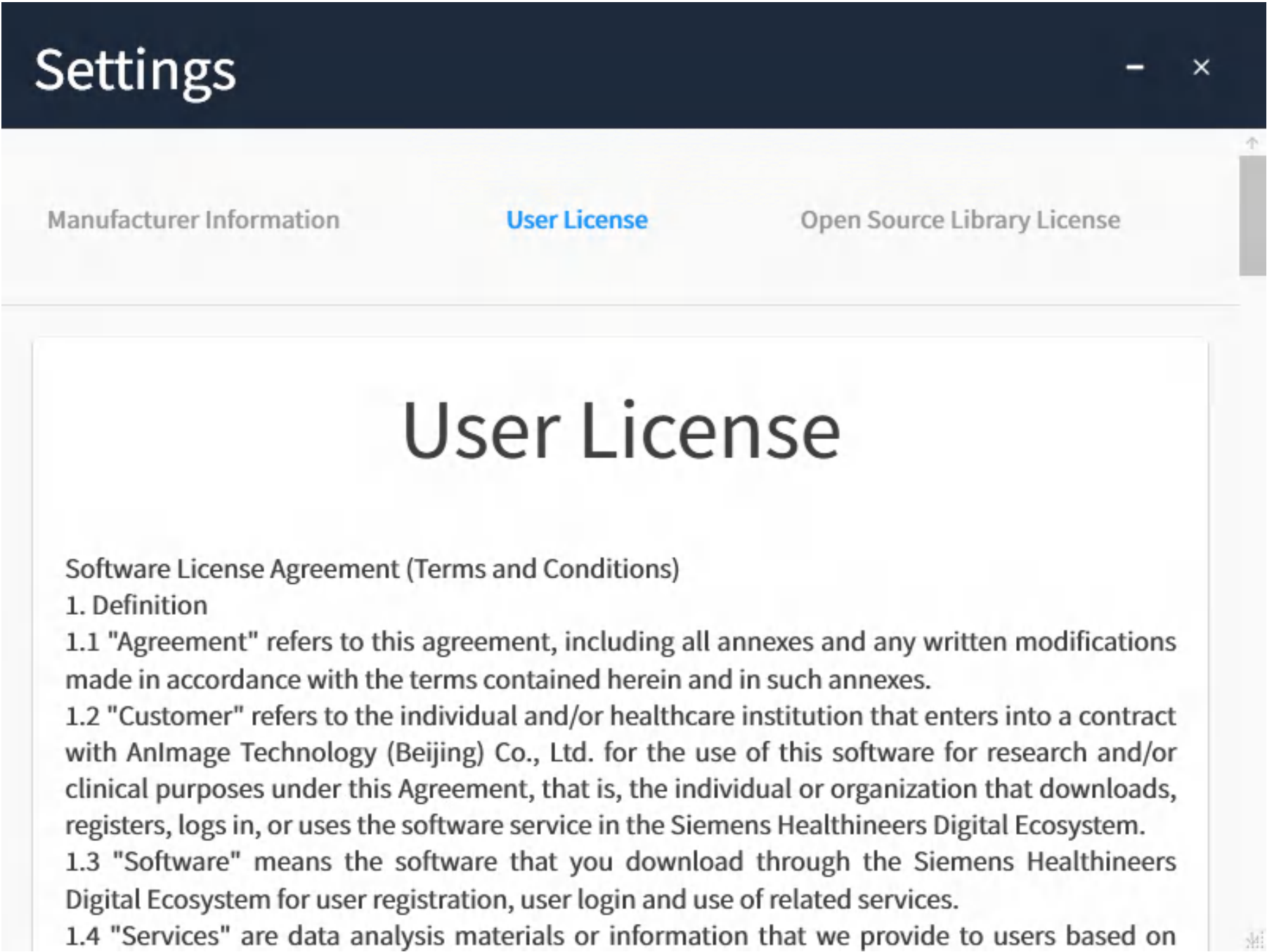






4.5 How to View Software Information?

- + Click the “  Settings ” button in the upper right corner of this software to pop up the software information page.
- Manufacturer Information 
  - View basic software information
  - View manufacturer information
- Software Installation License Agreement 
  - View the software installation license
- Open Source Library Licenses 
  - View the licenses for open source libraries used by the software.



4.6 How to Save Processing Results

- + After the processing is completed by this software, it will automatically transmit the report in DICOM format.

4.7 Other Matters

- + Explanation of graphics, symbols, abbreviations, etc., used on medical device labels:



(The last page)