Product Information

MR

No.: MPIMR0342EA
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MRI Systems Division

Release of V8.0 Upgrade Package for Vantage Orian

1) REVISION HISTORY

PI Number	Description	Release Date
MPIMR0332EA	- Release of V8.0 Upgrade Package for Vantage Orian	Mar 09, 2022

2) SUMMARY

We are pleased to announce the release of V8.0 upgrade package from V4.5, V6.0 or V7.0 for Vantage Orian.
As for key applications other than V8.0, please find each Product Information when the it is updated from V4.5 or V6.0.
The production release / shipping dates depend on the local regulations and/or regulatory requirements. Please consult (ISD) or (MRG) before marketing this product.

3) OUTLINE

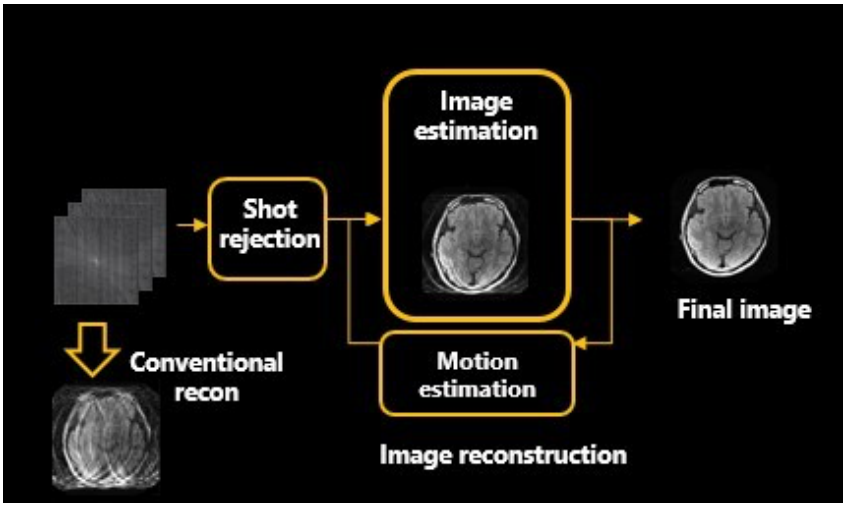
V8.0 introduces powerful new ways of addressing the artifacts including IMC Application for motion artifact, mART EXP Application for metal artifact and RDC DWI Application for image distortion in DWI. pCASL can provide perfusion-weighted images without contrast media. Moreover, Exsper is available in FSE2D sequence. It is more robust up against the artifacts caused by the unfolding error compared to conventional SPEEDER.
Auto Scan Assist, our scan planning assist solution expands its application to more body parts. The automated scan positioning by W-SpineLine+, ProstateLine+ and LiverLine+ based on machine learning, SURE VOI Liver based on deep learning contribute to more streamlined workflow.
Tablet UX which makes patient preparation easer is now available to achieve seamless workflow.

Key Application

- Iterative Motion Correction Application
- mART EXP Application
- RDC DWI Application
- pCASL Application
- Exsper in FSE2D

Iterative Motion Correction Application

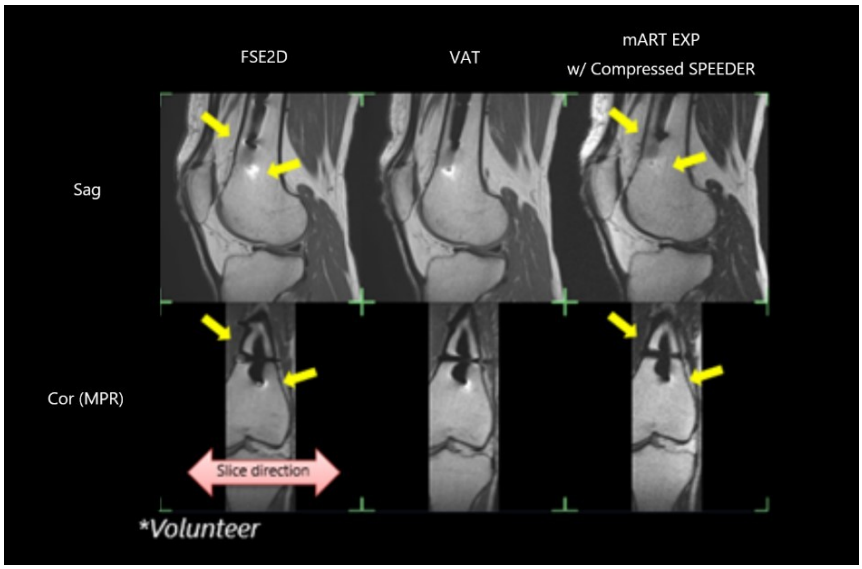
Iterative Motion Correction (IMC) is a motion correction technology for motion artifact caused by sporadic movement. IMC goes through the iterative process of image estimation and motion estimation, and final image is produced with significantly reduced motion artifact.



Simple scheme of Iterative Motion Correction (IMC)

mART EXP Application

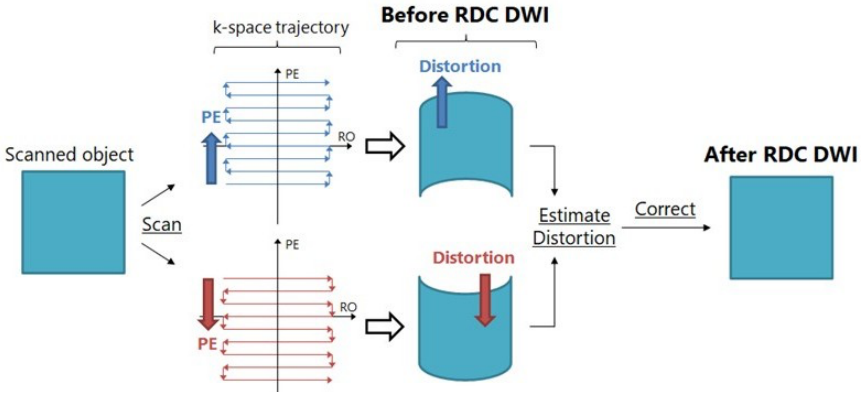
mART EXP (metal Artifact Reduction Technique Expansion) is 3D method to resolve in-plane and through-plane distortion artifact induced by magnetic susceptibility. Each slice is 3D phase-encoded to resolve distortion in slice dimension. VAT method can be combined with mART EXP application to maximize the metal artifact reduction.



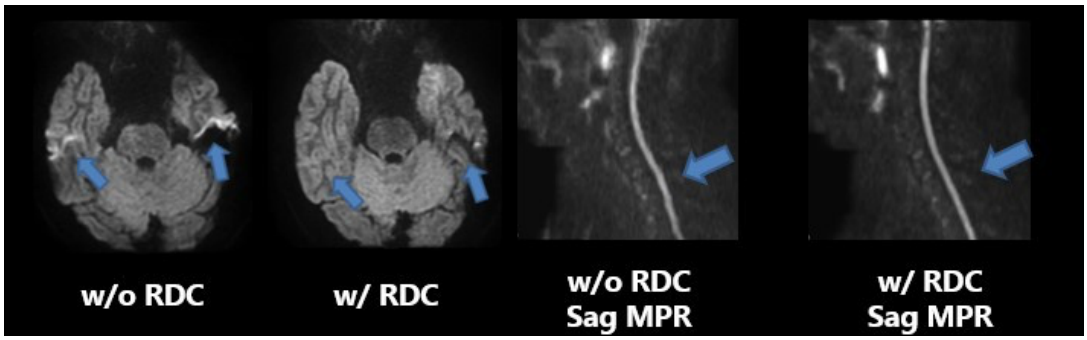
Comparison of images including implant

RDC DWI Application

RDC DWI (Reverse encoding Distortion Correction DWI) is aimed to reduce distortion in phase encoding direction due to B0 field inhomogeneity or eddy current in SEEPI2D sequence.



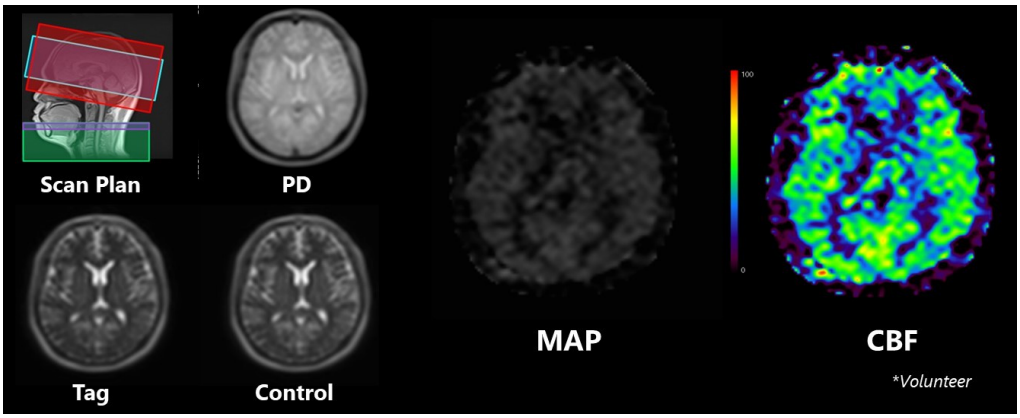
Simple scheme of Reverse encoding Distortion Correction DWI (RDC)



Comparison of images between without RDC and with RDC

pCASL Application

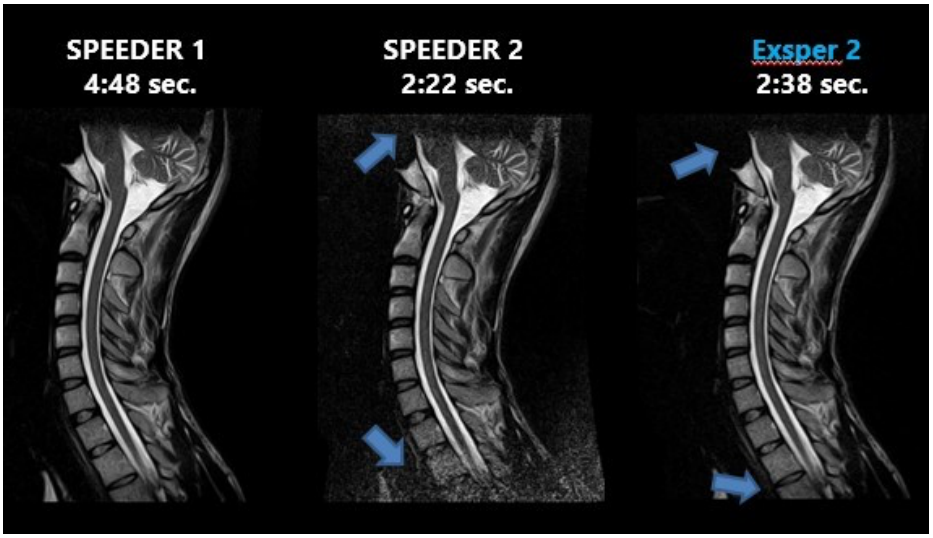
pCASL (pseudo-Continuous Arterial Spin Labelling) is one of the arterial spin labeling (ASL) techniques which can provide perfusion-weighted images without contrast media by subtracting the tag image from the control image. Pulsed ASL which is low SAR makes low SNR images. Continuous ASL (CASL) enables to get high SNR images, however, there is a limitation for its clinical use due to high SAR and RF duty. Now, pCASL enables to get higher SNR images with low SAR. In comparison with ASTER, which is used in 2D and 3D sequence, pCASL can be used in 3D FSE. As for coverage, it can be difficult for ASTER to maintain enough SNR in the crown of the head, but pCASL can work well for the whole head.



Example of images acquired by pseudo-Continuous Arterial Spin Labelling (pCASL)

Exsper in FSE2D

Exsper is available in FSE2D on V8.0. Exsper is more robust against artifacts caused by the unfolding error than conventional SPEEDER.



Comparison of acquisition time and images by conventional SPEEDER and by Exsper

New Workflow Solution

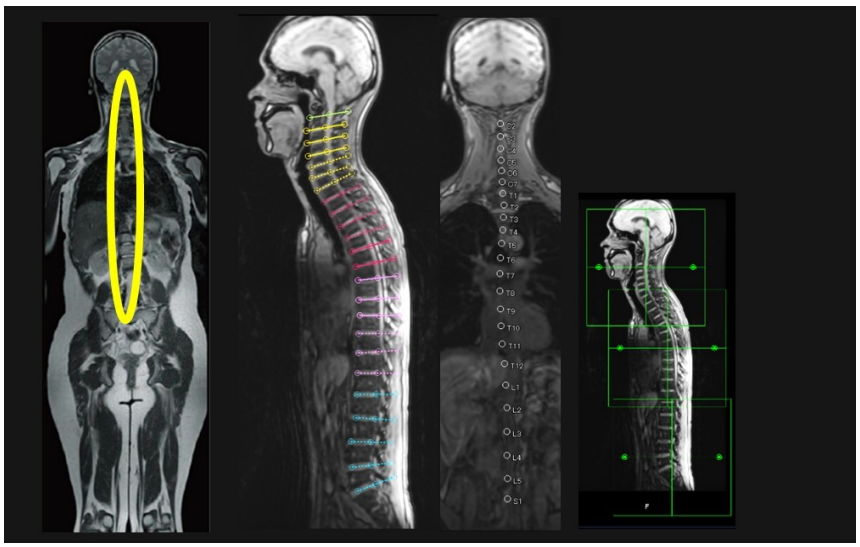
- Auto Scan Assist
  - W-SpineLine+ Application
  - ProstateLine+ Application
  - SURE VOI Liver & LiverLine+ Application
- Tablet UX

Auto Scan Assist

Auto Scan Assist standardizes the workflow with automated planning to take away the variability and help operators improve workflow with automatic slice alignment for a range of exams including whole spine, prostate and liver.

W-SpineLine+ Application

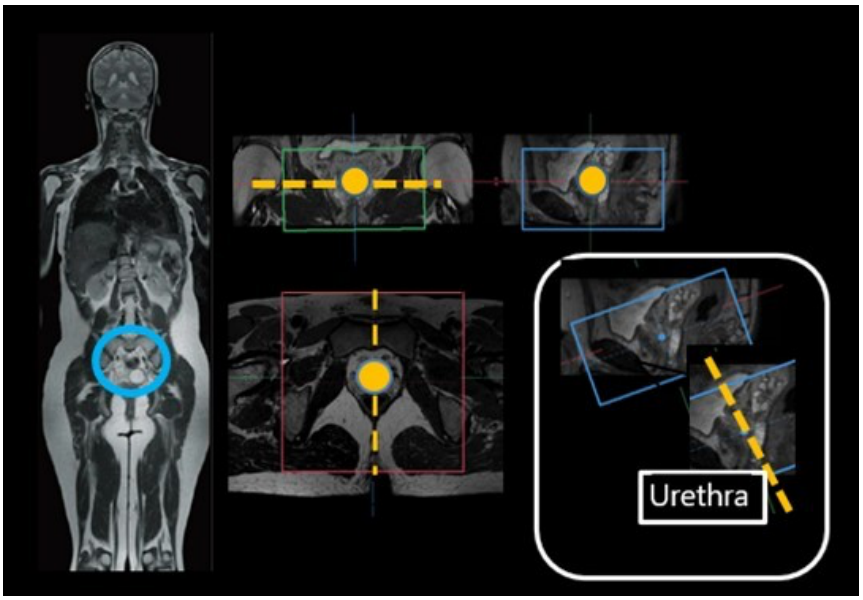
This technology is based on machine learning technology, which uses 3D multiple stations covering whole spine as an input, and three planes (sagittal, coronal, and spinal disc planes) conform the spine curvature automatically.



Example of automatic vertebra labeling acquired by W-SpineLine+

ProstateLine+ Application

Using 3D images as the input, five planes (axial, coronal, sagittal, oblique axial, and coronal that parallels to Urethra) of the prostate are automatically detected and set for the scan positioning ROIs. Supportive slice selection prescription is offered at the time of positioning.

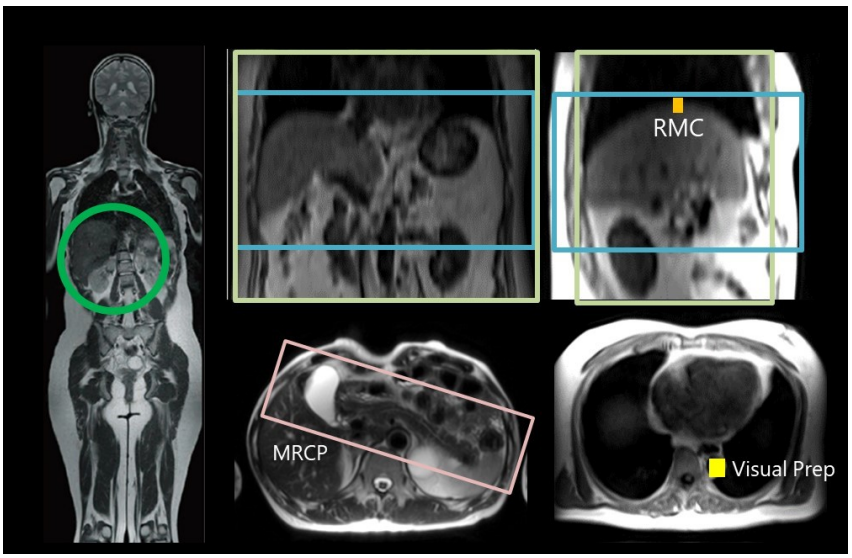


Example of cross-section images acquired by ProstateLine+

SURE VOI Liver & LiverLine+ Application

These applications are offered in EasyTech Liver Package. SUREVOI Liver automatically detects liver area and plan scan position for shimming scan, map scan, axial scan, coronal scan, probe scan for Real-time Motion Correction (RMC), and VisualPrep scan.

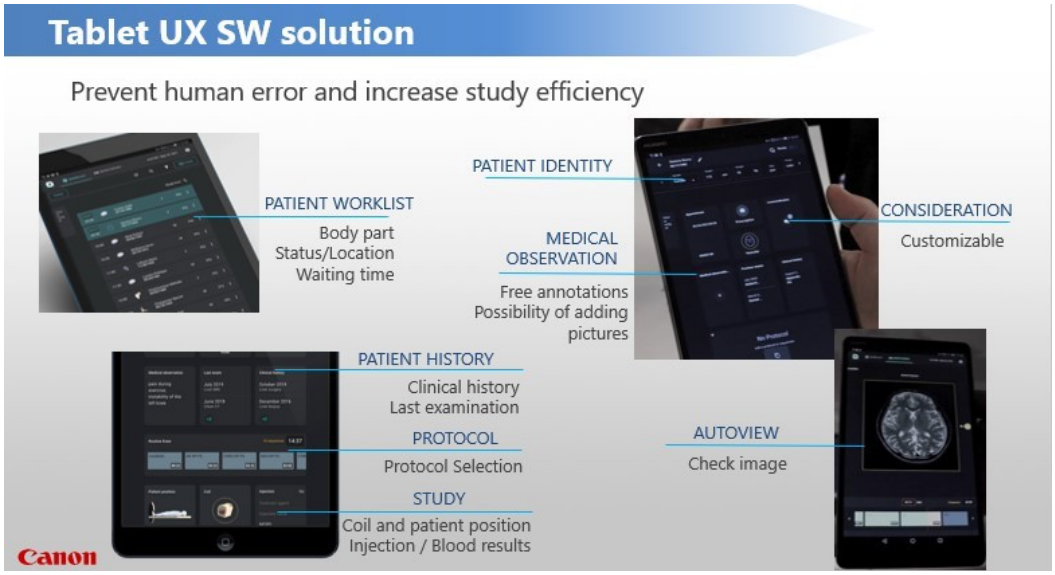
Using 2D images as the input, two kinds of MRCP scan plan (MRCP 3D and MRCP 2D) are automatically detected and set for the scan positioning ROIs.



Example of cross-section images acquired by SURE VOI Liver & LiverLine+

Tablet UX

Tablet UX enables to avoid unnecessary steps while patient information is seamlessly integrated into the system from the waiting room, and then easily move to the next patient. Emergency call function is provided, and a notification windows is displayed on the tablet when the patient call device is squeezed.



The feature of Tablet UX software solution

4) HARDWARE SPECIFICATION

System Specification (General)

Field strength	: 1.5T
Maximum Gradient amplitude	: STD 35mT/m, XGO 45mT/m
Maximum Slew rate	: STD 155T/m/s, XGO 200T/m/s
Maximum sound pressure level	: 110,5 dB (A) at peak gradient level & slew rate
Bore size	: 71cm

Installation requirement

	STD	XGO
Min. Footprint not including magnetic shield	24.7 m^2 * Scan room: 5.1 m × 3.2 m = 16.4 m^2 Operator's room: 1.6 m × 1.3 m = 2.1 m^2 Computer room: 3.7 m × 1.7 m = 6.2 m^2	24.8 m^2 * Scan room: 5.1 m × 3.2 m = 16.4 m^2 Operator's room: 1.6 m × 1.3 m = 2.1 m^2 Computer room: 3.9 m × 1.7 m = 6.3 m^2
G-amp specification* (Line Voltage)	380/400/415/440/480 V	380/400/415/440/480 V
Power requirements*	52kVA	80kVA

*Footprint requirements can be changed depending on site conditions.

System Specification (Transmission / Receiver System)

	STD	XGO
Number of Transmission channel	1 (Tx Rx intensity correction will be enhanced)	2 (Breast B_1 shim is available)
RF transmit peak power	24kW	30kW (15kW x2)
RF receiver system	PURE RF Rx Unique noise-suppression technology that reduces the electrical noise in MR signal for enhanced SNR	
Maximum number of receiver channels	128ch	

System Specification (Gradient)

	STD	XGO
Max Voltage	1,550V	1,925V
Max Current	550A	900A