Introducing Signa HDxt with Optima Edition 23.0

- Signa HDxt gets even better with the Optima Edition 23.0 platform
- New Express Exam user interface
- New applications
- New GEM Flex Suite
Advanced applications designed to enhance your productivity, consistency, and image quality
PROPELLER 3.0

- Significantly reduced motion and flow effects
- Enhanced tissue contrast
- Motion correction option for difficult patients
- Available in T2, T2 FLAIR, T1 FLAIR and Diffusion

- Radial k-space filling pattern
- Oversampling of k-space center
- No phase wrap technique
PROPELLER 3.0

- Significantly reduced motion effects incl. peristalsis and flow
- Excellent tissue contrast
- Same scan time as conventional techniques
- Free breathing acquisition

“I have been using PROPELLER T2 and PROPELLER T2 FLAIR routinely on all brain MRI scans at my facility during the last 4 years. During that time, I have NEVER had to repeat a PROPELLER scan.”

A. Joseph Borelli, MD. MR at Belfair, Bluffton SC, US

1 Individual results may vary
PROPELLER 3.0

- Inherent insensitivity to motion
- Uniform image, no Phase/Frequency
- Improved scan time efficiency over 2D-FSE

“The use of PROPELLER helped us improve the average image quality and robustness of the shoulder exams, but also resulted in a productivity gain too, not having to repeat any series anymore.”

Dr. E. Pessis, MD
CCN, St Denis, Fr.

PROPELLER 3.0, FatSat
8 ch Shoulder PA coil
3min43s acquisition per series

3.5mm slice thickness
0.6mm in-plane resolution
3D Cube 2.0
- Scan once, reformat into any plane
- Reliably visualize even small and subtle lesions
- Automated, rapid, whole brain volume exam
- Available as T1, T2, T2 FLAIR and PD

- 3D FSE sequence with modulated flip angle
- High SNR and enhanced tissue contrast
- Innovative 3D self-calibrating parallel engine ARC

1.5T Cube T2 FLAIR
3D rendering of healthy volunteer
3D Cube 2.0

- 3D FSE – T2 or PD
- High resolution - delineate fine detail
- Resolve what was once obscure
- Scan once, reformat into any plane – helps reduce total exam time

“A five-minute 3D Cube sequence can provide similar information as a 30 minute routine MR protocol.”

R. Kijowski, MD
UW Madison, WI

3.0T Cube, 0.4x0.4x0.6 mm
Ready Brain

- Fully automated exam
- Accurate planes and reproducible slice positions for easy follow up exams
- Consistent image quality
- Simple and fast, also for non-expert users

Automatic localizer, Rx, scan, reformatting, postprocessing and data management

Automatic midsagittal plane calculation for 2D/3D Rx and ACPC determination

Extreme (>45 deg) rotation correction

1 Compared to conventional MR acquisition

Automated Ready Brain (per protocol):

- Localizers acquired
- Midsagittal plane detected
- Scan planes computed
- All series scanned per protocol
- Post-processing completed
- Raw data pushed to PACS & selected series to AW

PACS
Reading room

imagination at work
3D Arterial Spin Labeling

- 3D whole brain coverage in high res
- Provides quantitative CBF values
- High SNR and robust at 3T and 1.5T:
  - Insensitive to susceptibility & motion
  - Free of geometrical distortion (typical for EPI)
- Instantaneous, automated post-processing

“We currently perform ASL on all patients with suspected or known cerebrovascular disease. The 3D FSE readout permitted the visualization of small structures (…) In several cases the 3D ASL images have increased our confidence or suggested an unexpected, alternative diagnosis.”

Greg Zaharchuk, MD, Stanford Radiology, CA

1.5T 3D ASL
Cerebral blood flow (CBF) map
Courtesy of Yokohama Sakae Kyosai Hospital
Non-contrast 3D ASL quantitative brain perfusion

Full brain coverage free of geometrical distortion (typical for EPI)
3D + FSE for high SNR (vs. 2D EPI)
Robust with susceptibility & motion

3D ASL on 1.5T HDxt, 3 x 3 x 4 mm
LAVA Flex

- Four image contrasts in one breath-hold - rapid
- Water, fat, in-phase, and out-of-phase - no mis-registration
- Higher SNR and CNR than standard LAVA
- Less sensitive to field inhomogeneities

“LAVA Flex provides 3D T1w imaging with high SNR and CNR, with very homogeneous fat saturation”

Dr M. Zins, Hopital St Joseph, Paris, France
Enhanced DWI\(^1\)

- Improved ADC quantification
- Improved SNR and contrast ...
- Reduced scan time ... smart averaging
- Improved spatial resolution ... 3-in-1 mode
- Respiratory triggering support for free breathing

"In our facility, we have found that the high image quality of the IR-prep DWI sequence is applicable for a broad range of oncology studies and treatment monitoring"

Dr T. La Folie, HIA Laveran/Ste Anne, France

1 Compared to conventional DWI technique

Respiratory Triggered eDWI at 3T

Liver mets 3-in-1 , B500, 4 NEX Breath-hold

b20 1NEX b500 3NEX b800 3NEX

3-in-1 192 x 224 in 30sec

Courtesy: Keio University, Japan
ASPIR: Adiabatic Spectral Inversion Recovery

- Homogeneous fat suppression
- Excellent contrast between soft tissue and fat
- Uniform inversion of the fat magnetization vector
- Available with: Cube, SSFSE, 2D FIESTA, Inhance Inflow IR, COSMIC, and VIBRANT

- Amplitude and frequency modulated inversion
- Insensitive to B1 field non-uniformities

Images acquired with Discovery MR750, and comparable to expected results from Signa HDxt
MR Touch / MR Elastography

Vibration
- Active driver
- Sound Waves
  - Shear waves generated by external acoustic driver
- Passive driver
  - Shear waves transmitted to tissue by passive driver

Acquisition
- MRE Scan
- Shear waves captured using phase contrast gradients GRE with modified cyclic motion-encoding gradients

Motion Synthesis
- External acoustic driver triggered by PSD.
- MEG gradient synchronized with external acoustic vibrations

Reconstruction
- Wave Image
- Inversion algorithm used to convert wave images into stiffness map

Elastogram
- Soft
- Hard

Not available for sale in Japan
Performance of MR Touch in Real Clinical Situations

Obesity

BMI = 36

Ascites

Not available for sale in Japan

Courtesy Mayo Clinic
IDEAL

- Productivity - Multiple contrast from one scan
- Perfect registration – with & without fatsat, no chemical shift
- Superb fat-water separation
- All T1, T2, PD contrasts

Select the desired output images
- Parallel imaging
- Region growing based field maps
- 2D FSE and 3D GRE implementations

Fat Only  Water Only  In Phase  Out of Phase
3D MERGE

- Fast, high resolution axial volumetric scan
- Water excitation for cartilage imaging
- Easy reformat in any plane

“In our clinical practice, the 3D MERGE technique has been used primarily for spine imaging and this acquisition is now included in our routine protocol for cervical, thoracic and lumbar spinal imaging.”

Jang-Gyu Cha, MD
Soonchunhyang University Hospital,
Bucheon, South Korea
Inhance Inflow IR 2.0

- Consistent, robust NCE 3D MRA for arteries & veins (Renal, Portal, Carotids etc.)
- Flexible scan plane with excellent fat, flow and background suppression
- Fast: scan time < 4 min with respiratory trigger

"With Inhance Inflow IR 2.0, we have noticed a change in referral patterns, with a larger volume of renal impairment patients and those who refuse IV contrast or cannot hold their breath for 25 s"

Prof. Wladyslaw Gedroyc @ St. Mary’s Hospital, UK
Quick Step – Simplified Workflow

Images comparable to that which could be expected with Signa HDxt 1.5T and 3.0T
3D HEART
Streamlined prescription and hi-res, whole heart morphology at 3T

CINE-IR
Quick assessment of optimal TI time for MDE myocardial viability studies and tissue characterization through T1 curve

FGRE Time Course
High temporal and spatial resolution for time course studies
ReportCard
Cardiac Visualization & Reporting

- Comprehensive CMR post-processing capability with automatic segmentation
- Integrate reporting with images, data and impression for effective information transfer to referring physician

- LV function & auto segmentation
- Time-course analysis
- Flow Analysis
- Infarct sizing
- T2* mapping
- PFO analysis
- Research Database
- Macro reporting
Cardiac VX

- Simple & intuitive workflow – Guided UI
- Reduce cardiac analysis time – Faster & more accurate new LV segmentation algorithm
- Quick report generation with macros, customizable report templates & normal values
- Easy comparison with multi-study viewing mode

- Automatic image series filter
- Optimized loading & post-processing speed
- New 2 Clicks LV segmentation algorithm
- Fast EF – Simpson’s Rule
- New Flow Regurgitation Fraction calculation
- MDE, Time Course, PFO, StarMap analysis

Function Analysis

Flow Analysis

MDE, Time Course, StarMap

Not available for sale in Japan
Flow Analysis 4 on Console

- Quick Flow analysis during exam
- Helps reduce patient recall
- Enables fast decision making

ReportCard Flow Analysis 4 available on console

Full Functionality with
- Automated segmentation
- Displays flow rate & other parameters
- Macro impression editor & report generation

1 Discovery MR70/450/750w and Optima MR450w
GEM Flex Suite†

- GEM Flex Suite:
  - Three high-density 16 channel arrays, knee support and fixation, coil fixation pad
- Variable element density helps ensure optimum imaging for patient size
- Light & flexible to accommodate a wide range of shapes
- Durable outer shell for simple cleaning and maintenance

† by NeoCoil; not compatible with 3.0T

Elbow at 1.5T
Axial and Coronal
PD FSE
Fat saturation
2.5mm
320x192
3:30 min

Not available for sale in Japan
High Density Cardiac Imaging
Now compatible with Signa HDxt

32 Element Cardiac Coil
High Density Design for Fast Imaging

ASSET x 4
TR/TE=3.2/1.4, Flip 45,38x38,8 mm, 224x224, 1 NEX, ZIP 512, ASSETx4,
10 slices total coverage entire LV
Scan time = 2x 20 s BH

Images acquired with Discovery MR450. Comparable to that which could be expected with Signa HDxt 1.5T
Express Exam user interface

• New UI platform shared across Optima and Discovery product lines
• Site protocols easily saved, filtered, archived, and shared.
• Automatically prescribe image processing
• Automatic launch of processing immediately after acquisition
• Toggle visibility of secondary parameters for new or experienced users
Waveforms display and Protocol Notes
Simplified protocol management

Site specific protocols easily saved, filtered, archived, and shared.

Save protocol as:

- Name: Brain-ASSET
- Library: GEHC
- ID: 1.1
- Patient: Adult
- Anatomy: Head
- Filters: Routine, MRI, Spectra, Contrast, Other
- Protocol Description

[Diagram of a human body with a list of protocols and options to save a protocol]
Automatically prescribe the acquisition based on previous series. Following parameters can be automatically updated and applied for you:

- Scan locations
- Volume size and shape
- Slice thickness
- Slice spacing
- Saturation
- Shim volume
Inline linking, combining and processing

Inline processing tasks immediately after the images are acquired, without user intervention.
Liberty Docking System – productivity starts before the patient enters the scan room

SAFETY
One Technologist can remove a patient in less than 30 seconds.

PRODUCTIVITY
Prepare the patient outside the scan room and help improve workflow with two tables.
Liberty Docking System – more than a table

**SERVICE EXPANSION**
Grow clinical services with additional tables.

**SAFETY**
One Technologist can remove a patient in less than 30 seconds.

**PRODUCTIVITY**
Prepare the patient outside the scan room and help improve workflow with two tables.

- Sentinelle Dedicated Breast
- Radiation Oncology
- Surgery & Intervention
Sentinelle dedicated breast table system

Enhanced imaging & intervention

Variable coil geometry adjusts to patient designed to enhance SNR, resolution, and coverage

Open table design for enhanced biopsy access – working space

Detachable table designed to optimize patient workflow and privacy with off-line set-up and patient care
Radiation therapy treatment planning table system

Flat table top replicates RT position and CT simulation – designed to help reduce organ distortion

Indexed table edge & Lok-bar designed to enable repeatable fixation

Detachable table designed to optimize patient workflow with off-line simulation set-up
Built upon an entire network to help you get the most out of your investment – from day one

*Trademark of General Electric Company
Built for upgradeability, uptime, and investment protection – it’s all about system longevity

Signa LX to Signa HDxt
Signa EXCITE to Signa HDxt
Signa HD to Signa HDxt
CXK4 to Discovery MR450
Signa HDx to Optima MR360

Built for upgradeability – a little or a lot.

Discovery MR450