

A man in profile, looking intently at a large monitor. The monitor displays four MRI scans of a brain, arranged in a 2x2 grid. The background is softly blurred, suggesting a clinical or laboratory setting.

**PHILIPS**

Magnetic Resonance

# Extending the **power of MR**

Clinical applications portfolio

# Extending the **power of MR**

At Philips MR, we are committed to partnering with you to help deliver a confident diagnosis the first time, while also helping to future-proof your radiology department. We do this by leveraging our deep insights into the people behind the image. This has culminated in our portfolio of MR solutions, which break down diagnostic boundaries by delivering **Speed, Comfort and Confidence**, all with the aim to help improve patient care.

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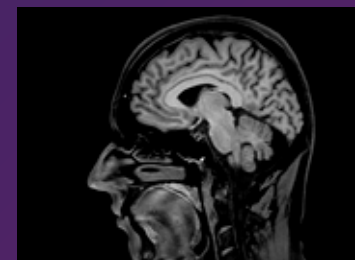


# ScanTools Pro

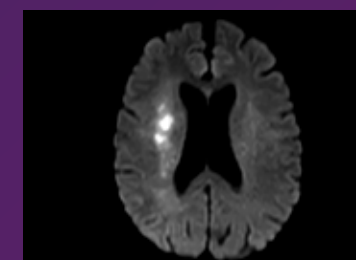
Scantools Pro provides the following generic workflow features for all clinical anatomies:

- **ExamCards**, for automated scanning and processing of patient studies. Examcards can be edited during scanning. The Split Exam option provides you the ability to separate imaging series acquired during a single scan session into multiple scan instances. This allows for correct association of imaging series to ordered/scheduled examinations to facilitate proper reporting, data handling and billing activities.
- **SENSE parallel imaging** methods for fast scan times, high resolution or to reduce susceptibility artifacts.
- **CLEAR** for signal uniformity correction based on coil-sensitivity and on patient loading.
- **PicturePlus** to improve appearance of images through edge enhancement and smoothing. Provides full control over all enhancement parameters, which can be applied automatically post-acquisition or as a post-processing option.
- **High-resolution** acquisitions and reconstruction (1024 matrix)

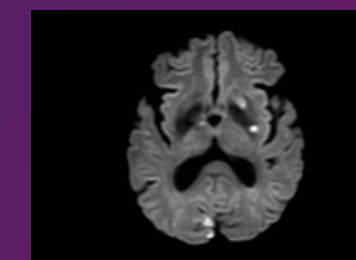
In addition, ScanTools Pro contains fast, high resolution imaging methods for the assessment of morphology of all anatomical areas including brain and spine, MSK, body and breast, cardiac, and various blood vessels with or without contrast agents. Specific features per clinical area are listed below.



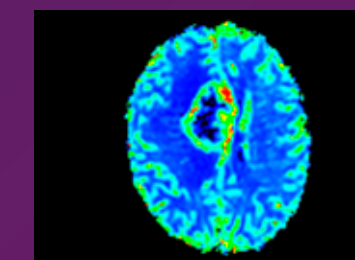
**3D BrainVIEW**  
View your 3D TSE imaging data in any plane



**Diffusion**  
Non-invasive assessment of tissue structure



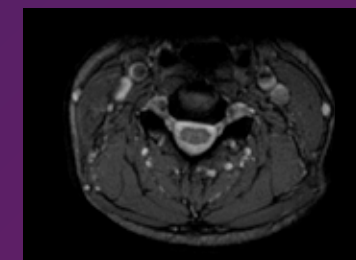
**DWI TSE**  
Diffusion imaging with reduced distortion



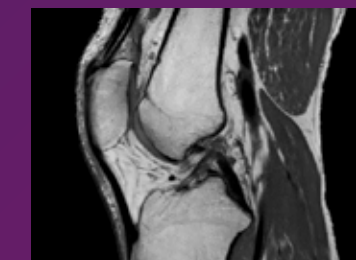
**Perfusion**  
T2\* perfusion imaging in short scan times



**3D DRIVE**  
Short scan time, brighter fluid



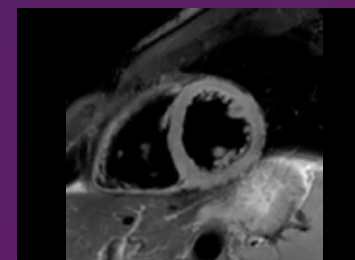
**mFFE**  
Optimal visualization of the spinal cord



**3D MSK VIEW**  
View your 3D TSE imaging data in any plane



**DWIBS**  
Easily visualize lesions throughout the body



**Cardiac MS/QF**  
Elevate your cardiac imaging to clinical routine level



# dS Performance Suite Plus

This suite is designed for fast workflow, robust scanning and an enhanced patient experience during MRI examinations. The dS Performance Suite Plus delivers fast, robust scanning methods based on dStream digital quality and speed.



**AutoVoice** Page 8  
Guiding your patients through the MR examination



**ComforTone** Page 9  
Reduce acoustic noise and enhance MR experience



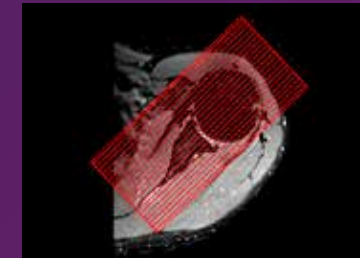
**ScanWise Implant** Page 10  
A key to confidence with MR Conditional implants



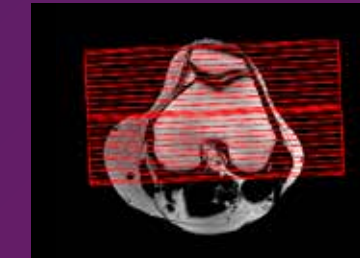
**SmartExam Brain** Page 11  
Standardized exams for consistent MRI results



**SmartExam Spine** Page 12  
Standardized exams for consistent MRI results



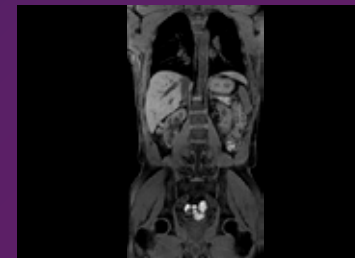
**SmartExam Shoulder** Page 13  
Standardized exams for consistent MRI results



**SmartExam Knee** Page 14  
Standardized exams for consistent MRI results



**O-MAR** Page 15  
Efficient near-metal soft tissue and bone imaging



**mDIXON XD FFE** Page 16  
Improve your fat-free imaging performance



**Whole Body** Page 17  
Get comfortable body imaging with head-to-toe coverage

## **AutoVoice** Guiding your patients through the MR examination

AutoVoice is a fully integrated and automated solution that guides your patients through the MR examination by indicating scan duration, announcing table movements and providing breathhold guidance, helping you enhance patient comfort. Automated breathhold commands are aligned with the patient's respiratory cycle and can be selected to fit patient conditions, such as expiration versus Inspiration.



## **ComforTone** Reduce acoustic noise and enhance MR patient experience

Leveraging our years of experience in acoustic noise reduction technologies, our unique ComforTone solution achieves up to 80% acoustic noise reduction<sup>1</sup> with similar image quality and contrast within the same time slot.

### **Additional information:**

- Available in several languages and customizable for local pronunciation or for a staff member's voice if desired.
- Allows export of customized settings to other Philips MR scanners.
- Texts and settings can be further adapted to meet operator preferences.



### **Additional information:**

- Can be used in routine exams like brain.
- Can be applied with high gradient settings.
- Easy to implement and use, only few clicks are required to get started thanks to our ready-to-use ExamCards.

## ScanWise Implant

# A key to confidence with MR Conditional implants

ScanWise Implant software helps you to confidently scan patients within the MR Conditional limits by providing step-by-step guidance to enter the condition values of the implant manufacturer. Your MR system then automatically applies these values for the entire examination helping you to simplify your scanning process for patients with MR Conditional implants.

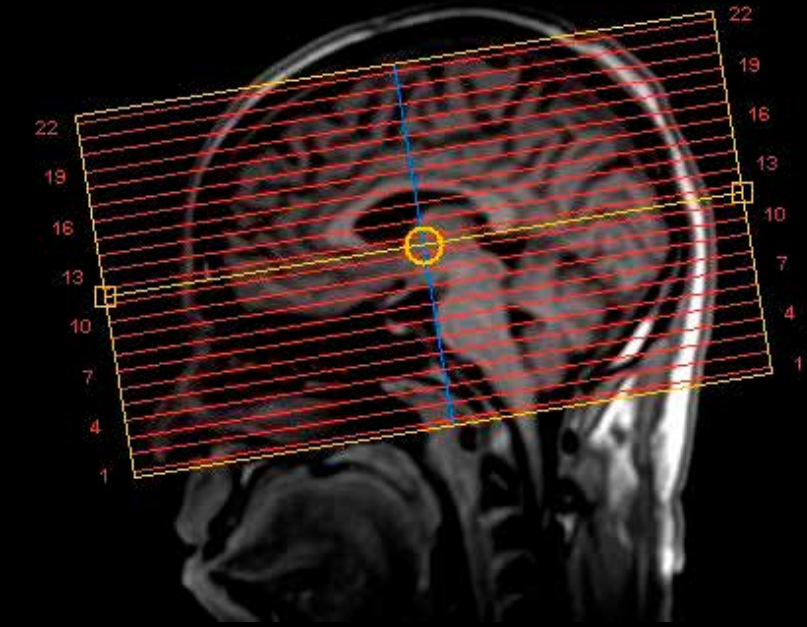


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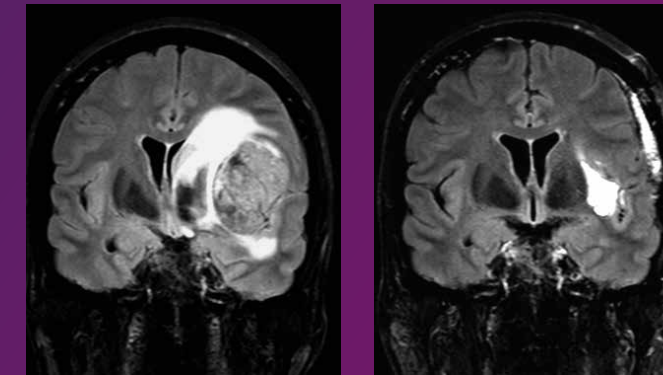
- Streamline your workflow with easy set-up of scanning parameters as to adhere to the implant's safety conditions, for all scans just once.
- Increase referrals of patients with MR Conditional implants to your institution by confidently offering MR imaging to this growing patient population.

## SmartExam Brain

# Standardized exams for consistent MRI results



SmartExam<sup>1</sup> Brain assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



Enhanced consistency in follow-up exams

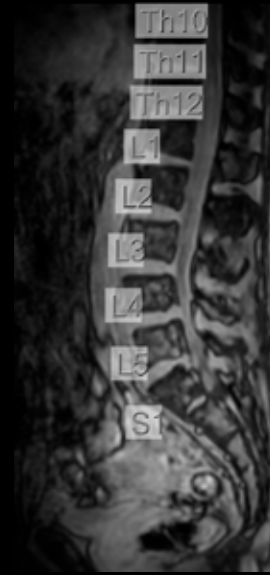
### Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

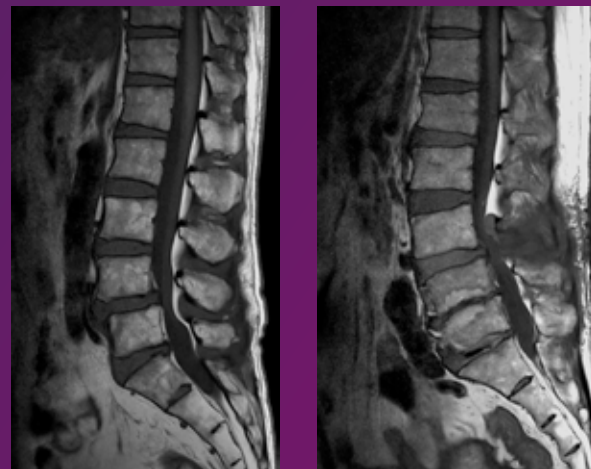
<sup>1</sup> SmartExam is not available to patients with MR Conditional implants.

## SmartExam Spine

Standardized exams for consistent MRI results



SmartExam Spine<sup>1</sup> assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



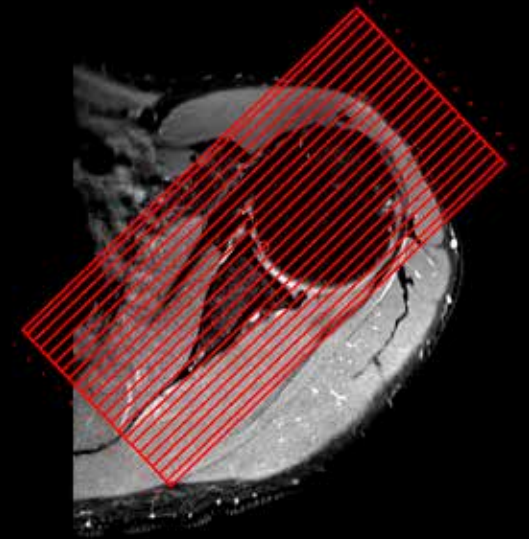
Consistent reading for any patient

### Additional information:

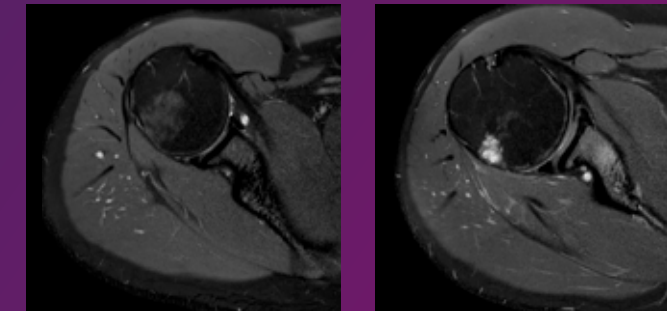
- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Includes numbering of the vertebrae and automatically matches the planning of the axial stacks to the disc's orientation.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

## SmartExam Shoulder

Standardized exams for consistent MRI results



SmartExam Shoulder<sup>1</sup> assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



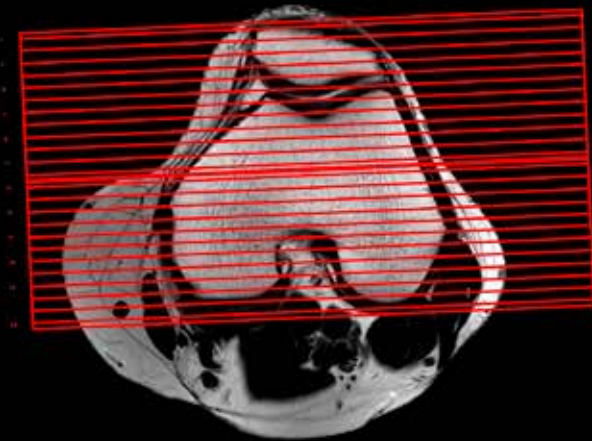
Consistent reading for any patient

### Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

## SmartExam Knee

# Standardized exams for consistent MRI results

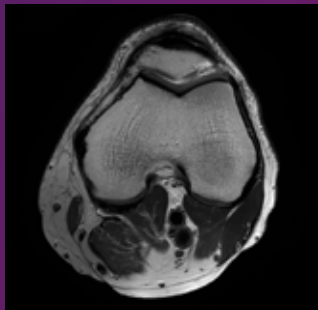


## O-MAR

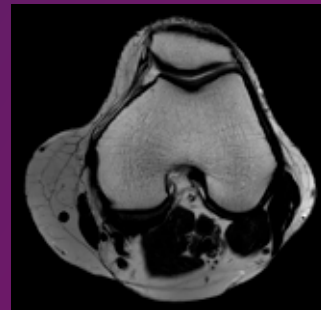
# Efficient near-metal soft tissue and bone imaging



SmartExam Knee<sup>1</sup> assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.



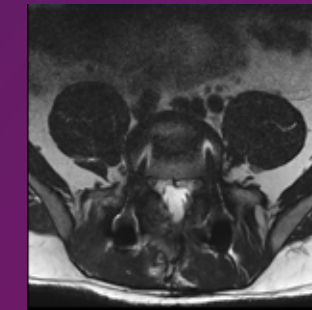
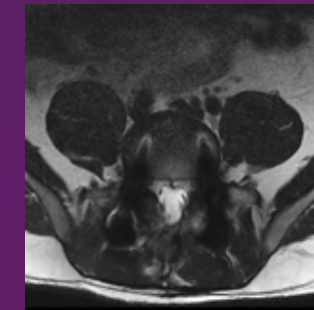
Consistent reading for any patient



### Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

O-MAR (Metal Artifact Reduction for Orthopedic implants) allows you to improve visualization of more soft tissue and bone in the near vicinity of MR Conditional orthopedic implants<sup>1</sup>. This allows you to offer post-operative MR imaging to patients with implants who could develop implant-related conditions.



Traditional T2w TSE (left) versus T2w TSE O-MAR (right)

### Additional information:

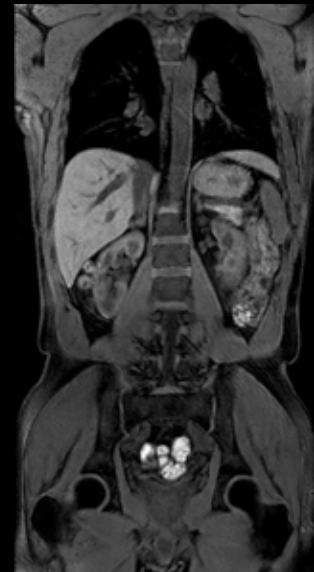
- Reduction of susceptibility artifacts<sup>2</sup> caused by metal implants<sup>1</sup>.
- Supports most relevant image contrasts (T1w, T2w, PDw, and STIR).
- Extending MARS (Metal Artifact Reduction Sequence) with the View Angle Tilting (VAT) technique.

<sup>2</sup> Compared to standard high bandwidth spin-echo based techniques.



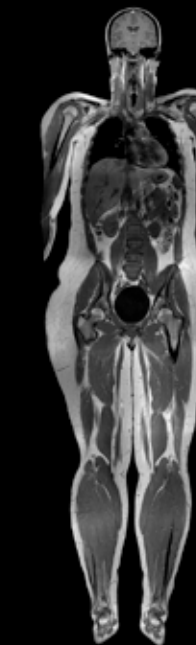
## mDIXON XD FFE

# Improve your fat-free imaging performance

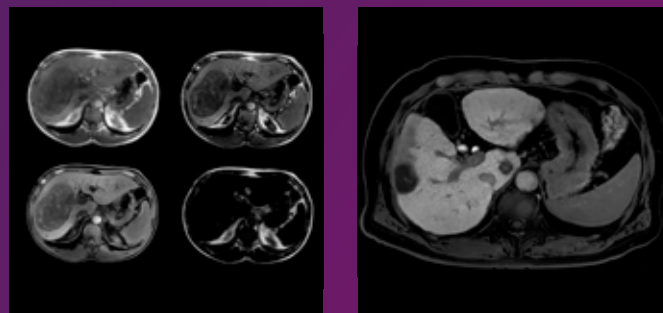


## Whole Body

# Get comfortable body imaging with head-to-toe coverage



mDIXON XD FFE provides more efficient fat-free imaging in routine scan times. Improve your fat-free imaging over large field-of-views and for high resolution imaging. With up to four image types in one single scan, including with or without fat suppression contrasts, mDIXON XD FFE will enable you to enhance your imaging strategies by simplifying your routine FFE procedures.



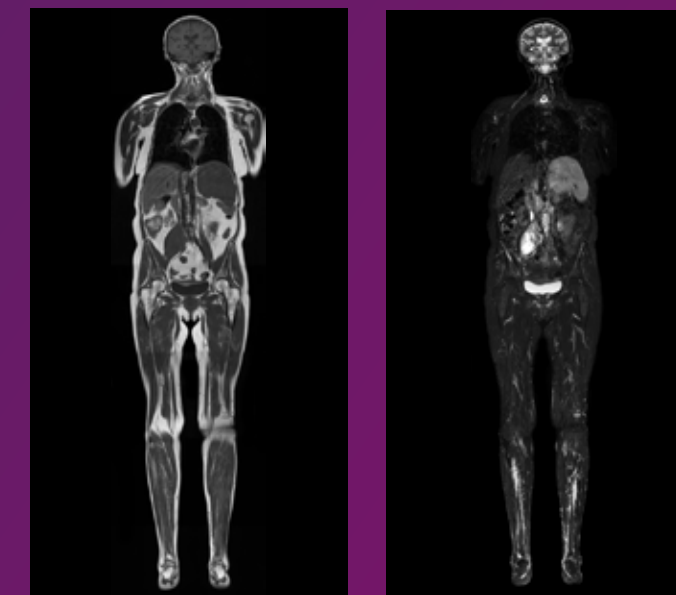
Multiple image contrasts in one single scan

### Additional information:

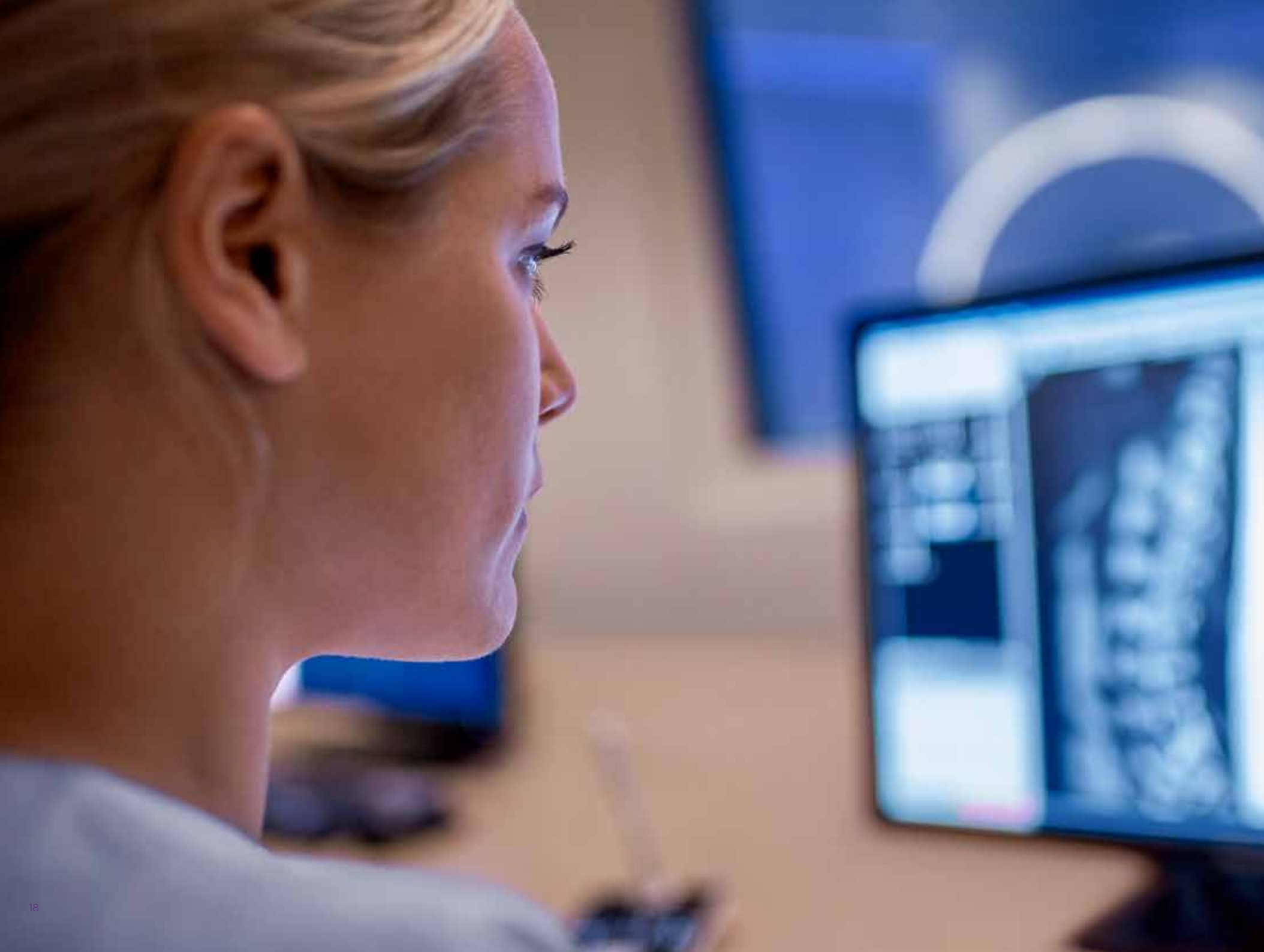
- Improved fat-free imaging over large 400-500 mm FOV and for sub-millimetric resolution<sup>1</sup>.
- More efficient, faster scanning<sup>2</sup>.
- Increased signal-to-noise ratio<sup>2</sup>.
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only)

<sup>1</sup> Compared to the standard mDIXON algorithm, due to unique 7-peak fat model and improved B0 correction.  
<sup>2</sup> Due to the unrestricted echo-time (TE) approach in mDIXON allowing more freedom in protocol optimization.

Whole Body package supports automated head-to-toe imaging coverage. By allowing an extended table stroke, it enables whole-body, multi-station, feet-first imaging studies. You can perform all required imaging sequences per station, reducing the amount of required table movements.

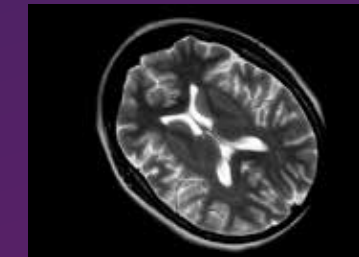


Head to toe imaging coverage

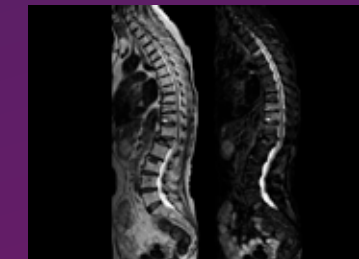


# dS Performance Suite Pro

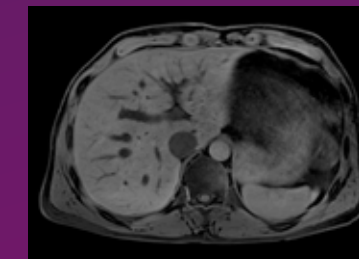
The dS PerformanceSuite Pro complements the dS PerformanceSuite Plus. It brings additional software applications for motion control, fat free performance TSE scan and free breathing liver imaging.



**MultiVane XD** Page 20  
Motion-free imaging in short scan time



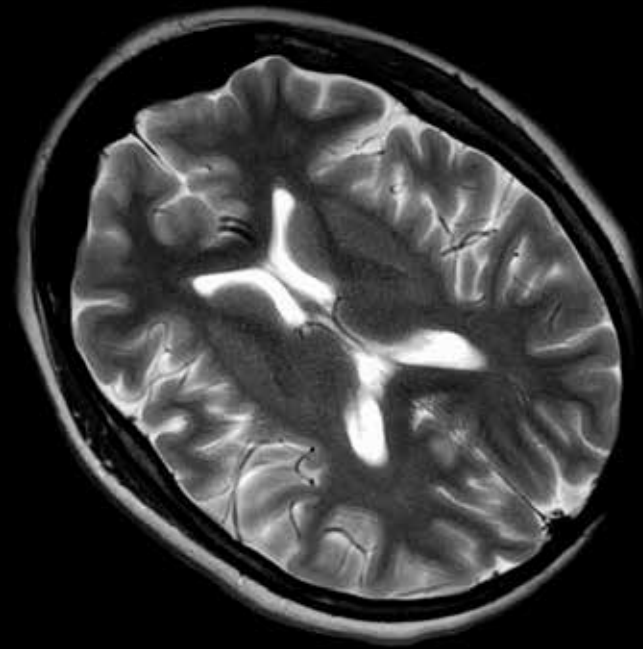
**mDIXON XD TSE** Page 21  
Replace all your FatSat by one single fat-free imaging solution



**3D VANE XD** Page 23  
Free breathing abdominal imaging

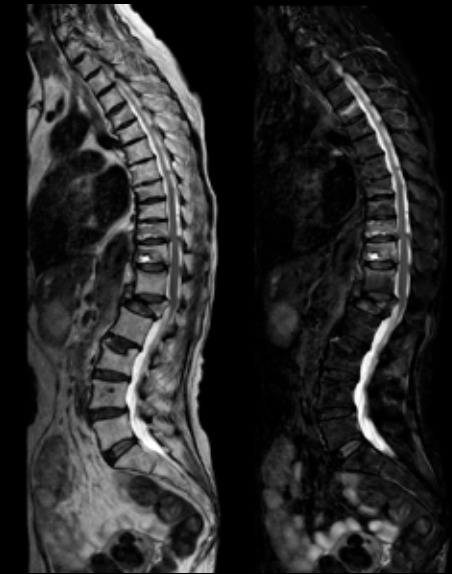
## MultiVane XD

# Motion-free imaging in short scan time

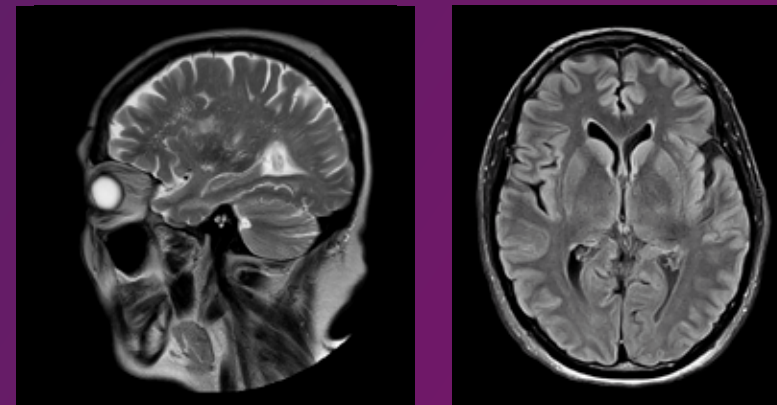


## mDIXON XD TSE

# Replace all your FatSat by one single fat-free imaging solution

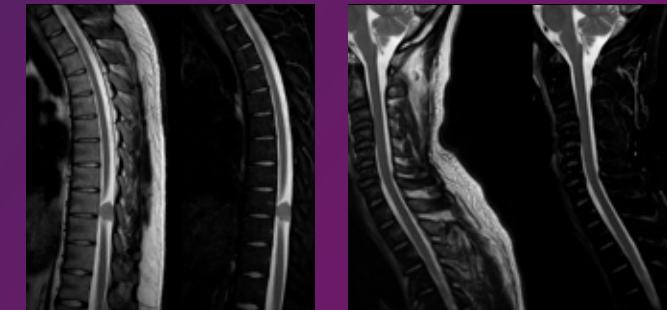


MultiVane XD delivers high resolution diagnostic images even in the case of severe patient motion by providing motion correction to a full range of anatomies, in short scan times<sup>1</sup>. MultiVane XD works in multiple orientations and for various contrasts (T1w, T2w, FLAIR) helping you to increase your diagnostic confidence.



Diagnostic images, even in the case of severe patient motion

mDIXON XD TSE brings a new dimension to fat suppression by providing uniform, complete and consistent fat-free imaging, even over large field-of-views and in challenging anatomies. Providing up to four image types in one single scan, including with/without fat suppression contrasts, in routine scan times and resolution simultaneously, you can easily replace your favorite routine TSE scans with it. mDIXON XD TSE will enable you to enhance your imaging strategies by simplifying your routine TSE procedures.



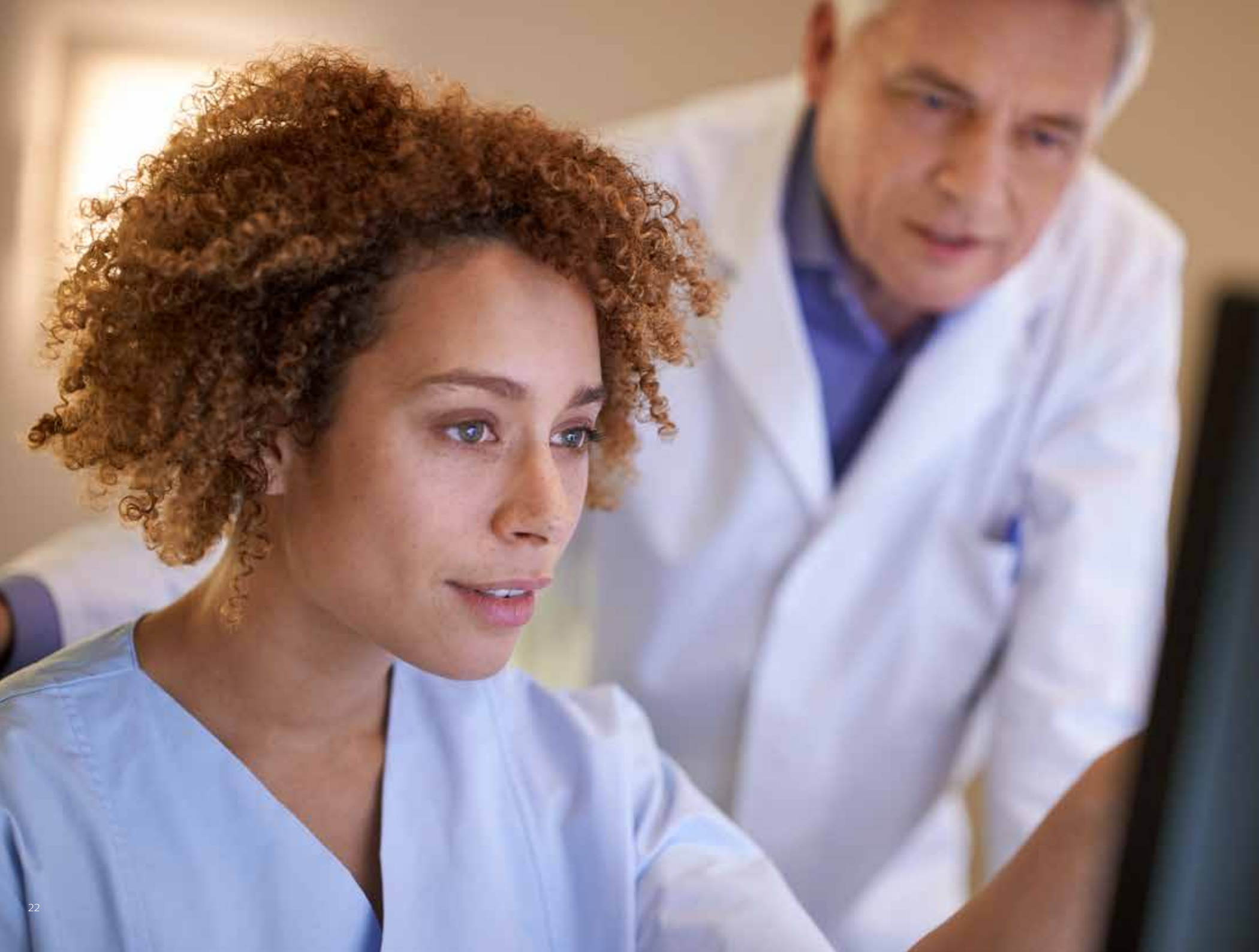
With/without fat suppression contrasts, simultaneously

### Additional information:

- 30% faster scanning and up to 30% reduced blurring<sup>1</sup>.
- Increased signal-to-noise ratio<sup>2</sup>.
- Acquire up to four image types in one single scan (water only, in phase, out phase, fat only).

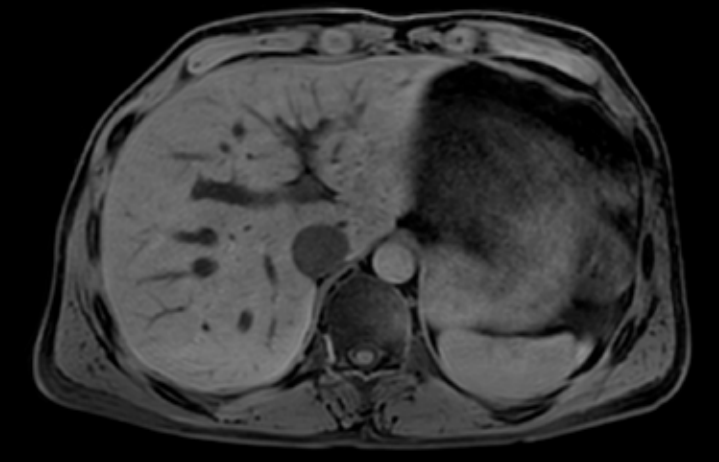
<sup>1</sup> Due to its unique 2-echo technology, compared to the conventional 3-echo DIXON TSE techniques.

<sup>2</sup> Compared to a standard non-fat-shift corrected fat-free TSE approach.

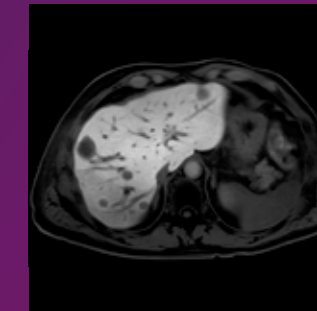
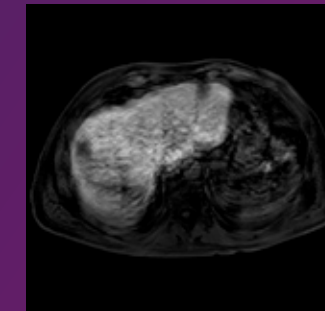


## 3D VANE XD

# Free breathing abdominal imaging



3D VANE XD supports imaging of the abdomen without the need for the patient to hold their breath, helping you reduce motion artifacts during free breathing<sup>1</sup> and improve patient comfort. With 3D VANE XD, you can now accommodate patients who are unable to hold their breath, including pediatric patients.



Breathhold mDIXON XD (left) versus a free breathing 3D VANE XD (right)

### Additional information:

- 3D T1w FFE imaging method.
- Can be combined with fat suppression methods (eTHRIVE, mDIXON XD).

<sup>1</sup> Due to radial imaging method, compared to Philips 3D cartesian imaging method.



# dS Performance Suite Premium

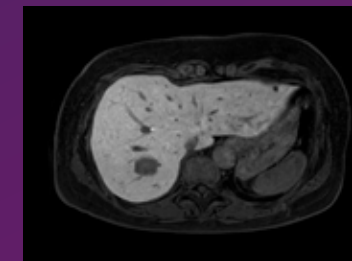
The dS PerformanceSuite Premium will complement the dS PerformanceSuite Pro by bringing all Compressed SENSE software applications.



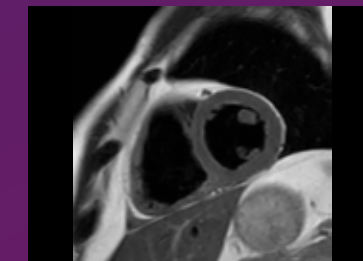
**Compressed SENSE** Page 26  
**Neuro and Spine**  
Speed done right, every time



**Compressed SENSE** Page 27  
**MSK**  
Speed done right, every time



**Compressed SENSE** Page 28  
**Body**  
Speed done right, every time



**Compressed SENSE** Page 29  
**Cardiac**  
Speed done right, every time

## Compressed SENSE Neuro and Spine

Speed done right,  
every time

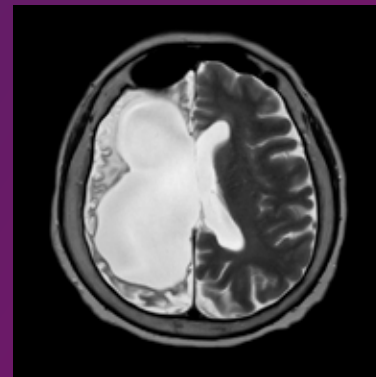


## Compressed SENSE MSK

Speed done right,  
every time



To meet the increased demand for productivity, a technology break-through in acceleration is required. Leveraging our long standing leadership position in speed (i.e. SENSE), Philips brings a breakthrough in productivity. Compressed SENSE is about accelerating full patient examinations to empower your staff to focus where it matters the most, enhanced patient care. This new paradigm in productivity is available for Neuro and Spine imaging, for all anatomical contrasts, and not only 3D scans but also 2D scans are (up to 50%) faster<sup>1</sup>.



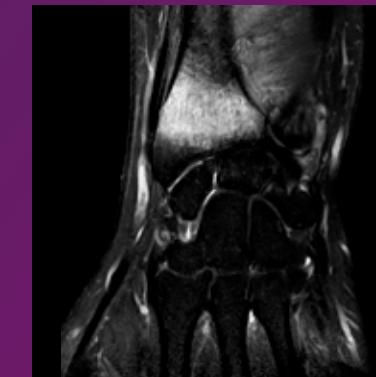
Fast 2D Brain imaging

### Additional information:

- Available for multiple cartesian scan techniques like FFE, SE, TFE and TSE.
- Available for all anatomical contrasts (e.g. T1, T2, PD, FLAIR, DIR, fat sat).
- A break-through acceleration technique speeding up not only sequences but your entire exam.
- Unique implementation enabling 2D and 3D scans to be up to 50% faster with virtually equivalent image quality<sup>1</sup>.

<sup>1</sup> Compared to scans without Compressed SENSE

To meet the increased demand for productivity, a technology break-through in acceleration is required. Leveraging our long standing leadership position in speed (i.e. SENSE), Philips brings a breakthrough in productivity. Compressed SENSE is about accelerating full patient examinations to empower your staff to focus where it matters the most, enhanced patient care. This new paradigm in productivity is available for MSK imaging, for all anatomical contrasts, and not only 3D scans but also 2D scans are (up to 50%) faster<sup>1</sup>.



Fast 2D MSK imaging

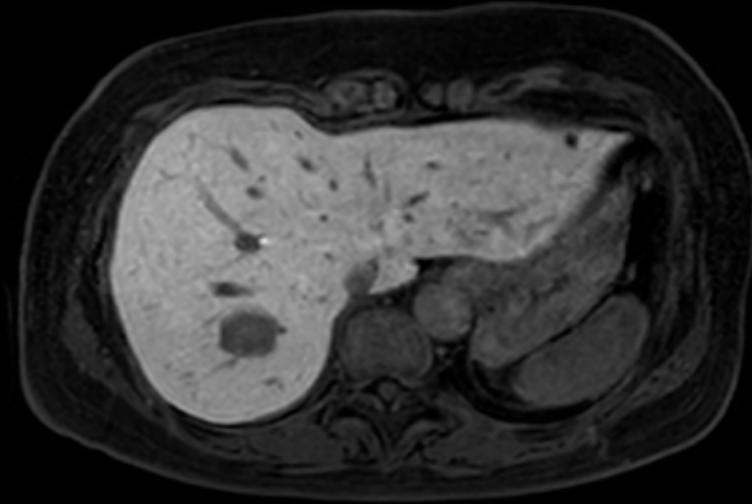
### Additional information:

- Available for multiple cartesian scan techniques like FFE, SE, TFE and TSE.
- Available for all anatomical contrasts (e.g. T1, T2, PD, FLAIR, DIR, fat sat).
- A break-through acceleration technique speeding up not only sequences but your entire exam.
- Unique implementation enabling 2D and 3D scans to be up to 50% faster with virtually equivalent image quality<sup>1</sup>.

<sup>1</sup> Compared to scans without Compressed SENSE

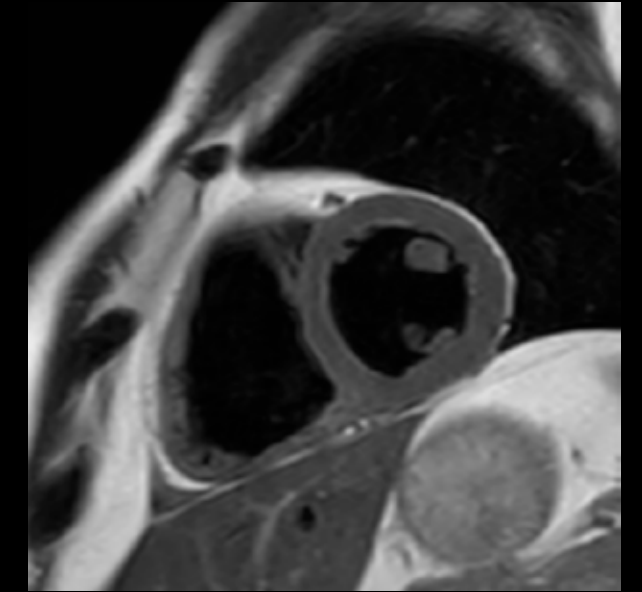
## Compressed SENSE Body

Speed done right,  
every time

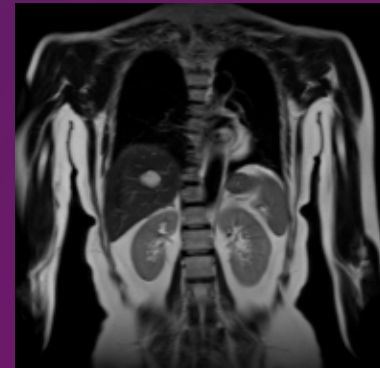


## Compressed SENSE Cardiac

Speed done right,  
every time



To meet the increased demand for productivity, a technology break-through in acceleration is required. Leveraging our long standing leadership position in speed (i.e. SENSE), Philips brings a breakthrough in productivity. Compressed SENSE is about accelerating full patient examinations to empower your staff to focus where it matters the most, enhanced patient care. This new paradigm in productivity is available for Liver, Prostate, Breast and Whole Body imaging, for all anatomical contrasts, and not only 3D scans but also 2D scans are (up to 50%) faster<sup>1</sup>.



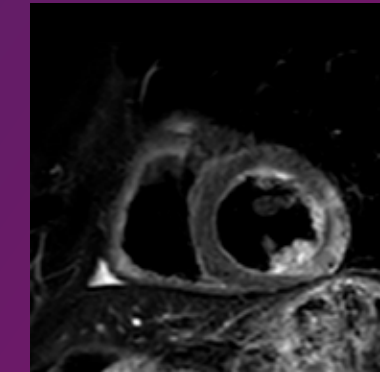
Fast 2D imaging with a short breath hold

### Additional information:

- Available for multiple cartesian scan techniques like FFE, SE, TFE and TSE.
- Available for all anatomical contrasts (e.g. T1, T2, PD, FLAIR, DIR, fat sat).
- A break-through acceleration technique speeding up not only sequences but your entire exam.
- Unique implementation enabling 2D and 3D scans to be up to 50% faster with virtually equivalent image quality<sup>1</sup>.

<sup>1</sup> Compared to scans without Compressed SENSE

To meet the increased demand for productivity, a technology break-through in acceleration is required. Leveraging our long standing leadership position in speed (i.e. SENSE), Philips brings a breakthrough in productivity. Compressed SENSE is about accelerating full patient examinations to empower your staff to focus where it matters the most, enhanced patient care. This new paradigm in productivity is available for Cardiac imaging, for all anatomical contrasts, and not only 3D scans but also 2D scans are (up to 50%) faster<sup>1</sup>.



Fast 2D Cardiac imaging with a short breath hold

### Additional information:

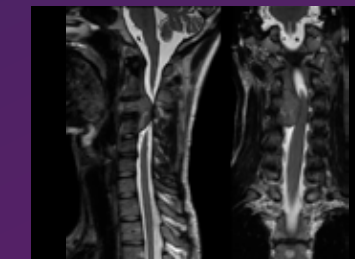
- Available for multiple cartesian scan techniques like FFE, SE, TFE and TSE.
- Available for all anatomical contrasts (e.g. T1, T2, PD, FLAIR, DIR, fat sat).
- A break-through acceleration technique speeding up not only sequences but your entire exam.
- Unique implementation enabling 2D and 3D scans to be up to 50% faster with virtually equivalent image quality<sup>1</sup>.

<sup>1</sup> Compared to scans without Compressed SENSE

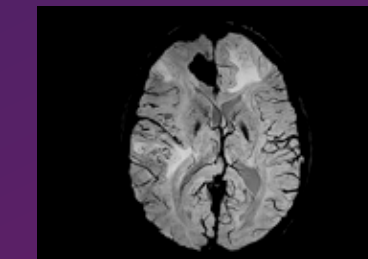


# dS **Neuro** Suite Plus

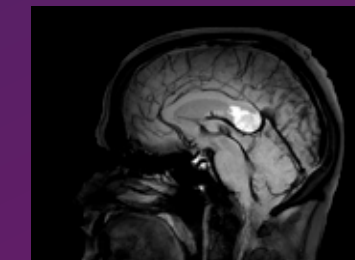
Advanced diagnostics are a crucial part of the treatment protocol for neurological disorders. With its superb 3D imaging of soft tissue, MRI can capture a wealth of structural and physiological information about the brain. Our dStream digital broadband architecture technology, which provides high-quality images at remarkable speed, helps you gain visibility into neurological anatomies and view multi-dimensional data to enable diagnostic decision support.



**3D SpineVIEW** Page 32  
View your 3D TSE imaging data in any plane



**SWIp** Page 33  
Exquisite susceptibility contrast



**Black Blood imaging** Page 34  
Enhance your diagnostic confidence for brain imaging

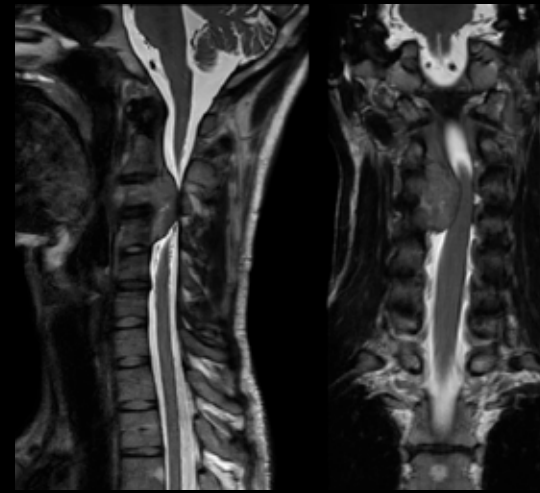


**Spectroscopy** Page 35  
Fully integrated proton spectroscopy

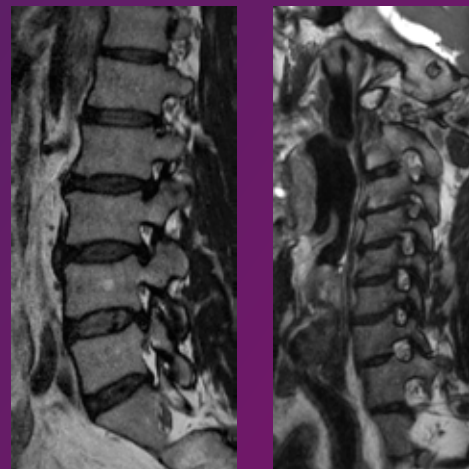


## 3D SpineVIEW

View your 3D TSE imaging data in any plane



3D SpineVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



Viewing imaging data in oblique directions

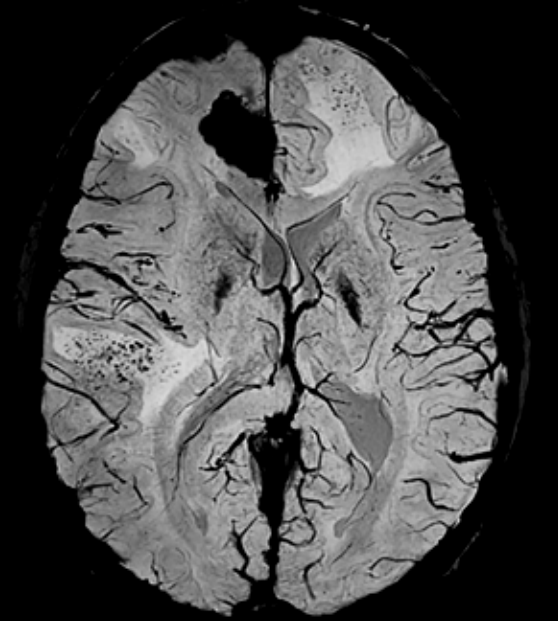
### Additional information:

- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times<sup>1</sup>.
- Available for a range of contrasts.

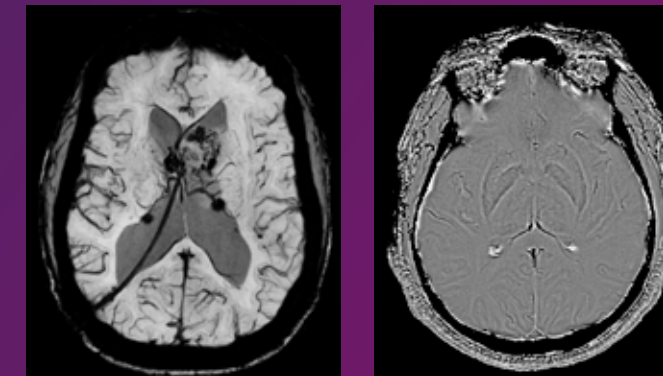
<sup>1</sup> Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

## SWIp

Exquisite susceptibility contrast



SWIp has a high sensitivity to enhance contrast for deoxygenated (venous) blood or calcium deposits and may help you, when used in combination with other clinical information, in the diagnosis of various neurological pathologies. SWIp offers high resolution 3D susceptibility weighted brain imaging allowing you to easily integrate it into your mainstream practice.



3D susceptibility weighted brain imaging, including phase maps

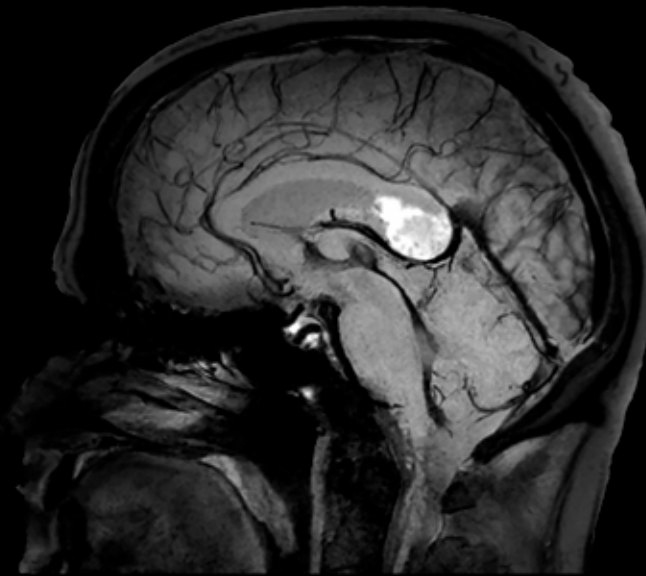
### Additional information:

- High signal-to-noise ratio<sup>1</sup>.
- Includes detailed phase maps to support advanced diagnosis.

<sup>1</sup> Due to multi-echo approach.

# Black Blood imaging

## Enhance your diagnostic confidence for Brain imaging

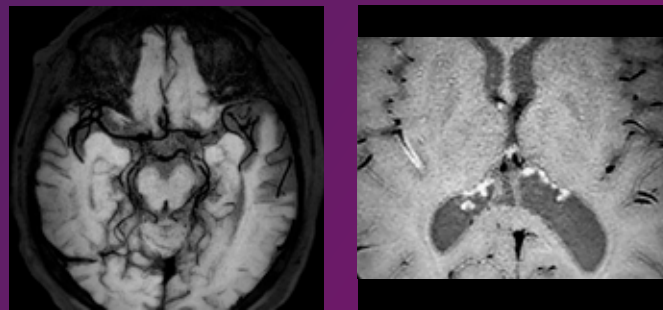


# Spectroscopy

## Fully integrated proton spectroscopy



Black Blood imaging helps you better differentiate the vessel lumen from the intra lumen blood signal. This enhances your diagnostic confidence by performing your 3D brain imaging with higher and isotropic imaging resolution<sup>1</sup> with a reduction of the intra-lumen brain blood signal<sup>2</sup> over the complete imaging volume.

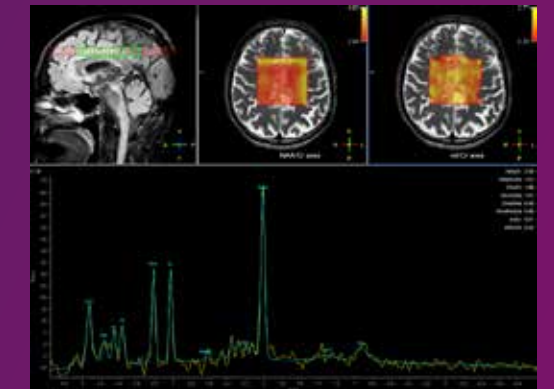


Reduction of the intra-lumen brain blood signal

### Additional information:

- Fast scan times<sup>3</sup> of five minutes.
- 3D isotropic acquisition enables reformats in any plane (including oblique) without loss of resolution.

Spectroscopy Specialist provides extra information about the spatial distribution of metabolites in the brain. This package provides a set of single voxel, multi-voxel and multi-slice proton spectroscopy, fully integrated into the MRI console. To reduce scan time, a combination of Turbo Spectroscopic Imaging and dS SENSE can be used. Anisotropic matrix can be used to further reduce acquisition time. Includes SpectroView Analysis package for visualization and processing of all spectroscopic data.



Spectroscopic imaging

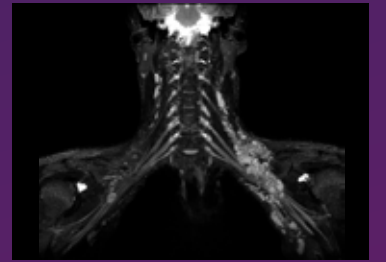
<sup>1</sup> Compared to our 2D double inversion methods with same brain coverage and scan time.  
<sup>2</sup> Compared to our 3D T1w scan without MSDE pre-pulse.

<sup>3</sup> Compared to our 2D double inversion recovery methods with same full brain coverage.

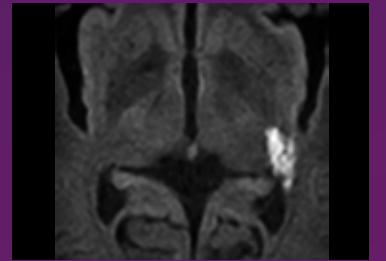


# dS **Neuro** Suite Pro

The dS NeuroSuite Pro complements the dS NeuroSuite Plus by bringing more advanced neuro applications which are 3D Nerve VIEW, Zoom Diffusion Imaging, and FiberTrak Specialist. Philips' neuro-diagnostic applications empower you to resolve complex questions with more certainty.



**3D NerveVIEW** Page 38  
Review nerve plexus, non-invasively



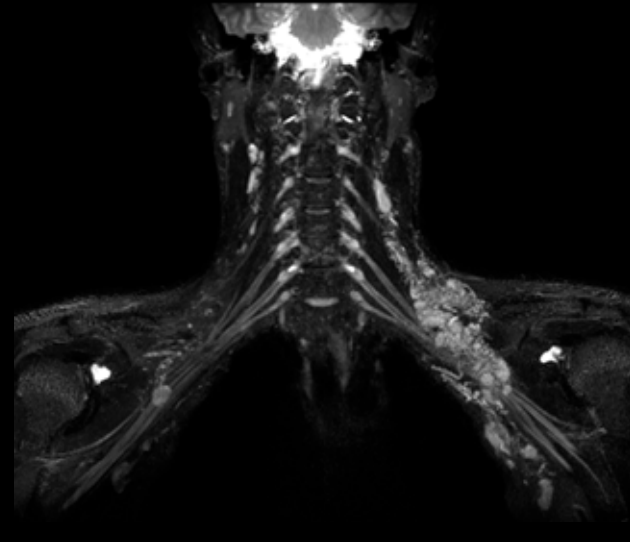
**Zoom Diffusion** Page 39  
Small FOV diffusion imaging for improved image quality



**DTI FiberTrak** Page 41  
Fast, easy clinical fiber tracking

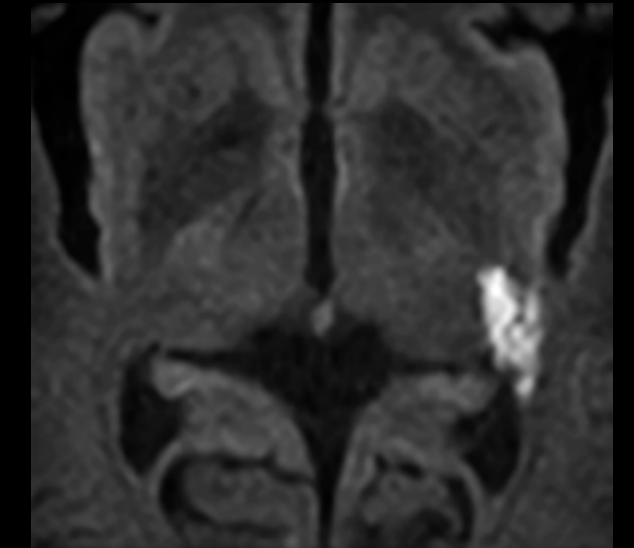
## 3D NerveVIEW

Review nerve plexus,  
non-invasively

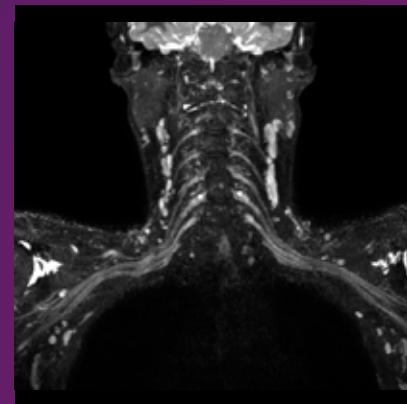


## Zoom Diffusion

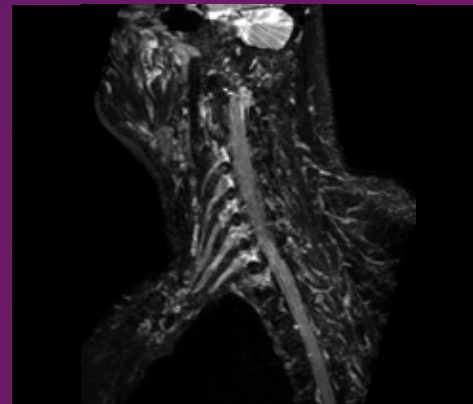
Small FOV diffusion  
imaging for improved  
image quality



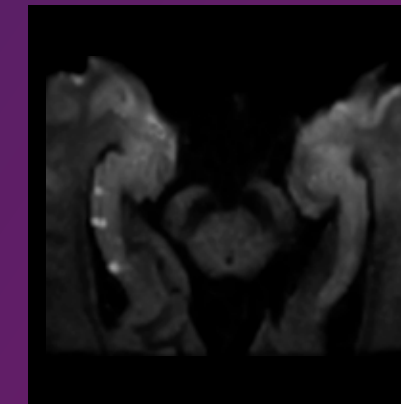
3D NerveVIEW improves visualization of the brachial and lumbar plexus by providing you with a high resolution T2w TSE acquisition with reduced remaining intra-lumen signal of the veins<sup>1</sup>. In addition, the 3D isotropic imaging method allows for reformats in any plane (including oblique) without loss of resolution helping you to save scan time and improve spinal nerve plexus assessment.



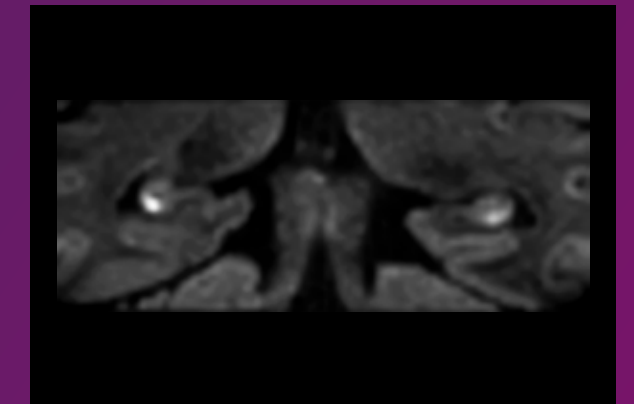
Improved visualization of the spinal nerve plexus



Zoom Diffusion allows you to acquire small FOV imaging, down to 200 x 50 mm, with reduced geometrical distortion, due to reduced EPI echo train length in DWI-EPI compared to conventional full FOV DWI-EPI, and higher spatial resolution, due to smaller acquisition voxel size compared to full FOV DWI-EPI, with same level of geometrical distortion.



Small FOV diffusion imaging with high spatial resolution



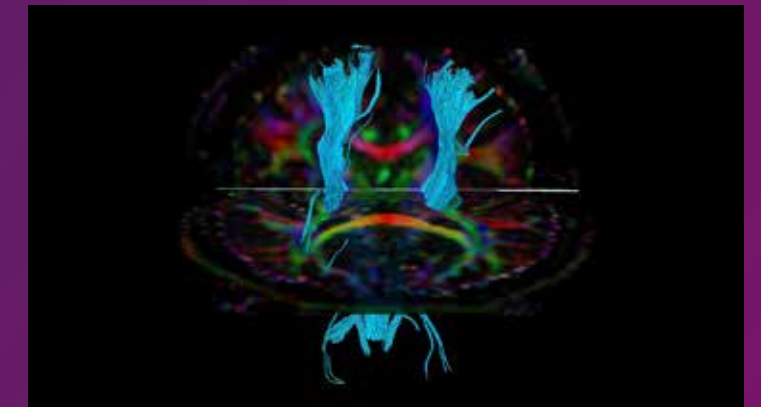


## DTI FiberTrak

Fast, easy clinical  
fiber tracking



Visualize specific white matter fiber tracts in the brain with Diffusion Tensor Imaging (DTI) data and fiber tracking. This package allows you to trace, analyze and process fibers in real-time with minimal mouse clicks. It supports pre-operative surgical planning, post-surgery evaluation, and general evaluation of fiber tracts around tumors and lesions in connection with functional areas. DTI FiberTrak supports up to 32 directions and 16 b-values and includes automatic calculation of Fractional Anisotropy (FA) maps.

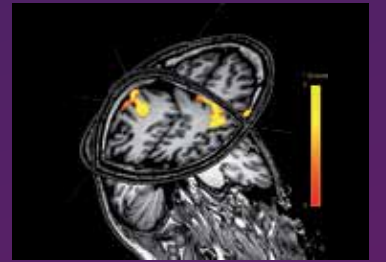


Visualization of white matter fiber tracts in the brain

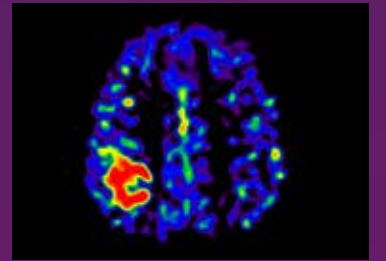


# dS **Neuro** Suite Premium

The dS NeuroSuite Premium complements the dS NeuroSuite Pro by bringing specialized neuro applications. This set of advanced diagnostic applications can help you differentiate yourself from competitors and increase your referral services.



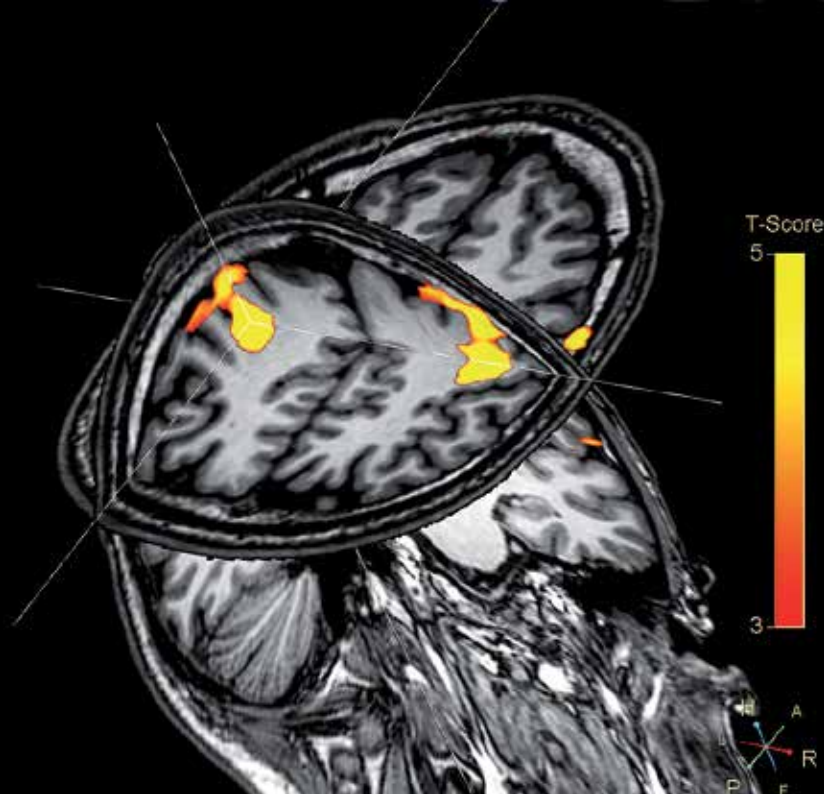
**Bold** Page 44  
Motion-free imaging in short scan time



**3D ASL** Page 45  
Reproducible contrast-free brain perfusion

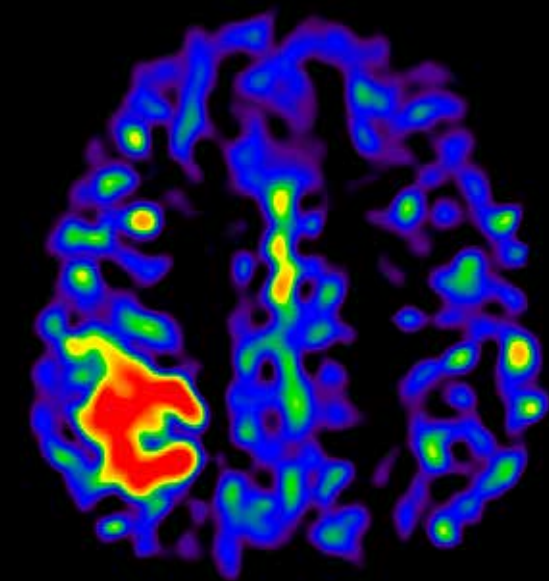
## BOLD

Fast, easy  
and reliable fMRI

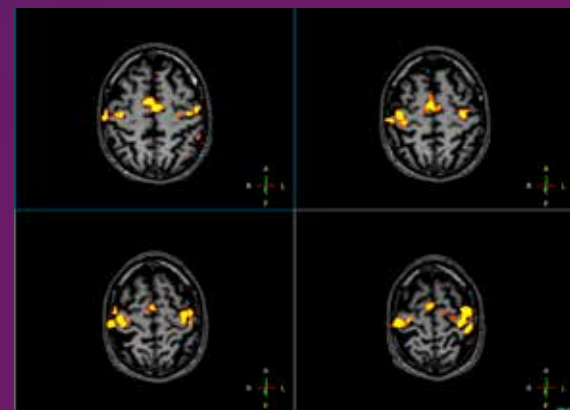


## 3D ASL

Reproducible contrast-free  
brain perfusion

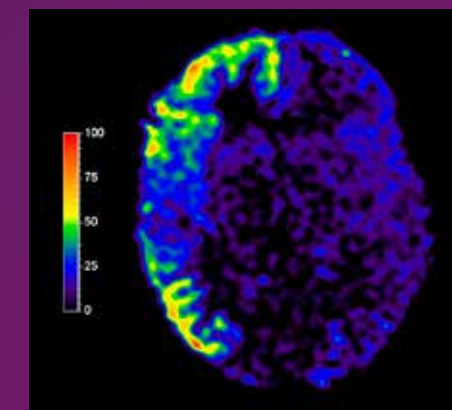
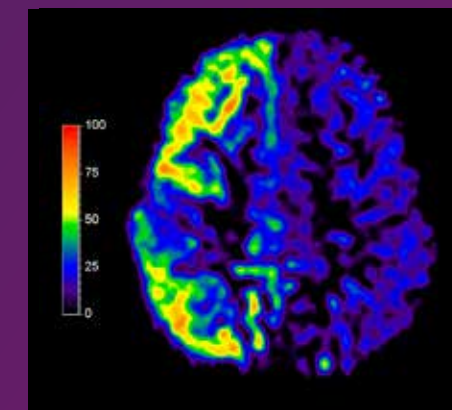


Accurately acquiring fMRI BOLD data during neuro imaging helps visualize task-related areas of activation in the brain. The fMRI paradigms that deliver and control stimuli are fully automated via dedicated ExamCards to make fMRI fast, easy, and reliable. The iView BOLD analysis package provides real-time processing of fMRI BOLD data into functional activation maps.



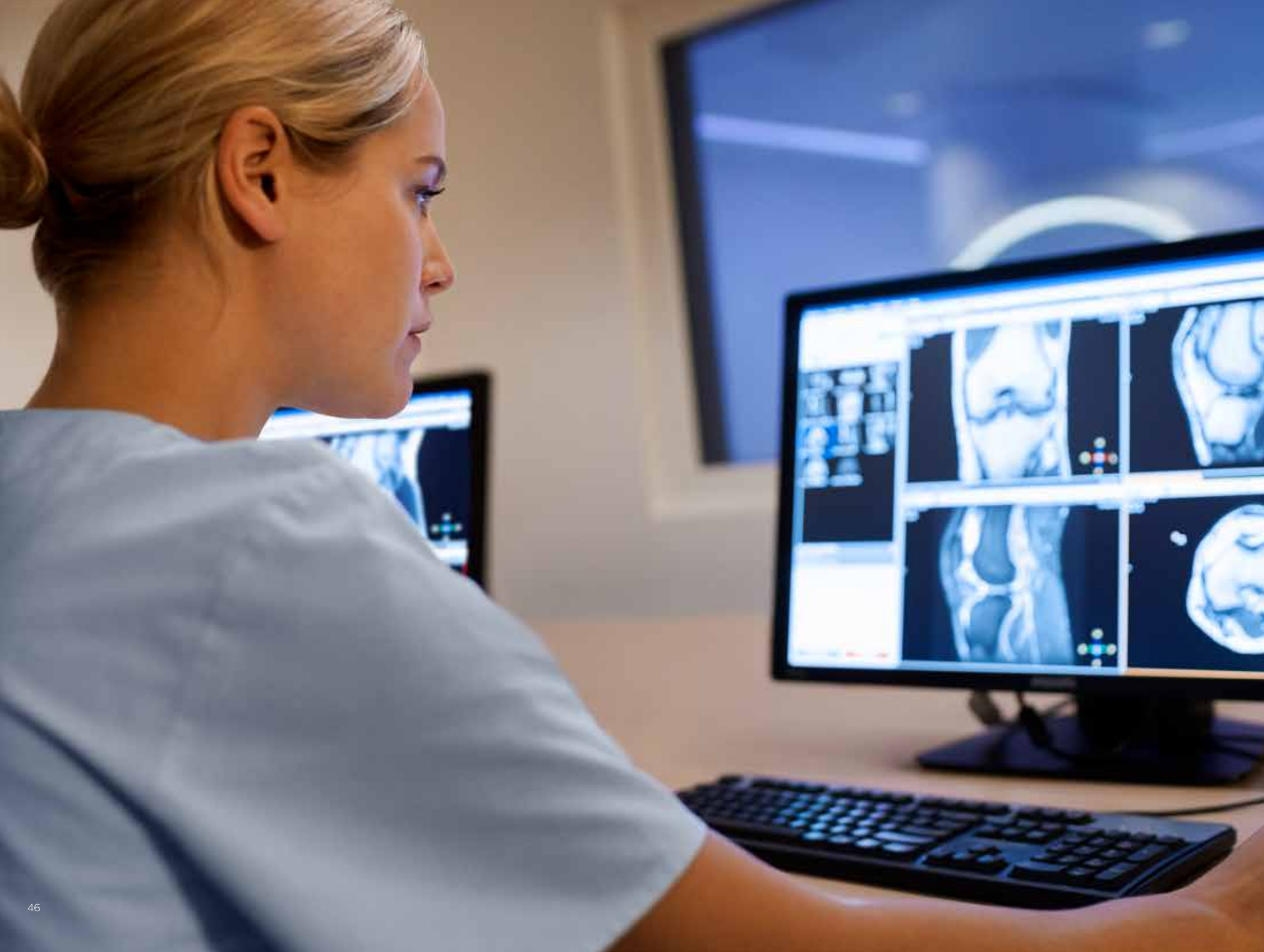
Visualize task-related areas of activation in the brain

3D ASL enables you to consistently quantify brain perfusion with an accuracy of 15%<sup>1</sup> in a non-contrast manner with full brain coverage, and better background suppression, compared to 2D pCASL method. 3D ASL includes fully automated calculation of color coded ASL maps.



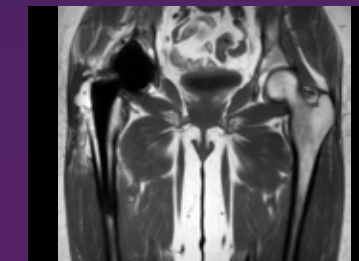
Quantification of brain perfusion in a non-contrast manner

<sup>1</sup> Measured on a single Philips 3.0T system for the same volunteer.

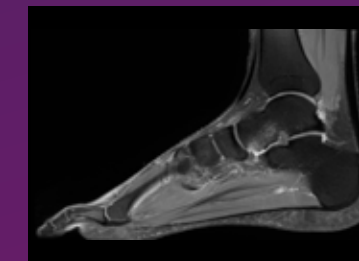


# dS **MSK** Suite

Advanced diagnostics are a crucial part of the treatment protocol for MSK disorders. Philips' MSK-diagnostic applications empower you to resolve complex questions with more certainty, especially in cases where metal implants are present.



**O-MAR XD** Page 48  
Efficient near-metal soft tissue and bone imaging

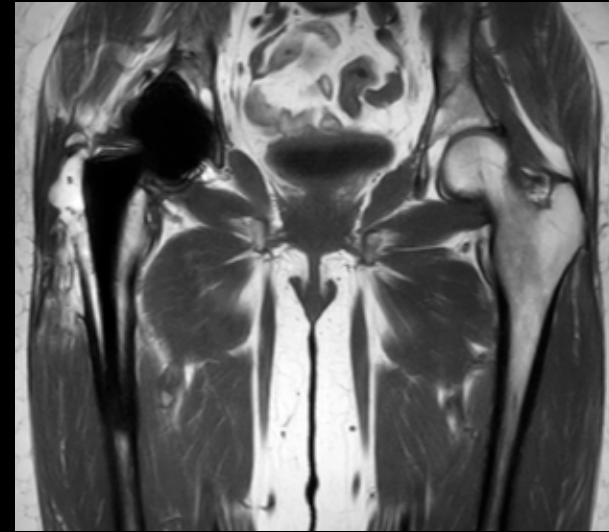


**2k imaging** Page 49  
High resolution imaging



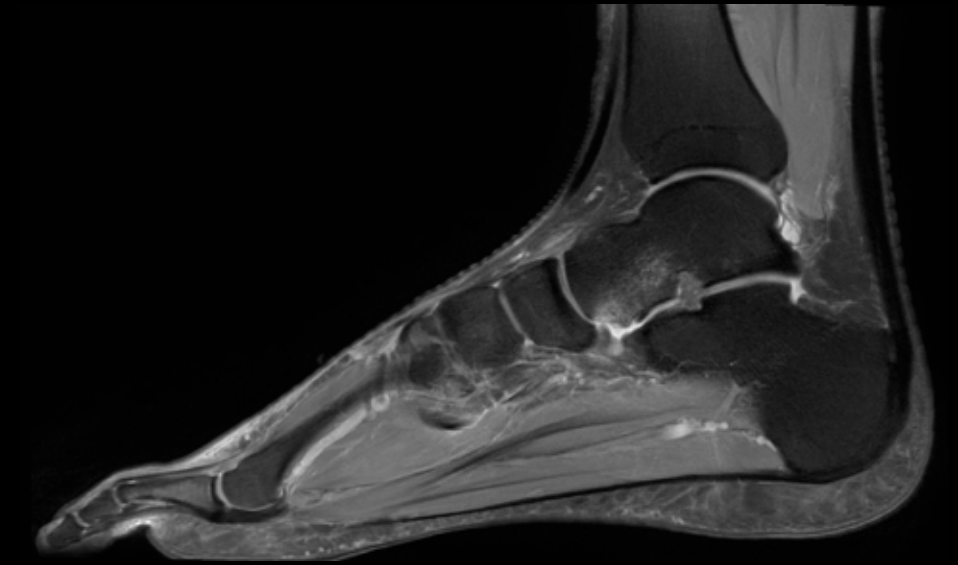
## O-MAR XD

# Efficient near-metal soft tissue and bone imaging

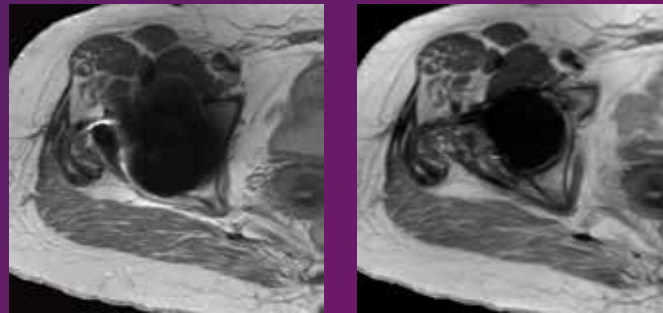


## 2k imaging

# High resolution imaging



O-MAR XD (Metal Artifact Reduction for Orthopedic implants) allows you to improve visualization of more soft tissue and bone in the near vicinity of MR Conditional Orthopedic implants<sup>1</sup>. This allows you to offer postoperative MR imaging to patients with implants who could develop implant-related conditions.



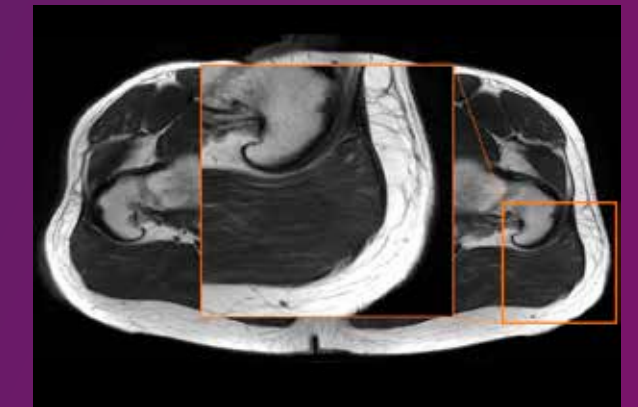
Traditional PDw TSE (left) versus PDw TSE O-MAR XD (right)

### Additional information:

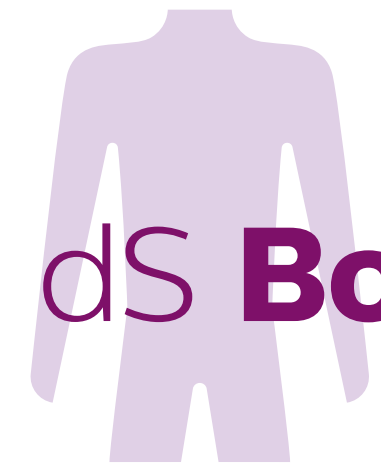
- Reduction of in- and throughplane susceptibility artifacts<sup>2</sup> caused by metal implants<sup>1</sup>.
- Supports most relevant image contrasts (T1w, T2w, PDw, and STIR).
- Extending MARS (Metal Artifact Reduction Sequence) with the View Angle Tilting (VAT) and Slice Encoding for Metal Artifact Correction (SEMAC) techniques.

<sup>2</sup> Compared to standard high bandwidth spin-echo based techniques.

2k Imaging offers a scan matrix of 2048 x 2048, providing high resolution even with large FOVs, or lower resolution scans with a 2048 matrix reconstruction. Compatible with all imaging methods.

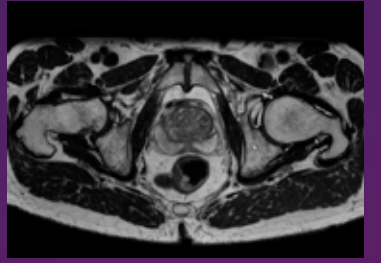


Ultra high resolution imaging

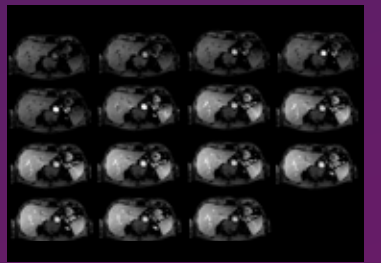


# dS **Body** Suite

Advanced diagnostics are a crucial part of the treatment protocol for diseases affecting the liver, pelvic area and breast. With its superb 3D imaging of soft tissue, MRI can capture a wealth of structural and physiological information on the body.



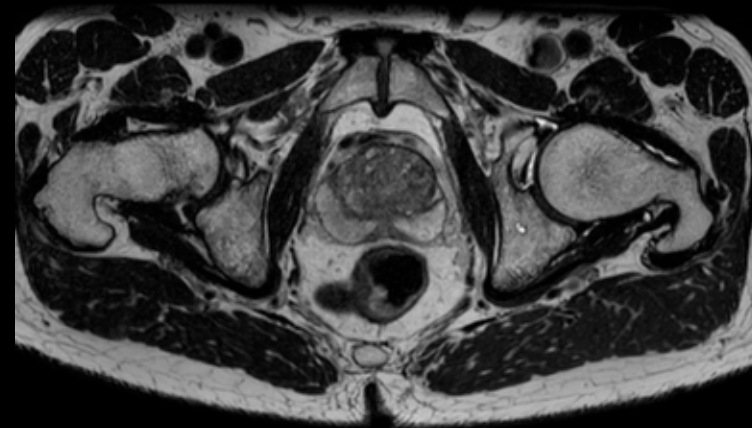
**3D PelvisVIEW** Page 52  
View your 3D TSE imaging data in any plane



**4D-THRIVE/BLISS** Page 53  
Accelerate dynamic body and breast imaging

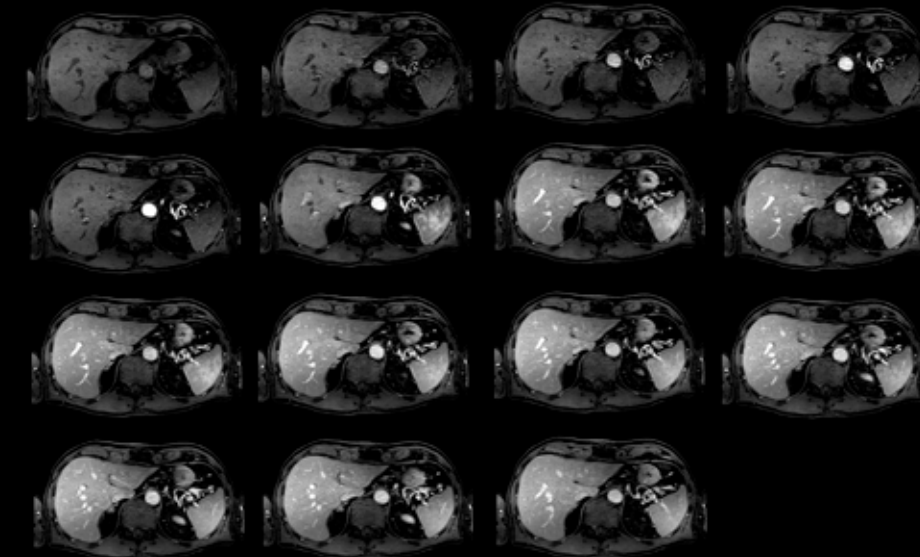
## 3D PelvisVIEW

View your 3D TSE imaging data in any plane

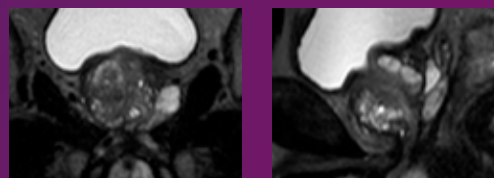
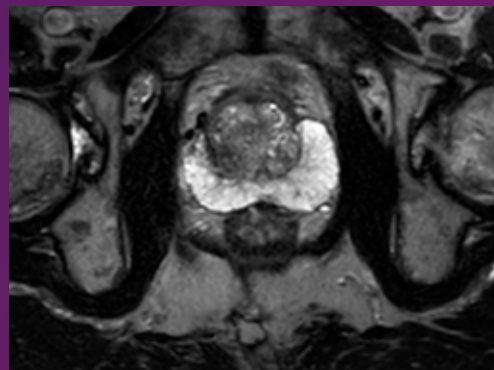


## 4D-THRIVE/BLISS

Accelerate dynamic body and breast imaging



3D PelvisVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



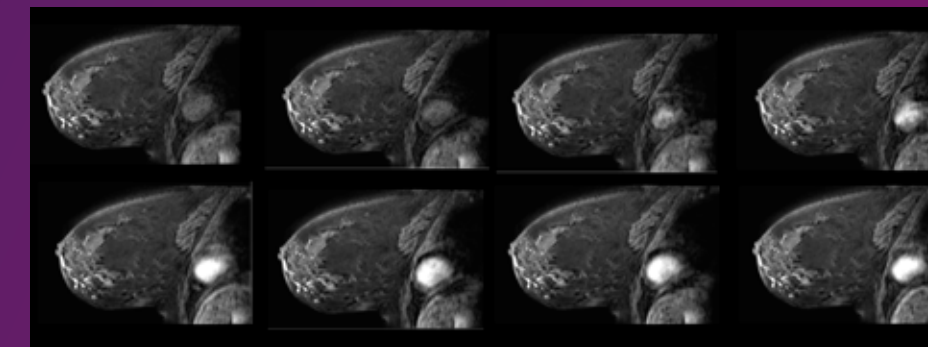
Data in multiple directions, in one scan

### Additional information:

- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times<sup>1</sup>.
- Available for a range of contrasts.

<sup>1</sup> Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

4D-THRIVE/BLISS is a time-resolved 3D technique to drastically accelerate dynamic body and breast imaging through the combination of a keyhole method with CENTRA and SENSE. Combines high spatial resolution with high temporal resolution to facilitate acquisition of multiple dynamic volumetric data sets per breath-hold.

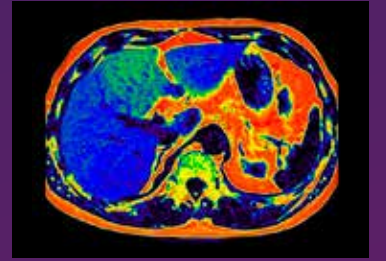


Accelerated, high resolution, sagittal 3D breast imaging

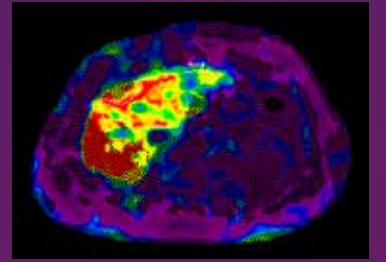


# dS **Liver** Suite

Advanced diagnostics are a crucial part of the treatment protocol for diseases affecting the liver and requiring assessment of liver stiffness. MR Elastography empowers you to resolve complex questions with more certainty. This supports non-invasive assessment of differences in tissue stiffness of the liver in a fast breathhold scan, providing you with additional input to help make treatment decisions more confidently.



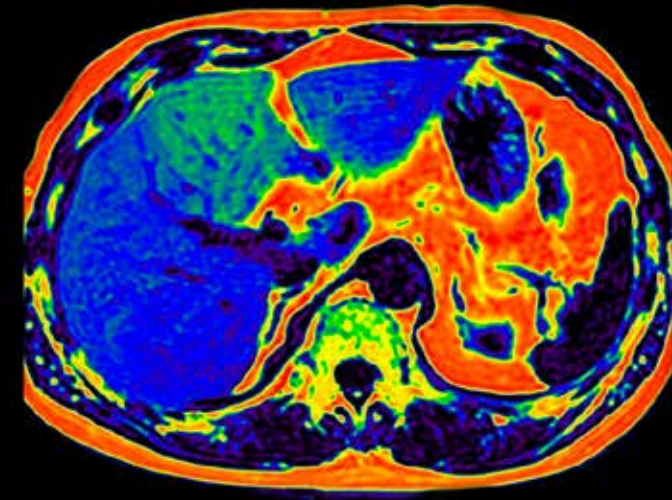
**mDIXON Quant** Page 56  
Non-invasive liver fat fraction quantification



**MR Elastography** Page 57  
Non-invasive assessment of liver tissue stiffness

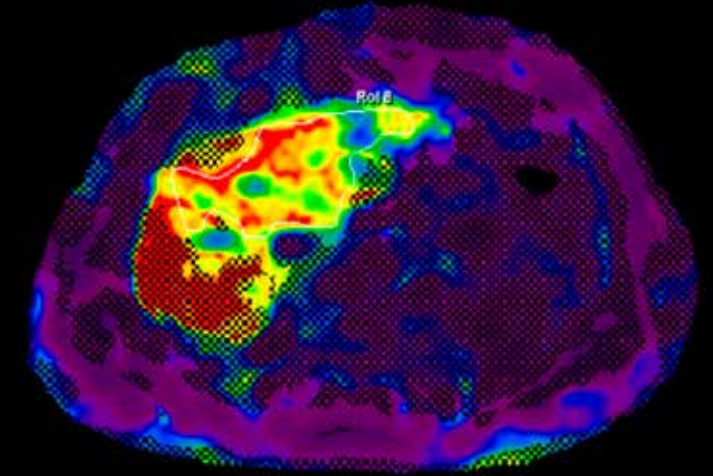
## mDIXON Quant

# Non-invasive liver fat fraction quantification

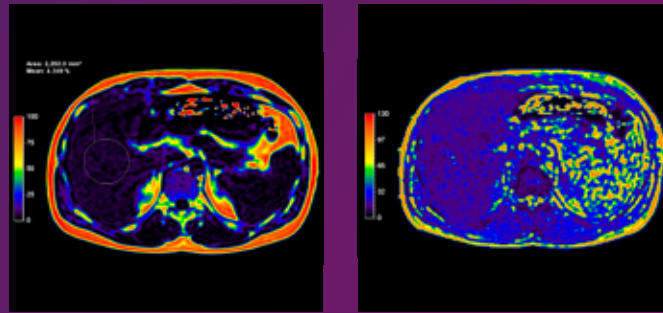


## MR Elastography

# Non-invasive assessment of liver tissue stiffness



mDIXON Quant brings a fast and simple 3D procedure for non-invasive liver fat quantification by providing high quality 3D fat fraction maps of the whole liver, even for short  $T2^*$ , with high accuracy ( $\pm 3.5\%$ ) and reproducibility ( $\pm 1.4\%$ )<sup>1</sup> allowing you to expand your MRI capabilities.  $T2^*/R2^*$  relaxation maps are provided to further help your diagnostic assessment.

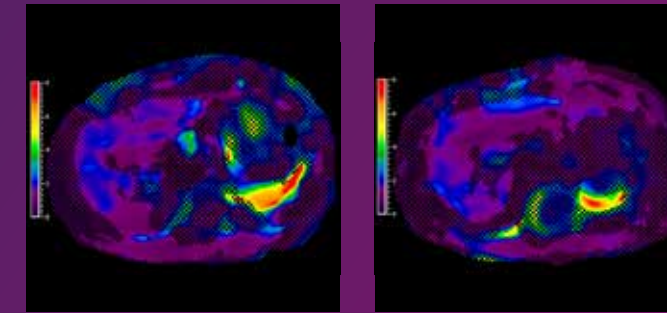


Fat fraction maps (left) and  $T2^*/R2^*$  relaxation maps (right)

### Additional information:

- Single breathhold acquisition.
- Based on state of the art 6-echo acquisition, 7-peak fat modeling reconstruction, correction for  $T2^*$  confounding effect and low flip angle to minimize T1 bias.
- Fat fraction maps are displayed in colors with a quantification bar.

MR Elastography allows for a non-invasive assessment of differences in tissue stiffness of the liver in a fast breathhold scan providing trained physicians with additional input to help make informed decisions about treatment.



Elastograms reflecting tissue stiffness in kPa

### Additional information:

- Image processing is fully integrated at the scanner.
- Automated calculation of Elastograms, reflecting tissue stiffness in kPa.
- Statistical confidence map is provided for reliability assessment.

<sup>1</sup> Accuracy and reproducibility were assessed using a reference liver protocol, on fat phantoms [range: 0-100%]. Reproducibility assessed over systems.

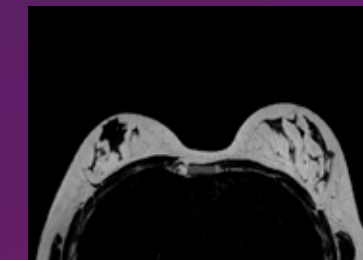


# dS Breast Suite

Advanced diagnostics are a crucial part of the treatment protocol for breast diseases. SmartExam Breast enables consistent fat suppression and reproducible image quality of breast examinations, independent of patient or operator. 3D Breast VIEW delivers high resolution isotropic 3D TSE breast acquisitions with short scan times by employing high 3D dS SENSE factors. Isotropic acquisition allows reformats in arbitrary planes.



**SmartExam Breast** Page 60  
Consistent fat suppression for every patient



**3D BreastVIEW** Page 61  
View your 3D TSE imaging data in any plane

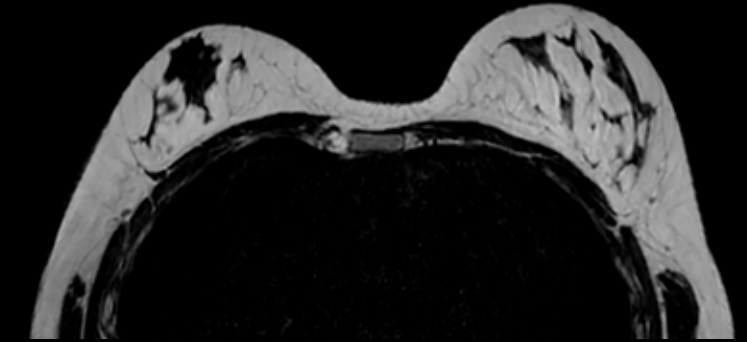
## SmartExam Breast

# Consistent fat suppression for every patient

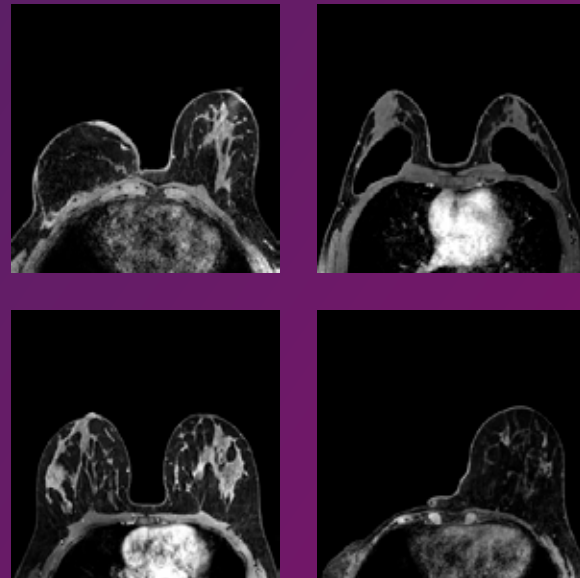


## 3D BreastVIEW

# View your 3D TSE imaging data in any plane



SmartExam Breast<sup>1</sup> provides consistent fat suppression for every patient and assists in delivering reproducible planning results by using intelligent software which automatically plans the scanning geometries, based on your validated scanning preferences. This enables you to standardize your MRI exam process helping you to enhance consistency in follow-up exams of the same patient and from patient to patient.

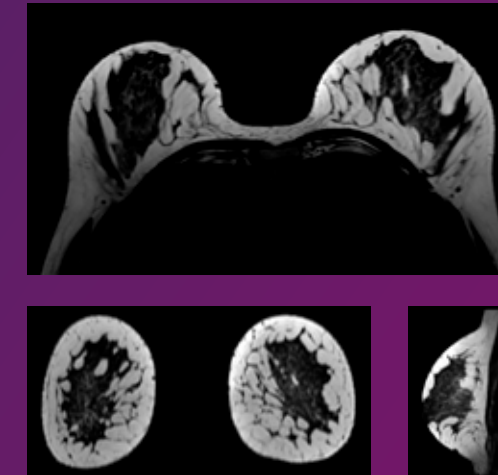


Consistent fat suppression for every patient

### Additional information:

- Dedicated 3D survey scan is included to determine patient positioning.
- Automated planning of the imaging stack is based on anatomic landmarks relating those to a previously defined planning.
- SmartExam planning can be adapted and expanded to fit changing requirements.
- Automated geometry planning can be shared and applied across Philips MRI consoles.

3D BreastVIEW is an advanced 3D TSE technique that lets you acquire high resolution data in multiple directions, including oblique, in one scan helping you enhance your confidence when diagnosing lesions.



Data in multiple directions, in one scan

### Additional information:

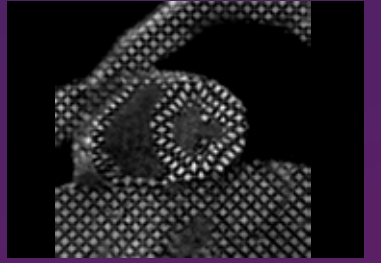
- Isotropic voxel size enabling reformats in any plane without loss of resolution.
- Allows for up to 20% shorter scan times<sup>1</sup>.
- Available for a range of contrasts.

<sup>1</sup> Due to time-efficient, low SAR flip angle sweep technology. Compared to standard 3D TSE.

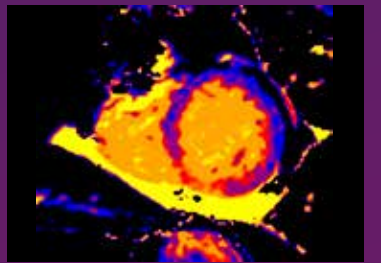


# dS **Cardiac Suite Pro**

Advanced diagnostics are a crucial part of the treatment protocol for heart disease. A comprehensive suite of cardiac MR tools for ischemic and non-ischemic diseases, including quantitative tissue characterization, can capture a wealth of functional and pathological information about the heart. Philips' cardiac diagnostic applications empower you to resolve complex questions with more certainty.



**Cardiac Expert** Page 64  
Expand your cardiac MR functionality



**CardiacQuant** Page 65  
Non-invasive assessment of myocardial tissue



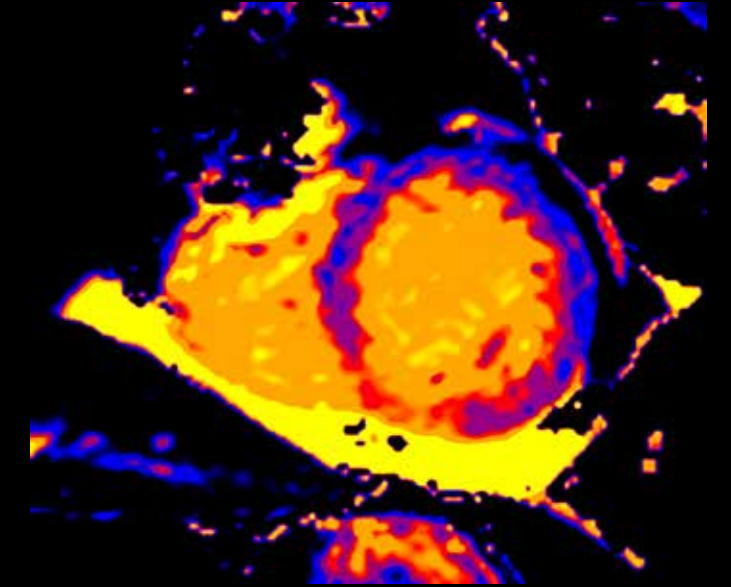
## Cardiac Expert

# Expand your cardiac MR functionality

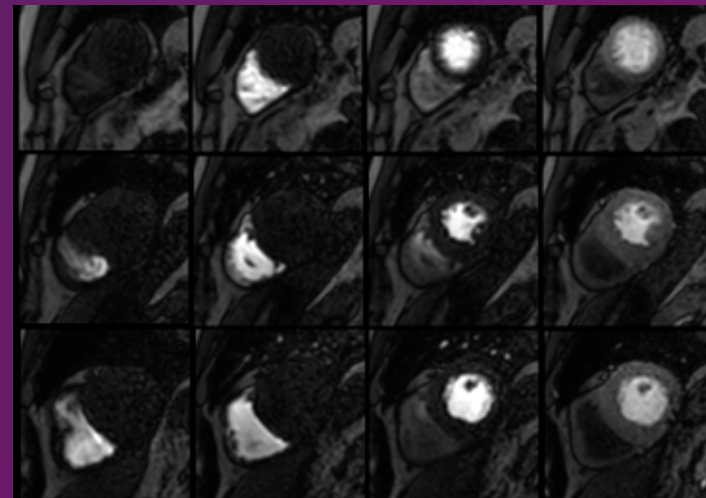


## CardiacQuant

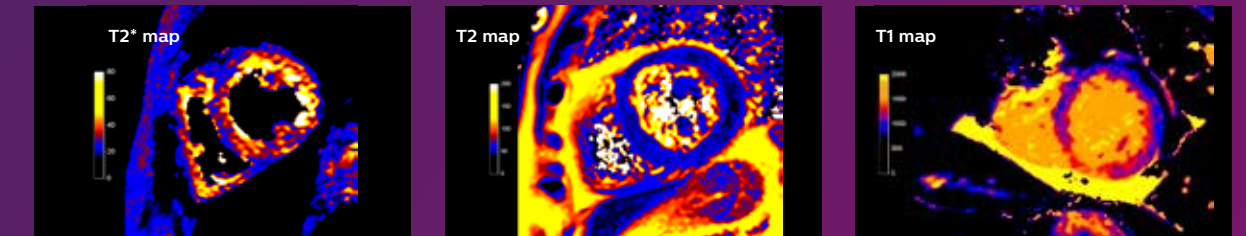
# Non-invasive assessment of myocardial tissue



Cardiac Expert supports the acquisition of multi-slice, dynamic tissue studies with T1 weighting and uniform tissue suppression<sup>1</sup> by including Look Locker methods for determining an optimal inversion delay time. Cardiac Expert also provides myocardial tagging<sup>2</sup> to allow assessment of regional wall motion and allows for real-time interactive planning of challenging cardiac views.



With CardiacQuant you get access to exciting new applications for cardiology, which can help in the non-invasive assessment of myocardial tissue characteristics by providing you with comprehensive graphs and pixel-based, quantitative information in different regions of the myocardium helping you to make early decisions for therapy.



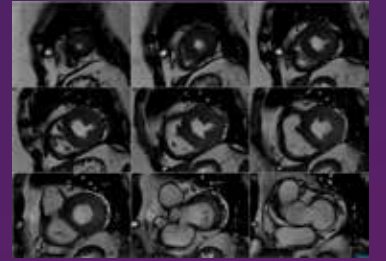
Quantitative T2\*, T2 and T1 maps in a single breathhold scan

1 With a (B1 insensitive) saturation pre-pulse  
2 By means of REST grids

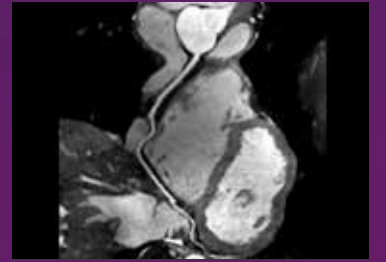


# dS **Cardiac Suite** Premium

Advanced diagnostics are a crucial part of the treatment protocol for heart disease. Philips' cardiac diagnostic applications empower you to resolve complex questions with more certainty. The dS CardiacSuite Premium complements the dS CardiacSuite Pro by bringing both Coronary Acquisition and k-t BLAST.



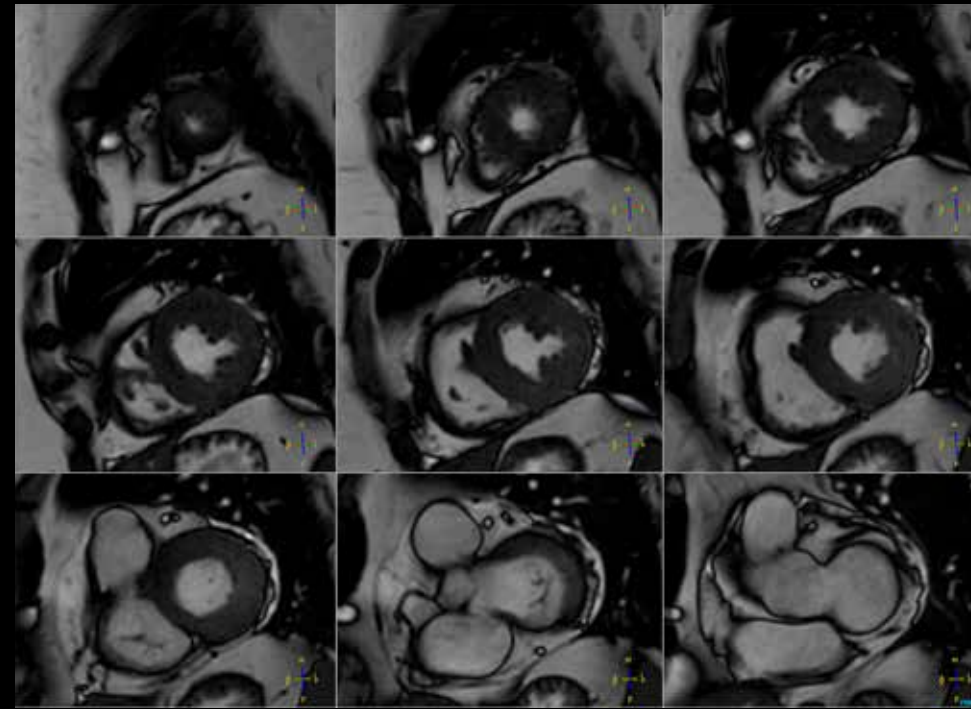
**k-t BLAST** Page 68  
Accelerate your cardiac studies



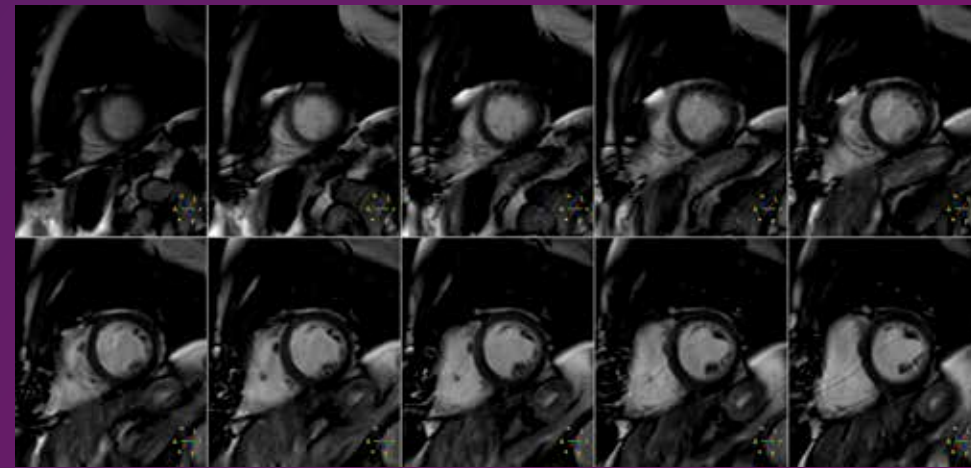
**Coronary Acquisition** Page 69  
Perform non-invasive imaging of coronary arteries

## k-t BLAST

Accelerate your cardiac studies

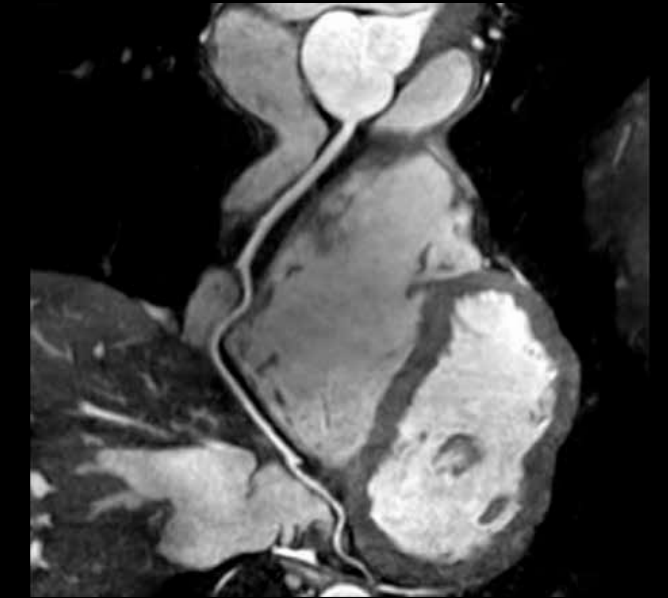


K-t BLAST provides up to five fold acceleration using an alternative parallel imaging technique employing undersampling in time and space. Suited for dynamic and real-time cardiac studies as well as single breath hold, multi-slice cine studies. Can be combined with most other imaging methods.

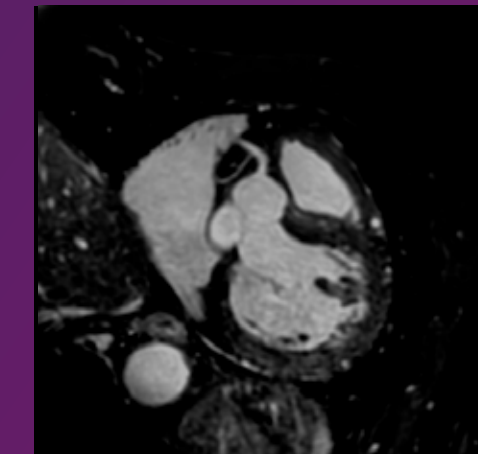


## Coronary Acquisition

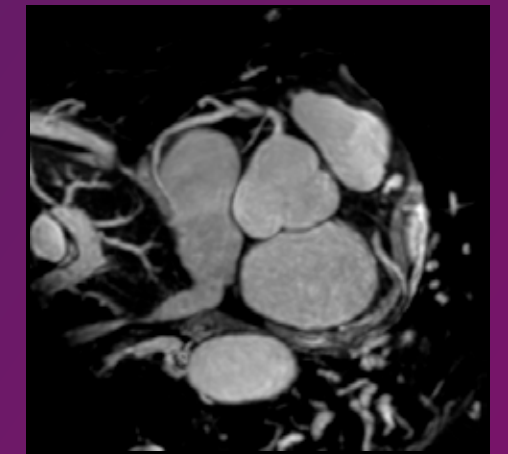
Perform non-invasive imaging of coronary arteries



Coronary Acquisition allows for non-invasive imaging of coronary arteries by displaying good contrast between myocardium and vessels by deploying 3D sequences combined with MotionTrak respiratory navigators for real-time motion correction and T2-preparation.



Non-invasive imaging of coronary arteries





# dS **Vascular Suite**

dS VascularSuite premium brings a comprehensive suite of MR angiography methods, including dynamic non-contrast acquisitions and non-subtraction peripheral MRA with mDIXON XD FFE can capture a wealth of structural and physiological information about the blood vessels.



**4D-TRANCE** Page 72  
Contrast-free imaging of brain vascular anatomy



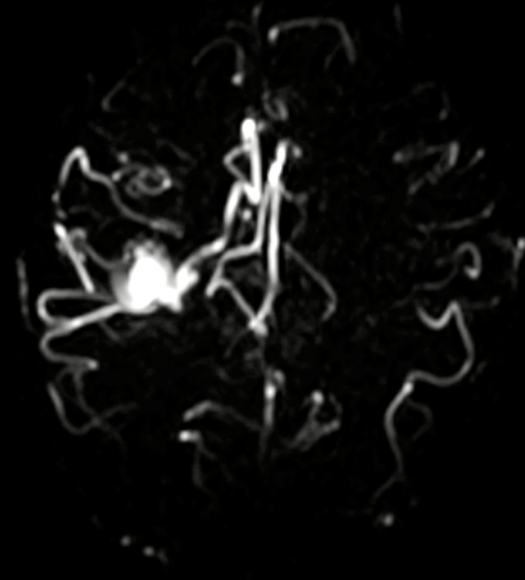
**4D-TRAK XD** Page 73  
Flexibility in your MR Angiography studies



**mDIXON XD MultiStation** Page 75  
Non-subtraction peripheral MR Angiography

## 4D-TRANCE

Contrast-free imaging of brain vascular anatomy

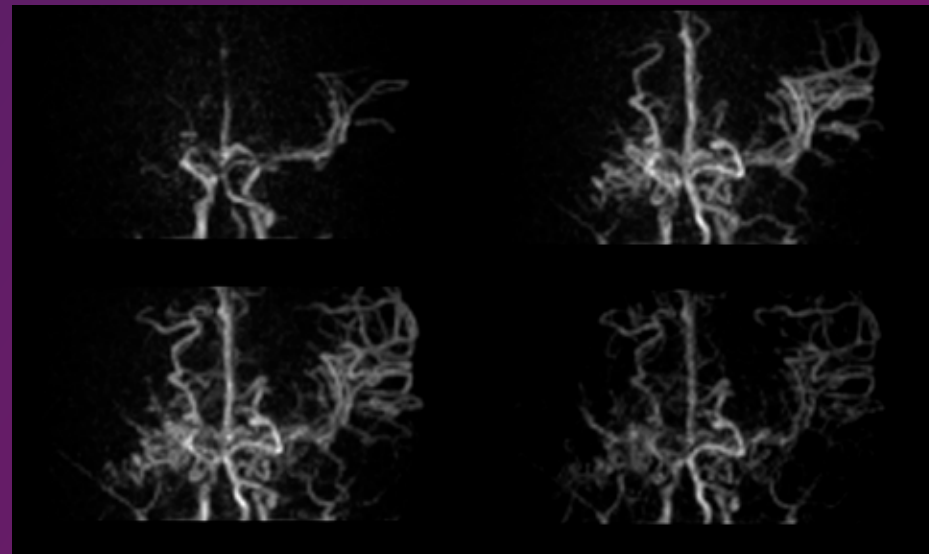


## 4D-TRAK XD

Flexibility in your MR Angiography studies

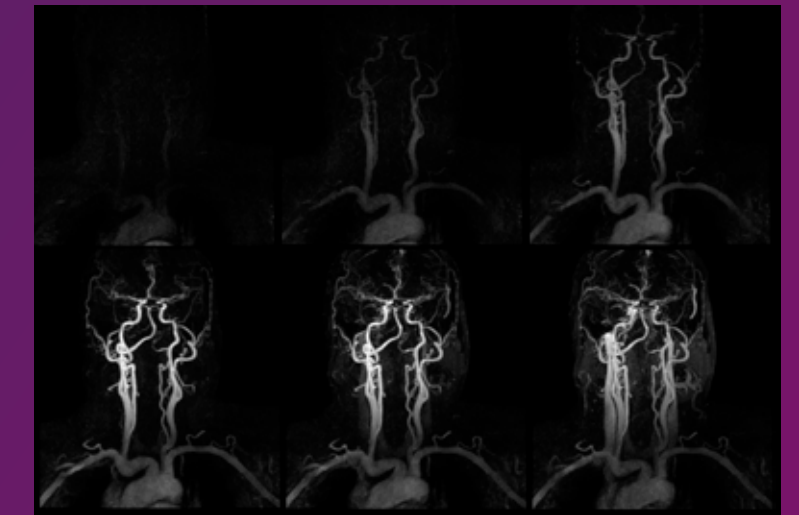


4D-TRANCE is a time-resolved technique for non-contrast angiography, promoting patient comfort and enabling you to evaluate the patency of the vascular anatomy in the brain using endogenous contrast with MIP visualization of multiple phases. 4D-TRANCE enables high temporal resolution down to 160 msec.



Non-contrast time-resolved angiography of the brain

4D-TRAK XD provides a fast, dynamic contrast-enhanced MR Angiography method with flexible sampling of both the arterial- and venous phase, by applying view sharing technique, enabling high spatial and temporal resolution simultaneously.



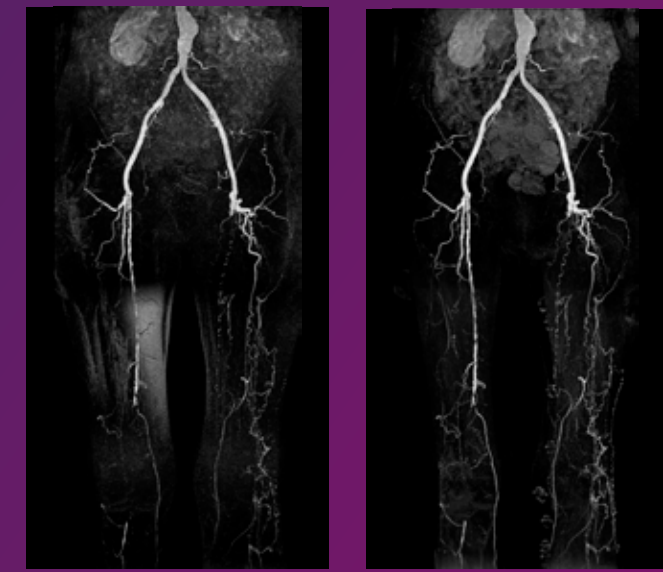
Fast, dynamic contrast-enhanced MR Angiography



## mDIXON XD MultiStation Non-subtraction peripheral MR Angiography



mDIXON XD MultiStation allows you to perform peripheral MR Angiography with improved vessel-to-background contrast in only one single pass<sup>1</sup>. You will be able to perform your peripheral MR Angiography acquisitions without the use of a subtraction mask, eliminating artifacts that could arise from misalignment, due to patient motion, between the pre and post contrast scan. Enjoy fast, robust peripheral MR Angiography.

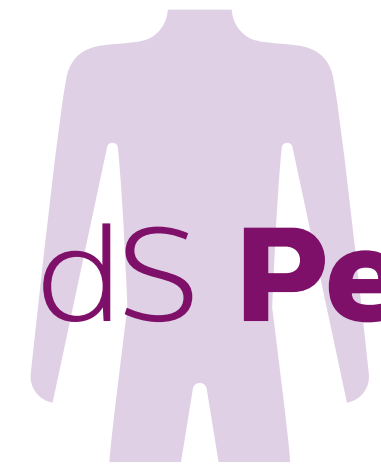


MR Angiography with subtraction (left) and in one single pass (right) with improved vessel-to-background contrast

### Additional information:

- Subtraction-less peripheral MR Angiography
- Improved vessel-to-background contrast by 30-36%<sup>1</sup>

<sup>1</sup> As opposed to standard MRA technology relying on the subtraction of a pre and post contrast scan.



# dS **Pediatric Suite**

The dedicated PediatricSuite exists of a comprehensive pack of pediatric coils and accessories. At Philips, we understand your challenging business environment and your need to increase profitability and grow revenue. This set of coils and accessories can help you differentiate yourself from competitors and increase your referral services.



**dS Ped NeuroSpine coil** Page 78

High SNR for your pediatric brain and spine studies



**dS Ped Torso coil** Page 79

High SNR for your pediatric torso and cardiac studies



**Pediatric positioning pack** Page 81

Taking care of the smallest patients

## dS Ped NeuroSpine coil

High SNR for your pediatric brain and spine studies

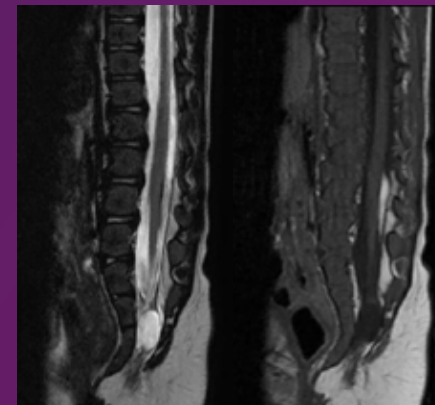


## dS Ped Torso coil

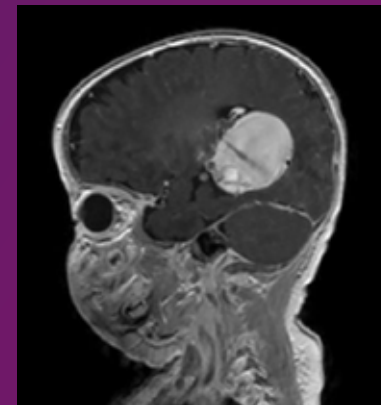
High SNR for your pediatric torso and cardiac studies



The dS Ped NeuroSpine 8ch coil is an open-design 8-element coil for high resolution pediatric brain and spine imaging. Specifically designed for neonates, but will accommodate pediatric patients up to 10kg. Open, cradle shaped design enables the operator to position and prepare the patient outside the examination room. Examinations of brain and spine can be performed without having to move the patient.

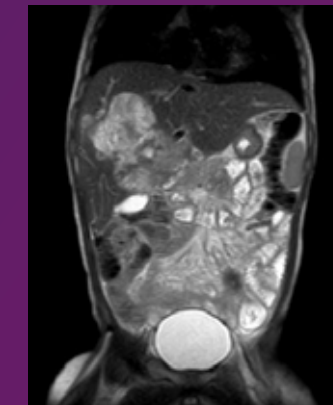


T2w and T1w Spine imaging

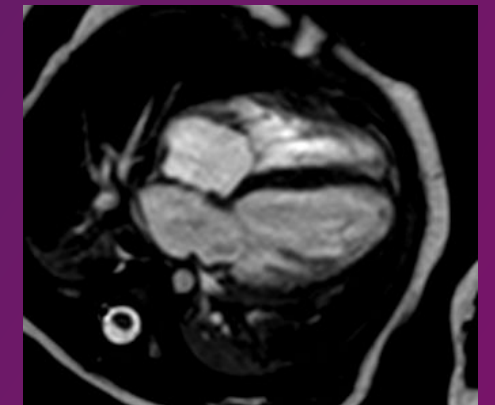


3D T1w Brain imaging

The dS Ped Torso coil is a dedicated 8-element coil designed to provide excellent pediatric torso and cardiac imaging. The coil is optimized for neonates, but will accommodate pediatric patients up to 10kg. Split design allowing the top of the coil to be taken off, enabling easy access to the patient. An insert cradle can be used for additional patient support. A surrounding mattress is available to accommodate larger patients.



T2w abdominal imaging



Cardiac cine imaging





## Pediatric positioning pack

Taking care of the smallest patients



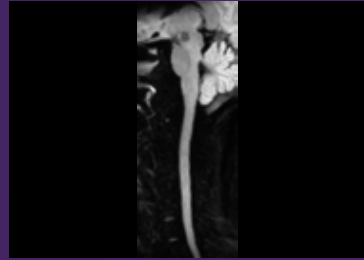
The Pediatric positioning pack for dStream systems consists of a subset of accessories designed to meet the needs of the smallest patients. Included is an anterior coil frame avoiding positioning of the dS Torso coil directly on the patient. Additionally a baby support pad, comfort pad, pediatric knee support and child elevation mattress are included in this package.



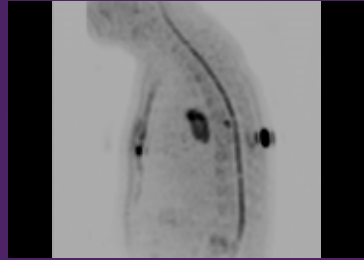


## A la carte

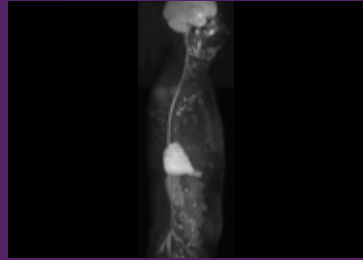
Next, to all the previously mentioned packs, there is also the option to choose the various software applications individually. All the options that are available on the packaging are also available individually, according to regulatory approval and system compatibility. However, if a package is selected the individual applications of that package cannot be selected a-la-carte. Furthermore, there are also some applications that are only available a-la-carte.



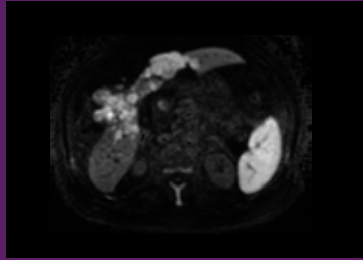
**IRIS Zoom** Page 86  
Improved small FOV spine diffusion imaging



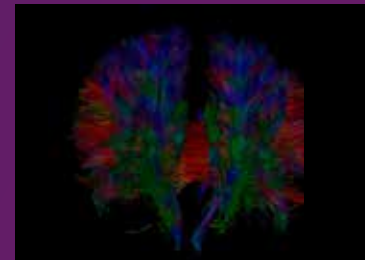
**DWI XD TSE** Page 87  
Speed up and improve the quality of your diffusion TSE



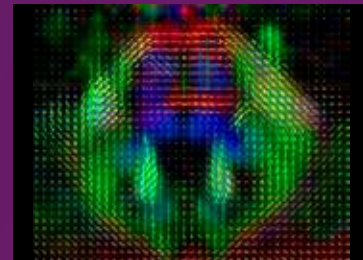
**SmartShim** Page 88  
Step up your diffusion performance



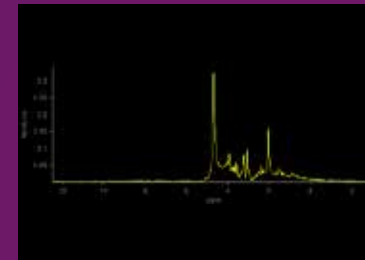
**Computed DWI** Page 89  
Step up your diffusion performance



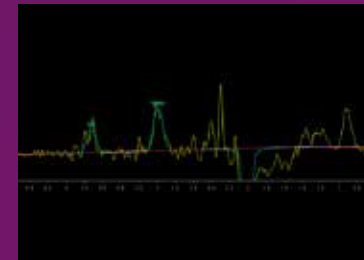
**NeuroScience** Page 98  
Explore brain connectivity



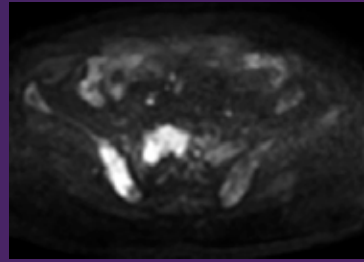
**NeuroScience extension** Page 99  
Extend your diffusion MRI studies



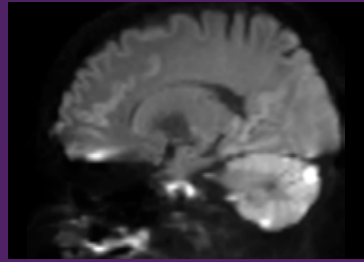
**Spectroscopy XD** Page 100  
More precise and more robust MR brain spectroscopy



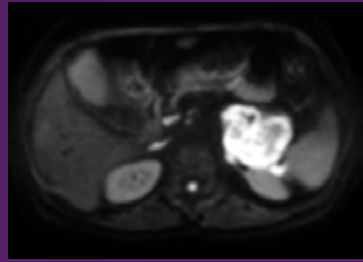
**MEGA** Page 101  
Detection of additional metabolites



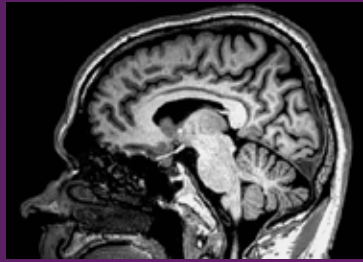
**LOVA ADC** Page 90  
Step up your diffusion performance



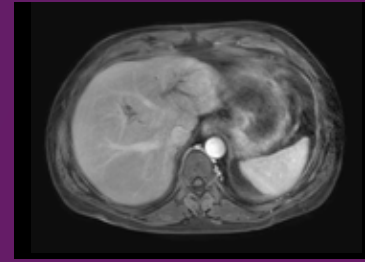
**EPIC Brain** Page 91  
Step up your diffusion performance



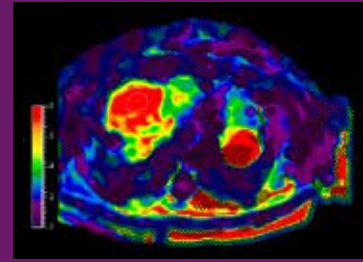
**Diffusion Excellence Pack** Page 92  
Step up your diffusion performance



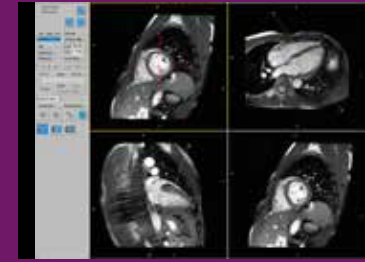
**3D Non-selective** Page 93  
Fast and robust large volume 3D FFE imaging



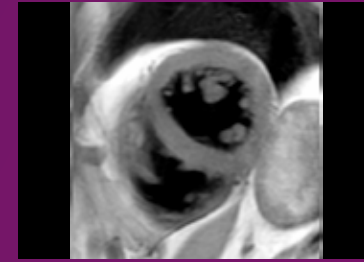
**4D FreeBreating** Page 102  
Improved imaging confidence for challenging patients in MRI liver studies



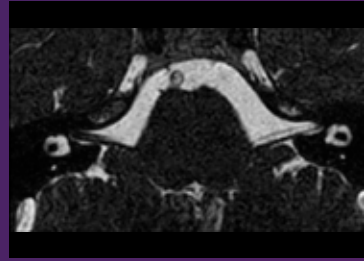
**MR Elastography extension** Page 103  
Boost diagnostic confidence with more robust liver tissue stiffness maps



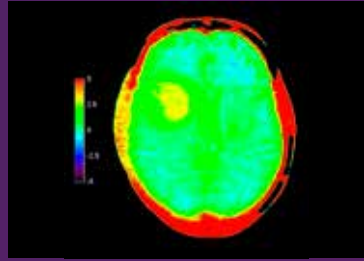
**Real-Time Specialist** Page 104  
Benefit from intuitive planning for cardiac studies



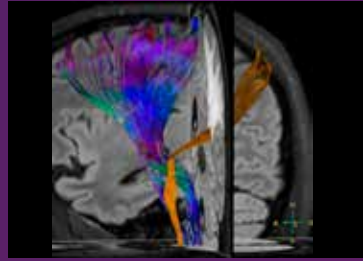
**Cardiac Expert extension** Page 105  
Fast CMR methods for anatomy, function and more



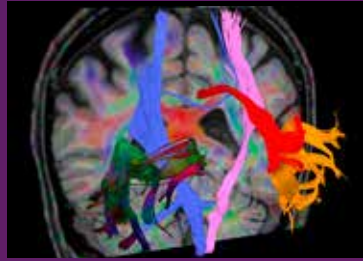
**bFFE XD** Page 94  
Expanding clinical applications of balanced FFE



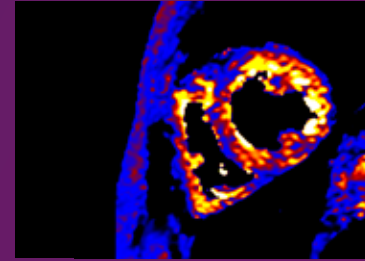
**3D APT** Page 95  
Enhanced diagnostic confidence in neuro oncology



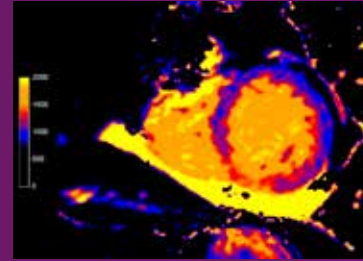
**FiberTrak Extension** Page 96  
High definition fiber tracking in the brain or spine



**MultiBand SENSE** Page 97  
High acceleration for your fMRI and DTI sequences



**StarQuant** Page 106  
Non-invasive assessment of myocardial tissue



**CardiacQuant Extension** Page 107  
Flexibility in creation of T1 maps for cardiac

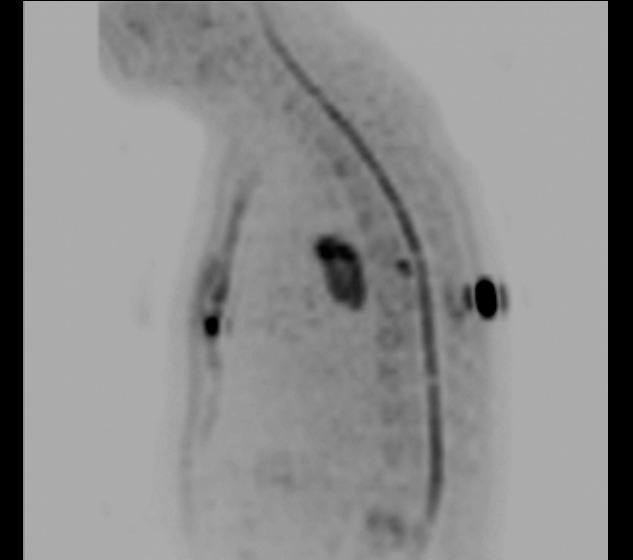
## IRIS Zoom

Improved small FOV spine diffusion imaging

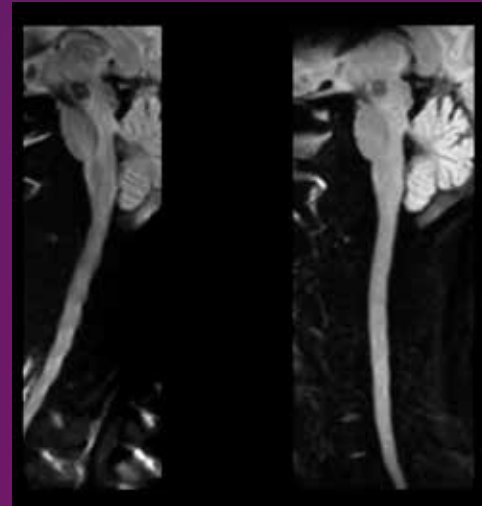


## DWI XD TSE

Speed up and improve the quality of your diffusion TSE



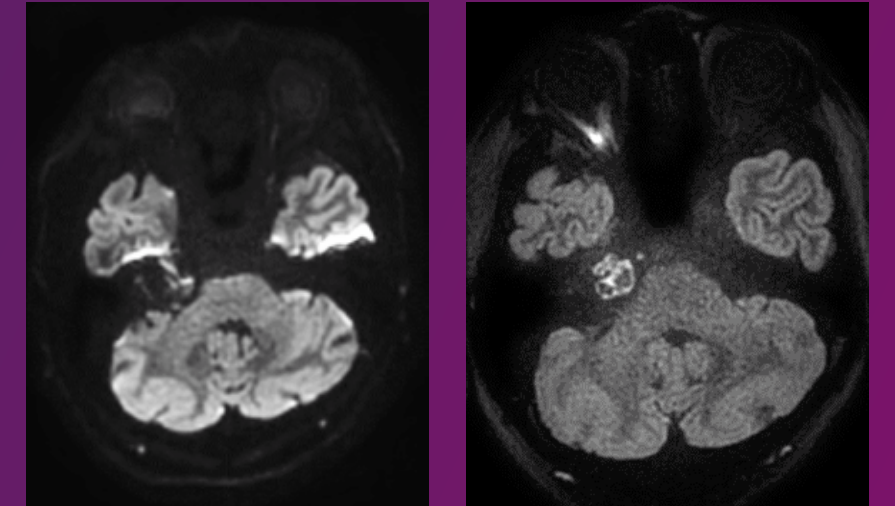
IRIS Zoom delivers small FOV diffusion imaging with higher resolution, lower distortion and improved fat suppression than Philips Zoom DWI. Higher resolution diffusion imaging in the spine is achieved by employing 2D navigator-based motion correction integrated into the dS-SENSE framework. IRIS Zoom also delivers higher SNR in spine imaging compared to Philips MultiVane DWI XD TSE.



b800 Zoom DWI (left) versus IRIS Zoom DWI (right)

DWI XD TSE delivers up to 25% faster diffusion TSE imaging with improved resolution due to its multi-shot approach<sup>1</sup>. DWI XD TSE is compatible with MultiVane, contributing to robust suppression of motion artifacts<sup>2</sup>. It also delivers images with less distortion because it is less sensitive to susceptibility differences compared to Philips conventional DWI EPI sequences.

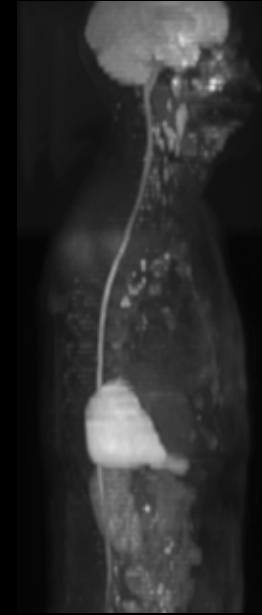
<sup>1</sup> Compared to Philips DWI TSE (Single-shot)  
<sup>2</sup> Compared to Philips multi shot DWI TSE



DWI EPI (left) versus robust inner ear DWI XD TSE (right)

## SmartShim

# Step up your diffusion performance

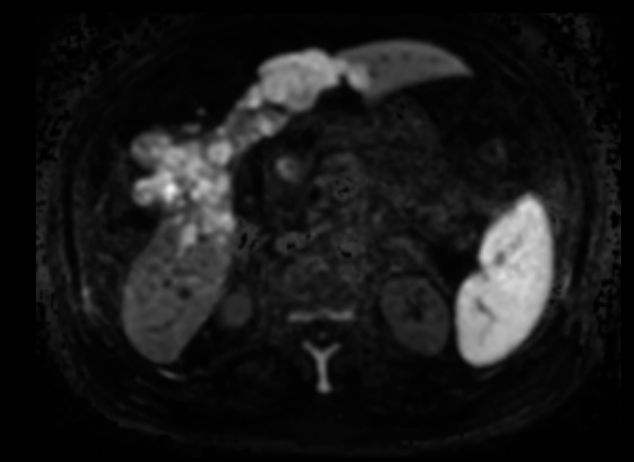


SmartShim is an image-based shimming method which delivers reliable fat suppression for whole body diffusion, resulting in highly uniform images.<sup>1</sup> The automated scan corrects for B0 inhomogeneities and eliminates operator variability<sup>2</sup> by eliminating manual shim box placement. It simplifies workflow by automating the planning of the shim region.

<sup>1</sup> Compared to auto shim, in body DWIBS.  
<sup>2</sup> Compared to volume shim.  
SmartShim is part of Diffusion Excellence Pack

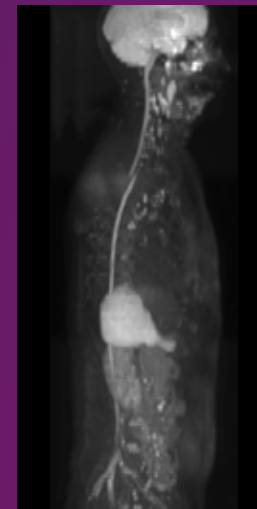
## Computed DWI

# Step up your diffusion performance

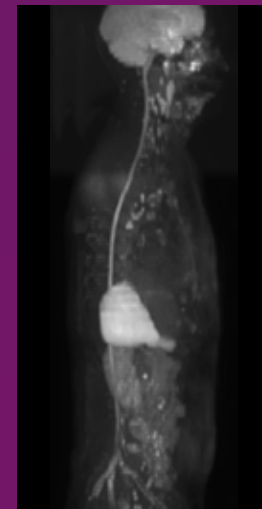


Computed DWI is a technique for generating synthetic high b-value images that were not acquired, which decreases your overall exam time and enhances clinical workflow.<sup>1</sup> Simply acquire two b-value images and you can generate virtually any image up to b5000. The acquired b-values are used to extrapolate synthetic high b-value images. This extrapolation uses a mono-exponential fit. Save time by generating the required b-values on the MR console. It enables computation of diffusion weighted images at any b-value between 0 and 5000 s/mm<sup>2</sup> from an acquired DWI series to support diagnosis of lesions. This technique enables an interactive b-value sweep to compare differences in diffusion behavior and find the optimal contrast for lesions.

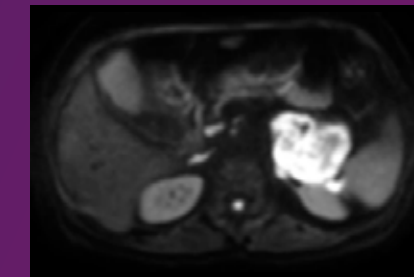
<sup>1</sup> Compared to Philips DWI, by generating synthetic high b-value images.  
Computed DWI is part of Diffusion Excellence Pack



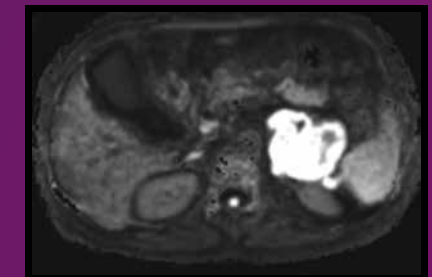
Volume shim



SmartShim



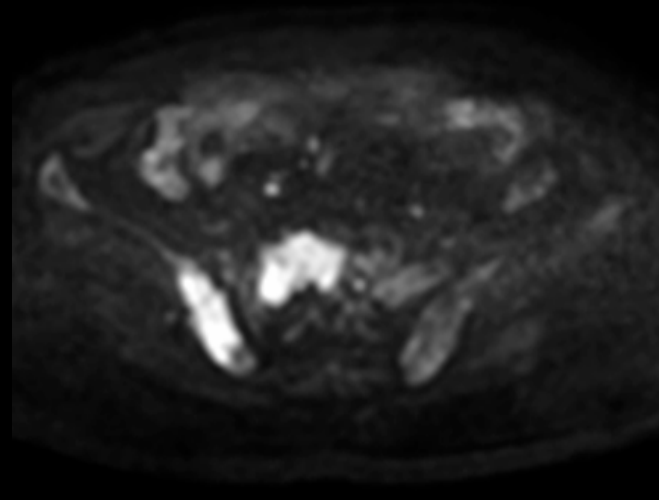
Acquired image, b800



Computed image, b1500

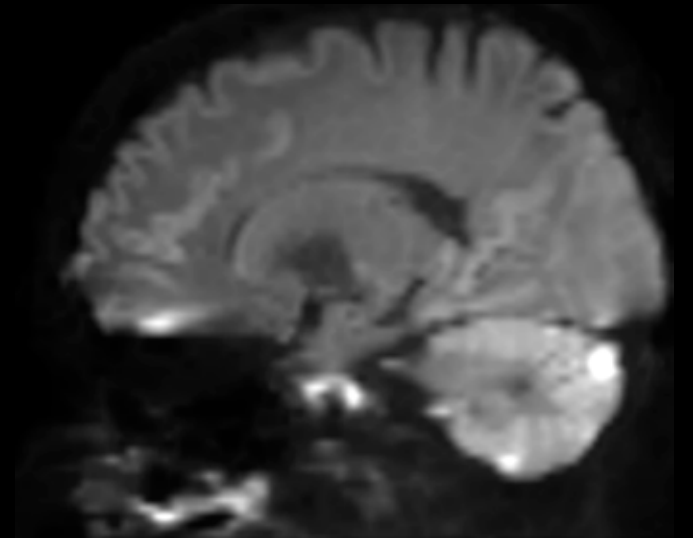
## LOVA ADC

# Step up your diffusion performance



## EPIC Brain

# Step up your diffusion performance



The LOVA ADC technique automatically corrects for ADC variability to improve diffusion restriction assessments and make ADC measurements more reproducible for follow-up examinations. LOVA ADC delivers consistent ADC values with up to 95% accuracy<sup>1</sup> compensating for gradient linearity errors, in large field of views.



ADC, away from iso-center



ADC, near iso-center



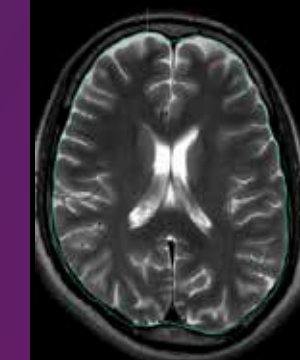
LOVA ADC, away from iso-center



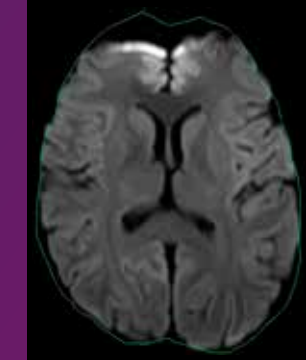
LOVA ADC, near iso-center

<sup>1</sup> Based on in house testing on phantom at a FOV of 45 cm. LOVA ADC is part of Diffusion Excellence Pack

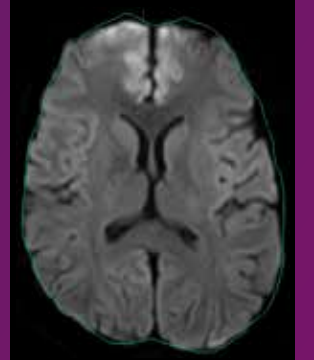
EPIC Brain aims at reducing B0-induced distortions to achieve better geometrical fidelity in EPI scans. It brings down the residual distortion within a single voxel size.<sup>1</sup> This improves the geometrical match between EPI images and MR anatomical brain images compared to conventional EPI scans. It is intended for EPI scans (DWI, DTI, fMRI, perfusion scans) of the brain. EPIC Brain will deliver fMRI, DWI, and DTI images that geometrically match anatomical brain images.



Anatomical T2w



Conventional EPI

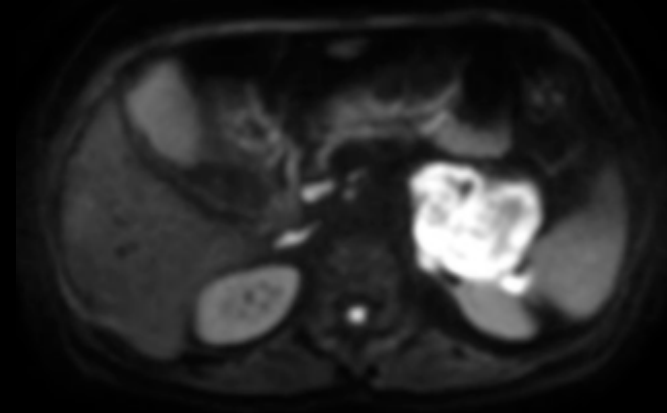


EPIC Brain

<sup>1</sup> Based on in house phantom tests, at a FOV of 230 mm and matrix size of 128x128. EPIC Brain is part of Diffusion Excellence Pack

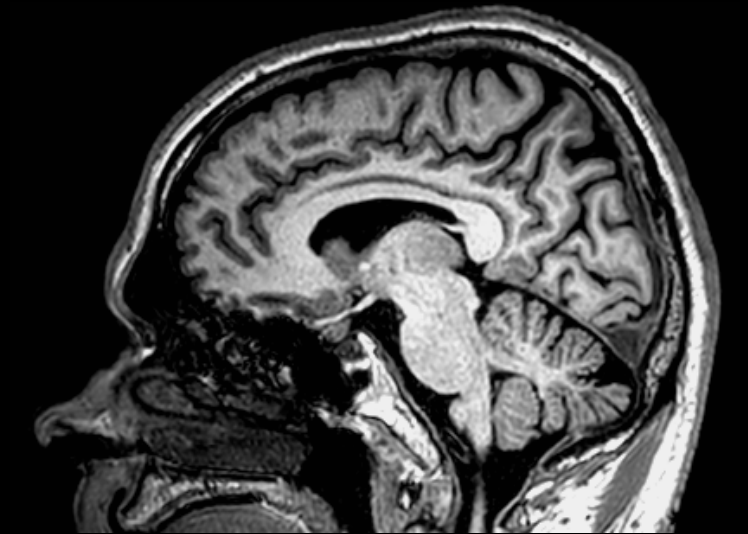
## Diffusion Excellence Pack

# Step up your diffusion performance



## 3D Non-selective

# Fast and robust large volume 3D FFE imaging



The Diffusion Excellence Pack offers a unique range of innovations to address the common challenges you face to enhance the efficiency and quality of diffusion imaging for areas ranging from oncology to neuro.

**SmartShim**, delivering reliable fat suppression with simplified workflow due to automating the planning of the shim region and image-based shimming.

**Computed DWI**, decreasing overall exam time and enhancing clinical workflow<sup>1</sup> by generating synthetic high b-value images.

**LOVA ADC**, delivering consistent ADC values with up to 95% accuracy<sup>2</sup> in large field of views.

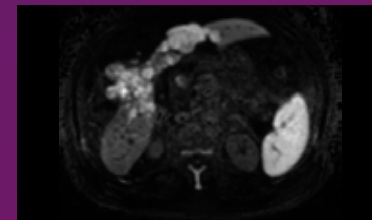
**EPIC Brain**, improving the geometrical match between EPI images and MR anatomical brain images, compared to conventional EPI scans.

<sup>1</sup> Compared to Philips DWI, by generating synthetic high b-value images.

<sup>2</sup> Based on in house testing on phantom at a FOV of 45 cm.



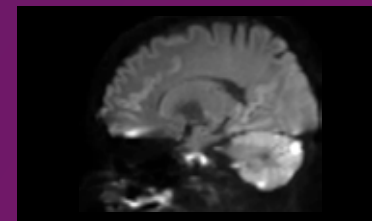
SmartShim



Computed DWI, b1500

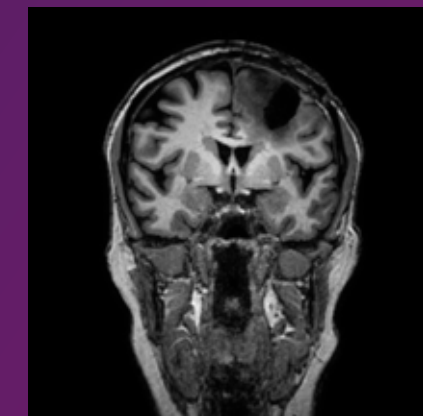


LOVA ADC

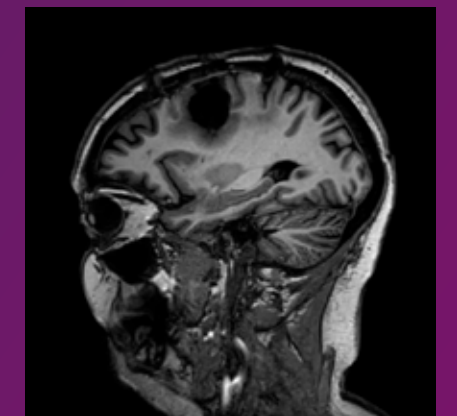


EPIC Brain

3D Non-selective enables faster and more robust<sup>1</sup> large volume 3D FFE imaging in brain. Thanks to shorter TR and TE, 3D Non-selective delivers a 9% faster protocol and improved grey-white matter contrast in Brain 3D TFE<sup>1</sup>.

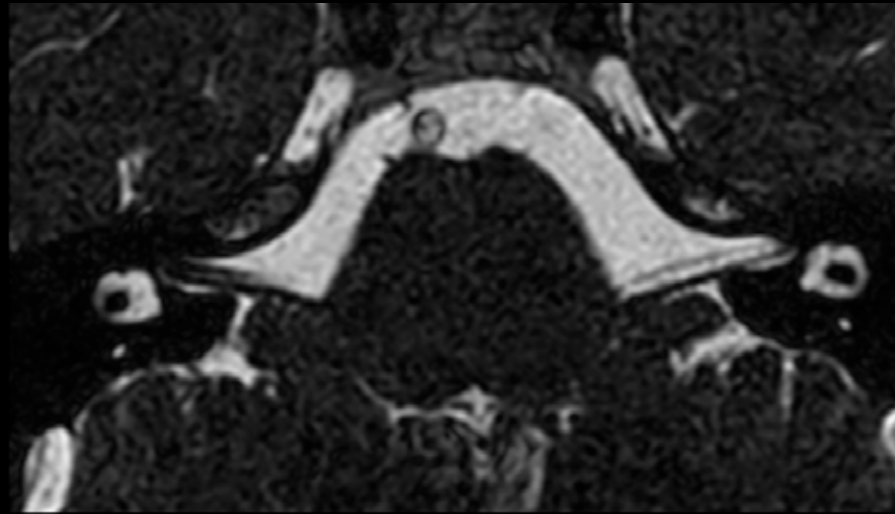


3D Non-selective bFFE



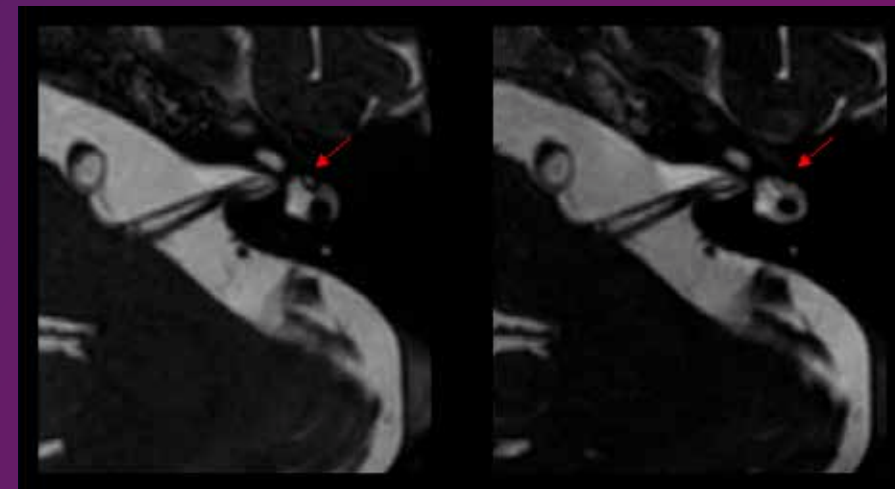
## bFFE XD

Expanding clinical applications of balanced FFE



bFFE XD expands the clinical application of bFFE towards better visualization of fine structures. It delivers robust 3D, high resolution imaging with a spatial resolution up to  $0.5 \times 0.5 \times 0.5 \text{ mm}^3$  in less than 6 minutes for inner ear applications, with reduced banding artifacts compared to conventional Philips balanced FFE.

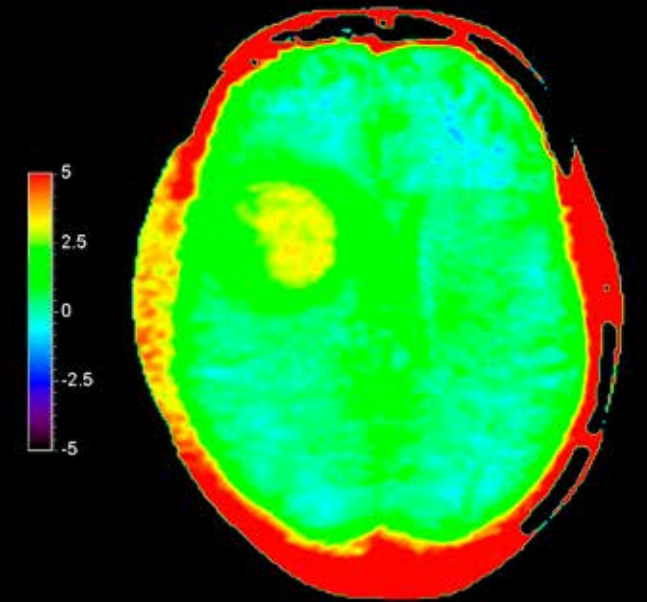
<sup>1</sup> For 3.0T systems. For 1.5T systems:  $0.6 \times 0.6 \times 0.6 \text{ mm}^3$



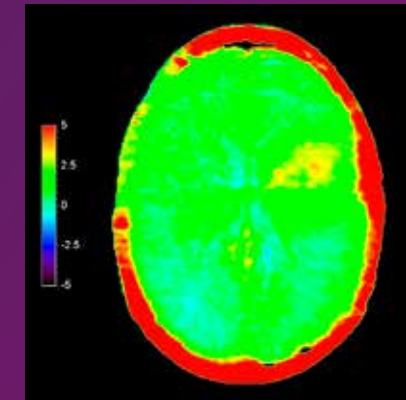
bFFE (left) versus bFFE XD (right)

## 3D APT

Enhanced diagnostic confidence in Neuro oncology



3D APT (Amide Proton Transfer) is a new unique, contrast-free, brain MR imaging method addressing the need for more confident diagnosis in neuro oncology. 3D APT uses the presence of endogenous cellular proteins, to produce an MR signal that directly correlates with cell proliferation, a marker of tumoral activity. 3D APT can support trained medical professionals in differentiating low grade from high grade gliomas and, in differentiating tumor progression from treatment effect<sup>1,2</sup>



3D APT image

### Additional information:

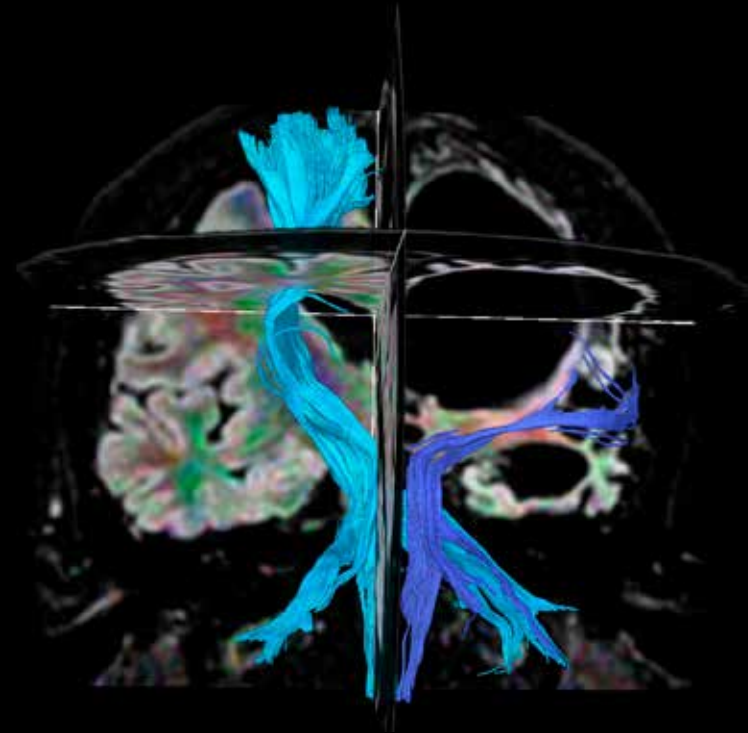
- 3D APTw images are calculated automatically and displayed as color maps
- Whole glioma coverage can be obtained with a resolution of  $2.0 \times 2.0 \times 5.0 \text{ mm}^3$

<sup>1</sup> Togao et al. (2014) Neuro-Oncology  
<sup>2</sup> Park KJ et al. (2016) Eur Radiol



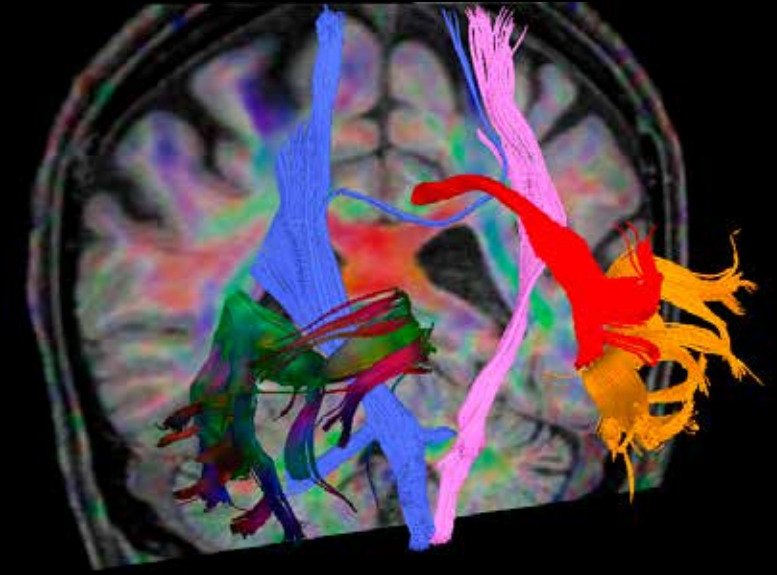
## FiberTrak Extension

High definition fibertracking in the brain or spine

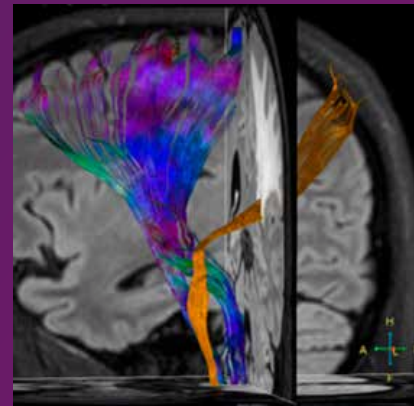


## MultiBand SENSE

High speed, high resolution fMRI and DTI studies

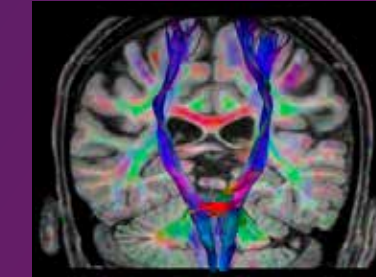


The FiberTrak Specialist Extension package Allows for diffusion imaging with up to 128 b-vectors and 16 b-values, delivering input for very high definition fiber tracking in the brain or spine.

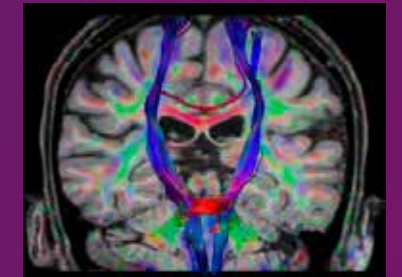


Visualization of white matter fiber tracts in the brain

By simultaneously exciting multiple slices, MultiBand SENSE allows you to use state-of-the-art acceleration techniques in functional brain scans to either shorten MRI scan time or enhance diagnostic information. It doubles your capabilities for fMRI. Due to a shorter minimum TR for fMRI, MultiBand SENSE can be used to deliver twice the temporal resolution with virtually no compromise in SNR, or to obtain twice as much anatomical coverage at similar scan times with virtually equal image quality.<sup>1</sup> In your DWI/DTI brain sequences, MultiBand SENSE enables up to 45% acceleration or twice as many diffusion vectors to be acquired with virtually equal image quality.<sup>1</sup> With MultiBand SENSE you can perform fMRI and DTI sequences at high speed and high resolution.<sup>2</sup>



**DTI**  
16 directions  
6:51 min



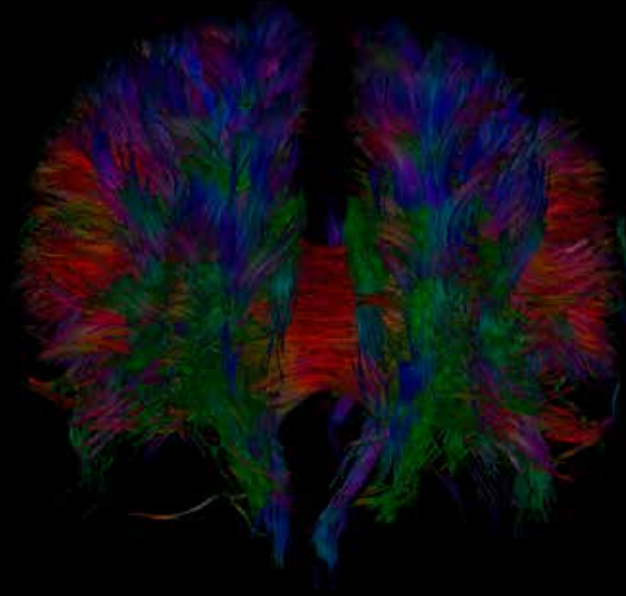
**DTI with MultiBand SENSE**  
16 directions  
3:37 min

<sup>1</sup> Compared to Philips 3D Selective 3D FFE imaging

<sup>1</sup> Compared to Philips DTI/fMRI scans without MultiBand SENSE.  
<sup>2</sup> Up to a MultiBand SENSE factor of 2.

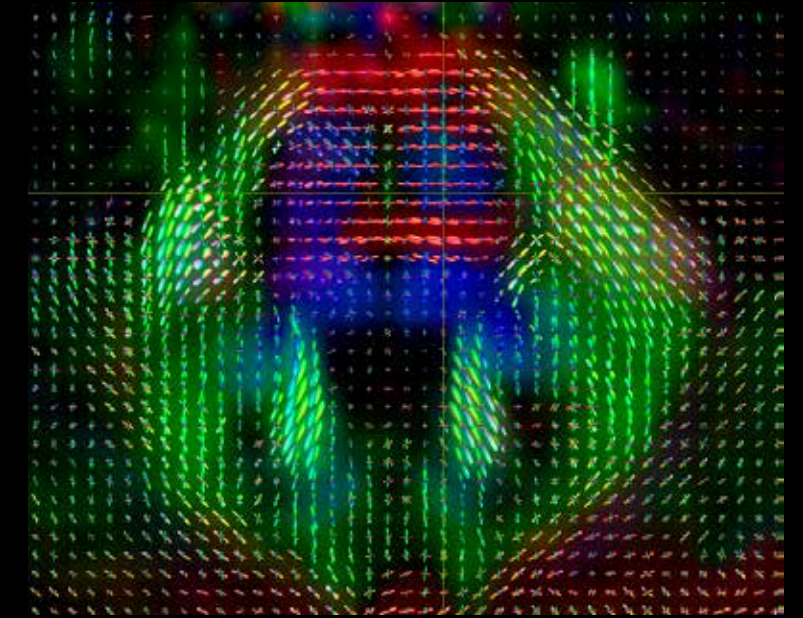
## NeuroScience

# Explore brain connectivity

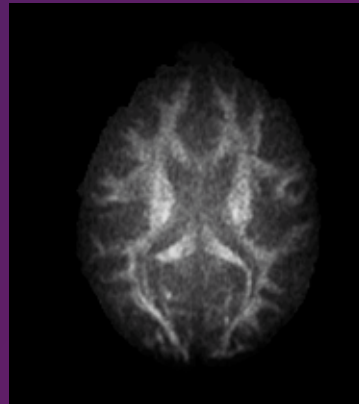


## NeuroScience extension

# Extend your diffusion MRI studies



NeuroScience comprehensive package helps you to explore brain connectivity by supporting advanced acquisition schemes allowing for high-definition brain fiber tracking, including crossing fibers and advanced fMRI capabilities.



Diffusion acquisition with a b-value of 15,000

### Additional information:

- Allows diffusion-weighted multi-shell acquisitions with up to 32 b-values and up to 128 unique diffusion directions
- Easy workflow for user defined gradient direction input
- Perform your fMRI studies with enhanced nyquist ghost stability and extended data storage (up to 64k images)
- Enables monitoring of consistency in longitudinal fMRI studies with a quality assurance tool, in line with fBRIN standards
- Includes B0 mapping for offline data correction and image processing
- Easy-to-use export tools in various formats, including NIFTI

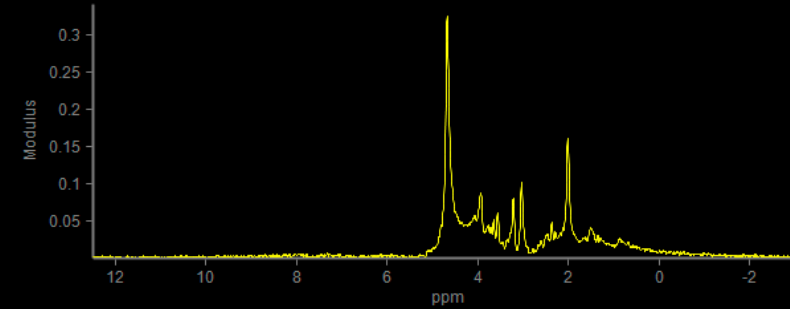
NeuroScience extension is an add-on to the comprehensive NeuroScience option. The extension brings your multi-shell DTI studies to a higher level. Advanced diffusion gradient control gives the scientific user control of the diffusion encoding gradient duration through selection of multiple diffusion encoding gradient waveforms. Furthermore, 2k DTI provides advanced control over diffusion gradients with up to 2048 independent diffusion encodings (vectors), each with up to 1024 different weightings and 1024 different directions, including multiple interleaved b0 encodings. Acquisition order is stored in the DICOM output.



Multi-shell DTI b4000 (128 directions)

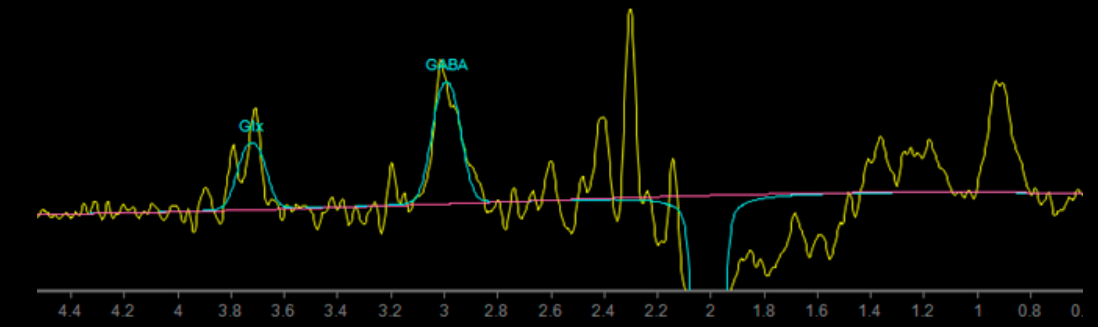
## Spectroscopy XD

More precise and more robust MR brain spectroscopy

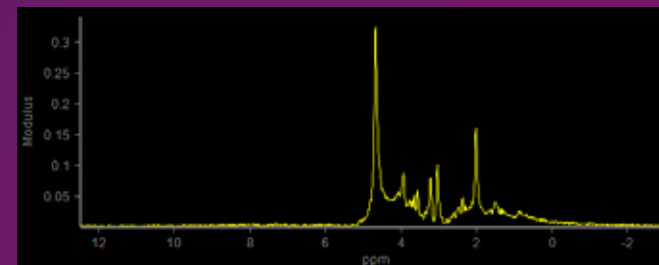
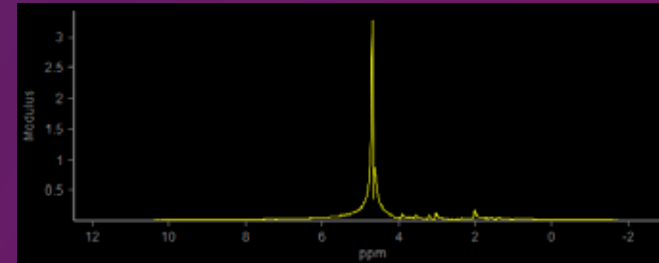


## MEGA

Detection of additional metabolites

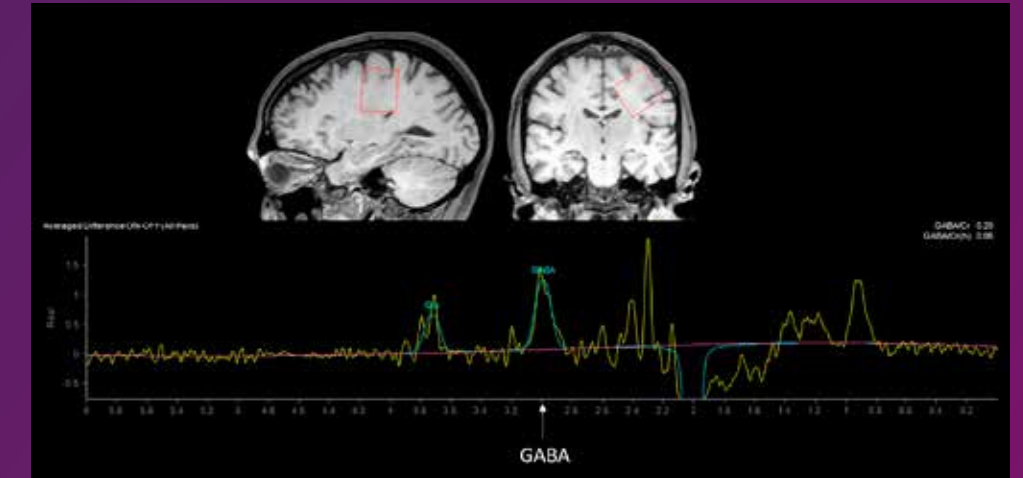


Spectroscopy XD is an add-on to our comprehensive Spectroscopy option. It includes VAPOR, which delivers faster MR spectroscopy examinations and more robust water suppression, up to a factor 4, than the conventional Philips water suppression technique (excitation) that uses time-consuming AWSO prescans. Furthermore, sLASER provides increased localization accuracy due to a reduction of the chemical shift displacement by a factor of 4 when compared to Philips PRESS.



No VAPOR, amplitude ~3.5 (top) versus VAPOR, amplitude ~0.35 (bottom)

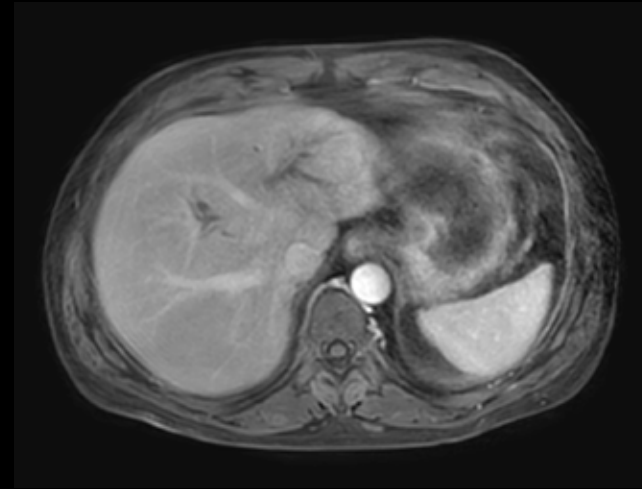
MEGA improves spectroscopy by revealing spectral peaks of interest which would otherwise remain hidden. It also allows detection and relative quantification of J-coupled metabolites such as gamma-aminobutyric acid (GABA) by automatically removing the spectral overlap from other metabolites. (In conventional spectroscopy, removing spectral overlap is only possible with spectral editing.) Frequency-selective RF pulses are included to manipulate the evolution of J-coupled MR signals. In addition, subtraction of on- and off-resonance spectra is used for relative quantification of J-coupled metabolites.



Detection of GABA with single voxel MEGA MR Spectroscopy

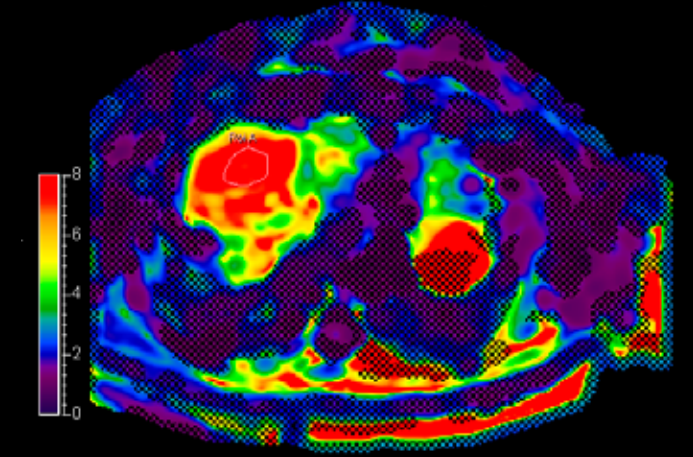
## 4D FreeBreathing

Improved imaging confidence for challenging patients in MRI liver studies



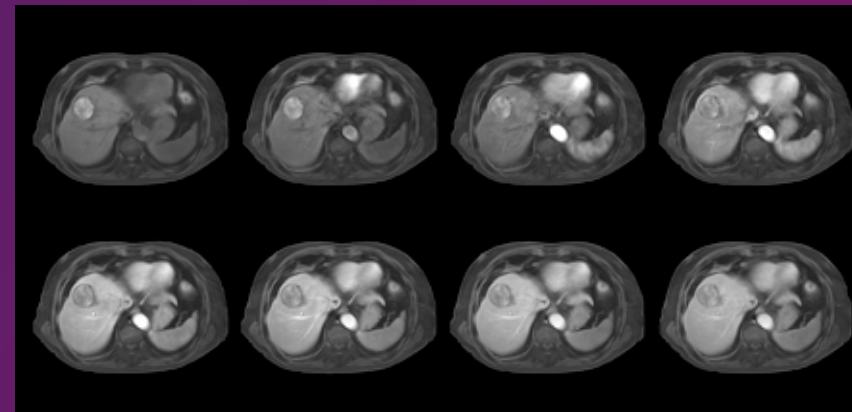
## MR Elastography Extension

Boost diagnostic confidence with more robust liver tissue stiffness maps



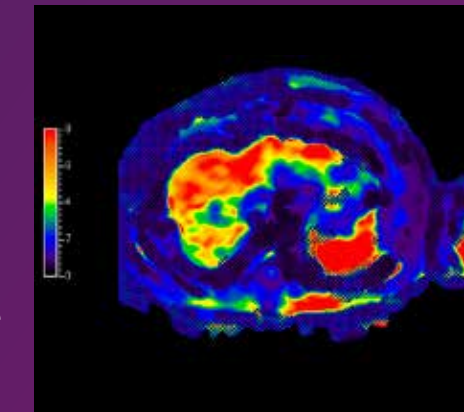
Multi-phase contrast-enhanced MRI studies are used to diagnose liver lesions, but many patients are simply not capable of performing multiple breathholds. With 4D FreeBreathing, you can now offer free-breathing MRI liver to a broader population, while improving imaging confidence and the patient experience. This allows you to address patients who have difficulty holding their breath or find it difficult to follow breathing instructions, like the rising elderly segment that has hearing loss, cognitive impairment or respiratory difficulties, as well as children and sedated patients.

4D FreeBreathing allows you to obtain excellent image quality from multi-phase liver studies performed without breathholds. This application is motion robust through its built-in respiratory soft gating and compatibility with high precision external sensors, like VitalEye. As a result, 4D FreeBreathing delivers reliable results that can improve imaging confidence<sup>1</sup>. You can easily define variable timings for multiple phases to seamlessly fit 4D FreeBreathing into your current workflow. Real-time reconstruction allows you to view the progress of images as they are acquired to monitor the quality of the results. To provide easy workflow, you can specify the number of temporal phases to be reconstructed. 4D FreeBreathing provides dynamic information with a temporal resolution<sup>2</sup> down to 3 seconds per phase.

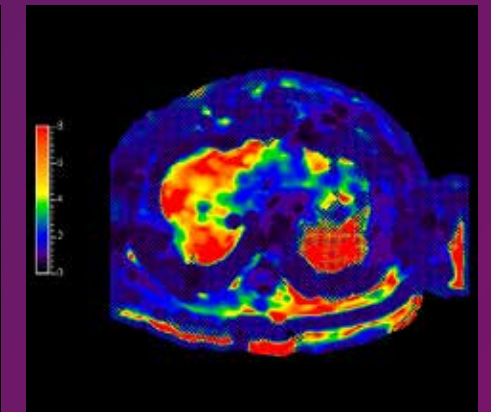


Multi-phase contrast-enhanced MRI liver study

The MR Elastography Extension has been developed to enhance diagnostic confidence by delivering faster, more robust stiffness maps across larger regions in the liver. With this new extension, MRE (SE-EPI) can be performed up to 8 times faster<sup>1</sup> and in a single breathhold, while delivering equal or better image confidence. The MR Elastography Extension supports you in getting consistent results for diverse patients. At high field strength the SE based MR Elastography Extension provides more robust stiffness maps, since the technique is more resistant to low T2\* signal fall out, compared to FFE based MR Elastography. A non-invasive assessment of tissue stiffness of the liver can be SE based MR Elastography Extension allows for, with a slice coverage of 4-5 slices, in a single breathhold scan. While FFE based MR Elastography requires one breathhold per slice. Image processing is fully integrated at the scanner with automated calculation of elastograms, providing trained physicians with additional input to help make informed decisions about treatment.



MRE, 4 slices in a single breath hold of 16 seconds



MRE, 8 slices in a single breath hold of 16 seconds

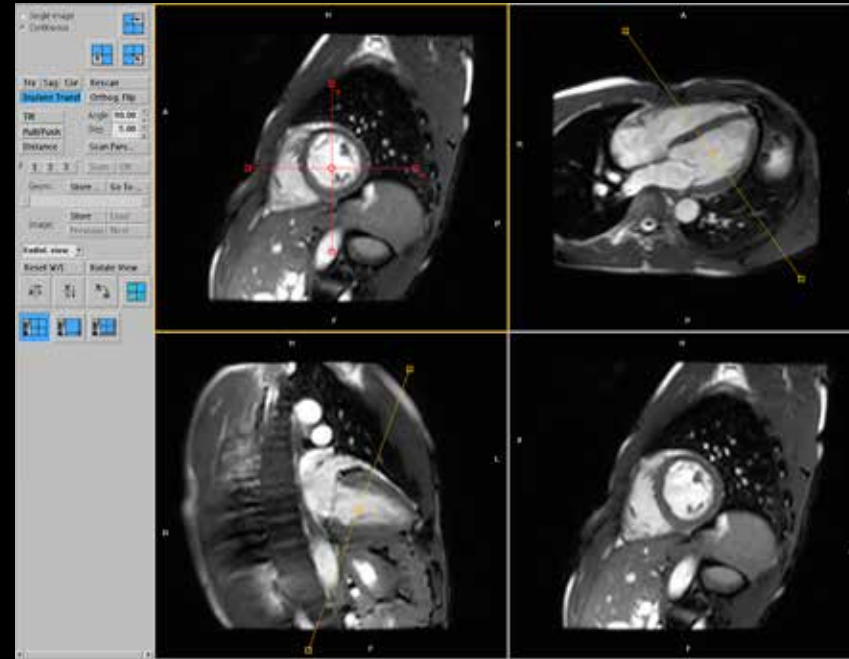
<sup>1</sup> Compared to eTHRIVE in subjects unable to hold their breath.

<sup>2</sup> Dynamics are reconstructed at prescribed temporal resolution and will contain data shared from earlier and later time points.

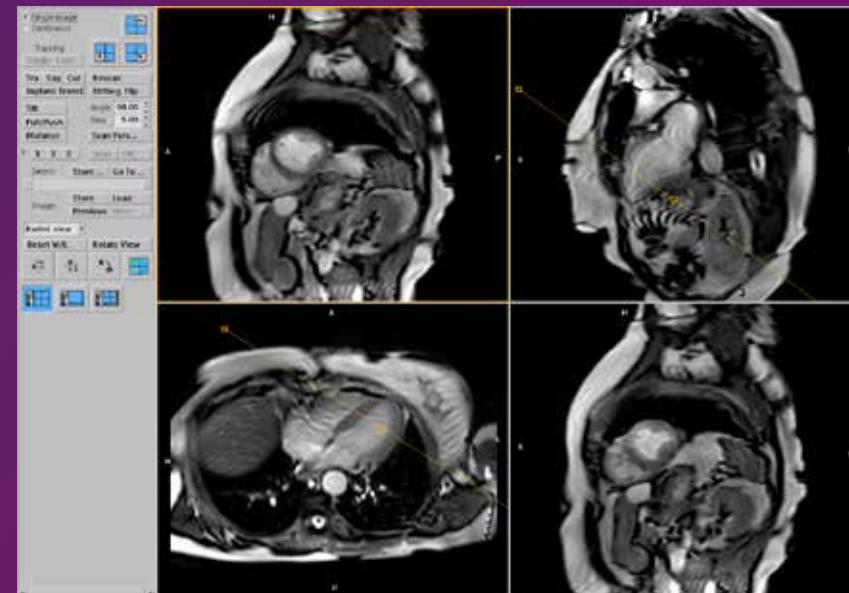
<sup>1</sup> Compared to Philips MR Elastography (gradient echo), at 3.0T.

# Real-Time Specialist

## Benefit from intuitive planning for cardiac studies



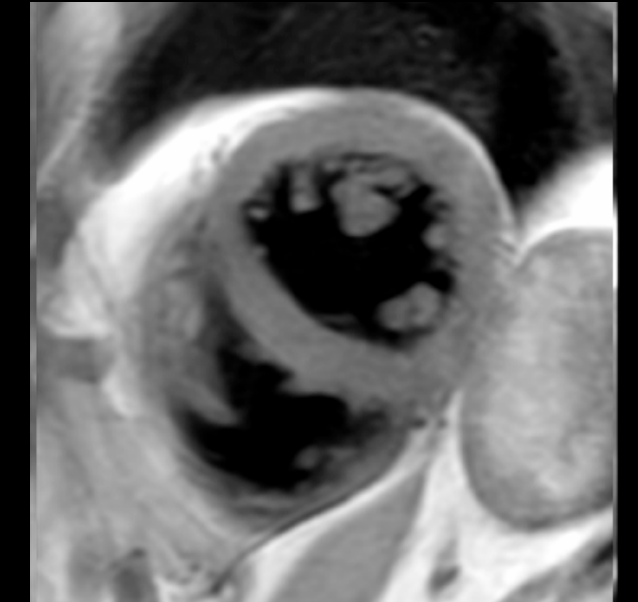
Real-Time Specialist enables real-time interactive imaging for planning, while changing geometry and contrast parameters during scanning with real-time reconstruction. Anatomic views can be stored and recalled for subsequent scans.



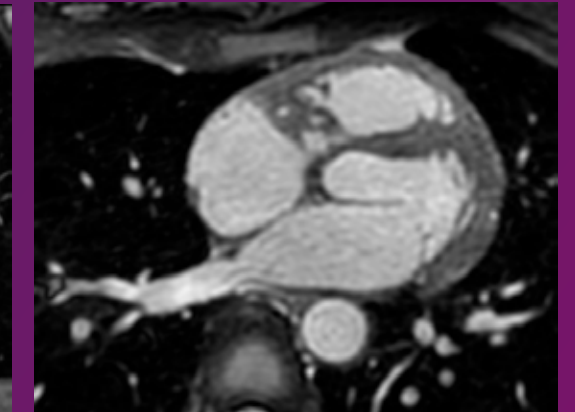
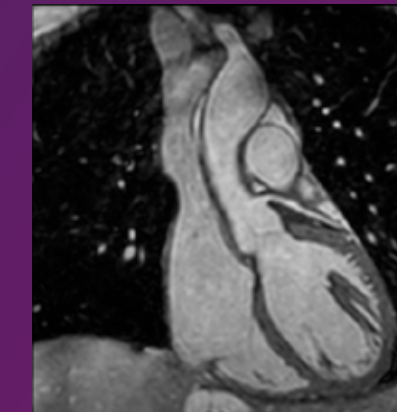
Real-time planning of cardiac studies

# Cardiac Expert extension

## Fast CMR methods for anatomy, function and more



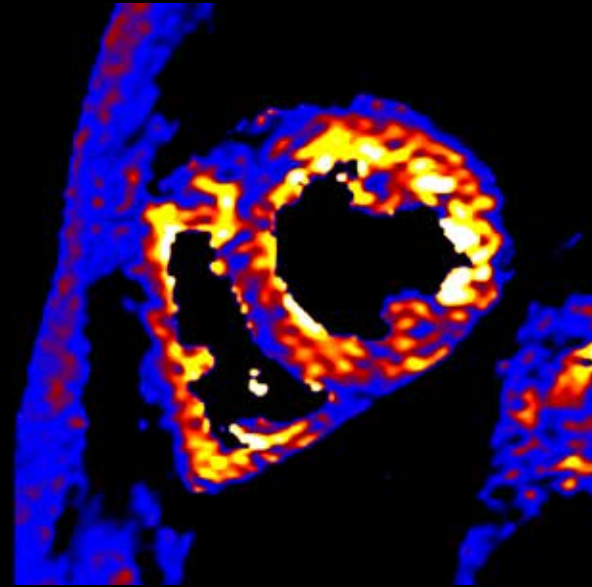
Cardiac Expert extension is an add-on to the comprehensive Cardiac Expert option. It provides additional techniques for fast black blood imaging, functional imaging and dynamic cardiac MR studies. Cardiac Zoom is a small FOV imaging technique that accelerates black blood TSE of the heart and great vessels. It decreases the required breath hold duration by up to 30% without changing spatial resolution by enabling single beat (shot) imaging, which is challenging for conventional (multi-beat) imaging approaches<sup>1</sup>. 3D Non-selective delivers 3D bFFE with reduced banding artifacts compared to Philips 3D Selective 3D FFE imaging. Retrospective EPI combines retrospective triggering with EPI sampling. kt-SENSE is a spatio-temporal acceleration technique that offers all the benefits of k-t BLAST in addition to enhanced image uniformity<sup>2</sup>.



3D Non-selective bFFE in cardiac applications

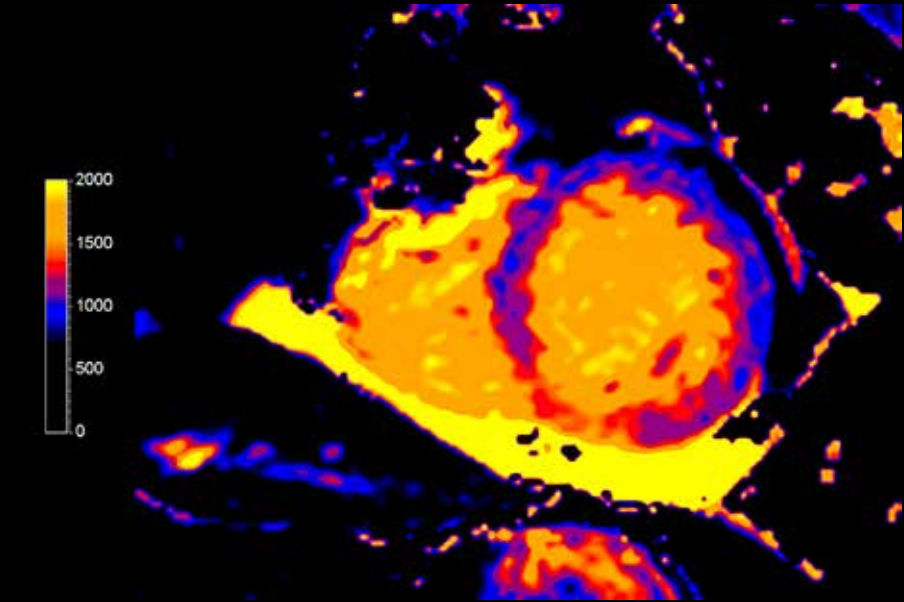
<sup>1</sup> Compared to conventional Philips black blood imaging  
<sup>2</sup> Compared to regular k-t BLAST

# StarQuant Non-invasive T2\* and T2 assessment of myocardial tissue

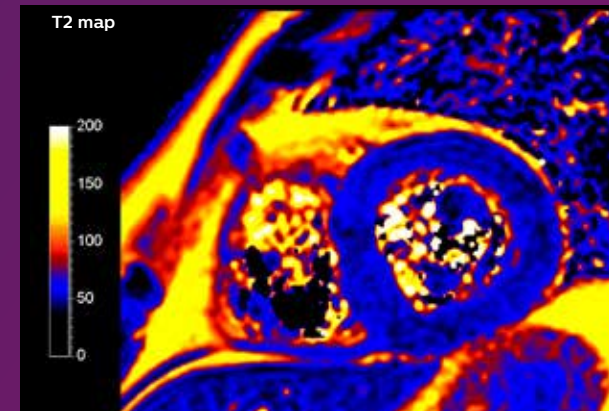
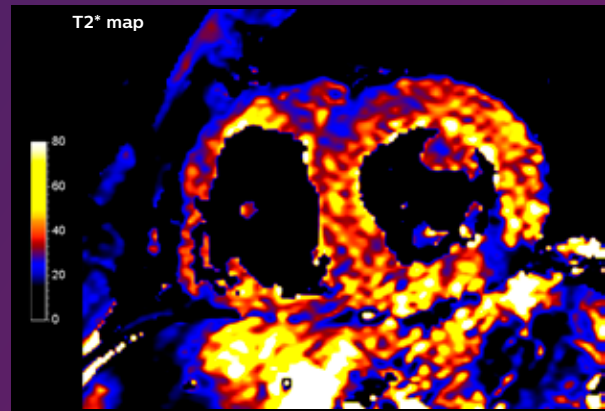


# CardiacQuant Extension

Flexibility in creation  
of T1 maps for cardiac

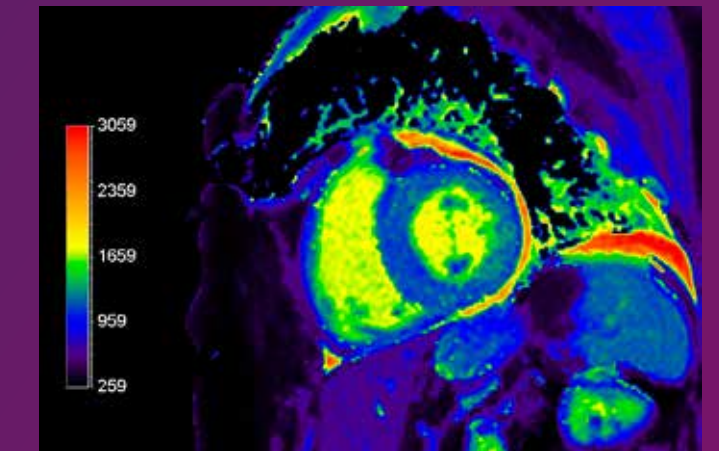


With StarQuant you get access to exciting new applications for cardiology, which can help in the non-invasive assessment of myocardial tissue characteristics by providing you with comprehensive graphs and pixel-based, quantitative T2/R2 and T2\*/R2\* maps in a single breathhold scan helping you to make early decisions for therapy.



Quantitative T2\* and T2 maps in a single breathhold scan

CardiacQuant Extension is an optional plugin for which adds flexibility for the creation of T1 maps. It allows the option of user defined T1 mapping schemes as alternatives for the predefined “native” or “enhanced” schemes as provided by CardiacQuant.







T1 map

## Compatibility overview

	Ingenia 3.0T	Ingenia 3.0T CX	Ingenia Elition 3.0T S	Ingenia Elition 3.0T X
Comprehensive set of clinical solutions and techniques				
ScanTools Pro	●	●	●	●
Towards first time right imaging				
 dS PerformanceSuite Plus	●	●	●	●
dS PerformanceSuite Pro	○	○	○	○
dS PerformanceSuite Premium	○	○	○	○
Answer complex clinical questions and grow your referrals				
 dS NeuroSuite Plus	○	○	○	○
dS NeuroSuite Pro	○	○	○	○
dS NeuroSuite Premium	○	○	○	○
 dS MSKSuite	○	○	○	○
dS BodySuite	○	○	○	○
 dS LiverSuite	○	○	○	○
dS BreastSuite	○	○	○	○
dS PediatricSuite 1.5T				
dS PediatricSuite 3.0T	○	○	○	○
dS VascularSuite	○	○	○	○
 dS CardiacSuite Pro	○	○	○	○
dS CardiacSuite Premium	○	○	○	○

● Standard ○ Options
















## Compatibility overview

	Ingenia 1.5T Evolution	Ingenia 1.5T CX*	Ingenia Ambition 1.5T S	Ingenia Ambition 1.5T X
Comprehensive set of clinical solutions and techniques				
ScanTools Pro	●	●	●	●
Towards first time right imaging				
 dS PerformanceSuite Plus	●	●	●	●
dS PerformanceSuite Pro	○	○	○	○
dS PerformanceSuite Premium	○	○	○	○
Answer complex clinical questions and grow your referrals				
 dS NeuroSuite Plus	○	○	○	○
dS NeuroSuite Pro	○	○	○	○
dS NeuroSuite Premium	○	○	○	○
 dS MSKSuite	○	○	○	○
dS BodySuite	○	○	○	○
 dS LiverSuite	○	○	○	○
dS BreastSuite	○	○	○	○
dS PediatricSuite 1.5T	○	○	○	○
dS PediatricSuite 3.0T				
dS VascularSuite	○	○	○	○
 dS CardiacSuite Pro	○	○	○	○
dS CardiacSuite Premium	○	○	○	○

\*Ingenia 1.5T CX is not for sale in the USA

● Standard ○ Options

# Compatibility overview

	Multiva 8ch	Multiva 16ch	Ingenia Prodiva 1.5T CS*	Ingenia Prodiva 1.5T CX*
Comprehensive set of clinical solutions and techniques				
ScanTools Pro	●	●	●	●
Towards first time right imaging				
 dS PerformanceSuite Plus	●	●	●	●
 dS PerformanceSuite Pro	○	○	○	○
 dS PerformanceSuite Premium				
Answer complex clinical questions and grow your referrals				
 dS NeuroSuite Plus	○	○	○	○
 dS NeuroSuite Pro	○	○	○	○
 dS NeuroSuite Premium	○	○	○	○
 dS MSKSuite	○	○		○
 dS BodySuite	○	○		○
 dS LiverSuite				
 dS BreastSuite	○	○		○
 dS PediatricSuite 1.5T				
 dS PediatricSuite 3.0T				
 dS VascularSuite		○		○
 dS CardiacSuite Pro	○	○		○
 dS CardiacSuite Premium	○	○		

\*Ingenia Prodiva 1.5T is not for sale in the USA

● Standard ○ Options

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