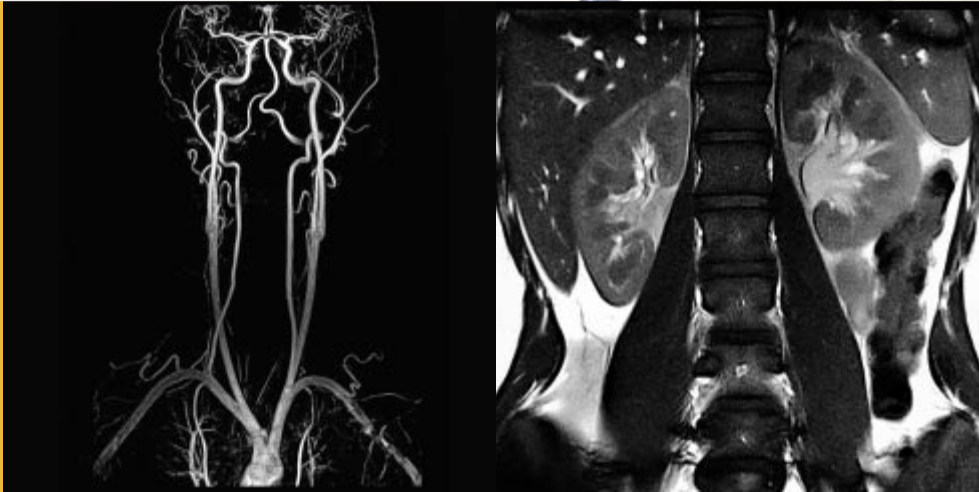


Trio



MAGNETOM Trio [UHF Class] 3T Unlimited



MAGNETOM Family

The Perfection of Care

The aim of Siemens MR is the perfection of care.

To create products and services that improve the quality of life of all persons who come into contact with them.


We do this by caring for the health of the patient, caring for the quality of the user's work – and caring about the owner's profit.

syngo

Siemens is the leader in cross modality common sense! *syngo*® is a comprehensive computer platform engineered for medical imaging that runs on the majority of Siemens medical products. Different modalities use common intuitive icons to initiate shared tasks such as patient registration, imaging, 3D reconstruction etc.

All tasks and applications within your workflow are covered either with, or at your system: from patient registration, image acquisition, viewing and post-processing to filming as well as archiving. The web-based patient record, for example, provides quick access to important patient information. As an alternative you can view lab results at the console without time-consuming telephone calls to the ward.



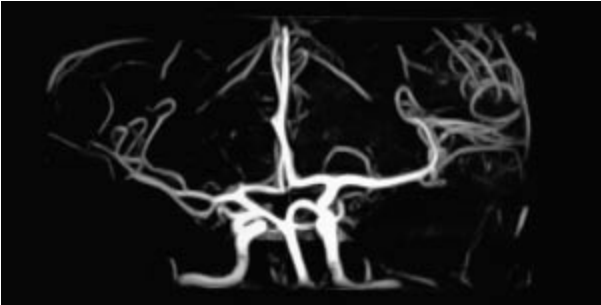


MAGNETOM® Trio features the multi-modality *syngo* user-interface. *syngo* has been optimized for clinical workflows and validated on the 0.2T, 1T and 1.5T MAGNETOM systems. Easy to use and flexible, *syngo* features the latest MR applications, all available on a simple and powerful interface. Since *syngo* is multimodal, your tech nologists can easily handle different modalities, such as CT, MR, angiography, and many more.

www.SiemensMedical.com

3T Technology – Unlimited

- < Two FDA-cleared ultra high-field products:
MAGNETOM Allegra, the only optimized 3T brain scanner, and
MAGNETOM Trio, your whole-body MR for unlimited 3T applications
- < Latest system design for best homogeneity and cost-efficient siting
- < Fastest examinations with the best gradients and most advanced
RF system – 8 fast channels, iPAT compatible



3T Applications – Unlimited

- < 3TCare for safe MR examinations with maximal anatomical coverage
- < iPAT integrated Parallel Acquisition Technique for every
MR whole-body application
- < MAGNETOM World Ultra High-Field Club: a network of excellence at 3T

3T Efficiency – Unlimited

- < *syngo*, the multi-modality user interface, empowers your daily workflow
- < Inline Technology – processing instead of post-processing
- < Evolve: your guaranty of up-to-date MR scans over the lifetime
of your MR system

Siemens: the Innovation Leader in MR Technology

The MAGNETOM Ultra High-Field Class – a new level of perfection in 3T magnetic resonance imaging, with a focus on unlimited 3T technology, advanced applications, and efficiency.

< **Siemens – the Leader in MR for ultimate 3T technology**

Siemens is the only company offering two 3T-optimized products – MAGNETOM Allegra and MAGNETOM Trio, equipped with the fastest gradients and the most advanced RF chain. Your guaranty of getting the best in 3T MR.

< **Siemens Stands for unlimited 3T applications**

Technological leadership for unlimited 3T applications: the 3TCare solution for SAR-reduction, iPAT for all applications and MAGNETOM World Ultra High-Field Club, a network of experts to share ideas with.

< **Siemens Sets Efficiency Standards with *syngo***

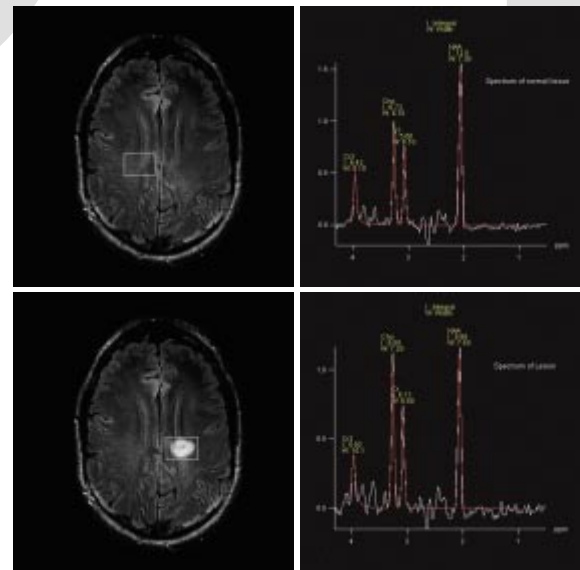
We are the first medical solutions provider to offer a software standard for several modalities. *syngo* features Inline Technology – processing instead of post-processing and the Evolve program.

Higher spatial resolution, faster scanning at 3T for new and better MR applications

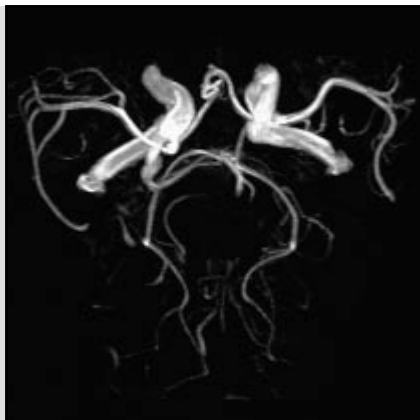
3T clinical Power

3T offers twice the signal-to-noise ratio (SNR) of 1.5T MR scanners. This increased SNR allows greater spatial resolution and in many cases faster scanning. In addition, MR spectroscopy benefits from increased field strength, better resolution of metabolites, and reduced acquisition time. Other 3T advantages include better T1-based techniques such as Time-of-Flight MRA, more robust T2*-weighted acquisitions, and more robust functional MRI signal.

Higher spatial resolution at 3T is the key to better diagnostic accuracy. Small tumors or stenoses, previously undetected, are now identified and can be treated in the earliest stages. Shorter acquisition times and the 3T SNR enable you to draw up efficient clinical protocols incorporating the most advanced applications such as Diffusion Tensor imaging or MR spectroscopy into your daily clinical workflow.



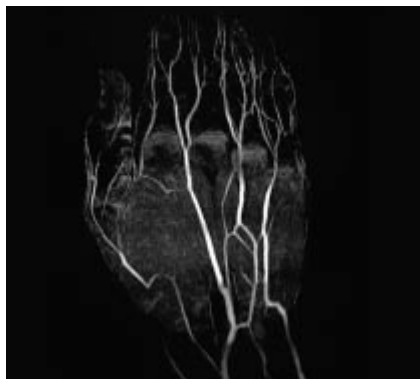
3T spectroscopy allows the excellent separation of brain metabolites.



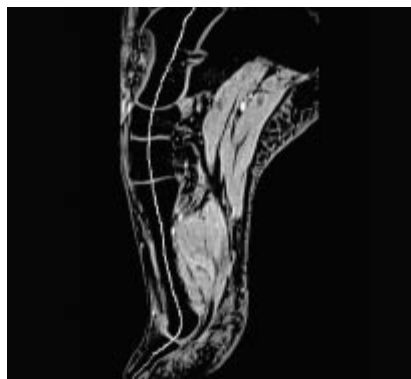
High resolution MRA eases the diagnosis of stenosis even for distal branches of the intracranial vessels. Matrix 512, FoV 220 mm



High resolution MRA eases the diagnosis of stenosis even for distal branches of the intracranial vessels. Matrix 1024, FoV 220 mm



Even the capillary vessels of the extremity (e.g. in the hand) can easily be visualized at 3T.

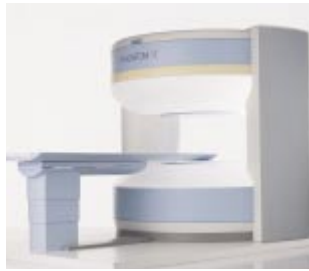


The high resolution 3D DESS allows a quick reconstruction of all anatomical structures.

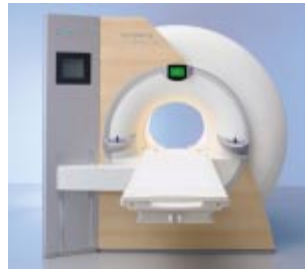


MPR reconstruction of the metatarsal bone at 3T. Excellent anatomical representation.

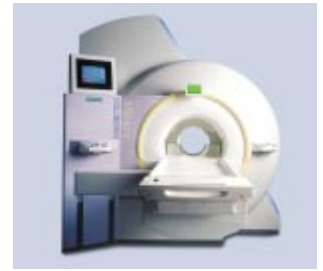
MAGNETOM Family



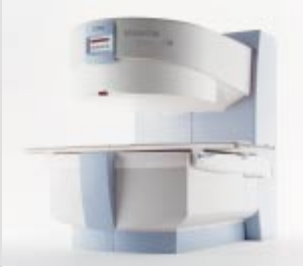
MAGNETOM Rhapsody
Open Class



MAGNETOM Symphony
Maestro Class



MAGNETOM Allegra
UHF Class



MAGNETOM Concerto
Open Class



MAGNETOM Harmony
Maestro Class



MAGNETOM Sonata
Maestro Class



MAGNETOM Trio
UHF Class

0.2

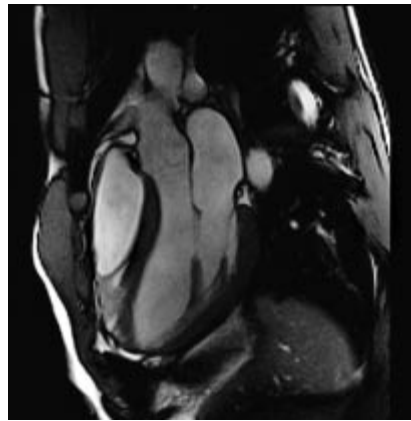
1.0

1.5

3.0

Tesla

Finally, the increased 3T SNR can be traded off for increased speed e.g. acquisitions with integrated Parallel Acquisition Techniques (iPAT – SENSE and SMASH-based techniques). In fact, iPAT enables a reduction of examination time or an increase in spatial resolution and improves image quality for single shot techniques – all at a cost of reduced SNR. At 3T, iPAT shows the best promise to provide excellent 3T image quality in all body regions prone to susceptibility artifacts.



Cardiac MR: the cine TrueFISP at 3T provides excellent contrast for rapid assessment of wall motion.



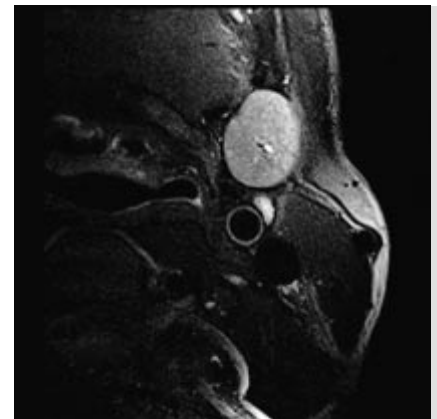
Cardiac MR: 3D TrueFISP images of the coronaries with submillimeter resolution in a breath-hold.



Orthopedics MR: 3D MEDIC knee imaging allows excellent cartilage visualization.
Matrix 448 matrix, 2 mm slice thickness, FoV 150 mm



Orthopedics MR: 3D MEDIC knee imaging allows excellent cartilage visualization.
Matrix 448, 1 mm slice thickness, FoV 89 mm



Plaque imaging:
high resolution carotids for evaluation of plaque.

3T Technology – Unlimited

Latest MR technology for the ultimate 3T experience

MAGNETOM Ultra High-Field Class

Always aiming at providing the latest MR advancements in clinical routine, Siemens has put together an innovative Ultra High-Field (UHF) program. This program develops and integrates technologies optimized for 3T. The Siemens UHF program: two FDA-cleared 3T products in the Ultra High-Field Class and cooperations on 7T human MR scanners.

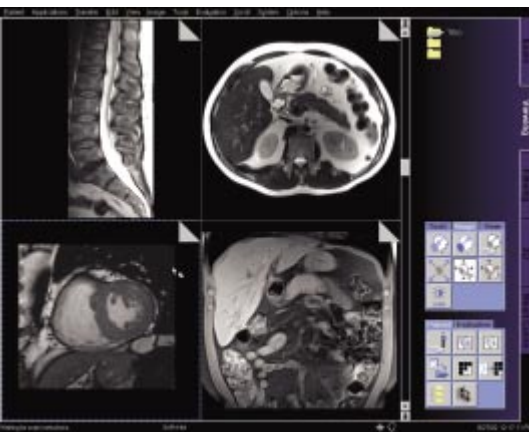
- < MAGNETOM Allegra – the only scanner designed and optimized for 3T brain imaging
- < MAGNETOM Trio – the whole-body MR scanner with 3TCare for unlimited 3T whole-body imaging
- < Active 7T support for hardware – with gradients, gradient amplifiers – and software. Even the 7T systems feature *syngo* – a unique approach directly benefiting our MAGNETOM Ultra High-Field Class products.

Fastest speed and best image quality

MAGNETOM Trio opens the way to a new generation of 3T MR systems, compact but with an extremely good homogeneity on a 40 cm FoV – including in the z-direction. Enabling the fastest acquisitions by combining gradient and RF chain performance.

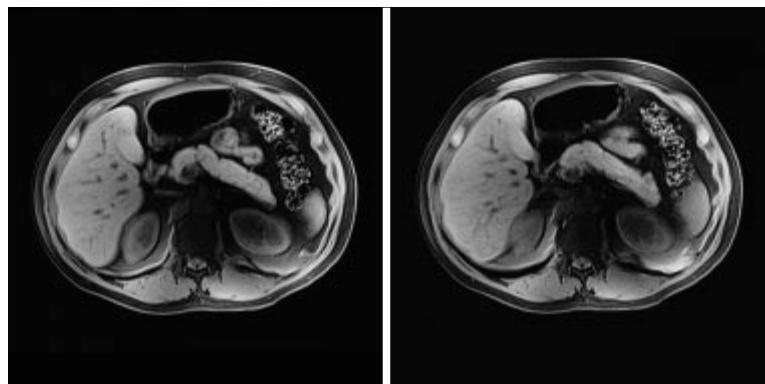
- < **Our standard: the most advanced RF concept with 8 channels**
MAGNETOM Trio features 8 independent and fast (1 MHz) RF channels in its standard configuration. For this reason, MAGNETOM Trio supports the latest array coil technology and iPAT to the highest acceleration factors.

- < **Fastest gradients in the industry with 200 microsecond rise time**
MAGNETOM Trio features the most performant whole-body gradient system, the Sonata gradients. The gradient system is the intrinsic component defining the speed of your scanner. The gradients perform at 40 mT/m per axis (or 69 mT/m effective) simultaneously with a 200 microsecond rise time (unique slew rate of 200 mT/m/ms). This slew rate operating on a 40 cm FoV enables extremely fast scanning so that you can easily run breathhold techniques and minimize echo-spacing, reducing any single-shot technique image distortion.



Viewer:
Multi study layout showing four different studies at a glance.

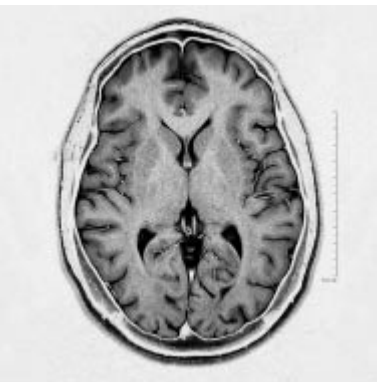
MAGNETOM Trio allows for excellent FatSat with and without iPAT in the abdomen as well as in other regions:



2D Flash with FatSat,
6 mm slice thickness, FoV 400 mm in 20 sec

2D Flash with FatSat,
6 mm slice thickness, FoV 400 mm with iPAT in 11 sec

MAGNETOM Trio allows iPAT with its standard 8-RF-channels and best FatSat thanks to the 2nd order shim



iPAT high-resolution supported from the 8 independent RF channels.
Matrix 1024, 3 mm slice thickness in 1:40 min

< **Magnet with E.I.S**
MAGNETOM Trio features an actively shielded magnet – for small footprint – equipped with the patented External Interference Shield (E.I.S.). The E.I.S. continuously compensates and automatically suppresses external magnetic field interference during measurements. Therefore nearby power lines and moving ferromagnetic objects such as elevators do not affect your image quality.

< **2nd order shim and 3D shim algorithm**
2nd order shims are standard with MAGNETOM Trio. Three linear and five non-linear channels are used to optimize the homogeneity in your region of interest. During your examination, your 3D-shim – a unique algorithm – determines corrections for all channels so that the magnetic field is the most homogeneous.

Together, these advanced features provide you with unmatched homogeneity: 0.35 ppm over 40 cm, an achievement unparalleled in the industry. Combined with RF technology and fastest gradients, image quality is at its best.

Cost-efficient 3T siting

MAGNETOM Trio is actively shielded to provide you with the smallest footprint. In addition, Siemens on the outside means Siemens on the inside, too. Even the most inconspicuous components have been made more efficient and miniaturized. This is reflected by the compact design of the electronic cabinets, which can be conveniently placed against the wall to save space.



3T Applications – Unlimited

Latest MR development for best image quality and safe patient examinations

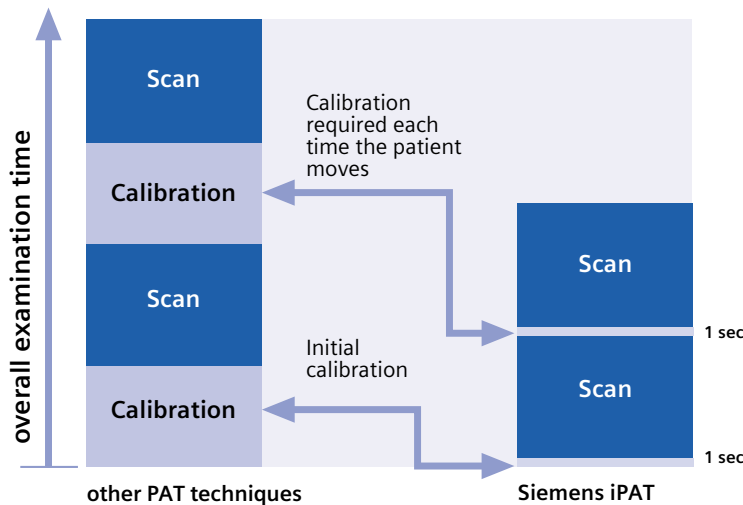
3TCare for safe 3T patient examinations

3TCare is a unique Siemens initiative designed to ensure safe patient scanning at 3T, by reducing the Specific Absorption Rate (SAR). SAR is the energy deposited in the body by radio frequency waves during scanning. It increases by a factor of 4 from 1.5T to 3T. Therefore the energy deposited in the patient has the potential to warm tissues. This may force you to triage

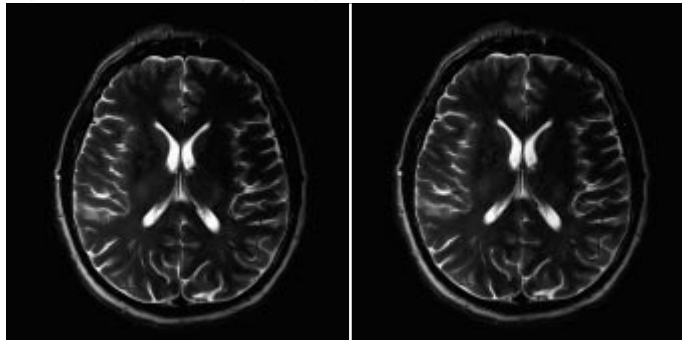
your patients or to compromise your examination, by changing sequence parameters or spatial coverage – thus altering your image contrast and examination duration. 3TCare brings you continuously evolving technologies in both hardware and software, that are reducing the SAR and maximize anatomical coverage and contrast:

- < **Hyperechoes**
The specially designed hyperecho sequence reduces the SAR up to a factor of 4, enabling you to scan more slices without being limited by SAR guidelines while still offering you excellent contrast.
- < **iPAT**
MAGNETOM Trio features integrated Parallel Acquisition Techniques (iPAT). iPAT reduces the RF energy and consequently the SAR by receiving simultaneous signals from our advanced array coil technology.
- < **Body coil**
MAGNETOM Trio has been structurally optimized, for best efficient coupling and reduced exposure of the patient to radio-frequency energy.

With 3TCare, you are confident that your MR scanner is optimized to provide the safest scanning techniques and uncompromised 3T MR examination.



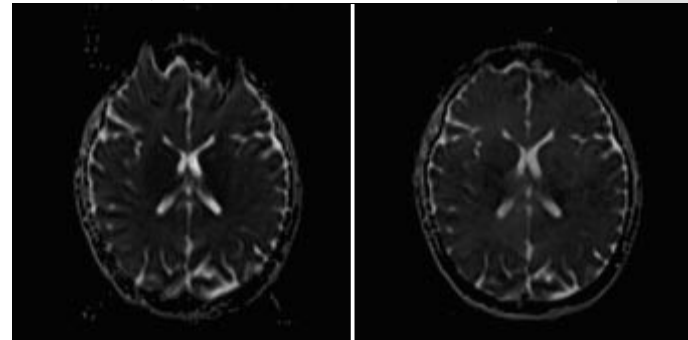
High resolution T2- weighted hyperecho MRI



without iPAT

with PAT factor 2

Diffusion imaging: ADC Map



without iPAT

with PAT factor 3

High resolution spine imaging,
512 matrix



3.28 min without iPAT



1.50 min with PAT factor 2



1.17 min with PAT factor 3

iPAT
for increased speed and
the reduction of artifacts.

iPAT, standard and to the highest factors

Increased susceptibility at 3T can cause image distortions. An efficient way to overcome this effect is to use iPAT at high factors. iPAT, especially in single-shot techniques, makes it possible to reduce echo train lengths, thus reducing blurring and geometric distortions. This is particularly important for breath-hold techniques in cardiac and abdominal imaging, and for neurological examinations focusing on structures at the base of the brain. Therefore Siemens has taken the technological lead in offering iPAT for all examinations.

- < iPAT to a factor of 4 (in 2D), the integrated Parallel Acquisition Technique, is a standard feature of the MAGNETOM Trio.
- < MAGNETOM Trio features many iPAT-compatible coils such as the CTL spine array, the cardiac array, the torso/pelvis coil. These coils are composed of the highest number of coil elements to allow using iPAT at high acceleration factors.

MAGNETOM World: a Network of Excellence

The MAGNETOM World Ultra High-Field Club is a global network of Siemens Ultra High-Field MR users. MAGNETOM World supports workshops, trainings and enables you to interact with other users, so that advanced information on clinical practice as well as new technologies can be shared. Communication also takes place via MAGNETOM Flash, our customer magazine, and, of course, through our Internet pages at:

www.SiemensMedical.com/

MAGNETOM-World



Phoenix

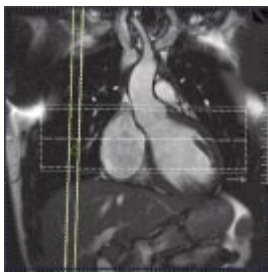
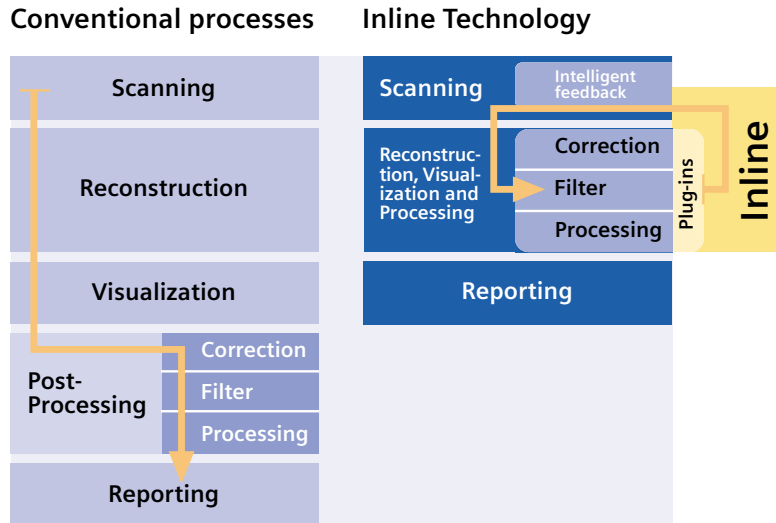
MAGNETOM World is facilitated by the unique Phoenix tool. Phoenix allows the exchange of image-based clinical protocols and enables easy customer-to-customer interaction.

3T Efficiency – Unlimited

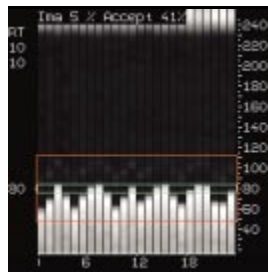
Concentrate on what matters most: the patient and the diagnosis

Inline Technology – Processing instead of Post-Processing

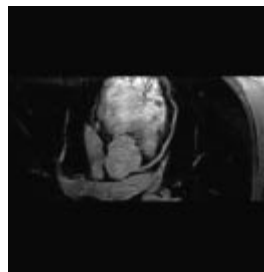
The complete exam is finished as soon as image acquisition is finished. Inline Technology uses an intelligent on-the-fly feedback loop to control scanning, reconstruction and processing. This means that post-processing steps such as motion correction or MIP are automatically performed providing you with images ready to be interpreted.



Positioning of slices and navigator



Inline display of diaphragm position. Define expiration phase to accept data



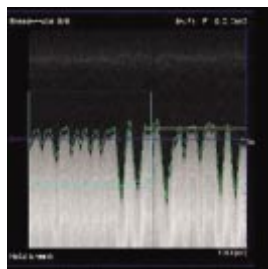
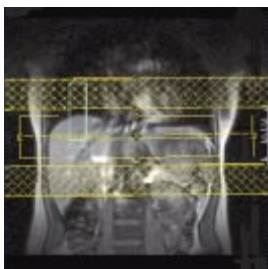
Coronary with free breathing

PACE Prospective Acquisition and CorrEction – Motion under control!

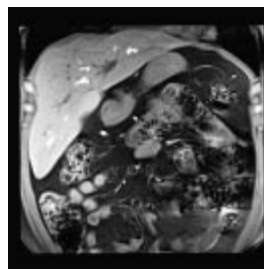
1D PACE – Free breathing, the perfect alternative to breath-hold scanning. Detect respiratory motion – accept data only during expiration – and get to see the results, quickly and easily!

2D PACE – Improve selectivity and precision in abdominal MRI. Automatically align each multi breath-hold – compensate for unwanted patient movement – and obtain fast and reliable diagnostic results.

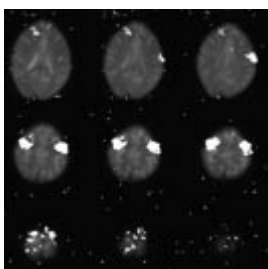
3D PACE – Freeze patient motion!
 < 3D motion correction on-the-fly
 < Improve spatial selectivity in functional MRI with the push of a button. The benefits are accurate neurosurgical planning and improved therapy follow-up after stroke.



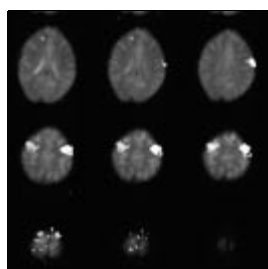
Inline display of diaphragm position. Define expiration phase to accept data



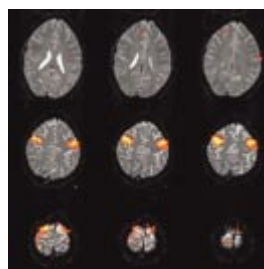
Result image multi breath-hold



fMRI experiment without motion correction



fMRI experiment with 3D PACE motion correction

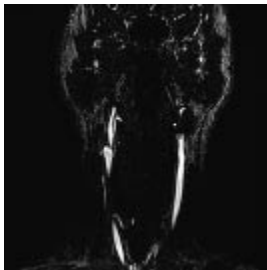


fMRI Evaluation

EVOLVE

Contrast-enhanced MRA at your fingertip

Complete both data acquisition and post-processing at the same time. Simplify and automate standard measurement procedures. Use the acquired data to get to the MIP directly (no database operation required). SuperMIP – automatically provides a scout image across the entire region of interest and lets you accurately plan for additional procedures. Allows you to spend more time with your patient.



ceMRA



Subtraction



High resolution MIP
without any user interaction

Inline Technology

Within EVOLVE you can choose between several options. You can upgrade your system to the latest generation or with the EVOLVE Package™ book a regular upgrade of hardware and software. The financial alternative to expensive new equipment is EVOLVE.

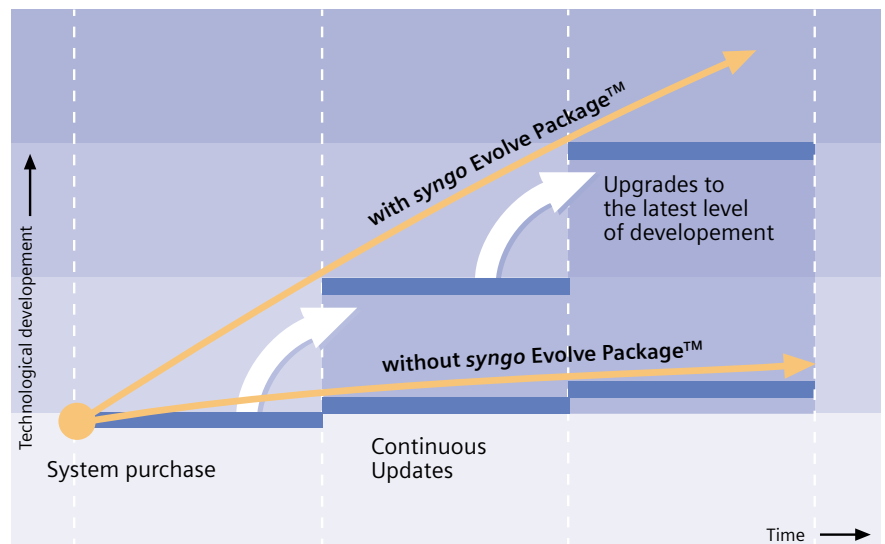
EVOLVE for MAGNETOM Trio

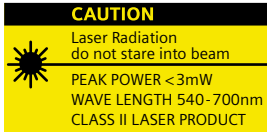
We offer complete packages suitable for a number of specific applications. These packages include dedicated application software, coils and expanded system performance.

Your subscription to the future – the syngo EVOLVE Package

The performance level of computer chips doubles roughly every 18 months. This means that today's leading processors will be obsolete in a few years. Similar time frames are valid for software innovations.

Within the scope of the Siemens Performance TOP maintenance program your hard- and software is upgraded regularly. You will get the image processor and host computer of your syngo-based system updated twice over a period of six years. New software versions will be made available to you. The choice is yours. Depending on your personal requirements, you can select one of our specific EVOLVE programs or the complete syngo EVOLVE Package.





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This brochure refers to both standard and optional features. Availability and packaging of options varies by country and is subject to change without notice. Some of the features described are not available for commercial distribution in the US.

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www.SiemensMedical.com

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