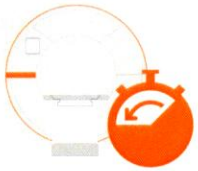


Increase department throughput
Drive improved efficiency

Increase in image resolution
Improve diagnostic confidence

Patient comfort in the MR
Faster exams = less table time

Schedule flexibility
Administrative support

Increase clinical referrals
Expand services

Deep Resolve and Value across the Radiology Network

↗ **siemens-healthineers.us/deep-resolve**

Deep Resolve is the Siemens Healthineers AI-powered image reconstruction technology that takes advantage of convolutional neural networks to accelerate MRI scans, faster than ever before while simultaneously increasing resolution.

SIEMENS Healthineers

Deep Resolve Gain

What is it?
Deep Resolve Gain is a targeted denoising method to increase the MRI signal of images. With this, either shorter scan times or higher resolution can be achieved.

How does it work?
The acquired MRI system generates a patient specific, targeted noise map which reflects spatial noise variations. The MR image and the corresponding targeted noise map are subtracted in an iterative process to remove excess noise which does not add value to the final MRI image.

What problem does it solve?
MRI coil geometry and patient variability can create unnecessary noise in MR images. The noise impairs the signal of the MRI image and can decreases image quality. Deep Resolve Gain directly addresses the removal of the signal not contributing to the image.

What is the key differentiator?
Deep Resolve Gain targets the local noise variation introduced by each MRI patient and the corresponding RF coil via the iterative principle, similar to compresed sensing, but focused on noise removal.

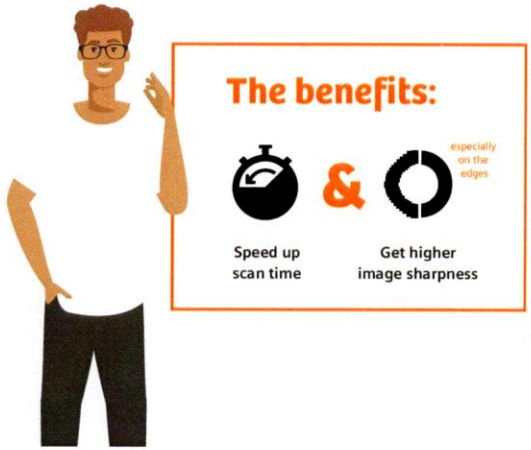
Deep Resolve Sharp

What is it?
Trained on over 10,000 pairs of low-res and high-res MR data, Deep Reslve Sharp reconstructs a higher resolution image from low resolution data via the AI network.

How does it work?
A low-res image is reconstructed from the lw-res data into a sharper, higher resolution image. Data consistency with the acquired raw data is ensured as part of the final image reconstruction. The result is an image with sharper edges and up to a 2x improvement of in-plane resolution.

What problem does it solve?
Typically, in MRI, you can either have a longer scan that acquires a lot of data and provides high resolution or a quicker scan, less data – but lower resolution. Why not have the best of both scenarios with Deep Resolve Sharp.

What is the key differentiator?
The AI network can generate high-res output from low-res input because it has been trained on many pairs of high and low-res images, enabling the software to anticipate where to expect a sharp edge in an image.



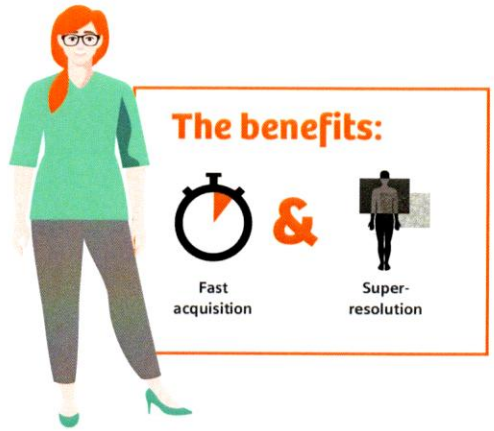
Deep Resolve Boost

What is it?
Deep Resolve Boost delivers super-resolution head to toe.

How does it work?
Leveraging raw data from a reduced, and thus faster scan as input, a deep neural network is applied multiple times in an iterative process to generate the final output with significantly reduced noise.
The integration of the raw data along the entire reconstruction process leads to unmatched performance and ensures data integrity.

What problem does it solve?
With conventional reconstruction methods, a highly accelerated image acquisition will lead to strong noise contamination and/or artifacts.
The reconstruction with Deep Resolve Boost enables the generation of images with extremely high MRI signal and a superfast image acquisition simultaneously.

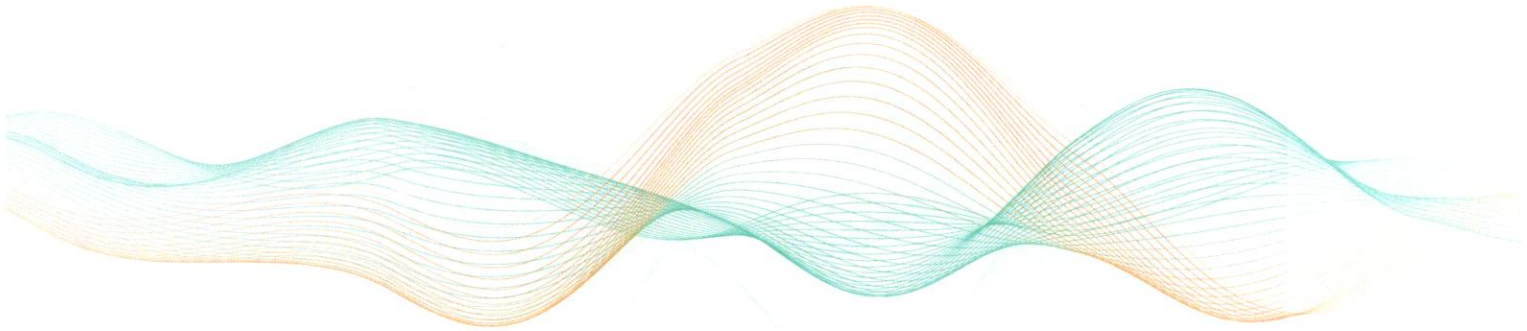
What is the key differentiator? Deep Resolve Boost can be combined with Deep Resolve Sharp as well as Simultaneous Multi-Slice (SMS) for amazingly fast accelerations and super-resolution across all anatomies.



Scanner Efficiency with Deep Resolve

Customer Need:
To drive increased throughput while maintaining high image quality

Siemens Healthineers Solution:
Deep Resolve: Acquiring sharper images, faster



MR Exam (1.5T Altea)	Pre Deep Resolve (minute)	Post Deep Resolve (minute)	Exam time savings	% exam time reduction
Brain	**12:42**	**6:27**	**6:15**	**49%**
T1 Sag	2:17	1:25	:52	38%
DWI Ax	1:14	0:33	:41	55%
T2 Ax	2:10	1:24	:46	35%
T2 IR Ax	4:14	1:30	2:44	65%
T1 Ax	2:47	1:35	1:12	43%
Knee	**19:03**	**8:33**	**10:30**	**55%**
T2 FS Ax	3:32	1:46	1:46	50%
PD FS Cor	2:41	1:06	1:35	59%
T2 FS Cor	2:41	1:46	:55	34%
PD FS Sag	3:32	1:06	2:26	69%
T1 Sag	3:23	1:03	2:20	69%
T1 FS Sag	3:14	1:46	1:28	45%
Lumbar	**18:28**	**10:58**	**7:30**	**41%**
T2 Sag	3:28	1:39	1:49	52%
T1 Sag	2:34	0:49	1:45	68%
T2 IR Sag	4:07	1:54	2:13	54%
T2 Ax	4:19	3:20	0:59	23%
T1 Ax	4:00	3:16	0:44	18%

Table 1 Data was acquired from the MAGNETOM Altea 1.5T System. The standard protocol was used as the "Pre Deep Resolve" exam and the "Post Deep Resolve" data incorporated the combination of Deep Resolve Gain & Sharp at similar protocol parameters. The decreased exam times as well as exam time percentage of reduction are included.

	1.5T Altea System	1.5T Altea with Deep Resolve	Estimated net increase with Deep Resolve Upgrade[1]
Average patients/day (7a - 7p)	12	17	5 more patients per day
Example reimbursement/ patient2	$450	$450	$450
Revenue/day (7a - 7p)	$5,400	**$7,650**	**$2,250**
Revenue/month (24 days)	$129,600	**$183,600**	**$54,000**
Revenue/year (288 days)	$1,555,200	**$2,203,200**	**$648,000**

Table 2 Outlines potential increase in revenue with Siemens Deep Resolve if the decreased exam time allowed a customer to add 5 more patients per day.

↗ Learn more

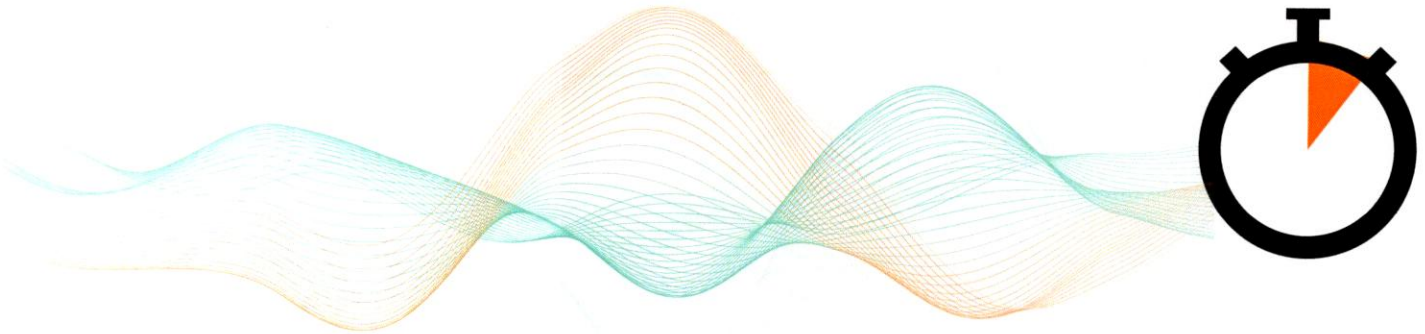
Deep Resolve Boost Competitive Scan Time Comparison

Siemens Healthineers Deep Resolve Boost

Radically shortens scan times without compromising image resolution

siemens-healthineers.us

	Competitor		Siemens Healthineers		
University Site Exam Type	**Standard Exam (min)**	**AI Based Accelerated Exam (min)**	**Deep Resolve Boost (min)**	**Improvement vs. Standard Competitor Exam**	**Improvement vs. AI based Accelerated Exam**
Ankle	11:00	7:00	4:55	55%	30%
Knee	11:00	8:00	5:03	54%	37%
Shoulder	13:00	9:00	6:50	47%	24%
Hand/Wrist	19:00	13:00	7:25	61%	43%
C-Spine	15:00	11:00	4:44	68%	57%
T-Spine	12:00	8:00	3:59	67%	50%
L-Spine	15:00	9:00	4:28	70%	50%
Prostate	30:00	23:00	10:17	66%	55%
F. Pelvis	25:00	17:00	9:12	63%	46%



↗ Learn more

Siemens Healthineers AG (listed in Frankfurt, Germany: SHL) pioneers breakthroughs in healthcare. For everyone. Everywhere. As a leading medical technology company headquartered in Erlangen, Germany, Siemens Healthineers and its regional companies is continuously developing its product and service portfolio, with AI-supported applications and digital offerings that play an increasingly important role in the next generation of medical technology. These new applications will enhance the company's foundation in in-vitro diagnostics, image-guided therapy, in-vivo diagnostics, and innovative cancer care.

Siemens Healthineers also provides a range of services and solutions to enhance healthcare providers' ability to provide high-quality, efficient care. In fiscal 2021, which ended on September 30, 2021, Siemens Healthineers, which has approximately 66,000 employees worldwide, generated revenue of €18.0 billion and adjusted EBIT of €3.1 billion.

Further information is available at www.siemens-healthineers.com.

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Siemens Healthineers Headquarters
Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
siemens-healthineers.com

USA
Siemens Medical Solutions USA, Inc.
Healthcare
40 Liberty Boulevard
Malvern, PA 19355-9998, USA
siemens-healthineers.us

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