

Multitom Rax

Move beyond traditional X-ray

➤ siemens-healthineers.us/multitom-rax



Study ID 5aab558

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University Hospital Wuerzburg, Germany.



Radiography remains key

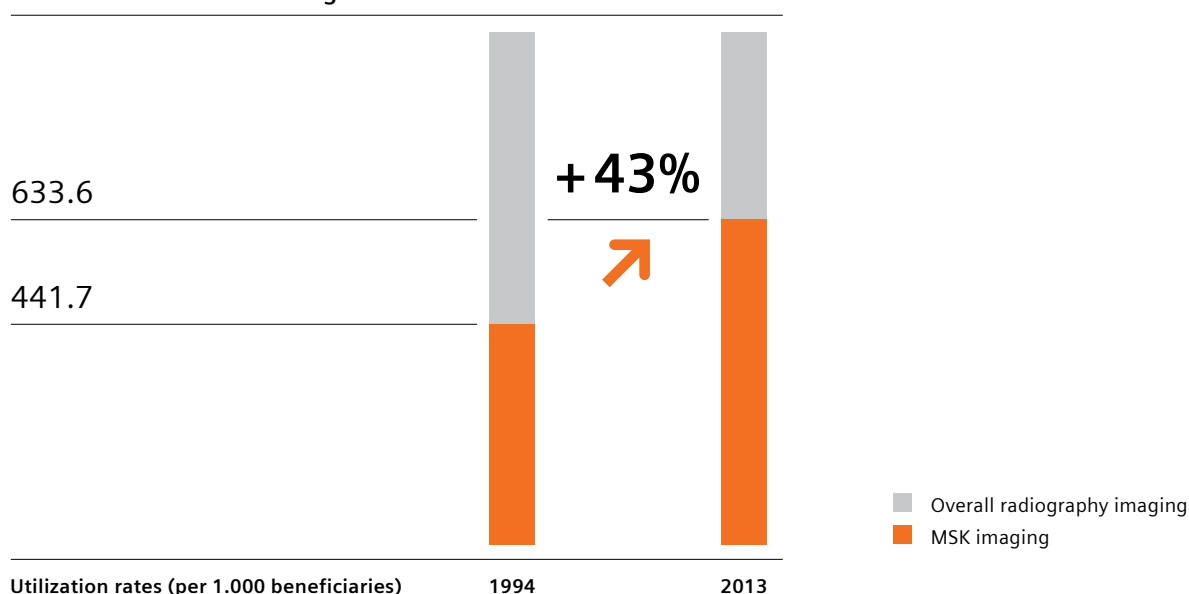
Around the globe, musculoskeletal (MSK) conditions are highly prevalent, affecting more than 1 in 5 people.¹ In fact, MSK disorders are the biggest contributor to years lived with disability (YLDs), accounting for 17% of all YLDs worldwide.²

While the prevalence of musculoskeletal conditions increases with age – and the global population is clearly growing older³ – all age groups are affected. Low back pain is currently the main culprit in disability-related early retirement, and its incidence is projected to increase.⁴

What's more, lifestyle factors such as obesity strain the musculoskeletal system – and cost pressures on healthcare systems intensify as a result.⁵

In the United States, radiography remains the most common modality for MSK imaging (63.4% in 2013) and plays a key role when initially screening patients' extremities in trauma and chronic pain cases.⁶

Changing Musculoskeletal Extremity Imaging Utilization from 1994 through 2013:



In the United States, radiography is the most commonly used MSK modality (63.4% in 2013), despite having shown only 43% growth from 1994 to 2013.³

¹ The United Nations Department of Economic and Social Affairs (UN DESA) estimates the 2019 global population at 7.7 billion: https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf. Accessed 2021-07-16. In 2019, approximately 1.71 billion people had musculoskeletal conditions (Cieza et al., see below). This number divided by 7.7 billion (estimated global population) gives 22.22%.

² Cieza A, et al. (2020). Global estimates of the need for rehabilitation based on the Global Burden of Disease study 2019: a systematic analysis for the Global Burden of Disease Study 2019. [https://doi.org/10.1016/S0140-6736\(20\)32340-0](https://doi.org/10.1016/S0140-6736(20)32340-0). Accessed 2021-07-16.

³ UN DESA predicts that the population share aged 65+ will grow from 9.3% in 2020 to approx. 16% in 2050: https://www.un.org/development/desa/pd/sites/www.un.org/development/desa/pd/files/undesa_pd-2020_world_population_ageing_highlights.pdf. Accessed 2021-07-16.

⁴ Hartvigsen J, et al. (2018). What low back pain is and why we need to pay attention. [https://doi.org/10.1016/S0140-6736\(18\)30480-X](https://doi.org/10.1016/S0140-6736(18)30480-X). Accessed 2021-07-16.

⁵ Woolf AD, et al. (2012). The need to address the burden of musculoskeletal conditions. <https://doi.org/10.1016/j.berh.2012.03.005>. Accessed 2021-08-05.

⁶ Gyftopoulos S, et al. (2017). Changing Musculoskeletal Extremity Imaging Utilization From 1994 Through 2013: A Medicare Beneficiary Perspective. *American Journal of Roentgenology*, 209(5).



Expanding precision medicine with Multitom Rax

Using traditional X-ray, complex radiographic examinations are often challenging or cumbersome, especially in musculo-skeletal or trauma cases. Whether due to time-consuming manual work, less experienced staff, limited precision in system positioning, or difficult-to-move patients – these exams may result in unsatisfactory diagnostic outcomes.

With Multitom Rax, we offer a high-performance system that excels in such examinations, helping you expand precision medicine and improve patient experience. A Twin Robotic X-ray system, it offers unparalleled positioning flexibility, unique automated workflows around the patient, and a multitude of diagnostic procedures, including Real3D⁷. What's more, Multitom Rax now features True2scale Body Scan⁷: for full-body images that avoid distortion. Standing, seated, or even supine. All at ALADA⁸ dose.

Discover Multitom Rax

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⁷ Option
⁸ ALADA = as low as diagnostically acceptable

Multitom Rax at a glance

Multitom Rax supports your technologists and radiologists in daily clinical routine and beyond. It is particularly suited for difficult examinations such as trauma or orthopedic cases. Benefit from precise insights, efficient workflows, as well as comprehensive diagnosis on a single system – and set new standards in advanced musculoskeletal imaging.



Precise insights through unique automation

With Multitom Rax, you can combine high precision and wide coverage. Accuracy is at your fingertips. Projections from nearly any angle and automated workflows combine to meet referrers' demands, while dose is kept as low as possible.

Efficient workflows around your patients

Multitom Rax offers fast, robotic setup and barrier-free 360° patient access. This helps you relieve staff workload and improve patient experience. Automated alignment, trolley workflows, and projection flexibility reduce the need for patient repositioning.

Comprehensive diagnosis with multiple procedures

Whether you need to perform functional diagnosis or administer injections into joint spaces, Multitom Rax enables a broad range of procedures: from Real3D¹ bone imaging to radiography, fluoroscopy¹, and minor interventions¹. Switch modalities, not rooms!

¹ Option

² In scanning direction



Go even further with True2scale Body Scan¹

Acquire up to two corresponding X-ray images in one scan run – with the patient supine, standing in natural weight-bearing position, or seated. Powered by slot-scanning technology, these low-dose images reliably avoid distortion and magnification.²

AI-Rad Companion¹

AI-Rad Companion is a family of vendor-neutral, multi-organ augmented reading solutions that automatically prepare clinical images to be interpreted by radiologists and/or clinicians.

Fleet Level Benefits

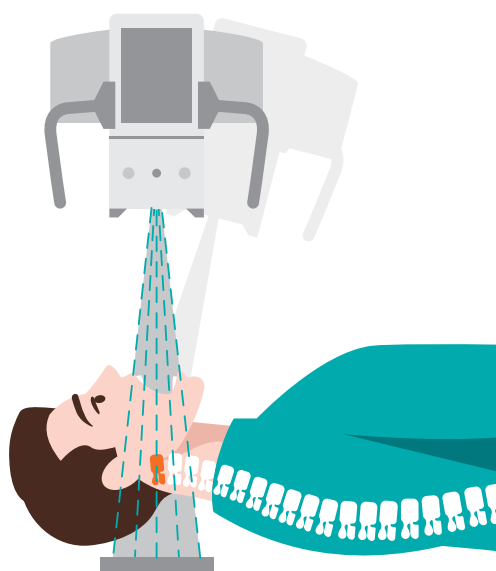
A systematic concept which helps you to reduce complexity. By standardizing you can achieve consistency for operational and clinical excellence. Supervision of your department's performance generates transparency for high availability and utilization. Securing your systems means having confidence in data and systems protection.

Precise insights through unique automation

To meet referrers' demands in advanced musculoskeletal (MSK) imaging, a high degree of precision, accurate positioning, and wide anatomical coverage are needed.

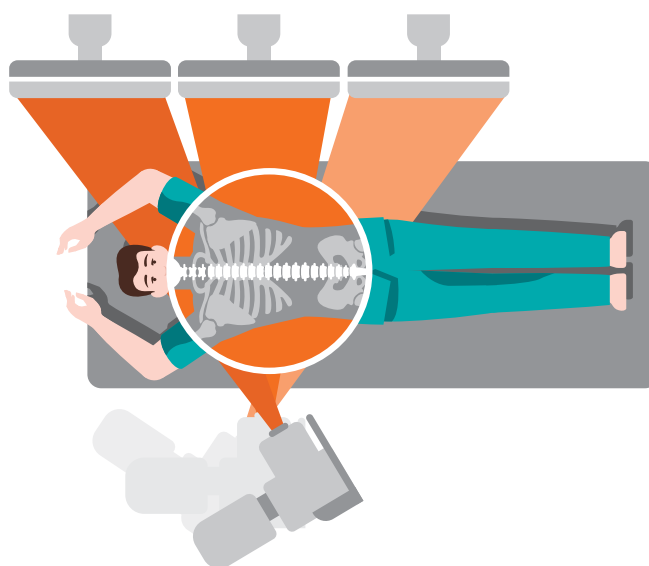
Multitom Rax offers unparalleled precision and flexibility in positioning, allowing projections from virtually all angles – plus unique automated workflows that let you integrate advanced MSK imaging in clinical routine.

And all that while saving dose.



Accurate positioning

Obtain accurate MSK insights through precise system and patient positioning – easily. Twin Robotic arms give you more flexibility through projections from nearly all angles. RAXalign sets the correct SID and orthogonally aligns the tube and detector, while RAXconfirm offers fluoroscopic guided positioning.



Extended anatomical coverage

Benefit from unique automation with enhanced RAXortho¹ acquisition modes built on the well-known SmartOrtho tilting technique. Whether it's lateral imaging of the full spine, visualization of both shoulders or the pelvis in one view, Multitom Rax is designed to suit you and your patients.

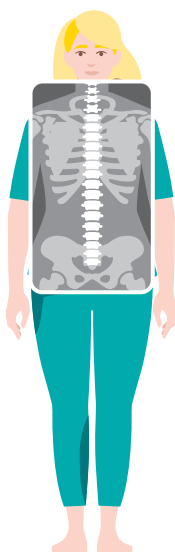
¹ Option

Ortho full Spine

"When we go into active planning, we must have accurate, high-precision images. Multitom Rax delivers the necessary high-quality imaging in order to realize successful treatment solutions especially for surgical procedures."

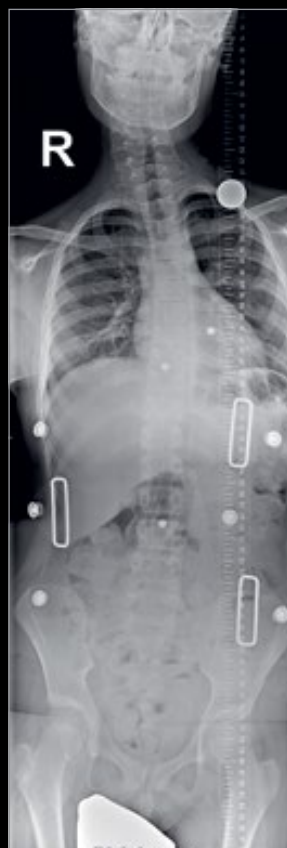
Prof. Alexander Carl Disch, MD

Head, University Comprehensive Spine Center
University Hospital Dresden, Germany



Right dose

Use the right dose for every patient: Choose proven technology with dedicated pediatric organ programs (OGPs) for different body parts to help reduce necessary radiation, limit unnecessary radiation with CAREPROFILE/CAREPOSITION, and minimize the risk of over-exposure and over-collimation with AEC and ACSS.



Study ID: 5aac422

Male patient, 12 years old. SmartOrtho full spine, composed image. AP mAs 18 kV 71 DAP [$\mu\text{Gy}\cdot\text{m}^2$] 0,571. LAT mAs 85 kV 78 DAP [$\mu\text{Gy}\cdot\text{m}^2$] 2.3.

Courtesy of University Hospital Dresden, Germany.

Efficient workflows around your patients

Advanced musculoskeletal imaging requires time-consuming patient and system positioning, complex manual workflow steps – and may be painful for patients or physically demanding for staff. As a result, it is cumbersome to perform in clinical routine.

Multitom Rax precisely positions and aligns itself, reducing the need for unnatural patient positioning – even in challenging situations like trauma cases. It supports staff and offers barrier-free 360° patient access, helping to optimize the diagnostic experience.

For fast, efficient, and productive workflows revolving around your patients.



Fast, robotic exam setup

Let standardized robotic movements speed up your daily routine. Reproducible, rapid examination setup is made possible by one-touch workflows and virtually unlimited, customizable organ programs that meet your specific requirements.



Automated detector/tube alignment

Reduce manual workflow steps and save valuable time. Thanks to RAXalign and RAXtrack, detector and tube align automatically and stay aligned when repositioning the system. The predictable and very compact virtual U-arm movement quickly shifts the system 90° around the patient – ideal for emergency departments.

"Multitom Rax has made our workflows noticeably smoother, faster, and more predictable. And our patients appreciate the extra comfort."

Frank Schellhammer, MD

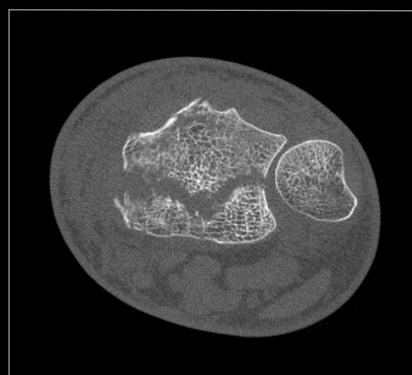
Head physician of diagnostic and interventional radiology
Academic Hospital Augustinerinnen Cologne, Germany



Less patient repositioning

Let the robots move, not the patient. With Multitom Rax, exams are less cumbersome, less painful, and less risky for patients. The system moves around the patient, so repositioning them is no longer necessary. And flexible workflows for wheelchairs, trolleys, and stretchers mean that patients need not be transferred onto the system's table at all.

Wrist



Study ID 5aa477

Male patient, 55 years old. Real3D Hi-Res, wrist, distal radius fracture. mAs 0.6/pulse kV 14.1 DAP [$\mu\text{Gy} \cdot \text{m}^2$] slice thickness 0.3mm.

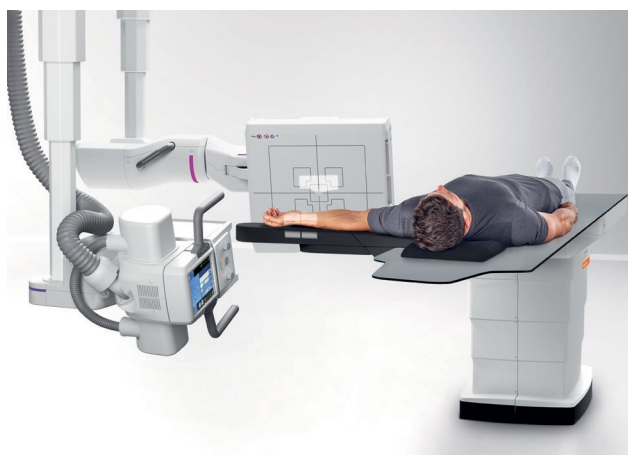
Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

Comprehensive diagnosis with multiple procedures

Advanced musculoskeletal imaging calls for more than just radiography. A patient may also require 3D bone imaging, functional diagnosis, or contrast and drug injections into joint spaces.

Thanks to its modular design, Multitom Rax can be quickly configured to suit your and your patients' needs. Starting with precision radiography, it also allows Real3D¹ imaging for the lumbar spine and extremities, as well as fluoroscopic¹ and interventional¹ imaging for functional assessment.

This way, Multitom Rax enables comprehensive diagnosis and can provide the basis for treatment planning – all in a single room on a single system.



More informed diagnosis and treatment planning

Acquire 3D bone imaging with our optimized Real3D feature, adding substantial value to the assessment of bone and joint trauma by detecting or ruling out extremity fractures and fracture-related findings more reliably than conventional radiography.² Real3D Hi-Res allows to visualize the small bones and joints of hand and elbow and even the trabecular structure of the bones with an isotropic resolution of up to 0.2 mm.



Enhanced comfort, flexibility, and independence

Depending on the individual patient's case, imaging can be done in supine, seated, or weight-bearing position. Multitom Rax can also help speed up diagnosis, since complementary imaging exams can be performed on a single system.

¹ Option

² Compared to previous version

"Multitom Rax holds the potential to be a 'one-stop shop' device for trauma-associated wrist imaging."

Jan-Peter Grunz, MD
University Hospital Wuerzburg, Germany



Expanded orthopedic capabilities

Perform fluoroscopy and minor interventions with 30 fps for needle guidance in musculoskeletal procedures such as functional diagnosis of joints, fracture and luxation repositioning, contrast and drug injections into joint spaces, as well as catheter or tube placements.

Real3D¹ weight-bearing

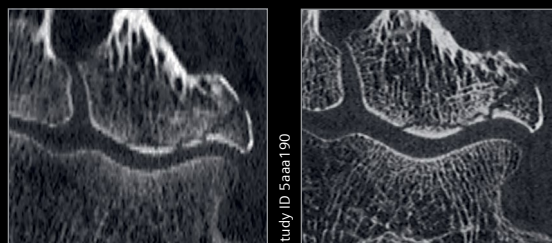
Enhanced diagnosis and surgical planning



Study ID 5aab015

Real3D Hi-Res¹ upper extremities

High isotropic resolution without increase in dose



Study ID 5aaa190

Study ID 5aaa186

3rd Gen. MDCT
UHR Mode (Ur77)

Multitom Rax
Real3D Hi-Res¹

Fluoroscopy¹ and interventions¹ for orthopedic specialists



Study ID 5aaa957

Arthrography of a knee joint

Go even further with True2scale Body Scan

Geometrical distortions and magnification effects in X-ray images make assessing musculoskeletal pathologies a challenge. What's more, treatment of deformities calls for frequent, recurring exams.

With True2scale Body Scan¹, Multitom Rax offers full-body slot scanning – fully integrated. Acquire up to two panoramic images in one run, with the patient standing, seated, or even supine. This technique also avoids distortion, which can improve quantitative assessment of skeletal malpositioning.

All at ALADA dose.



Even more anatomical coverage

True2scale Body Scan lets you quickly acquire images of the full body or a region of interest. With a scan range of up to 190 cm lying and up to 170 cm standing, this novel acquisition technique enables advanced insights in supine or natural weight-bearing position.



Even greater precision

An ultra-small-angle tomosynthesis reconstruction is performed on the acquired slot images. No stitching or manual calibration is needed. This level of precision is clinically relevant for a range of applications, such as scoliosis progression monitoring, surgical planning, and post-operative follow-ups of spinal fusions and knee implants.

¹ Option

True2scale Body Scan

"We definitely need less dose for comparable image quality. Our pediatric radiologists are very happy with True2scale, since they get optimum image quality at lower dose."

Sophia Blum, MD
Radiologist, University Hospital Dresden, Germany



Even lower dose

True2scale Body Scan¹ is powered by slot-scanning technology adapted to orthopedic cases. You see what you need for diagnostic purposes, while scatter reduction inherent in the beam collimation helps achieve ALADA dose. Low-dose imaging is particularly important for pediatric patients and anyone needing frequent follow-up exams



Female patient, 11 years old. True2scale Body Scan, full-body S AP supine/seated. mAs 0.49 kV 80.9 CU 0.3 DAP [$\mu\text{Gy} \cdot \text{m}^2$] 4.2.

Courtesy of University Hospital Dresden, Germany.

Case Study

Patient fell while horse riding. She suffered a concussion and reported left ankle and back pain.

X-rays of the left ankle were inconclusive. Despite considerable pain and swelling, no clear fracture dislocation or luxation could be ascertained. A fracture of the medial talus bone was suspected; however, the

fracture pattern could not be sufficiently judged with radiography.

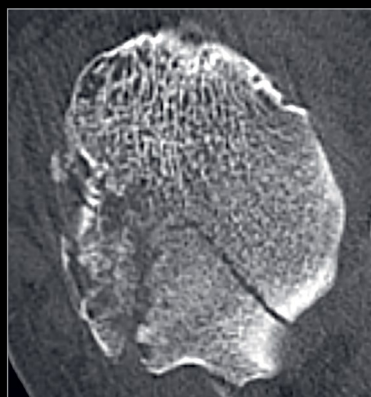
Real3D⁷ images in the lying position displayed a multi-fragment injury of the talus bone with articular involvement of the upper ankle joint and smaller dislocated fragments at the medial side.

Real3D



AP view
Conventional X-ray examination

Lateral view



Axial view



Coronal view



Sagittal view

Study ID: 5aab345

Female patient, 31 years old. Real3D⁷, talus. mAs 430 kV 80.5 DAP [$\mu\text{Gy} \cdot \text{m}^2$] 1071.

Courtesy of University Hospital Wuerzburg, Germany.

⁷ Option

Real3D weight-bearing



Study ID: 5aab005

Female patient, 55 years old. Real 3D7, ankle weight-bearing.
mAs 0.5/pulse kV 116 DAP [$\mu\text{Gy} \cdot \text{m}^2$] 75.
Courtesy of Academic Hospital Augustinerinnen Cologne, Germany.

True2scale Body Scan¹

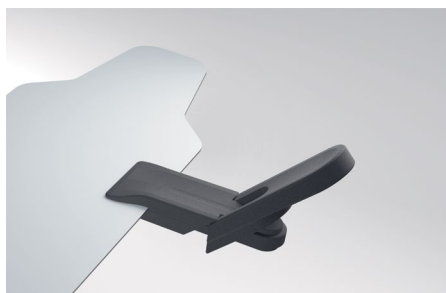


Study ID: 5aac707

Spine supine with T2S

Female patient, 17 years old. True2scale Body Scan,
full-body M AP weight-bearing. mAs 1.58 kV 80.9 CU
0.3 DAP [$\mu\text{Gy} \cdot \text{m}^2$] 48.58.
Courtesy of University Hospital Dresden, Germany.

Technical specifications



Arm board¹

For Real3D images of hand and elbow



Arm support

For lateral chest images



Tabletop extension¹

For Real3D images of knee and foot



RAX stand with knee support¹

For Real3D images of the knee under natural weightbearing condition



RAX stand with head support¹

For Real3D images under natural weightbearing condition



Max detectors¹

- MAX wi-D detector: 35 cm x 43 cm
Weight capacity: max. 300 kg
- MAX mini detector: 24 cm x 30 cm

¹ Option



Large color touchscreen (10")

User-friendly interface offers access to key image parameters with MAXtouch

Fast, robotic exam setup

- High speed, safe positioning with robotic precision
- Tube and detector move around the patient on up to 10 axes simultaneously
- Automated detector/tube alignment thanks to RAXalign, RAXtrack and virtual U-arm

RAX detector

Ceiling-mounted built-in 43 cm x 43 cm detector for static, dynamic, and 3D¹ imaging

Fluoroscopy¹

For extended MSK imaging tasks with multifunctional wireless footswitch¹



Table¹

Motorized height-adjustable table with minimum table height of 50 cm

- Foot kick-switches for table height adjustment
- Weight capacity: 240 kg

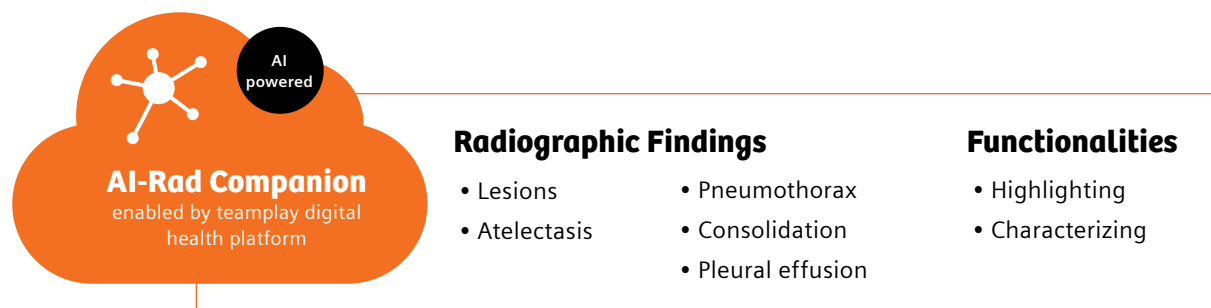


AI-Rad Companion

Multi-modality decision support

We developed the AI-Rad Companion¹ to help you cope with a growing radiology workload. With its deep learning algorithms, AI-Rad Companion automatically highlights abnormalities, segments anatomies, and compares results to reference values.

Drive productivity with seamless integration in the reading and reporting workflow, including automated measurements and DICOM structured reports. Every workflow step remains under wcontrol – enabling strong, evidence-based decisions.



Fleet Level Benefits

Unlock your potential – and increase the efficiency across your imaging fleet

As healthcare provider you are forced to do more with less, you have to run your radiology department more efficiently. A high level of complexity makes it challenging for you to reach the desired efficiency. Siemens Healthineers offers specific solutions across the entire X-ray portfolio

that let you standardize, analyze, and secure your fleet. Experience consistency, transparency, and confidence as valuable Fleet Level Benefits and improve outcomes, increase efficiency – and achieve greater staff and patient satisfaction.

 Standardize for consistency • Systems with highly intuitive user interfaces and common workflows • Staff with consistent knowledge level • Unified image quality and same image impression	 Analyze for transparency • Consolidated data in one place • Analyzed and evaluated data turned into valuable information	 Secure for confidence • Protect large IT network and imaging fleet with one cybersecurity philosophy • Same maintenance cycles and update strategies for the whole fleet
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¹ Option

Service and exchange

Increasing value by partnering throughout the entire equipment lifecycle.

Equipment Maintenance & Monitoring

Reliably servicing your Multitom Rax allows you to identify deviations from current norms to maximize equipment availability.

Education Management

Personalized education and training improve your staff's expertise as well as your equipment efficiency.

Fleet Management

A transparent overview of your fleet allows you to manage the performance and maintenance of your Siemens Healthineers equipment, 24/7.

Accessory Solutions

Products from our partner companies complement your use of our equipment in your daily workflow.

Performance Management

An intelligible overview of your radiography performance data helps you make prompt and well-informed decisions.

Asset Management & Planning

Access to innovative medical technology and equipment throughout the entire contract lifetime allows you to maximize focus on patient care.

Business Modelling & Financing

Customized business and financial models address your budgetary and enterprise needs enabling you to remain more competitive.

Departmental Layout Optimization

3D visualization and digital twin analysis create more efficient workflows and a more enjoyable working environment.

Continuously adding value and caring for your equipment, your workforce, and your entire institution.

Why Siemens Healthineers

At Siemens Healthineers, we pioneer breakthroughs in healthcare. For everyone. Everywhere. By constantly bringing breakthrough innovations to market, we enable healthcare professionals to deliver high-quality care, leading to the best possible outcome for patients. Our portfolio, spanning from in-vitro and in-vivo diagnostics to image-guided therapy and innovative cancer care, is crucial for clinical decision-making and treatment pathways.

Built on a history of innovation going back more than 125 years and with unique strengths in patient twinning, precision therapy, as well as digital, data, and artificial intelligence (AI), we are well positioned to take on the biggest challenges in healthcare. We will continue to build on these strengths to help fight the world's most threatening diseases, improving the quality of outcomes, and enabling access to care.

As a leader in the industry, we aspire to create better outcomes and experiences for patients no matter where they live or what health issues they are facing. We innovate sustainably to develop scalable solutions that can be tailored to the needs of healthcare providers, and the local health infrastructures.

Motivated by our purpose and guided by our values, we are building an inclusive culture, where we embrace diversity in all its forms. We are a team of 66,000 highly dedicated employees across more than 70 countries passionately pushing the boundaries of what's possible in healthcare to help improve people's lives around the world.



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 are continuously developing their 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 2022, which ended on September 30, 2022, Siemens Healthineers, which has approximately 69,500 employees worldwide, generated revenue of around €21.7 billion and adjusted EBIT of almost €3.7 billion.

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

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