syngo.via RT Image Suite

Boosting efficiency

Simulation, treatment preparation, and contouring

siemens-healthineers.com/*syngo*.via-rt-image-suite

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syngo.via RT Image Suite is not commercially available in all countries. Its future availability cannot be guaranteed.

SIEMENS Healthineers

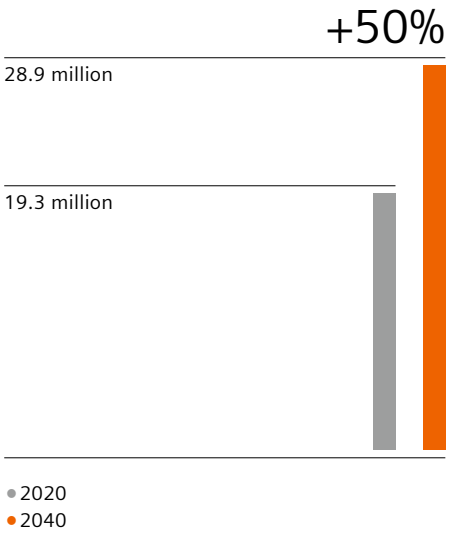
Radiation therapy in a dynamic healthcare environment

Like many other areas of healthcare, radiation therapy is a dynamic and fast-changing field. The number of patients receiving this type of therapy is continually rising.

At the same time, topics such as precision medicine, curative intent, and hypofractionated treatments have become increasingly relevant in recent years.

A growing problem

Total of new cancer cases worldwide[1]



Percentage of cancer patients receiving radiation therapy[2]

Up to 2/3

of cancer patients receive radiation therapy

Advances in technology and AI can potentially help to reduce workload, save time, and drive standardization in radiation therapy.

[1] *Union for International Cancer Control (UICCI), https://www.uicc.org; Cancer Research UK, www.cancerresearchuk.org*
[2] *ATUN, Rifat, et al. Expanding global access to radiotherapy. The lancet oncology, 2015, 16. Jg., Nr. 10, S. 1153-1186.*

Boosting efficiency simulation, treatment preparation, and contouring

Software applications have a key role to play in radiation therapy, and advances in treatment delivery methods will make them even more important. If the applications can support efficient workflows and deliver precision for advanced therapies, they will drive clinical excellence in RT today and in the future.

That's why we developed *syngo*.via RT Image Suite for radiation therapy. Our solution aims to reduce virtual simulation time and gives you fast access to accurate clinical information, wherever and whenever you need it. Other features – such as a comprehensive respiratory motion management, an MR-only workflow, a dedicated RT workflow for breast and spine treatments, state-of-the-art organs-at-risk (OAR) autocontouring, and comprehensive dose information – will expand your practice and support your treatments.

This software makes simulation, image assessment, and contouring easier and better integrated. It simplifies and standardizes your daily tasks, and gives you the capabilities you need to go beyond your current standard.

Ease what you do. Seize new opportunities.

Ease what you do

For RT professionals, handling multimodality images can be cumbersome. Manual steps and multiple workflows across unintegrated systems can all hamper the routine tasks of simulation, treatment preparation, and contouring. *syngo*.via RT Image Suite can help make your work more comfortable with efficient, straightforward and well-integrated functionalities.

"We at CCGM shortened the virtual simulation step to an estimated 20 minutes, and thereby saved a significant amount of time for the radiation therapy department as a whole."[1]

Stéphane Muraro,

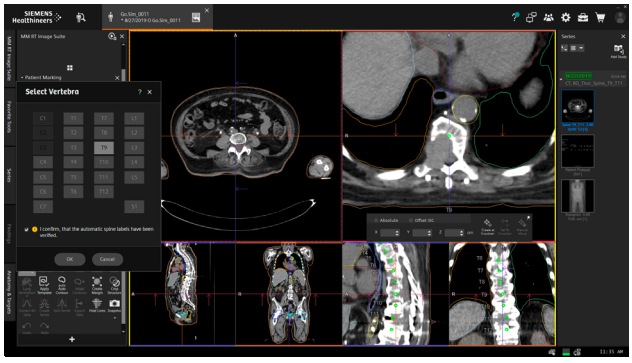
Centre de Cancérologie du Grand Montpellier (CCGM), Montpellier, France

syngo.via makes many of your daily tasks more fluent, therefore your routine gets easier and more productive. With its fast, reliable, and seamless performance across modalities, you can handle your clinical challenges with ease and confidence.

[1] *The statements by customers of Siemens Healthineers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or laboratory and many variables exist (e.g., hospital size, samples mix, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results. Stephane Muraro is engaged in a collaboration with Siemens Healthineers.*

Speed up your workflow with straightforward patient marking

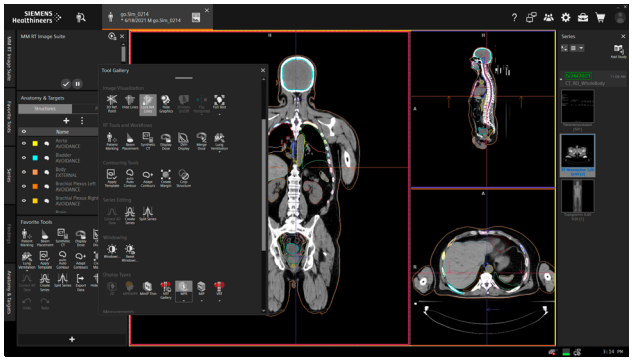
Integrated patient marking, as well as semi-automated isocenter placement workflow for breast and spine treatments may help you to work faster and avoid errors. Direct Laser Steering[1, 2] transfers coordinates to a compatible LAP laser system with no need for an extra workstation – for a fast, seamless, and accurate workflow. In addition, the support of multi-modality beam placement enables fast evaluation of beam geometry, adapted to the shape of the tumor.



Semi-automated Isocenter Placement
Courtesy of Leopoldina Krankenhaus Schweinfurt, Germany

Improved user experience

Combine your favorite tools for your daily tasks by using OneViewer Plugins – making everything directly accessible in one place.

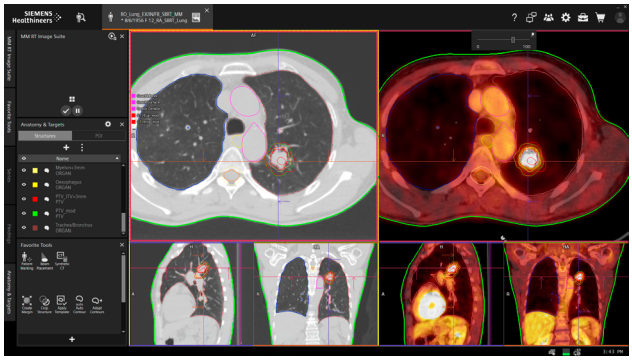


OneViewer Plugin
Courtesy of Nordstrahl MVZ GmbH, Nürnberg, Germany

Simplify your clinical workflow with smart contouring tools

Smart contouring tools for parallel contouring on multiple images can help simplify image assessment and enable "CT-free" contouring on MR or PET images. Image support for CT, MR, PET, PET-CT, CBCT, 4DCT, and time-resolved CT/MR images. Use multimodality images more confidently with deformable registration[1] and contouring propagation.[1]

Smart contouring tools
Courtesy of Radiologische Allianz Hamburg, Germany



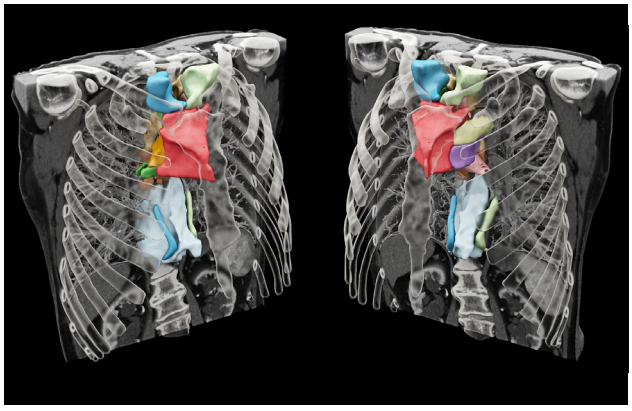
Multimodality image support
Courtesy of Radiologische Allianz Hamburg, Germany

[1] *Optional.*
[2] *Requires compatible laser system.*

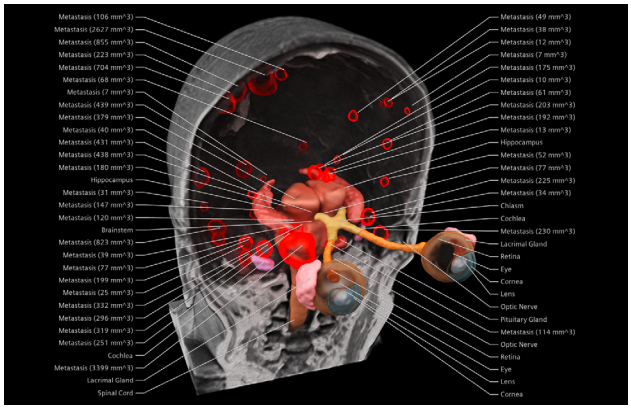
Optimize clinical operations with autocontouring for CT and MR data

Deep learning-based organs-at-risk contouring supports greater precision and reliability for various operators and delivers vendor neutral results, followed by established international guidelines. This may improve your CT contouring workflow, cutting down delineation time by 43%* per patient.

syngo.via RT Image Suite offers autocontouring[1] for the most relevant cancer types for CT and MR organ at risk autocontouring for male pelvis and brain and autocontouring on brain metastases.
Within the CT autocontouring functionalities, it's now possible to customize the contouring process for specific organs by choosing from two different contouring guidelines.



AI-based organs-at-risk contouring for mediastinal lymph nodes on CT data
Autocontouring results are generated by Siemens Healthineers

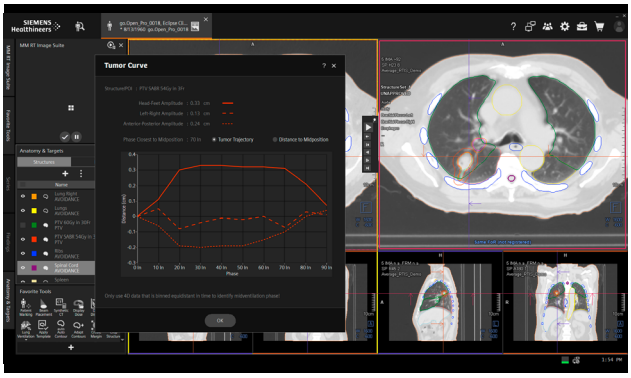


AI-based organs-at-risk contouring for brain on MR data
Courtesy of Universitätsklinikum Erlangen, Germany

The displayed renderings are created with software which is not commercially available.

Open up new treatment strategies with tumor trajectory and mid-ventilation phase

Semi-automatic contour propagation supports you to easily propagate contouring over the different breathing phases[1] and quickly generate an ITV. The software also visualizes quantitative 3D tumor trajectories and semi-automatically calculates the 4DCT phase where the tumor is closest to mid-ventilation position. This approach could help reduce the PTV, decrease toxicity, and open up lung SBRT to more patients[2] with a great 4D data handling tool for CT, PET-CT, and MRI.



Tumor trajectory with mid-ventilation phase
Courtesy of Aarhus Universitethospital, Denmark

**Results obtained from a selected group of organs based on version VB60, results may not be generalizable for all sites.*

[1] Optional.

[2] Mid-Ventilation based PTV margins in Stereotactic Body Radiotherapy: A clinical evaluation", Peulen et al, Radiotherapy and Oncology 110 (2014) 511–516, 2014.

Seize new opportunities

As a radiation oncologist, you need to keep up with the demands of your field. New treatment techniques, accurate contouring and planning, and interdisciplinary cancer care demand state-of-the-art technology and collaboration tools that go much further than a simple sticky note. *syngo*.via RT Image Suite helps enable you to go beyond today's standards.

Evaluation of MR-based Synthetic CT from Universitätsklinikum Erlangen, Germany:

The mean dose difference for PTV and GTV were overall 1%, with a median of 0.06%.*

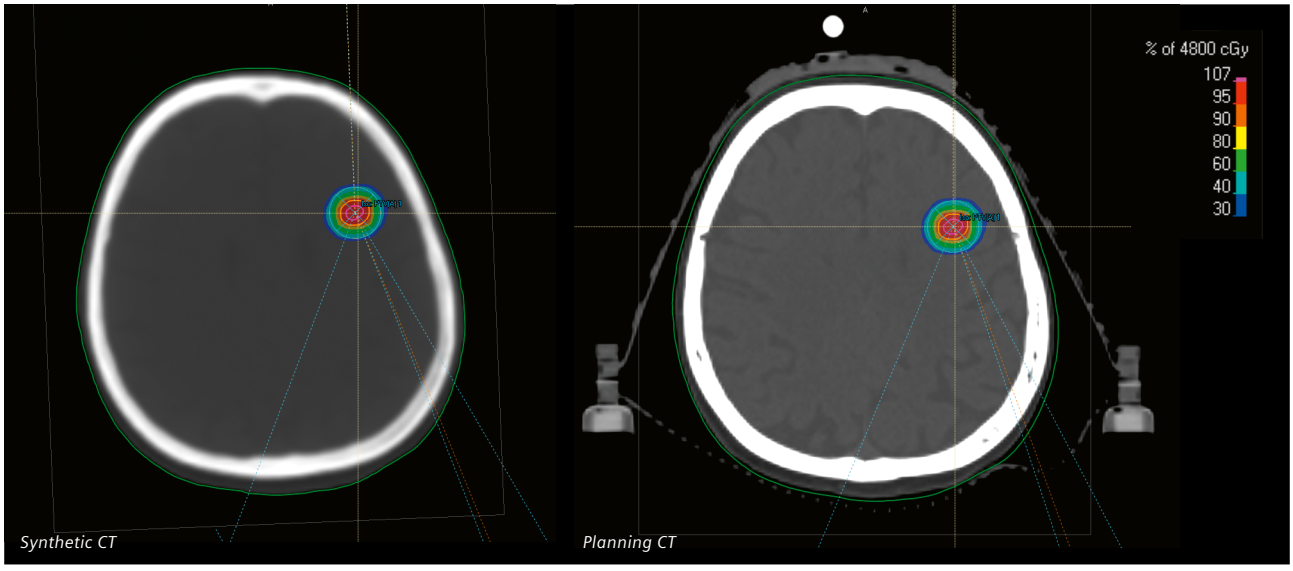


Figure 1: Dose distribution on Synthetic CT and CT with corresponding DVHs

Clinical progress never stops and *syngo*.via aims to be always up to date, applying the latest technologies like AI to help boost your clinical performance. As an open platform, *syngo*.via allows you to easily integrate your choice of apps and research prototypes, enabling you to apply new practices.

**Results are based on syngo.via VB60 Synthetic CT alogrithm.*

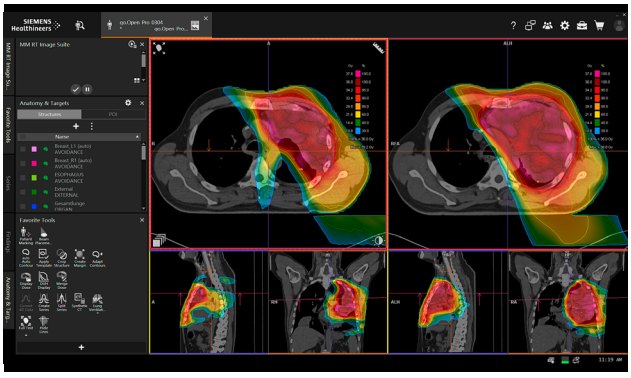
Reconstruct density information for dose calculations with MR-based Synthetic CT[1]

The AI-based MR-only approach for pelvis and brain offers a straightforward workflow that gives you the density information you need for dose calculations. It removes the problem of registration errors between CT and MRI in radiation therapy – and fast scanning protocols and automatic preprocessing allow it to fit seamlessly into your clinical practice. The Checkerboard allows easy assessment of the alignment between the Synthetic CT and MR images.

MR-only workflow
Courtesy of Universitätsklinikum Erlangen, Strahlenklinik, Germany

Get a detailed picture for treatment decisions

RT Dose Display[1] enables you to visualize dose volumes overlaid on any supported image type and side-by-side. The dose between current and prior dose volumes and images can be warped with deformable registration to get the full picture. Accumulate dose volumes for adaptive or treatment recurrences.



RT Dose Display
Courtesy of Universitätsklinikum Erlangen, Strahlenklinik, Germany

[1] *Optional.*

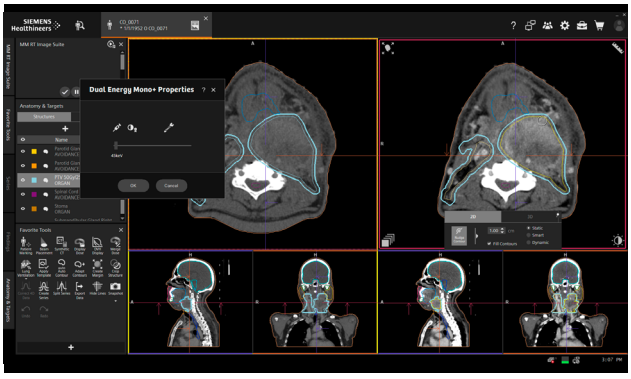
Optimize lung cancer treatment[1]

The lung lobe-based ventilation feature enables you to get more information from a 4DCT scan by evaluating inhale and exhale breathing phases. This feature may provide you with a more comprehensive picture of the patient, which may help to define the treatment strategy and may also inform the dosimetric planning to avoid radiation exposure to healthy structures.
When used during follow-up, it may assist with assessing therapy-induced functional changes in the lung.

Lung lobe-based ventilation
Courtesy of Universitätsklinikum Erlangen, Strahlenklinik, Germany

Use of Dual Energy results

syngo.via RT Image Suite leverages the power of modern CT simulation by allowing to incorporate Dual Energy CT information in the contouring process. The user can interactively choose the preferred contrast of the Dual Energy spectral CT scans[2] (including photon-counting data) by using monoenergetic images. Aside from this, *syngo*.via offers Dual Energy based Stopping Power Ratio (SPR) calculation with *syngo*.CT DE DirectSPR[3, 4, 5] as well as the calculation of relative electron density and effective atomic number (Rho/ Z).



Dual Energy Monoenergetic Plus[3]
Courtesy of Hospital del Mar, Barcelona, Spain

[1] Ventilation results produced by syngo.via RT Image Suite should not be used as the sole diagnostic tool.
[2] Interactive Spectral Imaging support will only work with a CT Dual Energy license.
[3] Optional.
[4] DirectSPR is designed for SOMATOM Dual Energy scanners and NAEOTOM scanners (≥ VB20) from Siemens Healthineers. TwinBeam DE images are not considered for SPR calculations with DirectSPR.
[5] syngo.CT DE DirectSPR should always be used with the corresponding software version at the CT-scanner. For syngo.via VC10 the CT-scanner (independent of CT-model) must be at syngo.CT VB20.

syngo.via RT Image Suite is pending 510(k) clearance and is not yet commercially available in the United States.

syngo.via can be used as a standalone device or together with a variety of *syngo*.via-based software options, which are medical devices in their own right. *syngo*.via and the *syngo*.via-based software options are not commercially available in all countries. Its future availability cannot be guaranteed.

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this brochure are available through the Siemens sales organization worldwide.

Availability and packaging may vary by country and is subject to change without prior notice. Some or all of the features and products described herein may not be available in the United States.

The information in this document contains general technical descriptions of specifications and options as well as standard and optional features that do not always have to be present in individual cases.

Depending on the configuration, deformable registration, MR-based Synthetic CT, DirectSPR and autocontouring are available as Options.

Siemens Healthineers reserves the right to modify the design, packaging, specifications, and options described herein without prior notice. Please contact your local Siemens Healthineers sales representative for the most current information.

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Siemens Healthineers Headquarters
Siemens Healthineers AG
Siemensstr. 3
91301 Forchheim, Germany
Phone: +49 9191 18-0
siemens-healthineers.com

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