

NAEOTOM Alpha.Prime RT Pro Edition

Count on clarity

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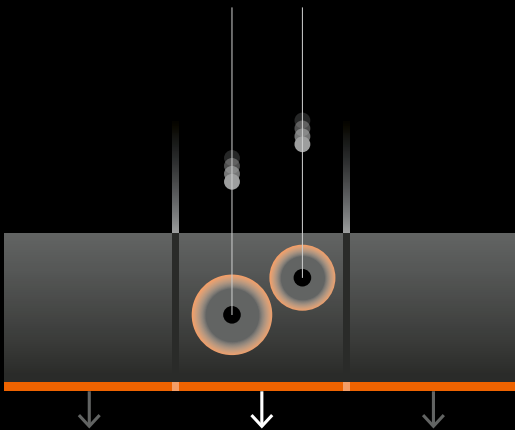


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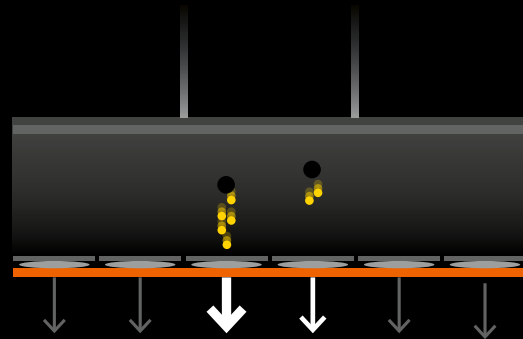
What is photon-counting CT?

At the core of photon-counting technology lies a detector with a cadmium telluride crystal semiconductor. After years of research and development, this crystal was integrated into the QuantaMax detector, enabling the launch of the World's first photon counting CT, NAEOTOM Alpha, in 2021.

Unlike standard scintillation detectors, it directly converts signals by generating an electrical charge instead of light – producing CT images with high spatial resolution, better contrast-to-noise ratio, and intrinsic spectral information.



In conventional CT, an energy-integrating detector (EID) sums the energy of incoming X-ray photons, measuring the total received radiation.



The QuantaMax detector converts X-rays directly into electrical signals, measuring each photon's energy to provide spectral data and high-contrast, high-resolution images at the same dose.

Benefits for Radiation Therapy



Improved contrast and resolution



Dose calculation for contrast-enhanced CT without native scan



Functional imaging with iodine quantification and perfusion



Motion management with Quantum Spectral data



All scans are Quantum Spectral scans with full scan field of view

Challenges in radiation therapy



Target volume definition is considered the largest uncertainty in modern radiotherapy [1].



Low image contrast and missing functional data in CT imaging remain a major challenge for RT planning [2].



Repeat scans can mean additional expenses, patient inconvenience, and treatment delay [3].

References

- [1] Li XA, et al. Variability of target and normal structure delineation for breast cancer radiotherapy. Int J Radiat Oncol Biol Phys. (2009).
- [2] Noid G, et al. Improving Structure Delineation for Radiation Therapy Planning Using Dual-Energy CT (2020).
- [3] Metzger A, et al. Unforeseen Computed Tomography Resimulation for Initial Radiation Planning: Associated Factors and Clinical Impact (2019).

NAEOTOM Alpha.Prime RT Pro Edition

Clarity is where confident decisions begin. In radiation therapy, it can redefine what is possible – revealing what matters, reducing uncertainty, and guiding the path forward.

NAEOTOM Alpha.Prime RT Pro Edition is the first photon-counting CT for radiation therapy. Developed to deliver high image clarity and resolution, it provides the insights needed to confidently shape treatment plans.

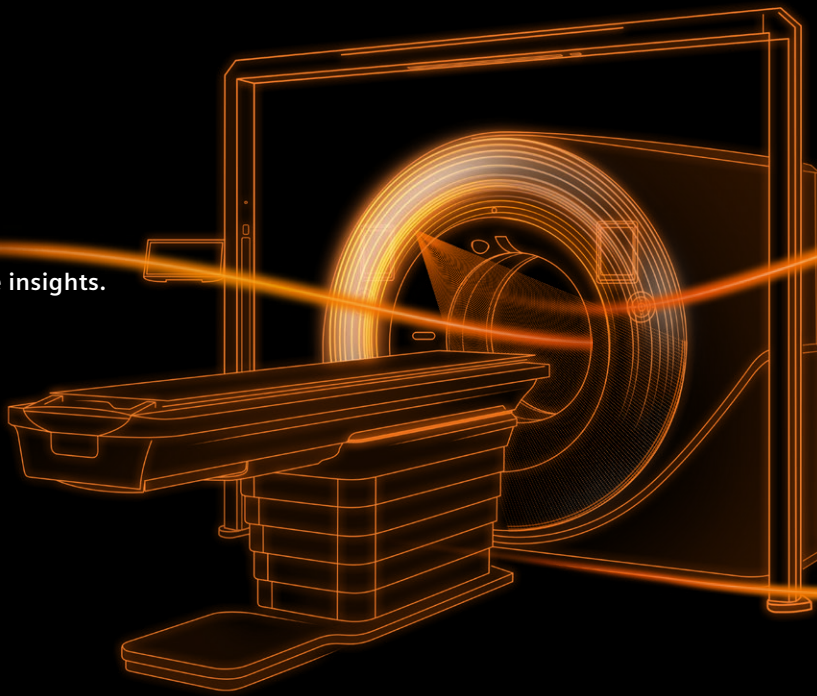
Photon-counting is more than a feature. It is the foundation of confident decision-making.

Count on clarity.
Count on NAEOTOM Alpha.Prime RT Pro Edition.

One scan.
Comprehensive insights.

Sharp images.
Sound decisions.¹

Lead today.
Define tomorrow.



One scan. Comprehensive insights.

NAEOTOM Alpha.Prime RT Pro Edition captures the complete dataset in one scan, allowing post-scan parameter adjustments and individually matching clinical needs for comprehensive insights.

Its dedicated photon-counting technology puts you in control of imaging across various clinical tasks, streamlining your workflow from start to finish.



Improved patient comfort



Greater planning flexibility

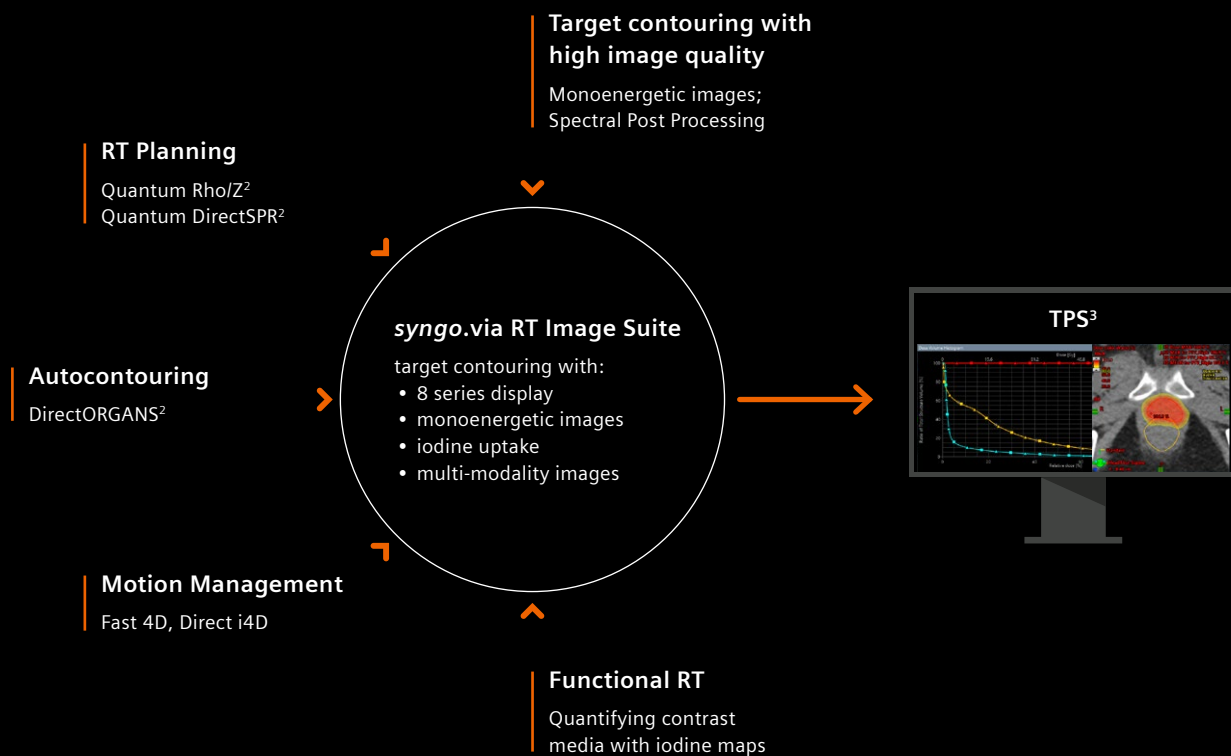


More confident decisions



Streamlined RT workflow

Your workflow with NAEOTOM Alpha.Prime RT Pro Edition



Sharp images. Sound decisions.¹

Powered by photon-counting detection, NAEOTOM Alpha.Prime RT Pro Edition combines enhanced geometrical accuracy and soft-tissue differentiation to deliver high image quality, contrast, and spatial resolution.

This enables you to achieve accurate target delineation and confident margin definition, supporting treatment decisions that meet your clinical intent.



Precise target definition



Confident margin definition



More informed decision-making

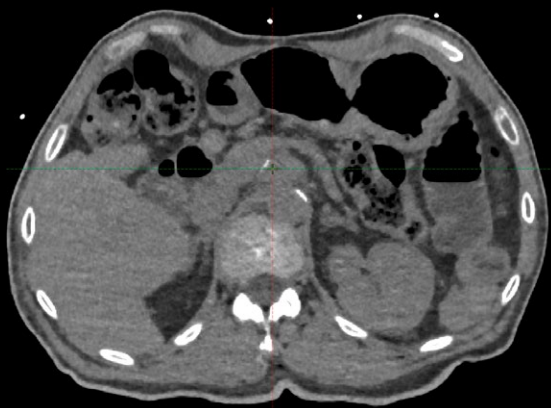


Better resource allocation

Clinical case

Pancreatic cancer

Improved confidence in delineation of CTV,
vascular structures and other OAR



Non-contrast enhanced photon-counting CT



Spectral Post Processing of a venous phase
photon-counting CT image

Courtesy of Radiochirurgia Zagreb, Croatia.

Lead today.
Define tomorrow.

As the world's first CT to bring photon-counting technology to RT, NAEOTOM Alpha.Prime RT Pro Edition offers the potential to automate the most common workflows, facilitate training and research partnerships, and foster collaboration across departments thanks to its shared-use capability.

Backed by the innovation power of Siemens Healthineers, NAEOTOM Alpha.Prime RT Pro Edition creates an advanced platform for clinical practice. This gives your institution the opportunity to lead in clinical excellence, attract top talents, and set new benchmarks in CT imaging for RT.



Attract skilled staff



Secure funding and collaborations



Gain competitive advantage

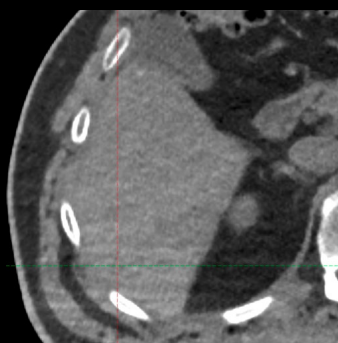


Increase patient throughput and appeal

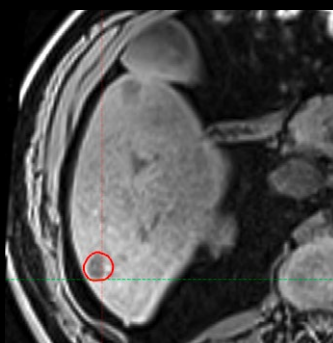
Clinical case

Small liver targets

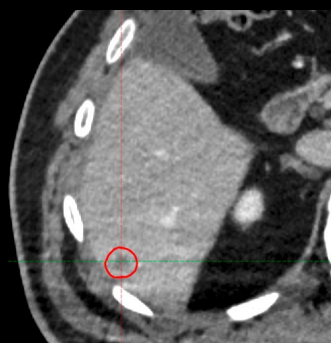
Even small (~4 mm) lesions are visible on contrast-enhanced spectral images, approaching the level of detail seen on MRI



Non-contrast enhanced
photon-counting CT



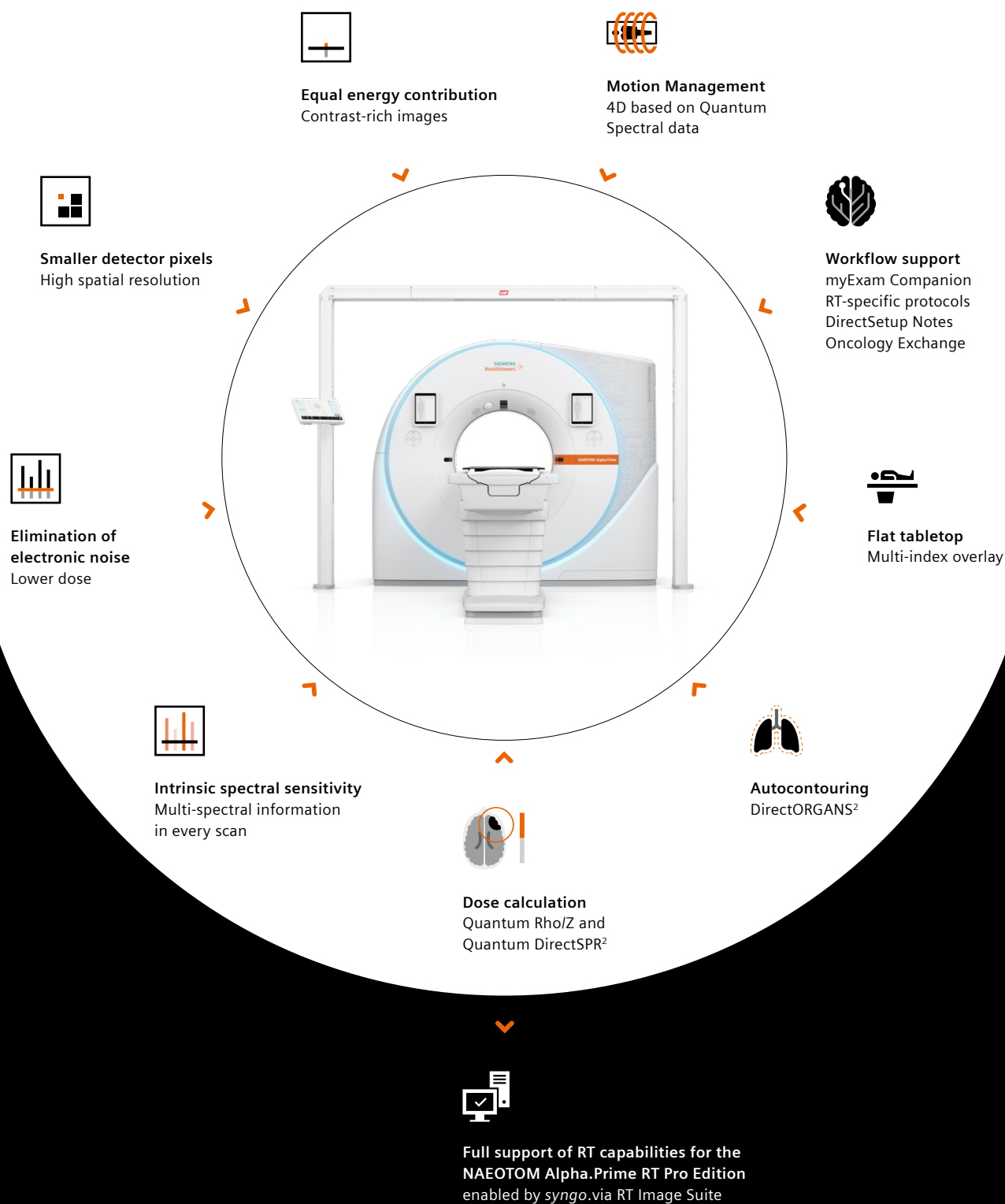
3T MRI T1 sequence



SPP venous phase
photon-counting CT

Courtesy of Radiochirurgia Zagreb, Croatia.

At a glance



Technical specifications

Detector	6 cm QuantaMax® photon-counting CT detector
Bore size	82 cm
X-ray tube	Vectron X-ray tube and Tin Filter
Max. number of acquired slices	144 slices
Number of physical detector rows	288 slices
mA	up to 1300 mA
Temporal resolution	down to 125 ms
kV	70, 90, 120, 140 kV Sn100, Sn140 kV
z-coverage	144 x 0.4 mm 120 x 0.2 mm (Quantum HD)
Spatial resolution	0.11 mm (in-plane) in Quantum HD mode
Power	120 kW (optional)
Table load	up to 750 lbs (340 kg)
Max. scan speed	345 mm/s (max pitch 1.5)



“Our new photon-counting CT for RT combines high-quality diagnostic imaging with optimal visualization of targets and organs at risk, adding functional information and improved material identification, thereby supporting treatment planning with confident decisions.”

Prof. Dr. med. Panagiotis Balermipas

Senior Physician, Department of Radiation Oncology, Universitätsspital, Zurich, Switzerland

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¹ The CT system supports clinicians in their decision making.

² DirectORGANS, Quantum Rho/Z and Quantum DirectSPR are part of syngo.via which is a medical device on its own right. syngo.via and the syngo.via based software are not commercially available in all countries.

³ In case of Eclipse version 18.1 recommended.

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