

Elekta Unity

Two worlds, one future.



 Elekta

Elekta Unity has a CE Mark but is not available for commercial distribution or sale in the U.S.

Helping clinicians
improve patients' lives



MR/RT—attack the tumor, protect the patient

Innovation is at the heart of what we do. It is our pioneering spirit that brought advances, such as SRS, SBRT, IGRT and VMAT to the field of radiation oncology and established them as standards of care in cancer centers around the world. This is where we excel.

The Elekta pioneering spirit is set to transform standards in cancer care once again with Elekta Unity—the world's first high-field MR-linac developed specifically for the new field of magnetic resonance radiation therapy (MR/RT).

Elekta Unity will—for the first time—deliver targeted radiation doses while simultaneously capturing high quality MR images. This will allow you to see targets and surrounding healthy tissue at any time throughout treatment and to adapt dose delivery accordingly.



We have brought together the very best of two worlds—precision radiation therapy and diagnostic standard (1.5 tesla) MR imaging—to create a brand new future with endless possibilities.

A new paradigm in cancer treatment

Designed specifically for MR/RT, Elekta Unity provides the opportunity to:

- **Reduce treatment margins—to spare healthy tissue**
- **Deliver higher doses—to improve cancer treatment regimens**
- **Truly personalize treatments—to improve patient outcomes**

Elekta Unity integrates the best of precision radiotherapy, high-field MR imaging and integrated responsive workflow software—without compromise. Tumors and surrounding tissue can be precisely located, their movement tracked, and treatment adapted in real time in response to changes in tumor position, shape, biology and spatial relationship to critical organs at the time of treatment.

By providing up-to-date information about the internal anatomy of patients on the day of treatment, MR/RT offers a new paradigm in the way cancer is treated. For the first time, you can see precisely what you are targeting and precisely what you need to avoid while you treat.

MR/RT takes precision radiation dose delivery to a new level. It is the integration of MR imaging and linear accelerator technology in a single platform, allowing you to see and track difficult-to-visualize soft tissue anatomies while radiation dose is being delivered.



Elekta Unity

The result of...



Vision

Harnessing knowledge and potential to address an unmet clinical need



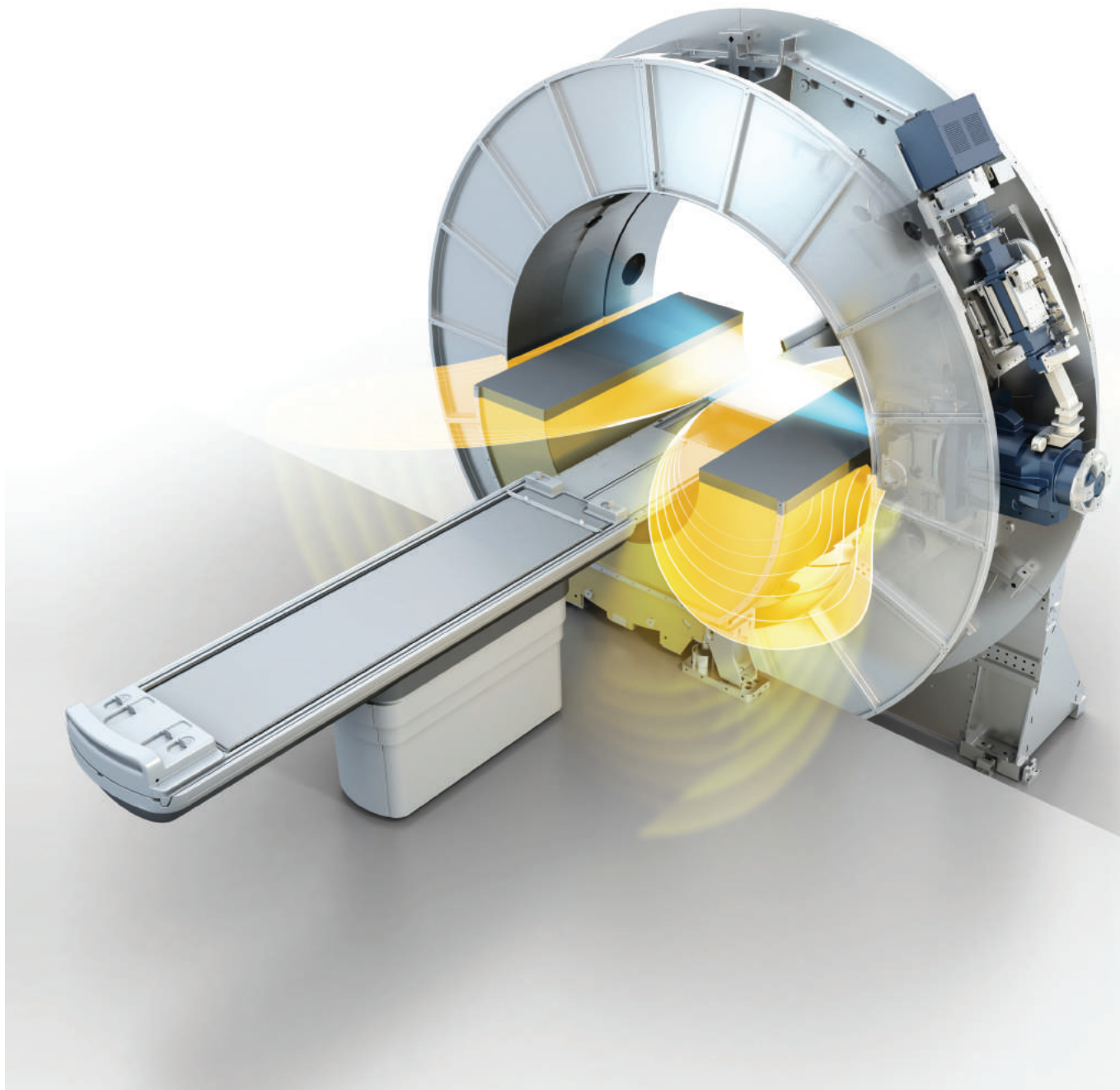
Innovation

Overcoming challenges to integrate high-field MR imaging and precision radiotherapy for the very first time



Collaboration

Demonstrating clinical benefit by working with experts from around the world



Groundbreaking technology

The groundbreaking Elekta Unity platform is ushering in a new standard of care—with crystal-clear imaging that occurs during advanced radiation therapy. Through simultaneous MR imaging and radiation, Elekta Unity makes it possible to deliver uncompromised, highly-targeted, precisely-dosed therapy in real time.

The future of radiation therapy is here with a platform designed for today and tomorrow's needs.



1 | Integrated treatment session management



3 | Responsive workflows like never before



2 | Real-time high-field MR imaging



4 | Unique particle transport algorithm





5 | User-centered design 


6 | Patient-focused environment 

7 | RT optimized coil 

8 | Uncompromised MR visualization 

9 | Novel slip ring design for seamless integration 

10 | High-speed beam shaping 

11 | Precision beam generation 

12 | Seamless set-up 

“I believe radiotherapy guided by real-time MR imaging will replace conventional radiotherapy in the near future.”

Professor Jan J.W. Lagendijk, PhD

UMC Utrecht, The Netherlands



Personalized precision therapy

A personal approach

Viewing targets and surrounding anatomy with such detail and clarity during treatment—with the ability to respond to changes and to adapt dose delivery immediately—allows daily radiation therapy plans to be tailored to individual patients like never before.

More than sight

Excellent soft tissue visualization and motion management capabilities allow you to see and track tumor changes and position in real time—during treatment—and with no additional dose to the patient.

Power to respond

Responsive workflows and intuitive software allow you to respond immediately to any changes in size, shape or position of the tumor at the time of treatment. Plans can be adapted quickly—while the patient is on the table—and safely, ensuring clinical intent is preserved.

Superior soft tissue visualization and motion management capabilities



Ensure customized treatment plans for every patient and at every session

Precise tumor targeting and critical structure avoidance



Ensure healthy tissue sparing and reduced toxicity

Responsive workflows and intuitive software



Ensure fast and efficient clinical decision making

Physician-driven protocols and plan of care driven workflows



Ensure safe adaptation and preservation of clinical intent

Extraordinary potential

MR/RT is an exciting new paradigm in cancer treatment. Today we are starting a new adaptive world with Unity. Its future application will grow and evolve as this new therapy is explored and realized.

Every aspect of Elekta Unity—from its state-of-the-art MLC and continuously rotating gantry to its high-field MR system—is designed to unlock the extraordinary potential of simultaneous high quality MR imaging and precision radiation dose delivery.

Options for hard-to-treat cancers

The high quality soft tissue detail enabled by high-field MR imaging provides clarity for tumors that are difficult to differentiate from surrounding healthy tissue, providing new treatment options for cancers that are otherwise hard to treat with radiation therapy.

Tumor response assessment

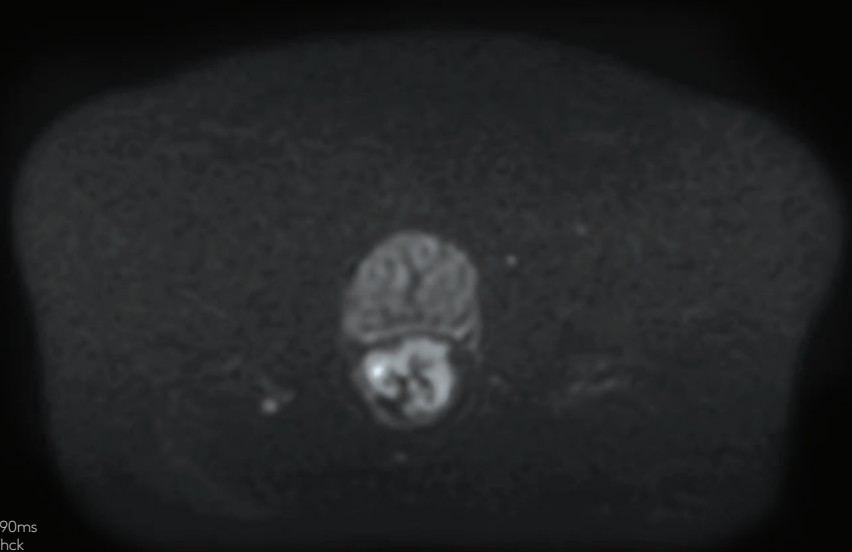
Since high-field MR imaging provides functional as well as anatomical information, there is the potential to gain deeper insights into the cellular activity within tumors—allowing therapy plans to be modified according to tumor response to treatment.

One stop patient pathway

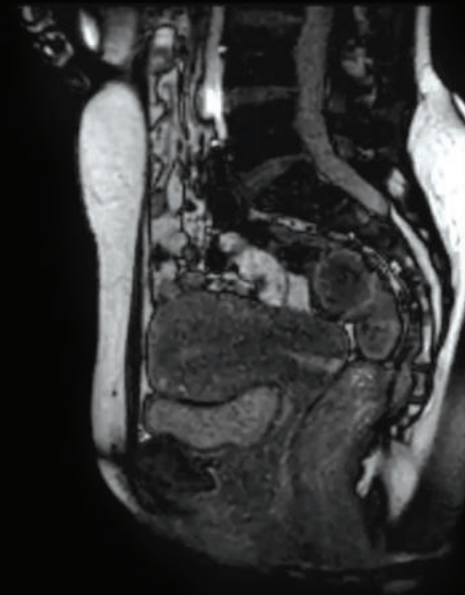
Having fully integrated, diagnostic-quality imaging on a treatment delivery platform offers the potential to scan, plan and treat patients in a single session—so you can start the treatment process at the earliest opportunity and provide a more streamlined patient experience.

Volunteer patient images captured on Elekta Unity illustrate excellent target visibility.

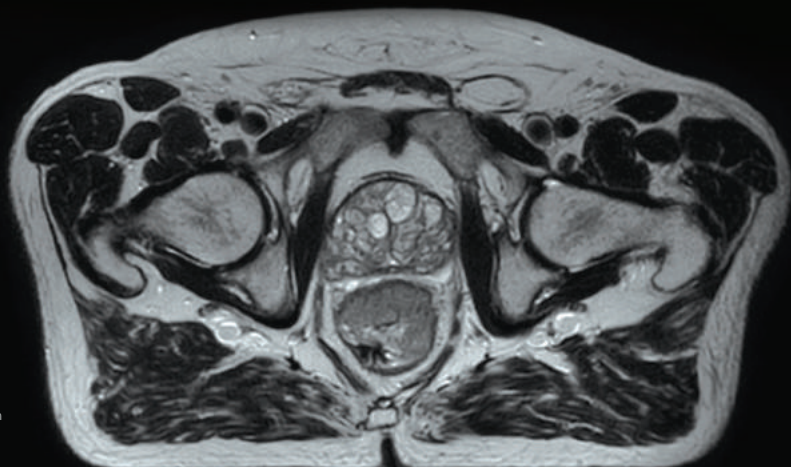
DWI (EPI)
b 800 - TE 90ms
4 mm Sl. Thick



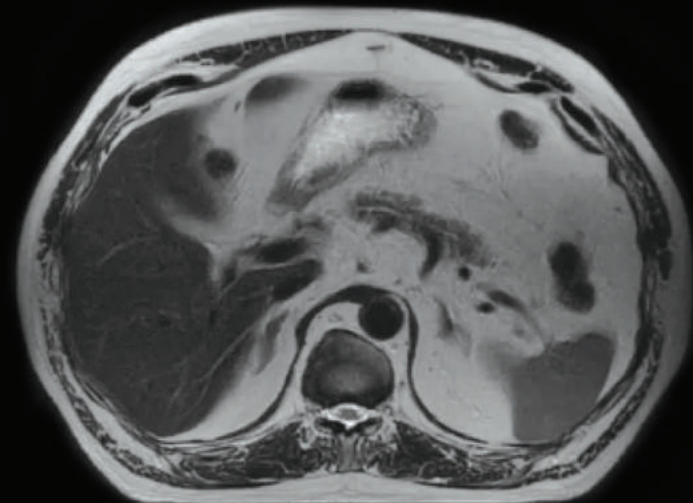
Cine MR (5mm thickness)



T₂w
TE 140ms
3.5 mm Sl. Thick
1.1 mm x 1.1 mm



T₂w
TE 140ms
3.5 mm Sl. Thick
1.1 mm x 1.1 mm



Inspiring clinical confidence

At Elekta, we believe new technology should be brought to life with clinical and operational support.

Join our new world

Elekta Unity delivers more than technology into cancer centers. A world class clinical community is available to provide support for implementing this new and exciting field. This approach allows smooth evidence-based introduction of MR/RT into existing radiation oncology department procedures.

Service and support

As a proven and established partner, Elekta is able to provide:

- Expert response to ensure system is running and supported through its life cycle
- Operational control by helping to ensure predictable costs in technology and service
- Shared knowledge to provide state-of-the-art learning in your hospitals, to keep skills and learning up to date

Global clinical community



>200

scientists



7

**world-leading cancer centers
as founding members**

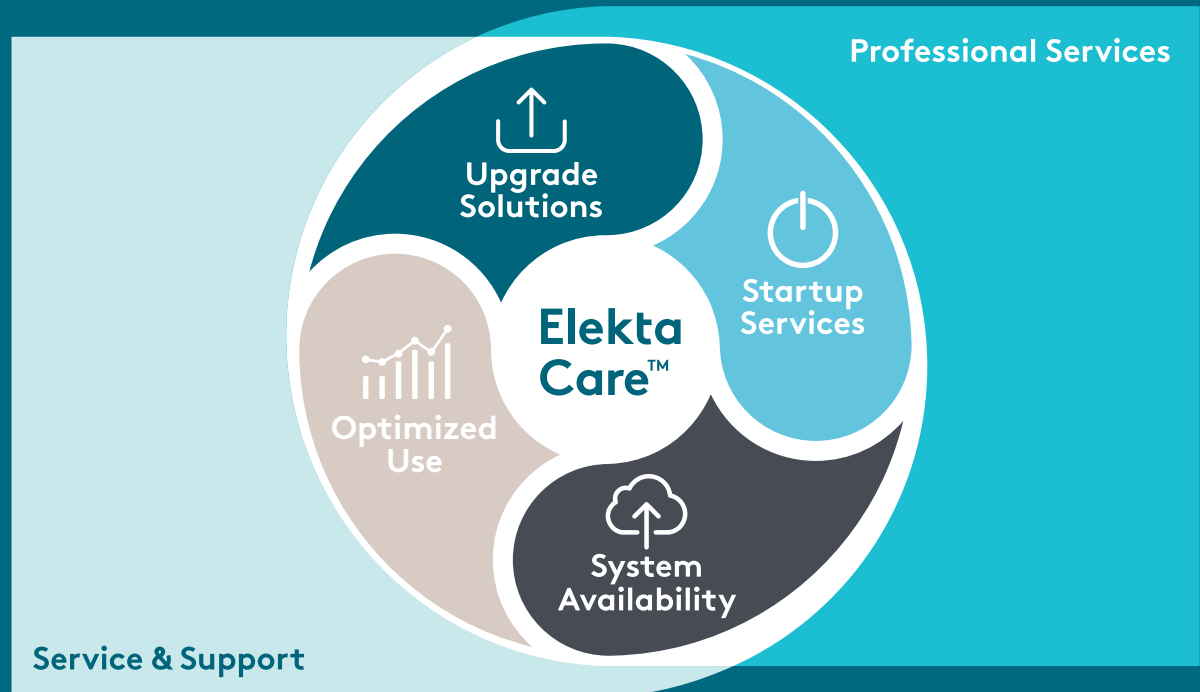


>120

**peer-reviewed
scientific papers**

Elekta Care™

Elekta Care supports you from startup through your product's lifecycle with comprehensive options from education, training and upgrades to solutions allowing you the highest uptime and improved operational efficiency.



Backed by a global support network, with unique expertise and vast experience supporting clinicians who treat cancer disorders, we are dedicated to providing you with essential tools and training toward improved patient outcomes and business growth. Elekta Care encompasses all services we provide—including installation services, project management, education and training, technical and application support and consultative services. Your Elekta Care service agreement offers extended coverage options beyond your system's warranty period. Elekta service agreement options help maximize clinical availability and utilization of your investment.

Technical specifications



High-field imaging enables excellent visibility

- 1.5 tesla MR scanner
- Bore width 70 cm, tunnel length 132 cm
- MR coil solution specifically developed for low attenuation of the beam (0.6% for anterior coil)
- Imaging field of view up to 50 cm
- Gradient peak amplitude (mT/m) 34,¹ peak slew rate (T/m/s) 120¹
- Intelligent SAR management through RF-SMART technology
- dStream digital broadband technology
- Geometric accuracy:
 - <= 1 mm for a 20 cm sphere
 - <= 2 mm for a 34 cm sphere
 - <= 2 mm for a 42 cm sphere (typically)

¹ Similar values compared to diagnostic MR system



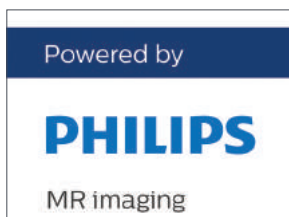
Next generation delivery provides precision

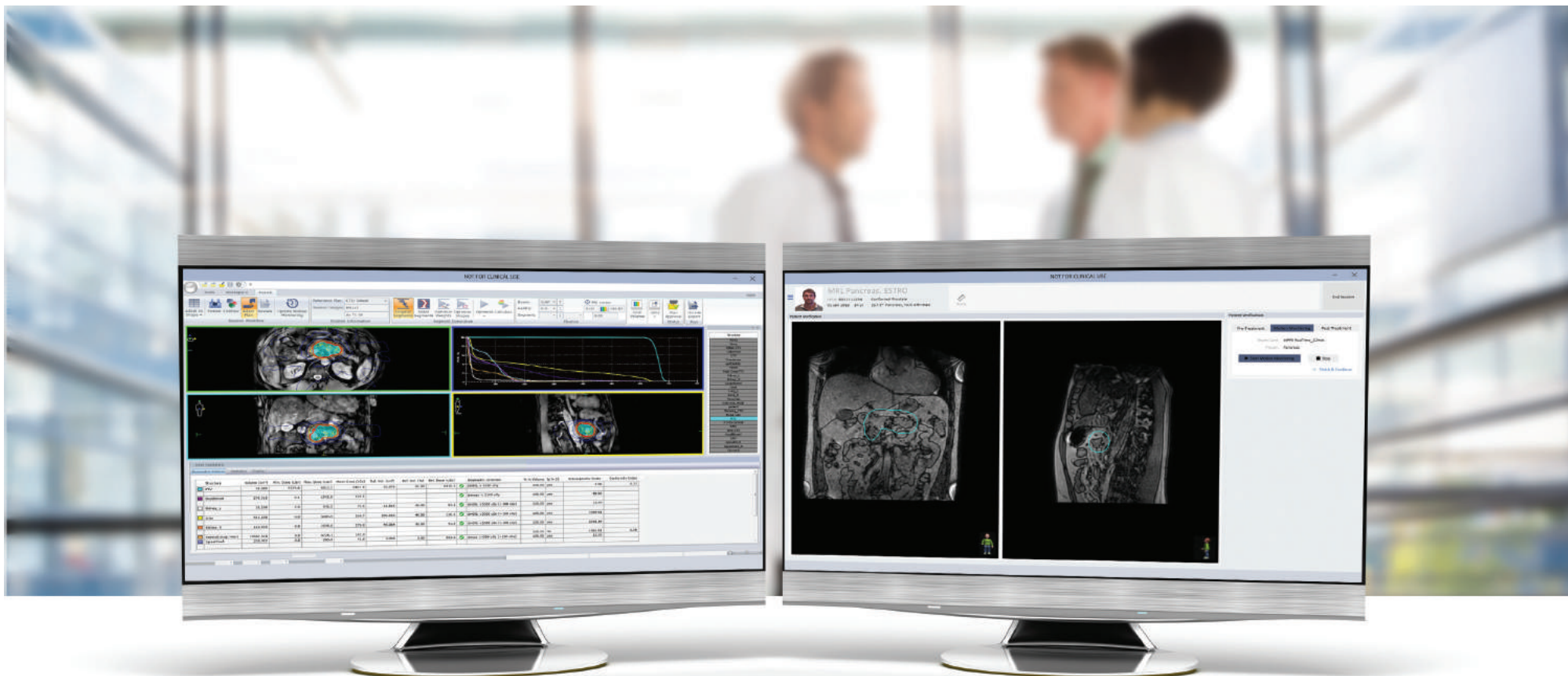
- 7MV FFF beam
- 160-leaf MLC technology, based on Agility
 - Collimation resolution: 1 mm
 - Leaf and diaphragm speed: 6 cm/sec
 - Leaf positioning accuracy: 1 mm APE/0.5 mm RMS
- Leaf speed: 6 cm/sec
- Continuous rotation capability at max gantry speed of 6rpm
- Field size: 57.4 x 22 cm
- SISO technology for servicing ease



Integrated environment for treatment adaptation

- Responsive workflows allowing adapt to position, shape and motion
- Rigid or deformable registration
- Imaging template to ensure clinical intent is met
- GPUMC dose calculation using the Particle Transport Algorithm for modeling of beam path in magnetic environment
- Dosimetric criteria provides quick insight in dose constraints
- Workflow console with two screens for the online adaptive workflow





Elekta Unity delivers a new clinical environment for live clinical decisions to be made. Using an online single environment, the software enables personalized therapy by allowing treatment adaptation to the tumor based on location, shape and biology every time you treat. This new environment is based on three areas—the ability to offer

responsive workflows, make live clinical decisions and ensure clinical intent. The responsive workflows provide flexibility to allow position or shape compensated workflows depending on the clinical challenge. The system also supports continuous imaging for motion monitoring and plans can be adapted based on up-to-date information being captured.

Live clinical decisions capability is supported with tools that ensure the system is always ready to respond. Tools including rapid evaluation for decision making, various levels of fast optimization and information are at the user's finger tips. All of this is supported through physician driven protocols and plan of care driven workflows to ensure clinical intent.

**We are healthcare technology innovators,
specializing in radiotherapy treatments
for cancer and brain disorders.**

**We help clinicians to improve patients'
lives through our forward-thinking
treatment solutions and oncology
informatics, creating focus where it
matters to achieve better outcomes.**



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