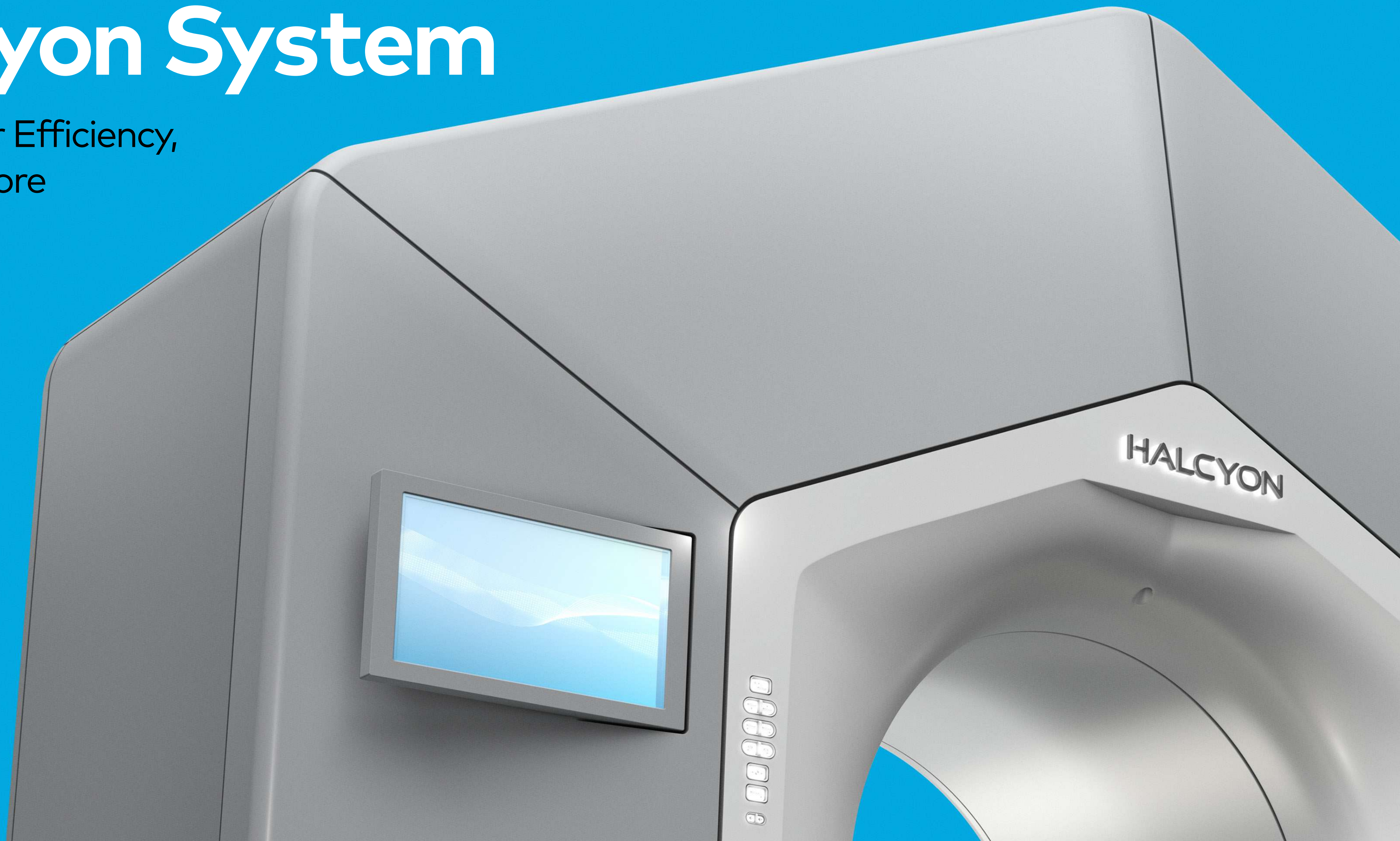


# Halcyon System

Designed for Efficiency,  
Achieving More



# Power new victories in the cancer fight with Halcyon

At Varian, a Siemens Healthineers company, we understand today's challenges—whether its resource pressures, operational inefficiencies, or any number of obstacles facing clinicians.

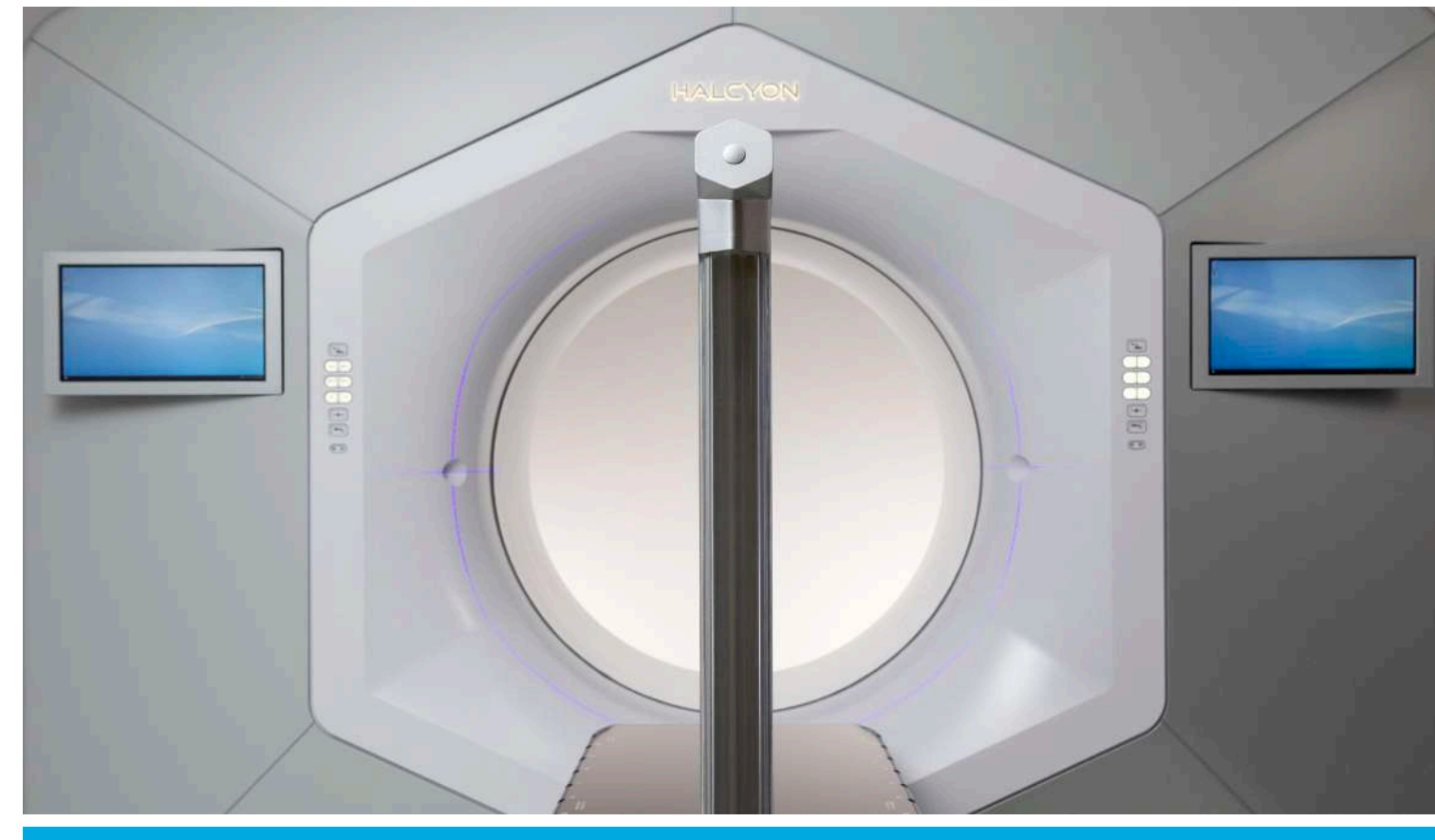
That's why we are continually innovating to ensure our solutions, and world-class services are seamlessly integrated—elevating every clinician's ability and confidence in helping patients win their fight against cancer. Our dedication to intelligent innovation continues with Halcyon.

Halcyon system is designed to enhance and streamline radiotherapy treatments by helping optimize productivity, simplify user tasks, and consistently deliver advanced, high-quality care that's personalized for every cancer patient.



# Halcyon

Designed for Efficiency, Achieving More



## Accessible

Halcyon is accessible to all, will not compromise your needs, and provides configuration options to fit your clinic.

With its simple, compact, and patient-centered technology, Halcyon allows clinicians to deliver straightforward, high-quality treatments for every patient, everywhere.

## Efficient

Halcyon is efficient from installation through treatment delivery, and facilitates the improvement of virtually every aspect of a cancer center's operation and clinical workflows. Fast installation and training enable the start of patient treatments in a couple of weeks.

With Halcyon's streamlined radiotherapy process, clinics can treat more patients while maintaining quality and safety. Halcyon may also help in reducing capital cost while improving productivity.

## Focused

Halcyon is focused on what your clinic needs. Its capabilities in delivering high quality radiotherapy allows clinics to treat patients with conventional and advanced radiation therapy delivery techniques—all optimized to produce the prescribed dose precisely and accurately.

Every treatment is image-guided to provide clinicians with the confidence to evaluate all aspects of the treatment while the patient is on the couch.

# Accessible

## Improved User Experience

Halcyon brings user experience to the next level. With an intuitive, nine-step treatment delivery process and 'follow the blue light' color-guided workflow, therapists can focus more on the patient.

Halcyon also enhances QA and Physics tasks efficiency by consolidating them in a dedicated Physics QA mode workspace.

**"The Halcyon is a wonderful machine—it has extreme software, it gets upgraded all the time, and the mechanics of it are very simplified."**<sup>†</sup>

—Dr. Diane Heaton

Northeastern Oklahoma Cancer Institute, Claremore OK



# Accessible

## Patient-Friendly Environment

The quiet, water-cooled system facilitates a comfortable treatment room environment for users and patients alike.

The 100 cm diameter bore with ambient lighting provides a patient-friendly environment—with a design that clinicians are familiar with since it resembles conventional imaging systems. Halcyon also provides a safe environment with an enclosed system design that reduces collisions with couch and patients. The integrated live view camera and intercom system always makes communication available between patients and therapists.



**"Halcyon provides a large bore of a 100 cm diameter, which allows for most of the patient's experience to be outside of the actual treatment structure [machine]."**<sup>†</sup>

—Dexter Wilson

University of Pennsylvania Hospital, Philadelphia PA

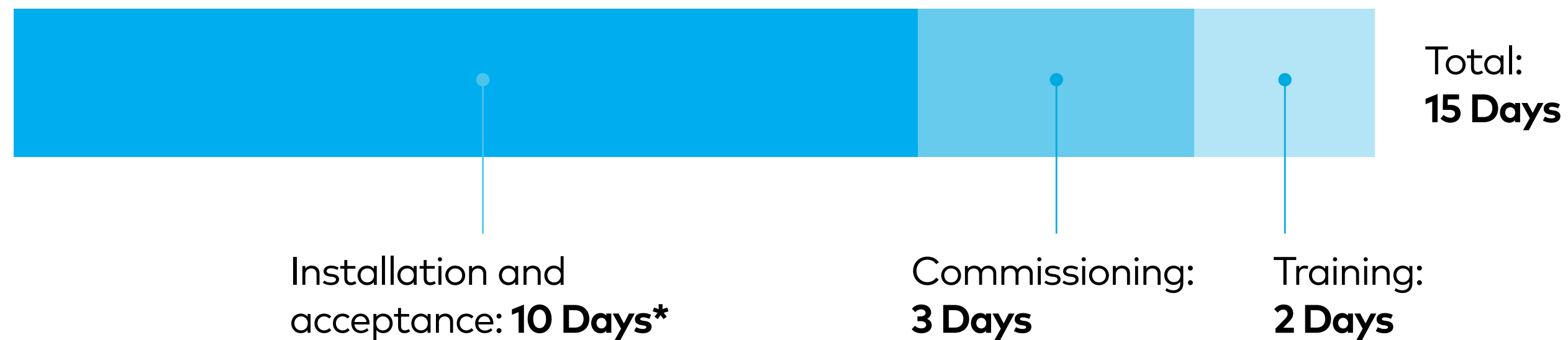
Fast positioning, imaging, and treatment delivery minimizes a patient's time on the table, helping to provide an even more positive patient experience, while at the same time improving treatment delivery efficiency.

# Efficient

## Reduced Operational Costs

Being efficient is as much about treatment delivery efficiency as it is about operational efficiency. Halcyon's highly-efficient capabilities start with fast installation and is operationally ready within 15 days.

### Fast Installation and Deployment



\* Install can range from 7-10 days

**"I think the preloaded beam data is a huge advantage. It makes the commissioning of this machine fairly straightforward, makes it a lot easier, and the visual cues for collisions during treatment planning are really great."**<sup>†</sup>

—Dexter Wilson  
University of Pennsylvania Hospital, Philadelphia PA

# Efficient

## Fast Imaging and Treatments

The image guidance process in Halcyon can be done at expedited speed—MV imaging in seven seconds, MV CBCT acquisition in 15 seconds, and kV CBCT in as fast as 17 seconds\*—automatic matching with reference CT and no imager deployment also help speed up the imaging process.

Fast dual-layer MLC motion up to 5 cm/sec\*\* allows treatment to be delivered at close to maximum dose rate, and four RPM\*\*\* gantry speed saves time between IMRT fields. RapidArc treatments are delivered typically at two RPM\*\* on average (for conventional dose fractionation).

Halcyon also comes with an easy follow the blue light workflow. Consistent, color-guided workflow process and one-step setup (delta couch) provides fast, safe patient positioning.

\* As fast as six seconds with optional HyperSight Imaging Solution

\*\* Depends on configuration

\*\*\* Six RPM with HyperSight



**“Halcyon offers simplified treatment workflows, reduced delivery times, and really a very nice implementation of Cone Beam CT.”†**

—Chris Kennedy

University of Pennsylvania, Philadelphia PA\*

\*The statement by Varian’s customer described here is based on results achieved in the customer’s unique clinical setting. Because there is no “typical” clinical setting and many variables exist, there is no guarantee that other customers will achieve the same results.

# Efficient

Examples of Halcyon clinically efficient cases and planning quality:

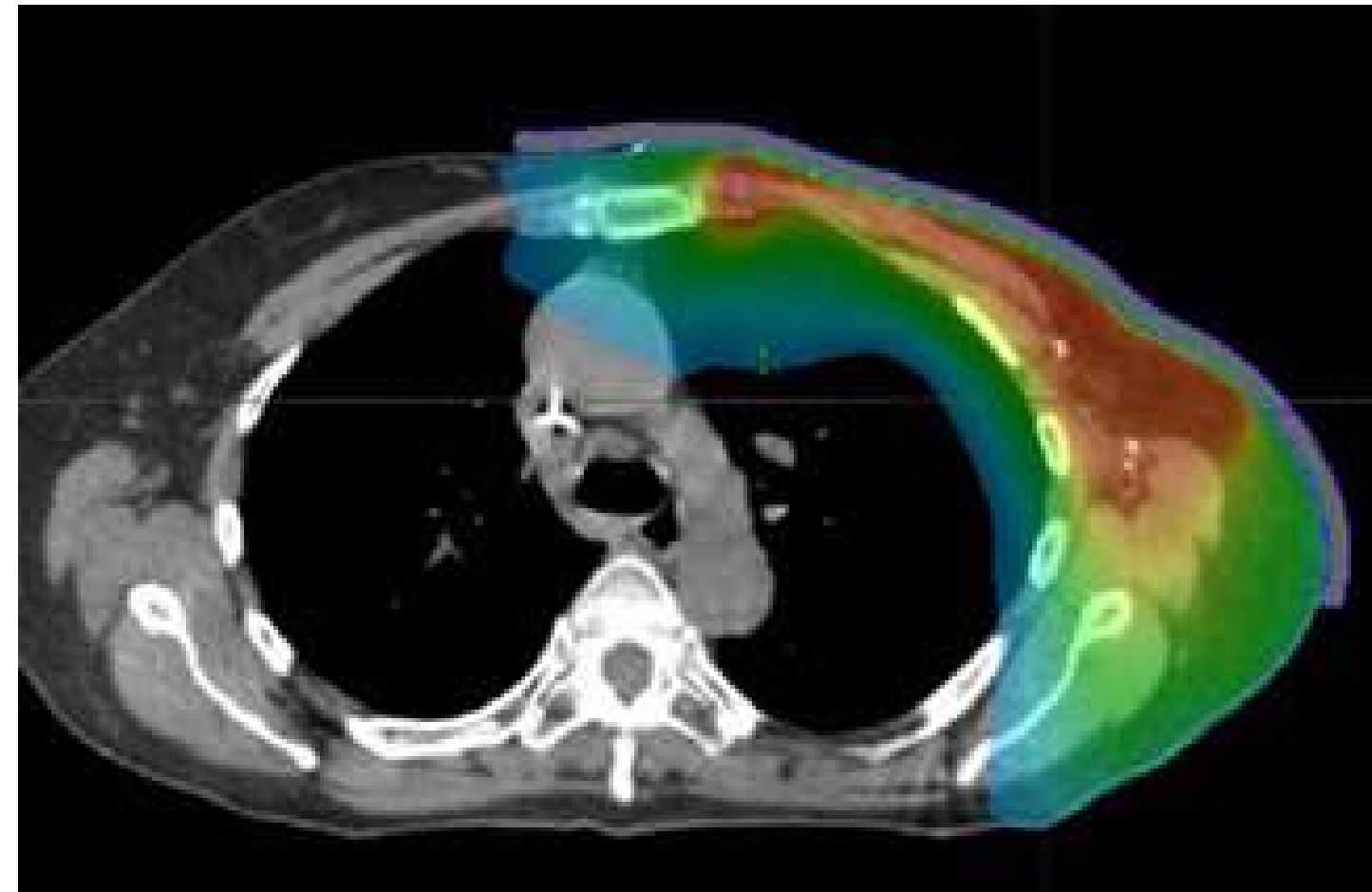


## Prostate

Five arcs; 74 cm diameter;  
lateral and anterior avoidance

1.956 Gy x 44 fractions

**150 seconds** Beam on time



## Left Chest Wall, Supraclavicular and posterior axillary boost

Four arcs; 1.8 Gy x 28 fractions

boost two Gy x 5 fractions

**130 seconds** Beam on time

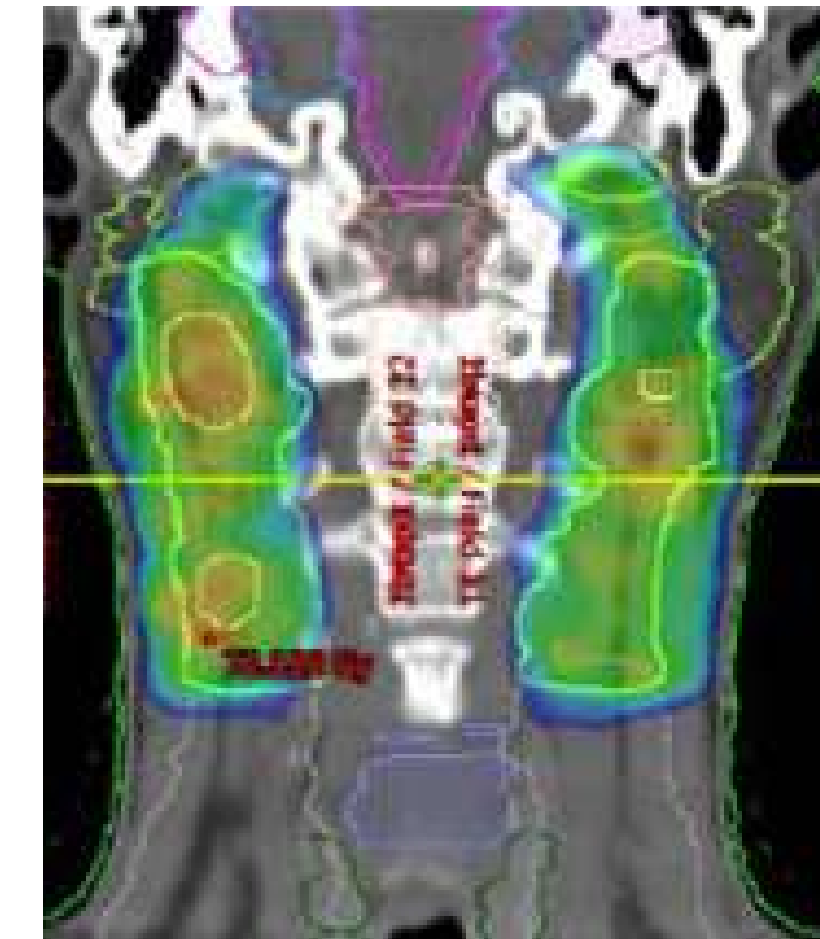


## Nasopharyngeal Cancer

Two arcs; single isocenter; 2.0 Gy x 30 fractions

PTV boost Two Gy x Five fractions

**63 seconds** Beam on time



**"After delivering 3,782 fractions, the average time a patient is in the Halcyon bunker is 6:51 minutes (after four months of clinical experience on Halcyon)."**<sup>†</sup>

—Dr. rer. medic. Matthias Kretschmer  
Radiologische Allianz, Hamburg Germany\*

\*The statement by Varian's customer described here is based on results achieved in the customer's unique clinical setting. Because there is no "typical" clinical setting and many variables exist, there is no guarantee that other customers will achieve the same results.



# Focused

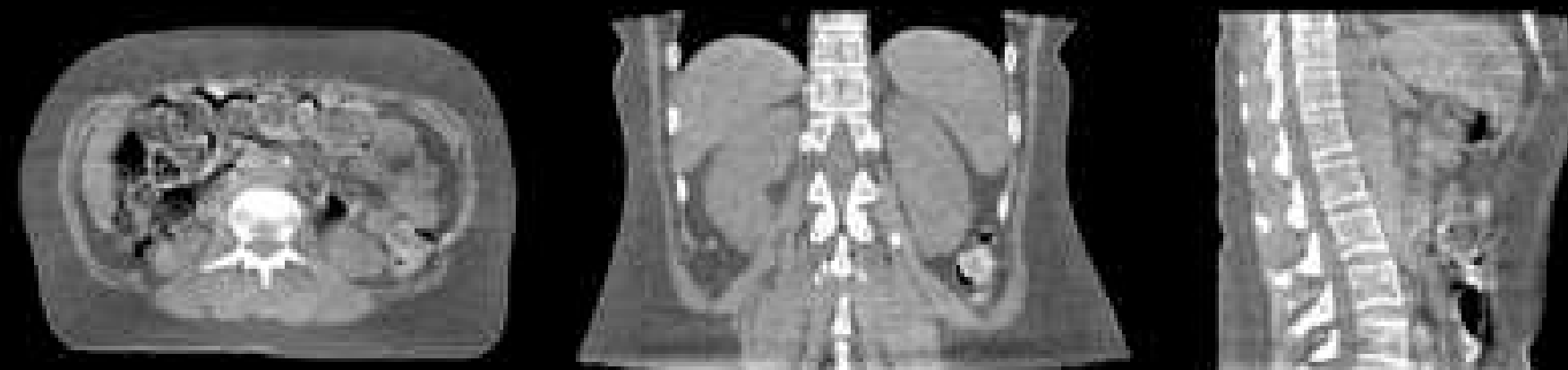
## 100% Image-Guided RT

High-quality treatment delivery may be achieved by using 3D CBCT images to allow for internal visualization. kV CBCT offers a large field of view\* and improves soft tissue contrast.

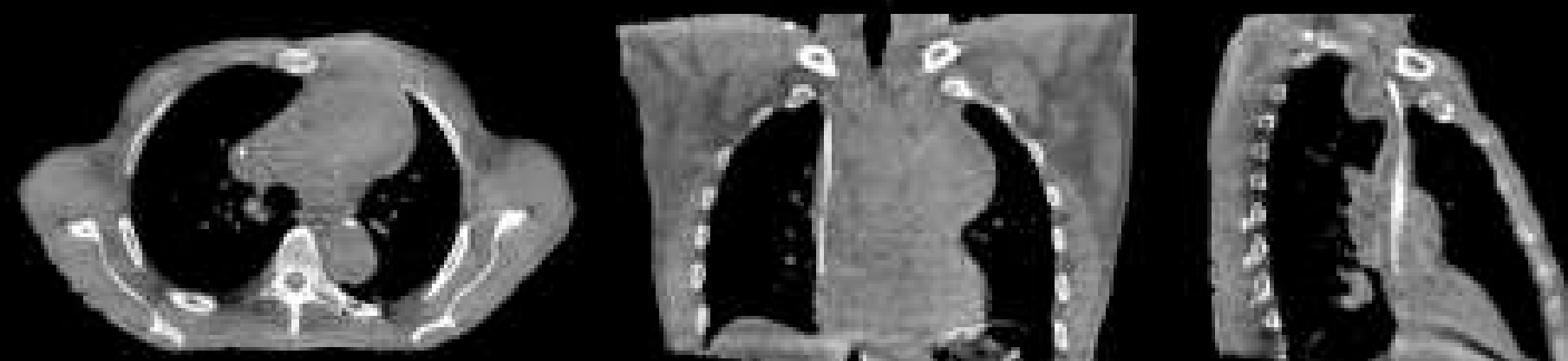
Iterative CBCT utilizes statistical reconstruction methods, Acuros CTS and motion reliance algorithms to enable better quality of CBCT images of anatomies, including those suffering from residual motion.

\* Extended 38.5 c

**kV-CBCT**  
(Iterative CBCT)



**kV-CBCT**  
(Iterative CBCT)



**“Treatment plans and pre-treatment imaging are of a high quality—the system is capable of treating a wide variety of diagnoses.”†**

—Ben Archibald-Heeren  
ICON Cancer Centers, Sydney, Australia

Patient imaging dose can be optimized by using the automatic mAs detection feature for kV CBCT image acquisition.

The larger capacity X-ray tube permits back-to-back reimaging of a patient using kV CBCT image acquisition without disrupting or extending treatment time.

# Designed for treatments head to toe.

With the treatment capabilities of Halcyon, customers around the globe have been able to treat a variety of anatomical sites—including, but not limited to—breast, brain, lung, skin lesions, extremities, prostate, head & neck, spine, liver, esophagus, brain metastasis, cervical, abdomen, and more.

Patient treatments with standard fractionation can be scheduled in a 10-minute slot in some cases, while other fractionations like SBRT are reported to be scheduled in a 20 to 25 treatment time slot.

Medical Affairs website:  
[medicalaffairs.varian.com](http://medicalaffairs.varian.com)

## Halcyon Central Nervous System Treatment Example



CNS FLDS



CNS No FLDS



# Experience the power of the stacked-and-staggered MLC.

Varian's advanced dual-layer MLC for Halcyon brings low leakage and transmission of 0.01%, overtravel distance of 28 cm, full interdigitation, leaf speed of 5 cm/s, and 5 mm field shaping resolution.

**"The dual-layer MLC has enabled us to deliver high quality treatment plans for large, complex target cases, such as Head & Neck plans."**<sup>†</sup>

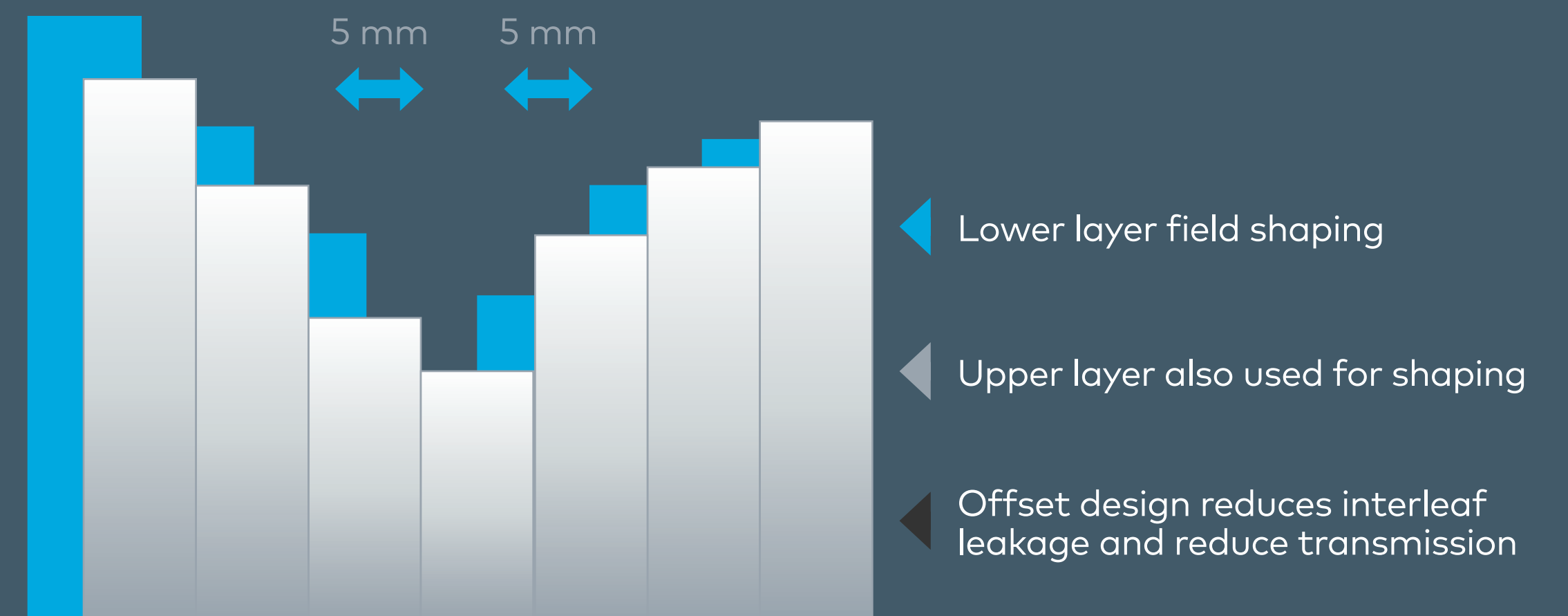
—Lei Dong  
University of Pennsylvania, Philadelphia PA

With Halcyon, there is the potential to achieve less dosage to organs at risk and more dose conformity to the target with the MLC stacked-and-staggered technology. The dual-layered MLC makes it possible to deliver IMRT and RapidArc treatments faster and more efficiently than before.

Multiple fields IMRT, multiple arcs RapidArc, and simple plans with dynamic beam flattening techniques are planned in Eclipse Treatment Planning System with a single 6MV FFF beam permitting to treat nearly every patient with a high-quality plan.

**"Halcyon has renewed our interest in static-gantry IMRT plans, which can exceed VMAT plans on quality and delivery speed."**<sup>†</sup>

—Dom Withers  
Queen's Hospital, Romford, UK



# HyperSight imaging solution

## A revolution in resolution

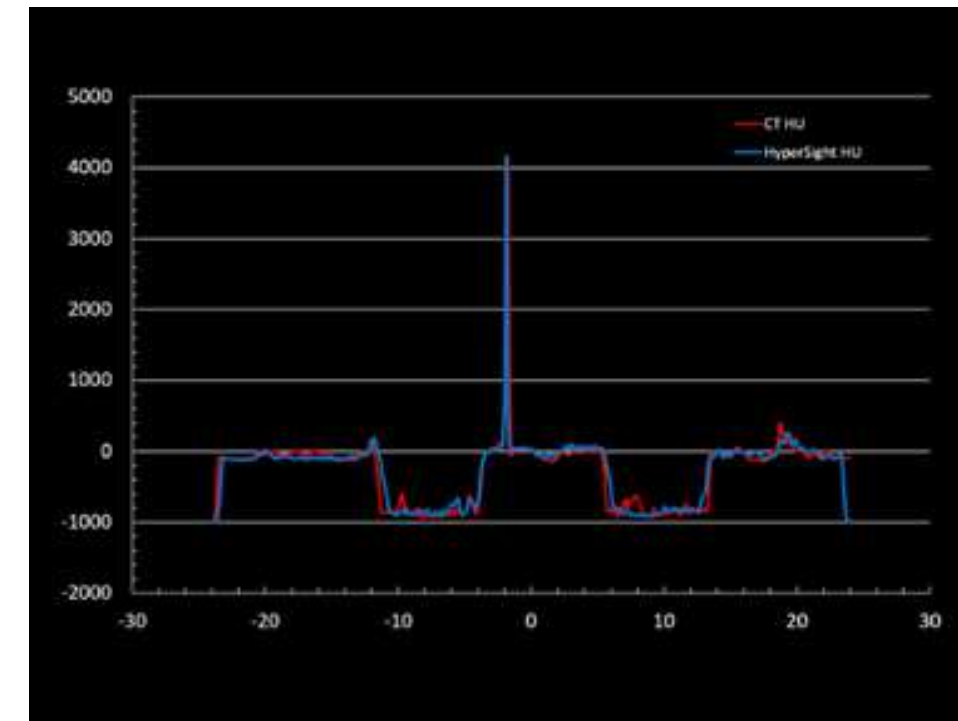
HyperSight imaging solution brings an epic advancement in image quality, precision, and speed—right inside your treatment room.



### Image Quality

Going beyond IGRT

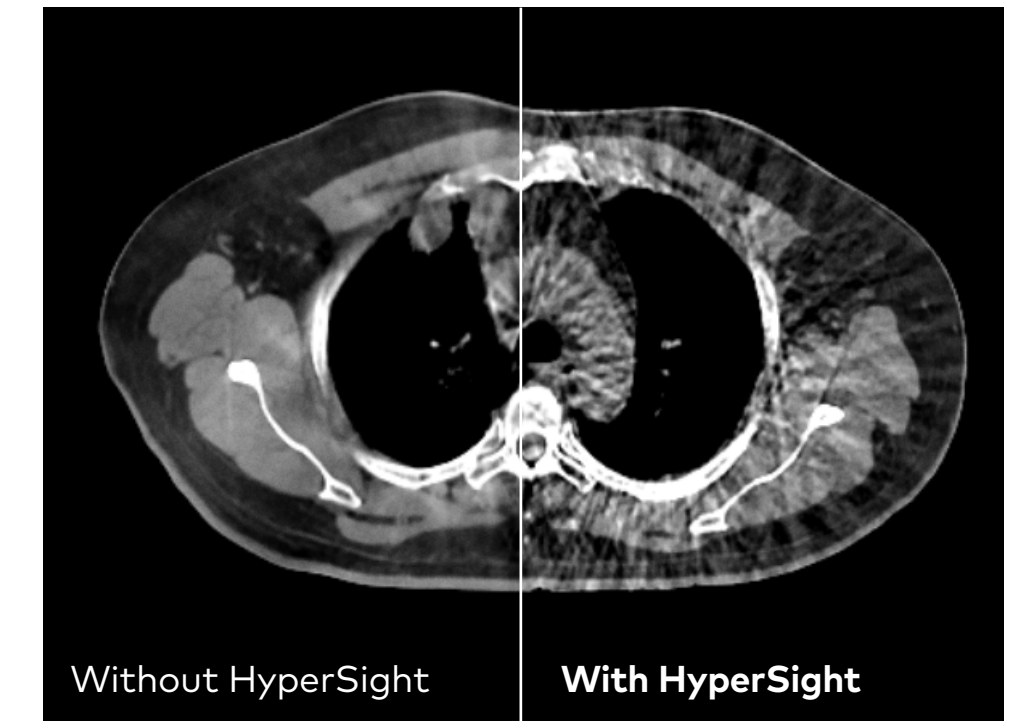
HyperSight improves spatial and contrast resolution to target tumor volumes and increase sparing of healthy tissue more precisely. HyperSight also comes with a new metal artifact reduction algorithm that enhances image quality for patients with hip prostheses and metal or dental implants.



### Precision

Images you can plan on.

HyperSight delivers the Hounsfield Unit (HU) accuracy expected from conventional CT-simulators; this allows for calculation of dose distribution directly on the CBCT image for adaptive cases. The image reconstruction algorithm and increased FOV offers improved visualization of the entire patient volume and surrounding organs at risk (OARs).



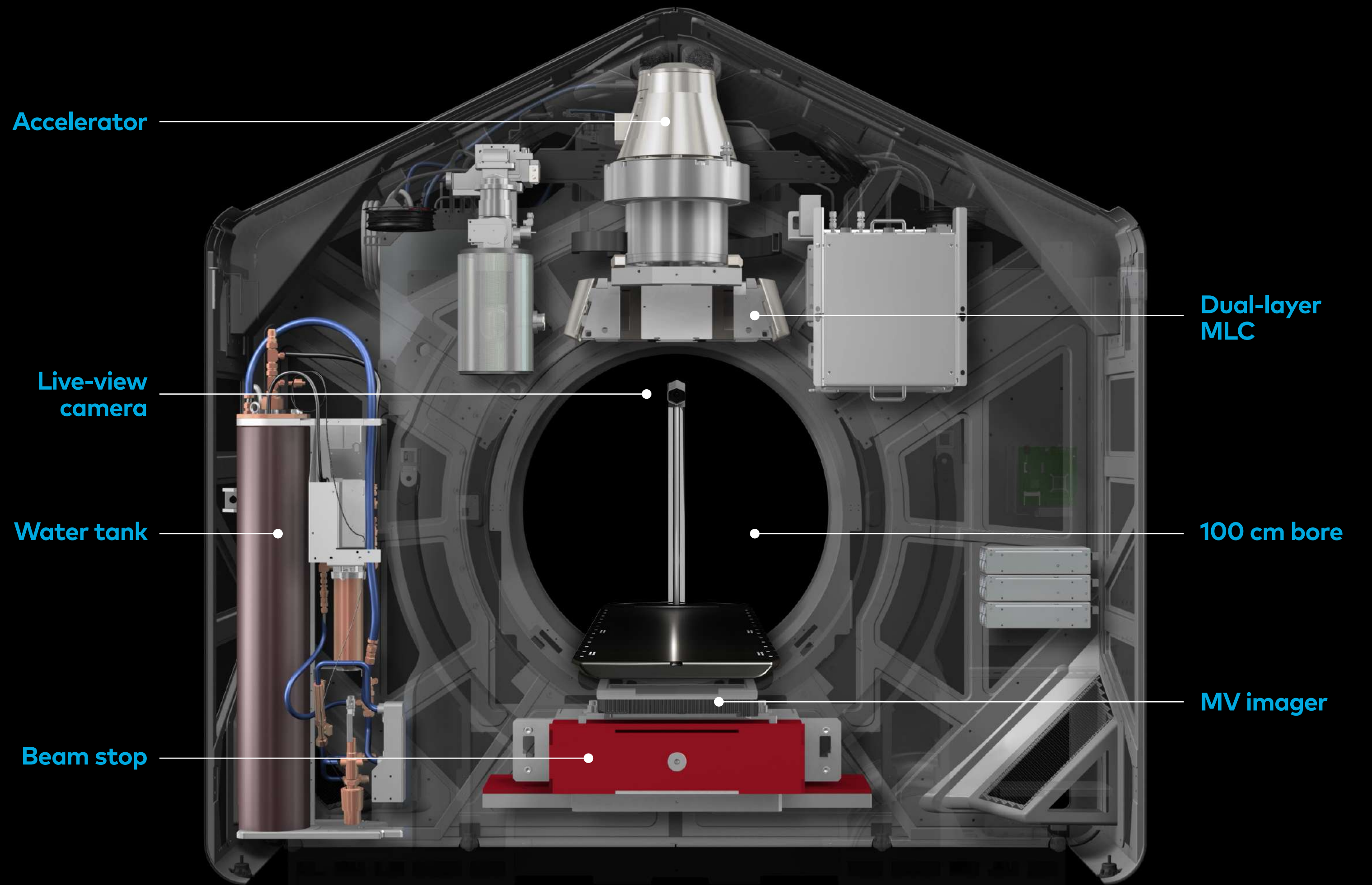
### Speed

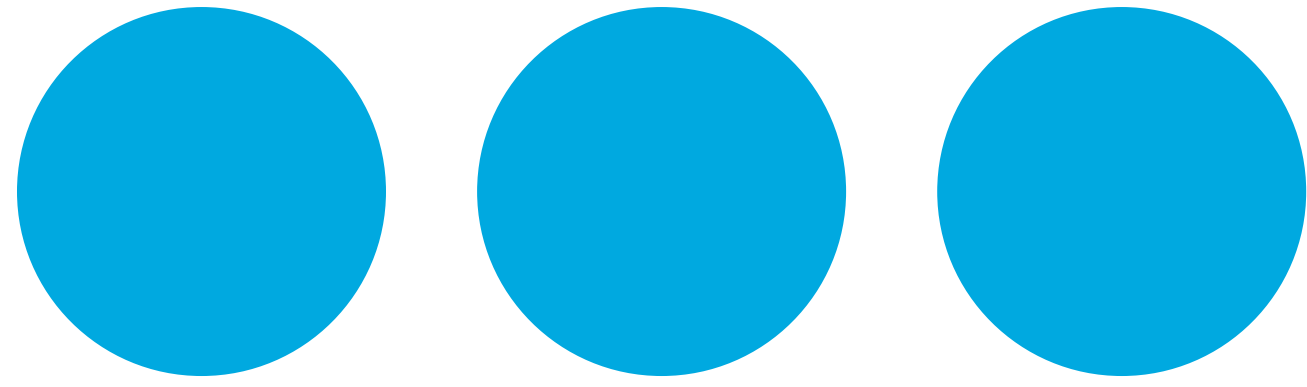
A single breath hold is all you need.

HyperSight acquires images as fast as 6 seconds for all anatomical sites which also reduces motion-related artifacts and may minimize patient discomfort with less time on the couch.

# What do you get with Halcyon?

Halcyon is here to give you an accessible, efficient, and focused linac, with these powerful features.



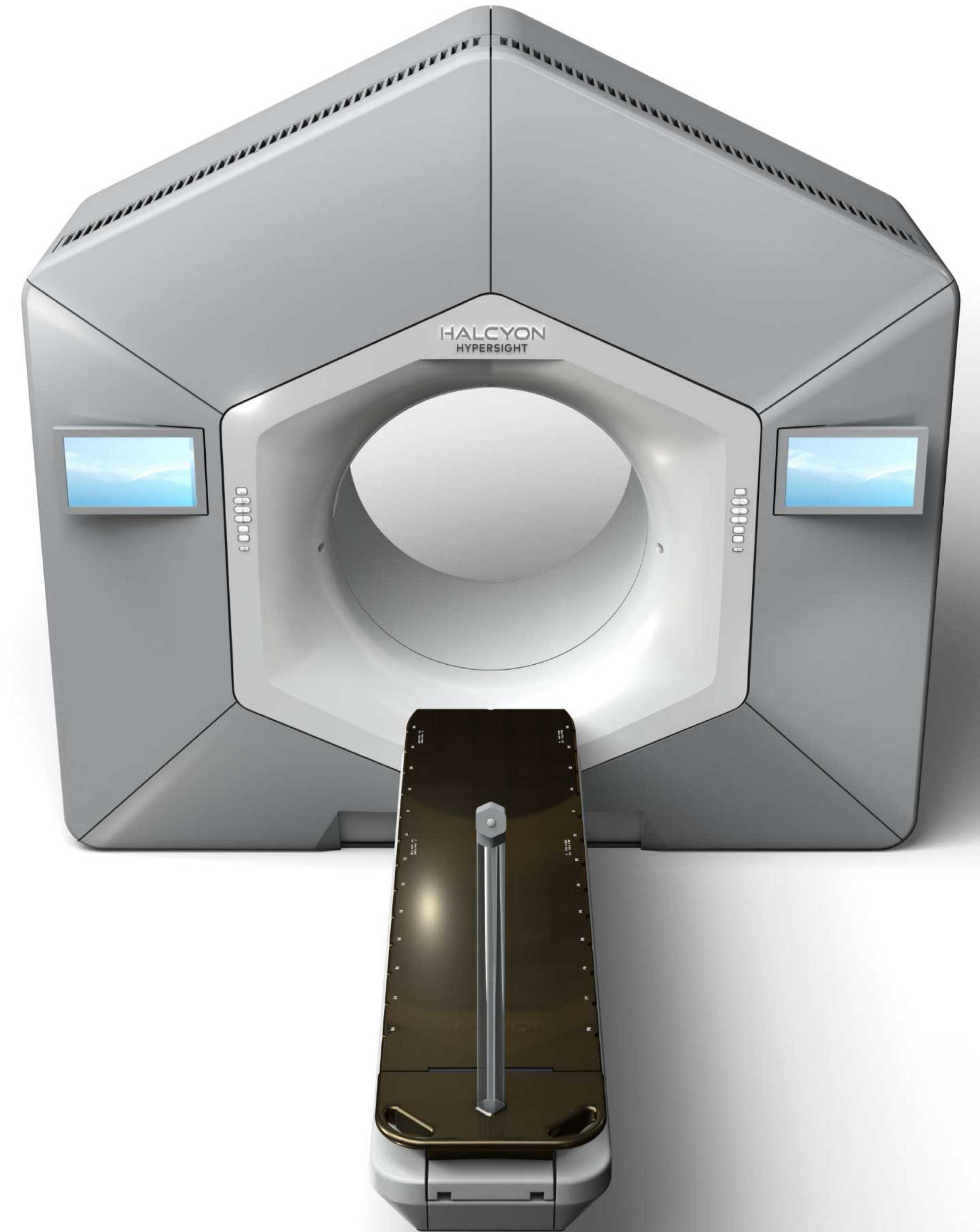


# Power new victories in the cancer fight with Halcyon.

Our vision of creating a world without fear of cancer is our principal pursuit at Varian, a Siemens Healthineers company.

From initial screening and high-quality imaging to treatment delivery and survivorship, our commitment to helping you streamline workflows and personalize treatments through a comprehensive approach to cancer care continues with the integration of Halcyon into our entire ecosystem.

Harness the power of Halcyon, and all our intelligent technologies and innovative therapies, to help advance your ability in delivering world-class cancer care—today, and well into the future.



Certain features are optional. Please speak with your sales personal for more information.  
Not all products or features available for sale in all markets.

\* Institution has previously received grant or other financial support from Varian

#### **Intended Use Summary**

Varian Medical Systems' linear accelerators are intended to provide stereotactic radiosurgery and precision radiotherapy for lesions, tumors, and conditions anywhere in the body where radiation treatment is indicated.

#### **Important Safety Information**

Radiation treatments may cause side effects that can vary depending on the part of the body being treated.

The most frequent ones are typically temporary and may include, but are not limited to, irritation to the respiratory, digestive, urinary or reproductive systems, fatigue, nausea, skin irritation, and hair loss. In some patients, they can be severe.

Treatment sessions may vary in complexity and time. Radiation treatment is not appropriate for all cancers.

#### **Medical Advice Disclaimer**

Varian as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual treatment results may vary.

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Varian Medical Systems as a medical device manufacturer cannot and does not recommend specific treatment approaches.  
Specifications subject to change without notice. Not all features or products are available in all markets.

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