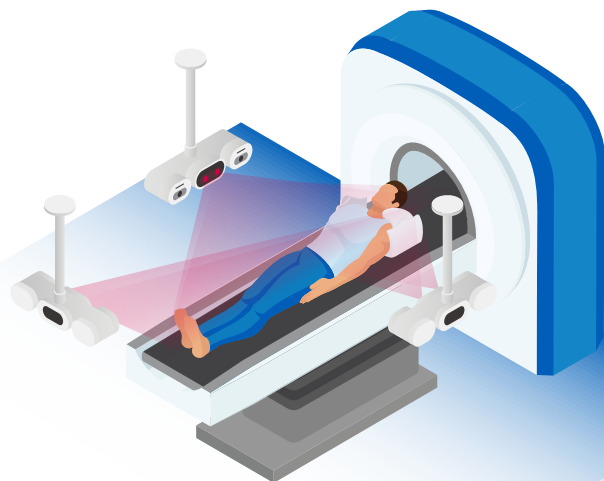


SGRT

USE OF **SURFACE GUIDANCE** TO IMPROVE THE SAFETY, EFFECTIVENESS AND EFFICIENCY OF THE **ENTIRE RADIATION THERAPY** WORKFLOW



SIMULATION

Non-contact **4D and breath hold CT** with no hardware setups, simple workflow and no surrogates.

simrt™



PLANNING

Clearance Mapping of entire patient and all equipment to assist planning without fear of collision, eliminating of dry runs and replans.

maprt®



TREATMENT

Contactless patient ID prior to treatment.

Demonstrated rapid **patient setup** without the need for tattoos.

TG302/ESTRO-ACROP compliant **motion monitoring** accuracy at all couch / gantry angle and skin tones.

alignrt® alignrt® InBore™

Beam visualization to help stop dose delivery errors in real time.

dosert™
Powered by BeamSite®

visionrt

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SGRT FOR 4D AND BREATH-HOLD CT

simrt™

**SIMPLE WORKFLOW
WITH NO HARDWARE SETUPS
AND NO SURROGATES**



4DCT scan



Breath-Hold scan

TRACKING POINT SELECTION FROM CONTROL ROOM:

- Rapid optimization of tracking point, for faster workflow
- Minimal patient distraction pre-scan, so breathing is undisturbed

CEILING MOUNTED CAMERA:

- No physical marker, block or belt needed - no physical distraction for patients
- No tracking equipment for the user to set up
- Completely non-invasive, non-ionizing motion monitoring

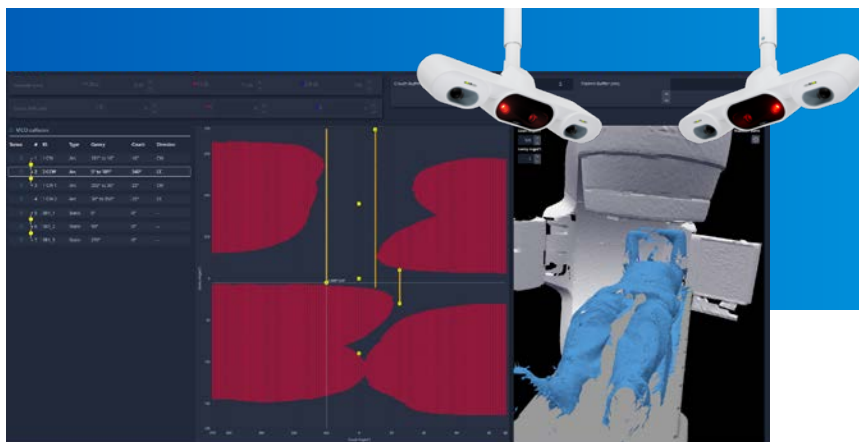
REAL TIME COACH™ DISPLAY:

- Coaches patient on breath-hold level
- No patient contact for minimal infection risk
- Simple and intuitive visual feedback for patients



SGRT FOR CLEARANCE MAPPING

maprt®



- Check treatment clearances before sim.
- Improve dose plan using safety map beam options.
- Avoid dry runs and replans for non-deliverable plans.¹

Two lateral wide-field cameras in simulation deliver a full 3D model of patient and accessories. This model is used to calculate a clearance map for every couch (x axis) and gantry (y axis) angles. Plans can be imported automatically to check beams, arcs and transition clearance.

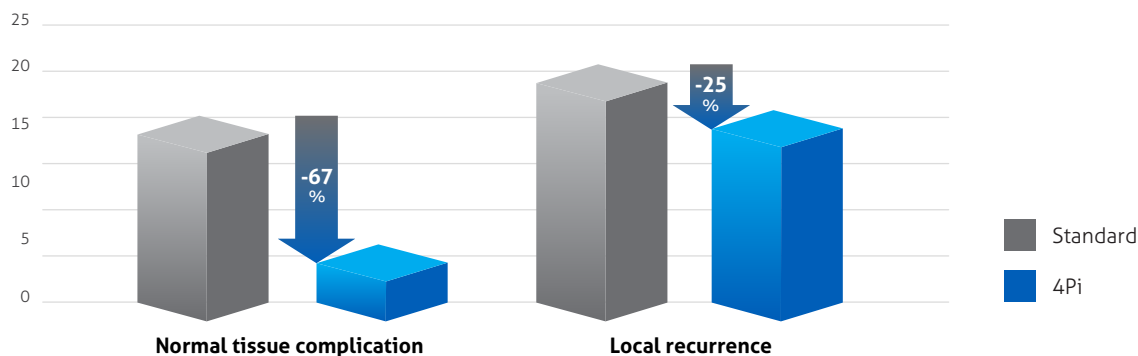
A five-center planning study recently showed improved assessment of deliverability using MapRT¹.

	# Fields assessed	Correct responses without MapRT	Correct responses with MapRT
Non-Deliverable	66	89%	97%*
Deliverable	284	64%	88%**

* Respondent comment on incorrect responses: the therapist will make small adjustments in the treatment room to make the gantry clear

** Respondent comment on incorrect responses: some fields were deliverable but considered too uncomfortable due to the machine proximity to patient face.

Calculated Outcome Probabilities



*"4Pi plans may allow dose escalation with significant and consistent improvements in critical organ sparing, tumor control, and coverage."*²

MapRT prototypes are being evaluated in clinical settings.

1. Surface guided clearance mapping; see more, do more and achieve more. SGRT Community USA 2022.
2. Rwigema JC, Nguyen D, Heron DE, Chen AM, Lee P, Wang PC, Vargo JA, Low DA, Huq MS, Tenn S, Steinberg ML, Kupelian P, Sheng K. 4π noncoplanar stereotactic body radiation therapy for head-and-neck cancer: potential to improve tumor control and late toxicity. Int J Radiat Oncol Biol Phys. 2015 Feb 1;91(2):401-9. doi: 10.1016/j.ijrobp.2014.09.043. Epub 2014 Dec 5. PMID: 25482301.

SGRT FOR MOTION MANAGEMENT

alignrt®

The market-leading SGRT system for tracking a patient's position before and during radiation therapy, to help ensure a streamlined workflow for accurate treatment delivery.



The most rigorous of the ESTRO-ACROP/AAPM-TG302 SGRT guidelines for SRS require a tracking accuracy of $\leq 0.5\text{mm}$ / $\leq 0.5^\circ$ in phantoms, including potential camera occlusions. AlignRT delivers a tracking accuracy of $\leq 0.5\text{mm}$ / $\leq 0.2^\circ$ at all couch and gantry angles. AlignRT's accuracy is not affected by skin tone.



alignrt® *InBore™*

For Halcyon® and Ethos™ linacs. +50 systems in routine, regulatory cleared, clinical use for DIBH, pelvis, abdomen, thorax / lung, right breast

Postural Video™

Gain clear positional guidance from multiple angles during setup and monitoring.



SGRT FOR BEAM VISUALIZATION

dosert™
Powered by BeamSite®

Visualize Dose Delivery & Monitor Patient Positioning in Real Time

DoseRT is a treatment verification tool that provides real time in vivo images of dose delivery while monitoring patient positioning to ensure treatment quality.

DoseRT brings together Cherenkov imaging with AlignRT and Horizon cameras.



What is Cherenkov Imaging?

During radiation therapy, Cherenkov light is emitted from the patient's skin where the radiation beam enters or exits the body.

Cherenkov Imaging uses highly sensitive cameras, synchronized with both the linac and SGRT, to visualize this light from the patient's skin.

Beam Visualization

Can help prevent treatment errors in real time.

Published data suggests approximately **10%** of patients received sub-optimal treatment that can be detected by Cherenkov imaging.¹

- **Stray Radiation to the Contralateral Breast**
Clinical evidence suggests that **2.6%** of breast cancer patients had secondary contralateral cancer attributable to radiation.²
- **Bolus Misplacement**
Currently no real-time verification tool exists.
- **Radiation to unintended areas**
Due to treatment plan errors, exit dose radiation, or patient positioning.

Beam Visualization + SGRT

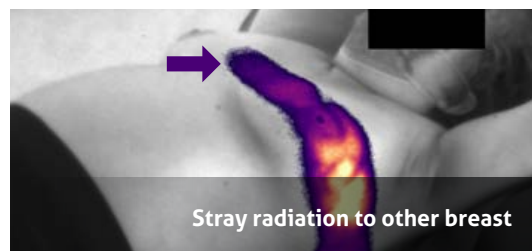
Can help improve treatment quality.

21% of Preventable Reported Events could be prevented with SGRT.³

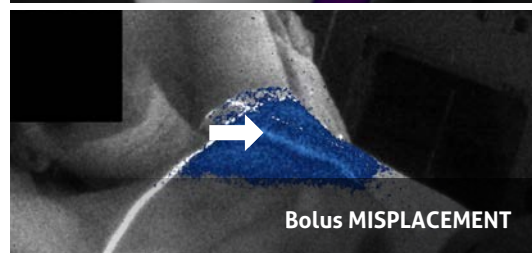
- **43%** due to wrong isocenter
- **34%** due to wrong accessory

Cherenkov imaging is currently in clinical use.

It has been clinically tested on breast, lung, head and neck, and SRS.



Stray radiation to other breast



Bolus MISPLACEMENT



UNPLANNED exit dose to chin

DoseRT not currently available for sale in the US. SimRT, MapRT, AlignRT and DoseRT are Trademarks of Vision RT. BeamSite is a trademark of DoseOptics LLC.

1. Jarvis LA et al. Initial Clinical Experience of Cherenkov Imaging in External Beam Radiation Therapy Identifies Opportunities to Improve Treatment Delivery. Int J Radiat Oncol Biol Phys. 2021 Apr 1;109(5):1627-1637
2. Burt, Lindsay M.; Ying, Jian; Poppe, Matthew M.; Suneja, Gita; Gaffney, David K. (2017): Risk of secondary malignancies after radiation therapy for breast cancer: Comprehensive results. In Breast (Edinburgh, Scotland) 35, pp. 122-129. DOI: 10.1016/j.breast.2017.07.004.
3. Hania Al-Hallaq et al. The role of surface-guided radiation therapy improving patient safety. Radiotherapy and Oncology. 2021 August 26; 163(2021) 229-236.

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