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Radiation Oncology

RTdrive

MR Prostate

Driving speed and consistency from imaging to plan

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You and your patients demand pinpoint precision, high clinical quality and consistency across the radiation treatment planning process. At the same time, you need to use your time and resources as efficiently as possible, to deliver the best possible patient care. Philips RTdrive MR Prostate is designed to accelerate and simplify radiation treatment planning workflows. As a result, you can perform repetitive tasks faster, freeing you up for more focused, meaningful work.
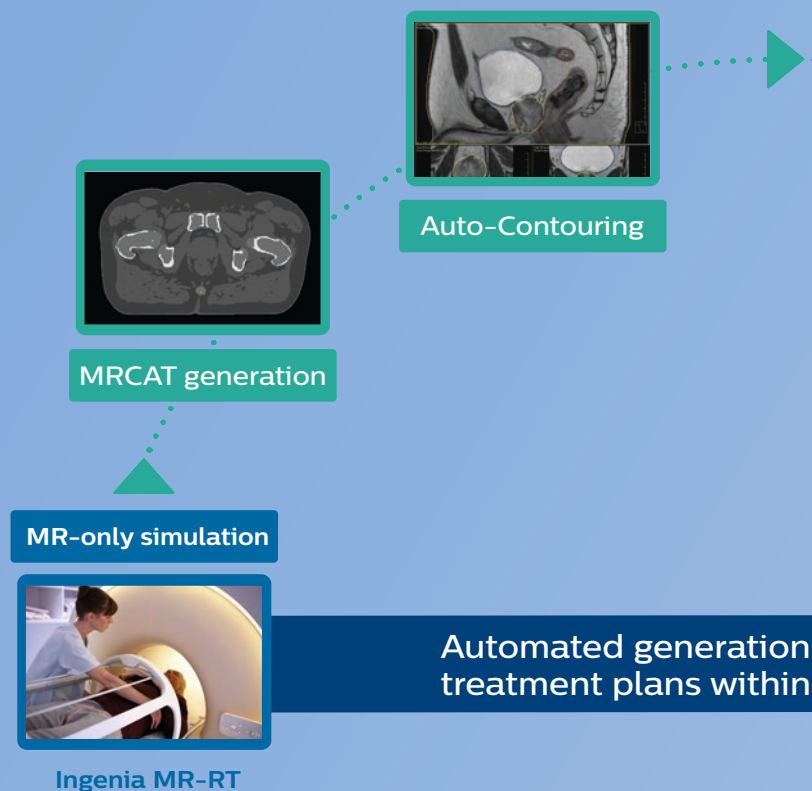
RTdrive combines multiple elements including the Ingenia MR-RT platform, MR-only simulation, Auto-Contouring and Pinnacle[3] Auto-Planning, and allows you to generate high-quality treatment plans for prostate with fewer manual steps. Thanks to intelligent automation you can create plans within 25 minutes[1] with minimal user input, saving valuable time and effort.

This holistic approach speeds time from imaging to treatment plan availability and increases consistency across the treatment planning process – helping you reduce variability, speed time to treatment, and extend the reach of your resources.

[1] Tested in a non-clinical environment with single Pinnacle user and a 5-beam IMRT plan. Excluding time for optional manual adjustments

Intelligent automation across your wor

Growing caseloads, higher patient throughputs, and increasing pressure on resources mean driving efficiency is a challenge in today's healthcare environments. The more time you can save on repetitive routine tasks, the more time you have for patients and to focus on value-added activities.

Auto-Contouring

MRCAT generation

MR-only simulation

Automated generation
treatment plans within

Ingenia MR-RT

* Tested in a non-clinical environment with single Pinnacle user and a 5-beam IMRT plan. Excluding time for optional manual adjustments.
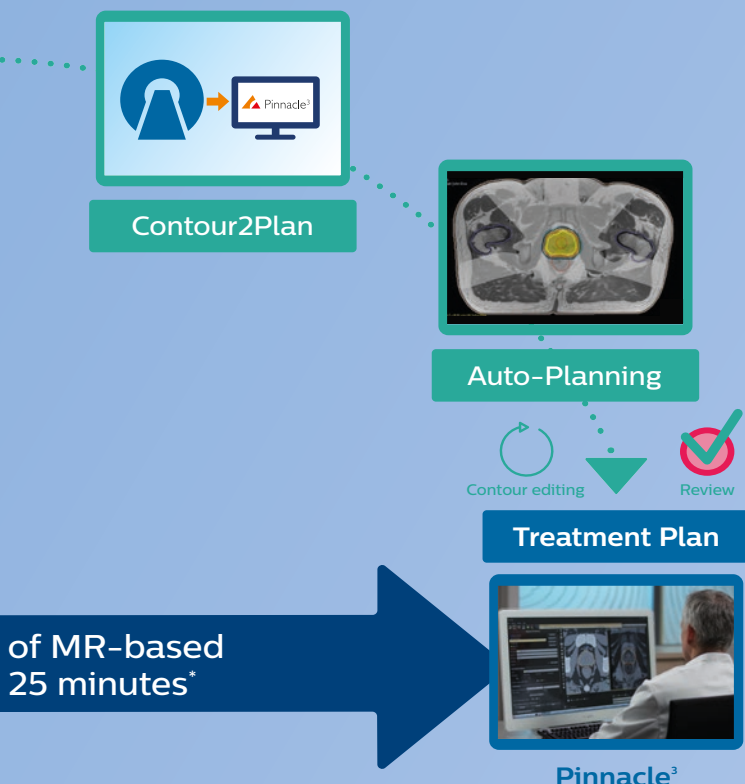
Ingenia MR-RT
Ingenia MR-RT is a dedicated MR simulation platform that provides high-quality, high-contrast MR images acquired in the treatment position. This helps clinicians benefit from MRI's excellent soft-tissue contrast for visualization of targets and critical structures and supports confident delineation. Designed for the needs of radiation oncology, this comprehensive solution offers the tools and software to work with the precision and versatility you demand.

MR-only simulation
Innovative MR-only simulation helps you rely on MRI as the primary imaging modality for planning your prostate cancer patients' treatment. Available as a plug-in extension to the Ingenia MR-RT platform, MR- only sim provides the high-contrast anatomical MR images you can trust for target delineation. In addition, it delivers MRCAT (MR for Calculating Attenuation) images with CT-like density information for dose calculations, without the need for CT.

RTdrive combines a number of individual building blocks, covering the entire workflow from imaging to planning. Together, they can help you streamline and automate workflows, while remaining firmly in the driver's seat.

1. **Ingenia MR-RT** platform, for high image quality, precision and versatility

2. **MR-only simulation (MRCAT)** of the prostate, for the provision of density information

3. **Auto-Contouring** for Prostate, for automatic generation of contours of the prostate and organs at risk based on dedicated MR sequences

4. **Contour2Plan**, for automatically setting parameters for initiating Auto-Planning

5. **Pinnacle³** 16 with Auto-Planning, for generating high-quality plans quickly with limited manual input

Contour2Plan

Auto-Planning

Contour editing   Review

Treatment Plan

of MR-based
25 minutes*
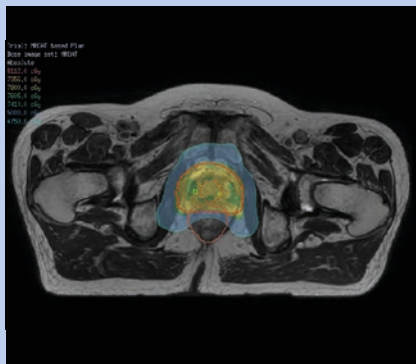
Pinnacle³

Pinnacle³ 16

Pinnacle³ Auto-Planning generates high-quality IMRT or VMAT plans on the first pass with limited user intervention. Auto-Planning reduces extensive manual data entry to just a few clicks, while enhancing plan consistency and quality.

Enhance target contouring with MRI's excellent soft-tissue contrast

Target delineation is one of the most critical steps in the radiotherapy chain. MRI offers superior soft-tissue contrast compared to CT, supporting greater target contouring accuracy, while aiding the visualization of organs–at–risk targets and organs. CT–based delineation often overestimates the prostate volume as compared to MRI, and multiple studies have shown that MR imaging can reduce the volume of contoured prostate by around 30%[II].
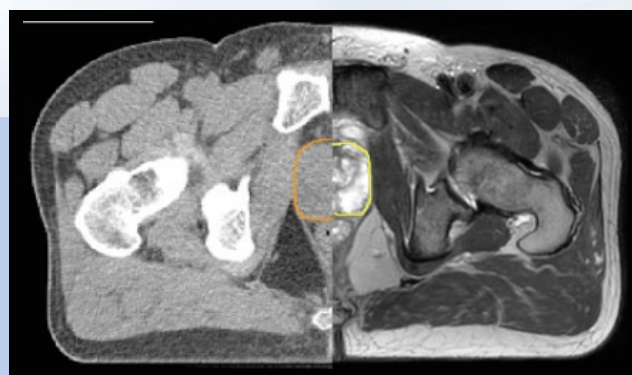
CT   MRI

Driving clinical quality
and consistency

Enhancing clinical quality and consistency across your treatment planning, generating accurate plans, and providing excellent patient care are among your top priorities. RTdrive responds to all these needs, by making the entire process – from imaging to plan delivery – reproducible and consistent. This means you can deliver high-quality radiation treatment plans tailored to each case. This automated, end-to-end approach means you have more time to focus on complex cases and activities that make a real difference to your patients' experience.

Increase consistency for greater confidence
By automating the prostate contouring process, RTdrive reduces variability and errors caused by manual steps, and improves consistency – for more confidence in the planning process and enhanced plan quality

Gain accurate* and consistent MR-based contouring
MR-based Auto-Contouring automatically provides contours of the prostate and organs at risk using dedicated MR imaging data based on T2W TSE and T1W mDIXON XD sequences and model-based algorithms. AutoContouring delineation of prostate organs at risk (OARs) has been found accurate (average distance < 1.5mm)* in at least 70% of contours evaluated**. This significantly reduces the need for manual contouring or manual adaptations, while increasing consistency.
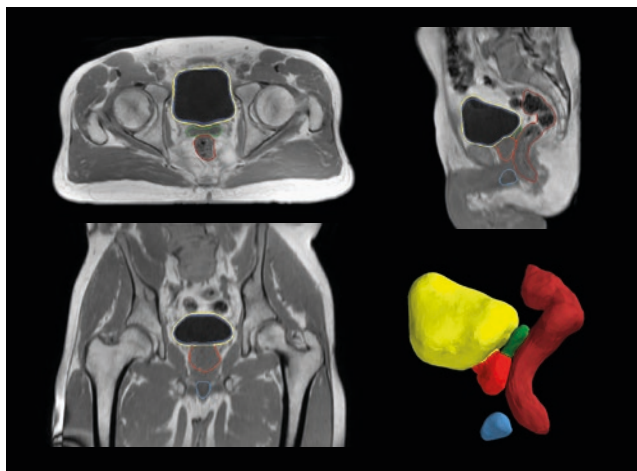
Generate treatment plans in line with your patients' needs
Based on the Pinnacle[3] treatment planning environment, RTdrive lets you generate high-quality treatment plans for a wide range of treatment deliveries in conventional radiotherapy, for IMRT and VMAT. This gives you the flexibility to select the appropriate treatment option for every patient.
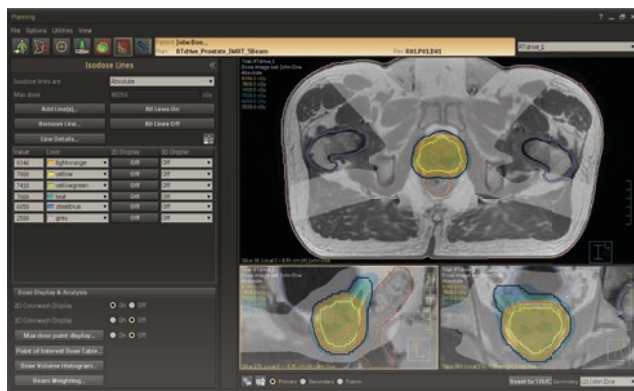
‖   Rasch et al. IJROBP, 43(1):57–66, 1999. Hentschel et al. Strahlenther Onkol,187(3):183–90, 2011. Tanaka et al. Radiat Res., 52(6):782–8, 2011
*   Accurate means 95% percentile modified Hausdorff distance <5mm compared to contours made by experts manually. Average distance is measured as average modified Hausdorff distance compared to contours made by experts manually.
** Based on 49 cases (each for bladder, rectum, penile bulb and femur heads).

Simplifying workflows
and speeding time to treatment

Treatment planning can be a time-consuming process comprising a number of individual stand-alone stages. By combining the multiple steps involved, RTdrive helps simplify and automate the radiation treatment planning workflow for prostate. It facilitates smooth transitions between stages and reduces the number of handovers.

Obtain a high-quality plan within 25 minutes[IV]
RTdrive streamlines and accelerates the workflow, letting you create a personalized treatment plan for your patient within 25 minutes from the start of MR simulation[IV]. Because RTdrive covers the entire planning process from imaging to plan, it limits the number of handovers between touchpoints. This reduces the scope for error and speeds time to treatment - for fast, efficient delivery of the best possible treatment plan for your patient.

Prepare for 1-click planning[V]
RTdrive is designed to support 1-click workflows[V] that cover the entire process from MR-only simulation to generation of a treatment plan with Pinnacle[3] Auto-Planning. RT drives lets you work in an automated way, while keeping you in the driver's seat. As a result, you benefit from automated workflows while still being able to define your own preferences and quality standards.

Reduce imaging modalities to one
Since RTdrive MR Prostate requires input from MR images only, there is no need for CT simulation. A dedicated imaging protocol provides both the anatomical data for contouring and density information for dose calculations. This reduces organization and coordination of scans, eliminates the effort involved in MR-CT registration, and saves the patient from undergoing multiple procedures.

Create contours with little to no user interaction
MR-based Auto-Contouring automatically creates contours of prostate and organs at risk in a few minutes, reducing repetitive tasks and time spent compared to manual methods. And, since the contouring process runs in parallel to image acquisition on the MR console, there is no disruption to the scanning schedule.

[IV] Tested in a non-clinical environment with single Pinnacle user and a 5-beam IMRT plan. Excluding time for optional manual adjustments.
[V] 1-click is possible when automated contours are acceptable without modification.

Review and edit contours in line with your specific requirements

While RTdrive automates standard, labor-intensive and repetitive tasks, it still allows you and your teams to review and edit contour parameters prior to approval and before you start Auto-Planning. In addition, color coding and contour labelling are user-defined from the start, so you can work in a way that suits your requirements and preferences.
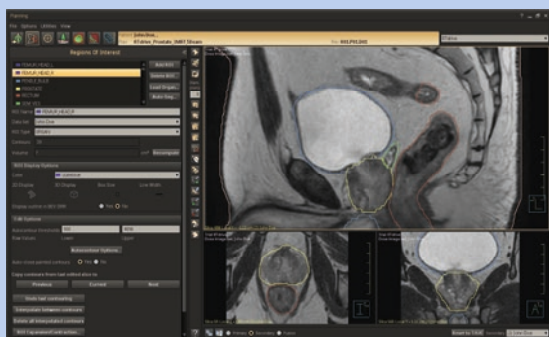
Connect and standardize your processes

Contour2Plan is a bridge between the MR console and Pinnacle3. By exporting images, contours and scripts to launch Auto-Planning it replaces repetitive and error-prone manual activities, saving you valuable time and helping you to standardize processes. The efficient, automated import of MRCAT data as a primary image dataset and direct export of contouring parameters to Pinnacle[3], for example, free up time that you can meaningfully invest in planning more complex cases.
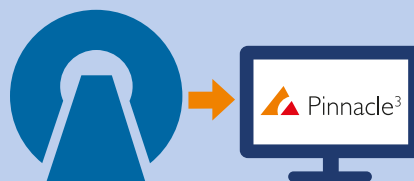
Extending the reach
of your resources

How to make efficient use of valuable resources is a prevalent question across the entire healthcare landscape. With mounting pressure on time and budgets, extending the reach of your capabilities and designing your treatment planning around your and your patients' demands are key considerations. By offering modular configuration options, Philips RTdrive lets you decide how best to use your resources, selecting the building blocks that suit your department's needs.

Choose a configuration that works for you
With RTdrive, you can opt to export imaging data with Auto-Contours to Pinnacle[3] Professional or SmartEnterprise platforms for a connected workflow. Moreover, the DICOM conformance of the image datasets and structures facilitates communication of image and plan information to other treatment planning systems of your choice. This helps you to remain flexible, while benefitting from the efficiency MR-based Auto-Contouring brings.
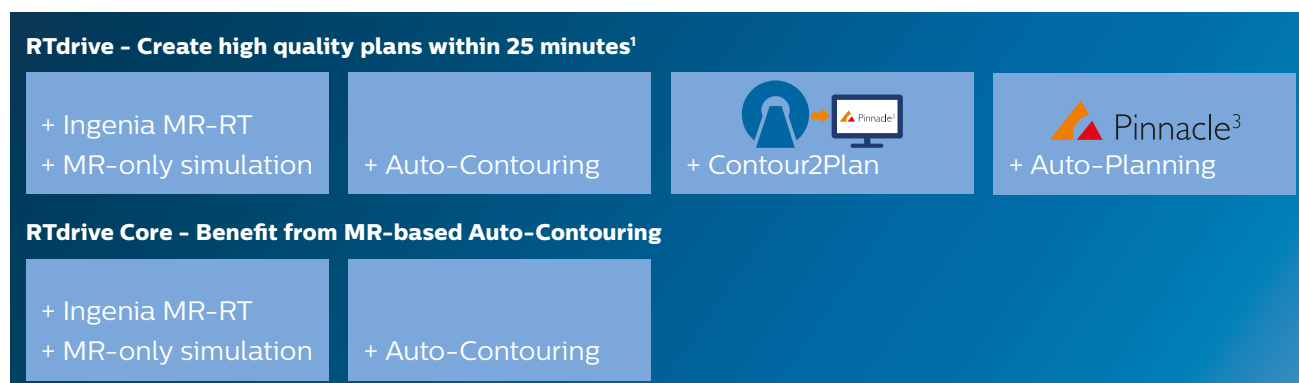
Learn how to make the most from your solution
Philips offers a range of education and training offerings tailored to your department and staff needs. Through these, you can learn how to fully embrace RTdrive as a time-saving, efficiency-driving tool. We show you how the solution can streamline your RT planning workflows, leaving you with more time for more focused, meaningful tasks.

Stay current and up to speed
The Philips Ingenia platform is powered by RTgo, a plug-and-play software environment that helps you keep pace with the latest MR-RT developments. You benefit from easy access to updates and short installation times that bring your Ingenia MR-RT platform with RTdrive up to the latest level. This simple approach to maintaining your system at the latest standard means you can invest your IT resources elsewhere.

RTdrive MR Prostate configurations

RTdrive – Create high quality plans within 25 minutes[1]

+ Ingenia MR-RT + MR-only simulation	+ Auto-Contouring	+ Contour2Plan	Pinnacle[3] + Auto-Planning

RTdrive Core – Benefit from MR-based Auto-Contouring

+ Ingenia MR-RT + MR-only simulation	+ Auto-Contouring

[1] Tested in a non-clinical environment with single Pinnacle user and a 5-beam IMRT plan. Excluding time for optional manual adjustments.

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