OptiBol

STARTER GUIDE

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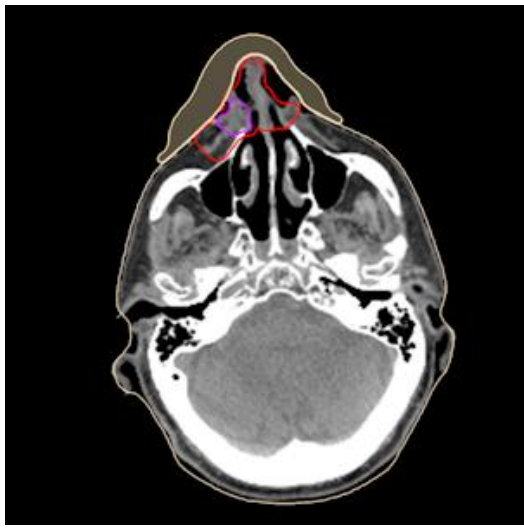
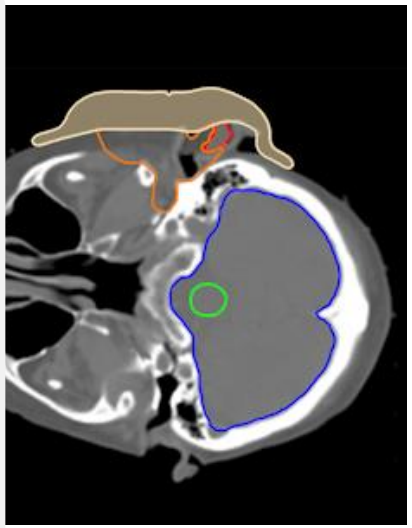
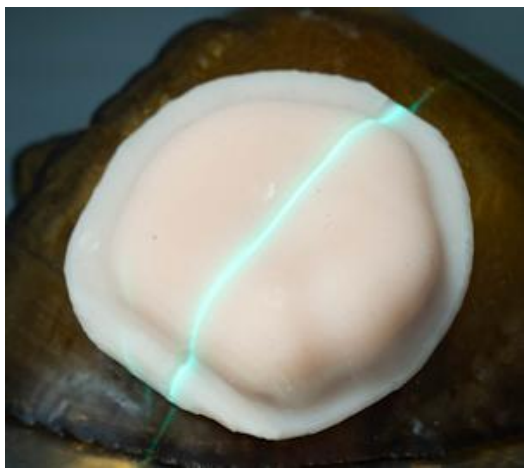






(1.1) INTRODUCTION AND RESOURCES

Introduction

- OptiBol is a bolus design option that you can use instead of, or in addition to, conventional TPS-based custom bolus design
- OptiBol highlights
  - **Automated bolus design** using target-based approach rather than conventional uniform-thickness bolus
  - **Variable-thickness** with user-defined buildup material created wherever needed, based on the target and external structures
  - With advanced features such as **alignment guides** and **user-defined outer margins** that can be "designed in" to each patient-specific bolus

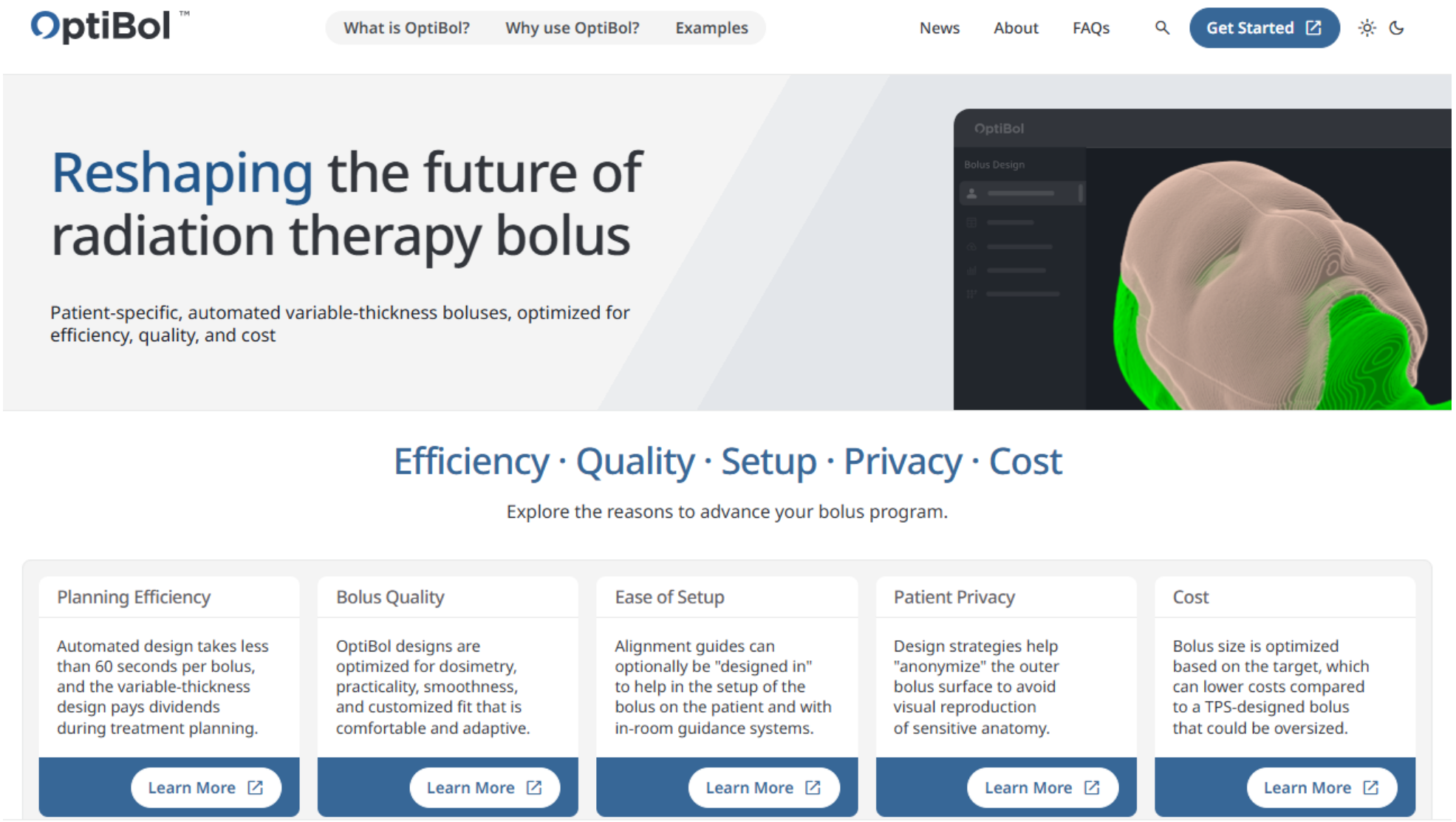
Purpose of this Document

- This document is a simple starter guide meant to ***supplement*** the general **FlexiBol Starter Guide** document.
- Please read that FlexiBol Starter Guide before (or in addition to) this supplemental document.

OptiBol Website

- For in-depth information, please see the dedicated OptiBol website.
- This website has comprehensive information, examples, and frequently asked questions (FAQs) about OptiBol.
- The OptiBol website is found here: https://optibol.com

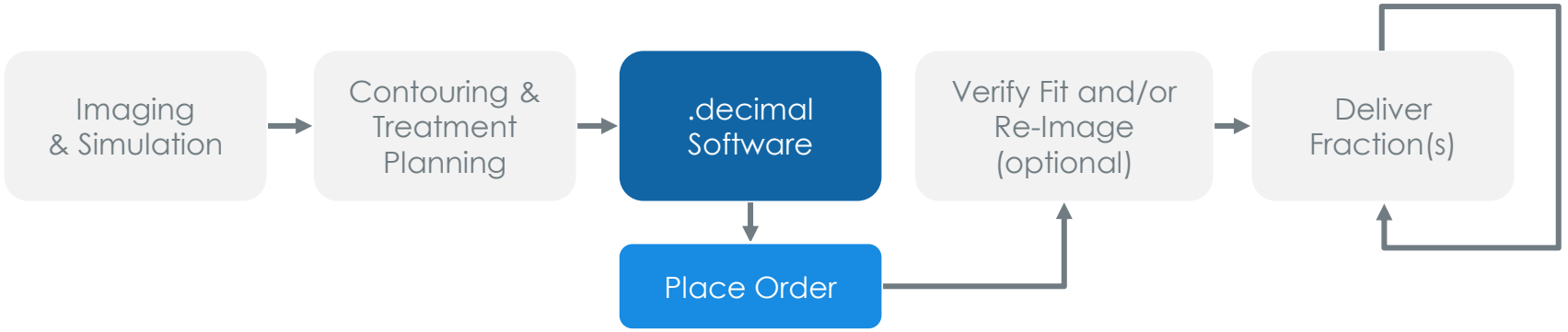
(1.3) RESOURCES: OPTIBOL.COM



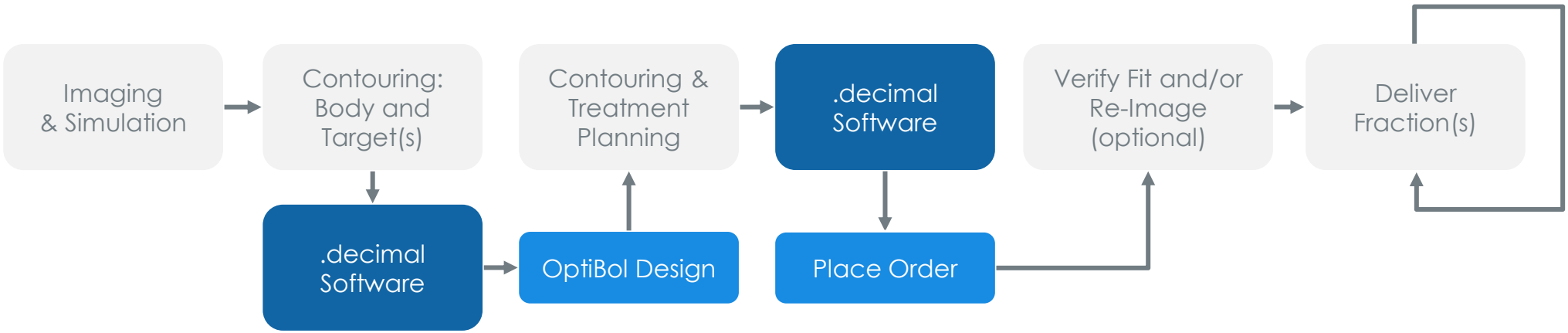
(2.1) Overview of Workflow: Comparison

WORKFLOW: CONVENTIONAL CUSTOM BOLUS (e.g., uniform-thickness)

- Conventional user-defined custom boluses are usually designed by the TPS (e.g., as uniform-thickness bolus around a above/adjacent a target) and/or edited/drawn by the user.

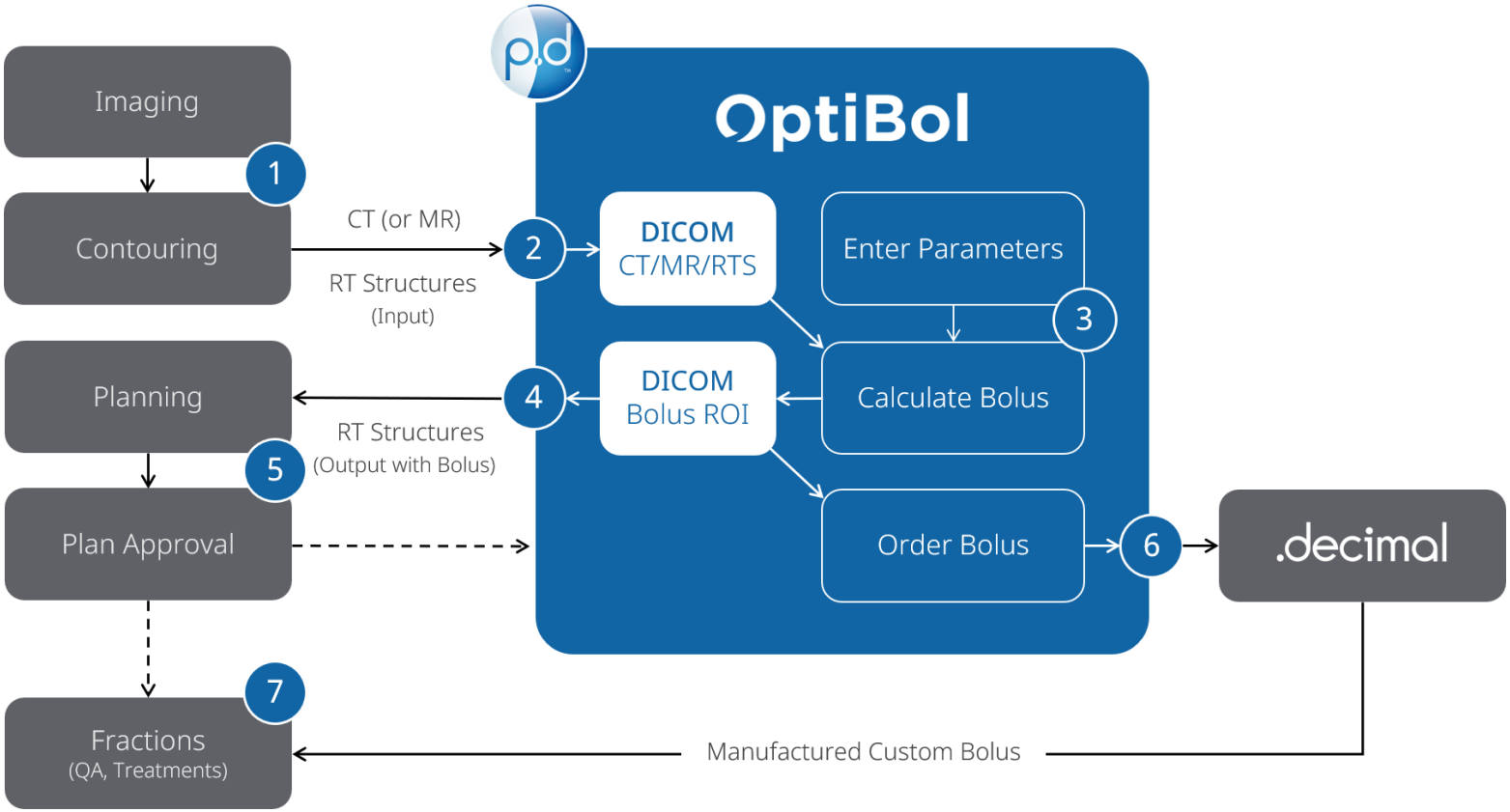


WORKFLOW: OPTIBOL (automated, target-based, variable-thickness design)



(2.2) Overview of Workflow: OptiBol

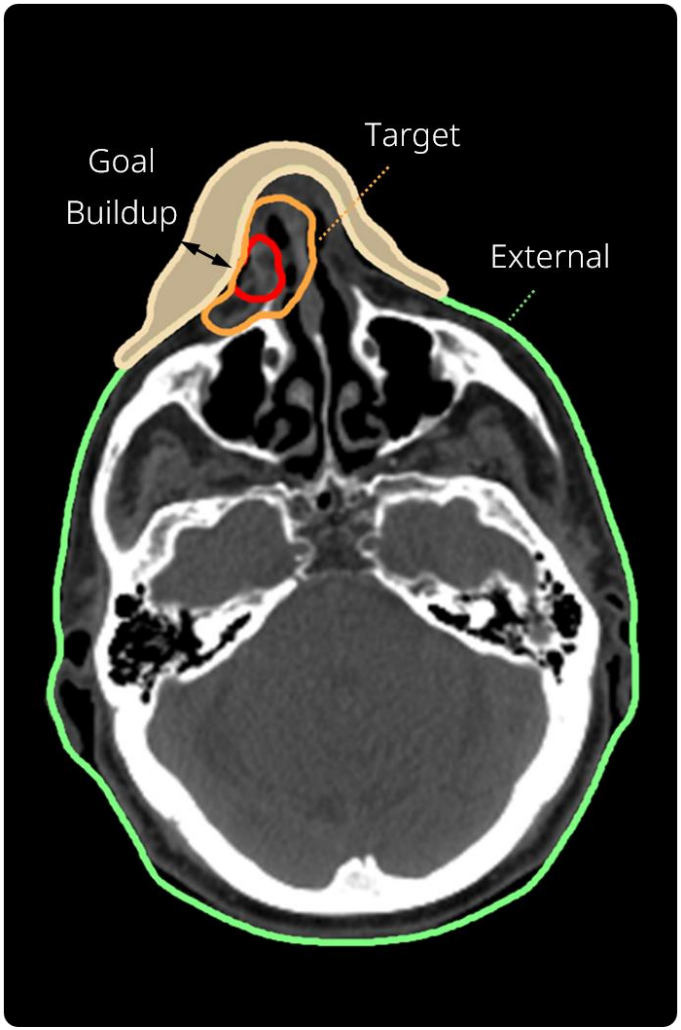
- The main steps are (1) image and contour, (2) import to p.d, (3) create OptiBol, (4) export to TPS, (5) treatment planning, (6) order bolus, and (7) perform QA and start treatments
- Refer to the OptiBol Software Walkthrough guide for step-by-step instructions

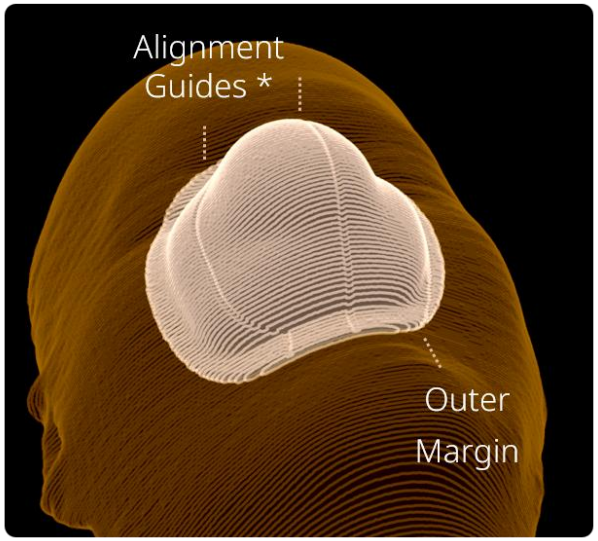


(3.1) Summary of Design Parameters

- **Design Parameters**
  - Target ROI
  - External ROI
  - Goal Buildup (mm)
  - Outer Margin (mm)
  - Alignment Guides
    - Style
    - Plane Locations *

* Optional





* Sagittal and coronal plane locations can be set either manually or at predefined locations stored in a "points of interest" (POI) in the input DICOM RT Structure Set file.

(3.2) SUMMARY OF DESIGN PARAMETERS

Parameter	Description
Target (Structure)	Select the **target structure** from the list derived from your input RT Structure Set
Patient Body (Structure)	Select the **body (external) structure** from the list derived from your input RT Structure Set
Goal Buildup Distance (mm)	Enter the goal buildup distance (mm) based on your intended beam energy and treatment goals, e.g., 15 mm for a 6 MV beam will ensure buildup near the Dmax depth. The OptiBol design algorithm will ensure that > 95% of the shallow target voxels will (once the bolus is placed) have a minimum depth inside the patient body of > 0.95 the entered goal buildup.
Lateral (Outside) Margin (mm)	Enter the size of the lateral (outside) margin you want designed around the required dosimetric buildup region. This margined region will have a nominal thickness of about 3 mm. NOTE: You can enter zero if you do not want an outer margin.
Alignment Guide Parameters (optional)	(See next page.)

(3.3) SUMMARY OF DESIGN PARAMETERS (CONT.)

Parameter	Description
Alignment Guide Size (optional)	Alignment guide size options are as follows: ▪ **None** (no alignment guides) ▪ **Small** (~1 mm radius) ▪ **Medium** (~1.5 mm radius) ▪ **Large** (~2 mm radius).
Alignment Guide **Coronal Plane Position** (mm)	Enter the coordinate position (mm) of a coronal plane at which you want to design alignment guides. These guides will be designed as small grooves that will appear as straight lines when viewed from the patient's side at the level of the coronal plane (i.e., from left or right for a supine patient).
Alignment Guide **Sagittal Plane Position** (mm)	Enter the coordinate position (mm) of a sagittal plane at which you want to design an alignment guide. This guide will be designed as a small groove that will appear as a straight line when viewed from above (i.e., from the anterior for a supine patient).

NOTE: Sagittal and coronal plane locations can be set either manually or at predefined locations stored as "points of interests" (POI) in the input DICOM RT Structure Set file.

(4.1) OptiBol Design Tips: Body Contours

GOOD PRACTICES FOR BODY CONTOURS

✓

Create accurate body contours.

The external (body) contours will be used directly to design the inner surface (i.e., patient-side) of the OptiBol.

Make sure the body contours are defined accurately to capture the exterior side of the patient that will be custom fit to the OptiBol inner surface.

NOTE: The OptiBol design will do some small-scale, micro-smoothing of the inner (patient-side) bolus surface, so very "roughness" (e.g., pixelation) of body contours will be corrected somewhat in the output bolus contours.

✓

Review your body contours with respect to any nearby immobilization devices or materials.

Pay special attention to immobilization devices and any other materials on or near the body surface in the regions of the targets where bolus material might be added.

If those devices or materials will be there during treatment and adjacent the patient skin, you will need to capture that in a body contour to be used in bolus design.

✓

General rule of thumb: your "body" contour will determine the patient-side bolus surface.

The inner (patient-side) surface of the OptiBol will be custom fit to your body contour, while the overall shape and outer (outside) surface of the bolus will be created based on achieving the desired buildup to the underlying target as it relates to the body and any external beam geometry.

(4.2) OptiBol Design Tips: Target Volumes

GOOD PRACTICES FOR TARGET CONTOUR(S)

✓

The target volume(s) requiring a bolus (i.e., with shallow regions or on/near the patient skin) will need to be contoured as an input to OptiBol design.

OptiBol design is target-based, so whichever target(s) you will be treating that have shallow portions requiring a bolus will need to be contoured prior to OptiBol design.

NOTE: If you have multiple targets and some are not shallow, i.e., will not require a bolus, you will not need those completed to design your OptiBol.

✓

In cases where you have multiple shallow targets, create a bolus design region-of-interest (ROI) that is the union of those targets.

OptiBol design will ask you for a single structure ROI as a design parameter. If you have multiple targets that are shallow / needing bolus, then you will need a union (e.g., PTV Union) as a separate ROI to be used for bolus design.

✓

If you want additional bolus material beyond the region of your underlying targets …

If you have special cases where you want additional bolus material on the patient where it is not needed dosimetrically (e.g., at distance from the target), but that may be an advantage in terms of bolus fit or placement, you can create a special "bolus design ROI" that is your real target(s) plus added regions where you want the extra bolus.

Obviously, a special ROI like this would be for bolus design purposes only; it is not your actual target volume.

(4.3) OptiBol Design Tips: Other Contours

OTHER NOTES ABOUT CONTOURING (OARs, ETC.)

INFO

You will NOT need organ-at-risk (OAR) contours in order to design an OptiBol.

OptiBol will create a bolus shape that is a custom fit to the outside the patient with a shape designed to achieve the user-defined buildup distance to the underlying target(s).

Therefore, the only input regions-of-interest (ROIs) you need at the time of OptiBol design are the body contour and the target volume(s).

NOTE: If you already have the OARs in progress (or even completed) at the time of bolus design, that's fine, but you will not need them for the actual bolus design.

INFO

(Option) Adding just the OptiBol structure(s) to a full structure set in your TPS

The OptiBol bolus design will be transferred to your treatment planning system (TPS) in the form of axial contours in a DICOM RT Structure Set.

The .decimal software allows you to export (1) the bolus design only, (2) all original structures + bolus, or (3) all original structures + bolus + bolus/body union.

Therefore, it is possible to just import just the bolus structure(s) (see option #1, above), then merge with the full structure set you're managing in your TPS, if you prefer.

This option is mentioned here in case you were doing additional contouring (e.g., OARs) in parallel to designing your bolus, which only required your body and target structures.

(4.4) OptiBol Design Tips: Importing Bolus

GOOD PRACTICES FOR IMPORTING OPTIBOL BOLUS STRUCTURES

✓

Ensure you assign the bolus relative electron density when you import the bolus structure.

Assign the correct relative electron density for the bolus ROI once imported to your TPS.

Silicone OptiBols are made of the identical materials as FlexiBols, so the density is ~1.025 relative to water.

✓

Depending on your TPS, you may need to ensure there is a new "External" structure that is the union of your body and bolus structures.

Some treatment planning systems require that all materials to be considered in the dose calc (even if not part of the patient body) need to be enclosed in a structure tagged as the "External" structure.

If this is the case for your TPS, you can either (1) do the union of the bolus and body structures in your TPS or (2) you can use the union structure exported by the p.d software that represents the "body + bolus" structure.