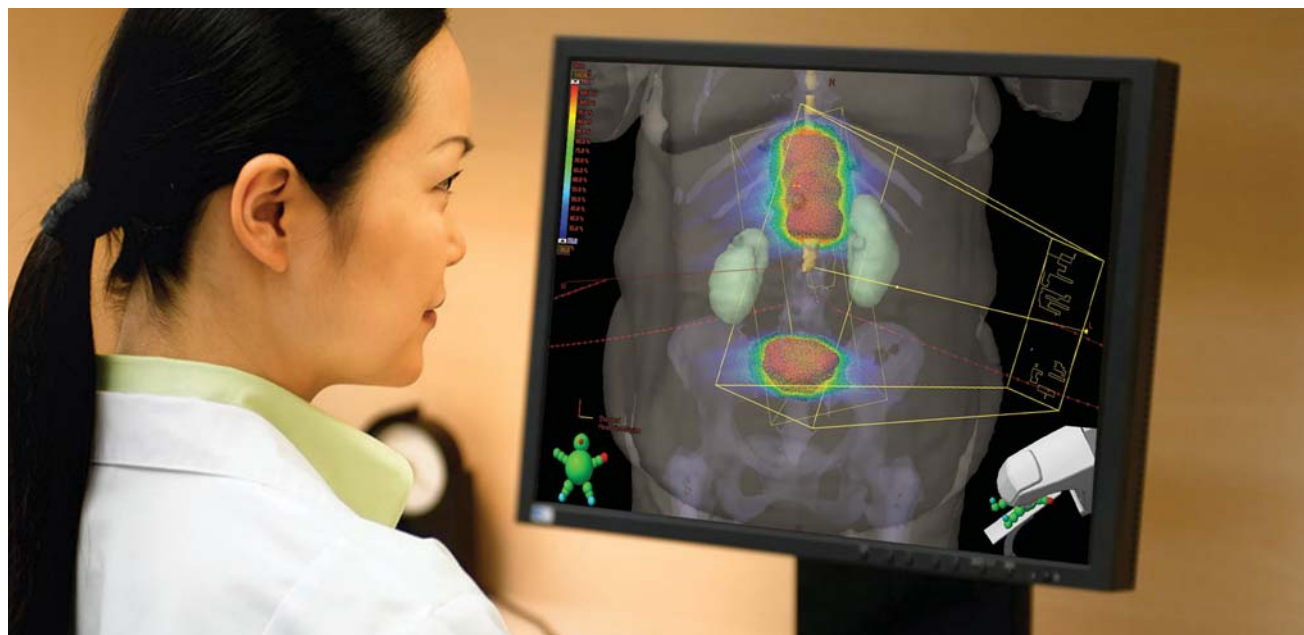


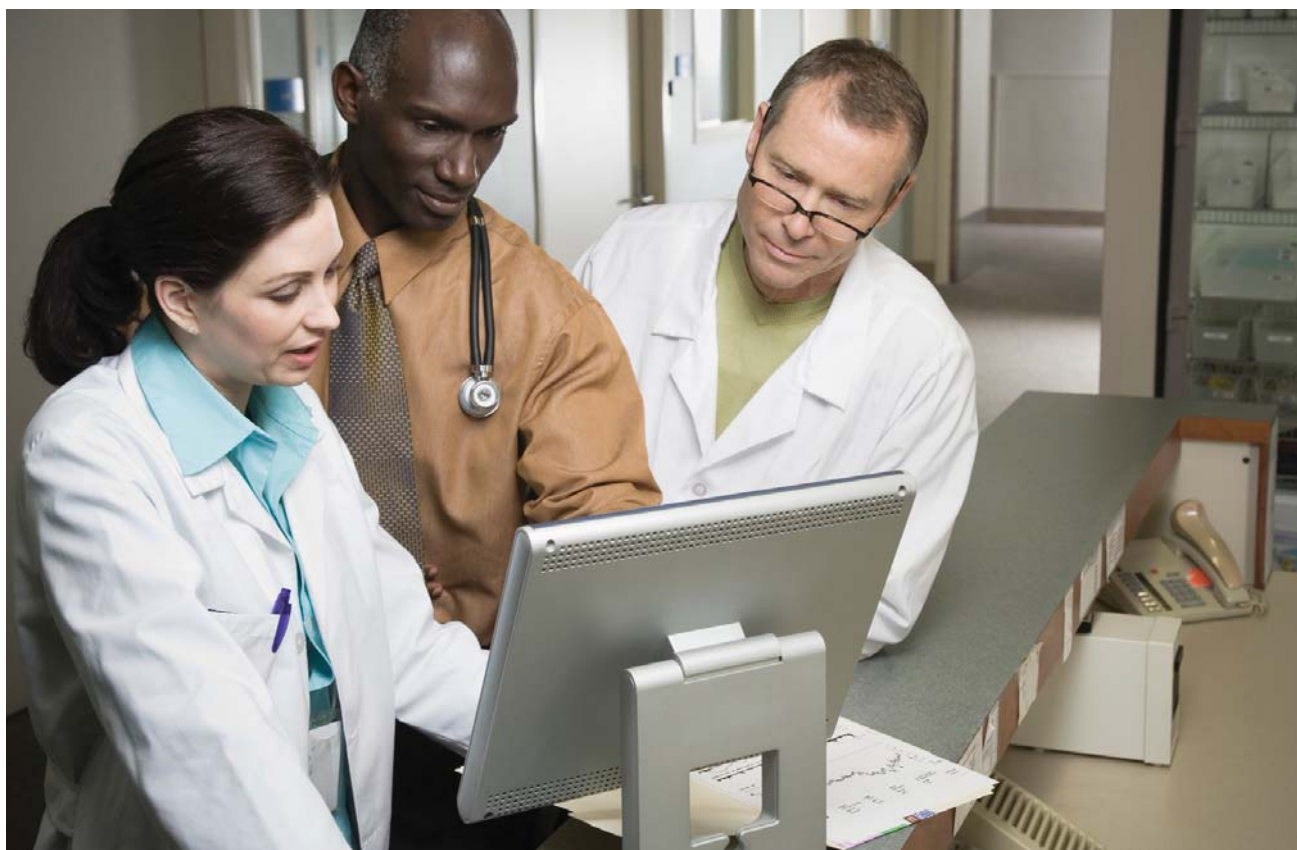
## Eclipse Treatment Planning System

### New Features and Enhancements for 2010



FEATURE	FUNCTION	BENEFIT	
<b>Registration</b>	Multimodality image registration and segmentation	Increased planning versatility, PET contouring, and enhanced target volume delineation	Included
<b>Portal Dosimetry for RapidArc® Radiotherapy Technology</b>	Pre-treatment verification of RapidArc plans	Ability to split RapidArc treatment fields into verification sub-arcs	Included*
<b>Leaf Motion Calculator</b>	Tracking jaws based on MLC aperture	Reduced leakage, support of step-and-shoot and multiple static segment IMRT delivery	Included
<b>Proton Therapy</b>	New spot list editor; improved setup field handling; room's eye view imaging; improved beam line editor	Custom designed modulated scanning	Included
<b>RapidArc Radiotherapy Technology</b>	Intuitive arc beam geometry tool, progressive resolution algorithm, and simple collision detection	Faster treatment field setup, reduced optimization time, and efficient motion calculation	Purchasable option
<b>Smart Segmentation® Automatic Contouring Utility</b>	Fully automatic segmentation	Improved contouring efficiency and consistency	Purchasable option
<b>SmartAdapt</b>	Deformable registration; toolset for tracking and adapting to interfractional changes during treatment	Quickly visualize and address differences between the planning CT and CBCT images	Purchasable option
<b>Eclipse Application Programming Interface (API)</b>	Ability for clinicians to implement their own dose calculation and optimization algorithms within Eclipse	Increased planning flexibility	Purchasable option

\*Included if clinical site already has RapidArc and Portal Dosimetry licenses



## Registration

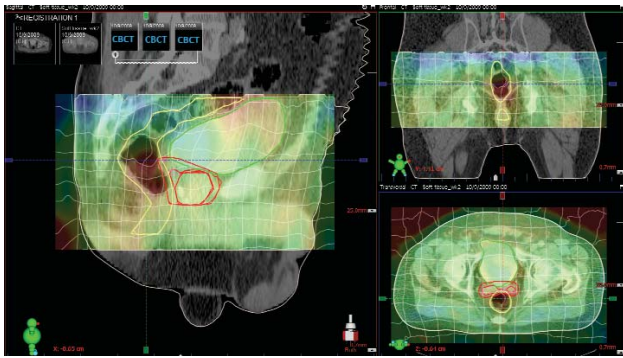
The Eclipse™ treatment planning system features an improved multimodality image registration and segmentation workspace for PET, CT, MR, as well as CBCT scans. A selection of several automatic rigid registration algorithms, including point-based matching, provides you with the flexibility to plan both simple and complex cases and allows integration of many aspects of morphology and function into the contouring process. Manual rigid registration, registration review, and approval are also included. PET and relative intensity-based contouring capabilities enable a variety of uses for biological imaging in radiation oncology.

## Smart Segmentation

The Smart Segmentation automatic contouring utility features enhanced segmentation of bony structures of the pelvis, the external head contour, and the thoracic spinal canal. The newly added segmentation of the seminal vesicles better addresses the need for prostate cancer patient segmentation and has the potential to positively influence the segmentation of other organs such as the rectum. To support optimal image-guided workflow and better patient positioning, gold markers segmentation has been introduced. Improved artifact correction, support of basic segmentation for different body positions, the option to customize the dimension of the segmented structures and other new features allow you to use this application for a wider range of patients. In addition, Smart Segmentation enables several segmentation services to be supported in a multi-site environment.

## SmartAdapt

The SmartAdapt toolset enables you to easily track and adapt to interfractional changes in anatomy in your patient throughout the treatment. Using the interactive deformable registration and segmentation tools, you can quickly visualize and address differences between the planning CT and CBCT images. You can automatically deform and propagate initial contours to match the current anatomy, and edit or fine tune the changes using a variety of 2D and 3D contour editing features. Sophisticated techniques such as blending, color mapping, difference rendering, and deformation-specific information allow a thorough review and approval of your registration results. A statistics tool allows tracking of relevant changes and provides you with crucial information for deciding about a potential reoptimization. Adapting treatments to meet your clinical goals and to improve patient outcomes can be made easier with SmartAdapt.



**Display of deformation grid and deformation distance information after deformable registration of two CT scans of a patient with prostate cancer.**

*Image courtesy of Dr. J. Wu, Duke University, Durham, NC*

## RapidArc enhancements

The next generation of RapidArc radiotherapy technology provides tools which simplify the set up of the RapidArc treatment field. The new intuitive arc Geometry Tool will suggest the number of arcs and isocenters based on target position and size, and improves efficiency during the planning process. New features, including the use of automatic normal tissue objective, mean dose objective, and intermediate dose calculation, will increase the quality of your treatment plans and make it possible to treat a wider range of tumor sites.

### Progressive-Resolution Optimizer Algorithm

The enhanced Progressive-Resolution Optimizer Algorithm (PRO) available in 2010 significantly reduces the optimization time for RapidArc treatment plans. To optimally achieve radiation goals and parameters given by radiation oncologists, the improved PRO uses calculated dose distribution done with AAA as a reference dose when restarting the optimization.

### Leaf Motion Calculator

The leaf motion calculator algorithm is available only for the TrueBeam™ system and is fully integrated in the Eclipse distributed calculation framework (DCF) to support both sliding window and multiple static segment IMRT delivery.

### Portal Dosimetry for RapidArc

Get more value out of your PortalVision™ MV imaging system and eliminate the need to purchase additional QA equipment just for RapidArc. The Eclipse treatment planning system provides tools which allow you to split your RapidArc treatment field into verification sub-arcs for detailed investigation of small arc segments. You can use Portal Dosimetry for RapidArc pre-treatment QA – giving you the same fast and efficient process, and the same high-resolution QA measurements for RapidArc.

# Eclipse Treatment Planning System



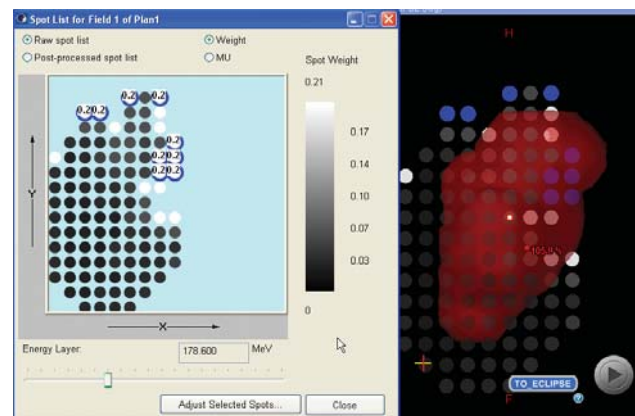
## Proton therapy

The Eclipse treatment planning system offers the next generation of proton therapy. Eclipse continues to support advanced proton delivery capabilities. Now you can tailor your proton treatments using the spot list editor. This new feature allows you to edit the spot list for custom designed modulated scanning.

The proton planning features are fully integrated with advanced hardware and software components, providing a range of configuration options specifically tailored to each site's clinical objectives.

### Key components include:

- Enhanced beam-line editing capability, including user specification of spread out Bragg peak (SOBP) and range
- Room-based imaging, including gantry pitch angles
- Enhanced setup field handling
- Beam spot editor for pencil-beam scanning



The spot list editor displays values and spots to be edited.

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