iPlan® RT Image
Advanced Contouring Workstation - Driving Physician Collaboration

The iPlan® Contouring Workstation offers unique and innovative capabilities for faster contouring and consistent segmentation outcomes. Using the automatic features and optimized workflow guidance, physicians are able to define anatomical objects and treatment volumes in just a few minutes. Objects are created with greater accuracy and consistency in comparison to manual “slice-by-slice” contouring, setting the foundation for better radiotherapy treatment planning.

With iPlan RT Image, pre-planning steps such as image fusion and definition of organs at risk are now fully automatic, saving time and increasing accuracy.

- Full DICOM RT connectivity enables the exchange of contours with existing dose treatment planning systems
- Optional remote treatment planning, anywhere, anytime, is possible when combined with iPlan® Net

Screenshots

Product Background

iPlan Automatic Image Fusion
With iPlan® RT Image, fully automatic image fusion merges all available anatomical information into one view - providing physicians with a complete overview and full confidence in defining targets in seconds.

- Automatic Image Fusion and display of multiple data sets including: CT, MR, fMRI, DTI, PET, Angio
- Seen as best in class image fusion
- “One-Click” fully automatic image fusion in 5 seconds
- Applicable for cranial, extracranial and H&N*
- Fast and proven “Mutual Information” algorithm
- Compensation of different slice distances and angular mis-alignments of modalities
- Combines multiple data sets for comprehensive target definition

For further information see:

Validation of a Method for Automatic Image Fusion (BrainLAB System) of CT Data and 11C-Methionine – PET Data for Stereotactic Radiotherapy Using a Linac: First Clinical Experience
iPlan Atlas-Based Automatic Segmentation

With the unique atlas-based Organ Segmentation, iPlan RT Image uses an advanced elastic fusion to automatically contour all required anatomical objects in less than 2 minutes with a single mouse-click. Automatic atlas segmentation is available for cranial, spine and prostate cases. BrainLAB will continue to lead in automatic segmentation with the release of the head & neck lymph level atlas, which includes over 45 objects.

- Innovative head and neck atlas includes RTOG and EORTC lymph node level guidelines*
- Includes Lymph Level 1-5
- Potential to save hours of contouring time with more consistent outcomes
- Faster contouring with unique, atlas-based Automatic Organ Segmentation

For further information see:

**Clinical Validation of Automated Prostate Segmentation in iPlan Image**

Charles Enke, M.D.; Timothy D. Solberg, Ph.D., Department of Radiation Oncology University of Nebraska Medical Center; Nebraska Medical Center Omaha, NE

*CT-based delineation of lymph node levels and related CTVs in the node-negative neck: DAHANCA, EORTC, GORTEC, NCIC, RTOG consensus guidelines*

V. Grégoire, P. Levendag et.al; Radiotherapy and Oncology 69 (2003) 227–236

iPlan RT 4-D CT Morphing

Advanced 4-D CT image handling module that allows the import of raw respiratory CT images for lung treatments. The user can then fuse, contour and enhance multiple data sets with automatically morphed target volumes

- Interactive movie demonstrates respiration cycle and movement of tumor for better dose coverage
- 4-D Morphing of contours mean less user interaction and automated target volume definition
- Offers the possibility to create more realistic GTV objects for more accurate treatment or gating
- It has been shown that 4D imaging helps to reduce the artifacts resulting from patient motion, thus leading not only to a more accurate delineation of target and critical structures as well as the potential for higher dosage.
iPlan Smart Contouring Tools
Including: Smart Brush® and Smart Shaper®

Smart Brush
The Smart Brush contouring wand provides easy automatic target delineation for even the most complex shaped structures. Selecting the contour in the first slice and the last slice, iPlan RT Image linearly interpolates the slices in between and provides a fast recreation of 3D volumes.

- Automatic interpolation and gray value detection
- Sensitive brush settings for fast contouring

Smart Shaper
The Smart Shaper elastic brush allows an added level of object manipulation that goes beyond anything else available in the market. This extremely unique tool elastically stretches and shrinks contoured objects in Axial, Coronal and Sagittal views at one time for the intelligent update of objects in 3-Dimensional space.

- Adjustable brush settings for any shape object
- Possibility to deform and move objects in 3D

FiberTracking and BOLD MRI Mapping
This unique combination of functional MRI imaging with DTI FiberTracking can lead to better protection of cortical function when set as risk organs.

- Offers image processing for motoric and speech functional areas for improved localization
- Functional areas convert to 3D structures for seamless integration into surgical navigation
- Completely unique in the market provides increased knowledge during target definition

For further information see:
Visualization of the Pyramidal Tract in Glioma Surgery by Integrating Diffusion Tensor Imaging in Functional Neuronavigation
PET Imaging SUV (Standard Uptake Value)
Software feature that gives the user advanced interface in defining target volumes within PET imaging.
- SUV can be clearly identified through threshold segmentation
- Hounsfield Unit (HU) reassignment possible for all outlined objects

Comprehensive Object Manipulation
In order to better prepare organs at risk (OARs) for dose treatment planning, advanced tools are needed to enhance those organs. iPlan RT Image makes this fast and precise with in-depth 3-D object handling for fast generation of planning objects.
- Symmetric or asymmetric object manipulations - expand CTV to PTV
- Optimize OARs for dose planning
- Creation of rectum / bladder wall objects for correct DVH evaluation
- Easy unification of structures and creation of intersections or subtractions and object splitting for easy boost planning
iPlan RT Image – The Global Contouring Workstation
Making revolutionary tools available for existing TPS

- Quick and consistent organ definition
- Automatic Image Fusion
- Atlas-based Automatic Segmentation
- Organ manipulation
- SRS/SRT planning system
- Global contouring workstation for RT

Existing TPS workstation
- Eclipse, ADAC, CMS, Pinnacle and BrainLAB
- Used for dose planning only
- Frees time of dose planning workstation
- Protects investment

For further information see:
Workflow Report – iPlan RT Contouring Workstation - Eclipse
Example workflow for H&N patients. Objects created with iPlan RT and exported via Dicom RT to Eclipse followed by IMRT Dose planning.
As implemented at the Charité, Berlin, Germany

Physician Collaboration- For the Entire Department and Across the Hospital
With full DICOM RT connectivity, iPlan functionality is available for existing conventional treatment planning systems, allowing iPlan RT Image to be used as the pre-planning tool for the entire department.

- iPlan from BrainLAB offers one software platform for: Radiosurgery, Radiotherapy, Neurosurgery and Drug Delivery
- Pre-planning steps are fully automatic, saving time and increasing accuracy
- Unique atlas-based organ segmentation, using advanced elastic fusion
- Automatically contours important anatomical objects within 3 minutes
- Integration of FiberTracking with functional MRI helps save vital functions
- Dicom compatibility for connectivity with third party TPS for ultimate flexibility

Clinical Experience
“The iPlan RT Image Cranial Automatic Segmentation software automatically contours all necessary organs within 2-3 minutes. Compared to standard manual contouring tools, this software not only helps us save time, it also allows definition of risk structures with a much higher degree of day to day consistency.”
Ian Crocker MD FACR, Professor of Radiation Oncology, Emory University School of Medicine, Atlanta, GA

iPlan Net Planning Anywhere and Anytime – Team Planning Option
“My office is on the first floor, and our physics department is in the basement. With iPlan Net I am able to save time by not having to walk down to Physics every time I want to approve a plan. The possibility to access iPlan from outside of the department was a key factor that drove the decision for iPlan Net. This solution helps us to improve the quality of treatment for our patients by making interdisciplinary consulting within the hospital much easier.”
Dr. Charles Niël, Radiation Oncology Department Chairman
Reinier de Graaf Gasthuis, Hospital, Delft, Netherlands