ABAS

Atlas-based Autosegmentation

Raising contouring to the next level

ELEKTA

ABAS

High performance, true segmentation

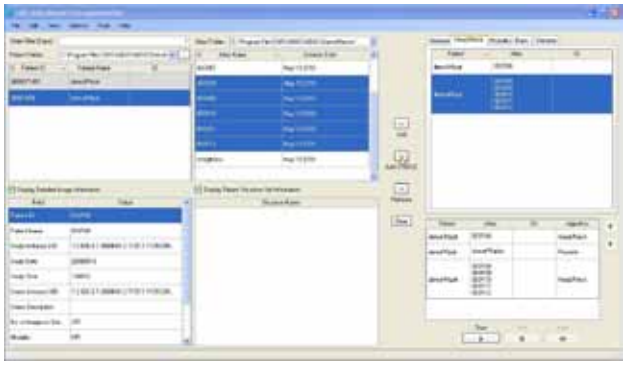
Manual contouring is a time-consuming component of the treatment planning process. Atlas-Based Autosegmentation (ABAS) from Elekta is a software application that produces an estimate of the anatomy boundary contours needed to create a radiation plan, significantly reducing the amount of time spent creating and editing patient contours by providing an advanced starting point. ABAS scans its library of previously defined reference images and applies specific elements of these forms onto a new patient image, creating a new structure set fit to the patient anatomy.

Accurate

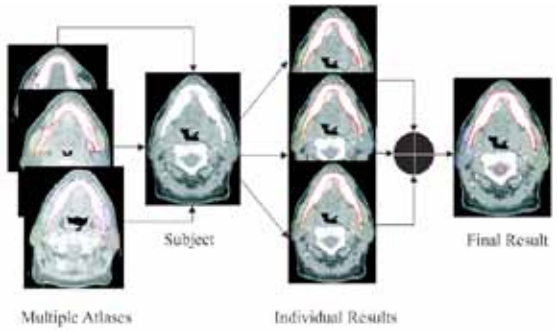
User-definable atlases allow clinicians to select an atlas that accurately reflects a given patient in a given clinic. Patient-specific atlases can be generated to promote adaptive planning techniques which account for tumor regression and weight loss. Utilizing a unique, three-phased algorithm, ABAS goes through multiple phases of refinement for increased accuracy. This process results in significantly better initial results while taking into account the variability between patient and atlas. Additional post processing refinement further improves accuracy in complex structure sets such as the head, neck and prostate.

Simultaneous Truth and Performance Level Estimation (STAPLE)

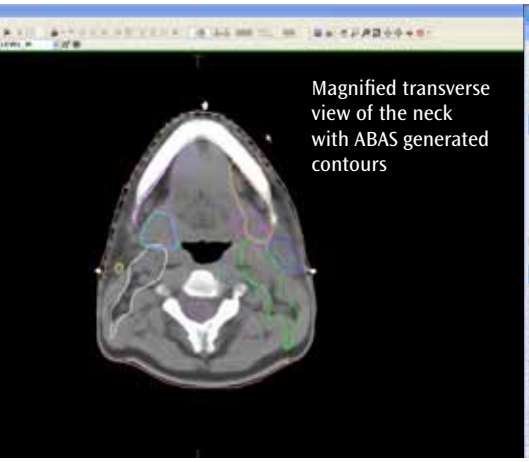
Unique to ABAS, the STAPLE calculation is more robust than simple averaging. By applying several individual atlases, multiple segmentations of the same subject are achieved. The segmentations are then combined to create a final unique segmentation. This technique allows ABAS to excel at complex structure sets and improve result accuracy.



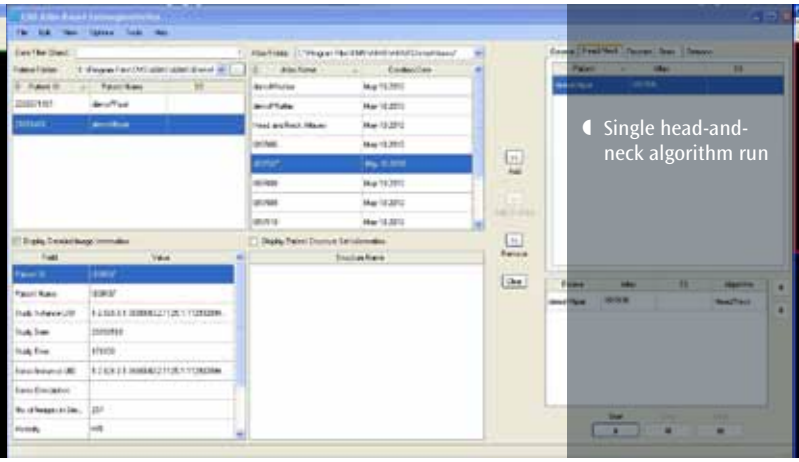
STAPLE algorithm added to the batch list for calculation



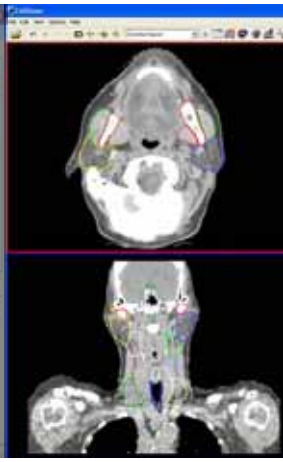
Overall workflow of atlas-based auto-segmentation with multi-atlas fusion



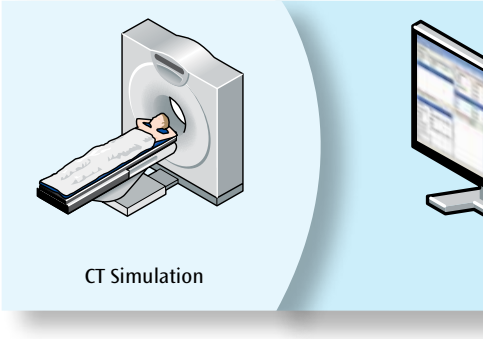
Magnified transverse view of the neck with ABAS generated contours



Single head-and-neck algorithm run



Clinical Workflow Using ABAS

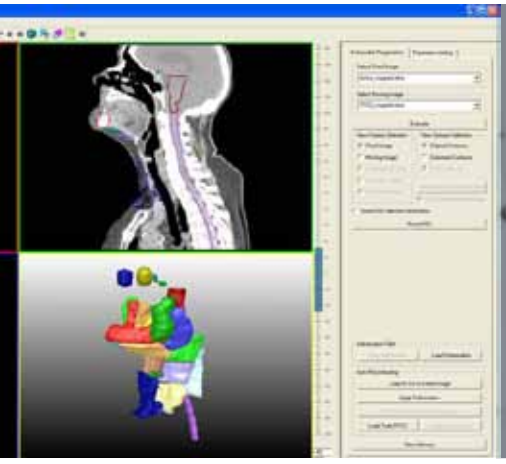


Flexible

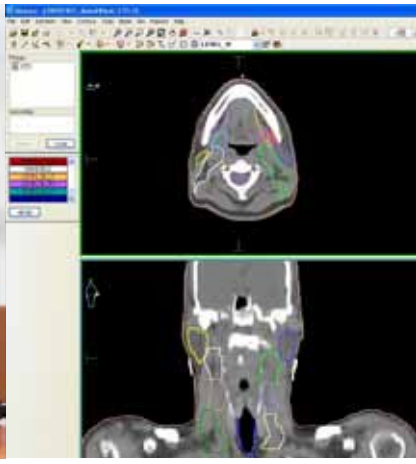
A stand-alone, vendor-neutral product that communicates using standard DICOM file formats for both input and output, ABAS is compatible with any radiation treatment planning system. Fully customizable, ABAS segments each atlas, finding the best structure for each patient. ABAS includes a starter library of atlases, but is completely user definable. Atlases can be set up to follow clinical protocols as well as inter-patient variability and has no requirements for your library of atlases. And the library of atlases will grow with your practice, giving you an evolving set of tools to further enhance treatment regimens.

Simple

ABAS operates in the background of your existing treatment planning system, which means your staff uses a familiar user interface. ABAS does not require user interaction to apply contours, only the selection of the appropriate atlas. The DICOM service is easily configurable for import and export functionality, automatically sending results to the location of your choice. ABAS also offers convenient batch processing capabilities, allowing any number of new patient images to be contoured collectively at your discretion.

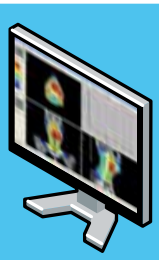


Results from ABAS displayed in transverse, sagittal and coronal view. Head-and-neck anatomy segmented by an atlas with multiple nodal levels.

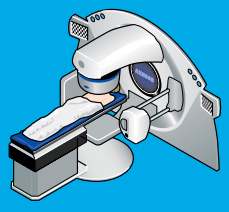


Clinician Review & Editing

Treatment Planning



Plan Review



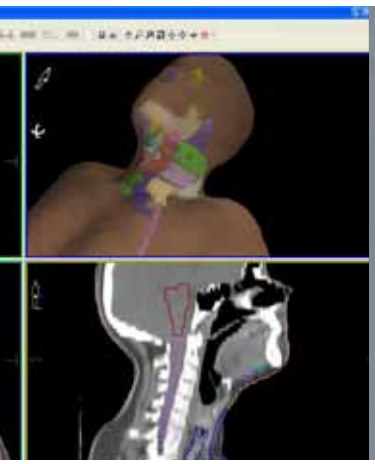
Treatment

Efficient

Optimize planning workflow with ABAS. Deformable registration algorithms morph contours from an existing anatomical atlas onto a new patient image set. The ABAS application saves physician and dosimetrist time by automatically contouring new image sets based on the anatomy defined in the atlas, which is always available for further edits and refinements. Studies have shown this process improvement offers up to 50 percent time savings over traditional manual contouring. With the cutting-edge GPU processing power of ABAS, this time is further reduced, allowing better contouring for more patients, improving the quality of their care.

Why ABAS?

- Improves efficiency, allowing for treatment of more patients
- Increases accuracy with STAPLE calculation
- Runs in the background and allows for batch processing
- Seamless workflow integration with multiple vendor compatibility
- Improves contouring consistency



Transverse, sagittal and coronal views of the RTS results from ABAS/ 3D view makes the contour lines 'thicker' for easier viewing

A human care company, Elekta pioneers significant innovations and clinical solutions for treating cancer and brain disorders. Elekta provides intelligent and resource-efficient technologies that improve, prolong and save patient lives. We go beyond collaboration seeking long-term relationships built on trust with a shared vision, offering confidence to healthcare providers and their patients.

Human Care Makes the Future Possible

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