PHILIPS

SmartCT

# The next leap in **simplifying and advancing 3D imaging**

To enhance interventional confidence

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## To enhance interventional confidence

The Philips Image Guided Therapy clinical application software SmartCT, working with the Azurion image guided therapy platform, enriches our exceptional 3D interventional tools with step by step guidance that is designed to remove the barriers to acquiring 3D images in the interventional lab. SmartCT supports state of the art quality of care regardless of the user's level of experience with 3D imaging*.

## SmartCT

### Intuitive and easy to learn
100% of users found that controlling SmartCT is intuitive and easy to learn[1]

### Empowers you to deliver the right treatment
88% believe that with SmartCT they can be confident that they provide the right treatment by having all relevant information at hand[1]

### Helps you focus on your patient
88% believe they can have more focus on their patient - thanks to full table side control with the touch screen module[1]

### Supports you in providing high quality care
100% think SmartCT technology brings valuable insights to support them in providing high quality care[1]

### Supports you to adopt 3D imaging
82% think that the ease of using SmartCT will increase their utilization of 3D imaging in interventional procedures[1]

## Key benefits

**Superb care**
Increase clinical confidence with advanced 3D imaging, visualization and measurement tools

**Lab performance**
Easily control advanced 3D visualization and measurements at table side on the touch screen module

**Outstanding user experience**
Simplifies 3D acquisition so clinical users can easily perform 3D imaging

**Increase economic value**
Increases economic value by helping you free up the CT scanner for diagnostics and enabling upgrades to new clinical capabilities

* The user level of expertise required is described in the Instructions for Use as the Intended Operator Profile

[1] Evaluated with clinical users in a simulated lab environment with a total of 17 teams consisting of a physician and a radio-tech with different levels of experience

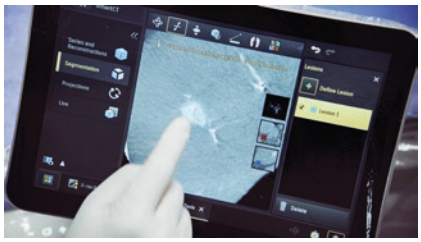
# Provide **superb care**

**SmartCT increases clinical confidence with advanced 3D imaging, visualization and measurement tools.**
Studies have shown that 3D CT-like imaging can enhance diagnostic accuracy[2-4] and support improved patient outcomes.

All SmartCT advanced 3D visualization and measurement features are controlled at table side on the intuitive touch screen:

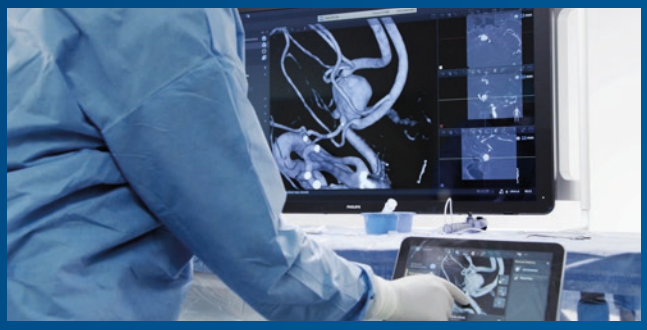
**SmartCT Vessel segmentation**
You can quickly define a vessel path on a SmartCT 3D volume at table side on the TSM by simply selecting two points of a vessel. The path is automatically detected and can be rendered in a centerline, tube or outline view. Edit the path by just moving one of the points. This supports you in determining the optimal projection angle for vessel analysis and catheterization.

**SmartCT Vessel Analysis for advanced 3D measurements**
Vessel Analysis offers the following features to allow easy inspection of the vessel and device positioning during treatment planning: Straightened, curved and cross-section reformats. The straightened reformat view of the vessel segment also contains a graph showing the vessel diameter along the segment. The straightened cross-section view displays an indication of the minimum and maximum diameters at the pointer location as you move it over the curved, reformat or straightened reformat view.



**SmartCT Segmentation to quickly define any structure of interest**
The semi-automatic lesion segmentation tool allows you to easily define any structure of interest, measure its volume and highlight anatomy to improve visualization.

# Clinically tailored acquisition and roadmap protocols



## SmartCT Angio

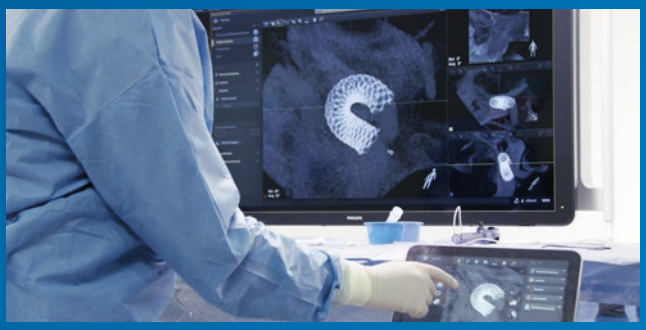
**Improve visibility of vasculature in cerebral, abdominal, cardiac and peripheral anatomies**
SmartCT Angio is an X-ray acquisition technique that generates a complete high-resolution 3D visualization of cerebral, abdominal, cardiac and peripheral vasculature from a single rotational angiography run – all controlled via the touch screen at the table. This can improve visibility of tortuous or complex anatomy. After acquisition, you can quickly render volumes, segment lesions and vessels, perform measurements and mark vessel paths to assess the size and location of pathology and thereby plan the treatment angle.

## SmartCT Soft Tissue

**CT-like visualization of soft tissue, bone and vascular structures**
SmartCT Soft Tissue is an X-ray acquisition technique that generates a CT-like visualization of soft tissue in relation to other structures during procedures – all controlled via the touch screen at the table. You can use the CT-like images to assess soft tissue, bone structure and stent deployment before, during and after interventional procedures. This technique is particularly useful for oncology and neurology procedures.

## SmartCT Roadmap

**Real-time 3D view aids guidewire and catheter navigation through complex vessel structures**
SmartCT Roadmap provides a live 3D image overlay that can be segmented to emphasize the targeted vessel and lesions. The SmartCT Roadmap overlays a 3D reconstruction of the vessel tree, vessel segments, or annotations with live fluoro images. You can adapt the transparency and contrast of the 3D image to enhance visibility of details.



## SmartCT Vaso

**Visualizes sub-millimeter structures and vasculature during neuro procedures**
This technique provides high resolution 3D imaging that reveals key information about cerebral vascular structures to support the highest possible spatial assessment of vessels in the soft tissue context.


# Optimize **lab performance**

**Easily control advanced 3D acquisition, visualization and measurements at table side to improve lab flexibility and efficiency**

To make it easier to benefit from 3D imaging in the lab, all acquisition, visualization and measurement tools can be accessed on the touch screen. This offers total control of 3D imaging within the sterile field that can save time during procedures. Many tasks, such as 3D lesion segmentation, center line and vessel contour detection, are semi-automated to support your 3D image analysis.

**Quickly perform two-point measurements on screen**

With SmartCT, you can perform two-point measurements on 3D images on the touch screen. This can help you quickly check the trajectory to a target vessel, measure distances for stent deployment, measure the size of anatomy or identify a discrepancy to support planning of the optimal treatment angle and aid navigation.

**Choose and store the projection angles for your treatment**

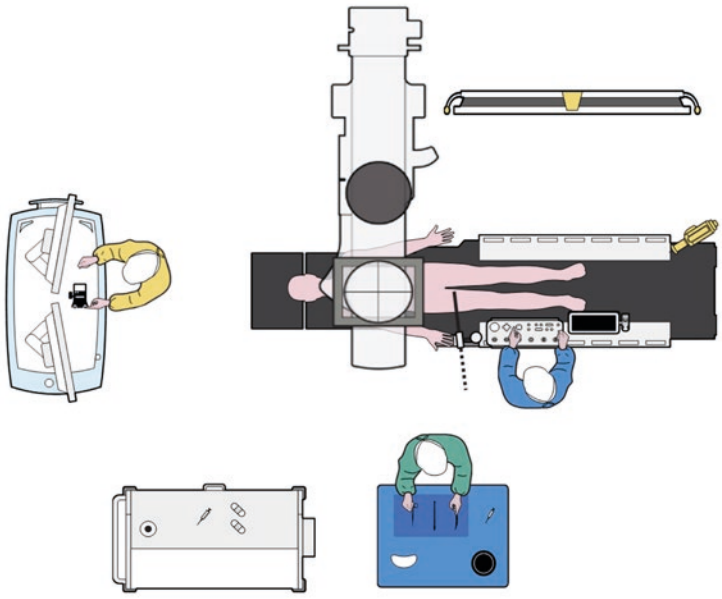
With SmartCT you can rotate your 3D image and store the corresponding projection angle you would like to use during your treatment. With Azurion's full system automatic position control (APC), you can recall any of the stored positions.

**Cut away structures that obstruct the 3D visualization of the anatomy of interest**

With SmartCT cut anatomy tool you can quickly and easily remove the structure that could obstruct the 3D visualisation of your region of interest.

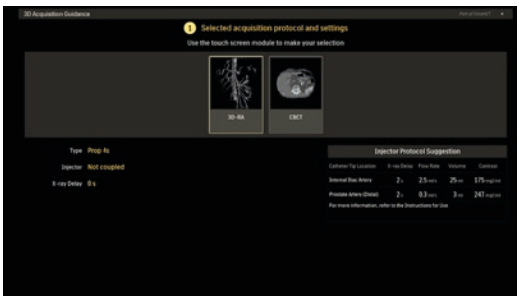
# Outstanding **user experience**

**With the touch screen, you can easily acquire 3D images and interact with all SmartCT 3D features in a more natural way.**



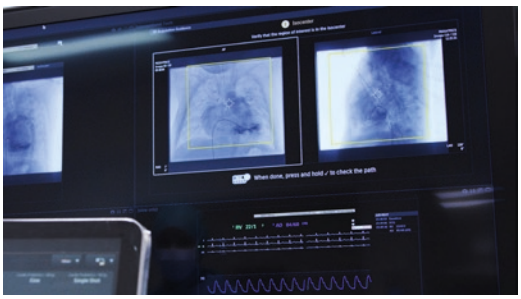
- **Easy room preparation**
  Room preparation tasks can be shown on the FlexVision to help you position equipment and the Azurion system so that you can acquire 3D images any time needed during your procedure.

- **Easy protocol selection**
  To help you easily select the required protocol, SmartCT's acquisition guidance displayes pictorials showing the type of 3D image you can select, without the need to memorize the name of the protocol.




- **Injection protocol suggestion***
  To help you have a consistent image quality of your contrast enhanced 3D images, SmartCT displayes a suggestion of injection protocol that is totally customizable to your standards.

- **Easy isocentering**
  With SmartCT you can perform zero dose table isocentering by giving you visual feedback on the field of view in both AP and lateral previously acquired projections.



* The injector protocols shown by SmartCT are suggestions that the user can tailor as desired. Philips does not endorse the use of the injector protocols.

- **Easy 3D acquisition**
  In order to prevent you from releasing the aquisition button too early, SmartCT guides you once you press the acquistion button by giving you countdown visual feedback on the time, remaining for X-ray delay and actual 3D acquisition. It will prompt you to release the button once the rotational scan is completed.

- **Easy 3D interaction on the TSM**
  Once acquired, the 3D image appears within a few seconds on the TSM and the FlexVision in the default rendering mode, ready for you to review and analyze.

# Increase **economic value** through lifecycle

**CT-like 3D imaging in the interventional lab could potentially free up the CT scanner for diagnostic purposes**
SmartCT provides CT-like 3D images in the interventional lab to support diagnosis, planning, treatment and follow-up for interventional radiology procedures. The 3D image data can be visualized, segmented and processed as a regular CT image with advanced 3D visualization and measurement tools. The ability to access CT-like imaging in the lab can free up the CT scanner for diagnostic purposes and thereby save time and help prevent additional risk to patient.

**Stay clinically and operationally relevant over complete lifecyle**
To keep the Azurion platform and clinical tools state- of-art clinically and operationally, subscribe to IGT Technology Maximizer - Plus, Pro or Premium offer.

Technology Maximizer is offered for a standard duration of 4 years at point of sale to keep the lab state-of-art.

With Technology Maximizer (TM) Plus offer, Azurion platform with SmartCT continues to receive upgrades for existing functionality on the complete Lab. TM Plus also keeps the Azurion Lab at state-of-art security and protects it from Obsolescence w.r.t computing hardware and associated software (including operating system e.g. Win10.

With TM Pro and Premium offer, Azurion platform with SmartCT continues to receive new clinical innovations in the selected clinical suite and selected clinical domain respectively.

For more information, refer to Technology Maximizer offer details.

For more information about how SmartCT can simplify your 3D acquisitions and enhance clinical decision making during procedures, please contact your Philips representative or go to the SmartCT website.


[1] Evaluated with clinical users in a simulated lab environment with a total of 17 teams consisting of a physician and a radio-tech with different levels of experience.

[2] Loffroy R et al. Comparing the Detectability of Hepatocellular Carcinoma by C-arm Dual-Phase Cone-Beam Computed Tomography During Hepatic Arteriography With Conventional Contrast- Enhanced Magnetic Resonance Imaging Cardiovasc Intervent Radiol. 2012, 35 (1), 97-104,

[3] Berman et al. ,The use of threedimensional rotational angiography to assess the pulmonary circulation following cavo-pulmonary connection in patients with single ventricle. https://www.ncbi.nlm.nih.gov/pubmed/22419358 Catheter Cardiovasc Interv. 2012 Nov 15;80(6):922-30.

[4] https://pubmed.ncbi.nlm.nih.gov/?term=Schernthaner+RE&cauthor_id=25476872 Schernthaner et al., Delayed-Phase Cone-Beam CT Improves Detectability of Intrahepatic Cholangiocarcinoma During Conventional Transarterial Chemoembolization Cardiovasc Intervent Radiol , 38 (4), 929-36, 2015

[5] Miyayama et al., Comparison of Local Control in Transcatheter Arterial Chemoembolization of Hepatocellular Carcinoma ≤6 Cm With or Without Intraprocedural Monitoring of the Embolized Area Using Cone-Beam Computed Tomography Cardiovasc Intervent Radiol , 2014, 37 (2), 388-95.



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