PHILIPS

Image Guided Therapy

Neuro suite

Neuro suite

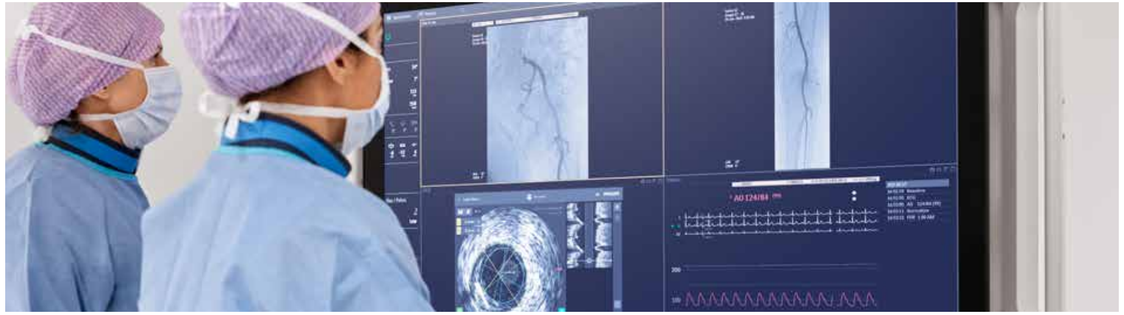
Neuro decisions are based on what you see, so see more

Defining the future
of Image Guided Therapy

At Philips, we look beyond technology to the experiences of patients, providers and caregivers. We unlock insights leading to meaningful innovations from hospital to home.

Our integrated solutions – packaged suites of systems, smart devices, software and services – combine broad and deep clinical expertise, technology and services, actionable data, consultative new business models and partnerships. Together with our customers, we can transform how care is delivered and experienced, to help deliver upon the Quadruple Aim: improved patient experience, better health outcomes, improved staff experience and lower cost of care.

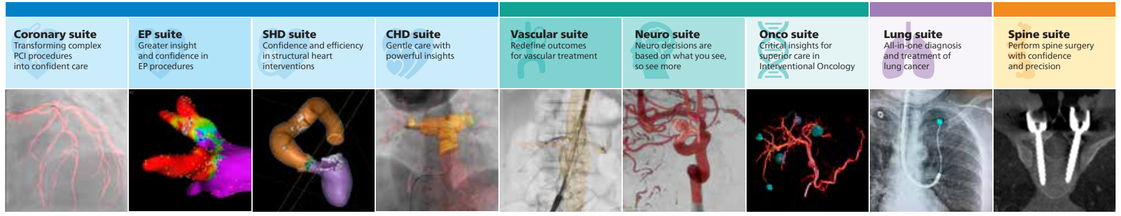
At Philips, we have played a pioneering role in image guided minimally invasive therapy for cardiovascular disease since the inception of the field back in the 1950s, thanks to our expertise in X-ray imaging systems. We aim to both improve existing procedures and introduce new procedures so that more patients can benefit from image guided therapy. We also develop new business models to cater to new care settings, such as ambulatory surgery centers and office-based labs, and drive improved lab performance. Today our clinical partners benefit from complete procedural solutions to treat a wide range of diseases – from cardiovascular disease to stroke, cancer and spine conditions.



Clinical demands are getting more specific. So are we.
During an interventional procedure you are focused on making the best decisions you can for each patient. Each patient and each disease has very specific challenges, complexities and needs. As the number of procedures and patients goes up, you can see the need for better forms of image guidance and interventional devices for effective treatment and decision-making. At the same time, optimized workflows are key to improving efficiency. That's why we created clinical suites; a flexible portfolio of integrated technologies, devices and services for a broad range of interventional procedures.

Each of our clinical suites offers specific image guided therapy solutions to provide more choice and flexibility so that you can be confident in your performance and that your patients are receiving exceptional care. Together we aim to create the future of image guided therapy.

Introducing clinical suites
Helping to bring across our comprehensive clinical propositions



Neuro suite

Neuro decisions are based on what you see, so see more

The field of neurovascular care encompasses a remarkable range in approaches to treatment. On one hand, stroke cases are acute and always require immediate treatment for the greatest chance of improving the patient's quality of life. On the other hand, planned procedures such as complex treatments for aneurysms and arteriovenous malformations (AVMs) need to be meticulously designed and executed to minimize the inherent risk. These procedures can be lifesaving and have significant potential to improve a patient's quality of life.

Philips Neuro suite offers a flexible portfolio of sophisticated imaging, integrated technologies, neuro accessories and valued-added services that puts you on top of things, whether treating an acute stroke patient or working precisely through a complex AVM. This allows you to act with confidence, supported by high levels of procedural efficiency and standardization to help redefine outcomes for your patients and provide a positive workflow experience for staff

Philips Neuro suite puts you firmly in control with excellent image quality at low dose and a range of advances offered by the Azurion image guided therapy biplane system, including the touchscreen module for tableside control, superior workflow for 2D/3D imaging, SmartCT for accessible 3D imaging, tools for innovative stroke care, thoughtful collaboration with ecosystem partners and services that support you 24/7.

Key benefits

- Supports superior care with high image quality in 2D and 3D for precision diagnosis and treatment in the neuro suite
- Elevates treatment confidence with sophisticated roadmapping functionalities that allow you to re-use any previously acquired roadmap
- Enhances workflow and efficiency with an outstanding user experience, system ergonomics and advanced visualization and measurement tools all accessible at tableside with tablet ease
- Promotes optimal lab performance by helping streamline and standardize system set-up with one press of a button
- Enriches capabilities of your lab as a result of thoughtful collaboration with ecosystem partners and effortless interoperability with third-party solutions

Be ready to take on new challenges in

ischemic stroke treatment

The stroke landscape has changed dramatically in recent years. Today more patients can benefit from mechanical thrombectomy through changed guidelines which widen the time window for endovascular treatment.[5] On top of that, clinical trials succeeded in providing evidence of the benefit of thrombectomy in patients with a basilar occlusion in the 6-24h time window (BOACHE & ATTENTION trial) and large ischemic strokes (ANGEL_ASPECT, RESCUE & SELECT2).

For all of these acute stroke patients, time to reperfusion is fundamental in reducing morbidity and mortality.[6-8] As diagnostic imaging in the interventional suite becomes more sophisticated, we see opportunities for image-based patient selection to dramatically shorten stroke workflows. Clinical studies have already proven that diagnostic imaging in the angio suite can speed up stroke treatment and potentially improve clinical outcome.[9] Our Neuro suite has been developed to address these trends. It provides workflow options, dedicated interventional neuro tools and neuro accessories to support high levels of procedural efficiency and redefine outcomes for your stroke patients. The Azurion system supports each step of your procedure – as you decide, guide, treat and confirm treatment results.

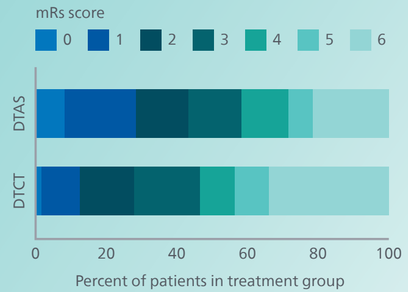
12% reduction in in-lab preparation time,
supported by ProcedureCards[6]

Decide › Guide › Treat › Confirm

Acute ischemic stroke

The need for rapid triage and intervention

"Delays in the workflow cause onset-to-reperfusion times of multiple hours. Long imaging-to-groin puncture times contribute significantly to the total delay."



Shown are mRS scales after 90 days for patients in the direct transfer to angiography suite (DTAS) group and the direct transfer to computed tomography (DTCT) group. The rates of a good clinical outcome measured by an mRS score of 2 or lower at 90 days were 43.6% for DTAS and 27.8% for DTCT (Requena et al, 2021)[10]

Workflow options that can help you optimize lab performance

ProcedureCards
Streamline and standardize system set-up and reduce preparation errors in acute ischemic stroke procedures (hospital-specific stroke protocols and/or checklists can be added)

Instant Parallel Working
Allows team members to work on different tasks at the same time without interrupting each other to shorten procedure times for critical stroke patients

Neuro headrest
Can be used to restrain restless patients under conscious sedation to help reduce motion artifacts during the procedure

Touchscreen module Pro
Allows tableside control of images and applications with tablet ease to save time and unnecessary walking in and out of the sterile area

FlexVision Pro
Gives you instant access and full control of pre-operative diagnostic scans, patient information and planning tools at tableside

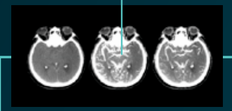
Philips Azurion offers a number of workflow innovations designed to help on-call staff work efficiently and easily while maintaining a single-minded focus on the patient during acute ischemic stroke interventions

Comprehensive diagnostic and treatment

support for ischemic stroke patients

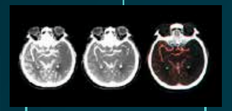
Decide
Identify if the patient has an ischemic or hemorrhagic stroke, locate the affected area and assess the state of the penumbra and amount of salvageable tissue.

Decide



Comprehensive stroke diagnosis based on three SmartCT Soft Tissue (CT-like) scans

- Non-contrast CBCT aids detection of early ischemic changes
- Early phase CBCT helps to identify the proximal occlusion
- Late phase contrast-enhanced CBCT supports detection of collaterals

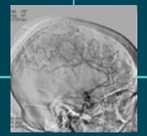


Dual View to see collateral filling
Viewing early and late phase CBCT volumes side by side enhances identification of penumbra and enables visualization of collateral filling.

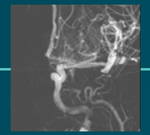
SmartCT Vaso IV to check location and length of a clot
SmartCT Vaso IV allows visualization beyond the clot with peri-procedural imaging of the distal vessel aspects in ischemic stroke. By retrograde filling, vessel structures before and after the clot become visible. The SmartCT Vaso 3D roadmap can be used to visualize clot-retrieval devices.

Guide and treat
When navigating and treating stroke pathology, clinicians need to be able to visualize the exact location of the clot and assess if and how the clot can be reached.

Guide and treat



Maintain sharp images using 2D DSA with ClarityIQ technology



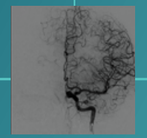
Enhance visualization of vasculature with Roadmap Pro
This advanced double contrast roadmap helps enhance visualization of overlapping vessels while balancing radiation exposure to make informed decisions about whether the clot can be reached and which route to use.

Gain anatomical references with SmartCT Angio and Roadmap
The SmartCT Roadmap provides anatomical references to support precise navigation of guidewire, catheter and device to the clot.

Confirm
After stroke treatment, there is a need to confirm if all clot material has been removed and to check for bleeds while the patient is still in the interventional lab.

Peri-procedure check of bleeds with SmartCT Soft Tissue
Use CBCT (CT-like) images in Neuro suite to check treatment success and bleeds

Confirm



Confirm treatment success with DSA run-off
High quality DSA visualizations allow you to assess if you have retrieved the complete clot and if pieces of clot have been dispersed distally in the brain. You can evaluate the restoration of blood flow to the penumbra and check for peri-procedure bleeds.

See clearly and navigate effectively when

treating cerebral aneurysms

Flow-diverter (FD) stenting has become an established technique for treating cerebral aneurysms. New techniques and devices inspired by the flow diversion principle are being used more often, and new coil technologies are increasingly gaining ground over traditional coiling. For bifurcation aneurysms, intrasaccular embolization devices are becoming mainstream. Visualizing these new, less opaque devices presents new challenges during treatment planning and device placement. In this dynamic area, superb 2D and 3D imaging is crucial to guide treatment decisions and device placement while managing radiation dose efficiently.

Neuro suite provides workflow options, dedicated neuro interventional tools and neuro accessories to help improve procedural accuracy and reduce radiation exposure for staff and patients during aneurysm interventions. They support each step of your procedure – as you decide, guide, treat and confirm treatment results.

Decide Guide Treat Confirm

Innovative neuro interventional workflow

ProcedureCards
Streamline and standardize system set-up and reduce preparation errors by selecting the Aneurysm ProcedureCard so the system is set up the way you want it to be (hospital-specific aneurysm protocols and/or checklists can be added to ProcedureCards and displayed on monitors to support consistent workflow)

Zero-dose positioning
Helps you manage dose by positioning the system or table on Last Image Hold so you can prepare your next run without using fluoroscopy

Neuro headrest
Can be used to help reduce motion artifacts during the procedure

Clarity IQ
ClarityIQ technology provides high-quality imaging for a comprehensive range of clinical procedures, achieving excellent visibility at low X-ray dose levels for patients of all sizes

Full tableside control with FlexVision Pro
FlexVision Pro gives you full control of all connected applications and interventional tools at tableside to save time and unnecessary walking in and out of the sterile area

Touchscreen module Pro
Easily review large data sets from tableside with the tablet ease of the touchscreen module Pro. Collimate on clinical images with a fingertip and pinch, zoom, pan and flag images for processing

Neuro suite with Azurion offers a number of workflow innovations designed to simplify your workflow, shorten procedure time and manage radiation dose during aneurysm interventions

Clinical solutions

that support efficient decision-making and treatment of cerebral aneurysms

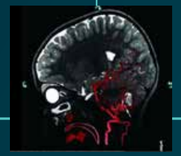
Decide
Obtain insight in the vasculature and visualize the location, size and neck of the aneurysm to optimize treatment planning.

Guide and treat
New technologies and devices make it more challenging than ever to efficiently navigate to the feeding vessel and accurately position devices - all while avoiding arterial dissection and spasms and managing contrast agent and radiation use.

Confirm
After aneurysm treatment, check proper device placement and deployment in the context of the feeding vessel, the neck and the sac of the aneurysm. Efficiently measure the effect of the device placed and check for possible arterial dissections while the patient is still on the table.

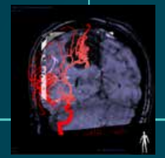
Decide

3D visualization of tortuous pathologies with SmartCT Angio
SmartCT Angio (3D-RA) provides a volumetric view in a few seconds* to assist with assessment of location, size, neck and severity of aneurysm for treatment planning. 3D-RA also provides high spatial resolution volumes and automatically compensates for patient movement.



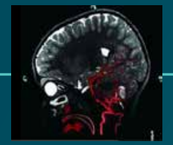
Visualize lesion boundaries and corresponding vascularization with MR-CT Roadmap
Use a previously acquired CT angio or MR angio scan and overlay it with live fluoroscopy to visualize lesion boundaries and corresponding vascularization for risk assessment. Re-using pre-acquired data helps you manage X-ray dose and contrast medium.

Guide

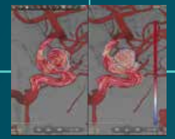


Dynamic 3D image guidance through neurovascular structures with SmartCT Roadmap
SmartCT Roadmap enhances visualization of overlapping vessels to support precise navigation of guidewire and catheter through complex vasculature. Offers a high level of precision with real-time compensation for gantry, table and small patient movements.

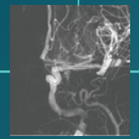
Treat



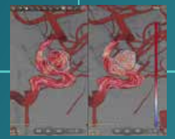
Support accurate guidance of devices with MR-CT Roadmap
Visualize lesion boundaries and corresponding vascularization to enhance accurate navigation through challenging pathologies while reducing unnecessary contrast and managing X-ray dose.



Visualize blood flow patterns with Aneurysm Flow
Visualize and quantify blood flow patterns in the parent vessel and aneurysm sac to obtain key information that can assist deployment of flow diverters and other embolization devices.



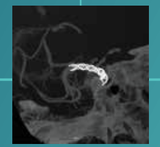
Enhance visualization of cerebral vasculature with Roadmap Pro
This advanced roadmap helps enhance visualization of overlapping vessels while balancing radiation exposure. It can be customized to see advancement during coil placement.



Post-treatment flow calculations with AneurysmFlow
Evaluate changes in blood flow in the aneurysm pre- and post-placement by calculating the change in mean aneurysm flow amplitude (MAFA ratio) before and after flow diverter placement.

Confirm

Peri-procedure check of bleeds with SmartCT Soft Tissue
Use CBCT (CT-like) images in Neuro suite to check treatment success and identify bleeds.



Enhance imaging of vessels in the brain with SmartCT Vaso IA
SmartCT Vaso is an acquisition technique that combines high-resolution CBCT with a contrast injection to enhance visualization of endovascular stents, flow diverters, and other devices and of vessel morphology down to the perforator level. It is increasingly used for follow-up of aneurysms treated with flow-diverter stents to check device positioning.

SmartCT Experience easy 3D visualization and measurement to enhance interventional confidence

The Philips image guided therapy clinical application software SmartCT, to be used at the Azurion image guided therapy platform, enriches our exceptional 3D interventional tools with clear 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.[3] Via the touchscreen at the table, you can access clinically tailored 3D acquisition protocols and advanced visualization and measurement tools that depict the type and extent of disease with great detail.

Empowers you to easily adopt 3D imaging

- Easy room preparation to help position equipment and the Azurion system for a 3D acquisition
- Easy protocol selection via pictorials
- Injection protocol suggestion based on literature
- Easy isocentering with visual feedback to confirm your field of view position without using X-ray dose[5]
- Easy 3D acquisition – you know when the acquisition is completed and you can release the push button or pedal

100% of customers found that controlling SmartCT is intuitive and easy to learn[4]

88% believe they can have more focus on their patient - thanks to full tableside control with the touchscreen module[4]

Provide superb care
Increases clinical confidence for diverse vascular procedures with advanced 3D imaging, visualization and measurement tools.

Optimize lab performance
Easily control advanced 3D acquisition, visualization and measurements at tableside to improve lab flexibility and efficiency.

Oustanding user experience
Acquire 3D images and interact with all SmartCT 3D features in a more natural and effortless way.

SmartCT Angio

This X-ray acquisition technique generates a complete high-resolution 3D visualization of cerebral vasculature from a single rotational angiography run – all controlled via the touchscreen at the table. This can improve visibility of tortuous or complex anatomy.

Key benefits:

- 3D visualization of vascular pathologies from a single rotational angiography X-ray acquisition
- Improve visibility of vasculature in cerebral anatomies
- Aquire and interact with 3D imaging at tableside

SmartCT Soft Tissue

SmartCT Soft Tissue offers a cone beam CT (CBCT) acquisition technique augmented with step-by-step guidance. Advanced 3D visualization and measurement tools are accessed on the touchscreen module at tableside. To support you in acquiring CBCT images first-time-right[4] and to streamline your workflow, you are guided through key steps. Once the CBCT scan has been successfully performed, the acquired 3D image is automatically displayed in the SmartCT 3D visualization tool with the appropriate rendering settings and the 3D measurement tools tailored for the selected 3D protocol.

Key benefits:

- Step-by-step guidance technique to simplify CBCT acquisition
- Interact with your CBCT image at tableside on the touchscreen module
- Access advanced 3D measurements at tableside on the touchscreen module

SmartCT Roadmap

SmartCT Roadmap facilitates complex neurovascular interventions by providing live 3D image guidance that can be segmented to emphasize target vessel and lesions, aiding guidewire and catheter navigation through complex vessel structures. All of this is controlled via the touchscreen at tableside.

Key benefits:

- Real-time 3D guidance tool
- Adapts to position changes in real-time
- Variable settings to enhance visualization

SmartCT Vaso

This technique provides high-resolution 3D imaging that reveals key information about cerebrovascular structures to support the highest possible spatial assessment of vessels in the soft tissue context.

Key benefits:

- Step-to-step acquisition technique offers guidance to simplify 3D imaging
- Allows direct image inspection with advanced 3D visualization at tableside
- Supports peri-procedure check of positioning of flow-diverter stents

System platform
Azurion 7 B20/15, 7 M20
ClarityIQ technology

Dedicated neuro products
AneurysmFlow
SmartCT Angio
SmartCT Roadmap
SmartCT Soft Tissue
SmartCT Vaso
XperGuide

Integrated tools
CX50 xMATRIX ultrasound
DoseWise Portal
DoseAware

Accessories
Neuro head holder
Neuro table top

Integrated tables

Create your perfect Neuro suite

Our image guided therapy Neuro suite is the result of our ongoing investment in neurovascular imaging technology and our partnerships with clinical leaders and industry pioneers on research and clinical studies to support more informed decision-making for neurovascular interventions. Neuro suite is a combination of the Azurion platform, interventional solutions, workflow options, accessories, education and services. We also offer room solutions and support to create a leading-edge hybrid OR. Because all solutions are integrated, you have the flexibility to configure a treatment environment that matches your clinical challenges and requirements.

Azurion – one platform, an endless array of clinical possibilities
Based on the three principles of superior care, lab performance and unique user experience, Azurion helps to provide a consistent standardization of care. Backed by our clinical suites, it's an invaluable platform to improve workflows and provide new treatment options.

What makes Azurion so unique?
With its wide range of interventional tools, Azurion is designed to help you perform procedures more efficiently and consistently with fewer complications. It also offers greater user customization and control over every aspect of interventions.

Increase value
throughout your Neuro suite lifecycle

Stay clinically and operationally relevant with Technology Maximizer

To keep your image guided therapy suite state of the art with regard to cybersecurity and clinical and operational advancements, subscribe to the IGT Technology Maximizer – Plus, Pro or Premium offer – for a standard duration of 4 years at point of sale.

Technology Maximizer secures all your eligible Philips imaging equipment with the same technology release level, reducing maintenance complexity and simplifying lifecycle management across hospital departments. Maintain peace of mind with imaging equipment that is always up to date, and enhance patient care knowing you will always be first to take advantage of technology innovations.

Learn more about Technology Maximizer

	Standard offer Technology Maximizer Plus	Mid-level offer Technology Maximizer Pro	Premium offer Technology Maximizer Premium Cardiac/Vascular
Azurion system software version upgrade	✓	✓	✓
State-of-the-art security	✓	✓	✓
Latest available Operating System	✓	✓	✓
Computer hardware refresh to support software upgrade	✓	✓	✓
Application training for new or enhanced functionality (days)	1	2	2
New version of existing iApps	✓	✓	✓
Future iApps in one clinical suite (Coronary, EP, SHD, Vascular, Neuro, Onco, Spine or Lung)		✓	✓
Future iApps in one clinical domain (Cardiac or Vascular)			✓

1 Source: "World Stroke Organization (WSO): Global Stroke Fact Sheet 2022"

2 Source: Philips Eureka MI&A

3 Source: "World Stroke Organization (WSO): Global Stroke Fact Sheet 2022"

4 Market Research Group reports '16-'17

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