



# Making the difference with Philips Live Image Guidance

Philips NeuroSuite

**PHILIPS**

# Making the difference with Philips Live Image Guidance

Together we make the difference in minimally invasive neuro interventions to improve patient outcomes and save lives. With our Live Image Guidance we aim to lower barriers to effective and reproducible treatment, delivering relevant clinical value where it's needed most - at the point of patient treatment.

## The challenges for neuro interventions

The treatment environment for neuro interventionalists and neuro surgeons is rapidly changing as more diseases are treated with less invasive techniques. New devices enable new treatments, but smaller and less radio opaque devices can also present new challenges for device placement and treatment assessment. Whether visualizing the smallest intracranial vessels, precisely placing a flow diverter, treating a stroke patient, or working slowly through a complex AVM, the goal is to see clearly and navigate effectively, while managing safety for your patients, staff, and yourself.

## NeuroSuite – unique vision for innovative neuro interventions

To overcome these challenges, Philips introduces the NeuroSuite featuring the Allura FD20/15 interventional X-ray system. This integrated solution is designed to enhance your treatment capabilities and support more effective device guidance and placement in every procedure.

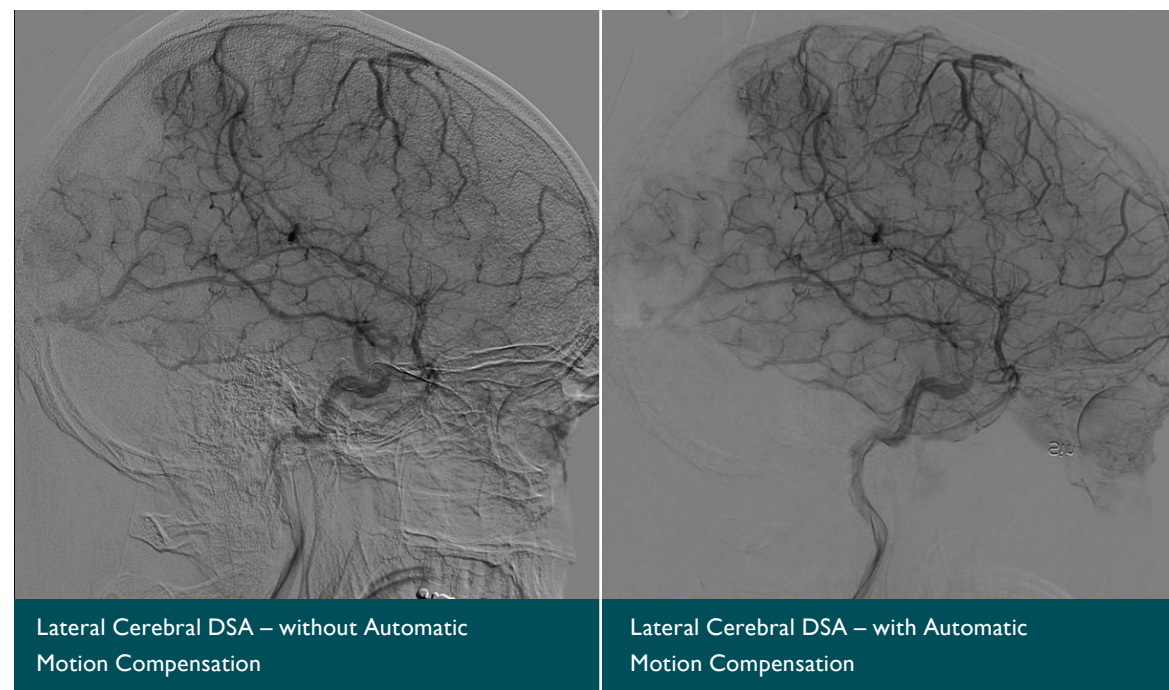
New imaging technologies enhance 2D and 3D imaging to reveal never-before-seen details of intracranial vessels and devices. So you can quickly assess the anomaly, confidently reach the target, and position and place the device of choice. Experience simple, smooth clinical workflow with our dedicated neuro features. Expand your treatment options for challenging cases using our unique AlluraClarity with ClarityIQ technology. Confidently perform stroke interventions and groundbreaking cerebrovascular procedures with the critical insight and real-time feedback provided by our one-of-a-kind imaging capabilities.



## Key advantages

- See details of vessels and devices you have never seen before
- Experience new convenience and consistency with our enhanced neuro workflow
- Expand your treatment options into new areas of care





## See details of vessels and devices you have never seen before

The use of smaller, less radio opaque devices comes with advantages and disadvantages. To avoid vascular obstructions, it is critical to correctly position and deploy devices. However, new visualization techniques are required to guide new devices to the correct, critical orientation. To support these challenging procedures our NeuroSuite is equipped with new, cutting edge technologies to provide high-quality visualizations during your procedures.

### Improved image quality with new detector technologies

The intricacies of complex malformations and less radio-opaque flow diverters and intra saccular devices are fully visible with our 16 bit detector technology in the 20 inch frontal and 15 inch lateral flat detectors. The 20 inch frontal detector provides the ideal size and latest technology for making high-resolution 3D rotational scans used to provide live navigation and immediate therapy feedback. This improved image quality is possible due to a higher X-ray to image conversion efficiency (DQE), more homogeneous images, and increased gray levels (16 bits). The 20 inch size is optimal for avoiding the truncation artifacts that can be introduced by smaller detectors.

Consistent imaging performance is provided by our exclusive Advanced Conductive Cooling technology which eliminates the complex liquid cooling systems of earlier generation flat detectors. In the next generation of detector technology the heat from the detector is channeled away via the geometry to avoid temperature fluctuations that can affect image quality.

### Full access and brain coverage with PerfectFit design

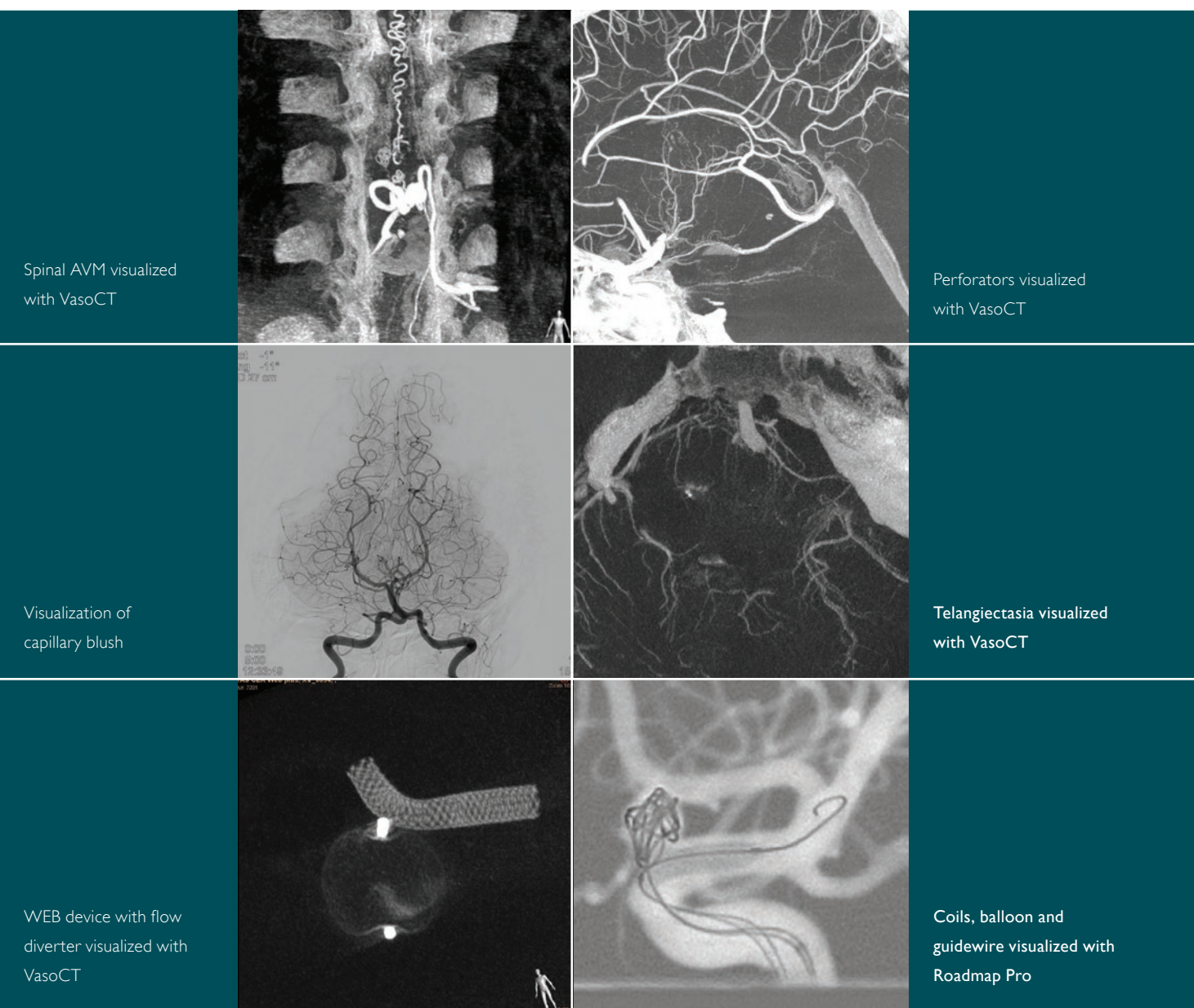
The Allura FD20/15 pairs a 20 inch detector with a 15 inch lateral flat detector. Thanks to our PerfectFit design the lateral detector can be positioned close to the patient's head while still providing full brain coverage. This results in quality images at low X-ray dose, and also reduces detector collision. AlluraClarity has Automatic Motion Compensation built-in which keeps the vessel tree clear even with patient motion, meaning you will see details of vessels and devices you have never seen before.

### VasoCT – a new level of visualization for challenging devices and beyond the clot

With its broad dynamic range, our 16 bit FD20 detector technology enhances device and contrast imaging, taking our VasoCT interventional tool to a new level of specificity. You can see small intracranial devices in the vessel context and vessel morphology down to the perforator level with unmatched spatial resolution. This allows you to evaluate device deployment right after placement and immediately correct kinked stents or malapposed stents to the vessel wall. You can also

visualize the location, size and direction of an occlusion, to confidently plan ischemic stroke treatment.

Comfortably view images of brain vasculature at the capillary level in 2D and 3D without changing position thanks to the enhanced viewing angle on our FlexVision XL 58" display. The improved contrast and brightness further enhances complex visualizations. An intuitive user interface gracefully arranges all video inputs, putting the right image in the right place for every procedure type.





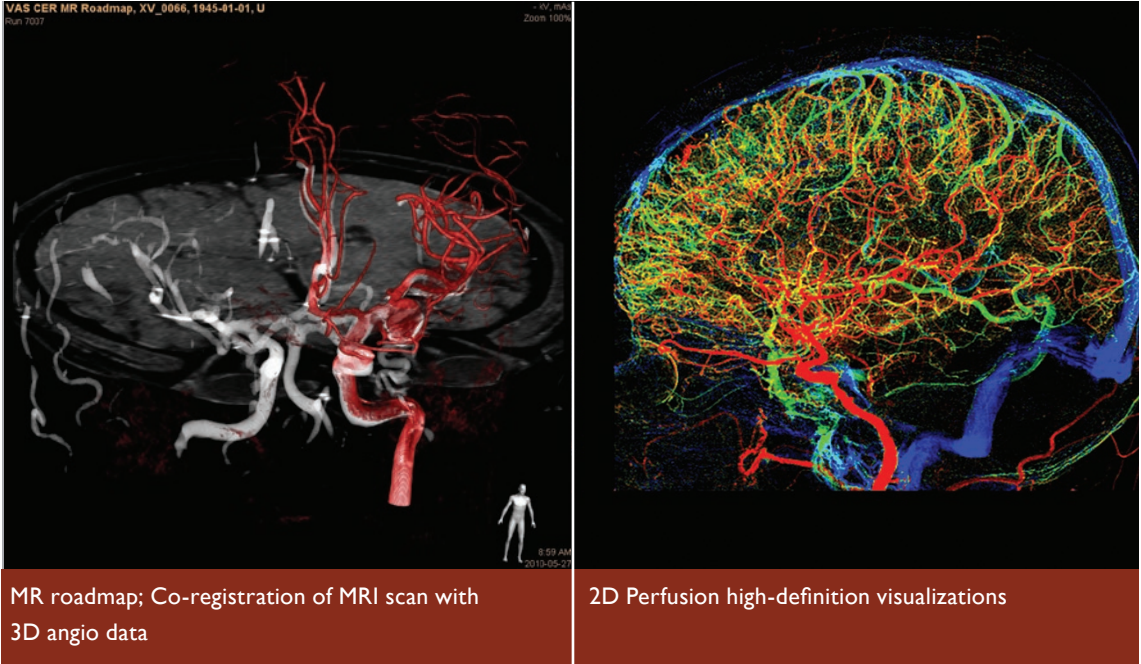
# Experience new convenience and consistency with our enhanced neuro workflow

New procedures, like flow diverters and stroke interventions, place new demands on your interventional equipment and workflow. To make long, complex neuro interventions go more smoothly, our NeuroSuite offers dedicated neuro features designed to improve comfort for patients and clinicians and remove unnecessary delays and tasks.

**Enhanced patient handling and imaging stability**  
Our improved Xper table glides effortlessly into position and the neuro head support can be rotated left or right so the patient can be transferred on and off the table without lifting the patient's head. Once on the Xper table, the Neuro Head Holder can be flexibly adjusted to enhance patient comfort and provide the excellent treatment position. The head rest combined with the

increased stability of the Xper table reduce imaging artifacts during procedures. The Xper table is IPX1 compliant according to IEC60601-2-43, 3<sup>rd</sup> Edition, which protects the table from fluid ingress

**Improve workflow at critical moments**  
Unwanted complications to already challenging procedures. Our PerfectFit flat detector combination provides full frontal and lateral brain coverage, while allowing positioning freedom and reduces collision between the detectors. Capturing a full brain volume in one rotation can save time at crucial moments.



**Confident navigation and device placement**  
Live Image Guidance is an essential tool for efficient navigation and device placement. Our Roadmap Pro, 3D Roadmap, and MR/CT Roadmap options offer state-of-the-art guidance in 2D and 3D that can save time during procedures. Different clinical modes provide application-specific settings to enhance visualization of challenging devices or materials like ONYX. These tools are equipped with the AlluraClarity's unique automatic motion compensation to keep the Roadmap and live image in sync with each other without any user intervention or changes in the regular workflow.

**Avoid time-consuming manual pixel shift for archiving**  
By shifting and rotating pixels on the sub-pixel level automatically during every procedure, AlluraClarity's Automatic Motion Compensation improves results compared to manual pixel shift. It eliminates the need for manual pixel shift post-processing.

**Quick post-check in the interventional lab**  
To save time and unnecessary patient handling, you can use our XperCT scan to do a post procedural check for bleedings while the patient is still on the table. Its improved grey scale visualization and more homogeneous images enhance the visualization of soft tissue and small bleedings.

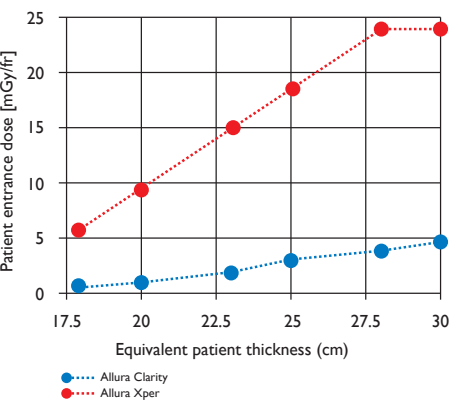


# Expand your treatment options into new areas of care

New devices and techniques are pushing the boundaries of interventions and allowing the treatment of new diseases. Today, in more and more neuro interventional labs, flow diverters are used to treat aneurysms and thrombectomy procedures are performed for ischemic stroke cases. New hybrid procedures will soon bring open procedures into the neuro interventional lab. In the future functional imaging and blood flow studies will offer advanced decision support during neuro treatments.

ClarityIQ is our breakthrough technology which allows you to obtain high quality imaging at low dose levels. This expands your treatment options for challenging cases, may reduce complications with lengthy cases and helps you efficiently manage staff exposure. Several clinical studies have confirmed the high image quality at low settings can be achieved for neuro interventions using ClarityIQ technology.\*\*

Cerebral DSA



The diagrams above show a comparison of the patient entrance dose versus the equivalent patient thickness for the AlluraClarity and the Allura Xper systems.

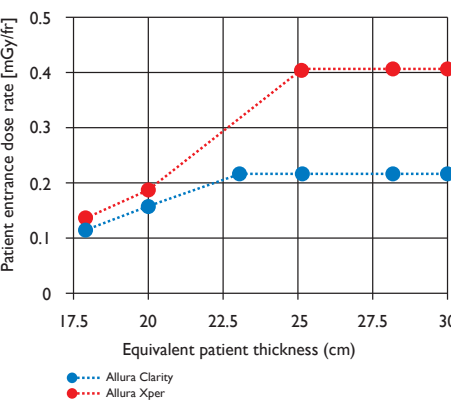
### Up to 25% higher DQE

Philips’ 16 bit Flat Detectors have a thicker scintillator layer compared to the 14 bit Flat Detectors, which improves detector efficiency for neuro interventions. Consequently, our 16 bit Flat detectors provide up to 25% better X-ray to Image conversion (DQE) at 120 kV.

### Perform endovascular and open neuro procedures in a Hybrid Suite

With the Hybrid Suite from Philips, a full range of procedures can be performed in a single room, virtually without compromise. Using our unique FlexMove configuration, a monoplane FD20 can be easily moved as required anywhere around the table - and then conveniently parked out of the way during open surgery.

Cerebral Fluoro



For interventions, the new IPX2 - compliant Xper table top offers increased stability, improved resistance against body fluids, and easy cleaning. For hybrid and open procedures, the Allura systems seamlessly integrate the Allura X-ray and MAQUET operating table. The two are completely synchronized and benefit from automatic position control (APC), bolus chase procedures, and 3D software tools.

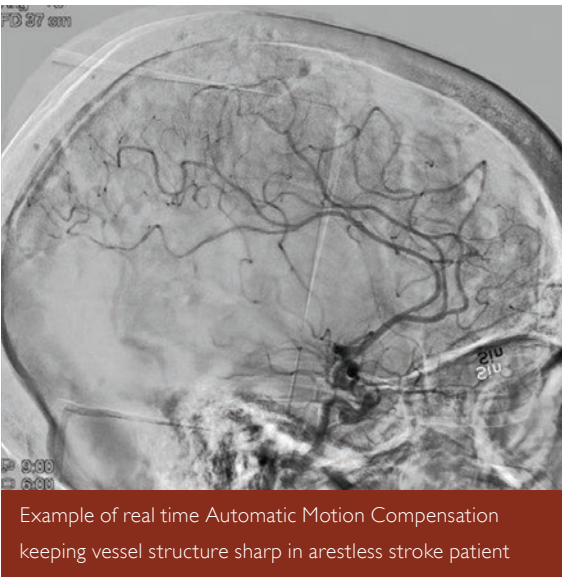
### New imaging capabilities for stroke workflow

Endovascular treatments of ischemic stroke are increasing as new effective devices become available for thrombus retrieval. Today, a large proportion of stroke interventions are performed on a Philips system. Our NeuroSuite supports all aspects of stroke treatment, helping to advance care at each critical step.

### Determining a better strategy for stroke treatment

One of the tools supporting stroke treatment is our VasoCT software. VasoCT combined with an

intravenous contrast injection can visualize the vessel beyond the clot in a blocked vessel during ischemic stroke. One study\*\*\* has shown that using VasoCT “allowed for clot location and length visualization, assessment of communicating arteries patency, and evaluation of vessel collateral grade.” The authors said that “Quantification of the extent of vascular occlusion helps in the determination of the treatment strategy.”



### Enhanced visualization and fewer retakes for restless patients

Unsedated stroke patients are often restless during the procedure and this can produce movement artifacts that obscure pathology. Our Neuro Head Holder provides features to keep head movement to a minimum,

thereby reducing background motion artifacts in DSA and roadmapping. Visualizations are further improved through our stable Xper table and Automatic Motion Compensation, which delivers a clear image of the vessel tree, and enhances visibility of devices at the base of the skull. This can result in fewer re-takes and delays.

### Tablesides perfusion feedback during procedures

Our 2D Perfusion software visualizes the flow of contrast through vessels and the organ parenchymal enhancement over time in a single color coded image. By comparing the left and right hemisphere you can easily identify perfusion differences. By comparing pre and post procedural images you can verify if the required level of perfusion has been achieved while the patient is on the table.

### Visualize flow diverters in the vessel context

Flow diverters offer new options for treating complex aneurysms. Our enhanced VasoCT software visualizes these devices in the vessel context to support precise positioning and deployment. This can help you, for instance, identify a small kink in a flow diverter or avoid obstructing a viable vessel. Our FD20 16 bit detector and built-in automatic motion compensation in AlluraClarity improve visualization to check deployment even at the base of the skull. For those cases where a Flow Diverter is combined with additional coiling, Metal Artifact Reduction helps reduce streak artifacts that might obstruct assessment of device placement at the end of the case. Devices become visible in detail, even close to a coil mass in an aneurysm.

# Increased economic value

Global healthcare environments are rapidly changing. New treatments and procedures have to be balanced with the rising costs of healthcare services to treat aging populations. This requires new levels of efficiency and effectiveness. The purchase of a neuro interventional suite demonstrates a long-term commitment to patients, personnel, and your community. Philips also has a long-term vision for interventional imaging, supported by a comprehensive portfolio of service and support options. We are committed to helping you succeed both clinically and financially.

## Stand out with an exceptional treatment environment

Create a truly exceptional treatment environment for neuro interventions that differentiates your facility with our AlluraClarity system. It helps you efficiently manage exposure for patients and staff. This appealing treatment environment can help you attract new referrals and qualified personnel.

## Open the door to new procedures and higher lab utilization

We collaborate with you to increase patient volume and lab utilization by opening the door to new procedures and techniques. The superb image quality of our AlluraClarity enables your neuro lab to perform new procedures based upon the latest intracranial devices. It also provides critical imaging support for stroke interventions.

## Improve lab efficiency

Our dedicated neuro features are designed to save costly lab time. The PerfectFit design of the Allura FD20/15 simplifies access to the patient to help reduce the chance of retakes. Our enhanced VasoCT interventional tool supports efficient, first-time-right device placement which has the potential to reduce procedure complications and allow rapid non-traumatic follow-up. Our built-in automatic motion correction eliminates the need for time-consuming manual pixel shift tasks.

## Sustainable technology

At Philips, we strive to deliver sustainable healthcare by providing solutions that help you make the best use of your resources. The AlluraClarity family fits perfectly in our Green Product line.

Managing dose keeps your personnel and your patients healthier. With our Live Image Guidance solutions, we help shorten procedure times, which adds value from an economic, environmental, and social perspective for your patients and organization. Our SmartPath program is another perfect example how we focus on enhancing the lifecycle of our products and thus reducing environmental impact and increasing your investment while giving you access to excellent technology.

## Supporting your vision

To protect your investment over its entire lifecycle and increase your uptime, our flexible service contracts are tailored to your budget and provide easy access to the latest upgrades and innovations. Whether you want to reduce your operational risk and equipment downtime, leverage your in-house service capabilities or use your system more effectively, you simply choose the support that is the right fit for you.



- \* Our FD15 detector can cover the head from cranium to cervical 3 in the lateral projection in 95% of the patient population.
- \*\* Copies of clinical studies are available upon request.
- \*\*\* Blanc R, et al, Intravenous flat-detector CT angiography in acute ischemic Stroke management, Neuroradiology, 2012 Apr 54(4):383-91. Epub 2011 May 31.



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