

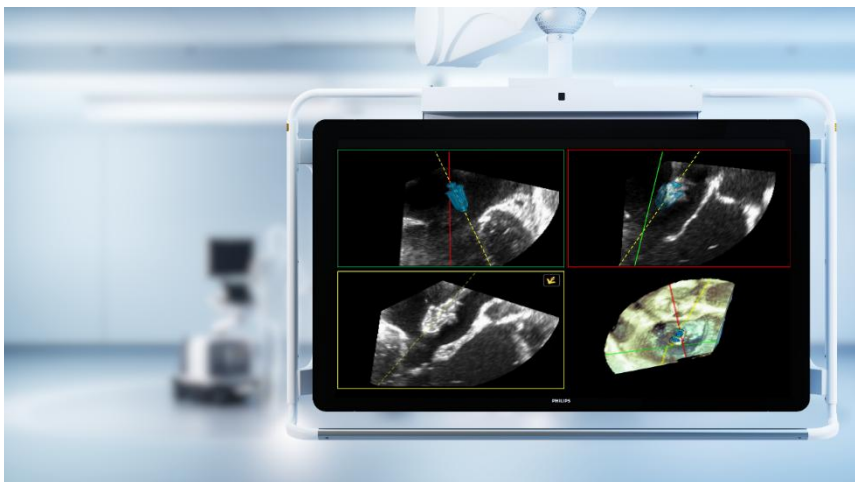
Philips DeviceGuide

A new AI real-time guidance solution to help doctors perform one of the most complex heart procedures

“With DeviceGuide, we’re bringing artificial intelligence into the heart of the procedure room, and into the heart itself. For the first time, it’s assisting doctors in real time as they repair the human heart,” – Dr. Atul Gupta, Chief Medical Officer Diagnosis & Treatment at Philips.

What is DeviceGuide?

DeviceGuide is Philips’ new AI-based real-time guidance solution to help doctors perform one of the most complex heart procedures, repairing a leaky mitral valve without open heart surgery, aiming to make the procedure easier and to enhance physician confidence. Traditionally, physicians navigate using flat, two-dimensional X-ray and ultrasound images, mentally reconstructing the anatomy as they work. DeviceGuide transforms that experience, it turns a 2D map into a 3D navigator inside the heart. By turning complex imaging data into intuitive visual guidance, DeviceGuide acts as a co-pilot in the procedure room, helping physicians “see what they couldn’t see before”.



How Dr. Atul Gupta, Chief Medical Officer Diagnosis & Treatment at Philips and practicing interventional physician, explains it:

“Imagine trying to hit a target inside a moving tennis ball, while it’s spinning and its walls are transparent. That’s what guiding a catheter through a beating heart feels like. Normally, doctors watch several flat, two-dimensional screens and have to imagine where the device is inside the body. DeviceGuide changes that completely. It works like a kind of intelligent co-pilot, a system that tracks the device inside the heart, keeps it in focus, and shows you exactly where you are and where you need to go.”

“It’s as if a beacon of light were attached to the device itself: always visible, always in focus. The AI tracks its 3D movement through the heart’s chambers, showing its position and direction in real time. That gives doctors a clear sense of depth and orientation that simply wasn’t possible before.”

Who it’s for

DeviceGuide is designed for interventional cardiologists, structural heart specialists, echocardiographers, and cath-lab teams performing mitral TEER procedures. It being developed with the aim to simplify interventions in cardiology, supporting both experienced centers and hospitals that are newer to these therapies. It can help to shorten the learning curve and creates consistent visual guidance; DeviceGuide aims to democratize access to cardiac care, for more hospitals and more patients.

Before we dive in further: what is image-guided therapy?

For centuries, surgery meant opening the body to reach the area that needed repair. Technological innovation has radically and positively changed that.

Image-guided therapy (IGT) is the modern form of surgery, using tiny instruments and catheters guided by live images instead of large incisions. Doctors can now see inside the body using X-ray, ultrasound, MRI, or CT, and navigate miniature tools through a pin-sized opening to repair or replace what’s needed. For patients, that means less trauma and faster recovery, and often just a small band-aid instead of a long scar.

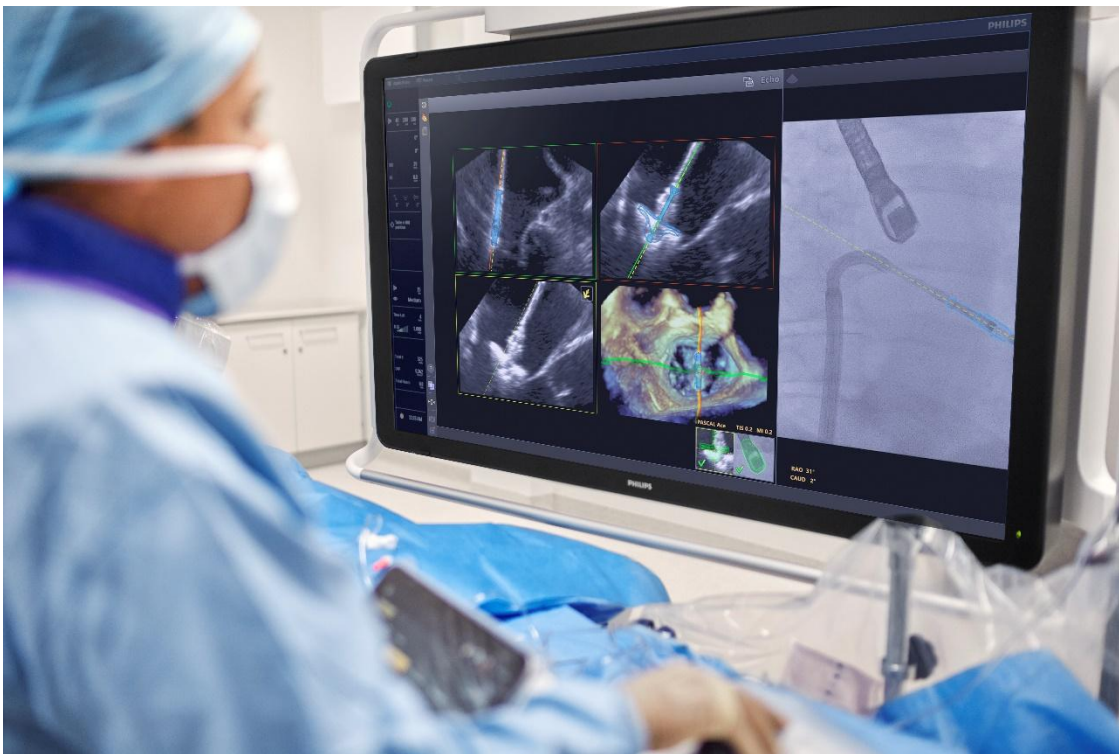
At Philips, image-guided therapy has become the foundation for a wide range of solutions that help physicians around the globe treat conditions from heart disease to stroke and cancer. Every second, somewhere in the world, a patient is being treated using Philips’ image-guided therapy technology.

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DeviceGuide is the next step in that evolution, combining imaging and artificial intelligence to guide doctors more intuitively than ever before.

What is DeviceGuide for?

Fixing a leaking heart valve without open surgery is one of modern medicine's great advances. Mitral valve regurgitation, as this condition is called, affects more than **35 million** adults worldwide [1]. People with mitral regurgitation often live with **persistent fatigue, shortness of breath**, and a general feeling of being "run down." Everyday activities, climbing stairs, walking the dog, carrying groceries, can leave them breathless or exhausted.



A major community study from Minnesota, published in The Lancet [2], found that most people with moderate to severe mitral valve leakage (mitral regurgitation) never undergo surgery, even though the condition often leads to heart failure and higher mortality. Within five years of diagnosis, about two-thirds of patients developed heart failure. Over half of patients with significant mitral regurgitation remain untreated surgically, mainly because they are too frail or have a prohibitive surgical risk [3].

This is making access to less invasive treatments increasingly important. It allows patients worldwide, often elderly and too fragile for open-heart surgery, to receive treatment through a minimally invasive procedure called TEER (Transcatheter Edge-to-Edge Repair).

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Yet, these procedures remain among the most technically demanding in interventional cardiology within a specialty that is also referred to as structural heart disease (SHD). Doctors must carefully guide a tiny device in the beating heart using both X-ray and ultrasound images, constantly communicating to keep track of position and movement. It takes immense skill, focus, and particularly teamwork.

DeviceGuide is designed to bridge this gap, aiming to make the images and the device movements easier to follow. Everyone in the room can clearly see what's happening and act together in real time.

This marks an important step for Philips as AI moves from diagnostics, in imaging and monitoring, into live procedural guidance. While Philips has already used AI as an assistant in diagnostic imaging or monitoring, DeviceGuide takes this to a new level, helping clinicians make precise decisions in the moment during live interventional procedures.

How it works

During a live heart repair, several people operate in sync, one controls the probe, another adjusts the imaging, others guide or monitor the catheter. This constant coordination takes time and verbal precision. DeviceGuide helps by creating one shared visual reference: everyone in the room sees the same orientation of the device and anatomy. It can potentially improve communication in the heart team, and save critical seconds, and lets the team focus on the patient rather than the imaging buttons and controls.

The brains behind DeviceGuide are Philips' image-guided therapy system, called Azurion and EchoNavigator, a real-time image-guidance system that fuses the live X-ray and echocardiography images. It enables doctors to see the heart with two live imaging views at the same time: ultrasound to visualize soft tissues (like the valve) and X-ray to visualize instruments and the implant. Using deep-learning technology, Philips is able to automatically track the implant through the beating heart in real-time using both imaging modalities.

What happens during a mitral valve repair using a catheter:

- **Access and navigation:** Through a small incision in the groin, the doctor advances a thin catheter towards and then into the heart, crossing from the right heart to the left, and down to the mitral valve. (Animation: <https://www.youtube.com/watch?v=snKjA9eX-0Y>)
- **Instant understanding:** DeviceGuide analyses each incoming image, identifies the 'silhouette' of the implant in real time, and highlights the implant so everyone can follow its position at a glance.
- **Navigational guidance:** As the doctor advances or repositions the device, DeviceGuide tracks its path and orientation, updating alignment and showing **where the device is now and help clinicians understand where it needs to go.**

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- **Real-time updates:** Every small movement is reflected on screen immediately — like a GPS for the heart — which can reduce course corrections and keep the team aligned.
- **Placement support:** With the implant clearly visualized against the moving anatomy, the team can focus on placement and verification while sharing the same synchronized view.

This has the potential for smoother teamwork, fewer manual adjustments to the imaging or probe, and an improved shared understanding of what's happening inside the heart – moment by moment, step by step.

How AI is helping

At the core of DeviceGuide is AI-based device intelligence. It supports the clinical team by:

- Recognizing and tracking the implant automatically, so physicians don't have to manually locate it in complex imaging views.
- Navigational guidance, ensuring that the implant's position trajectory and orientations are always displayed.
- Enhancing communication across the heart team — everyone sees the same device position, trajectory and orientation, instantly updated.
- Aligning and combining 2D images into a coherent 3D visualization.
- Analyzing movement, to predict trajectory and guide where the device needs to go.

By embedding AI directly into workflow, DeviceGuide brings the same clarity and speed that AI has already delivered in diagnostic imaging, but now *inside the beating heart during the interventional procedure.*

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Partnerships

DeviceGuide was developed in close collaboration with Edwards Lifesciences, the leading global structural heart innovation company. Edwards brings deep technology and procedure expertise. Philips contributes leadership in imaging and image-guided therapy systems. Together, the two companies have enhanced parts of the M-TEER workflow to continue delivering clinical innovations for heart teams.

DeviceGuide represents the next phase of Philips' mission to make image-guided therapy smarter, faster, and more accessible. It brings together years of expertise in imaging and AI to help doctors navigate inside the body with greater confidence, turning what used to be a 2D challenge into a 3D experience that saves time, builds skill, and opens access for more patients worldwide.

[1] [MDPI](#)

[2] [The Lancet](#)

[3] [The Lancet](#))

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