



PHILIPS

Trendy v moderní angiografii

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FBMI – Trendy vývoje angiografických zobrazovacích systémů v lékařství

innovation  you

Objectives

- Getting up to speed
- Trends in modern angiography
- Dose Management
- 3D Angiography
- Innovations
- It's not just the technology













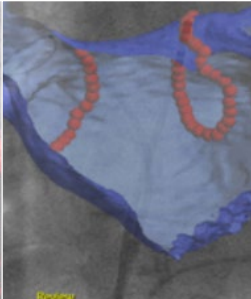
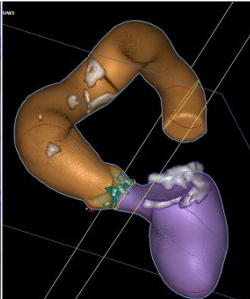
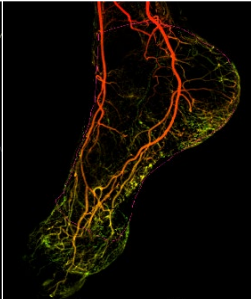
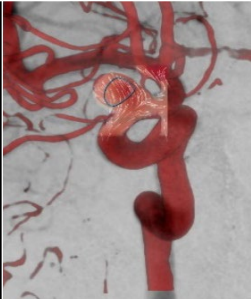
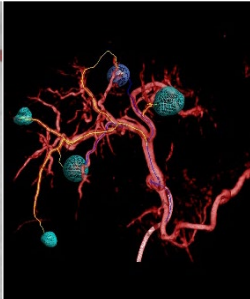

What is IGT?



Image Guided Therapy Surgery of modern time



Angiography: Vessel treatment and DSA?

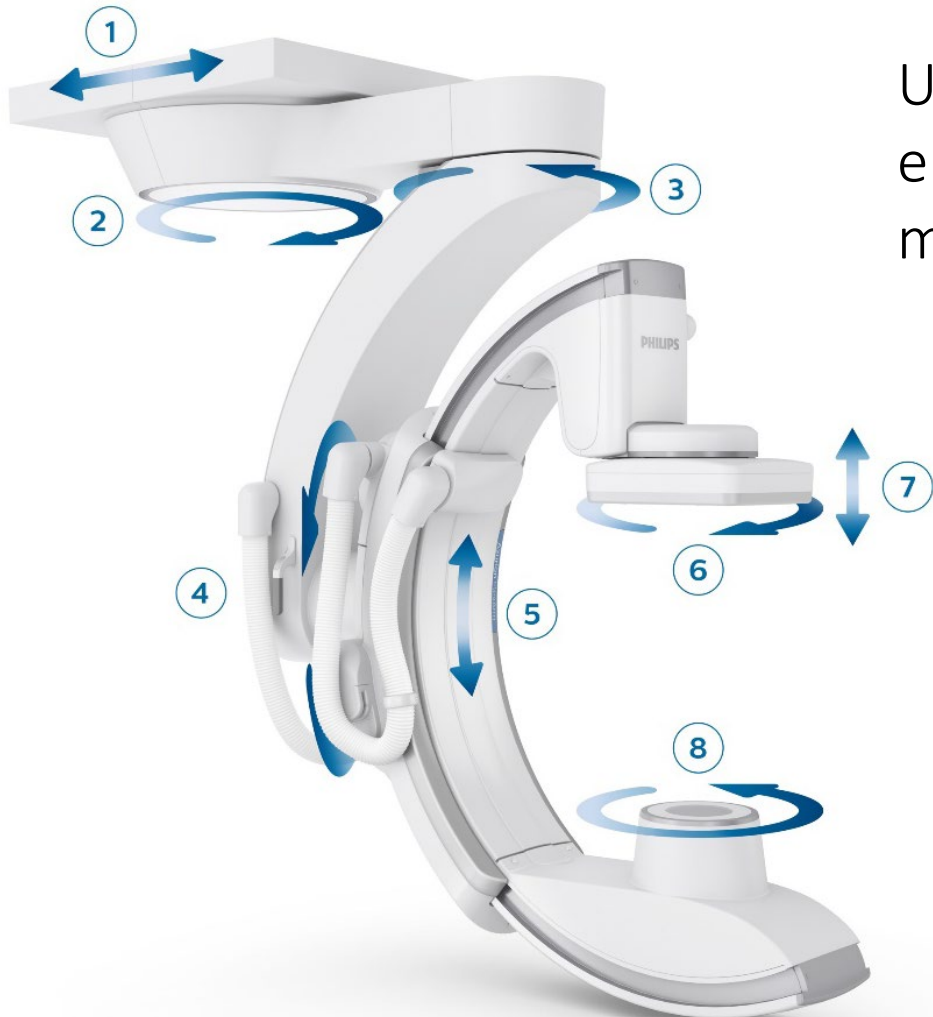
Blue			Teal			Orange
						
PCI suite Transforming complex PCI procedures into confident care	EP suite Seamless integration drives EP excellence	SHD suite Planning to live guidance for SHD procedures	Vascular suite Redefine outcomes for vascular treatment	Neuro suite Neuro decisions are based on what you see, so see more	Onco suite Critical insights for superior care in Interventional Oncology	Spine suite Perform spine surgery with confidence and precision
						



State of a modern Angiography and it's trends



Unlimited imaging flexibility empowered by 8-axis movements



Very flexible gantry

- Innovative design rotates on no less than 8 axes to help enhance positioning of the c-arm for more imaging positions

Ease of use

- Table-side control of gantry with a single intuitive joystick with Axsys technology for predictable movements

High image quality

- Stable gantry and high flexibility to select the best imaging projections

Režim celé obrazovky ukončíte stisknutím klávesy Klávesa Esc

Flexibility in your Hybrid OR

Philips Azurion with FlexArm



Integration

Hybrid OR: One-Stop shop for everything







Dose Management

Philips, leading the way in dose management

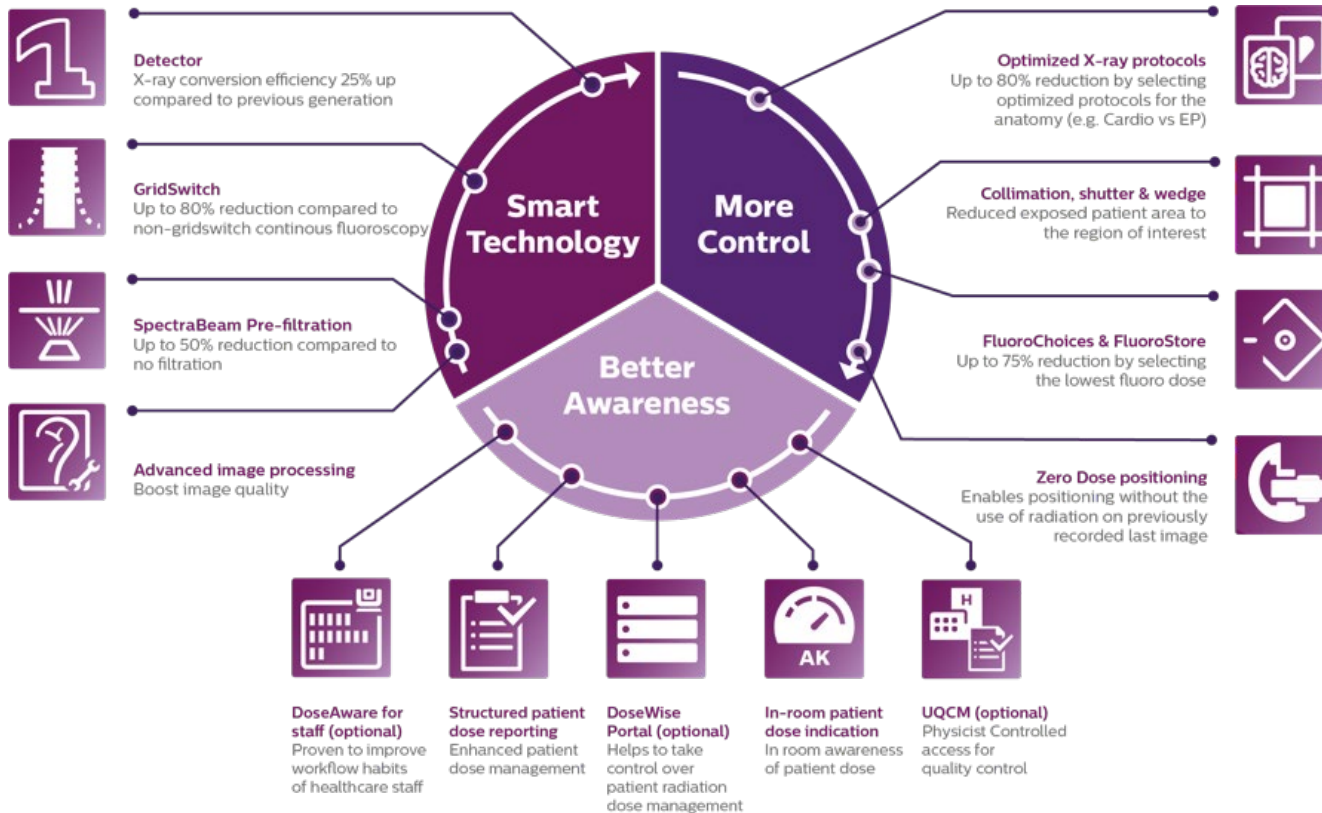
Breakthrough solutions

Interventional X-ray

1896	1952	1979	1981	1988	1992	1995	1996	1998	2001
Introduction of the first medical X-ray tube by CHF Müller, Philips	First commercial X-ray image intensifier	Digital Video Image Processor	Digital Subtraction Angiography (DSA)	MRC X-ray tube and Spectra Beam copper filtration system	Rotational Angiography	Grid Switched Fluoroscopy	Introduction of collimation on Last Image Hold	Introduction 3D-RA	Introduction Flat panel detector with Xres3 imaging processing
2003	2005	2010	2012	2013	2014	2015	2017		
Introduction of X-ray Personalized (Xper) & Dose display	Introduction XperCT and StentBoost	DoseAware - real time dose feedback for physicians	AlluraClarity X-ray system with ClarityIQ technology	Introduction DoseAware Xtend	DoseWise Portal	Open-trajectory Vessel-Navigator Echo-navigator	Physicist controlled User Quality Control Mode ProcedureCard Zero Dose Positioning		

DoseWise Azurion ingredients

DoseWise integrated in all interventional fixed systems



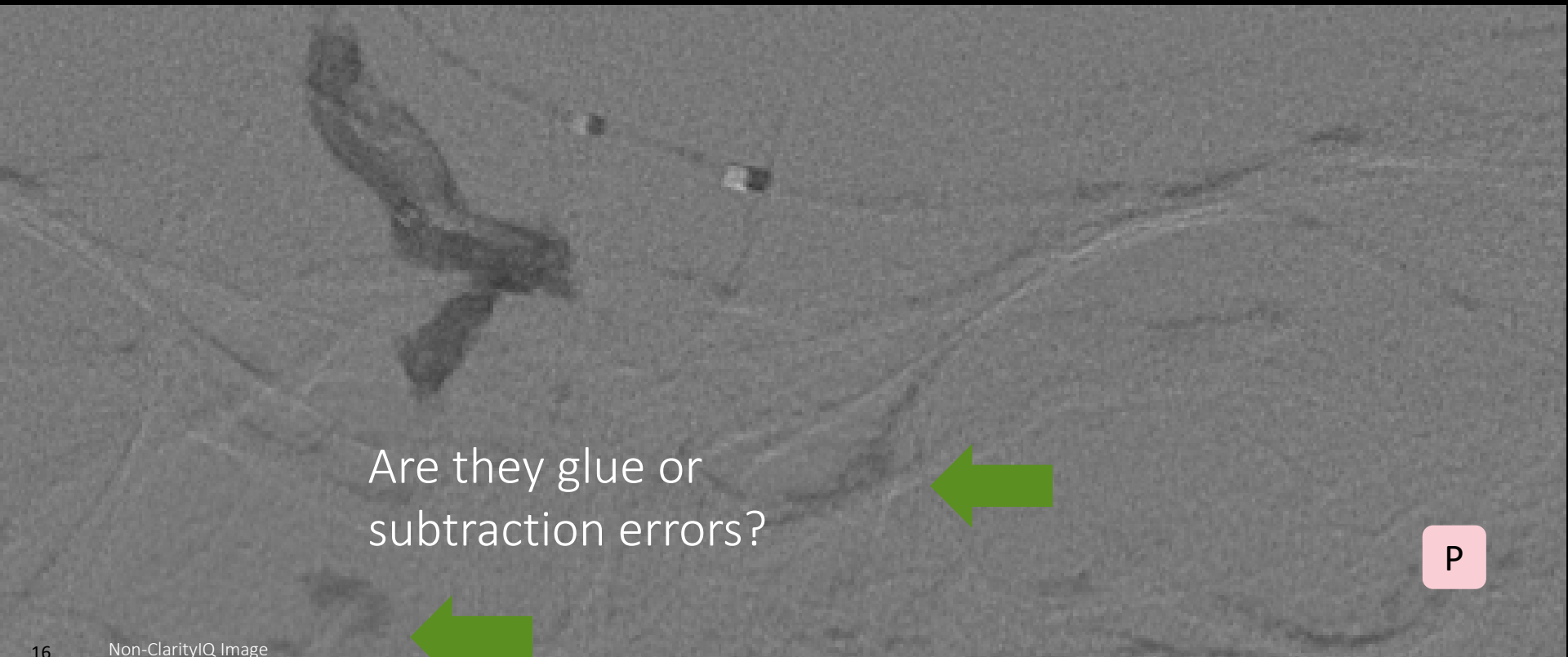


ClarityIQ technology

Touches every part of the system, from tube to display

- P** Automatic Pixel Shift
- I** Image enhancement
- M** Motion compensation
- N** Noise reduction

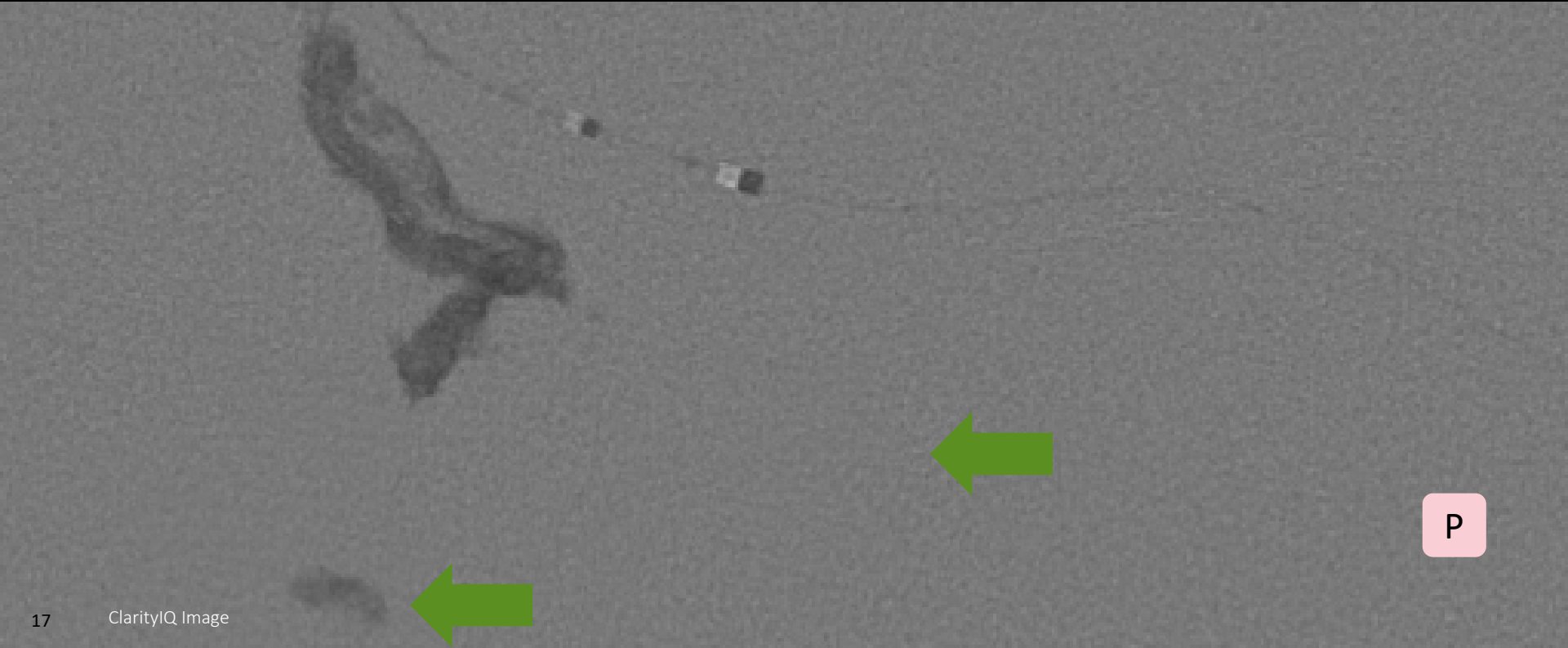
ClarityIQ technology: automatic pixel shift



Are they glue or subtraction errors?

P

ClarityIQ technology: automatic pixel shift

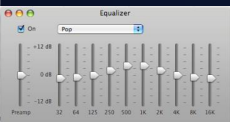




ClarityIQ technology

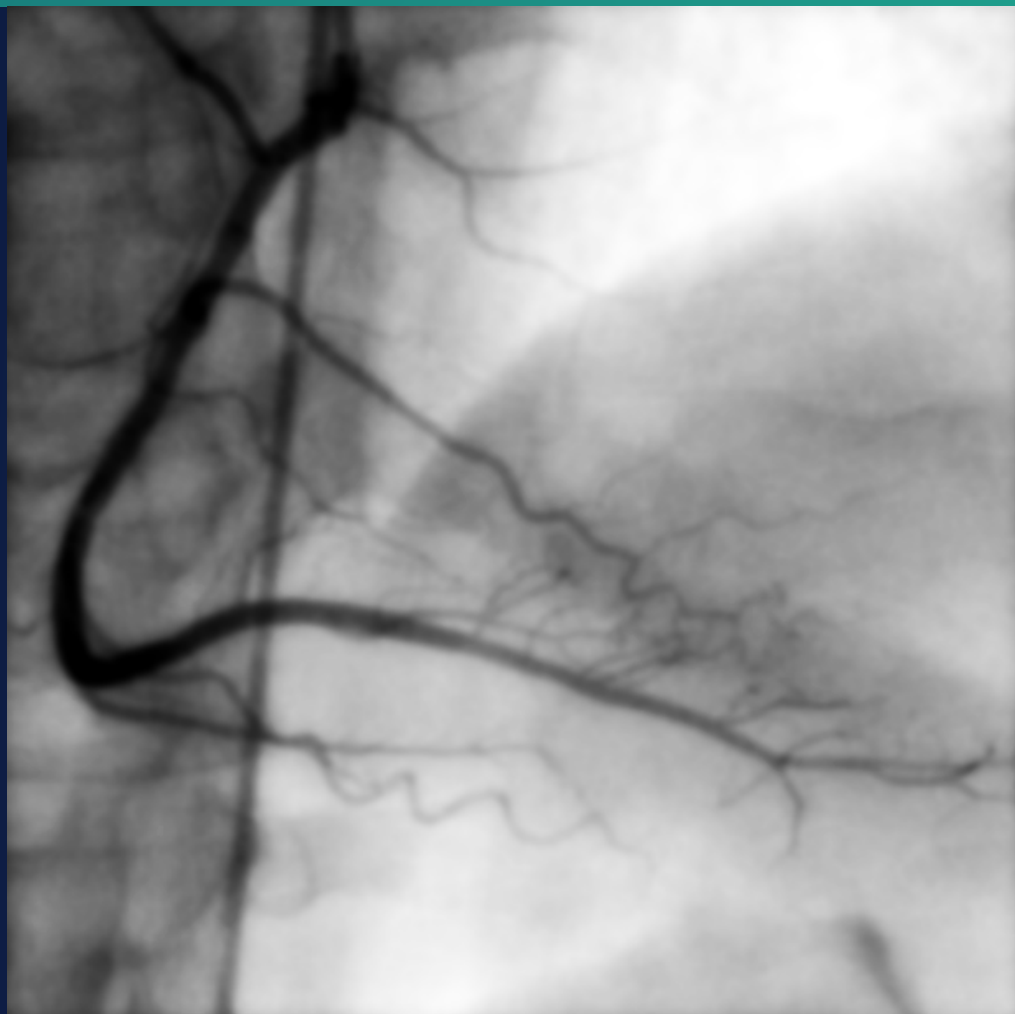
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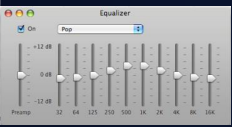
- P** Automatic Pixel Shift
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- ✓ Low frequencies correspond to structures changing slowly in space (background, lungs)
- ✓ High frequencies correspond to fine details (noise, catheters)

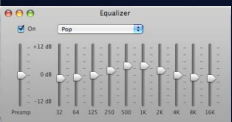
Each frequency can be independently controlled and enhanced



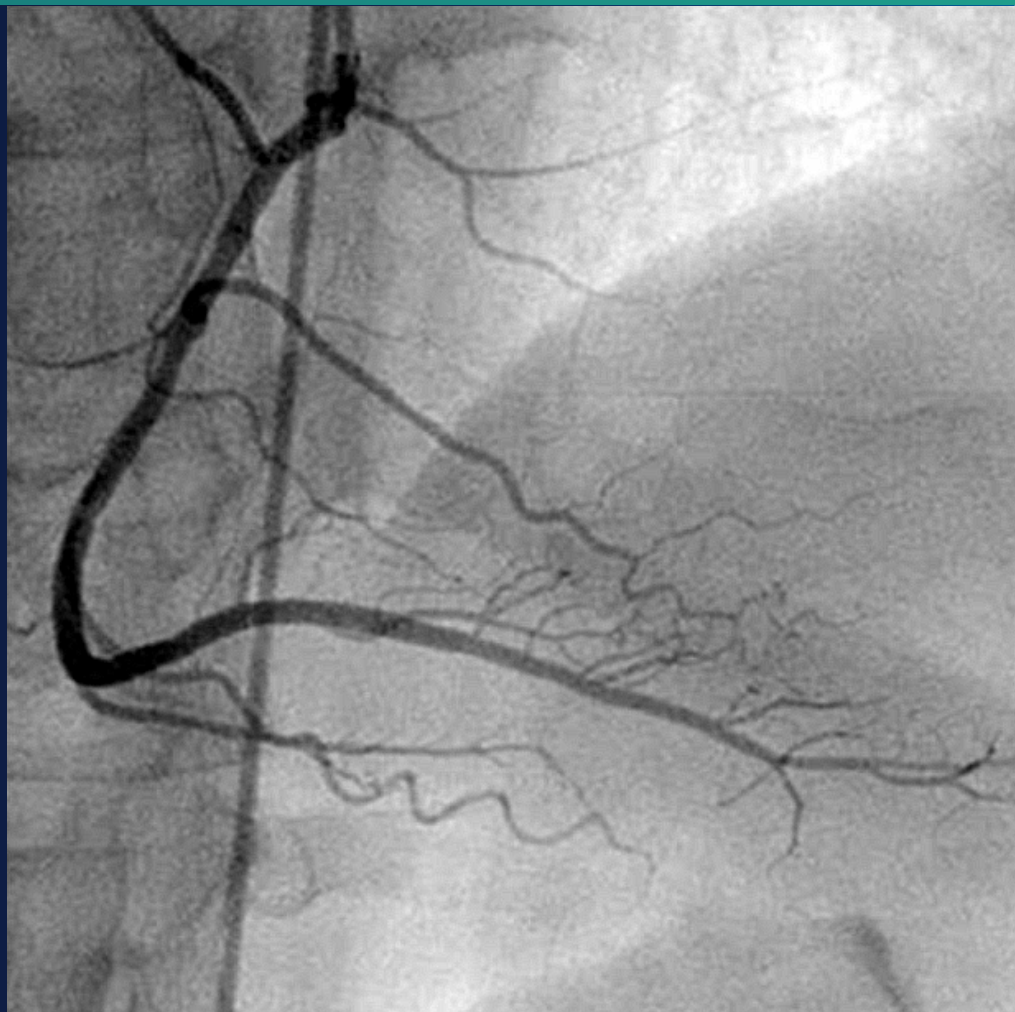


Reduce low frequency (but image is not sharp)





Amplify high frequency (edge enhancement)





ClarityIQ technology

Touches every part of the system, from tube to display

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Image fusion and why do we need it

Why Image Fusion matters

Imaging techniques

Fluoroscopy

- * Information obtained through bi-plane shadows
- * Multiple contrast injections in multiple views to obtain adequate spatial information
- * Significant radiation and contrast requirements
- * Most labs are not biplane

CTA

- * Not real time
- * Significant radiation and contrast requirements
- * Single phase

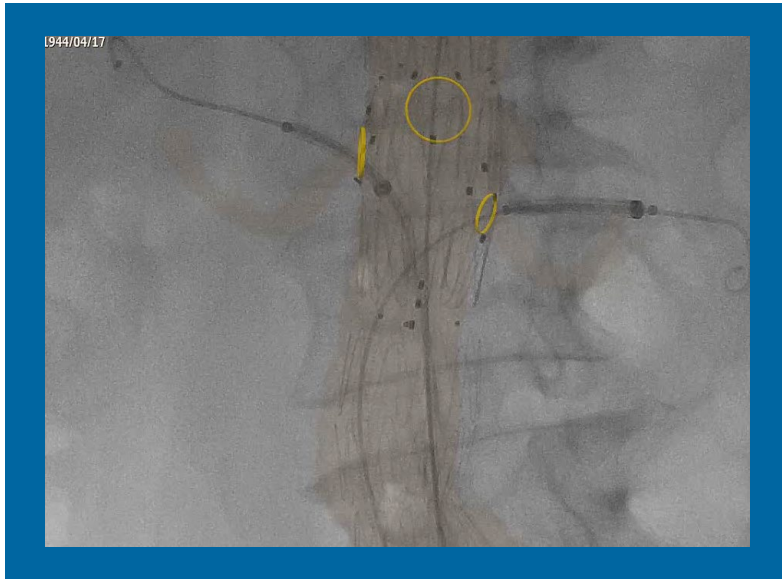
MRA

- * Not real time
- * MR compatible equipment
- * Poor spatial resolution
- * Poor visualisation of calcium

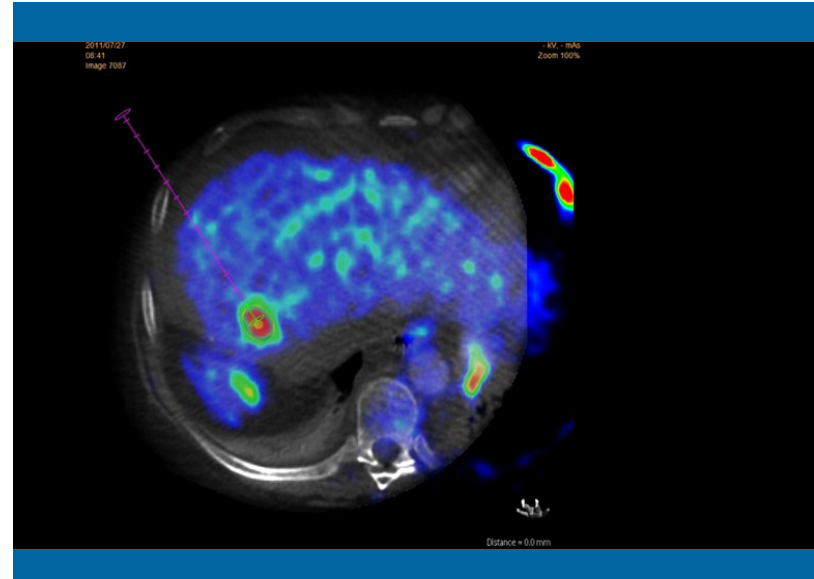
EchoCardiography

- * Small FOV in real time 3D TEE
- * Slower frame rate with lower resolution
- * Very fine structures (devices) are not well visualised

Fusion imaging



CTA fusion



PET/CT fusion

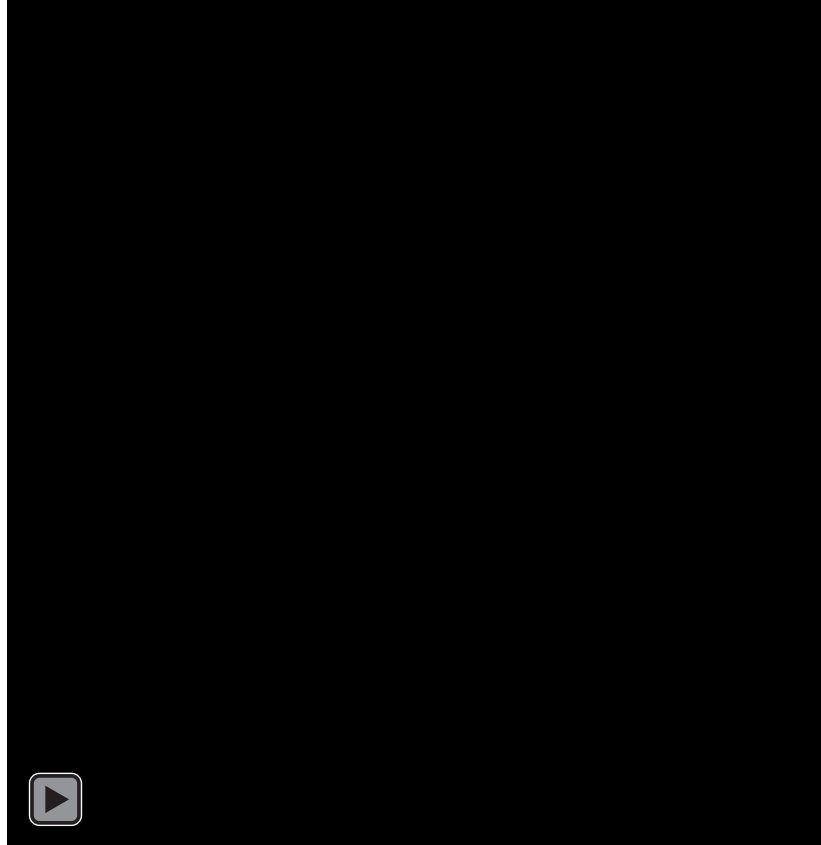
EchoCardiography fusion



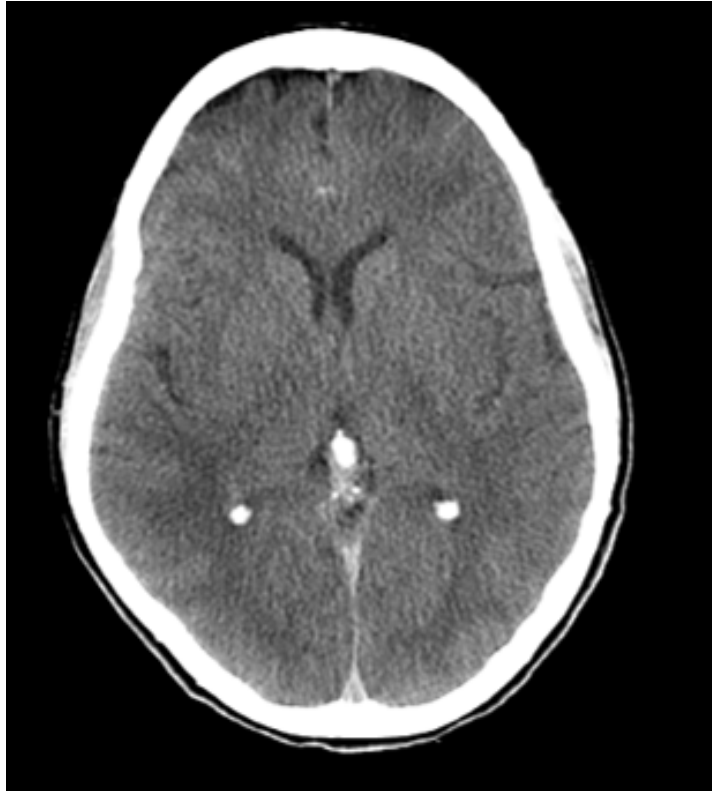


3D Angiography

3D Angiography



Cone Beam CT



WE-TRUST study

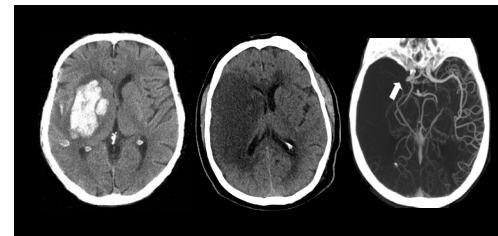
- Multicenter randomized controlled trial

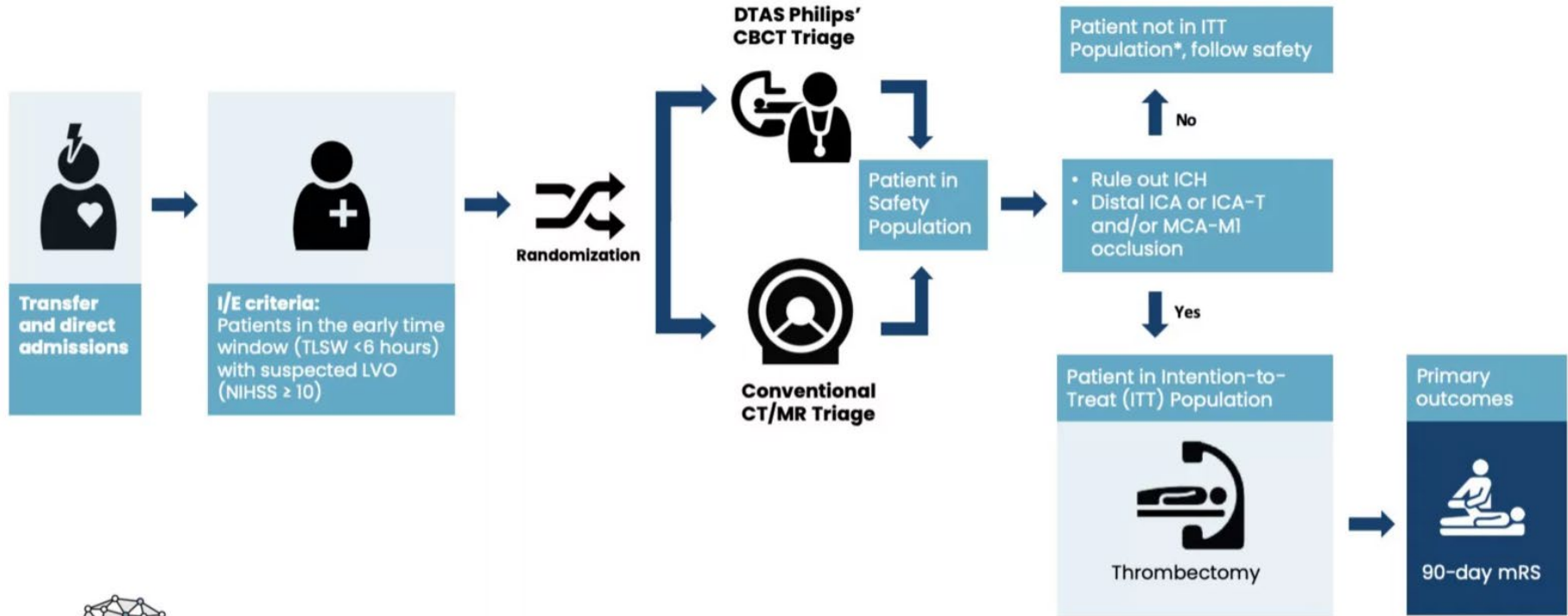
Objective

To demonstrate that the DTAS triage workflow involving CBCT results in superior patient outcome in ischemic stroke patients with confirmed Large Vessel Occlusion as compared to the conventional CT/MR triage workflow

- 16 centers*
- 500 + patients
- 9 different countries in 3 continents: Europe, North America, LATAM
- 2 years
- 3-month follow-up
- Patients in the early time window with suspected LVO

* pending approvals form ethics committees and CA's





* Patients of the DTAS arm that are not part of the ITT population will receive treatment as per local clinical practice.



Present, near and maybe not so near future of
angiography

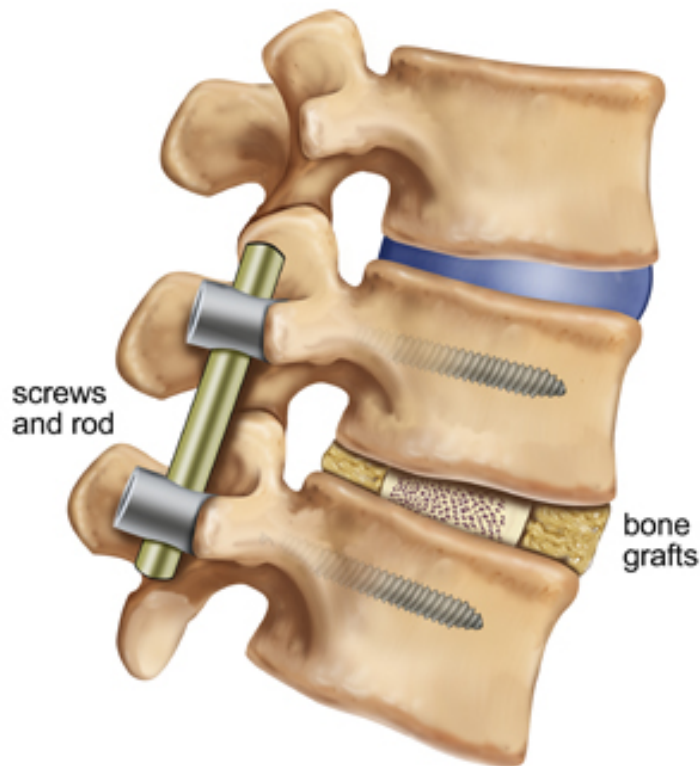


Spinal Fusion

Surgical procedure used to address many problems with spine. Essentially a „welding“ process, where you fuse two or more vertebrae, so that they heal into a single solid bone.

May relieve symptoms of:

- Spondylolisthesis
- Scolioses
- Spinal fracture
- Spinal stenosis
- etc.



ClarifEye: Augmented Reality



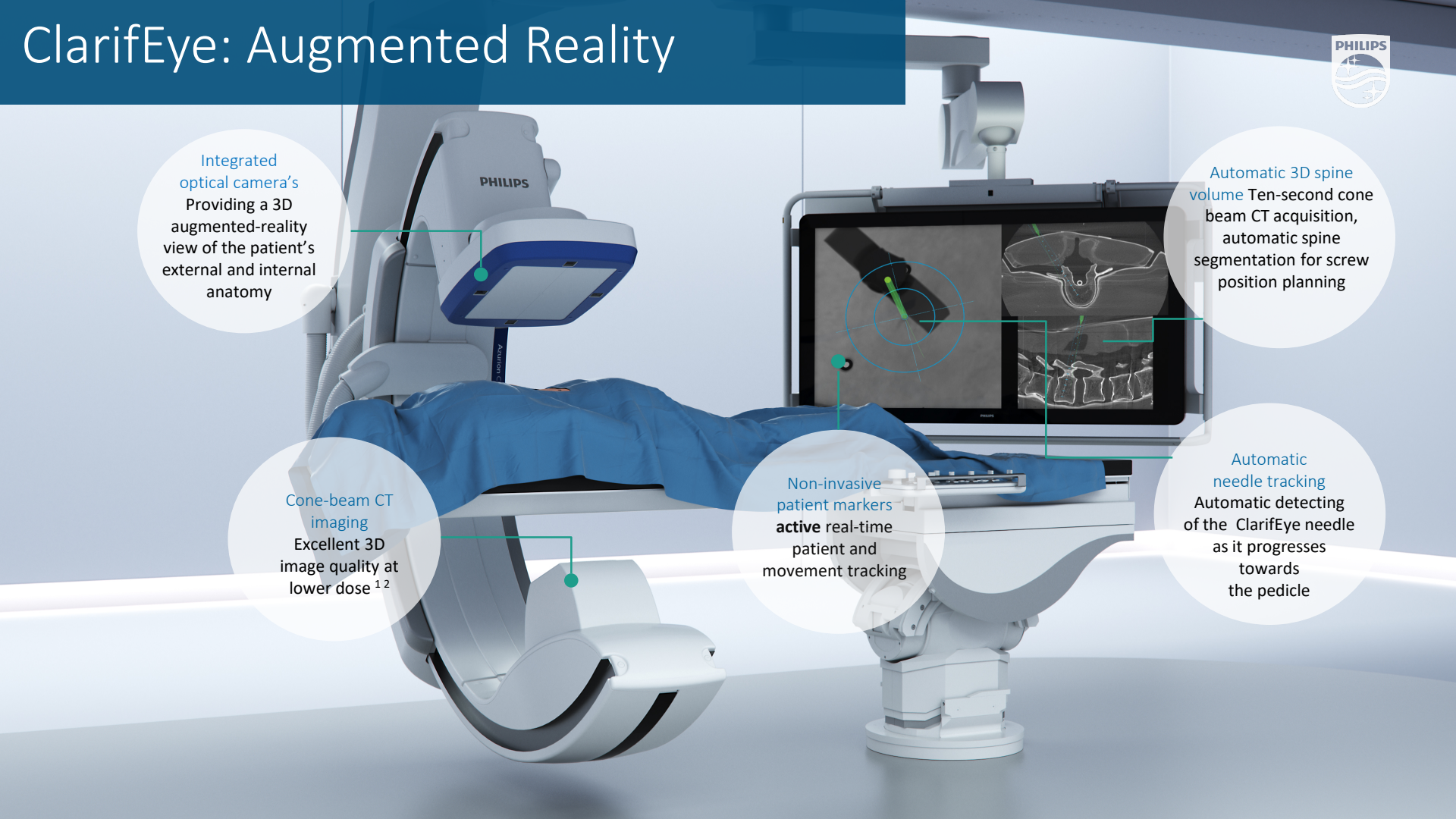
Integrated optical camera's
Providing a 3D augmented-reality view of the patient's external and internal anatomy

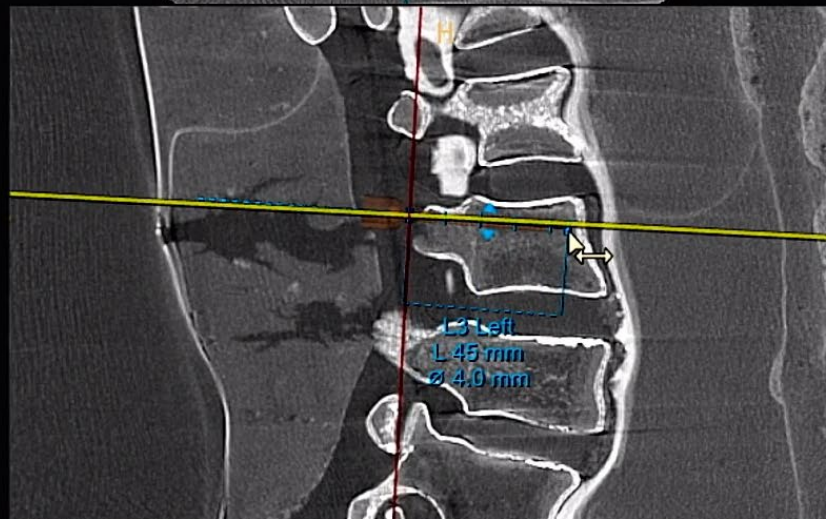
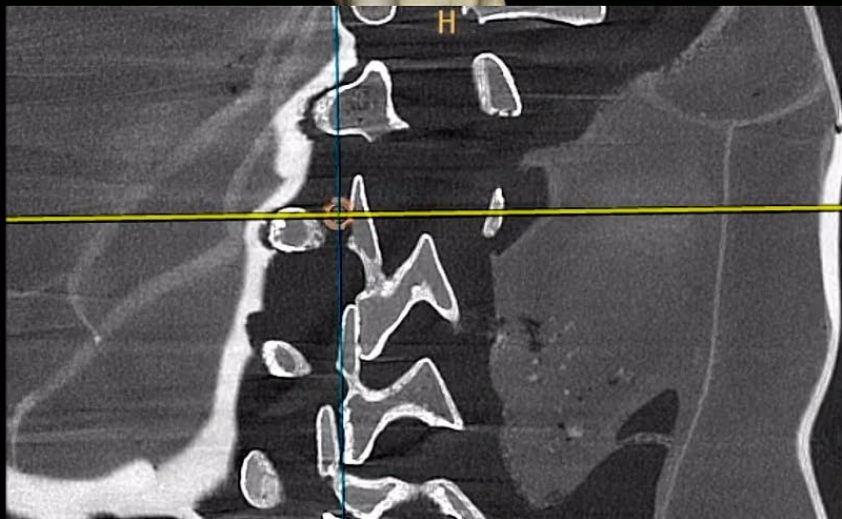
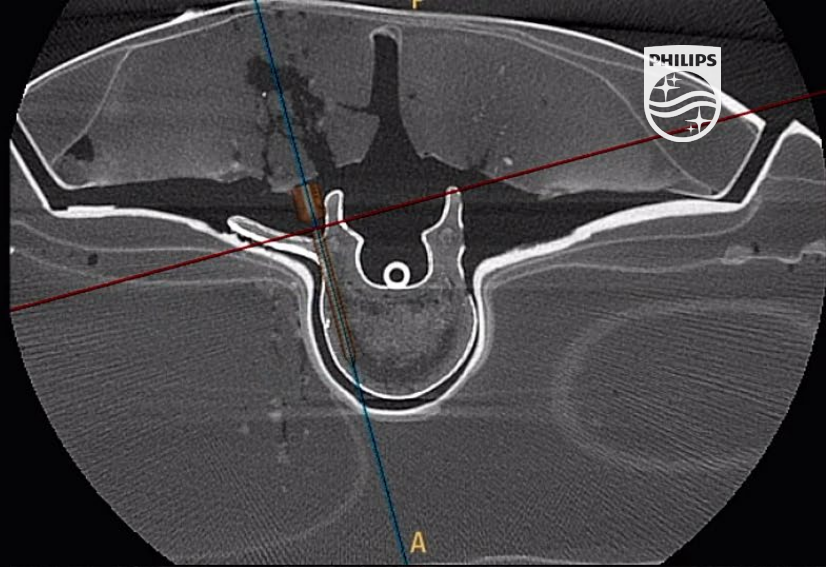
Cone-beam CT imaging
Excellent 3D image quality at lower dose^{1,2}

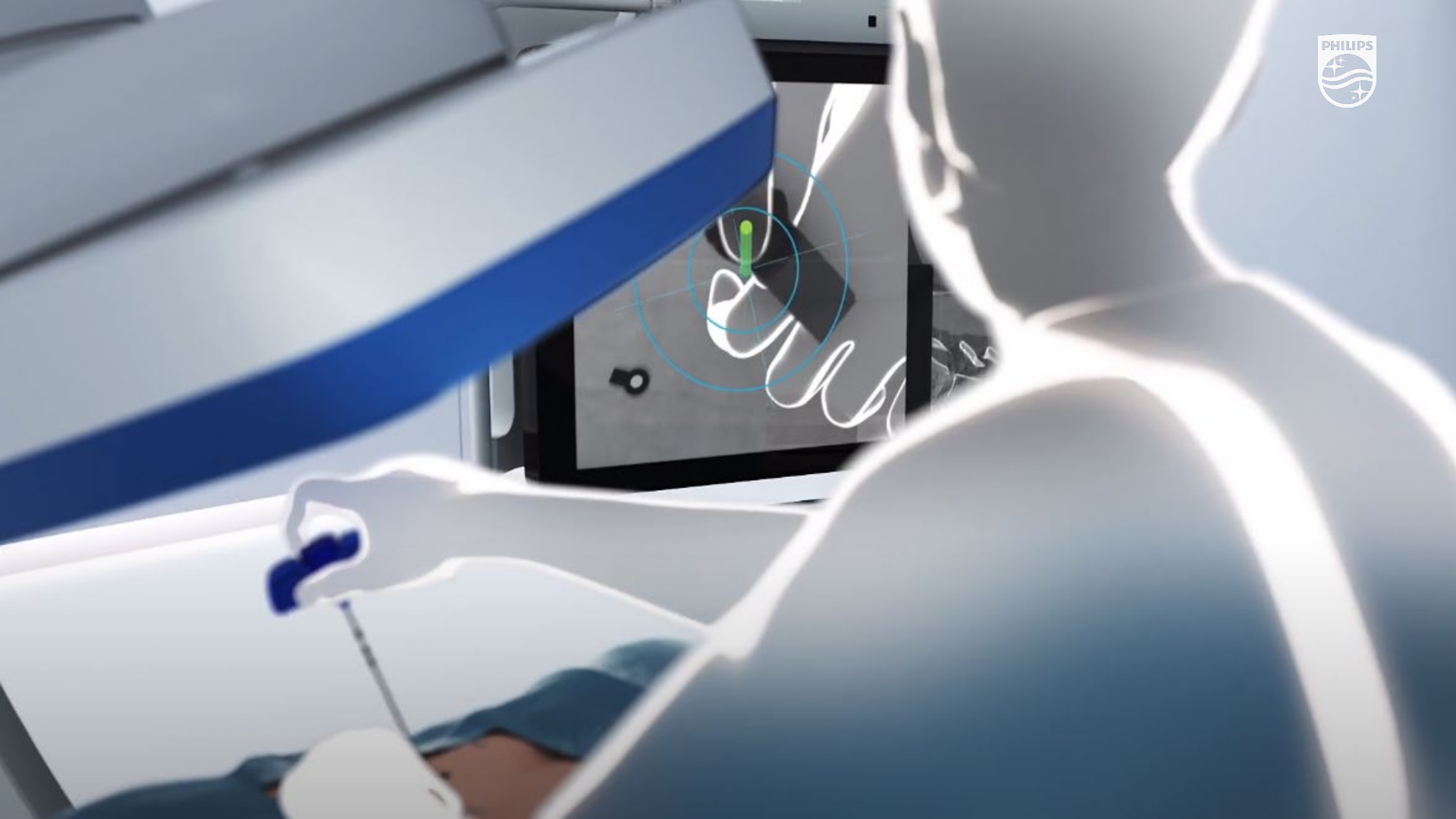
Non-invasive patient markers
active real-time patient and movement tracking

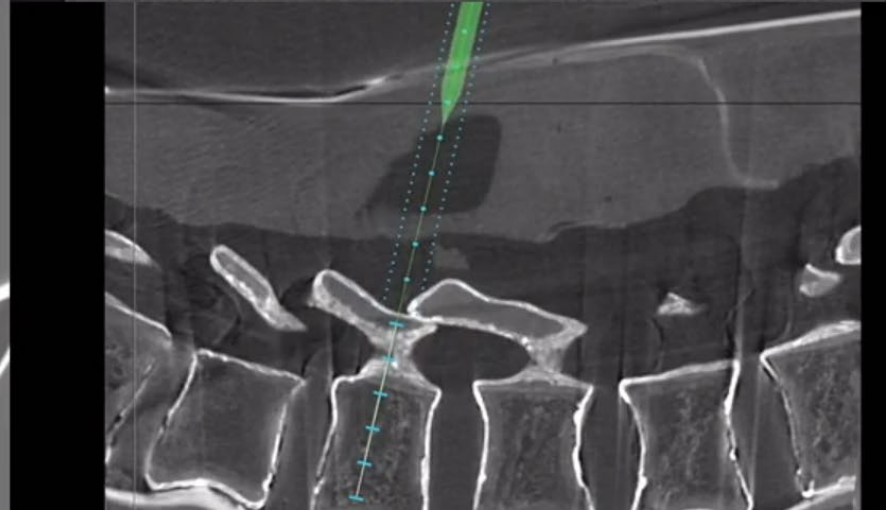
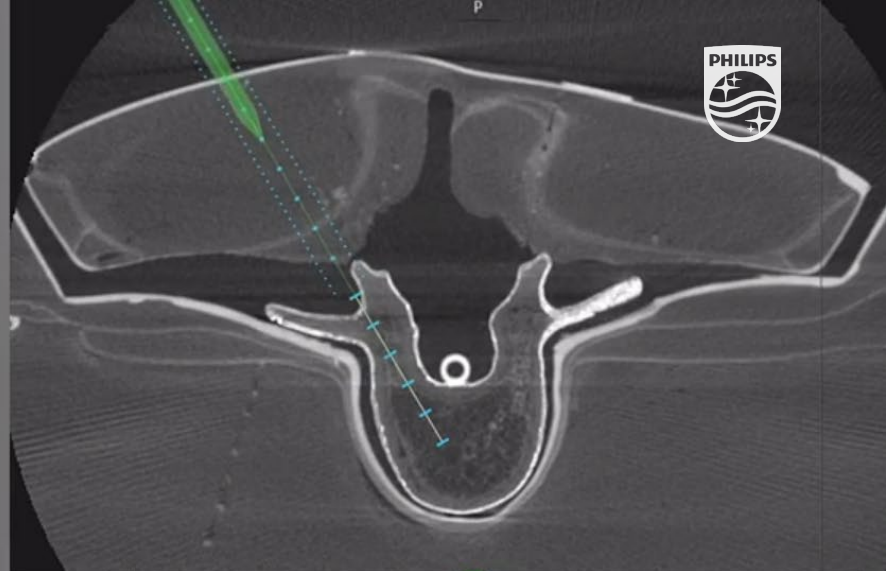
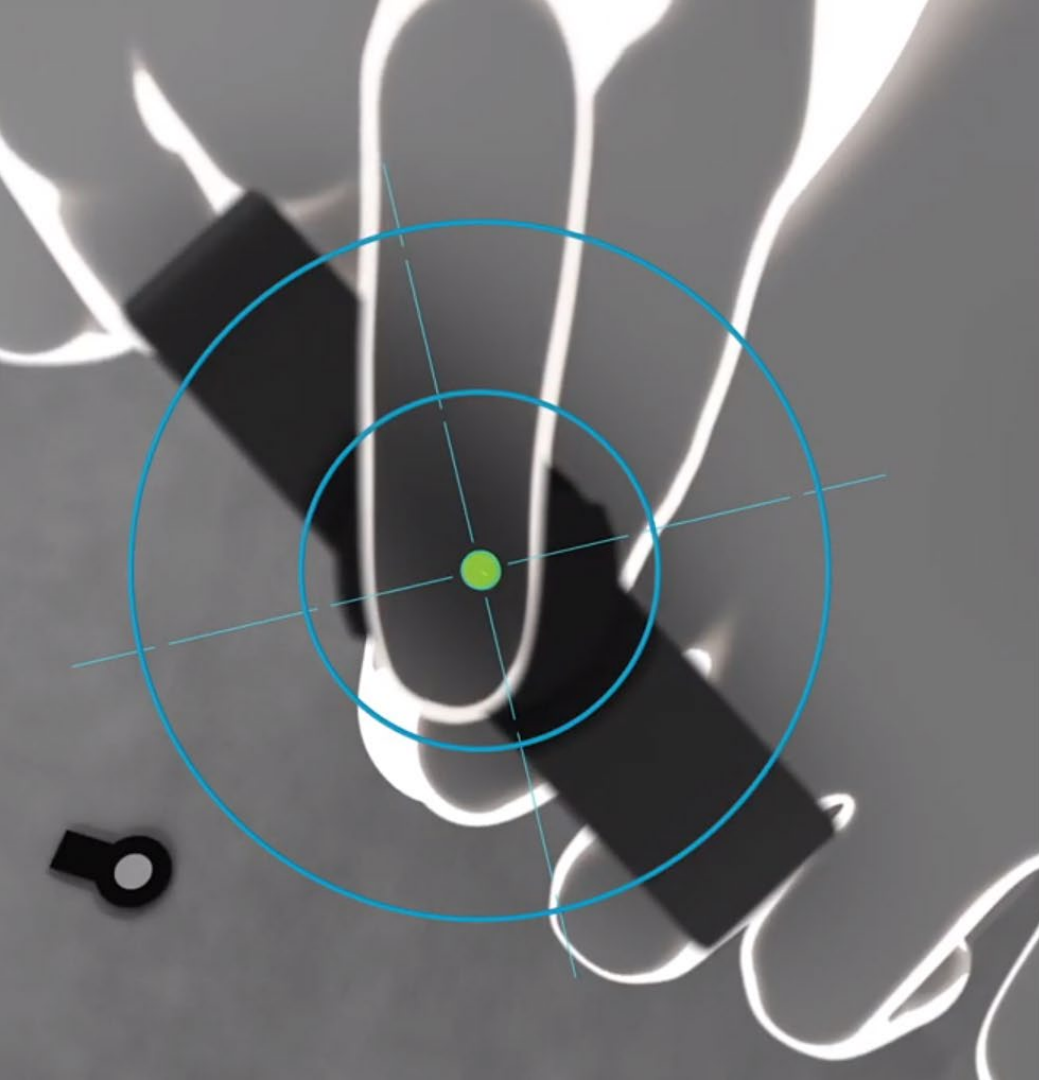
Automatic 3D spine volume
Ten-second cone beam CT acquisition, automatic spine segmentation for screw position planning

Automatic needle tracking
Automatic detecting of the ClarifEye needle as it progresses towards the pedicle





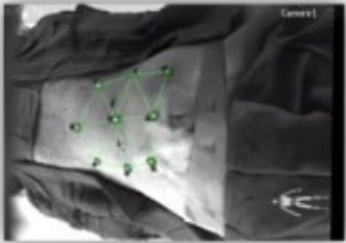




ClarifEye: Augmented Reality



Easy setup



Live non-invasive tracking



Imaging & navigation into 1



X-ray included



In-room 3D verification

No wheeling, no cables

No invasive reference frame

No registration ,no data transfer

No need for additional system

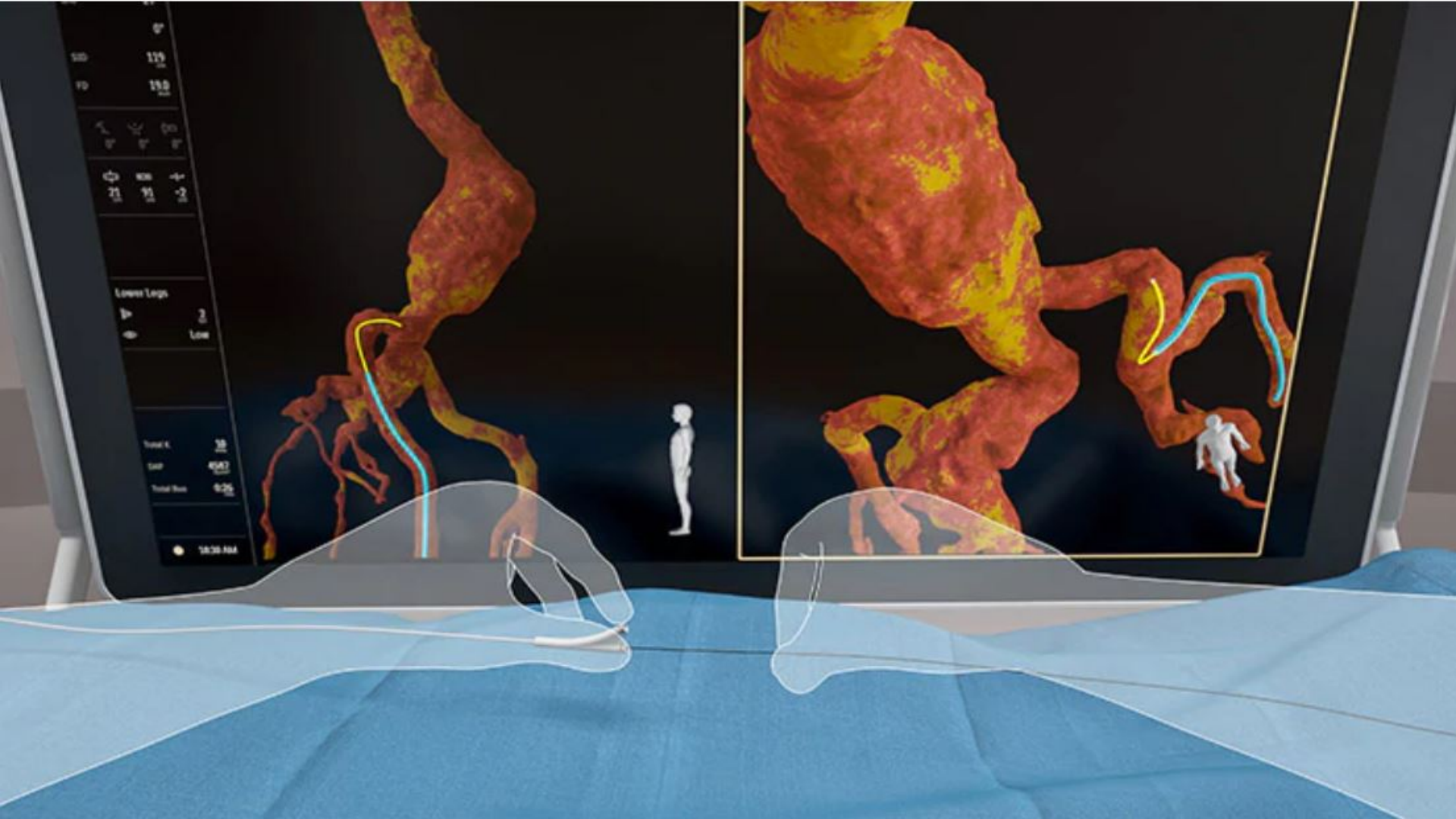
No need for post-op CT





3D Device Guidance powered by Fiber Optic RealShape (FORS) technology





100
115
130

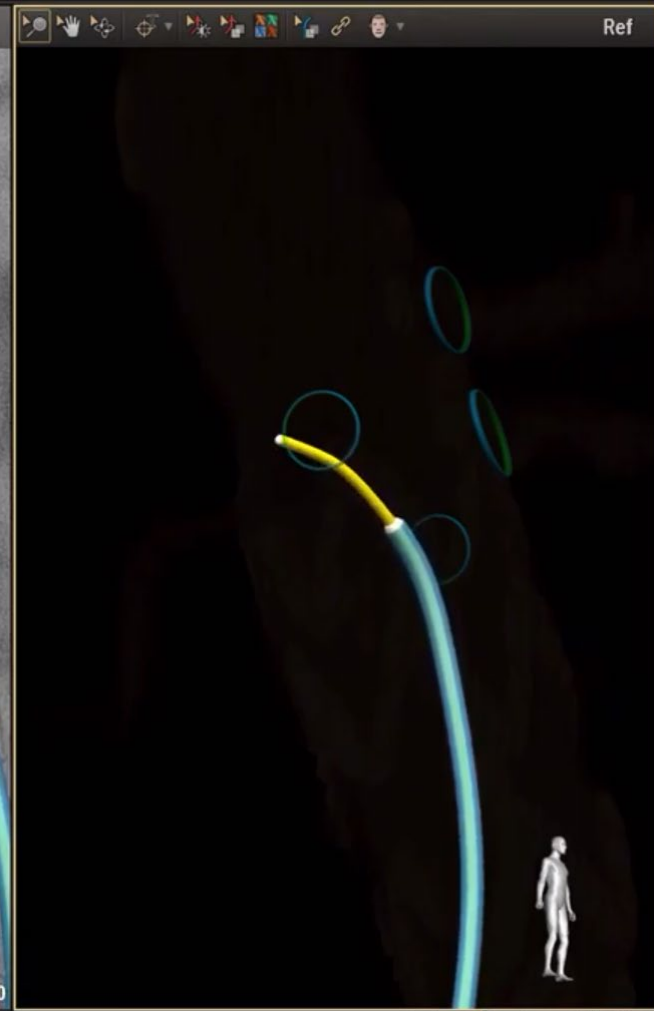
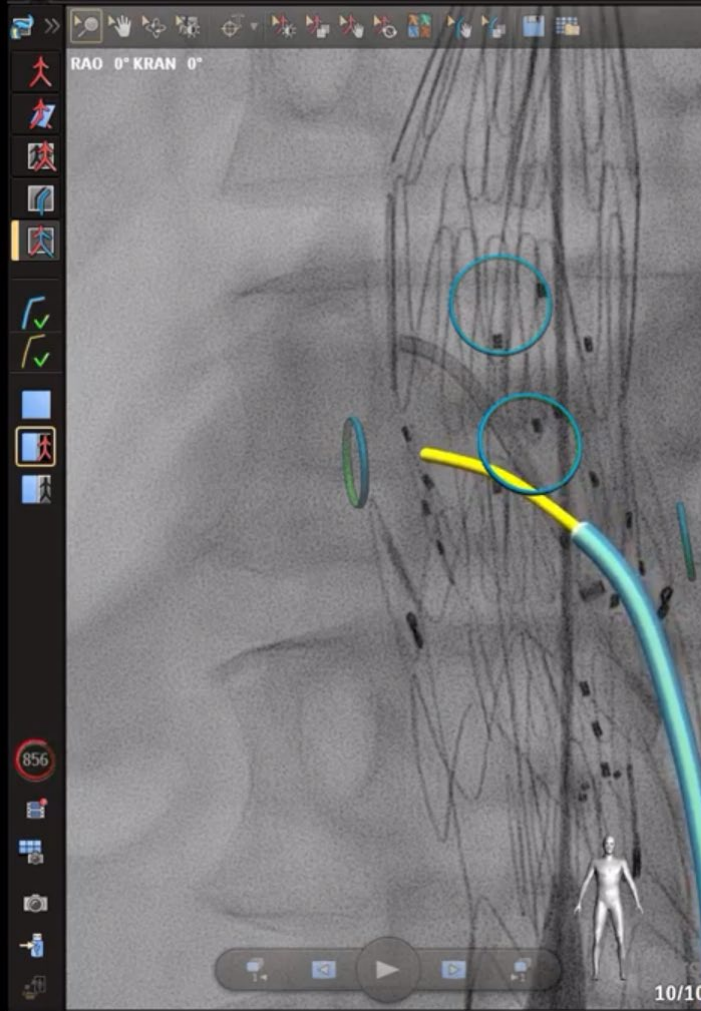
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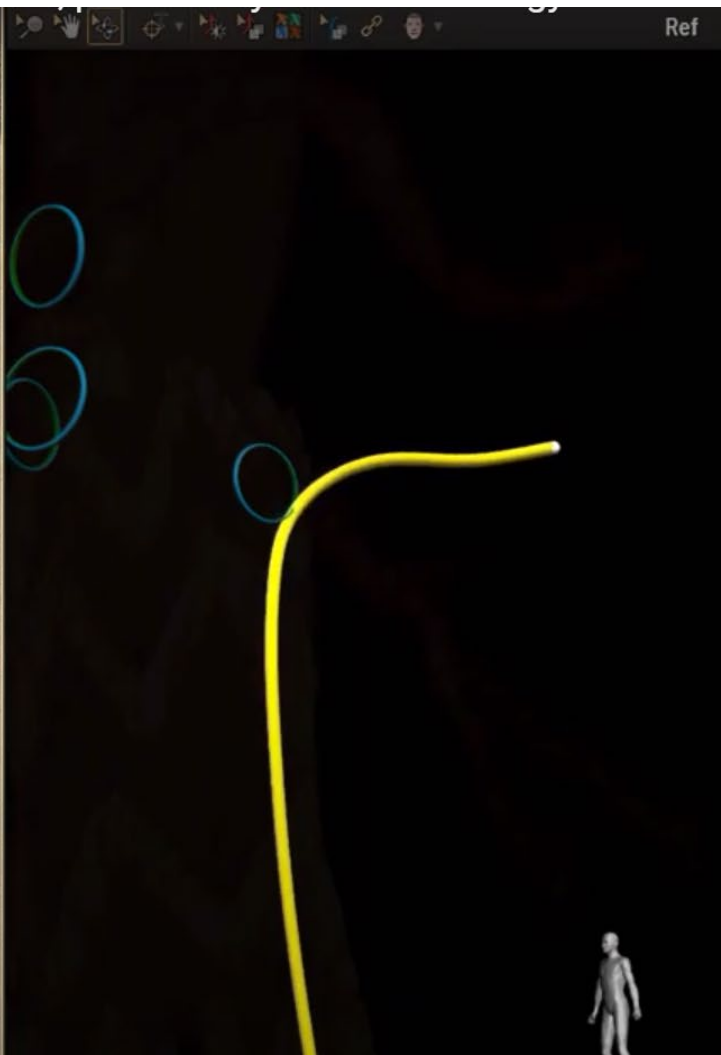
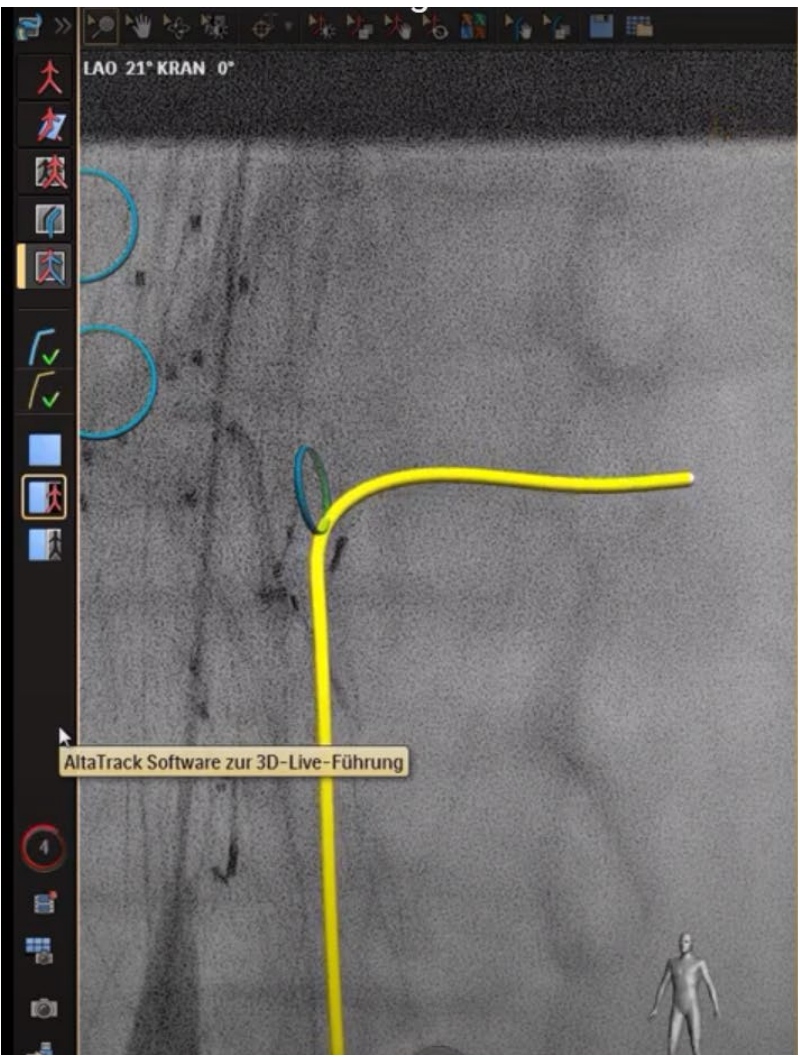
Lower Limbs

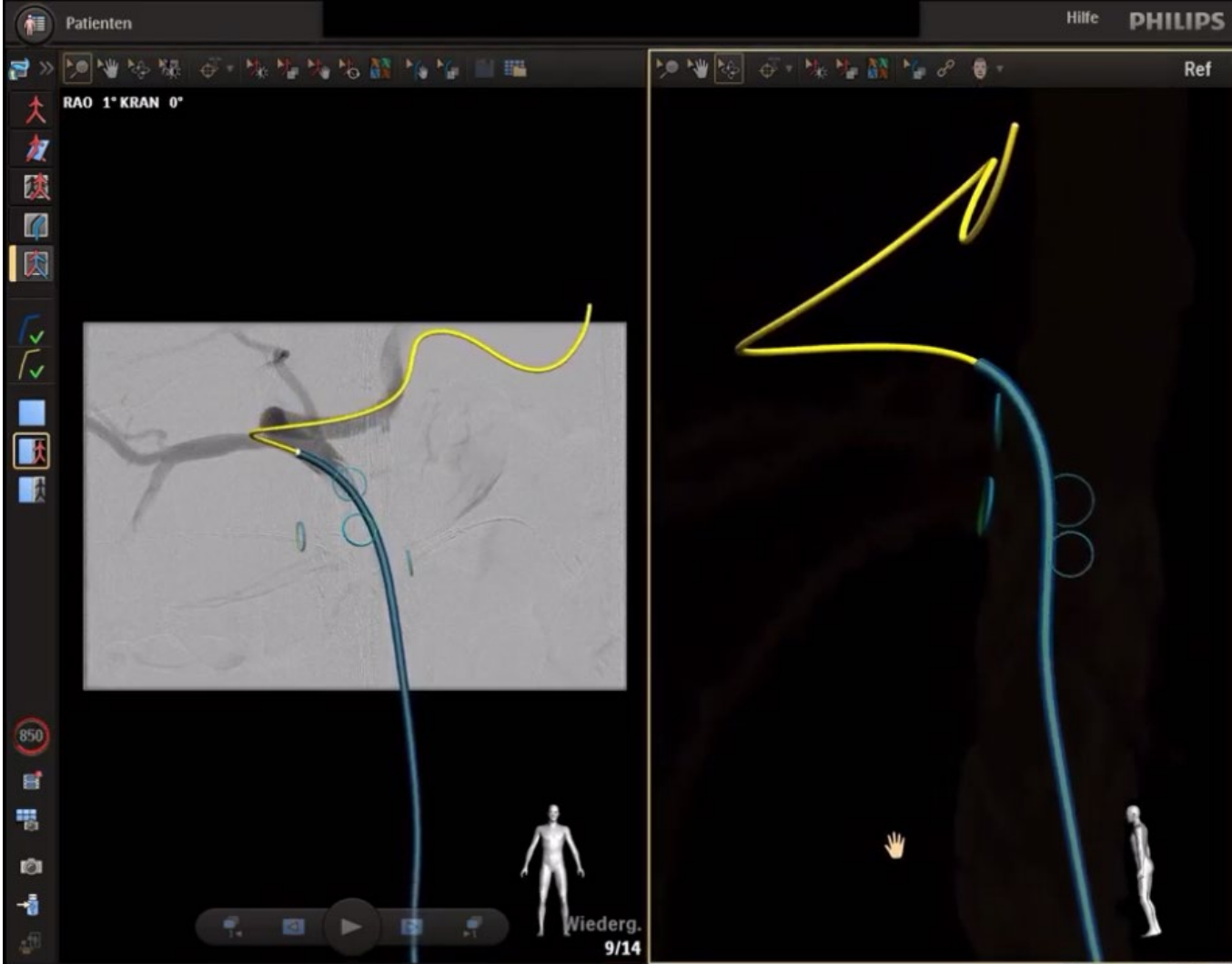
2
Line

Total L: 20
L: 45.7
Total Flow: 0.25

10:30 AM















It's not just about the technology that is changing

