



**PHILIPS**

Veradius Unity

Surgery

# Making the difference with Live Image Guidance

Enjoy straightforward surgical imaging



### Key advantages

- Transform your surgical procedures with a system as easy to use as a tablet. The user interface is so easy, it scored in the top 10% for ease of use<sup>1</sup>
- Cut miscommunication by almost half during positioning through our patented ClearGuide and color coding on the C-arm<sup>2</sup>
- Increase confidence during complex vascular, cardiac, and orthopedic procedures with superb image quality achieved at excellent dose efficiency

## Enhance teamwork for consistently high image quality

New and complex surgical procedures require surgical teams to work together efficiently and understand the exact nature of critical anatomy in relation to the devices used. When carefully setting pedicle screws, placing a stent graft, or delicately inserting a pacemaker lead, your X-ray system provides crucial guidance. Getting consistent high quality images is only possible when there is excellent interaction between the physician, operator, and the mobile C-arm system. We have re-defined teamwork during surgical imaging so you can experience a new level of efficiency in surgical procedures.

## 80% say Veradius Unity is easier to use<sup>2</sup>

Veradius Unity is already our third generation Flat Detector system. Its unique tablet-like user interface is extremely user friendly. In fact, 80% of non-Philips operators said the user interface of the Veradius Unity was easier to work with than the C-arm they were currently using<sup>2</sup>. Combined with our superb image quality and dose efficiency, Veradius Unity supports you to perform difficult cases with confidence and experience smooth procedures.

# Making the difference

## Philips Live Image Guidance

Together we make the difference in surgical procedures to improve patient outcomes and save lives. With our Live Image Guidance we are creating a better experience and providing greater insight in the surgical theater, delivering relevant clinical value where it's needed most – at the point of patient treatment.

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# Better user experience

## to promote consistency and efficiency

### Efficient workflow to enhance staff satisfaction

When you are deciphering tortuous vasculature or finding the sweet spot for spinal surgery, establishing an efficient workflow can enhance team member satisfaction.

Physicians and operators experience a whole new level of simplicity with our tablet-like user interface on the C-arm. Now you can just touch the screen with a finger to drag the shutters and iris into position on Last Image Hold. At each step you only see the features you need, making it easy to find the right selections.

### Accurate repositioning – first-time-right

Returning the C-arm to the exact position to check placement of a pedicle screw during spinal surgery can require additional scout images without extra positioning guidance. With Position Memory, you can store a previous position and recall it when needed to speed up re-positioning. During user tests, Position Memory increased first-time-right<sup>3</sup> repositioning from 49% to 94%<sup>2</sup>.

### Outstanding communication for faster positioning

Our unique ClearGuide in combination with color coding on the C-arm speeds up positioning. This can make spinal surgery and other procedures that require frequent position changes more pleasant for staff. ClearGuide provides a uniform set of reference numbers for the operator and physician to use during positioning. In fact, when users tested ClearGuide as they performed a simulated spinal surgery, miscommunication about system positioning was cut by almost half<sup>2</sup>.

### Ample room to work

The optimized C-arc design provides ample room to easily access and image normal sized and obese patients. There is plenty of space for the surgeon to work around patients. It is easy to position the C-arm, even for difficult projections. Plus, you have room to maneuver and reposition your instruments.

### Wireless foot switch – less clutter

Our Wireless foot switch reduces clutter and simplifies preparation.



## User study confirms advantages of ClearGuide and Position Memory

The Veradius Unity is the product of a collaborative effort that involved physicians and operators around the world. The result is an intuitive system with innovations not found on any other mobile C-arm. To quantify the benefits of the Veradius Unity in clinical practice, we put its novel design through a rigorous set of independent user tests.

During the tests, 45 clinicians (15 nurses, 15 X-ray technicians, and 15 physicians) were split into two groups. The first group of 15 X-ray technicians and nurses tested the user interface. The second group of 15 physicians and 15 X-ray technicians and nurses performed simulated procedures in a simulated OR environment. Each physician was paired up with one nurse or X-ray technician. None of them had worked with a Philips C-arm or with each other before. While looking at a spine phantom, they were asked to perform sequences of positioning tasks with an accuracy of  $\pm 1$  degree. As they worked, an independent agency that specializes in usability testing, measured the number of images and time needed to reach the desired position, instances of miscommunication, frustration, etc. Each test was performed once while using ClearGuide and Position Memory, and once without, to determine their effect on the parameters measured.



Swipe through images, pull up a large image, and collimate and rotate images with the touch of a fingertip on our intuitive touchscreen.

The same reference numbers are shown on the clinical image and on the Flat Detector so everyone knows which direction is meant when positioning the C-arm.



Position Memory stores a previous position and displays it on the monitor above the current position, helping the user to quickly return to the desired view with accuracy.



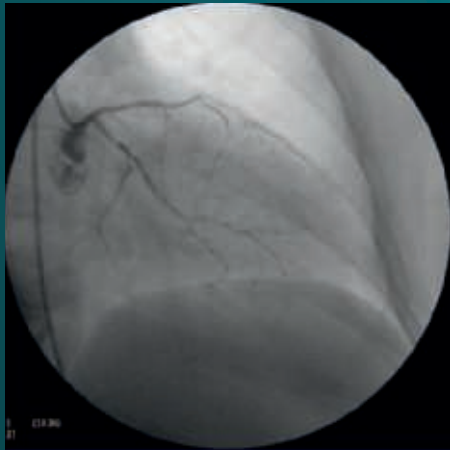
AP view Thoracic Spine -  
Fusion to reduce Scoliosis



EVAR (EndoVascular Aneurysm Repair)



AP view of an ERCP-Endoscopic Retrograde  
Cholangio Pancreatography



Coronary angiography



# Greater insight and confidence

## in finding and treating the problem

### Exceptional quality images

A number of features enhance image quality for specific procedures:

- High level fluoroscopy and exposure mode – produces high quality images of virtually every patient, whatever their anatomy or size
- Unique BodySmart software – allows free positioning of anatomy, even at the edge of the image, by providing automatic image adjustment
- Automatic shutter positioning – sets shutters at the touch of a finger for superb image quality
- Automatic contrast and brightness control – optimizes images in real time

### See more, decide with confidence

Our third generation Flat Detector system once again raises the bar in surgical imaging performance. It provides high quality fluoroscopy, exposure, subtraction runs, and roadmap guidance to support orthopedic, cardiac and vascular surgeons in performing the most challenging procedures. From pacemaker lead insertions to abdominal aortic aneurysm repair, from hand surgery to vertebroplasty. The Flat Detector delivers consistent, undistorted edge-to-edge image quality and superb contrast resolution to support critical decision making. Take a high resolution digital exposure with the SharpShot feature to check device placement after procedures. Get sharp cardiac images with the 30 frames per second fluoroscopy setting.

Veradius Unity has a number of new features to enhance decision making during challenging surgical procedures.

### Outlining made simple

To easily mark a bifurcation or side branches on live fluoroscopy images, the outlining tool allows you to draw on the touchscreen of the Mobile Viewing Station using a stylus pen or your finger. Simply press the undo button to correct or erase the outlining.

### Enhanced imaging for metal objects

To reduce artifacts from metal objects, such as orthopedic implants, the Metal Correction can be applied during imaging. It adjusts the contrast and brightness of images to enhance image quality when metal objects are present in the field of view. This can be useful during spinal surgery or fracture repairs.

# Lower barriers

## for minimally invasive interventions

### Manage dose efficiently with relevant acquisition settings

Different types of procedures require different imaging parameters. A fracture repair in an ankle (static and small) can use relatively long pulse times and higher levels of noise reduction while still producing high quality images. ERCP procedures that involve lots of moving anatomy require short pulse times, as well as excellent contrast resolution for the small biliary stones and guide wires to be visible.

The Veradius Unity provides a pre-set list of acquisition settings grouped by types of exams. Now it's even easier to select the relevant procedure and anatomical area from the list and the system automatically applies the parameters to get the required image quality with the appropriate presets. Manual adjustments can be made as needed.



Conveniently select the procedure type and anatomy and the system will automatically deliver superb image quality at excellent X-ray dose efficiency.







### Comprehensive X-ray dose management

With the Veradius Unity, you benefit from highly evolved X-ray technology with comprehensive dose management features. Philips was the first company to market the mobile C-arm and has over half a century of experience in developing mobile C-arm systems for the surgical environment. That translates into a full range of radiation management features that allow low X-ray dose for lengthy surgical procedures, while providing superb quality images:

- ClearGuide and Position Memory: during a simulated spinal surgery the use of these features cut the number of scout images nearly in half, compared to not using it<sup>2</sup>
- Independent shutters – position shutters independently to better match anatomy in the field of view without using radiation
- Efficient beam filters with an additional 0.1 mm of copper and 1 mm of aluminum increase the quality of the X-ray beam, allowing a 40%<sup>4</sup> reduction in skin entrance dose rate compared to the minimum filtering required by international standards
- Monoblock design – delivers sharp pulses to provide excellent radiation dose management
- Removable grid – easily removed for small anatomy and extremity exams to enhance dose management.
- Integrated laser – accurately position the C-arm without applying radiation

### Increased dose awareness

All our mobile C-arms provide radiation dose awareness features which aid in the documentation, analysis, and awareness of radiation dose in the OR. These include DICOM Radiation Dose Structured Reporting, dose indication during the procedure, and a dose alert when the examination dose exceeds a preprogrammed level.

### DoseAware real-time dose feedback

The DoseAware<sup>5</sup> dose monitoring system provides real-time feedback that is displayed during a procedure, so staff can immediately adjust working habits to better manage radiation exposure. DoseAware also provides a time-stamped record of where and when X-ray dose was acquired.



# Increased economic value

We are committed to working with you to reduce re-admissions, streamline workflow, and increase patient volume by opening the door to new procedures and techniques. By supporting a wide range of procedures and improving workflow efficiency during imaging, the Veradius Unity can help you increase system utilization and reduce the total cost of ownership.

## **Full utilization of your system**

You no longer need separate systems for orthopedics, vascular, and cardiac procedures. The Veradius Unity is a versatile imaging system that supports all your clinical needs. To enhance performance in these different applications and to simplify use, each procedure type is supported by a dedicated preprogrammed exam set with suitable imaging parameters.

## **Your needs, your support**

As your healthcare business changes, we are changing right alongside you. Today's healthcare providers are looking for more flexibility in the support they receive from their imaging partners. Our Veradius Unity is the result

of a close collaborative process. Our new portfolio of RightFit Service Agreements<sup>6</sup> have also been designed from the ground up based on extensive input from healthcare providers to meet their service challenges and business priorities.

## **Philips Remote Services**

Our worldwide Remote Services is an advanced, virtual private network that links your Philips Healthcare equipment to our global Remote Services Customer Care Centers. Services that formerly required onsite visits are now available by connecting to our remote experts. This includes system error identification, diagnosis, and troubleshooting, as well as immediate remote repair online.



### Save precious time

Time is money, especially in an OR. Many options in our system help you save valuable surgical time. These small savings can quickly add up to shorter procedures in the end:

- Using an intuitive streamlined user interface can prevent delays from searching for specific functions
- During preparation, you can boot-up the system in less than 70 seconds and bring it into the OR – ready to go. That can save start-up time per case. Start imaging immediately after the system is up and add patient data later when it's convenient
- ClearGuide, with its unified way of working, reduced the time needed for positioning by more than 20% in user tests<sup>2</sup>
- Position Memory, facilitating first time right repositioning, reduced the time needed to get back to a previous position by more than 40% in user tests<sup>2</sup>

1 Top 10% for ease of use is based on an average score of 83.5 on the System Usability Scale (SUS) by 15 users in an independent study, interacting with the C-arm software's user interface. The SUS was developed by J.Sauro (See "A Practical Guide to the System Usability Scale: background, Benchmarks, & Best Practices," by J. Sauro, 2011, Denver, CO, USA, Measuring Usability LLC.) Sauro's study tested the ease of use of 500 consumer and commercial products and did not necessarily include mobile surgery C-arms.

2 Results obtained during user tests performed in November 2013 by Use-Lab GmbH, an independent company. The tests involved 30 USA based clinicians (15 physicians teamed up with 15 nurses or X-ray technicians), who performed simulated procedures in a simulated OR environment. None of them had worked with a Philips C-arm or with each other before.

3 First time right repositioning was defined as moving to a position within 1 degree of required position in test set-up.

4 IEC 60601-2-43: 2010 specifies minimum filtering of 3 mm aluminum. Data was obtained from non-clinical testing using PMMA phantoms.

5 DoseAware is not a replacement for the thermoluminescent dosimeter (TLD) as a qualified dose meter. DoseAware is not intended for patient use.

6 The RightFit Service Agreements portfolio is not yet available in all countries.

