GE Healthcare

Innova
IGS 5 with AutoRight™

IGS 520 configuration
Single plane Image Guided System
for cardiology procedures

Simplify your workflows

1   Exclusive Gantry Ergonomy

✔ The floor-mounted system does not interfere with ceiling-mounted ancillaries, allowing you to position them where they need to be.

✔ The offset position of the C-arm provides **maximum positioning flexibility** and **patient access for coverage** from groin to head, **without the need to move** the L-arm to the side.

✔ Thanks to the offset C-arm, you get **access to the patient's head** for anesthesia and nursing.

✔ Reach **steep angulations for coronary visualization** thanks to the C-arm design. As an example the left main coronary artery can be visualised with minimum foreshortening.

✔ The offset C-arm permits fast-spin rotational angiography over a maximum range of 200° at variable speeds from 20° to 40°/sec (maximum speed of 30°/s from LAO to RAO) with flexible cranio/caudal oblique angulations. The **enhanced InnovaSpin™ trajectories** are not constrained to a single transverse plane and can be used at oblique angulations within physical constraints.

✔ The C-arm design allows to perform **3D rotational acquisitions of the left atrium or the aorta**.

3   Table optimised for minimally invasive cardiac procedures

✔ Innova IGS 5 comes with **Omega IV, Omega V** or **Innova I** table rotation, and maximum patient weight of 204 kg. Bot additional area for placement of sterile items.
- Omega IV table is optimal for cardiac work, with its 8-way
- Omega V, **motorised table**, with its 333 cm long table to
- Innova IQ table allows tllting capabilities

Take advantage of the exclusive design of Innova IGS 5 to get maximum positioning flexibility and excellent patient access.

2 User interface meant for simplicity

✔ Control your system and images with integrated, intuitive and robust **table-side controls**

✔ With simple menus, the Central touchscreen lets you control the system, modify imaging parameters, configure your large display monitor and manipulate advanced applications – **all at table-side**.

✔ The full-color, 148 cm (58 in) medical grade large display lets you view **multiple images from up to 16 sources**, using up to **120 customised layouts**[†]. Zoom in comfortably without loss of detail or pixilation to get the clinical focus you need.

✔ Save up to **63 gantry and/or table positions** with the **press of a button**, and recall them at all time with two clicks using the **auto-positionner**[32]. Allowing you to **program your coronary diagnostic angulations** and run the exam quickly.

✔ Access One-touch QA to perform your stenosis analysis from table side.

✔ Control your hemodynamic measurement system from table-side[1].
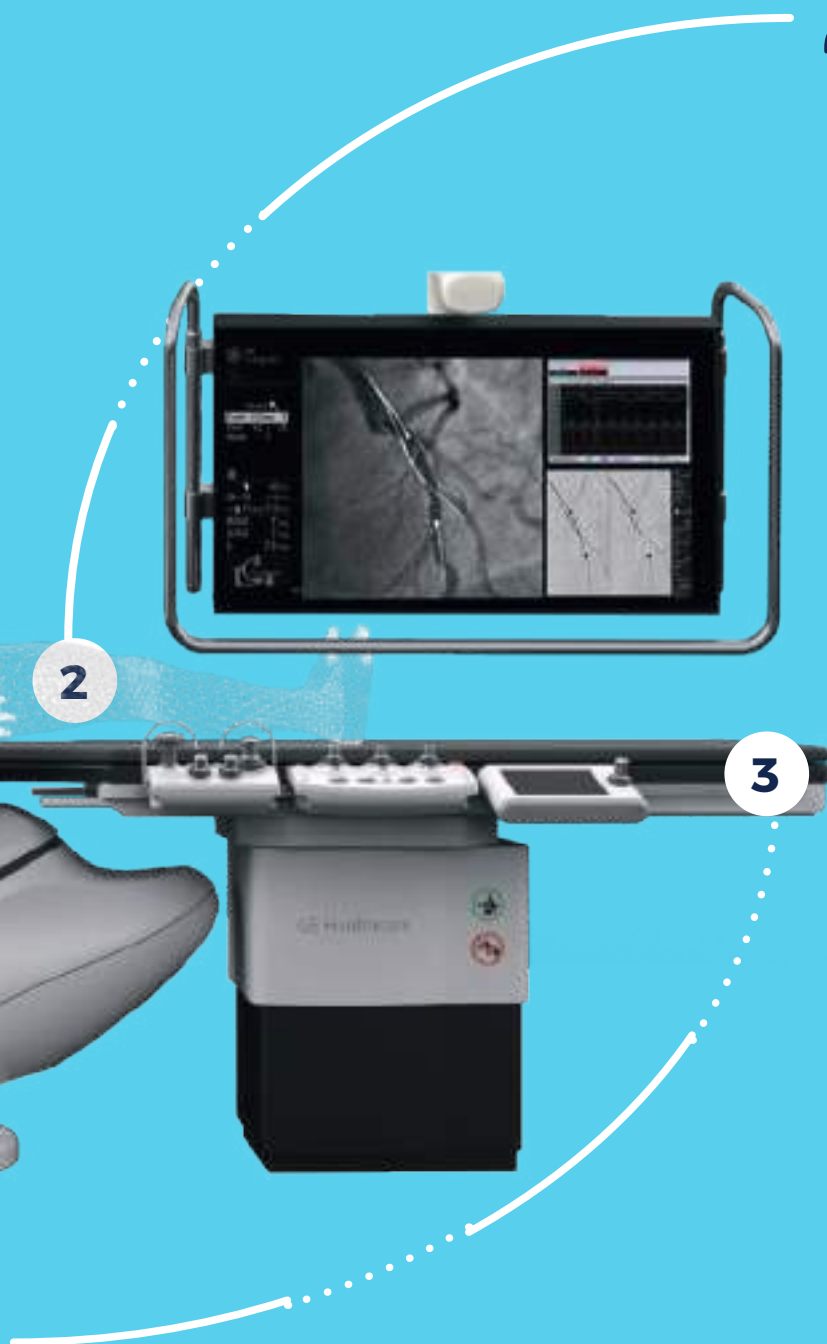
Q tables according to your choice, all of which allow +/- 180°
th tables are designed to accommodate catheters and provide

horizontal floating movement and 300 cm length.
p is optimal for cardiac and peripheral procedures.
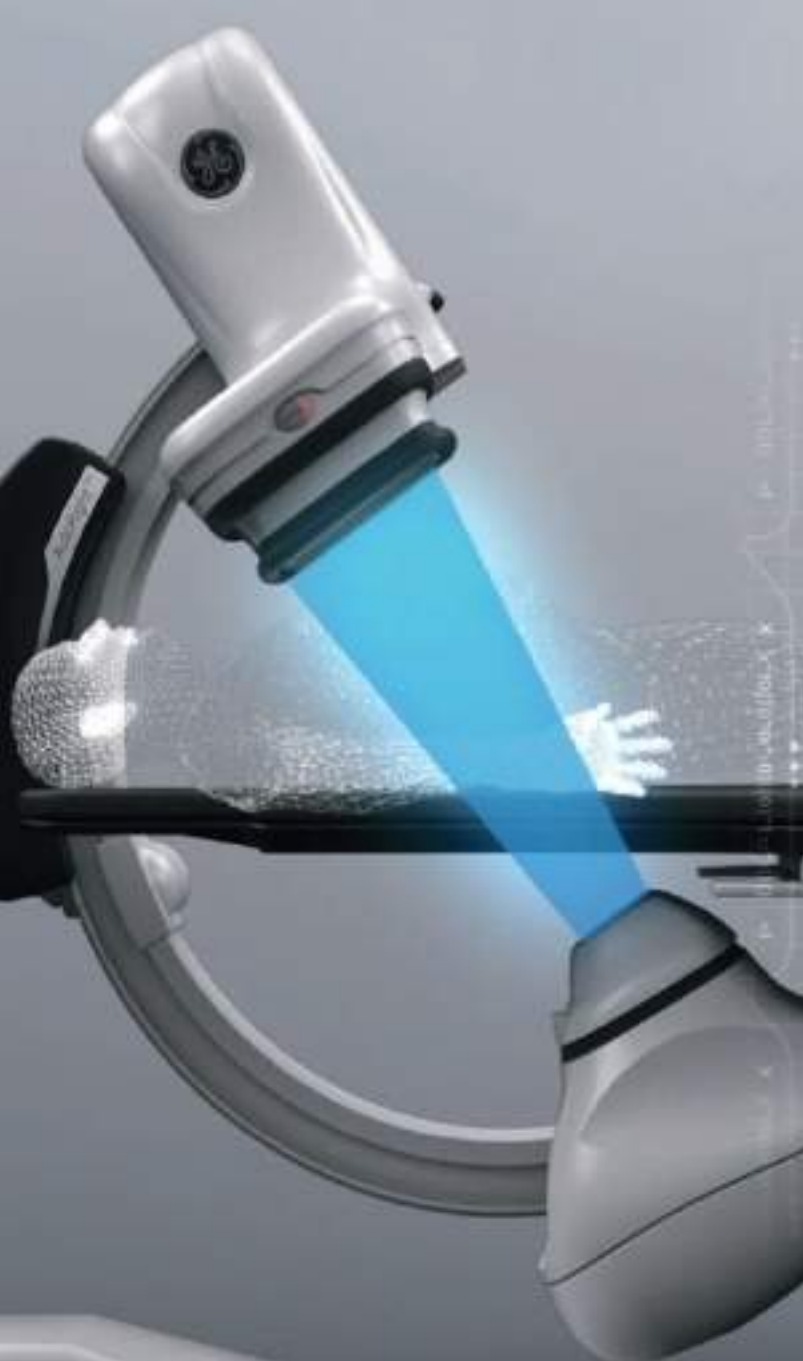
4 Excellent patient access for all procedures

Femoral & arm access, both from left or right, are cornerstone for most cardiovascular procedures. Being able to reach steep angulations from all access, whatever patient size is key to be able to make diagnostic and treatment with comfort & confidence.

Innova IGS 5 offers excellent patient access for all procedures:

✔ The offset C-arm allows head-to-groin coverage without rotating the gantry, limiting L-arm movements.

✔ Thanks to a gantry L-arm rotating at +/- 100° around its vertical axis, patients can be accessed easily from head to toe, from their right or left sides.

✔ The combination of movements of the C-arm and the L-arm permits +/- 55° cranial and caudal angulations.

✔ If CPR must be performed in emergency, total patient access can be provided at any time.

Fast, quick, easy access to the radial artery from either arm

Femoral acces

Radial access

Head-to-toe

The offset C-arm allows head-to-groin coverage without moving the L-arm.

Fast, quick, easy access to the radial artery from either arm.

Perform cardiac and peripheral procedures with wide positioning flexibility and head to toe coverage. Automatic optimization of distance patient/detector with InnovaSense™2 to optimize overall procedure dose

Support that never sleeps

Your partner to help optimise patient care

1 Expert Service Delivery

- ✓ Customised and flexible offerings with service interventions guaranteed within 30 min remotely & within 4 hours on site, to achieve up to 99% uptime[3].

- ✓ Dedicated and highly trained local experts, with 3830 modality-trained field engineers, 130 online engineers, and 160 customer agents in 17 centres in Europe[4].

- ✓ Remote diagnostic solutions 24/7 (InSite, iLinq) leading to 27% remote fix and 81% issues fixed in less than one visit on site[5].

3 Education and Training

- ✓ Optimise equipment performance with customisable clinical application training with on-site, remote, and online options.

- ✓ Over 350 accredited continuing programmes and over 100 application specialists in Europe[4].

- ✓ Connect to the GE Cares Community and learn how to capitalise on online resources to facilitate trainings and increase your professional skills.

- ✓ Get subscribed to our bi-yearly ASSIST magazine to learn about innovations & practice from your peers around the world.

- ✓ Obtain priority access to a specialised clinical leader for continuous training on advanced applications[8].

### 2 OnWatch[6], convert unplanned to planned

We created OnWatch to maximise your efficiency by helping to ensure that your angiography system is operating when you need it to. OnWatch service measures key parameters from your equipment. It looks ahead to help limit disruption from unplanned downtime, creating a less stressful experience for you, your staff and your patients. This visionary technology drives progress in patient care, enhances efficiency and can help minimise the costs associated with downtime.
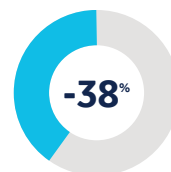
-38% UNPLANNED DOWNTIME[7]
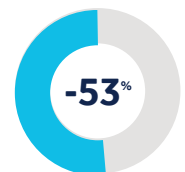
-53% TIME BEFORE RESUMING SCHEDULE[7]

-26% TIME TO REPAIR[7]

GE CARES COMMUNITY
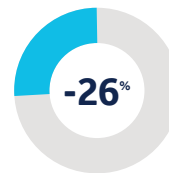
Join us now on GECARES.COM

ASSIST Magazines

See clearly what you need to see

It is our mission to provide you with exceptional image quality so you can make your diagnosis & treatment with confidence.

Optimal coverage for coronaries

Optimal coverage for cardiac applications. With its 20,5 x 20,5 cm square flat panel digital detector, enables to cover the coronary tree in a single injection without moving the table.

Excellent anatomical coverage

Superb quality image

The fully licensed end to end GE Imaging Chain leverages premium hardware and processing to deliver image quality tailored to the needs and preferences of each clinician, while automatically optimizing X-ray parameters. The flat-panel detector offers one of the industry's highest ratings for Detective Quantum Efficiency (up to 80% DQE[9]). High DQE enables better-quality images at the same dose, or the same quality image at a lower dose.

Flat-panel detector

AutoRight™

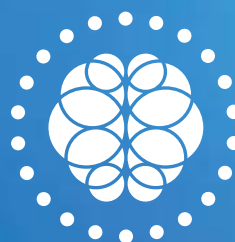## AutoRight™, Automated Image Acquisition

7P[10] with embedded neural networks (NNs)

✔ **Up to 7 Parameters[10] device control**

✔ **Automatic optimization of acquisition parameters** in real time, based on the imaged anatomy (6P)

✔ **Automatic optimization of patient/detector distance** in real time, to help save un-necessary X-ray dose. (1P)[10]

AutoRight helps remove the burden of manual adjustment, lets you focus attention on patients.

Helps focus your attention on patient

✔ AutoRight[11] is the **1st AI-based**, interventional image chain in the industry[12], trained on **6,000+ datasets**

✔ Automatic adjustment of up to **7 parameters[13]** in real time to optimize image quality and dose

✔ **2/3** of hardware and software renewed in the image chain

Powered By
Edison

AutoRight™, Intelligence inside

Providing you with the right image at the right dose, automatically

Automated image acquisition with dose and IQ optimization in real time, whatever the patient anatomy or C-Arm angulation (7P[13] control)

Smart image processing to retain and present only the useful part of the information embedded in the acquired images.

AUTOMATED IMAGE ACQUISITION

SMART IMAGE PROCESSING

AI AutoRight
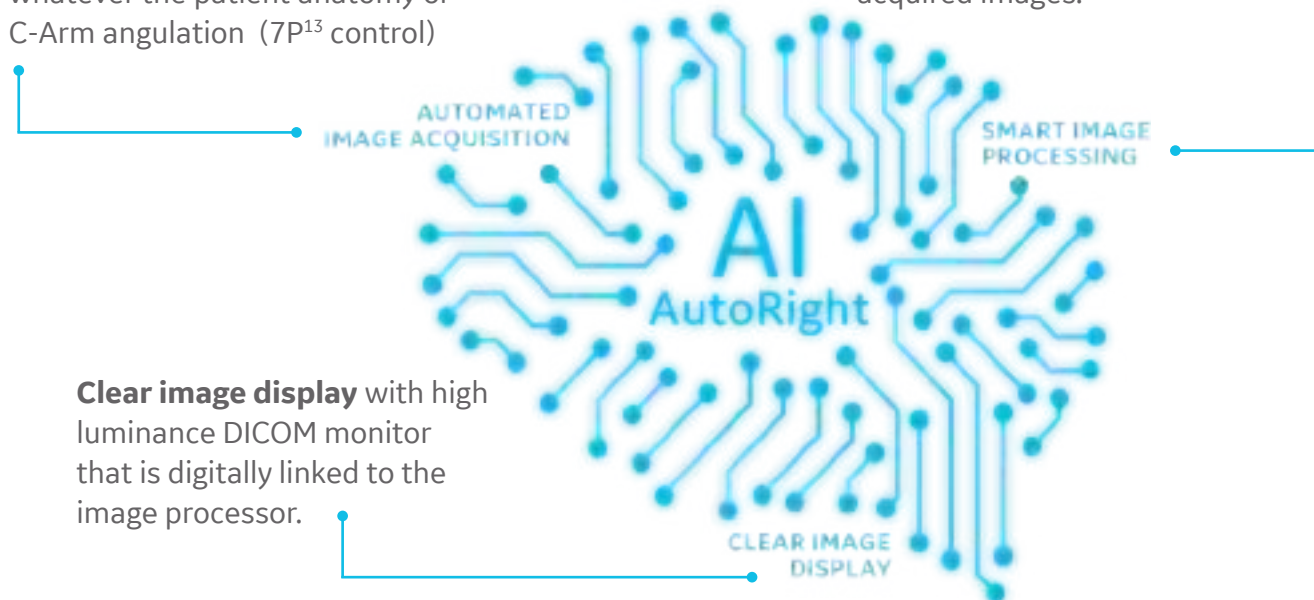
Clear image display with high luminance DICOM monitor that is digitally linked to the image processor.

CLEAR IMAGE DISPLAY

myIQ: you decide what's best for you![14]

Image quality is not one-size-fits all for physicians.
On the contrary, preferred « looks » vary greatly from one clinician to another. myIQ lets you decide what's best for you! Configure your preferred looks with your local GE application support and get the best image quality for you. Where no two people are the same, why would your image system need to be?
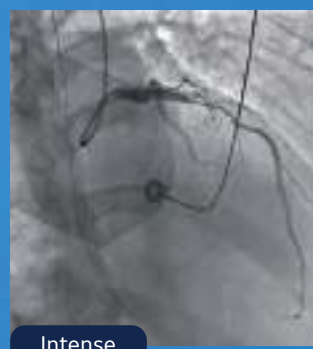
Natural

Balanced

Clean

Intense
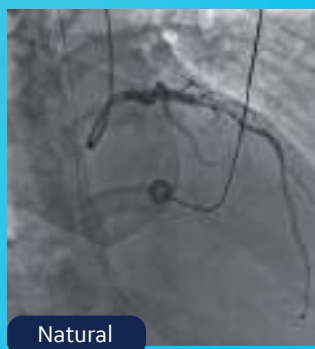
Genuine look with limited digital processing. GE historical DSA look for devotees.

Respectful if X-ray characteristics, maintain small detail visibility, while reducing background noise.

Filters out most of the noise, ideal to image proximal and large vessel anatomies.

Sharp small details bright and constrated

Coronary intervention
Hemodynamics management

Hemodynamics and physiology management are part of the IGS Innova 5 - Mac-Lab solution. Naturally connected, our solution enables a smooth workflow between the exam room and the control room.

The Mac-Lab™ Hemodynamic Recording System is part of a comprehensive cath lab workflow infrastructure designed to help make you efficient, productive, and able to care for your patients effectively. From imaging to recording to IT, everything works as one. Clearly. Smoothly. Seamlessly.

Mac-Lab FFR option takes the place of a separate FFR analyzer and Makes FFR just another measurement.
- ✔ A wireless FFR receiver connects to the TRAM / PDM module P2 entry.
- ✔ Simple manoeuvers enable to select segment and start measurement.
- ✔ FFR value is then calculated from P1 & P2 and value becomes part of the case report.

Workspace Integrator

Workspace Integrator provides a documentation path from the Mac-Lab/Cardio-Lab systems into the EMR or other third-party documentation solutions. Workplace Integrator may reduce dependencies on redundant equipment (multiple monitors, keyboards, mouse, etc.) by providing a single data entry point.

Benefit from the natural **connectivity between IGS Innova 5 and Mac-Lab.**
Control 100% of your hemodynamic recording system from table side and save time by zeroing your pressure(s) and control your main pressure measurements from Innova IGS 5 touch screen.


Touch screen

Endo-coronary
imaging management

Innova IGS 5 provides an open architecture mode to enable you to connect other imaging sources such as OCT and IVUS.

OCT / IVUS. Intra-vascular imaging is common in a modern cathlab in a need to smoothly interface your cathlab with IVUS and OCT imaging modalities is growing.

✔ Display the imaging sources you need at the moment you need it.

✔ Thanks to the open sources available on IGS Innova 5, easily retrieve specific large Display Monitors layouts dedicated to endo coronary visualization from the Innova Central Touchscreen.
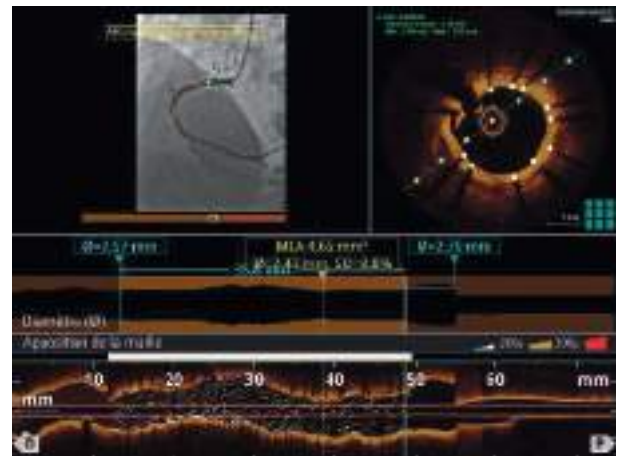
Innovative physiology based on imaging

QFR(R) from MEDIS is a technology that derives an FFR value from angiograms only. Exclusive interface between Innova IGS 5 and QFR software provides an easier workflow.

QFR®[15] is providing a physiologic assessment of one or more lesions at the same time, in less than 5 minutes procedure time[16]. This measurement is based on the computation of two standard angiographic projections, requiring neither adenosine or pressure wire.
QFR® is applicable pre-during - as well as post-PCI. With residual QFR® value, physiological impact of stenting, even in case of consecutive lesions can be anticipated.
3D QCA[17] helps reduce foreshortening to measure the lesion with precision and select the most appropriate stent.

Workflow interface† with QFR® optimizing the QFR® workflow enabled by a full synchronisation of Innova IGS 5 QFR® workflow interface, DICOM push to Medis software and visualisation of QFR® computation and result on the large display monitor.
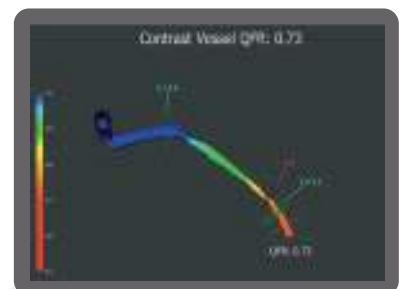

QFR®

Exclusive interface
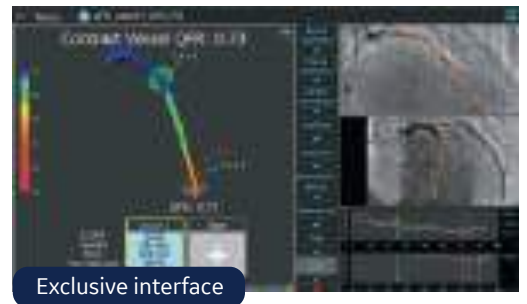
1 | Guided acquisition workflow

2 | 3D QCA analysis

3 | QFR® display

Outcomes in Coronary angiography and PCI

Stent enhancement tools help improve clinical outcomes[18]

-7.1pts restenosis[18]

-5.3pts Total Length restenois[18]

PCI ASSIST improves visualization of the relation of the stent to the vessel in **70%** of cases[19]

PCI ASSIST helped decide the course of intervention in **40%** of cases[19]

Centricity cardio workflow helped reduce the time to report by **60%**[20]

Up to +85% IQ improvemen[21] with PCI assist at same dose

-7.2pts TLR-MACE[18]
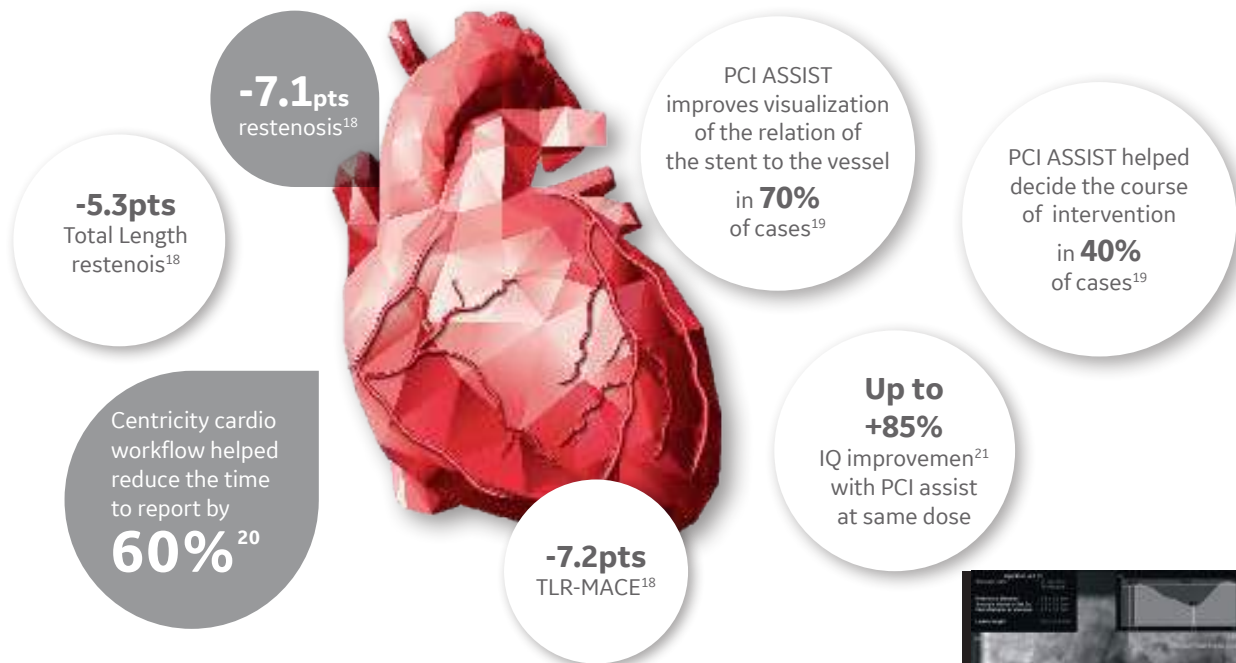
OneTouch QA. This tool puts quantitative analysis package at your fingertips, assisting with distance measurement and stenosis ratio to help plan the optimal sized stent or device required.

PCI ASSIST. This application combines several solutions that can help improve visualization of stent deployment as well as anatomical visibility by up to 85% in moving arteries at the same dose, and up to 75% in larger patients.[21,22]

Enhanced stent visualization with PCI ASSIST[22]

✔ Quick and accurate visualization of the 2 stents to get the optimal overlap

✔ Clear visualization of the stent position relative to the side branch

✔ PCI ASSIST helps assess the deployment, the apposition and the stent overlap

OneTouch QA

Cine image

Less dose

Fluoro image

Structural heart interventions

Embrace structural interventions with easy to use advanced fusion tools improving outcomes.

Interventional cardiologist's activity and practice is evolving and diversifying. As endovascular procedures prove to be efficient in structural heart, new opportunities open up for interventional cardiologists who want to increase their practice. However, these procedures are complex and require high precision and new imaging capabilities.

VALVE ASSIST 2[23] will help you expand your activity in Structural Heart with confidence. It will help simplify the planning phase, enabling you to do all the required measurements and select access route easily and with accuracy. Calcification Visualization Enhancement feature will virtually subtract the non-moving organs. This will help you better see moving contrasted object used as landmarks to guide your device accurately and efficiently, while reducing contrast media[24].

Moreover, Valve ASSIST 2 enables to overlay the anatomy (pre-op CT, MR or CBCT images) and planning lines which help guide your procedure and reduce procedure time[25].

TAVI procedures:
- ✔ **Easy and reproducible valve sizing:** 0-click Aorta segmentation and auto detection of valve plane.
- ✔ **Precise Guidance with live calcification enhancement:** By suppressing non moving contrasted structures[26], this new live imaging mode allows you to better visualize key anatomical landmarks while crossing the stenosedaortic valve, and positioning the new valve.
- ✔ **Automatic overlay**[27] of any procedure points, the aorta, calcifications, valve planning line positioned during planning.
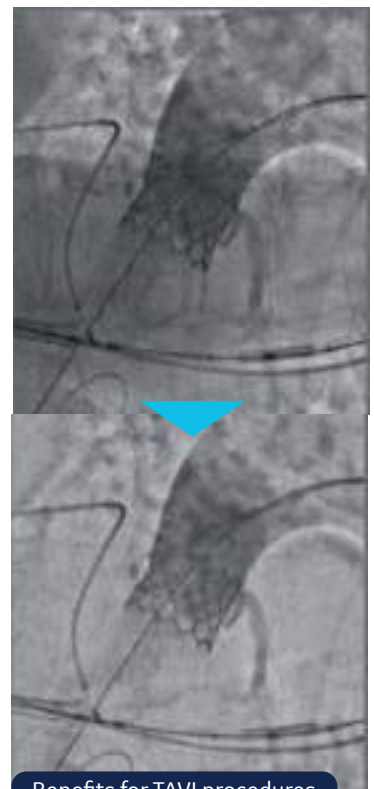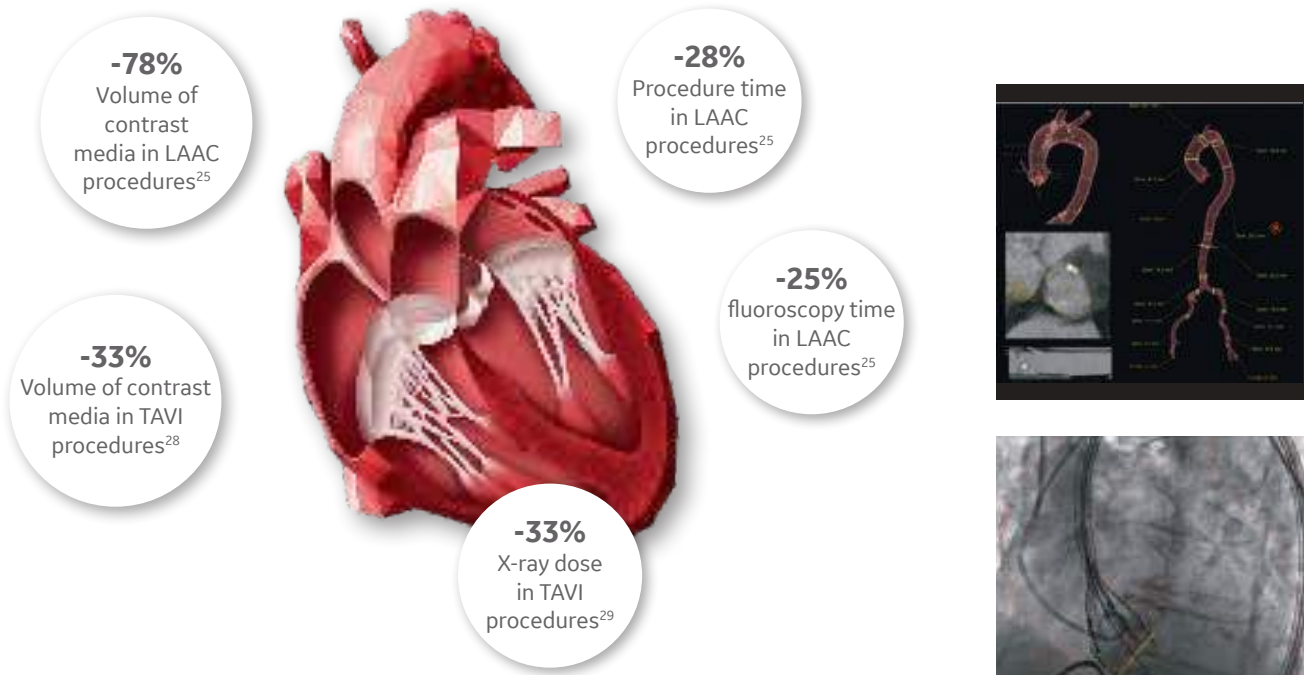

Benefits for TAVI procedures
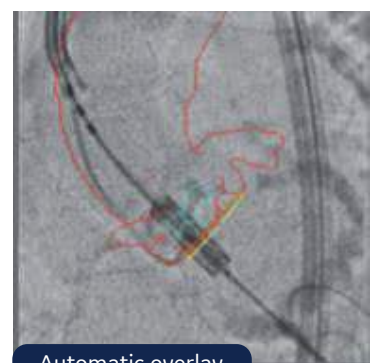
Automatic overlay

Improve the Heart Team communication

Demonstrated Outcomes in Structural Heart Interventions with Valve ASSIST 2

-78%
Volume of contrast media in LAAC procedures[25]

-28%
Procedure time in LAAC procedures[25]

-25%
fluoroscopy time in LAAC procedures[25]

-33%
Volume of contrast media in TAVI procedures[28]

-33%
X-ray dose in TAVI procedures[29]

Valve ASSIST 2[23], helps simplify **CT planning** and improve outcomes with increased device sizing accuracy and the ability to assess regurgitations due to valve mispositioning, all while helping reducing X-ray dose and contrast media volume.[27, 28, 29]

Valve ASSIST 2 and **CT Fusion**[30] complemantary for complex Structural Heart interventions.
Fusion of CT images together with live X-ray and echo images help see both the anatomy in a large field of view and region of interest at the same time. Common reference helps simplify transeptal puncture and device navigation.

Left Atrial Appendage closure

### Mitral Valve Repair/Replacement

Tricusid Valve therapies
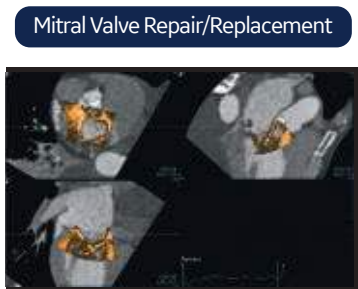
Electrophysiology recording management

More than a recording system, Cardiolab enables a smooth workflow in the EP lab.

CardioLab

CARTO™ Mapping

Innova Central Touch screen
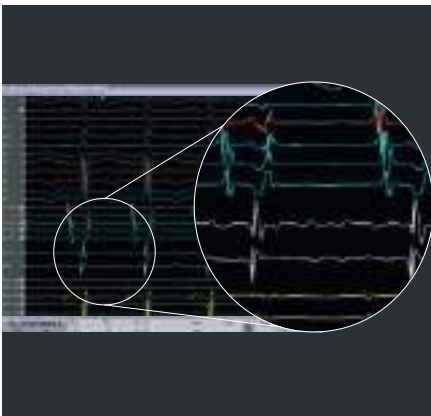
CardioLab provides Excellent Signal Quality, through an Innovative signal processing provides clear, crisp signals throughout the procedure.
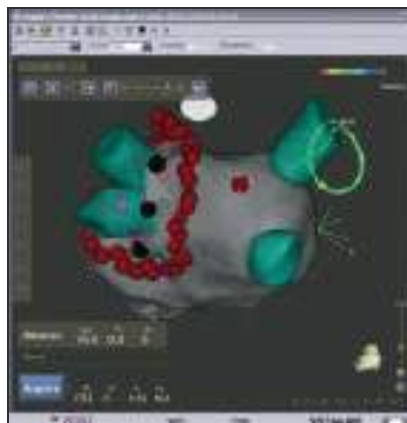
The enhanced integration of **CARTO** information enables to view mapping points on CardioLab and associate them to electrogram data, get a synchronized display for concurrent viewing of points on CARTO and CardioLab, Import and view CARTO 3 AVI files directly on the CardioLab for convenient case review and finally annotate images and include them in the CardioLab report.

Access electrophysiology recording maneuvers from table side through the Innova Central Touch screen, such as acquiring a 12 lead ECG, increasing or decreasing the gain of your channels, change the speed of the signal display, select the endo channels to be stimulated.

Advanced EP workflows

When advanced procedures require advanced imaging, our solution aims at providing smarter workflows.

CARTOUNIVU

CBCT and ASSIST

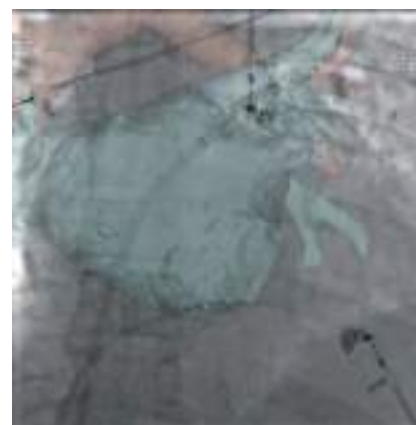**Cryoablation and ASSIST**
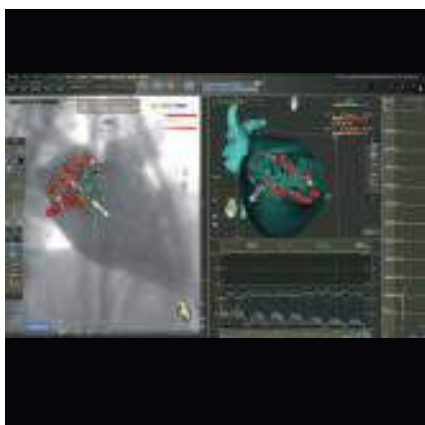
CARTO UNIVU™ Module seamlessly combines a fluoro image and CARTO® 3 System maps into a single view. It helps reduce fluoroscopy levels - consistent with the ALARA principle of reducing exposure for physicians, staff and patients to as low as reasonably achievable. Now you can navigate confidently from an integrated view, with just one X-ray image or cine sequence needed for continuous anatomical orientation
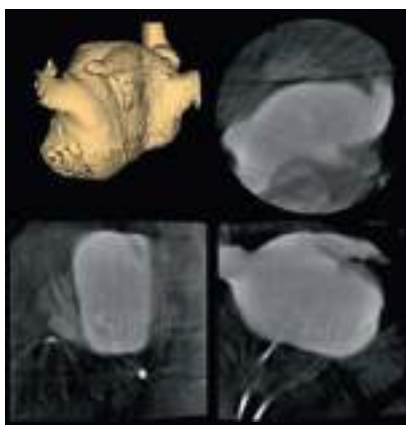
The C-arm design allows to perform **3D rotational acquisitions of the left atrium**. Thanks to ASSIST Application [23], fuse this useful segmented left atrium data with the live X-ray fluoroscopy.

Cryoablation and ASSIST[23] use the full potential of your pre-operative CT to fuse with the Xray live fluoroscopy and help your guidance while minimizing X-ray exposure.

References

† Optional feature, not available on all IGS configurations or AW configurations. Refer to your sales representative.

1. Compatibility with Mac-Lab Cardiolab and Combolab systems.

2. Applicable to Innova IGS 5 (IGS 520 and IGS 530 configurations)

3. Varies per country.

4. GE internal data.

5. Statistics for imaging equipment in 2018 in Europe.

6. OnWatch is an optional feature, not available in all countries and sold separately.

7. Vascular OnWatch study documented infographic.

8. Upon request and availability of clinical leaders

9. DQE values given are typical at f = 0 cycles/mm with RQA5 conditions as defined by IEC62220-1-3 standards.

10. InnovaSense is an option: applicable to Innova IGS 5 (IGS 520 and IGS 530 configurations), Innova IGS 6 and Discovery IGS 7 (IGS 730 configuration)

11. AutoRight refers to intelligent image chain features of GEHC's Interventional X-ray systems, from image acquisition to image processing and display, available on Innova IGS 5, Innova IGS 6, Discovery IGS 7 and Discovery IGS 7 OR. Product may not be available in all countries and regions and cannot be placed on the market or put into service until it has been made to comply with all required regulatory authorizations. Refer to your sales representative for more information.

12. Based on competitive research, among major players in interventional imaging

13. One of the parameters is InnovaSense, an option applicable to Innova IGS 5 (IGS 520 and IGS 530 configurations), Innova IGS 6 and Discovery IGS 7 (IGS 730 configuration)

14. System is delivered with default settings. Customisation requires a GE representative.

15. QFR Analysis is included in QAngio XA 3D software. Supplied by Medis medical imaging bv. Not available in all countries. It is compatible with Innova IGS 5, Innova IGS 6, Discovery IGS 7 and Discovery IGS 7 OR

16. Shengxian Tu, PhD, Jelmer Westra, MS, Junqing Yang, MD, Clemens von Birgelen, MD, PhD, Angela Ferrara, MD, Mariano Pellicano, MD, Holger Nef, MD, Matteo Tebaldi, MD, Yoshinobu Murasato, MD, PhD, Alexandra Lansky, MD, PhD, Emanuele Barbato, MD, PhD, Johan H.C. Reiber, PhD, Niels Ramsing Holm, MD, William Wijns, MD, PhD, on behalf of the FAVOR Pilot Trial study group. Diagnostic Accuracy of Fast Computational Approaches to Derive Fractional Flow Reserve from Diagnostic Coronary Angiography: The International Multicenter FAVOR (Functional Assessment by Various FlOw Reconstructions) Pilot Study. J Am Coll Cardiol Interv 2016, 9(19): 2024-2035.

17. 3D QCA Analysis is included in QAngio® XA 3D software. Sold by Medis. It is applicable to Innova IGS 5, Innova IGS 6, Discovery IGS 7 and Discovery IGS 7 OR.

18. Effect of StentBoost imaging guided percutaneous coronary intervention on mid-term angiographic and clinical outcomes : www.ncbi.nlm.nih.gov/pubmed/23332899.
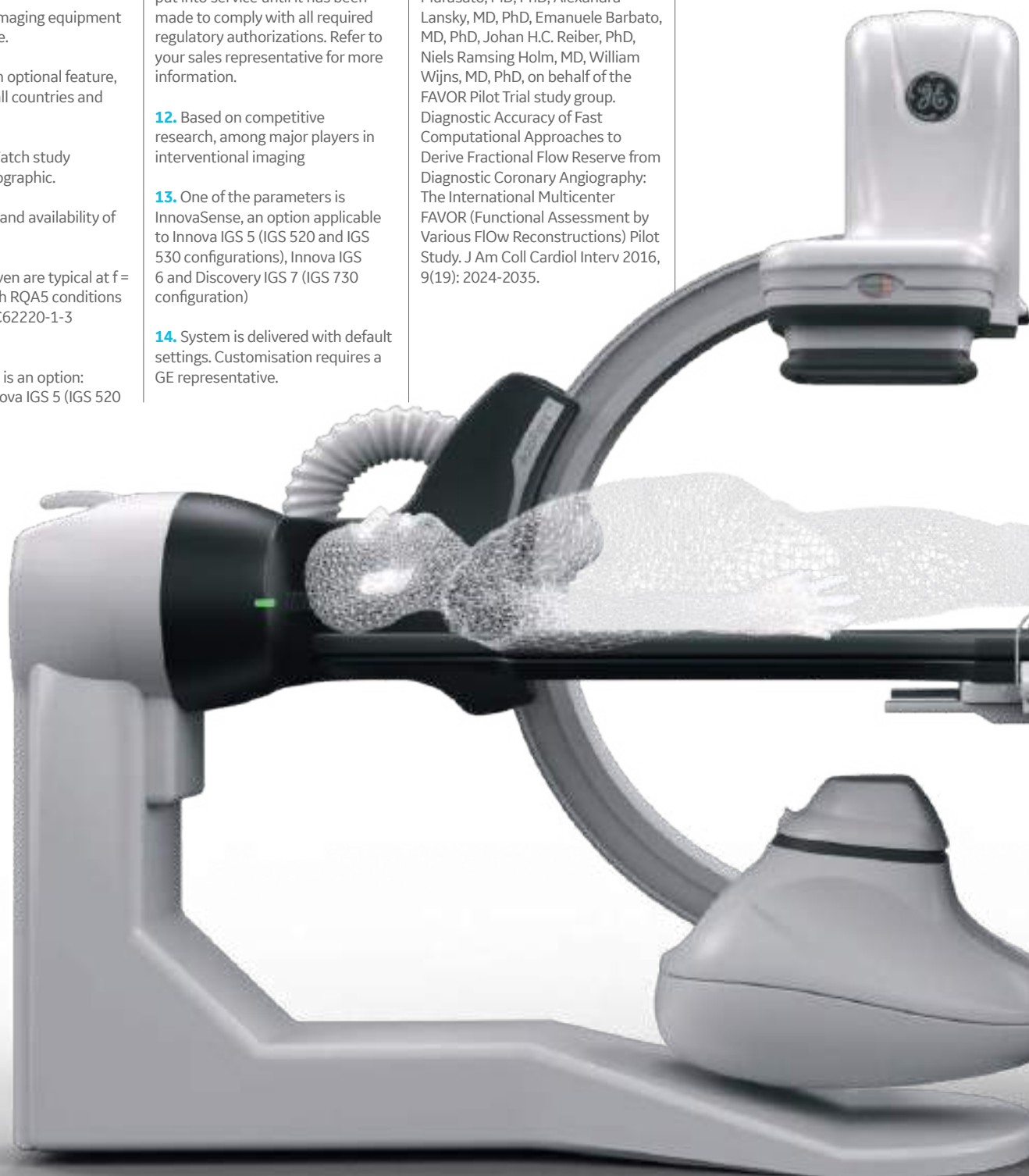
19. DOC1683165 - Clinical evidence generation study based on Columbia images. The Statements by GE's customers described here are based on results that were achieved in the customer's unique setting. Since there is no " typical " hospital and many variables exist i.e..g. hospital size, case med , there can be no guarantee that other customers will achieve the same results. – Method: Assessment of clinical benefit of StentVesselViz: => - Independent assessment of each sequence by 6 experienced interventional cardiologists; - Assessment done in 2 steps by each reviewer:
1 - Conventional post-deployment angiogram alone x 11 clinical cases.
2 - Angio + SVV sequence x 11 same clinical cases. Results are based on - Consensus of 5/6 operators.

20. JB54813XXd – Nuremberg Clinic case study.

21. Improvement vs. same test without PCI ASSIST option. IQ & visibility improvement is measured on Innova IGS530 with phantoms using various Plexiglas Thicknesses, acquisition parameters and the NEMA spoke wheel tool (ref 1), calculating the ratio of the contrast of the moving wires to the background noise level. The amount of IQ improvement related to PCI ASSIST depends on the acquisition parameters, clinical task, patient size, amount of motion in the image, anatomical location, and clinical practice. Ref1: A new tool for benchmarking cardiovascular fluoroscopes; S. Balter, Radiation Protection Dosimetry, Vol. 94, No. 1–2 pp. 161–166 (2001). Applicable to Innova IGS 5 (IGS 520, IGS 530 configurations), Innova IGS 6 (IGS 620, IGS 630 configurations) and Discovery IGS 7 (IGS 730 configuration).

22. PCI ASSIST solution includes StentViz and StentVesselViz, features of Interventional X-ray systems Innova IGS 5, Innova IGS 6, Discovery IGS 7 and Discovery IGS 7 OR.

23. Valve ASSIST 2 solution includes TAVI Analysis, HeartVision 2 and requires AW workstation with Volume Viewer, Volume Viewer Innova. These applications are sold separately.

24. Effect of a New Enhanced Fluoroscopy Technology (Valve ASSIST2) on Contrast and Radiation Use in Patients Undergoing Transcatheter Aortic Valve Replacement - Ali Shafiq et al. Abstract n°353 Journal Of The American College of Cardiology, Vol.70, NO.18, SupplB, 2017

25. Roy, et al. Novel Integrated 3D Multi-Detector Computed Tomography and Fluoroscopy Fusion for Left Atrial Appendage Occlusion Procedures . Catheter Cardiovasc Interv 2017; Mar 17, DOI:10.1002/ccd.26998.

26. Calcification Enhancement mode enhance the Contrast to Noise Ratio of moving contrasted structures by a factor 2.6 Measured on experimental set-up including a chest phantom and moving aortic calcification phantom, using Calcification Visualization Enhancement feature at level 100%

27. Using advanced imaging techniques to help you guide your TAVI procedure planning and valve positioning with ease - Dr T. Hovasse - JB40298FR The Statements by GE's customers described here are based on results that were achieved in the customer's unique setting. Since there is no "typical " hospital and many variables exist i.e..g. hospital size, case med , there can be no guarantee that other customers will achieve the same results.

28. Shafiq, et al. Effect of a new enhanced fluoroscopy technology (Valve ASSIST 2) on outcomes in patients undergoing trans-catheter aortic valvular replacement. TCT 2017; Abstract.

29. Overtchouk, et al. Advanced image processing with fusion and calcification enhancement in transcatheter aortic valve implantation: impact on radiation exposure. Interactive CardioVascular and Thoracic Surgery (2018) 1–8. doi:10.1093/icvts/ivy136.

30. CT Fusion requires Vivid™ E95 system, sold separately.

31. Refer to Valve ASSIST 2.

32. Only the Innova IQ table allows storing and recalling gantry and/or table positions

GE Healthcare

GE Healthcare is a leading global medical technology and digital solutions innovator. GE Healthcare enables clinicians to make faster, more informed decisions through intelligent devices, diagnostic pharmaceuticals, data analytics, applications and services, supported by its Edison intelligence platform. With over 100 years of healthcare industry experience and around 50,000 employees globally, the company operates at the center of an ecosystem working toward precision health, digitizing healthcare, helping drive productivity and improve outcomes for patients, providers, health systems and researchers around the world.

Follow us on Facebook, LinkedIn, Twitter and Insights or visit our website www.gehealthcare.com for more information.

Imagination at work

gehealthcare.uk