GE HealthCare

Allia IGS Pulse

Cardiac imaging excellence.
Visible impact.

Interventional
cardiology

GE HealthCare is a long-standing partner of interventional cardiologists

Our primary ambition and our constant concern has always been to break new ground to achieve better patient outcomes, but also to meet physicians' needs, rooted in the reality of their daily practice.

In interventional cardiology, physicians' requirements are: reduced risk, quicker recovery and improved quality of life. Interventional cardiology has revolutionized the management of heart conditions, now offering a wide range of minimally invasive procedures and treatment options to diagnose and treat various heart diseases.

This field is evolving constantly, bringing new challenges, in terms of:

Clinical and operational efficiency

Setting up the workspace to suit unique preferences is complex and time-consuming for the cardiologist.

Expanding practice and integrated ecosystem

Cardiology practices are expanding for PCI, peripheral interventions, EP and SH, increasing in complexity and in need of more advanced imaging and measurement tools.

Optimal image quality at the lowest possible dose

Cardiologists need to focus on the patient and the procedure, not on setting the parameters for optimal image quality and dose.

PCI: Percutaneous Coronary Intervention; EP: electrophysiology; SH: Structural Heart.

Meet Allia™ IGS Pulse*, your trusted assistant for cardiology interventions

A GE HealthCare innovation, Allia IGS Pulse is a solution developed with interventional physicians, for interventional physicians.

Discover Allia IGS Pulse's characteristics through a detailed description of its features and users' testimonials, across 4 pillars.

It's your room whenever you enter

Cardiac imaging excellence, visible impact

Augment your outcomes with augmented imaging

Freedom of choice with multi-modality integration

Get ready to discover Allia IGS Pulse, the new assistant available through GE HealthCare for use in your interventional lab.

Allia IGS Pulse

It’s your room whenever you enter

Personalize your workspace for 1-click access to all essential cardiac functions and benefit from optimized operating comfort for a simplified workflow

> What is amazing with Allia: it radically changes the user interface... It's really simple.
>
> Prof. Martine Gilard, Interventional cardiologist. University Hospital (CHU), Brest, France

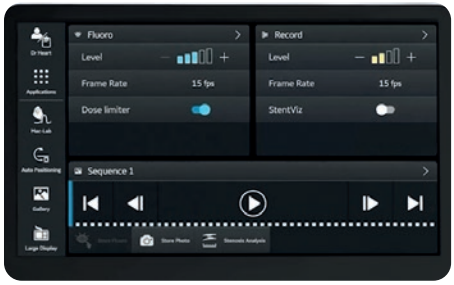
> The additional value of the Allia IGS Pulse system that I felt as an operator is its faculty to adapt to all my daily situations... This system is really versatile.
>
> Dr. Nicolas Dumonteil, Interventional cardiologist. Pasteur Clinic, Toulouse, France

Allia IGS Pulse
It’s your room whenever you enter

Ease and speed of procedure in your room

Personalized profiles tailored to your needs

1-click access to all essential cardiac functions



With Allia IGS Pulse, you can **personalize** the homepage to respond to your **specific needs and preferences.** You can **create operator profiles** for Allia to remember you. **In just 1 click**, you can access **your essential functions** with smartphone-like interactions on the Touch Panel.

Enhanced ergonomics at your service

Commands at your fingertips wherever you are

Direct access from detector to move C-arm, table[1] and detector, and the IGS Control Center[2] gives you **ergonomic access from any position.**

You can also benefit from **hand detection technology** for **effortless table motion**[3] regardless of patient weight.

Operating comfort to ease your procedures

Offset C-arm to maximize space and freedom of movement around your patient

Head-to-groin coverage is possible without moving the gantry.

Easy access to your patients for anesthesia and nursing needs as well as to **avoid collision with anesthesia airway tubes and intravenous lines** when performing steep angulations.

Allia IGS Pulse

Cardiac imaging excellence, visible impact

Exceptional image quality from small to large patients with automated dose optimization

> I saw a significant improvement of the image quality, especially with obese patients and with complex angioplasties.
>
> Dr. Raphaël Philippart, Interventional cardiologist. Pasteur Clinic, Toulouse, France

> I remember a recent case with a morbid obese patient with a BMI over 50. Definitely, for this patient, we have an optimal image quality for precise treatment with a significant dose reduction.
>
> Dr. Antoine Sauguet, Interventional cardiologist. Pasteur Clinic, Toulouse, France

Image excellence to treat your patient optimally

Innova IGS

Equivalent patient thickness (EPT)
30-cm PMMA

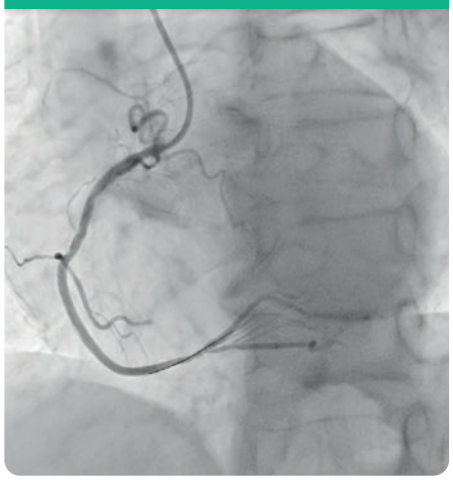
Allia IGS Pulse

EPT 30-cm PMMA

Innova IGS

EPT 29-cm PMMA

Allia IGS Pulse



EPT 26-cm PMMA

Images are coming from four different patients. Same field of view (FOV) 20 cm. Auto exposure preference sets on level IQ Standard Low for Innova IGS images and level Intel IQ 2 for Allia IGS Pulse images.

Go beyond current technology limits in interventional X-ray imaging and get outstanding images optimized for cardiology interventions

Image quality

Benefit from exceptional image quality from small to large patients thanks to our **monopolar tube** enabling reduced pulse width and unmatched X-ray peak power.

By increasing the peak power, the pulse width has been reduced by at least 39%[4] for better visualization of moving elements such as vessels and devices.

View stunning details regardless of patient size with our 0.3, 0.5 and 0.8 focal spots, all usable in both fluoro and cine acquisition modes.

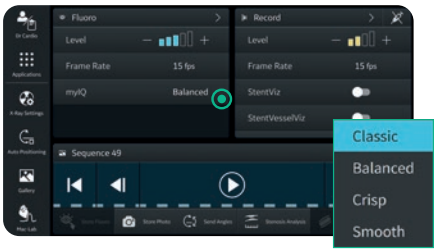
By reducing the focal spot, the spatial resolution has been increased by 22%[5]. Increasing resolution allows for better visualization of guide wires and small arteries.

Thanks to **Allia live advanced image rendering**, enhance your image quality at the **same dose** with visible noise reduction and improved contrast of vessels/objects[6].

Visualization comfort

High visualization comfort with image personalization that is now at your fingertips.

One-click access to highly differentiated renderings designed to match your image preference[7].



Tube design

With the very small footprint of the first interventional monopolar tube, reach steeper angulations even with the 30-cm detector configuration (up to 40% tube volume reduction for 30-cm detector configuration[8]). You will appreciate the comfort of the quiet tube[9].

Fluoro acquisitions rated **good or excellent** in **96% of cases**[10]

Cine acquisitions rated **good or excellent** in **97% of cases**[10]

Ultra-low dose procedures demonstrated during clinical practice

A unique set of capabilities to help you master image quality and dose

DOSE EFFICIENCY
Monopolar tube, high DQE detector, Copper spectral filters, Grid-switching mode

DOSE REDUCTION AUTOMATION
Intuitive cockpit, Dose limiter, InnovaSense™, FluoroStore, Image Fusion, Digital Zoom

DOSE AWARENESS
Dose rate meter, Dose Map, DoseWatch

Powered by AutoRight™ PLUS

More than 50% reduction of dose[11] with Allia IGS Pulse compared to previous cathlab generations.

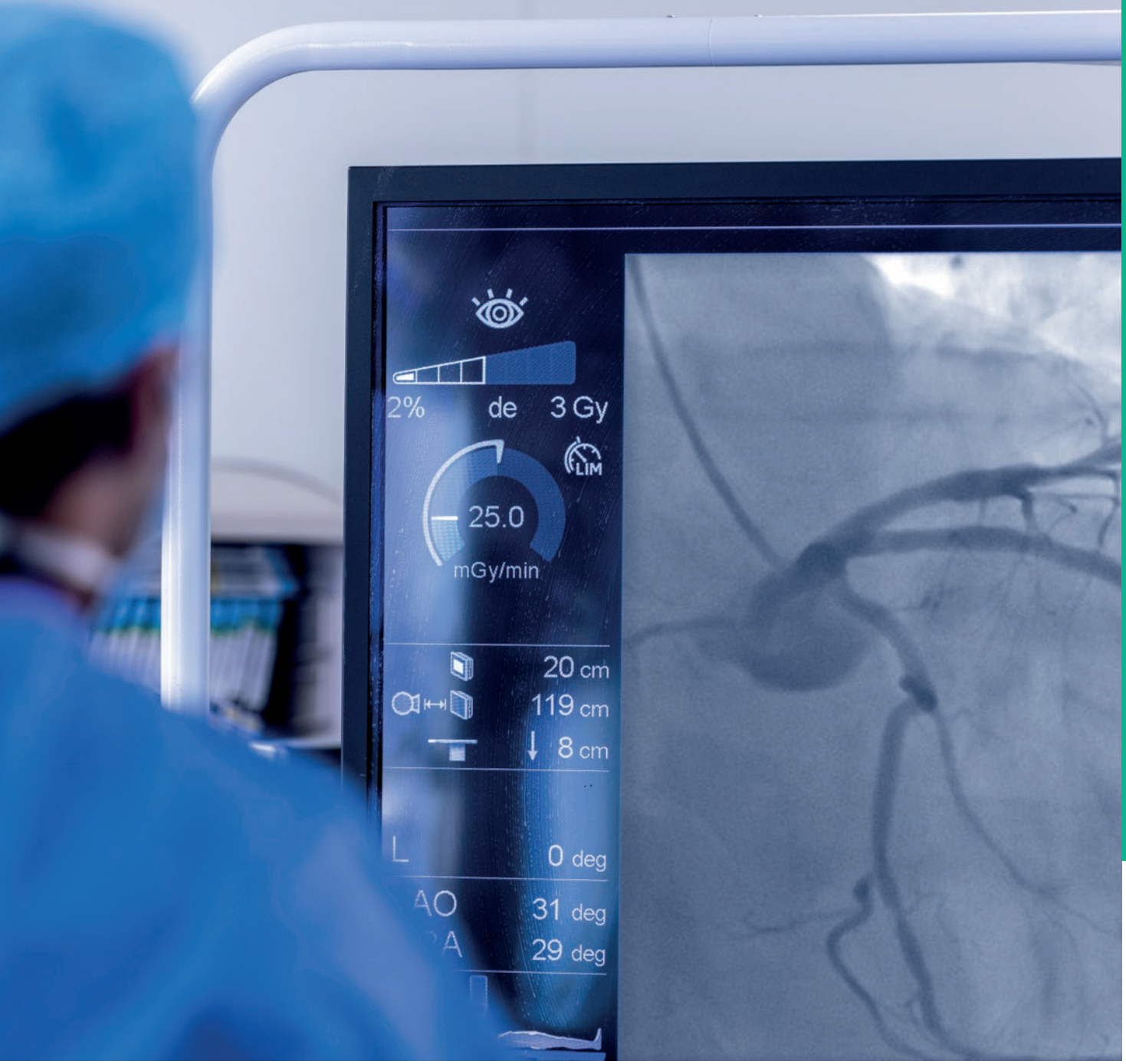
96% of clinicians[12] interviewed by GE HealthCare believe they have a better control of image quality and dose trade-off with the AutoRight cockpit[13].

AutoRight PLUS
Benefit from the next generation of our automation platform that will optimize image quality and dose for you, automatically.
Connected to a wide range of technologies, AutoRight PLUS enhances system performances all along the image chain.

Intuitive cockpit
Graphical display of real-time dose rate and one-touch access to full image quality range with a dose limiter function for additional control of max fluoroscopic dose-rate limit.

InnovaSense
Access to an intelligent algorithm that minimizes the distance between the detector and the patient.

Dose Map
Visual map that can help reduce the estimated cumulative radiation dose received at a surface representative of the patient's skin.



	Allia IGS Pulse	Other manufacturers	
kVp	✓	✓	✓
mA	✓	✓	✓
mS	✓	✓	✓
Focal spot selection	✓	✓	✗
Spectral filter	✓	✓	✗
Detector dose	✓	✓	✗
Focal spot shape	✓	✗	✗

AutoRight PLUS adjusts 7 acquisition parameters in real-time based on image anatomy to optimize image quality and dose

Allia IGS Pulse

Augment your outcomes with augmented imaging

Facilitates adoption of augmented image guidance in daily practice

> With 3DStent, for the first time, we have a detailed depiction of the stent during the procedure without the use of intracoronary imaging.
>
> Dr. Carlos Collet, Interventional cardiologist.
> CV Center Aaslt, Belgium

> Image fusion is a huge help for structural heart procedures, with pre-op preparation and to reduce the dose of both contrast media and radiation.
>
> Dr. Xavier Freixa, Interventional cardiologist.
> Hospital clínic, Barcelona, Spain

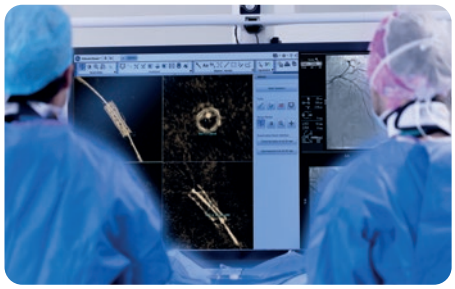
Allia IGS Pulse
Augment your outcomes with augmented imaging

Imaging innovation to extend your possibilities

Coronary

3DStent[14]

Get a new perspective for stent visualization

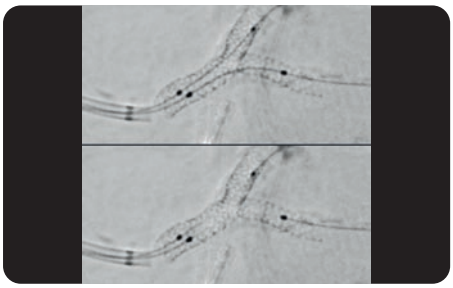


Access intraprocedural 3D stent reconstruction at your fingertips with CMCT** imaging.
With 3DStent, you will:

- **See your stent from all angles during the procedure with one single acquisition.**
- **Get 3D stent reconstructions with ZERO additional contrast, devices and procedural cost.**
- **Enjoy EASY image interpretation and perform FAST measurements such as areas, lengths and diameters.**

PCI ASSIST 2[15]

Increase visibility at same dose to power up your decision making



PCI ASSIST 2 will help to increase positioning accuracy and confidence in multiple stent positioning.

Thanks to the StentViz algorithm, you will have an enhanced visibility of both stents in a bifurcation.

One Touch QA

Optimize stenosis and left ventricle measurements in one click

With One Touch QA, you will be able to plan the optimal sized stent or device thanks to an estimation of distances and stenosis ratio all at tableside.

Allia IGS Pulse
Augment your outcomes with augmented imaging

Imaging innovation to extend your possibilities

Structural heart

Valve ASSIST 2[16] for planning

Access a streamlined workflow

You will get intuitive planning tools for structural heart procedures with remote access when you need to work off-site.

Thanks to a streamlined, guided workflow, your TAVI procedures planning will be facilitated and efficient:

- **Faster[17] annulus plane detection and aortic annulus measurements.**
- **One single application to assess aortic root and plan peripheral access.**
- **Perpendicular view and S-curve automatically displayed to help identify best working C-arm angulations for valve deployment.**

Import 3mensio[18] planning landmarks to guide your complex structural procedures.

Valve ASSIST 2 for guidance

Benefit from “augmented” guidance

The **Digital Zoom** will increase your visual comfort without increasing radiation dose and the One touch **calcification enhancement** capability will improve visualization of moving contrasted structures during structural heart procedures.

With **Digital Pen**[19], designed to help highlight and mark an area of interest on 2D images, you will be able to draw landmarks and to follow these landmarks in the moving images based on table and gantry movements. This tool is integrated at the table side to optimize user comfort and adoption.

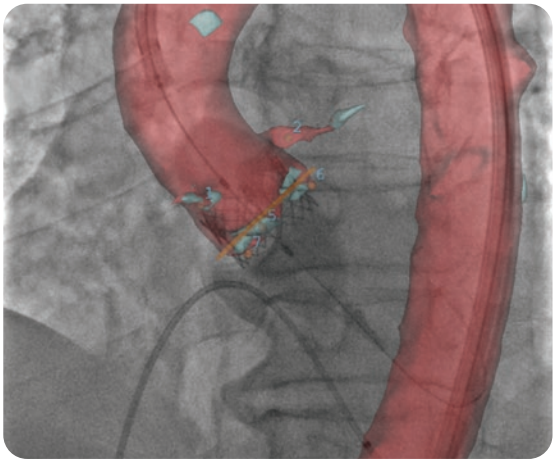
You will also benefit from the automatic superimposition of planning information on the fluoroscopy during the procedure from any working position of the gantry.

Patient outcome improvements

In TAVI procedures:

-33% volume of contrast media[20]

-33% X-ray[21] dose

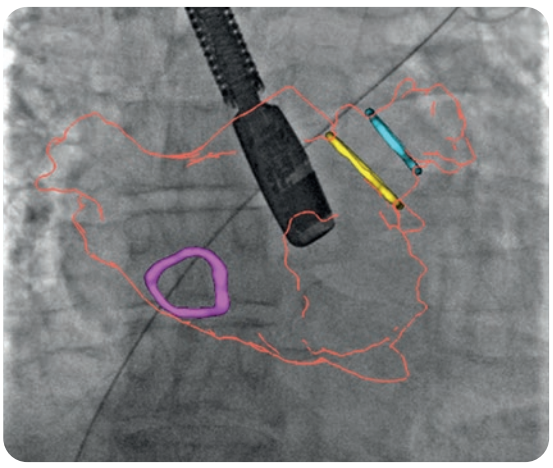


In LAAC procedures[22]:

-78% volume of contrast media

-28% procedure time

-25% fluoroscopy time



Allia IGS Pulse

You have the freedom of choice

Allia IGS Pulse enables you to easily integrate and connect with other devices and imaging sources, offering a real ecosystem at your fingertips for a seamless workflow

The revolution with this new platform is precisely the possibility of integrating all the imaging that is essential in the treatment of patients.

Prof. Martine Gilard, Interventional cardiologist. University Hospital (CHU), Brest, France

With the Allia system, it is very easy to integrate intravascular imaging and physiology.
You can co-register images like Optical Coherence Tomography or iFR.

Dr. Manuel Sabaté, Chief of Interventional Cardiology. Hospital clínic, Barcelona, Spain

Allia IGS Pulse
You have the freedom of choice

Multi-modality integrations to optimize workflow

Multimodality control at your fingertips

Allia x Boston Scientific AVVIGO™+
INTERACT Touch for full control of IVUS, FFR and DFR directly from the Allia Touch panel without breaking the sterile field.

Facilitates angio-based FFR[23] adoption

Allia x Medis QFR®
QFR from Medis non-invasive image-based tool to accurately and rapidly compute FFR, without the need for a pressure wire, nor hyperemic drug.

Offers IVUS/iFR co-registration

Allia x Philips IntraSight
iFR and IVUS combined with the angiogram for precise coronary anatomy and physiology mapping.

Enhances communication within the heart team

Allia x Vivid™ E95
INTERACT View-X[24] enables the display of X-ray images on echo screen.

Enables OCT/angiography co-registration

Allia x Abbott OPTIS™ OCT

Real-time synchronization of angiographic and OCT images for side-by-side viewing and optimized PCI workflow.

Offers a pocket-sized ultrasound imaging

Allia x Vscan Air™

Enjoy a wireless dual-probe with sector and linear transducers connected to your interventional system.

Gives access to hemodynamics recording

Allia x Mac-Lab™

Natural connectivity between Allia and Mac-Lab to control hemodynamic recordings from tableside Touch Panel.

Mac-Lab FFR option replaces a separate FFR analyzer.

Products may not be available on all markets.
Refer to your sales representatives for more information.

Your trusted assistant for cardiology interventions

Different versions of Allia IGS Pulse at a glance

	Allia IGS 3 Pulse	Allia IGS 5 Pulse	Allia IGS 7 Pulse	Allia IGS 7 OR Pulse
Advanced ergonomics with user interface personalization	•	•	•	•
Exceptional image quality with automated dose optimization	•	•	•	•
Augmented imaging and interventional tools		Optional	Optional	Optional
Full system mobility with mobile robotic gantry			•	•
Tilting table*		Optional	•	N/A
Maquet OR table				•
	Get stellar image quality and a customized user interface tailored to answer your daily needs.	Deliver precision care and improve outcomes with our latest patient-focused interventional tools at your fingertips.	Make the most complex procedure set-ups simple with the very high flexibility of the mobile robotic gantry.	Combine the unparalleled strengths of Allia and Maquet™ to deliver superior care for hybrid surgery.

* Compliant with standard IEC 60601-2-46 required for operating tables.

Allia IGS Pulse

Designed to:

- Augment imaging
- Enhance user experience
- Improve outcomes

References

*Allia IGS Pulse is the commercial name of the latest generation of Allia IGS 3, Allia IGS 5, Allia IGS 7, Allia IGS 7 OR products in their 20-cm or 30-cm detector configurations. Product may not be available on all markets. Refer to your sales representatives for more information.

Allia IGS Pulse images shown were acquired in real clinical settings with offline post-processing and can be generated from release IGS5_5.10.0 or IGS7_7.10.0.

**CMCT: C-arm motion compensated computed tomography.

Prof. Gilard, Dr. Dumonteil, Dr. Philippart, Dr. Sauguet, Dr. Collet, Dr. Freixa and Dr. Sabaté are paid consultants for GE HealthCare. The statements described here are based on their own opinion and on results that were achieved in their unique setting. Results may vary. Dr. Collet's statement on 3DStent described here is based on offline image reviews from a product prototype.

1. Table motion not available for IGS 520 configuration.
2. Option available with Innova IQ table.
3. Valid for Innova IQ table.
4. As compared to the first generation of Allia IGS 5 in IGS 530 configuration at 7.5 fps, level 3 (default cardiac protocol setup), dose limiter set to off (i.e., 88 mGy/min maximum), 20-cm FOV with the high contrast fluoroscopy (HCF) option using various PMMA thicknesses.
5. Visible on linearized for-processing images of the NEMA XR 21 resolution phantom with a magnification factor of 1.7 within a kV range (100 kV and 120 kV) used for the exposure of patients of larger anatomical thickness.
6. Compared to legacy processing based on measurements of noise and contrast-to-noise ratio (CNR) on a representative clinical database, complemented by internal image reviews.
7. Review by 6 independent cardiologists to score differences in image rendering on more than 60 sequences randomly picked from a representative clinical database.
8. Tube means X-ray source assembly.
9. System acoustic noise measured at 51.2 dB(A) with 49 dB(A) background noise. Normal conversation is 60 dB (A).
10. Results obtained during the evaluation of Allia IGS 5 Pulse by 14 clinicians from Pasteur clinic, Toulouse, France, over 306 clinical cases. The statement described here is based on the opinion of these healthcare professionals, who are paid consultants for GE HealthCare and were compensated for their participation.
11. Results obtained comparing Allia IGS 5 Pulse and Innova IGS 5 dose performances (Dose Area Product in $Gy.cm^2$) in ICPS Antony, France, on 1314 clinical cases. Similar median fluoroscopy and procedure time, same physicians and similar median BMI between Allia IGS Pulse and Innova IGS cases.
12. Results obtained during the evaluation of Allia IGS 7 by 19 clinicians from Europe and the United States, using a simulated interventional lab environment. The statement described here is based on the opinion of these healthcare professionals, who are paid consultants for GE HealthCare and were compensated for their participation.
13. AutoRight refers to intelligent image chain features of GE HealthCare's Interventional X-ray systems, from image acquisition to image processing and display, available on Allia IGS products. May not be available on all markets.
14. 3DStent solution includes Allia system, 3DXR and Volume Viewer Innova and requires AW workstation with Volume Viewer. These applications are sold separately. Not available for sale on all markets. Available on Allia IGS 5 with 20-cm or 30-cm detector and Allia IGS 7 with 30-cm detector.
15. PCI ASSIST 2 solution includes StentViz and StentVesselViz.
16. Valve ASSIST 2 solution includes TAVI Analysis, HeartVision 2 and requires AW workstation with Volume Viewer, Volume Viewer Innova. These applications are sold separately.
17. Compared to the manual approach (data on file).
18. 3mensio is a product line of Pie Medical imaging corporation.
19. Digital Pen option requires AW workstation with Volume Viewer, Volume Viewer Innova, Vision 2, VesselIQ Xpress, Autobone Xpress. These applications are sold separately. Digital Pen may not be available on all markets. Refer to your sales representative for more information.
20. Shafiq A. 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.
21. Overtchouk P. 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.
22. Roy AK. et al. Novel Integrated 3D Multi-Detector Computed Tomography and Fluoroscopy Fusion for Left Atrial Appendage Occlusion Procedures. Catheter Cardiovasc Interv2017;Mar 17, DOI:10.1002/ccd.26998.
23. QFR Analysis is included in QAngio XA 3D software, supplied by Medis medical imaging bv manufacturer and it is operating on a separate hardware. Not available on all markets. It is compatible with Innova IGS 5, Innova IGS 6, Discovery IGS 7, Discovery IGS 7 OR, Allia IGS 7, Allia IGS 7 OR and Allia IGS 5.
24. INTERACT ViewX is a connection kit to display Interventional images on the GE HealthCare Ultrasound system display. Requires Vivid E95 systems or Vivid S70N systems sold separately. Requires Interventional X-ray systems Allia IGS 5, Allia IGS 7 or Allia IGS 7 OR. Not all products are available on all markets. For more information about products and services that are available in your country, please contact your GE HealthCare sales representative.

About GE HealthCare Technologies Inc.

GE HealthCare is a trusted partner and leading global healthcare solutions provider, innovating medical technology, pharmaceutical diagnostics, and integrated, cloud-first AI-enabled solutions, services and data analytics. We aim to make hospitals and health systems more efficient, clinicians more effective, therapies more precise, and patients healthier and happier. Serving patients and providers for more than 125 years, GE HealthCare is advancing personalized, connected and compassionate care, while simplifying the patient's journey across care pathways. Together, our Imaging, Advanced Visualization Solutions, Patient Care Solutions and Pharmaceutical Diagnostics businesses help improve patient care from screening and diagnosis to therapy and monitoring. We are a $19.7 billion business with approximately 53,000 colleagues working to create a world where healthcare has no limits.

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