Enabling Cardiovascular CT at point-of-care

Scott Schubert
Arineta, CEO & Chairman of the Board

October 2022

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Topic	Speaker	Title
Introduction	Scott Schubert	CEO, Arineta
Enhanced Cardio access in an office-based clinic	Sujith Kalathiveetil MD	XXXX, Duly Health and Care
Role of CCT for the interventional cardiologist in an ASC	Tony Das MD	XXX, Connected Cardiovascular Care (C3)
CardioGraphe technology overview	Scott Schubert	
Q&A		

For more information contact: scott.schubert@arineta.com

Arineta

About Arineta

- Our Vision:

  Dedicated to growing cardiac CT as the front-line non-invasive test for diagnosing, therapy planning and monitoring of cardiovascular disease … the #1 cause of death and costs for healthcare worldwide

- Based in Caesarea Israel. USA incorporated in 2021.
- World class CT technology pioneers. >600 years total CT R&D experience.
- Developer and manufacturer of **CardioGraphe** … the world's 1st dedicated cardiovascular CT
- Regulatory cleared in the USA, EU, China, ANZ, Canada and other countries
- CardioGraphe systems installed worldwide, performing up to 50 pats/day
- Partners with GE Healthcare for sales and service

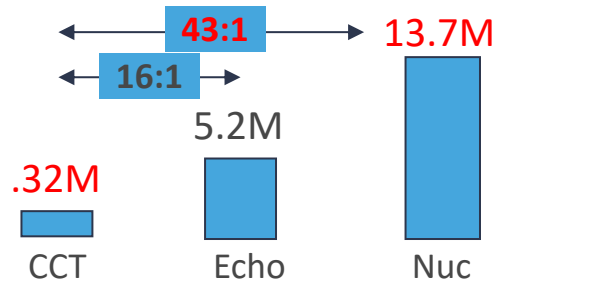
Cardiac CT lacks access at point-of-care

Current Situation*

US Medicare providers

CCT growing at 15% CAGR from 2012-2017

But … significantly fewer CCT procedures than Echo U/S or Nuc MPI



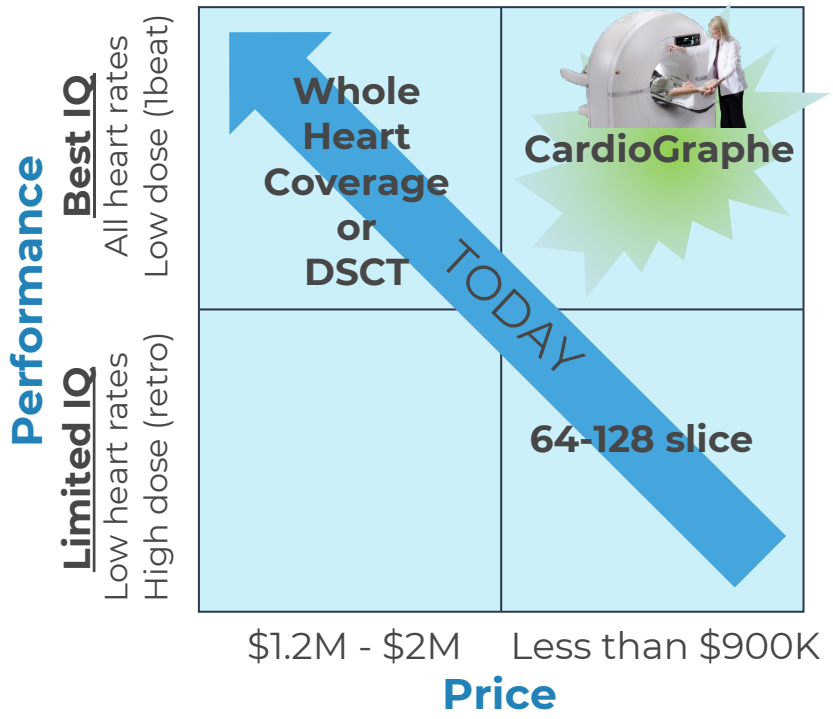
6yr cumulative procedures (2012-17)

* Goldfarb et al. Trends in Cardiovascular MRI and CT in the U.S. Medicare Population from 2012 to 2017. Radiology: Cardiothoracic Imaging 2021; 3(1):e200112.

Enabling CCT access

CardioGraphe

- Highest performance
- Affordable
- Fits in an office, cath lab or mobile



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Arineta

Arineta: transforming the care of cardiovascular disease

Arineta CT (CardioGraphe):

Highest performance,
small footprint, affordable

Reduce cardiovascular death

Improve patient outcomes

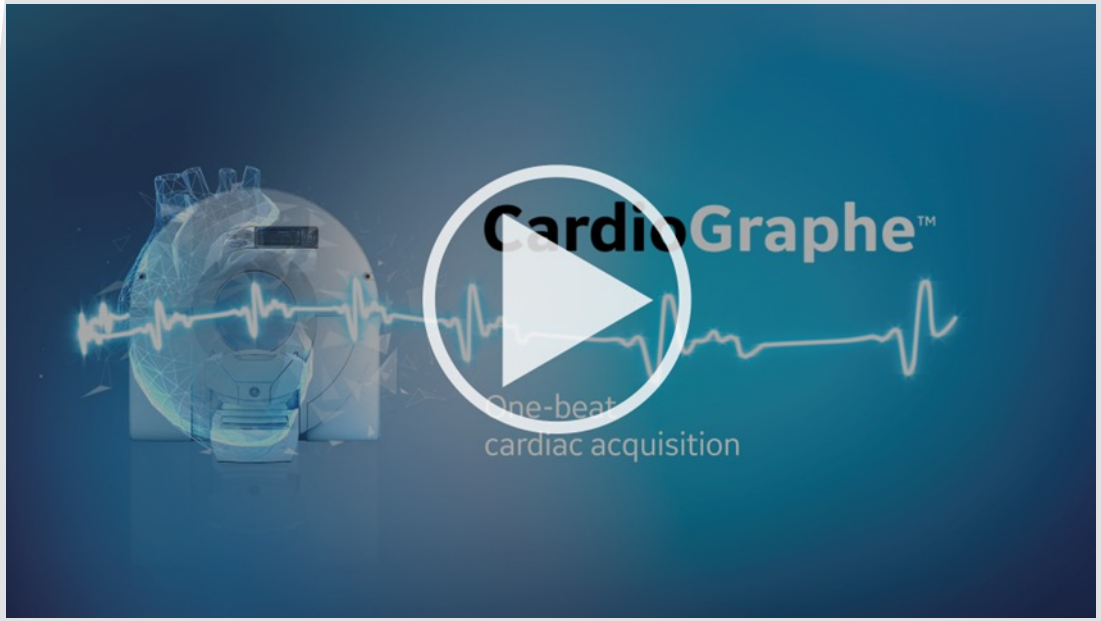
Reduce healthcare costs

Arineta

CardioGraphe:

The highest performance cardiovascular CT

- 0.24sec rot speed + half-scan + SSF2*
- 14cm whole heart coverage
- 560 slices
- 0.28mm spatial resolution w/ 0.5mm detector
- 139kW effective power for SNR
- Stereo CT for reduced cone beam
- Axial scan w/ prospective gating – always
- 25cm cardiac w/10x attenuation outside FOV
- 45cm Thoracic Extended FOV

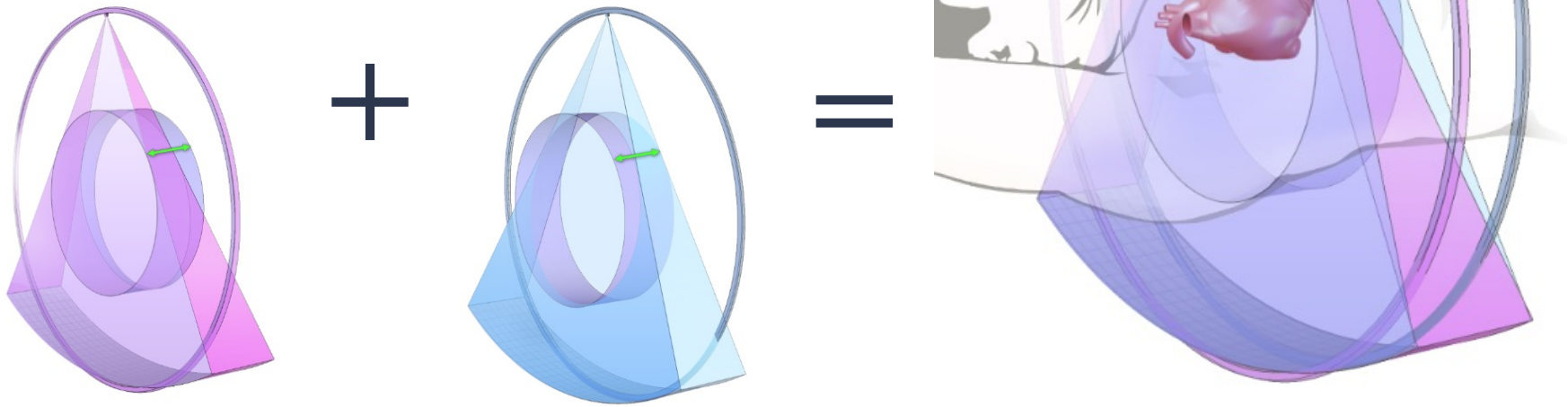


**Intelligent motion correction with SnapShot™ Freeze is designed to reduce blurring artifacts due to motion in coronary vessels that cannot be addressed by gantry speed alone.*

Arineta

The Arineta Stereo CT™ technology

- Whole heart coverage w/ 1 heartbeat
- Dual overlapping beams from different directions
- Superb 3D imaging
- Eliminates the cone beam artifacts
- Reduced detector size and cost

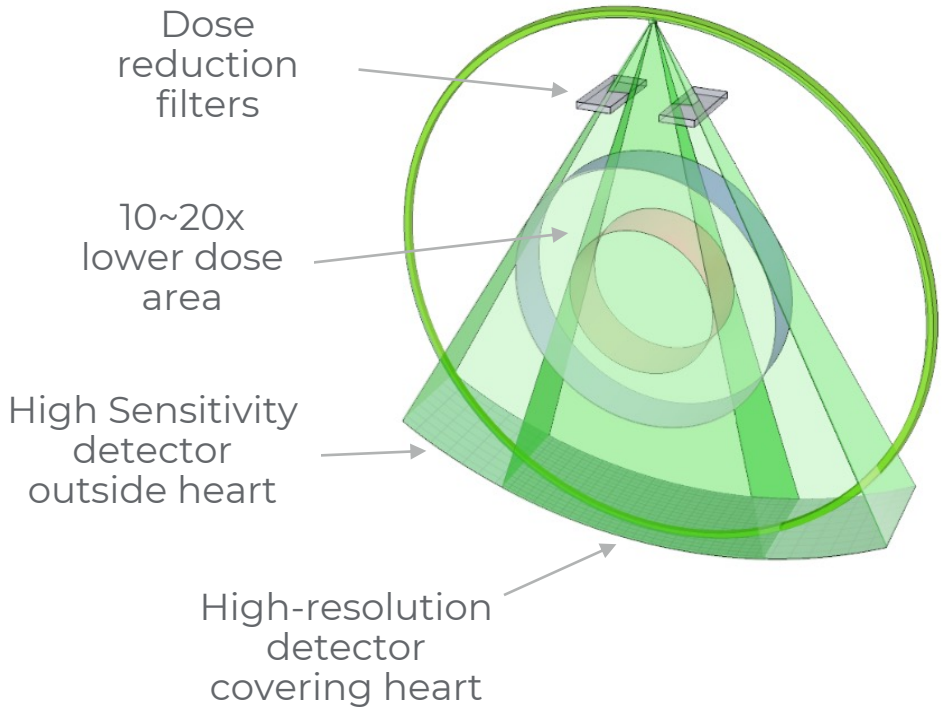


Focused FOV

In CT, body parts outside the FOV affect the image reconstruction inside the FOV.

CardioGraphe solution:

- Radiation outside FOV attenuated by 10~20 x
- High sensitivity peripheral detectors acquire data out of the FOV
- 250mm FOV
- Less incidental finding in lungs



Ultra-fast rotation speed 0.24s

120 msec temporal resolution with partial scan

Short tube to detector distance

Advantages

1) Less centrifugal force when gantry rotates fast
   - Enables 0.24 sec rotation speed
   - 120ms temporal resolution
2) More photon flux for a given tube power
   - 72KW on CardioGraphe provide same flux at iso-center as 139KW on scanner with SAD=627mm
3) Reduced gantry size, weight, installation cost

Bore size is 600mm

- Patients with up to BMI 72 scanned successfully

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Siting

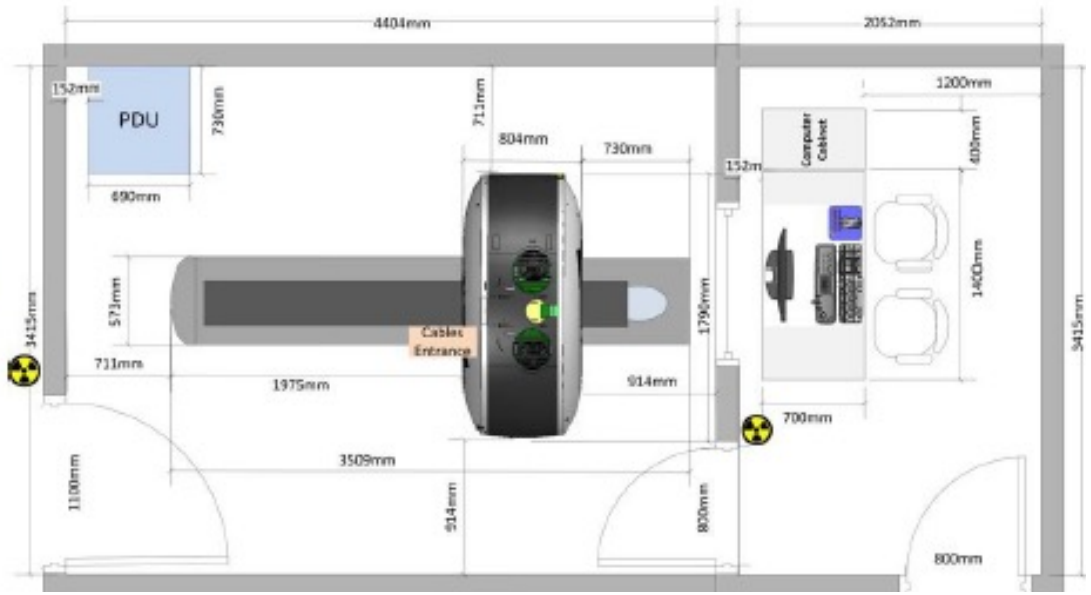
Compact design for office, cath lab, ED or mobile

Advantages

- Fits through standard doorways
- Safe for standard elevators
- Sites in a small room: 15m^2

Comparisons (vs Rev CT)

- 40% smaller room size (23m^2)
- 40% lighter weight gantry (6335lb)
- 50% smaller gantry (6.44m^3)



Matt Budoff MD
Past President, SCCT

Why we chose CardioGraphe for RURAL

The world's first and only dedicated cardiovascular CT:

QUALITY – High quality images for any patient

- **SPEED** – The world's fastest CT scanner - 0.24sec rotation
- **COVERAGE** – Whole heart imaging in a **single heartbeat**

ACCESS – Easily located in physician office, cath lab, mobile

- **SMALL** – Small footprint for lower installation cost
- **DEDICATED** – Easy to train and operate

COST – Top performance at lower price

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Scientific studies

"Overall image quality was higher in the DCCT (Dedicated Cardiac CT) group"

ARTICLE IN PRESS

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Technical note

A comparative assessment of the performance of a state-of-the art small footprint dedicated cardiovascular CT scanner

Paul Maggiore, Alex L. Huang, Malcolm Anastasius, Richard Brown, Jordan Boroditsky, Evan Ariel, Jonah Ezekiel, Jacob Merkur, Philipp Blanke, Jonathon Leipsic*

Department of Radiology, St Paul's Hospital, Vancouver, British Columbia, Canada

ARTICLE INFO

Keywords:
Dedicated cardiovascular CT
FFRct
CTCA
Atherosclerosis
Chest pain

ABSTRACT

Introduction: With increasing adoption of CT coronary angiography (CTA) there is increasing demand for cost-effective, small footprint, dedicated cardiac scanners. We compared a state-of-the-art, small footprint dedicated cardiac scanner (DCCT) to a standard multidetector scanner (MDCT).

Methods: The study was a retrospective unblinded single centre study. A total of 800 patients were included, with 400 undergoing a DCCT and MDCT coronary CTA scanning, respectively. Image quality was assessed using a 4-point grading score. Image noise and artifact, signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR), and acceptance rate for CT-derived fractional flow reserve (FFRct) were recorded.

Results: Overall image quality was higher in the DCCT group (3.8 ± 0.55 vs 3.6 ± 0.69; p = 0.042). There was no difference in overall image noise (p = 0.131) or artifact (p = 0.295). SNR was superior in the DCCT group (14.2 ± 6.85 vs 11.4 ± 3.32; p < 0.005) as was CNR (12.7 ± 6.77 vs 11.9 ± 3.29; p < 0.005). The heart rate was lower in the DCCT group (56 ± 9.1 vs 59 ± 8.1; p < 0.005). No difference in the dose length product (DLP median 244.53 (IQR 105.6) vs 237.63 (IQR 160.1); p = 0.313) or FFR_{CT} acceptance rate (100 vs 97.7%; p > 0.05) was noted. Independent predictors of excellent quality regardless of scanner type were age (p = 0.011), heart rate < 65 bpm (p < 0.005), and body mass index < 35 (p < 0.005).

Conclusion: A DCCT scanner is capable of image quality similar to modern current generation general purpose CT technology. Such technology appears to be a viable option to serve the increasing demand for CTCA imaging.

Jonathon Leipsic MD

"high image quality both in AF (A-Fib, 94bpm) and sinus rhythm patients"

RSNA 2020
HUMAN INSIGHT/VISIONARY MEDICINE
November 29 to December 5

106th Scientific Assembly and Annual Meeting

Feasibility of the Coronary Computed Tomography Angiography Examinations in Patients With Atrial Fibrillation Using A Novel Dedicated Cardiovascular CT System: Initial Clinical Experience With CardioGraphe
J cao, etc.

Purpose:
Patients with atrial fibrillation (AF) were regarded as a challenge for coronary computed tomography angiography (CCTA). We aimed to evaluate the clinical performance of a novel dedicated cardiovascular CT system in patients with AF.

Method and Materials:
A total of 52 patients with suspected coronary artery disease, including 30 patients with persistent AF (Group A) and 22 patients with sinus rhythm (Group B) , underwent CCTA on a 560-slice Stereo CT(CardioGrapheTM, GE healthcare). Image data was transferred to a advanced workstation (AW4.6) for post-reconstruction. Image quality was assessed subjectively by Likert scale and objectively by SNR and CNR. Two experienced radiologists who were blinded to the electrocardiograph, independently graded the CT images in terms of visibility and artifacts with a 4-grade rating scale (4, excellent; 3, good; 2, poor; 1, insufficient) on per-segment, per-vessel and
per-patient level. SNR and CNR were calculated based on the mean CT attenuation values and standard deviations within 3 regions of interest placed in the proximal left main and proximal right coronary artery. The CNR and SNR of two groups were compared using independent-sample T-test. The image quality of two groups were compared using Wilcoxon rank-sum test.

Results:
The two groups are matched in BMI (P>0.05). Mean HR and HR variability during acquisition were 94.87±45.414 and 89.03±51.49 bmp in Group A, which were significantly higher than 64.36±8.856 and 8.73±14.907 bmp in Group B (P<0.05). No significant differences were observed in CNR and SNR(P>0.05). Subjective image quality score was not significantly different between group A and group B in vessel-based(3.6±0.5 vs 3.5±0.7, P>0.05) or patient-based analysis(3.7±0.5 vs 3.6±0.5, P>0.05).

Conclusion:
CCTA examinations using the novel dedicated cardiovascular CT system yielded high image quality equally for AF and sinus rhythm patients..

Clinical Relevance/ Application:
Images of CCTA acquired with the novel dedicated cardiovascular CT system are of high image quality both in AF and sinus rhythm patients. CardioGraphe has an excellent performance on clinical application.

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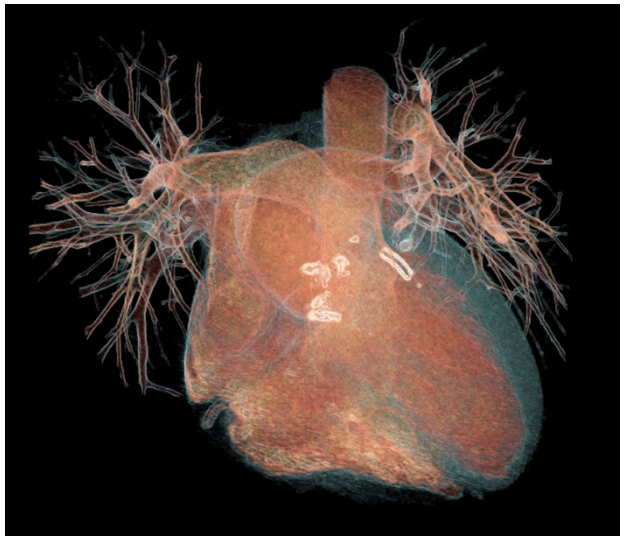
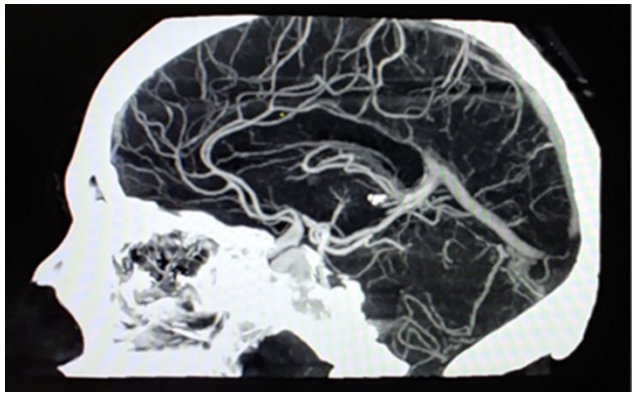
High performance structural heart and vascular imaging



Calcified aortic valve

Aorta – arc to iliac



Brain angiography

Carotid arteries

Mobile ready

- Only premium cardiovascular & thoracic scanner that fits in a small mobile
- Access to cardiac and lung CT without expensive acquisition by every site
- Access to underserved
- Community hospitals, satellite sites of major hospitals, outpatient partnerships

RURAL
Risk Underlying Rural Areas Longitudinal Study

- NIH research study
- CardioGraphe selected because: clinical performance, size, weight, power

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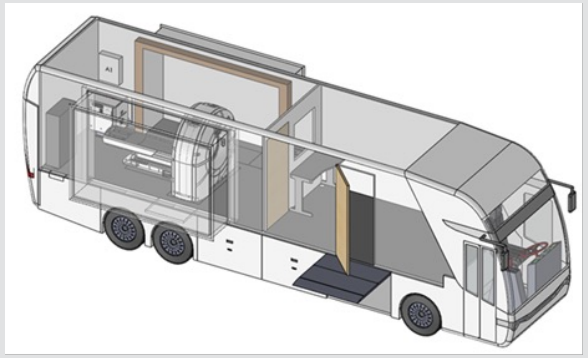
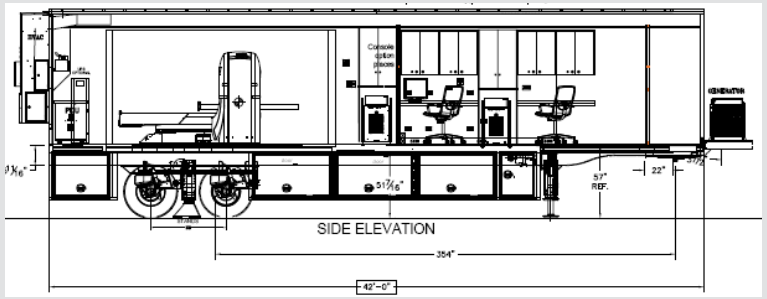
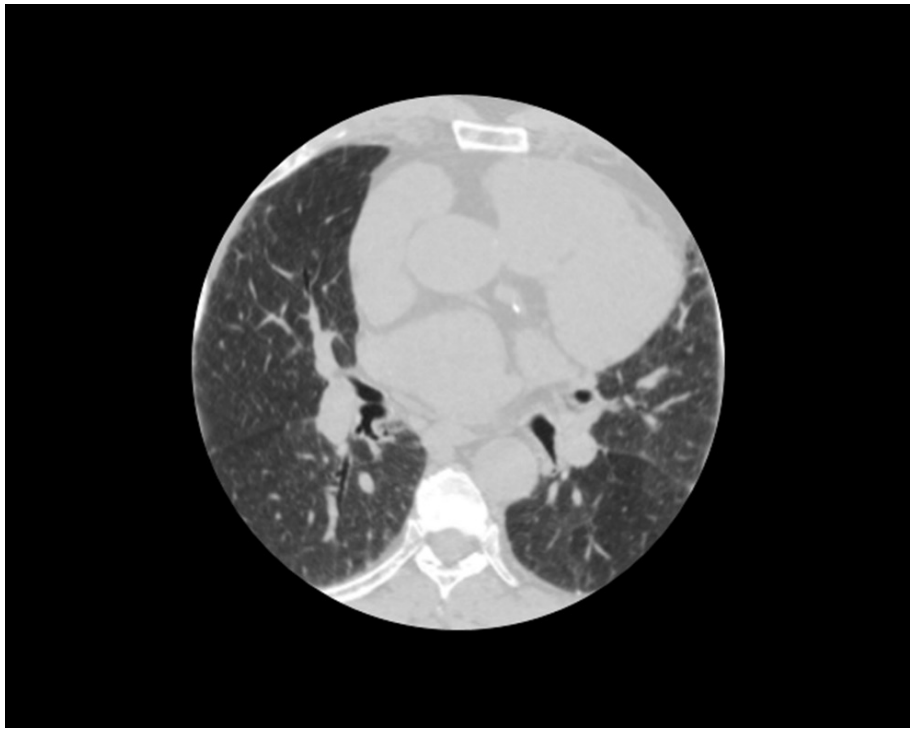
Bus config (self-propelled)



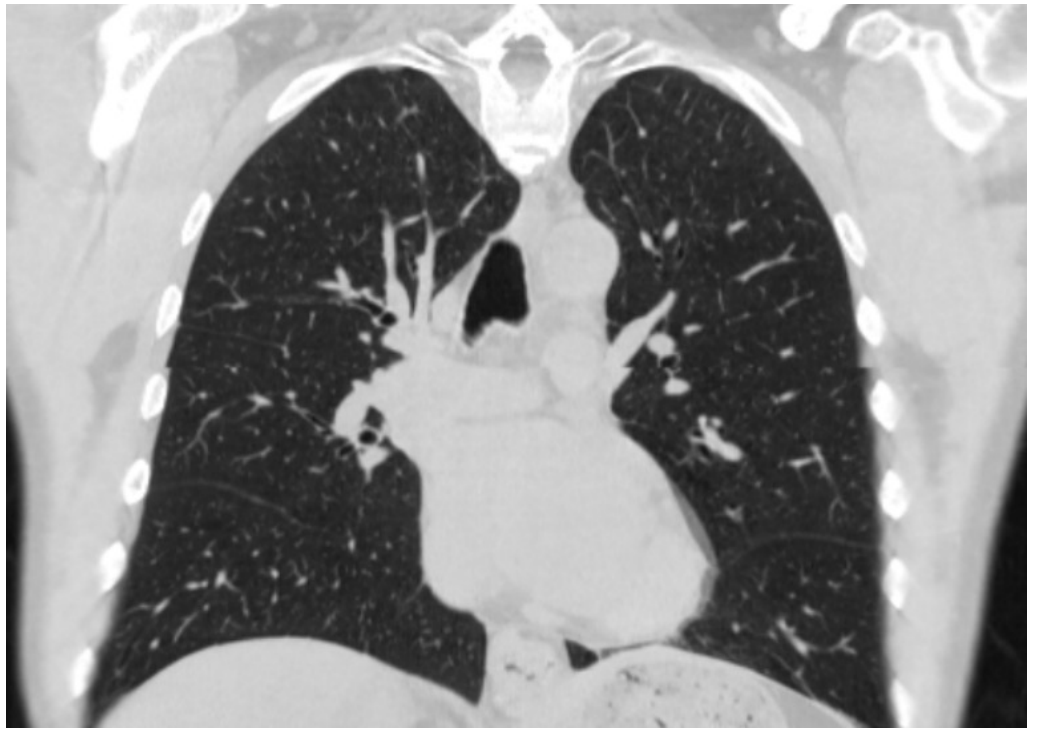
Short Trailer config (w/ tractor)



Lung imaging – Extended FOV option*



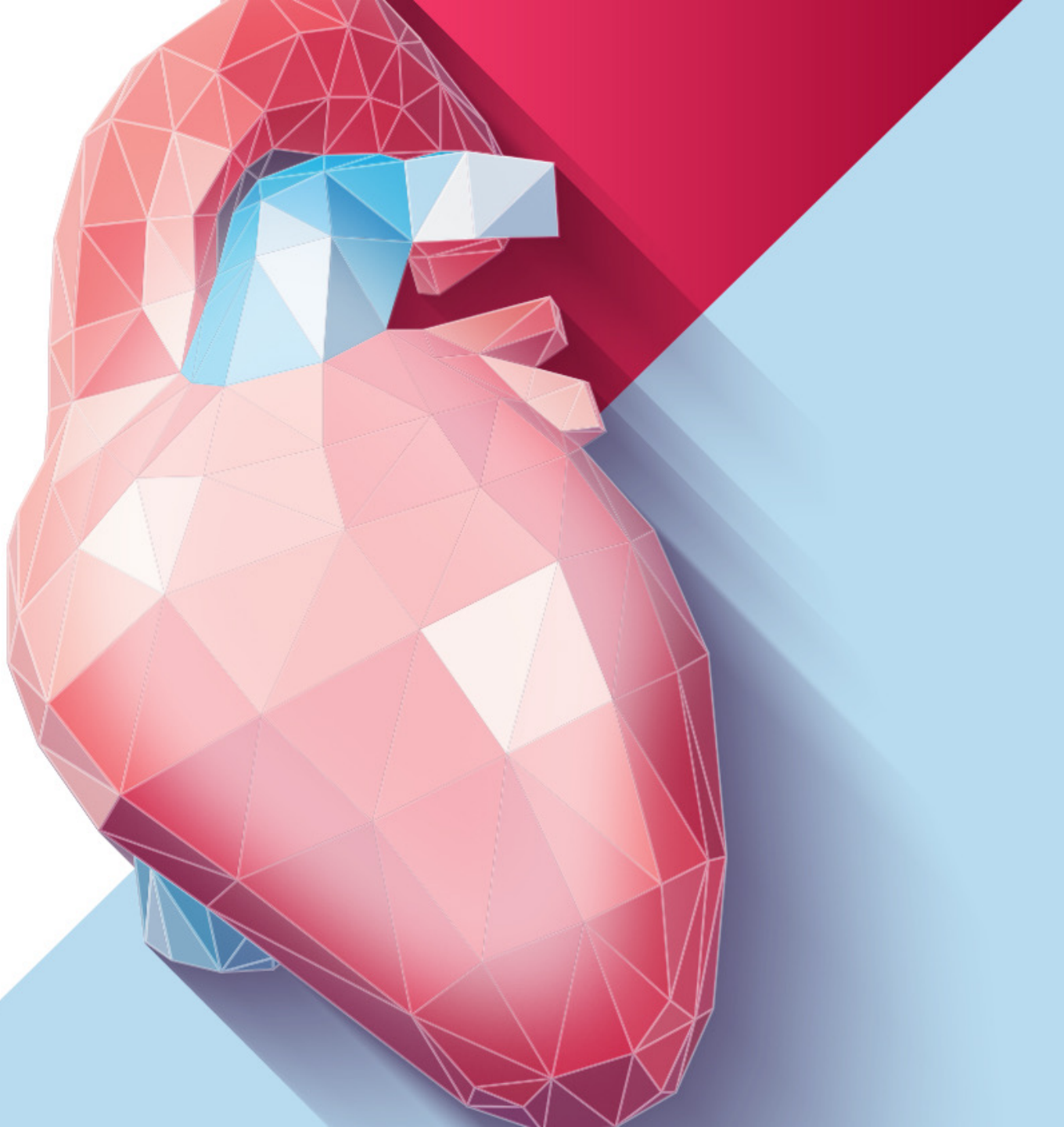
Cardiac Field of View



Thoracic Field of View

* 510(k) pending

Financial Benefits



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Economic ProForma

21mo payback at 10 patients/day. Break even at 4.5 patients/day

Equipment Costs	$900K
Equipment Financing	100% Financed, 5% rate, 5 yr loan, 7 yr depreciation
Build out costs	$25K
Service costs/yr	$120K
Labor costs/yr	$110K
Variable costs/procedure such as contrast agents	$25
Ave Reimbursement/procedure	$400
Ave patients/day	10 patients
Ave days/month operation	21 days

~$2.5M Cumulative Net Cash Flow in 5 yrs at 10 patients/day

Pay Per Use model overview

- No upfront CT scanner cost for the user
- Scanner records # of procedures, and user pays a fixed cost per procedure
- Arineta/GE provides the scanner, peripherals (injector, workstation), installation, training. Arineta retains title of equipment.
- Service included, provided by GE
- User provides the facility, manpower, operational cost
  - Manpower includes MD, tech, nurse, receptionist
  - Consumables incl contrast agent, pharmaceuticals, others
  - User pays for facility construction
  - CON, if needed

Install CardioGraphe NOW

No upfront cost

No capital risk

PPU to address CapEx risk concern

Arineta
CARDIO IMAGING

THANK YOU

www.arineta.com